DrayTek

Vigor3200 Series

Multi-WAN Security Router

Your reliable networking solutions partner

User's Guide

V1.0

Vigor3200 Series
Multi-WAN Security Router
User's Guide

Version: 1.0

Firmware Version: V3.3.6_RC6

Date: 18/11/2010

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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: Vigor3200 Series Router

DrayTek Corp. declares that Vigor3200 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 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.

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1 Preface

Vigor3200 Series is a broadband router. It integrates IP layer QoS, NAT session/bandwidth management to help users control works well with large bandwidth.

By adopting hardware-based VPN platform and hardware encryption of AES/DES/3DES, the router increases the performance of VPN greatly, and offers several protocols (such as IPSec/PPTP/L2TP) with up to **32** VPN tunnels.

The object-based design used in SPI (Stateful Packet Inspection) firewall allows users to set firewall policy with ease. CSM (Content Security Management) provides users control and management in IM (Instant Messenger) and P2P (Peer to Peer) more efficiency than before. By the way, DoS/DDoS prevention and URL/Web content filter strengthen the security outside and control inside.

Object-based firewall is flexible and allows your network be safe. In addition, Vigor3200 Series supports USB interface for connecting USB printer to share printer or USB storage device for sharing files, or for 3G WAN connection.

Vigor3200 Series provides two-level management to simplify the configuration of network connection. The user mode allows user accessing into WEB interface via simple configuration. However, if users want to have advanced configurations, they can access into WEB interface through admin mode.

1.1 Web Configuration Buttons Explanation

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

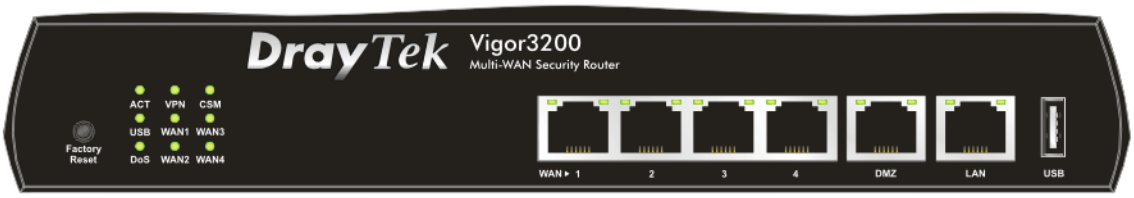
OK	Save and apply current settings.
Cancel	Cancel current settings and recover to the previous saved settings.
Clear	Clear all the selections and parameters settings, including selection from drop-down list. All the values must be reset with factory default settings.
Add	Add new settings for specified item.
Edit	Edit the settings for the selected item.
Delete	Delete the selected item with the corresponding settings.

Note: For the other buttons shown on the web pages, please refer to Chapter 3 and 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.

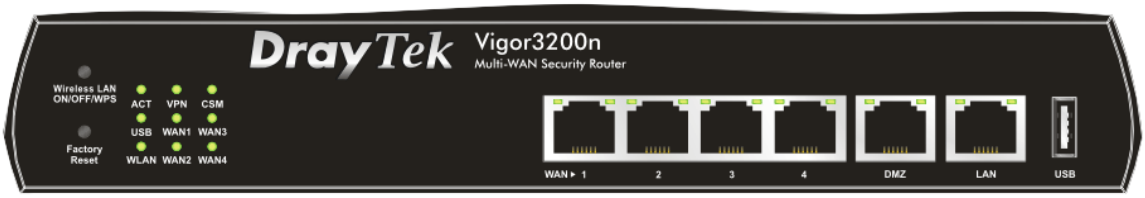
1.2.1 For Vigor3200



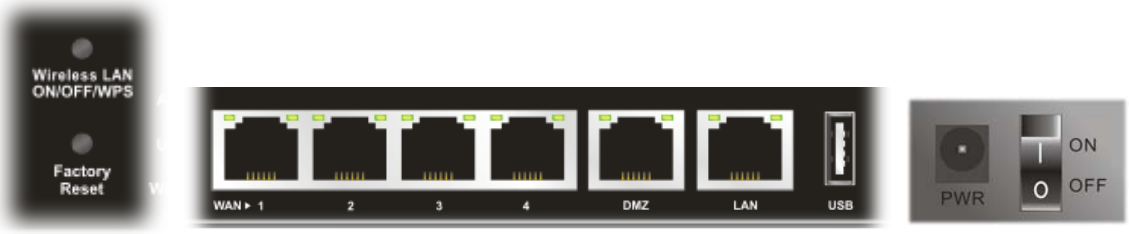
LED		Status	Explanation
ACT (Activity)		Blinking	The router is powered on and running normally.
		Off	The router is powered off.
USB		On	USB device is connected and ready for use.
		Blinking	The data is transmitting.
DoS		On	The DoS/DDoS function is active.
		Blinking	It will blink while detecting an attack.
VPN		On	The VPN tunnel is active.
WAN1-4		On	The WAN1 ~ WAN4 connection is ready.
		Blinking	It will blink while transmitting data.
CSM		On	The profile(s) of CSM (Content Security Management) for IM/P2P, URL/Web Content Filter application can be enabled from **Firewall >>General Setup**. (Such profile must be established under **CSM** menu).
LED on Connector			
WAN 1/2/3/4	Left LED (Green)	On	The port is connected.
		Off	The port is disconnected.
		Blinking	The data is transmitting.
	Right LED (Green)	On	The port is connected with 1000Mbps.
		Off	The port is connected with 10/100Mbps when left LED is on.
DMZ	Left LED (Green)	On	The port is connected.
		Off	The port is disconnected.
		Blinking	The data is transmitting.
	Right LED (Green)	On	The port is connected with 1000Mbps.
		Off	The port is connected with 10/100Mbps when left LED is on.
LAN	Left LED (Green)	On	The port is connected.
		Off	The port is disconnected.
		Blinking	The data is transmitting.
	Right LED (Green)	On	The port is connected with 1000Mbps.
		Off	The port is connected with 10/100Mbps when left LED is on.

Interface	Description
Factory Reset	Restore the default settings. Usage: Turn on the router (ACT LED is blinking). Press the hole and keep for more than 5 seconds. When you see the ACT LED begins to blink rapidly than usual, release the button. Then the router will restart with the factory default configuration.
WAN1- WAN4	Connecters for remote networked devices.
DMZ	Connecter for local DMZ host.
LAN	Connecter for local network devices.
USB	Connecter for 3G Modem or printer.
PWR	Connecter for a power adapter.
ON/OFF	Power Switch.

1.2.2 For Vigor3200n



LED		Status	Explanation
ACT (Activity)		Blinking	The router is powered on and running normally.
		Off	The router is powered off.
USB		On	USB device is connected and ready for use.
		Blinking	The data is transmitting.
WLAN		On	Wireless access point is ready.
		Blinking	Ethernet packets are transmitting over wireless LAN.
		Off	The WLAN function is inactive.
VPN		On	The VPN tunnel is active.
WAN1-4		On	The WAN1 ~ WAN4 connection is ready.
		Blinking	It will blink while transmitting data.
CSM		On	The profile(s) of CSM (Content Security Management) for IM/P2P, URL/Web Content Filter application can be enabled from **Firewall >>General Setup**. (Such profile must be established under **CSM** menu).
LED on Connector			
WAN 1/2/3/4	Left LED (Green)	On	The port is connected.
		Off	The port is disconnected.
		Blinking	The data is transmitting.
	Right LED (Green)	On	The port is connected with 1000Mbps.
		Off	The port is connected with 10/100Mbps when left LED is on.
DMZ	Left LED (Green)	On	The port is connected.
		Off	The port is disconnected.
		Blinking	The data is transmitting.
	Right LED (Green)	On	The port is connected with 1000Mbps.
		Off	The port is connected with 10/100Mbps when left LED is on.
LAN	Left LED (Green)	On	The port is connected.
		Off	The port is disconnected.
		Blinking	The data is transmitting.
	Right LED (Green)	On	The port is connected with 1000Mbps.
		Off	The port is connected with 10/100Mbps when left LED is on.



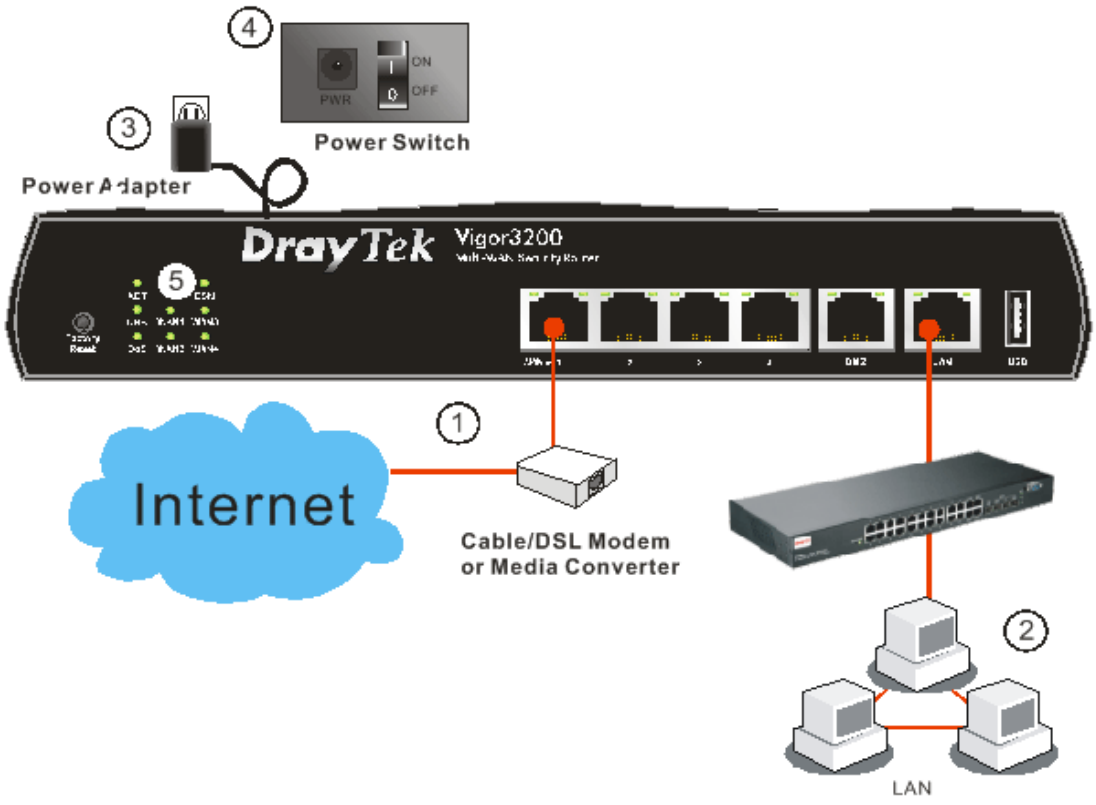
Interface	Description
Wireless LAN ON/OFF/WPS	Press "Wireless LAN ON/OFF/WPS" button once to wait for client device making network connection through WPS. Press "Wireless LAN ON/OFF/WPS" button twice to enable (WLAN LED on) or disable (WLAN LED off) wireless connection.
Factory Reset	Restore the default settings. Usage: Turn on the router (ACT LED is blinking). Press the hole and keep for more than 5 seconds. When you see the ACT LED begins to blink rapidly than usual, release the button. Then the router will restart with the factory default configuration.
WAN1- WAN4	Connecters for remote networked devices.
DMZ	Connecter for local DMZ host.
LAN	Connecter for local network devices.
USB	Connecter for 3G Modem or printer.
PWR	Connecter for a power adapter.
ON/OFF	Power Switch.

1.3 Hardware Installation

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

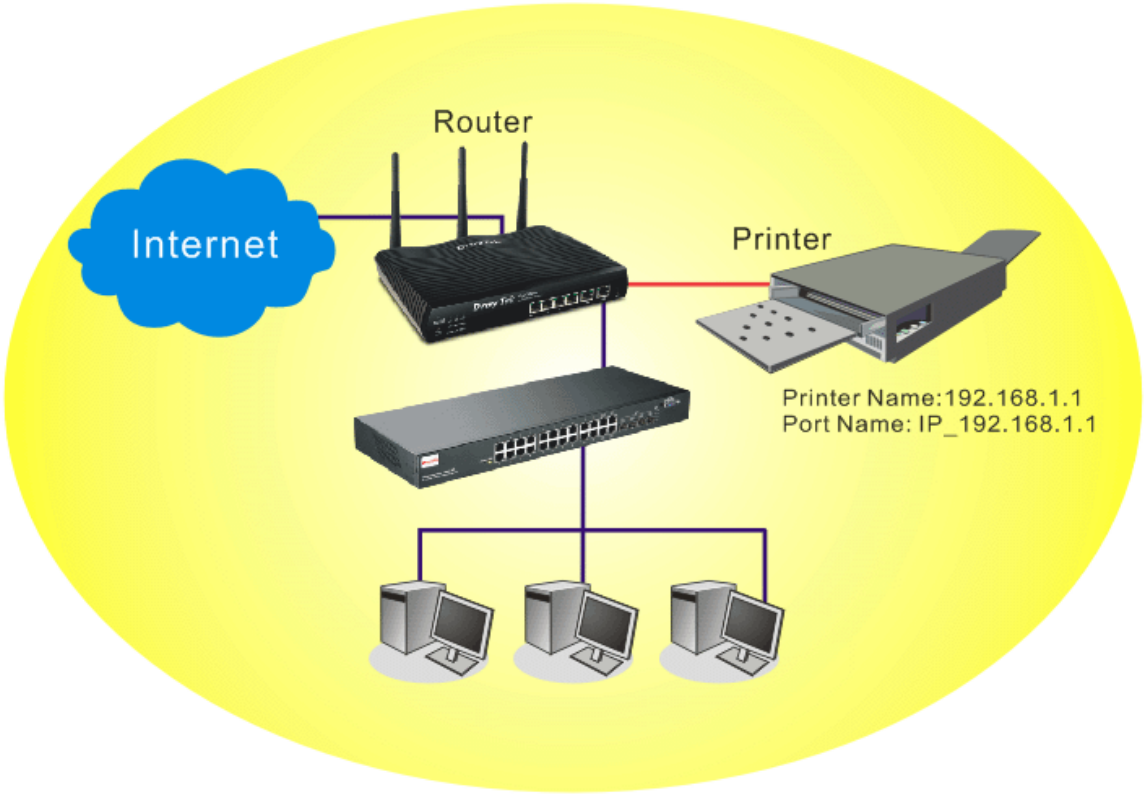
1. Connect the cable Modem/DSL Modem/Media Converter to any WAN port of router with Ethernet cable (RJ-45).
2. Connect one end of an Ethernet cable (RJ-45) to the **LAN** port of the router and the other end of the cable (RJ-45) into the Ethernet port on your computer. Or, use a switch to connect Vigor router and computer(s).
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.

(For the detailed information of LED status, please refer to section 1.1.)



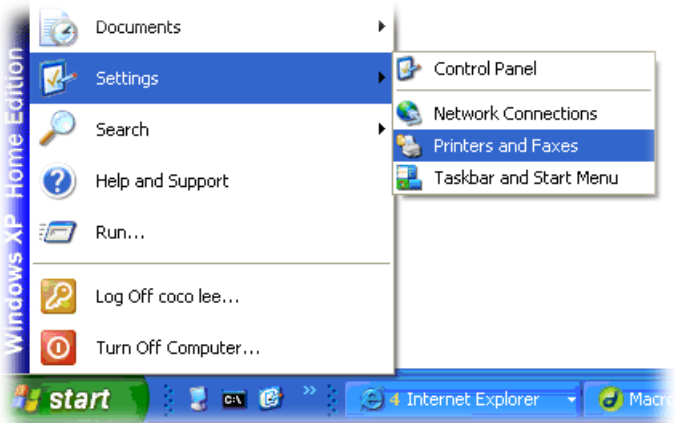
1.4 Printer Installation

You can install a printer onto the router for sharing printing. All the PCs connected this router can print documents via the router. The example provided here is made based on Windows XP/2000. For Windows 98/SE/Vista, please visit **www.DrayTek.com**.

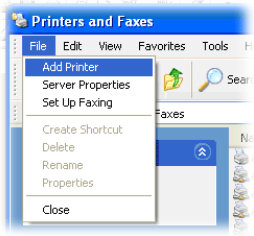


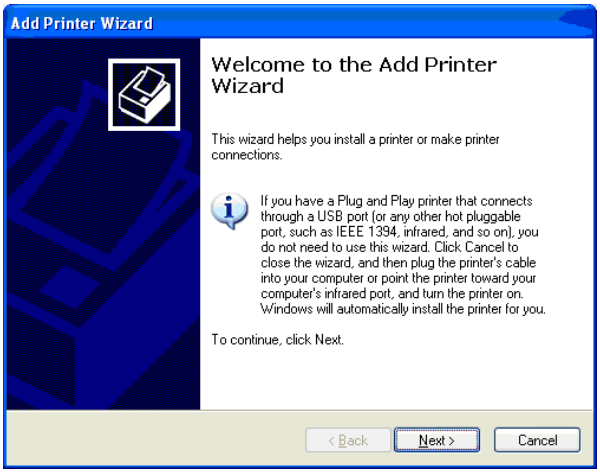
Before using it, please follow the steps below to configure settings for connected computers (or wireless clients).

1. Connect the printer with the router through USB/parallel port.
2. Open **Start->Settings-> Printer and Faxes**.

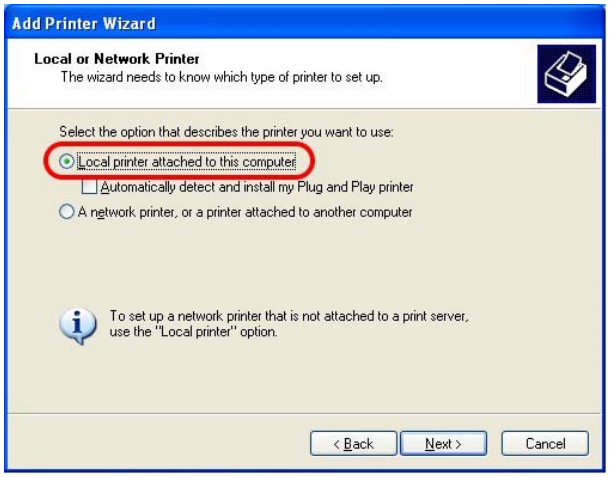


3. Open **File->Add Printer**. A welcome dialog will appear. Please click **Next**.

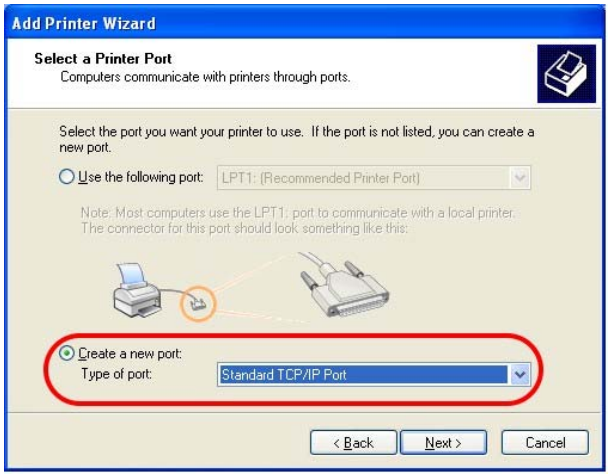




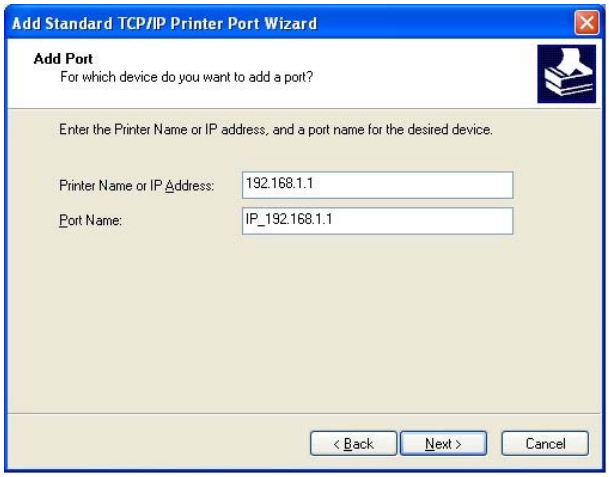
4. Click Local printer attached to this computer and click Next.



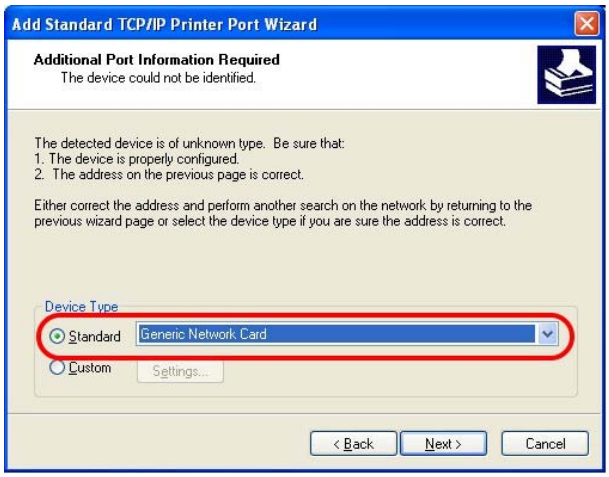
5. In this dialog, choose **Create a new port Type of port** and use the drop down list to select **Standard TCP/IP Port**. Click **Next**.



6. In the following dialog, type **192.168.1.1** (router's LAN IP) in the field of **Printer Name or IP Address** and type **IP_192.168.1.1** as the port name. Then, click **Next**.

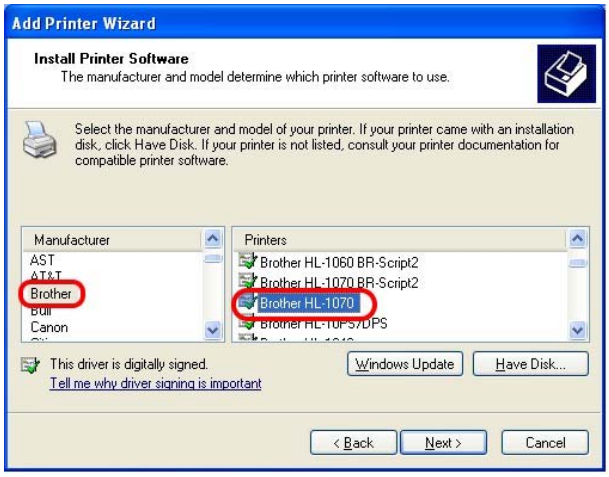


7. Click Standard and choose Generic Network Card.

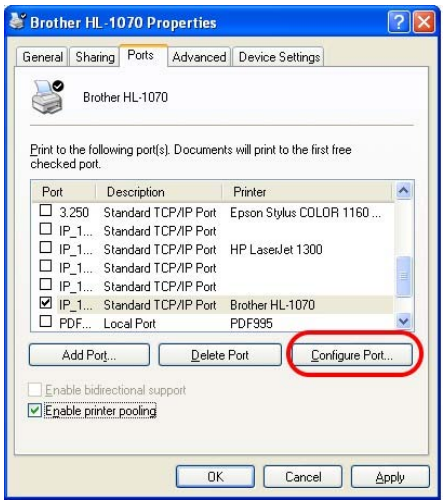


8. Then, in the following dialog, click **Finish**.

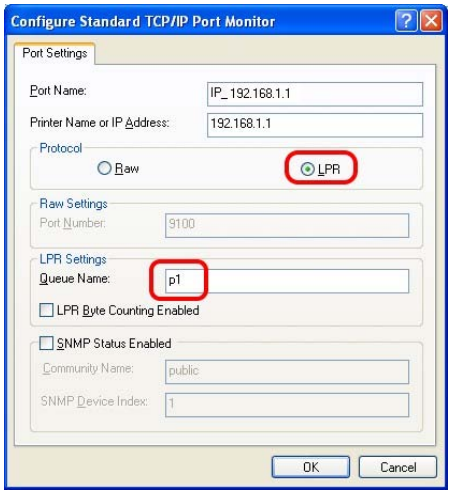
9. Now, your system will ask you to choose right name of the printer that you installed onto the router. Such step can make correct driver loaded onto your PC. When you finish the selection, click **Next**.



10. For the final stage, you need to go back to **Control Panel-> Printers** and edit the property of the new printer you have added.

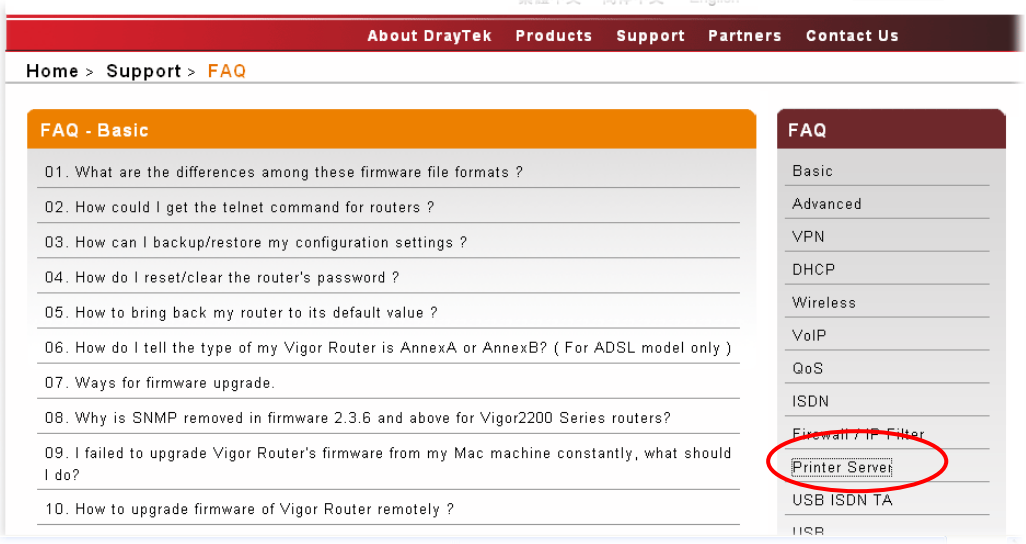


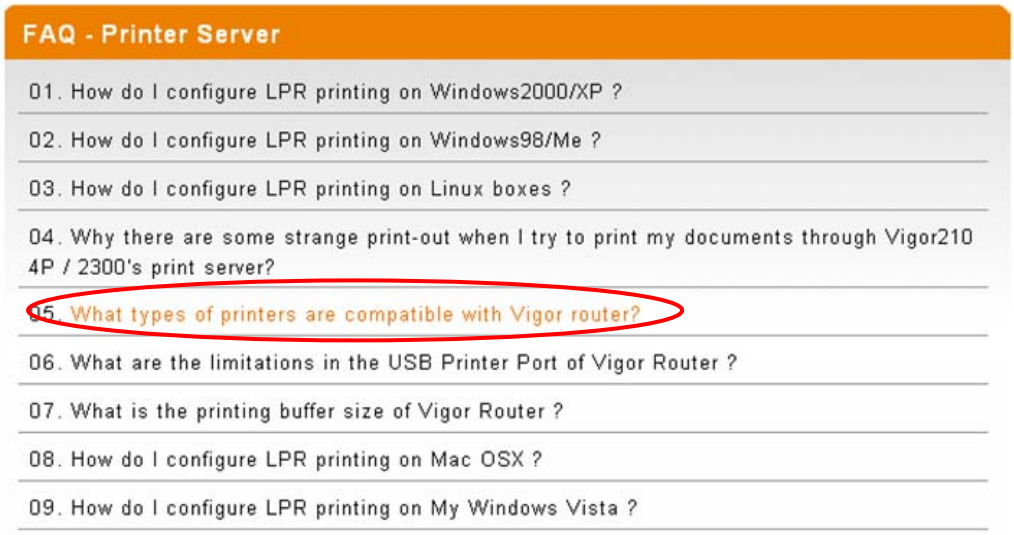
11. Select "**LPR**" on Protocol, type **p1** (number 1) as Queue Name. Then click **OK**. Next please refer to the red rectangle for choosing the correct protocol and LPR name.



The printer can be used for printing now. Most of the printers with different manufacturers are compatible with vigor router.

Note 1: Some printers with the fax/scanning or other additional functions are not supported. If you do not know whether your printer is supported or not, please visit www.DrayTek.com to find out the printer list. Open **Support >FAQ**; find out the link of **Printer Server** and click it; then choose the **What types of printers are compatible with Vigor router?**.





Note 2: Vigor router supports printing request from computers via the LAN port but not WAN port.

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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.

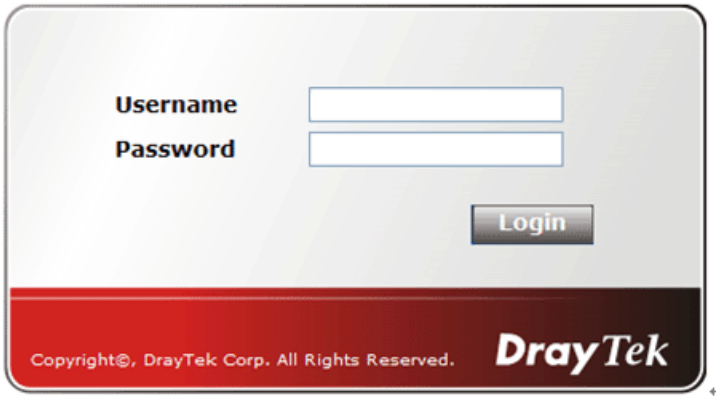
Yet, for admin mode operation, please type "admin/admin" on Username/Password and click Login for full configuration.

2.2 Accessing Web Page

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

   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.

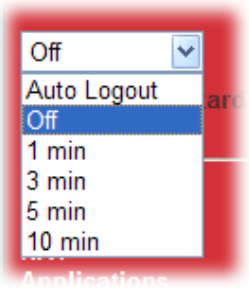
2. Open a web browser on your PC and type **http://192.168.1.1.** The following window will be open to ask for username and password.



3. For user 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.

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

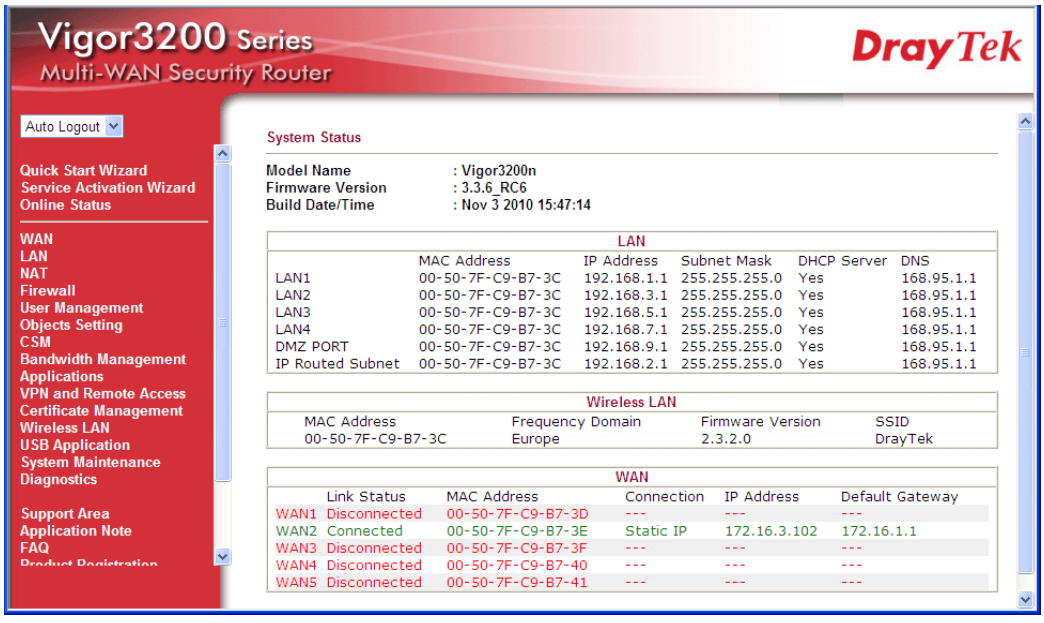
4. The web page can be logged out according to the chosen condition. The default setting is **Auto Logout**, which means the web configuration system will logout after 5 minutes without any operation. Change the setting for your necessity.



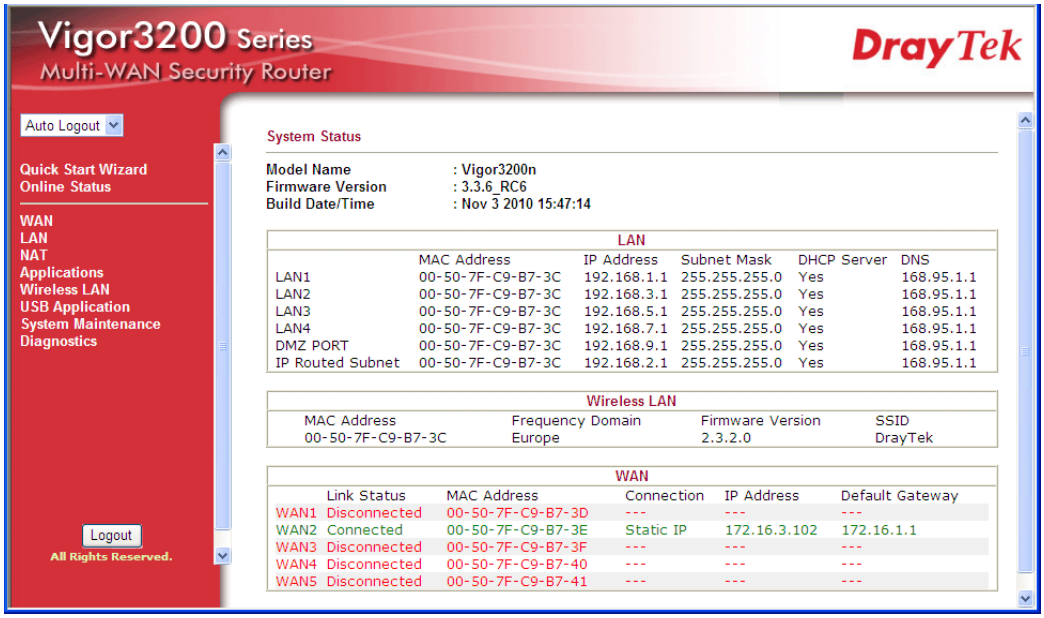
2.3 Changing Password

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 admin mode. Otherwise, do not type any word (both username and password are Null for user mode) on the window and click **Login** on the window.
3. Now, the **Main Screen** will appear.



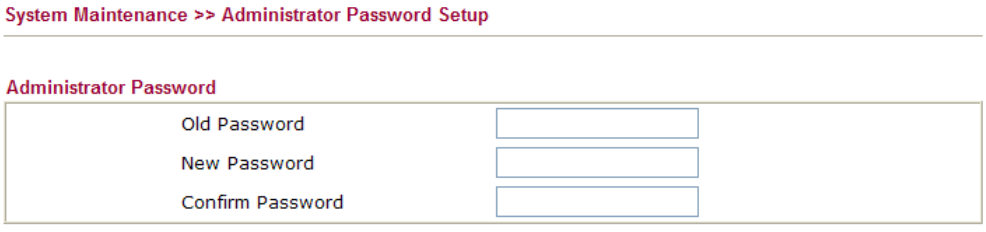
Main screen for admin mode operation (full configuration)



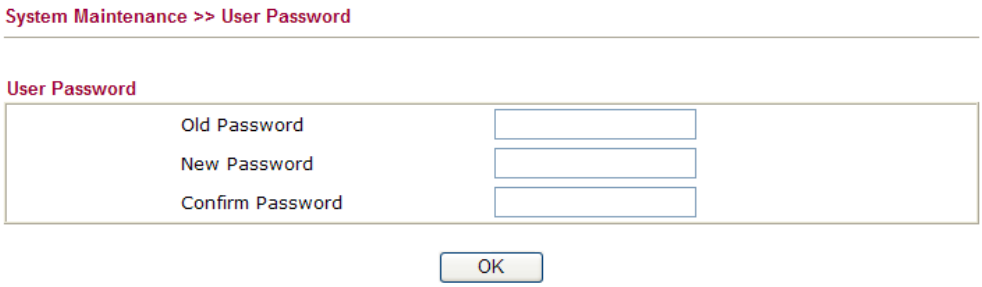
Main screen for user mode operation (simple configuration)

> **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**.

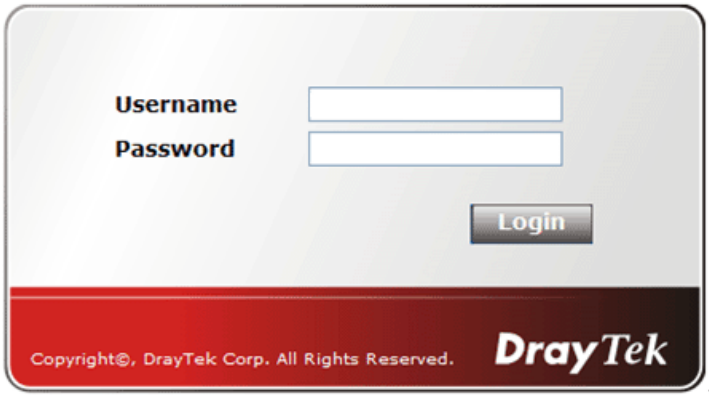


or



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

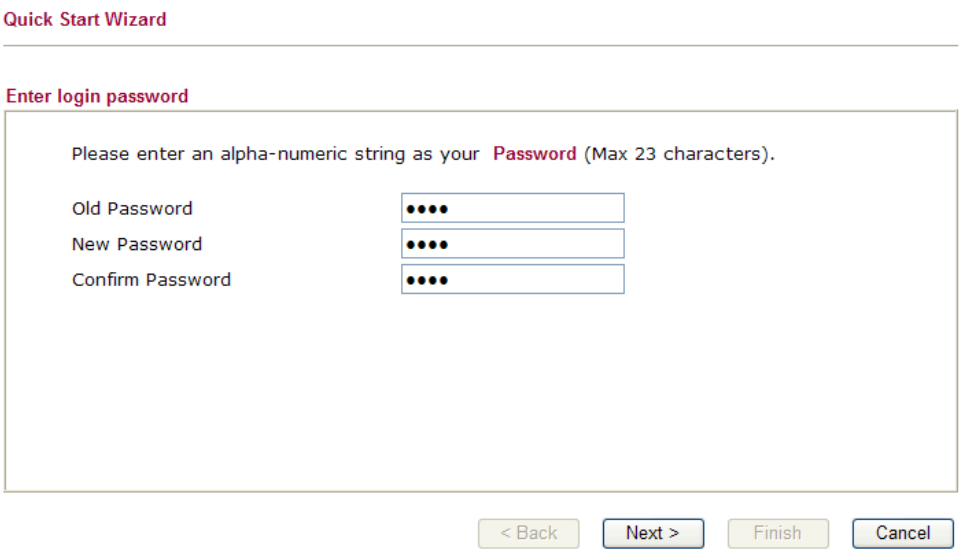
6. Now, the password has been changed. Next time, use the new password to access the Web Configurator for this router.



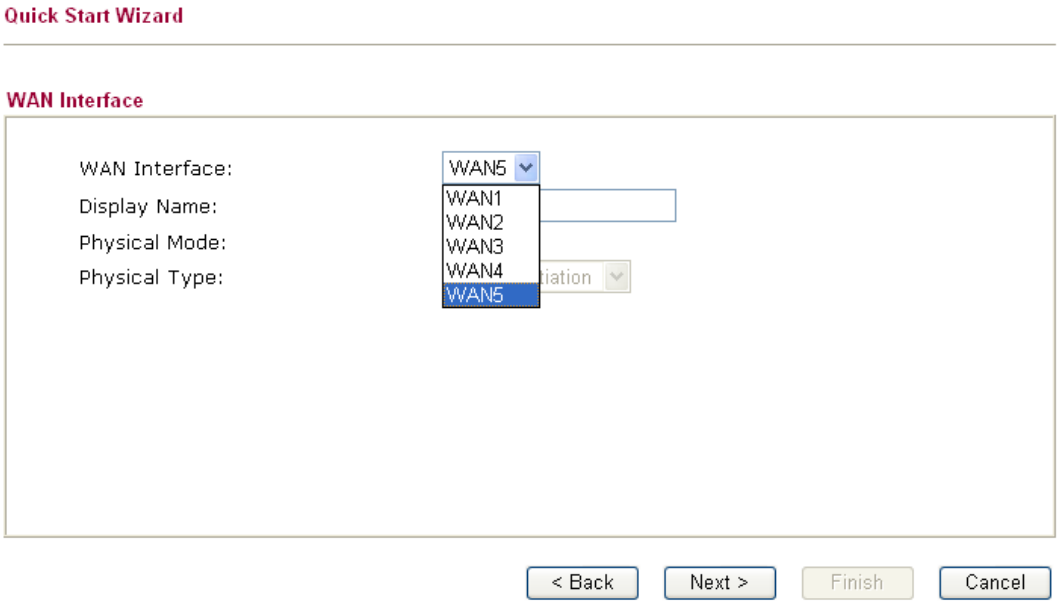
2.4 Quick Start Wizard

Notice: Quick Start Wizard for user mode operation is the same as for admin mode 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**.

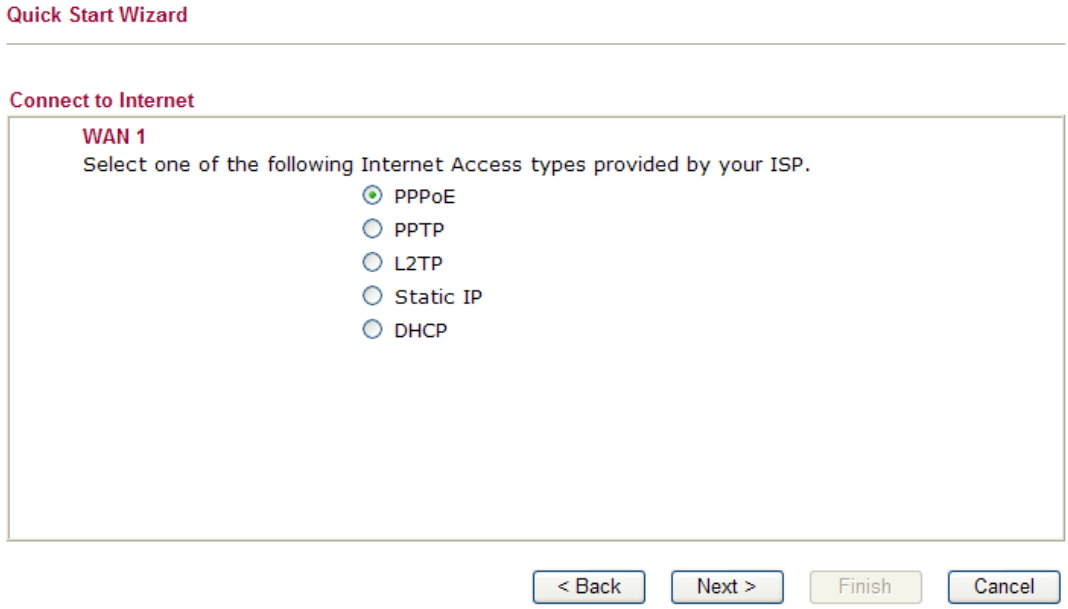


On the next page as shown below, please select the WAN interface that you use. Choose **Auto negotiation** as the physical type for your router. Then click **Next** for next step.



Note: There are five WAN selections available for you to choose. In which, WAN5 is selected for 3G USB modem connection.

On the next page as shown below, please select the appropriate Internet access type according to the information from your ISP. For example, you should select PPPoE mode if the ISP provides you PPPoE interface. Then click **Next** for next step.

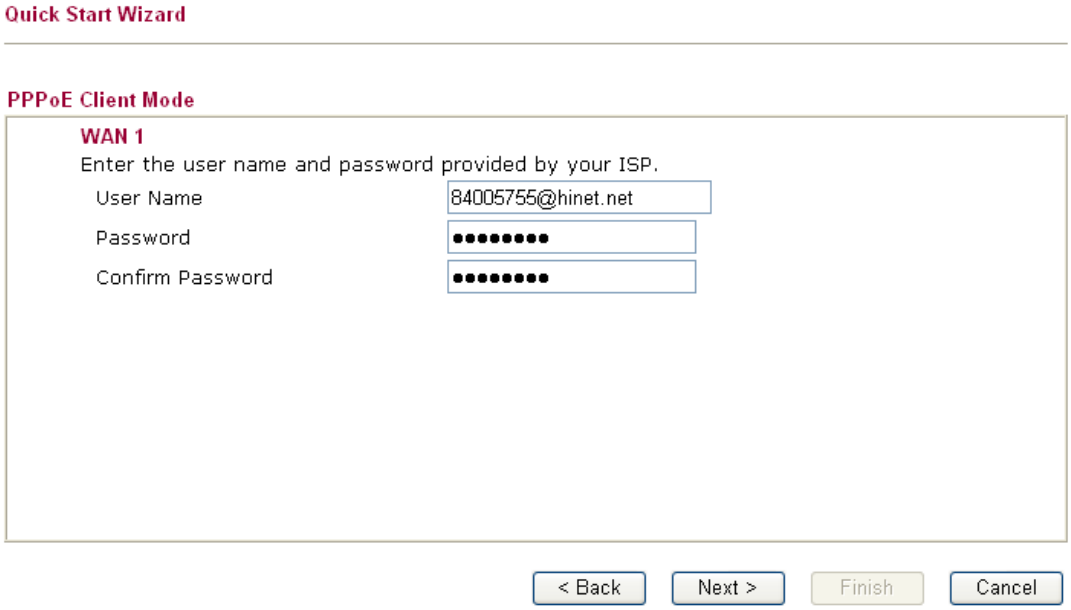


2.4.1 PPPoE

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.

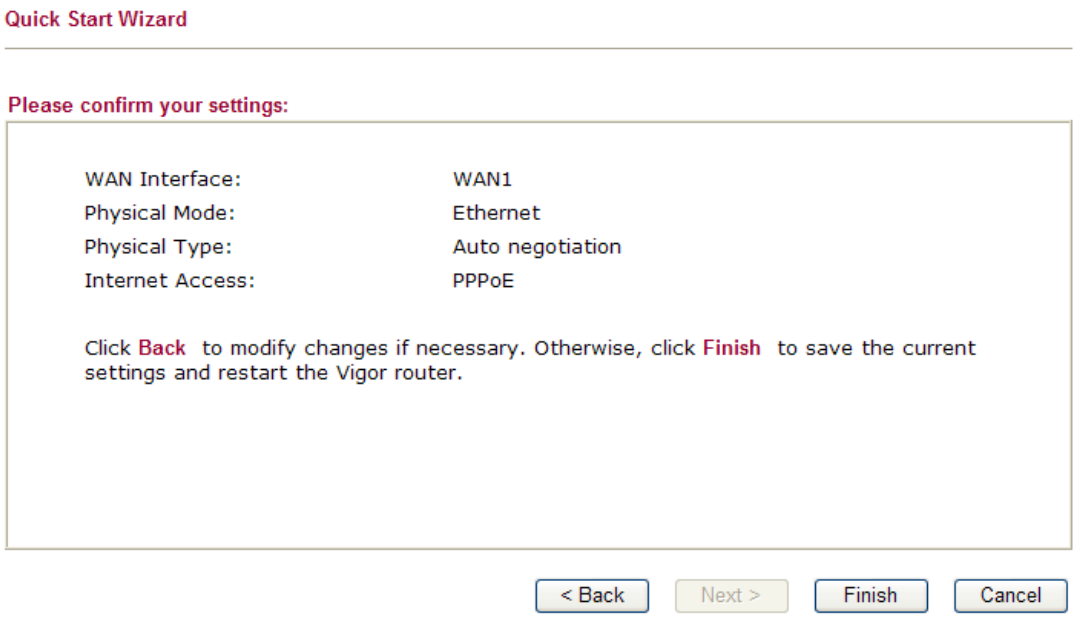
PPPoE is used for most of DSL modem users. All local users can share one PPPoE connection for accessing the Internet. Your service provider will provide you information about user name, password, and authentication mode.

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



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.

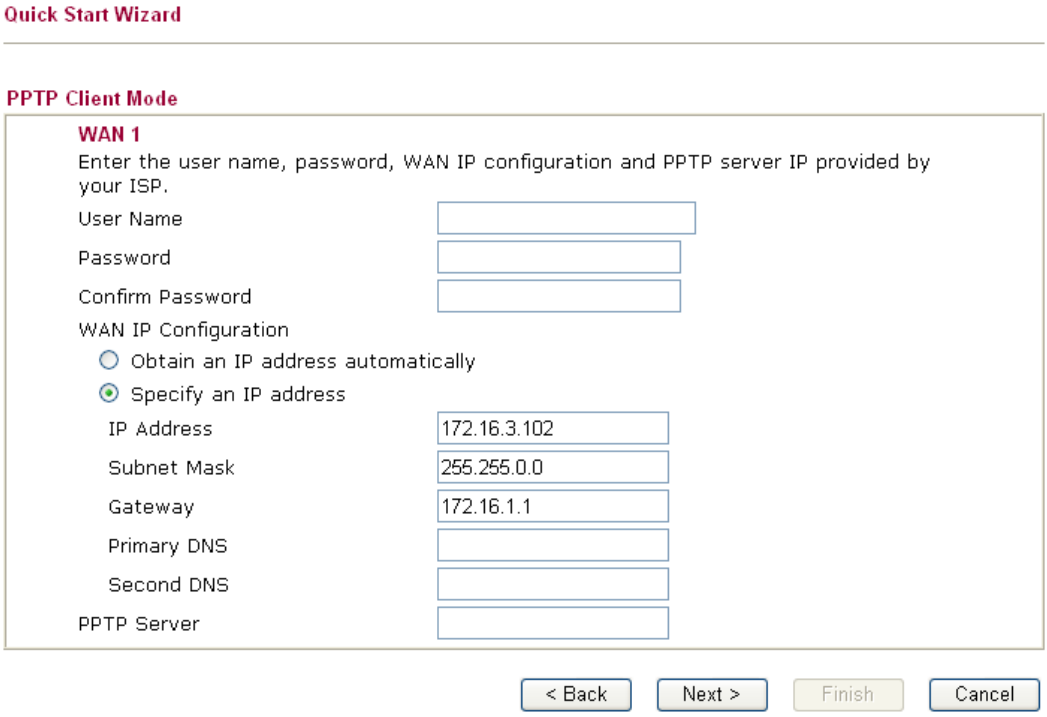
Click **Next** for viewing summary of such connection.



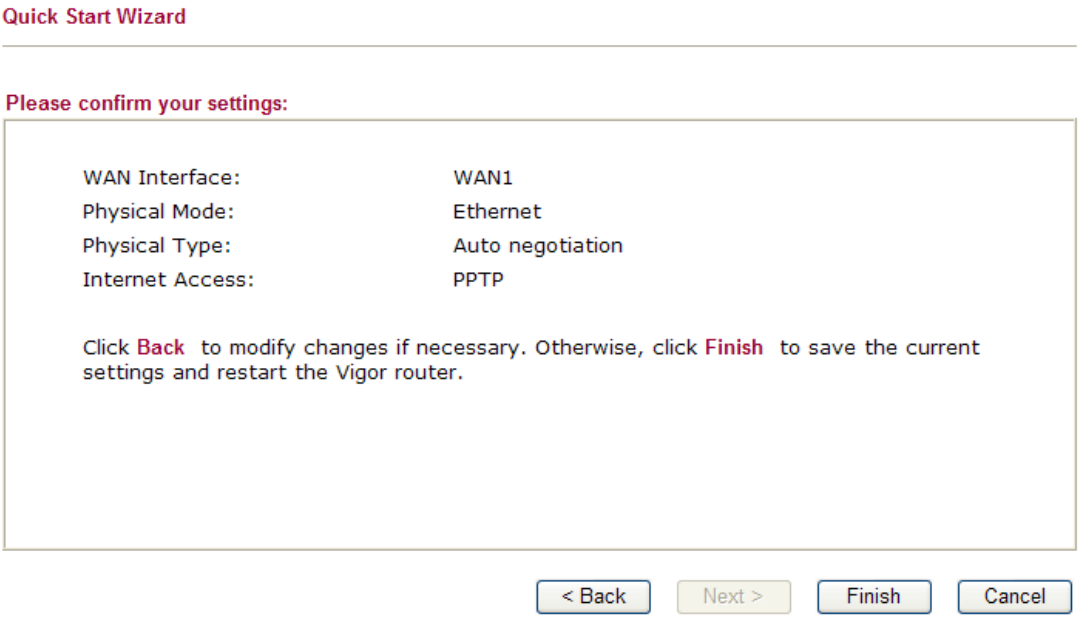
Click **Finish.** A page of **Quick Start Wizard Setup OK!!!** will appear. Then, the system status of this protocol will be shown.

2.4.2 PPTP/L2TP

Click **PPTP/L2TP** as the protocol. Type in all the information that your ISP provides for this protocol.



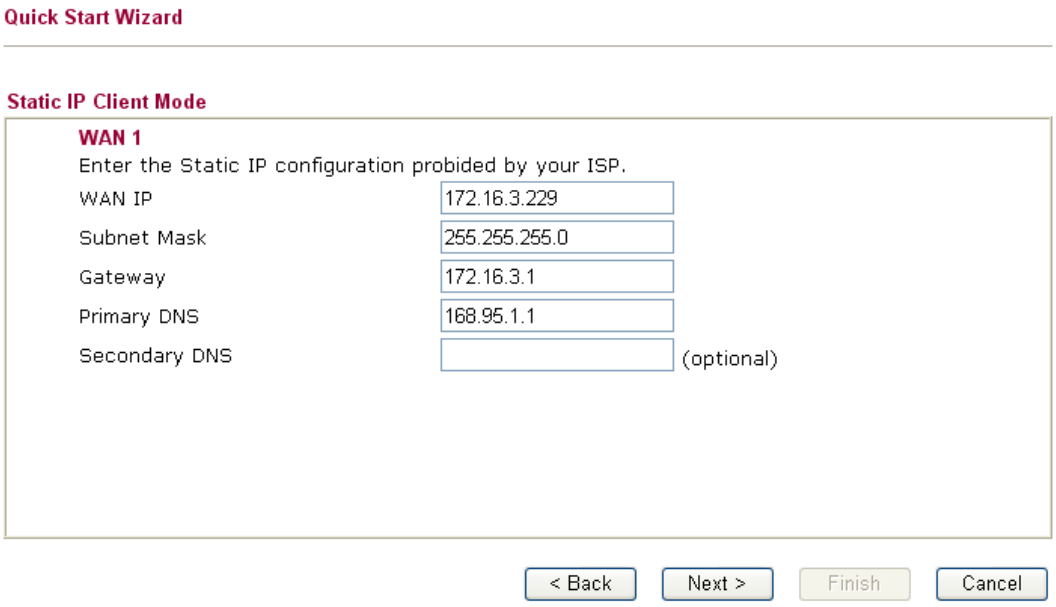
Click **Next** for viewing summary of such connection.



Click **Finish.** A page of **Quick Start Wizard Setup OK!!!** will appear. Then, the system status of this protocol will be shown.

2.4.3 Static IP

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

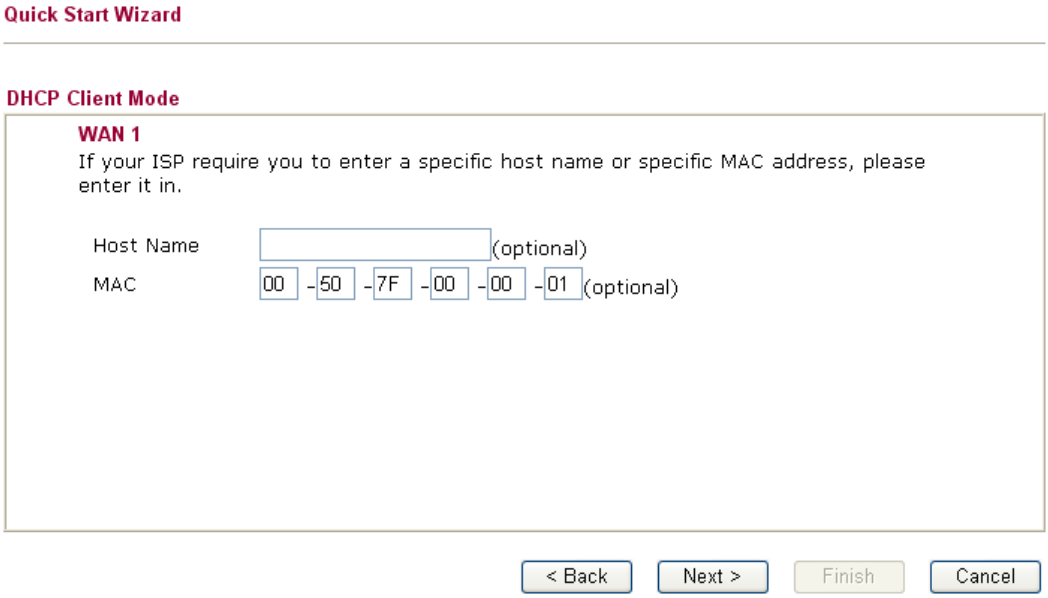


After finishing the settings in this page, click **Next** to see the following page.

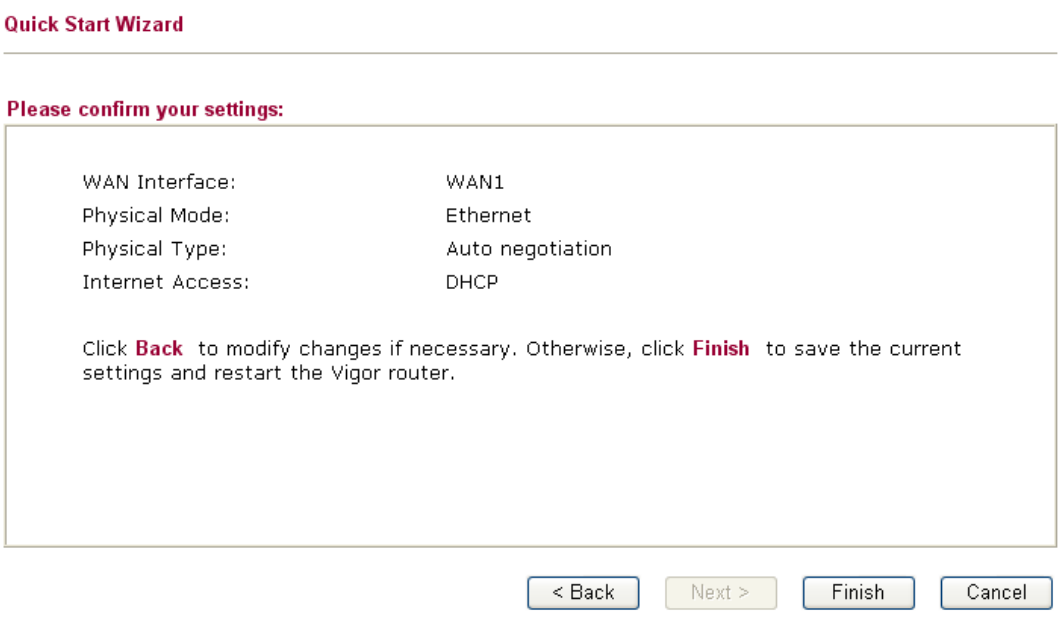
Click **Finish.** A page of **Quick Start Wizard Setup OK!!!** will appear. Then, the system status of this protocol will be shown.

2.4.4 DHCP

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



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



Click **Finish.** A page of **Quick Start Wizard Setup OK!!!** will appear. Then, the system status of this protocol will be shown.

2.5 Service Activation Wizard

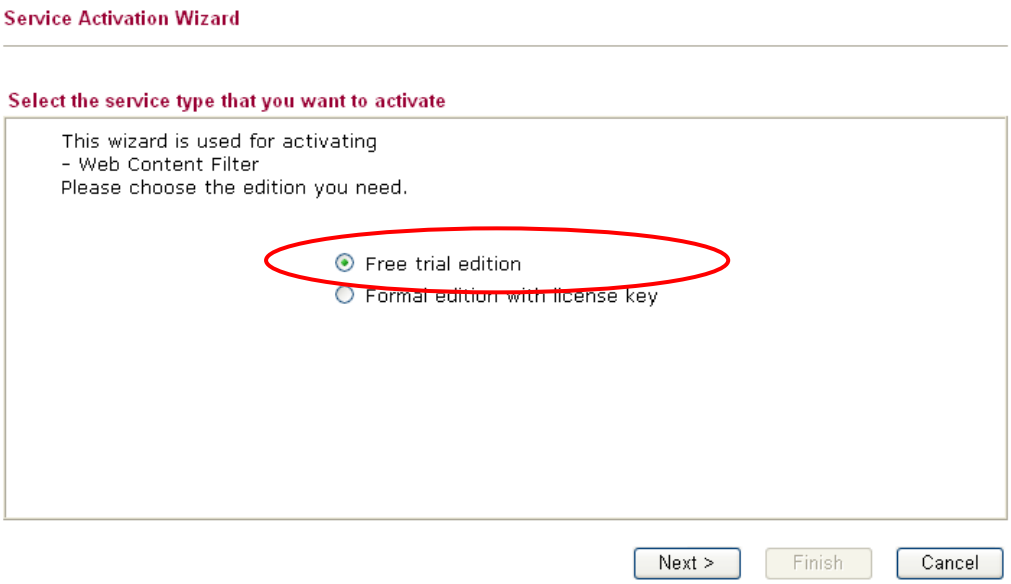
Service Activation Wizard can guide you to set WCF (Web Content Feature) with a quick and easy way. **For the Service Activation Wizard is only available for admin operation, therefore, please type "admin/admin" on Username/Password while Logging into the web configurator.**

Service Activation Wizard is a tool which allows you to use trial version or update the license of WCF directly without accessing into the server (***MyVigor***) located on http://myvigor.draytek.com. For using Web Content Filter Profile, please refer to later section **Web Content Filter Profile** for detailed information.

Now, follow the steps listed below to activate WCF feature for your router.

1. Open **Service Activation Wizard**.

2. The screen of **Service Activation Wizard** will be shown as follows. Choose the one you need and click **Next**. In this case, we choose to activate free trail edition.



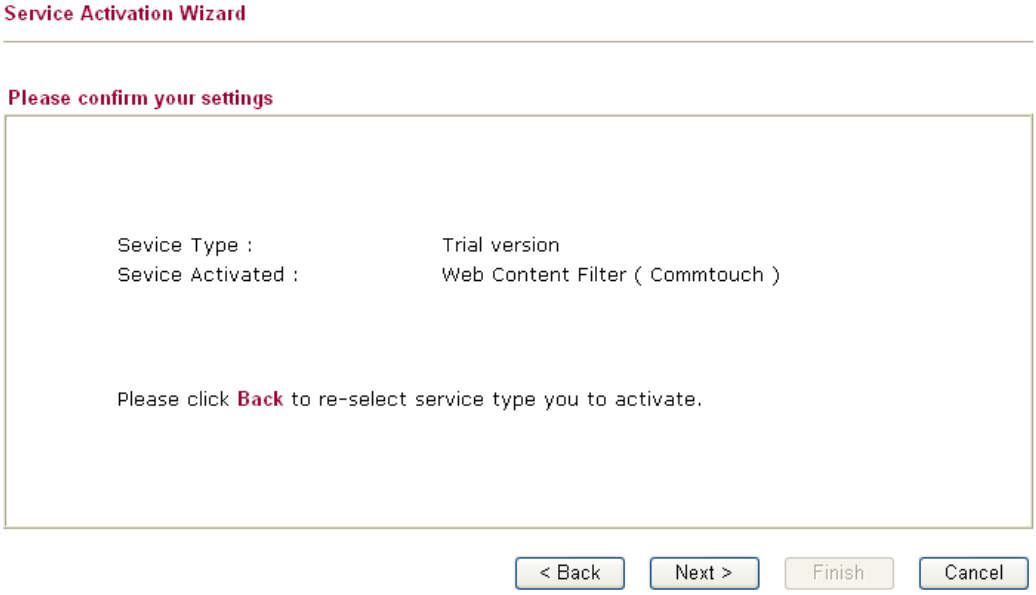
Free trial edition: it offers a period of trial for you to get acquainted with WCF function.

Formal edition with license key: you can extend the license valid time manually.

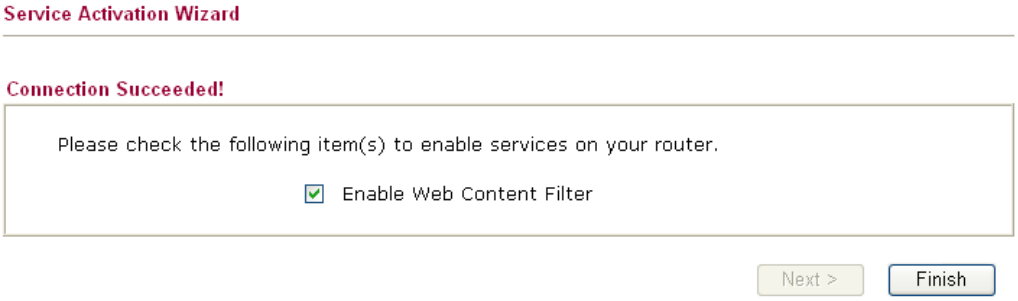
> **Note:** If you activate **Formal edition with license key** first, the free trial edition will be invalid.

3. In the following page, you can activate the Web content filter service at the same time or individually. When you finish the selection, please click **Next**.

4. Setting confirmation page will be displayed as follows, please click **Next**.



5. Wait for a moment till the following page appears.

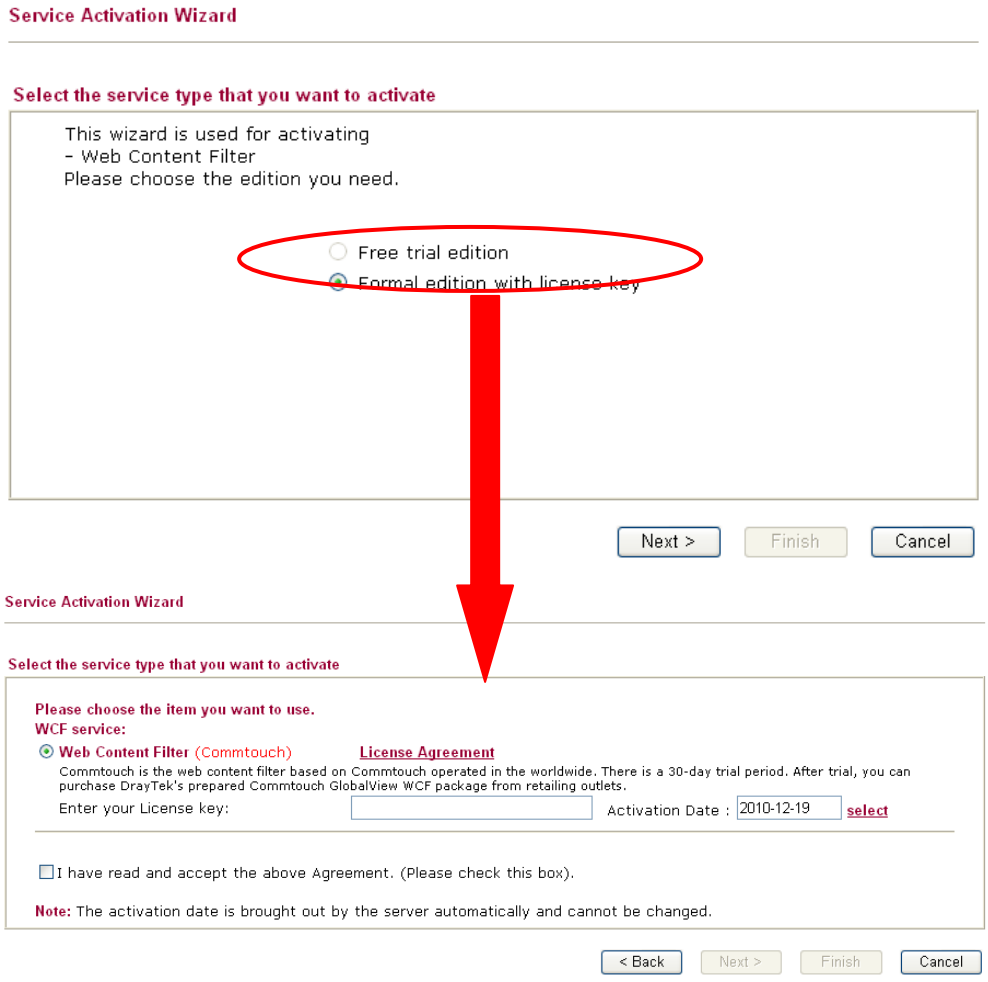


When such page appears, you can enable or disable these services for your necessity. Then, click **Finish.**

> **Note:** The service will be activated and applied as the default rule configured in **Firewall>>General Setup**.

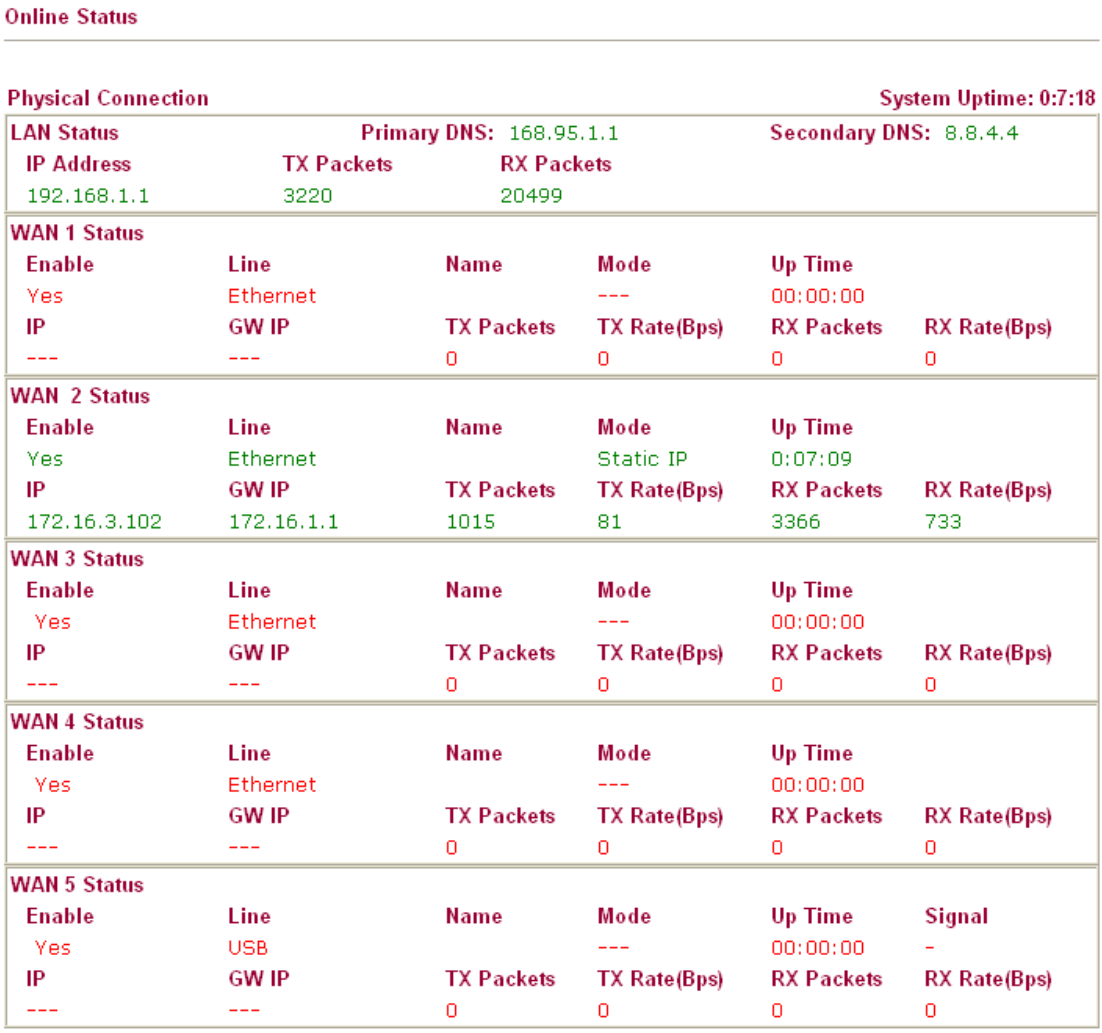
6. Now, the web page will display the service that you have activated according to your selection(s). The valid time for the free trial of these services is one month.

Later, if you need to extend the license valid time, you can also use the **Service Activation Wizard** again to reach your goal by clicking the radio button of **Formal edition with license key** and clicking **Next.**



2.6 Online Status

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



Online Status

Physical Connection — System Uptime: 0:7:18

LAN Status — Primary DNS: 168.95.1.1 — Secondary DNS: 8.8.4.4

IP Address	TX Packets	RX Packets
192.168.1.1	3220	20499

WAN 1 Status

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

WAN 2 Status

Enable	Line	Name	Mode	Up Time	
Yes	Ethernet		Static IP	0:07:09	
IP	**GW IP**	**TX Packets**	**TX Rate(Bps)**	**RX Packets**	**RX Rate(Bps)**
172.16.3.102	172.16.1.1	1015	81	3366	733

WAN 3 Status

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

WAN 4 Status

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

WAN 5 Status

Enable	Line	Name	Mode	Up Time	Signal
Yes	USB		---	00:00:00	-
IP	**GW IP**	**TX Packets**	**TX Rate(Bps)**	**RX Packets**	**RX Rate(Bps)**
---	---	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~WAN5 Status

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

Name Displays the name set in WAN web page.

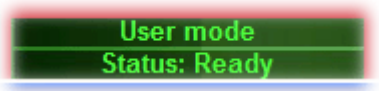
Mode Displays the type of WAN connection (e.g., PPPoE).

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.

2.7 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.



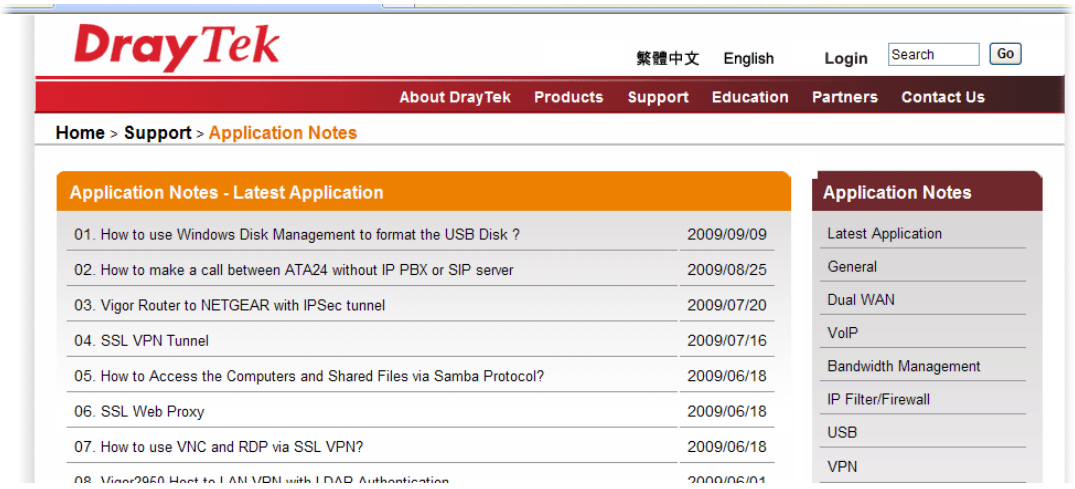
Ready indicates the system is ready for you to input settings.

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

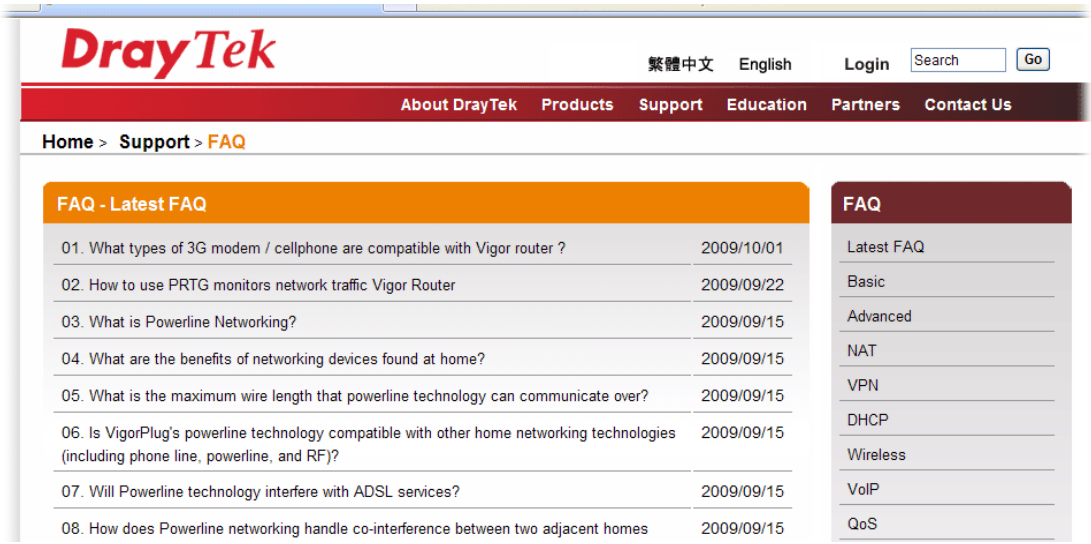
2.8 Support Area

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

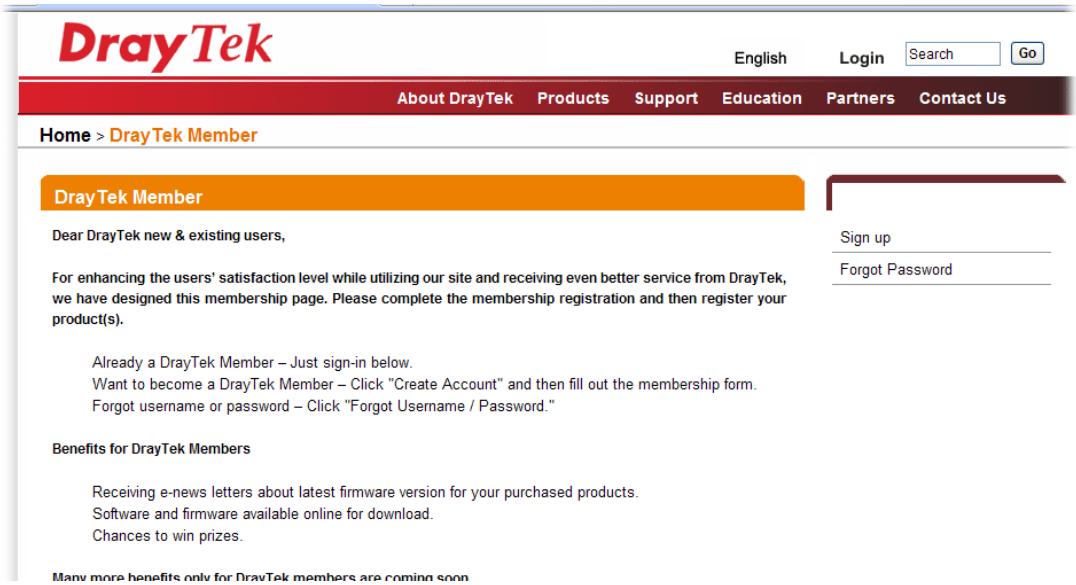
Click **Support Area>>Application Note**, the following web page will be displayed.



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



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



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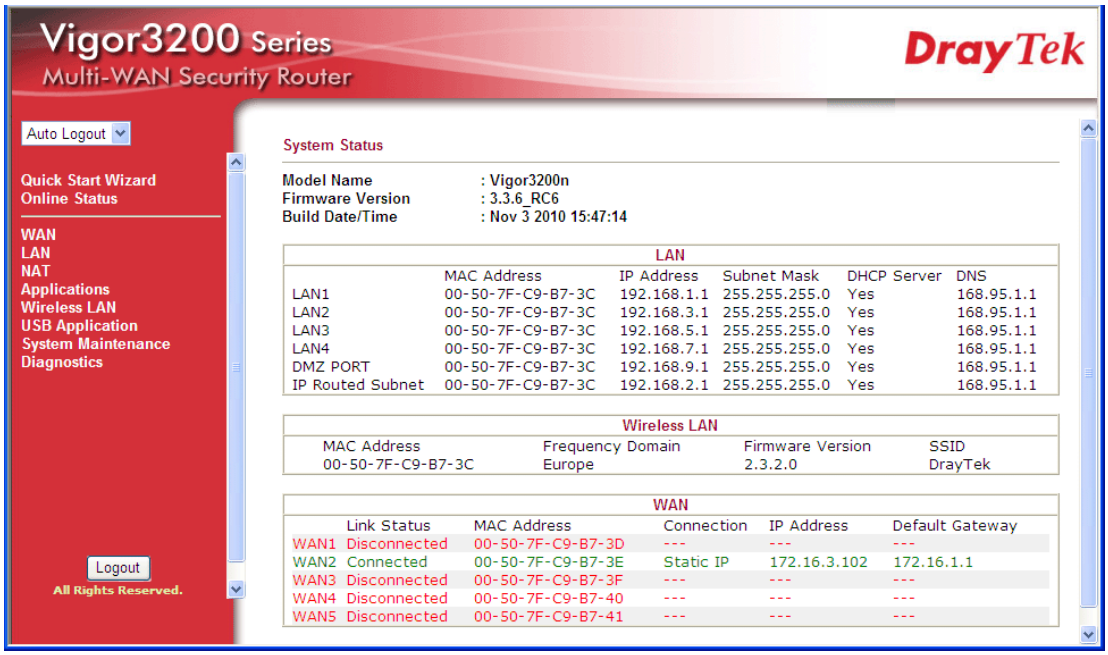
3 User Mode Operation

This chapter will guide users to execute simple configuration through user mode operation. As for other examples of application, please refer to chapter 5.

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.



3.1 WAN

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.

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.

Network Connection by 3G USB Modem

For 3G mobile communication through Access Point is more and more popular, Vigor3200 adds the function of 3G network connection for such purpose. By connecting 3G USB Modem to the USB port of Vigor3200, it can support HSDPA/UMTS/EDGE/GPRS and the future 3G standard (HSUPA, etc). Vigor3200n with 3G USB Modem allows you to receive 3G signals at any place such as your car or certain location holding outdoor activity and share the bandwidth for using by more people. Users can use the LAN port on the router to access Internet. Also, they can access Internet via 802.11n wireless function of Vigor3200n, and enjoy the powerful firewall, bandwidth management, VPN features of Vigor3200n series.

After connecting into the router, 3G USB Modem will be regarded as the fifth WAN port. However, the other Ethernet WAN ports still can be used and Load-Balance can be done in the router. Besides, 3G USB Modem in WAN5 also can be used as backup device. Therefore, when other Ethernet WAN port is not available, the router will use 3.5G for supporting

automatically. The supported 3G USB Modem will be listed on DrayTek web site. Please visit www.draytek.com for more detailed information.

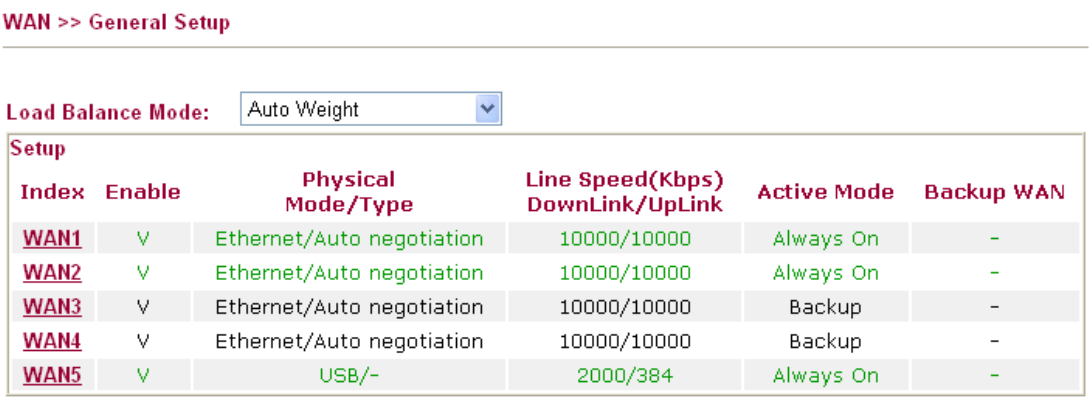
Below shows the menu items for **WAN**.

3.1.2 General Setup

This section will introduce some general settings of Internet and explain the connection modes for WAN1 to WAN5 in details.

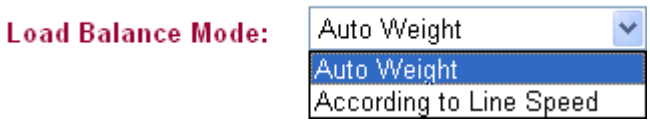
There are four WAN ports (represented with WAN1, WAN2, WAN3 and WAN4 in web pages) and one USB port (represented with WAN5 in web pages) offered by the router. For this router supports multiple WANs function, it allows users to access Internet and combine the bandwidth of the multiple WANs to speed up the transmission through the network. Each WAN port can connect to different ISPs, even if the ISPs use different technology to provide telecommunication service (such as DSL, Cable modem, etc.). If any connection problem occurred on one of the ISP connections, all the traffic will be guided and switched to the normal communication port for proper operation.

This webpage allows you to set general setup for WAN1 to WAN5 respectively.



From the above figure, WAN1 ~ WAN4 connect to Internet through the interface of Ethernet; WAN5 connects to Internet via USB interface. Therefore the configuration for each WAN port will be different slightly. Please click the WAN link under Index to open the web page for detailed configuration.

Load Balance Mode — This option is available for multiple-WAN for getting enough bandwidth for each WAN port. If you know the practical bandwidth for your WAN interface, please choose the setting of **According to Line Speed**. Otherwise, please choose **Auto Weigh** to let the router reach the best load balance.



Index — Click the WAN interface link under Index to access into the WAN configuration page.

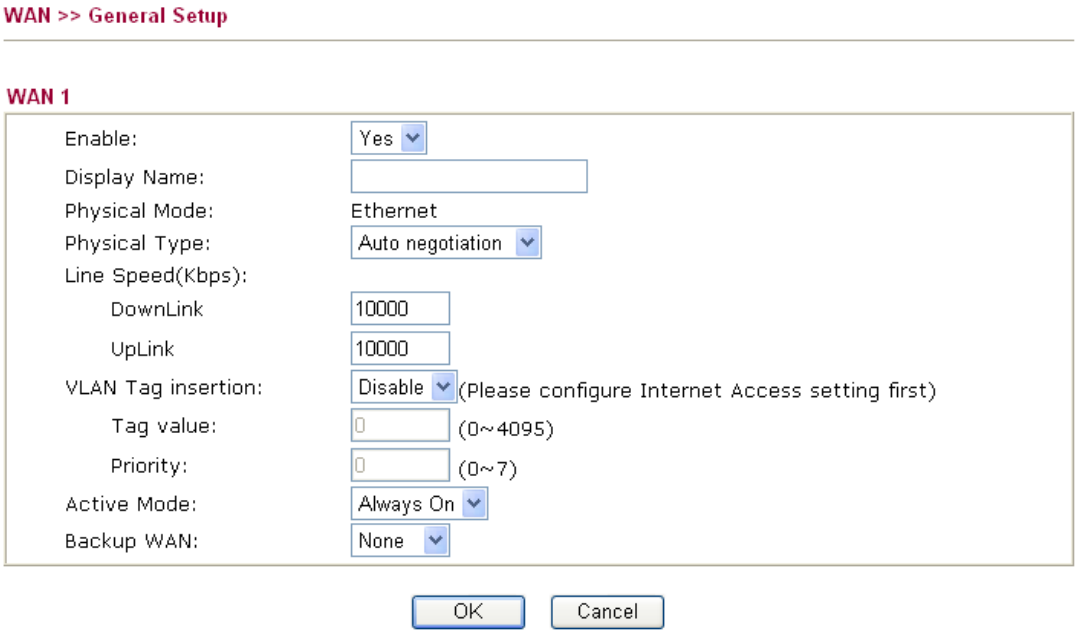
Enable — **V** means such WAN interface is enabled and ready to be used.

Physical Mode / Type	Display the physical mode and physical type of such WAN interface.
Line Speed	Display the downstream and upstream rate of such WAN interface.
Active Mode	Display whether such WAN interface is Active device or backup device.
Backup WAN	Display the Backup WAN interface for such WAN when it is disabled.

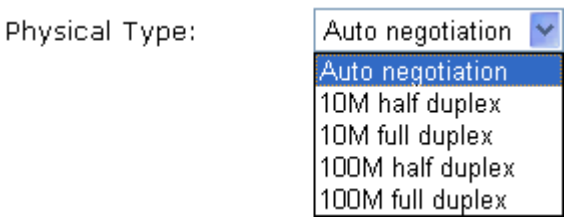
Note: In default, each WAN is enabled.

For WAN1 ~ WAN4

WAN1 ~ WAN4 are fixed with physical mode of Giga Ethernet. Here we take WAN1 as an example.



Enable	Choose **Yes** to invoke the settings for this WAN interface. Choose **No** to disable the settings for this WAN interface.
Display Name	Type the description for such WAN interface.
Physical Mode	Display the physical mode of such WAN interface.
Physical type	You can change the physical type for WAN2 or choose **Auto negotiation** for determined by the system.



Line Speed	If your choose **According to Line Speed** as the **Load Balance Mode**, please type the line speed for downloading and uploading for such WAN interface. The unit is kbps. The

default setting for down link and up link is 10000Kbps.

VLAN Tag insertion

Enable – Enable the function of VLAN with tag.

The router will add specific VLAN number to all packets on the WAN while sending them out.

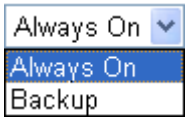
Disable – Disable the function of VLAN with tag.

Tag value – Type the value as the VLAN ID number. The range is form 0 to 4095.

Priority – Type the number for such VLAN. The range is from 0 to 7.

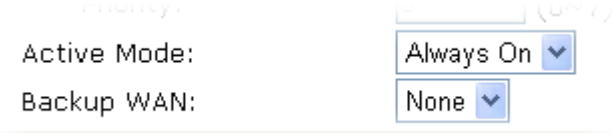
Active Mode and Backup WAN/Backup Type

Active Mode – Determine the WAN interface will be active for always (**Always On**) or be treated as a backup WAN interface (**Backup**).

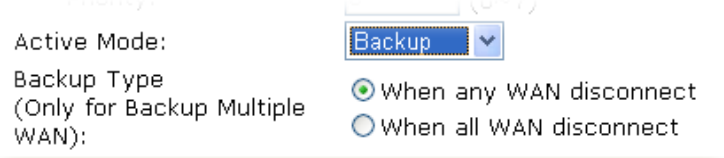


Backup WAN/ Backup Type – Determine the role of such WAN interface. It will be changed according to the **Active Mode** specified.

If you choose **Always On** as **Active Mode**, you can choose one of the backup WAN interfaces from the **Backup WAN** drop down list. Later, when such WAN is disconnected for some reason, the backup WAN will be activated automatically to prevent data transmission from connection interrupted.



If you choose **Backup** as the **Active Mode**, Backup WAN will be changed into **Backup Type**. You have to specify which role the WAN interface should play if you want to backup multiple WANs.

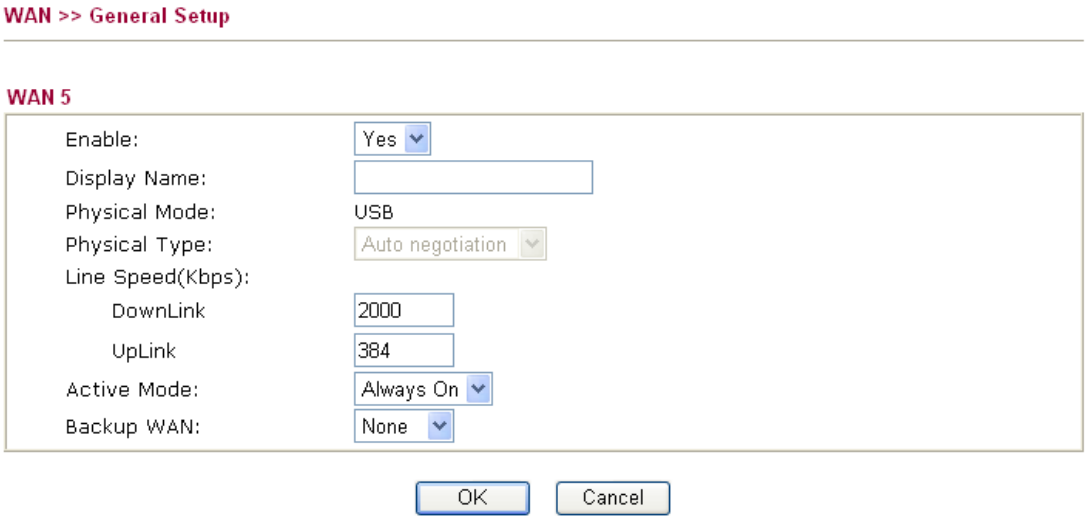


When any WAN disconnect –WAN1 will be activated when any master WAN interface disconnects.

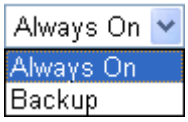
When all WAN disconnect –WAN1 will be activated when all master WAN interfaces disconnect.

For WAN5

To use 3G network connection through 3G USB Modem, please configure **WAN5** interface.



Enable	Choose **Yes** to invoke the settings for this WAN interface. Choose **No** to disable the settings for this WAN interface.
Display Name	Type the description for such WAN interface.
Physical Mode	Display the physical mode of such WAN interface.
Physical type	For such WAN interface is fixed to USB network connection, it is not necessary to specify physical type.
Line Speed	If your choose **According to Line Speed** as the **Load Balance Mode**, please type the line speed for downloading and uploading for such WAN interface. The unit is kbps.
Active Mode and Backup WAN/Backup Type	**Active Mode –** Determine the WAN interface will be active for always (**Always On**) or be treated as a backup WAN interface (**Backup**).

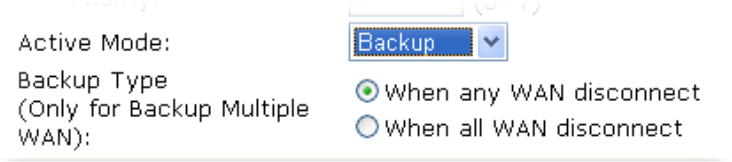


Backup WAN/Backup Type – Determine the role of such WAN interface. It will be changed according to the **Active Mode** specified.

If you choose **Always On** as **Active Mode**, you can choose one of the backup WAN interfaces from the **Backup WAN** drop down list. Later, when such WAN is disconnected for some reason, the backup WAN will be activated automatically to prevent data transmission from connection interrupted.

If you choose **Backup** as the **Active Mode**, Backup WAN will

be changed into **Backup Type**. You have to specify which role the WAN interface should play.

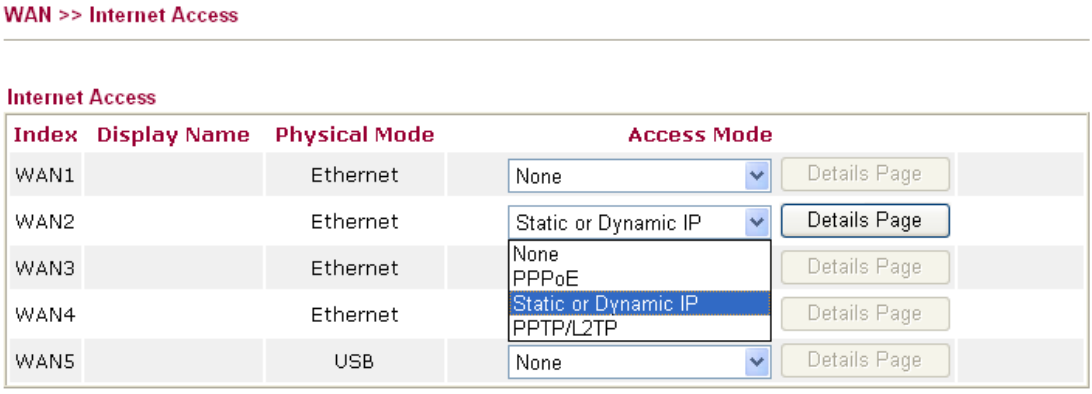


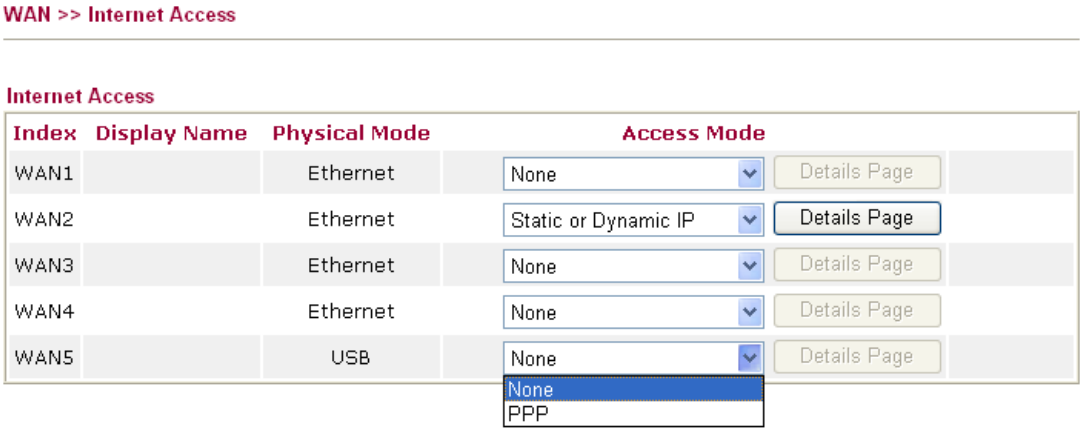
When any WAN disconnect – WAN1 will be activated when any WAN interface disconnects.

When all WAN disconnect – WAN1 will be activated when all the WAN interfaces disconnect.

3.1.3 Internet Access

For the router supports multi-WAN function, the users can set different WAN settings (for WAN1/WAN2/WAN3/WAN4/WAN5) for Internet Access. Due to different Physical Mode of WAN interface, the Access Mode for these connections also varies. Refer to the following figures.





Index Display the WAN interface.

Display Name It shows the name of the WAN1/WAN2/WAN3/WAN4/WAN5 that entered in general setup.

Physical Mode It shows the physical connection for WAN1-WAN4 (Ethernet) /WAN5 (3G USB Modem) according to the real network

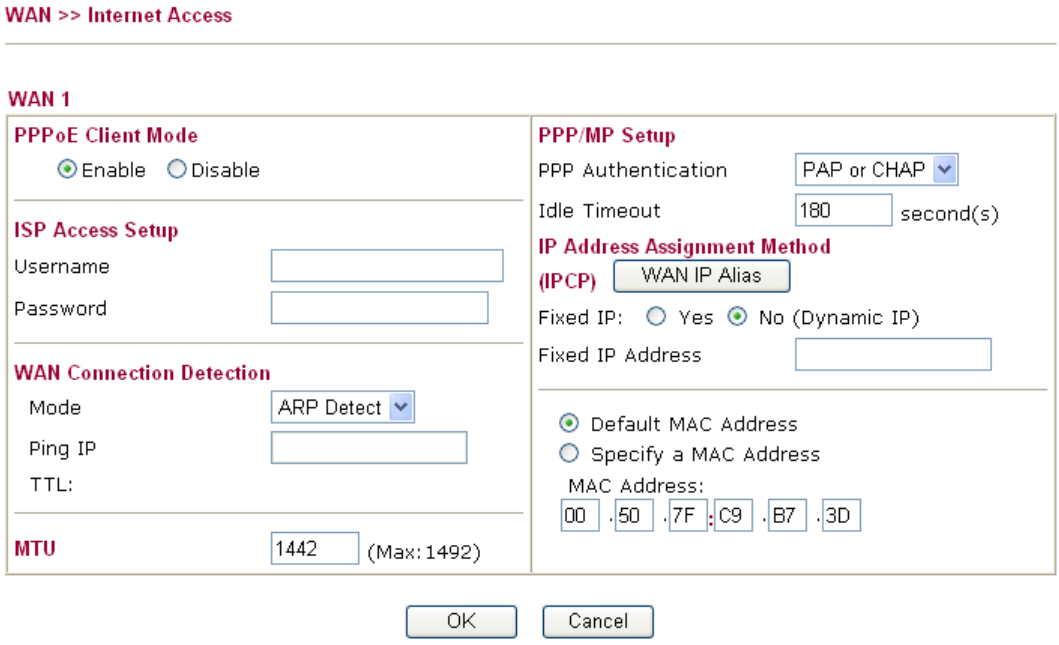
connection.

Access Mode Use the drop down list to choose a proper access mode. The details page of that mode will be popped up. If not, click **Details Page** for accessing the page to configure the settings.

Details Page This button will open different web page according to the access mode that you choose in WAN interface

Details Page for PPPoE in WAN1 ~ WAN4

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



PPPoE Client Mode 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.

ISP Access Setup Enter your allocated username, password and authentication parameters according to the information provided by your ISP.

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

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

WAN Connection Detection Such function allows you to verify whether network connection is alive or not through ARP Detect or Ping Detect.

Mode – Choose **ARP Detect** or **Ping Detect** for the system to execute for WAN detection.

Ping IP – If you choose Ping Detect as detection mode, you have to type IP address in this field for pinging.

TTL (Time to Live) – Displays value for your reference. TTL value is set by telnet command.

PPP/MP Setup **PPP Authentication** – Select **PAP only** or **PAP or CHAP** for

PPP. If you want to connect to Internet all the time, you can check **Always On**.

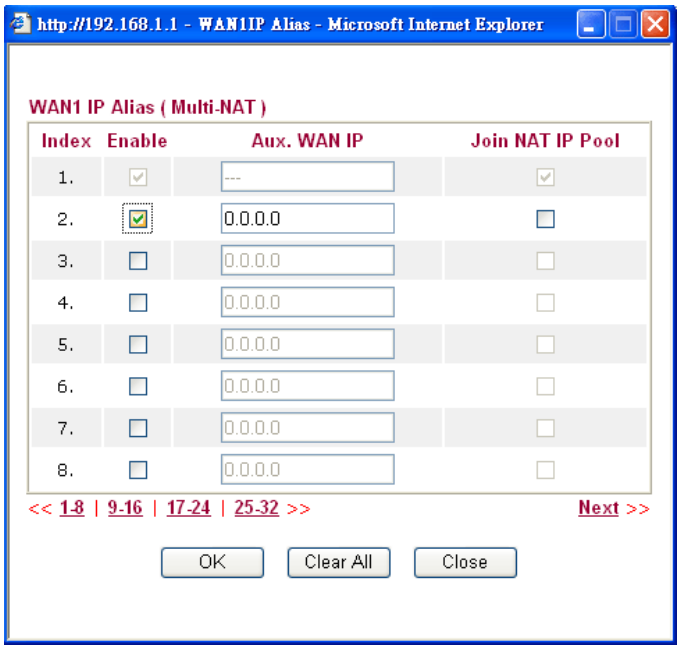
Idle Timeout – Set the timeout for breaking down the Internet after passing through the time without any action.

IP Address Assignment Method (IPCP)

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 **32** public IP addresses other than the current one you are using.

Type the additional WAN IP address and check the Enable box. Then click OK to exit the dialog.



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.

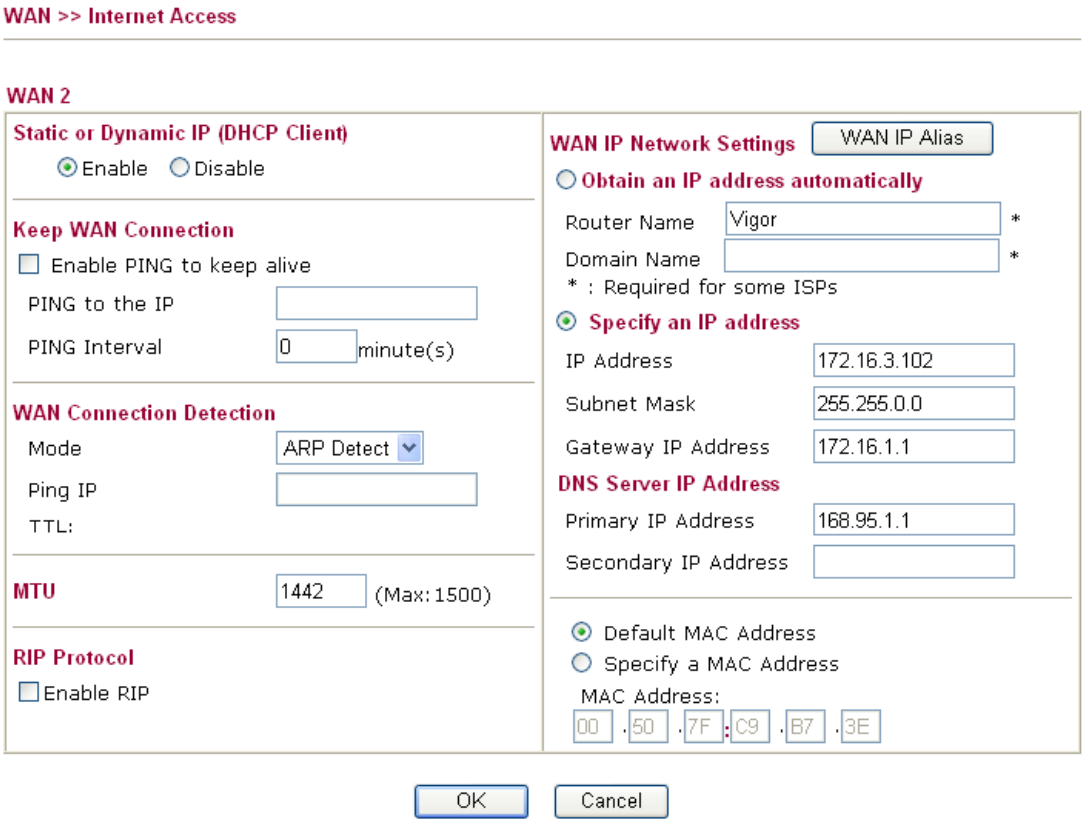
Specify a MAC Address – Type the MAC address for the router manually.

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

Details Page for Static or Dynamic IP in WAN1 ~ WAN4

For static IP mode, you usually receive a fixed public IP address or a public subnet, namely multiple public IP addresses from your DSL or Cable ISP service providers. In most cases, a Cable service provider will offer a fixed public IP, while a DSL service provider will offer a public subnet. If you have a public subnet, you could assign an IP address or many IP address to the WAN interface.

To use **Static or Dynamic IP** as the accessing protocol of the internet, please choose **Static or Dynamic IP** mode from **Internet Access** menu. The following web page will be shown.



Static or Dynamic IP — 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.

Keep WAN Connection — Normally, this function is designed for Dynamic IP environments because some ISPs will drop connections if there is no traffic within certain periods of time. Check **Enable PING to keep alive** box to activate this function.

PING to the IP - If you enable the PING function, please specify the IP address for the system to PING it for keeping alive.

PING Interval - Enter the interval for the system to execute the PING operation.

WAN Connection Detection — Such function allows you to verify whether network connection is alive or not through ARP Detect or Ping Detect.

Mode – Choose **ARP Detect** or **Ping Detect** for the system to execute for WAN detection.

Ping IP – If you choose Ping Detect as detection mode, you

have to type IP address in this field for pinging.

TTL (Time to Live) – Displays value for your reference. TTL value is set by telnet command.

MTU

It means Max Transmit Unit for packet. The default setting is 1442.

RIP Protocol

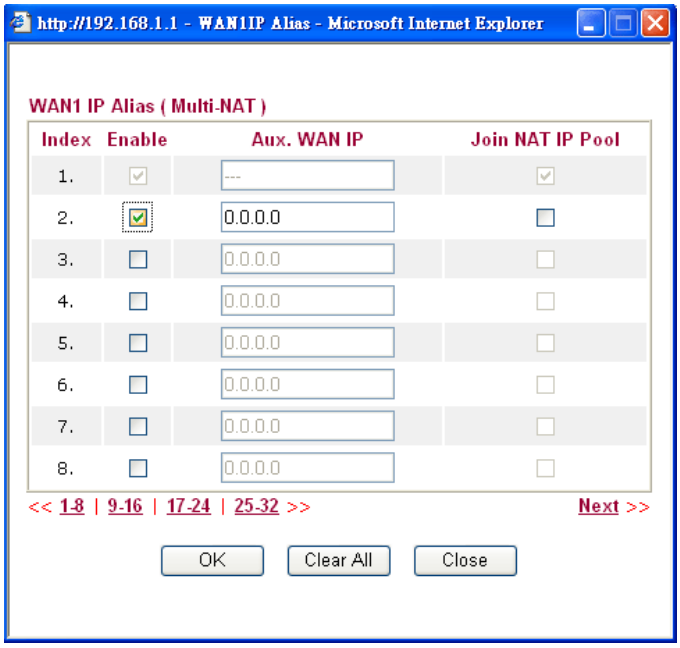
Routing Information Protocol is abbreviated as RIP（RFC1058）specifying how routers exchange routing tables information. Click **Enable RIP** for activating this function.

WAN IP Network Settings

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 **32** public IP addresses other than the current one you are using.

Type the additional WAN IP address and check the Enable box. Then click OK to exit the dialog.



Obtain an IP address automatically – Click this button to obtain the IP address automatically if you want to use **Dynamic IP** mode.

Router Name: Type in the router name provided by ISP.

Domain Name: Type in the domain name that you have assigned.

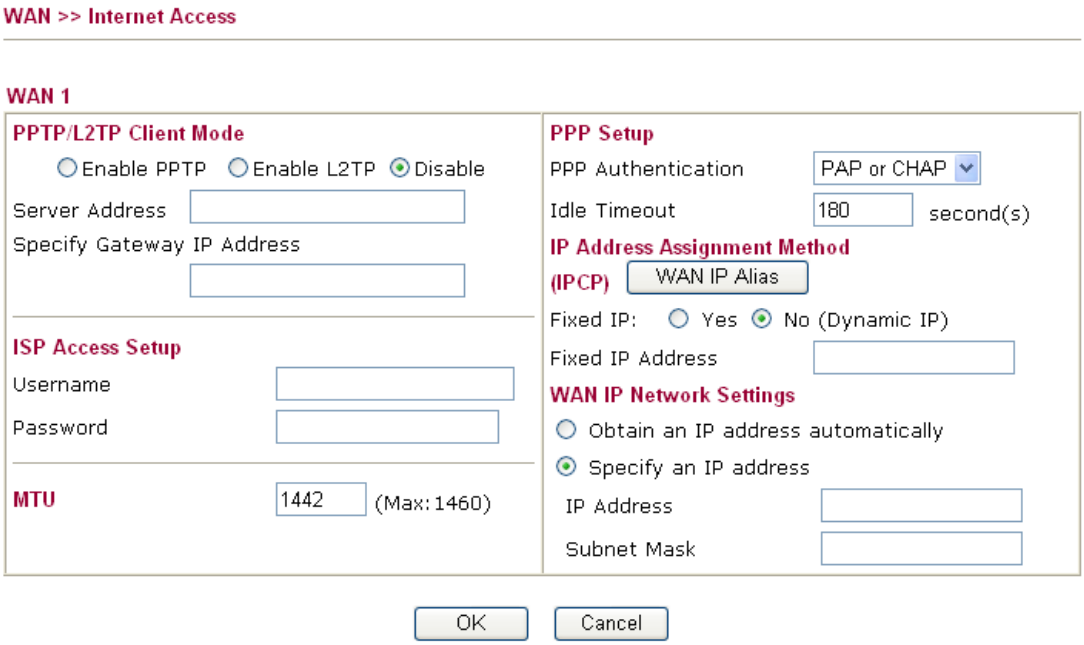
Specify an IP address – Click this radio button to specify some data if you want to use **Static IP** mode.

IP Address: Type the IP address.

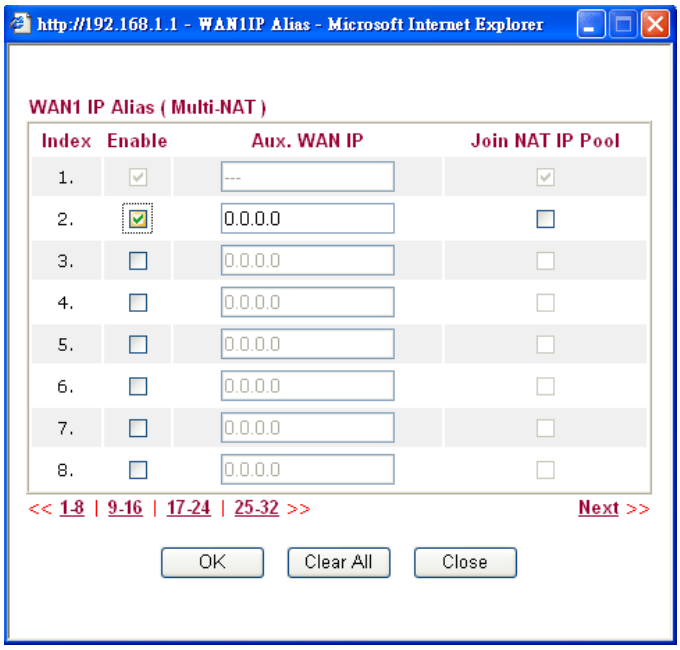
	Subnet Mask*:* Type the subnet mask. ***Gateway IP Address****:* Type the gateway IP address. ***Default MAC Address*** : Click this radio button to use default MAC address for the router. ***Specify a MAC Address***: Some Cable service providers specify a specific MAC address for access authentication. In such cases you need to click the **Specify a MAC Address** and enter the MAC address in the MAC Address field.
DNS Server IP Address	Type in the primary IP address for the router if you want to use **Static IP** mode. If necessary, type in secondary IP address for necessity in the future.

Details Page for PPTP/L2TP in WAN1 ~ WAN4

To use **PPTP/L2TP** as the accessing protocol of the internet, please choose **PPTP/L2TP** from **Internet Access** menu. The following web page will be shown.



PPTP/L2TP Client Mode	**Enable PPTP-** Click this radio button to enable a PPTP client to establish a tunnel to a DSL modem on the WAN interface. **Enable L2TP** - Click this radio button to enable a L2TP client to establish a tunnel to a DSL modem on the WAN interface. **Disable** – Click this radio button to close the connection through PPTP or L2TP. **Server Address** - Specify the IP address of the PPTP/L2TP server if you enable PPTP/L2TP client mode. **Specify Gateway IP Address** – Specify the gateway IP address for DHCP server.
ISP Access Setup	**Username** -Type in the username provided by ISP in this field. **Password** -Type in the password provided by ISP in this field.
MTU	It means Max Transmit Unit for packet. The default setting is 1442.
PPP Setup	**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.
IP Address Assignment Method(IPCP)	**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.



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

Fixed IP Address -Type a fixed IP address.

WAN IP Network Settings

Obtain an IP address automatically – Click this button to obtain the IP address automatically.

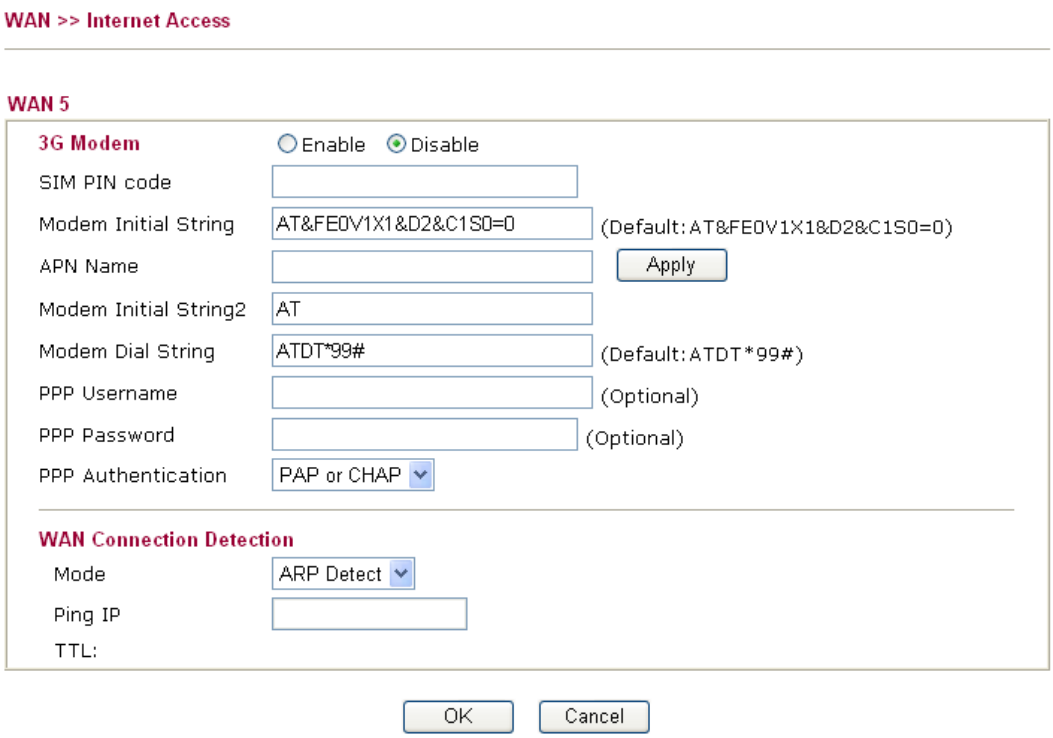
Specify an IP address – Click this radio button to specify some data.

IP Address – Type the IP address.

Subnet Mask – Type the subnet mask.

Details Page for PPP in WAN5

To use **PPP** (for 3G USB Modem) as the accessing protocol of the internet, please choose **Internet Access** from **WAN** menu. Then, select **PPP** mode for WAN5. The following web page will be shown.



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.
SIM PIN code	Type PIN code of the SIM card that will be used to access Internet.
Modem Initial String	Such value is used to initialize USB modem. Please use the default value. If you have any question, please contact to your ISP.
APN Name	APN means Access Point Name which is provided and required by some ISPs. Type the name and click Apply.
Modem Initial String2	The initial string is shared with APN. In some cases, users may need another initial ***AT*** command to restrict 3G band or do any special settings.
Modem Dial String	Such value is used to dial through USB mode. Please use the default value. If you have any question, please contact to your ISP.
PPP Username	Type the PPP username (optional).
PPP Password	Type the PPP password (optional).
PPP Authentication	Select **PAP only** or **PAP or CHAP** for PPP.
WAN Connection Detection	Such function allows you to verify whether network connection is alive or not through ARP Detect or Ping Detect.

Mode – Choose **ARP Detect** or **Ping Detect** for the system to execute for WAN detection.

Ping IP – If you choose Ping Detect as detection mode, you have to type IP address in this field for pinging.

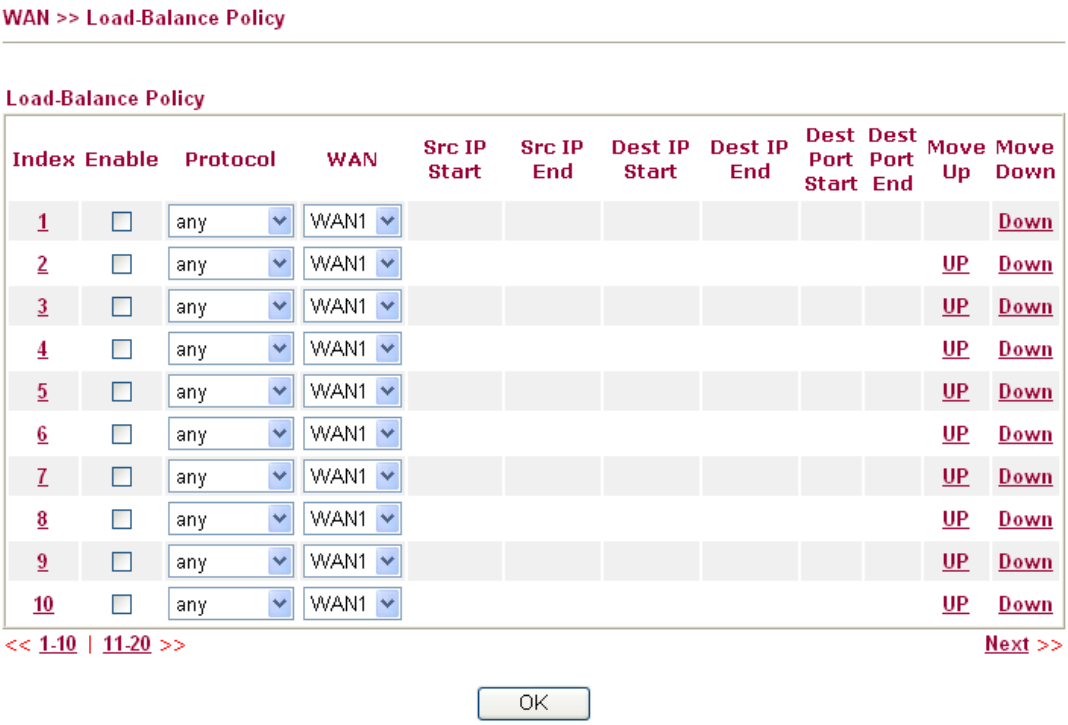
TTL (Time to Live) – Displays value for your reference. TTL value is set by telnet command.

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

3.1.4 Load-Balance Policy

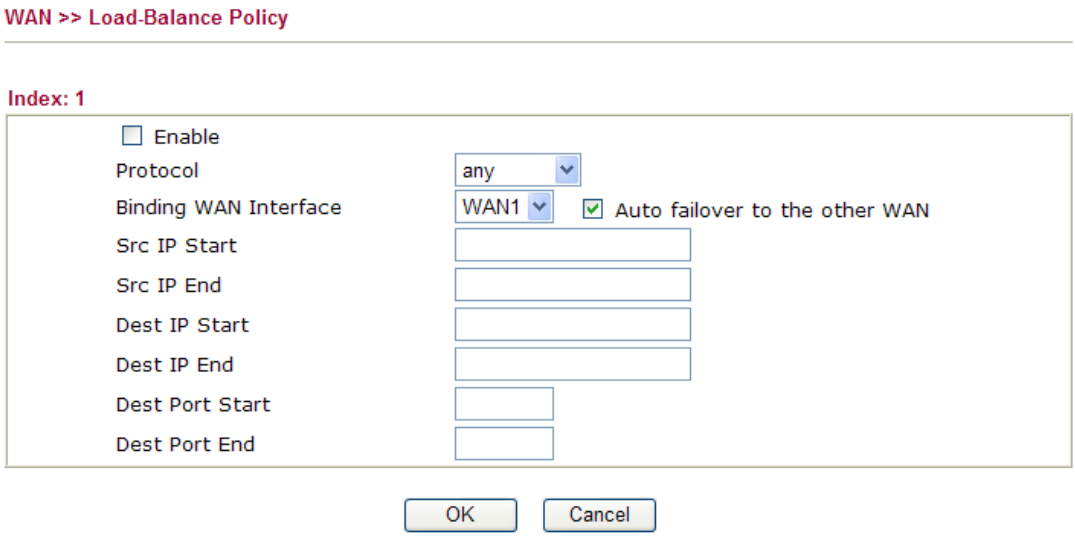
This router supports the function of load balancing. It can assign traffic with protocol type, IP address for specific host, a subnet of hosts, and port range to be allocated in WAN interface. The user can assign traffic category and force it to go to dedicate network interface based on the following web page setup. Twenty policies of load-balance are supported by this router.

> **Note:** Load-Balance Policy is running only when more than two WAN interfaces are activated.

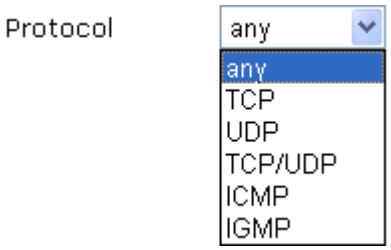


Index	Click the number of index to access into the load-balance policy configuration web page.
Enable	Check this box to enable this policy.
Protocol	Use the drop-down menu to change the protocol for the WAN interface.
WAN	Use the drop-down menu to change the WAN interface.
Src IP Start	Displays the IP address for the start of the source IP
Src IP End	Displays the IP address for the end of the source IP.
Dest IP Start	Displays the IP address for the start of the destination IP.
Dest IP End	Displays the IP address for the end of the destination IP.
Dest Port Start	Displays the IP address for the start of the destination port.
Dest Port End	Displays the IP address for the end of the destination port.
Move UP/Move Down	Use **Up** or **Down** link to move the order of the policy.

Click **Index 1** to access into the following page for configuring load-balance policy.



Enable	Check this box to enable this policy.
Protocol	Use the drop-down menu to choose a proper protocol for the WAN interface.



Binding WAN interface	Choose the WAN interface (WAN1 / WAN2 / WAN3 / WAN4 /WAN5) for binding. **Auto failover to other WAN** – Check this button to lead the data passing through other WAN automatically when the selected WAN interface is failover.
Src IP Start	Type the source IP start for the specified WAN interface.
Src IP End	Type the source IP end for the specified WAN interface. If this field is blank, it means that all the source IPs inside the LAN will be passed through the WAN interface.
Dest IP Start	Type the destination IP start for the specified WAN interface.
Dest IP End	Type the destination IP end for the specified WAN interface. If this field is blank, it means that all the destination IPs will be passed through the WAN interface.
Dest Port Start	Type the destination port start for the destination IP.
Dest Port End	Type the destination port end for the destination IP. If this field is blank, it means that all the destination ports will be passed through the WAN interface.

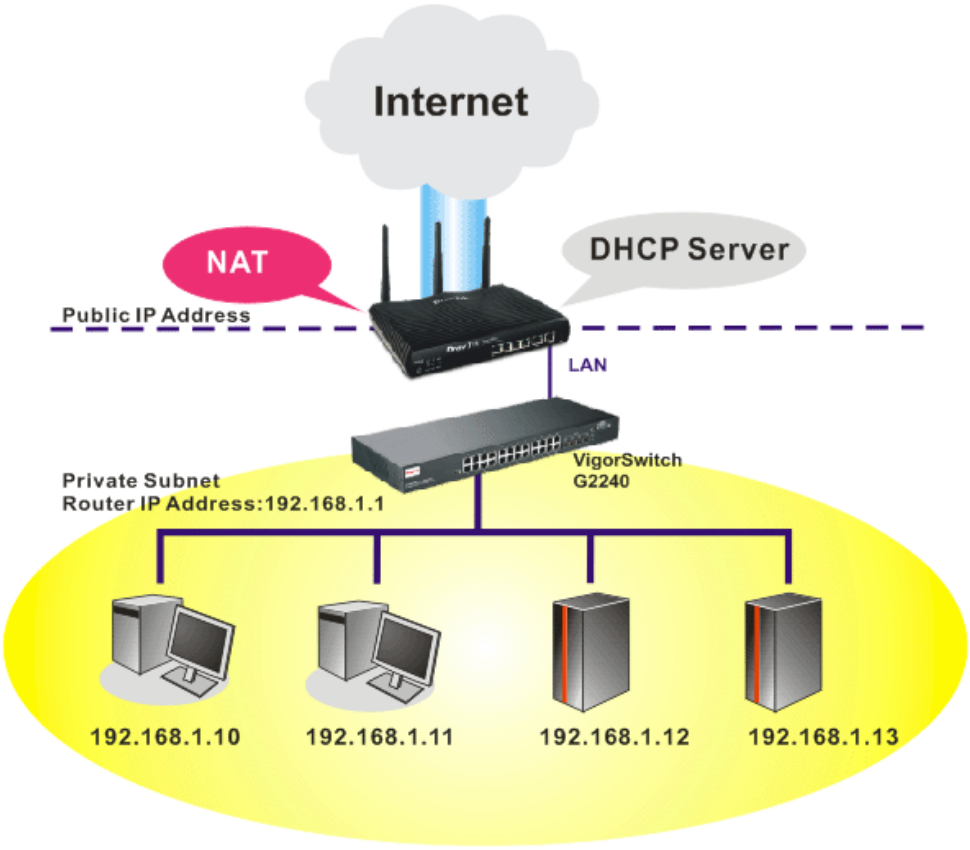
3.2 LAN

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.

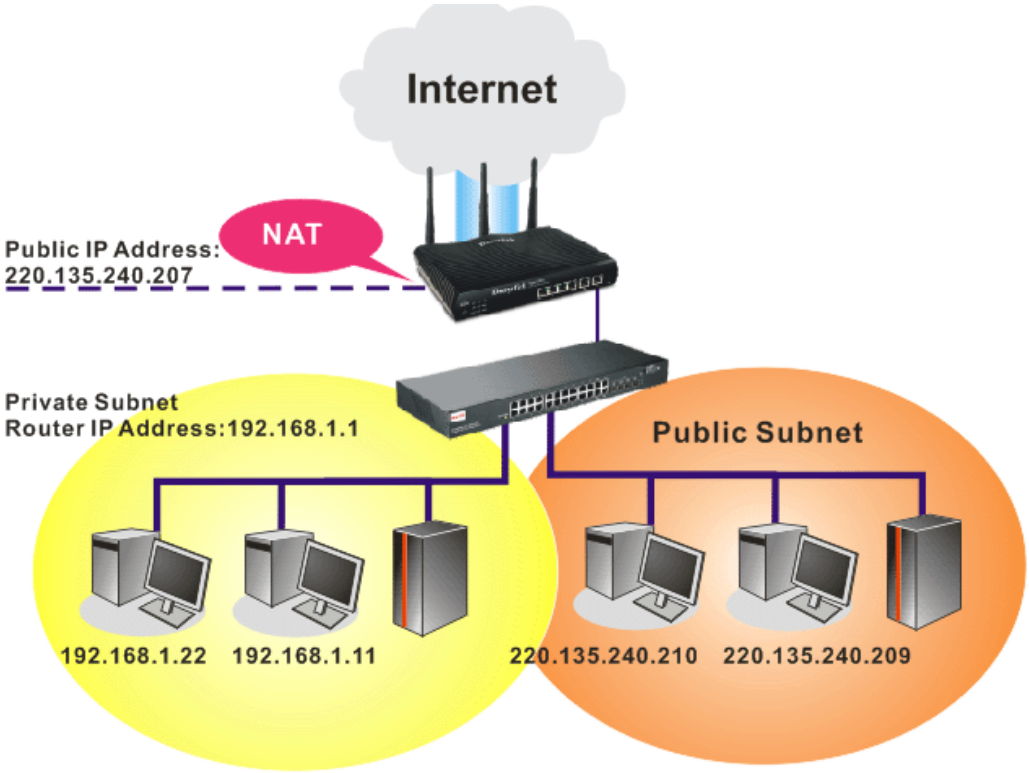
LAN
General Setup

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.

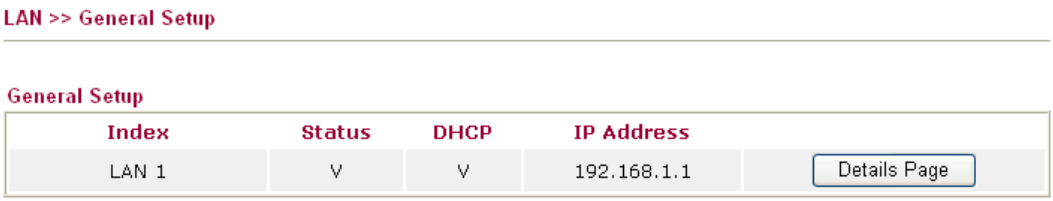


What is Routing Information Protocol (RIP)

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.

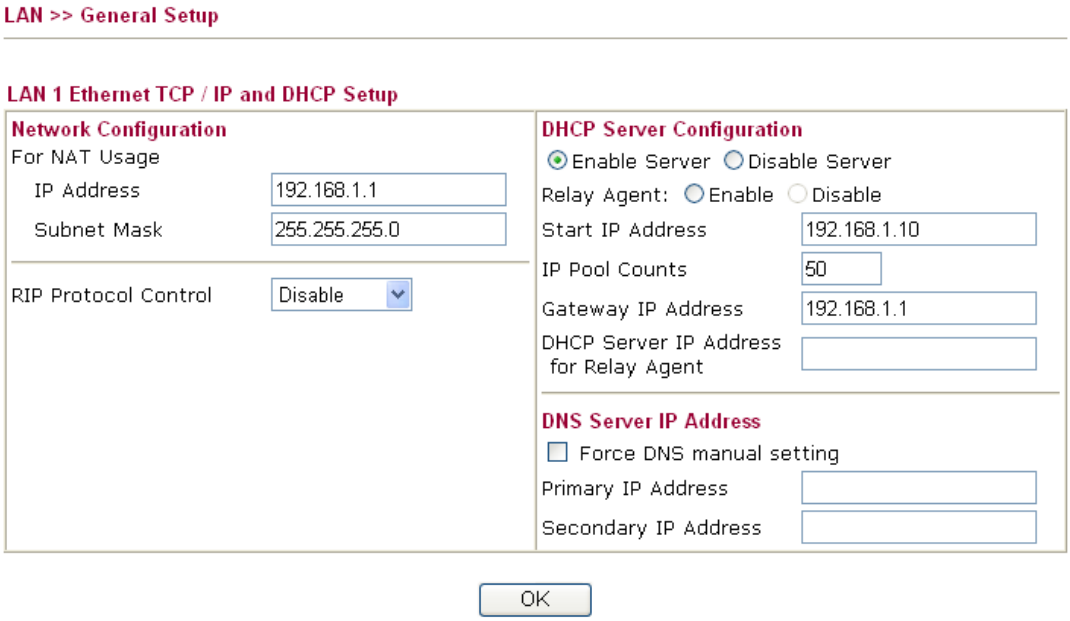
3.2.2 General Setup

This page provides you the general settings for LAN. Click **LAN** to open the LAN settings page and choose **General Setup**.



Index	Display the number of LAN interface.
Status	Basically, LAN1 status is enabled in default.
DHCP	LAN1 is configured with DHCP in default.
IP Address	Display the IP address for LAN1. Such information is set in default.
Details Page	Click it to access into the setting page.

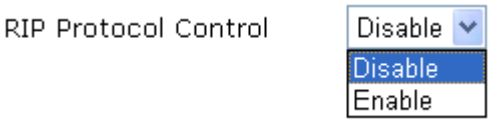
Details Page for LAN1



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)

RIP Protocol Control **Disable** deactivates the RIP protocol. It will lead to a interruption of the exchange of routing information between routers.



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.

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.

Relay Agent –Specify which subnet that DHCP server is located the relay agent should redirect the DHCP request to.

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 192.168.1.10, the starting IP address must be 192.168.1.11 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.

DHCP Server IP Address for Relay Agent - Set the IP address of the DHCP server you are going to use so the Relay Agent can help to forward the DHCP request to the DHCP server.

DNS Server IP Address

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.

Force DNS manual setting - Force Vigor router to use DNS servers in this page instead of DNS servers given by the Internet Access server (PPPoE, PPTP, L2TP or DHCP server).

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:

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.

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:

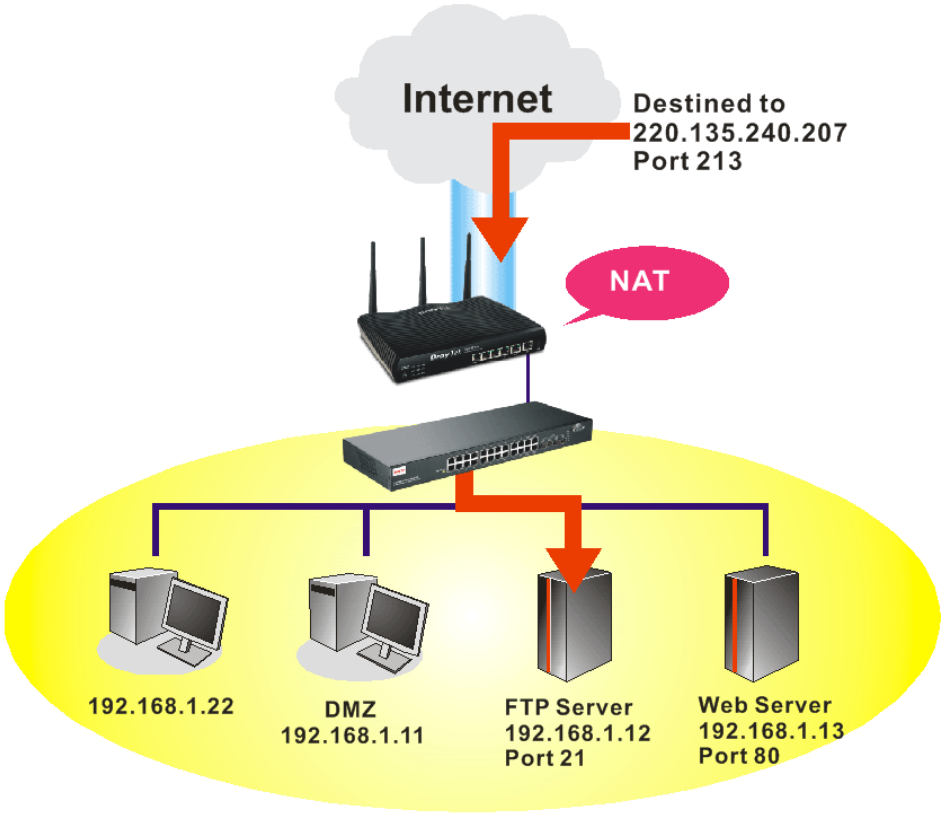
- **Save cost on applying public IP address and apply efficient usage of IP address.** NAT allows the internal IP addresses of local hosts to be translated into one public IP address, thus you can have only one IP address on behalf of the entire internal hosts.
- **Enhance security of the internal network 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.

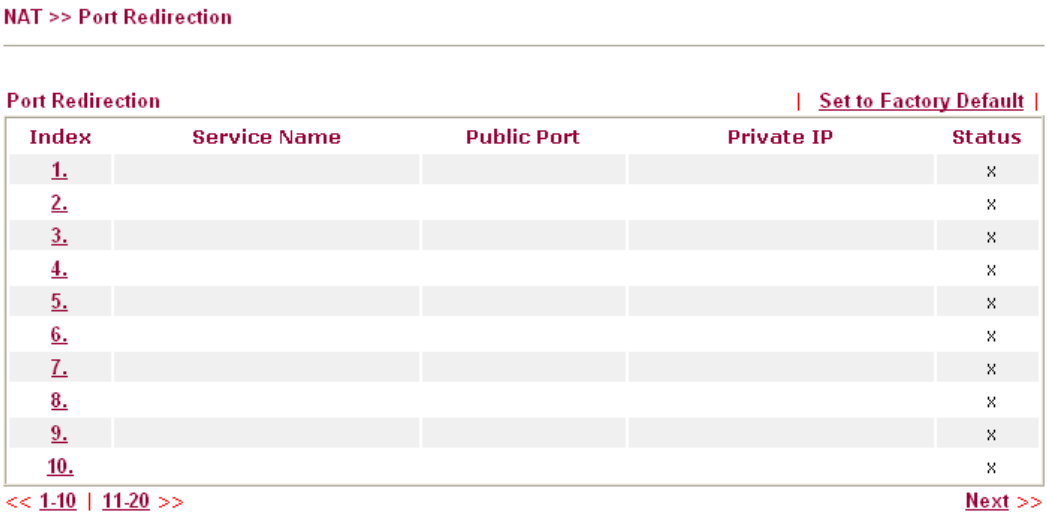
3.3.1 Port Redirection

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.

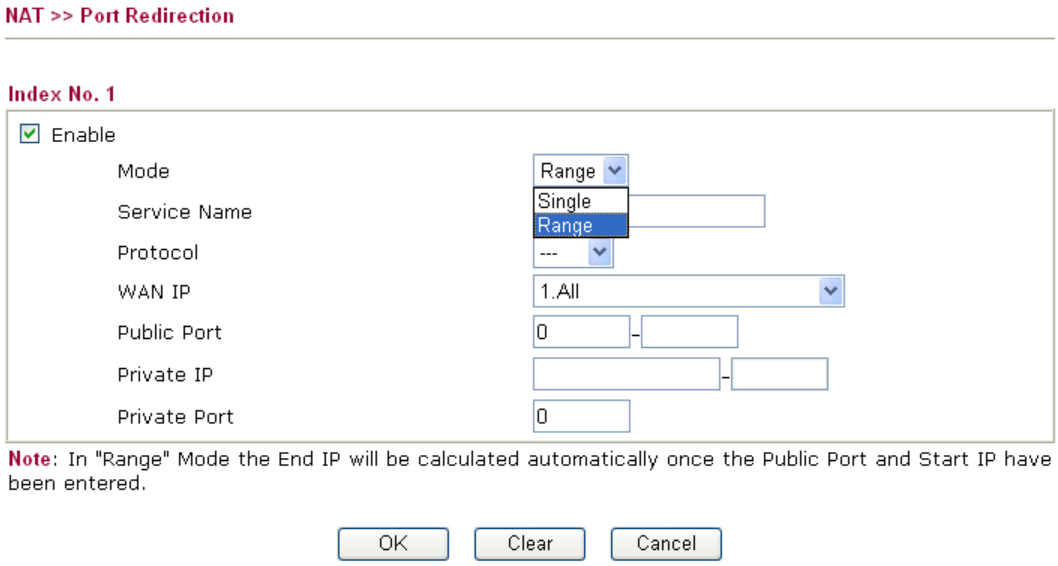


The port redirection can only apply to incoming traffic.

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.



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



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).

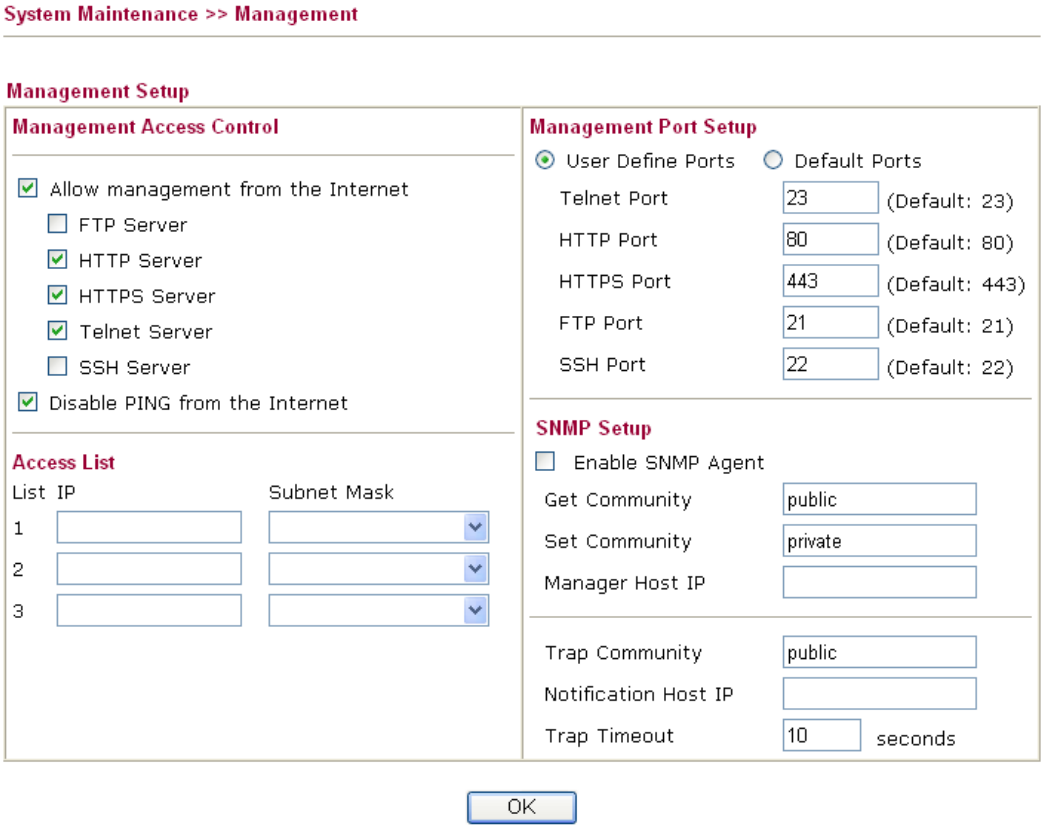
WAN IP Select the WAN IP used for port redirection. There are eight WAN IP alias that can be selected and used for port redirection. The default setting is **All** which means all the incoming data from any port will be redirected to specified range of IP address and port.

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

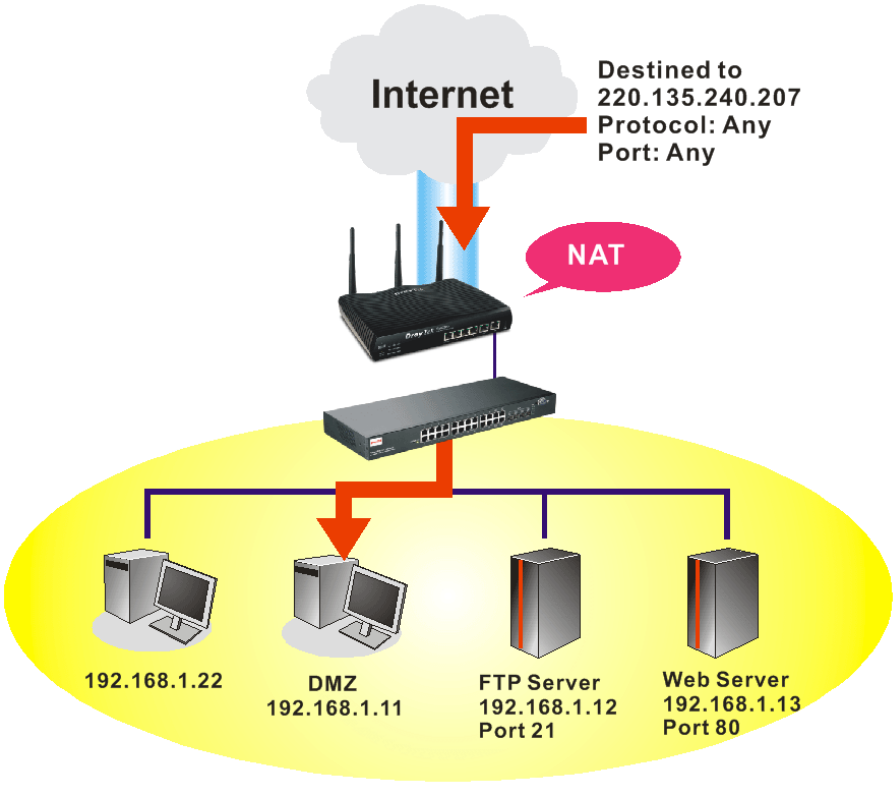
Note that the router has its own built-in services (servers) such as Telnet, HTTP and FTP etc. Since the common port numbers of these services (servers) are all the same, you may need to reset the router in order to avoid confliction.

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 Setup**. 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.



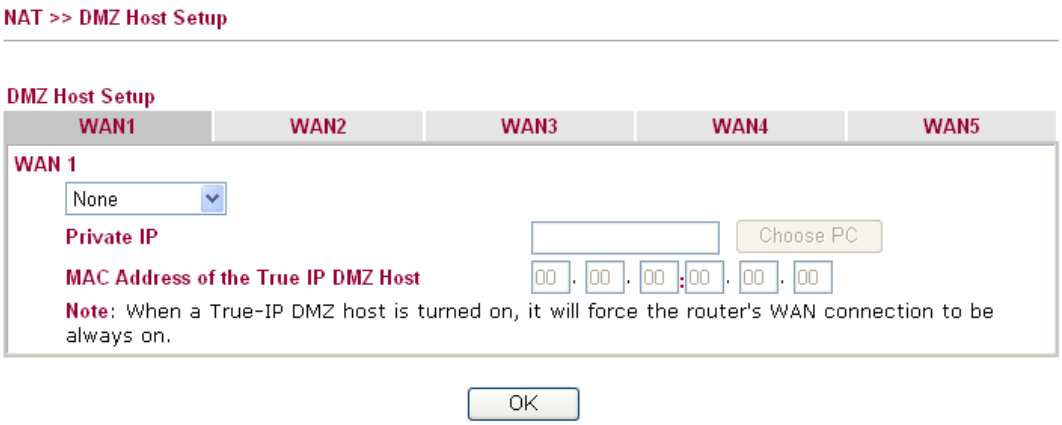
3.3.2 DMZ Host

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 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.

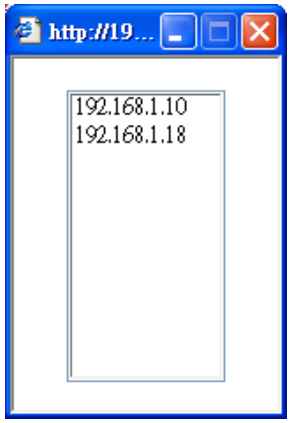
Click **DMZ Host** to open the following page. You can set different DMZ host for each WAN interface. Click the WAN tab to switch into the configuration page for that WAN.



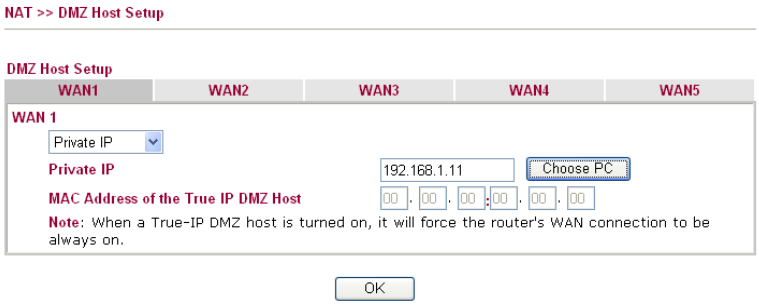
Enable Check to enable the DMZ Host function.

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

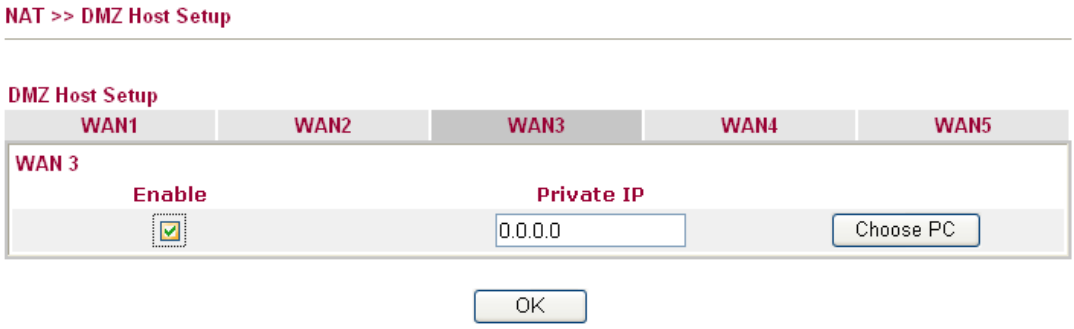
Choose PC Click this button and then a window will automatically pop up, as depicted below. The window consists of a list of private IP addresses of all hosts in your LAN network. Select one private IP address in the list to be the DMZ host.



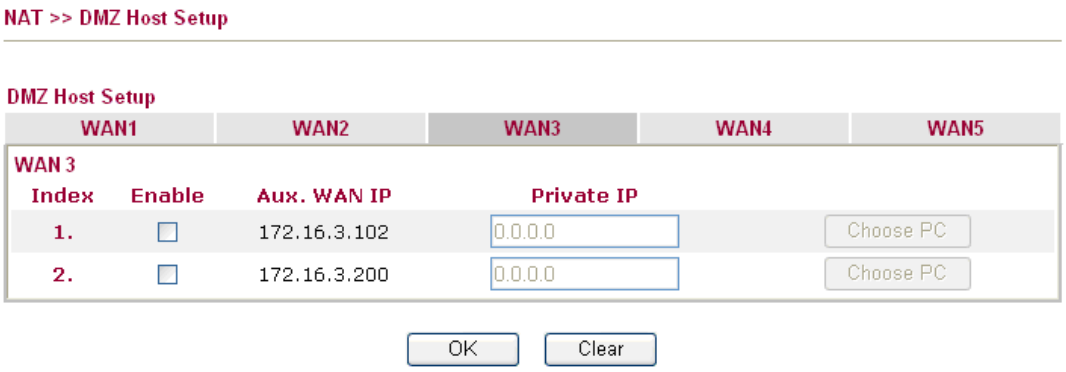
When you have selected one private IP from the above dialog, the IP address will be shown on the following screen. Click **OK** to save the setting.



DMZ Host for WAN2 ~ WAN5 are slightly different with WAN1. See the following figure.



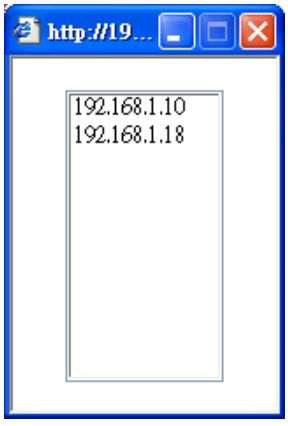
If you previously have set up **WAN Alias** for **PPPoE** or **Static or Dynamic IP** mode in WAN2/WAN3/WAN4/WAN5 interface**,** you will find them in **Aux. WAN IP** for your selection.



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.



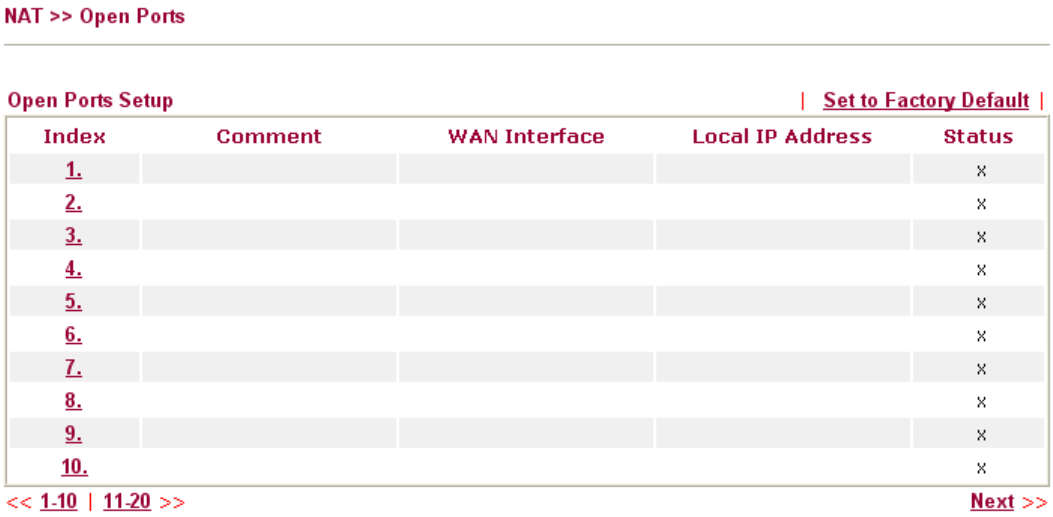
When you have selected one private IP from the above dialog, the IP address will be shown on the following screen. Click **OK** to save the setting.

3.3.3 Open Ports

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

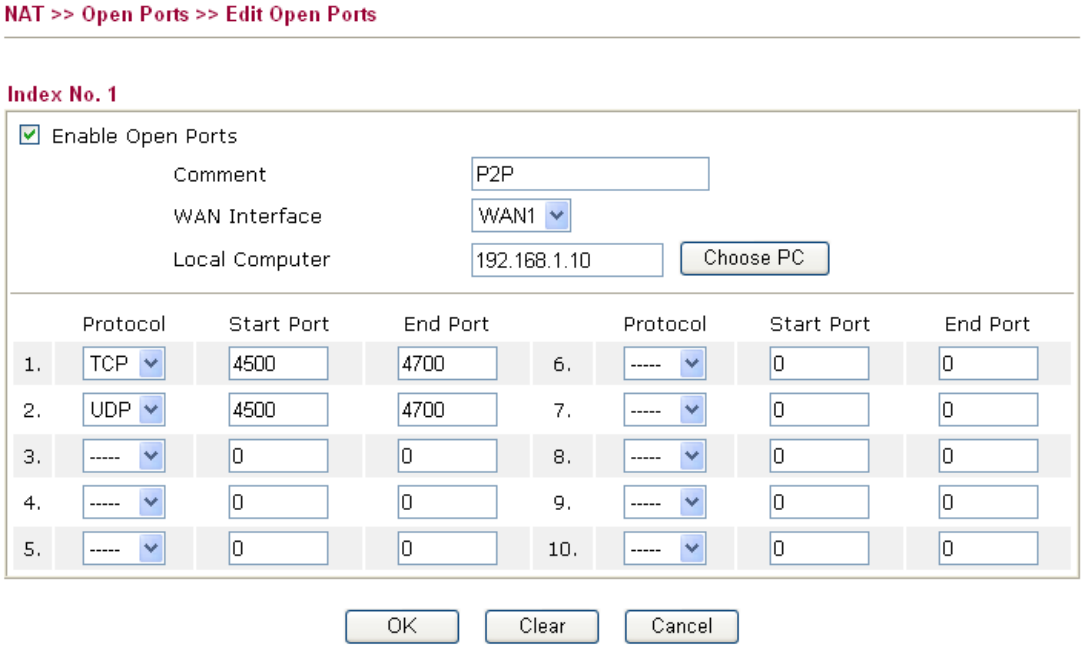
Common application of Open Ports includes P2P application (e.g., BT, KaZaA, Gnutella, WinMX, eMule and others), Internet Camera etc. Ensure that you keep the application involved up-to-date to avoid falling victim to any security exploits.

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



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.
WAN Interface	Display the WAN interface for such NAT profile.
Aux. WAN IP	Display the WAN IP address specified in WAN IP Alias page. It will be hidden if WAN IP Alias page is not configured.
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.



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.

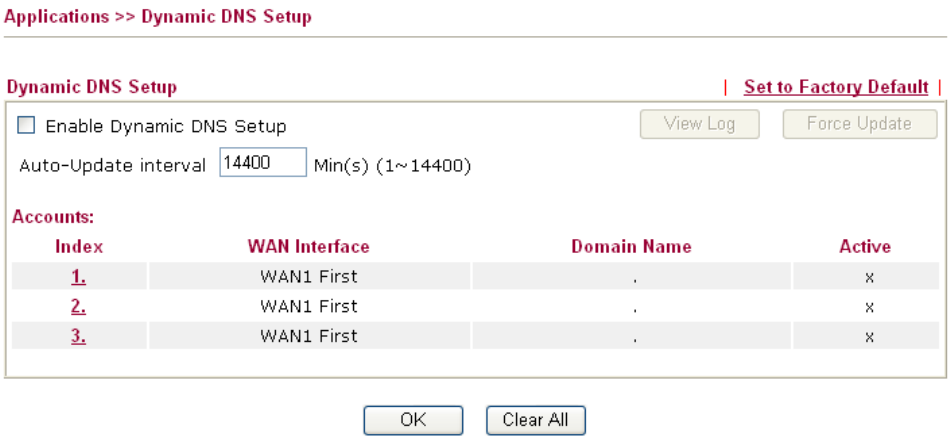
3.4.1 Dynamic DNS

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

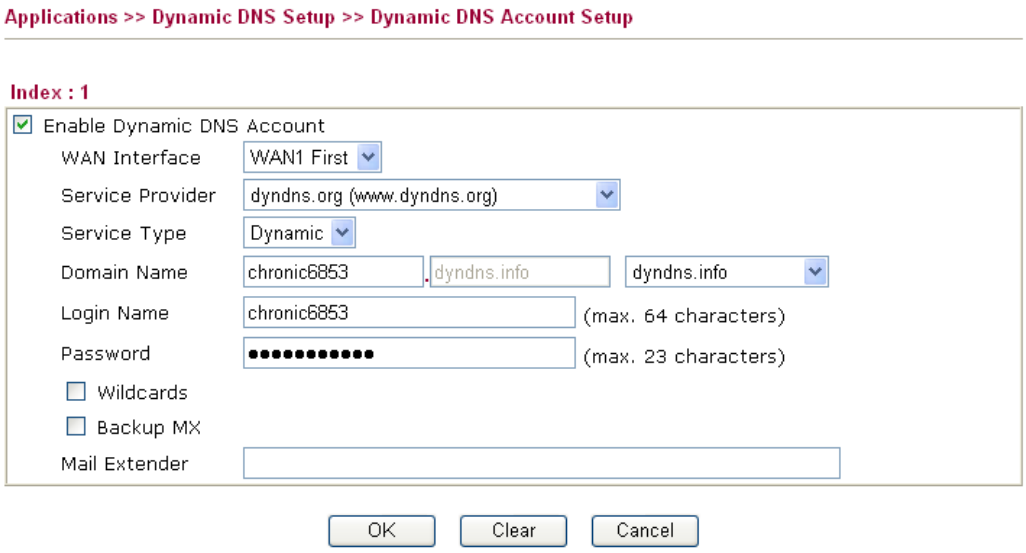
1. Assume you have a registered domain name from the DDNS provider, say *hostname.dyndns.org*, and an account with username: *test* and password: *test*.
2. In the DDNS setup menu, check **Enable Dynamic DNS Setup**.



Enable Dynamic DNS Setup	Check this box to enable DDNS function.
Set to Factory Default	Clear all profiles and recover to factory settings.
Auto-Update interval	Set the time for the router to perform auto update for DDNS service.
Index	Click the number below Index to access into the setting page of DDNS setup to set account(s).
WAN Interface	Display the WAN interface used.
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*.



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).
WAN Interface	**WAN1/WAN2/WAN3/WAN4/WAN5 First** - While connecting, the router will use WAN1/WAN2/WAN3/WAN4/WAN5 as the first channel for such account. If WAN1/WAN2/WAN3 fails, the router will use another WAN interface instead. **WAN1/WAN2/WAN3/WAN4/WAN5 Only** - While connecting, the router will use WAN1/WAN2/WAN3/WAN4/WAN5 as the only channel for such account.
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.
Wildcard and Backup MX	The Wildcard and Backup MX features are not supported for all Dynamic DNS providers. You could get more detailed information from their websites.

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

Disable the Function and Clear all Dynamic DNS Accounts

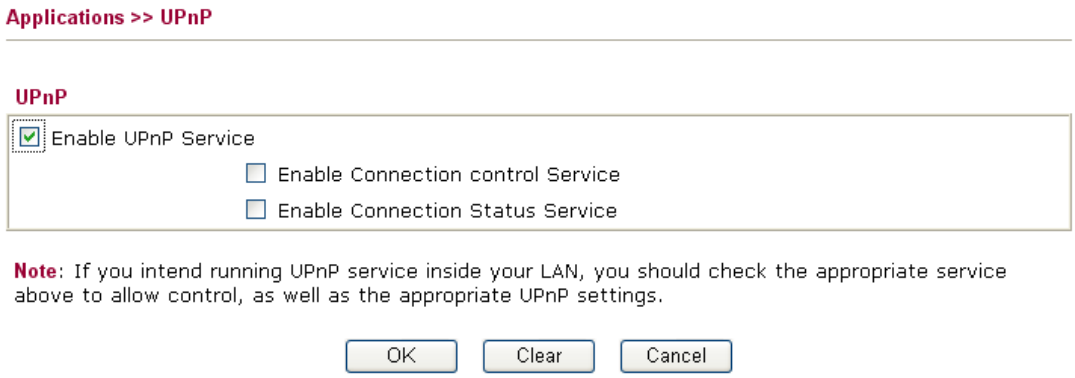
In the DDNS setup menu, uncheck **Enable Dynamic DNS Setup**, and push **Clear All** button to disable the function and clear all accounts from the router.

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.

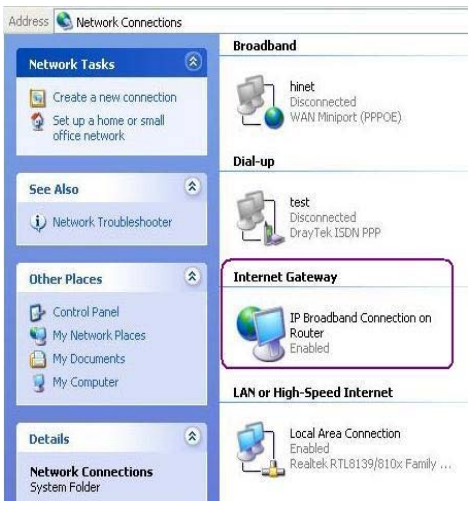
3.4.2 UPnP

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.

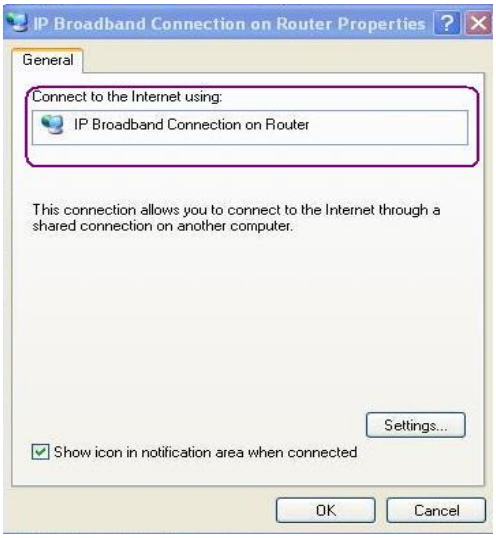


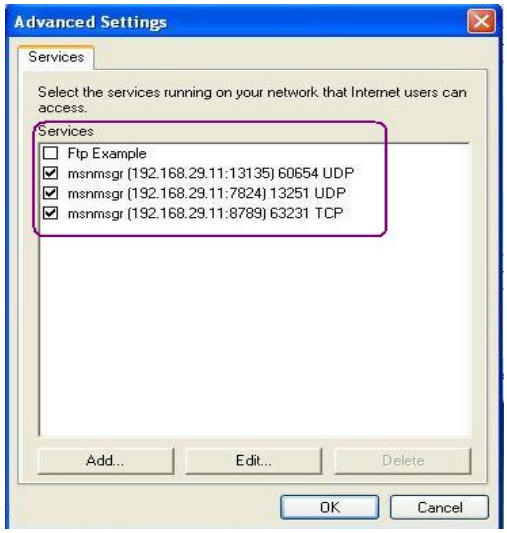
Enable UPNP Service Accordingly, you can enable either the **Connection Control Service** or **Connection Status Service**.

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.



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.





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 "n" models.

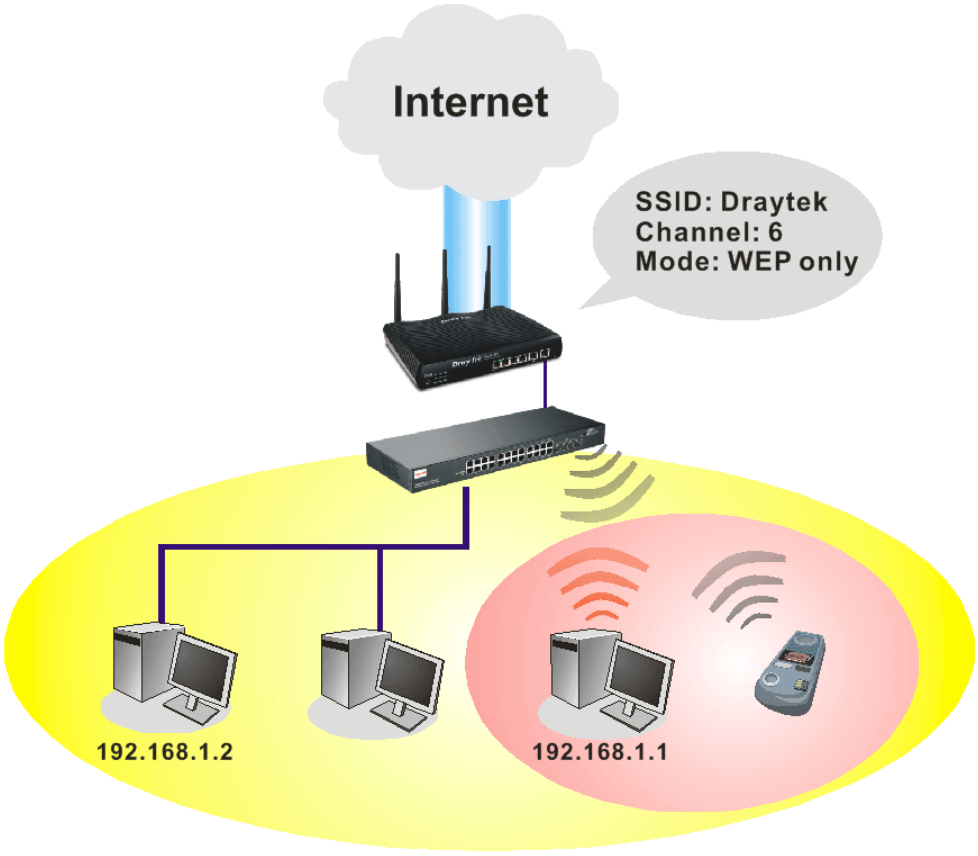
3.5.1 Basic Concepts

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 "n" 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 draft 2 protocol. To boost its performance further, the Vigor Router is also loaded with advanced wireless technology to lift up data rate up to 300 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.

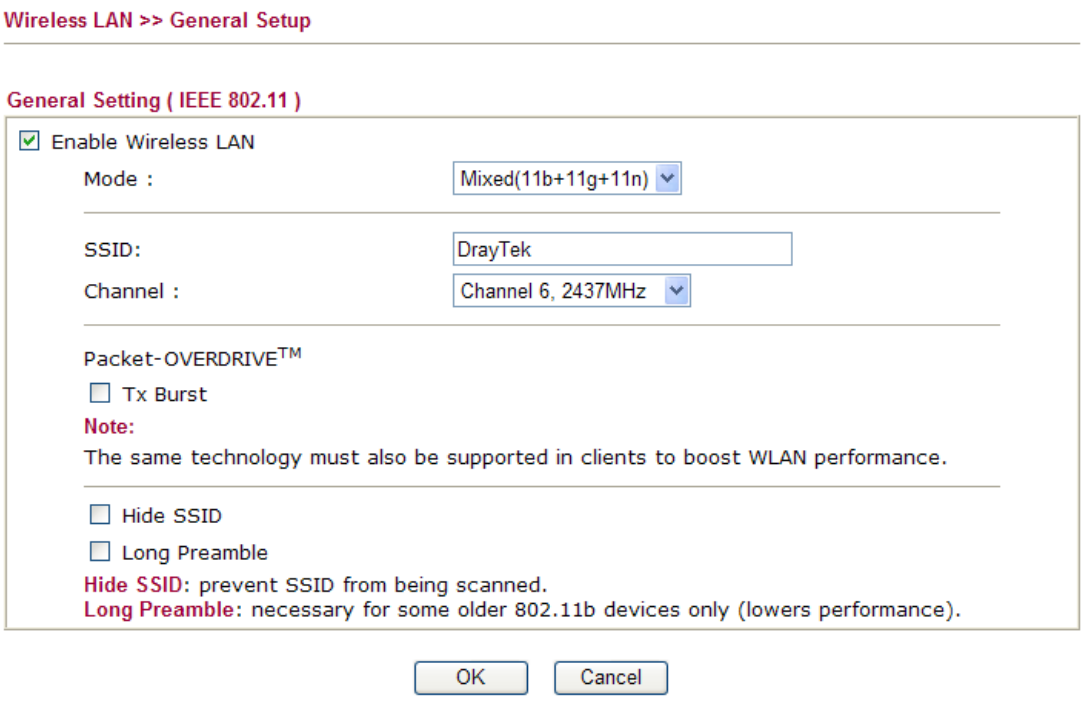
Separate the Wireless and the Wired LAN- WLAN Isolation enables you to isolate your wireless LAN from wired LAN for either quarantine or limit access reasons. To isolate means neither of the parties can access each other. To elaborate an example for business use, you may set up a wireless LAN for visitors 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.

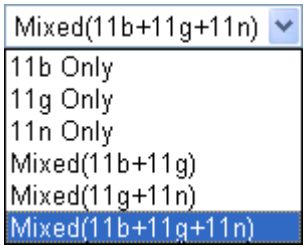
Below shows the menu items for Wireless LAN.

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.

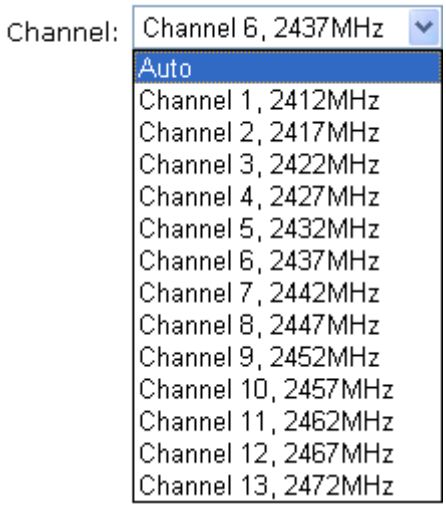


Enable Wireless LAN	Check the box to enable wireless function.
Mode	At present, the router can connect to Mixed (11b+11g), 11g Only, 11b Only, Mixed (11g+11n), 11n Only and Mixed (11b+11g+11n) stations simultaneously. Simply choose Mix (11b+11g+11n) mode.



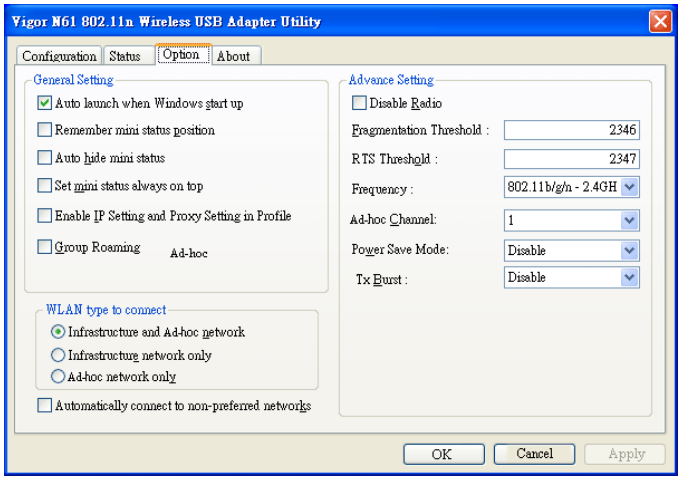
SSID Means the identification of the wireless LAN. SSID can be any text numbers or various special characters. The default SSID is "DrayTek". We suggest you to change it.

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.



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**).



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.

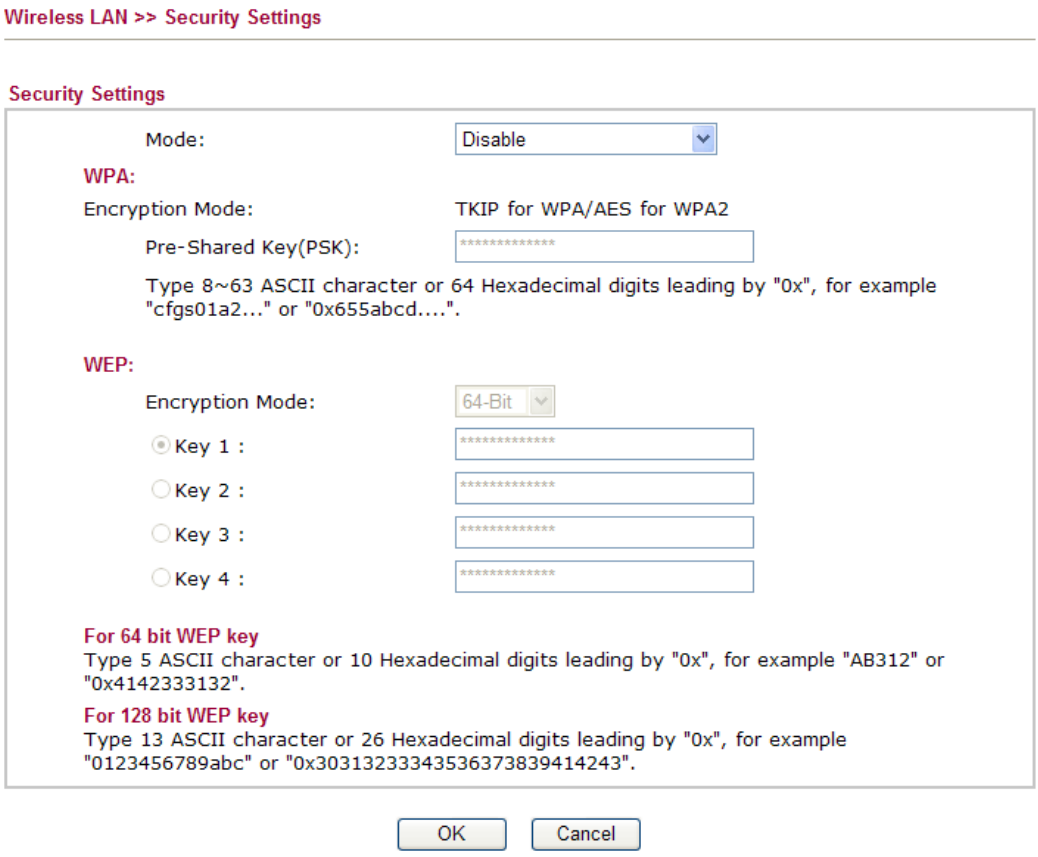
Long Preamble

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 field 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.

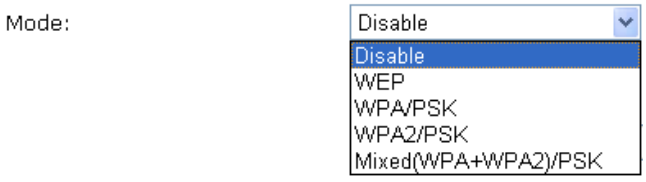
3.5.3 Security

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

Default Pre-Shared Key (PSK) is provided and stated on the label pasted on the bottom of the router. For the wireless client who wants to access into Internet through such router, please input the default PSK value for connection.



Mode There are several modes provided for you to choose.



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.

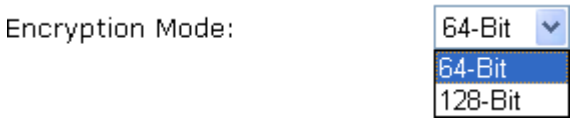
Pre-Shared Key (PSK) - Either **8~63** ASCII characters, such as 012345678..(or 64 Hexadecimal digits leading by 0x, such as "0x321253abcde...").

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.)

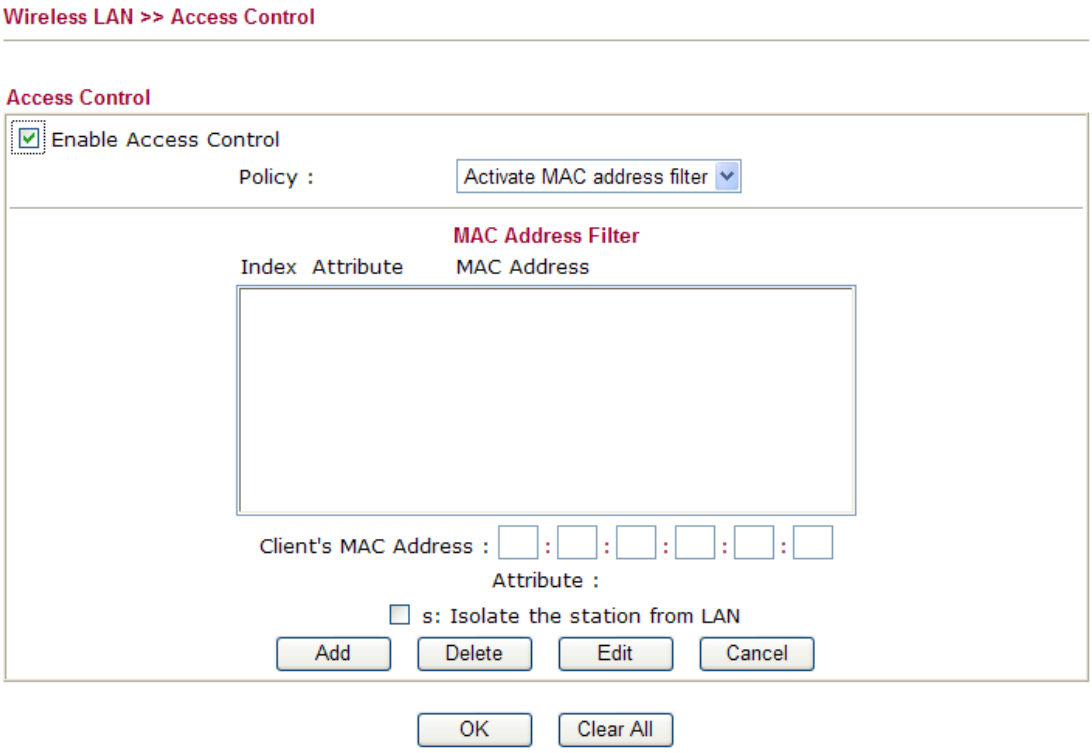
128-Bit - For 128 bits WEP key, either **13** ASCII characters, such as ABCDEFGHIJKLM (or 26 hexadecimal digits leading by 0x, such as 0x41424344454647484 94A4B4C4D).

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.

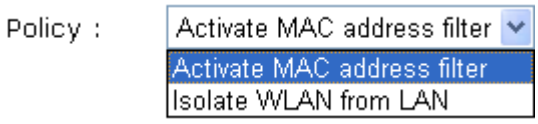


3.5.4 Access Control

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.



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.

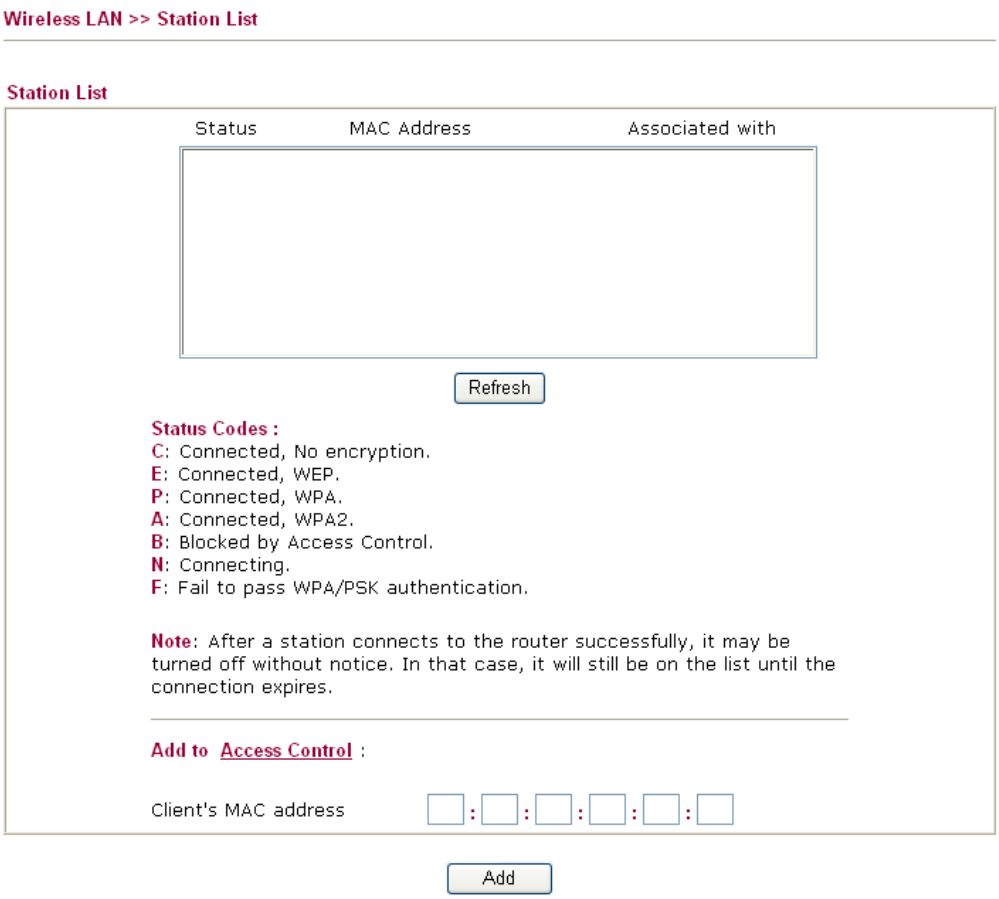


MAC Address Filter	Display all MAC addresses that are edited before.
Client's MAC Address	Manually enter the MAC address of wireless client.
Attribute	**s: Isolate the station from LAN -** select to isolate the wireless connection of the wireless client of the MAC address from LAN.
Add	Add a new MAC 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.

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.



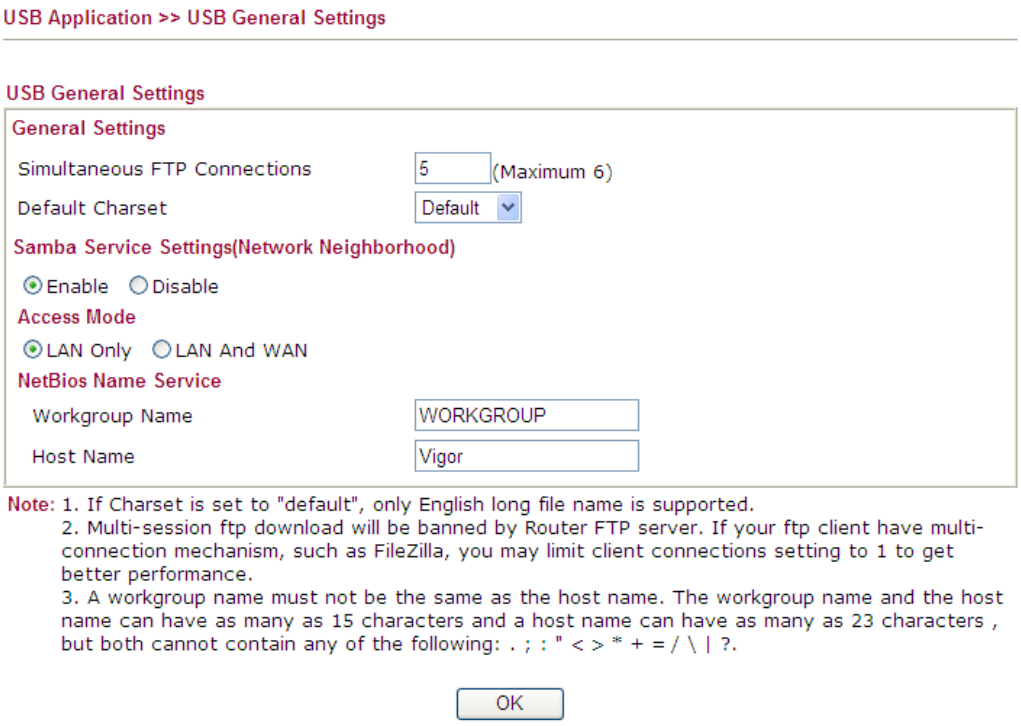
Refresh	Click this button to refresh the status of station list.
Add	Click this button to add current typed MAC address into **Access Control**.

3.6 USB Application

USB diskette connected on Vigor router can be regarded as a server. By way of Vigor router, clients on LAN/WAN can access, write and read data stored in USB diskette with different applications. After setting the configuration in **USB Application**, you can type the IP address of the Vigor router and username/password created in **USB Application>>USB User Management** on the client software. Then, the client can use the FTP site (USB diskette) or share the Samba service through Vigor router.

3.6.1 USB General Settings

This page will determine the number of concurrent FTP connection, default charset for FTP server and enable Samba service. At present, the Vigor router can support USB diskette with formats of FAT16 and FAT32 only. Therefore, before connecting the USB diskette into the Vigor router, please make sure the memory format for the USB diskette is FAT16 or FAT32. It is recommended for you to use FAT32 for viewing the filename completely (FAT16 cannot support long filename).



General Settings

Simultaneous FTP Connection - This field is used to specify the quantity of the FTP sessions. The router allows up to 6 FTP sessions connecting to USB storage diskette at one time.

Default Charset - At present, Vigor router supports three types of character sets: default, GB2312 and BIG5.

Default Charset is for English based file name. For Simplified Chinese file/directory names, please choose GB2312; for Traditional Chinese file/directory names, choose BIG5.

Samba Service Settings

Click **Enable** to invoke samba service via the router.

Access Mode

LAN Only – Users coming from internet cannot connect to the samba server of the router.

LAN And WAN - Both LAN and WAN users can

access samba server of the router.

NetBios Name Service

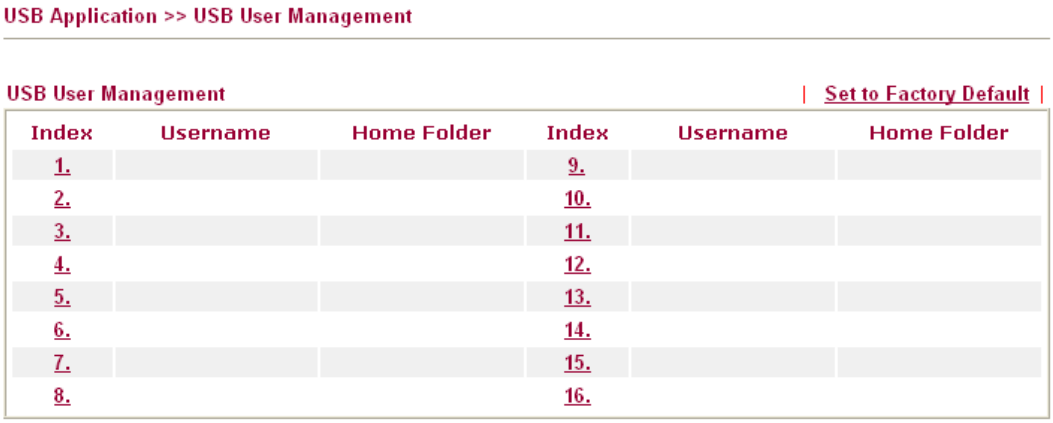
For the NetBios service of USB diskette, you have to specify a workgroup name and a host name. A workgroup name must not be the same as the host name. The workgroup name can have as many as 15 characters and the host name can have as many as 23 characters. Both them cannot contain any of the following--- ; : " < > * + = \ | ?.

Workgroup Name – Type a name for the workgroup.

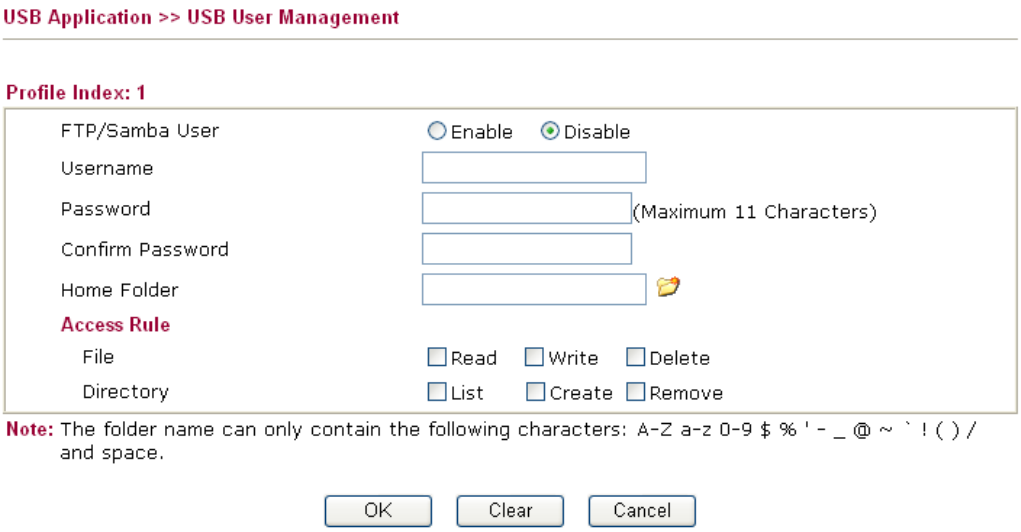
Host Name – Type the host name for the router.

3.6.2 USB User Management

This page allows you to set profiles for FTP/Samba users. Any user who wants to access into the USB diskette must type the same username and password configured in this page. Before adding or modifying settings in this page, please insert a USB diskette first. Otherwise, an error message will appear to warn you.



Click index number to access into configuration page.



FTP/Samba User

Enable – Click this button to activate this profile (account) for FTP service or Samba User service. Later, the user can use the username specified in this page to login into FTP server.

Disable – Click this button to disable such profile.

Username

Type the username for FTP/Samba users for accessing into FTP server (USB diskette). Be aware that users cannot access into USB diskette in anonymity. Later, you can open FTP client software and type the username specified here for accessing into USB storage diskette.

Note: "Admin" could not be typed here as username, for the word is specified for accessing into web pages of Vigor router only. Also, it is reserved for FTP firmware upgrade usage.

Note: FTP Passive mode is not supported by Vigor Router.

Please disable the mode on the FTP client.

Password

Type the password for FTP/Samba users for accessing FTP server. Later, you can open FTP client software and type the password specified here for accessing into USB storage diskette.

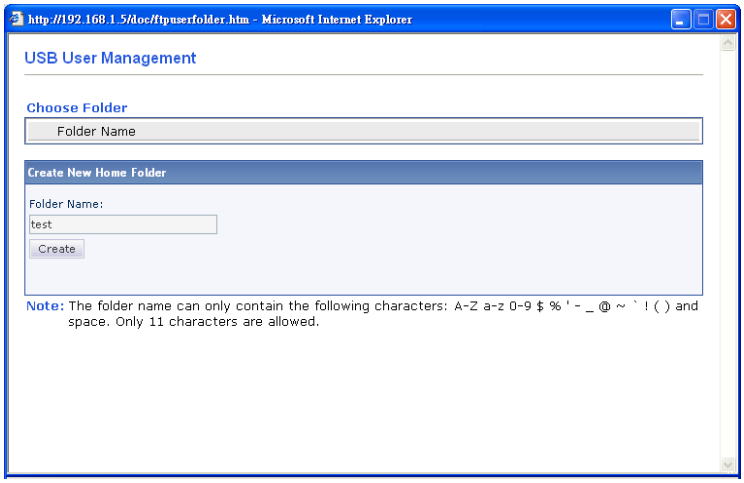
Confirm Password

Type the password again to make confirmation.

Home Folder

It determines the range for the client to access into.
The user can enter a directory name in this field. Then, after clicking **OK**, the router will create the specific/new folder in the USB diskette. In addition, if the user types "/" here, he/she can access into all of the disk folders and files in USB diskette.
Note: When write protect status for the USB diskette is **ON**, you cannot type any new folder name in this field. Only "/" can be used in such case.

You can click to open the following dialog to add any new folder which can be specified as the Home Folder.



Access Rule

It determines the authority for such profile. Any user, who uses such profile for accessing into USB diskette, must follow the rule specified here.

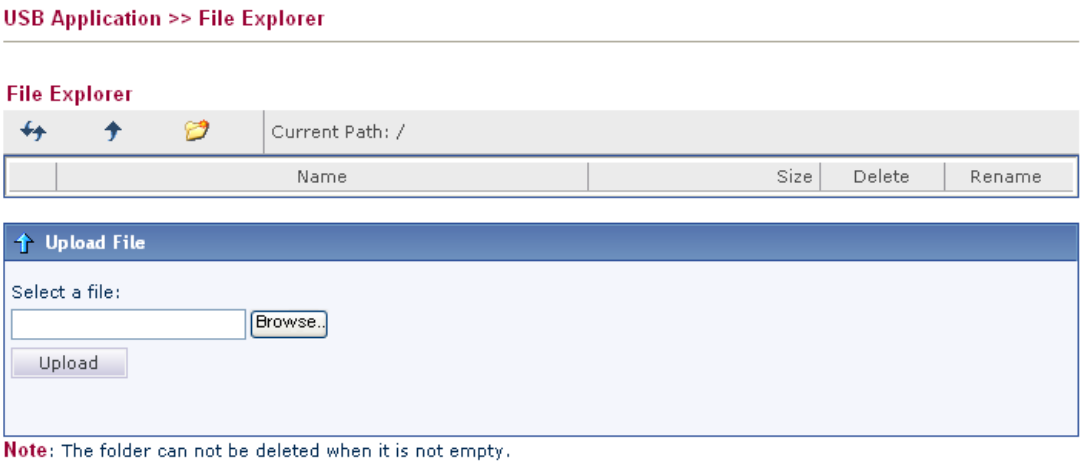
File – Check the items (Read, Write and Delete) for such profile.

Directory –Check the items (List, Create and Remove) for such profile.

Before you click **OK**, you have to insert a USB diskette into the USB interface of the Vigor router. Otherwise, you cannot save the configuration.

3.6.3 File Explorer

File Explorer offers an easy way for users to review and manage the content of USB diskette connected on Vigor router.



Refresh	Click this icon to refresh files list.
Back	Click this icon to return to the upper directory.
Create	Click this icon to add a new folder.
Current Path	Display current folder.
Upload	Click this button to upload the selected file to the USB diskette. The uploaded file in the USB diskette can be shared for other user through FTP.

3.6.4 USB Disk Status

This page is to monitor the status for the users who accessing into FTP or Samba server (USB diskette) via the Vigor router. If you want to remove the diskette from USB port in router, please click **Disconnect USB Disk** first. And then, remove the USB diskette later.

Connection Status	If there is no USB diskette connected to Vigor router, "**No Disk Connected**" will be shown here.
Disk Capacity	It displays the total capacity of the USB diskette.
Free Capacity	It displays the free space of the USB diskette. Click **Refresh** at any time to get new status for free capacity.
Index	It displays the number of the client which connecting to FTP server.
IP Address	It displays the IP address of the user's host which connecting to the FTP server.
Username	It displays the username that user uses to login to the FTP server.

When you insert USB diskette into the Vigor router, the system will start to find out such device within several seconds.

3.7 System Maintenance

For the system setup, there are several items that you have to know the way of configuration: Status, User Password, Time setup and Reboot System.

Below shows the menu items for System Maintenance.

3.7.1 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 : Vigor3200n
Firmware Version : 3.3.6_RC6
Build Date/Time : Nov 3 2010 15:47:14

LAN

	MAC Address	IP Address	Subnet Mask	DHCP Server	DNS
LAN1	00-50-7F-C9-B7-3C	192.168.1.1	255.255.255.0	Yes	168.95.1.1
LAN2	00-50-7F-C9-B7-3C	192.168.3.1	255.255.255.0	Yes	168.95.1.1
LAN3	00-50-7F-C9-B7-3C	192.168.5.1	255.255.255.0	Yes	168.95.1.1
LAN4	00-50-7F-C9-B7-3C	192.168.7.1	255.255.255.0	Yes	168.95.1.1
DMZ PORT	00-50-7F-C9-B7-3C	192.168.9.1	255.255.255.0	Yes	168.95.1.1
IP Routed Subnet	00-50-7F-C9-B7-3C	192.168.2.1	255.255.255.0	Yes	168.95.1.1

Wireless LAN

MAC Address	Frequency Domain	Firmware Version	SSID
00-50-7F-C9-B7-3C	Europe	2.3.2.0	DrayTek

WAN

	Link Status	MAC Address	Connection	IP Address	Default Gateway
WAN1	Disconnected	00-50-7F-C9-B7-3D	---	---	---
WAN2	Connected	00-50-7F-C9-B7-3E	Static IP	172.16.3.102	172.16.1.1
WAN3	Disconnected	00-50-7F-C9-B7-3F	---	---	---
WAN4	Disconnected	00-50-7F-C9-B7-40	---	---	---
WAN5	Disconnected	00-50-7F-C9-B7-41	---	---	---

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 built.

***LAN*-------**

MAC Address Display the MAC address of the LAN Interface.

IP Address Display the IP address of the LAN interface.

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

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

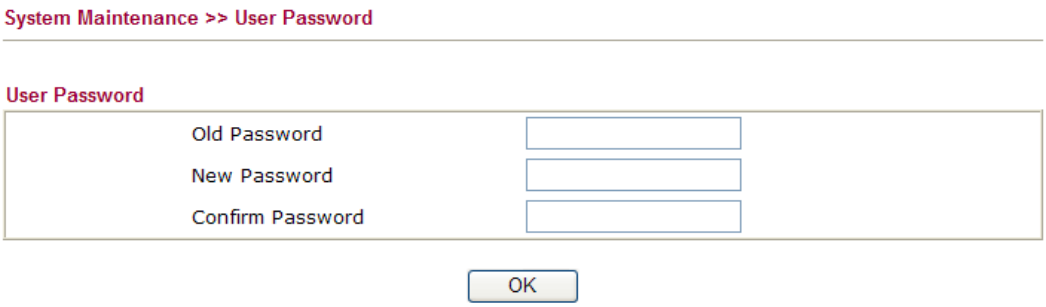
DNS Display the assigned IP address of the primary DNS.

***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.
***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.

3.7.2 User Password

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

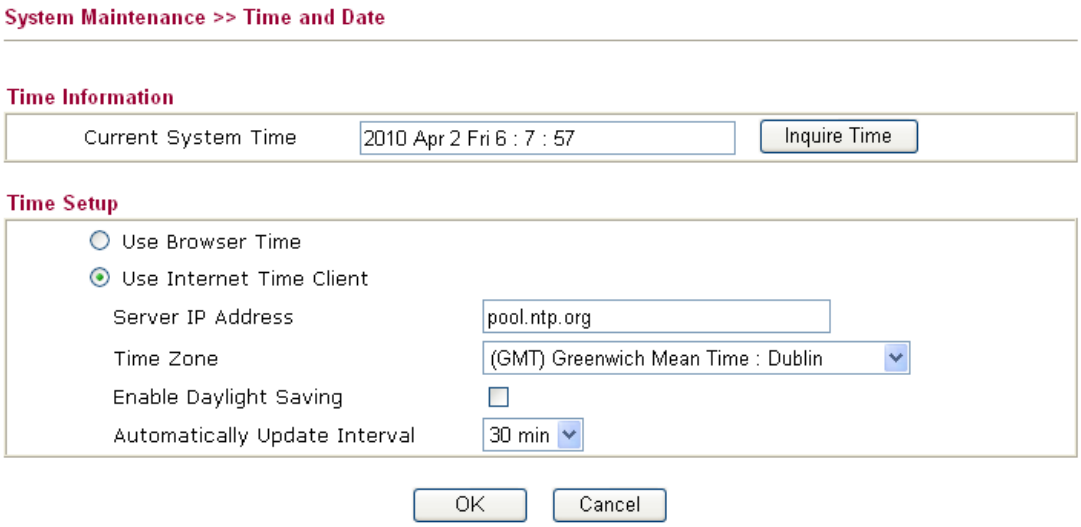


Old Password	Type in the old password. The factory default setting for password is blank.
New Password	Type in new password in this field.
Confirm Password	Type in the new password again.

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

3.7.3 Time and Date

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

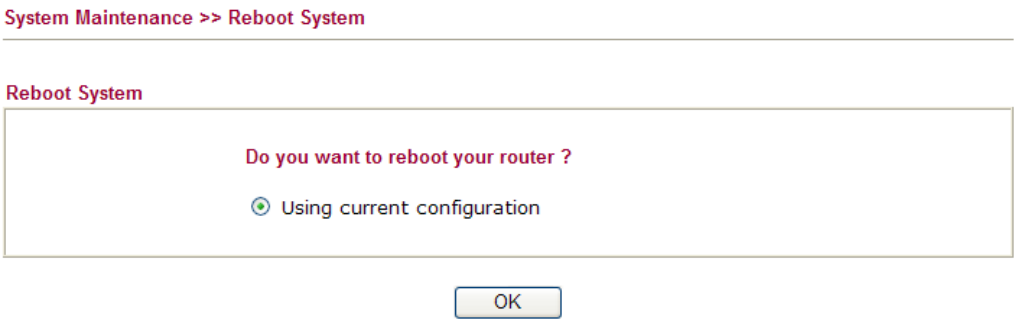


Current System Time	Click **Inquire Time** to get the current time.
Use Browser Time	Select this option to use the browser time from the remote administrator PC host as router's system time.
Use Internet Time	Select to inquire time information from Time Server on the Internet using assigned protocol.
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.
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.

3.7.4 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.



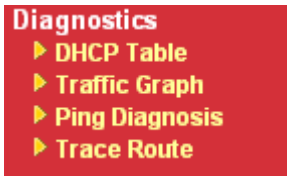
Click **OK**. The router will take 5 seconds to reboot the system.

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.

3.8 Diagnostics

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

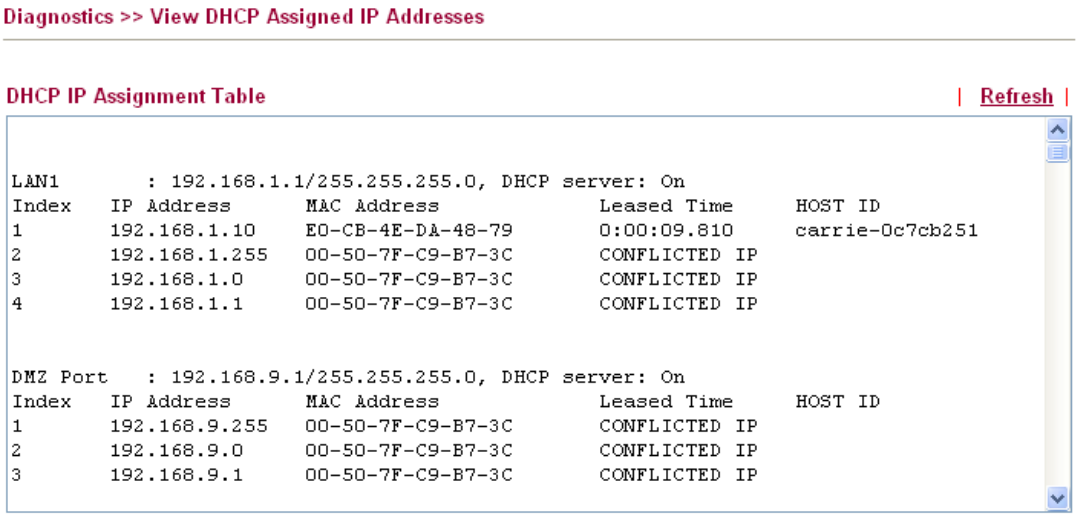
Below shows the menu items for Diagnostics.



3.8.1 DHCP Table

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

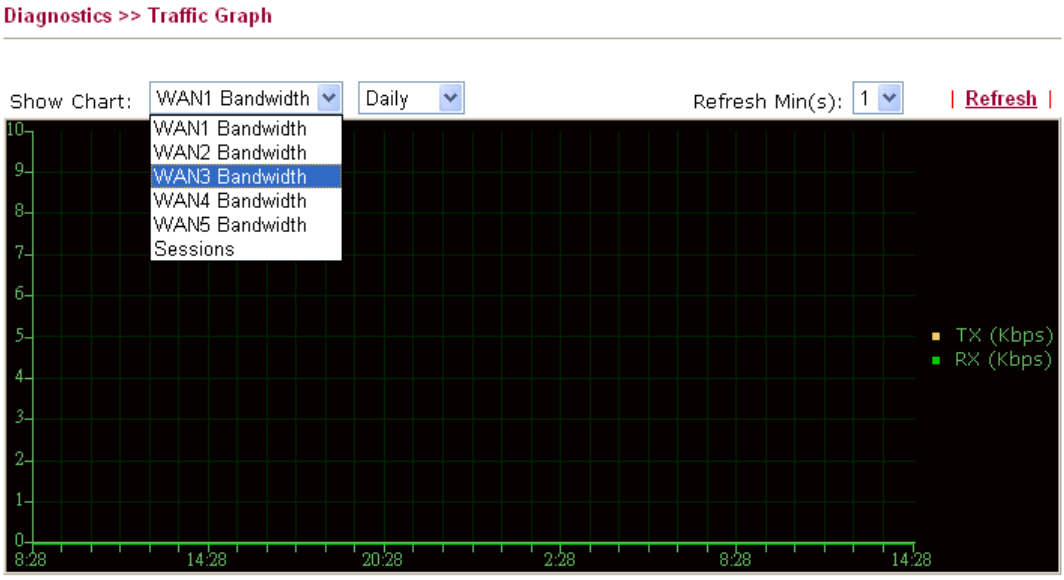
Click **Diagnostics** and click **DHCP Table** to open the web page.



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.

3.8.2 Traffic Graph

Click **Diagnostics** and click **Traffic Graph** to open the web page. Choose WAN1/WAN2/WAN3/WAN4/WAN5 Bandwidth, Sessions, daily or weekly for viewing different traffic graph. Click **Refresh** to renew the graph at any time. The following two figures display different charts by daily and weekly.

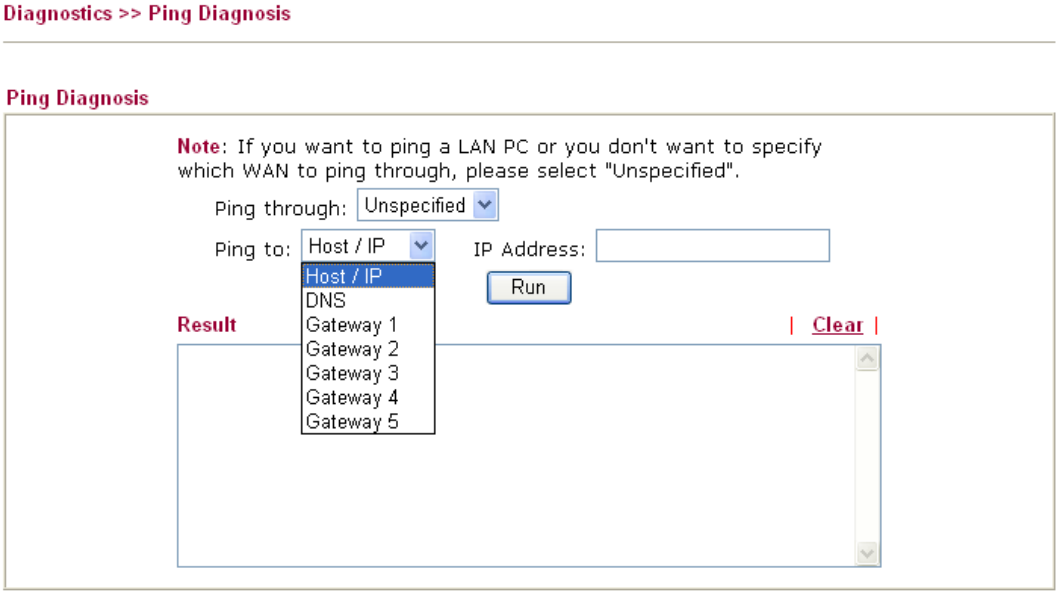


The horizontal axis represents time. Yet the vertical axis has different meanings. For WAN1/WAN2/WAN3/WAN4/WAN5 Bandwidth chart, the numbers displayed on vertical axis represent the numbers of the transmitted and received packets in the past.

For Sessions chart, the numbers displayed on vertical axis represent the numbers of the NAT sessions during the past.

3.8.3 Ping Diagnosis

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



Ping through Use the drop down list to choose the WAN interface that you want to ping through or choose **Unspecified** to be determined by the router automatically.

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

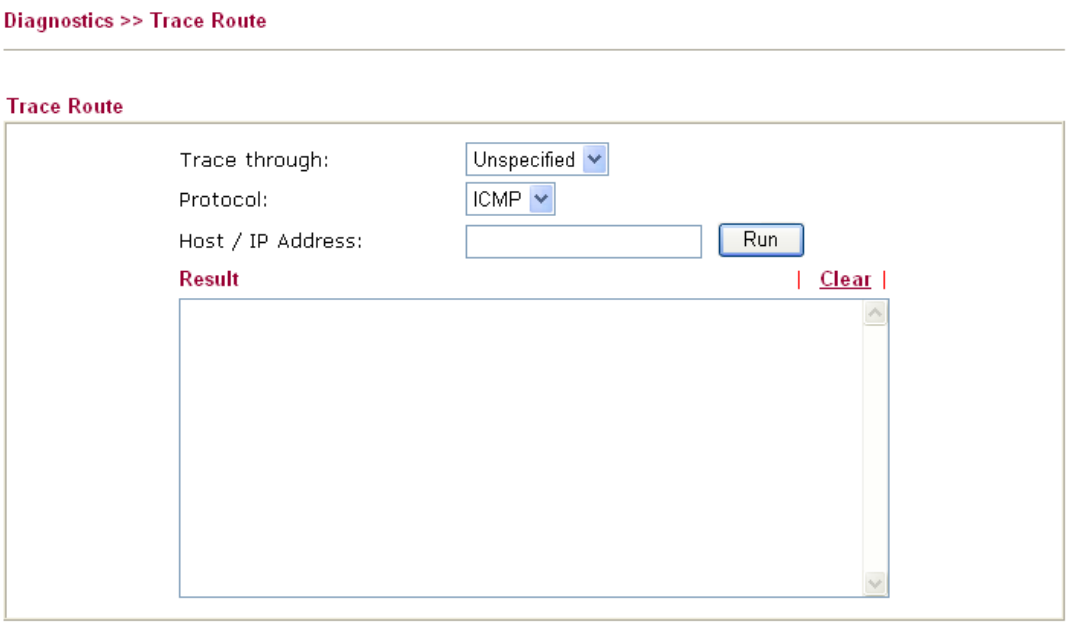
IP Address Type in the IP address of the Host/IP that you want to ping.

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.

3.8.4 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.



Trace through Use the drop down list to choose the WAN interface that you want to ping through or choose **Unspecified** to be determined by the router automatically.

Protocol Choose the protocol for using trace route.

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.

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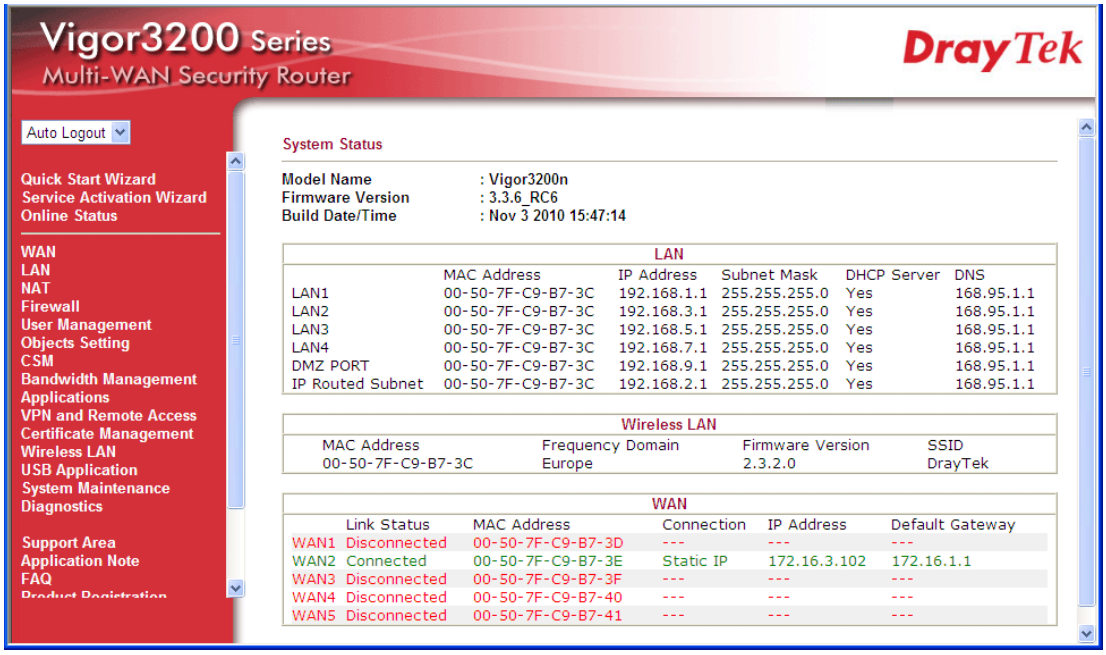
4 Admin Mode Operation

This chapter will guide users to execute advanced (full) configuration through admin mode operation. As for other examples of application, please refer to chapter 5.

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.



4.1 WAN

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.

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.

Network Connection by 3G USB Modem

For 3G mobile communication through Access Point is popular more and more, Vigor3200 adds the function of 3G network connection for such purpose. By connecting 3G USB Modem to the USB port of Vigor3200, it can support HSDPA/UMTS/EDGE/GPRS/GSM and the future 3G standard (HSUPA, etc). Vigor3200n with 3G USB Modem allows you to receive 3G signals at any place such as your car or certain location holding outdoor activity and share the bandwidth for using by more people. Users can use the LAN port on the router to access Internet. Also, they can access Internet via 802.11n wireless function of Vigor3200n, and enjoy the powerful firewall, bandwidth management, VPN features of Vigor3200n series.

After connecting into the router, 3G USB Modem will be regarded as the fifth WAN port. However, the other Ethernet WAN ports still can be used and Load-Balance can be done in the router. Besides, 3G USB Modem also can be used as backup device. Therefore, when other Ethernet WAN ports are not available, the router will use 3.5G for supporting automatically. The supported 3G USB Modem will be listed on DrayTek web site. Please visit www.DrayTek.com for more detailed information.

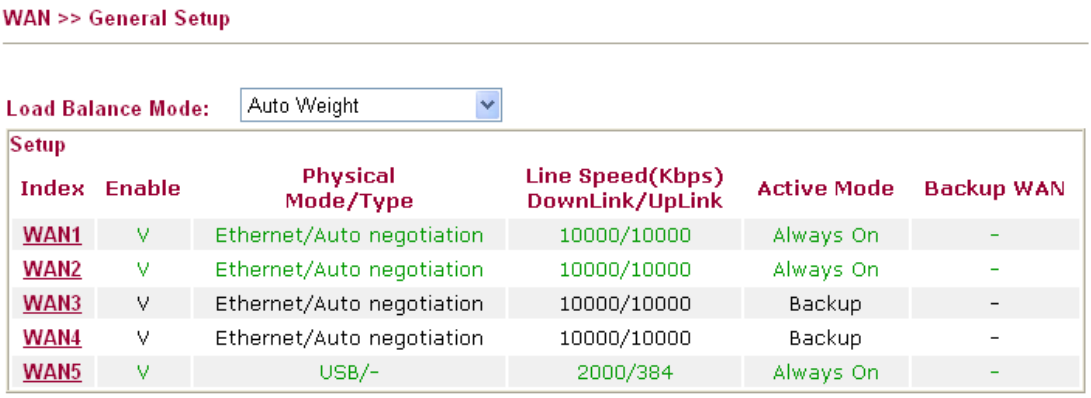
Below shows the menu items for **WAN**.

4.1.2 General Setup

This section will introduce some general settings of Internet and explain the connection modes for WAN1 to WAN5 in details.

There are four WAN ports (represented with WAN1, WAN2, WAN3 and WAN4 in web pages) and one USB port (represented with WAN5 in web pages) offered by the router. For this router supports multiple WANs function, it allows users to access Internet and combine the bandwidth of the multiple WANs to speed up the transmission through the network. Each WAN port can connect to different ISPs, even if the ISPs use different technology to provide telecommunication service (such as DSL, Cable modem, etc.). If any connection problem occurred on one of the ISP connections, all the traffic will be guided and switched to the normal communication port for proper operation.

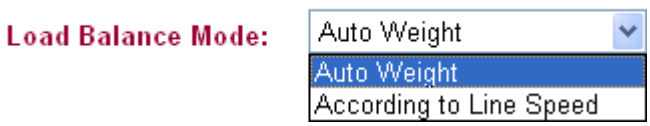
This webpage allows you to set general setup for WAN1 to WAN5 respectively.



Index	Enable	Physical Mode/Type	Line Speed(Kbps) DownLink/UpLink	Active Mode	Backup WAN
WAN1	V	Ethernet/Auto negotiation	10000/10000	Always On	-
WAN2	V	Ethernet/Auto negotiation	10000/10000	Always On	-
WAN3	V	Ethernet/Auto negotiation	10000/10000	Backup	-
WAN4	V	Ethernet/Auto negotiation	10000/10000	Backup	-
WAN5	V	USB/-	2000/384	Always On	-

From the above figure, WAN1 ~ WAN4 connect to Internet through the interface of Ethernet; WAN5 connects to Internet via USB interface. Therefore the configuration for each WAN port will be different slightly. Please click the WAN link under Index to open the web page for detailed configuration.

Load Balance Mode — This option is available for multiple-WAN for getting enough bandwidth for each WAN port. If you know the practical bandwidth for your WAN interface, please choose the setting of **According to Line Speed**. Otherwise, please choose **Auto Weigh** to let the router reach the best load balance.



Index — Click the WAN interface link under Index to access into the WAN configuration page.

Enable — **V** means such WAN interface is enabled and ready to be used.

Physical Mode / Type — Display the physical mode and physical type of such WAN interface.

Line Speed — Display the downstream and upstream rate of such WAN

interface.

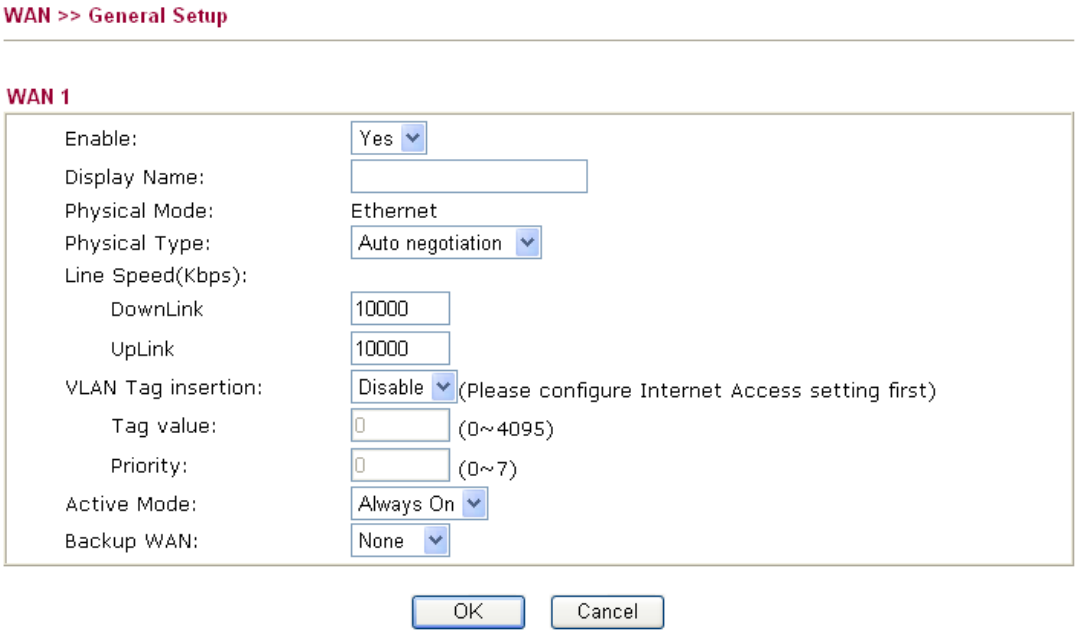
Active Mode Display whether such WAN interface is Active device or backup device.

Backup WAN Display the Backup WAN interface for such WAN when it is disabled.

Note: In default, each WAN is enabled.

For WAN1 ~ WAN4

WAN1 ~ WAN4 are fixed with physical mode of Giga Ethernet. Here we take WAN1 as an example.

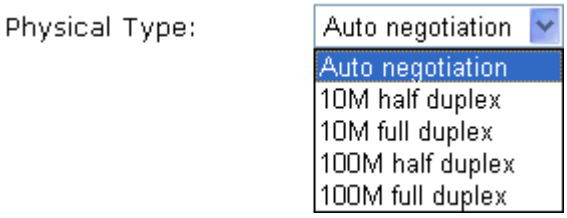


Enable Choose **Yes** to invoke the settings for this WAN interface. Choose **No** to disable the settings for this WAN interface.

Display Name Type the description for such WAN interface.

Physical Mode Display the physical mode of such WAN interface.

Physical type You can change the physical type for WAN2 or choose **Auto negotiation** for determined by the system.



Line Speed If your choose **According to Line Speed** as the **Load Balance Mode**, please type the line speed for downloading and uploading for such WAN interface. The unit is kbps. The default setting for down link and up link is 10000Kbps.

VLAN Tag insertion **Enable** – Enable the function of VLAN with tag.

The router will add specific VLAN number to all packets on the

WAN while sending them out.

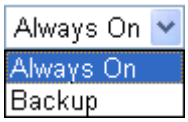
Disable – Disable the function of VLAN with tag.

Tag value – Type the value as the VLAN ID number. The range is form 0 to 4095.

Priority – Type the number for such VLAN. The range is from 0 to 7.

Active Mode and Backup WAN/Backup Type

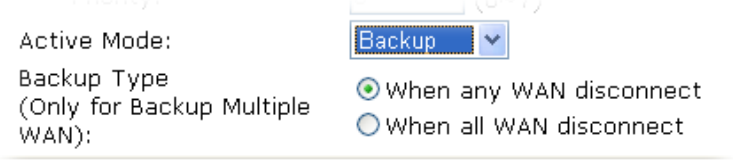
Active Mode – Determine the WAN interface will be active for always (**Always On**) or be treated as a backup WAN interface (**Backup**).



Backup WAN/Backup Type – Determine the role of such WAN interface. It will be changed according to the **Active Mode** specified.

If you choose **Always On** as **Active Mode**, you can choose one of the backup WAN interfaces from the **Backup WAN** drop down list. Later, when such WAN is disconnected for some reason, the backup WAN will be activated automatically to prevent data transmission from connection interrupted.

If you choose **Backup** as the **Active Mode**, Backup WAN will be changed into **Backup Type**. You have to specify which role the WAN interface should play.

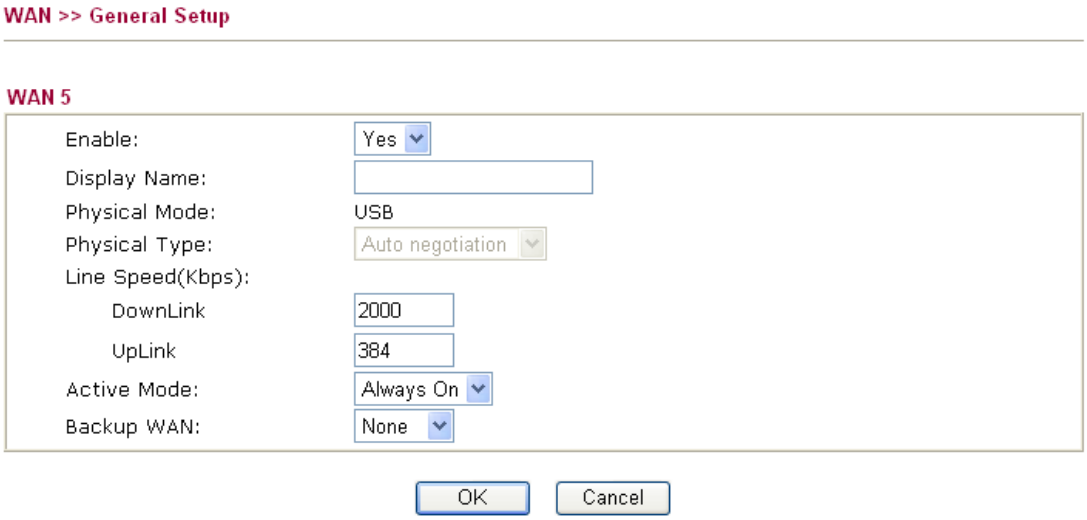


When any WAN disconnect – WAN1 will be activated when any WAN interface disconnects.

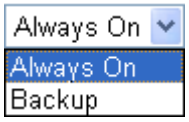
When all WAN disconnect – WAN1 will be activated when all the WAN interfaces disconnect.

For WAN5

To use 3G network connection through 3G USB Modem, please configure **WAN5** interface.



Enable	Choose **Yes** to invoke the settings for this WAN interface. Choose **No** to disable the settings for this WAN interface.
Display Name	Type the description for such WAN interface.
Physical Mode	Display the physical mode of such WAN interface.
Physical type	For such WAN interface is fixed to USB network connection, it is not necessary to specify physical type.
Line Speed	If your choose **According to Line Speed** as the **Load Balance Mode**, please type the line speed for downloading and uploading for such WAN interface. The unit is kbps.
Active Mode and Backup WAN/Backup Type	**Active Mode –** Determine the WAN interface will be active for always (**Always On**) or be treated as a backup WAN interface (**Backup WAN**).

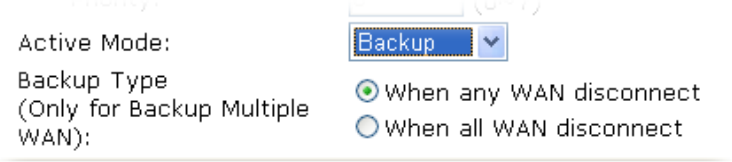


Backup WAN/Backup Type – Determine the role of such WAN interface. It will be changed according to the **Active Mode** specified.

If you choose **Always On** as **Active Mode**, you can choose one of the backup WAN interfaces from the **Backup WAN** drop down list. Later, when such WAN is disconnected for some reason, the backup WAN will be activated automatically to prevent data transmission from connection interrupted.

If you choose **Backup** as the **Active Mode**, Backup WAN will

be changed into **Backup Type**. You have to specify which role the WAN interface should play.

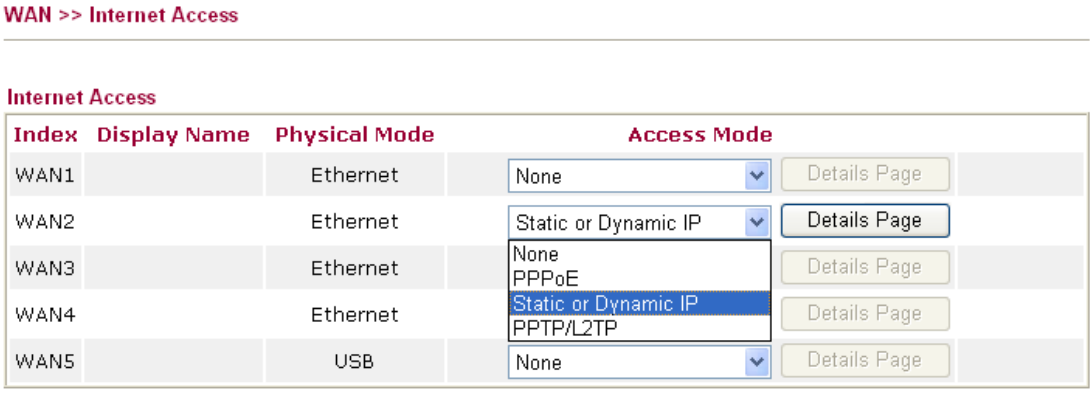


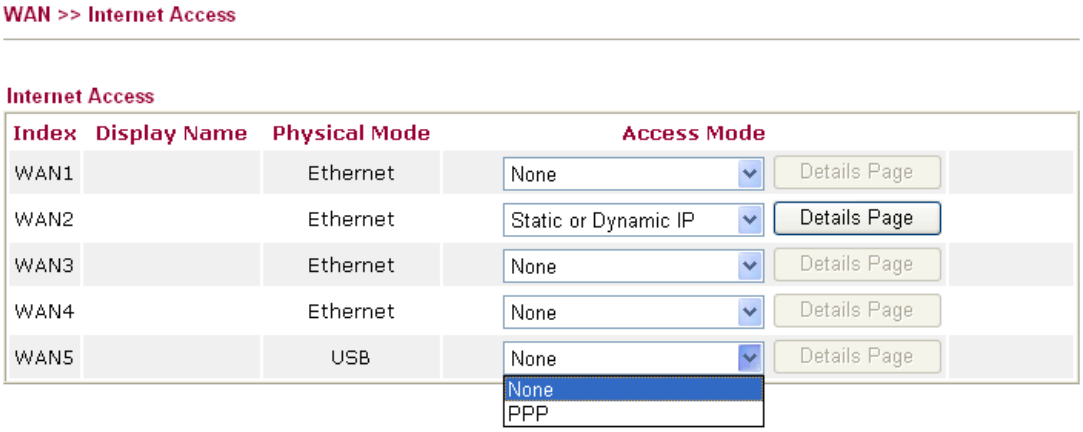
When any WAN disconnect – WAN5 will be activated when any WAN interface disconnects.

When all WAN disconnect – WAN5 will be activated when all the WAN interfaces disconnect.

4.1.3 Internet Access

For the router supports multi-WAN function, the users can set different WAN settings (for WAN1/WAN2/WAN3/WAN4/WAN5) for Internet Access. Due to different Physical Mode of WAN interface, the Access Mode for these connections also varies. Refer to the following figures.





Index Display the WAN interface.

Display Name It shows the name of the WAN1/WAN2/WAN3/WAN4/WAN5 that entered in general setup.

Physical Mode It shows the physical connection for WAN1-WAN4 (Ethernet) /WAN5 (3G USB Modem) according to the real network

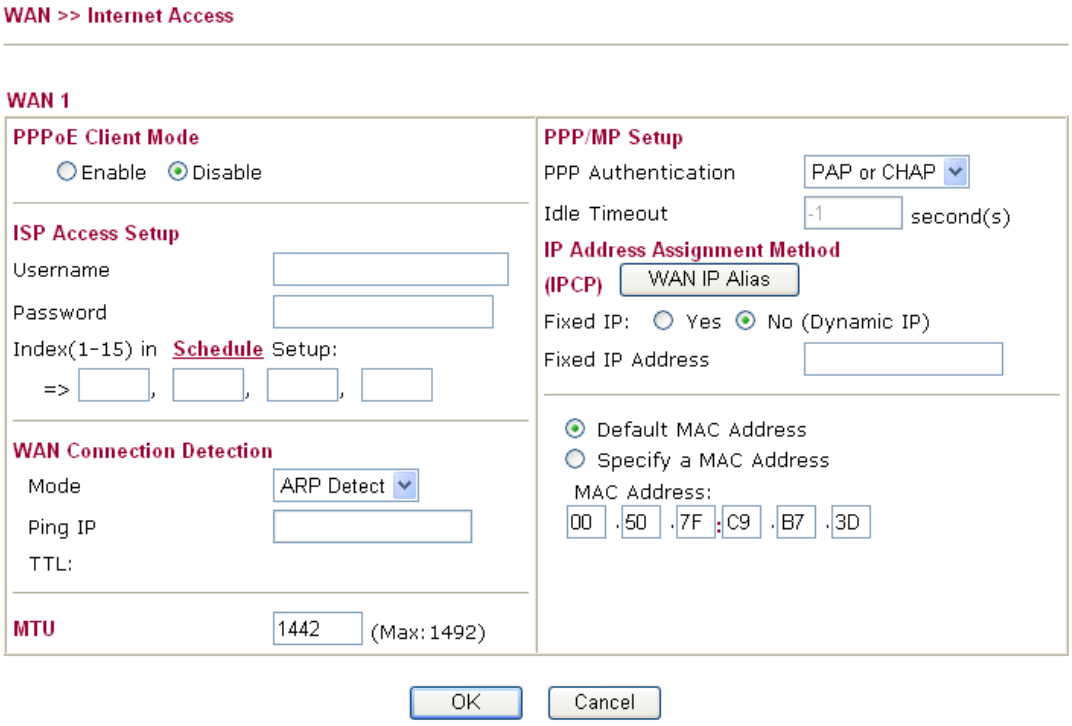
connection.

Access Mode Use the drop down list to choose a proper access mode. The details page of that mode will be popped up. If not, click **Details Page** for accessing the page to configure the settings.

Details Page This button will open different web page according to the access mode that you choose in WAN interface

Details Page for PPPoE in WAN1 ~ WAN4

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



PPPoE Client Mode 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.

ISP Access Setup Enter your allocated username, password and authentication parameters according to the information provided by your ISP.

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

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

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 **Application >>Schedule** web page and you can use the number that you have set in that web page.

WAN Connection Detection Such function allows you to verify whether network connection is alive or not through ARP Detect or Ping Detect.

Mode – Choose **ARP Detect** or **Ping Detect** for the system to

execute for WAN detection.

Ping IP – If you choose Ping Detect as detection mode, you have to type IP address in this field for pinging.

TTL (Time to Live) – Displays value for your reference. TTL value is set by telnet command.

PPP/MP Setup

PPP Authentication – Select **PAP only** or **PAP or CHAP** for PPP. If you want to connect to Internet all the time, you can check **Always On**.

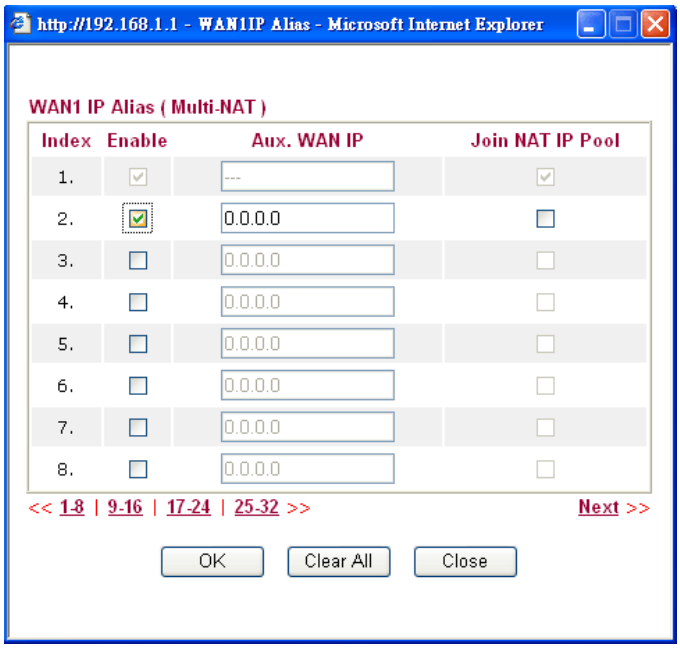
Idle Timeout – Set the timeout for breaking down the Internet after passing through the time without any action.

IP Address Assignment Method (IPCP)

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 **32** public IP addresses other than the current one you are using.

Type the additional WAN IP address and check the Enable box. Then click OK to exit the dialog.



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.

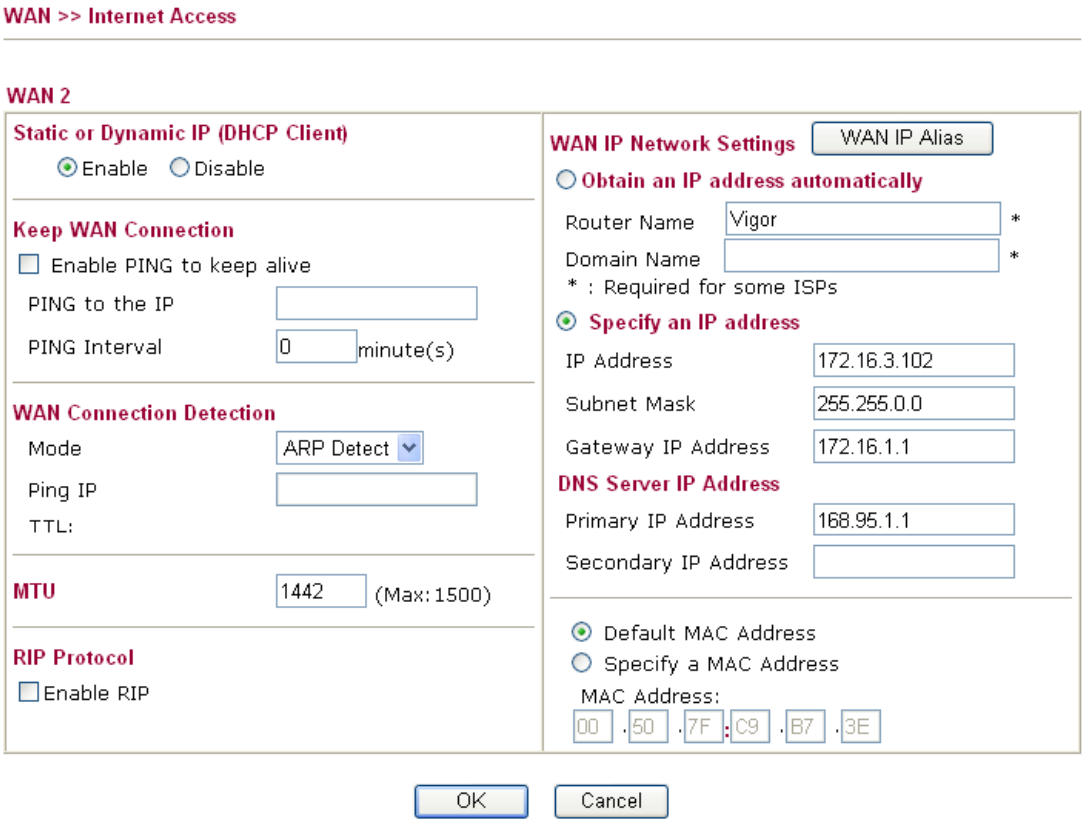
Specify a MAC Address – Type the MAC address for the router manually.

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

Details Page for Static or Dynamic IP in WAN1 ~ WAN4

For static IP mode, you usually receive a fixed public IP address or a public subnet, namely multiple public IP addresses from your DSL or Cable ISP service providers. In most cases, a Cable service provider will offer a fixed public IP, while a DSL service provider will offer a public subnet. If you have a public subnet, you could assign an IP address or many IP address to the WAN interface.

To use **Static or Dynamic IP** as the accessing protocol of the internet, please choose **Static or Dynamic IP** mode from **Internet Access** menu. The following web page will be shown.



Static or Dynamic IP — 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.

Keep WAN Connection — Normally, this function is designed for Dynamic IP environments because some ISPs will drop connections if there is no traffic within certain periods of time. Check **Enable PING to keep alive** box to activate this function.

PING to the IP - If you enable the PING function, please specify the IP address for the system to PING it for keeping alive.

PING Interval - Enter the interval for the system to execute the PING operation.

WAN Connection Detection — Such function allows you to verify whether network connection is alive or not through ARP Detect or Ping Detect.

Mode – Choose **ARP Detect** or **Ping Detect** for the system to execute for WAN detection.

Ping IP – If you choose Ping Detect as detection mode, you

have to type IP address in this field for pinging.

TTL (Time to Live) – Displays value for your reference. TTL value is set by telnet command.

MTU

It means Max Transmit Unit for packet. The default setting is 1442.

RIP Protocol

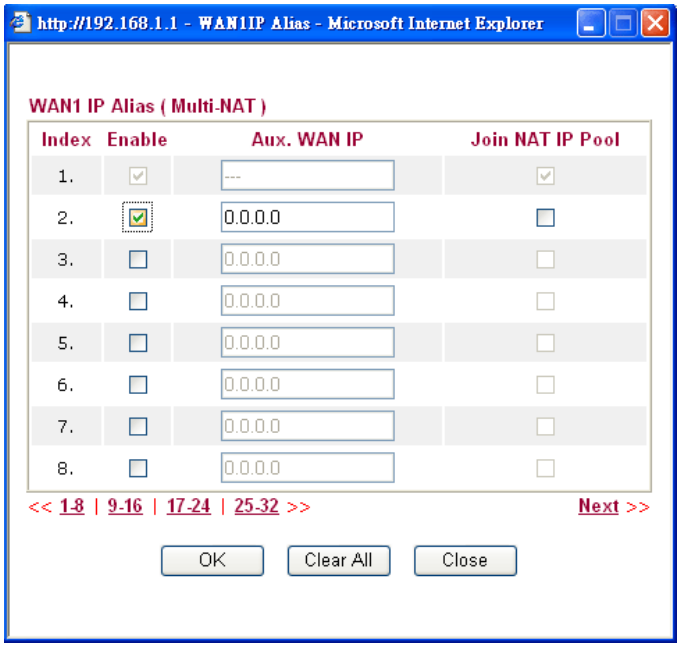
Routing Information Protocol is abbreviated as RIP（RFC1058）specifying how routers exchange routing tables information. Click **Enable RIP** for activating this function.

WAN IP Network Settings

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 **32** public IP addresses other than the current one you are using.

Type the additional WAN IP address and check the Enable box. Then click OK to exit the dialog.



Obtain an IP address automatically – Click this button to obtain the IP address automatically if you want to use **Dynamic IP** mode.

Router Name: Type in the router name provided by ISP.

Domain Name: Type in the domain name that you have assigned.

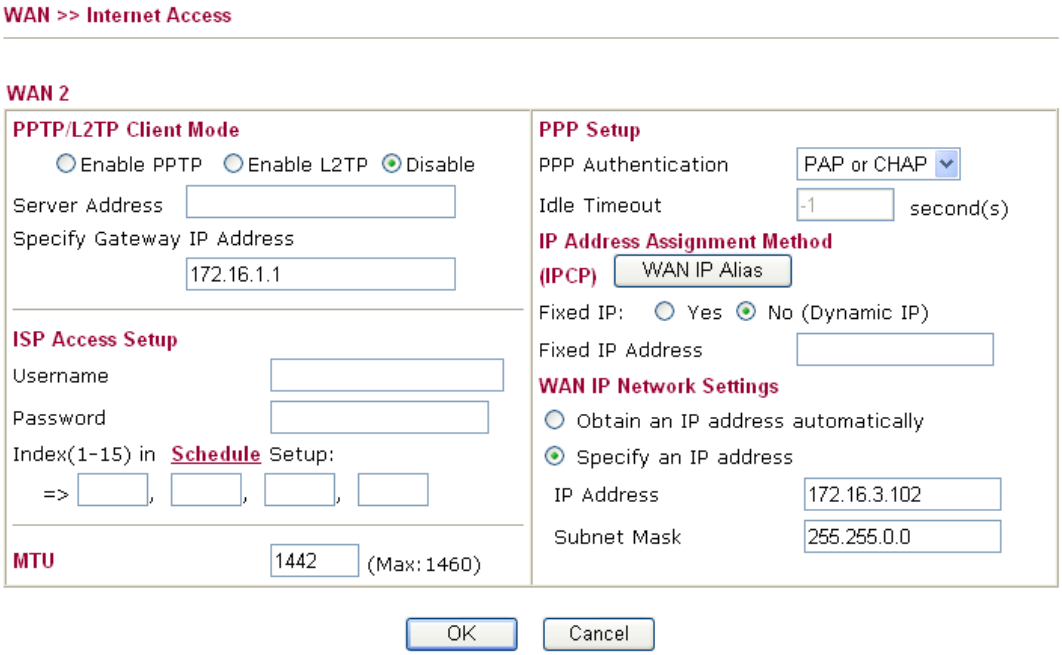
Specify an IP address – Click this radio button to specify some data if you want to use **Static IP** mode.

IP Address: Type the IP address.

	Subnet Mask*:* Type the subnet mask. ***Gateway IP Address****:* Type the gateway IP address. ***Default MAC Address*** : Click this radio button to use default MAC address for the router. ***Specify a MAC Address***: Some Cable service providers specify a specific MAC address for access authentication. In such cases you need to click the **Specify a MAC Address** and enter the MAC address in the MAC Address field.
DNS Server IP Address	Type in the primary IP address for the router if you want to use **Static IP** mode. If necessary, type in secondary IP address for necessity in the future.

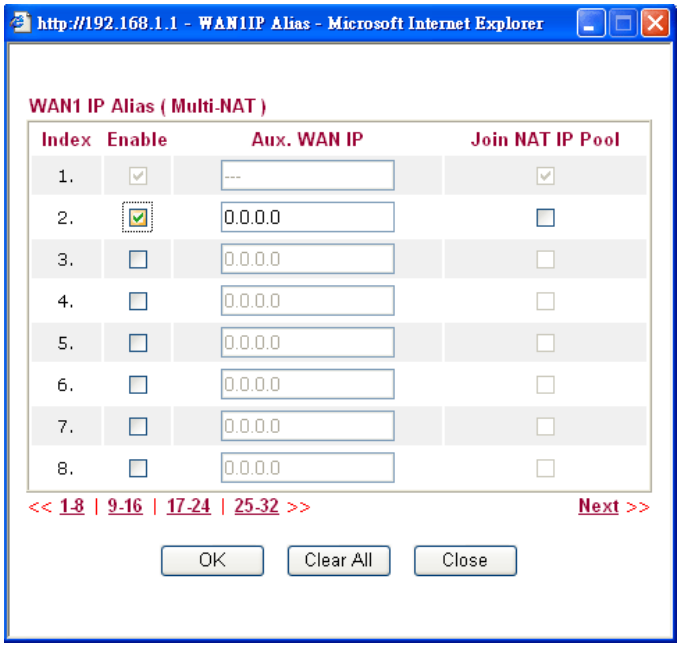
Details Page for PPTP/L2TP in WAN1 ~ WAN4

To use **PPTP/L2TP** as the accessing protocol of the internet, please choose **PPTP/L2TP** from **Internet Access** menu. The following web page will be shown.



PPTP/L2TP Client Mode	**Enable PPTP-** Click this radio button to enable a PPTP client to establish a tunnel to a DSL modem on the WAN interface. **Enable L2TP** - Click this radio button to enable a L2TP client to establish a tunnel to a DSL modem on the WAN interface. **Disable** – Click this radio button to close the connection through PPTP or L2TP. **Server Address** - Specify the IP address of the PPTP/L2TP server if you enable PPTP/L2TP client mode. **Specify Gateway IP Address** – Specify the gateway IP address for DHCP server.
ISP Access Setup	**Username** -Type in the username provided by ISP in this field. **Password** -Type in the password provided by ISP in this field. **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 **Application >>Schedule** web page and you can use the number that you have set in that web page.
MTU	It means Max Transmit Unit for packet. The default setting is 1442.
PPP Setup	**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.
IP Address Assignment Method(IPCP)	**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.



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

Fixed IP Address -Type a fixed IP address.

WAN IP Network Settings

Obtain an IP address automatically – Click this button to obtain the IP address automatically.

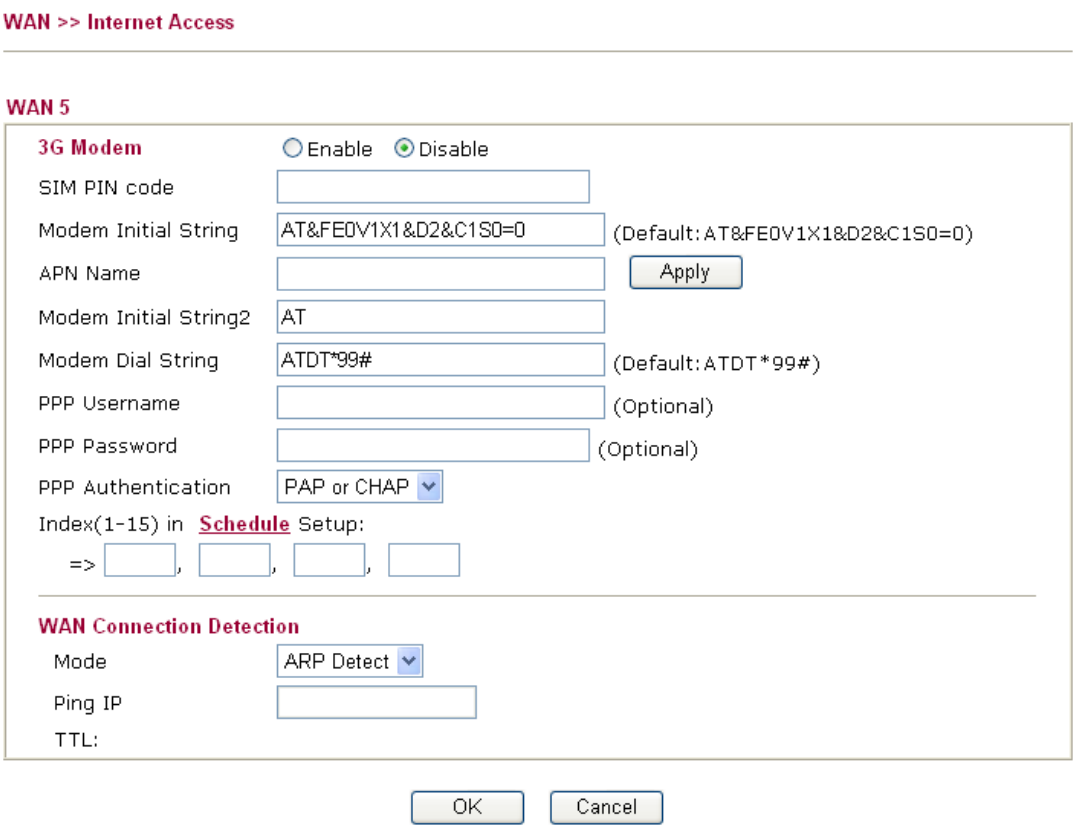
Specify an IP address – Click this radio button to specify some data.

IP Address – Type the IP address.

Subnet Mask – Type the subnet mask.

Details Page for PPP in WAN5

To use **PPP** (for 3G USB Modem) as the accessing protocol of the internet, please choose **Internet Access** from **WAN** menu. Then, select **PPP** mode for WAN5. The following web page will be shown.



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.
SIM PIN code	Type PIN code of the SIM card that will be used to access Internet.
Modem Initial String	Such value is used to initialize USB modem. Please use the default value. If you have any question, please contact to your ISP.
APN Name	APN means Access Point Name which is provided and required by some ISPs. Type the name and click Apply.
Modem Initial String2	The initial string 1 is shared with APN. In some cases, users may need another initial ***AT*** command to restrict 3G band or do any special settings.
Modem Dial String	Such value is used to dial through USB mode. Please use the default value. If you have any question, please contact to your ISP.
PPP Username	Type the PPP username (optional).
PPP Password	Type the PPP password (optional).
Index (1-15) in Schedule	You can type in four sets of time schedule for your request. All

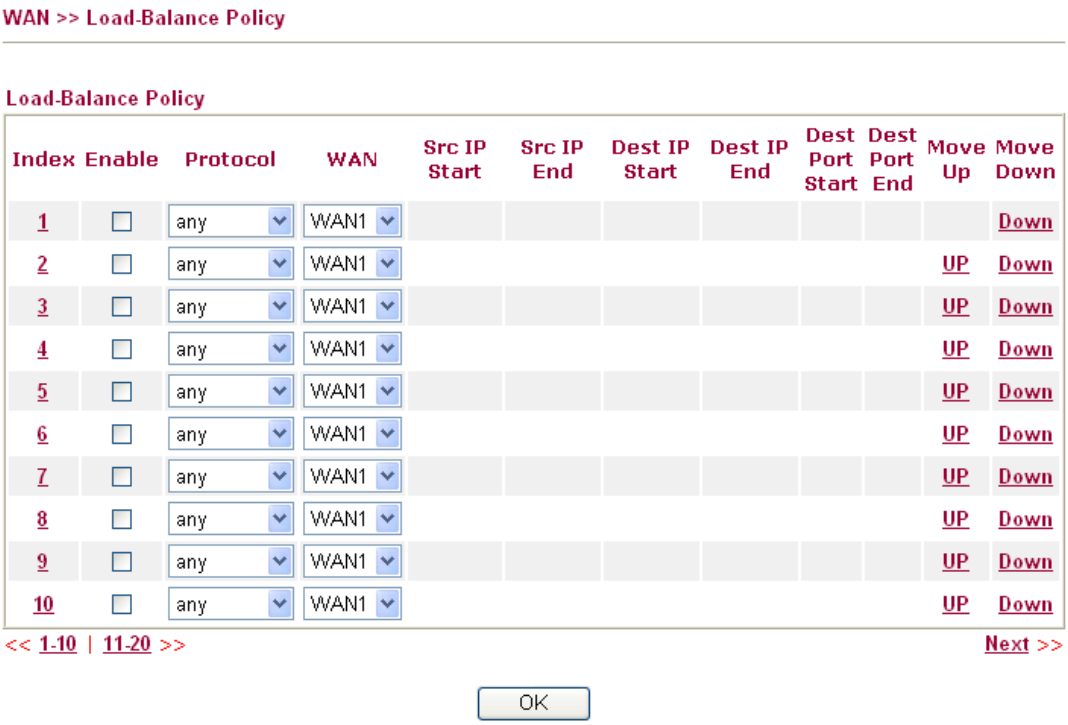
Setup	the schedules can be set previously in **Application >>Schedule** web page and you can use the number that you have set in that web page.
WAN Connection Detection	Such function allows you to verify whether network connection is alive or not through ARP Detect or Ping Detect. **Mode** – Choose **ARP Detect** or **Ping Detect** for the system to execute for WAN detection. **Ping IP** – If you choose Ping Detect as detection mode, you have to type IP address in this field for pinging. **TTL (Time to Live)** – Displays value for your reference. TTL value is set by telnet command.

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

4.1.4 Load-Balance Policy

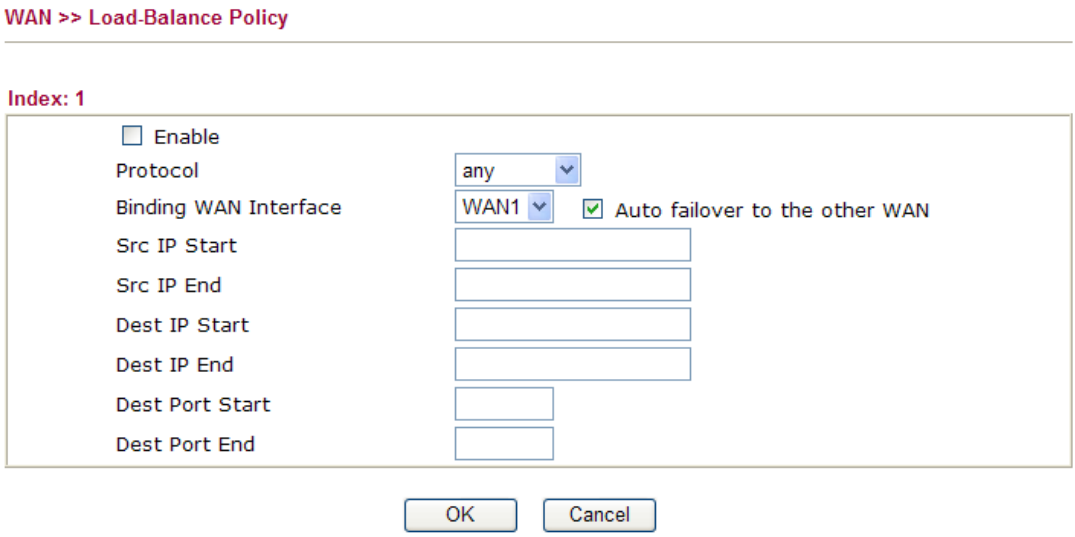
This router supports the function of load balancing. It can assign traffic with protocol type, IP address for specific host, a subnet of hosts, and port range to be allocated in WAN interface. The user can assign traffic category and force it to go to dedicate network interface based on the following web page setup. Twenty policies of load-balance are supported by this router.

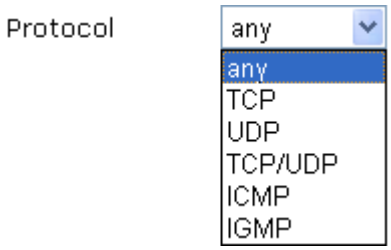
> **Note:** Load-Balance Policy is running only when more than two WAN interfaces are activated.



Index	Click the number of index to access into the load-balance policy configuration web page.
Enable	Check this box to enable this policy.
Protocol	Use the drop-down menu to change the protocol for the WAN interface.
WAN	Use the drop-down menu to change the WAN interface.
Src IP Start	Displays the IP address for the start of the source IP
Src IP End	Displays the IP address for the end of the source IP.
Dest IP Start	Displays the IP address for the start of the destination IP.
Dest IP End	Displays the IP address for the end of the destination IP.
Dest Port Start	Displays the IP address for the start of the destination port.
Dest Port End	Displays the IP address for the end of the destination port.
Move UP/Move Down	Use **Up** or **Down** link to move the order of the policy.

Click **Index 1** to access into the following page for configuring load-balance policy.



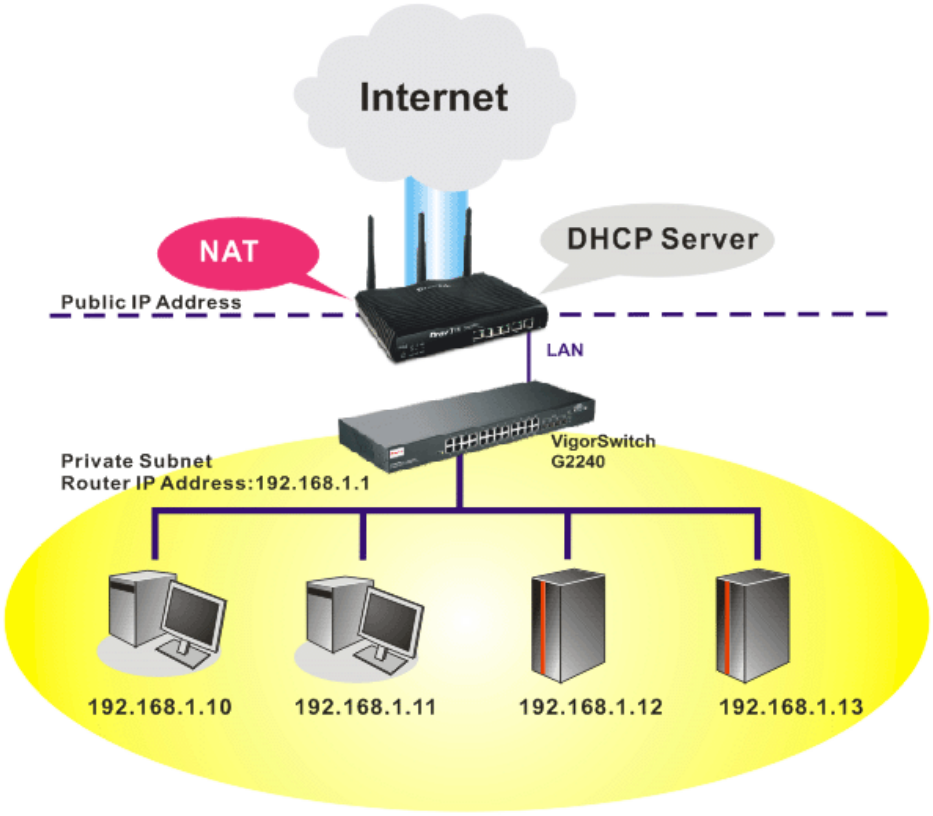
Enable	Check this box to enable this policy.
Protocol	Use the drop-down menu to choose a proper protocol for the WAN interface. 
Binding WAN interface	Choose the WAN interface (WAN1 / WAN2 / WAN3 / WAN4 / WAN5) for binding. **Auto failover to other WAN** – Check this button to lead the data passing through other WAN automatically when the selected WAN interface is failover.
Src IP Start	Type the source IP start for the specified WAN interface.
Src IP End	Type the source IP end for the specified WAN interface. If this field is blank, it means that all the source IPs inside the LAN will be passed through the WAN interface.
Dest IP Start	Type the destination IP start for the specified WAN interface.
Dest IP End	Type the destination IP end for the specified WAN interface. If this field is blank, it means that all the destination IPs will be passed through the WAN interface.
Dest Port Start	Type the destination port start for the destination IP.
Dest Port End	Type the destination port end for the destination IP. If this field is blank, it means that all the destination ports will be passed through the WAN interface.

4.2 LAN

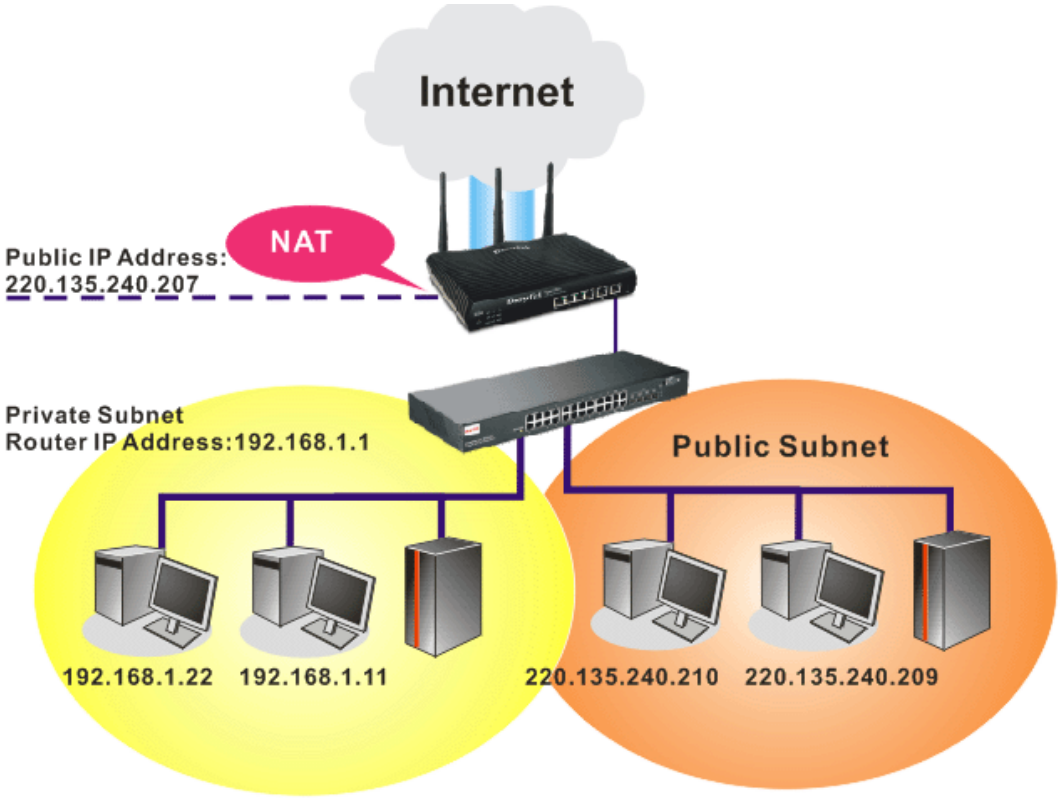
Local Area Network (LAN) is a group of subnets regulated and ruled by router. The design of network structure is related to what type of public IP addresses coming from your ISP.

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)

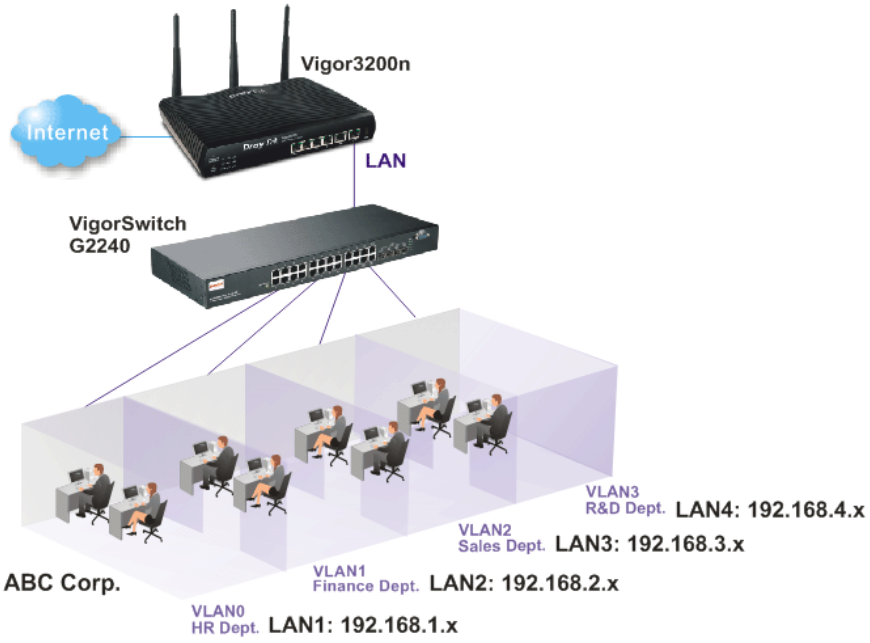
Vigor router will exchange routing information with neighboring routers using the RIP to accomplish IP routing. This allows users to change the information of the router such as IP address and the routers will automatically inform for each other.

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 and Rate Control

You can group local hosts by physical port 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.

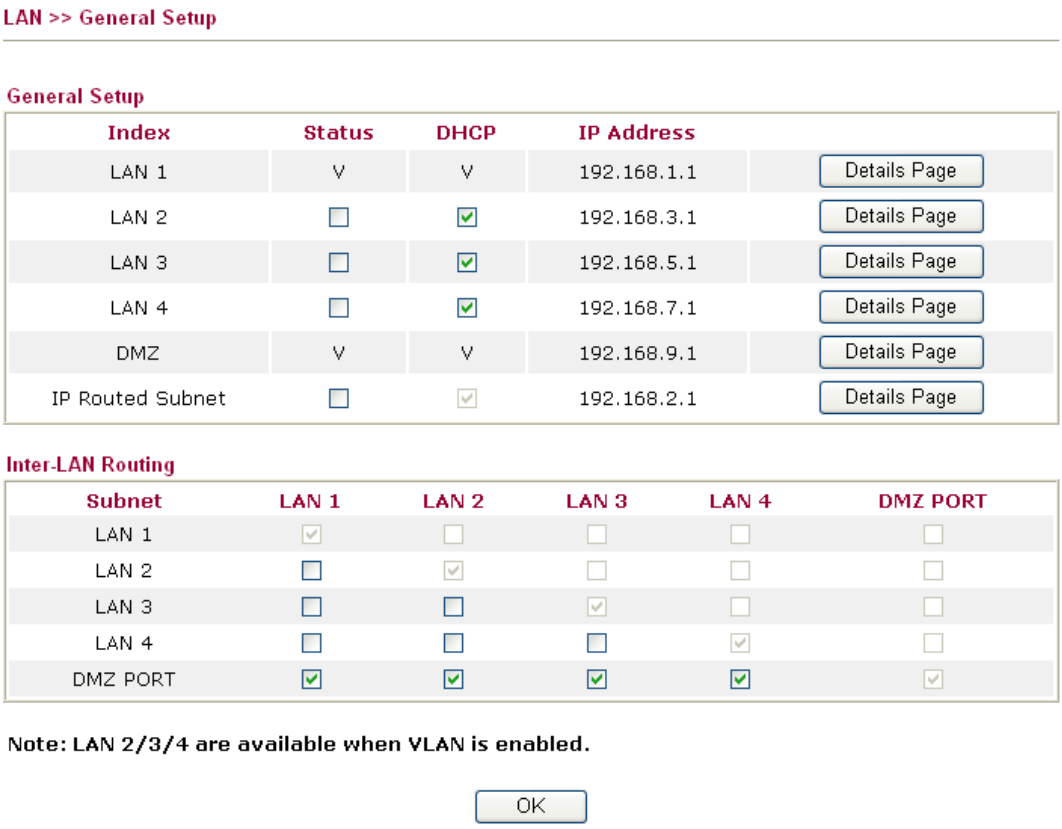


4.2.2 General Setup

This page provides you the general settings for LAN. Vigor3200 series provides four LANs, one DMZ and one IP Routed Subnet.

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

There are four subnets provided by the router which allow users to divide groups into different subnets (LAN1 – LAN4). In addition, different subnets can link for each other by configuring Inter-LAN Routing. At present, LAN1 setting is fixed with NAT mode only. LAN2 – LAN4 can be operated under NAT or Route mode. IP Routed Subnet can be operated under Route mode.



General Setup----- Allow to configure settings for each subnet respectively.

Index Display all of the LAN items, DMZ and IP Routed Subnet.

Status Check the box to enable such LAN configuration. Basically, LAN1 status is enabled in default. LAN2, LAN3, LAN4 and IP Routed Subnet can be observed by checking the box of **Status**.

DHCP Check the box to enable DHCP server for such LAN configuration. LAN1 is configured with DHCP in default. If required, please check the DHCP box for each LAN.

IP Address Display the IP address of the LAN configuration. Display the IP address for each LAN item. Such information is set in default and you can not modify it.

Details Page Click it to access into the setting page. Each LAN will have different LAN configuration page. **Each LAN must be configured in different subnet.**

Inter-LAN Routing --- Check the box to allow to link or route two subnets.

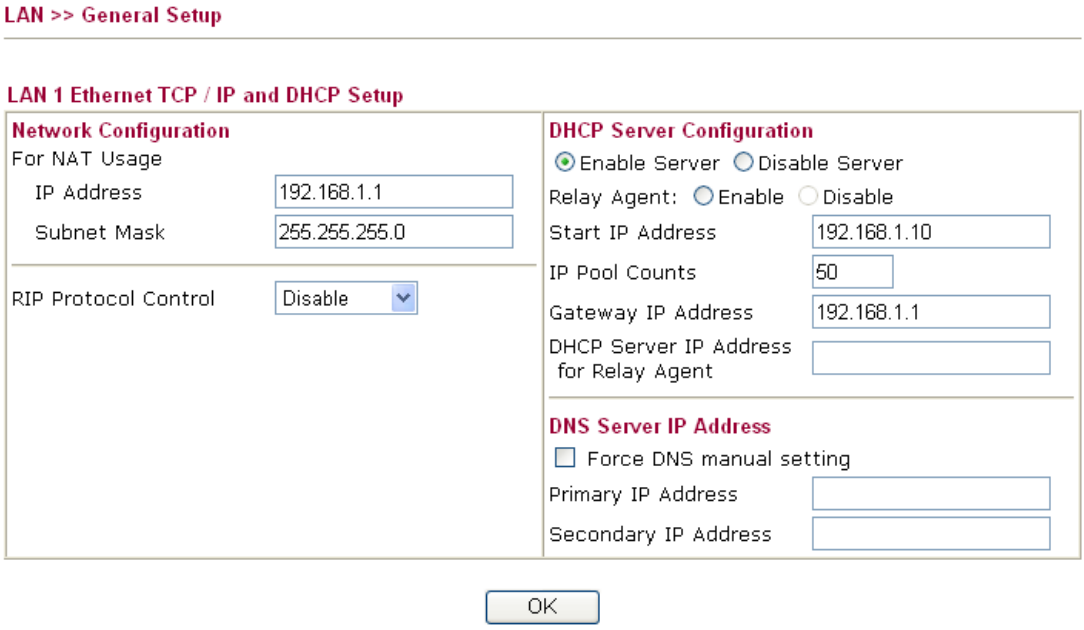
Subnet Display four LANs and one DMZ PORT available for routing.

LAN 1 ~ LAN 4, DMZ PORT Check the box to make the routing among LANs.

To configure LAN 1 ~ LAN 4, DMZ or IP Routed Subnet, simply click **Details Page** to open the settings page.

LAN 1

LAN1 is the default configuration for basic host connection.



Network Configuration

Set IP address and Subnet Mask for clients connected via LAN1.

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)

RIP Protocol Control

Disable deactivates the RIP protocol. It will lead to a stoppage of the exchange of routing information between routers. (Default)

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.

Relay Agent - Specify which subnet that DHCP server is located the relay agent should redirect the DHCP request to.

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.

DHCP Server IP Address for Relay Agent - Set the IP address of the DHCP server you are going to use so the Relay Agent can help to forward the DHCP request to the DHCP server.

DNS Server IP Address

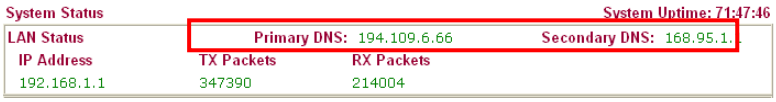
DNS stands for Domain Name System. Every Internet host must have a unique IP address, also they may have a human-friendly, easy to remember name such as www.yahoo.com. The DNS server converts the user-friendly name into its equivalent IP address.

Force DNS manual setting - Force Vigor router to use DNS servers in this page instead of DNS servers given by the Internet Access server (PPPoE, PPTP, L2TP or DHCP server).

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:

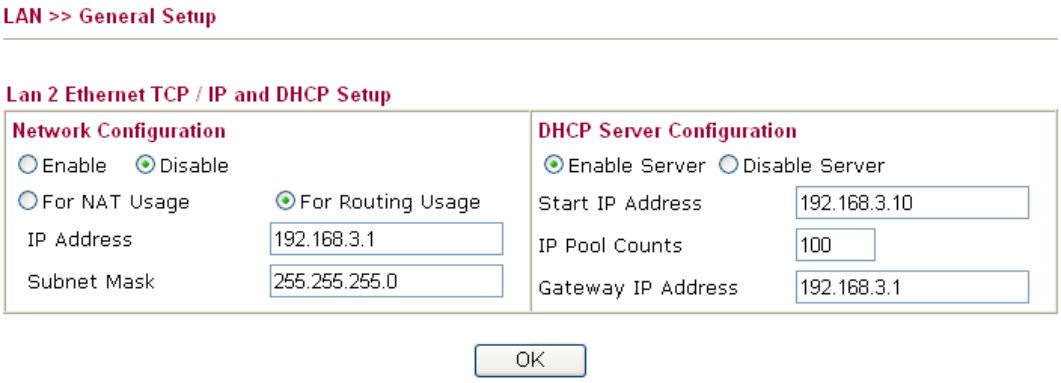


If both the Primary IP and Secondary IP Address fields are left empty, the router will assign its own IP address to local users as a DNS proxy server and maintain a DNS cache.

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.

LAN 2, LAN 3, LAN 4

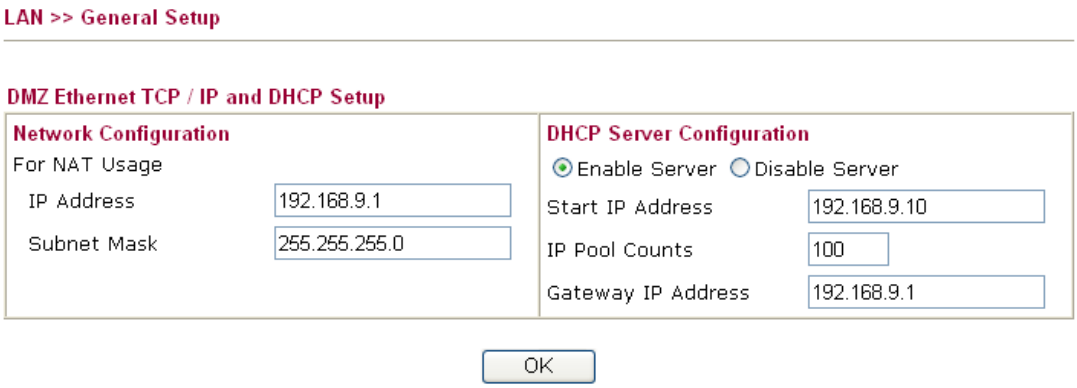
With the multi-subnet feature offered by Vigor router, LAN2 ~ LAN4 are used for different subnets.



Network Configuration	**Enable** – enable the configuration for such LAN. **Disable** – disable the configuration for such LAN.
For NAT Usage	Click this item to invoke NAT usage.
For Routing Usage	Click this item to invoke Routing usage.
	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.

DMZ

DMZ port setting is used for connecting host in DMZ.



Network Configuration

Set IP address and Subnet Mask for clients connected via DMZ port.

For NAT Usage

IP Address - Type in private IP address for connecting to a local private network (Default: 192.168.9.1).

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.

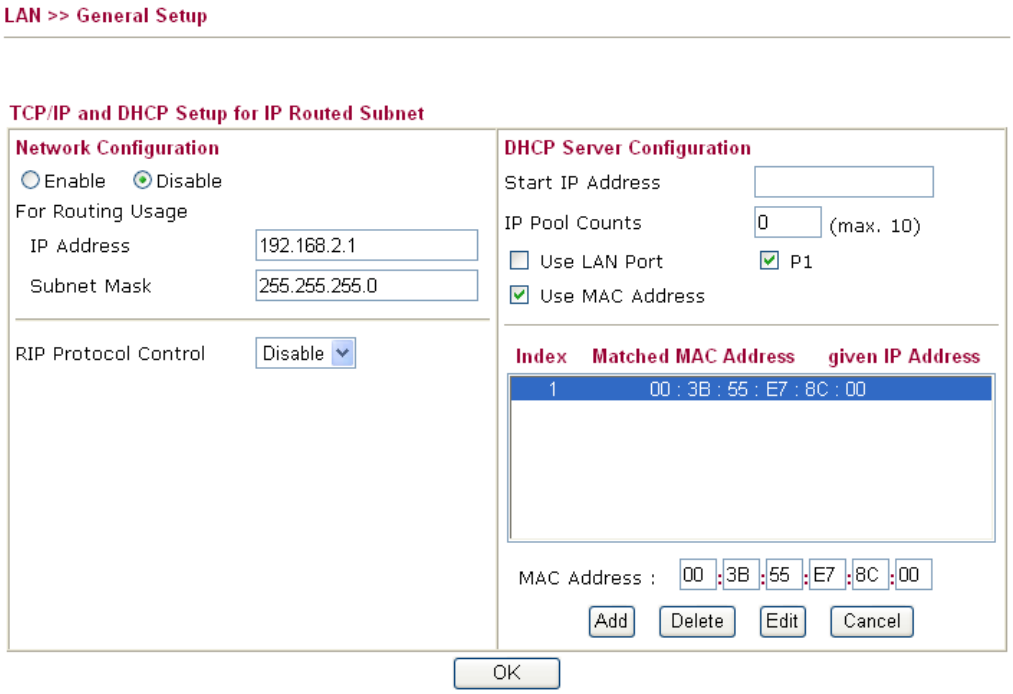
Start IP Address - Enter a value of the IP address pool for the DHCP server to start with when issuing IP addresses. If the 1st IP address of your router is 192.168.9.10, the starting IP address must be 192.168.9.11 or greater, but smaller than 192.168.1.254.

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.

IP Routed Subnet

Vigor router can serve as a DHCP server to route the request coming from LAN PC.



Network Configuration

Enable – enable the configuration for such LAN.

Disable – disable the configuration for such LAN.

IP Address - Type in private IP address for connecting to a local private network (Default: 192.168.2.1).

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

RIP Protocol - Disable deactivates the RIP protocol. It will lead to a stoppage of the exchange of routing information between routers.

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.

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 0 and the maximum is 10.

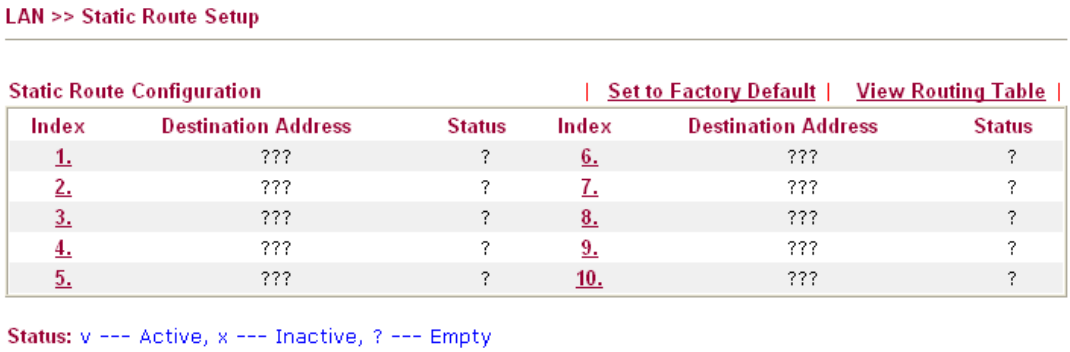
Use LAN Port – Any PC asked for LAN IP address assigned by the DHCP server will send the request through the LAN port of the router.

Use MAC Address - IP Routed Subnet will automatically assign the subnet for incoming DHCP with listed MAC address. Only the PC which matches the MAC address added can ask for LAN IP address assigned by DHCP server.

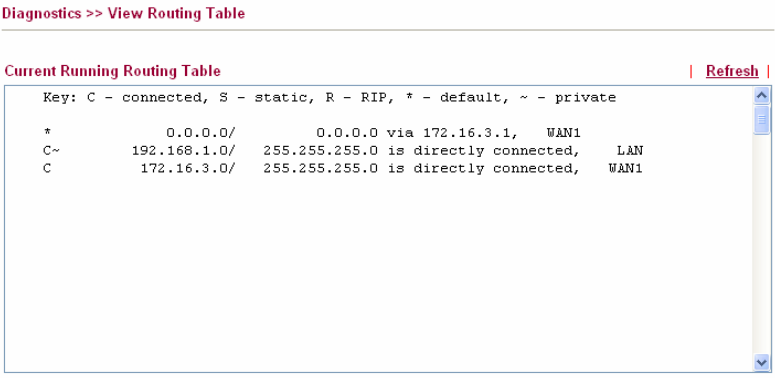
Add /Delete /Edit- Enter the MAC Address of the host one by one and click **Add** to create a list of hosts to be assigned, deleted or edited IP address from above pool. Set a list of MAC Address of the DHCP server which can help the router to assign the correct IP address of the correct subnet to the correct host.

4.2.3 Static Route

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



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.
Viewing Routing Table	Displays the routing table for your reference.

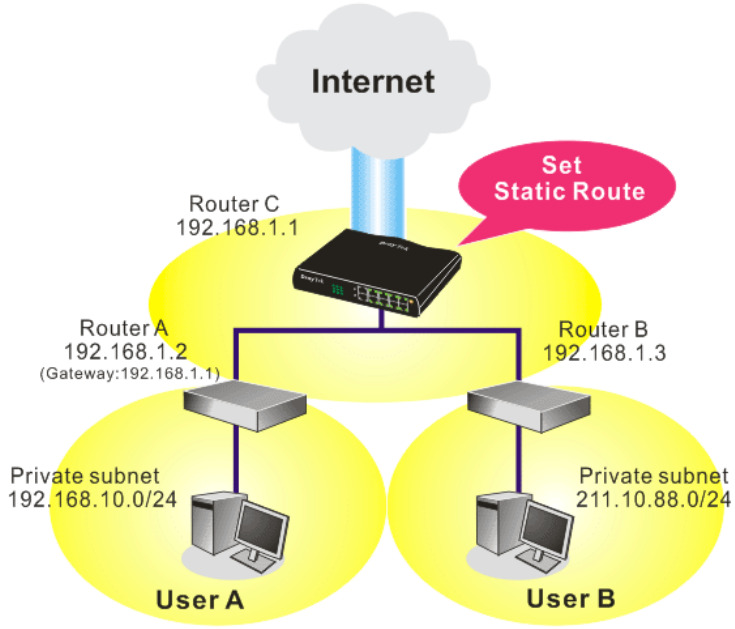


Add Static Routes to Private and Public Networks

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.

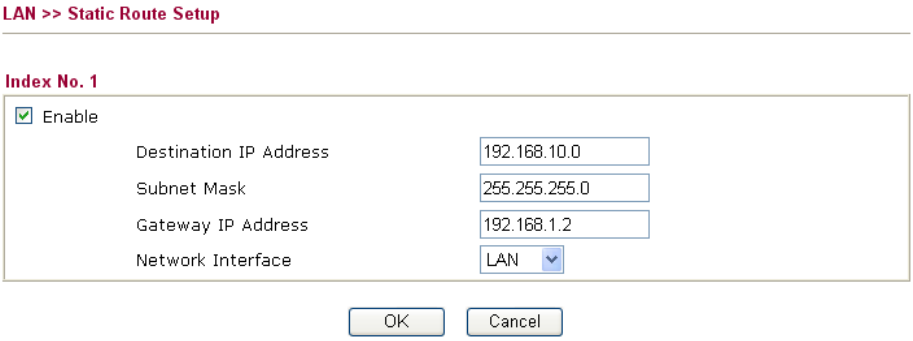
Before setting Static Route, user A cannot talk to user B for Router A can only forward recognized packets to its default gateway Main Router.



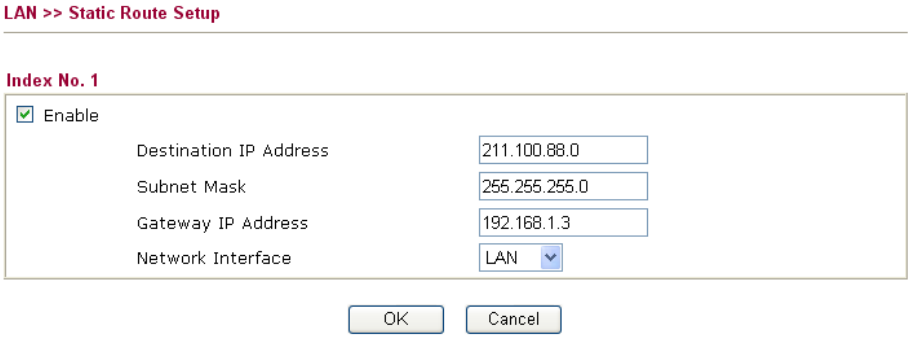
1. Go to **LAN** page and click **General Setup**, select 1st Subnet as the **RIP Protocol Control.** Then click the **OK** button.

> **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.

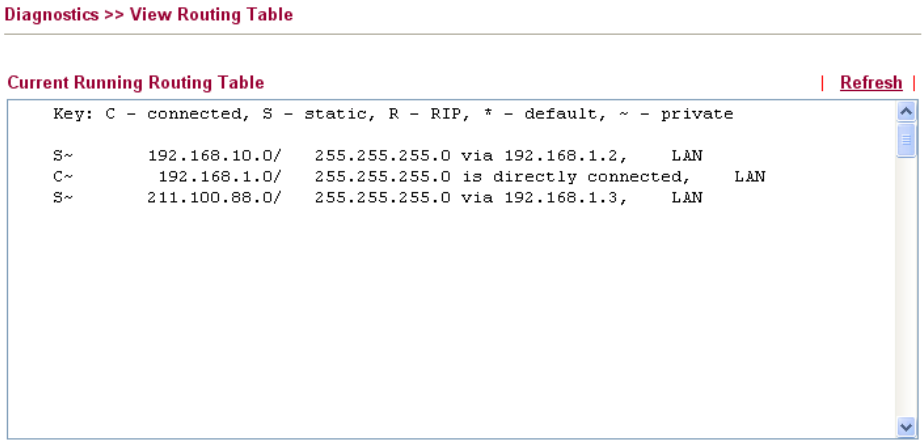
2. Click the **LAN - Static Route** and click on the **Index Number 1.** Check the **Enable** box. Please add a static route as shown below, which regulates all packets destined to 192.168.10.0 will be forwarded to 192.168.1.2. Click **OK**.



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.



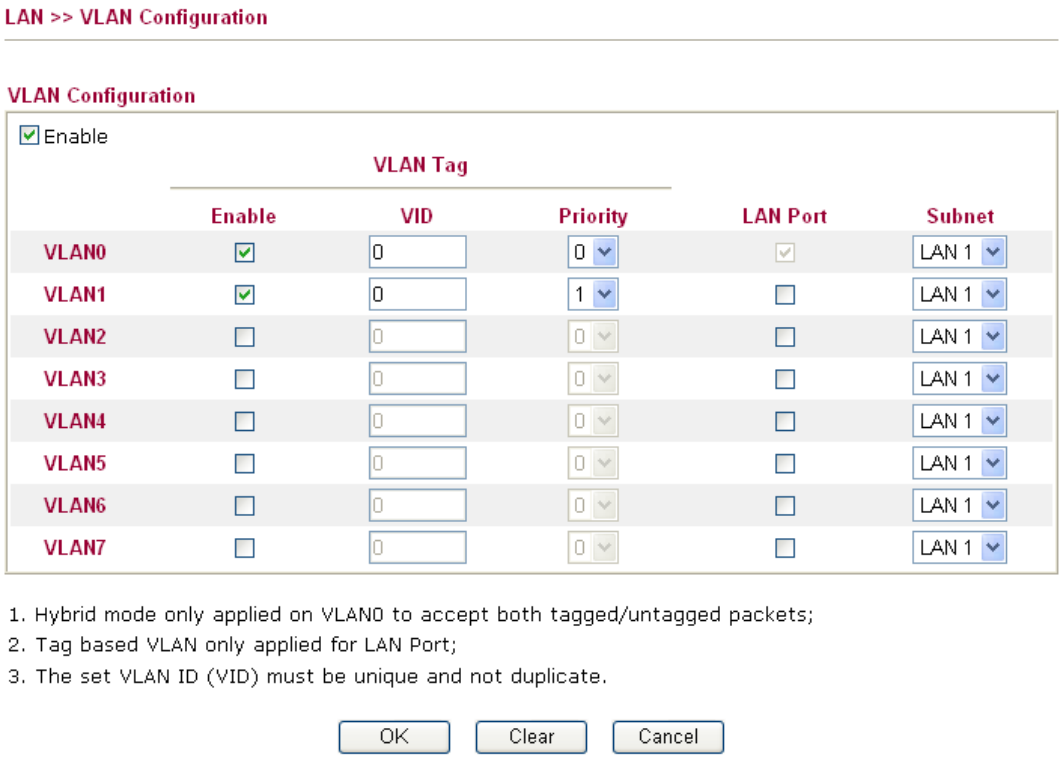
4. Go to **Diagnostics** and choose **Routing Table** to verify current routing table.



4.2.4 VLAN

Virtual LAN function provides you a very convenient way to manage subnets by grouping them.

Go to **LAN** page and select **VLAN**. The following page will appear. Click **Enable** to invoke VLAN function.



Enable — Check this box to enable VLAN configuration. The router will add specific VLAN tagging number to all packets on the WAN while sending them out.

Please type the tag value and specify the priority for the packets sending by LAN port.

VLAN Tag — **Enable** – Check this box to enable the VID and the Priority. The router will add specific VLAN number to all packets on LAN while sending them out.

VID — Type the value as the VLAN ID number. The range is form 0 to 4095.

Priority — Type the number for such VLAN. The range is from 0 to 7.

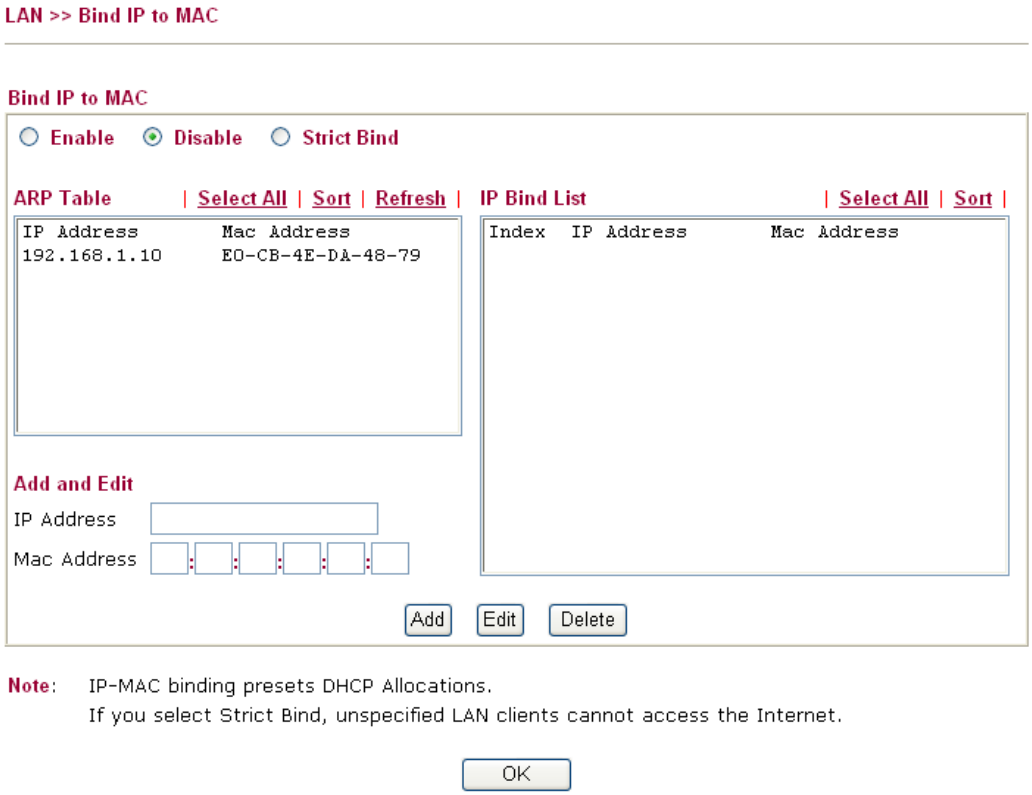
LAN Port — Check this box to make the VLAN settings (such as VID, priority, subnet) applying to the LAN port.

Subnet — Choose one of them to make the selected VLAN group mapping to specified subnet only. For example, LAN1 is specified for VLAN0 group. It means that PCs grouped under VLAN0 can get the IP address (es) that specified by the subnet.

4.2.5 Bind IP to MAC

This function is used to bind the IP and MAC address in LAN to have a strengthening control in network. When this function is enabled, all the assigned IP and MAC address binding together cannot be changed. If you modified the binding IP or MAC address, it might cause you not access into the Internet.

Click **LAN** and click **Bind IP to MAC** to open the setup page.



Enable	Click this radio button to invoke this function. However, IP/MAC which is not listed in IP Bind List also can connect to Internet.
Disable	Click this radio button to disable this function. All the settings on this page will be invalid.
Strict Bind	Click this radio button to block the connection of the IP/MAC which is not listed in IP Bind List.
ARP Table	This table is the LAN ARP table of this router. The information for IP and MAC will be displayed in this field. Each pair of IP and MAC address listed in ARP table can be selected and added to IP Bind List by clicking **Add** below.
Add and Edit	**IP Address** – Type the IP address that will be used for the specified MAC address. **Mac Address** – Type the MAC address that is used to bind with the assigned IP address.
Refresh	It is used to refresh the ARP table. When there is one new PC added to the LAN, you can click this link to obtain the newly ARP table information.
IP Bind List	It displays a list for the IP bind to MAC information.

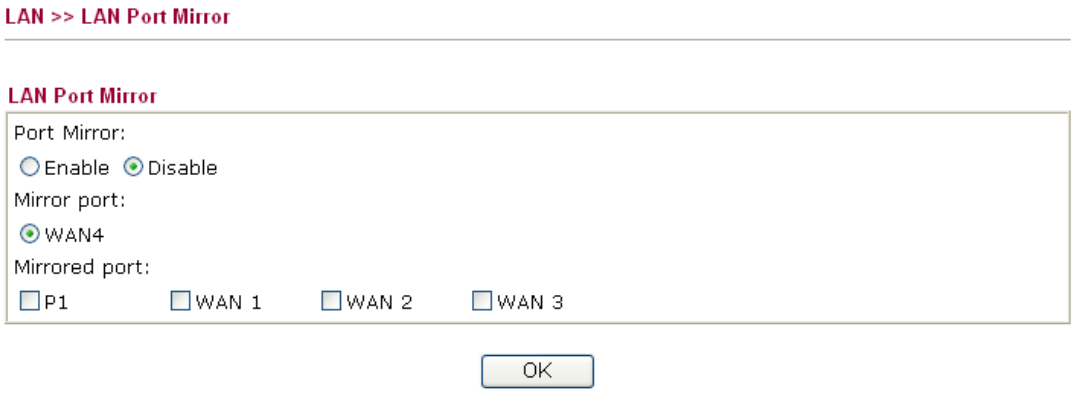
Add	It allows you to add the one you choose from the ARP table or the IP/MAC address typed in **Add and Edit** to the table of **IP Bind List**.
Edit	It allows you to edit and modify the selected IP address and MAC address that you create before.
Delete	You can remove any item listed in **IP Bind List**. Simply click and select the one, and click **Delete**. The selected item will be removed from the **IP Bind List**.

Note: Before you select **Strict Bind**, you have to bind one set of IP/MAC address for one PC. If not, no one of the PCs can access into Internet. And the web configurator of the router might not be accessed.

4.2.6 LAN Port Mirror

LAN Port mirror can be applied for the users in LAN. Generally speaking, this function copies traffic from one or more specific ports to a target port. This mechanism helps manager track the network errors or abnormal packets transmission without interrupting the flow of data access the network. By the way, user can apply this function to monitor all traffics which user needs to check.

There are some advantages supported in this feature. First, it is more economical without other detecting equipments to be set up. Second, it may be able to view traffic on one or more ports within a VLAN at the same time. Third, it can transfer all data traffics to be mirrored to one analyzer connect to the mirroring port. Last, it is more convenient and easy to configure in user's interface.



Port Mirror	Check **Enable** to activate this function. Or, check **Disable** to close this function.
Mirror Port	Select a port to view traffic sent from mirrored ports. At present, only WAN4 will be treated as mirror port.
Mirrored port	Select which ports (LAN port or WAN port) are necessary to be mirrored. P1 represents LAN port.

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:

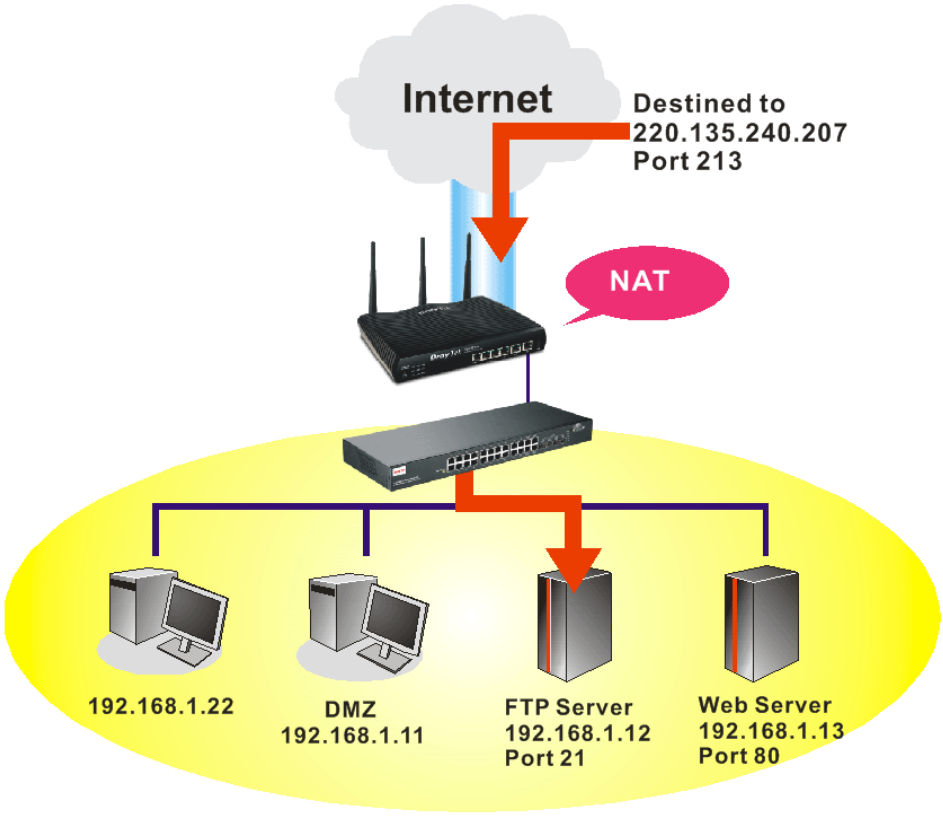
- **Save cost on applying public IP address and apply efficient usage of IP address.** NAT allows the internal IP addresses of local hosts to be translated into one public IP address, thus you can have only one IP address on behalf of the entire internal hosts.
- **Enhance security of the internal network 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.

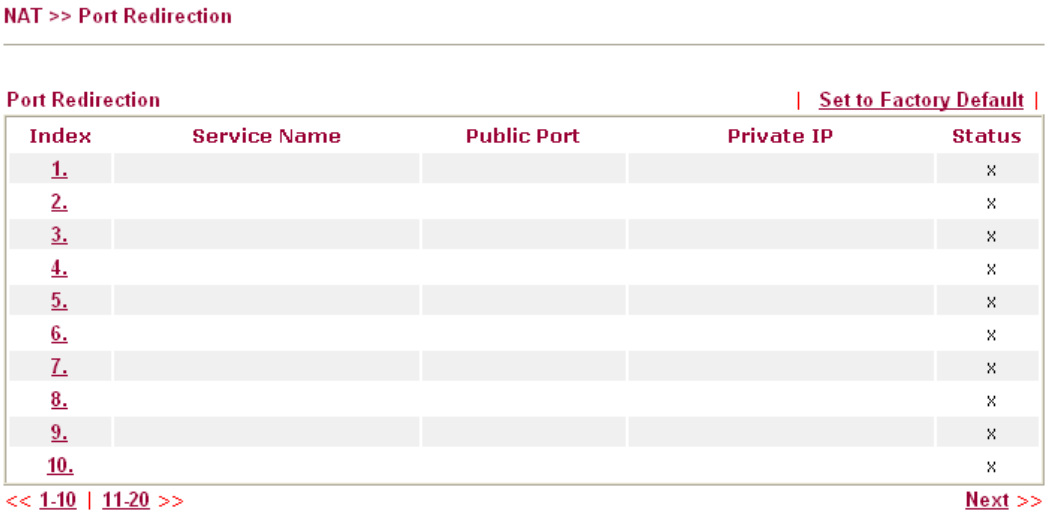
4.3.1 Port Redirection

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.

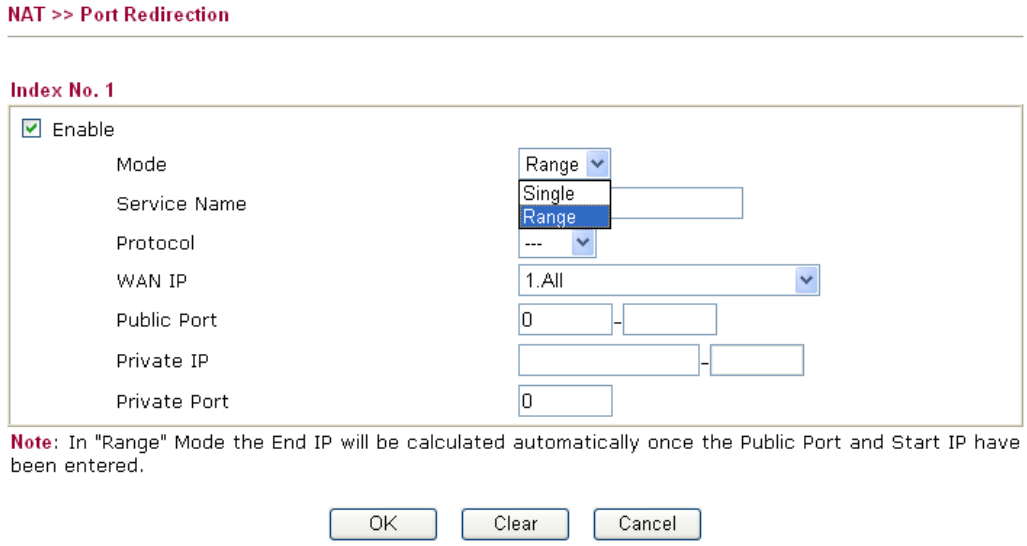


The port redirection can only apply to incoming traffic.

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.



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



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 Interface Select the WAN interface used for port redirection.

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.

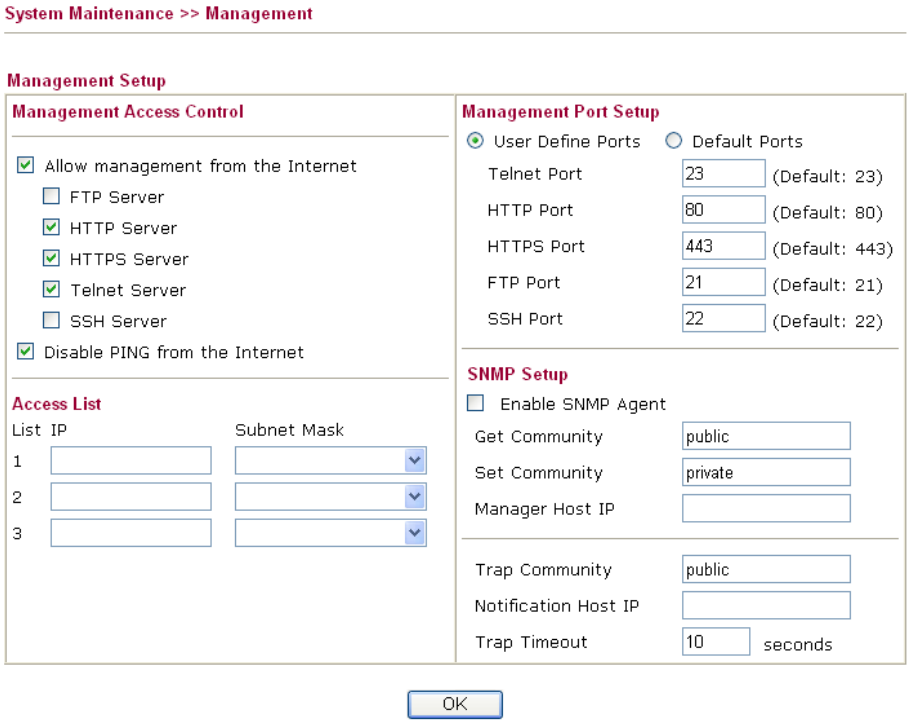
Private IP Specify the private IP address of the internal host providing the

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.

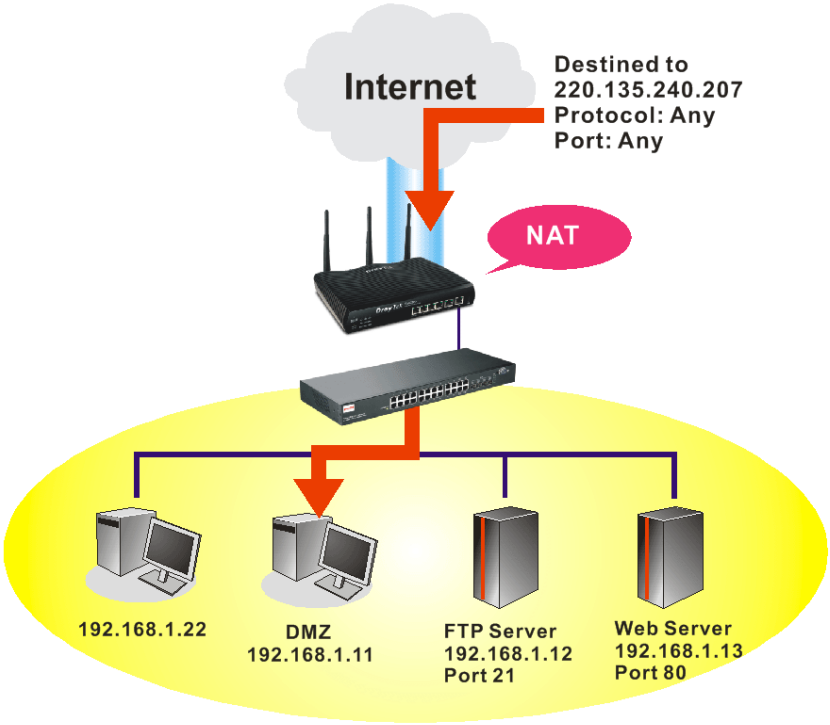
Note that the router has its own built-in services (servers) such as Telnet, HTTP and FTP etc. Since the common port numbers of these services (servers) are all the same, you may need to reset the router in order to avoid confliction.

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 Setup**. 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.



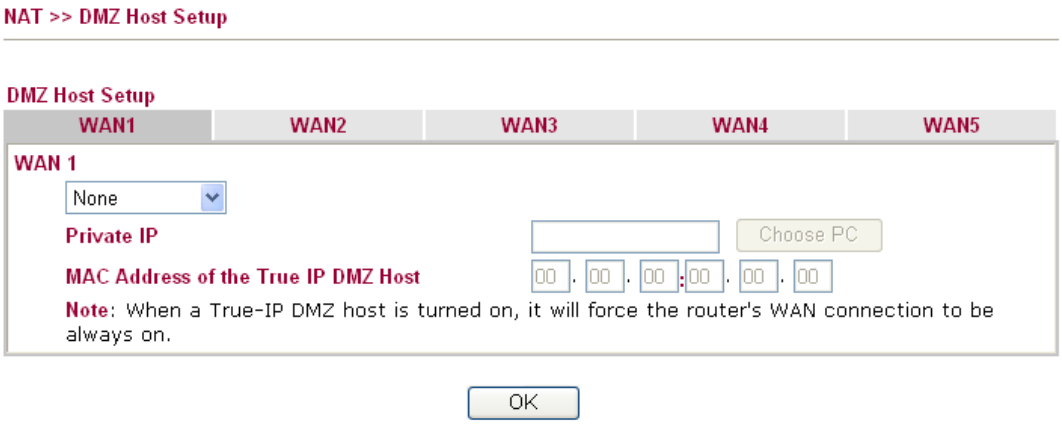
4.3.2 DMZ Host

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 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. You can set different DMZ host for each WAN interface. Click the WAN tab to switch into the configuration page for that WAN.

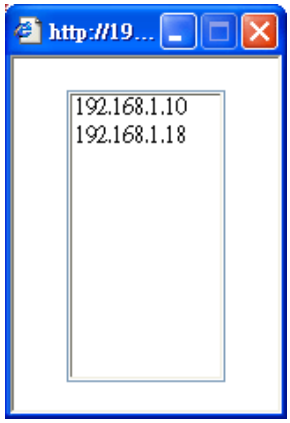


Enable Check to enable the DMZ Host function.

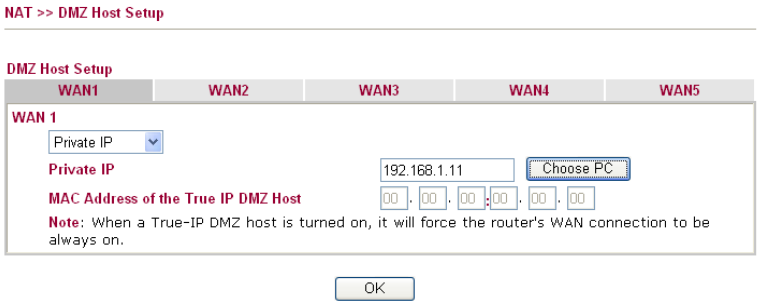
Private IP Enter the private IP address of the DMZ host, or click Choose PC

to select one.

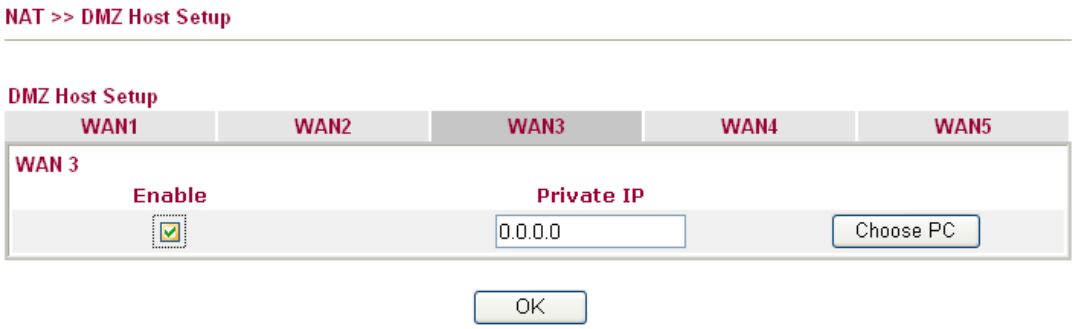
Choose PC Click this button and then a window will automatically pop up, as depicted below. The window consists of a list of private IP addresses of all hosts in your LAN network. Select one private IP address in the list to be the DMZ host.



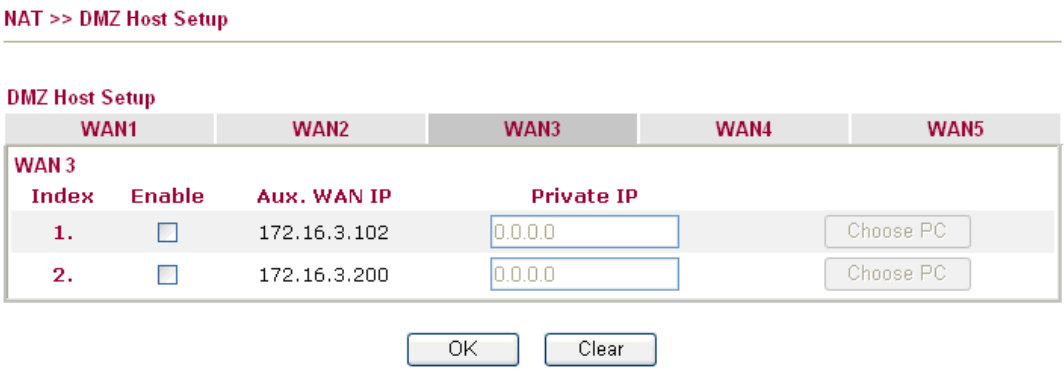
When you have selected one private IP from the above dialog, the IP address will be shown on the following screen. Click **OK** to save the setting.



DMZ Host for WAN2 ~ WAN5 are slightly different with WAN1. See the following figure.



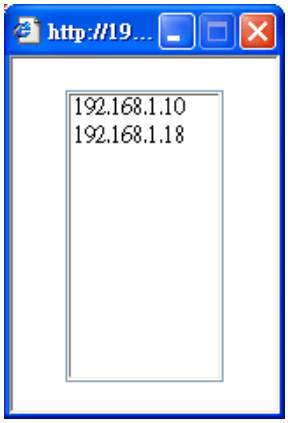
If you previously have set up **WAN Alias** for **PPPoE** or **Static or Dynamic IP** mode in WAN2/WAN3/WAN4/WAN5 interface**,** you will find them in **Aux. WAN IP** for your selection.



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.



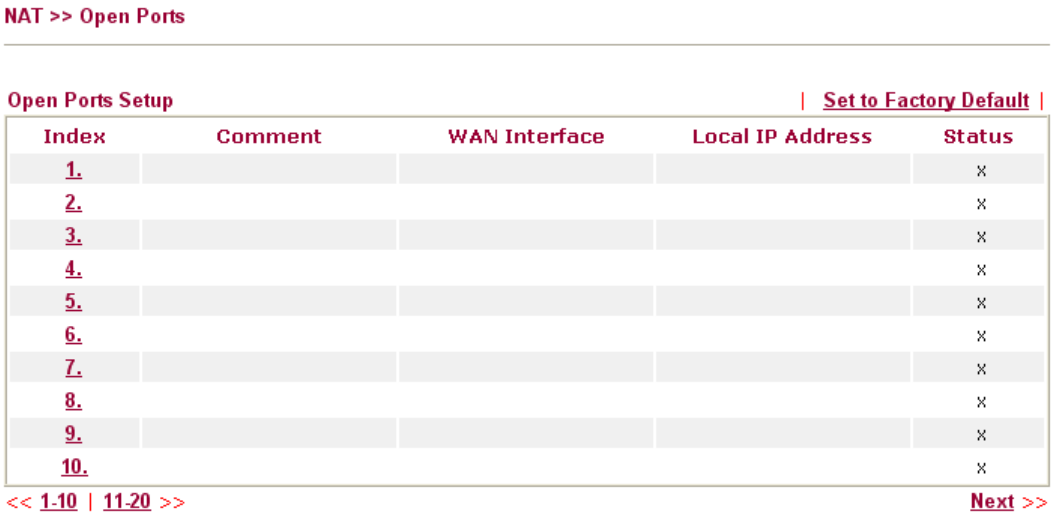
When you have selected one private IP from the above dialog, the IP address will be shown on the following screen. Click **OK** to save the setting.

4.3.3 Open Ports

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

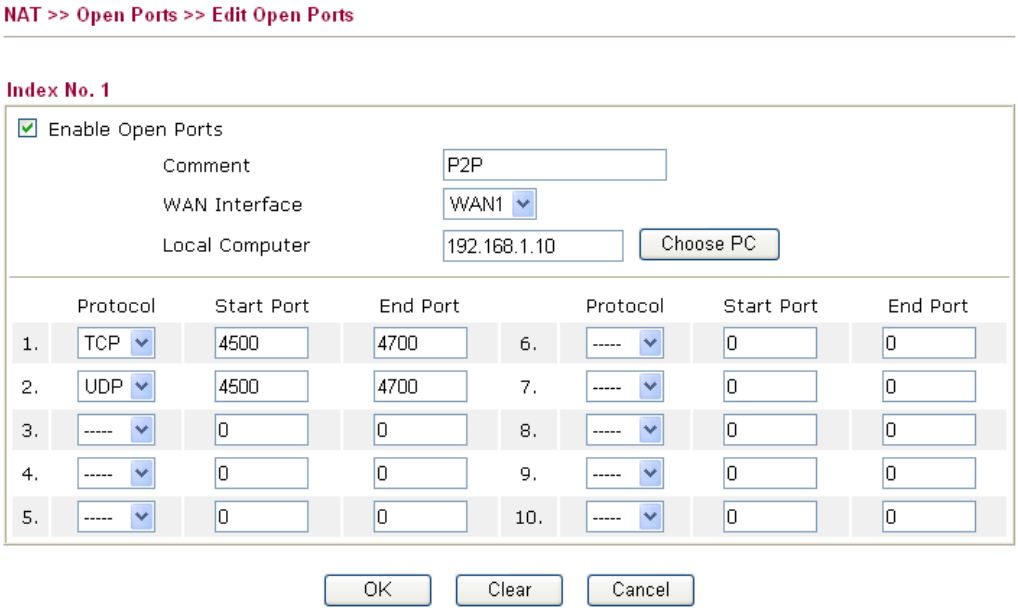
Common application of Open Ports includes P2P application (e.g., BT, KaZaA, Gnutella, WinMX, eMule and others), Internet Camera etc. Ensure that you keep the application involved up-to-date to avoid falling victim to any security exploits.

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



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.
WAN Interface	Display the WAN interface used by such index.
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.



Enable Open Ports	Check to enable this entry.
Comment	Make a name for the defined network application/service.
WAN IP	Specify the WAN IP address that will be used for this entry. This setting is available when WAN IP Alias is configured.
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:

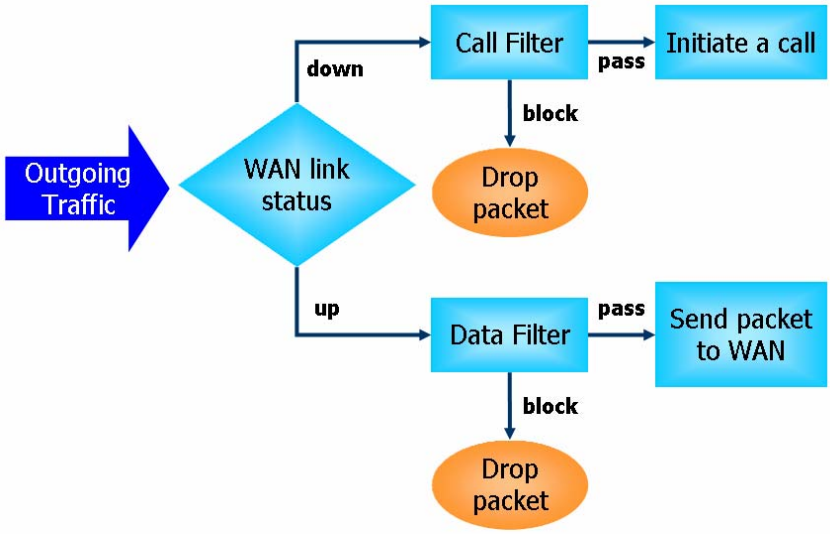
- User-configurable IP filter (Call Filter/ Data Filter).
- Stateful Packet Inspection (SPI): tracks packets and denies unsolicited incoming data
- Selectable Denial of Service (DoS) /Distributed DoS (DDoS) attacks protection

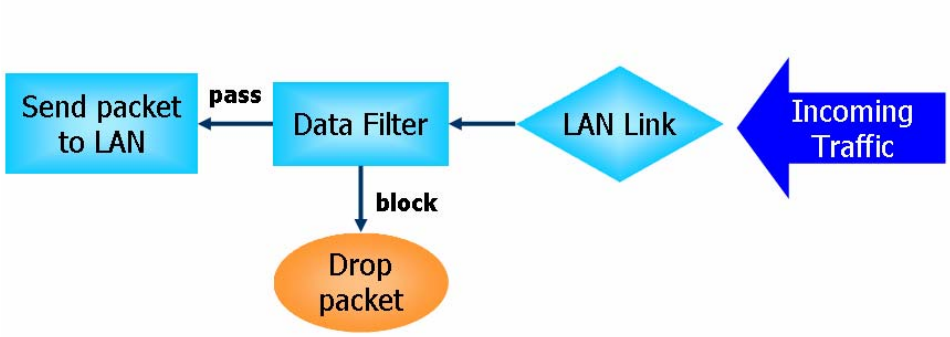
IP Filters

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.

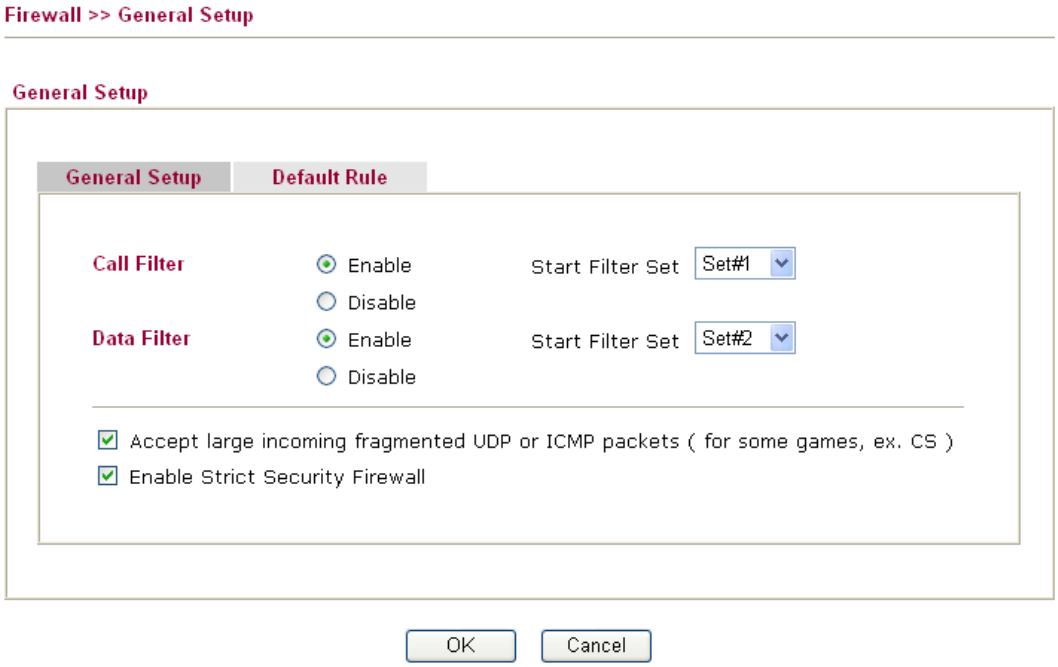
4.4.2 General Setup

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 Flag** settings, **Apply IP filter to VPN incoming packets**, and **Accept incoming fragmented UDP packets**.

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

General Setup Page

Such page allows you to enable / disable Call Filter and Data Filter, determine general rule for filtering the incoming and outgoing data.



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.

Accept large incoming… — 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**".

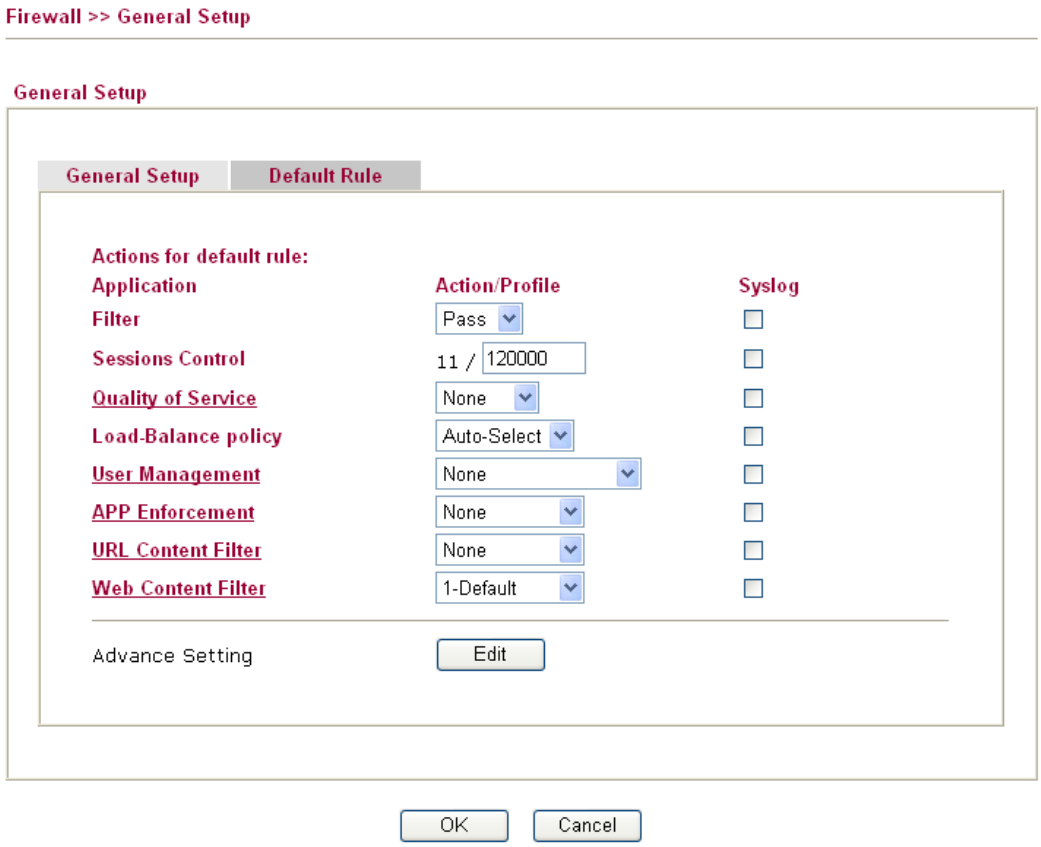
Enable Strict Security Firewall — For the sake of security, the router will execute strict security checking for data transmission.

Such feature is enabled in default. All the packets will be inspected by the web content filter server while transmitting through Vigor router. If the web content filter server does not make any response (pass or block) for the packets, Vigor

router's firewall will block the packets directly for security.

Default Rule Page

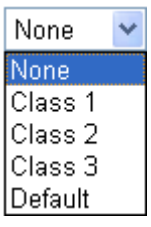
Such page allows you to choose filtering profiles including QoS, Load-Balance policy, WCF, APP Enforcement, URL Content Filter, AI/AV, AS, for data transmission via Vigor router.



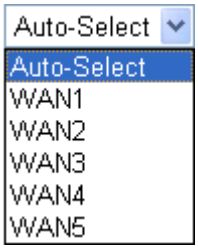
Filter Select **Pass** or **Block** for the packets that do not match with the filter rules.

Sessions Control The number typed here is the total sessions of the packets that do not match the filter rule configured in this page. The default setting is 60000.

Quality of Service Choose one of the QoS rules to be applied as firewall rule. For detailed information of setting QoS, please refer to the related section later.

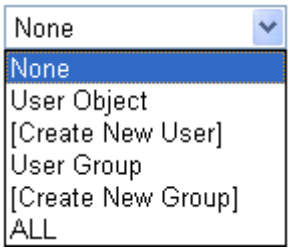


Load-Balance Policy Choose the WAN interface for applying Load-Balance Policy.



User Management

Such item is available only when **Rule-Based** is selected in User **Management>>General Setup**. The general firewall rule will be applied to the user/user group/all users specified here.



Note: When there is no user profile or group profile existed, **Create New User** or **Create New Group** item will appear for you to click to create a new one.

APP Enforcement

Select an **APP Enforcement** profile for global IM/P2P application blocking. If there is no profile for you to selelct, please choose **[Create New]** from the drop down list in this page to create a new profile. All the hosts in LAN must follow the standard configured in the **APP Enforcement** profile selected here. For detailed information, refer to the section of **APP Enforcement** profile setup. For troubleshooting needs, you can specify to record information for IM/P2P by checking the Log box. It will be sent to Syslog server. Please refer to section **Syslog/Mail Alert** for more detailed information.

URL Content Filter

Select one of the **URL Content Filter** profile settings (created in **CSM>> URL Content Filter**) for applying with this router. Please set at least one profile for choosing in **CSM>> URL Content Filter** web page first. Or choose **[Create New]** from the drop down list in this page to create a new profile. For troubleshooting needs, you can specify to record information for **URL Content Filter** by checking the Log box. It will be sent to Syslog server. Please refer to section **Syslog/Mail Alert** for more detailed information.

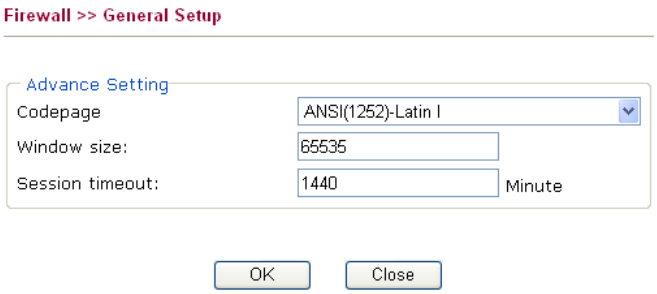
Web Content Filter

Select one of the **Web Content Filter** profile settings (created in **CSM>> Web Content Filter**) for applying with this router. Please set at least one profile for anti-virus in **CSM>> Web Content Filter** web page first. Or choose **[Create New]** from the drop down list in this page to create a new profile. For troubleshooting needs, you can specify to record information for **Web Content Filter** by checking the Log box. It will be sent to Syslog server. Please refer to section **Syslog/Mail Alert** for more detailed information.

Advance Setting

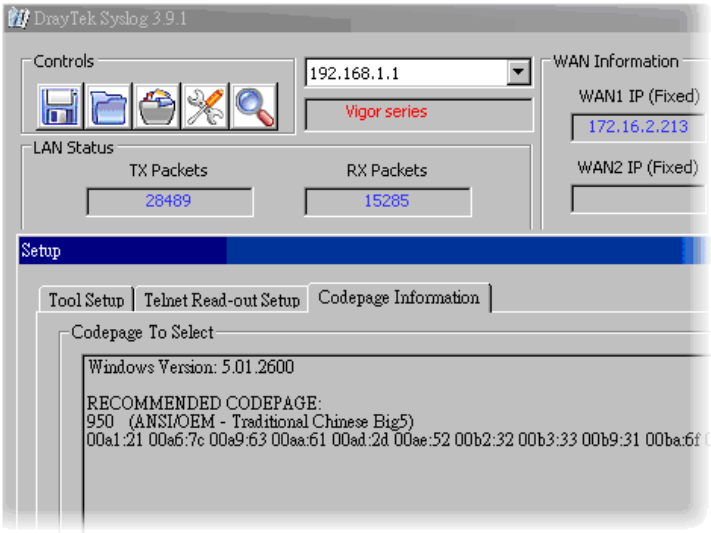
Click **Edit** to open the following window. However, it is

strongly recommended to use the default settings here.



Codepage - This function is used to compare the characters among different languages. Choose correct codepage can help the system obtaining correct ASCII after decoding data from URL and enhance the correctness of URL Content Filter. The default value for this setting is ANSI 1252 Latin I. If you do not choose any codepage, no decoding job of URL will be processed. Please use the drop-down list to choose a codepage.

If you do not have any idea of choosing suitable codepage, please open Syslog. From Codepage Information of Setup dialog, you will see the recommended codepage listed on the dialog box.

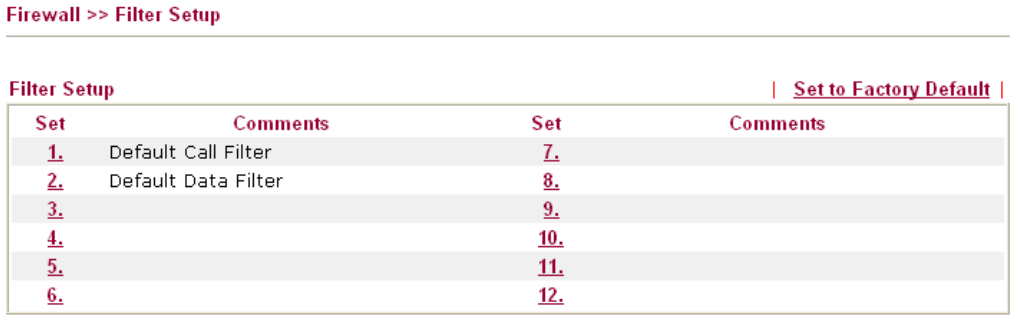


Window size – It determines the size of TCP protocol (0~65535). The more the value is, the better the performance will be. However, if the network is not stable, small value will be proper.

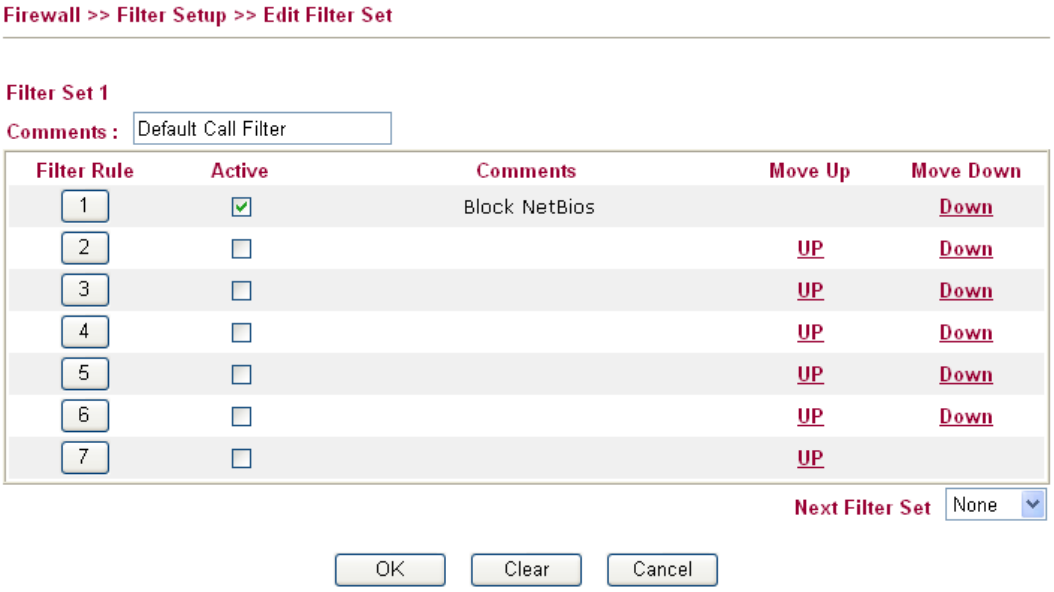
Session timeout – Setting timeout for sessions can make the best utilization of network resources.

4.4.3 Filter Setup

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

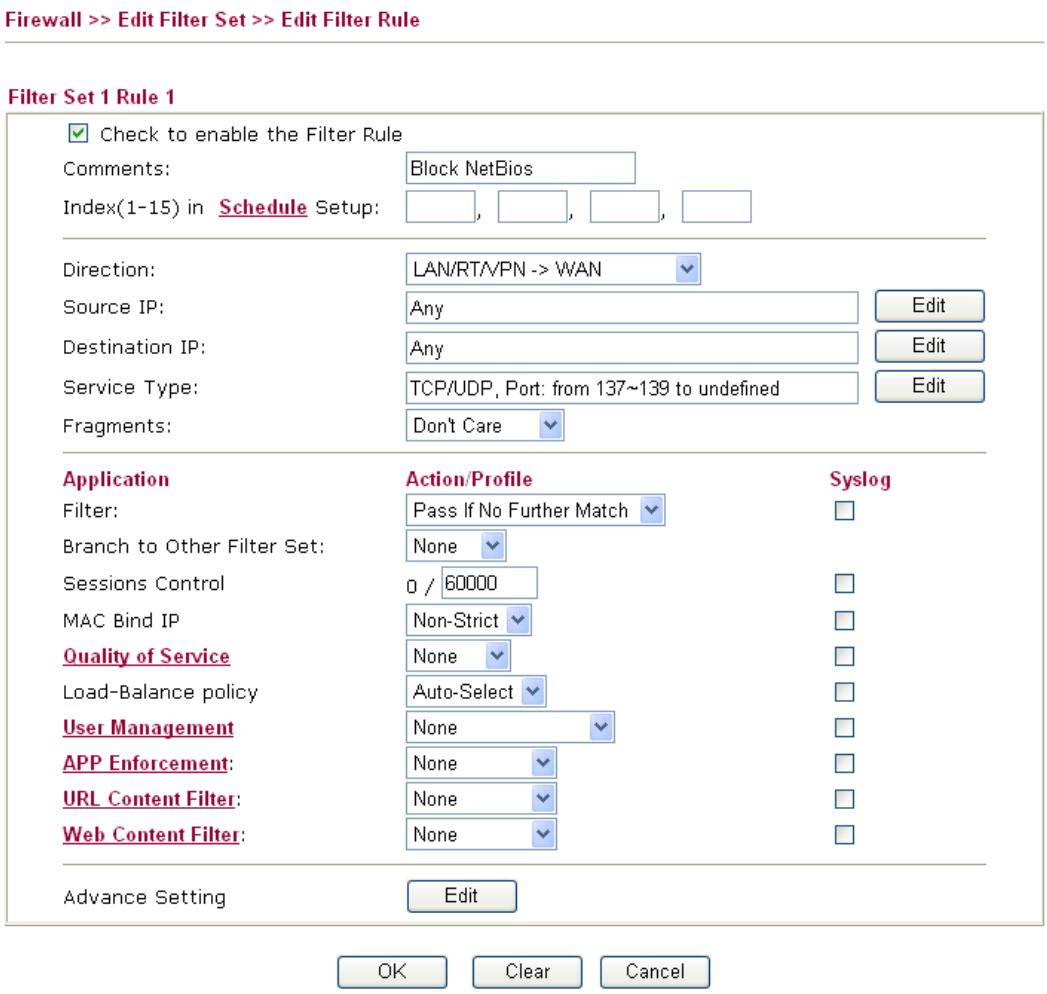


To edit or add a filter, click on the set number to edit the individual set. The following page will be shown. Each filter set contains up to 7 rules. Click on the rule number button to edit each rule. Check **Active** to enable the rule.



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.

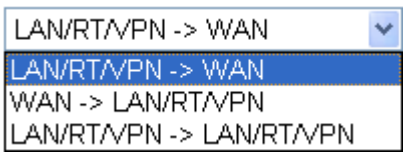


Check to enable the Filter Rule Check this box to enable the filter rule.

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

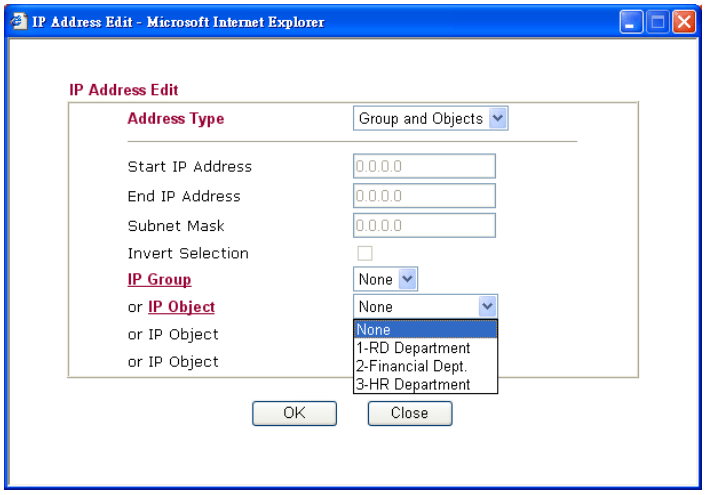
Index(1-15) Set PCs on LAN to work at certain time interval only. You may choose up to 4 schedules out of the 15 schedules pre-defined in **Applications** >> **Schedule** setup. The default setting of this field is blank and the function will always work.

Direction Set the direction of packet flow. It is for **Data Filter** only. For the **Call Filter**, this setting is not available since **Call Filter** is only applied to outgoing traffic.

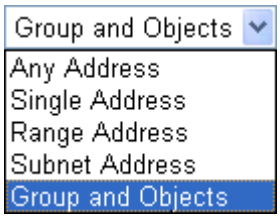


Note: RT means routing domain for 2nd subnet or other LAN.

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



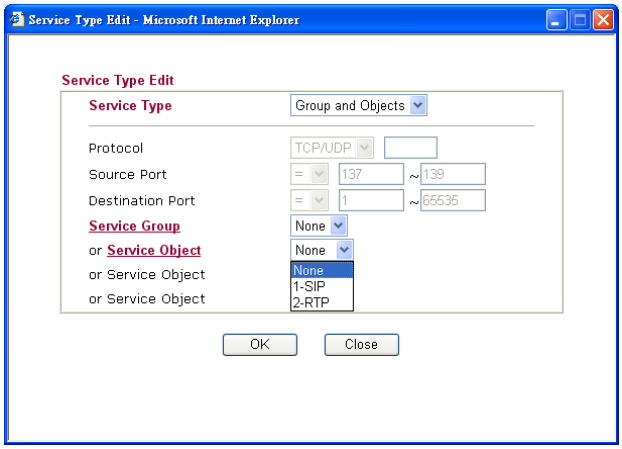
To set the IP address manually, please choose **Any Address/Single Address/Range Address/Subnet Address** as the Address Type and type them in this dialog. In addition, if you want to use the IP range from defined groups or objects, please choose **Group and Objects** as the Address Type.



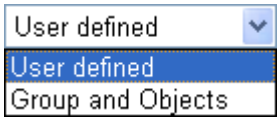
From the **IP Group** drop down list, choose the one that you want to apply. Or use the **IP Object** drop down list to choose the object that you want.

Service Type

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



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.

Sessions Control

The number typed here is the total sessions of the packets that do not match the filter rule configured in this page. The default setting is 60000.

MAC Bind IP

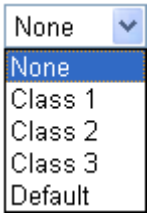
Strict – Make the MAC address and IP address settings

configured in **IP Object** for **Source IP** and **Destination IP** be bound for applying such filter rule.

No-Strict - no limitation.

Quality of Service

Choose one of the QoS rules to be applied as firewall rule. For detailed information of setting QoS, please refer to the related section later.

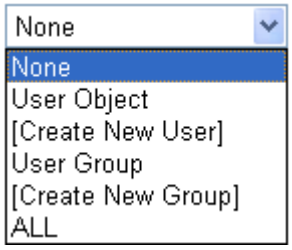


Load-Balance policy

Choose the WAN interface for applying Load-Balance Policy.

User Management

Such item is available only when **Rule-Based** is selected in User **Management>>General Setup**. The general firewall rule will be applied to the user/user group/all users specified here.



Note: When there is no user profile or group profile existed, **Create New User** or **Create New Group** item will appear for you to click to create a new one.

APP Enforcement

Select an **APP Enforcement** profile for global IM/P2P application blocking. If there is no profile for you to select, please choose **[Create New]** from the drop down list in this page to create a new profile. All the hosts in LAN must follow the standard configured in the **APP Enforcement** profile selected here. For detailed information, refer to the section of **APP Enforcement** profile setup. For troubleshooting needs, you can specify to record information for IM/P2P by checking the Log box. It will be sent to Syslog server. Please refer to section **Syslog/Mail Alert** for more detailed information.

URL Content Filter

Select one of the **URL Content Filter** profile settings (created in **CSM>> URL Content Filter**) for applying with this router. Please set at least one profile for choosing in **CSM>> URL Content Filter** web page first. Or choose **[Create New]** from the drop down list in this page to create a new profile. For troubleshooting needs, you can specify to record information for **URL Content Filter** by checking the Log box. It will be sent to Syslog server. Please refer to section **Syslog/Mail Alert** for more detailed information.

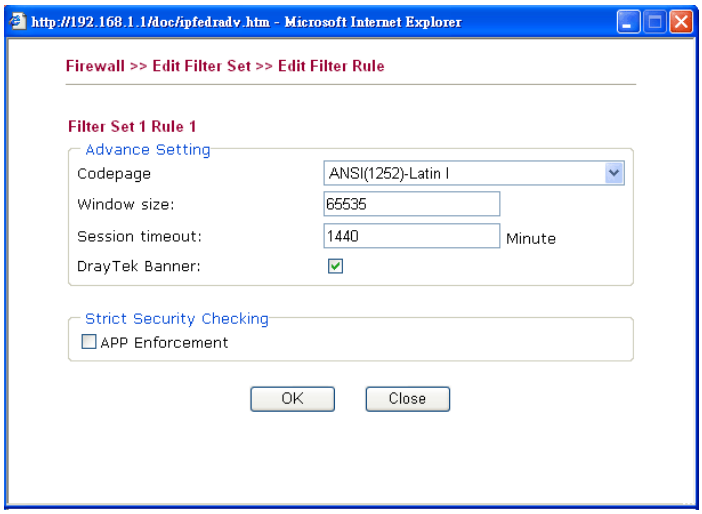
Web Content Filter

Select one of the **Web Content Filter** profile settings (created in **CSM>> Web Content Filter**) for applying with this router. Please set at least one profile for anti-virus in **CSM>> Web**

Content Filter web page first. Or choose **[Create New]** from the drop down list in this page to create a new profile. For troubleshooting needs, you can specify to record information for **Web Content Filter** by checking the Log box. It will be sent to Syslog server. Please refer to section **Syslog/Mail Alert** for more detailed information.

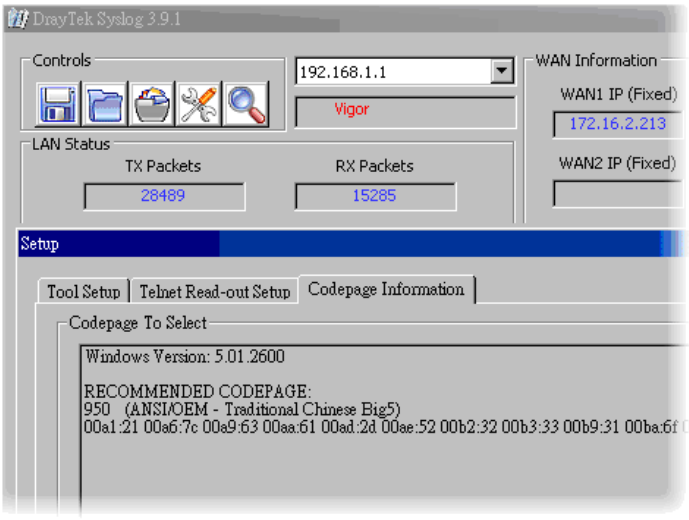
Advance Setting

Click **Edit** to open the following window. However, it is **strongly recommended** to use the default settings here.



Codepage - This function is used to compare the characters among different languages. Choose correct codepage can help the system obtaining correct ASCII after decoding data from URL and enhance the correctness of URL Content Filter. The default value for this setting is ANSI 1252 Latin I. If you do not choose any codepage, no decoding job of URL will be processed. Please use the drop-down list to choose a codepage.

If you do not have any idea of choosing suitable codepage, please open Syslog. From Codepage Information of Setup dialog, you will see the recommended codepage listed on the dialog box.

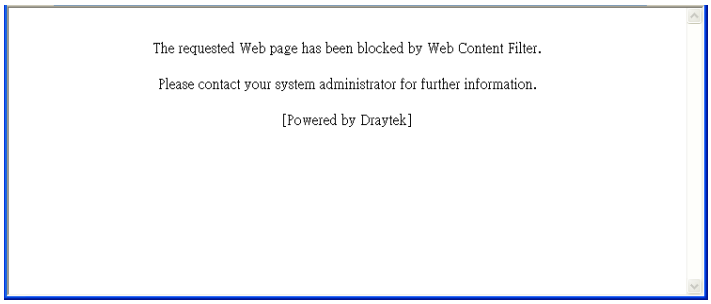


Window size – It determines the size of TCP protocol (0~65535). The more the value is, the better the performance

will be. However, if the network is not stable, small value will be proper.

Session timeout–Setting timeout for sessions can make the best utilization of network resources. However, Queue timeout is configured for TCP protocol only; session timeout is configured for the data flow which matched with the firewall rule.

DrayTek Banner – Please uncheck this box and the following screen will not be shown for the unreachable web page. The default setting is Enabled.



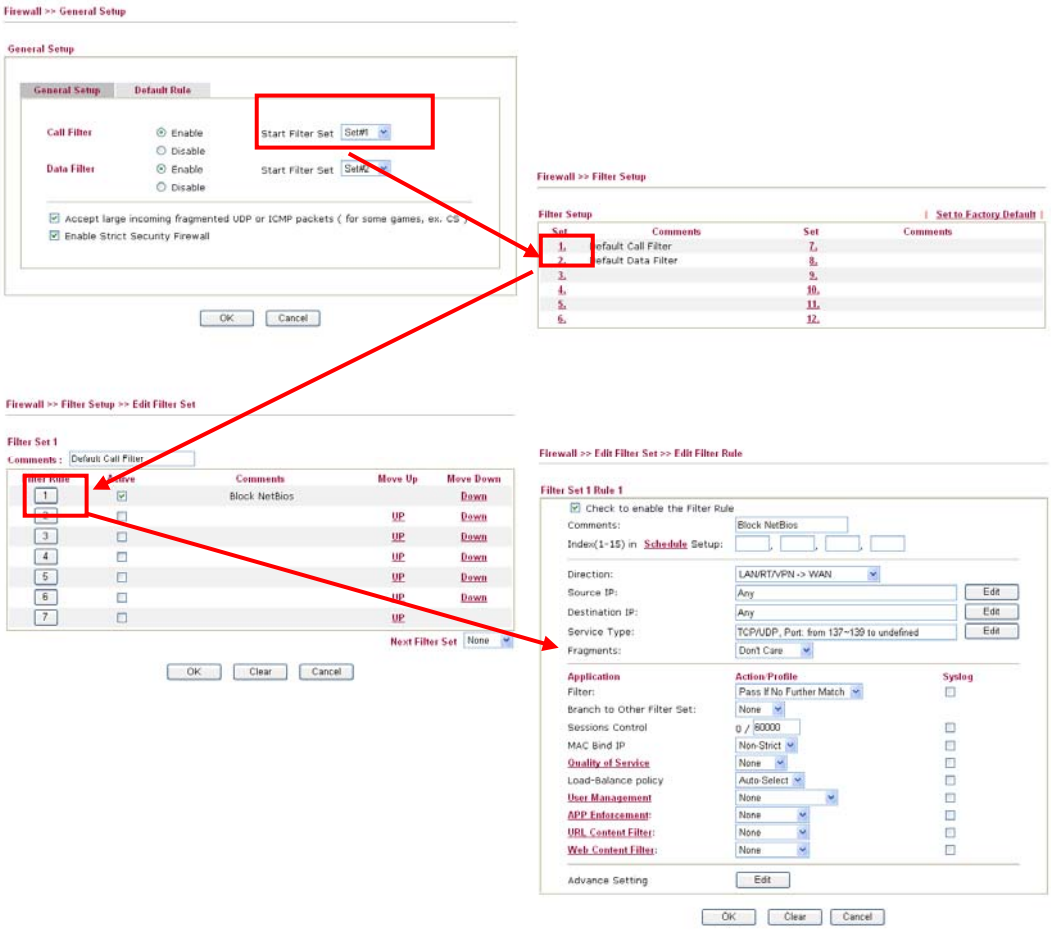
Strict Security Checking - All the packets, while transmitting through Vigor router, will be filtered by firewall settings configured by Vigor router if Strict Security Firewall is enabled. If the firewall system does not have any response (pass or block) for these packets, such as no response coming from Anti-Spam server, then the router's firewall will block the packets directly.

In addition, you can restrict the strict security checking just be done by specified server and conditions such as Anti-Virus, Anti-Spam, In-Sequence and APP Enforcement. Thus, the packets not only must be filtered by general rules by Firewall, but also must be filtered by the items selected in Strict Security Checking. Such work can ensure the data security transferring via network.

APP Enforcement – Check this box to execute the critical checking for all the files transferred via IM/P2P.

Example

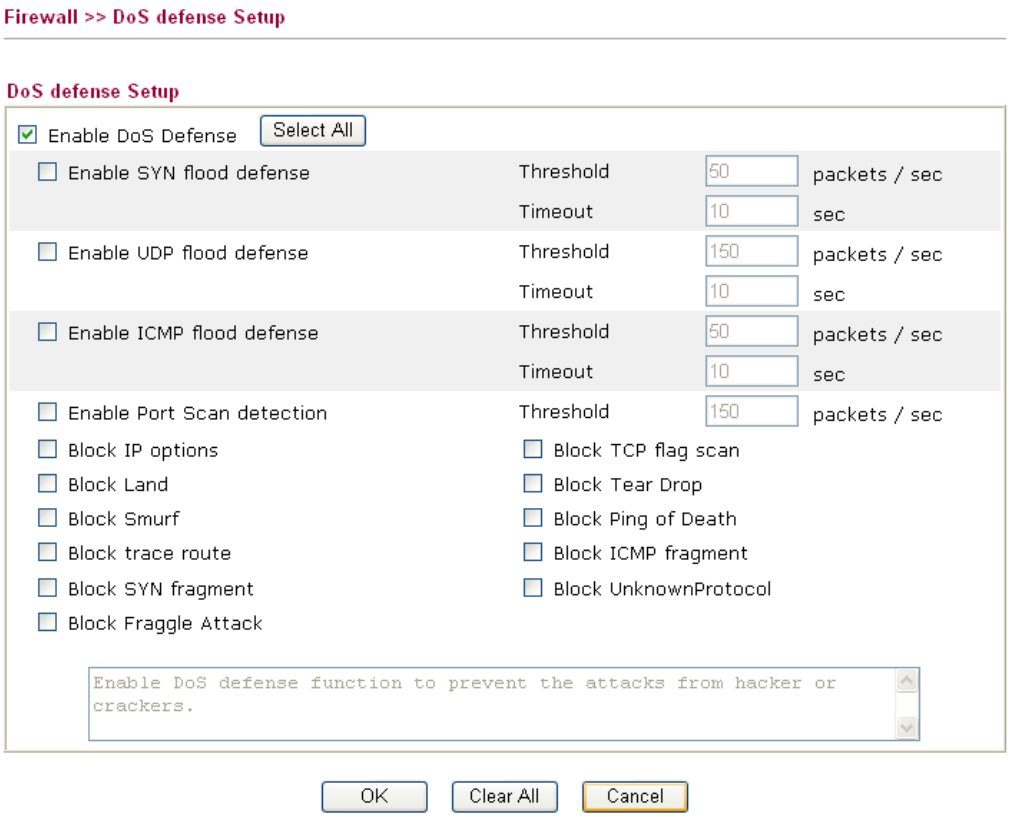
As stated before, all the traffic will be separated and arbitrated using on of two IP filters: call filter or data filter. You may preset 12 call filters and data filters in **Filter Setup** and even link them in a serial manner. Each filter set is composed by 7 filter rules, which can be further defined.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



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.



Enable Dos Defense	Check the box to activate the DoS Defense Functionality.
Select All	Click this button to select all the items listed below.
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 detection	Port Scan attacks the Vigor router by sending lots of packets to 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

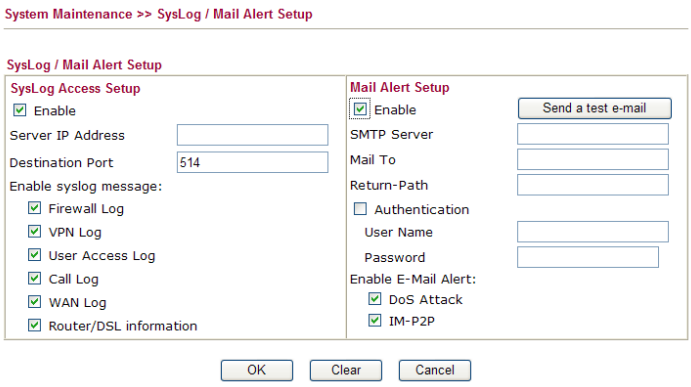
once they re-construct the packets. The Vigor routers will block any packets realizing this attacking activity.

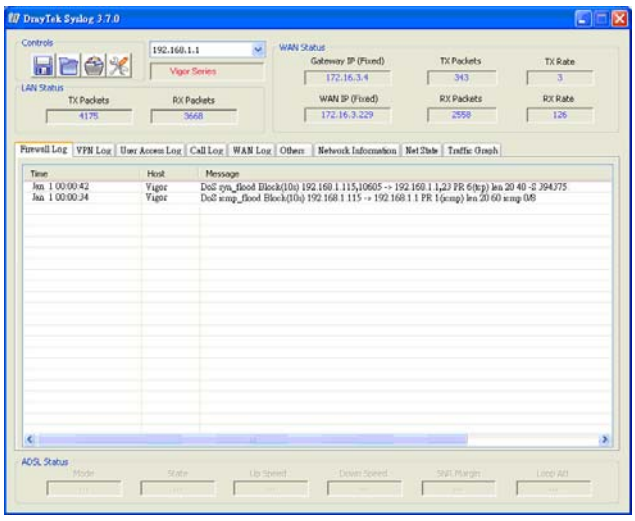
Block ICMP Fragment Check the box to activate the Block ICMP fragment function. Any ICMP packets with more fragment bit set are dropped.

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.

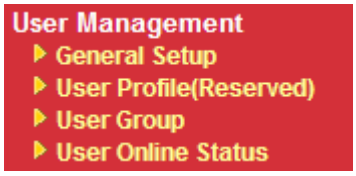




4.5 User Management

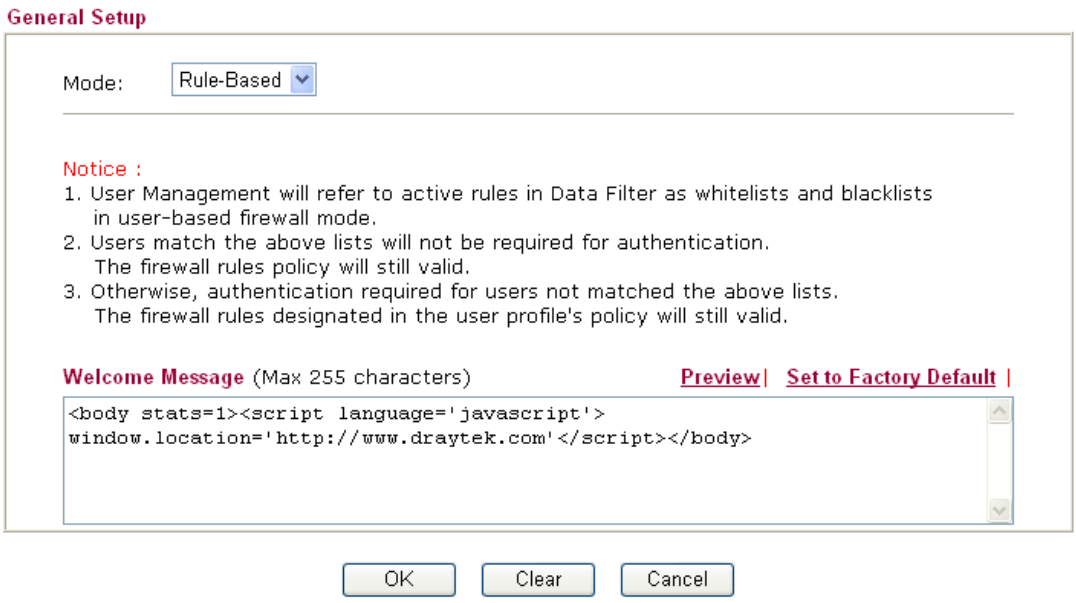
User Management is a security feature which disallows any IP traffic (except DHCP-related packets) from a particular host until that host has correctly supplied a valid username and password. Instead of managing with IP address/MAC address, User Management function manages hosts with user account. Network administrator can give different firewall policies or rules for different hosts with different User Management accounts. This is more flexible and convenient for network management. Not only offering the basic checking for Internet access, User Management also provides additional firewall rules, e.g. CSM checking for protecting hosts.

> **Note**: Filter rules configured under Firewall usually are applied to the host (the one that the router installed) only. With user management, the rules can be applied to every user connected to the router with customized profiles.
>
> **Note**: If **Transparency Mode** is selected in **Firewall>>General Setup**, User Management cannot be used any more. Please uncheck Transparency Mode first if you want to utilize user management to handle users in LAN, WAN or WLAN.



4.5.1 General Setup

General Setup can determine the standard (rule-based or user-based) for the users controlled by User Management. The mode (standard) selected here will influence the contents of the filter rule(s) applied to every user.



Mode There are two modes offered here for you to choose. Each mode will bring different filtering effect to the users involved.

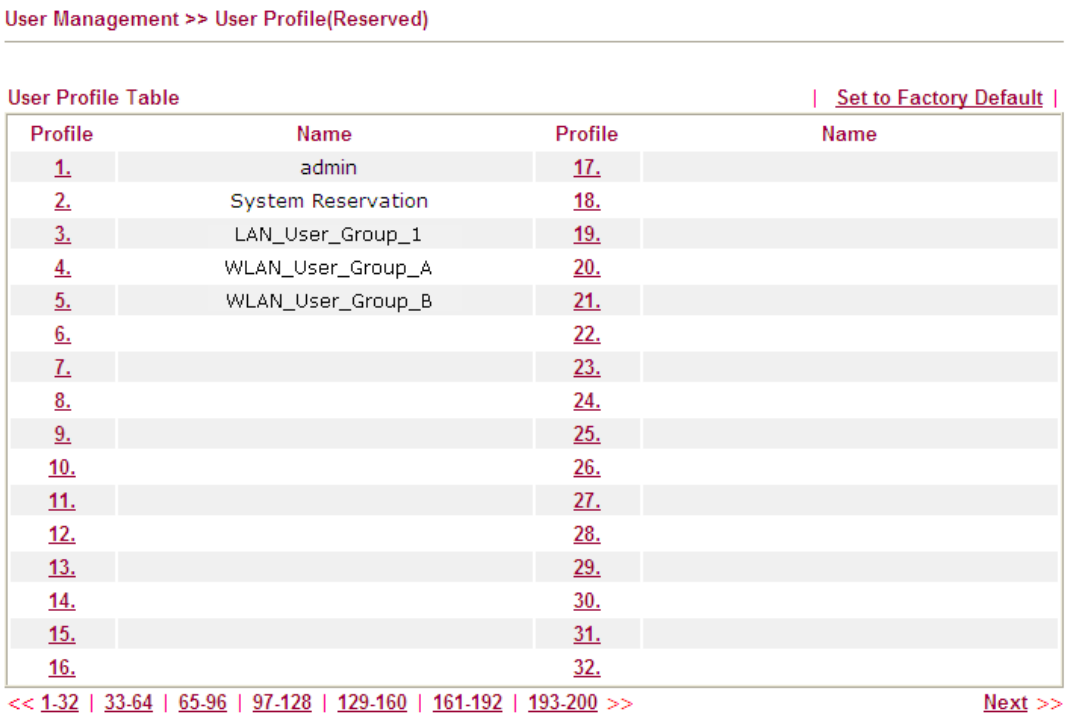
User-Based - If you choose such mode, the router will apply the filter rules configured in **User Management>>User Profile** to the users.

Rule-Based –If you choose such mode, the router will apply

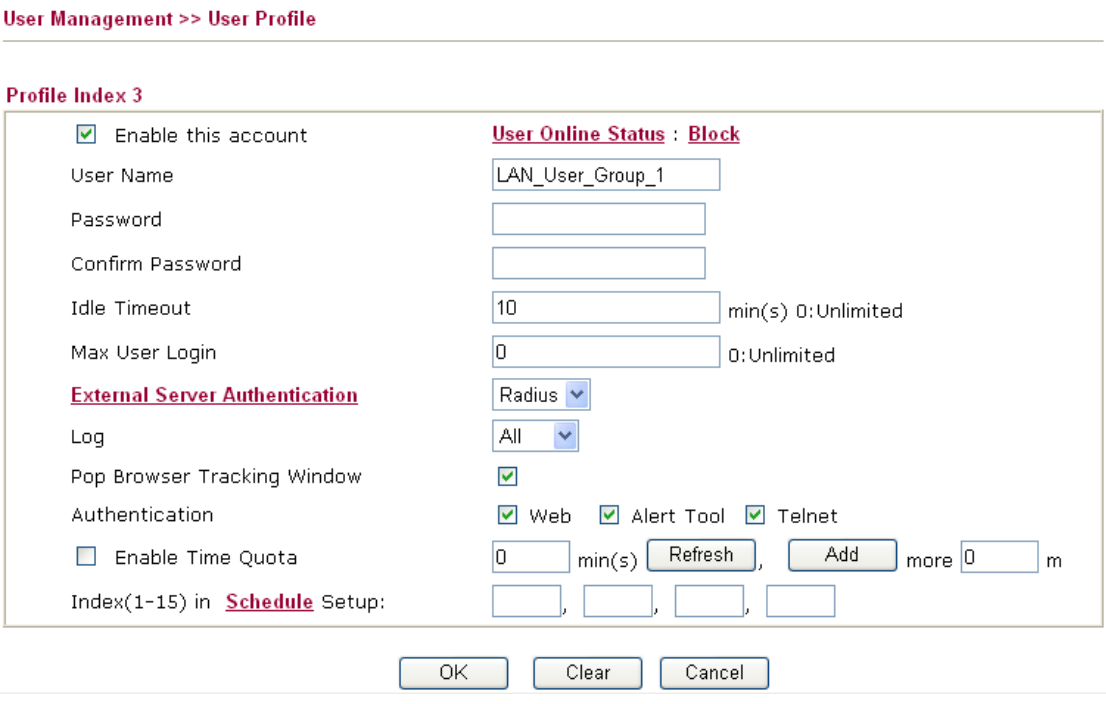
the filter rules configured in **Firewall>>General Setup** and **Filter Rule** to the users.

4.5.2 User Profile (Reserved)

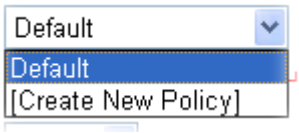
This page allows you to set customized profiles (up to 200) which will be applied for users controlled under **User Management**. Simply open **User Management>>User Profile (Reserved)**.



To set the user profile, please click any index number link to open the following page. Notice that profile 1 (Admin) and profile 2 (System Reservation) are factory default settings and only few settings for them can be modified.

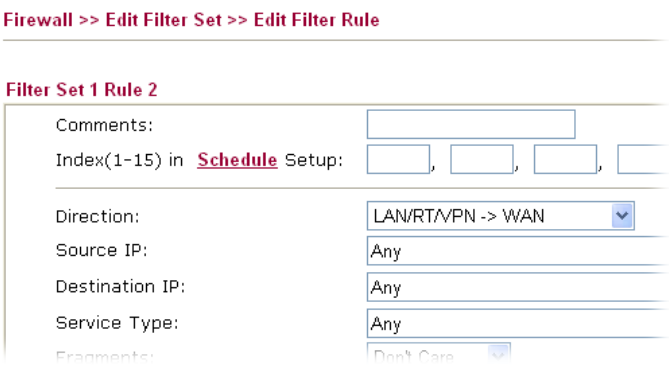


Enable this account	Check this box to enable such user profile.
User Name	Type a name for such user profile (e.g., *LAN_User_Group_1*, *WLAN_User_Group_A*, *WLAN_User_Group_B*, etc). When a user tries to access Internet through this router, an authentication step must be performed first. The user has to type the User Name specified here to pass the authentication. When the user passes the authentication, he/she can access Internet via this router. However the accessing operation will be restricted with the conditions configured in this user profile.
Password	Type a password for such profile (e.g., *lug123*, *wug123*,*wug456*, etc). When a user tries to access Internet through this router, an authentication step must be performed first. The user has to type the password specified here to pass the authentication. When the user passes the authentication, he/she can access Internet via this router with the limitation configured in this user profile.
Confirm Password	Type the password again for confirmation.
Idle Timeout	If the user is idle over the limitation of the timer, the **network connection will be stopped for such user.** By default, the Idle Timeout is set to 10 minutes.
Max User Login	Such profile can be used by many users. You can set the limitation for the number of users accessing Internet with the conditions of such profile. The default setting is 0 which means no limitation in the number of users.
Policy	It is available only when **User-Based** mode selected in **User Management>>General Setup**.



Default – If you choose such item, the filter rules pre-configured in **Firewall** can be adopted for such user profile.

Create New Policy – If you choose such item, the following page will be popped up for you to define another filter rule as a new policy.

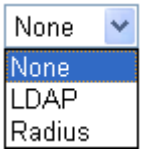


For the detailed configuration, simply refer to **Firewall>>Filter Rule**. The firewall filter rules that are not

selected in **Firewall>>General>>Default rule** can be available for use in **User Management>>User Profile**.

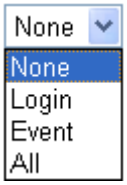
External Service Authentication

The router will authenticate the dial-in user by itself or by external service such as LDAP server or Radius server. If LDAP or Radius is selected here, it is not necessary to configure the password setting above.



Log

Time of login/log out, block/unblock for the user(s) can be sent to and displayed in Syslog. Please choose any one of the log items to take down relational records for the user(s).



Pop Browser Tracking Window

If such function is enabled, a pop up window will be displayed on the screen with time remaining for connection if Idle Timeout is set. However, the system will update the time periodically to keep the connection always on. Thus, Idle Timeout will not interrupt the network connection.

Authentication

Any user (from LAN side or WLAN side) tries to connect to Internet via Vigor router must be authenticated by the router first. There are three ways offered by the router for the user to choose for authentication.

Web – If it is selected, the use can type the URL of the router from any browser. Then, a login window will be popped up and ask the user to type the user name and password for authentication. If succeed, a **Welcome Message** (configured in **User Management >> General Setup)** will be displayed. After authentication, the destination URL (if requested by the user) will be guided automatically by the router.

Alert Tool – If it is selected, the user can open Alert Tool and type the user name and password for authentication. A window with remaining time of connection for such user will be displayed. Next, the user can access Internet through any browser on Windows. Note that Alert Tool can be downloaded from DrayTek web site.

Telnet – If it is selected, the user can use Telnet command to perform the authentication job.

Enable Time Quota

Time quota means the total connection time allowed by the router for the user with such profile. Check the box to enable the function of time quota. The first box displays the remaining time of the network connection. The second box allows to type the number of time (unit is minute) which is available for the user (using such profile) to access Internet.

Refresh – Click this button to recalculate the time quota.

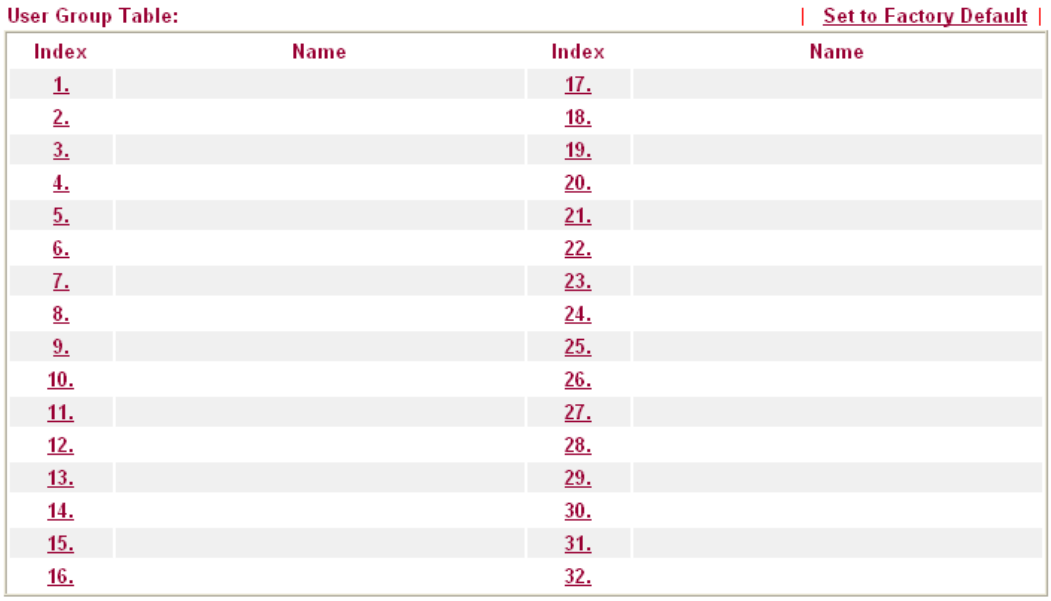
Add – Click this box to set the time quota for such profile.

Index (1-15) in Schedule Setup

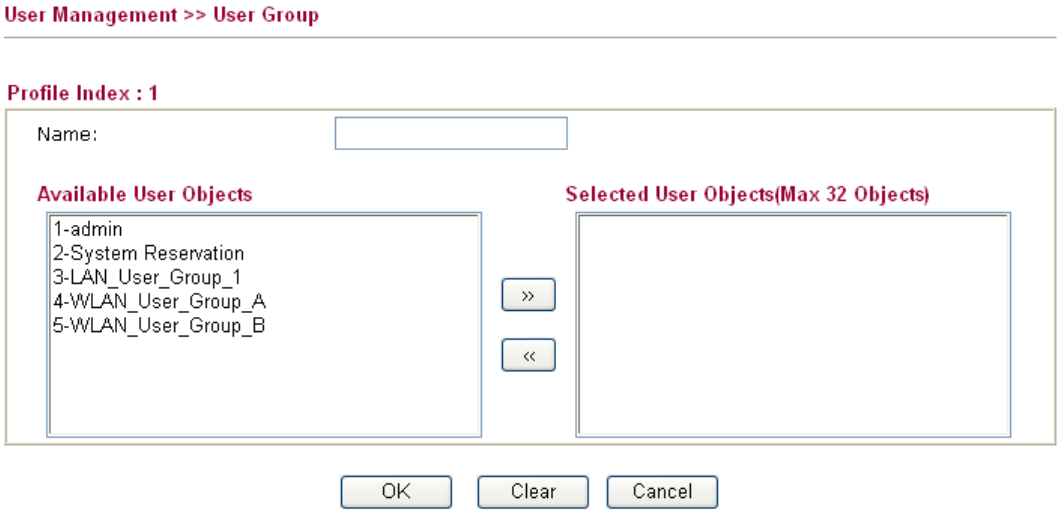
You can type in four sets of time schedule for your request. All the schedules can be set previously in **Application >> Schedule** web page and you can use the number that you have set in that web page.

4.5.3 User Group

This page allows you to bind several user profiles into one group. These groups will be used in **Firewall>>General Setup** as part of filter rules.



Please click any index number link to open the following page.



Name

Type a name for this user group.

Available User Objects

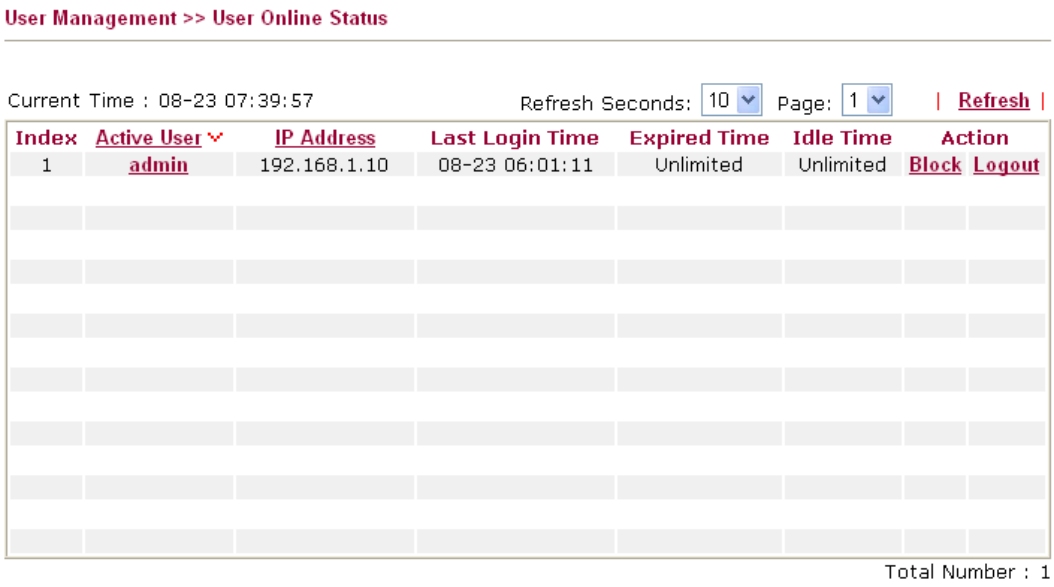
You can gather user profiles (objects) from **User Profile** page within one user group. All the available user objects that you have created will be shown in this box. Notice that user object, Admin and Dial-In User are factory settings. User defined

profiles will be numbered with 3, 4, 5 and so on.

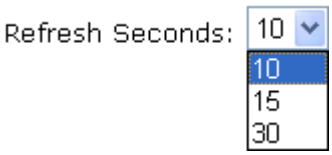
Selected Keyword Objects Click » button to add the selected user objects in this box.

3.5.4 User Online Status

This page displays the user(s) connected to the router and refreshes the connection status in an interval of several seconds.



Refresh Seconds Use the drop down list to choose the time interval of refreshing data flow that will be done by the system automatically.



Refresh Click this link to refresh this page manually.

Index Display the number of the data flow.

Active User Display the users which connect to Vigor router currently. You can click the link under the username to open the user profile setting page for that user.

IP Address Display the IP address of the device.

Last Login Time Display the login time that such user connects to the router last time.

Expired Time Display the expired time of the network connection for the user.

Idle Time Display the idle timeout setting for such profile.

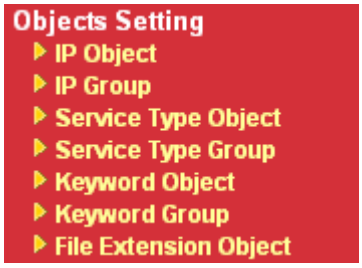
Action **Block** - can prevent specified user accessing into Internet.

Unblock – the user will be blocked.

Logout – the user will be logged out forcefully.

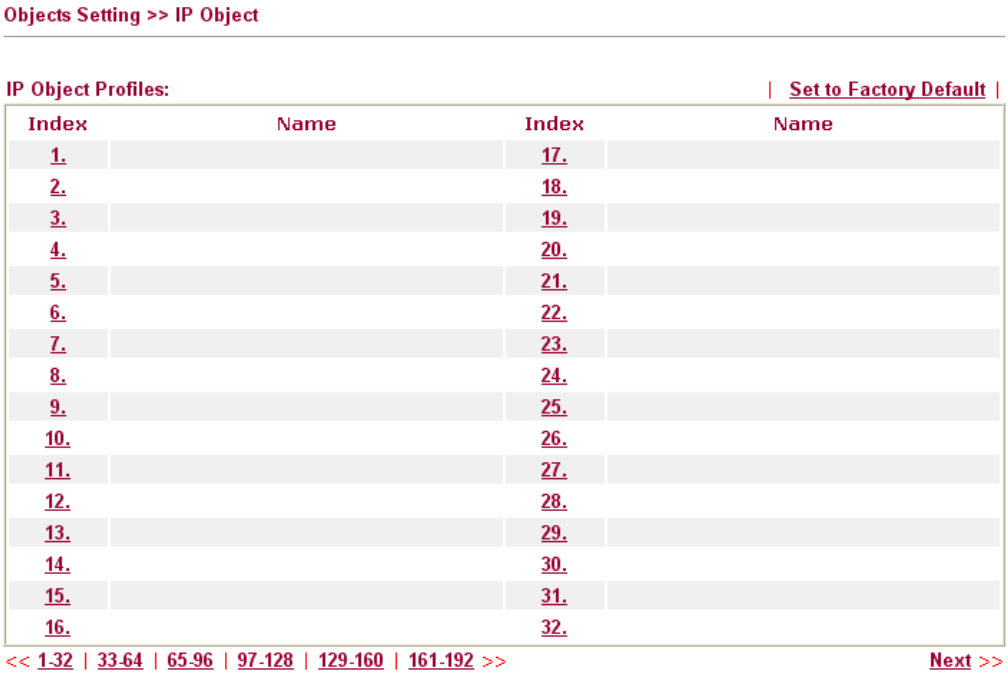
4.6 Objects Settings

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).



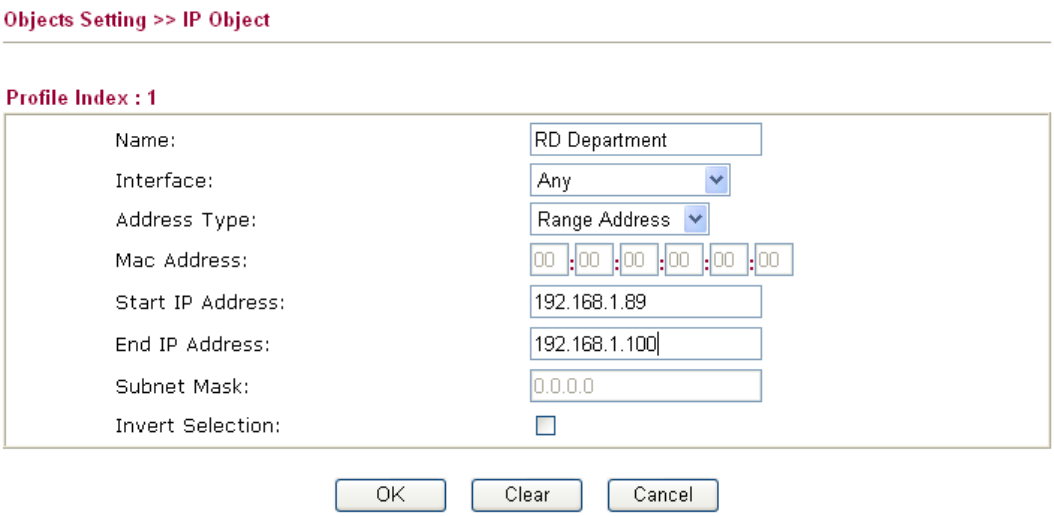
4.6.1 IP Object

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



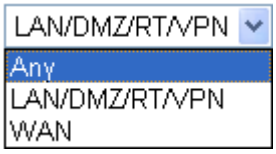
Set to Factory Default Clear all profiles.

Click the number under Index column for settings in detail.



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

Interface Choose a proper interface.



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.

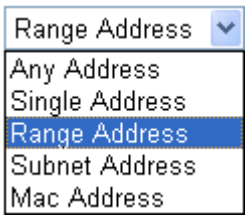
Address Type Determine the address type for the IP address.
Select **Single Address** if this object contains one IP address only.

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.

Select **Mac Address** if this object contains Mac address.



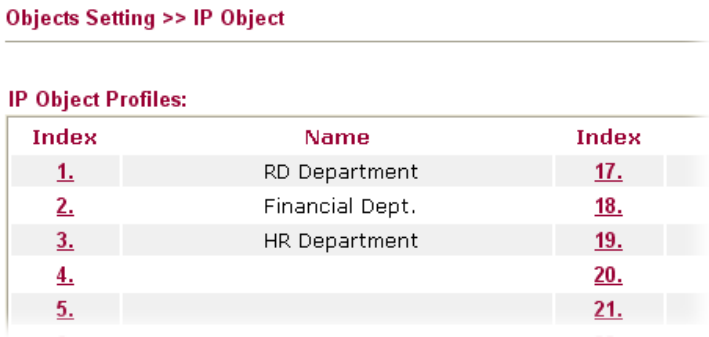
MAC Address Type the MAC address for Mac Address type.

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.

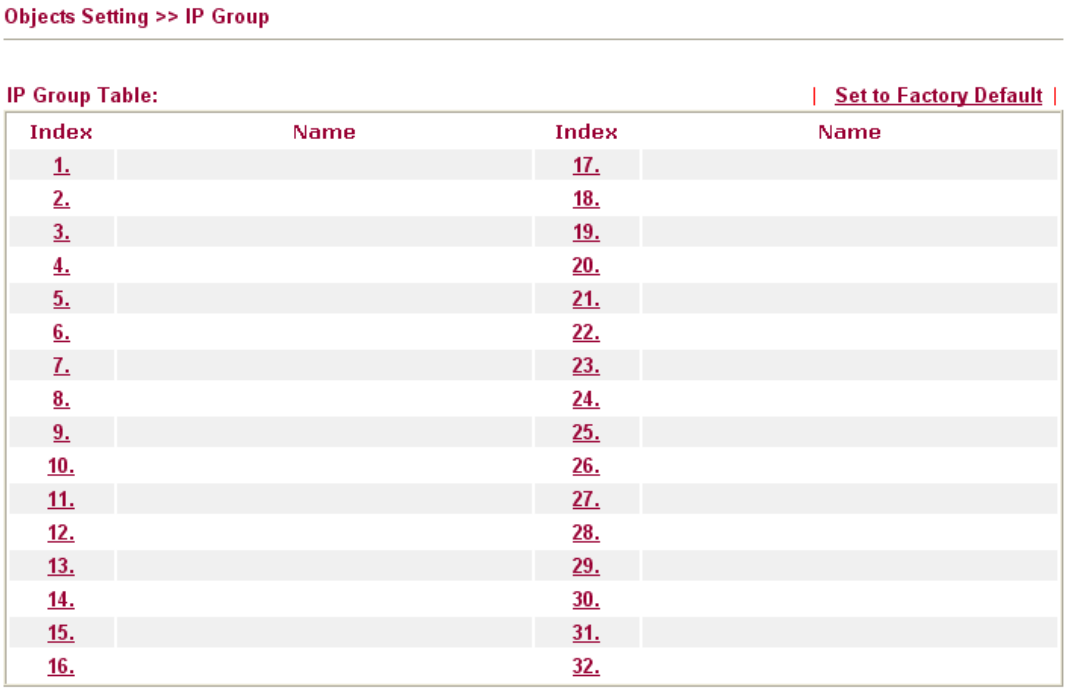
Subnet Mask	Type the subnet mask if the Subnet Address type is selected.
Invert Selection	If it is checked, all the IP addresses except the ones listed above will be applied later while it is chosen.

Below is an example of IP objects settings.



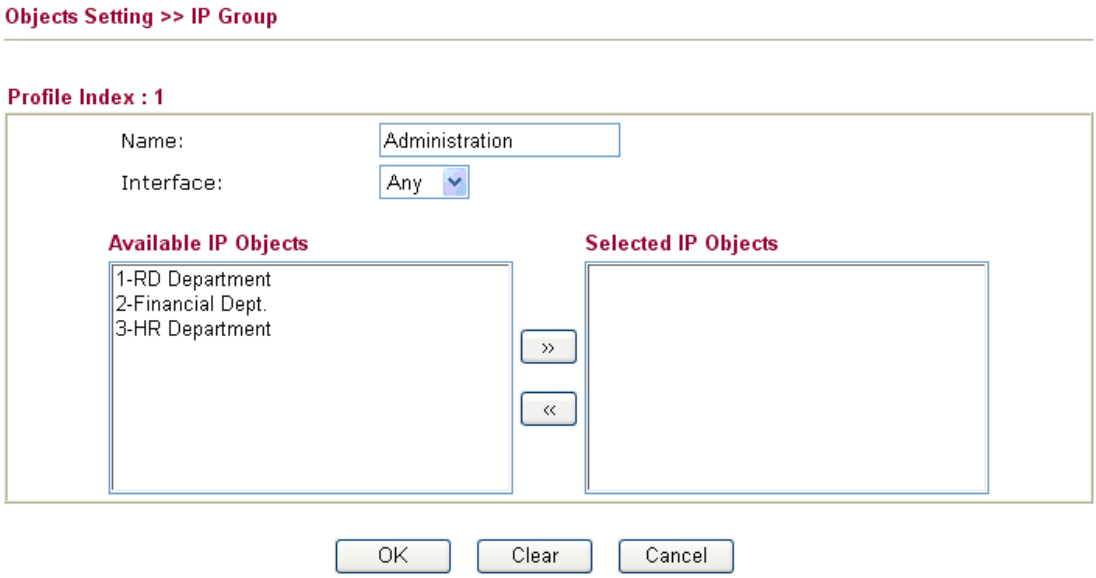
4.6.2 IP Group

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



Set to Factory Default	Clear all profiles.

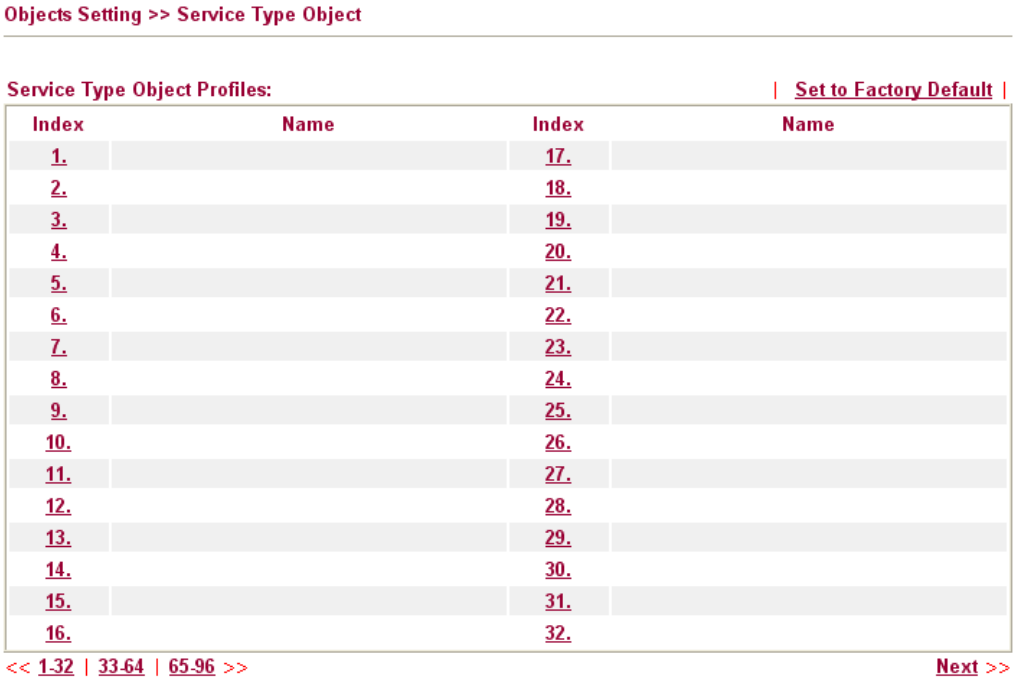
Click the number under Index column for settings in detail.



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.

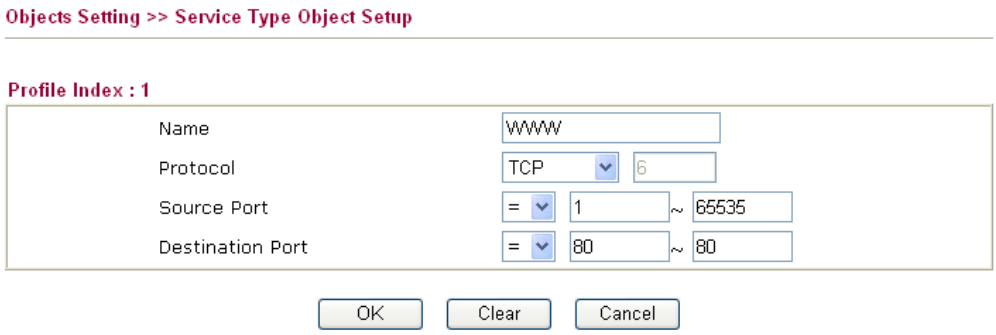
4.6.3 Service Type Object

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



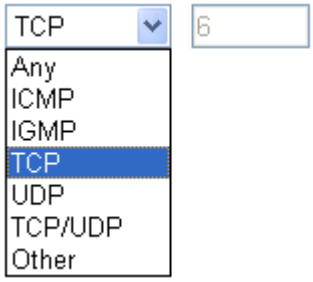
Set to Factory Default Clear all profiles.

Click the number under Index column for settings in detail.



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.

Service Type Object Profiles:

Index	Name
1.	SIP
2.	RTP
3.	

4.6.4 Service Type Group

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

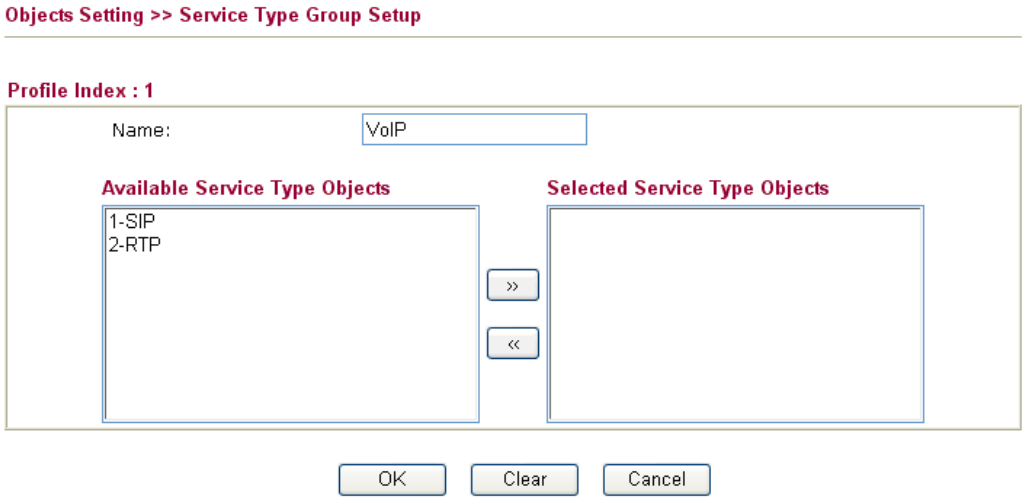
Objects Setting >> Service Type Group

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.

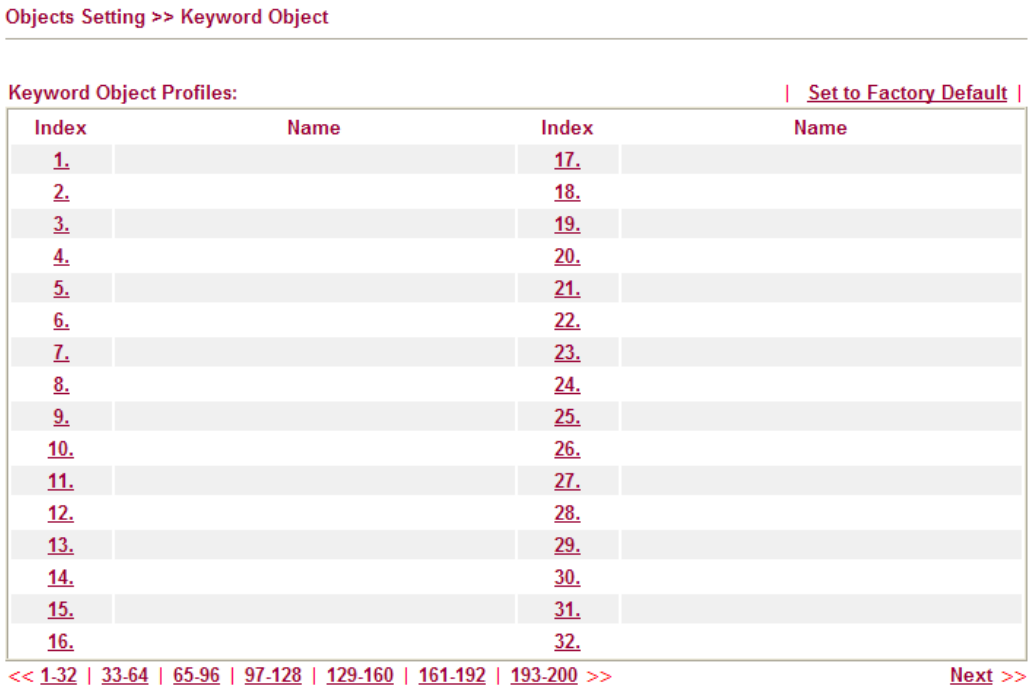
Click the number under Index column for settings in detail.



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.

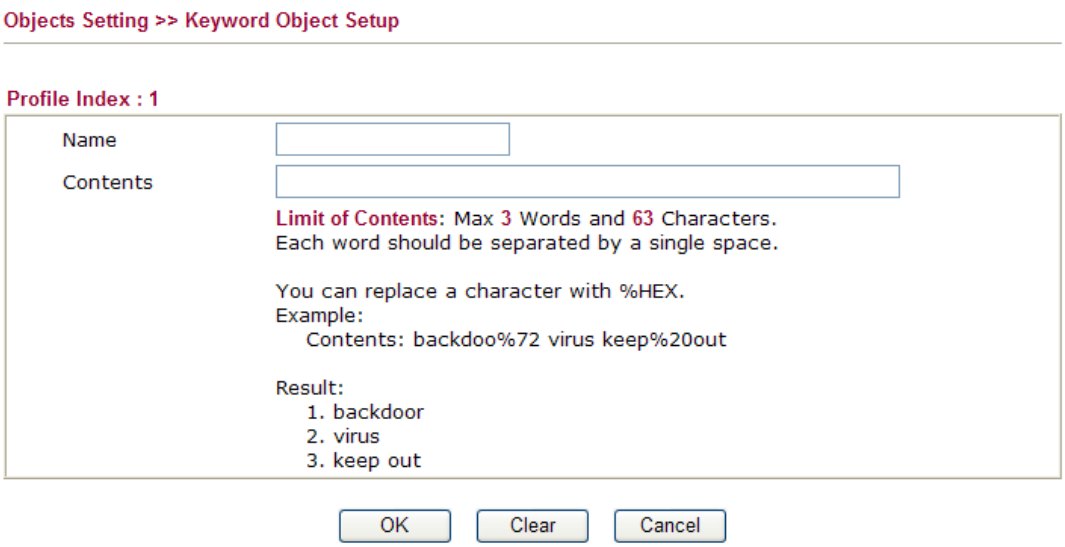
4.6.5 Keyword Object

You can set 200 keyword object profiles for choosing as black /white list in **CSM >>URL Web Content Filter Profile.**



Set to Factory Default	Clear all profiles.

Click the number under Index column for setting in detail.

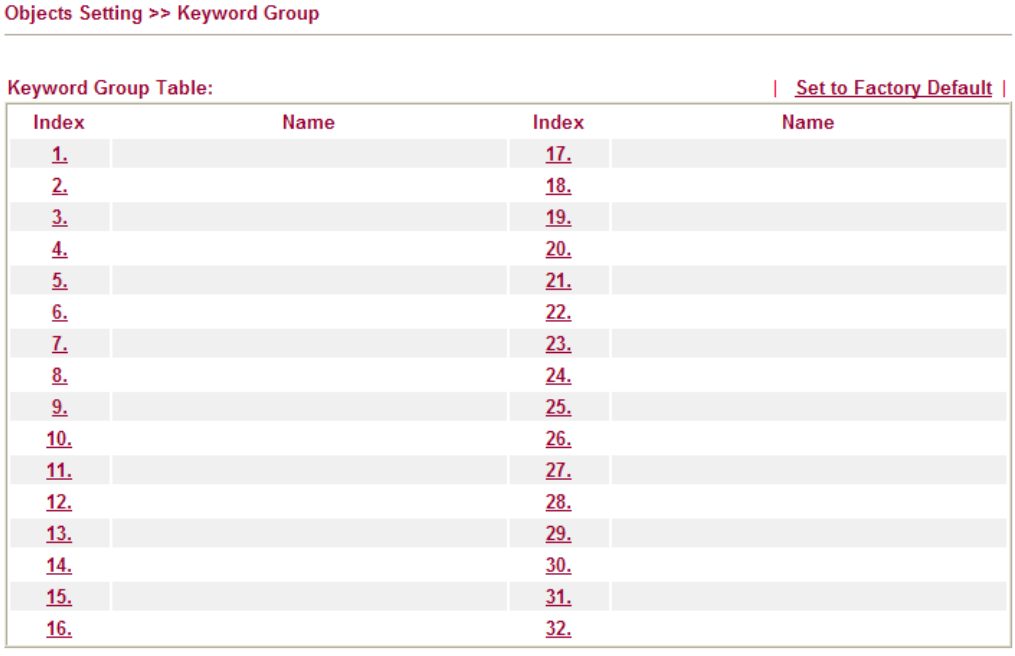


Name Type a name for this profile, e.g., game.

Contents Type the content for such profile. For example, type *gambling* as Contents. When you browse the webpage, the page with gambling information will be watched out and be passed/blocked based on the configuration on Firewall settings.

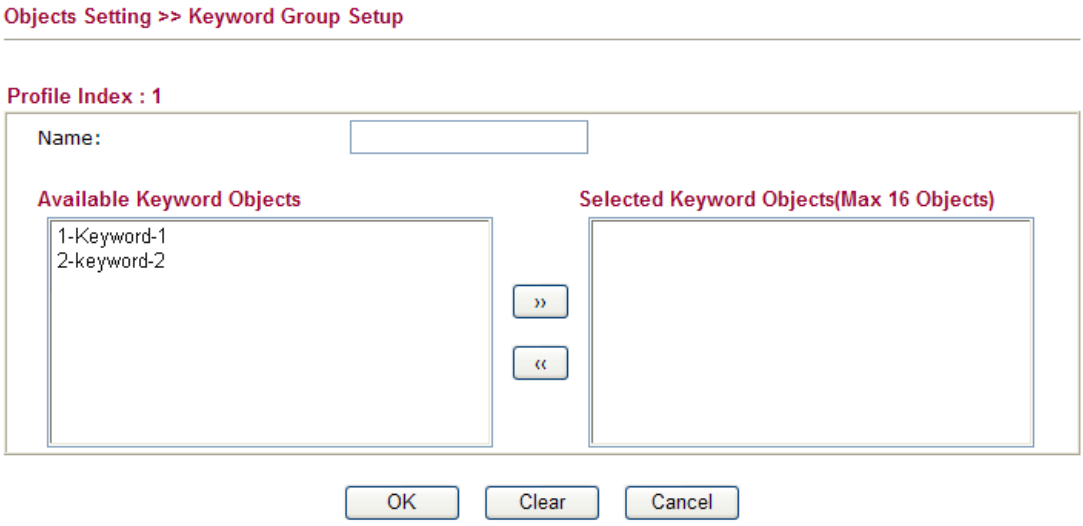
4.6.6 Keyword Group

This page allows you to bind several keyword objects into one group. The keyword groups set here will be chosen as black /white list in **CSM >>URL /Web Content Filter Profile**.



Set to Factory Default Clear all profiles.

Click the number under Index column for setting in detail.

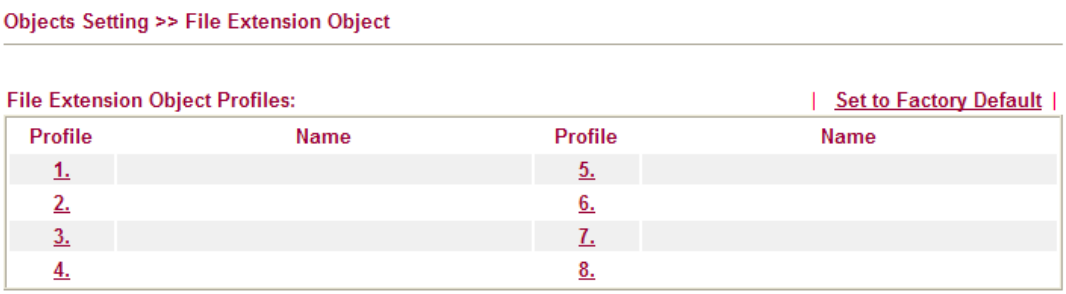


Name	Type a name for this group.
Available Keyword Objects	You can gather keyword objects from **Keyword Object** page within one keyword group. All the available Keyword objects that you have created will be shown in this box.
Selected Keyword Objects	Click button to add the selected Keyword objects in this box.

4.6.7 File Extension Object

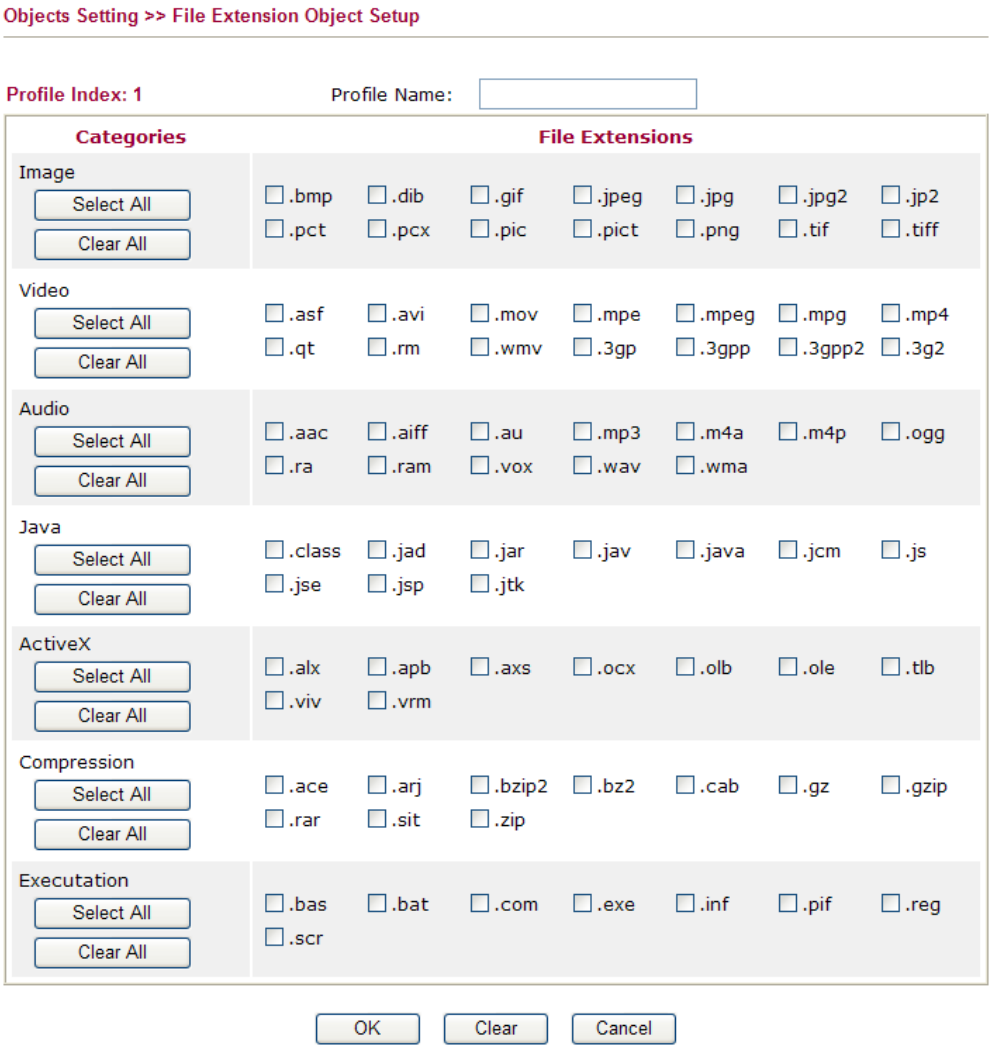
This page allows you to set eight profiles which will be applied in **CSM>>URL Content Filter**. All the files with the extension names specified in these profiles will be processed according to the chosen action.

Profile 1 with name of “default” is the default profile, some files with the file extensions specified in this profile will be ignored and not be scanned by Vigor router.



Set to Factory Default	Clear all profiles.

Click the number under Profile column for configuration in details.



Profile Name Type a name for this profile.

Type a name for such profile and check all the items of file extension that will be processed in the router. Finally, click **OK** to save this profile.

4.7 CSM Profile

Content Security Management (CSM)

CSM is an abbreviation of **Content Security Management** which is used to control IM/P2P usage, filter the web content and URL content to reach a goal of security management.

APP Enforcement Filter

As the popularity of all kinds of instant messenger application arises, communication cannot become much easier. Nevertheless, while some industry may leverage this as a great tool to connect with their customers, some industry may take reserve attitude in order to reduce employee misusage during office hour or prevent unknown security leak. It is similar situation for corporation towards peer-to-peer applications since file-sharing can be convenient but insecure at the same time. To address these needs, we provide CSM functionality.

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.

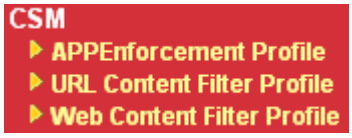
On the other hand, Vigor router can prevent user from accidentally downloading malicious codes from web pages. It's very common that malicious codes conceal in the executable objects, such as ActiveX, Java Applet, compressed files, and other executable files. Once downloading these types of files from 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.

Web Content Filter

We all know that the content on the Internet just like other types of media may be inappropriate sometimes. As a responsible parent or employer, you should protect those in your trust against the hazards. With Web filtering service of the Vigor router, you can protect your business from common primary threats, such as productivity, legal liability, network and security threats. For parents, you can protect your children from viewing adult websites or chat rooms.

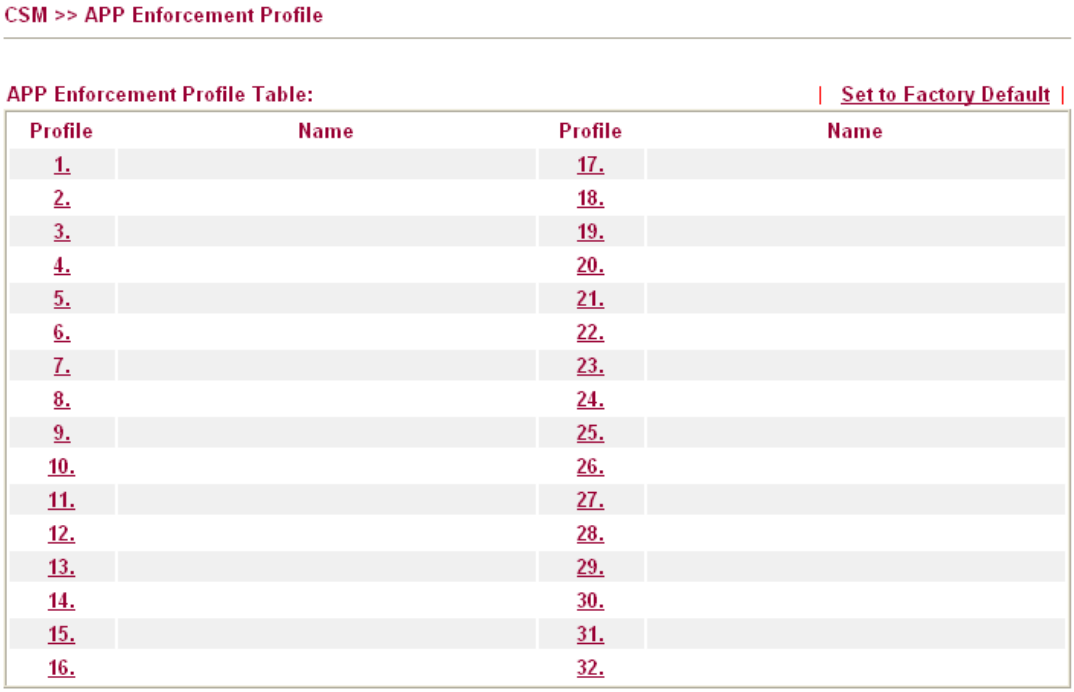
Once you have activated your Web Filtering service in Vigor router and chosen the categories of website you wish to restrict, each URL address requested (e.g.www.bbc.co.uk) will be checked against our server database. This database is updated as frequent as daily by a global team of Internet researchers. The server will look up the URL and return a category to your router. Your Vigor router will then decide whether to allow access to this site according to the categories you have selected. Please note that this action will not introduce any delay in your Web surfing because each of multiple load balanced database servers can handle millions of requests for categorization.

Note: The priority of URL Content Filter is higher than Web Content Filter.



4.7.1 APP Enforcement Profile

You can define policy profiles for IM (Instant Messenger)/P2P (Peer to Peer)/Protocol/Misc application. This page allows you to set 32 profiles for different requirements. The APP Enforcement Profile will be applied in **Default Rule** of **Firewall>>General Setup** for filtering.

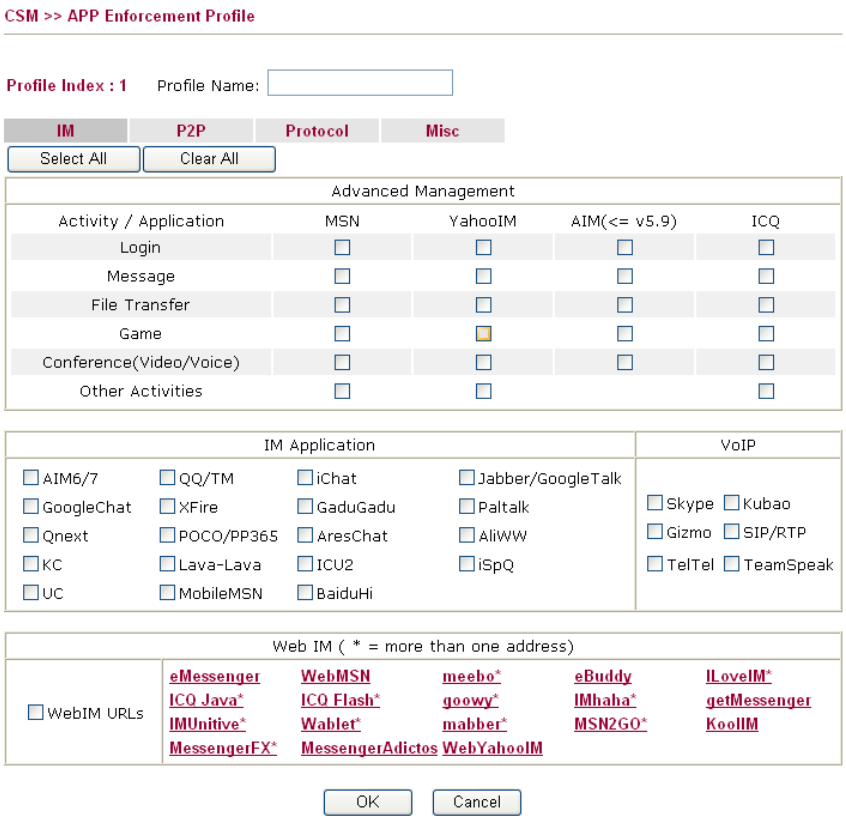


Set to Factory Default	Clear all profiles.
Profile	Display the number of the profile which allows you to click to set different policy.
Name	Display the name of the APP Enforcement Profile.

Click the number under Index column for settings in detail.

There are four tabs IM, P2P, Protocol and Misc displayed on this page. Each tab will bring out different items that you can choose to disallow people using.

Below shows the items which are categorized under **IM**.



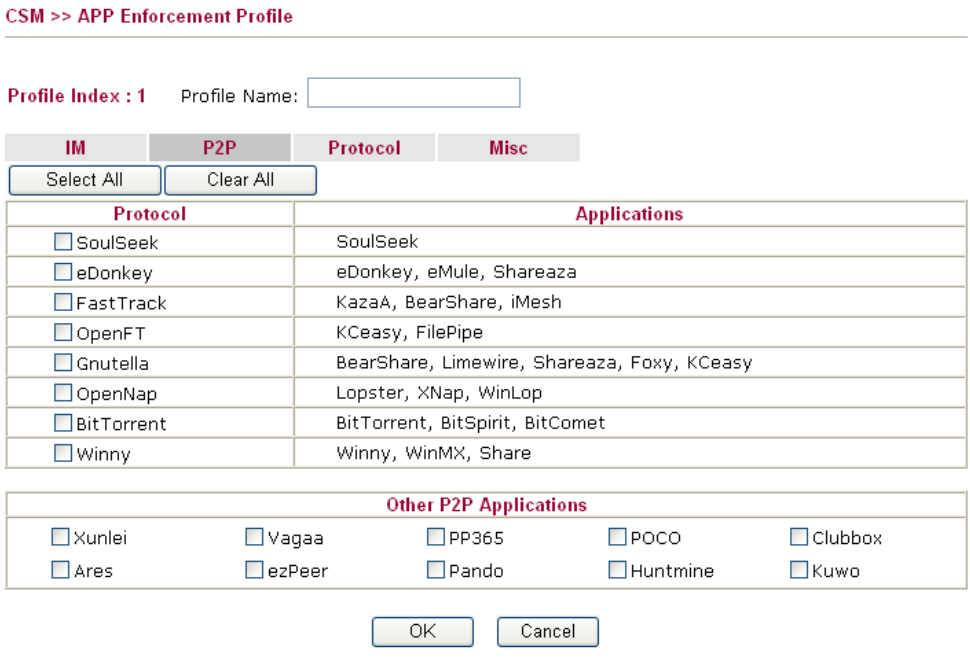
Profile Name Type a name for the CSM profile.

Select All Click it to choose all of the items in this page.

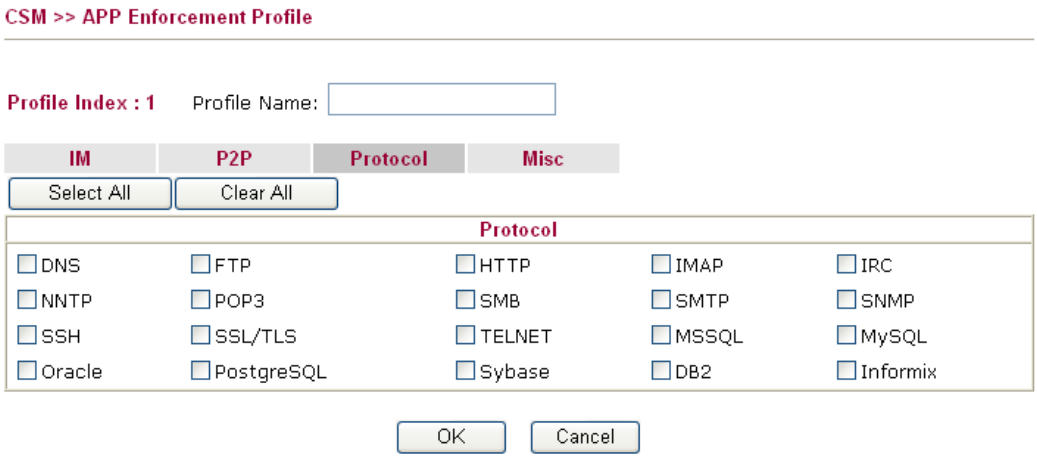
Clear All Uncheck all the selected boxes.

The profiles configured here can be applied in the **Firewall>>General Setup** and **Firewall>>Filter Setup** pages as the standard for the host(s) to follow.

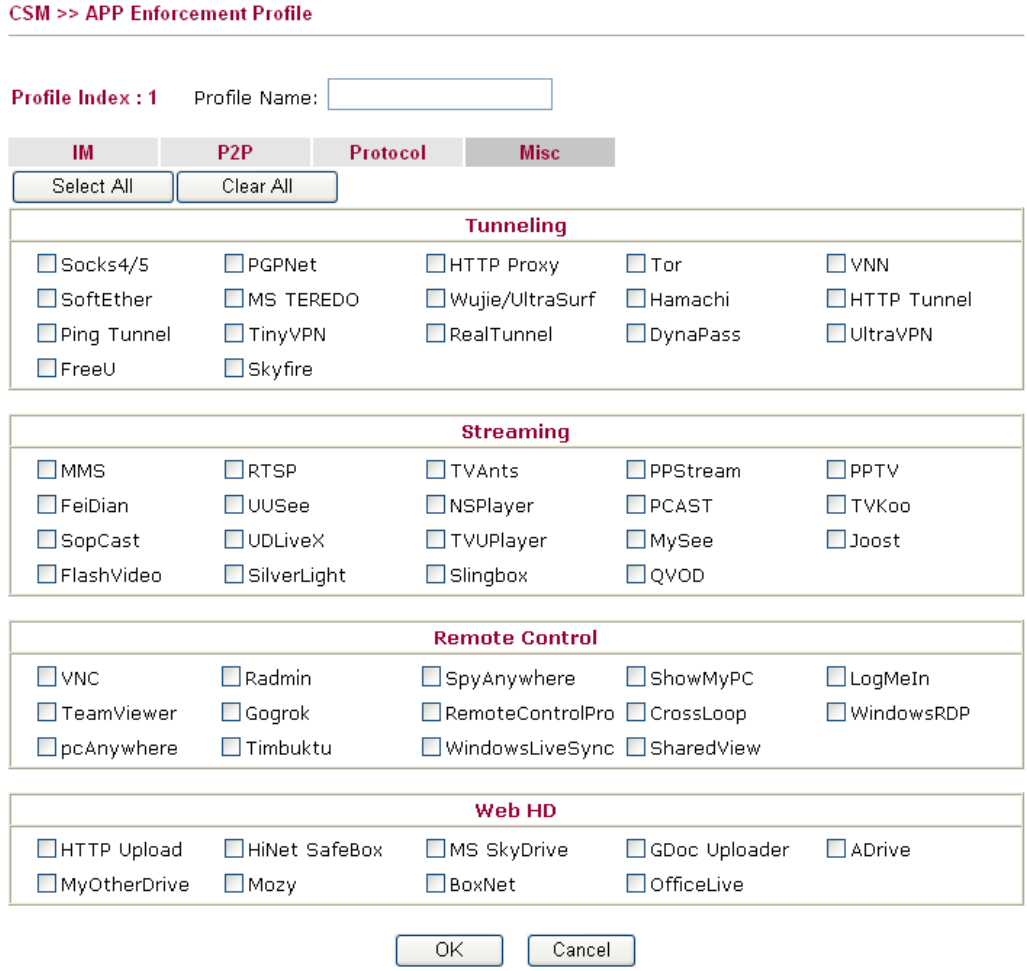
Below shows the items which are categorized under **P2P**.



Below shows the items which are categorized under **Protocol**.



The items categorized under **Misc.**



4.7.2 URL Content Filter Profile

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.

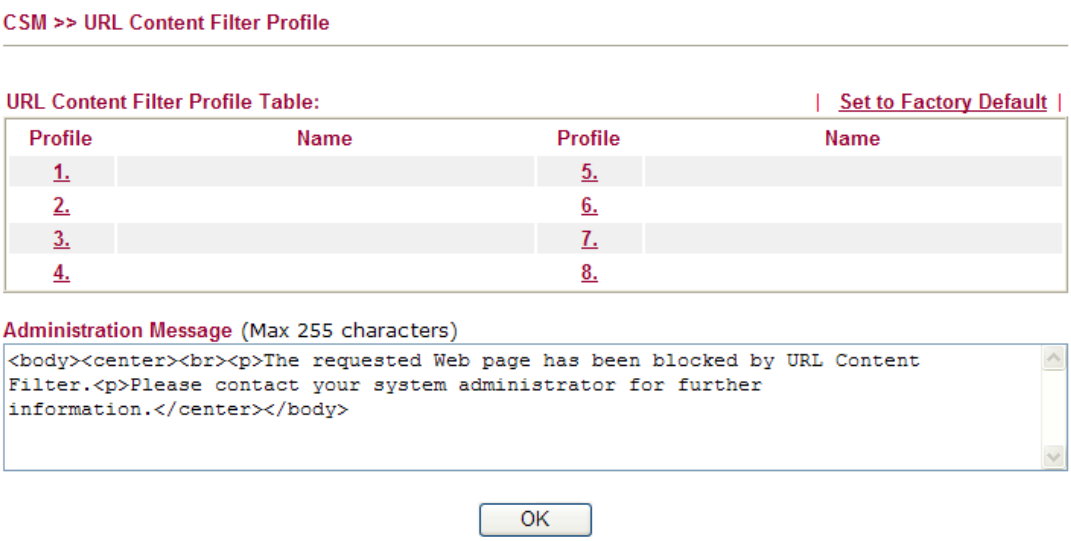
Once a user type in or click on an URL with objectionable keywords, URL keyword blocking facility will decline the HTTP request to that web page thus can limit user's access to the website. You may imagine **URL Content Filter** as a well-trained convenience-store clerk who won't sell adult magazines 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 user 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.

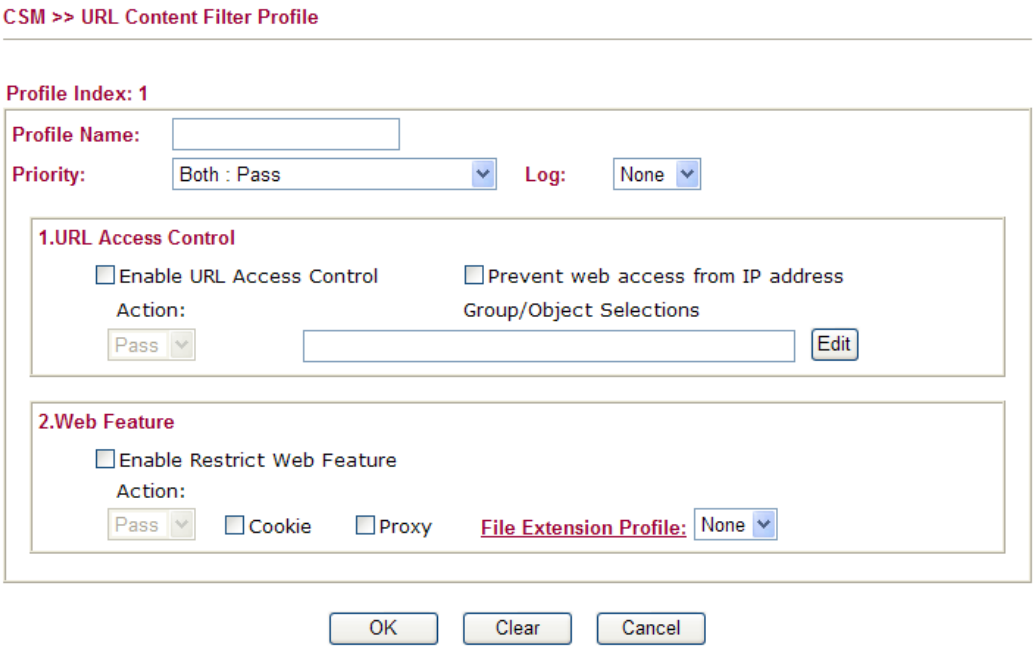
For example, if you add key words such as "sex", Vigor router will limit web access to web sites or web pages such as "www.sex.com", "www.backdoor.net/images/sex/p_386.html". Or you may simply specify the full or partial URL such as "www.sex.com" or "sex.com".

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

Click **CSM** and click **URL Content Filter Profile** to open the profile setting page.



You can set eight profiles as URL content filter. Simply click the index number under Profile to open the following web page.



Profile Name Type a name for the CSM profile.

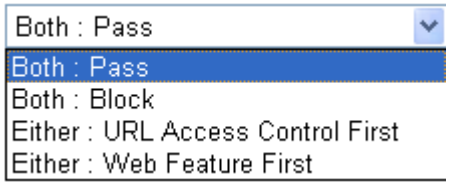
Priority It determines the action that this router will apply.

Both: Pass – The router will let all the packages that match with the conditions specified in URL Access Control and Web Feature below passing through. When you choose this setting, both configuration set in this page for URL Access Control and Web Feature will be inactive.

Both:Block –The router will block all the packages that match with the conditions specified in URL Access Control and Web Feature below. When you choose this setting, both configuration set in this page for URL Access Control and Web Feature will be inactive.

Either: URL Access Control First – When all the packages matching with the conditions specified in URL Access Control and Web Feature below, such function can determine the priority for the actions executed. For this one, the router will process the packages with the conditions set below for URL first, then Web feature second.

Either: Web Feature First –When all the packages matching with the conditions specified in URL Access Control and Web Feature below, such function can determine the priority for the actions executed. For this one, the router will process the packages with the conditions set below for web feature first, then URL second.

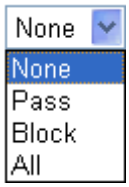


Log **None** – There is no log file will be recorded for this profile.

Pass – Only the log about Pass will be recorded in Syslog.

Block – Only the log about Block will be recorded in Syslog.

All – All the actions (Pass and Block) will be recorded in Syslog.



URL Access Control

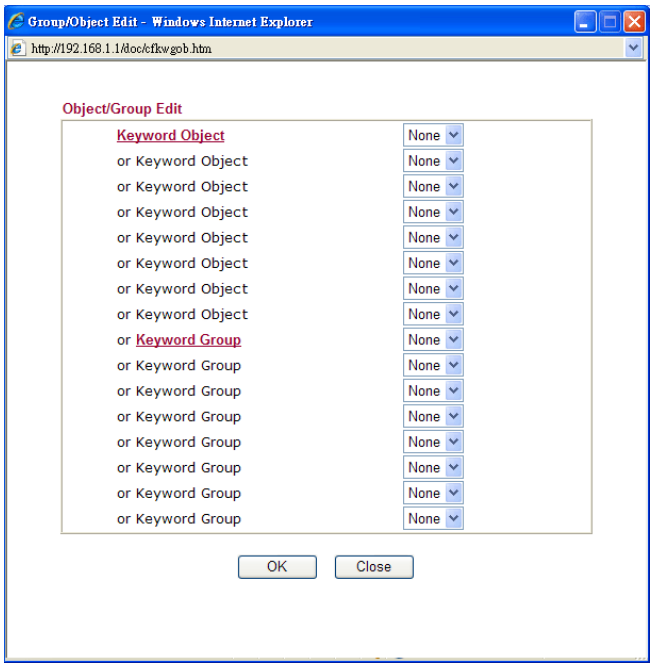
Enable URL Access Control - Check the box to activate URL Access Control. Note that the priority for **URL Access Control** is higher than **Restrict Web Feature**. If the web content match the setting set in URL Access Control, the router will execute the action specified in this field and ignore the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

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.

Action – This setting is available only when **Either : URL Access Control First** or **Either : Web Feature First** is selected. ***Pass*** - Allow accessing into the corresponding webpage with the keywords listed on the box below.

Block **-** Restrict accessing into the corresponding webpage with the keywords listed on the box below.
If the web pages do not match with the keyword set here, it will be processed with reverse action.

Group/Object Selections – The Vigor router provides several 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 is, the more efficiently the Vigor router performs.



Web Feature

Enable Restrict Web Feature - Check this box to make the keyword being blocked or passed.

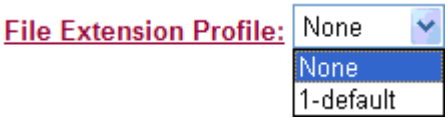
Action - This setting is available only when **Either: URL Access Control First** or **Either: Web Feature Firs** is selected. **Pass** allows accessing into the corresponding webpage with the keywords listed on the box below.
***Pass* -** Allow accessing into the corresponding webpage with the keywords listed on the box below.

***Block* -** Restrict accessing into the corresponding webpage with the keywords listed on the box below.
If the web pages do not match with the specified feature set here, it will be processed with reverse action.

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.

File Extension Profile – Choose one of the profiles that you configured in **Object Setting>> File Extension Objects** previously for passing or blocking the file downloading.



4.7.3 Web Content Filter Profile

There are three ways to activate WCF on vigor router, using **Service Activation Wizard**, by means of **CSM>>Web Content Filter Profile** or via **System Maintenance>>Activation**.

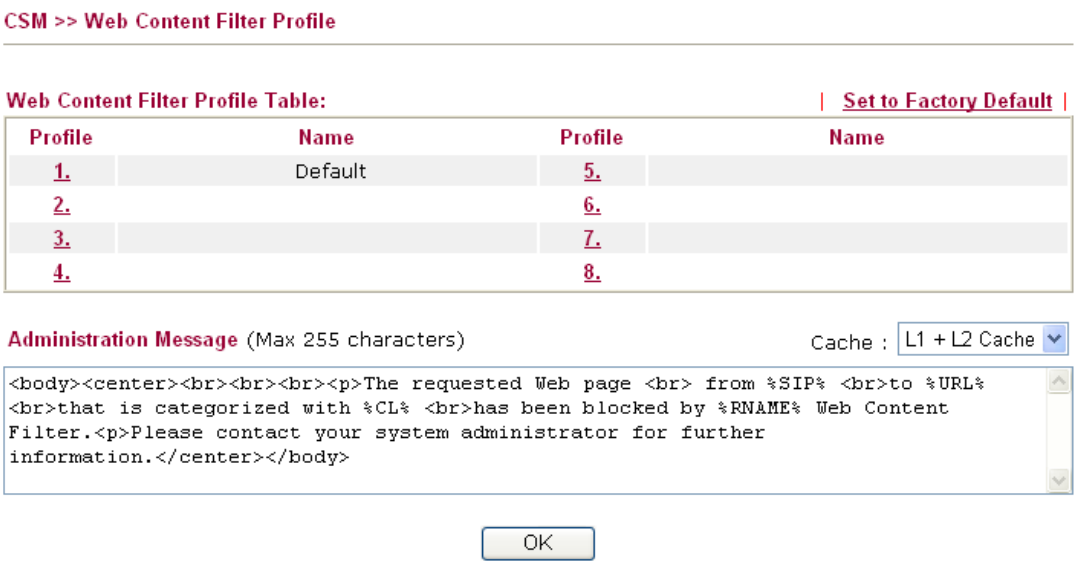
Service Activation Wizard allows you to use trial version or update the license of WCF directly without accessing into the server (***MyVigor***) located on http://myvigor.draytek.com.

However, if you use the **Web Content Filter Profile** page to activate WCF feature, it is necessary for you to access into the server (***MyVigor***) located on http://myvigor.draytek.com. Therefore, you need to register an account on http://myvigor.draytek.com for using corresponding service. Please refer to section of creating MyVigor account.

> **Note:** If you have used **Service Activation Wizard** to activate WCF service, you can skip this section.

WCF adopts the mechanism developed and offered by certain service provider (e.g., DrayTek). No matter activating WCF feature or getting a new license for web content filter, you have to click **Activate** to satisfy your request. Be aware that service provider matching with Vigor router currently offers a period of time for trial version for users to experiment. If you want to purchase a formal edition, simply contact with the channel partner or your dealer.

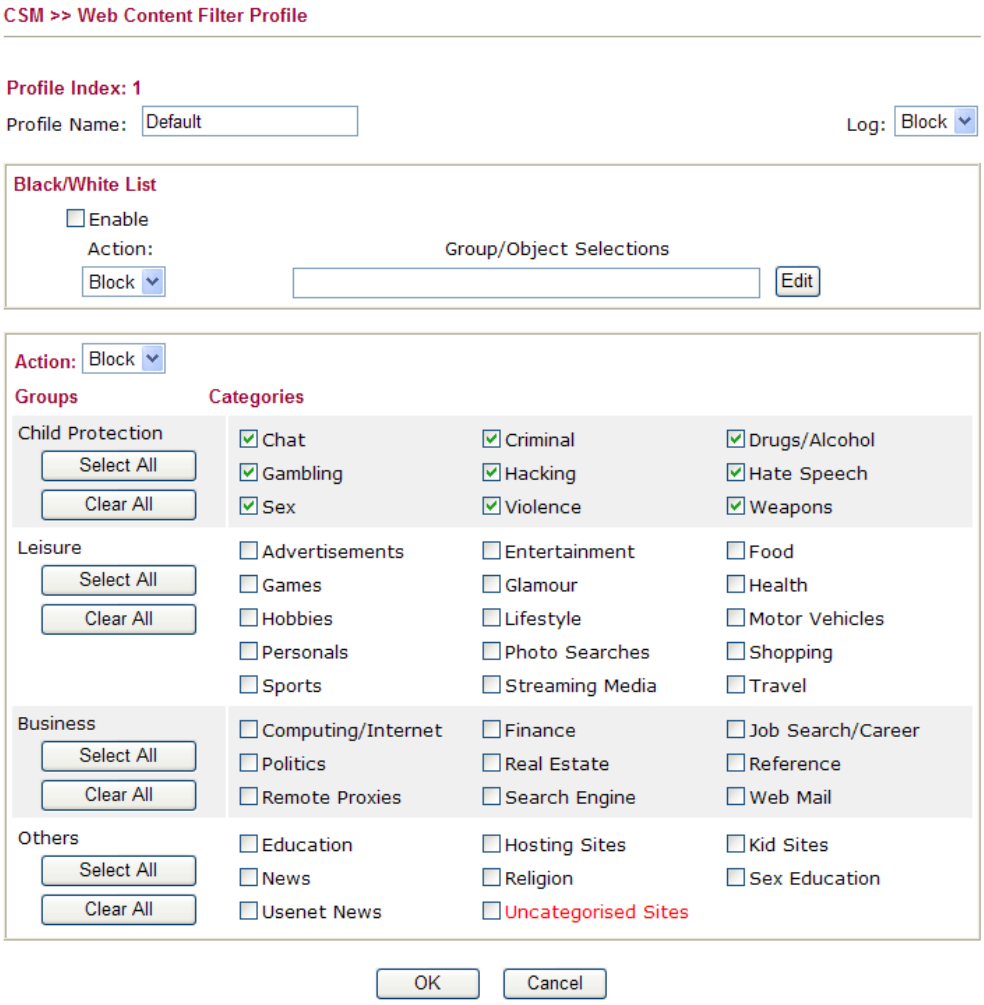
Click **CSM** and click **Web Content Filter Profile** to open the profile setting page. The default setting for Setup Query Server /Setup Test Server is **auto-selected**. You can choose another server for your necessity by clicking **Find more** to open http://myvigor.draytek.com for searching another qualified and suitable one. Next, click the link of **Test a site to verify whether it is categorized** to do the verification.



Activate	Click it to access into MyVigor for activating WCF service.
Setup Query Server	It is recommended for you to use the default setting, auto-selected. You need to specify a server for categorize searching when you type URL in browser based on the web content filter profile.
Setup Test Server	It is recommended for you to use the default setting, auto-selected. By the way, you can click the link of **Test a site to verify whether it is categorized** to access into the test server selected.
Find more	Click it to open http://myvigor.draytek.com for searching

	another qualified and suitable server.
Test a site to verify whether it is categorized	Click this link to do the verification.
Set to Factory Default	Click this link to retrieve the factory settings.
Cache	**None** – the router will check the URL that the user wants to access via WCF precisely, however, the processing rate is normal. Such item can provide the most accurate URL matching. **L1** – the router will check the URL that the user wants to access via WCF. If the URL has been accessed previously, it will be stored for a short time (about 1 second) in the router to be accessed quickly if required. Such item can provide accurate URL matching with faster rate. **L2** – the router will check the URL that the user wants to access via WCF. If the data has been accessed previously, the IP addresses of source and destination IDs will be memorized for a short time (about 1 second) in the router. When the user tries to access the same destination ID, the router will check it by comparing the record stored. If it matches, the page will be retrieved quickly. Such item can provide URL matching with the fastest rate. **L1+L2 Cache** – the router will check the URL with fast processing rate combining the feature of L1 and L2.

Eight profiles are provided here as Web content filters. Simply click the index number under Profile to open the following web page. The items listed in Categories will be changed according to the different service providers. If you have and activate another web content filter license, the items will be changed simultaneously. All of the configuration made for web content filter will be deleted automatically. Therefore, please backup your data before you change the web content filter license.



Black/White List

Enable – Activate white/black list function for such profile.
Group/Object Selections – Click **Edit** to choose the group or object profile as the content of white/black list.

Action

Pass - allow accessing into the corresponding webpage with the characters listed on **Group/Object Selections**. If the web pages do not match with the specified feature set here, they will be processed with the categories listed on the box below.

Block - restrict accessing into the corresponding webpage with the characters listed on **Group/Object Selections**. If the web pages do not match with the specified feature set here, they will be processed with the categories listed on the box below.

Pass - allow accessing into the corresponding webpage with the categories listed on the box below.

Block - restrict accessing into the corresponding webpage with the categories listed on the box below.

If the web pages do not match with the specified feature set here, it will be processed with reverse action.

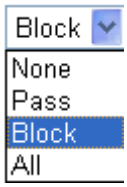
Log

None – There is no log file will be recorded for this profile.

Pass – Only the log about Pass will be recorded in Syslog.

Block – Only the log about Block will be recorded in Syslog.

All – All the actions (Pass and Block) will be recorded in Syslog.



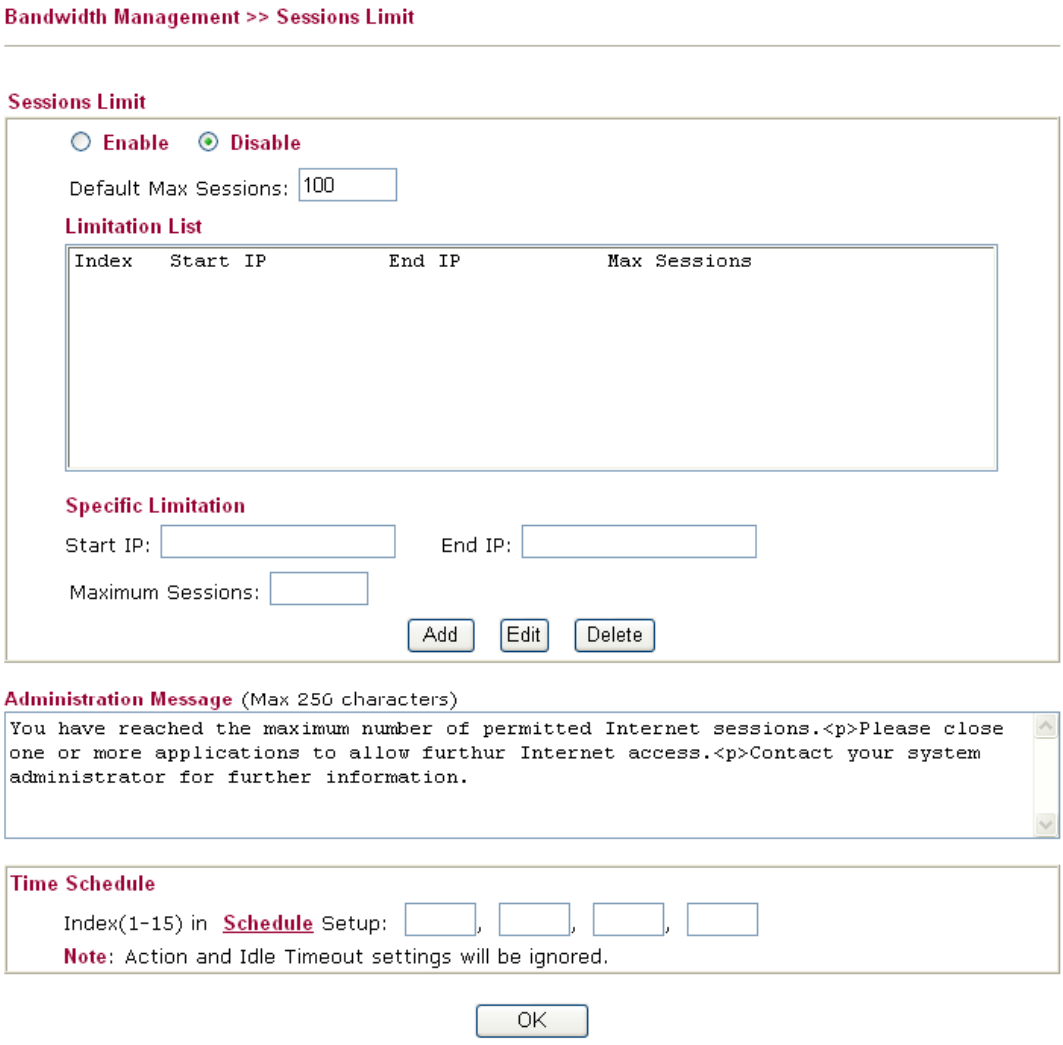
4.8 Bandwidth Management

Below shows the menu items for Bandwidth Management.

4.8.1 Sessions Limit

A PC with private IP address can access to the Internet via NAT router. The router will generate the records of NAT sessions for such connection. The P2P (Peer to Peer) applications (e.g., BitTorrent) always need many sessions for procession and also they will occupy over resources which might result in important accesses impacted. To solve the problem, you can use limit session to limit the session procession for specified Hosts.

In the **Bandwidth Management** menu, click **Sessions Limit** to open the web page.



To activate the function of limit session, simply click **Enable** and set the default session limit.

Enable	Click this button to activate the function of limit session.
Disable	Click this button to close the function of limit session.
Default session limit	Defines the default session number used for each computer in LAN.
Limitation List	Displays a list of specific limitations that you set on this web page.
Start IP	Defines the start IP address for limit session.
End IP	Defines the end IP address for limit session.
Maximum Sessions	Defines the available session number for each host in the specific range of IP addresses. If you do not set the session number in this field, the system will use the default session limit for the specific limitation you set for each index.
Add	Adds the specific session limitation onto the list above.
Edit	Allows you to edit the settings for the selected limitation.
Remove	Remove the selected settings existing on the limitation list.
Administration Message	Type the words which will be displayed when reaches the

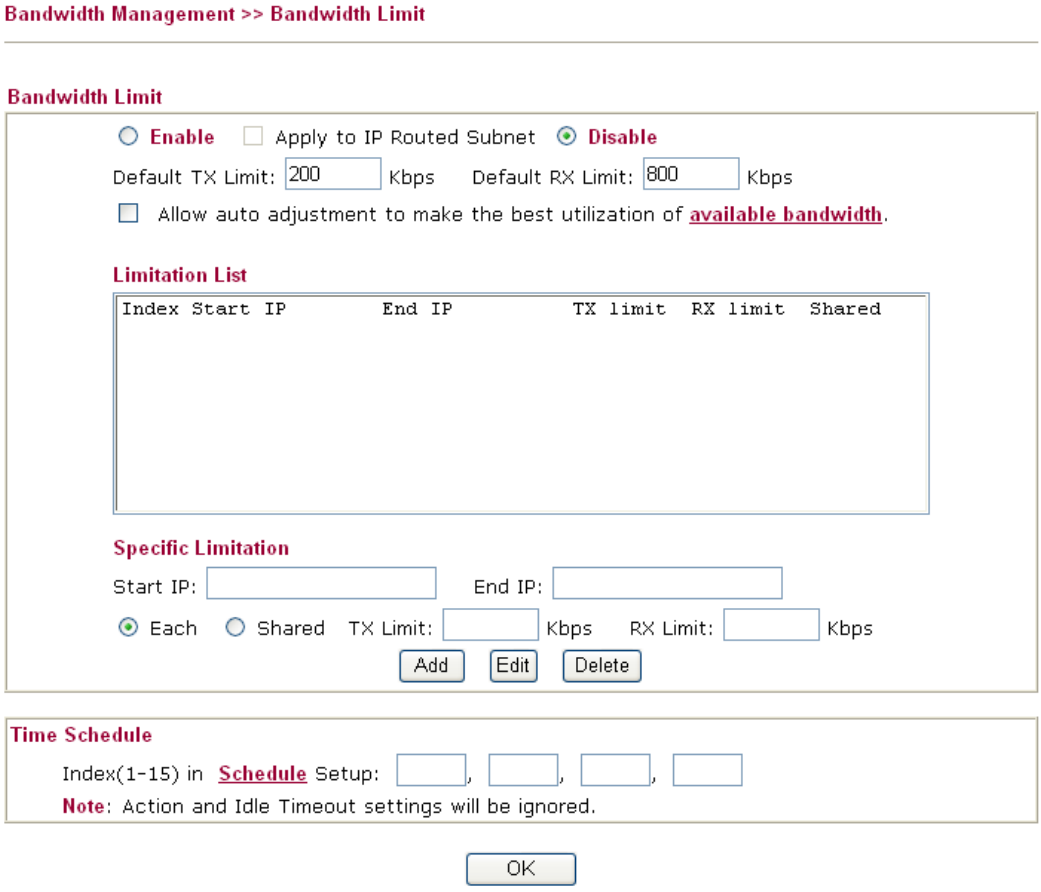
maximum number of Internet sessions permitted.

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 **Application >> Schedule** web page and you can use the number that you have set in that web page.

4.8.2 Bandwidth Limit

The downstream or upstream from FTP, HTTP or some P2P applications will occupy large of bandwidth and affect the applications for other programs. Please use Limit Bandwidth to make the bandwidth usage more efficient.

In the **Bandwidth Management** menu, click **Bandwidth Limit** to open the web page.



To activate the function of limit bandwidth, simply click **Enable** and set the default upstream and downstream limit.

Enable — Click this button to activate the function of limit bandwidth. **Apply to IP Routed Subnet** – Check this box to apply the bandwidth limit to the subnet specified in **LAN>>General Setup**.

Disable — Click this button to close the function of limit bandwidth.

Default TX limit — Define the default speed of the upstream for each computer in LAN.

Default RX limit — Define the default speed of the downstream for each computer in LAN.

Limitation List	Display a list of specific limitations that you set on this web page.
Start IP	Define the start IP address for limit bandwidth.
End IP	Define the end IP address for limit bandwidth.
Each /Shared	Select **Each** to make each IP within the range of Start IP and End IP having the same speed defined in TX limit and RX limit fields; select **Shared** to make all the IPs within the range of Start IP and End IP share the speed defined in TX limit and RX limit fields.
TX limit	Define the limitation for the speed of the upstream. If you do not set the limit in this field, the system will use the default speed for the specific limitation you set for each index.
RX limit	Define the limitation for the speed of the downstream. If you do not set the limit in this field, the system will use the default speed for the specific limitation you set for each index.
Add	Add the specific speed limitation onto the list above.
Edit	Allow you to edit the settings for the selected limitation.
Delete	Remove the selected settings existing on the limitation list.
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 **Application** >> **Schedule** web page and you can use the number that you have set in that web page.

4.8.3 Quality of Service

Deploying QoS (Quality of Service) management to guarantee that all applications receive the service levels required and sufficient bandwidth to meet performance expectations is indeed one important aspect of modern enterprise network.

One reason for QoS is that numerous TCP-based applications tend to continually increase their transmission rate and consume all available bandwidth, which is called TCP slow start. If other applications are not protected by QoS, it will detract much from their performance in the overcrowded network. This is especially essential to those are low tolerant of loss, delay or jitter (delay variation).

Another reason is due to congestions at network intersections where speeds of interconnected circuits mismatch or traffic aggregates, packets will queue up and traffic can be throttled back to a lower speed. If there's no defined priority to specify which packets should be discarded (or in another term "dropped") from an overflowing queue, packets of sensitive applications mentioned above might be the ones to drop off. How this will affect application performance?

There are two components within Primary configuration of QoS deployment:

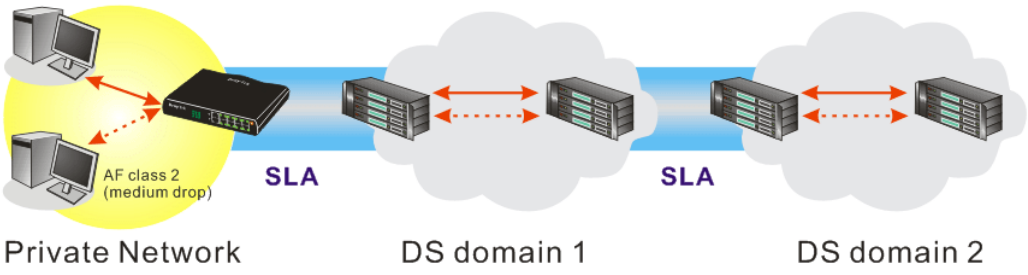
- Classification: Identifying low-latency or crucial applications and marking them for high-priority service level enforcement throughout the network.
- Scheduling: Based on classification of service level to assign packets to queues and associated service types

The basic QoS implementation in Vigor routers is to classify and schedule packets based on the service type information in the IP header. For instance, to ensure the connection with the

headquarter, a teleworker may enforce an index of QoS Control to reserve bandwidth for HTTPS connection while using lots of application at the same time.

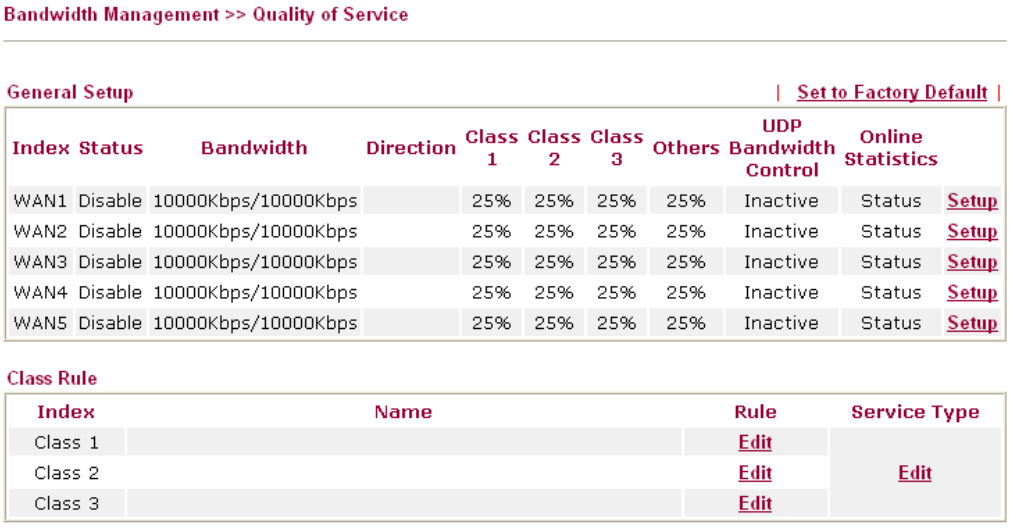
One more larger-scale implementation of QoS network is to apply DSCP (Differentiated Service Code Point) and IP Precedence disciplines at Layer 3. Compared with legacy IP Precedence that uses Type of Service (ToS) field in the IP header to define 8 service classes, DSCP is a successor creating 64 classes possible with backward IP Precedence compatibility. In a QoS-enabled network, or Differentiated Service (DiffServ or DS) framework, a DS domain owner should sign a Service License Agreement (SLA) with other DS domain owners to define the service level provided toward traffic from different domains. Then each DS node in these domains will perform the priority treatment. This is called per-hop-behavior (PHB). The definition of PHB includes Expedited Forwarding (EF), Assured Forwarding (AF), and Best Effort (BE). AF defines the four classes of delivery (or forwarding) classes and three levels of drop precedence in each class.

Vigor routers as edge routers of DS domain shall check the marked DSCP value in the IP header of bypassing traffic, thus to allocate certain amount of resource execute appropriate policing, classification or scheduling. The core routers in the backbone will do the same checking before executing treatments in order to ensure service-level consistency throughout the whole QoS-enabled network.



However, each node may take different attitude toward packets with high priority marking since it may bind with the business deal of SLA among different DS domain owners. It's not easy to achieve deterministic and consistent high-priority QoS traffic throughout the whole network with merely Vigor router's effort.

In the **Bandwidth Management** menu, click **Quality of Service** to open the web page.



Bandwidth Management >> Quality of Service

General Setup | Set to Factory Default |

Index	Status	Bandwidth	Direction	Class 1	Class 2	Class 3	Others	UDP Bandwidth Control	Online Statistics	
WAN1	Disable	10000Kbps/10000Kbps		25%	25%	25%	25%	Inactive	Status	Setup
WAN2	Disable	10000Kbps/10000Kbps		25%	25%	25%	25%	Inactive	Status	Setup
WAN3	Disable	10000Kbps/10000Kbps		25%	25%	25%	25%	Inactive	Status	Setup
WAN4	Disable	10000Kbps/10000Kbps		25%	25%	25%	25%	Inactive	Status	Setup
WAN5	Disable	10000Kbps/10000Kbps		25%	25%	25%	25%	Inactive	Status	Setup

Class Rule

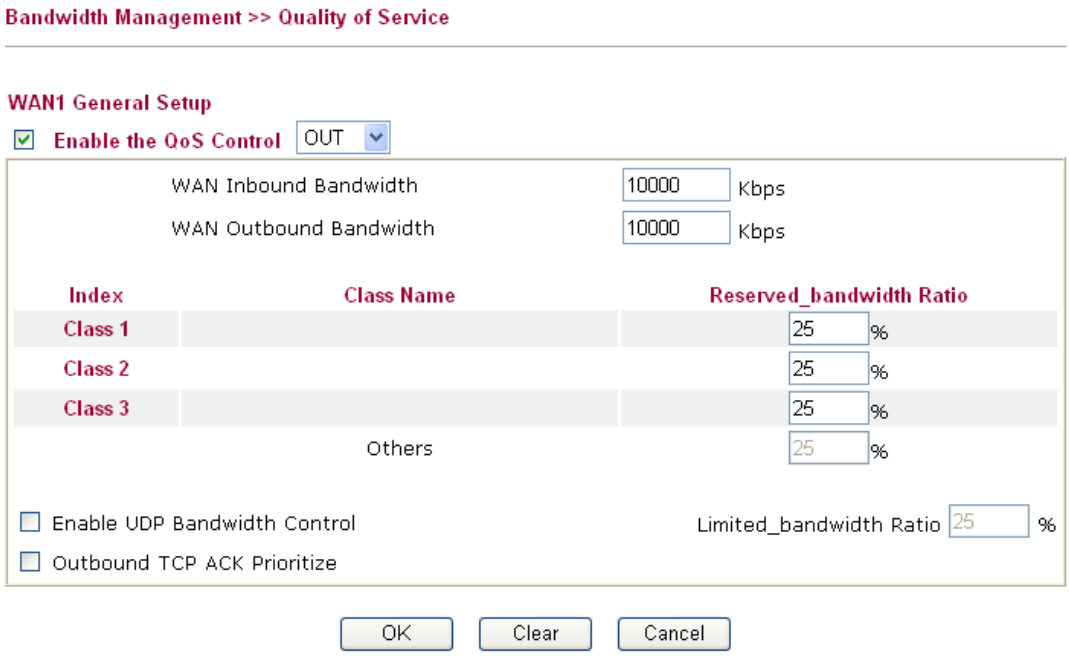
Index	Name	Rule	Service Type
Class 1		Edit	
Class 2		Edit	Edit
Class 3		Edit	

This page displays the QoS settings result of the WAN interface. Click the **Setup** link to access into next page for the general setup of WAN interface. As to class rule, simply click the **Edit** link to access into next for configuration.

You can configure general setup for the WAN interface, edit the Class Rule, and edit the Service Type for the Class Rule for your request.

General Setup for WAN Interface

When you click **Setup**, you can configure the bandwidth ratio for QoS of the WAN interface. There are four queues allowed for QoS control. The first three (Class 1 to Class 3) class rules can be adjusted for your necessity. Yet, the last one is reserved for the packets which are not suitable for the user-defined class rules.



Enable the QoS Control

The factory default for this setting is checked.

Please also define which traffic the QoS Control settings will apply to.

IN- apply to incoming traffic only.

OUT-apply to outgoing traffic only.

BOTH- apply to both incoming and outgoing traffic.

Check this box and click **OK**, then click **Setup** link again. You will see the **Online Statistics** link appearing on this page.

WAN Inbound Bandwidth

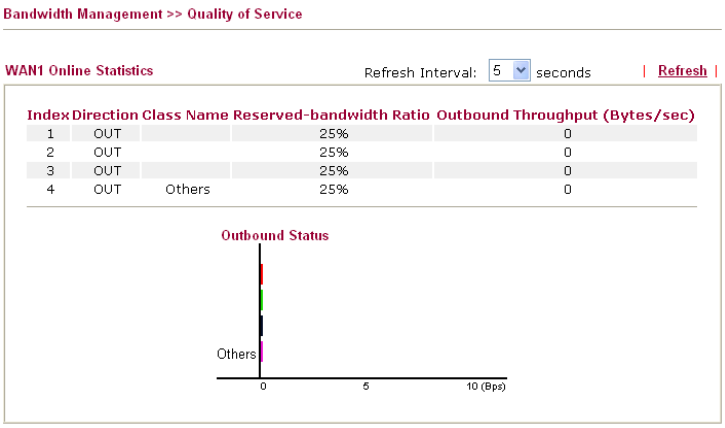
It allows you to set the connecting rate of data input for WAN. For example, if your ADSL supports 1M of downstream and 256K upstream, please set 1000kbps for this box. The default value is 10000kbps.

WAN Outbound Bandwidth

It allows you to set the connecting rate of data output for WAN. For example, if your ADSL supports 1M of downstream and 256K upstream, please set 256kbps for this box. The default value is 10000kbps.

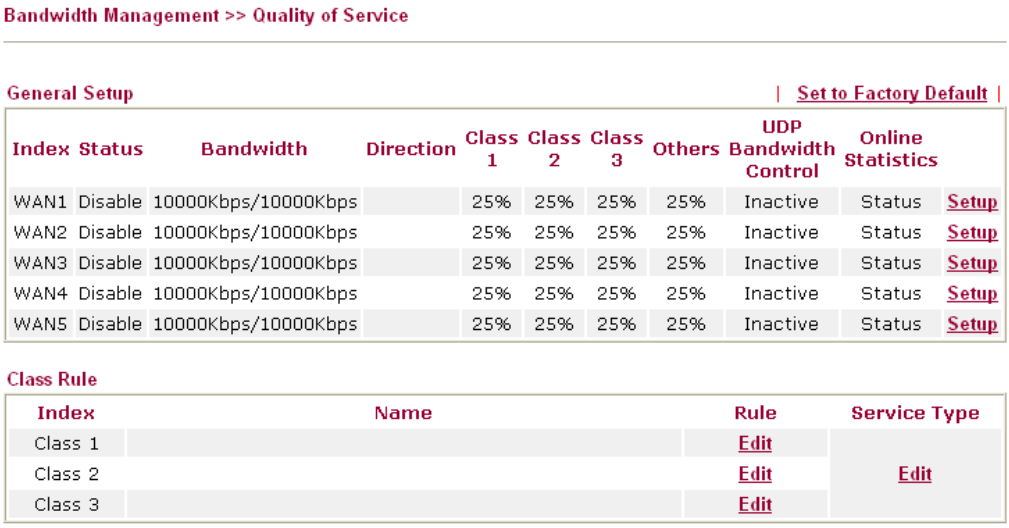
Note: The rate of outbound/inbound must be smaller than the real bandwidth to ensure correct calculation of QoS. It is suggested to set the bandwidth value for inbound/outbound as 80% - 85% of physical network speed provided by ISP to maximize the QoS performance.

Reserved Bandwidth Ratio	It is reserved for the group index in the form of ratio of **reserved bandwidth to upstream speed** and **reserved bandwidth to downstream speed**.
Enable UDP Bandwidth Control	Check this and set the limited bandwidth ratio on the right field. This is a protection of TCP application traffic since UDP application traffic such as streaming video will exhaust lots of bandwidth.
Outbound TCP ACK Prioritize	The difference in bandwidth between download and upload are great in ADSL2+ environment. For the download speed might be impacted by the uploading TCP ACK, you can check this box to push ACK of upload faster to speed the network traffic.
Limited_bandwidth Ratio	The ratio typed here is reserved for limited bandwidth of UDP application.
Online Statistics	Display an online statistics for quality of service for your reference.

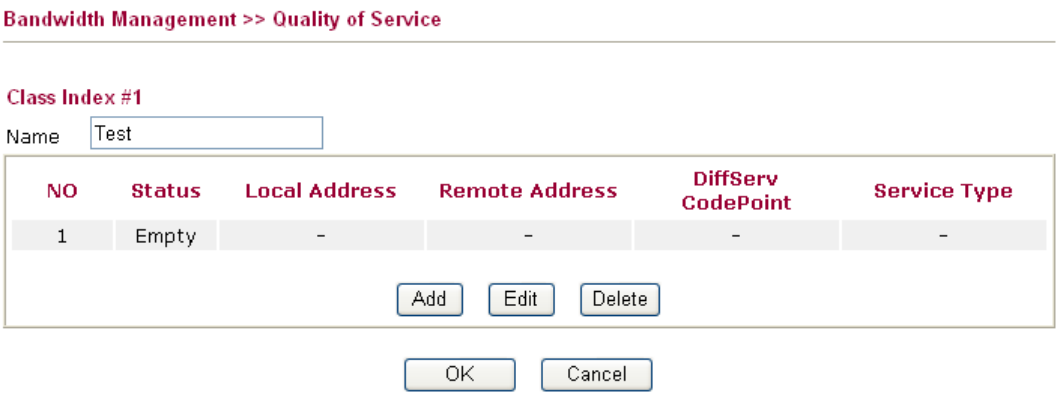


Edit the Class Rule for QoS

The first three (Class 1 to Class 3) class rules can be adjusted for your necessity. To add, edit or delete the class rule, please click the **Edit** link of that one.



After you click the **Edit** link, you will see the following page. Now you can define the name for that Class. In this case, "Test" is used as the name of Class Index #1.



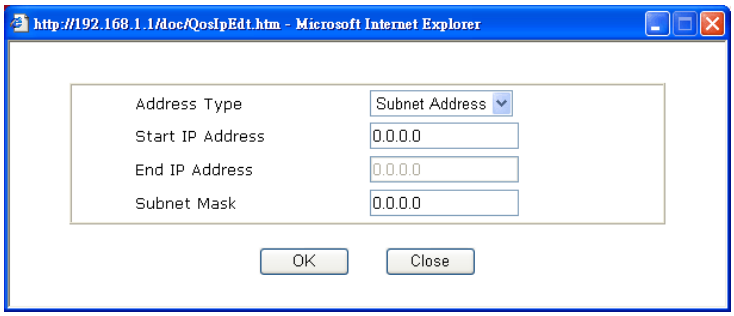
For adding a new rule, click **Add** to open the following page.

ACT — Check this box to invoke these settings.

Local Address — Click the **Edit** button to set the local IP address (on LAN) for the rule.

Remote Address — Click the **Edit** button to set the remote IP address (on LAN/WAN) for the rule.

Edit — It allows you to edit source address information.



Address Type – Determine the address type for the source address.

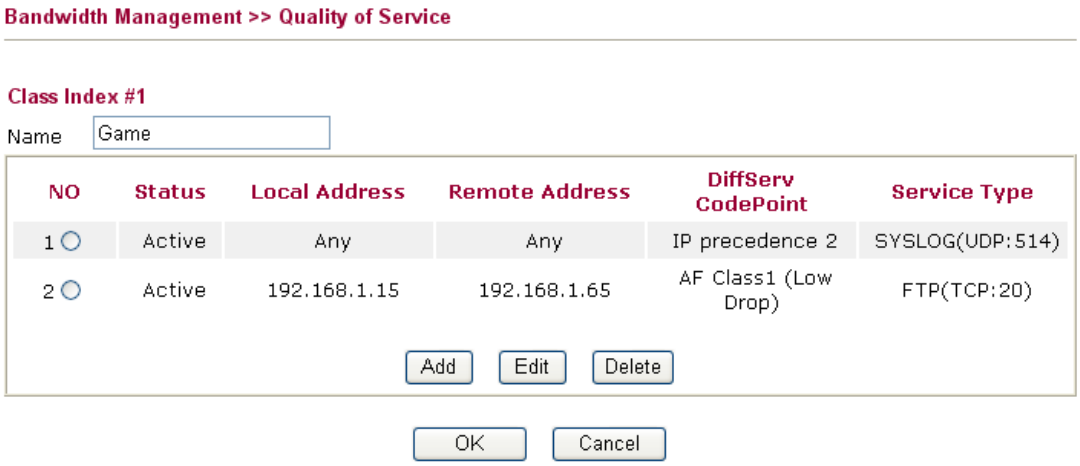
For **Single Address**, you have to fill in Start IP address.

For **Range Address**, you have to fill in Start IP address and End IP address.

For **Subnet Address**, you have to fill in Start IP address and

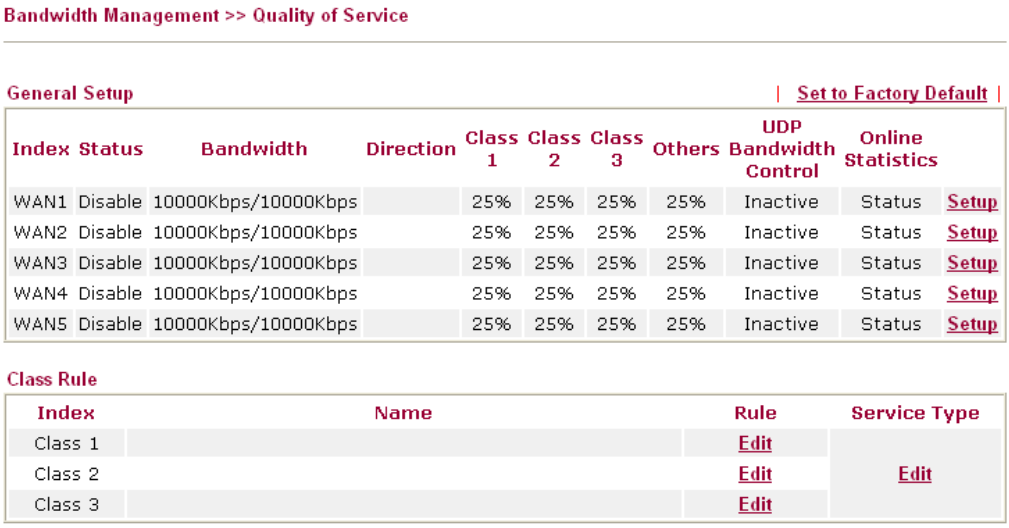
	Subnet Mask.
DiffServ CodePoint	All the packets of data will be divided with different levels and will be processed according to the level type by the system. Please assign one of the levels of the data for processing with QoS control.
Service Type	It determines the service type of the data for processing with QoS control. It can also be edited. You can choose the predefined service type from the Service Type drop down list. Those types are predefined in factory. Simply choose the one that you want for using by current QoS.

By the way, you can set up to 20 rules for one Class. If you want to edit an existed rule, please select the radio button of that one and click **Edit** to open the rule edit page for modification.

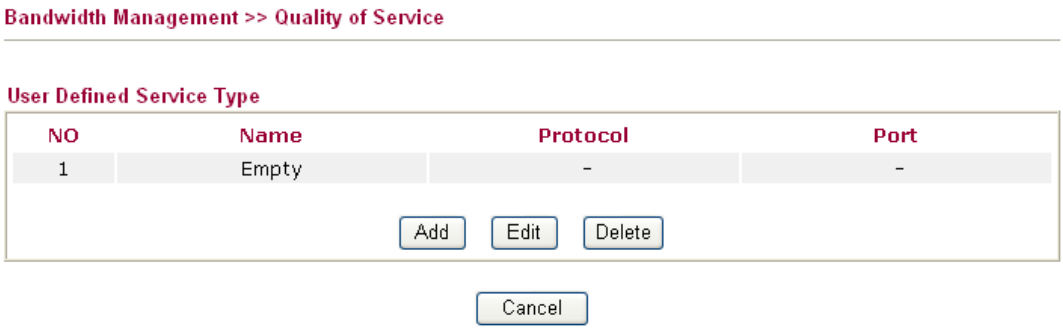


Edit the Service Type for Class Rule

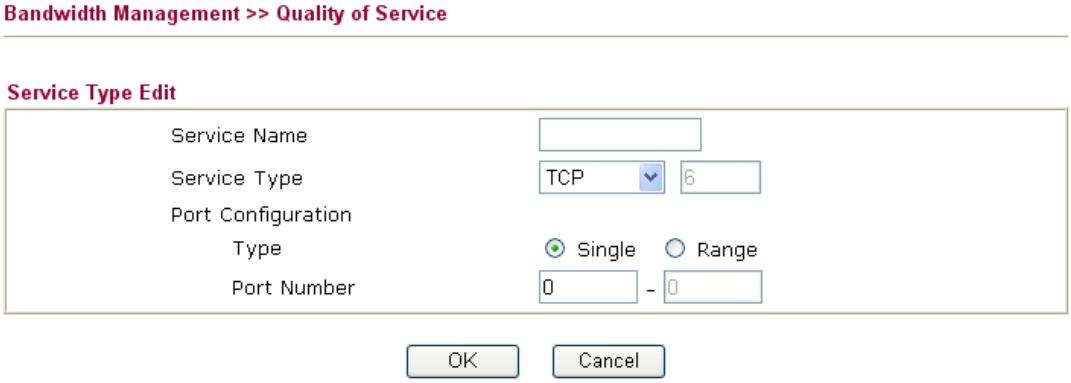
To add a new service type, edit or delete an existed service type, please click the Edit link under Service Type field.



After you click the **Edit** link, you will see the following page.



For adding a new service type, click **Add** to open the following page.



Service Name Type in a new service for your request.

Service Type Choose the type (TCP, UDP or TCP/UDP) for the new service.

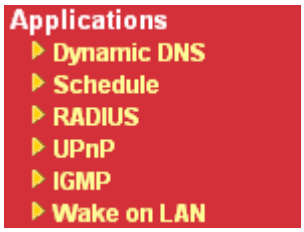
Port Configuration Click **Single** or **Range** as the **Type**. If you select Range, you have to type in the starting port number and the end porting number on the boxes below.

Port Number – Type in the starting port number and the end porting number here if you choose Range as the type.

By the way, you can set up to 40 service types. If you want to edit/delete an existed service type, please select the radio button of that one and click **Edit/Edit** for modification.

4.9 Applications

Below shows the menu items for Applications.



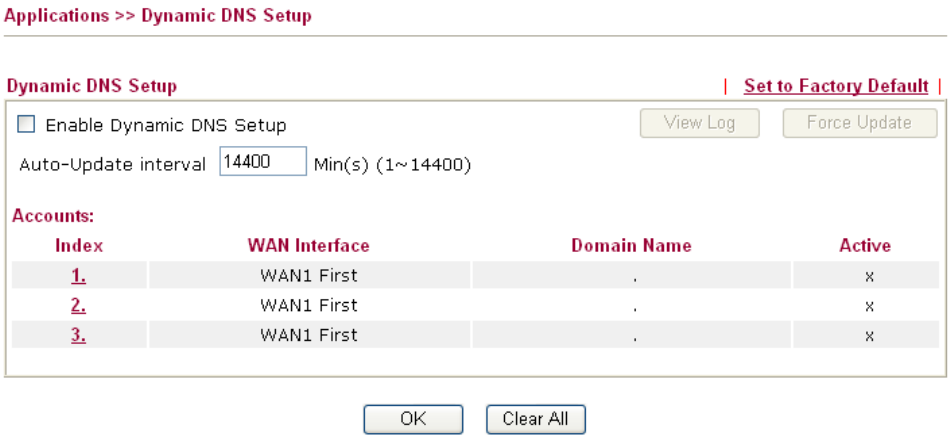
4.9.1 Dynamic DNS

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

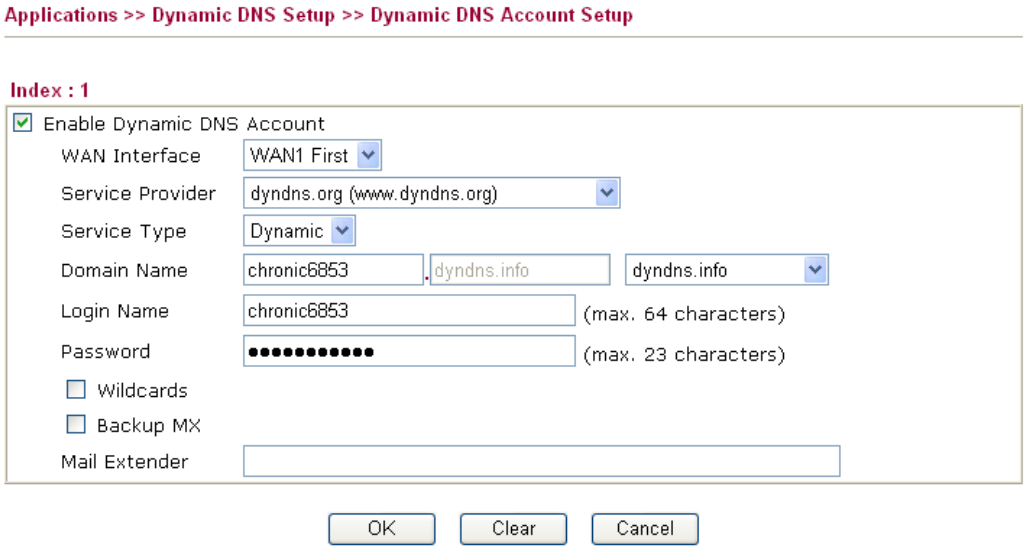
1. Assume you have a registered domain name from the DDNS provider, say *hostname.dyndns.org*, and an account with username: *test* and password: *test*.
2. In the DDNS setup menu, check **Enable Dynamic DNS Setup**.



Enable Dynamic DNS Setup	Check this box to enable DDNS function.
Set to Factory Default	Clear all profiles and recover to factory settings.
Auto-Update interval	Set the time for the router to perform auto update for DDNS service.
Index	Click the number below Index to access into the setting page of DDNS setup to set account(s).

WAN Interface	Display the WAN interface used.
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*.



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).
WAN Interface	**WAN1/WAN2/WAN3/WAN4/WAN5 First** - While connecting, the router will use WAN1/WAN2/WAN3 /WAN4 /WAN5 as the first channel for such account. If WAN1/WAN2/WAN3/WAN4/WAN5 fails, the router will use another WAN interface instead. **WAN1/WAN2/WAN3/WAN4/WAN5 Only** - While connecting, the router will use WAN1/WAN2/WAN3 /WAN4/WAN5 as the only channel for such account.
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.

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

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

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.

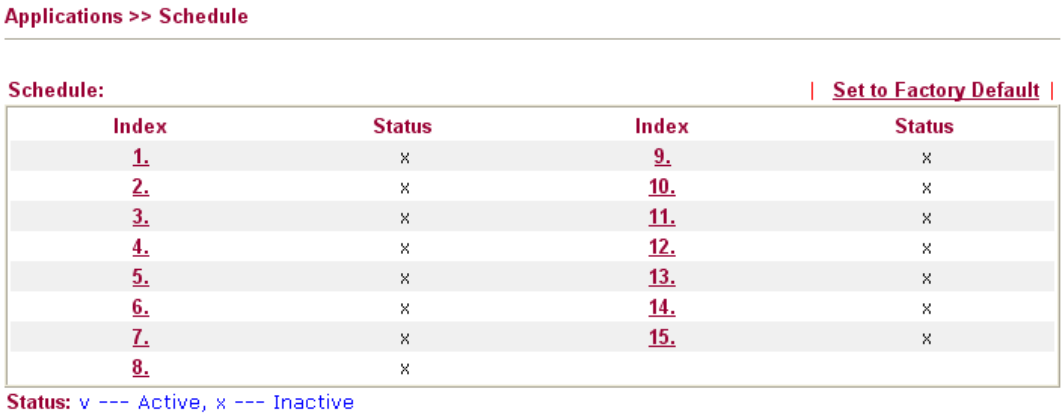
Delete a Dynamic DNS Account

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

4.9.2 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.

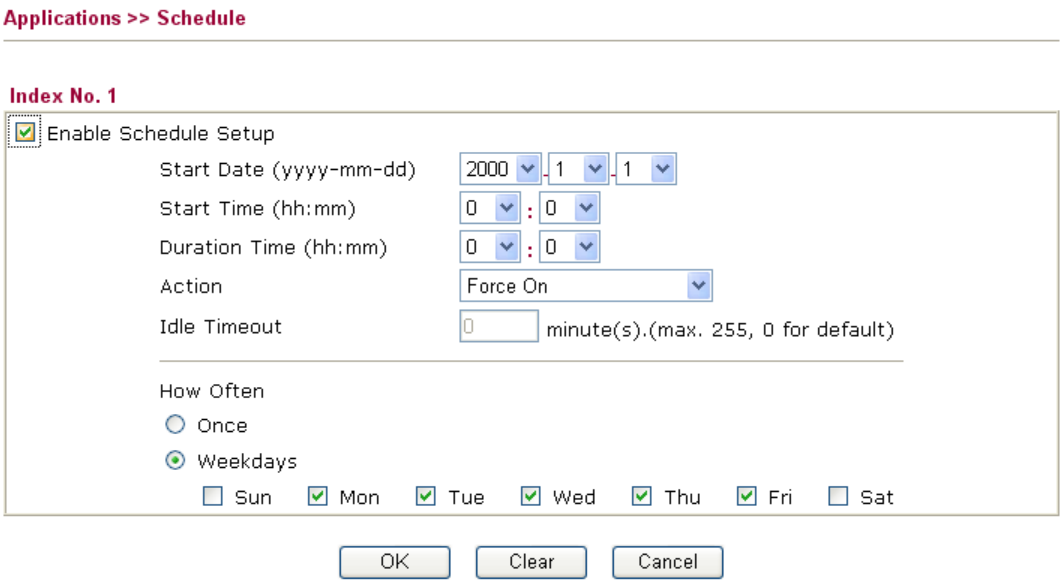
You have to set your time before set schedule. In **System Maintenance>> Time and Date** menu, press **Inquire Time** button to set the Vigor router's clock to current time of your PC. The clock will reset once if you power down or reset the router. There is another way to set up time. You can inquiry 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.



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. Then you can apply them to your **Internet Access** or **VPN and Remote Access >> LAN-to-LAN** settings.

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.



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)

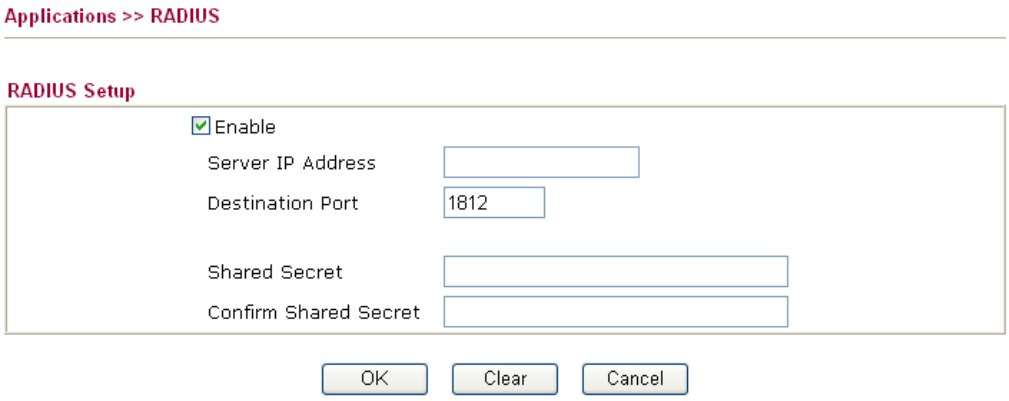
Mon - Sun 9:00 am to 6:00 pm

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.

4.9.3 RADIUS

Remote Authentication Dial-In User Service (RADIUS) is a security authentication client/server protocol that supports authentication, authorization and accounting, which is widely used by Internet service providers. It is the most common method of authenticating and authorizing dial-up and tunneled network users.

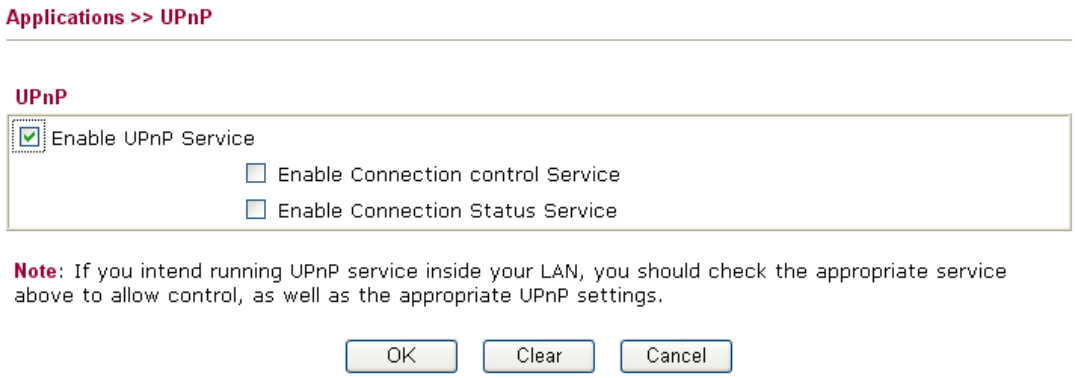
The built-in RADIUS client feature enables the router to assist the remote dial-in user or a wireless station and the RADIUS server in performing mutual authentication. It enables centralized remote access authentication for network management.



Enable	Check to enable RADIUS client feature.
Server IP Address	Enter the IP address of RADIUS server
Destination Port	The UDP port number that the RADIUS server is using. The default value is 1812, based on RFC 2138.
Shared Secret	The RADIUS server and client share a secret that is used to authenticate the messages sent between them. Both sides must be configured to use the same shared secret.
Confirm Shared Secret	Re-type the Shared Secret for confirmation.

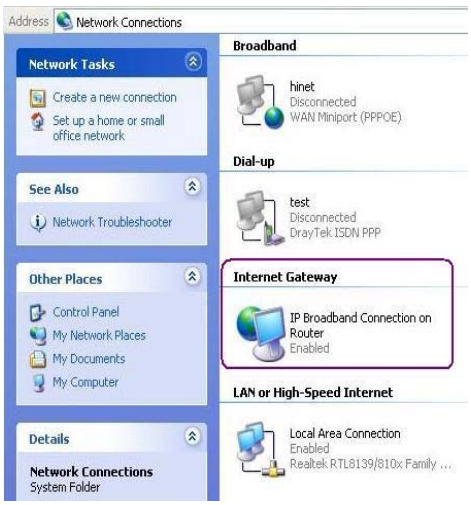
4.9.4 UPnP

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.

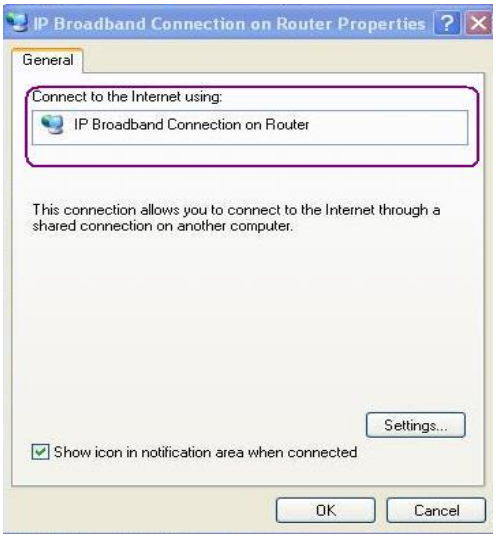


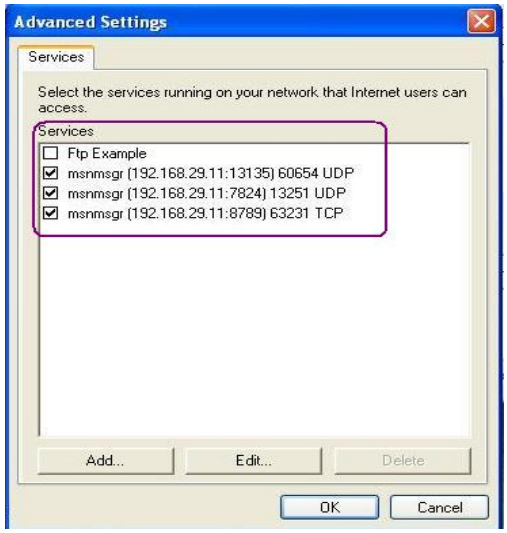
Enable UPNP Service Accordingly, you can enable either the **Connection Control Service** or **Connection Status Service**.

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.



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.





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

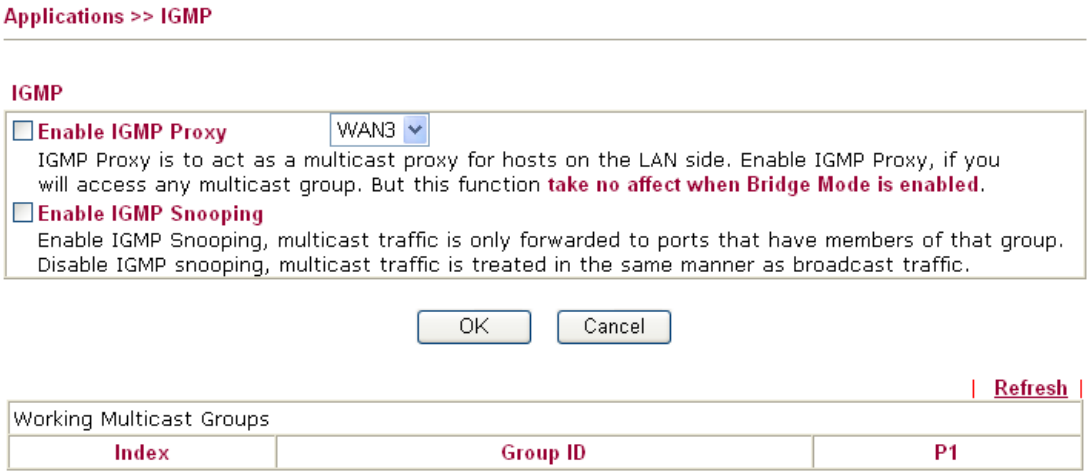
Activating the UPnP function on your network may incur some security threats. You should consider carefully these risks before activating the UPnP function.

- 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.

4.9.5 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.



Enable IGMP Proxy Check this box to enable this function. The application of multicast will be executed through WAN port selected. In addition, such function is available in NAT mode.

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.

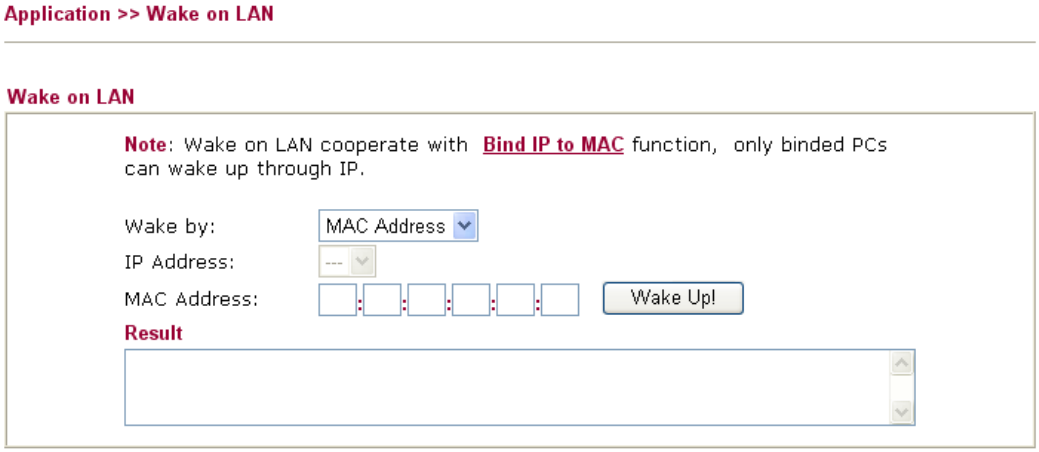
P1 It indicates the LAN port used for the multicast group.

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

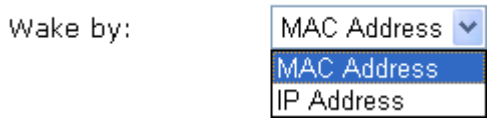
4.9.6 Wake on LAN

A PC client on LAN can be woken up by the router it connects. When a user wants to wake up a specified PC through the router, he/she must type correct MAC address of the specified PC on this web page of **Wake on LAN** of this router.

In addition, such PC must have installed a network card supporting WOL function. By the way, WOL function must be set as “Enable” on the BIOS setting.



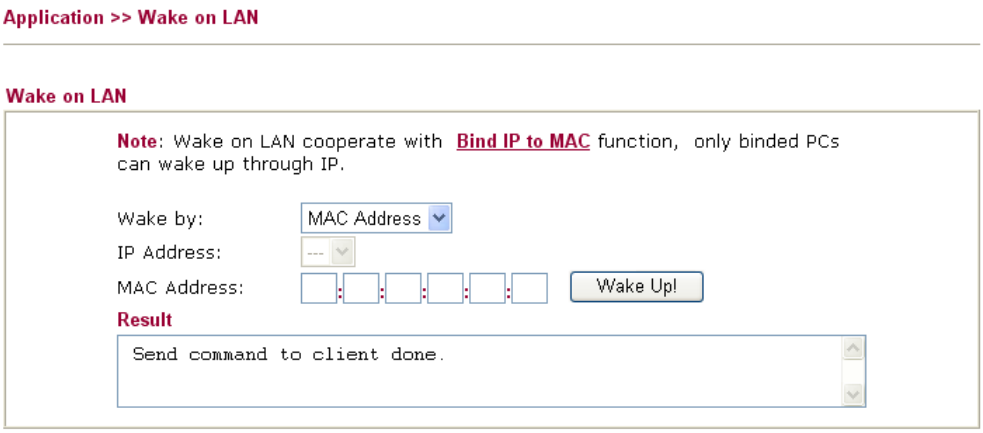
Wake by Two types provide for you to wake up the binded IP. If you choose Wake by MAC Address, you have to type the correct MAC address of the host in MAC Address boxes. If you choose Wake by IP Address, you have to choose the correct IP address.



IP Address The IP addresses that have been configured in **Firewall>>Bind IP to MAC** will be shown in this drop down list. Choose the IP address from the drop down list that you want to wake up.

MAC Address Type any one of the MAC address of the bound PCs.

Wake Up Click this button to wake up the selected IP. See the following figure. The result will be shown on the box.



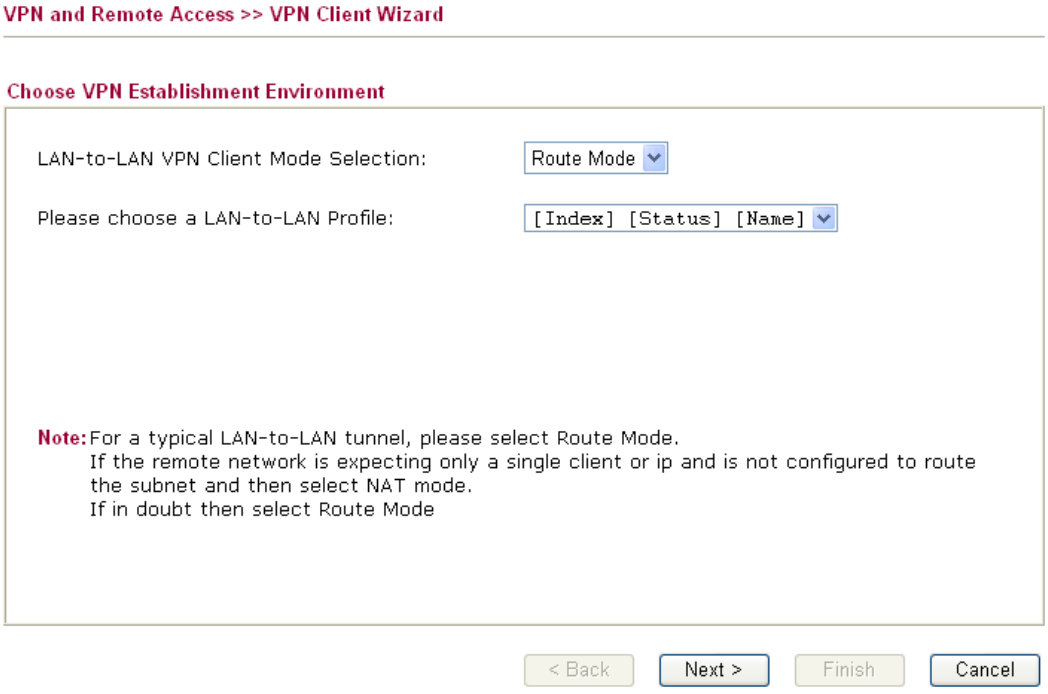
4.10 VPN and Remote Access

A Virtual Private Network (VPN) is the extension of a private network that encompasses links across shared or public networks like the Internet. In short, by VPN technology, you can send data between two computers across a shared or public network in a manner that emulates the properties of a point-to-point private link.

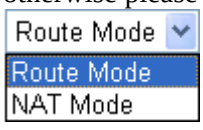
Below shows the menu items for VPN and Remote Access.

4.10.1 VPN Client Wizard

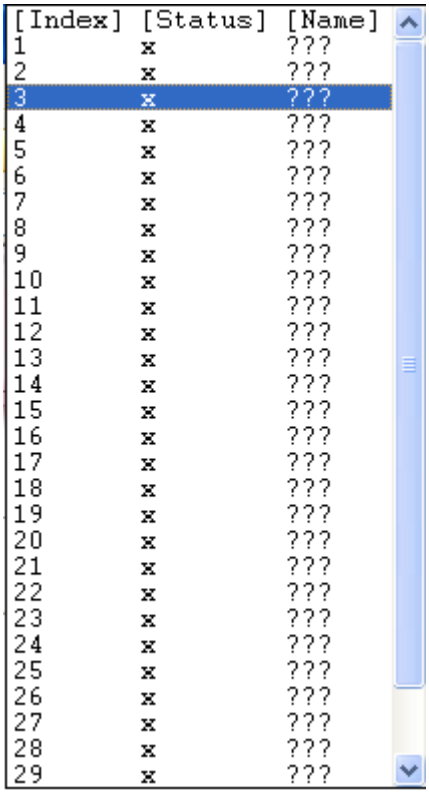
Such wizard is used to configure VPN settings for VPN client. Such wizard will guide to set the LAN-to-LAN profile for VPN dial out connection (from server to client) step by step.



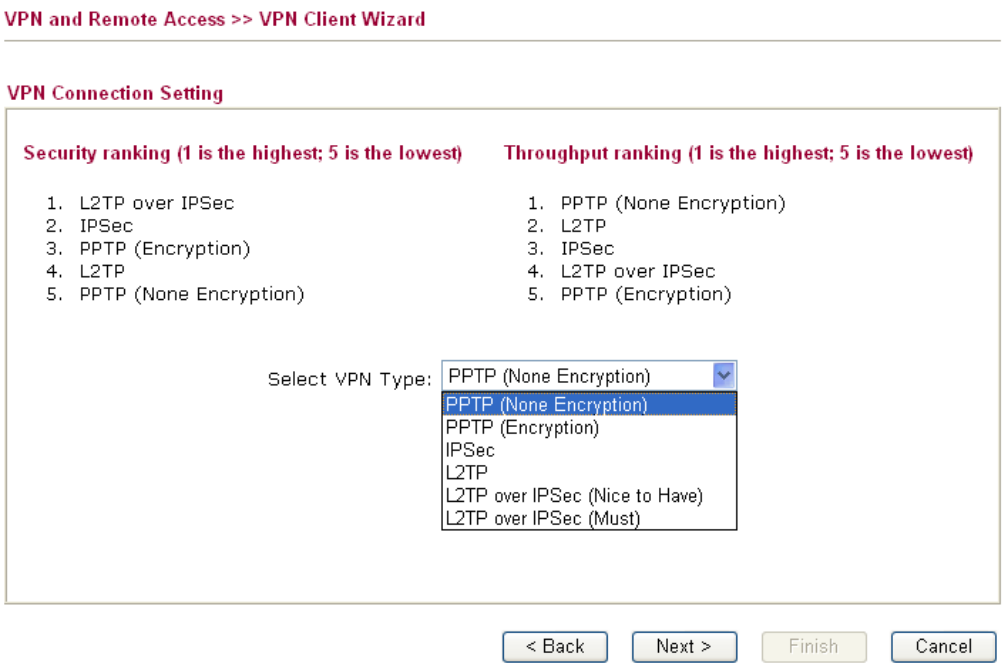
LAN-to-LAN Client Mode Selection Choose the client mode.
Route Mode/NAT Mode – If the remote network only allows you to dial in with single IP, please choose this mode, otherwise please choose Route Mode.



Please choose a LAN-to-LAN Profile There are 32 VPN profiles for users to set.

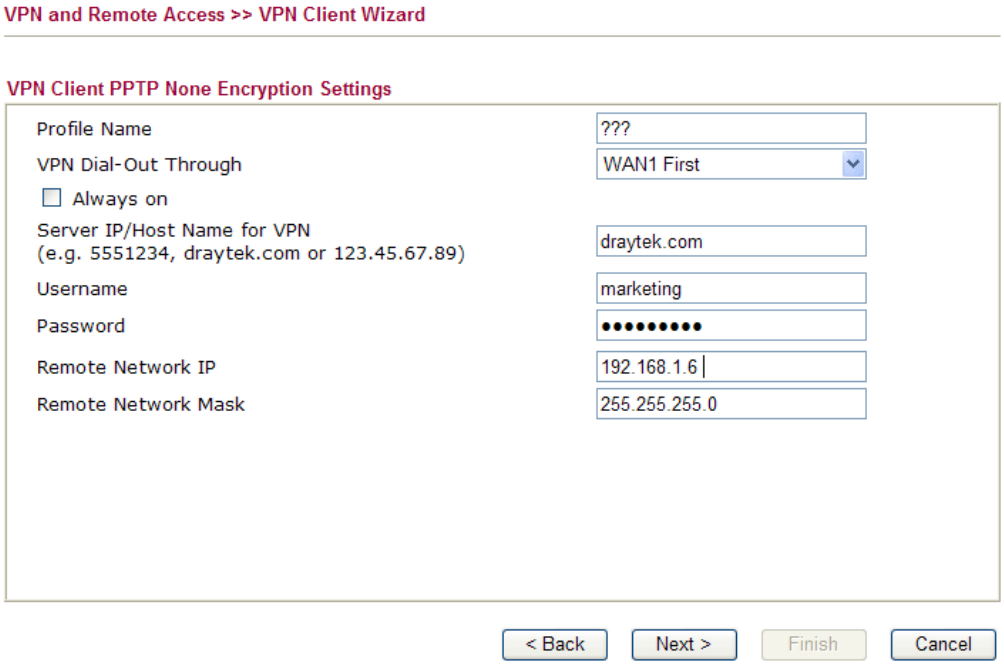


When you finish the mode and profile selection, please click **Next** to open the following page.

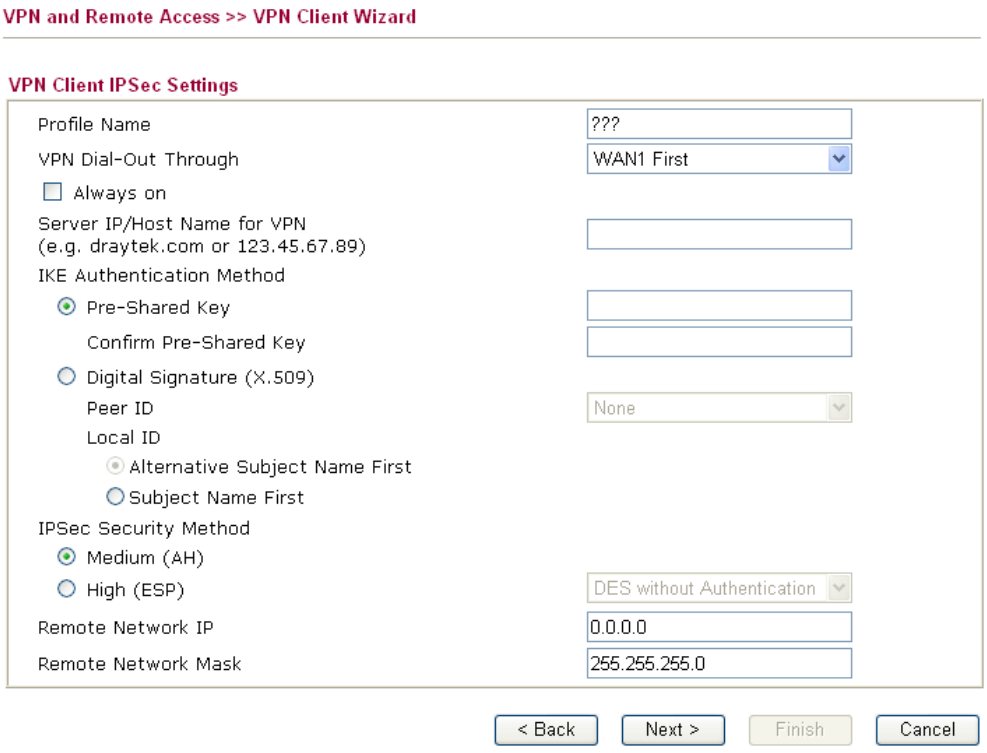


In this page, you have to select suitable VPN type for the VPN client profile. There are six types provided here. Different type will lead to different configuration page. After making the choices for the client profile, please click **Next**. You will see different configurations based on the selection(s) you made.

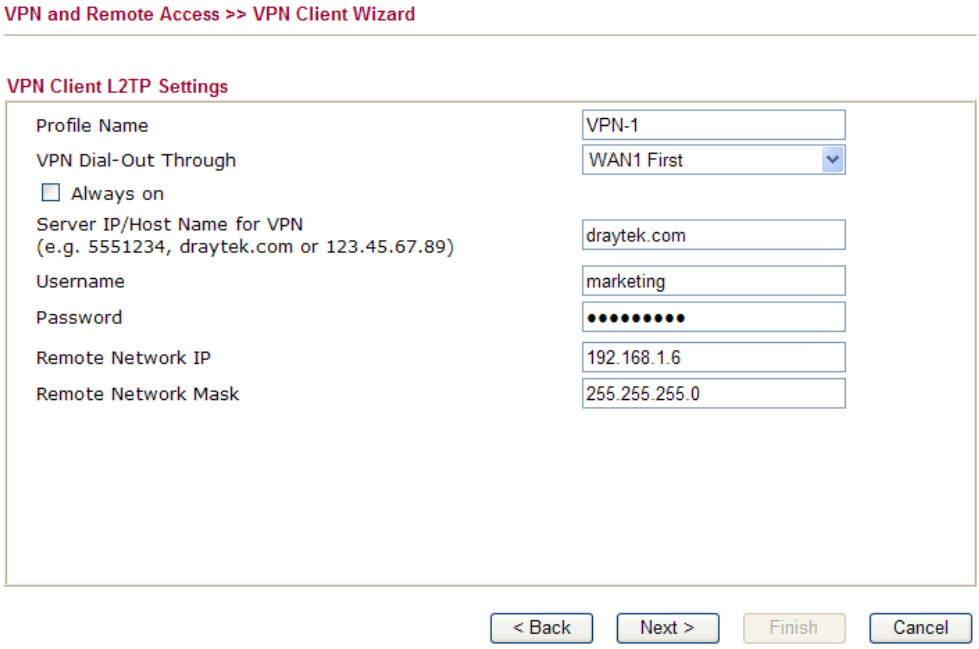
- When you choose **PPTP (None Encryption)** or **PPTP (Encryption)**, you will see the following graphic:



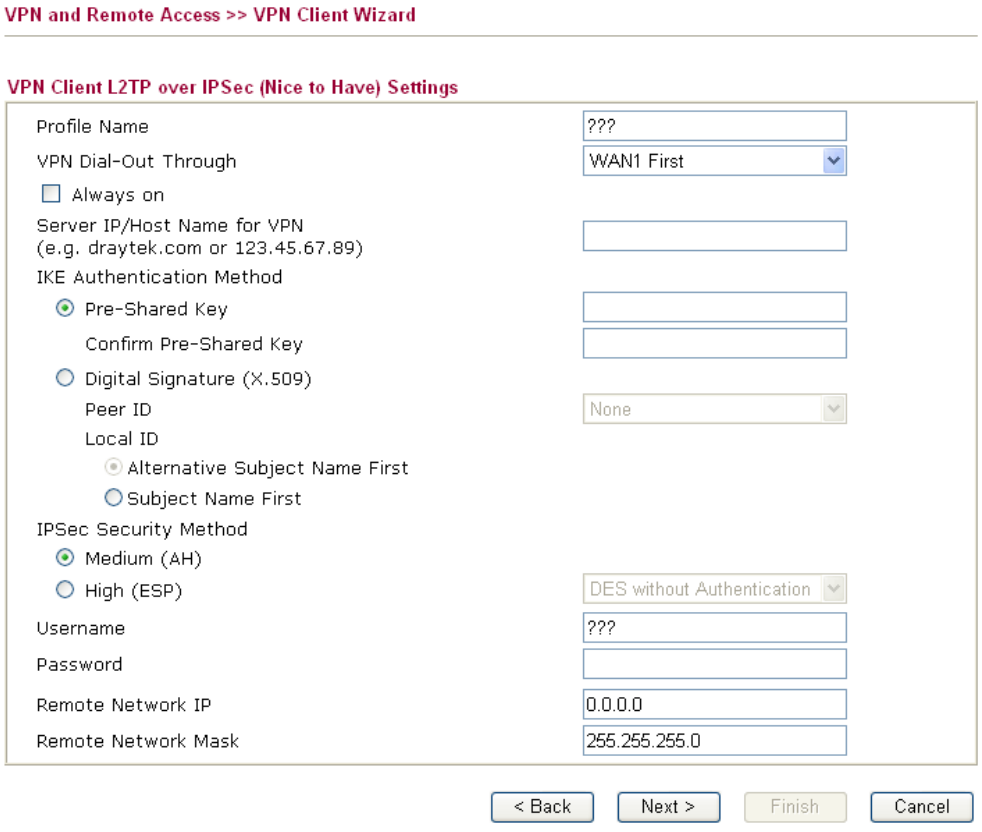
- When you choose **IPSec**, you will see the following graphic:



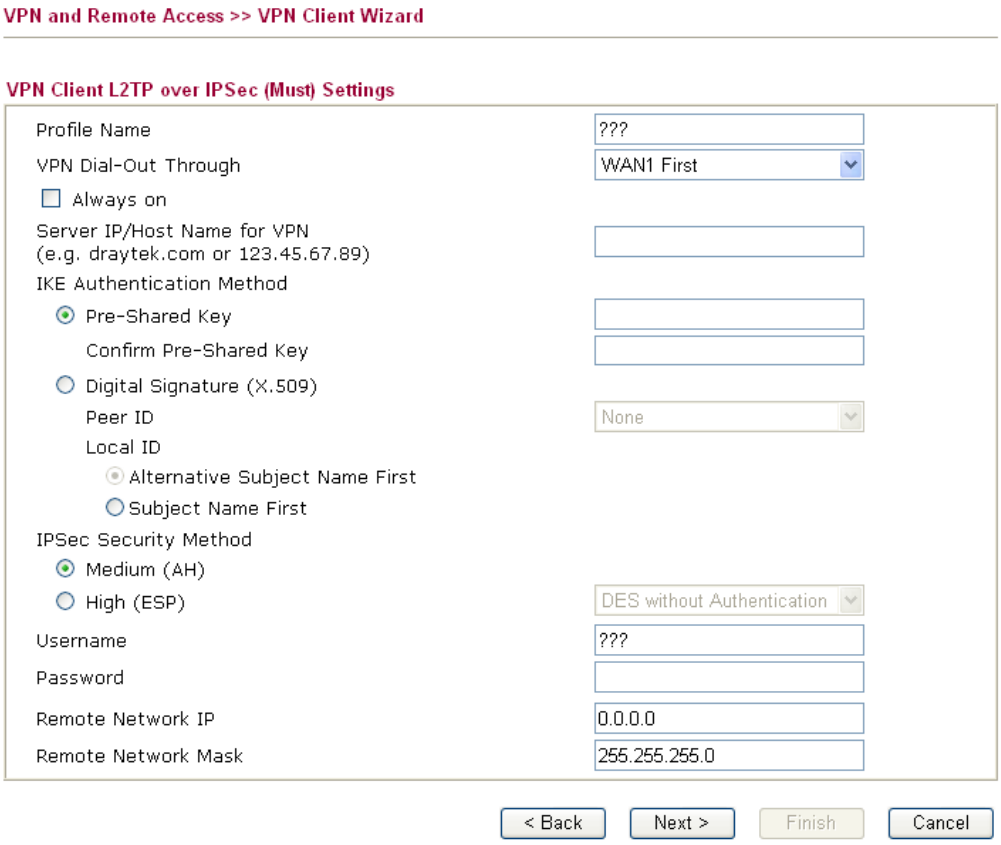
- When you choose **L2TP**, you will see the following graphic:



- When you choose **L2TP over IPSec (Nice to Have),** you will see the following graphic:



- When you choose **L2TP over IPSec (Must),** you will see the following graphic:



Profile Name — Type a name for such profile. The length of the file is limited to 10 characters.

VPN Dial-Out Through — Use the drop down menu to choose a proper WAN interface for this profile. This setting is useful for dial-out only.

WAN1 First / WAN2 First / WAN3 First / WAN4 First / WAN5 First - While connecting, the router will use WAN1/WAN2/WAN3/WAN4/WAN5 as the first channel for VPN connection. If WAN1/WAN2/WAN3 /WAN4/WAN5 fails, the router will use another WAN interface instead.

WAN1 Only / WAN2 Only / WAN3 Only / WAN4 Only/ WAN5 Only - While connecting, the router will use WAN1/WAN2/WAN3/WAN4/WAN5 as the only channel for VPN connection.

Always On — Check to enable router always keep VPN connection.

Pre-Shared Key — **IKE Authentication Method** usually applies to those are remote dial-in user or node (LAN to LAN) which uses dynamic IP address and IPSec-related VPN connections such as L2TP over IPSec and IPSec tunnel.

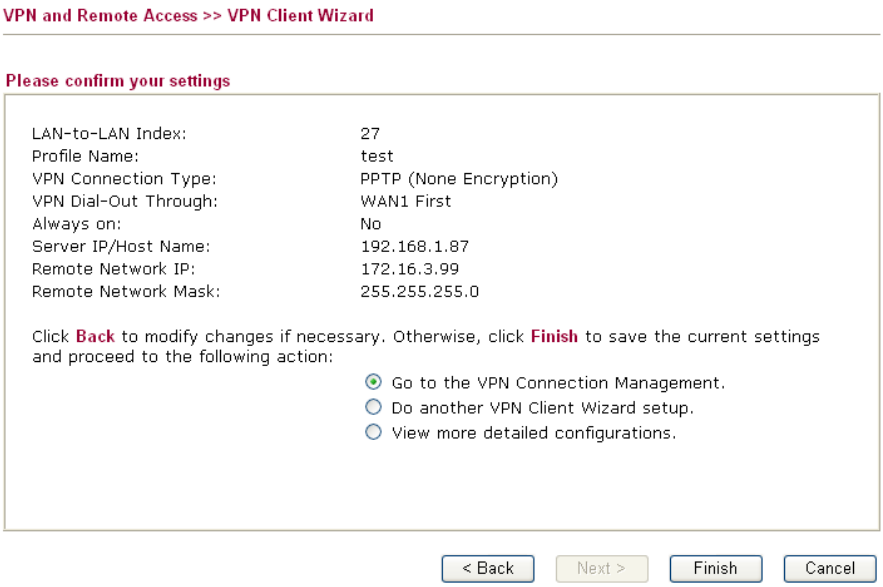
Pre-Shared Key- Specify a key for IKE authentication.

Confirm Pre-Shared Key-Confirm the pre-shared key.

Digital Signature (X.509) — Click **Digital Signature** to invoke this function. Use the drop down list to choose one of the certificates for using.

	You have to configure one certificate at least previously in **Certificate Management >> Local Certificate.** Otherwise, the setting you choose here will not be effective. **Peer ID** – Choose one of the ID from the drop down list. **Local ID** – Choose **Alternative Subject Name First** or **Subject Name First**.
IPSec Security Method	**Medium** - Authentication Header (AH) means data will be authenticated, but not be encrypted. By default, this option is active. **High** - Encapsulating Security Payload (ESP) means payload (data) will be encrypted and authenticated. You may select encryption algorithm from Data Encryption Standard (DES), Triple DES (3DES), and AES.
User Name	This field is used to authenticate for connection when you select PPTP or L2TP with or without IPSec policy above.
Password	This field is used to authenticate for connection when you select PPTP or L2TP with or without IPSec policy above.
Remote Network IP	Please type one LAN IP address (according to the real location of the remote host) for building VPN connection.
Remote Network Mask	Please type the network mask (according to the real location of the remote host) for building VPN connection.

After finishing the configuration, please click **Next.** The confirmation page will be shown as follows. If there is no problem, you can click one of the radio buttons listed on the page and click **Finish** to execute the next action.

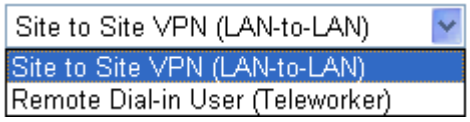


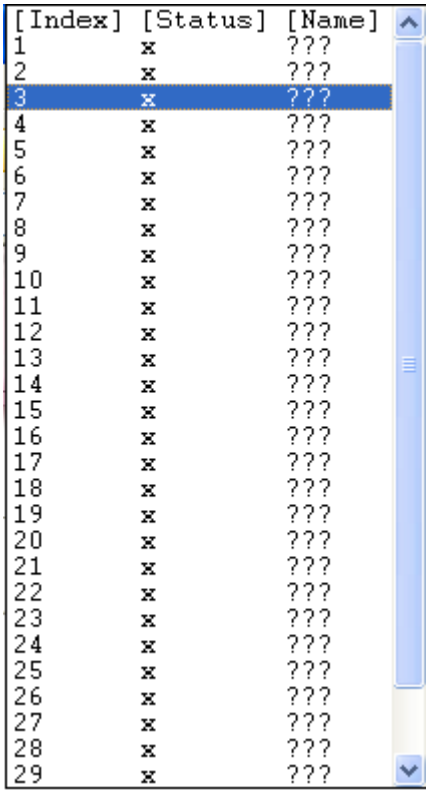
Go to the VPN Connection Click this radio button to access **VPN and Remote**

Management	**Access>>Connection Management** for viewing VPN Connection status.
Do another VPN Server Wizard Setup	Click this radio button to set another profile of VPN Server through VPN Server Wizard.
View more detailed configuration	Click this radio button to access **VPN and Remote Access>>LAN to LAN** for viewing detailed configuration.

4.10.2 VPN Server Wizard

Such wizard is used to configure VPN settings for VPN server. Such wizard will guide to set the LAN-to-LAN profile for VPN dial in connection (from client to server) step by step.

VPN Server Mode Selection	Choose the direction for the VPN server. **Site to Site VPN/Remote Dial-in User** – To set a LAN-to-LAN profile automatically, please choose Site to Site VPN. **Remote Dial-in User** –You can manage remote access by maintaining a table of remote user profile, so that users can be authenticated to dial-in via VPN connection. 
Please choose a LAN-to-LAN Profile	This item is available when you choose **Site to Site VPN** (LAN-to-LAN) as VPN server mode. There are 32 VPN profiles for users to set.



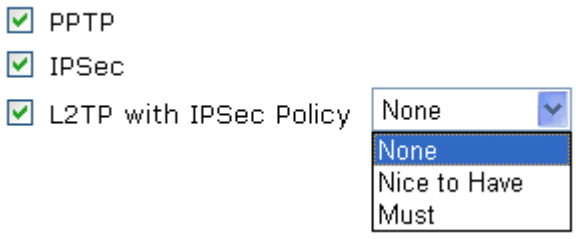
[Index]	[Status]	[Name]
1	x	???
2	x	???
3	x	???
4	x	???
5	x	???
6	x	???
7	x	???
8	x	???
9	x	???
10	x	???
11	x	???
12	x	???
13	x	???
14	x	???
15	x	???
16	x	???
17	x	???
18	x	???
19	x	???
20	x	???
21	x	???
22	x	???
23	x	???
24	x	???
25	x	???
26	x	???
27	x	???
28	x	???
29	x	???

Please choose a Dial-in User Accounts

This item is available when you choose Remote Dial-in User (Teleworker) as VPN server mode. There are 32 VPN tunnels for users to set.

Allowed Dial-in Type

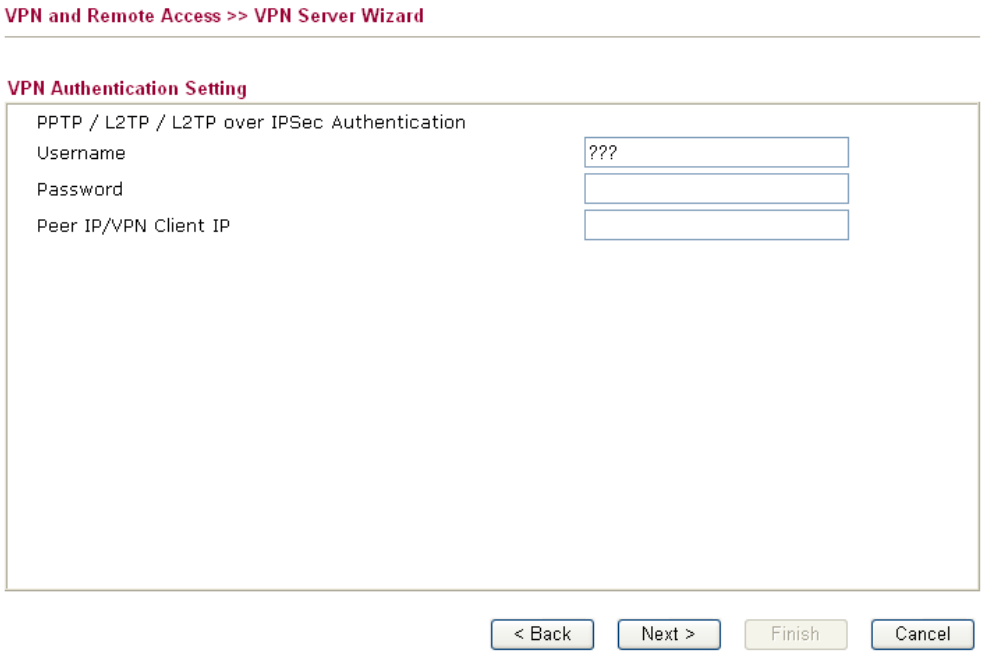
This item is available after you choose any one of dial-in user account profiles. Next, you have to select suitable dial-in type for the VPN server profile. There are several types provided here (similar to VPN Client Wizard).



Different Dial-in Type will lead to different configuration page. In addition, adjustable items for each dial-in type will be changed according to the VPN Server Mode (**Site to Site VPN** and **Remote Dial-in User**) selected.

After making the choices for the server profile, please click **Next**. You will see different configurations based on the selection you made. Here we take the example of choosing **Remote-Dial-in User** as the **VPN Server Mode**.

- When you check **PPTP**, you will see the following graphic:

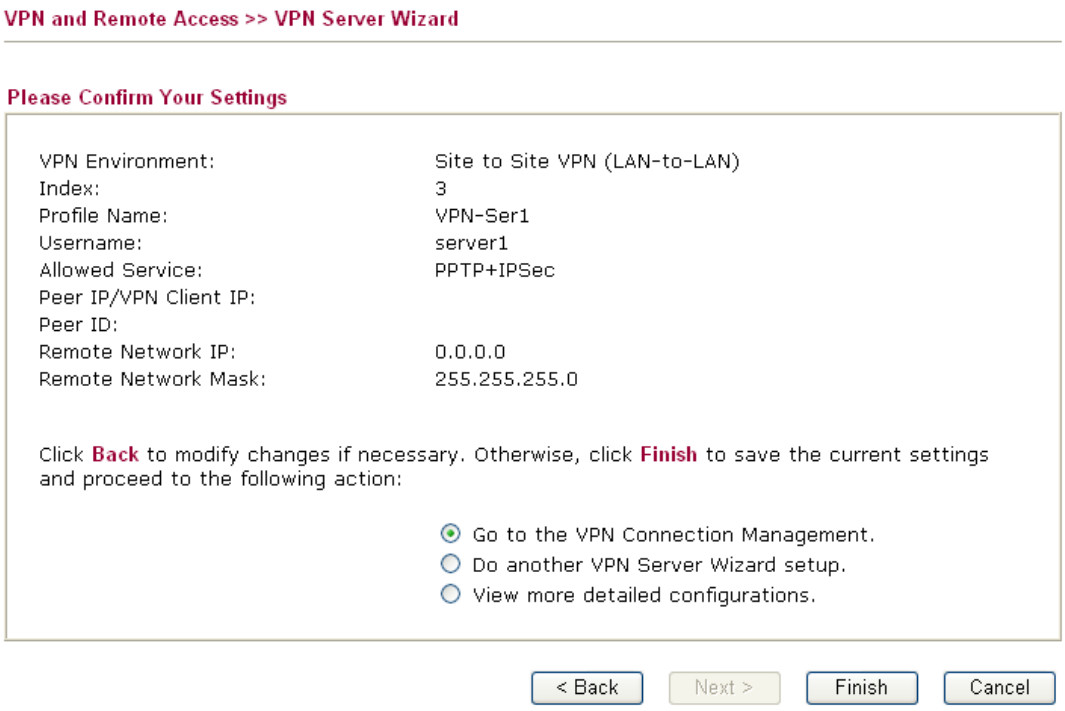


- When you check **PPTP/IPSec/L2TP** (three types) or **PPTP/IPSec** (two types) or **L2TP with Policy (Nice to Have/Must)**, you will see the following graphic:

- When you check **IPSec**, you will see the following graphic:

Profile Name	Type a name for such profile. The length of the file is limited to 10 characters.
User Name	This field is used to authenticate for connection when you select PPTP or L2TP with or without IPSec policy above.
Password	This field is used to authenticate for connection when you select PPTP or L2TP with or without IPSec policy above.
Pre-Shared Key	For IPSec/L2TP IPSec authentication, you have to type a pre-shared key.
Confirm Pre-Shared Key	Type the pre-shared key again for confirmation.
Digital Signature (X.509)	Check the box of Digital Signature to invoke this function. Use the drop down list to choose one of the certificates for using. You have to configure one certificate at least previously in **Certificate Management >> Local Certificate.** Otherwise, the setting you choose here will not be effective.
Peer IP/VPN Client IP	Type the WAN IP address or VPN client IP address for the remote client.
Peer ID	Type the ID name for the remote client.
Remote Network IP	Please type one LAN IP address (according to the real location of the remote host) for building VPN connection.
Remote Network Mask	Please type the network mask (according to the real location of the remote host) for building VPN connection.

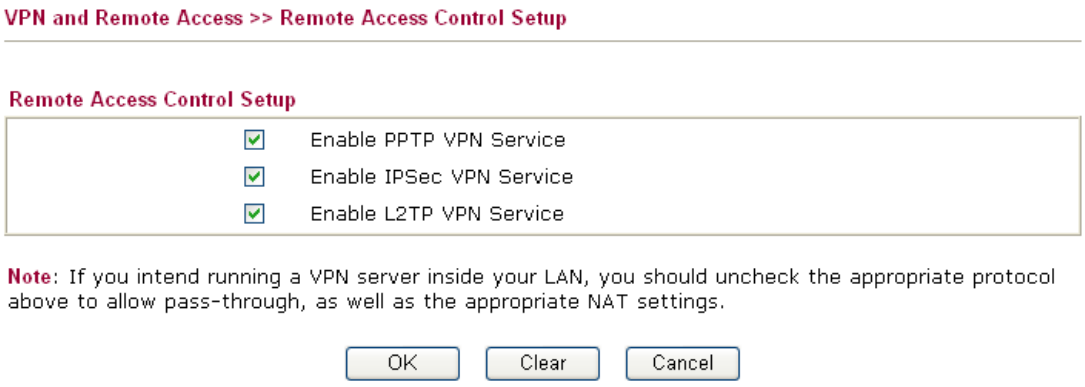
After finishing the configuration, please click **Next.** The confirmation page will be shown as follows. If there is no problem, you can click one of the radio buttons listed on the page and click **Finish** to execute the next action.



Go to the VPN Connection Management	Click this radio button to access **VPN and Remote Access>>Connection Management** for viewing VPN Connection status.
Do another VPN Server Wizard Setup	Click this radio button to set another profile of VPN Server through VPN Server Wizard.
View more detailed configuration	Click this radio button to access **VPN and Remote Access>>LAN to LAN** for viewing detailed configuration.

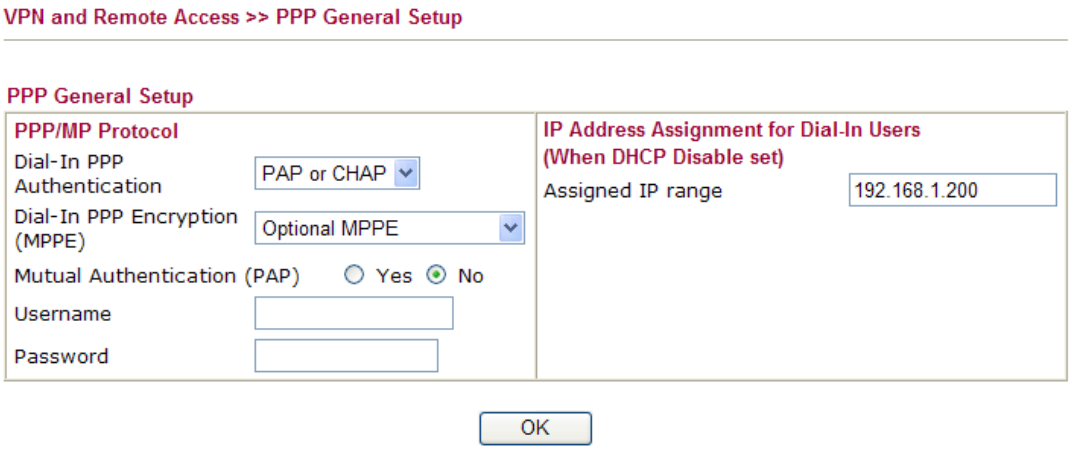
4.10.3 Remote Access Control

Enable the necessary VPN service as you need. If you intend to run a VPN server inside your LAN, you should disable the VPN service of Vigor Router to allow VPN tunnel pass through, as well as the appropriate NAT settings, such as DMZ or open port.



4.10.4 PPP General Setup

This submenu only applies to PPP-related VPN connections, such as PPTP, L2TP, L2TP over IPSec.



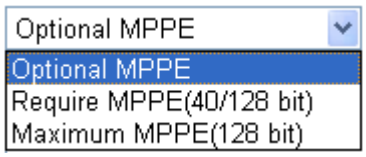
Dial-In PPP Authentication

PAP Only - elect this option to force the router to authenticate dial-in users with the PAP protocol.

PAP or CHAP - Selecting this option means the router will attempt to authenticate dial-in users with the CHAP protocol first. If the dial-in user does not support this protocol, it will fall back to use the PAP protocol for authentication.

Dial-In PPP Encryption (MPPE)

Optional MPPE - This option represents that the MPPE encryption method will be optionally employed in the router for the remote dial-in user. If the remote dial-in user does not support the MPPE encryption algorithm, the router will transmit “no MPPE encrypted packets”. Otherwise, the MPPE encryption scheme will be used to encrypt the data.



Require MPPE (40/128bits) - Selecting this option will force the router to encrypt packets by using the MPPE encryption algorithm. In addition, the remote dial-in user will use 40-bit to perform encryption prior to using 128-bit for encryption. In other words, if 128-bit MPPE encryption method is not available, then 40-bit encryption scheme will be applied to encrypt the data.

Maximum MPPE - This option indicates that the router will use the MPPE encryption scheme with maximum bits (128-bit) to encrypt the data.

Mutual Authentication (PAP)

The Mutual Authentication function is mainly used to communicate with other routers or clients who need bi-directional authentication in order to provide stronger security, for example, Cisco routers. So you should enable this function when your peer router requires mutual authentication. You should further specify the **User Name** and **Password** of the mutual authentication peer.

Assigned IP Range Enter a start IP address for the dial-in PPP connection. You should choose an IP address from the local private network. For example, if the local private network is 192.168.1.0/255.255.255.0, you could choose 192.168.1.200 as the Start IP Address.

4.10.5 IPSec General Setup

In **IPSec General Setup,** there are two major parts of configuration.

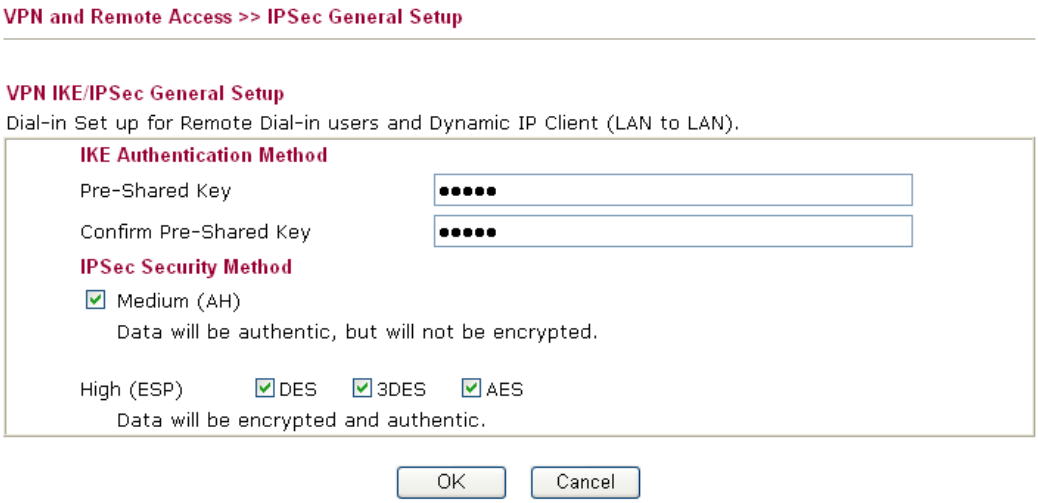
There are two phases of IPSec.

- Phase 1: negotiation of IKE parameters including encryption, hash, Diffie-Hellman parameter values, and lifetime to protect the following IKE exchange, authentication of both peers using either a Pre-Shared Key or Digital Signature (x.509). The peer that starts the negotiation proposes all its policies to the remote peer and then remote peer tries to find a highest-priority match with its policies. Eventually to set up a secure tunnel for IKE Phase 2.
- Phase 2: negotiation IPSec security methods including Authentication Header (AH) or Encapsulating Security Payload (ESP) for the following IKE exchange and mutual examination of the secure tunnel establishment.

There are two encapsulation methods used in IPSec, **Transport** and **Tunnel**. The **Transport** mode will add the AH/ESP payload and use original IP header to encapsulate the data payload only. It can just apply to local packet, e.g., L2TP over IPSec. The **Tunnel** mode will not only add the AH/ESP payload but also use a new IP header (Tunneled IP header) to encapsulate the whole original IP packet.

Authentication Header (AH) provides data authentication and integrity for IP packets passed between VPN peers. This is achieved by a keyed one-way hash function to the packet to create a message digest. This digest will be put in the AH and transmitted along with packets. On the receiving side, the peer will perform the same one-way hash on the packet and compare the value with the one in the AH it receives.

Encapsulating Security Payload (ESP) is a security protocol that provides data confidentiality and protection with optional authentication and replay detection service.



IKE Authentication Method This usually applies to those are remote dial-in user or node (LAN-to-LAN) which uses dynamic IP address and IPSec-related VPN connections such as L2TP over IPSec and

IPSec tunnel.

Pre-Shared Key -Currently only support Pre-Shared Key authentication.

Pre-Shared Key- Specify a key for IKE authentication
Confirm Pre-Shared Key- Retype the characters to confirm the pre-shared key.

IPSec Security Method

Medium - Authentication Header (AH) means data will be authenticated, but not be encrypted. By default, this option is active.

High - Encapsulating Security Payload (ESP) means payload (data) will be encrypted and authenticated. You may select encryption algorithm from Data Encryption Standard (DES), Triple DES (3DES), and AES.

4.10.6 IPSec Peer Identity

To use digital certificate for peer authentication in either LAN-to-LAN connection or Remote User Dial-In connection, here you may edit a table of peer certificate for selection. As shown below, the router provides **32** entries of digital certificates for peer dial-in users.

VPN and Remote Access >> IPSec Peer Identity

X509 Peer ID Accounts: | Set to Factory Default |

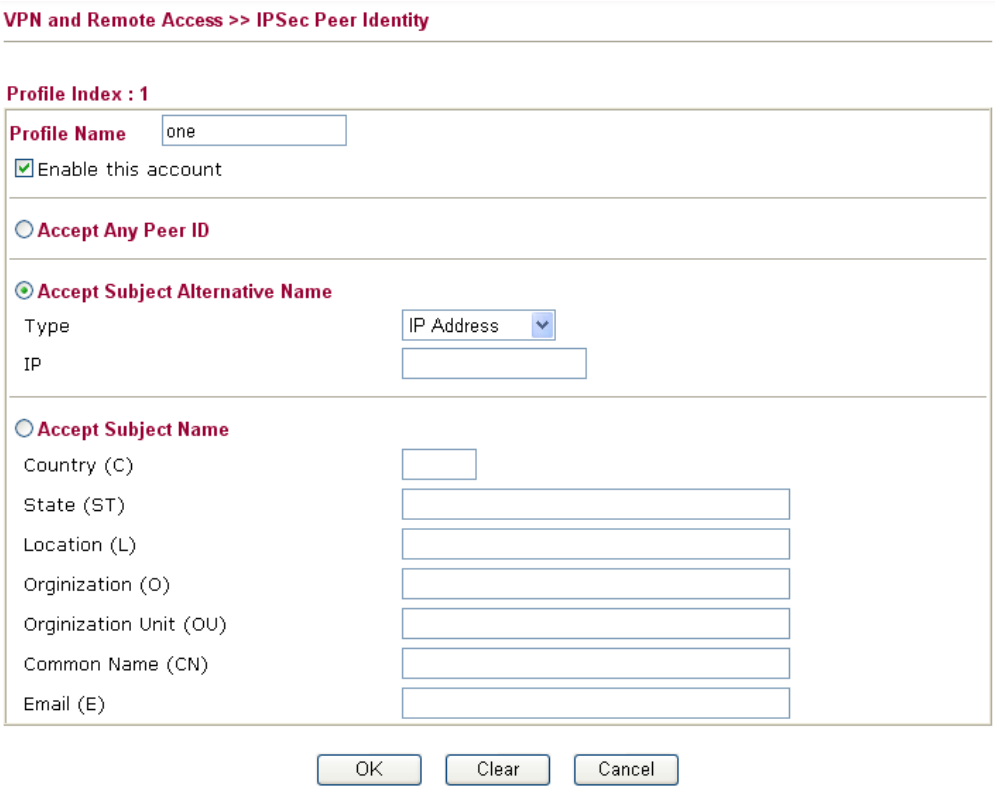
Index	Name	Status	Index	Name	Status
1.	???	X	17.	???	X
2.	???	X	18.	???	X
3.	???	X	19.	???	X
4.	???	X	20.	???	X
5.	???	X	21.	???	X
6.	???	X	22.	???	X
7.	???	X	23.	???	X
8.	???	X	24.	???	X
9.	???	X	25.	???	X
10.	???	X	26.	???	X
11.	???	X	27.	???	X
12.	???	X	28.	???	X
13.	???	X	29.	???	X
14.	???	X	30.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

Set to Factory Default Click it to clear all indexes.

Index Click the number below Index to access into the setting page of IPSec Peer Identity.

Name Display the profile name of that index.

Click each index to edit one peer digital certificate. There are three security levels of digital signature authentication: Fill each necessary field to authenticate the remote peer. The following explanation will guide you to fill all the necessary fields.



Profile Name	Type the name of the profile.
Accept Any Peer ID	Click to accept any peer regardless of its identity.
Accept Subject Alternative Name	Click to check one specific field of digital signature to accept the peer with matching value. The field can be **IP Address, Domain,** or **E-mail Address**. The box under the Type will appear according to the type you select and ask you to fill in corresponding setting.
Accept Subject Name	Click to check the specific fields of digital signature to accept the peer with matching value. The field includes **Country (C), State (ST), Location (L), Organization (O), Organization Unit (OU), Common Name (CN),** and **Email (E)**.

4.10.7 Remote Dial-in User

You can manage remote access by maintaining a table of remote user profile, so that users can be authenticated to dial-in via VPN connection. You may set parameters including specified connection peer ID, connection type (VPN connection - including PPTP, IPSec Tunnel, and L2TP by itself or over IPSec) and corresponding security methods, etc.

The router provides **32** access accounts for dial-in users. Besides, you can extend the user accounts to the RADIUS server through the built-in RADIUS client function. The following figure shows the summary table.

VPN and Remote Access >> Remote Dial-in User

Remote Access User Accounts: | Set to Factory Default |

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

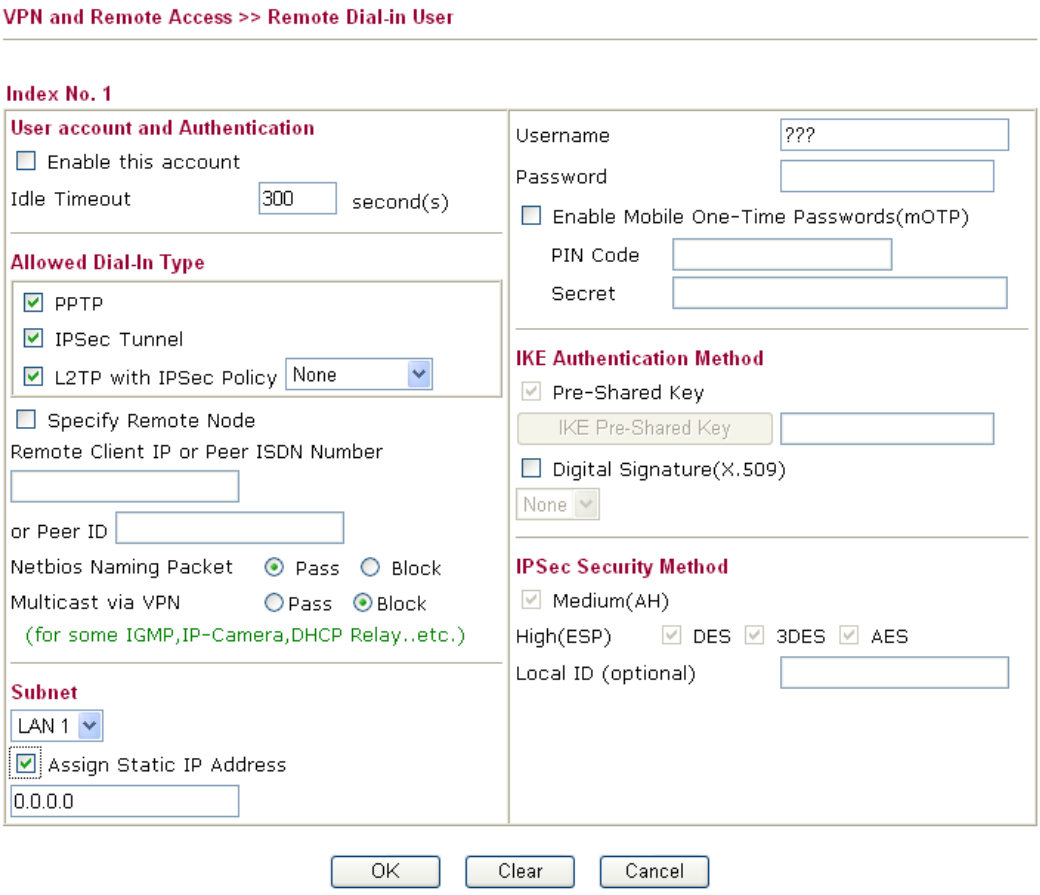
Set to Factory Default Click to clear all indexes.

Index Click the number below Index to access into the setting page of Remote Dial-in User.

User Display the username for the specific dial-in user of the LAN-to-LAN profile. The symbol **???** represents that the profile is empty.

Status Display the access state of the specific dial-in user. The symbol V and X represent the specific dial-in user to be active and inactive, respectively.

Click each index to edit one remote user profile. **Each Dial-In Type requires you to fill the different corresponding fields on the right.** If the fields gray out, it means you may leave it untouched. The following explanation will guide you to fill all the necessary fields.



User account and Authentication

Enable this account - Check the box to enable this function.

Idle Timeout- If the dial-in user is idle over the limitation of the timer, the router will drop this connection. By default, the Idle Timeout is set to 300 seconds.

Allowed Dial-In Type

PPTP - Allow the remote dial-in user to make a PPTP VPN connection through the Internet. You should set the User Name and Password of remote dial-in user below.

IPSec Tunnel - Allow the remote dial-in user to make an IPSec VPN connection through Internet.

L2TP with IPSec Policy - Allow the remote dial-in user to make a L2TP VPN connection through the Internet. You can select to use L2TP alone or with IPSec. Select from below:

None - Do not apply the IPSec policy. Accordingly, the VPN connection employed the L2TP without IPSec policy can be viewed as one pure L2TP connection.

Nice to Have - Apply the IPSec policy first, if it is applicable during negotiation. Otherwise, the dial-in VPN connection becomes one pure L2TP connection.

Must -Specify the IPSec policy to be definitely applied on the L2TP connection.

Specify Remote Node	**Check the checkbox-**You can specify the IP address of the remote dial-in user, ISDN number or peer ID (used in IKE aggressive mode). **Uncheck the checkbox-**This means the connection type you select above will apply the authentication methods and security methods in the **general settings**. **Netbios Naming Packet** **Pass** – Click it to have an inquiry for data transmission between the hosts located on both sides of VPN Tunnel while connecting. **Block** – When there is conflict occurred between the hosts on both sides of VPN Tunnel in connecting, such function can block data transmission of Netbios Naming Packet inside the tunnel.
Multicast via VPN	Some programs might send multicast packets via VPN connection. **Pass** – Click this button to let multicast packets pass through the router. **Block** – This is default setting. Click this button to let multicast packets be blocked by the router.
Subnet	Chose one of the subnet selections for such VPN profile. **Assign Static IP Address –** Please type a static IP address for the subnet you specified.
User Name	This field is applicable when you select PPTP or L2TP with or without IPSec policy above.
Password	This field is applicable when you select PPTP or L2TP with or without IPSec policy above.
Enable Mobile One-Time Passwords (mOTP)	Check this box to make the authentication with mOTP function. **PIN Code** – Type the code for authentication (e.g, 1234). **Secret** – Use the 32 digit-secret number generated by mOTP in the mobile phone (e.g., e759bb6f0e94c7ab4fe6).
IKE Authentication Method	This group of fields is applicable for IPSec Tunnels and L2TP with IPSec Policy when you specify the IP address of the remote node. The only exception is Digital Signature (X.509) can be set when you select IPSec tunnel either with or without specify the IP address of the remote node. **Pre-Shared Key -** Check the box of Pre-Shared Key to invoke this function and type in the required characters (1-63) as the pre-shared key. **Digital Signature (X.509) –** Check the box of Digital Signature to invoke this function and Select one predefined Profiles set in the **VPN and Remote Access >>IPSec Peer Identity.**
IPSec Security Method	This group of fields is a must for IPSec Tunnels and L2TP with IPSec Policy when you specify the remote node. Check

the Medium, DES, 3DES or AES box as the security method. **Medium-Authentication Header (AH)** means data will be authenticated, but not be encrypted. By default, this option is invoked. You can uncheck it to disable it.

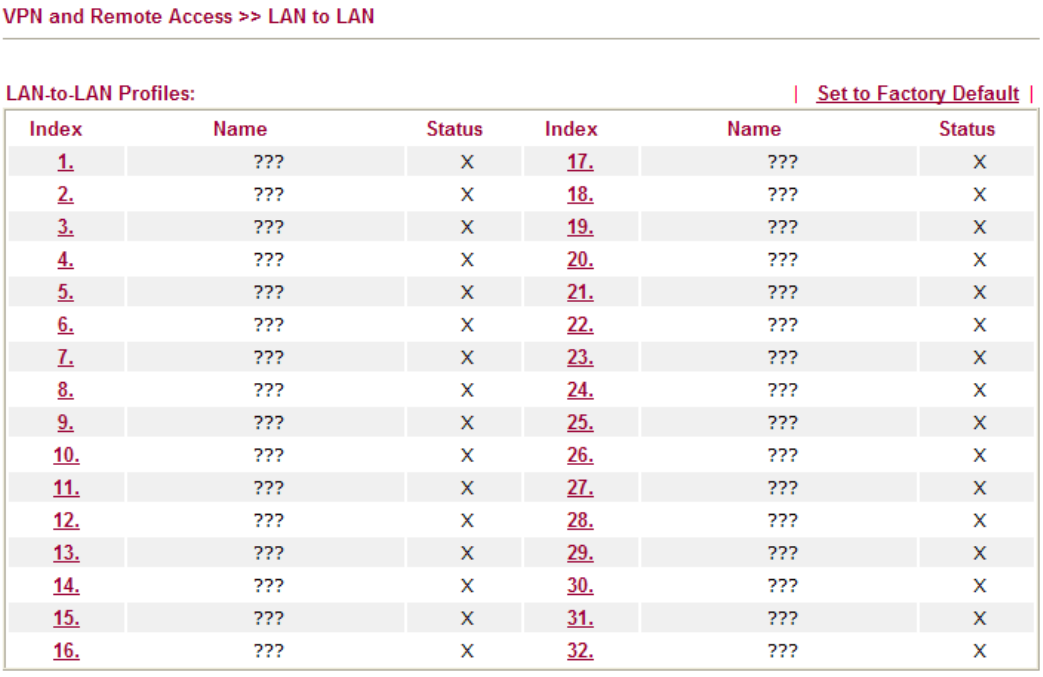
High-Encapsulating Security Payload (ESP) means payload (data) will be encrypted and authenticated. You may select encryption algorithm from Data Encryption Standard (DES), Triple DES (3DES), and AES.

Local ID - Specify a local ID to be used for Dial-in setting in the LAN-to-LAN Profile setup. This item is optional and can be used only in IKE aggressive mode.

4.10.8 LAN to LAN

Here you can manage LAN-to-LAN connections by maintaining a table of connection profiles. You may set parameters including specified connection direction (dial-in or dial-out), connection peer ID, connection type (VPN connection - including PPTP, IPSec Tunnel, and L2TP by itself or over IPSec) and corresponding security methods, etc.

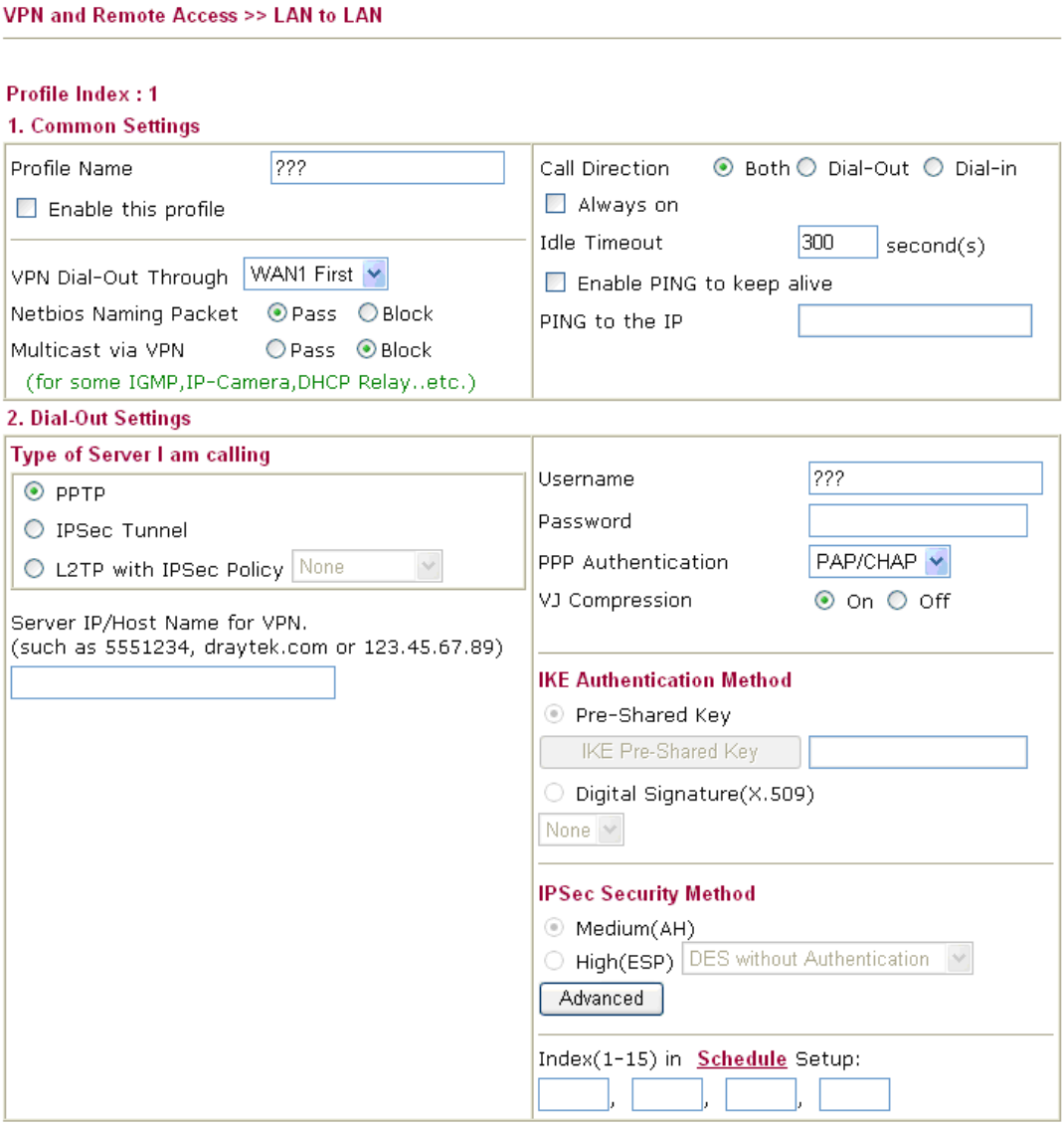
The router supports up to 32 VPN tunnels simultaneously. The following figure shows the summary table.



Set to Factory Default	Click to clear all indexes.
Name	Indicate the name of the LAN-to-LAN profile. The symbol **???** represents that the profile is empty.
Status	Indicate the status of individual profiles. The symbol V and X represent the profile to be active and inactive, respectively.

Click each index to edit each profile and you will get the following page. Each LAN-to-LAN profile includes 4 subgroups. If the fields gray out, it means you may leave it untouched. The following explanations will guide you to fill all the necessary fields.

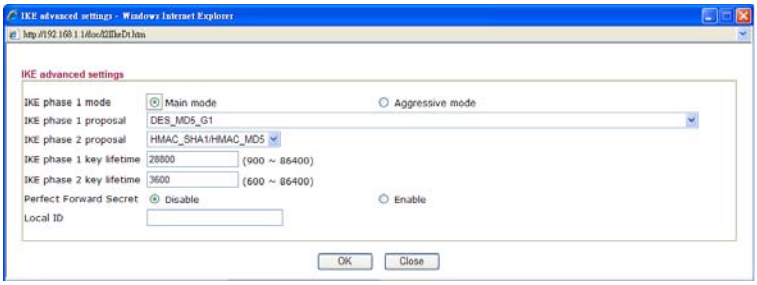
For the web page is too long, we divide the page into several sections for explanation.



Profile Name	Specify a name for the profile of the LAN-to-LAN connection.
Enable this profile	Check here to activate this profile.
VPN Dial-Out Through	Use the drop down menu to choose a proper WAN interface for this profile. This setting is useful for dial-out only. **WAN1 /WAN2 /WAN3 /WAN4 /WAN5 First** - While connecting, the router will use WAN1 /WAN2 /WAN3 /WAN4 /WAN5 as the first channel for VPN connection. If WAN1 fails, the router will use another WAN interface instead. **WAN1 /WAN2 /WAN3 /WAN4 /WAN5 Only** - While connecting, the router will use WAN1 /WAN2 /WAN3 /WAN4 /WAN5 as the only channel for VPN connection.
Netbios Naming Packet	**Pass** – click it to have an inquiry for data transmission between the hosts located on both sides of VPN Tunnel while connecting. **Block** – When there is conflict occurred between the hosts on both sides of VPN Tunnel in connecting, such function can block data transmission of Netbios Naming Packet inside the

	tunnel.
Multicast via VPN	Some programs might send multicast packets via VPN connection. **Pass** – Click this button to let multicast packets pass through the router. **Block** – This is default setting. Click this button to let multicast packets be blocked by the router.
Call Direction	Specify the allowed call direction of this LAN-to-LAN profile. **Both**:-initiator/responder **Dial-Out**- initiator only **Dial-In-** responder only.
Always On or Idle Timeout	**Always On-**Check to enable router always keep VPN connection. **Idle Timeout:** The default value is 300 seconds. If the connection has been idled over the value, the router will drop the connection.
Enable PING to keep alive	This function is to help the router to determine the status of IPSec VPN connection, especially useful in the case of abnormal VPN IPSec tunnel disruption. For details, please refer to the note below. Check to enable the transmission of PING packets to a specified IP address.
PING to the IP	Enter the IP address of the remote host that located at the other-end of the VPN tunnel. **Enable PING to keep alive** is used to handle abnormal IPSec VPN connection disruption. It will help to provide the state of a VPN connection for router's judgment of redial. Normally, if any one of VPN peers wants to disconnect the connection, it should follow a serial of packet exchange procedure to inform each other. However, if the remote peer disconnect without notice, Vigor router will by no where to know this situation. To resolve this dilemma, by continuously sending PING packets to the remote host, the Vigor router can know the true existence of this VPN connection and react accordingly. This is independent of DPD (dead peer detection).
Type of Server I am calling	**PPTP** - Build a PPTP VPN connection to the server through the Internet. You should set the identity like User Name and Password below for the authentication of remote server. **IPSec Tunnel** - Build an IPSec VPN connection to the server through Internet. **L2TP with IPSec Policy** - Build a L2TP VPN connection through the Internet. You can select to use L2TP alone or with IPSec. Select from below: **None:** Do not apply the IPSec policy. Accordingly, the VPN connection employed the L2TP without IPSec policy can be viewed as one pure L2TP connection. **Nice to Have:** Apply the IPSec policy first, if it is applicable during negotiation. Otherwise, the dial-out VPN connection

	becomes one pure L2TP connection. **Must:** Specify the IPSec policy to be definitely applied on the L2TP connection.
User Name	This field is applicable when you select, PPTP or L2TP with or without IPSec policy above.
Password	This field is applicable when you select PPTP or L2TP with or without IPSec policy above.
PPP Authentication	This field is applicable when you select, PPTP or L2TP with or without IPSec policy above. PAP/CHAP is the most common selection due to wild compatibility.
VJ compression	This field is applicable when you select PPTP or L2TP with or without IPSec policy above. VJ Compression is used for TCP/IP protocol header compression. Normally set to **Yes** to improve bandwidth utilization.
IKE Authentication Method	This group of fields is applicable for IPSec Tunnels and L2TP with IPSec Policy. **Pre-Shared Key** - Input 1-63 characters as pre-shared key. **Digital Signature (X.509)** - Select one predefined Profiles set in the **VPN and Remote Access >>IPSec Peer Identity**.
IPSec Security Method	This group of fields is a must for IPSec Tunnels and L2TP with IPSec Policy. **Medium AH (Authentication Header)** means data will be authenticated, but not be encrypted. By default, this option is active. **High (ESP-Encapsulating Security Payload)-** means payload (data) will be encrypted and authenticated. Select from below: **DES without Authentication** -Use DES encryption algorithm and not apply any authentication scheme. **DES with Authentication-**Use DES encryption algorithm and apply MD5 or SHA-1 authentication algorithm. **3DES without Authentication-**Use triple DES encryption algorithm and not apply any authentication scheme. **3DES with Authentication-**Use triple DES encryption algorithm and apply MD5 or SHA-1 authentication algorithm. **AES without Authentication-**Use AES encryption algorithm and not apply any authentication scheme. **AES with Authentication-**Use AES encryption algorithm and apply MD5 or SHA-1 authentication algorithm.
Advanced	Specify mode, proposal and key life of each IKE phase, Gateway, etc. The window of advance setup is shown as below:



IKE phase 1 mode -Select from **Main** mode and **Aggressive** mode. The ultimate outcome is to exchange security proposals to create a protected secure channel. **Main** mode is more secure than **Aggressive** mode since more exchanges are done in a secure channel to set up the IPSec session. However, the **Aggressive** mode is faster. The default value in Vigor router is Main mode.

IKE phase 1 proposal-To propose the local available authentication schemes and encryption algorithms to the VPN peers, and get its feedback to find a match. Two combinations are available for Aggressive mode and nine for **Main** mode. We suggest you select the combination that covers the most schemes.

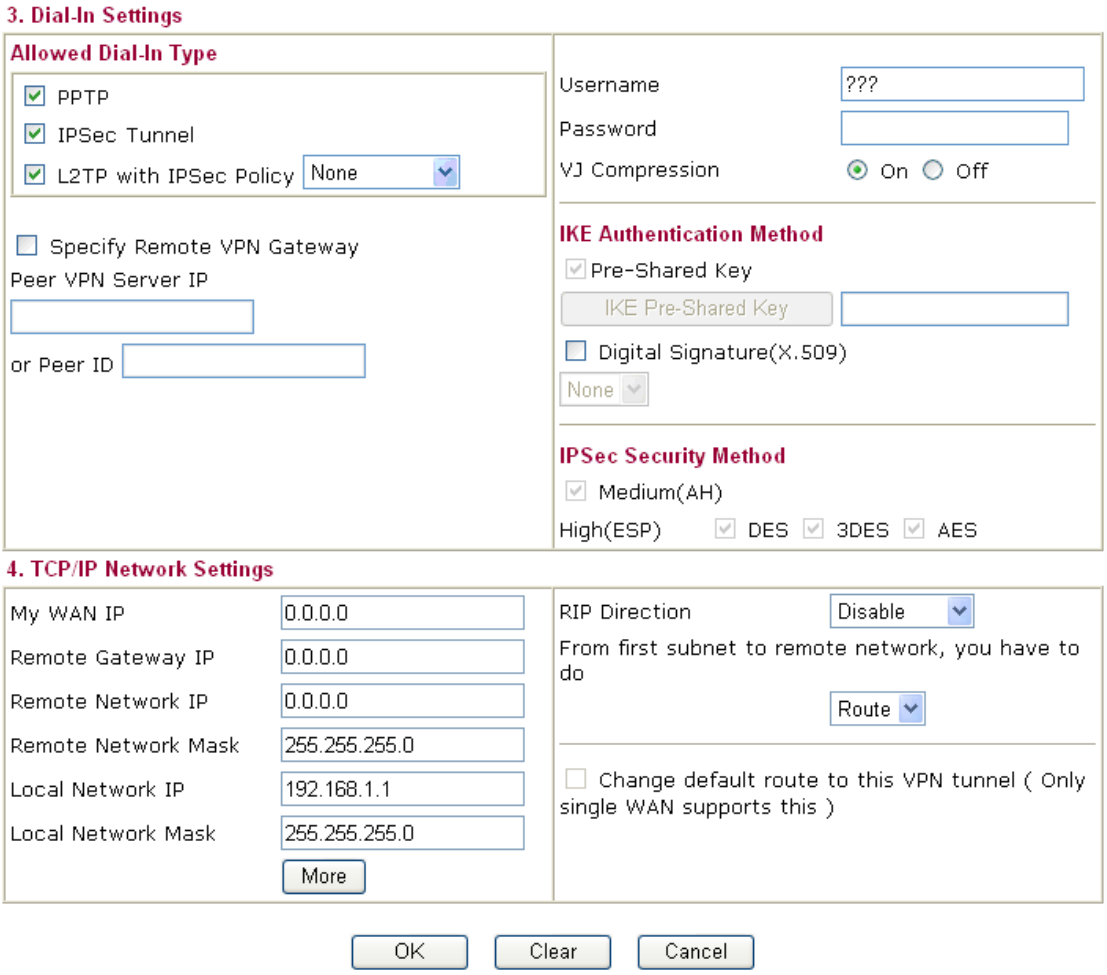
IKE phase 2 proposal-To propose the local available algorithms to the VPN peers, and get its feedback to find a match. Three combinations are available for both modes. We suggest you select the combination that covers the most algorithms.

IKE phase 1 key lifetime-For security reason, the lifetime of key should be defined. The default value is 28800 seconds. You may specify a value in between 900 and 86400 seconds.

IKE phase 2 key lifetime-For security reason, the lifetime of key should be defined. The default value is 3600 seconds. You may specify a value in between 600 and 86400 seconds.

Perfect Forward Secret (PFS)-The IKE Phase 1 key will be reused to avoid the computation complexity in phase 2. The default value is inactive this function.

Local ID-In **Aggressive** mode, Local ID is on behalf of the IP address while identity authenticating with remote VPN server. The length of the ID is limited to 47 characters.



Allowed Dial-In Type Determine the dial-in connection with different types.

PPTP - Allow the remote dial-in user to make a PPTP VPN connection through the Internet. You should set the User Name and Password of remote dial-in user below.

IPSec Tunnel- Allow the remote dial-in user to trigger an IPSec VPN connection through Internet.

L2TP with IPSec Policy - Allow the remote dial-in user to make a L2TP VPN connection through the Internet. You can select to use L2TP alone or with IPSec. Select from below:

None - Do not apply the IPSec policy. Accordingly, the VPN connection employed the L2TP without IPSec policy can be viewed as one pure L2TP connection.

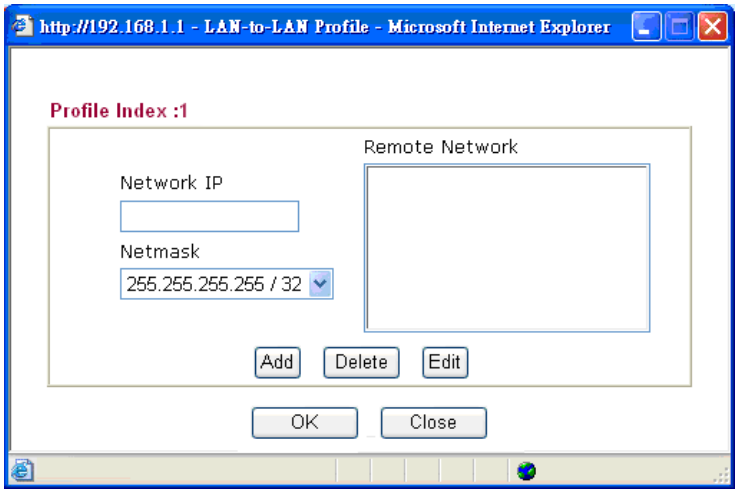
Nice to Have - Apply the IPSec policy first, if it is applicable during negotiation. Otherwise, the dial-in VPN connection becomes one pure L2TP connection.

Must - Specify the IPSec policy to be definitely applied on the L2TP connection.

Specify Remote VPN Gateway You can specify the IP address of the remote dial-in user or peer ID (should be the same with the ID setting in dial-in type) by checking the box. Also, you should further specify the corresponding security methods on the right side.

	If you uncheck the checkbox**,** the connection type you select above will apply the authentication methods and security methods in the general settings.
User Name	This field is applicable when you select PPTP or L2TP with or without IPSec policy above.
Password	This field is applicable when you select PPTP or L2TP with or without IPSec policy above.
VJ Compression	VJ Compression is used for TCP/IP protocol header compression. This field is applicable when you select PPTP or L2TP with or without IPSec policy above.
IKE Authentication Method	This group of fields is applicable for IPSec Tunnels and L2TP with IPSec Policy when you specify the IP address of the remote node. The only exception is Digital Signature (X.509) can be set when you select IPSec tunnel either with or without specify the IP address of the remote node. **Pre-Shared Key -** Check the box of Pre-Shared Key to invoke this function and type in the required characters (1-63) as the pre-shared key. **Digital Signature (X.509) –**Check the box of Digital Signature to invoke this function and select one predefined Profiles set in the **VPN and Remote Access >>IPSec Peer Identity**.
IPSec Security Method	This group of fields is a must for IPSec Tunnels and L2TP with IPSec Policy when you specify the remote node. **Medium-** Authentication Header (AH) means data will be authenticated, but not be encrypted. By default, this option is active. **High-** Encapsulating Security Payload (ESP) means payload (data) will be encrypted and authenticated. You may select encryption algorithm from Data Encryption Standard (DES), Triple DES (3DES), and AES.
My WAN IP	This field is only applicable when you select PPTP or L2TP with or without IPSec policy above. The default value is 0.0.0.0, which means the Vigor router will get a PPP IP address from the remote router during the IPCP negotiation phase. If the PPP IP address is fixed by remote side, specify the fixed IP address here. Do not change the default value if you do not select PPTP or L2TP.
Remote Gateway IP	This field is only applicable when you select PPTP or L2TP with or without IPSec policy above. The default value is 0.0.0.0, which means the Vigor router will get a remote Gateway PPP IP address from the remote router during the IPCP negotiation phase. If the PPP IP address is fixed by remote side, specify the fixed IP address here. Do not change the default value if you do not select PPTP or L2TP.
Remote Network IP/ Remote Network Mask	Add a static route to direct all traffic destined to this Remote Network IP Address/Remote Network Mask through the VPN connection. For IPSec, this is the destination clients IDs of phase 2 quick mode.
Local Network IP / Local	Display the local network IP and mask for TCP / IP

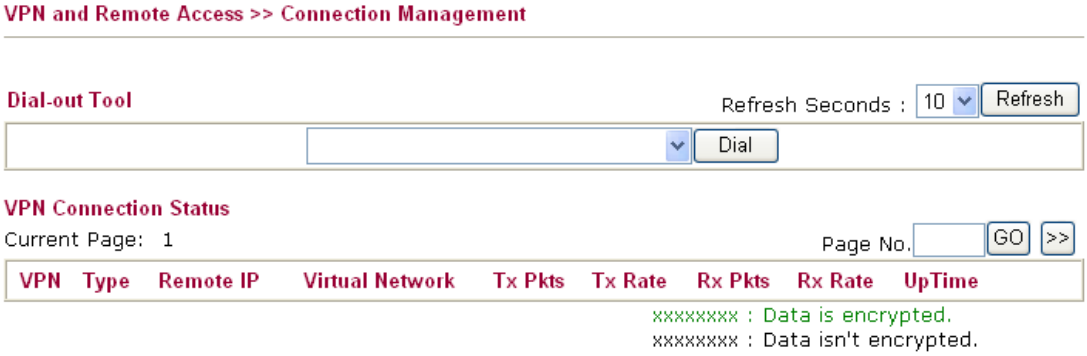
Network Mask	configuration. You can modify the settings if required.
More	Add a static route to direct all traffic destined to more Remote Network IP Addresses/ Remote Network Mask through the VPN connection. This is usually used when you find there are several subnets behind the remote VPN router.



RIP Direction	The option specifies the direction of RIP (Routing Information Protocol) packets. You can enable/disable one of direction here. Herein, we provide four options: TX/RX Both, TX Only, RX Only, and Disable.
From first subnet to remote network, you have to do	If the remote network only allows you to dial in with single IP, please choose **NAT**, otherwise choose **Route**.
Change default route to this VPN tunnel	Check this box to change the default route with this VPN tunnel.

4.10.9 Connection Management

You can find the summary table of all VPN connections. You may disconnect any VPN connection by clicking **Drop** button. You may also aggressively Dial-out by using Dial-out Tool and clicking **Dial** button.



Dial	Click this button to execute dial out function.
Refresh Seconds	Choose the time for refresh the dial information among 5, 10, and 30.
Refresh	Click this button to refresh the whole connection status.

4.11 Certificate Management

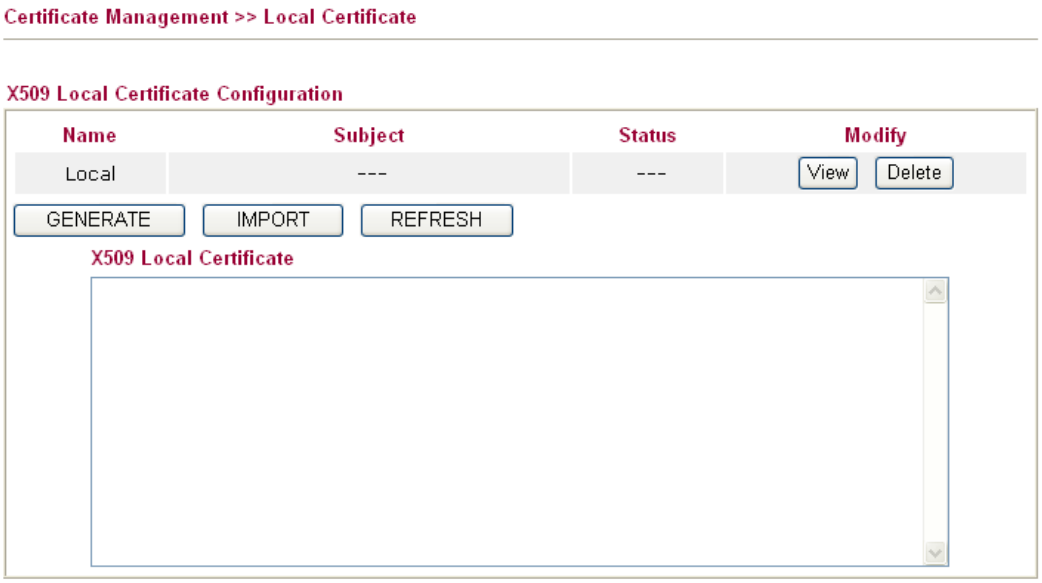
A digital certificate works as an electronic ID, which is issued by a certification authority (CA). It contains information such as your name, a serial number, expiration dates etc., and the digital signature of the certificate-issuing authority so that a recipient can verify that the certificate is real. Here Vigor router support digital certificates conforming to standard X.509.

Any entity wants to utilize digital certificates should first request a certificate issued by a CA server. It should also retrieve certificates of other trusted CA servers so it can authenticate the peer with certificates issued by those trusted CA servers.

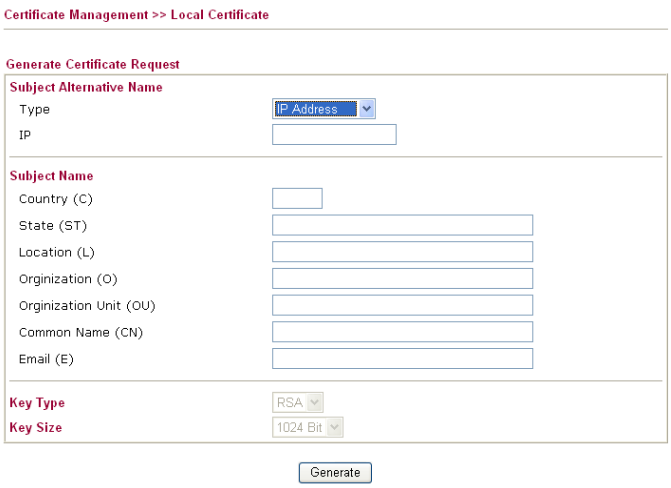
Here you can manage generate and manage the local digital certificates, and set trusted CA certificates. Remember to adjust the time of Vigor router before using the certificate so that you can get the correct valid period of certificate.

Below shows the menu items for Certificate Management.

4.11.1 Local Certificate



Generate Click this button to open **Generate Certificate Request** window.



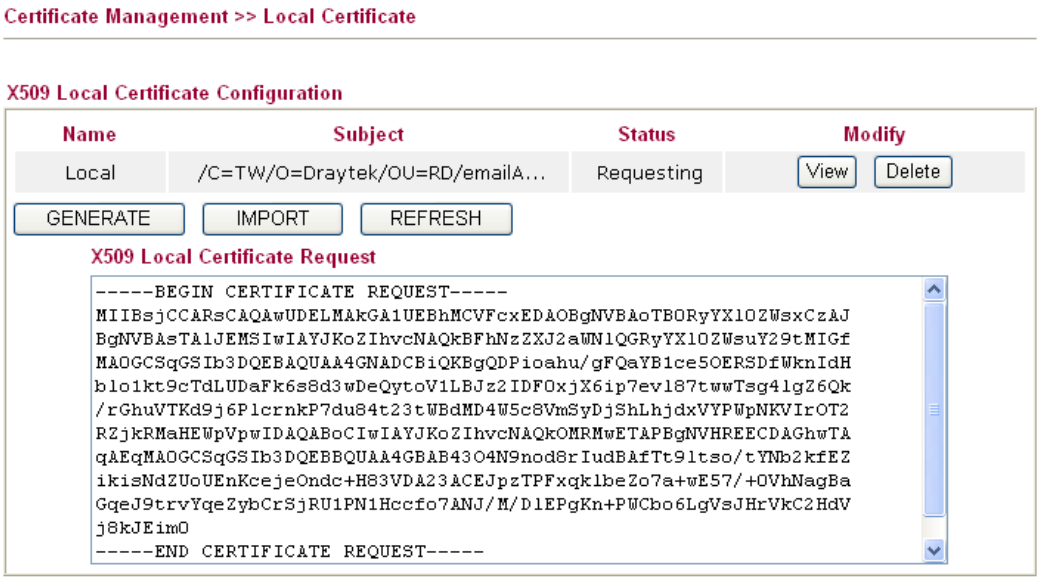
Type in all the information that the window requests. Then click **Generate** again.

Import Click this button to import a saved file as the certification information.

Refresh Click this button to refresh the information listed below.

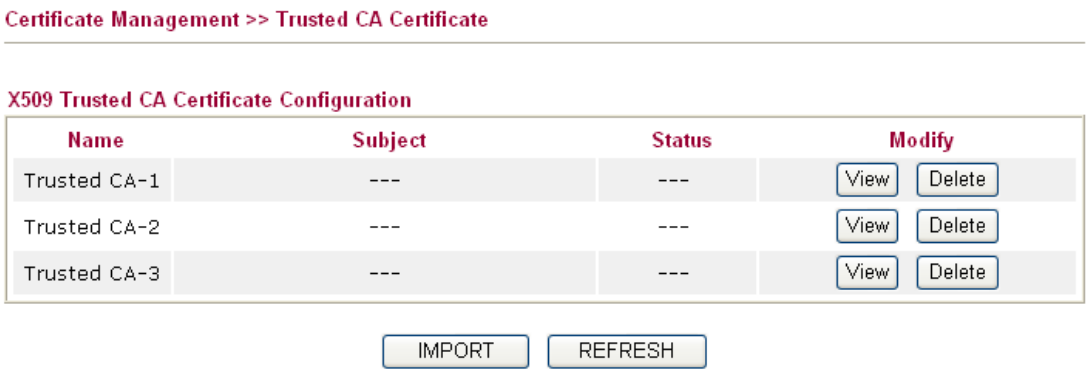
View Click this button to view the detailed settings for certificate request.

After clicking **Generate**, the generated information will be displayed on the window below:

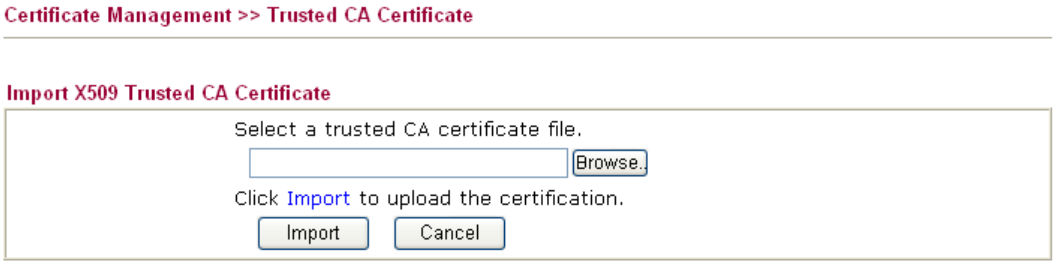


4.11.2 Trusted CA Certificate

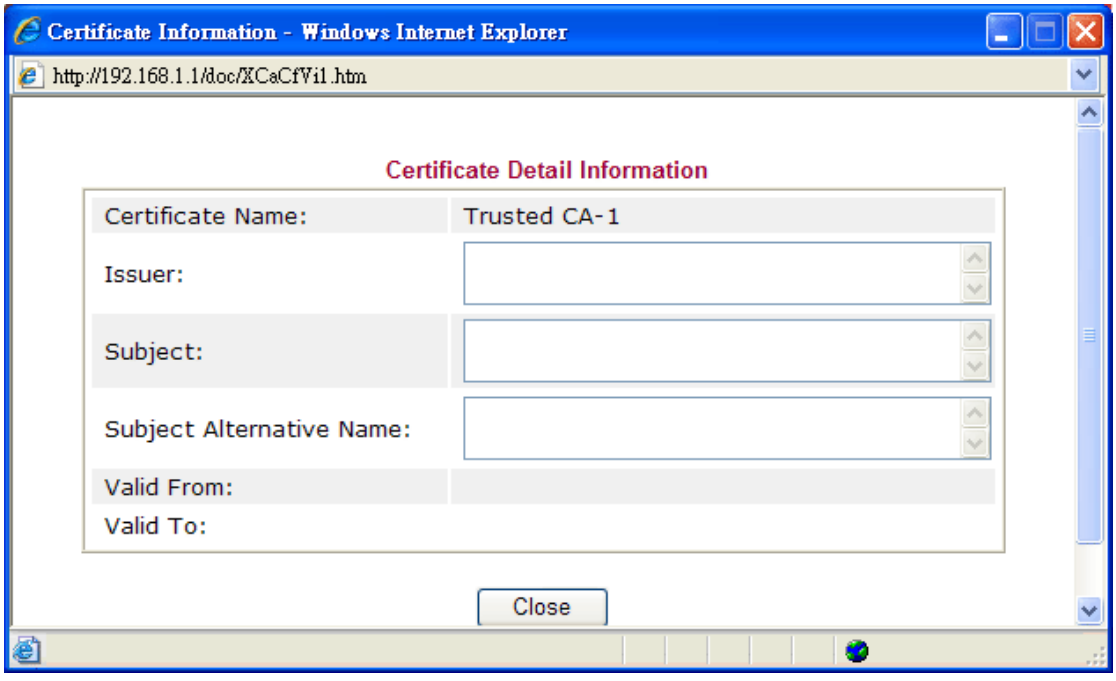
Trusted CA certificate lists three sets of trusted CA certificate.



To import a pre-saved trusted CA certificate, please click **IMPORT** to open the following window. Use **Browse…** to find out the saved text file. Then click **Import**. The one you imported will be listed on the Trusted CA Certificate window. Then click **Import** to use the pre-saved file.



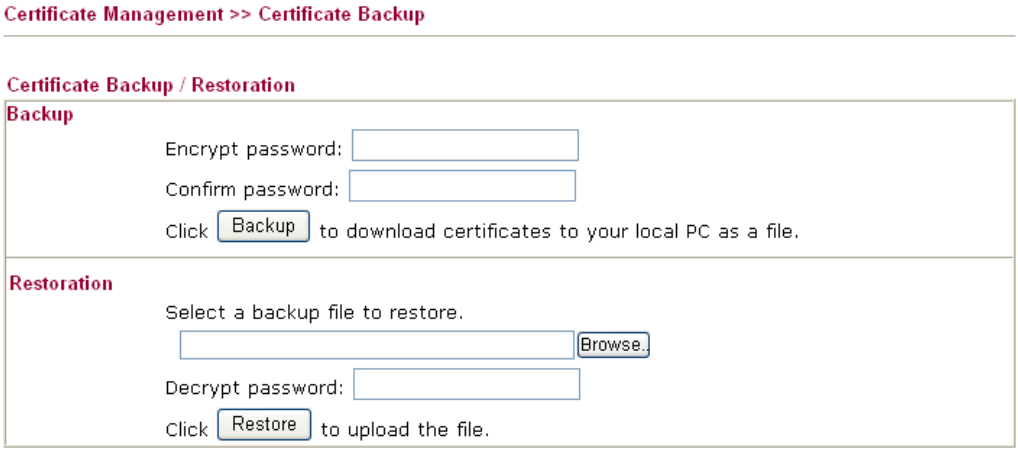
For viewing each trusted CA certificate, click **View** to open the certificate detail information window. If you want to delete a CA certificate, choose the one and click **Delete** to remove all the certificate information.



4.11.3 Certificate Backup

Local certificate and Trusted CA certificate for this router can be saved within one file. Please click **Backup** on the following screen to save them. If you want to set encryption password for these certificates, please type characters in both fields of **Encrypt password** and **Retype password**.

Also, you can use **Restore** to retrieve these two settings to the router whenever you want.



4.12 Wireless LAN

This function is used for "n" models only.

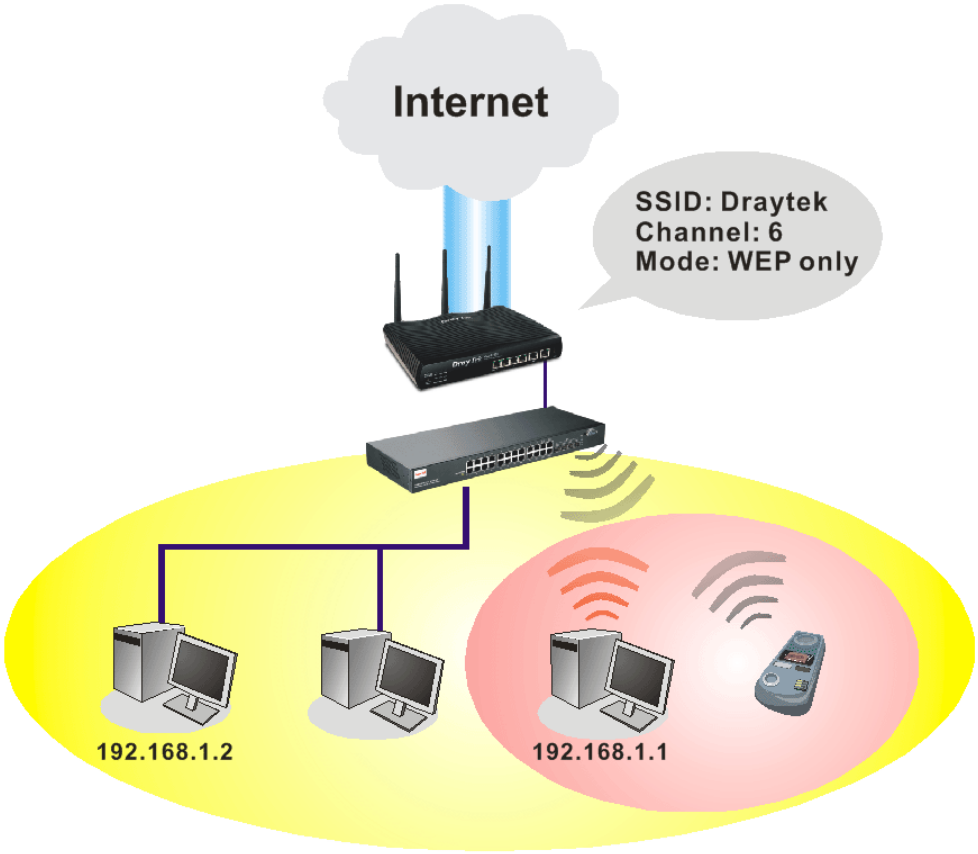
4.12.1 Basic Concepts

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 "n" 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 draft 2 protocol. To boost its performance further, the Vigor Router is also loaded with advanced wireless technology to lift up data rate up to 300 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.



Multiple SSIDs

Vigor router supports four SSID settings for wireless connections. Each SSID can be defined with different name and download/upload rate for selecting by stations connected to the router wirelessly.

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.

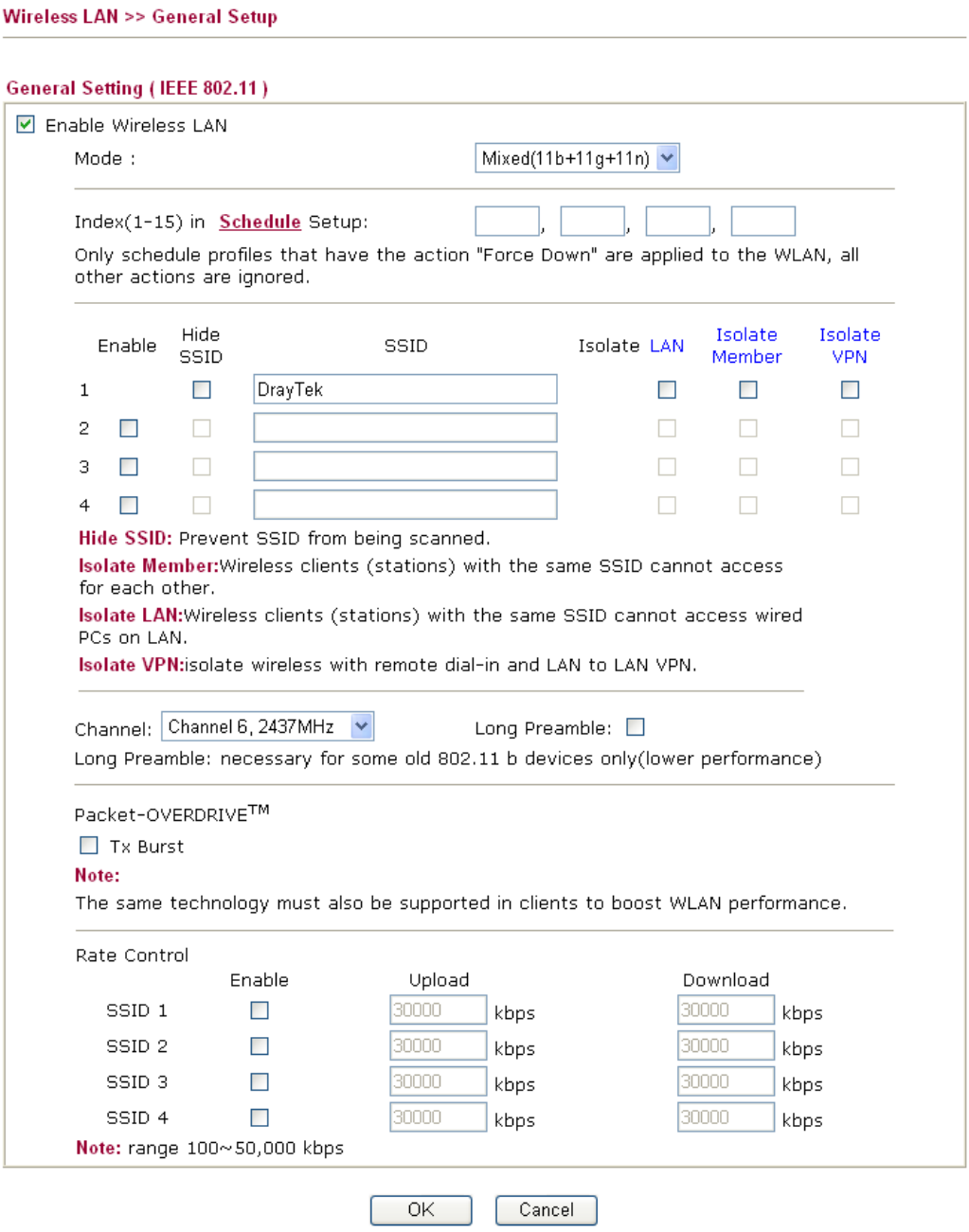
Separate the Wireless and the Wired LAN- WLAN Isolation enables you to isolate your wireless LAN from wired LAN for either quarantine or limit access reasons. To isolate means neither of the parties can access each other. To elaborate an example for business use, you may set up a wireless LAN for visitors 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.

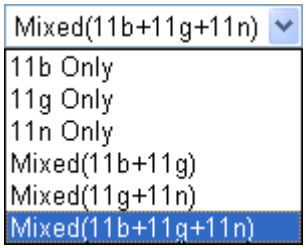
4.12.2 General Setup

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.



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.



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 field is blank and the function will always work.

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.

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.

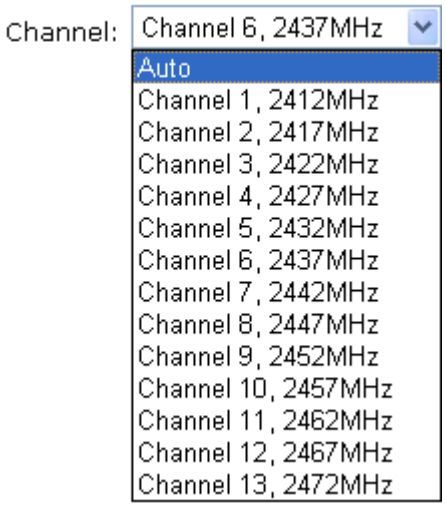
Isolate

LAN – Check this box to make the wireless clients (stations) with the same SSID cannot access wired PCs on LAN.

Member –Check this box to make the wireless clients (stations) with the same SSID not accessing for each other.

VPN - Check this box to make the wireless clients (stations) with different VPN not accessing for each other.

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.



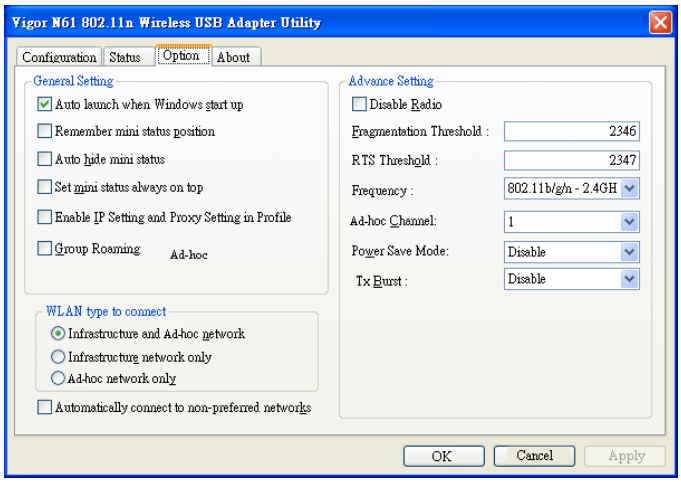
Long Preamble

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 field 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.

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**).



Note: * means the real transmission rate depends on the environment of the network.

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.

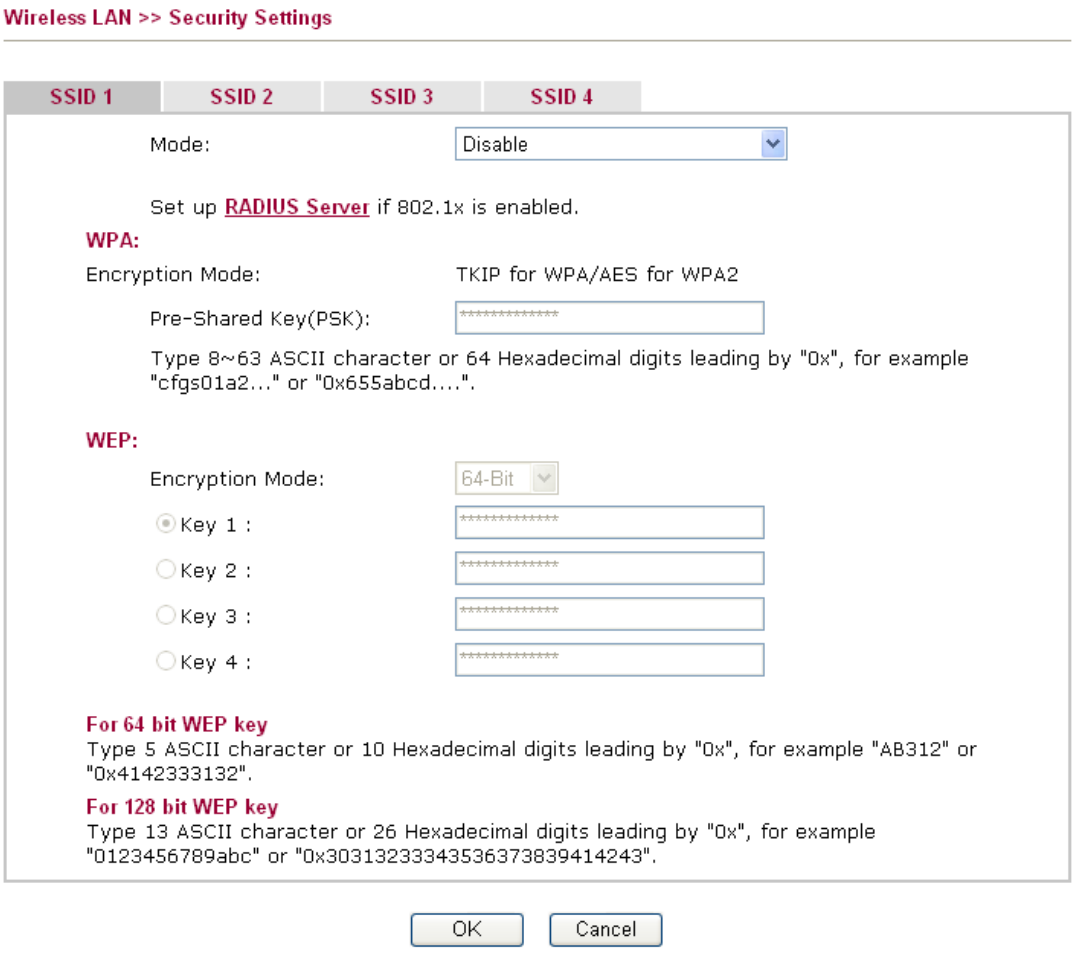
Download – Type the transmitting rate for data download. Default value is 30,000 kbps.

4.12.3 Security

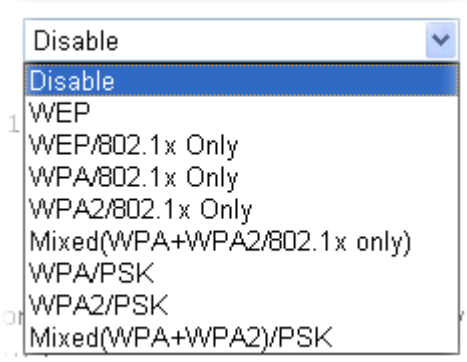
This page allows you to set security with different modes for SSID 1, 2, 3 and 4 respectively. After configuring the correct settings, please click **OK** to save and invoke it.

Default Pre-Shared Key (PSK) is provided and stated on the label pasted on the bottom of the router. For the wireless client who wants to access into Internet through such router, please input the default PSK value for connection.

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



Mode There are several modes provided for you to choose.



Disable - Turn off the encryption mechanism.

WEP-Accepts only WEP clients and the encryption key should be entered in WEP Key.

WEP/802.1x Only - Accepts only WEP clients and the encryption key is obtained dynamically from RADIUS server with 802.1X protocol.

WPA/802.1x Only- Accepts only WPA clients and the encryption key is obtained dynamically from RADIUS server with 802.1X protocol.

WPA2/802.1x Only- Accepts only WPA2 clients and the encryption key is obtained dynamically from RADIUS server with 802.1X protocol.

Mixed (WPA+WPA2/802.1x only) - Accepts WPA and WPA2 clients simultaneously and the encryption key is obtained dynamically from RADIUS server with 802.1X protocol.
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

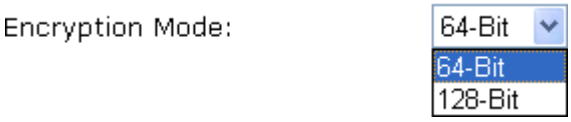
The WPA encrypts each frame transmitted from the radio using the key, which either PSK (Pre-Shared Key) entered manually in this field below or automatically negotiated via 802.1x authentication. Either **8~63** ASCII characters, such as 012345678(or 64 Hexadecimal digits leading by 0x, such as "0x321253abcde...").

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 0x41424344454647484 94A4B4C4D).

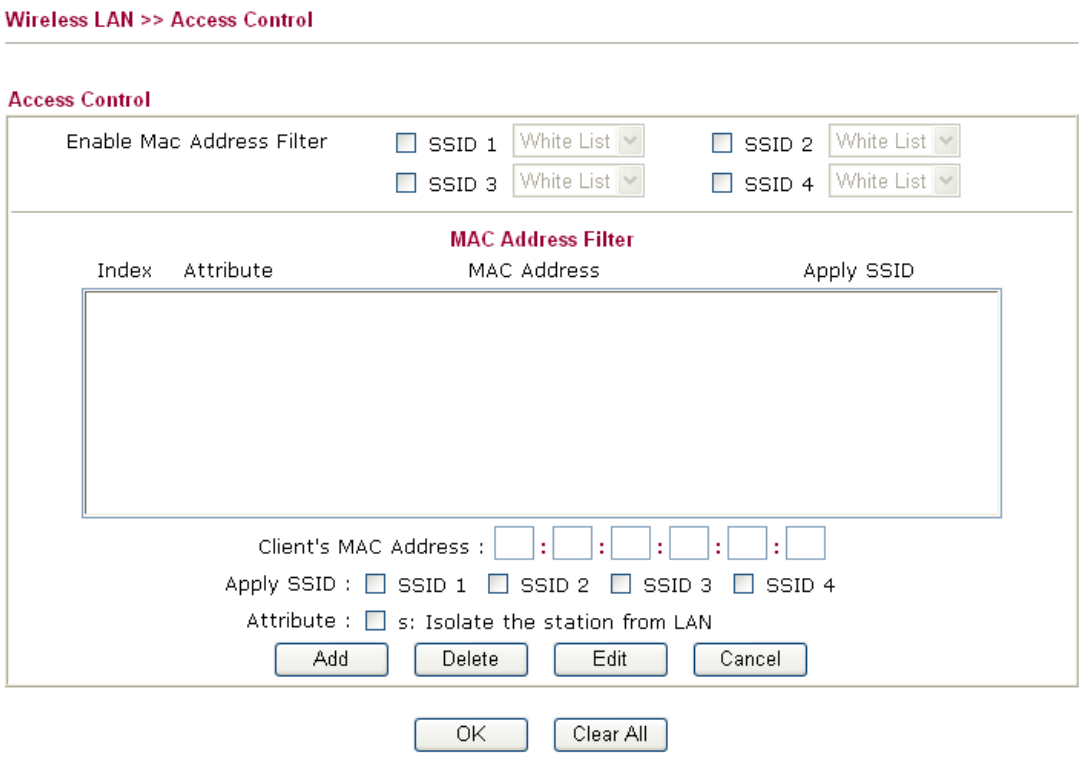


All wireless devices must support the same WEP encryption bit size and have the same key. **Four keys** can be entered here, but only one key can be selected at a time. The keys can be entered in ASCII or Hexadecimal. Check the key you wish to use.

4.12.4 Access Control

In the **Access Control**, the router may restrict wireless access to certain wireless clients only by locking their MAC address into a black or white list. The user may block wireless clients by inserting their MAC addresses into a black list, or only let them be able to connect by inserting their MAC addresses into a white list.

In the **Access Control** web page, users may configure the **white/black** list modes used by each SSID and the MAC addresses applied to their lists.

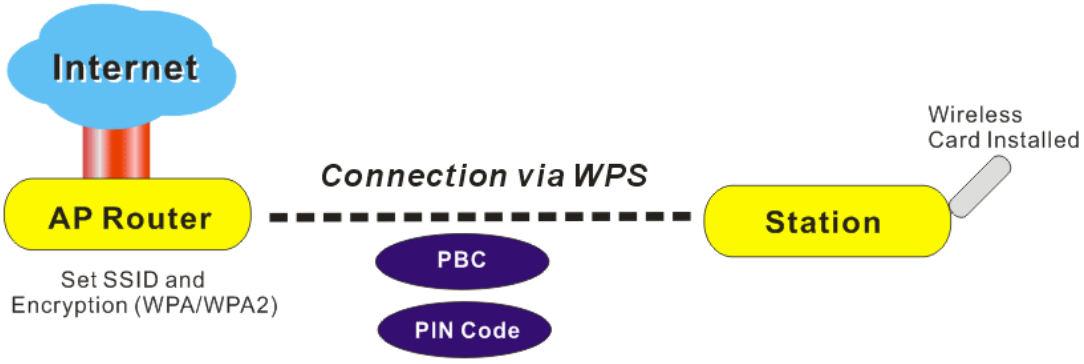


Enable Mac Address Filter	Select to enable the MAC Address filter for wireless LAN identified with SSID 1 to 4 respectively. All the clients (expressed by MAC addresses) listed in the box can be grouped under different wireless LAN. For example, they can be grouped under SSID 1 and SSID 2 at the same time if you check SSID 1 and SSID 2.
MAC Address Filter	Display all MAC addresses that are edited before.
Client's MAC Address	Manually enter the MAC address of wireless client.
Apply SSID	After entering the client's MAC address, check the box of the SSIDs desired to insert this MAC address into their access control list.
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.

4.12.5 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.

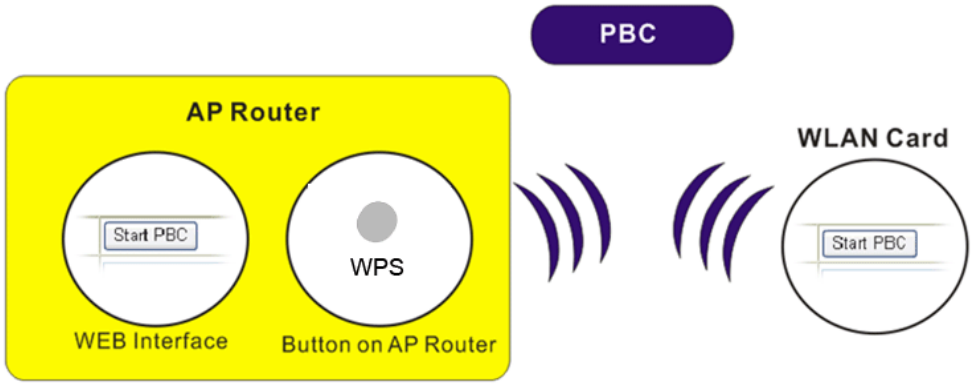


Note: Such function is available for the wireless station with WPS supported.

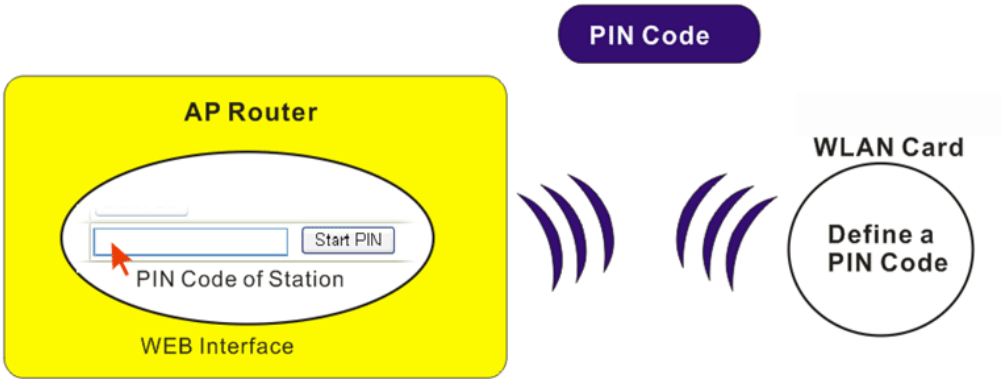
It is the simplest way to build connection between wireless network clients and vigor router. Users do not need to select any encryption mode and type any long encryption passphrase to setup a wireless client every time. He/she only needs to press a button on wireless client, and WPS will connect for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

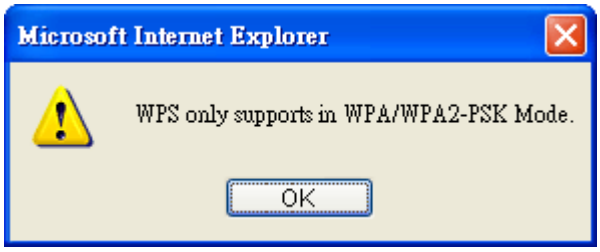
- On the side of Vigor 3200 series which served as an AP, press **WPS** button once on the front panel of the router or click **Start PBC** on web configuration interface. On the side of a station with network card installed, press **Start PBC** button of network card.



- 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.



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.

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.

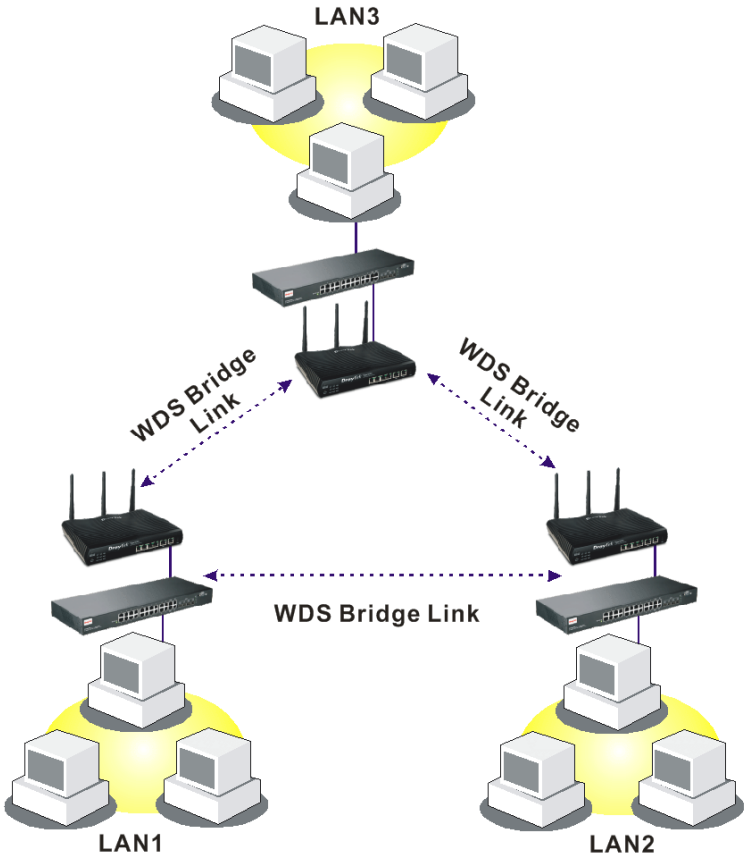
SSID	Display the SSID1 of the router. WPS is supported by SSID1 only.
Authentication Mode	Display current authentication mode of the router. Only WPA2/PSK and WPA/PSK support WPS.
Configure via Push Button	Click **Start PBC** to invoke Push-Button style WPS setup procedure. The router will wait for WPS 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 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)

4.12.6 WDS

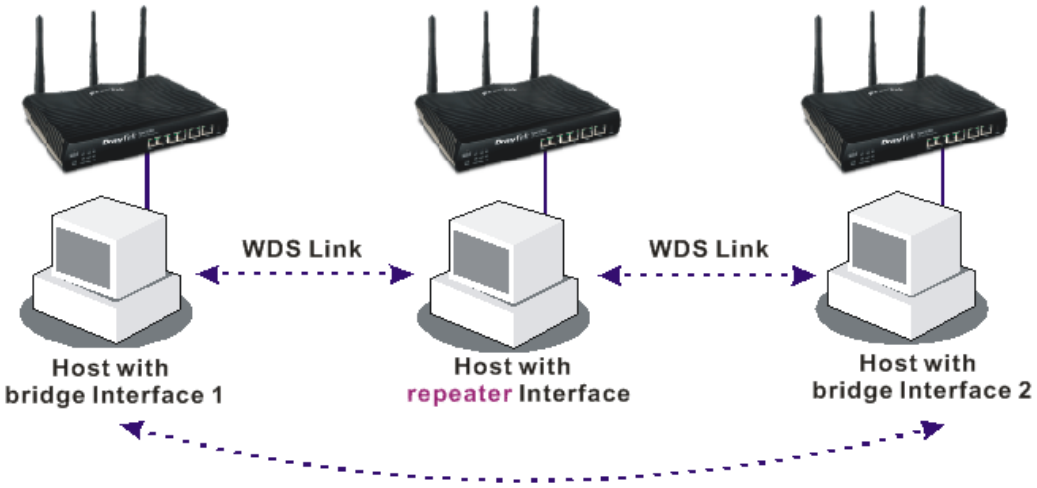
WDS means Wireless Distribution System. It is a protocol for connecting two access points (AP) wirelessly. Usually, it can be used for the following application:

- Provide bridge traffic between two LANs through the air.
- Extend the coverage range of a WLAN.

To meet the above requirement, two WDS modes are implemented in Vigor router. One is **Bridge**, the other is **Repeater**. Below shows the function of WDS-bridge interface:

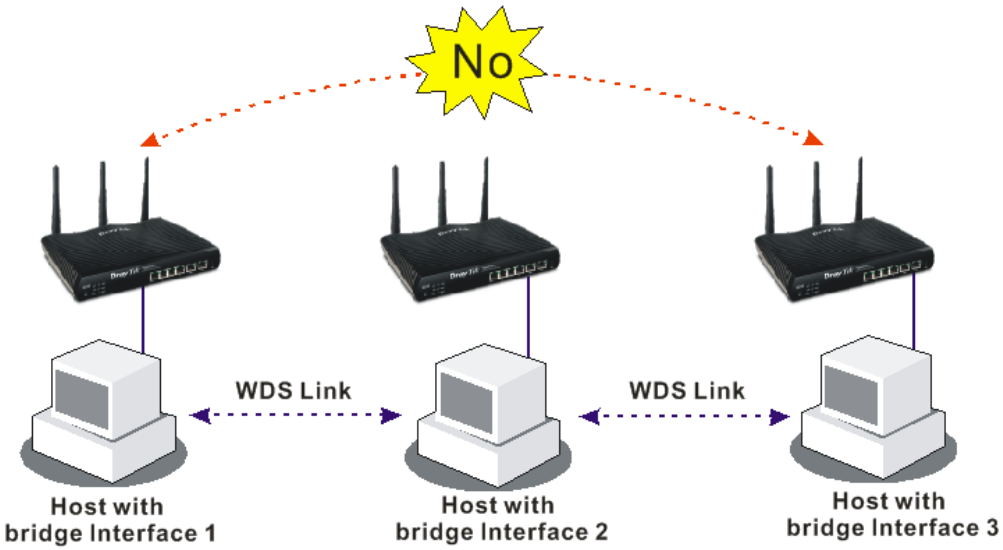


The application for the WDS-Repeater mode is depicted as below:

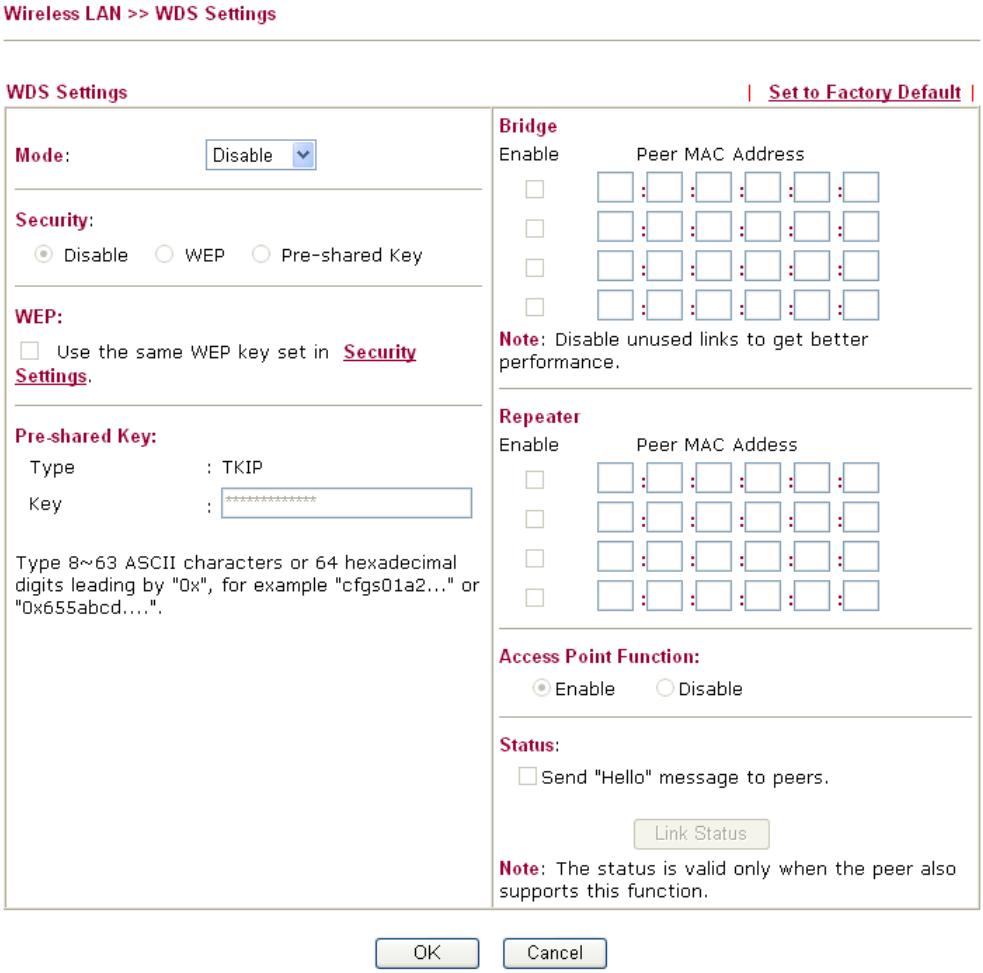


The major difference between these two modes is that: while in **Repeater** mode, the packets received from one peer AP can be repeated to another peer AP through WDS links. Yet in **Bridge** mode, packets received from a WDS link will only be forwarded to local wired or wireless hosts. In other words, only Repeater mode can do WDS-to-WDS packet forwarding.

In the following examples, hosts connected to Bridge 1 or 3 can communicate with hosts connected to Bridge 2 through WDS links. However, hosts connected to Bridge 1 CANNOT communicate with hosts connected to Bridge 3 through Bridge 2.



Click **WDS** from **Wireless LAN** menu. The following page will be shown.



Mode Choose the mode for WDS setting. **Disable** mode will not invoke any WDS setting. **Bridge** mode is designed to fulfill the first type of application. **Repeater** mode is for the second one.

Security There are three types for security, **Disable**, **WEP** and **Pre-shared key**. The setting you choose here will make the following WEP or Pre-shared key field valid or not. Choose one of the types for the router.

WEP Check this box to use the same key set in **Security Settings** page. If you did not set any key in **Security Settings** page, this check box will be dimmed.

Pre-shared Key **Type –** There are three types for you to choose. **DrayTek WPA** can be used for all DrayTek wireless routers like Vigor2700, Vigor2800, Vigor2820, and etc., except for other brand's wireless routers. **WPA** and **WPA2** are used for WDS devices (e.g., AP700). For example, if you have a wireless AP and a Vigor2820n wireless router, you can set the encryption mode as WPA or WPA2 to establish your WDS system between AP and the router.

Key - Type 8 ~ 63 ASCII characters or 64 hexadecimal digits leading by “0x”.

Bridge — If you choose Bridge as the connecting mode, please type in the peer MAC address in these fields. Four peer MAC addresses are allowed to be entered in this page at one time. Yet please disable the unused link to get better performance. If you want to invoke the peer MAC address, remember to check **Enable** box in the front of the MAC address after typing.

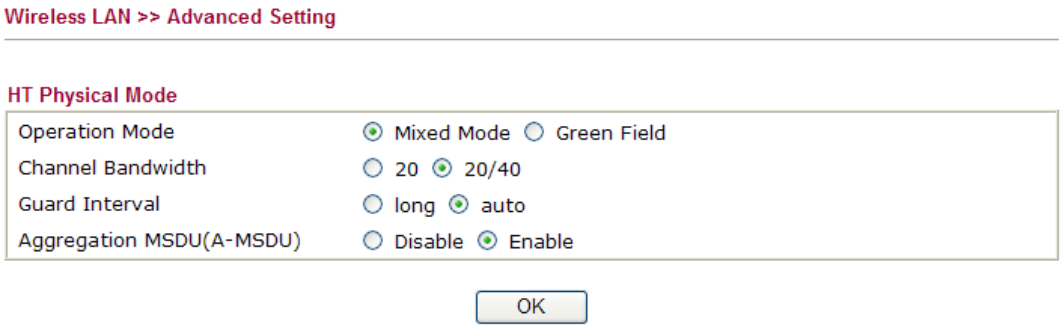
Repeater — If you choose Repeater as the connecting mode, please type in the peer MAC address in these fields. Four peer MAC addresses are allowed to be entered in this page at one time. Similarly, if you want to invoke the peer MAC address, remember to check **Enable** box in the front of the MAC address after typing.

Access Point Function — Click **Enable** to make this router serving as an access point; click **Disable** to cancel this function.

Status — It allows user to send “hello” message to peers. Yet, it is valid only when the peer also supports this function.

4.12.7 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.



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

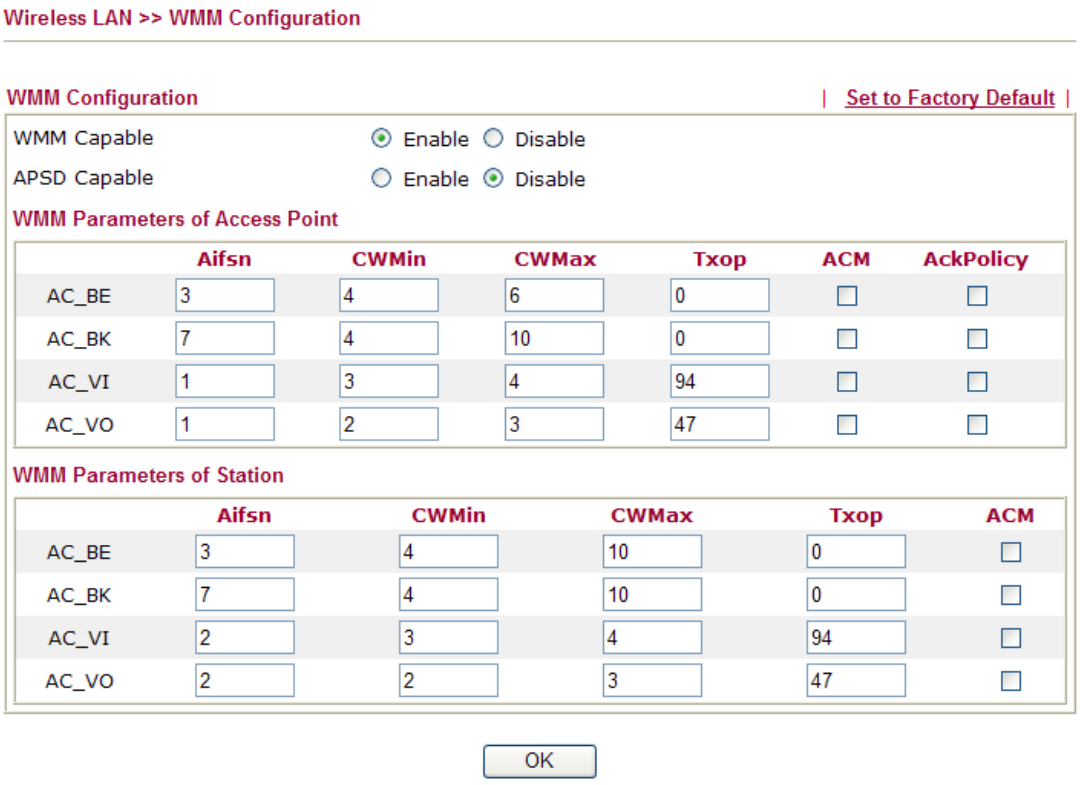
wireless performance) or long guard interval for data transmit based on the station capability.

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.**

4.12.8 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.



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 For the service of e-mail or web browsing, please set large value for AC_BE and AC_BK categories.

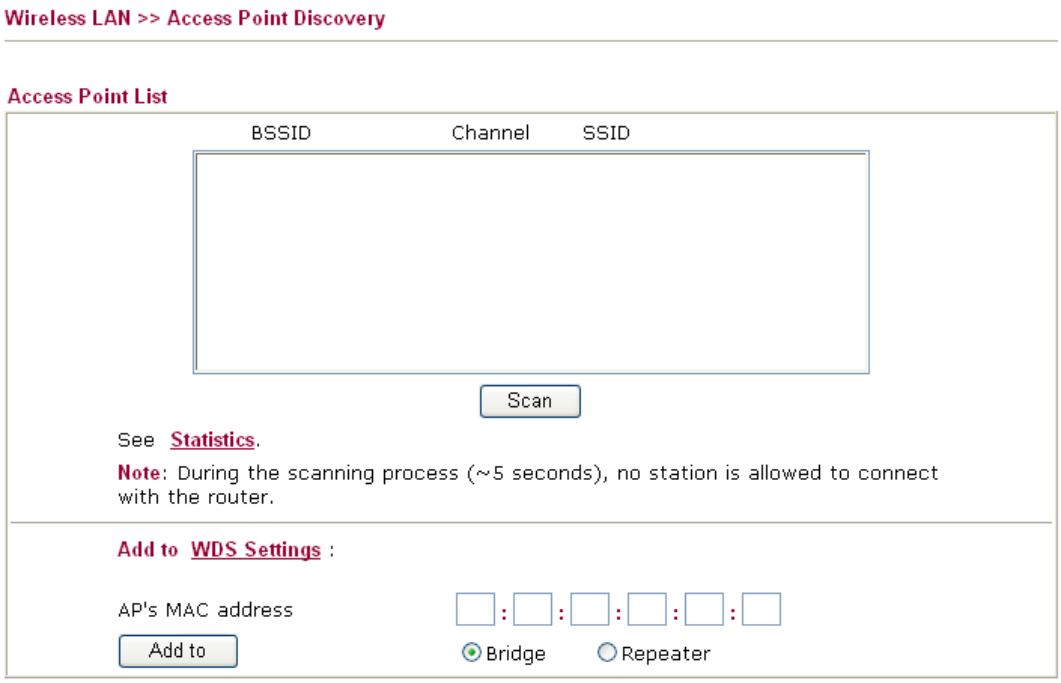
CWMin/CWMax **CWMin** means contention Window-Min and **CWMax** means contention Window-Max. Please specify the value ranging from 1 to 15. Be aware that CWMax value must be greater than CWMin or equals to CWMin value. Both values will influence

	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. **Note:** Vigor2830 provides standard WMM configuration in the web page. If you want to modify the parameters, please refer to the Wi-Fi WMM standard specification.
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.

4.12.9 AP Discovery

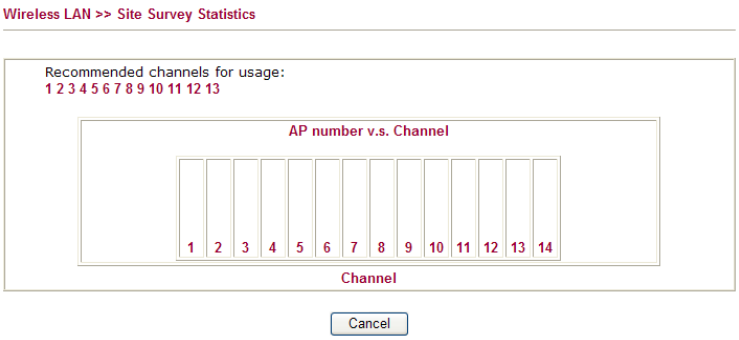
Vigor router can scan all regulatory channels and find working APs in the neighborhood. Based on the scanning result, users will know which channel is clean for usage. Also, it can be used to facilitate finding an AP for a WDS link. Notice that during the scanning process (about 5 seconds), no client 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.



Scan It is used to discover all the connected AP. The results will be shown on the box above this button.

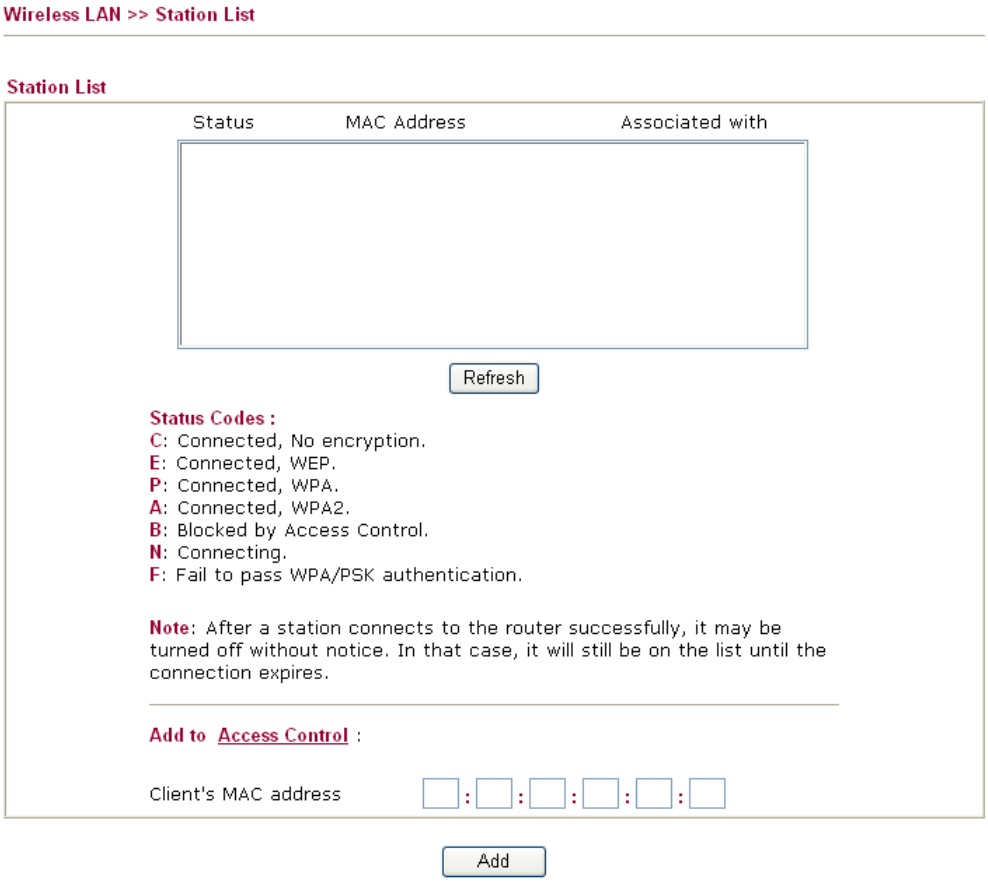
Statistics It displays the statistics for the channels used by APs.



Add to If you want the found AP applying the WDS settings, please type in the AP's MAC address on the bottom of the page and click Bridge or Repeater. Next, click **Add to**. Later, the MAC address of the AP will be added to Bridge or Repeater field of WDS settings page.

4.12.10 Station List

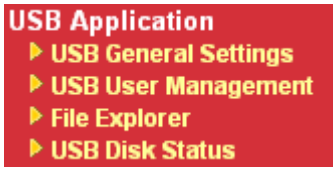
Station List provides the knowledge of connecting wireless clients now along with its status code. There is a code summary below for explanation. For convenient **Access Control**, you can select a WLAN station and click **Add to Access Control** below.



Refresh	Click this button to refresh the status of station list.
Add	Click this button to add current typed MAC address into **Access Control.**

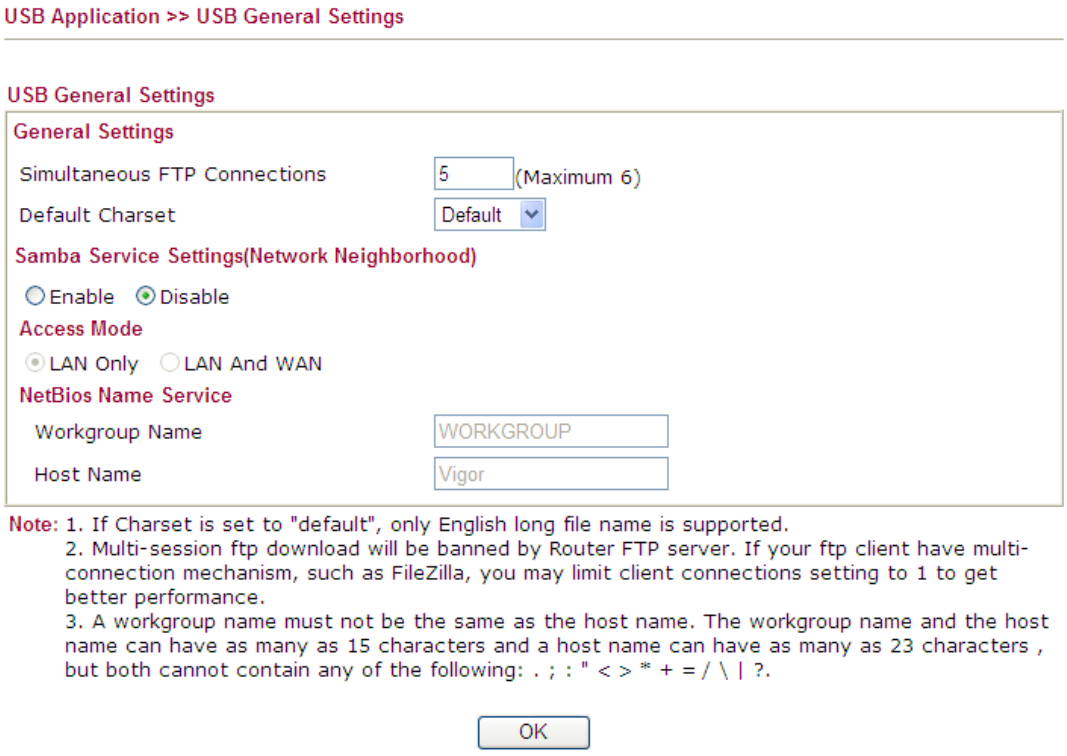
4.13 USB Application

USB diskette connected on Vigor router can be regarded as a server. By way of Vigor router, clients on LAN/WAN can access, write and read data stored in USB diskette with different applications. After setting the configuration in **USB Application**, you can type the IP address of the Vigor router and username/password created in **USB Application>>USB User Management** on the client software. Then, the client can use the FTP site (USB diskette) or share the Samba service through Vigor router.



4.13.1 USB General Settings

This page will determine the number of concurrent FTP connection, default charset for FTP server and enable Samba service. At present, the Vigor router can support USB diskette with formats of FAT16 and FAT32 only. Therefore, before connecting the USB diskette into the Vigor router, please make sure the memory format for the USB diskette is FAT16 or FAT32. It is recommended for you to use FAT32 for viewing the filename completely (FAT16 cannot support long filename).



General Settings

Simultaneous FTP Connection - This field is used to specify the quantity of the FTP sessions. The router allows up to 6 FTP sessions connecting to USB storage diskette at one time.

Default Charset - At present, Vigor router supports three types of character sets: default, GB2312 and BIG5.

Default Charset is for English based file name. For Simplified Chinese file/directory names, please choose GB2312; for Traditional Chinese file/directory names, choose BIG5.

Samba Service Settings

Click **Enable** to invoke samba service via the router.

Access Mode

LAN Only – Users coming from internet cannot connect to the samba server of the router.

LAN And WAN - Both LAN and WAN users can access samba server of the router.

NetBios Name Service

For the NetBios service of USB diskette, you have to specify a workgroup name and a host name. A workgroup name must not be the same as the host name. The workgroup name can have as

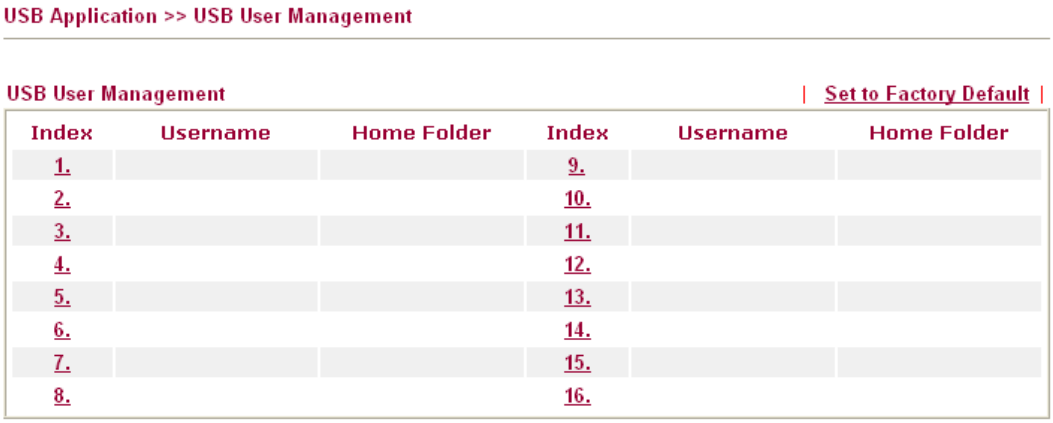
many as 15 characters and the host name can have as many as 23 characters. Both them cannot contain any of the following--- ; : " < > * + = \ | ?.

Workgroup Name – Type a name for the workgroup.

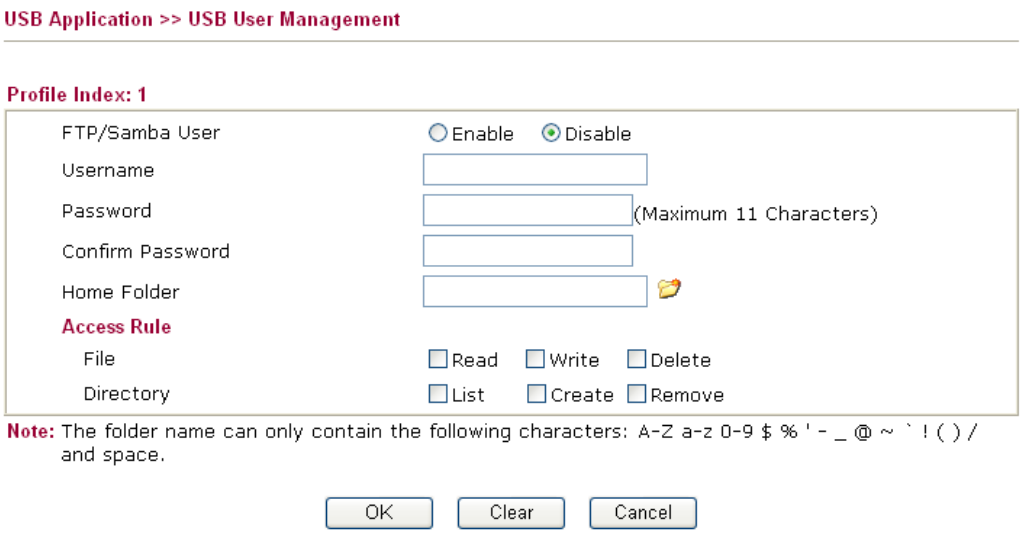
Host Name – Type the host name for the router.

4.13.2 USB User Management

This page allows you to set profiles for FTP/Samba users. Any user who wants to access into the USB diskette must type the same username and password configured in this page. Before adding or modifying settings in this page, please insert a USB diskette first. Otherwise, an error message will appear to warn you.



Click index number to access into configuration page.



FTP/Samba User

Enable – Click this button to activate this profile (account) for FTP service or Samba User service. Later, the user can use the username specified in this page to login into FTP server.

Disable – Click this button to disable such profile.

Username

Type the username for FTP/Samba users for accessing into FTP server (USB diskette). Be aware that users cannot access into USB diskette in anonymity. Later, you can open FTP client software and type the username specified here for accessing

into USB storage diskette.

Note: “Admin” could not be typed here as username, for the word is specified for accessing into web pages of Vigor router only. Also, it is reserved for FTP firmware upgrade usage.

Note: FTP Passive mode is not supported by Vigor Router.

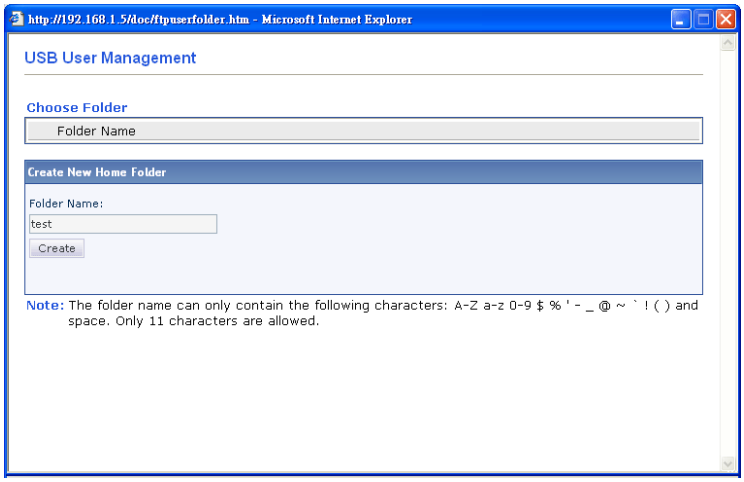
Please disable the mode on the FTP client.

Password — Type the password for FTP/Samba users for accessing FTP server. Later, you can open FTP client software and type the password specified here for accessing into USB storage diskette.

Confirm Password — Type the password again to make confirmation.

Home Folder — It determines the range for the client to access into.
The user can enter a directory name in this field. Then, after clicking **OK**, the router will create the specific/new folder in the USB diskette. In addition, if the user types “/” here, he/she can access into all of the disk folders and files in USB diskette.
Note: When write protect status for the USB diskette is **ON**, you cannot type any new folder name in this field. Only “/” can be used in such case.

You can click to open the following dialog to add any new folder which can be specified as the Home Folder.



Access Rule — It determines the authority for such profile. Any user, who uses such profile for accessing into USB diskette, must follow the rule specified here.

File – Check the items (Read, Write and Delete) for such profile.

Directory –Check the items (List, Create and Remove) for such profile.

Before you click **OK**, you have to insert a USB diskette into the USB interface of the Vigor router. Otherwise, you cannot save the configuration.

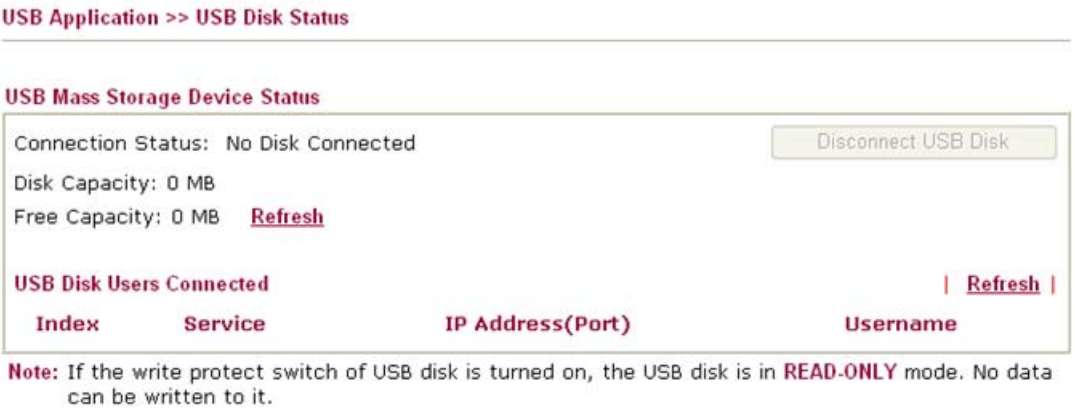
4.13.3 File Explorer

File Explorer offers an easy way for users to review and manage the content of USB diskette connected on Vigor router.

Refresh	Click this icon to refresh files list.
Back	Click this icon to return to the upper directory.
Create	Click this icon to add a new folder.
Current Path	Display current folder.
Upload	Click this button to upload the selected file to the USB diskette. The uploaded file in the USB diskette can be shared for other user through FTP.

4.13.4 USB Disk Status

This page is to monitor the status for the users who accessing into FTP or Samba server (USB diskette) via the Vigor router. If you want to remove the diskette from USB port in router, please click **Disconnect USB Disk** first. And then, remove the USB diskette later.



Connection Status	If there is no USB diskette connected to Vigor router, "**No Disk Connected**" will be shown here.

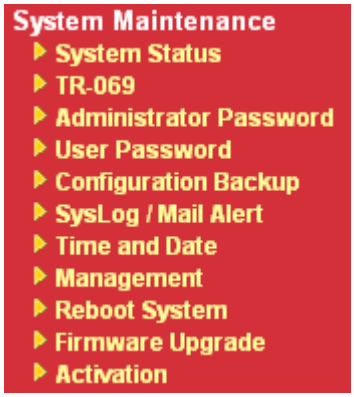
Disk Capacity	It displays the total capacity of the USB diskette.
Free Capacity	It displays the free space of the USB diskette. Click **Refresh** at any time to get new status for free capacity.
Index	It displays the number of the client which connecting to FTP server.
IP Address	It displays the IP address of the user's host which connecting to the FTP server.
Username	It displays the username that user uses to login to the FTP server.

When you insert USB diskette into the Vigor router, the system will start to find out such device within several seconds.

4.14 System Maintenance

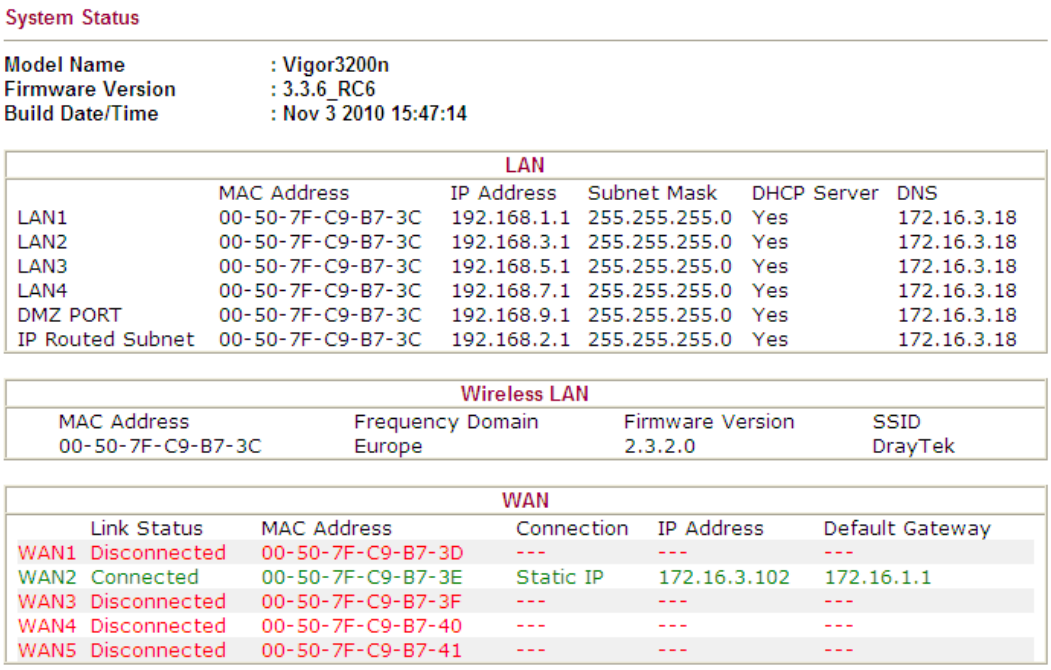
For the system setup, there are several items that you have to know the way of configuration: Status, Administrator Password, Configuration Backup, Syslog, Time setup, Reboot System, Firmware Upgrade.

Below shows the menu items for System Maintenance.



4.14.1 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 : Vigor3200n
Firmware Version : 3.3.6_RC6
Build Date/Time : Nov 3 2010 15:47:14

LAN

	MAC Address	IP Address	Subnet Mask	DHCP Server	DNS
LAN1	00-50-7F-C9-B7-3C	192.168.1.1	255.255.255.0	Yes	172.16.3.18
LAN2	00-50-7F-C9-B7-3C	192.168.3.1	255.255.255.0	Yes	172.16.3.18
LAN3	00-50-7F-C9-B7-3C	192.168.5.1	255.255.255.0	Yes	172.16.3.18
LAN4	00-50-7F-C9-B7-3C	192.168.7.1	255.255.255.0	Yes	172.16.3.18
DMZ PORT	00-50-7F-C9-B7-3C	192.168.9.1	255.255.255.0	Yes	172.16.3.18
IP Routed Subnet	00-50-7F-C9-B7-3C	192.168.2.1	255.255.255.0	Yes	172.16.3.18

Wireless LAN

MAC Address	Frequency Domain	Firmware Version	SSID
00-50-7F-C9-B7-3C	Europe	2.3.2.0	DrayTek

WAN

	Link Status	MAC Address	Connection	IP Address	Default Gateway
WAN1	Disconnected	00-50-7F-C9-B7-3D	---	---	---
WAN2	Connected	00-50-7F-C9-B7-3E	Static IP	172.16.3.102	172.16.1.1
WAN3	Disconnected	00-50-7F-C9-B7-3F	---	---	---
WAN4	Disconnected	00-50-7F-C9-B7-40	---	---	---
WAN5	Disconnected	00-50-7F-C9-B7-41	---	---	---

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 built.

LAN-------

MAC Address Display the MAC address of the LAN Interface.

IP Address Display the IP address of the LAN interface.

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.

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.

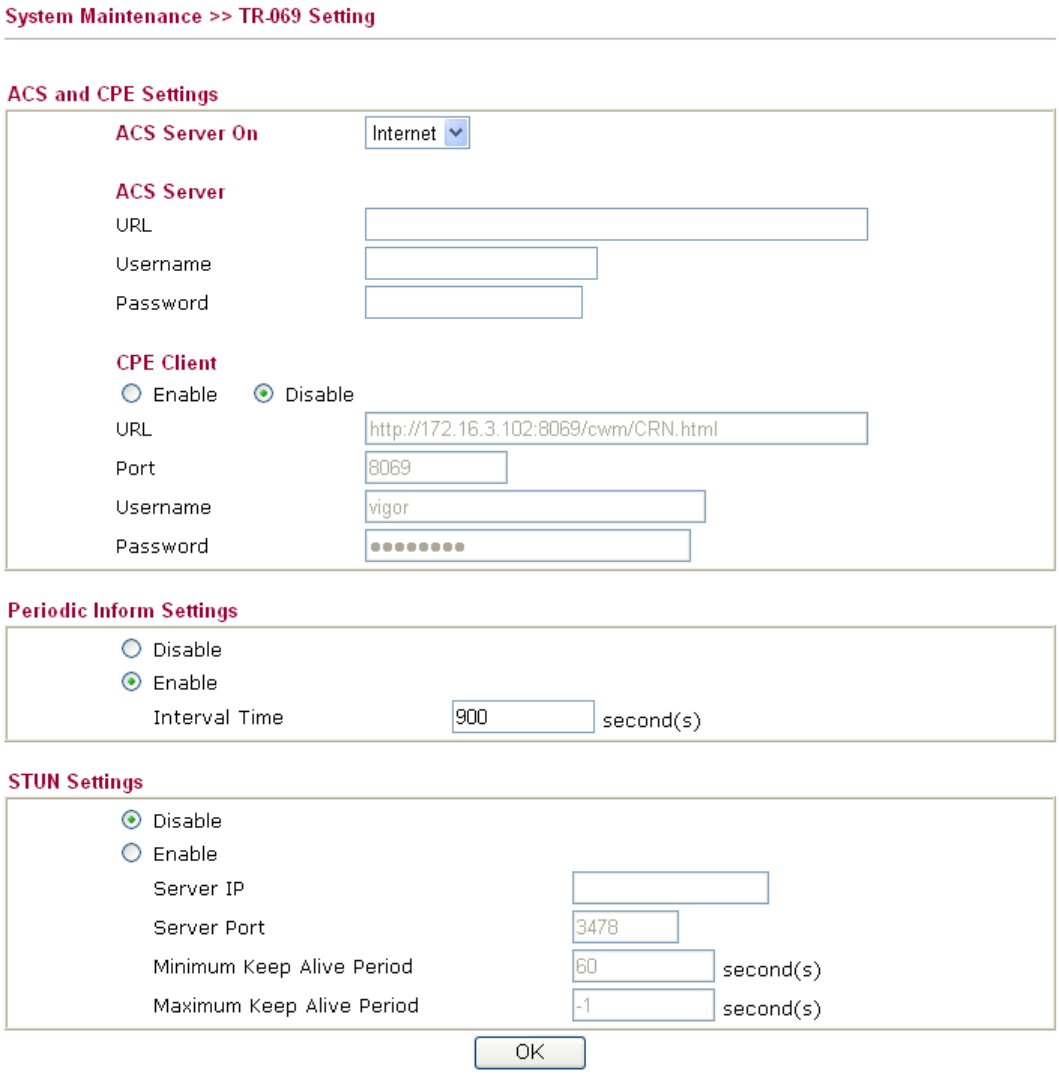
WAN-------

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.

4.14.2 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.



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	Such information is useful for Auto Configuration Server. **Enable/Disable** – Allow/Deny the CPE Client to connect with Auto Configuration Server. **Port** – Sometimes, port conflict might be occurred. To solve

such problem, you might change port number for CPE.

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.

STUN Settings — The default is **Disable**. If you click **Enable**, please type the relational settings listed below:

Server IP – Type the IP address of the STUN server.

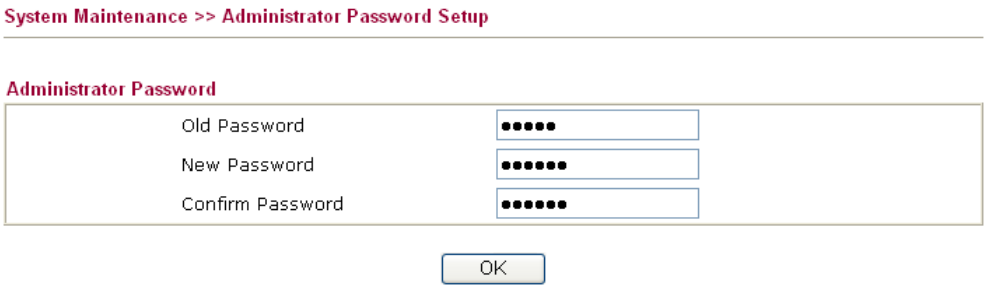
Server Port – Type the port number of the STUN server.

Minimum Keep Alive Period – If STUN is enabled, the CPE must send binding request to the server for the purpose of maintaining the binding in the Gateway. Please type a number as the minimum period. The default setting is "60 seconds".

Maximum Keep Alive Period – If STUN is enabled, the CPE must send binding request to the server for the purpose of maintaining the binding in the Gateway. Please type a number as the maximum period. A value of "-1" indicates that no maximum period is specified.

4.14.3 Administrator Password

This page allows you to set new password.



Old Password — Type in the old password. The factory default setting for password is **"admin"**.

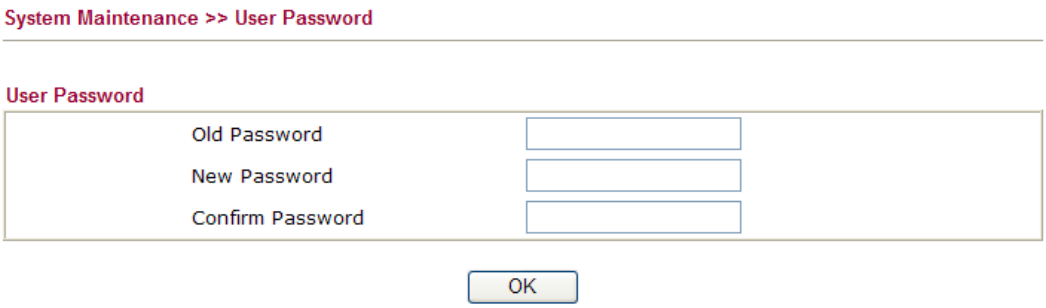
New Password — Type in new password in this field.

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.

4.14.4 User Password

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



Old Password	Type in the old password. The factory default setting for password is blank.
New Password	Type in new password in this field.
Confirm Password	Type in the new password again.

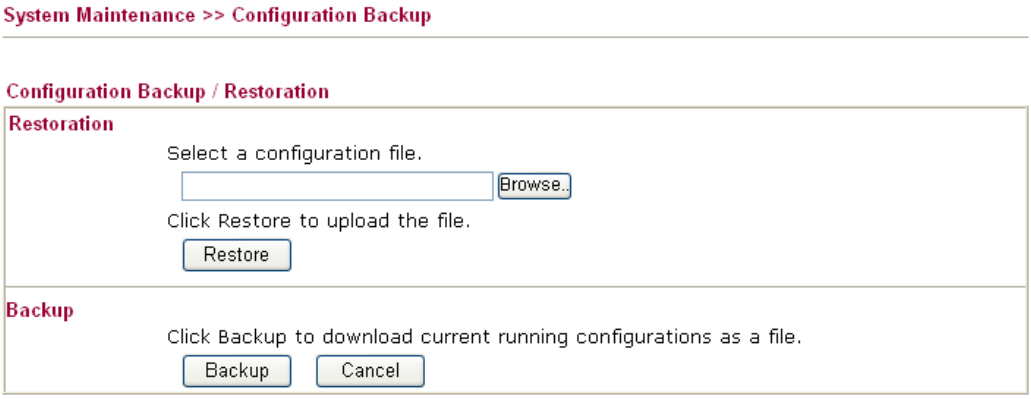
When you click **OK**, the login window will appear. Please use the new password to access into the web configurator again.

4.14.5 Configuration Backup

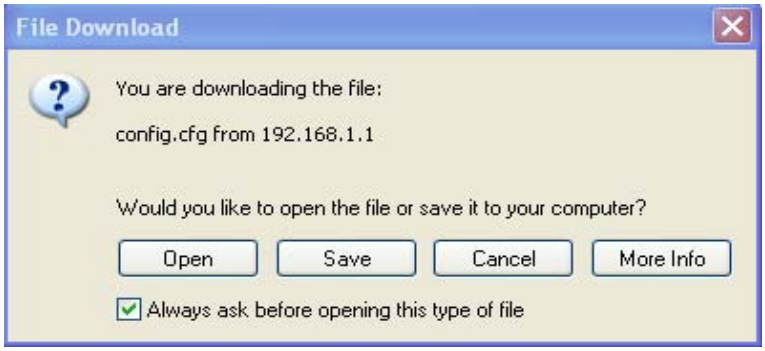
Backup the Configuration

Follow the steps below to backup your configuration.

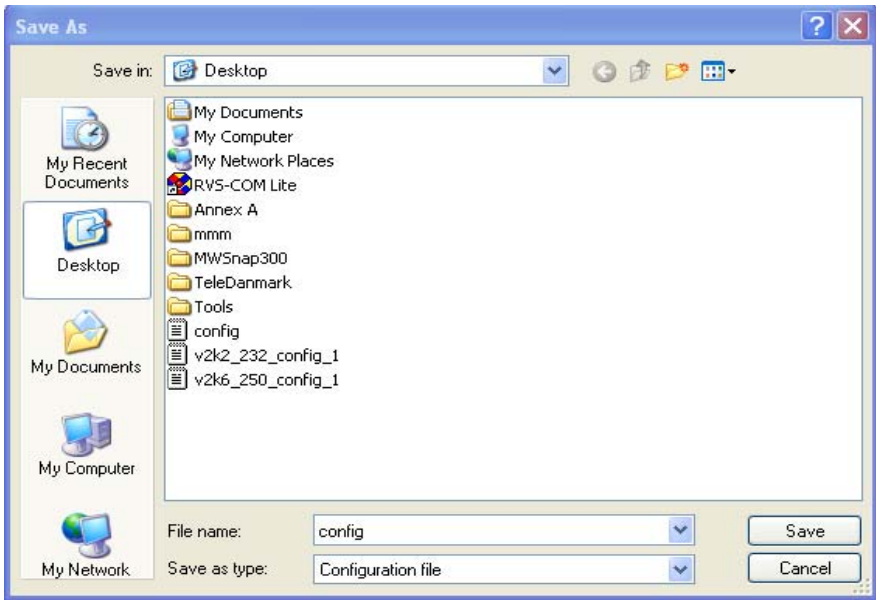
1. Go to **System Maintenance** >> **Configuration Backup**. The following windows will be popped-up, as shown below.



2. Click **Backup** button to get into the following dialog. Click **Save** button to open another dialog for saving configuration as a file.



3. In **Save As** dialog, the default filename is **config.cfg**. You could give it another name by yourself.



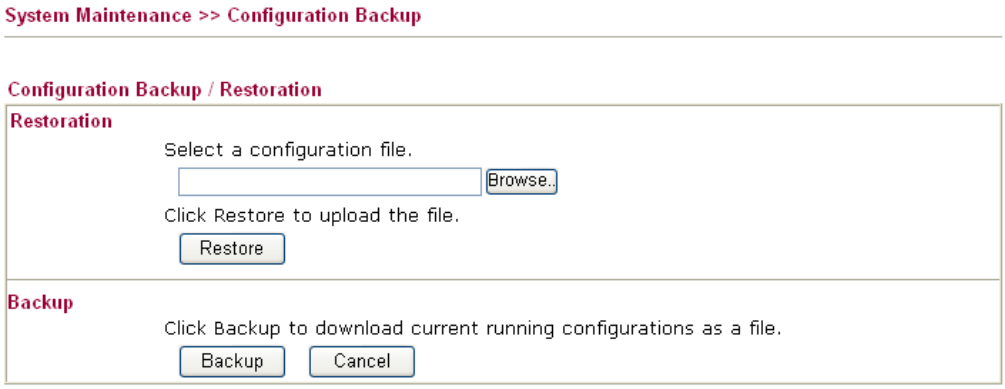
4. Click **Save** button, the configuration will download automatically to your computer as a file named **config.cfg**.

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

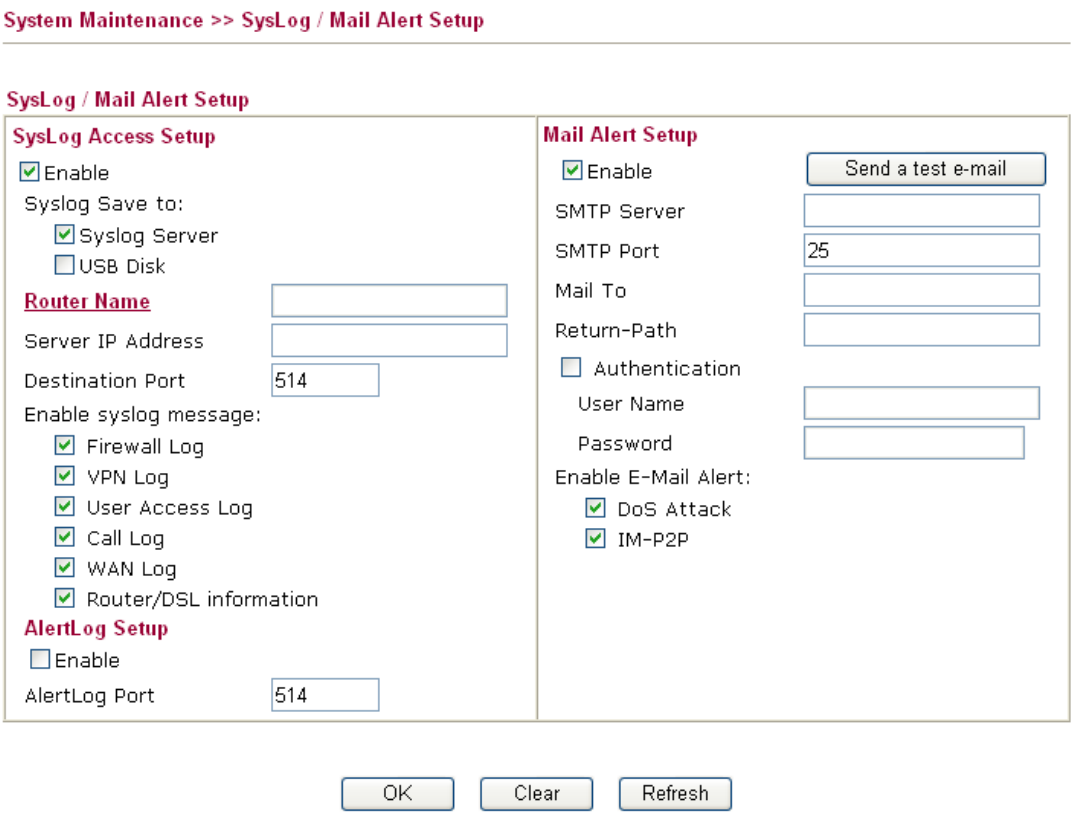
1. Go to **System Maintenance** >> **Configuration Backup**. The following windows will be popped-up, as shown below.



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.

4.14.6 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.



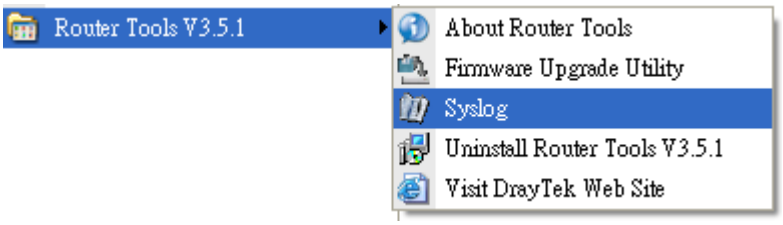
Enable	Check **Enable** to activate function of syslog.
Syslog Save to	Check **Syslog Server** to save the log to Syslog directly. Check **USB Disk** to save the log to the attached USB diskette.
Router Name	Display the name for such router configured in **System Maintenance>>Management.** If there is no name here, simply lick the link to access into **System Maintenance>>Management** to set the router name.
Server IP Address	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, VPN, User Access, Call, WAN, Router/DSL information to Syslog.
AlertLog Setup	Check "**Enable**" to activate function of alert log. Type the port number for alert log. The default setting is 514.
Mail 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.

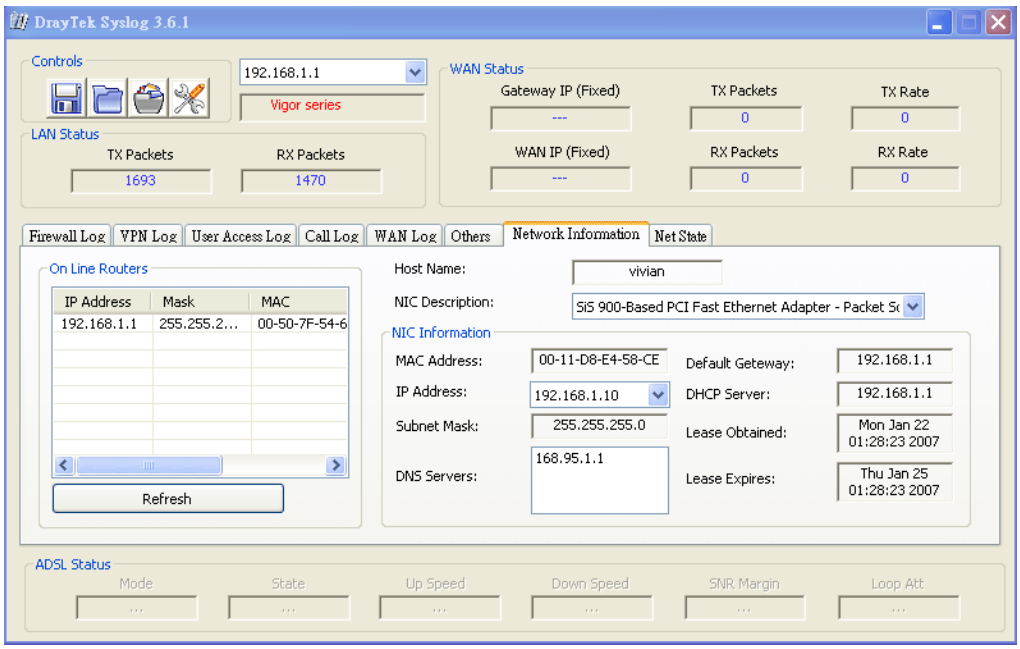
Click **OK** to save these settings.

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.

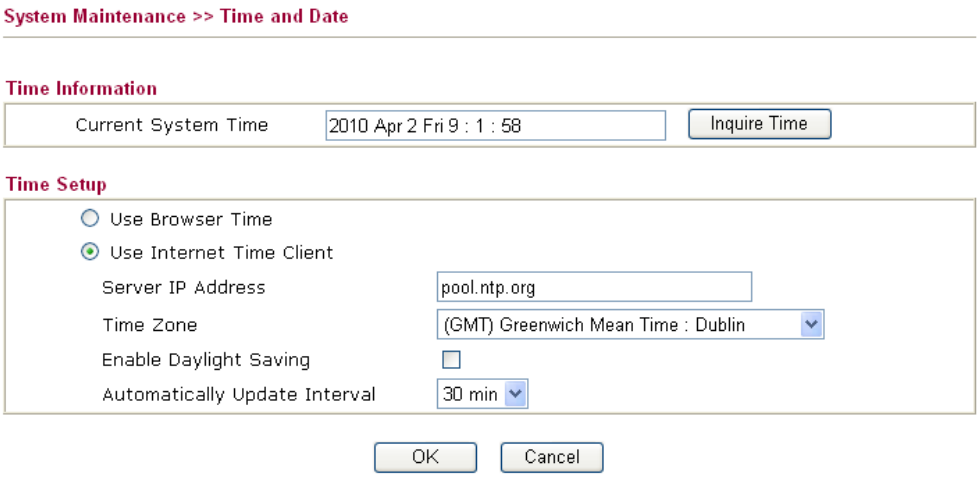


3. From the Syslog screen, select the router you want to monitor. Be reminded that in **Network Information**, select the network adapter used to connect to the router. Otherwise, you won't succeed in retrieving information from the router.



4.14.7 Time and Date

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

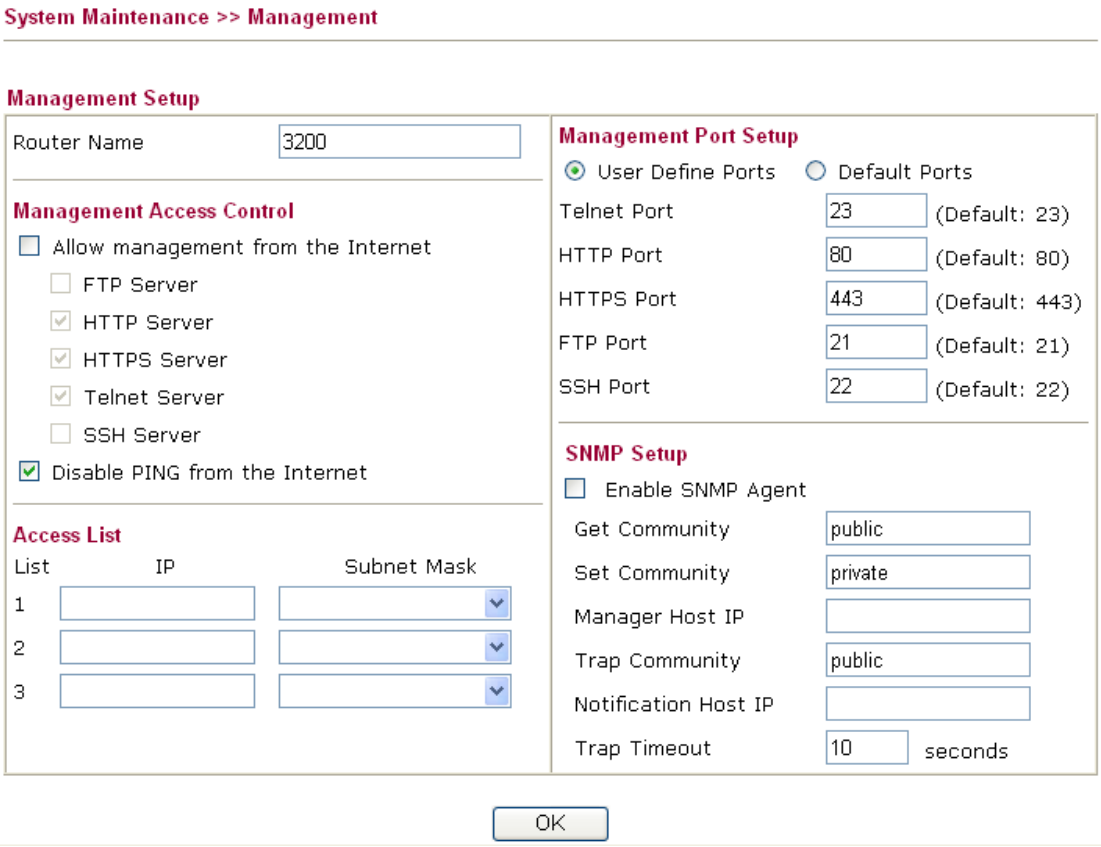


Current System Time	Click **Inquire Time** to get the current time.
Use Browser Time	Select this option to use the browser time from the remote administrator PC host as router's system time.
Use Internet Time	Select to inquire time information from Time Server on the Internet using assigned protocol.
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.
Enable Daylight Saving	Check this box to enable daylight saving function.
Automatically Update Interval	Select a time interval for updating from the NTP server.

Click **OK** to save these settings.

4.14.8 Management

This page allows you to manage the settings for access control, access list, port setup, and SMP setup. For example, as to management access control, the port number is used to send/receive SIP message for building a session.

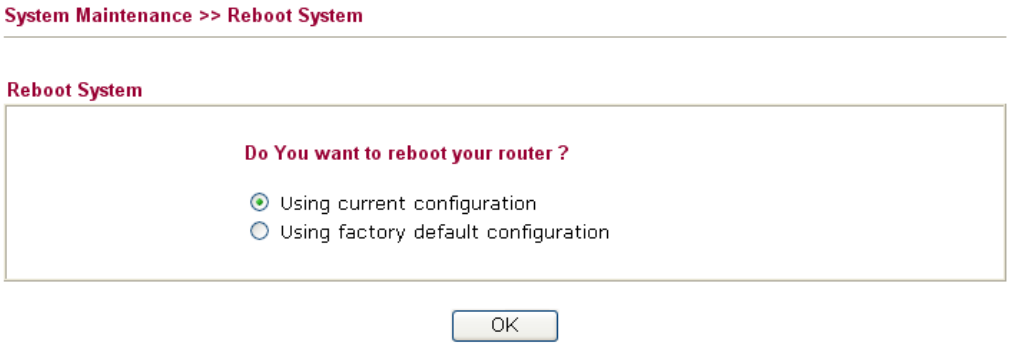


Router Name	Type a name as a identification for such router.
Allow management from the Internet	Enable the checkbox to allow system administrators to login from the Internet. There are several servers provided by the system to allow you managing the router from Internet. Check the box(es) to specify.
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.
Enable SNMP Agent	Check it to enable this function.
Get Community	Set the name for getting community by typing a proper character. The default setting is **public.**

Set Community	Set community by typing a proper name. The default setting is **private.**
Manager Host IP	Set one host as the manager to execute SNMP function. Please type in IP address to specify certain host.
Trap Community	Set trap community by typing a proper name. The default setting is **public.**
Notification Host IP	Set the IP address of the host that will receive the trap community.
Trap Timeout	The default setting is 10 seconds.

4.14.9 Reboot System

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



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.

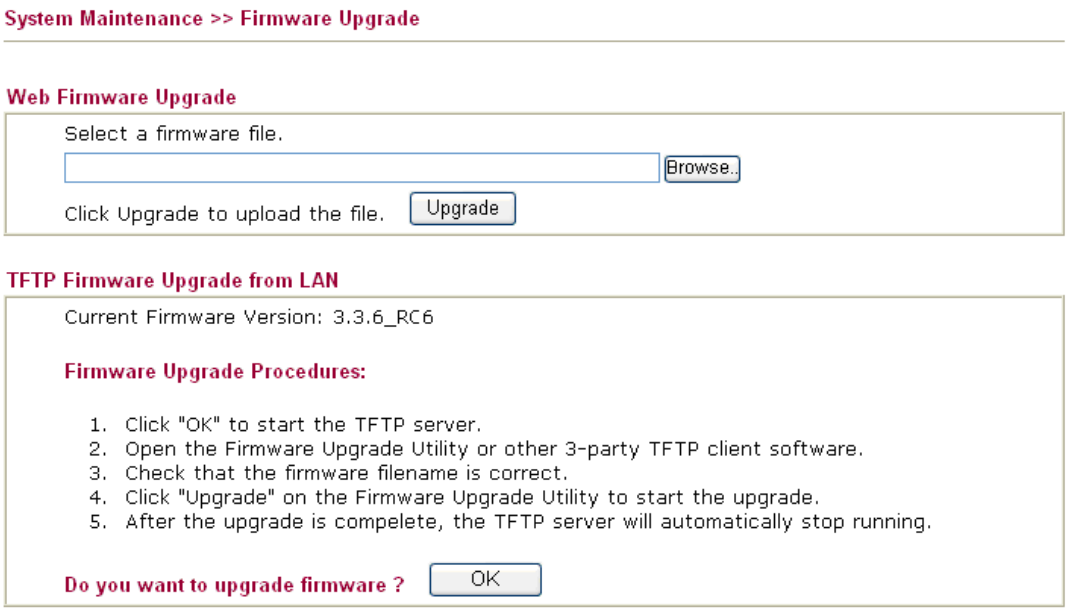
Note: When the system pops up Reboot System web page after you configure web settings, please click **OK** to reboot your router for ensuring normal operation and preventing unexpected errors of the router in the future.

4.14.10 Firmware Upgrade

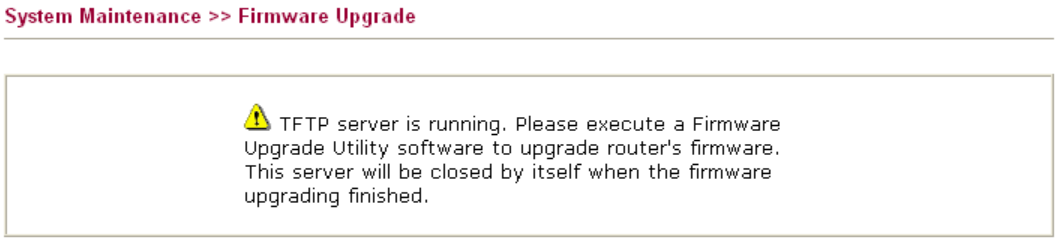
Before upgrading your router firmware, you need to install the Router Tools. The **Firmware Upgrade Utility** is included in the tools. The following web page will guide you to upgrade firmware by using an example. Note that this example is running over Windows OS (Operating System).

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.



Click **OK**. The following screen will appear. Please execute the firmware upgrade utility first.



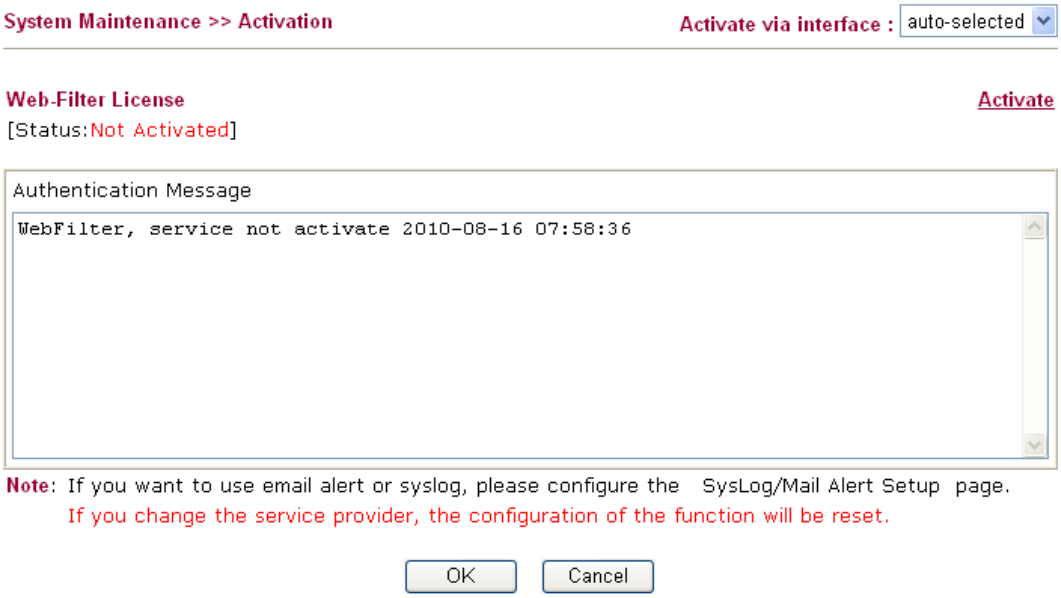
For the detailed information about firmware update, please go to Chapter 5.

4.14.11 Activation

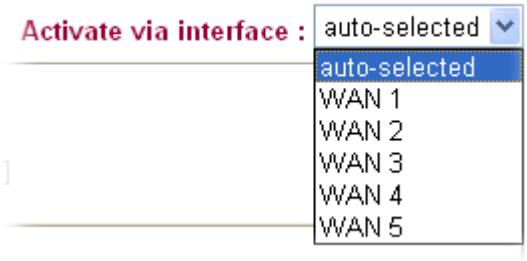
There are three ways to activate WCF on vigor router, using **Service Activation Wizard**, by means of **CSM>>Web Content Filter Profile** or via **System Maintenance>>Activation**.

After you have finished the setting profiles for WCF (refer to **Web Content Filter Profile**), it is the time to activate the mechanism for your computer.

Click **System Maintenance>>Activation** to open the following page for accessing http://myvigor.draytek.com.



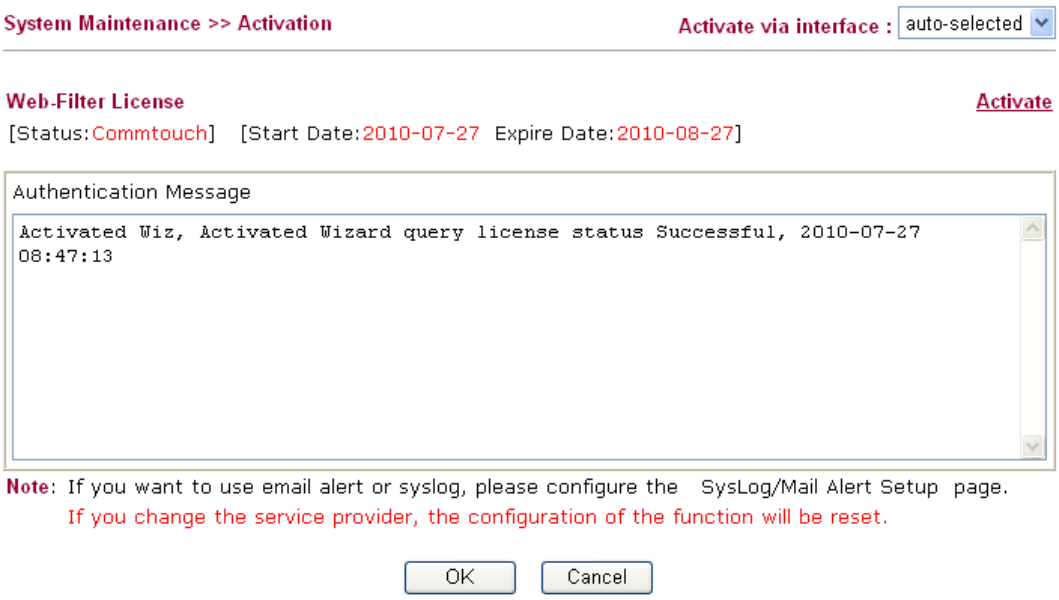
Activate via Interface Choose WAN interface used by such device for activating Web Content Filter.



Activate The **Activate** link brings you accessing into http://myvigor.draytek.com to finish the activation of the account and the router.

Authentication Message As for authentication information of **web filter**, the process of authenticating will be displayed on this field for your reference.

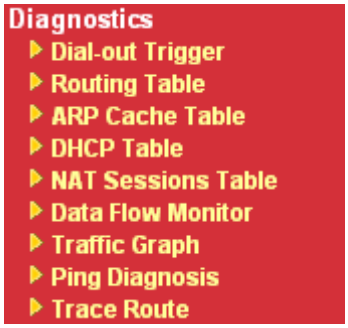
Below shows the successful activation of Web Content Filter:



4.15 Diagnostics

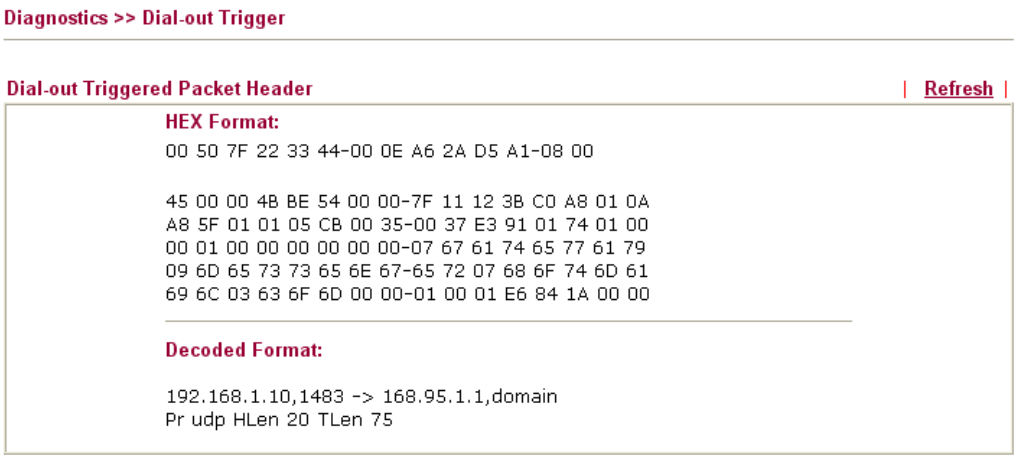
Diagnostic Tools provide a useful way to **view** or **diagnose** the status of your Vigor router.

Below shows the menu items for Diagnostics.



4.15.1 Dial-out Trigger

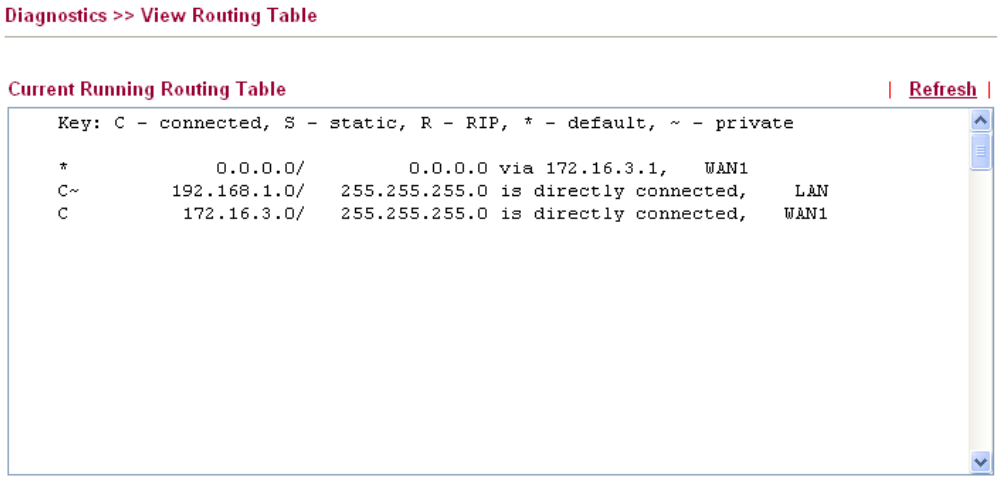
Click **Diagnostics** and click **Dial-out Trigger** to open the web page. The internet connection (e.g., PPPoE) is triggered by a package sending from the source IP address.



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.

4.15.2 Routing Table

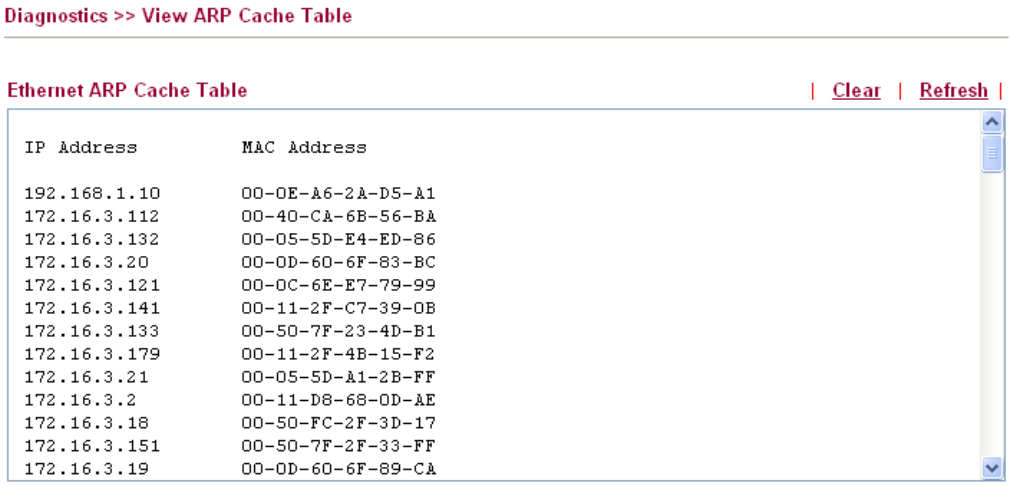
Click **Diagnostics** and click **Routing Table** to open the web page.



Refresh	Click it to reload the page.

4.15.3 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.

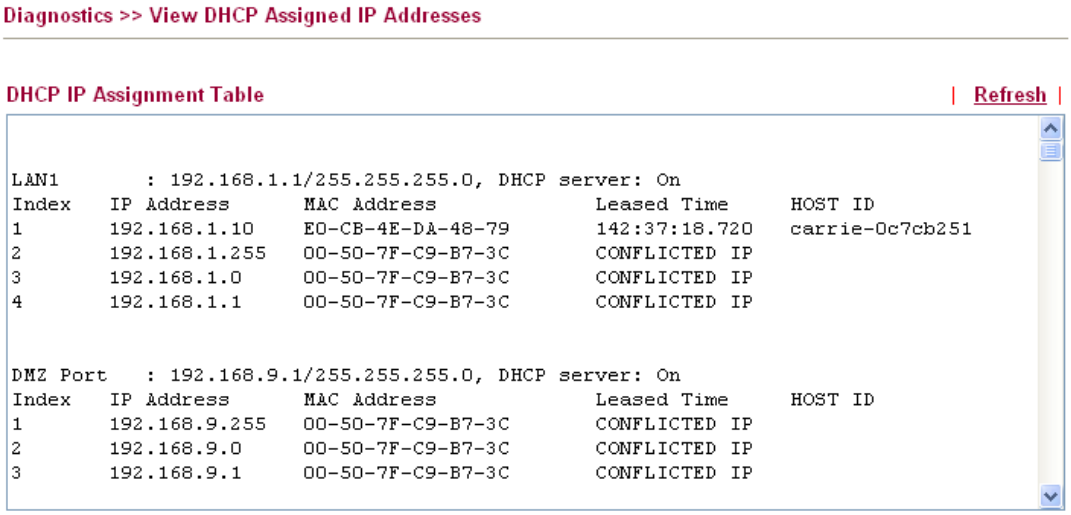


Refresh	Click it to reload the page.
Clear	Click it to clear the whole table.

4.15.4 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.

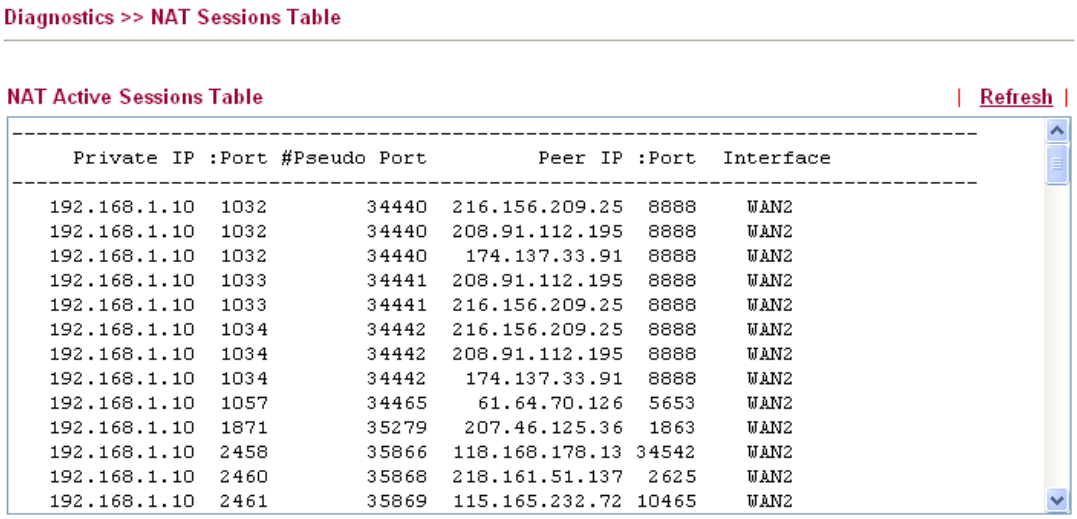


Index	It displays the connection item number.
IP Address	It displays the IP address assigned by this router for specified PC.
MAC Address	It displays the MAC address for the specified PC that DHCP assigned IP address for it.

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.

4.15.5 NAT Sessions Table

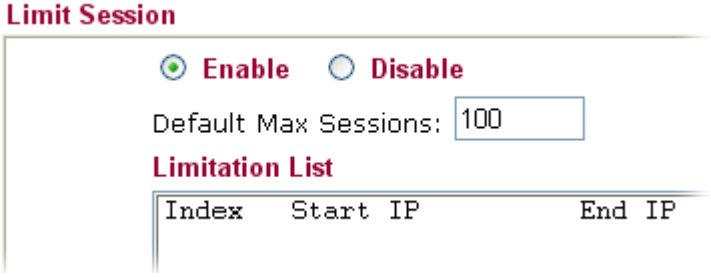
Click **Diagnostics** and click **NAT Sessions Table** to open the list page.



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.

4.15.6 Data Flow Monitor

This page displays the running procedure for the IP address monitored and refreshes the data in an interval of several seconds. The IP address listed here is configured in Bandwidth Management. You have to enable IP bandwidth limit and IP session limit before invoke Data Flow Monitor. If not, a notification dialog box will appear to remind you enabling it.



Click **Diagnostics** and click **Data Flow Monitor** to open the web page. You can click **IP Address**, **TX rate**, **RX rate** or **Session** link for arranging the data display.

Diagnostics >> Data Flow Monitor

Enable Data Flow Monitor

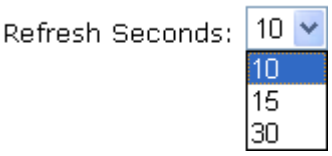
Refresh Seconds: 10 Page: 1 | Refresh |

Index	IP Address	TX rate(Kbps)	RX rate(Kbps)	Sessions	Action
1	192.168.1.10_CARRIE-0C7CB251	9	0	92	Block
		Current / Peak / Speed	Current / Peak / Speed	Current / Peak	
WAN1	---	0 / 0 / Auto	0 / 0 / Auto	---	
WAN2	172.16.3.102	9 / 456 / Auto	6 / 1080 / Auto	---	
WAN3	---	0 / 0 / Auto	0 / 0 / Auto	---	
WAN4	---	0 / 0 / Auto	0 / 0 / Auto	---	
WAN5	---	0 / 0 / Auto	0 / 0 / Auto	---	
Total		9 / 456 / Auto	6 / 1080 / Auto	54 / 681	

Note: 1. Click "Block" to prevent specified PC from surfing Internet for 5 minutes.
2. The IP blocked by the router will be shown in red, and the session column will display the remaining time that the specified IP will be blocked.
3. (Kbps): shared bandwidth
+ : residual bandwidth used
Current/Peak are average.

Enable Data Flow Monitor Check this box to enable this function.

Refresh Seconds Use the drop down list to choose the time interval of refreshing data flow that will be done by the system automatically.



Refresh Click this link to refresh this page manually.

Index Display the number of the data flow.

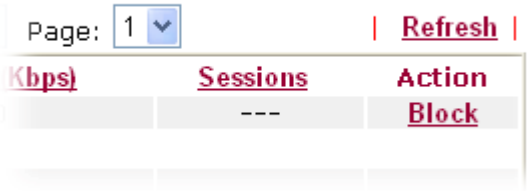
IP Address Display the IP address of the monitored device.

TX rate (kbps) Display the transmission speed of the monitored device.

RX rate (kbps) Display the receiving speed of the monitored device.

Sessions Display the session number that you specified in Limit Session web page.

Action **Block** - can prevent specified PC accessing into Internet within 5 minutes.



Unblock – the device with the IP address will be blocked in five minutes. The remaining time will be shown on the session column.

Current /Peak/Speed

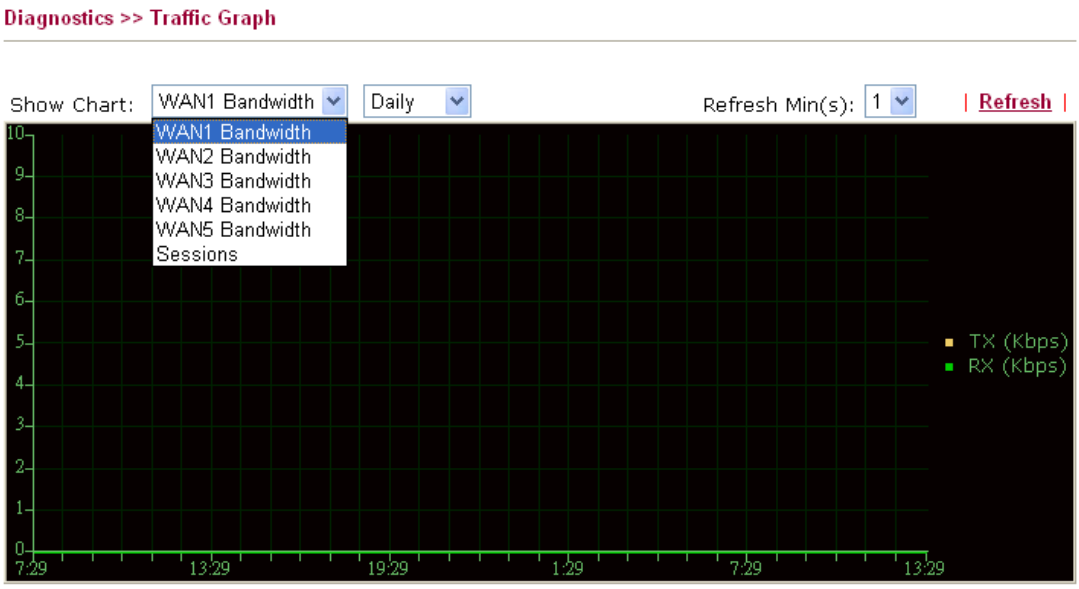
Current means current transmission rate and receiving rate for WAN interface.

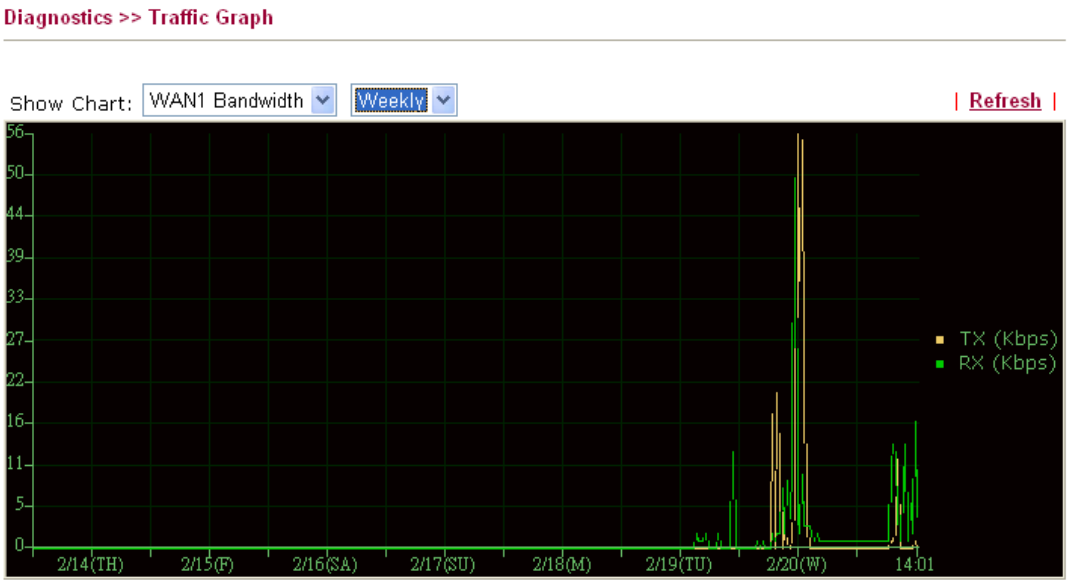
Peak means the highest peak value detected by the router in data transmission.

Speed means line speed specified in **WAN>>General Setup**. If you do not specify any rate at that page, here will display **Auto** for instead.

4.15.7 Traffic Graph

Click **Diagnostics** and click **Traffic Graph** to open the web page. Choose WAN1/WAN2/WN3/WAN4/WAN5 Bandwidth, Sessions, daily or weekly for viewing different traffic graph. Click **Refresh** to renew the graph at any time.



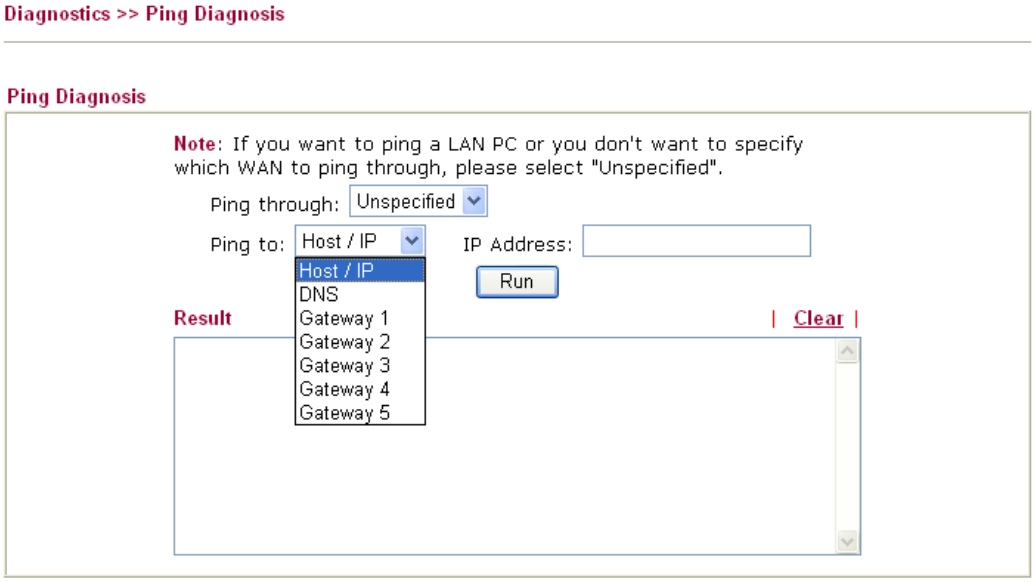


The horizontal axis represents time. Yet the vertical axis has different meanings. For WAN1/WAN2/WAN3/WAN4/WAN5 Bandwidth chart, the numbers displayed on vertical axis represent the numbers of the transmitted and received packets in the past.

For Sessions chart, the numbers displayed on vertical axis represent the numbers of the NAT sessions during the past.

4.15.8 Ping Diagnosis

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

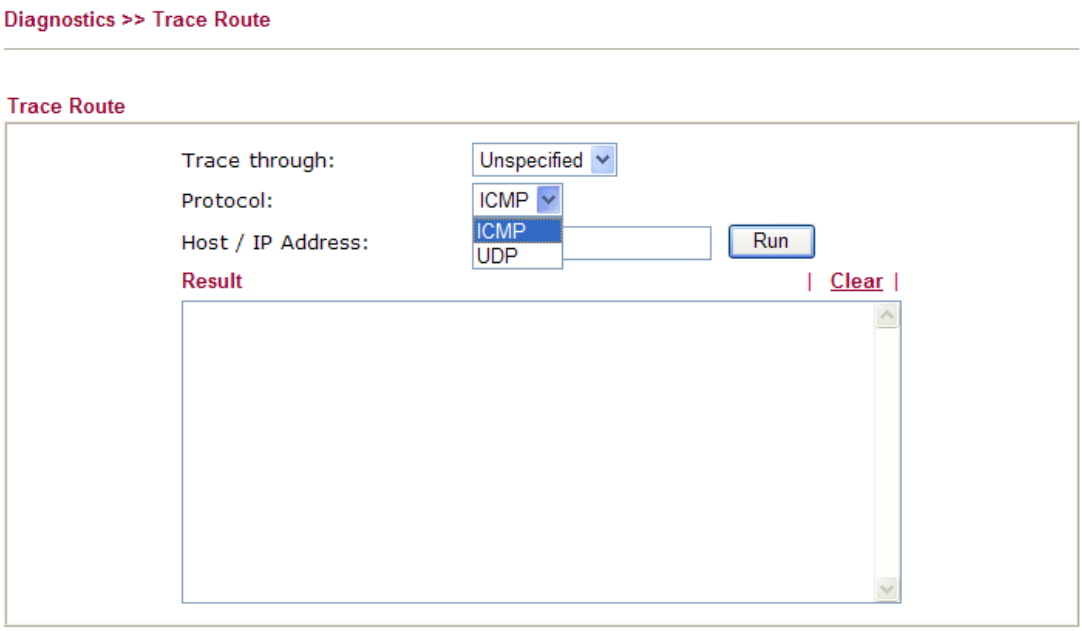


Ping through	Use the drop down list to choose the WAN interface that you want to ping through or choose **Unspecified** to be determined by the router automatically.
Ping to	Use the drop down list to choose the destination that you want to ping.
IP Address	Type in the IP address of the Host/IP that you 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.

4.15.9 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.



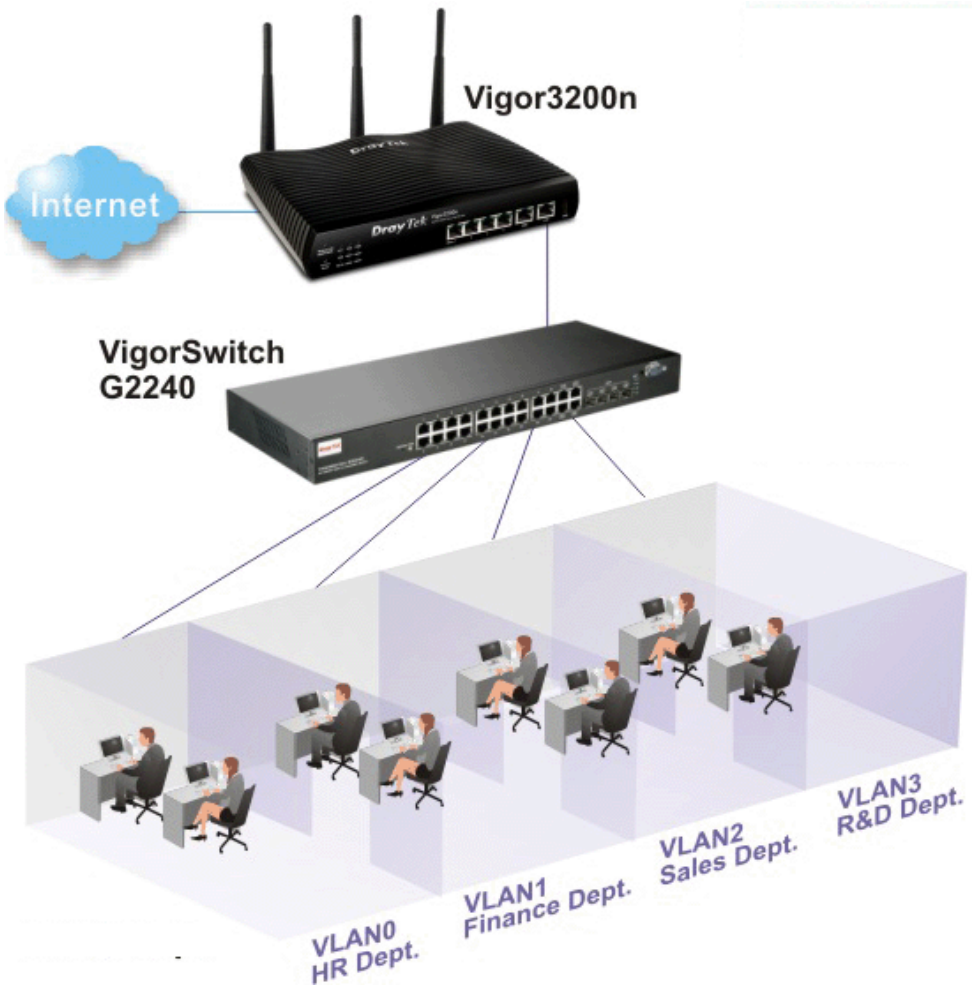
Trace through	Use the drop down list to choose the WAN interface that you want to ping through.
Protocol	Use the drop down list to choose the protocol that you want to ping through.
Host/IP Address	It indicates the IP address of the host.
Run	Click this button to start route tracing work.
Clear	Click this link to remove the result on the window.

5 Application and Examples

5.1 How to Configure Multi-Subnet

By identifying the tagged message, Vigor3200 can divide the LAN Port into several VLAN groups. Such LAN port with tagged information will accept the packets only with VLAN ID number.

For example, Vigor3200 can divide the internal departments of a company into four different groups by using VigorSwitch G2240. Each group uses different network segment and does not connect for each other. VigorSwitch G2240 Trunk Port 23 and Vigor3200 LAN Port are connected with network cable. See the following graphic for an example.



VLAN0 (Human Resource): LAN Port 4 IP: 192.168.1.0/24

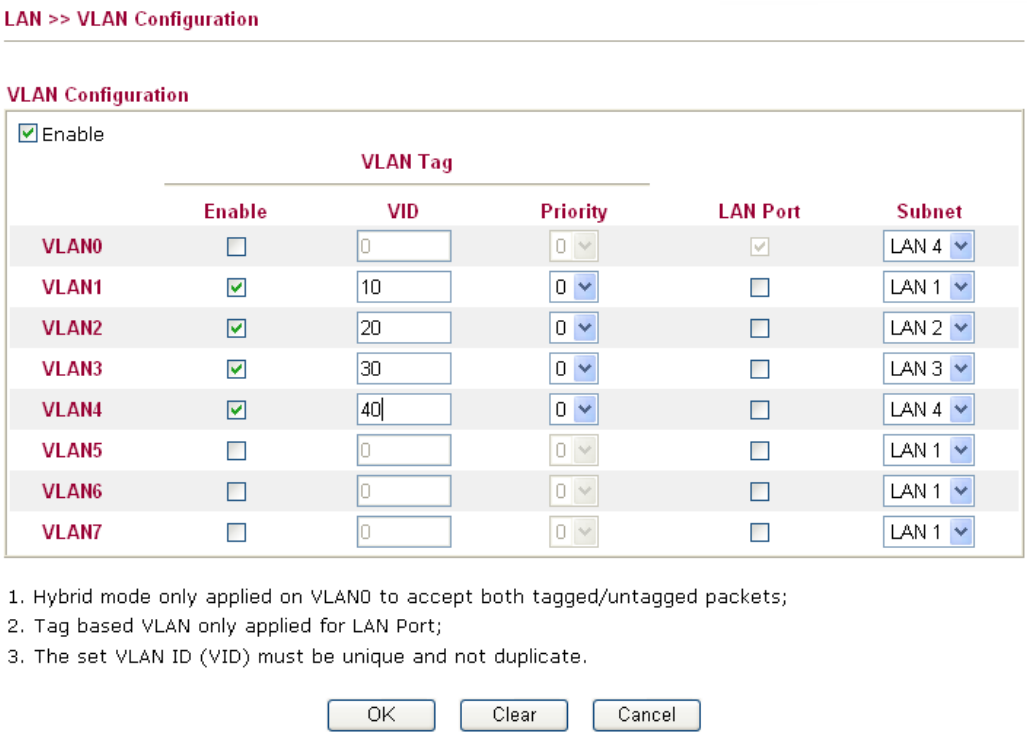
VLAN1 (Finance Dept): LAN Port 4 IP: 192.168.3.0/24

VLAN2 (Sales Dept.): LAN Port 4 IP: 192.168.5.0/24

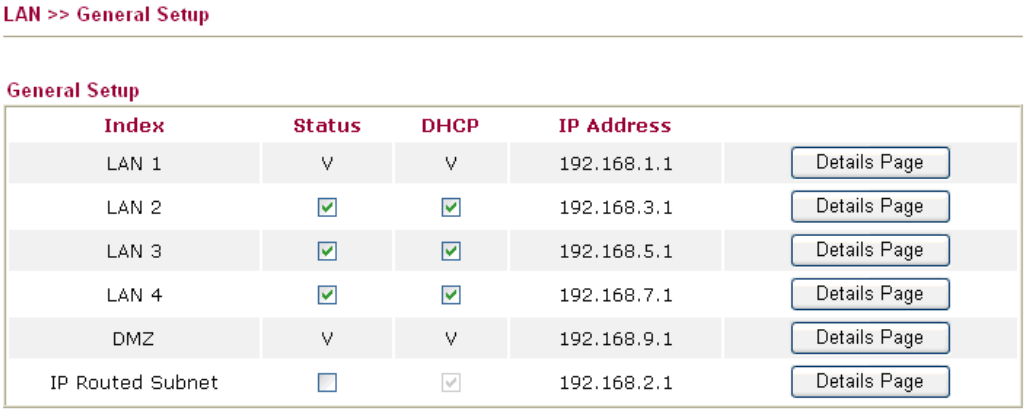
VLAN3 (R&D): LAN Port 4 IP: 192.168.7.0/24

Configuration for Vigor3200

1. In the page of **LAN >> VLAN Configuration**, check the box of **Enable** to enable the function of VLAN Configuration.
2. Untag VLAN0 and set **LAN4** as the **Subnet**.
3. To activate the function of VLAN Tag for VLAN1 setting, check the box of **Enable** and type the value (10) for VID setting. Then check **LAN Port** and set **LAN1** as the **Subnet**.
4. To activate the function of VLAN Tag for VLAN2 setting, check the box of **Enable** and type the value (20) for VID setting. Then check **LAN Port** and set **LAN2** as the **Subnet**.
5. To activate the function of VLAN Tag for VLAN3 setting, check the box of **Enable** and type the value (30) for VID setting. Then check **LAN Port** and set **LAN3** as the **Subnet**.
6. To activate the function of VLAN Tag for VLAN4 setting, check the box of **Enable** and type the value (40) for VID setting. Then check **LAN Port** and set **LAN4** as the **Subnet**.



In the page of **LAN >> General Setup**, check the **Status** box of LAN2, LAN3, LAN4 and enable the function of DHCP.



After finishing the above configuration, the equipment connecting to Vigor3200 LAN Port can get the corresponding IP address of the network segment.

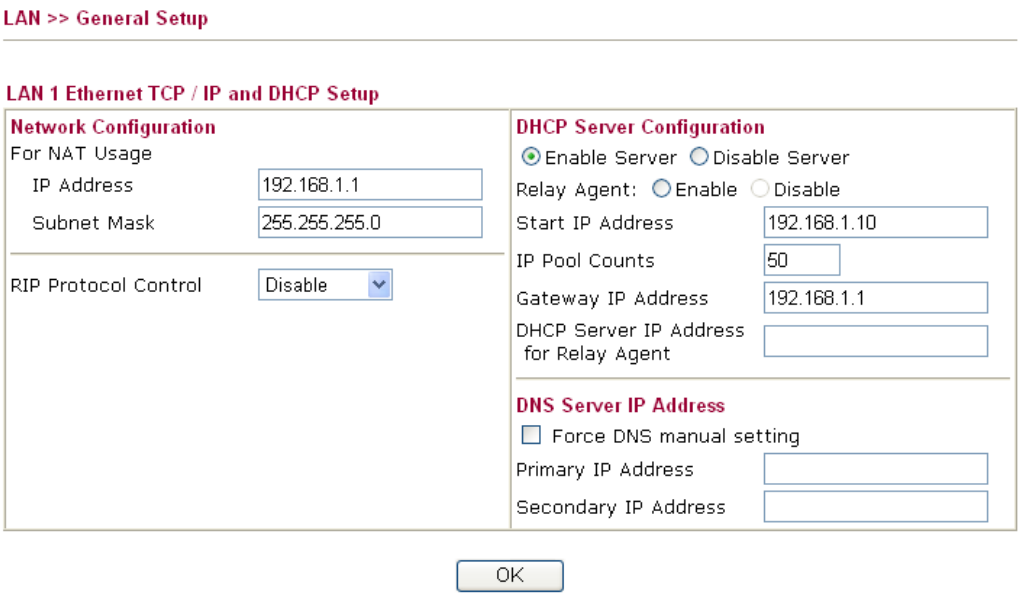
The equipment connecting to Vigor3200 LAN Port 1 (LAN1) can get the IP address of 192.168.1.0/24.

The equipment connecting to Vigor3200 LAN Port 2 (LAN2) can get the IP address of 192.168.3.0/24.

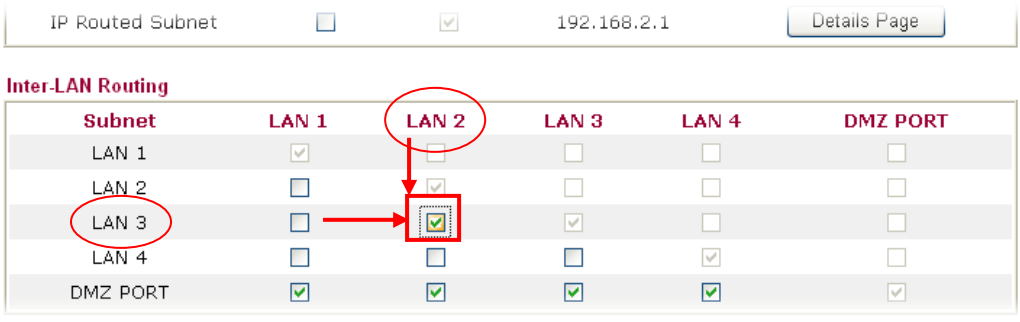
The equipment connecting to Vigor3200 LAN Port 3 (LAN3) can get the IP address of 192.168.5.0/24.

The equipment connecting to Vigor3200 LAN Port 4 (LAN4) can get the IP address of 192.168.7.0/24.

For the detailed settings of the network segment, open **LAN>>General Setup** and click **Details Page.** Adjust the settings for your request. Refer to the following figure.



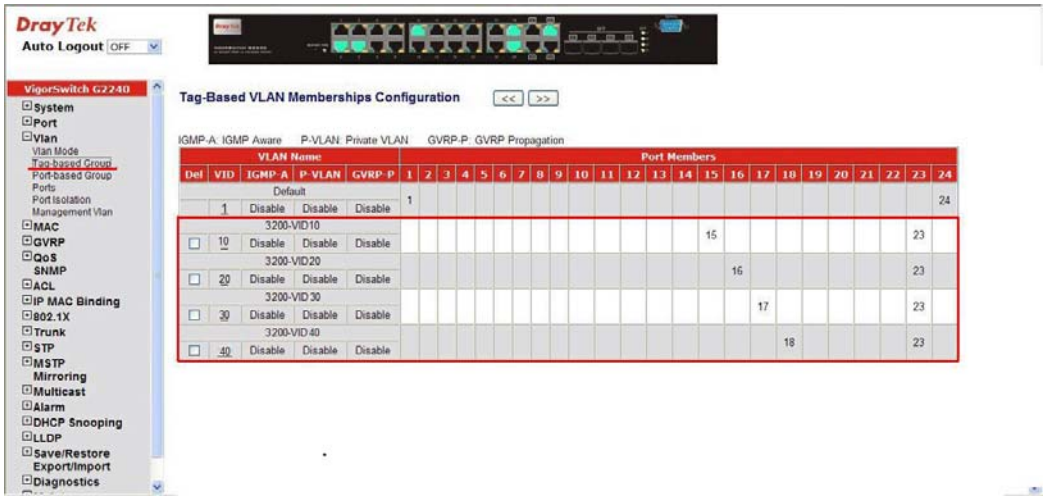
7. To make any two of VLAN groups linked with each other, just check the boxes of the ones in the field of Inter-LAN Routing in the page of **LAN >> General Setup**. Refer to the following figure. LAN2 and LAN3 are linked.



Configuration for VigorSwitch G2240

1. Open **Vlan>>Tag-based Group**.

2. Add four VID groups. In this case, we can explanation it with Port 15, 16, 17, 18 and Trunk Port 23.

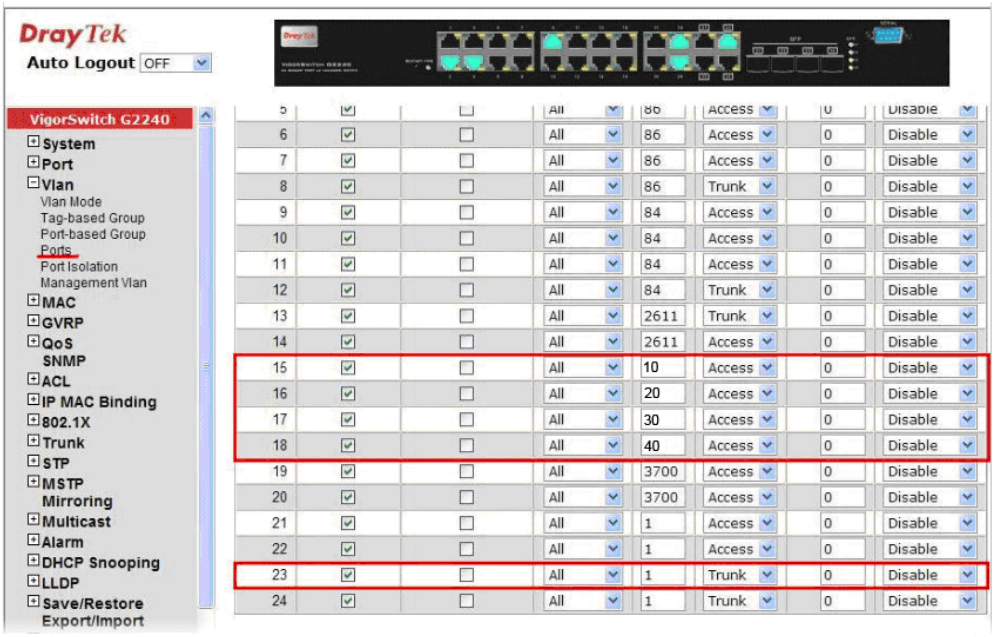


VLAN Name 3200-VID10, Port Members = 15、23
VLAN Name 3200-VID20, Port Members = 16、23
VLAN Name 3200-VID30, Port Members = 17、23
VLAN Name 3200-VID40, Port Members = 18、23

3. Open **Vlan>> Ports** and set the VID value with role for each Port:

Port 15 VID = 10 Role = Access
Port 16 VID = 20 Role = Access
Port 17 VID = 30 Role = Access
Port 18 VID = 40 Role = Access
Port 23 VID = 1 Role = Trunk

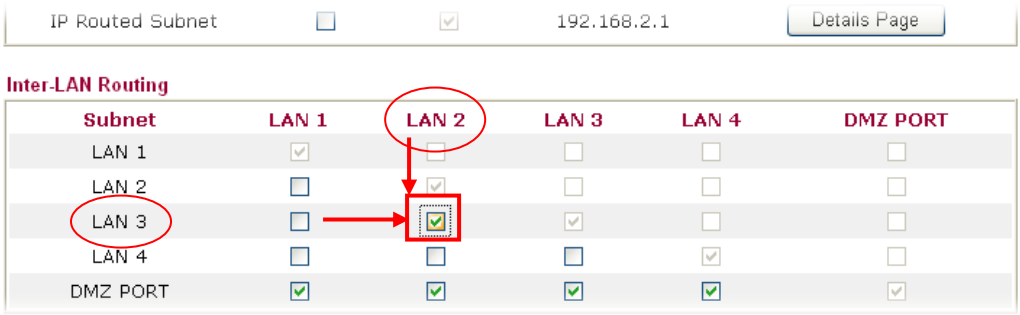
Port 23 is set with Trunk in this example and will transfer the packets with VLAN Tag information. That is, packets with VID 10, 20, 30 and 40 will be transferred to Vigor3200 by Port 23 and VID information will be retained.



4. After finishing the above configuration, the equipment connecting to VigorSwitch Port 15, 16, 17 and 18 can get the corresponding IP address(es) of the network segment.

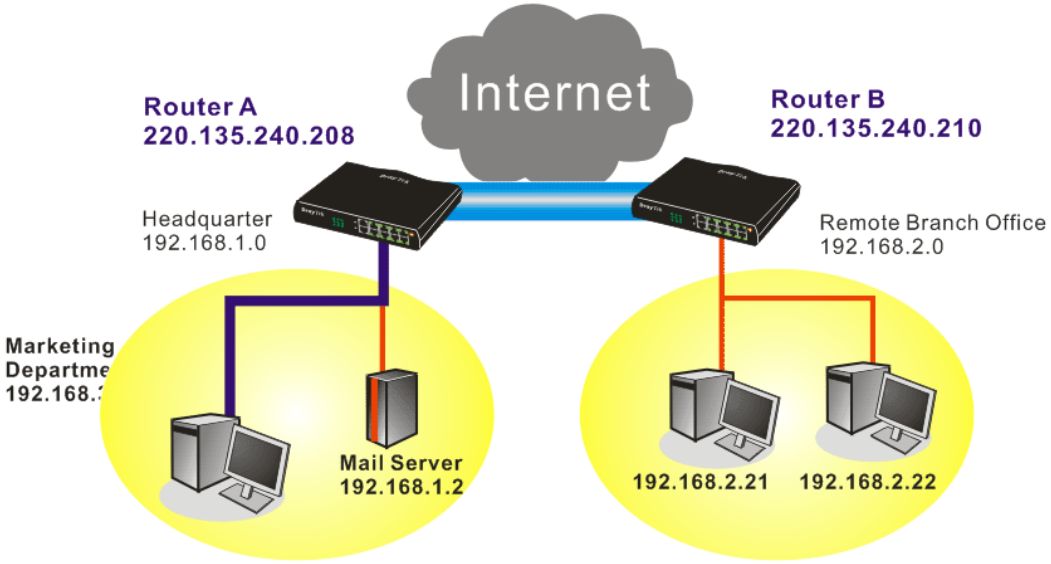
   The equipment connecting to VigorSwitch Port 15 can get the IP address of 192.168.1.0/24
   The equipment connecting to VigorSwitch Port 16 can get the IP address of 192.168.3.0/24
   The equipment connecting to VigorSwitch Port 17 can get the IP address of 192.168.5.0/24
   The equipment connecting to VigorSwitch Port 18 can get the IP address of 192.168.7.0/24

5. To make any two of VLAN groups of Tag Based VLAN linked with each other, just check the boxes of the ones in the field of **Inter-LAN Routing** in the page of **LAN >> General Setup**. Refer to the following figure. LAN2 and LAN3 are linked.



5.2 Create a LAN-to-LAN Connection Between Remote Office and Headquarter

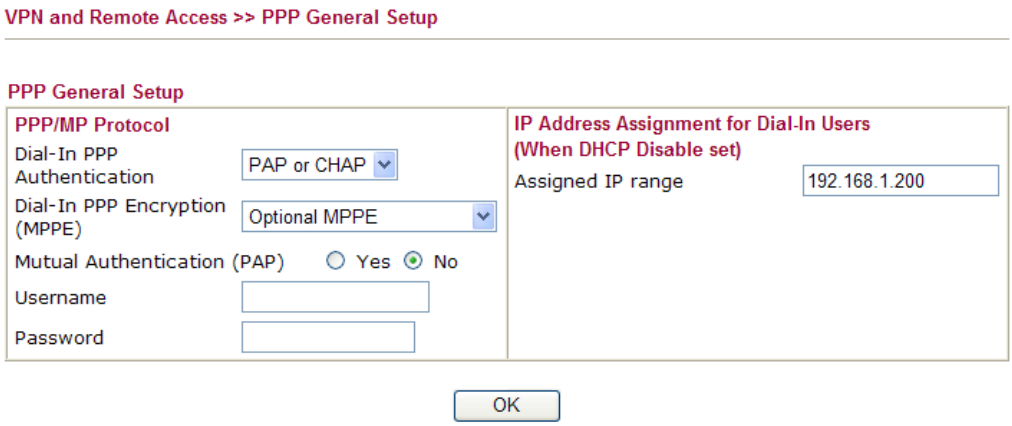
The most common case is that you may want to connect to network securely, such as the remote branch office and headquarter. According to the network structure as shown in the below illustration, you may follow the steps to create a LAN-to-LAN profile. These two networks (LANs) should NOT have the same network address.



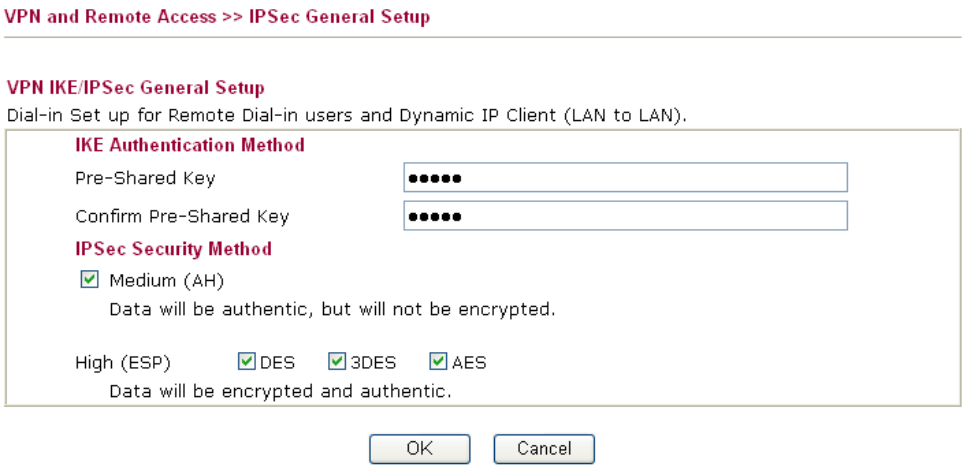
Settings in Router A in headquarter:

1. Go to **VPN and Remote Access** and select **Remote Access Control** to enable the necessary VPN service and click **OK**.

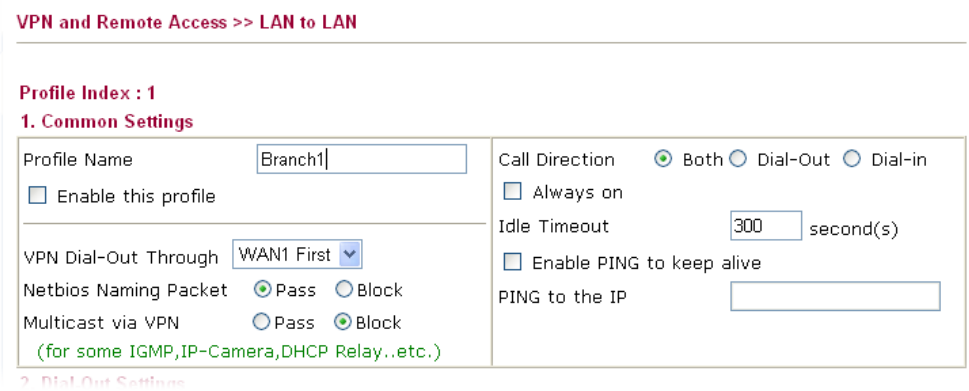
2. Then,
   For using **PPP** based services, such as PPTP, L2TP, you have to set general settings in **PPP General Setup**.



For using **IPSec**-based service, such as IPSec or L2TP with IPSec Policy, you have to set general settings in **IPSec General Setup**, such as the pre-shared key that both parties have known.

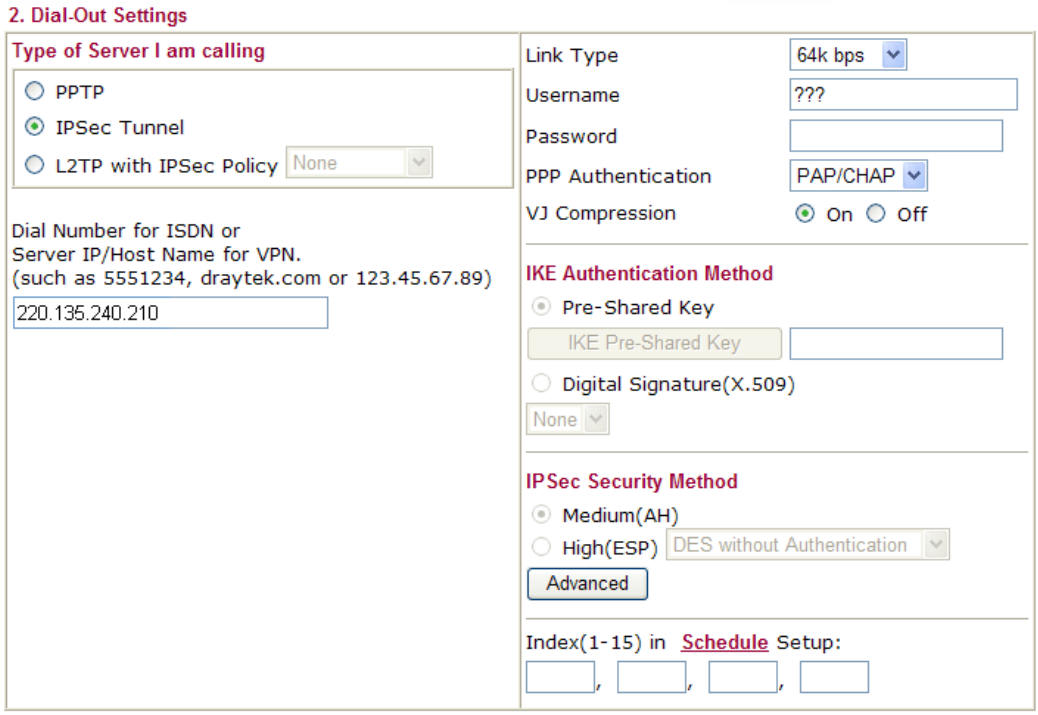


3. Go to **LAN-to-LAN**. Click on one index number to edit a profile.
4. Set **Common Settings** as shown below. You should enable both of VPN connections because any one of the parties may start the VPN connection.

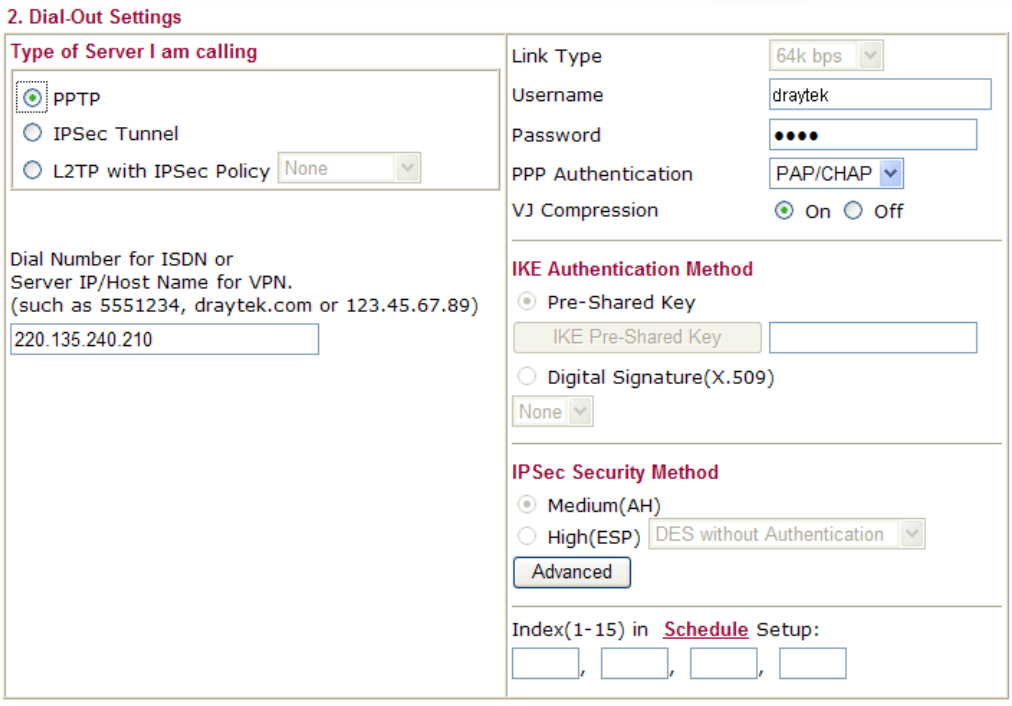


5. Set **Dial-Out Settings** as shown below to dial to connect to Router B aggressively with the selected Dial-Out method.

   If an ***IPSec-based*** service is selected, you should further specify the remote peer IP Address, IKE Authentication Method and IPSec Security Method for this Dial-Out connection.

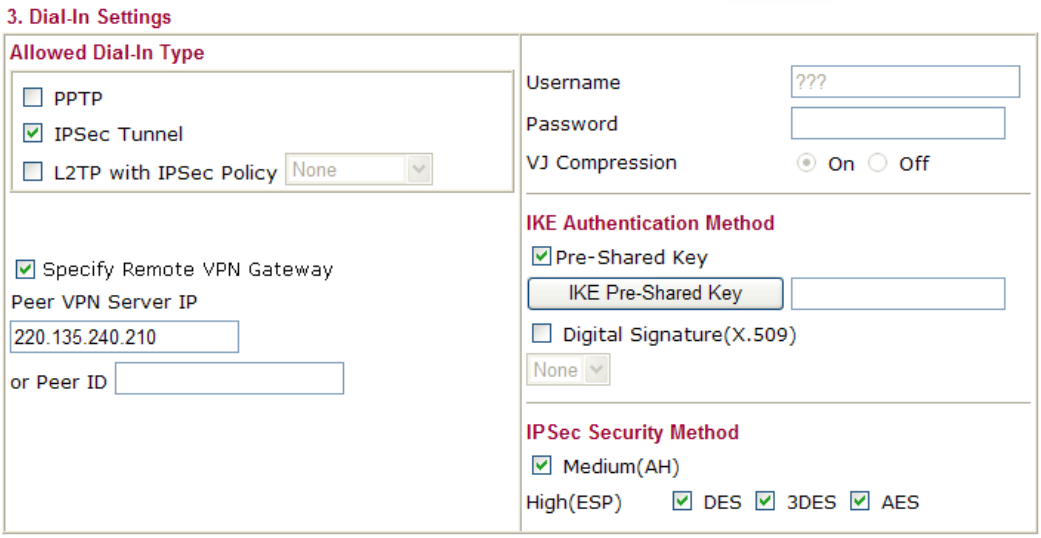


   If a ***PPP-based service*** is selected, you should further specify the remote peer IP Address, Username, Password, PPP Authentication and VJ Compression for this Dial-Out connection.

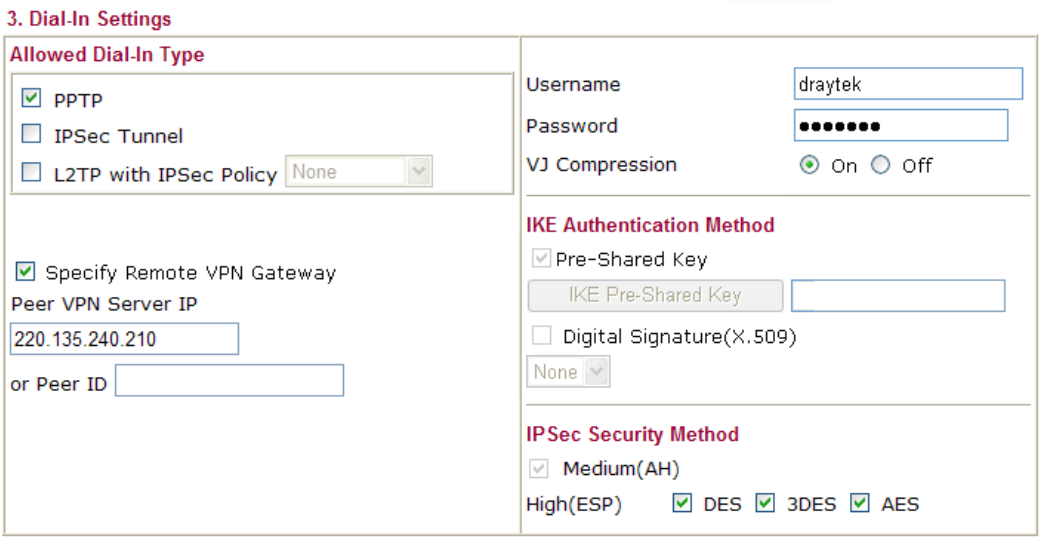


6. Set **Dial-In settings** to as shown below to allow Router B dial-in to build VPN connection.

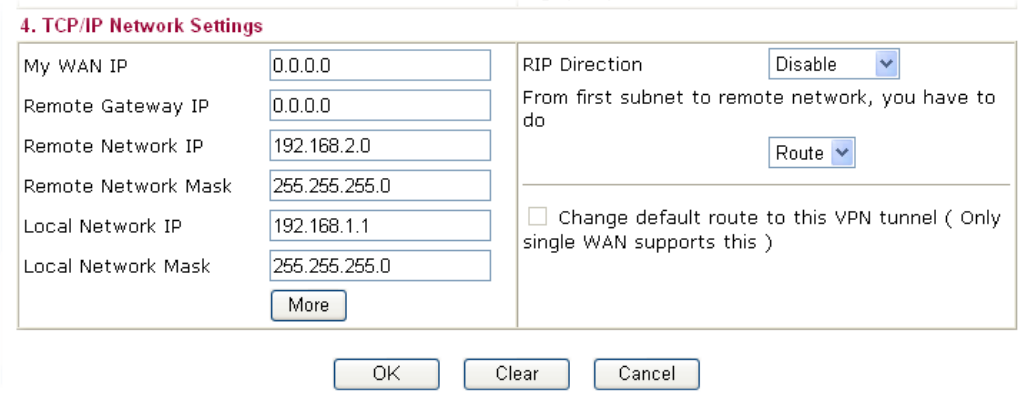
   If an ***IPSec-based*** service is selected, you may further specify the remote peer IP Address, IKE Authentication Method and IPSec Security Method for this Dial-In connection. Otherwise, it will apply the settings defined in **IPSec General Setup** above.



   If a ***PPP-based service*** is selected, you should further specify the remote peer IP Address, Username, Password, and VJ Compression for this Dial-In connection.

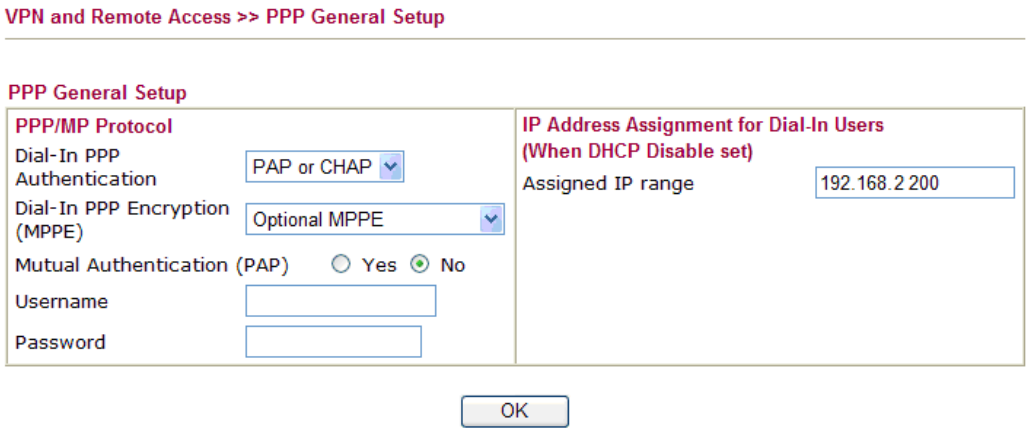


7. At last, set the remote network IP/subnet in **TCP/IP Network Settings** so that Router A can direct the packets destined to the remote network to Router B via the VPN connection.

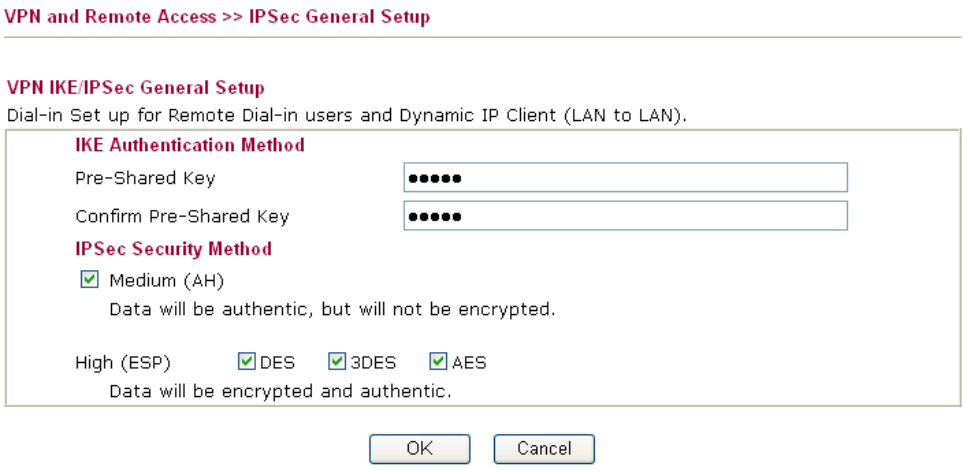


Settings in Router B in the remote office:

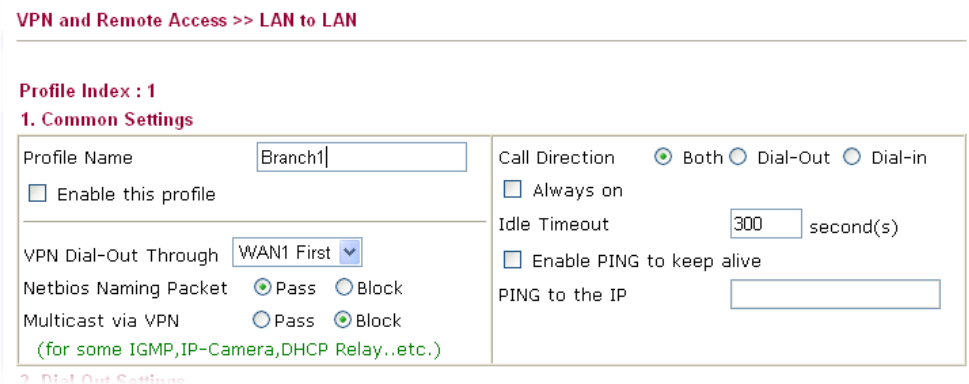
1. Go to **VPN and Remote Access** and select **Remote Access Control** to enable the necessary VPN service and click **OK**.
2. Then, for using **PPP based** services, such as PPTP, L2TP, you have to set general settings in **PPP General Setup**.



For using **IPSec-based** service, such as IPSec or L2TP with IPSec Policy, you have to set general settings in **IPSec General Setup**, such as the pre-shared key that both parties have known.

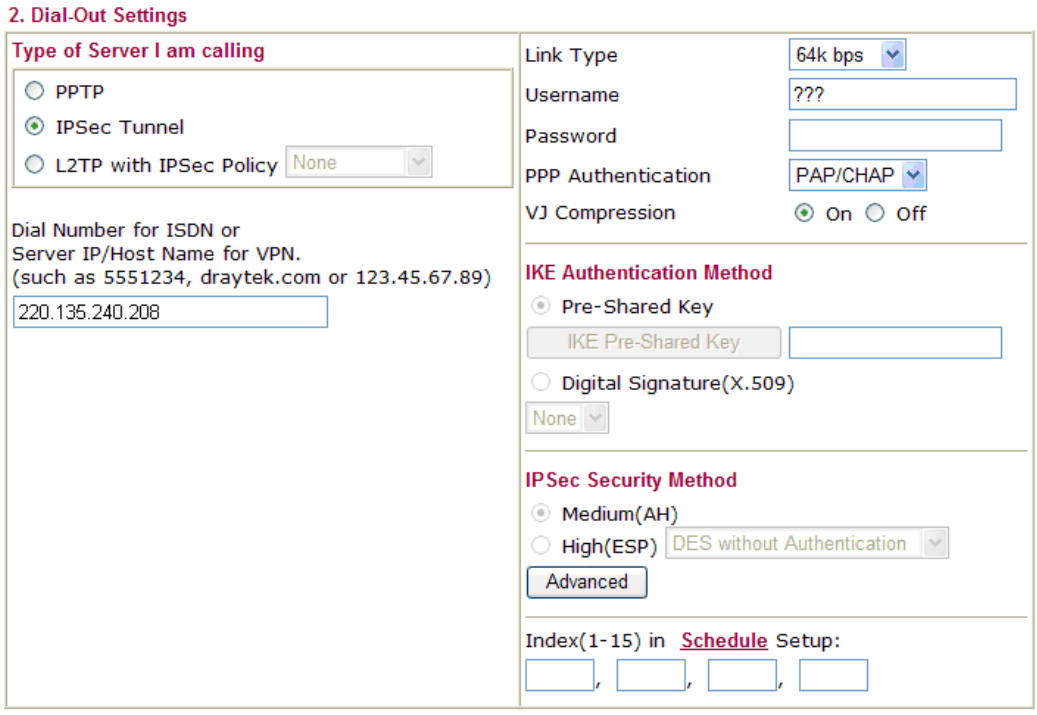


3. Go to **LAN-to-LAN**. Click on one index number to edit a profile.
4. Set **Common Settings** as shown below. You should enable both of VPN connections because any one of the parties may start the VPN connection.

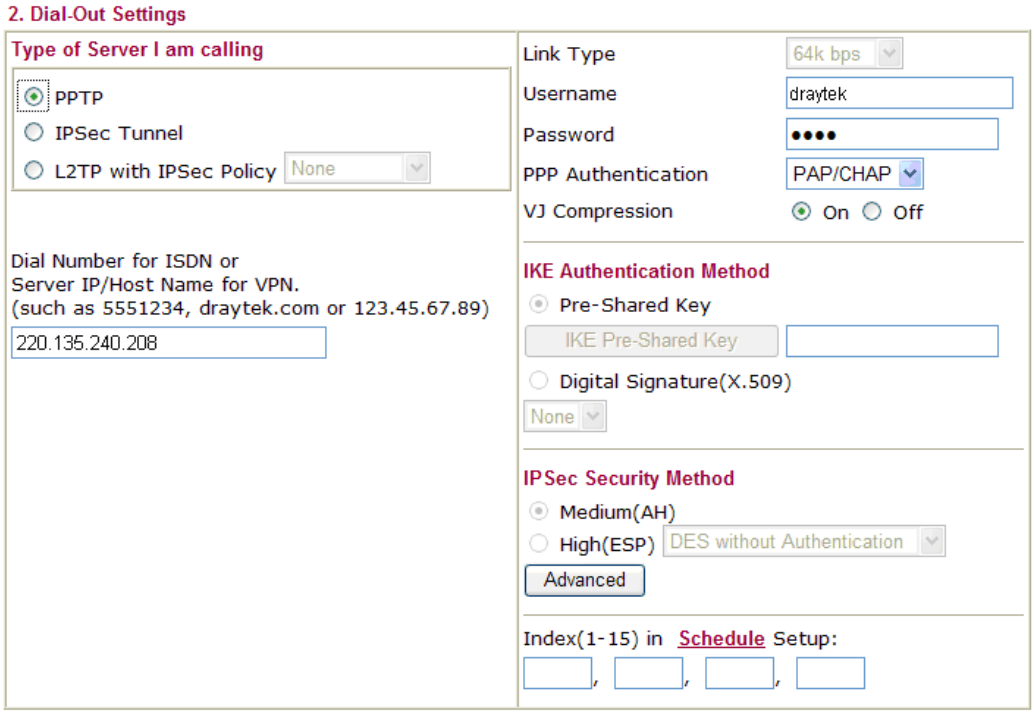


5. Set **Dial-Out Settings** as shown below to dial to connect to Router B aggressively with the selected Dial-Out method.

   If an ***IPSec-based*** service is selected, you should further specify the remote peer IP Address, IKE Authentication Method and IPSec Security Method for this Dial-Out connection.

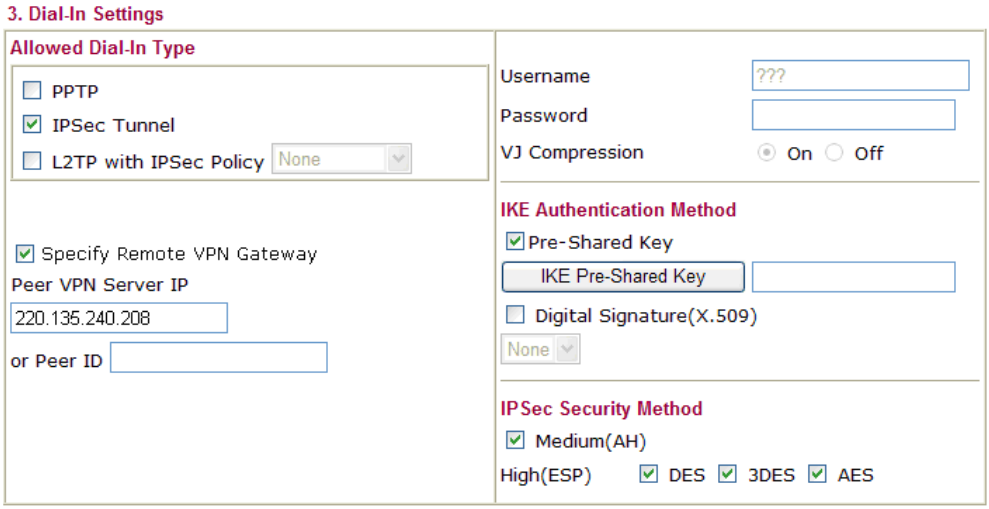


If a ***PPP-based*** service is selected, you should further specify the remote peer IP Address, Username, Password, PPP Authentication and VJ Compression for this Dial-Out connection.

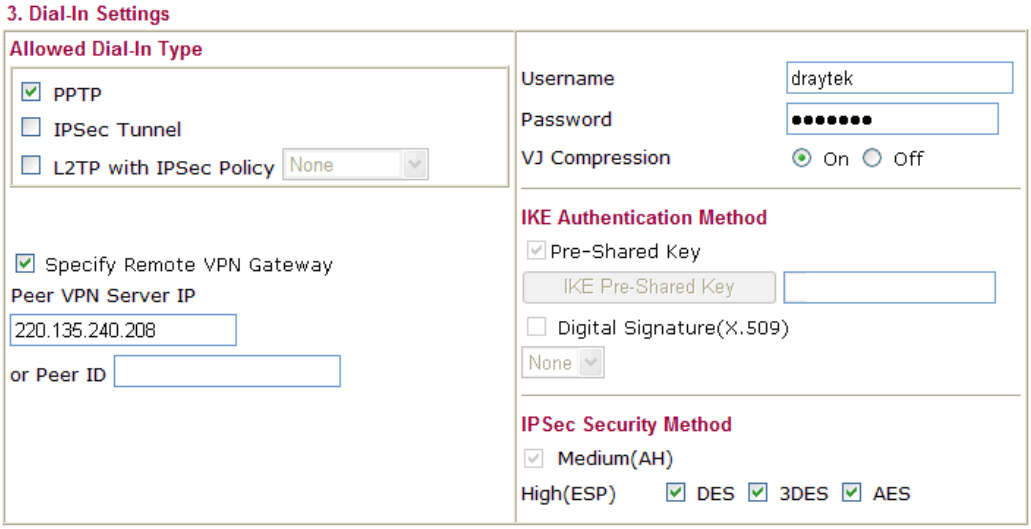


6. Set **Dial-In settings** to as shown below to allow Router A dial-in to build VPN connection.

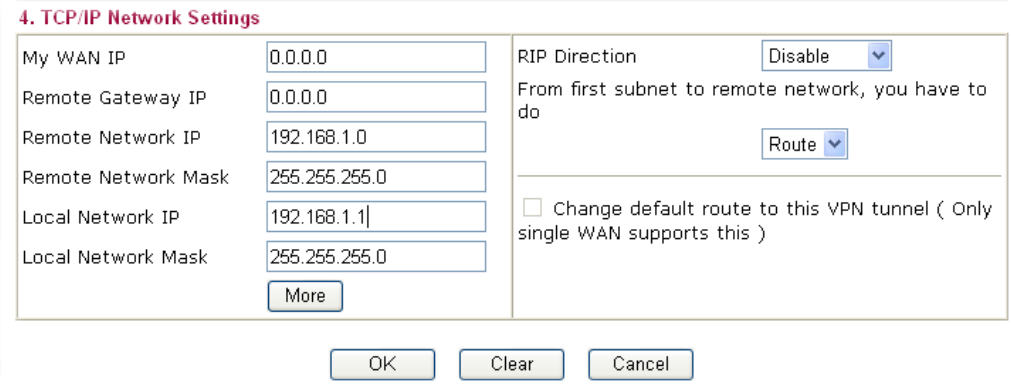
   If an ***IPSec-based*** service is selected, you may further specify the remote peer IP Address, IKE Authentication Method and IPSec Security Method for this Dial-In connection. Otherwise, it will apply the settings defined in **IPSec General Setup** above.



   If a ***PPP-based*** service is selected, you should further specify the remote peer IP Address, Username, Password, and VJ Compression for this Dial-In connection.

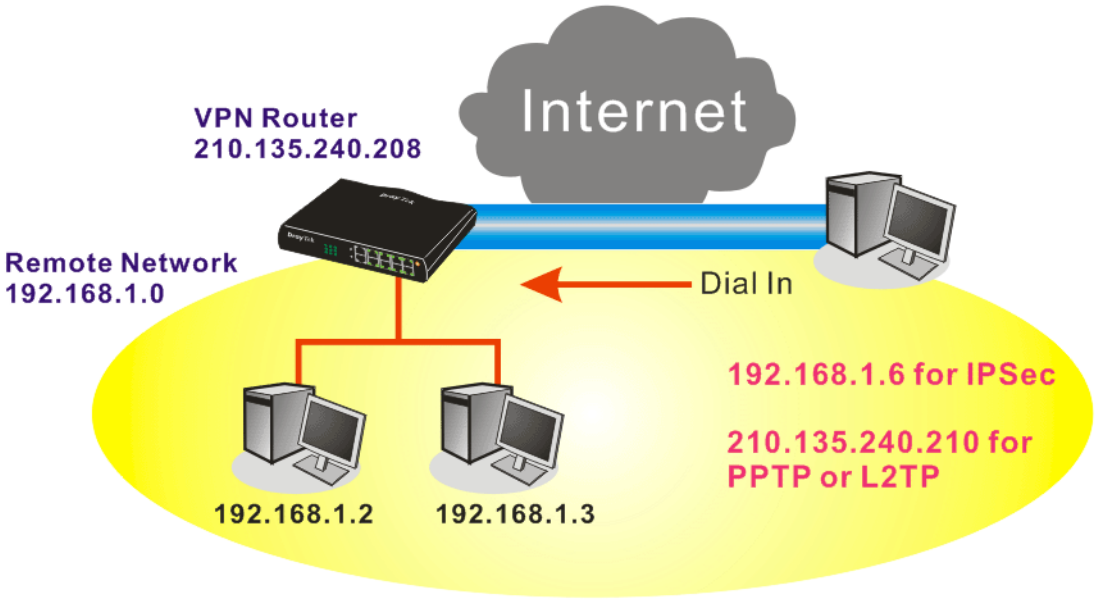


7. At last, set the remote network IP/subnet in **TCP/IP Network Settings** so that Router B can direct the packets destined to the remote network to Router A via the VPN connection.



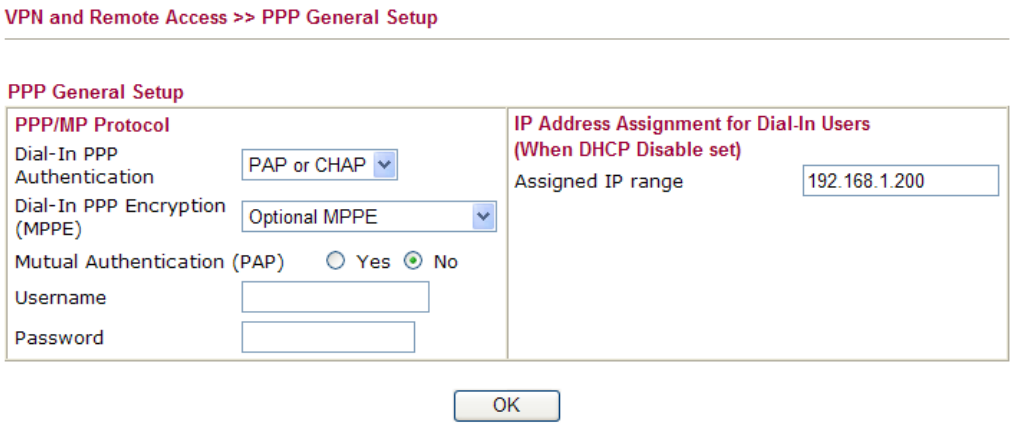
5.3 Create a Remote Dial-in User Connection Between the Teleworker and Headquarter

The other common case is that you, as a teleworker, may want to connect to the enterprise network securely. According to the network structure as shown in the below illustration, you may follow the steps to create a Remote User Profile and install Smart VPN Client on the remote host.

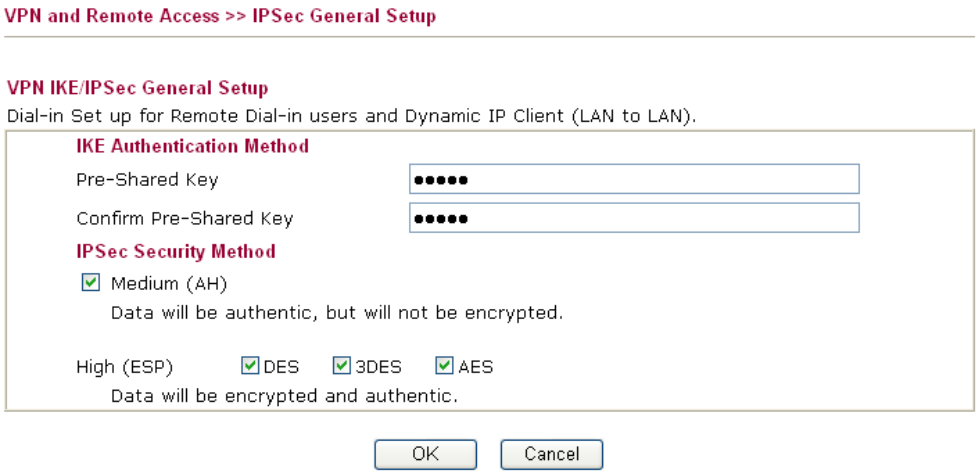


Settings in VPN Router in the enterprise office:

1. Go to **VPN and Remote Access** and select **Remote Access Control** to enable the necessary VPN service and click **OK**.
2. Then, for using PPP based services, such as PPTP, L2TP, you have to set general settings in **PPP General Setup**.

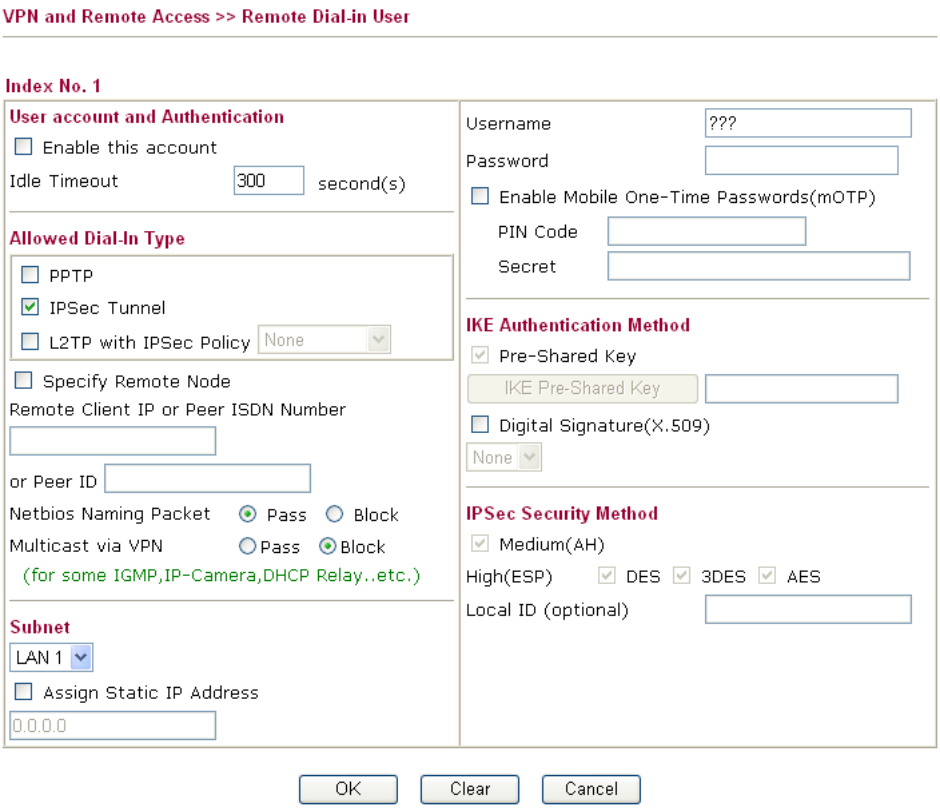


For using IPSec-based service, such as IPSec or L2TP with IPSec Policy, you have to set general settings in **IKE/IPSec General Setup**, such as the pre-shared key that both parties have known.

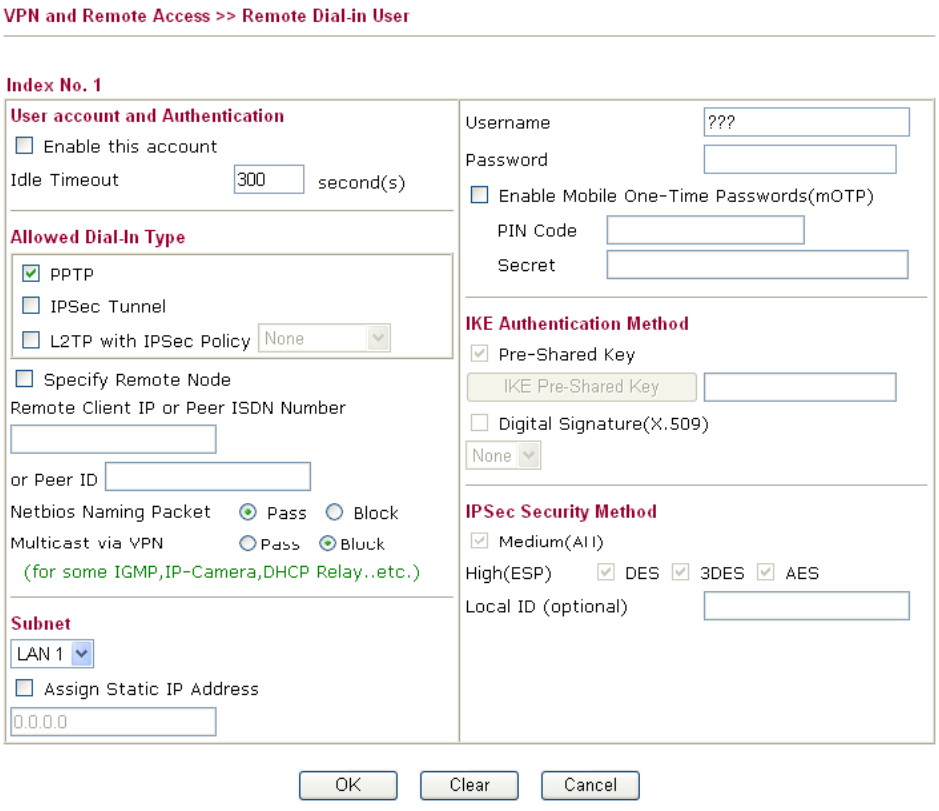


3. Go to **Remote Dial-In User**. Click on one index number to edit a profile.
4. Set **Dial-In** settings to as shown below to allow the remote user dial-in to build VPN connection.

   If an ***IPSec-based*** service is selected, you may further specify the remote peer IP Address, IKE Authentication Method and IPSec Security Method for this Dial-In connection. Otherwise, it will apply the settings defined in **IPSec General Setup** above.



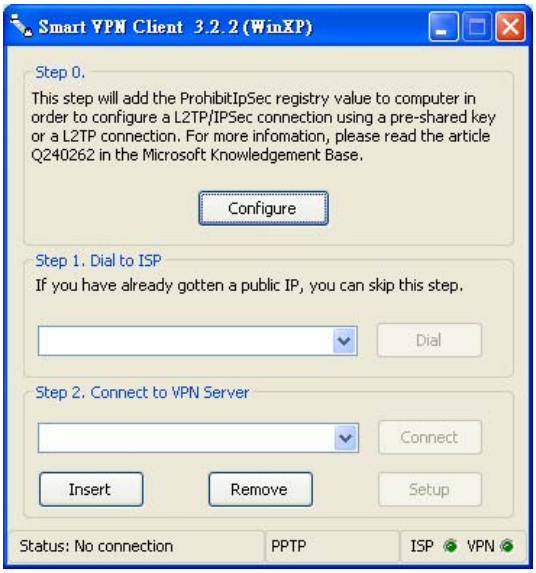
If a ***PPP-based*** service is selected, you should further specify the remote peer IP Address, Username, Password, and VJ Compression for this Dial-In connection.



Settings in the remote host:

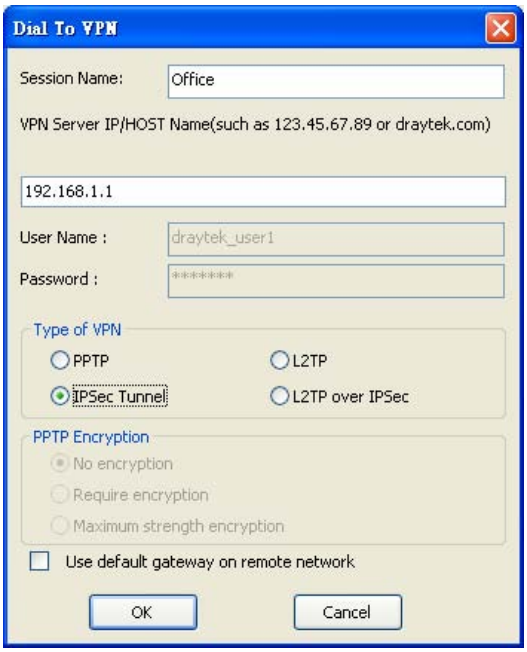
1. For Win98/ME, you may use "Dial-up Networking" to create the PPTP tunnel to Vigor router. For Win2000/XP, please use "Network and Dial-up connections" or “Smart VPN Client”, complimentary software to help you create PPTP, L2TP, and L2TP over IPSec tunnel. You can find it in CD-ROM in the package or go to www.DrayTek.com download center. Install as instructed.

2. After successful installation, for the first time user, you should click on the **Step 0. Configure** button. Reboot the host.

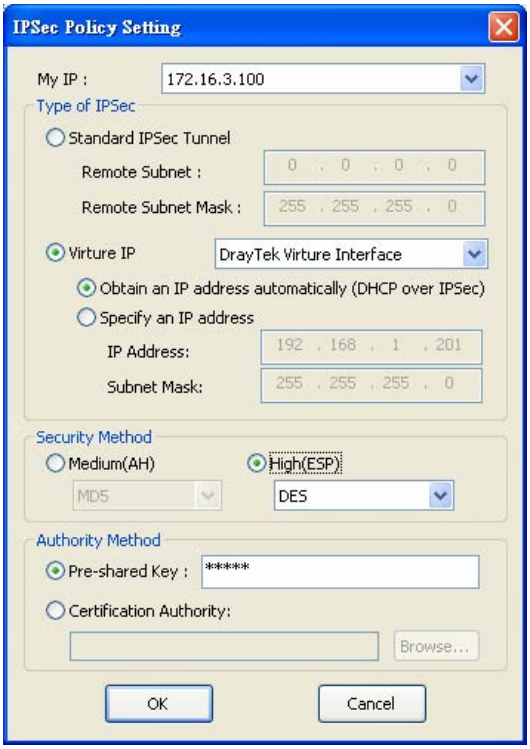


3. In **Step 2. Connect to VPN Server**, click **Insert** button to add a new entry.

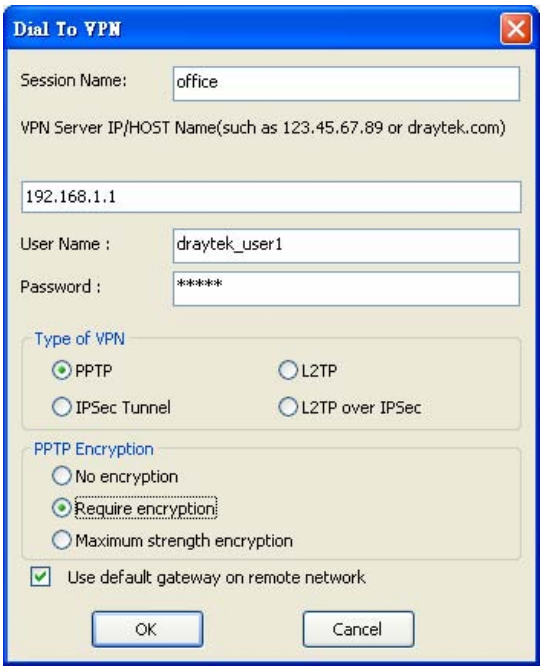
   If an IPSec-based service is selected as shown below,



   You may further specify the method you use to get IP, the security method, and authentication method. If the Pre-Shared Key is selected, it should be consistent with the one set in VPN router.



If a PPP-based service is selected, you should further specify the remote VPN server IP address, Username, Password, and encryption method. The User Name and Password should be consistent with the one set up in the VPN router. To use default gateway on remote network means that all the packets of remote host will be directed to VPN server then forwarded to Internet. This will make the remote host seem to be working in the enterprise network.

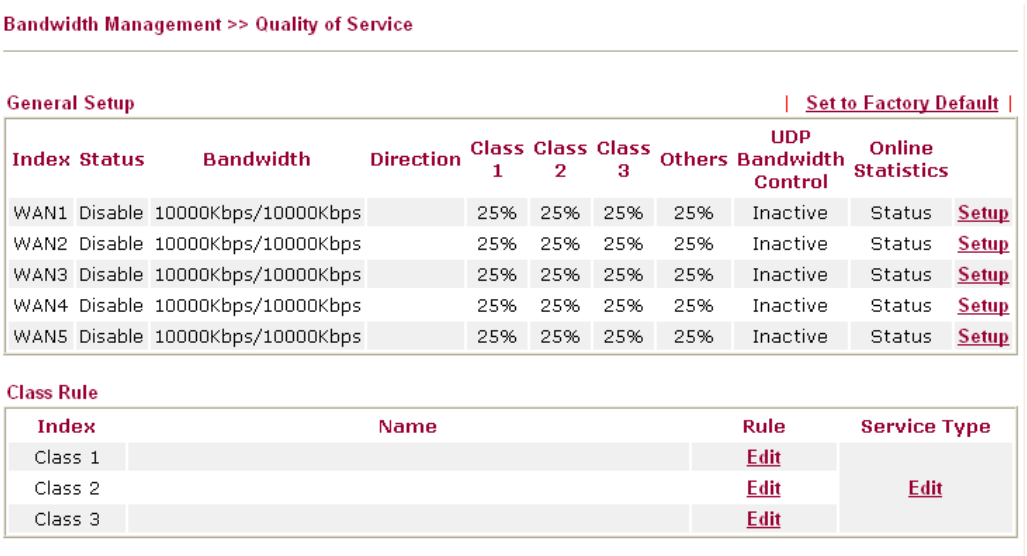


4. Click **Connect** button to build connection. When the connection is successful, you will find a green light on the right down corner.

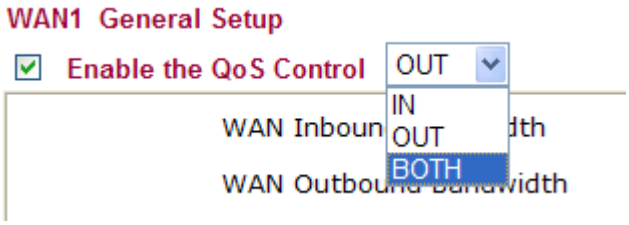
5.4 QoS Setting Example

Assume a teleworker sometimes works at home and takes care of children. When working time, he would use Vigor router at home to connect to the server in the headquarter office downtown via either HTTPS or VPN to check email and access internal database. Meanwhile, children may chat on Skype in other room.

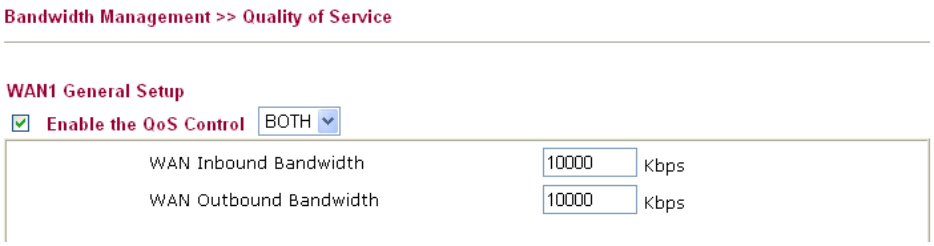
1. Go to **Bandwidth Management>>Quality of Service.**



2. Click **Setup** link of WAN. Make sure the QoS Control on the left corner is checked. And select **BOTH** in **Direction**.

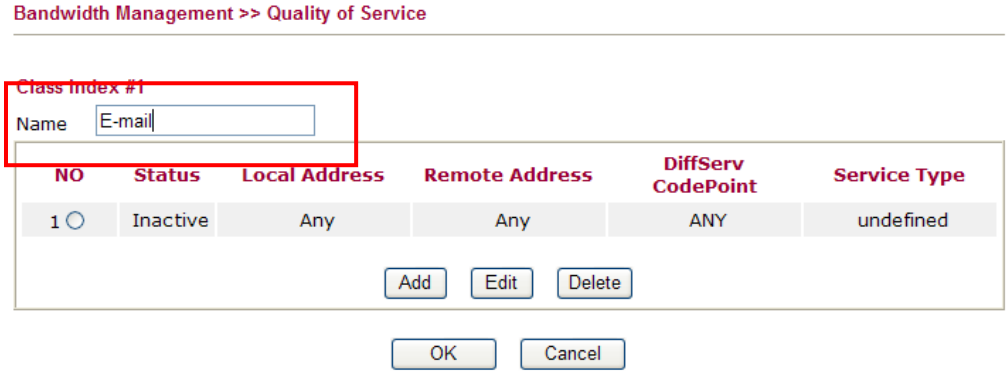


3. Set Inbound/Outbound bandwidth.

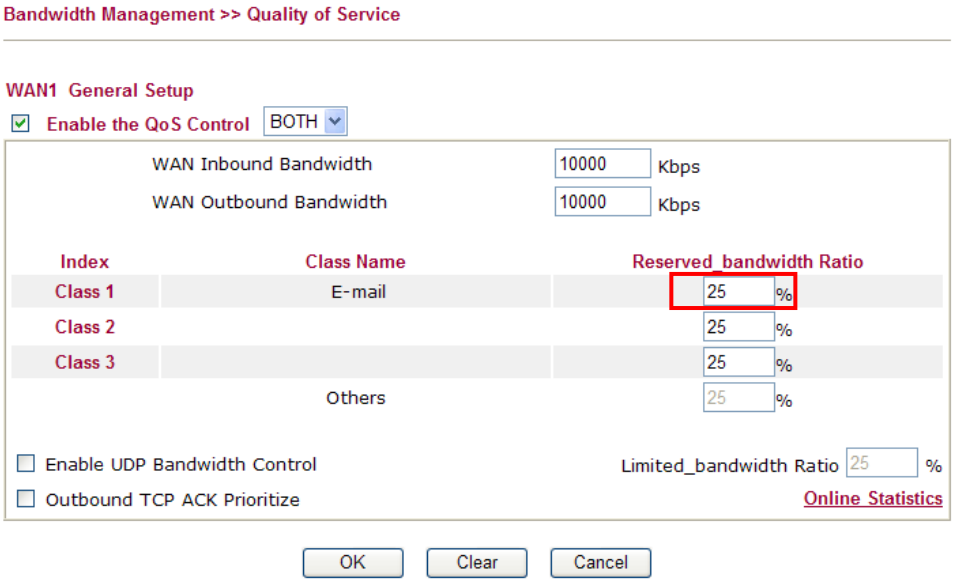


Note: The rate of outbound/inbound must be smaller than the real bandwidth to ensure correct calculation of QoS. It is suggested to set the bandwidth value for inbound/outbound as 80% - 85% of physical network speed provided by ISP to maximize the QoS performance.

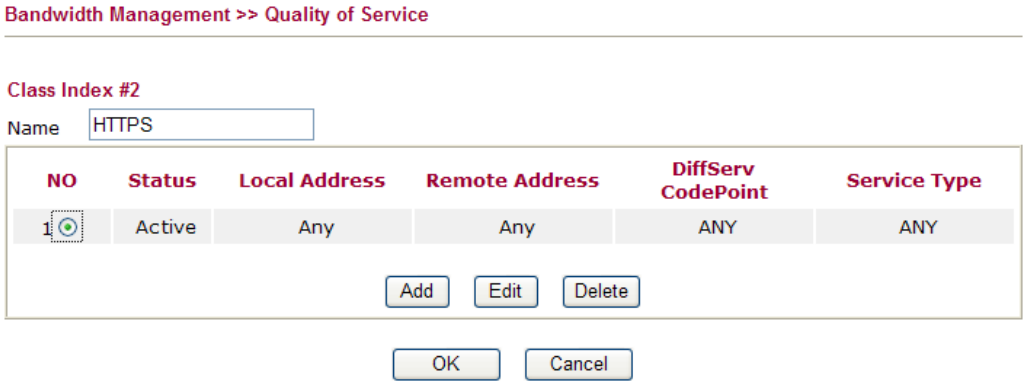
4. Return to previous page. Enter the Name of Index Class 1 by clicking **Edit** link. Type the name "**E-mail**" for Class 1.



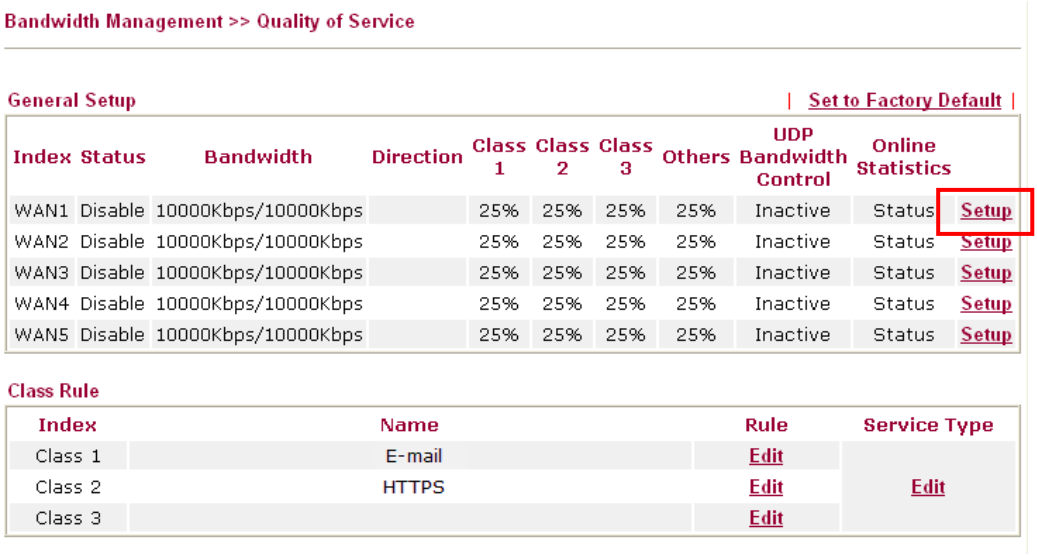
5. For this index, the user will set reserved bandwidth (e.g., 25%) for **E-mail** using protocol POP3 and SMTP.



6. Return to previous page. Enter the Name of Index Class 2 by clicking **Edit** link. In this index, the user will set reserved bandwidth for **HTTPS**. And click **OK**.

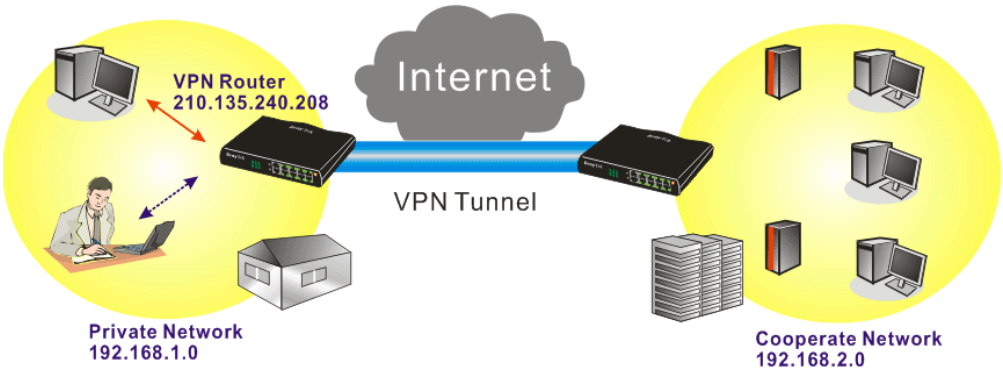


7. Click **Setup** link for one of the WAN interface.

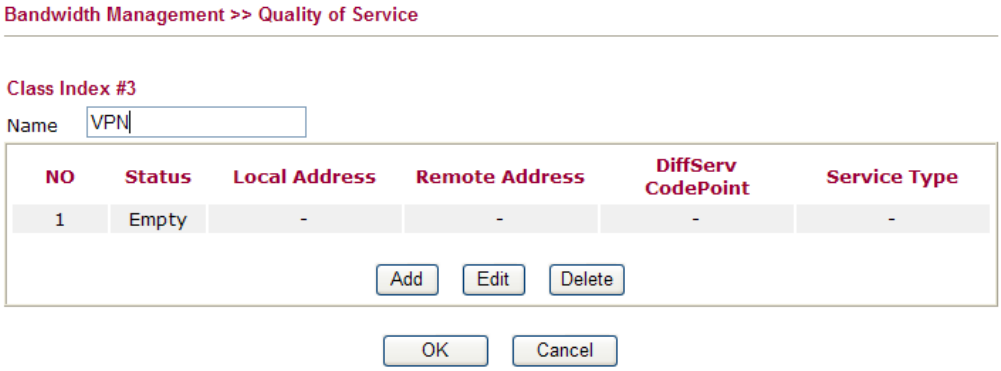


8. Check **Enable UDP Bandwidth Control** on the bottom to prevent enormous UDP traffic of influent other application. Click **OK**.

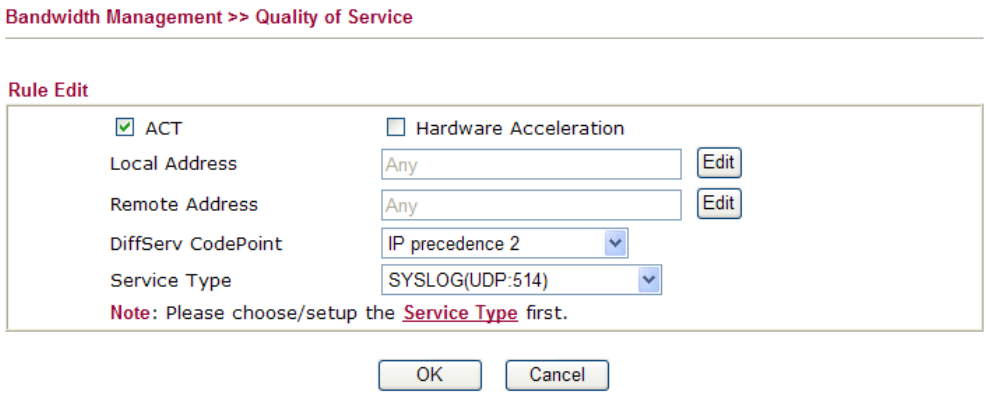
9. If the worker has connected to the headquarter using host to host VPN tunnel. (Please refer to Chapter 3 VPN for detail instruction), he may set up an index for it. Enter the Class Name of Index 3. In this index, he will set reserved bandwidth for 1 VPN tunnel.



10. Click **Edit** to open a new window.



11. Click **Edit** to open the following window. Check the **ACT** box, first.



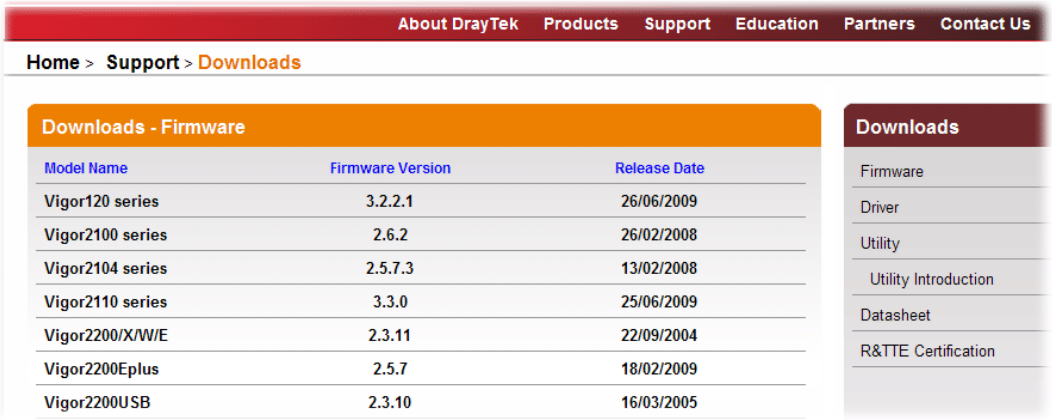
12. Then click **Edit** of **Local Address** to set a worker's subnet address. Click **Edit** of **Remote Address** to set headquarter's IP address. Leave other fields and click **OK**.

5.5 Upgrade Firmware for Your Router

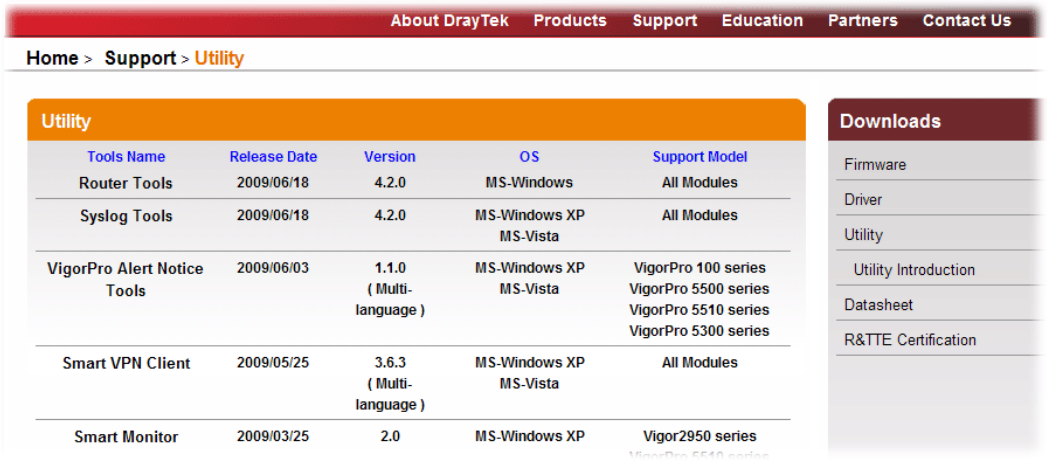
Using Firmware Upgrade Utility

Before upgrading your router firmware, you need to install the Router Tools. The **Firmware Upgrade Utility** is included in the tools.

1. Go to **www.DrayTek.com.**
2. Access into **Support >> Downloads**. Please find out **Firmware** menu and click it. Search the model you have and click on it to download the newly update firmware for your router.

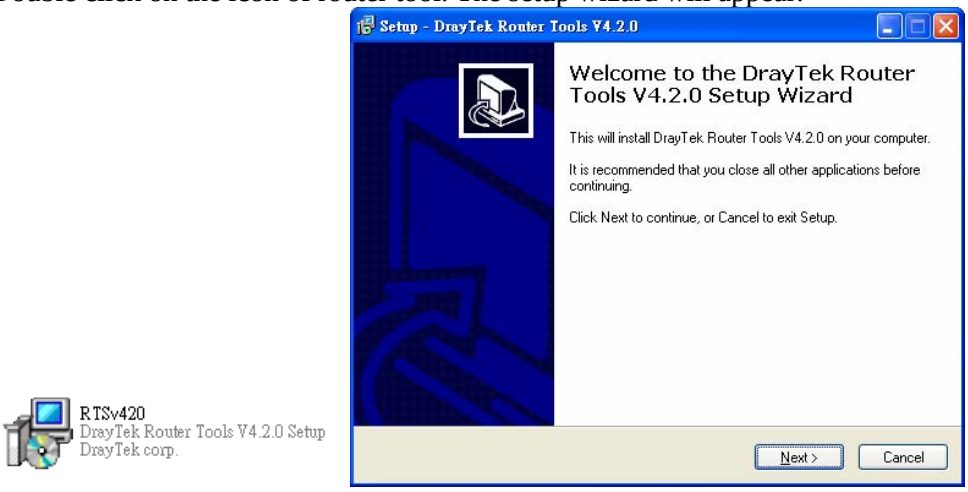


3. Access into **Support >> Downloads**. Please find out **Utility** menu and click it.



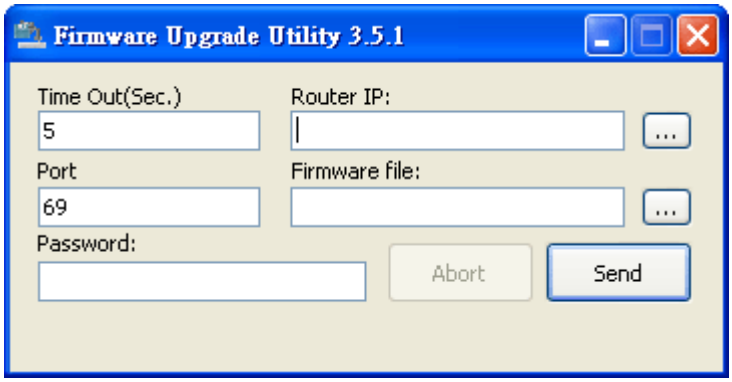
4. Click on the link of **Router Tools** to download the file. After downloading the files, please decompressed the file onto your host.

5. Double click on the icon of router tool. The setup wizard will appear.



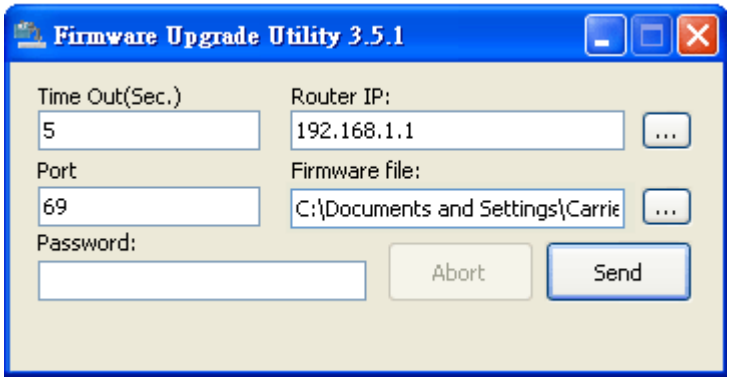
6. Follow the onscreen instructions to install the tool. Finally, click **Finish** to end the installation.

7. From the **Start** menu, open **Programs** and choose **Router Tools XXX** >> **Firmware Upgrade Utility**.

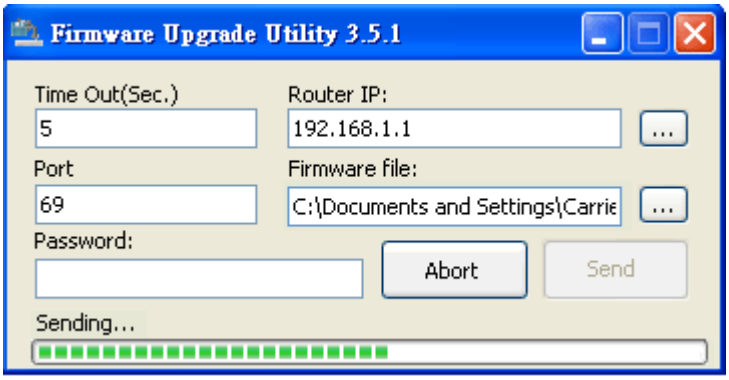


8. Type in your router IP, usually **192.168.1.1**.

9. Click the button to the right side of Firmware file typing box. Locate the files that you download from the company web sites. You will find out two files with different extension names, **xxxx.all** (keep the old custom settings) and **xxxx.rst** (reset all the custom settings to default settings). Choose any one of them that you need.



10. Click **Send**.

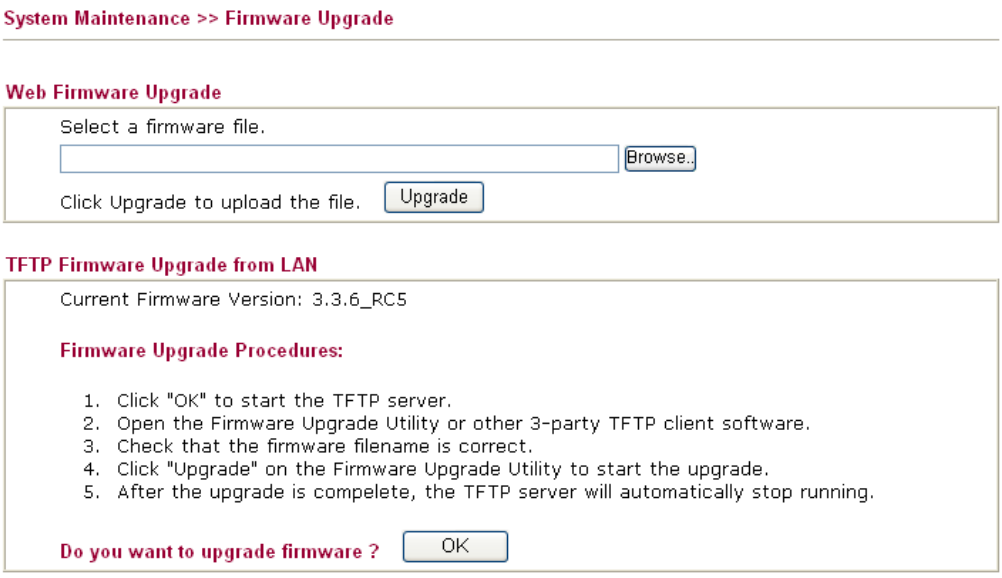


11. Now the firmware update is finished.

Using Web Page

The web page also can guide you to upgrade firmware. Note that this example is running over Windows OS (Operating System).

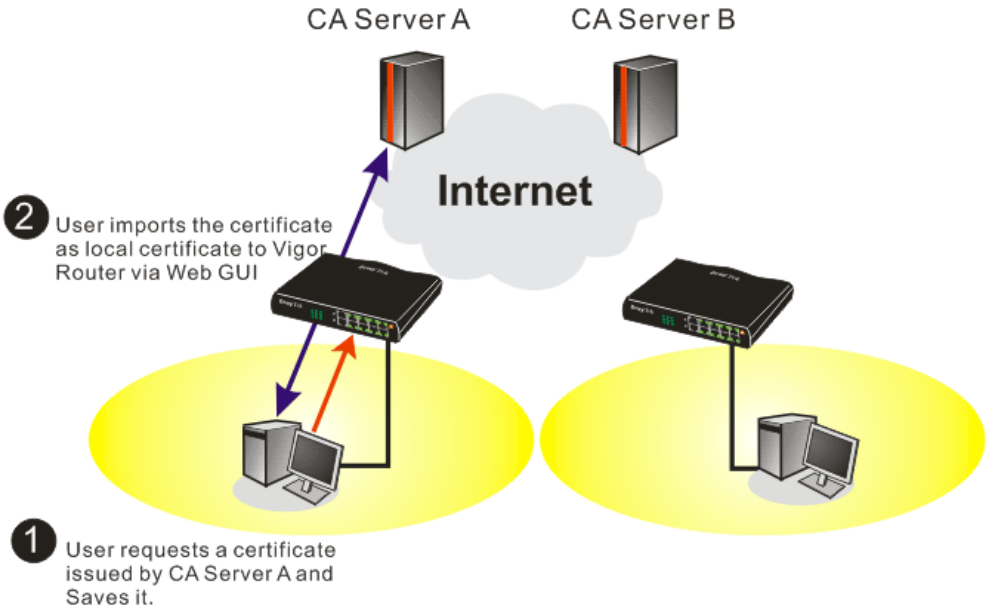
1. Download the newest firmware from DrayTek's web site or FTP site. The DrayTek web site is www.DrayTek.com (or local DrayTek's web site) and FTP site is ftp.DrayTek.com.
2. Click **System Maintenance>> Firmware Upgrade**.



3. Select a firmware file by clicking **Browse**.

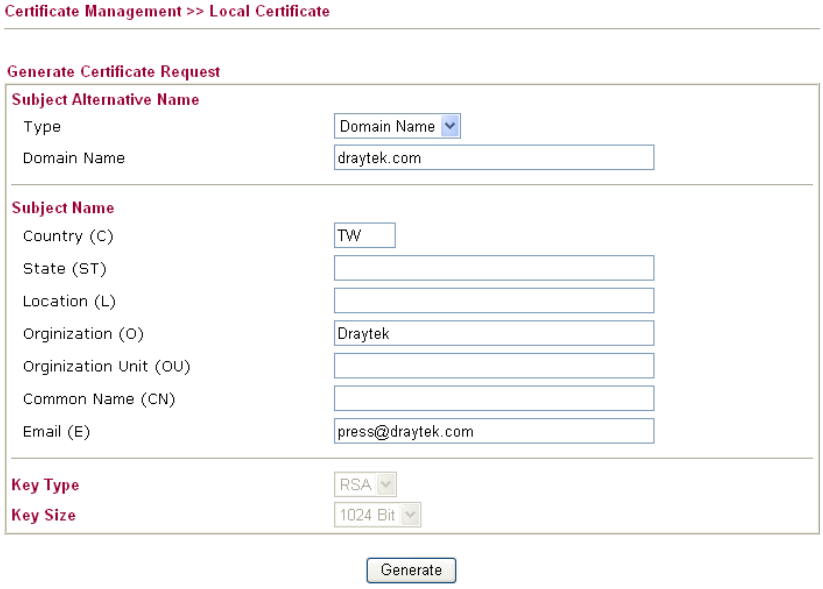
Click **Upgrade** to perform the firmware upgrade.

5.6 Request a certificate from a CA server on Windows CA Server

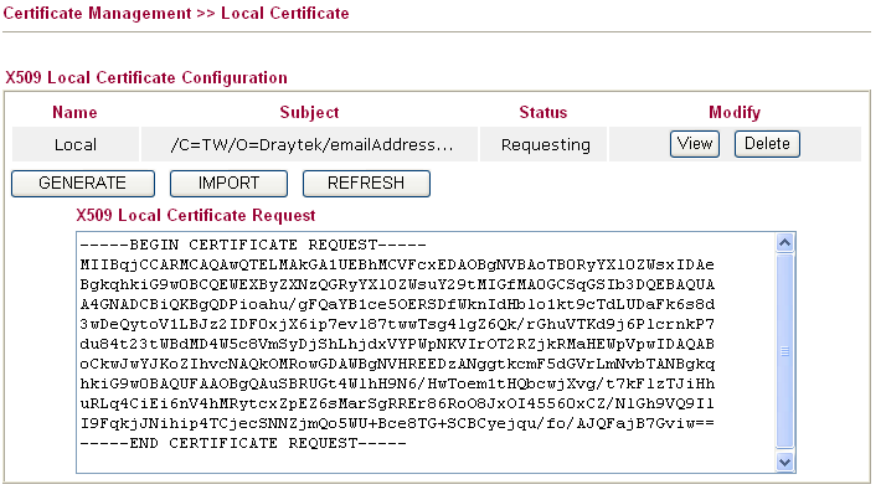


1. Go to **Certificate Management** and choose **Local Certificate**.

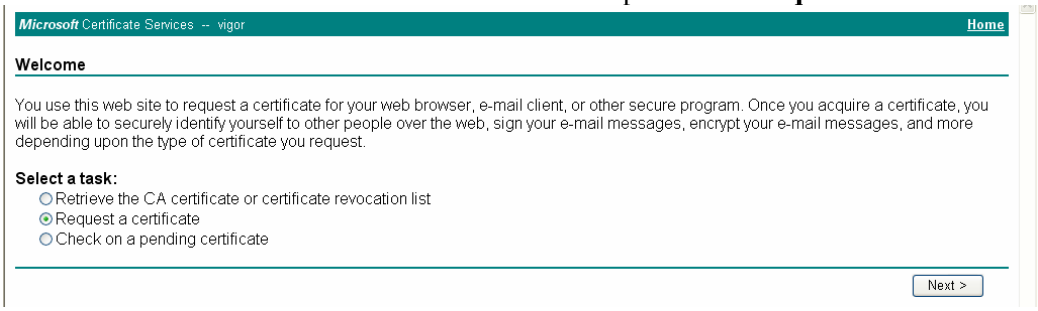
2. You can click **GENERATE** button to start to edit a certificate request. Enter the information in the certificate request.



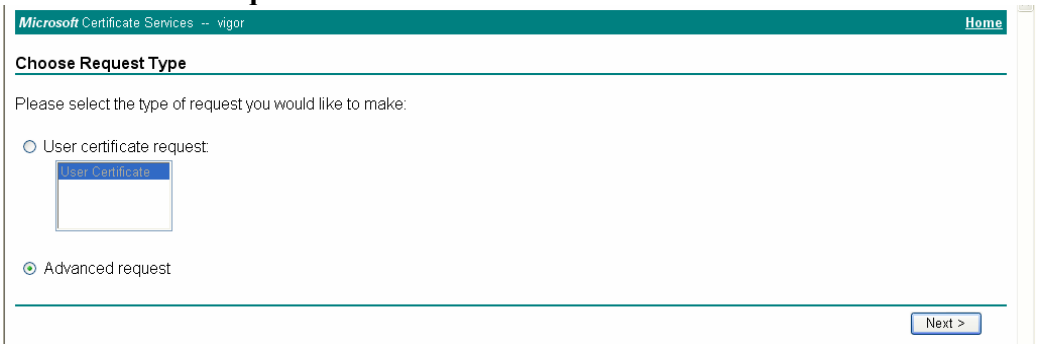
3. Copy and save the X509 Local Certificate Requet as a text file and save it for later use.



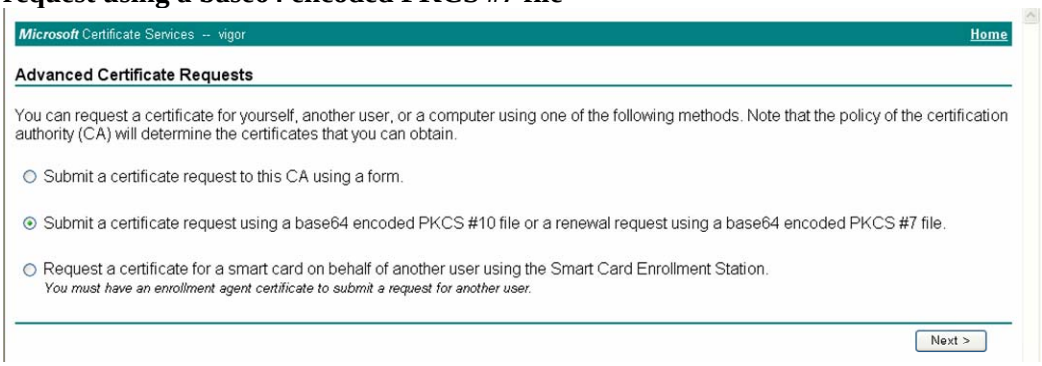
4. Connect to CA server via web browser. Follow the instruction to submit the request. Below we take a Windows 2000 CA server for example. Select **Request a Certificate**.



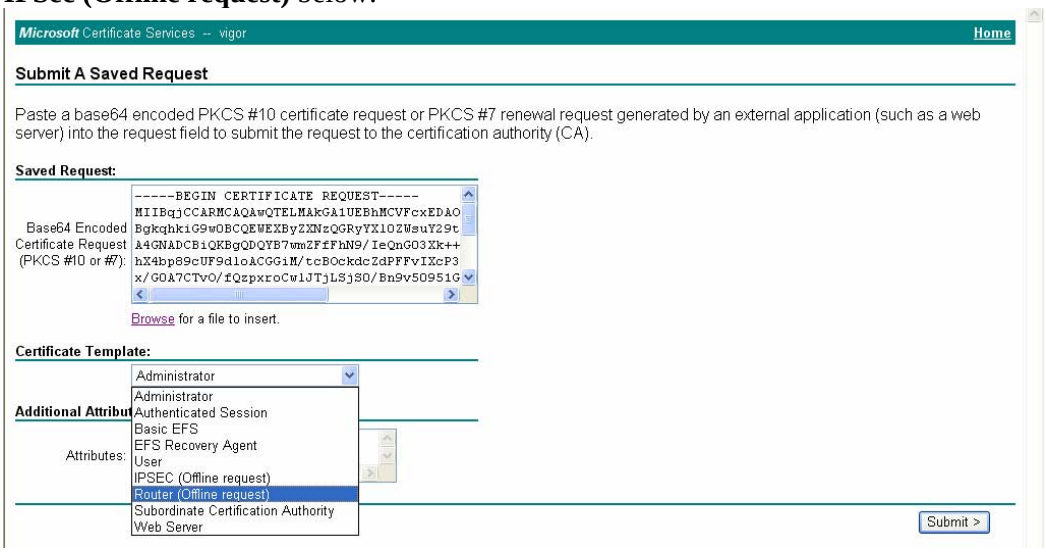
Select **Advanced request**.



Select **Submit a certificate request a base64 encoded PKCS #10 file or a renewal request using a base64 encoded PKCS #7 file**



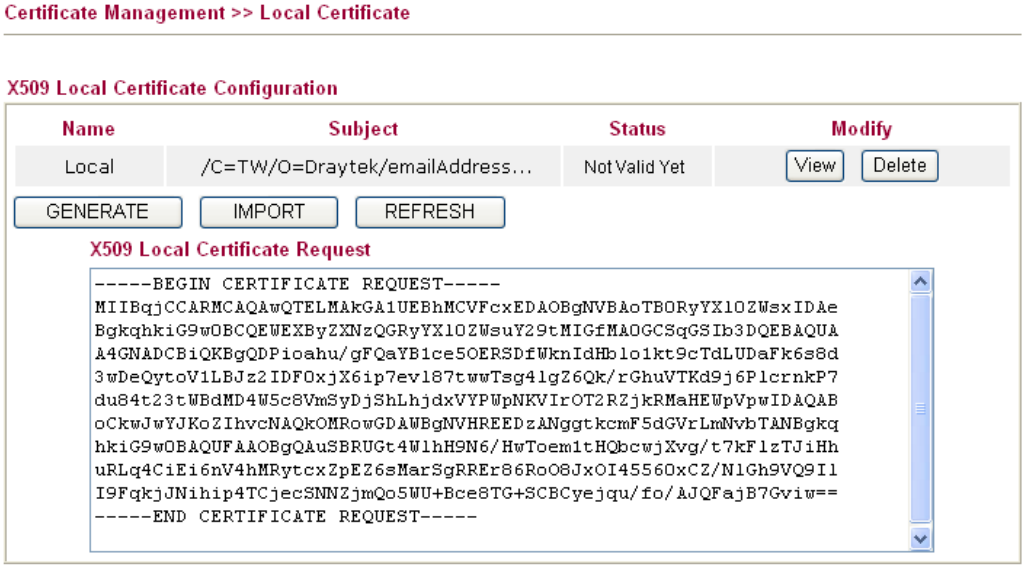
Import the X509 Local Certificate Request text file. Select **Router (Offline request)** or **IPSec (Offline request)** below.



Then you have done the request and the server now issues you a certificate. Select **Base 64 encoded** certificate and **Download CA certificate**. Now you should get a certificate (.cer file) and save it.

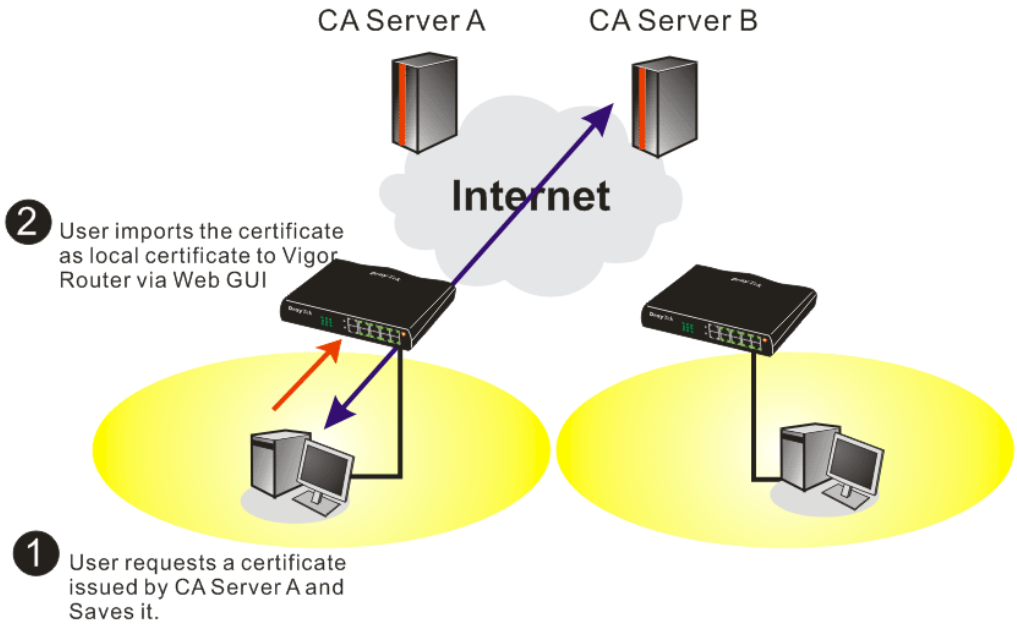
5. Back to Vigor router, go to **Local Certificate**. Click **IMPORT** button and browse the file to import the certificate (.cer file) into Vigor router. When finished, click refresh and

you will find the below window showing "------BEGINE CERTIFICATE------....."

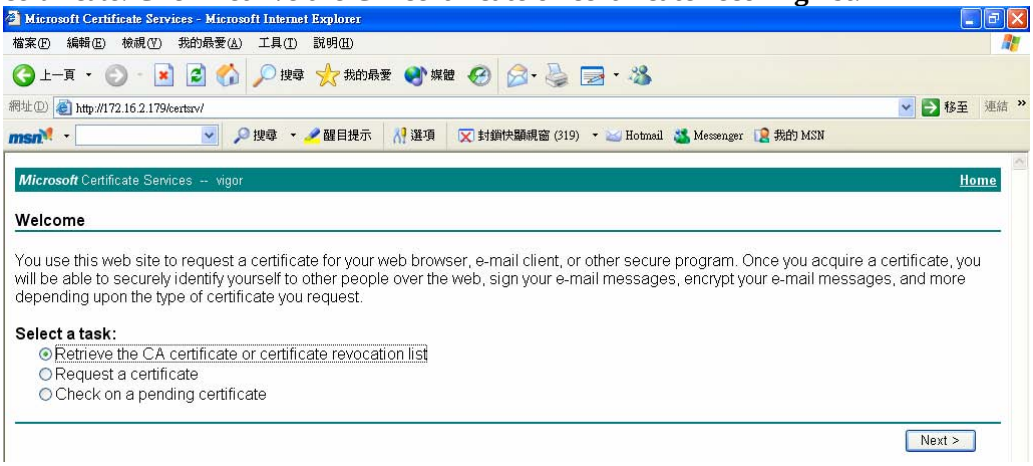


6. You may review the detail information of the certificate by clicking **View** button.

5.7 Request a CA Certificate and Set as Trusted on Windows CA Server

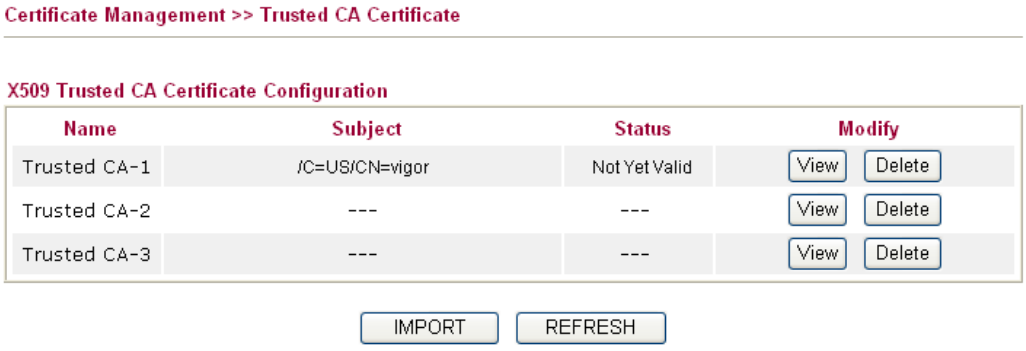


1. Use web browser connecting to the CA server that you would like to retrieve its CA certificate. Click **Retrive the CA certificate or certificate recoring list**.

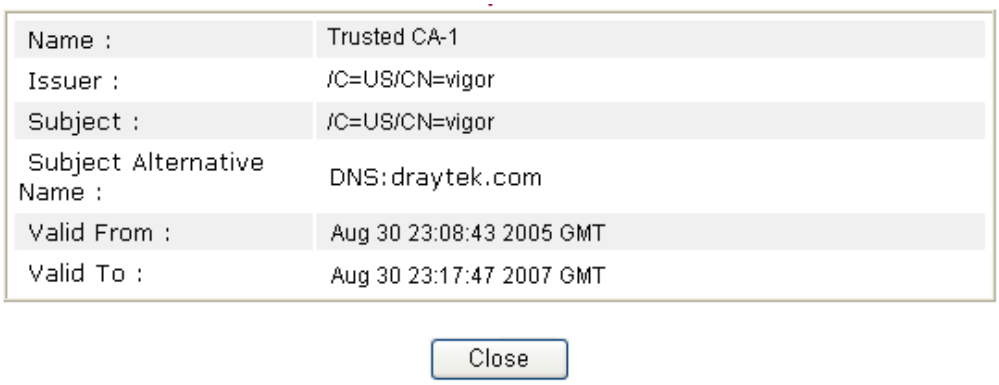


2. In **Choose file to download**, click CA Certificate **Current** and **Base 64 encoded,** and **Download CA certificate** to save the .cer. file.

3. Back to Vigor router, go to **Trusted CA Certificate**. Click **IMPORT** button and browse the file to import the certificate (.cer file) into Vigor router. When finished, click refresh and you will find the below illustration.



4. You may review the detail information of the certificate by clicking **View** button.



Note: Before setting certificate configuration, please go to **System Maintenance** >> **Time and Date** to reset current time of the router first.

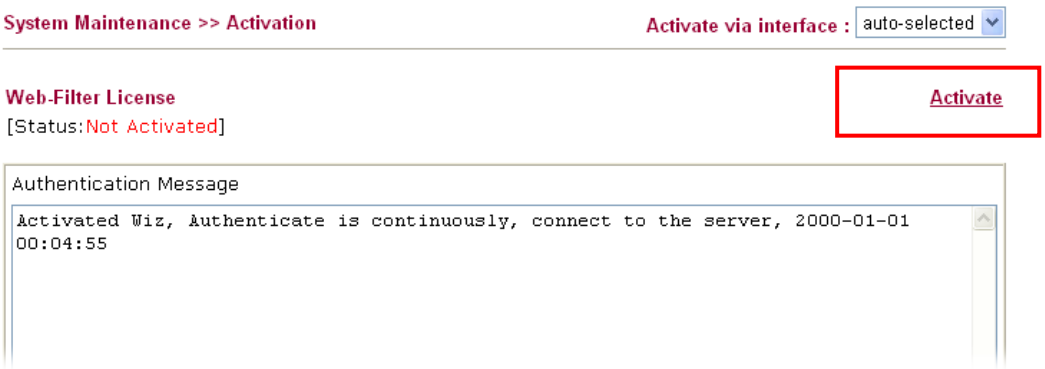
5.8 Creating an Account for MyVigor

The website of MyVigor (a server located on http://myvigor.draytek.com) provides several useful services (such as Anti-Spam, Web Content Filter, Anti-Intrusion, and etc.) to filter the web pages for protecting your system.

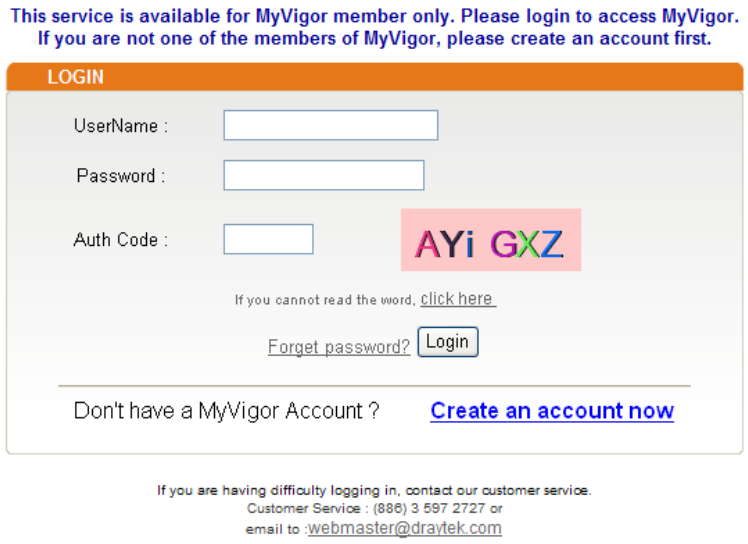
To access into MyVigor for getting more information, please create an account for MyVigor first.

5.8.1 Creating an Account via Vigor Router

1. Click **System Maintenance>>Activation** to open the following page.

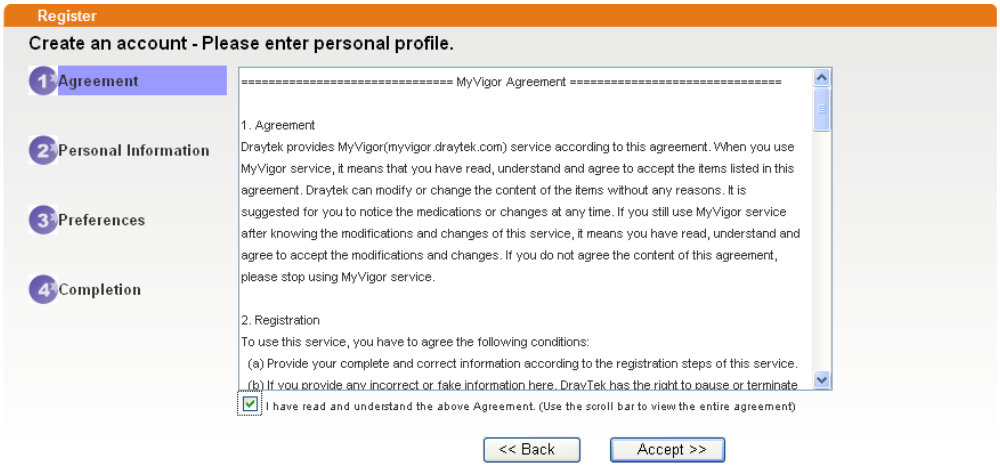


2. Click the **Activate** link. A login page for MyVigor web site will pop up automatically.

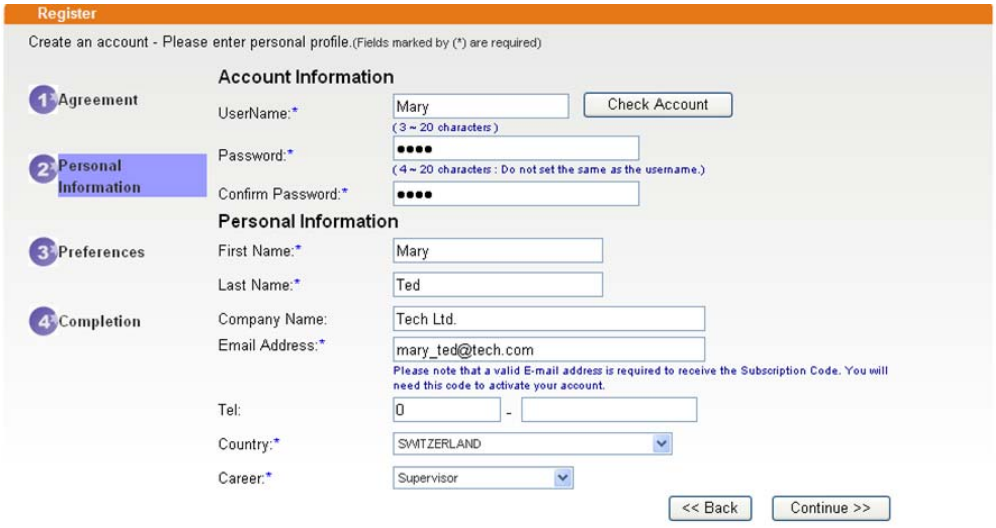


3. Click the link of **Create an account now**.

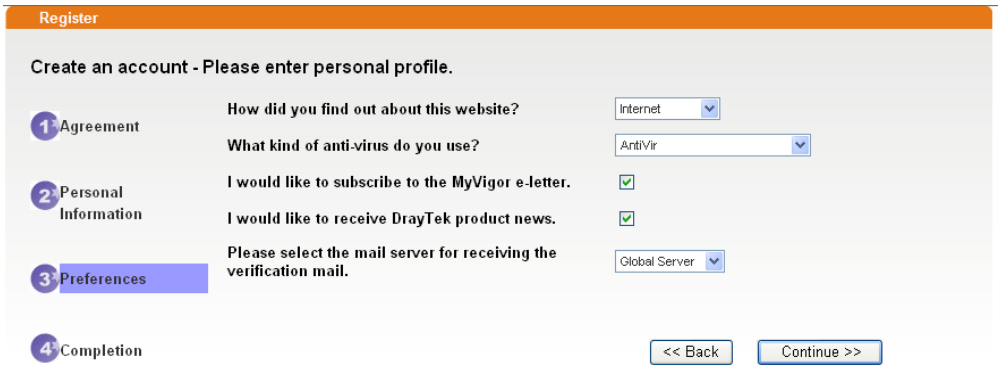
4. Check to confirm that you accept the Agreement and click **Accept**.



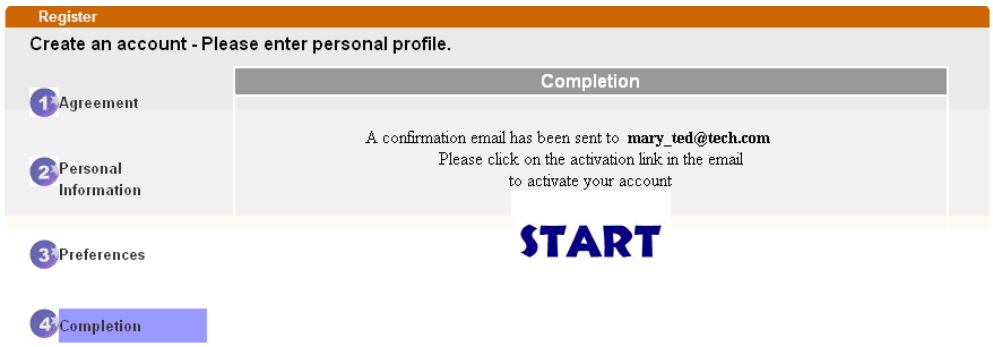
5. Type your personal information in this page and then click **Continue**.



6. Choose proper selection for your computer and click **Continue**.



7. Now you have created an account successfully. Click START.



8. Check to see the confirmation ***email*** with the title of **New Account Confirmation Letter from myvigor.draytek.com**.

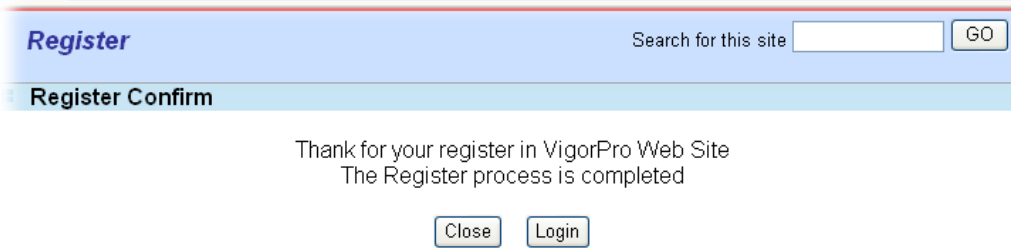
****** This is an automated message from myvigor.draytek.com.******

Thank you (**Mary**) for creating an account.

Please click on the activation link below to activate your account

Link : Activate my Account

9. Click the **Activate my Account** link to enable the account that you created. The following screen will be shown to verify the register process is finished. Please click **Login**.

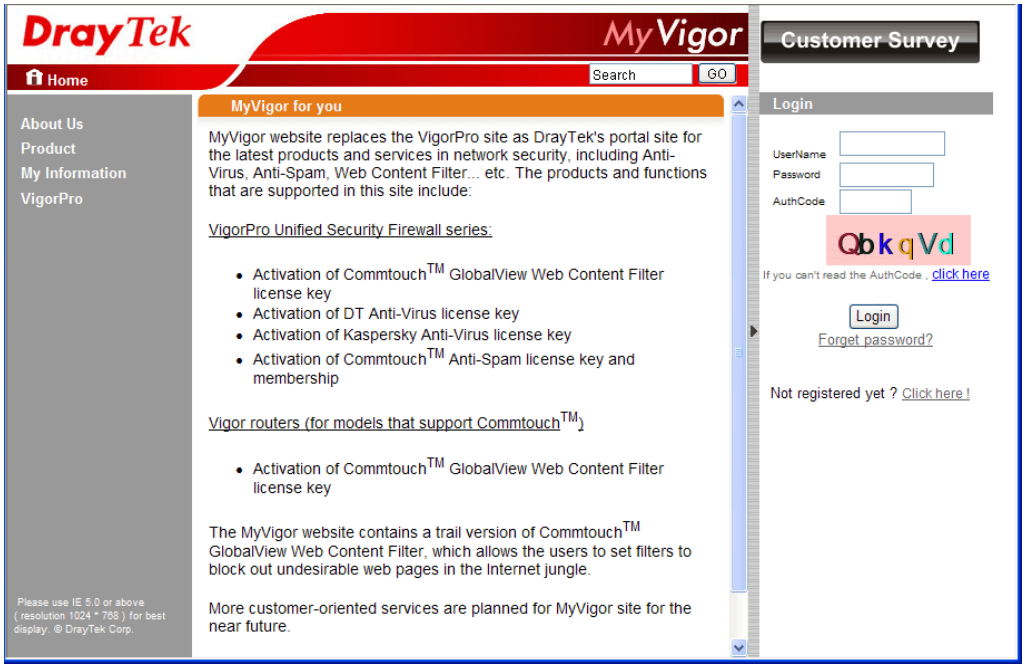


10. When you see the following page, please type in the account and password (that you just created) in the fields of **UserName** and **Password**.

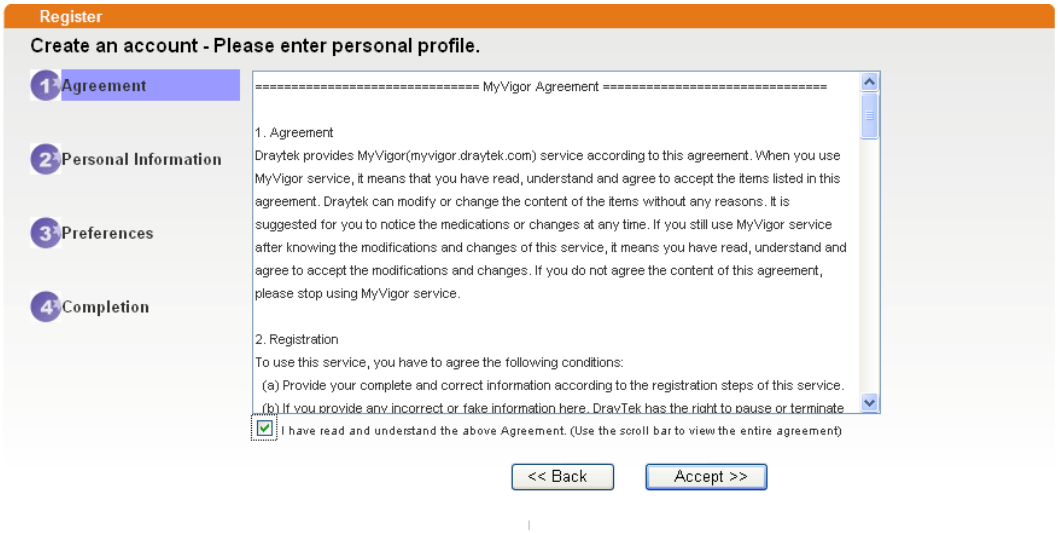
11. Now, click **Login**. Your account has been activated. You can access into MyVigor server to activate the service (e.g., WCF) that you want.

5.8.2 Creating an Account via MyVigor Web Site

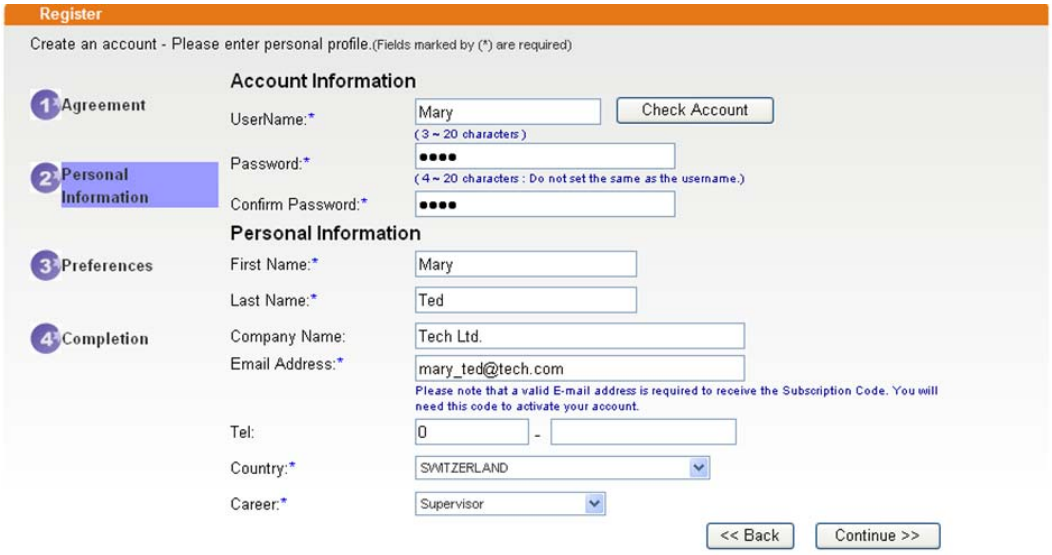
1. Access into http://myvigor.draytek.com. Find the line of **Not registered yet?**. Then, click the link **Click here!** to access into next page.



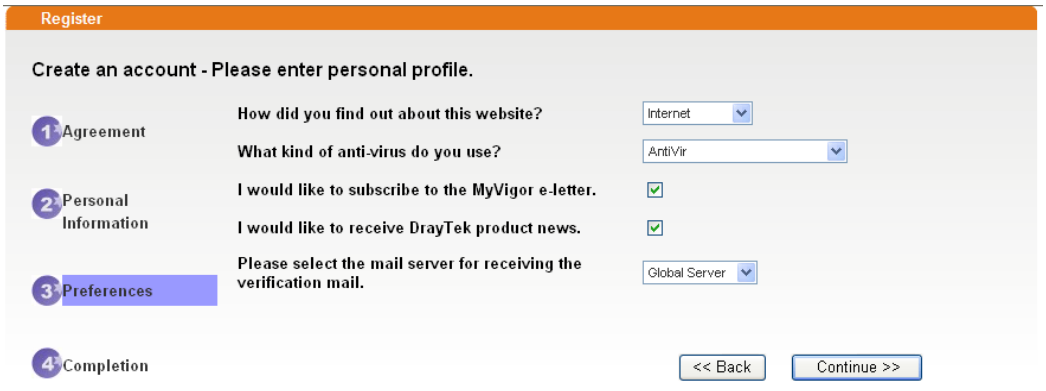
2. Check to confirm that you accept the Agreement and click **Accept**.



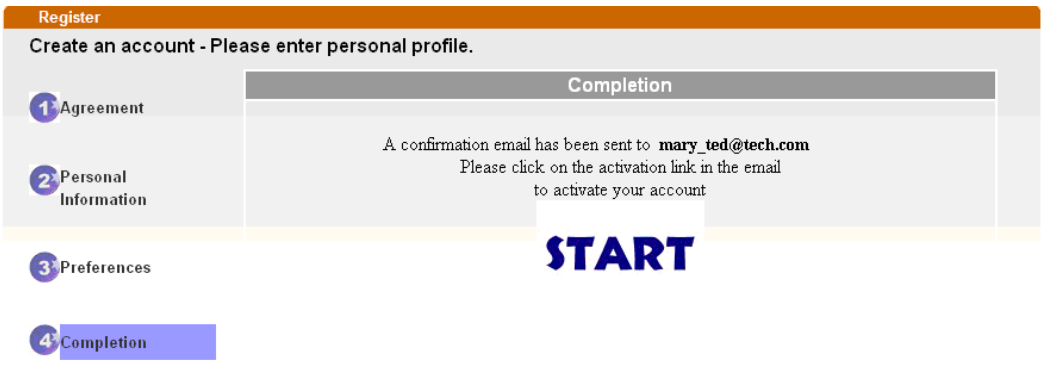
3. Type your personal information in this page and then click **Continue**.



4. Choose proper selection for your computer and click **Continue**.



5. Now you have created an account successfully. Click START.



6. Check to see the confirmation ***email*** with the title of **New Account Confirmation Letter from myvigor.draytek.com**.

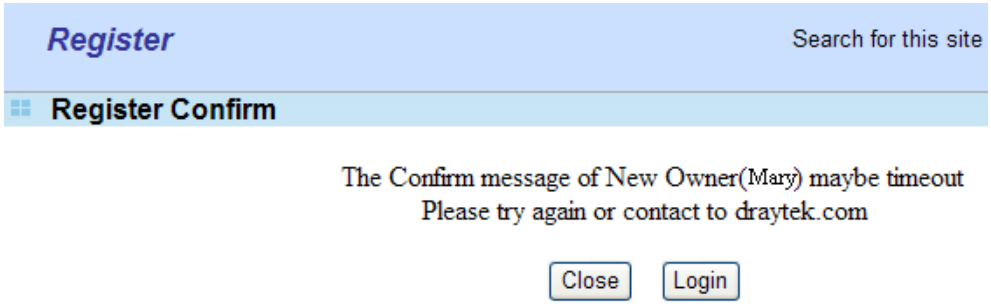
****** This is an automated message from myvigor.draytek.com.******

Thank you (**Mary**) for creating an account.

Please click on the activation link below to activate your account

Link : Activate my Account

7. Click the **Activate my Account** link to enable the account that you created. The following screen will be shown to verify the register process is finished. Please click **Login**.



8. When you see the following page, please type in the account and password (that you just created) in the fields of **UserName** and **Password**. Then type the code in the box of Auth Code according to the value displayed on the right side of it.

Now, click **Login**. Your account has been activated. You can access into MyVigor server to activate the service (e.g., WCF) that you want.

6 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.

6.1 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.

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.

6.2 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.

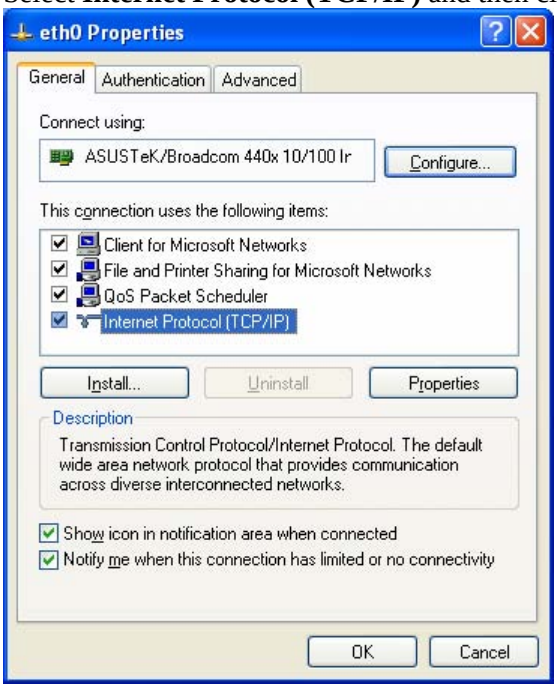
For Windows

> 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**.

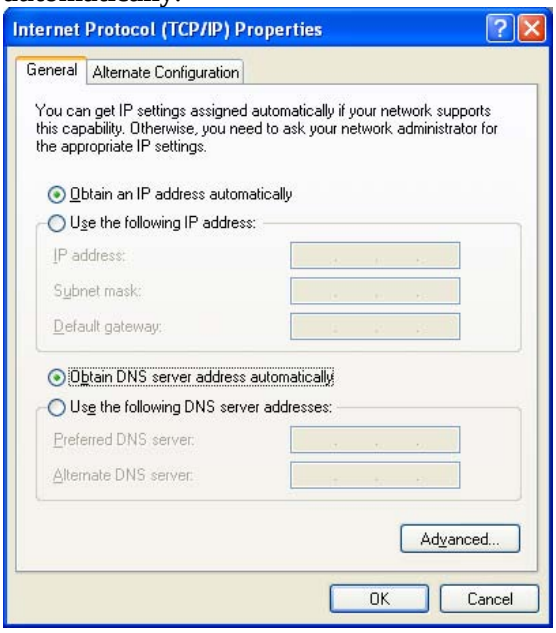
1. Go to **Control Panel** and then double-click on **Network Connections**.

2. Right-click on **Local Area Connection** and click on **Properties**.

3. Select **Internet Protocol (TCP/IP)** and then click **Properties**.

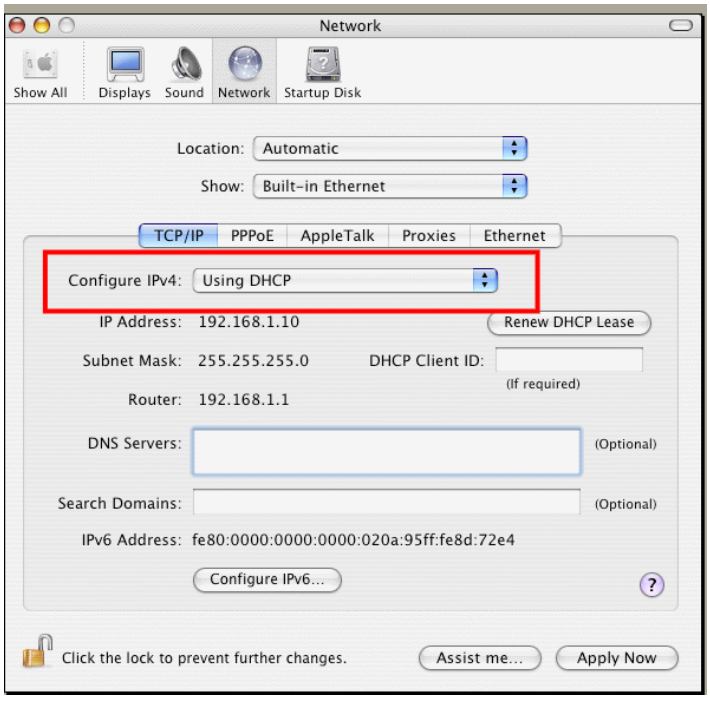


4. Select **Obtain an IP address automatically** and **Obtain DNS server address automatically**.



For Mac OS

1. Double click on the current used Mac OS 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.



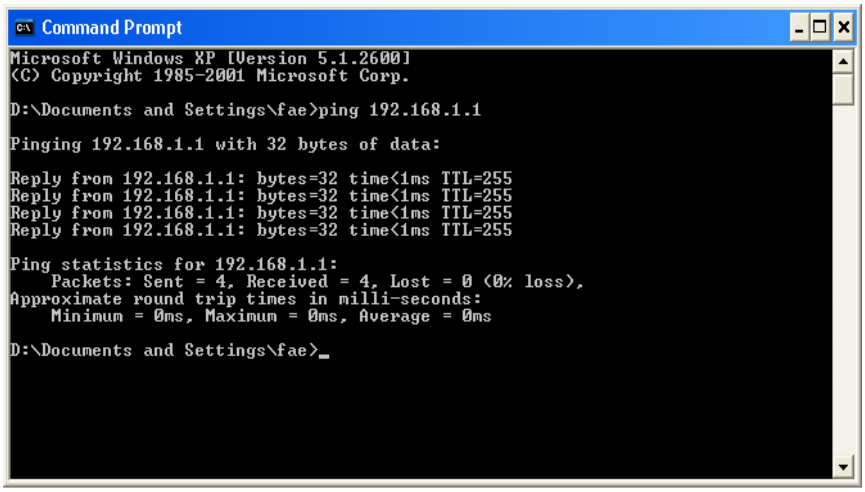
6.3 Pinging the Router from Your Computer

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 6.2)

Please follow the steps below to ping the router correctly.

For Windows

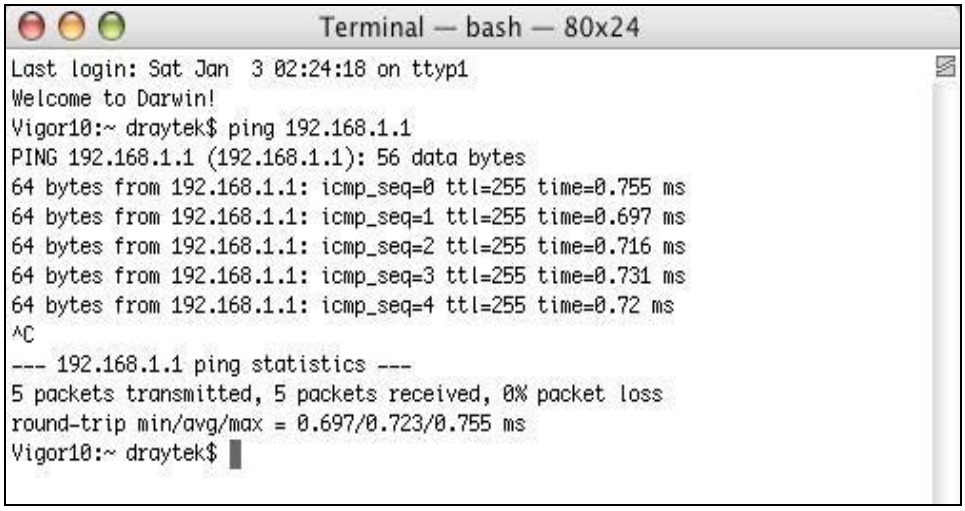
1. Open the **Command** Prompt window (from **Start menu> Run**).
2. Type **command** (for Windows 95/98/ME) or **cmd** (for Windows NT/ 2000/XP/Vista). The DOS command dialog will appear.



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.

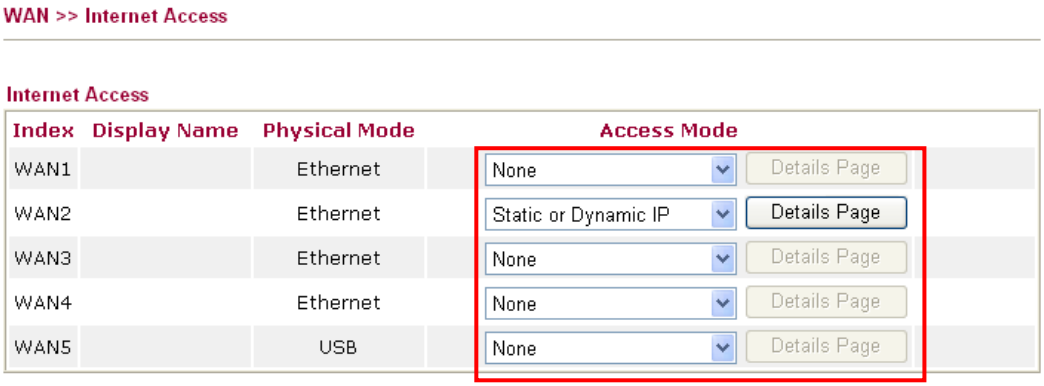
For Mac OS (Terminal)

1. Double click on the current used Mac OS 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.



6.4 Checking If the ISP Settings are OK or Not

Open **WAN >> Internet Access** page and then check whether the ISP settings are set correctly. Click **Details Page** of each WAN interface to review the settings that you configured previously.



6.5 Problems for 3G Network Connection

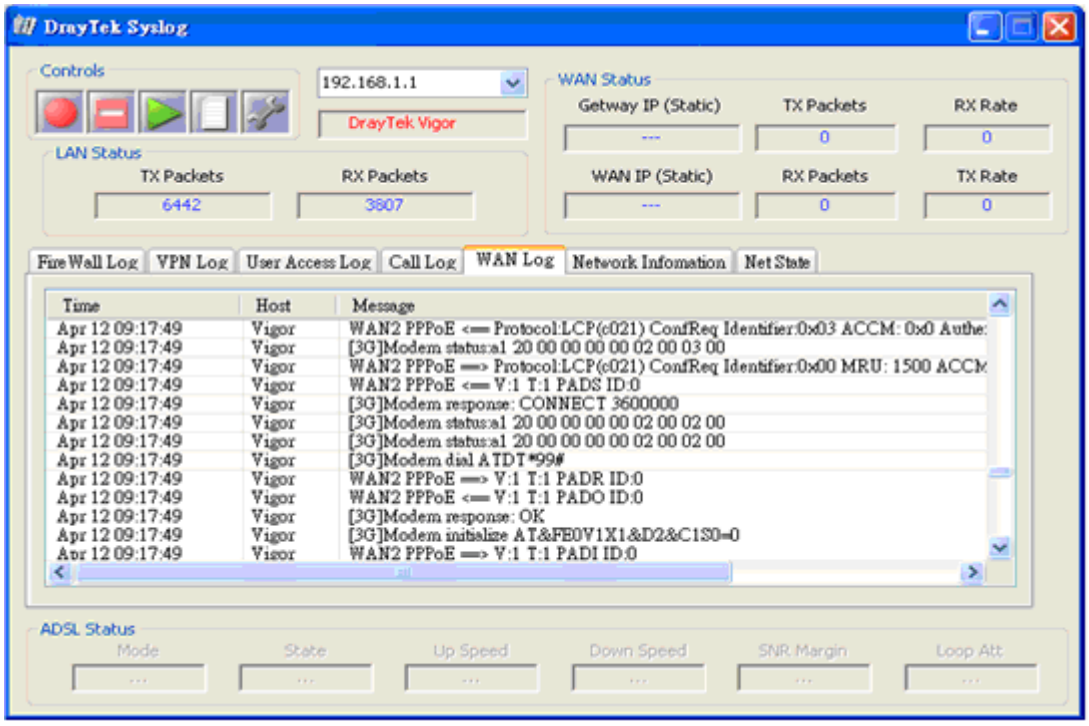
When you have trouble in using 3G network transmission, please check the following:

Check if USB LED lights on or off

You have to wait about 15 seconds after inserting 3G USB Modem into your Vigor3200. Later, the USB LED will light on which means the installation of USB Modem is successful. If the USB LED does not light on, please remove and reinsert the modem again. If it still fails, restart Vigor3200.

USB LED lights on but the network connection does not work

Check the PIN Code of SIM card is disabled or not. Please use the utility of 3G USB Modem to disable PIN code and try again. If it still fails, it might be the compliance problem of system. Please open DrayTek Syslog Tool to capture the connection information (WAN Log) and send the page (similar to the following graphic) to the service center of DrayTek.



Transmission Rate is not fast enough

Please connect your Notebook with 3G USB Modem to test the connection speed to verify if the problem is caused by Vigor3200. In addition, please refer to the manual of 3G USB Modem for LED Status to make sure if the modem connects to Internet via HSDPA mode. If you want to use the modem indoors, please put it on the place near the window to obtain better signal receiving.

6.6 Backing to Factory Default Setting If Necessary

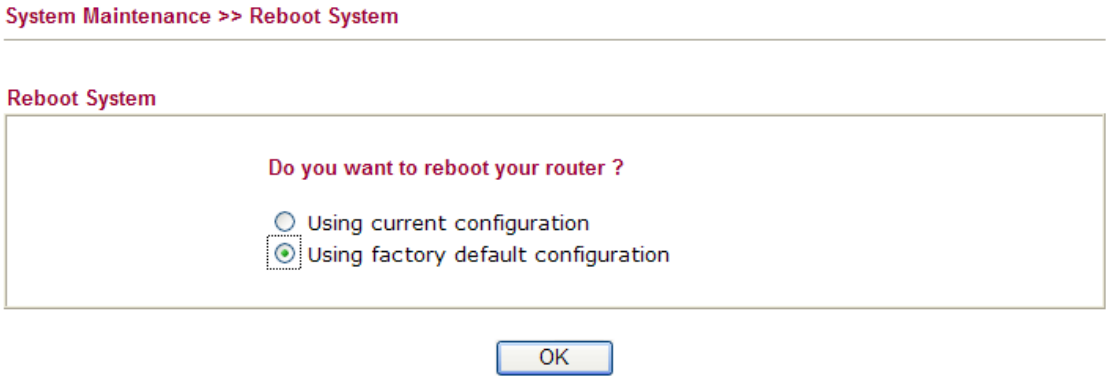
Sometimes, a wrong connection can be improved by returning to the default settings. Try to reset the router by software or hardware. Such function is available in **Admin Mode** only.

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

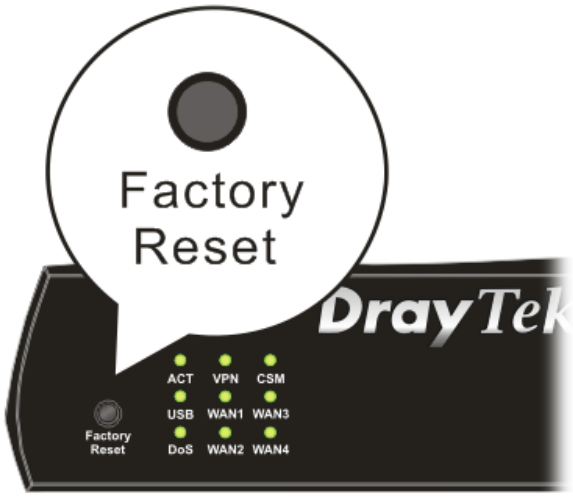
You can reset the router to factory default via Web page. Such function is available in **Admin Mode** only.

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.



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.

6.7 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.