



Vigor2800 Series ADSL2/2+ Security Router User's Guide

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1

Preface

Targeting requirement for residential, SOHO (Small Office and Home Office) and business users, the Vigor2800 series is an ADSL2/2+ enabled integrated access device. With downstream speed up to 12Mbps (ADSL2) or 24Mbps (ADSL2+), the Vigor2800V/VG provides exceptional bandwidth for Internet access.

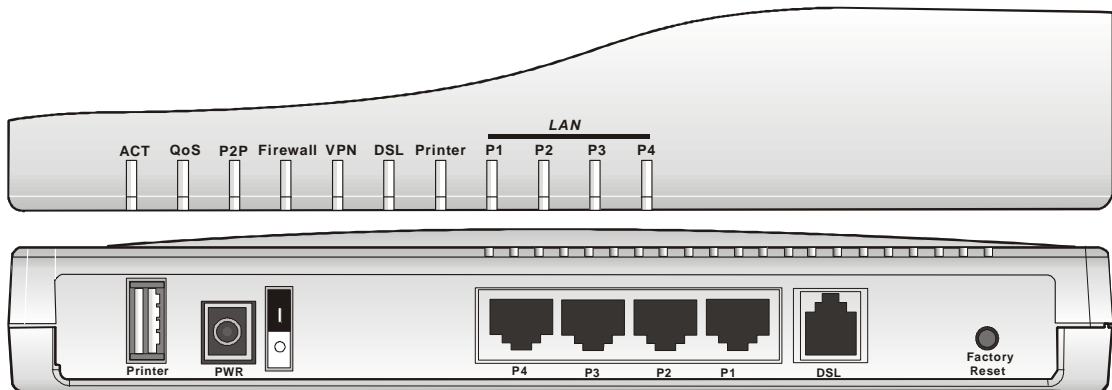
To secure your network, the Vigor2800 series provides an advanced firewall with advanced features, such as NAT with multi VPN pass-through, Stateful Packet Inspection (SPI) to offer network reliability by detecting and prohibiting malicious penetrating packets, user-configurable web filtering for parental control against network abuse etc.

Vigor2800 series is embedded with an 802.11g compliant wireless module which provides wireless LAN access with data rate as much as 108Mbps, SuperG. As for data privacy of wireless network, the Vigor2800 series can encode all transmissions data with standard WEP and industrial strength WPA2 (IEEE 802.11i) encryption. Additional features include Wireless Client List and MAC Address Control for maintaining control over user's authorization in your network, and Hidden SSID for being invisible to outside intruders scanning.

1.1 LED Indicators and Connectors

The displays of LED indicators and connectors for the routers are different slightly.

1.1.1 For Vigor2800



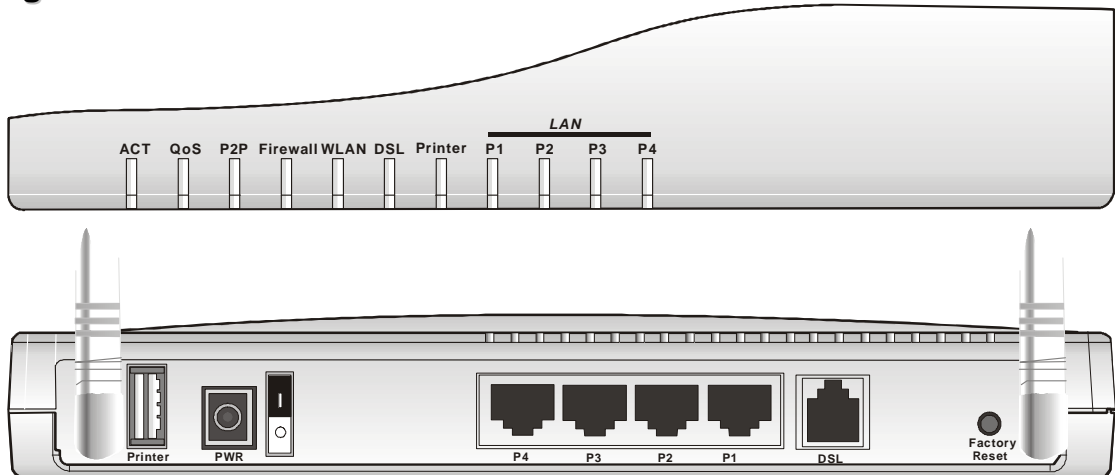
LED Explanation

LED	Status	Explanation
ACT (Activity)	Blinking	The router is powered on and running properly.
	On	The router is powered on.
QoS	On	The QoS function is active.
	Off	The QoS function is inactive.
P2P	On	The P2P function is active.
	Blinking	Starts to prohibit P2P data.
VPN	On	The VPN tunnel is launched.
DSL	On	The ADSL, ADSL2/2+ line is connected.
Printer	On	The USB interface printer is ready.
LAN (P1, P2, P3, P4)	Orange	A normal 10Mbps connection is through its corresponding port.
	Green	A normal 100Mbps connection is through its corresponding port.
	Blinking	Ethernet packets are transmitting.

Connector Explanation

Interface	Description
Printer	Connector for a USB printer.
PWR	Connector for a power adapter with 12-15VDC.
ON/OFF	Power Switch.
LAN P4 – P1	Connectors for local networked devices.
DSL	Connector for accessing Internet with the ADSL,ADSL2/2+ line
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.

1.1.2 For Vigor2800G



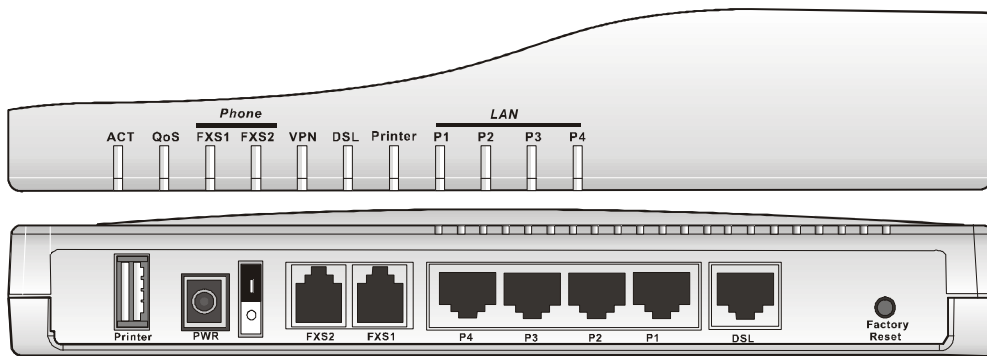
LED Explanation

LED	Status	Explanation
ACT (Activity)	Blinking	The router is powered on and running properly.
	On	The router is powered on.
QoS	On	The QoS function is active.
	Off	The QoS function is inactive.
P2P	On	The P2P function is active.
	Blinking	Starts to prohibit P2P data.
Firewall	On	The DoS function is enabled.
	Blinking	When encountered DoS attacks.
WLAN	On	Wireless access point is ready.
	Blinking	Wireless traffic goes through.
	Off	Wireless access point is turned off.
DSL	On	The ADSL, ADSL2/2+ line is connected.
Printer	On	The USB interface printer is ready.
LAN (P1, P2, P3, P4)	Orange	A normal 10Mbps connection is through its corresponding port.
	Green	A normal 100Mbps connection is through its corresponding port.
	Blinking	Ethernet packets are transmitting.

Connector Explanation

Interface	Description
Printer	Connector for a USB printer.
PWR	Connector for a power adapter with 12-15VDC.
ON/OFF	Power Switch.
LAN P4 – P1	Connectors for local networked devices.
DSL	Connector for accessing Internet with the ADSL, ADSL2/2+ line
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.

1.1.3 For Vigor2800V



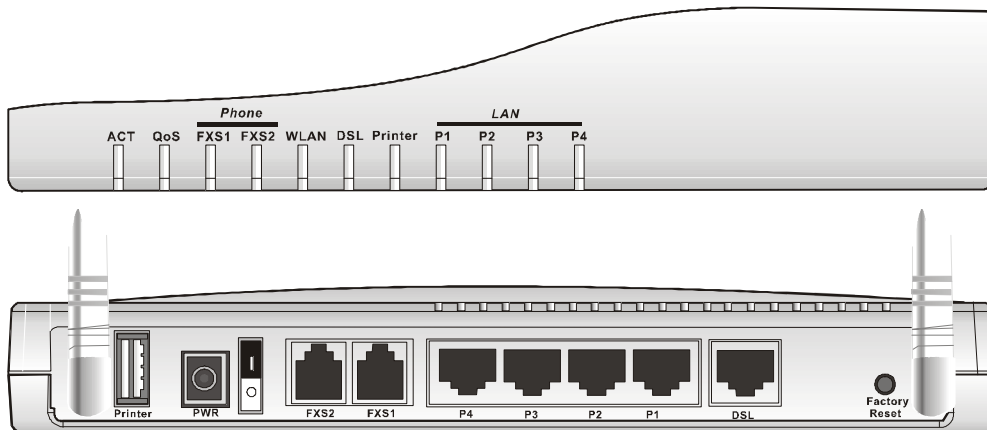
LED Explanation

LED	Status	Explanation
ACT (Activity)	Blinking	The router is powered on and running properly.
	On	The router is powered on.
QoS	On	The QoS function is active.
	Off	The QoS function is inactive.
FXS1/FXS2	On	The phone is off hook (the handset of phone is hanging).
	Blinking	A phone call is incoming.
VPN	On	The VPN tunnel is launched.
DSL	On	The ADSL, ADSL2/2+ line is connected.
Printer	On	The USB interface printer is ready.
LAN (P1, P2, P3, P4)	Orange	A normal 10Mbps connection is through its corresponding port.
	Green	A normal 100Mbps connection is through its corresponding port.
	Blinking	Ethernet packets are transmitting.

Connector Explanation

Interface	Description
Printer	Connector for a USB printer.
PWR	Connector for a power adapter with 12-15VDC.
ON/OFF	Power Switch.
FXS2 & FXS1	Connectors for telephone set and analog phone with VoIP communication.
LAN P4 – P1	Connectors for local networked devices.
DSL	Connector for accessing Internet with the ADSL,ADSL2/2+ line
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.

1.1.4 For Vigor2800VG



LED Explanation

LED	Status	Explanation
ACT (Activity)	Blinking	The router is powered on and running properly.
	On	The router is powered on.
QoS	On	The QoS function is active.
	Off	The QoS function is inactive.
FXS1/FXS2	On	The phone is off hook (the handset of phone is hanging).
	Blinking	A phone call is incoming.
WLAN	On	Wireless access point is ready.
	Blinking	Wireless traffic goes through.
	Off	Wireless access point is turned off.
DSL	On	The ADSL, ADSL2/2+ line is connected.
Printer	On	The USB interface printer is ready.
LAN (P1, P2, P3, P4)	Orange	A normal 10Mbps connection is through its corresponding port.
	Green	A normal 100Mbps connection is through its corresponding port.
	Blinking	Ethernet packets are transmitting.

Connector Explanation

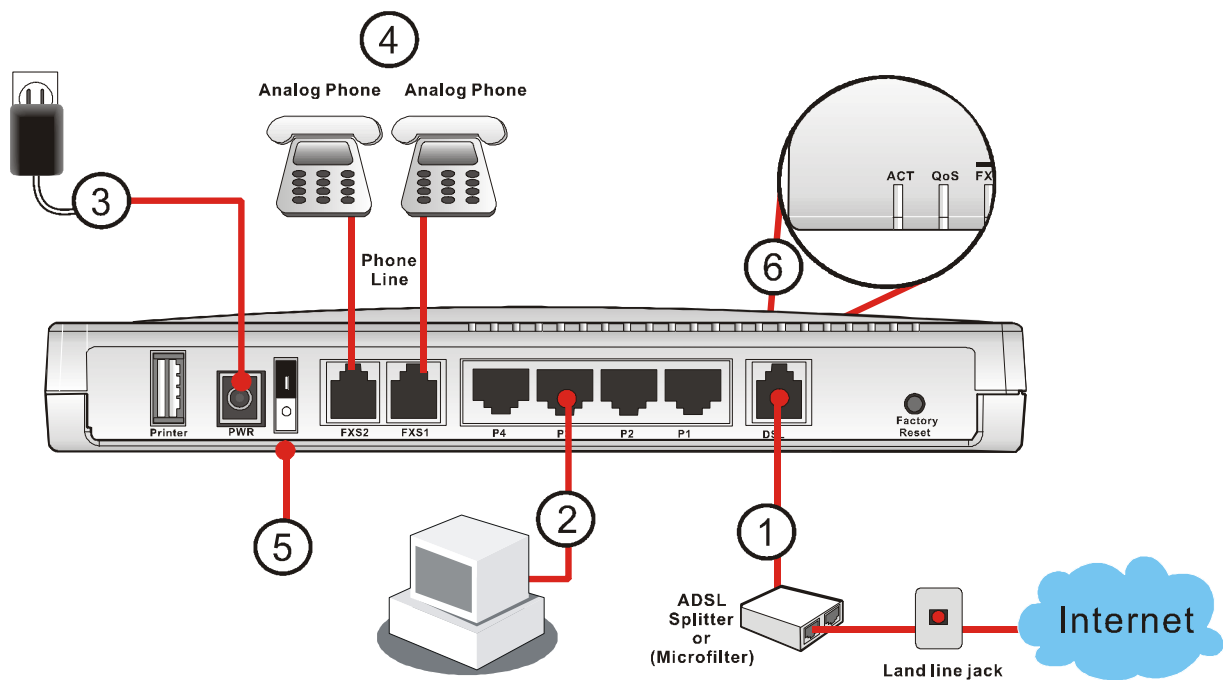
Interface	Description
Printer	Connector for a USB printer.
PWR	Connector for a power adapter with 12-15VDC.
ON/OFF	Power Switch.
FXS2 & FXS1	Connectors for telephone set and analog phone with VoIP communication.
LAN P4 – P1	Connectors for local networked devices.
DSL	Connector for accessing Internet with the ADSL, ADSL2/2+ line
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.

1.2 Hardware Installation

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

1. Connect the DSL interface to the external ADSL splitter with an ADSL line cable.
2. Connect one port of 4-port switch to your computer with a RJ-45 cable. This device allows you to connect 4 PCs directly.
3. Connect one end of the power cord to the power port of this device. Connect the other end to the wall outlet of electricity.
4. Connect the telephone sets with phone lines (for using VoIP function). For the user of the model without VoIP ports, skip this step.
5. Power on the router.
6. Check the **ACT** LED to assure network connections.

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



Caution: Each of the FXS ports can be connected to an analog phone only. Do not connect the FXS ports to the telephone wall jack. This connection might damage your router.

2

Configuring Basic Settings

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

This chapter explains how to setup a password for an administrator and how to adjust basic settings for accessing Internet successfully. Be aware that only the administrator can change the router configuration.

2.1 Changing Password

To change the password for this device, you have to access into the web browse with default password first.

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

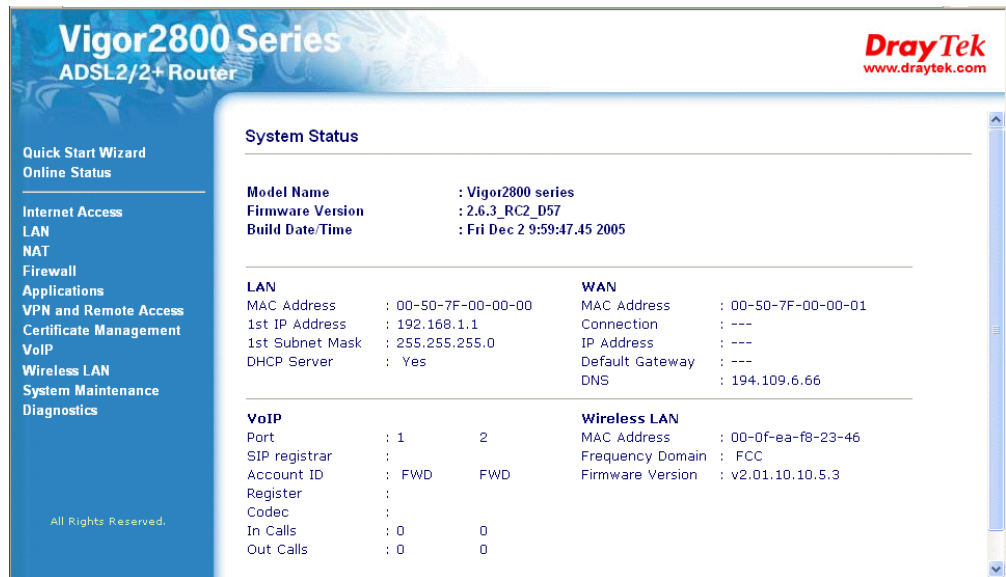


Notice: You may either simply set up your computer to get IP dynamically from the router or set up the IP address of the computer to be the same subnet as **the default IP address of Vigor router 192.168.1.1**. For the detailed information, please refer to the later section - Trouble Shooting of this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

2. 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. Please type default values (both username and password are Null) on the window for the first time accessing and click **OK** for next screen.



3. Now, the **Main Screen** will pop up.



- Go to **System Maintenance** page and choose **Administrator Password**.

System Maintenance >> Administrator Password Setup

Administrator Password

Old Password	<input type="text"/>
New Password	<input type="text"/>
Retype New Password	<input type="text"/>

OK

- Enter the login password (the default is blank) on the field of **Old Password**. Type a new one in the field of **New Password** and retype it on the field of **Retype New Password**. Then click **OK** to continue.
- Now, the password has been changed. Next time, use the new password to access the Web Configurator for this router.



2.2 Quick Start Wizard

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

Quick Start Wizard

1. Enter login password

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

New Password

Confirm Password

< Back Next > Finish Cancel

2.2.1 Adjusting Protocol/Encapsulation

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

Quick Start Wizard

2. Connect to Internet

VPI	<input type="text" value="8"/>	<input type="button" value="Auto detect"/>
VCI	<input type="text" value="36"/>	
Protocol / Encapsulation	<input type="text" value="1483 Routed IP VC-Mux (IPoA)"/>	
Fixed IP		PPPoE LLC/SNAP
IP Address		PPPoE VC MUX
Subnet Mask		PPPoA LLC/SNAP
Default Gateway		PPPoA VC MUX
Primary DNS		1483 Bridged IP LLC
Second DNS	<input type="text"/>	1483 Routed IP LLC
		1483 Bridged IP VC-Mux
		1483 Routed IP VC-Mux (IPoA)
		1483 Bridged IP (IPoE)

< Back Next > Finish Cancel

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

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

VCI Stands for **Virtual Channel Identifier**. It is a 16-bit field inside ATM cell's header that indicates the cell's next destination as it

travels through the network. A virtual channel is a logical connection between two end devices on the network.

Protocol/Encapsulation	Select an IP mode for this WAN interface. There are several available modes for Internet access such as PPPoE , PPPoA , Bridged IP and Routed IP .
Fixed IP	Click Yes to specify a fixed IP for the router. Otherwise, click No (Dynamic IP) to allow the router choosing a dynamic IP. If you choose No , the following IP Address, Subnet Mask and Default Gateway will not be changed.
IP Address	Assign an IP address for the protocol that you select.
Subnet Mask	Assign a subnet mask value for the protocol of Routed IP and Bridged IP .
Default Gateway	Assign an IP address to the gateway for the protocol of Routed IP and Bridged IP .
Primary DNS	Assign an IP address to the primary DNS.
Second DNS	Assign an IP address to the secondary DNS.

2.2.2 PPPoE/PPPoA

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

PPPoE or PPPoA is used for most of DSL modem users. All local users can share one PPPoE or PPPoA 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** or **PPPoA** connection, please select **PPPoE** or **PPPoA** for this router. The following page will be shown:

[Quick Start Wizard](#)

3. Set PPPoE / PPPoA

ISP Name

User Name

Password

Confirm Password

Always On

Idle Timeout Seconds

< Back Next > Finish Cancel

ISP Name Assign a specific name for ISP requirement.

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.
- Always On** Check this box to allow the router connecting to Internet forever.
- Idle Timeout** Type in the value (unit is second) as the idle timeout of the connection. When the time is expired, the internet connection will be dropped immediately.

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

Quick Start Wizard

4. Please confirm your settings:

VPI	: 8
VCI	: 35
Protocol / Encapsulation	: PPPoE / LLC
Fixed IP	: No
Primary DNS	:
Secondary DNS	:
Always On	: Yes

Click **Finish**. The online status of this protocol will be shown as below.

Online Status

System Status				System Uptime: 0:2:33		
LAN Status		Primary DNS: 168.95.192.1		Secondary DNS: 168.95.1.1		
IP Address	TX Packets	RX Packets				
192.168.1.1	458	408				
WAN Status		GW IP Addr: 61.216.116.254			<input style="border: 1px solid #ccc; padding: 2px 5px;" type="button" value=" Drop PPPoE "/>	
Mode	IP Address	TX Packets	TX Rate	RX Packets	RX Rate	Up Time
PPPoE	61.216.234.174	8	3	40	14	0:01:30
ADSL Information (ADSL Firmware Version: Y.1.28.187)						
ATM Statistics		TX Blocks	RX Blocks	Corrected Blocks		Uncorrected Blocks
		529	100	0		2
ADSL Status	Mode	State	Up Speed	Down Speed	SNR Margin	Loop Att.
	G.DMT	SHOWTIME	704000	7552000	10.0	28.0

2.2.3 Bridged IP

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

Quick Start Wizard

2. Connect to Internet

VPI	<input type="text" value="8"/>	<input type="button" value="Auto detect"/>
VCI	<input type="text" value="35"/>	
Protocol / Encapsulation	<input type="text" value="1483 Bridged IP LLC"/>	
Fixed IP	<input type="radio"/> Yes <input checked="" type="radio"/> No(Dynamic IP)	
IP Address	<input type="text"/>	
Subnet Mask	<input type="text"/>	
Default Gateway	<input type="text"/>	
Primary DNS	<input type="text"/>	
Second DNS	<input type="text"/>	

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

Quick Start Wizard

4. Please confirm your settings:

VPI	:	8
VCI	:	35
Protocol / Encapsulation	:	1483 Bridge LLC
Fixed IP	:	No
Primary DNS	:	
Secondary DNS	:	

Click **Finish**. The online status of this protocol will be shown as below.

Online Status

System Status		System Uptime: 0:1:21				
LAN Status		Primary DNS: 194.109.6.66		Secondary DNS: 194.98.0.1		
IP Address	TX Packets	RX Packets				
192.168.1.1	277	238				
WAN Status		GW IP Addr: 192.168.225.120				
Mode	IP Address	TX Packets	TX Rate	RX Packets	RX Rate	Up Time
Static IP	192.168.225.10	3	8	12	87	0:00:21
ADSL Information		(ADSL Firmware Version: D.57.2.14)				
ATM Statistics		TX Blocks	RX Blocks	Corrected Blocks	Uncorrected Blocks	
518		116	16	0		
ADSL Status	Mode	State	Up Speed	Down Speed	SNR Margin	Loop Att.
	ADSL2+	SHOWTIME	1088800	22341300	6.5	0.5

2.2.4 Routed IP

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

Quick Start Wizard

2. Connect to Internet

VPI	<input type="text" value="8"/>	<input type="button" value="Auto detect"/>
VCI	<input type="text" value="35"/>	
Protocol / Encapsulation	<input type="text" value="1483 Routed IP LLC"/>	
Fixed IP	<input checked="" type="radio"/> Yes <input type="radio"/> No(Dynamic IP)	
IP Address	<input type="text" value="192.168.225.10"/>	
Subnet Mask	<input type="text" value="255.255.255.0"/>	
Default Gateway	<input type="text" value="192.168.225.120"/>	
Primary DNS	<input type="text"/>	
Second DNS	<input type="text"/>	

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

Quick Start Wizard

4. Please confirm your settings:

VPI	:	8
VCI	:	35
Protocol / Encapsulation	:	1483 Route LLC
Fixed IP	:	Yes
IP Address	:	192.168.225.10
Subnet Mask	:	255.255.255.0
Default Gateway	:	192.168.225.120
Primary DNS	:	
Secondary DNS	:	

Click **Finish**. The online status of this protocol will be shown as below.

Online Status

System Status							System Uptime: 0:1:21
LAN Status		Primary DNS: 194.109.6.66			Secondary DNS: 194.98.0.1		
IP Address		TX Packets		RX Packets			
192.168.1.1		277		238			
WAN Status		GW IP Addr: 192.168.225.120					
Mode	IP Address	TX Packets	TX Rate	RX Packets	RX Rate	Up Time	
Static IP	192.168.225.10	3	8	12	87	0:00:21	
ADSL Information (ADSL Firmware Version: D.57.2.14)							
ATM Statistics	TX Blocks	RX Blocks	Corrected Blocks	Uncorrected Blocks			
	518	116	16	0			
ADSL Status	Mode	State	Up Speed	Down Speed	SNR Margin	Loop Att.	
	ADSL2+	SHOWTIME	1088800	22341300	6.5	0.5	

2.3 Online Status

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

Online status for PPPoA/PPPoE

Online Status

System Status							System Uptime: 0:2:33
LAN Status		Primary DNS: 168.95.192.1			Secondary DNS: 168.95.1.1		
IP Address		TX Packets		RX Packets			
192.168.1.1		458		408			
WAN Status		GW IP Addr: 61.216.116.254					Drop PPPoE
Mode	IP Address	TX Packets	TX Rate	RX Packets	RX Rate	Up Time	
PPPoE	61.216.234.174	8	3	40	14	0:01:30	
ADSL Information (ADSL Firmware Version: Y.1.28.187)							
ATM Statistics	TX Blocks	RX Blocks	Corrected Blocks	Uncorrected Blocks			
	529	100	0	2			
ADSL Status	Mode	State	Up Speed	Down Speed	SNR Margin	Loop Att.	
	G.DMT	SHOWTIME	704000	7552000	10.0	28.0	

Online status for Bridge

Online Status

System Status							System Uptime: 0:1:21
LAN Status		Primary DNS: 194.109.6.66			Secondary DNS: 194.98.0.1		
IP Address		TX Packets		RX Packets			
192.168.1.1		277		238			
WAN Status		GW IP Addr: 192.168.225.120					
Mode	IP Address	TX Packets	TX Rate	RX Packets	RX Rate	Up Time	
Static IP	192.168.225.10	3	8	12	87	0:00:21	
ADSL Information (ADSL Firmware Version: D.57.2.14)							
ATM Statistics	TX Blocks	RX Blocks	Corrected Blocks	Uncorrected Blocks			
	518	116	16	0			
ADSL Status	Mode	State	Up Speed	Down Speed	SNR Margin	Loop Att.	
	ADSL2+	SHOWTIME	1088800	22341300	6.5	0.5	

Online status for Routed IP

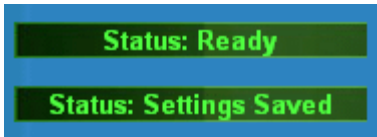
Online Status

System Status			System Uptime: 0:1:21			
LAN Status		Primary DNS: 194.109.6.66		Secondary DNS: 194.98.0.1		
IP Address	TX Packets	RX Packets				
192.168.1.1	277	238				
WAN Status		GW IP Addr: 192.168.225.120				
Mode	IP Address	TX Packets	TX Rate	RX Packets	RX Rate	Up Time
Static IP	192.168.225.10	3	8	12	87	0:00:21
ADSL Information		(ADSL Firmware Version: D.57.2.14)				
ATM Statistics	TX Blocks	RX Blocks	Corrected Blocks		Uncorrected Blocks	
	518	116	16		0	
ADSL Status	Mode	State	Up Speed	Down Speed	SNR Margin	Loop Att.
	ADSL2+	SHOWTIME	1088800	22341300	6.5	0.5

Primary DNS	Displays the assigned IP address of the primary DNS.
Secondary DNS	Displays the assigned IP address of the secondary DNS.
IP Address (in LAN)	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.
GW IP Addr:	Displays the assigned IP address of the default gateway.
IP Address (in WAN)	Displays the IP address of the WAN interface.
TX Rate	Displays the speed of transmitted packets at the WAN interface.
RX Rate	Displays the speed of received packets at the WAN interface.
Up Time	Displays the total system uptime of the interface.
TX Blocks	Displays the total number of transmitted ATM Blocks.
RX Blocks	Displays the total number of received ATM Blocks.
Corrected Blocks	Displays the total number of received ATM Blocks corrupted but corrected.
Uncorrected Blocks	Displays the total number of received ATM Blocks corrupted but uncorrected.
Mode	Displays the modulation mode used: G.DMT, G.Lite, or T1.413.
State	Displays the DSL line status.
Up Speed	Displays the transmission speed of uploading data (bits/ second).
Down Speed	Displays the transmission speed of downloading data (bits/ second).
SNR Margin	Displays the value of Signal Noise Ratio Margin (dB). The higher value has better signal quality.
Loop Att.	Displays the value of subscribed Loop Attenuation.

2.4 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.

3

Advanced Web Configuration

After finished basic configuration of the router, you can access Internet with ease. For the people who want to adjust more setting for suiting his/her request, please refer to this chapter for getting detailed information about the advanced configuration of this router. As for other examples of application, please refer to chapter 4.

3.1 Internet Access

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

To acquire a public IP address from your ISP for Vigor router as a customer premises equipment, there are three common protocols: Point to Point Protocol over Ethernet (**PPPoE**), **PPPoA** and **MPoA**. **Multi-PVC** is provided for more advanced setup of the above.

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

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

Below shows the menu items for Internet Access.



3.1.2 PPPoE/PPPoA

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

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

Internet Access >> PPPoE / PPPoA

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

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

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

VPI - Type in the value provided by ISP.

VCI - Type in the value provided by ISP.

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

Protocol - Drop down the list to choose the one provided by ISP.

If you have already used **Quick Start Wizard** to set the protocol, then it is not necessary for you to change any settings in this group.

PPPoE Pass-through

The router offers PPPoE dial-up connection. Besides, you also can establish the PPPoE connection directly from local clients to your ISP via the Vigor router.

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

ISP Access Setup

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

ISP Name – Type in the ISP Name provided by ISP in this field.

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

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

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

Always On – Check this box if you want the router keeping connecting to Internet forever.

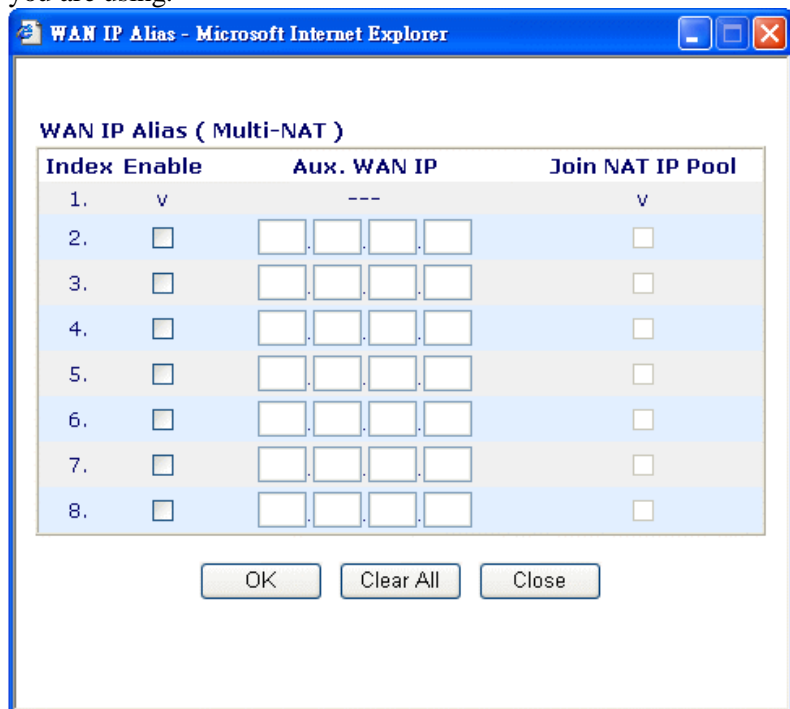
Idle Timeout – Set the timeout for breaking down the Internet after passing through the time without any action.

IP Address From ISP

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

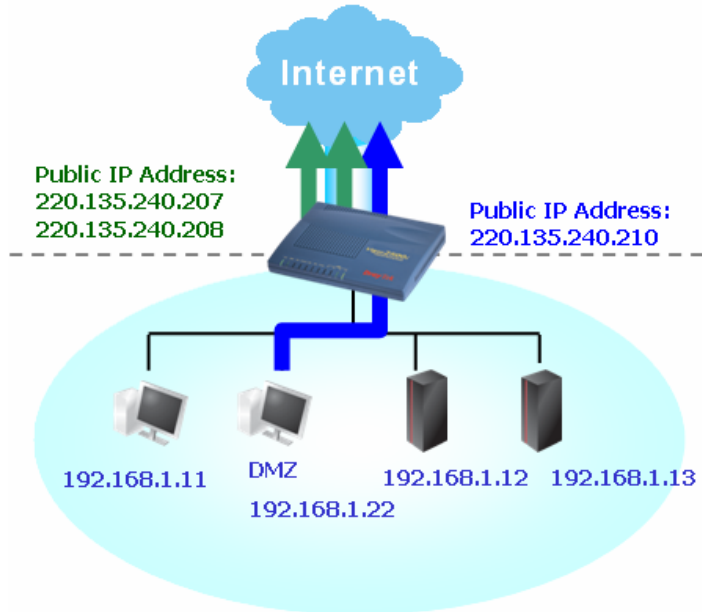
Fixed IP – Click **Yes** to use this function and type in a fixed IP address in the box.

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.

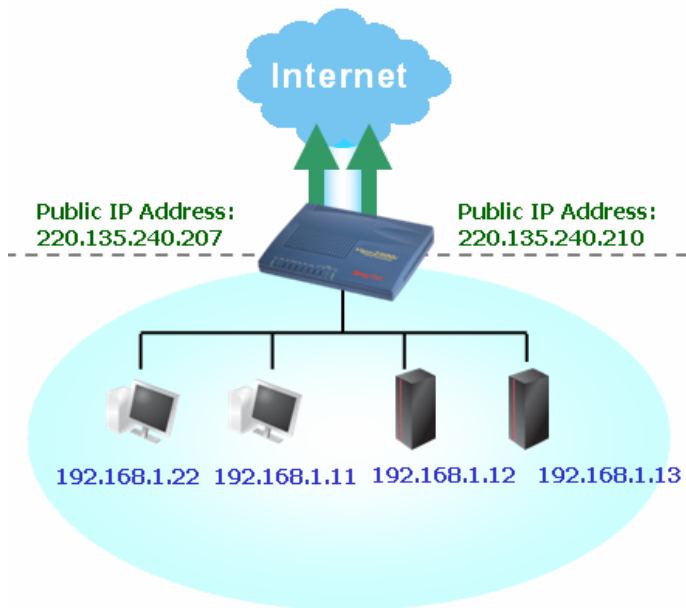


By checking the checkbox **Join NAT IP Pool**, data from NAT hosts

will be round-robin forwarded on a session basis.



If you do not check **Join NAT IP Pool**, you can still use these public IP addresses for other purpose, such as DMZ host, Open Ports.



Default MAC Address Type in MAC address for the router. You can use **Default MAC Address** or specify another MAC address for your necessity.
MAC Address – Type in the MAC address for the router manually.

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.

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

3.1.3 MPoA

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

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

Internet Access >> MPoA (RFC1483/2684)

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

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

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

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

VPI - Type in the value provided by ISP.

VCI - Type in the value provided by ISP.

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

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

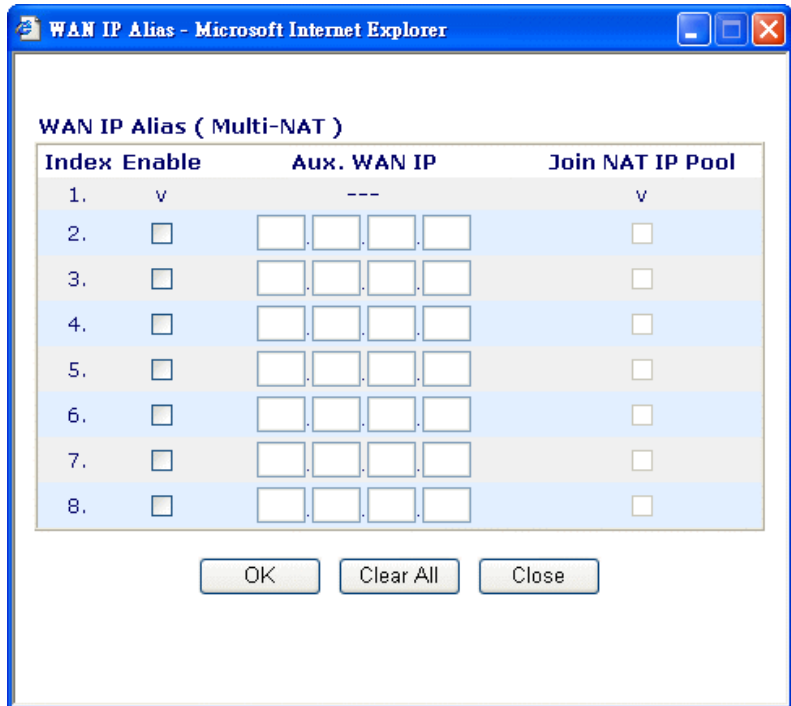
WAN IP Network Settings This group allows you to obtain an IP address automatically and allows you type in IP address manually.

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

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

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

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.



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

Default MAC Address Type in MAC address for the router. You can use **Default MAC Address** or specify another MAC address for your necessity.
MAC Address – Type in the MAC address for the router manually.

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

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

3.1.4 Multi-PVCs

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

[Internet Access >> Multi-PVCs Setup](#)

Multi-PVCs

Channel	Enable	VPI	VCI	QoS Type	Protocol	Encapsulation
1.	<input checked="" type="checkbox"/>	8	36	UBR	PPPoE	LLC/SNAP
2.	<input checked="" type="checkbox"/>	8	36	UBR	MPoA	1483 Bridged IP LLC
3.	<input type="checkbox"/>	8	37	UBR	PPPoA	VC MUX
4.	<input type="checkbox"/>	8	38	UBR	PPPoA	VC MUX
5.	<input type="checkbox"/>	8	39	UBR	PPPoA	VC MUX
6.	<input type="checkbox"/>	8	40	UBR	PPPoA	VC MUX
7.	<input type="checkbox"/>	8	41	UBR	PPPoA	VC MUX
8.	<input type="checkbox"/>	8	42	UBR	PPPoA	VC MUX

OK Clear Cancel

Enable Type in the primary IP address for the router. If necessary, type
VPI Type in the value provided by your ISP.
VCI Type in the value provided by your ISP.
QoS Type Select a proper QoS type for the channel.

QoS Type

Protocol Select a proper protocol for this channel.

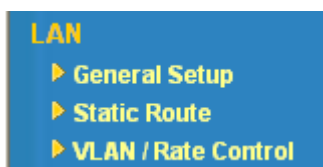
Protocol

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

Encapsulation

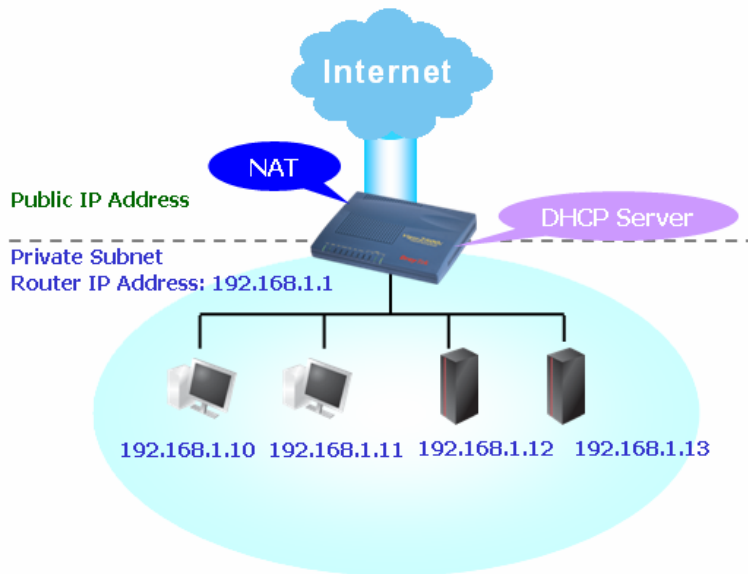
3.2 LAN

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.

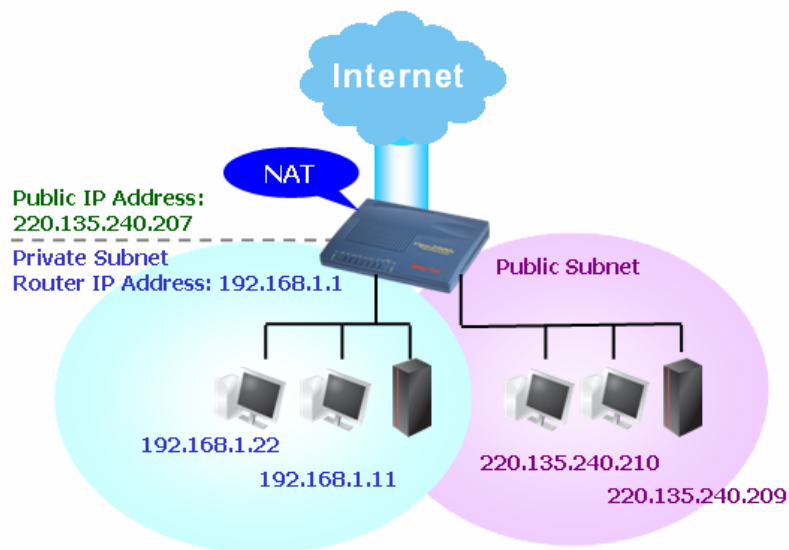


3.2.1 Basics of LAN

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)

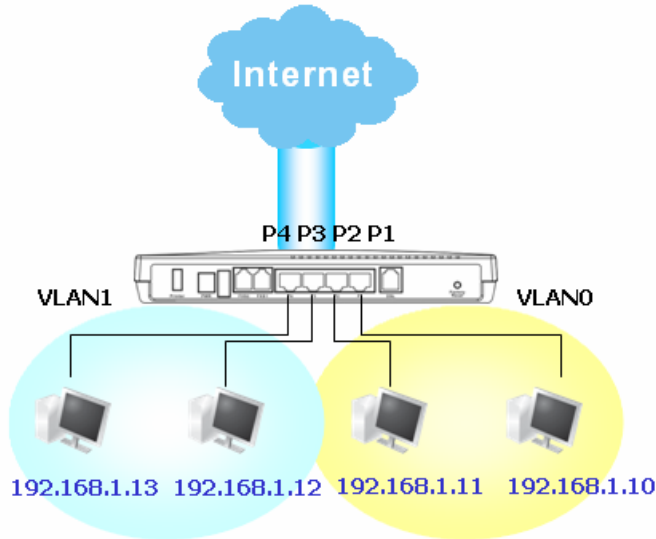
Vigor router will exchange routing information with neighboring routers using the RIP to accomplish IP routing. This allows users to change the information of the router such as IP address and the routers will automatically inform for each other.

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



3.2.2 General Setup

This page provides you the general settings for LAN.

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

[LAN >> General Setup](#)

Ethernet TCP / IP and DHCP Setup	
LAN IP Network Configuration	
For NAT Usage	
1st IP Address	<input type="text" value="192.168.1.1"/>
1st Subnet Mask	<input type="text" value="255.255.255.0"/>
For IP Routing Usage <input type="radio"/> Enable <input checked="" type="radio"/> Disable	
2nd IP Address	<input type="text" value="192.168.2.1"/>
2nd Subnet Mask	<input type="text" value="255.255.255.0"/>
<input type="checkbox"/> 2nd Subnet DHCP Server	
RIP Protocol Control	<input type="text" value="Disable"/> ▼
DHCP Server Configuration	
<input checked="" type="radio"/> Enable Server <input type="radio"/> Disable Server	
Relay Agent: <input type="radio"/> 1st Subnet <input type="radio"/> 2nd Subnet	
Start IP Address	<input type="text" value="192.168.1.10"/>
IP Pool Counts	<input type="text" value="50"/>
Gateway IP Address	<input type="text" value="192.168.1.1"/>
DHCP Server IP Address for Relay Agent	
<input type="text"/>	
DNS Server IP Address	
Primary IP Address	
<input type="text"/>	
Secondary IP Address	
<input type="text"/>	
<input type="button" value="OK"/>	

- 1st IP Address** Type in private IP address for connecting to a local private network (Default: 192.168.1.1).
- 1st Subnet Mask** Type in an address code that determines the size of the network. (Default: 255.255.255.0/ 24)
- For IP Routing Usage** Click **Enable** to invoke this function. The default setting is **Disable**.
- 2nd IP Address** Type in secondary IP address for connecting to a subnet. (Default: 192.168.2.1/ 24)
- 2nd Subnet Mask** An address code that determines the size of the network. (Default: 255.255.255.0/ 24)

2nd DHCP Server

You can configure the router to serve as a DHCP server for the 2nd subnet.

The screenshot shows the '2nd DHCP Server' configuration window in a Microsoft Internet Explorer browser. The window title is 'Router Web Configurator - Microsoft Internet Explorer'. The main content area is titled '2nd DHCP Server' and contains the following elements:

- 'Start IP Address': An empty text input field.
- 'IP Pool Counts': A text input field containing '0' with '(max. 10)' to its right.
- A table with three columns: 'Index', 'Matched MAC Address', and 'given IP Address'. The table is currently empty.
- 'MAC Address': A series of six small input boxes for entering a MAC address in hexadecimal format.
- Buttons: 'Add', 'Remove', 'Edit', and 'Cancel' are positioned below the MAC address input boxes. 'OK', 'Clear All', and 'Close' are at the bottom of the window.

Start IP Address: Enter a value of the IP address pool for the DHCP server to start with when issuing IP addresses. If the 2nd IP address of your router is 220.135.240.1, the starting IP address must be 220.135.240.2 or greater, but smaller than 220.135.240.254.

IP Pool Counts: Enter the number of IP addresses in the pool. The maximum is 10. For example, if you type 3 and the 2nd IP address of your router is 220.135.240.1, the range of IP address by the DHCP server will be from 220.135.240.2 to 220.135.240.11.

MAC Address: 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 for 2nd DHCP server will help router to assign the correct IP address of the correct subnet to the correct host. So those hosts in 2nd subnet won't get an IP address belonging to 1st subnet.

RIP Protocol Control

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

RIP Protocol Control

The screenshot shows a dropdown menu for 'RIP Protocol Control'. The menu is open, displaying three options: 'Disable' (which is selected and highlighted in blue), '1st Subnet', and '2nd Subnet'.

1st Subnet - Select the router to change the RIP information of the 1st subnet with neighboring routers.

2nd Subnet - Select the router to change the RIP information of the 2nd subnet with neighboring 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.

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 – (1st subnet/2nd subnet) 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 Configuration

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

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

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

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

System Status		System Uptime:0:18:40	
LAN Status	Primary DNS: 194.109.6.66	Secondary DNS: 194.98.0.1	
IP Address	TX Packets	RX Packets	
192.168.1.1	5940	4996	

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

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

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

3.2.3 Static Route

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

LAN >> Static Route Setup

Static Route Configuration			View Routing Table		
Index	Destination Address	Status	Index	Destination Address	Status
1.	???	?	6.	???	?
2.	???	?	7.	???	?
3.	???	?	8.	???	?
4.	???	?	9.	???	?
5.	???	?	10.	???	?

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

Index The number (1 to 10) under Index allows you to open next page to setup 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.

[Diagnostics >> View Routing Table](#)

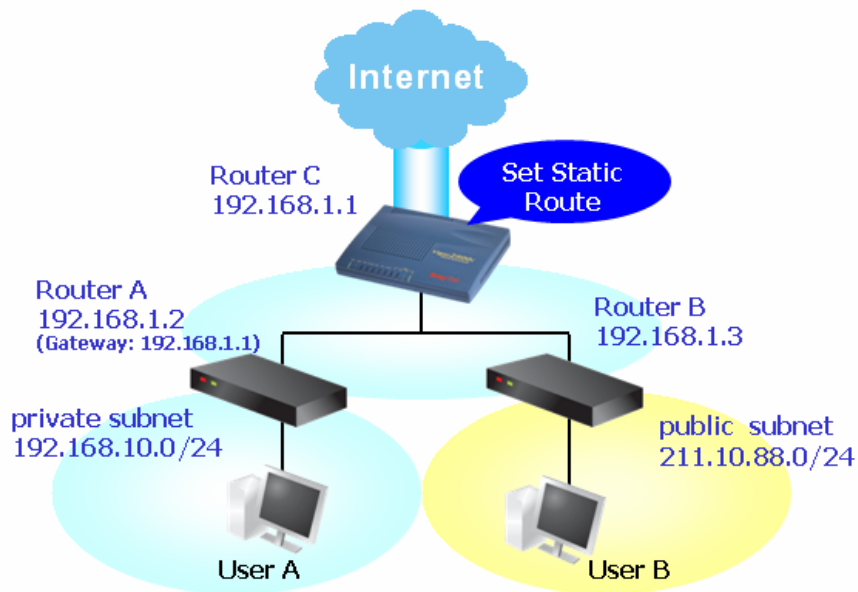
Current Running Routing Table		Refresh
Key: C - connected, S - static, R - RIP, * - default, ~ - private		
C~	192.168.1.0/ 255.255.255.0 is directly connected, IFO	

Add Static Routers 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**. Please add a static route as shown below, which regulates all packets destined to 192.168.10.0 will be forwarded to 192.168.1.2. Click **OK**.

LAN >> Static Route Setup

Index No. 1

Status/Action	Active/Add
Destination IP Address	192.168.10.0
Subnet Mask	255.255.255.0
Gateway IP Address	192.168.1.2
Network Interface	LAN

OK Cancel

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 192.168.1.2.

LAN >> Static Route Setup

Index No. 2

Status/Action	Active/Add
Destination IP Address	211.100.88.0
Subnet Mask	255.255.255.0
Gateway IP Address	192.168.1.3
Network Interface	LAN

OK Cancel

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

Diagnostics >> View Routing Table

Current Running Routing Table

| Refresh |

```
Key: C - connected, S - static, R - RIP, * - default, ~ - private
S~   192.168.10.0/ 255.255.255.0 via 192.168.1.2, IFO
C~   192.168.1.0/ 255.255.255.0 is directly connected, IFO
S~   211.100.88.0/ 255.255.255.0 via 192.168.1.3, IFO
```

Delete Static Route

1. Go to **LAN** page and click **Static Route** to open the web page. Select the index number of the one that you want to delete.
2. Select **Empty/Clear** from the drop-down menu, and then click the **OK** button to delete the route.

LAN >> Static Route Setup

Index No. 2

Status/Action	Active/Add
Destination IP Address	
Subnet Mask	
Gateway IP Address	192.168.1.3
Network Interface	LAN

OK Cancel

Deactivate Static Route

3. Go to **LAN** page and click **Static Route** to open the web page. Select the index number of the one that you want to delete.
4. Select **Inactive/Disable** from the drop-down menu, and then click the **OK** button to delete the route.

3.2.4 VLAN/Rate Control

Virtual LAN function provides you a very convenient way to manage hosts by grouping them based on the physical port. You can also manage the in/out rate of each port. Go to **LAN** menu and select **VLAN/Rate Control**. The following page will appear. Click **Enable** to invoke VLAN function. **Rate Control** manages the transmission rate of data in and out through the router.

LAN >> VLAN / Rate Control

VLAN Configuration

Enable

	P1	P2	P3	P4
VLAN0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
VLAN1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
VLAN2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
VLAN3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Rate Control

Enable

	Out		In	
	Enable	Rate	Enable	Rate
P1	<input type="checkbox"/>	640Kbps	<input type="checkbox"/>	640Kbps
P2	<input type="checkbox"/>	640Kbps	<input type="checkbox"/>	640Kbps
P3	<input type="checkbox"/>	640Kbps	<input type="checkbox"/>	640Kbps
P4	<input type="checkbox"/>	640Kbps	<input type="checkbox"/>	640Kbps

OK Clear Cancel

Enable

Check this box to enable this function (for VLAN Configuration).

P1 – P4

Check the box to make the computer connecting to the port being grouped in specified VLAN. Be aware that each port can be grouped in different VLAN at the same time only if you check the box. For example, if you check the boxes of VLAN0-P1 and VLAN1-P1, you can make P1 to be grouped under VLAN0 and VLAN1 simultaneously.

VLAN0-3

This router allows you to set 4 groups of virtual LAN.

Enable

Check this box to enable this function (for Rate Control). The rate control will limit the transmission rate for data in and out. Check the corresponding boxes to enable the rate control function for different ports.

Out

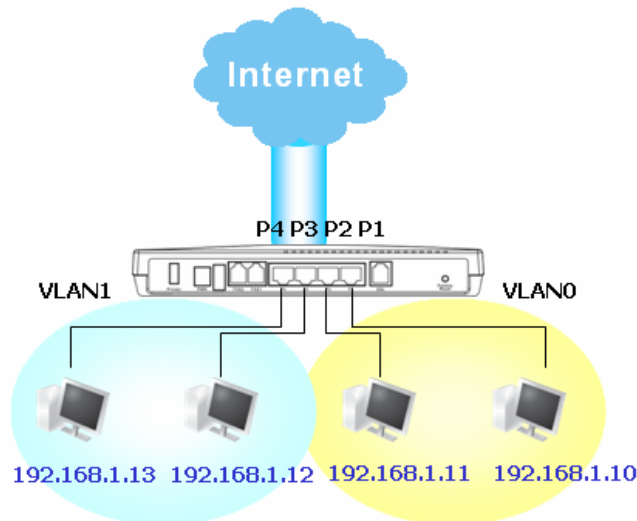
It decides the rate of data transmission for output. When you check the box of **Enable**, please also decide the rate by using the drop down list of **Rate**.

In

It decides the rate of data transmission for input. When you check the box of **Enable**, please also decide the rate by using the drop down list of **Rate**.

To add or remove a VLAN, please refer to the following example.

1. If, VLAN 0 is consisted of hosts linked to P1 and P2 and VLAN 1 is consisted of hosts linked to P3 and P4.



2. After checking the box to enable VLAN function, you will check the table according to the needs as shown below.

VLAN Configuration

Enable

	P1	P2	P3	P4
VLAN0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
VLAN1	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
VLAN2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
VLAN3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. To remove VLAN, uncheck the needed box and click **OK** to save the results.

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.

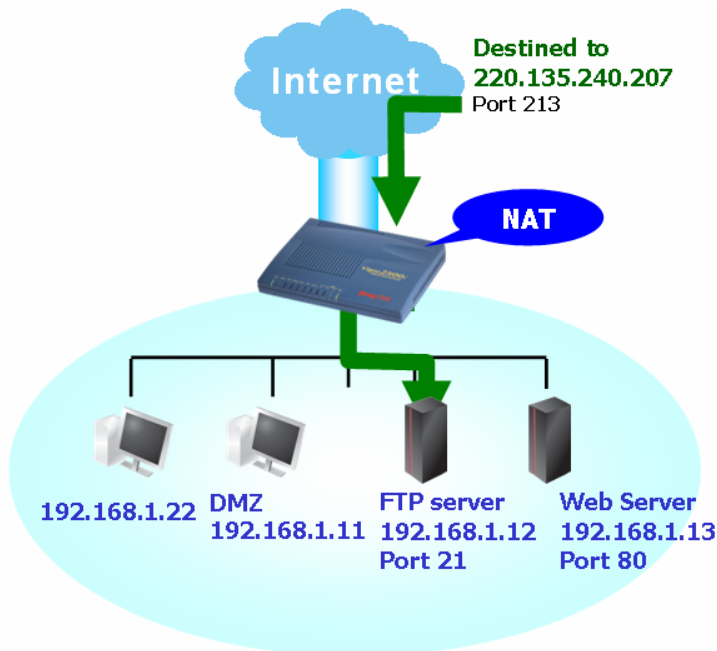
On NAT page, you will see the private IP address defined in RFC-1918. Usually we use the 192.168.1.0/24 subnet for the router. As stated before, the NAT facility can map one or more IP addresses and/or service ports into different specified services. In other words, the NAT function can be achieved by 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 10 port-mapping entries for the internal hosts.

NAT >> Configure Port Redirection Table

Port Redirection Table

Index	Service Name	Protocol	Public Port	Private IP	Private Port	Active
1	<input type="text"/>	--- <input type="button" value="v"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="checkbox"/>
2	<input type="text"/>	--- <input type="button" value="v"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="checkbox"/>
3	<input type="text"/>	--- <input type="button" value="v"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="checkbox"/>
4	<input type="text"/>	--- <input type="button" value="v"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="checkbox"/>
5	<input type="text"/>	--- <input type="button" value="v"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="checkbox"/>
6	<input type="text"/>	--- <input type="button" value="v"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="checkbox"/>
7	<input type="text"/>	--- <input type="button" value="v"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="checkbox"/>
8	<input type="text"/>	--- <input type="button" value="v"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="checkbox"/>
9	<input type="text"/>	--- <input type="button" value="v"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="checkbox"/>
10	<input type="text"/>	--- <input type="button" value="v"/>	<input type="text" value="0"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="checkbox"/>

OK

- Service Name** Enter the description of the specific network service.
- Protocol** Select the transport layer protocol (TCP or UDP).
- Public Port** Specify which port can be redirected to the specified **Private IP and Port** of the internal host.
- Private IP** Specify the private IP address of the internal host providing the service.
- Private Port** Specify the private port number of the service offered by the internal host.
- Active** Check this box to activate the port-mapping entry you have defined.

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

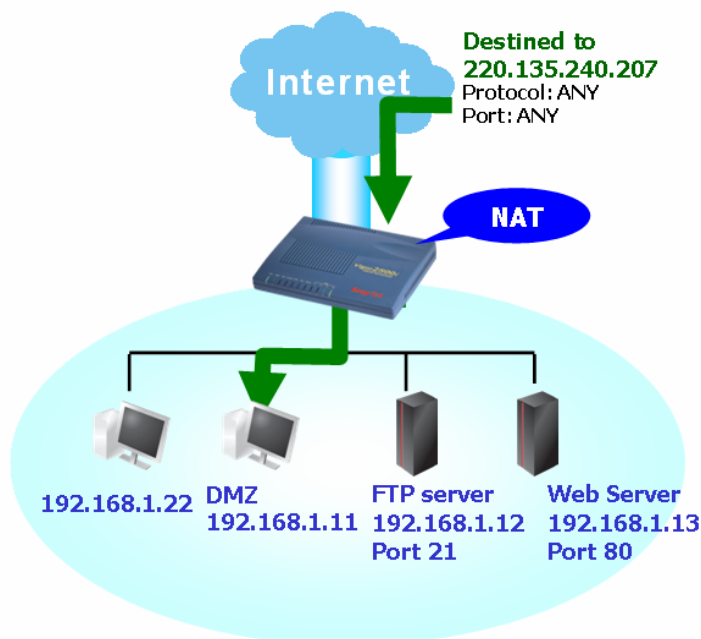
For example, the built-in web configurator in the router is with default port 80, which may conflict with the web server in the local network, http://192.168.1.13:80. Therefore, you need to **change the router's http port to any one other than the default port 80** to avoid conflict, such as 8080. This 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.

Management Setup

<p>Management Access Control</p> <p><input type="checkbox"/> Enable remote firmware upgrade(FTP)</p> <p><input type="checkbox"/> Allow management from the Internet</p> <p><input checked="" type="checkbox"/> Disable PING from the Internet</p> <p>Access List</p> <table border="1"> <thead> <tr> <th>List</th> <th>IP</th> <th>Subnet Mask</th> </tr> </thead> <tbody> <tr> <td>1</td> <td><input type="text"/></td> <td><input type="text"/></td> </tr> <tr> <td>2</td> <td><input type="text"/></td> <td><input type="text"/></td> </tr> <tr> <td>3</td> <td><input type="text"/></td> <td><input type="text"/></td> </tr> </tbody> </table>	List	IP	Subnet Mask	1	<input type="text"/>	<input type="text"/>	2	<input type="text"/>	<input type="text"/>	3	<input type="text"/>	<input type="text"/>	<p>Management Port Setup</p> <p><input type="radio"/> Default Ports (Telnet: 23, HTTP: 80, HTTPS: 443, FTP: 21)</p> <p><input checked="" type="radio"/> User Define Ports</p> <p>Telnet Port <input type="text" value="23"/></p> <p>HTTP Port <input type="text" value="8080"/></p> <p>HTTPS Port <input type="text" value="443"/></p> <p>FTP Port <input type="text" value="21"/></p> <hr/> <p>SNMP Setup</p> <p><input type="checkbox"/> Enable SNMP Agent</p> <p>Get Community <input type="text" value="public"/></p> <p>Set Community <input type="text" value="private"/></p> <p>Manager Host IP <input type="text"/></p> <hr/> <p>Trap Community <input type="text" value="public"/></p> <p>Notification Host IP <input type="text"/></p> <p>Trap Timeout <input type="text" value="10"/> seconds</p>
List	IP	Subnet Mask											
1	<input type="text"/>	<input type="text"/>											
2	<input type="text"/>	<input type="text"/>											
3	<input type="text"/>	<input type="text"/>											

3.3.2 DMZ Host

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



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

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

NAT >> DMZ Host Setup

DMZ Host Setup

Enable	Private IP	Choose PC
<input checked="" type="checkbox"/>	<input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/>	<input type="button" value="Choose PC"/>

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

NAT >> DMZ Host Setup

DMZ Host Setup

Index	Enable	Aux. WAN IP	Private IP	Choose PC
1.	<input type="checkbox"/>	220.135.240.247	<input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/>	<input type="button" value="Choose PC"/>

Enable

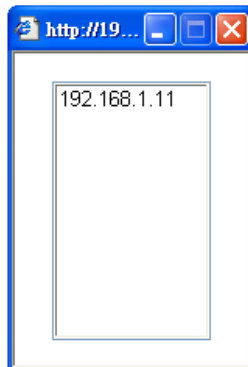
Check to enable the DMZ Host function.

Private IP

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

Choose PC

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



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

NAT >> DMZ Host Setup

DMZ Host Setup

Enable	Private IP	Choose PC
<input checked="" type="checkbox"/>	192.168.1.11	<input type="button" value="Choose PC"/>

3.3.3 Open Ports

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

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

[NAT >> Open Ports Setup](#)

Open Ports Setup

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

- 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.
- Aux. WAN IP** Display the private IP address of the local host that you specify in WAN Alias. If you did not specify any IP address in WAN Alias, this item will not be shown.
- Local IP Address** Display the private IP address of the local host offering the service.
- Status** Display the state for the corresponding entry. X or V is to represent the **Inactive** or **Active** state.

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

NAT >> Open Ports Setup >> Edit Open Ports Setup

Index No. 1

Enable Open Ports

Comment: P2P WAN IP: 192.168.1.56

Local Computer: 192 | 168 | 1 | 11 Choose PC

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

OK Clear Cancel

However, if you previously have set up **WAN Alias** in **Internet Access>>PPPoE/PPPoA** or **Internet Access>>MPoA**, you will find that **WAN IP** appeared for your selection.

Enable Open Ports Check to enable this entry.

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

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.

NAT >> Open Ports Setup

Open Ports Setup

Index	Comment	Aux. WAN IP	Local IP Address	Status
1.	P2P	192.168.1.56	192.168.1.11	v
2.				x
3.				x
4.				x
5.				x
6.				x
7.				x
8.				x
9.				x
10.				x

Clear All

3.4 Firewall

3.4.1 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.

The most basic security concept is to set user name and password while you install your router. The administrator login will prevent unauthorized access to the router configuration from your router.

Quick Start Wizard

1. Enter login password

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

New Password	<input type="text"/>
Confirm Password	<input type="text"/>

If you did not set password during installation; you can go to **System Maintenance** to set up your password.

System Maintenance >> Administrator Password Setup

Administrator Password

Old Password	<input type="text"/>
New Password	<input type="text"/>
Retype New Password	<input type="text"/>

Firewall Facilities

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

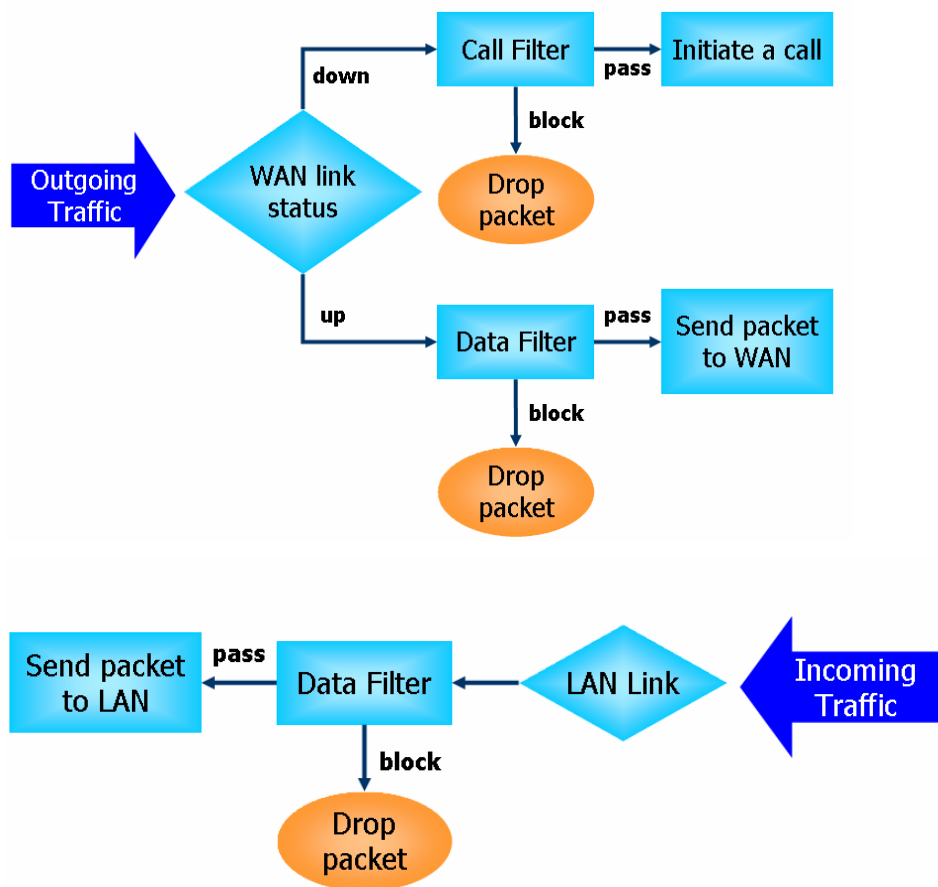
- User-configurable IP filter (Call Filter/ Data Filter).
- Stateful Packet Inspection (SPI): tracks packets and denies unsolicited incoming data
- Selectable Denial of Service (DoS) /Distributed DoS (DDoS) attacks protection
- URL Content Filter

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.

Instant Messenger (IM) and Peer-to-Peer (P2P) Application Blocking

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 misuse 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 IM and P2P blocking functionality.

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. TCP Flag scan
5. Trace route
6. IP options
7. Unknown protocol
8. Land attack
9. Smurf attack
10. SYN fragment
11. ICMP fragment
12. Tear drop attack
13. Fraggle attack
14. Ping of Death attack
15. TCP/UDP port scan

Content Filtering

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.

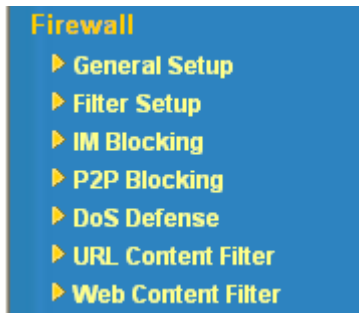
On the other hand, Vigor router can prevent user from accidentally downloading malicious codes from web pages. It's very common that malicious codes conceal in the executable objects, such as ActiveX, Java Applet, compressed files, and other executable files. Once downloading these types of files from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

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, powered by SurfControl. The database covering over 70 languages and 200 countries, over 1 billion Web pages divided into 40 easy-to-understand categories. 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.

Below shows the menu items for Firewall.



3.4.2 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, **Enable Stateful packet inspection**, **Apply IP filter to VPN incoming packets**, **Drop non-http connection on TCP port 80**, and **Accept incoming fragmented UDP packets**.

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

Firewall >> General Setup

General Setup

Call Filter	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	Start Filter Set	Set#1
Data Filter	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	Start Filter Set	Set#2
Log Flag	None		

Enable stateful packet inspection
 Apply IP filter to VPN incoming packets
 Drop non-http connection on TCP port 80
 Accept incoming fragmented UDP packets (for some games, ex. CS)

OK

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.

Log Flag For troubleshooting needs you can specify the filter log here.
None - The log function is not activated.
Block - All blocked packets will be logged.
Pass - All passed packets will be logged.
No Match - The log function will record all packets that are not matched.
Note that the filter log will be displayed on the Telnet terminal when you type the *log -f* command.

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 Incoming Fragmented UDP 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 Incoming Fragmented UDP Packets”.

3.4.3 Filter Setup

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

Firewall >> Filter Setup

Filter Setup | [Set to Factory Default](#) |

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

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

Filter Set 1
 Comments :

Filter Rule	Active	Comments
<input type="button" value="1"/>	<input checked="" type="checkbox"/>	Block NetBios
<input type="button" value="2"/>	<input type="checkbox"/>	
<input type="button" value="3"/>	<input type="checkbox"/>	
<input type="button" value="4"/>	<input type="checkbox"/>	
<input type="button" value="5"/>	<input type="checkbox"/>	
<input type="button" value="6"/>	<input type="checkbox"/>	
<input type="button" value="7"/>	<input type="checkbox"/>	

Next Filter Set

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

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.

Filter Set 1 Rule 1
 Comments : Check to enable the Filter Rule

Pass or Block <input type="text" value="Block Immediately"/>		Branch to Other Filter Set <input type="text" value="None"/>	
		<input type="checkbox"/> Log	
Direction	<input type="text" value="IN"/>	Protocol	<input type="text" value="TCP/UDP"/>
	IP Address	Subnet Mask	Operator
Source	<input type="text" value="any"/>	<input type="text" value="255.255.255.255 (/32)"/>	<input "="" type="text" value="="/>
			Start Port
			<input type="text" value="137"/>
			End Port
			<input type="text" value="139"/>
Destination	<input type="text" value="any"/>	<input type="text" value="255.255.255.255 (/32)"/>	<input "="" type="text" value="="/>
			<input type="text" value=""/>
			<input type="text" value=""/>
<input type="checkbox"/> Keep State		Fragments <input type="text" value="Don't Care"/>	

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

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

Pass or Block 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.
Log	Check this box to enable the log function. Use the Telnet command <i>log-f</i> to view the logs.
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.
Protocol	Specify the protocol(s) which this filter rule will apply to.
IP Address	Specify a source and destination IP address for this filter rule to apply to. Place the symbol “!” before a specific IP Address will prevent this rule from being applied to that IP address. To apply the rule to all IP address, enter any or leave the field blank.
Subnet Mask	Select the Subnet Mask for the IP Address column for this filter rule to apply from the drop-down menu.
Operator, Start Port and End Port	<p>The operator column specifies the port number settings. If the Start Port is empty, the Start Port and the End Port column will be ignored. The filter rule will filter out any port number.</p> <p>(=) If the End Port is empty, the filter rule will set the port number to be the value of the Start Port. Otherwise, the port number ranges between the Start Port and the End Port (including the Start Port and the End Port).</p> <p>(!=) If the End Port is empty, the port number is not equal to the value of the Start Port. Otherwise, this port number is not between the Start Port and the End Port (including the Start Port and End Port).</p> <p>(>) Specify the port number is larger than the Start Port (includes the Start Port).</p> <p>(<) Specify the port number is less than the Start Port (includes the Start Port).</p>
Keep State	<p>This function should work along with Direction, Protocol, IP address, Subnet Mask, Operator, Start Port and End Port settings. It is used for Data Filter only.</p> <p>Keep State is in the same nature of modern term Stateful Packet Inspection. It tracks packets, and accept the packets with appropriate characteristics showing its state is legal as the protocol defines. It will deny unsolicited incoming data. You may select protocols from any, TCP, UDP, TCP/UDP, ICMP and IGMP.</p>
Fragments	<p>Specify the action for fragmented packets. And it is used for Data Filter only.</p> <p>Don't care -No action will be taken towards fragmented packets.</p> <p>Unfragmented -Apply the rule to unfragmented packets.</p> <p>Fragmented - Apply the rule to fragmented packets.</p> <p>Too Short - Apply the rule only to packets that are too short to contain a complete header.</p>

Example

As stated before, all the traffic will be separated and arbitrated using one 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.

The screenshots illustrate the configuration process for firewall filters. The first screenshot shows the 'General Setup' where both 'Call Filter' and 'Data Filter' are enabled, and specific filter sets are assigned. The second screenshot shows the 'Filter Setup' table with 12 rules, where rule 1 is the 'Default Call Filter'. The third screenshot shows the 'Edit Filter Set' for 'Filter Set 1', where rule 1 is selected as active. The fourth screenshot shows the 'Edit Filter Rule' for 'Filter Set 1 Rule 1', configured to block NetBios traffic from any source to any destination on ports 137 and 139.

3.4.4 IM Blocking

IM Blocking means instant messenger blocking. Click **Firewall** and click **IM Blocking** to open the setup page. You will see a list of common IM (such as MSN, Yahoo, ICQ/AOL) applications. Check **Enable IM Blocking** and select the one(s) that you want to block. To block selected IM applications during specific periods, enter the number of the scheduler predefined in **Applications>>Call Schedule**.

Firewall >> IM Blocking Setup

Instant Messenger Applications Blocking Setup

Enable IM Blocking

Block MSN Messenger

Block Yahoo Messenger

Block ICQ/AOL

Time Schedule

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

Note: Action and Idle Timeout settings will be ignored.

3.4.5 P2P Blocking

P2P is the short name of peer to peer. Click **Firewall** and click **P2P Blocking** to open the setup page. You will see a list of common P2P applications. Check **Enable P2P Blocking** and select the one(s) to block. To block selected P2P applications during specific periods, enter the number of the scheduler predefined in **Applications>>Schedule**.

[Firewall >> P2P Blocking Setup](#)

Peer-to-Peer file-sharing Applications Blocking Setup

Enable P2P Blocking

Protocol	Applications	Action
eDonkey	eDonkey, eMule, Shareaza, MLDonkey	<input checked="" type="radio"/> Allow <input type="radio"/> Disallow <input type="radio"/> Disallow upload
FastTrack	KazaA, iMesh, MLDonkey	<input checked="" type="radio"/> Allow <input type="radio"/> Disallow
Gnutella	BearShare, Gnucleus, Limewire, Phex, Swapper, XoloX, Shareaza, MLDonkey	<input checked="" type="radio"/> Allow <input type="radio"/> Disallow
BitTorrent	BitTorrent	<input checked="" type="radio"/> Allow <input type="radio"/> Disallow

Time Schedule

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

Note: Action and Idle Timeout settings will be ignored.

Action

Specify the action for each protocol.

Allow – Allow the client to access into the application through the specified protocol.

Disallow – Forbid the client to access into the application through the specified protocol.

Disallow upload – Forbid the client to access into the application through the specified protocol for downloading. Yet uploading is allowed.

3.4.6 DoS Defense

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

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

Firewall >> DoS defense Setup



Enable Dos Defense

Check the box to activate the DoS Defense Functionality.

Enable SYN flood defense

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

Enable UDP flood defense

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

Enable ICMP flood defense

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

Enable PortScan 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 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 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.

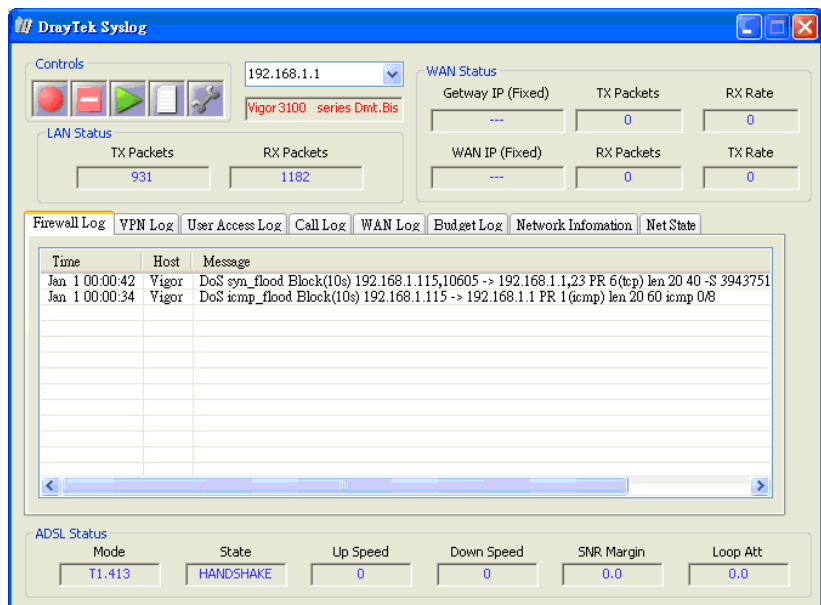
All the warning messages related to **DoS defense** will be sent to user and user can review it through Syslog daemon. Look for the keyword **DoS** in the message, followed by a name to indicate what kind of attacks is detected.

SysLog Access Setup

Enable

Server IP Address: 192.168.1.115

Destination Port: 514



3.4.7 URL Content Filter

Based on the list of user defined keywords, the **URL Content Filter** facility in Vigor router inspects the URL string in every outgoing HTTP request. No matter the URL string is found full or partial matched with a keyword, the Vigor router will block the associated HTTP connection.

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 **Firewall** and click **URL Content Filter** to open the setup page.

Firewall >> URL Content Filter

Content Filter Setup

Enable URL Access Control

Black List (block those matching keyword)

White List (pass those matching keyword)

No	ACT	Keyword	No	ACT	Keyword
1	<input type="checkbox"/>	<input type="text"/>	5	<input type="checkbox"/>	<input type="text"/>
2	<input type="checkbox"/>	<input type="text"/>	6	<input type="checkbox"/>	<input type="text"/>
3	<input type="checkbox"/>	<input type="text"/>	7	<input type="checkbox"/>	<input type="text"/>
4	<input type="checkbox"/>	<input type="text"/>	8	<input type="checkbox"/>	<input type="text"/>

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

Prevent web access from IP address

Enable Restrict Web Feature

Java ActiveX Compressed files Executable files Multimedia files

Cookie Proxy

Enable Excepting Subnets

No	Act	IP Address		Subnet Mask
1	<input type="checkbox"/>	<input type="text"/>	~	<input type="text"/>
2	<input type="checkbox"/>	<input type="text"/>	~	<input type="text"/>
3	<input type="checkbox"/>	<input type="text"/>	~	<input type="text"/>
4	<input type="checkbox"/>	<input type="text"/>	~	<input type="text"/>

Time Schedule

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

Note: Action and Idle Timeout settings will be ignored.

Enable URL Access Control

Check the box to activate URL Access Control.

Black List (block those matching keyword)

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

White List (pass those matching keyword)

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

Keyword

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

Prevent web access from IP address

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

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

Enable Restrict Web Feature

Check the box to activate the function.

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

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

Compressed file - Check the box to activate the Block Compressed file function to prevent someone from downloading any compressed file. The following list shows the types of compressed files that can be blocked by the Vigor router. .

zip, rar, .arj, .ace, .cab, .sit

Executable file - Check the box to reject any downloading behavior of the executable file from the Internet.

.exe, .com, .scr, .pif, .bas, .bat, .inf, .reg

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

Proxy - Check the box to reject any proxy transmission. To control efficiently the limited-bandwidth usage, it will be of great value to provide the blocking mechanism that filters out the multimedia files downloading from web pages. Accordingly, files with the following extensions will be blocked by the Vigor router.

.mov .mp3 .rm .ra .au .wmv

.wav .asf .mpg .mpeg .avi .ram

Enable Excepting Subnets

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

Time Schedule

Specify what time should perform the URL content filtering facility.

3.4.8 Web Content Filter

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

For this section, please refer to **Web Content Filter** user's guide.

CPA(Content Portal Authority) Web Content Filter Setup

Select a CPA server: 

[Activate Free Trial and Purchase Subscription](#)
[Test a site to verify whether it is categorized](#)

Enable Web Content Filter

Groups **Categories** (Tick categories to block. Untick to unblock)

Child Protection <input type="button" value="Select All"/> <input type="button" value="Clear All"/>	<input type="checkbox"/> Chat <input type="checkbox"/> Gambling <input type="checkbox"/> Sex	<input type="checkbox"/> Criminal <input type="checkbox"/> Hacking <input type="checkbox"/> Violence	<input type="checkbox"/> Drugs/Alcohol <input type="checkbox"/> Hate speech <input type="checkbox"/> Weapons
Leisure <input type="button" value="Select All"/> <input type="button" value="Clear All"/>	<input type="checkbox"/> Advertisements <input type="checkbox"/> Games <input type="checkbox"/> Hobbies <input type="checkbox"/> Personals <input type="checkbox"/> Sports	<input type="checkbox"/> Entertainment <input type="checkbox"/> Glamour <input type="checkbox"/> Lifestyle <input type="checkbox"/> Photo Searches <input type="checkbox"/> Streaming Media	<input type="checkbox"/> Food <input type="checkbox"/> Health <input type="checkbox"/> Motor Vehicles <input type="checkbox"/> Shopping <input type="checkbox"/> Travel
Business <input type="button" value="Select All"/> <input type="button" value="Clear All"/>	<input type="checkbox"/> Computing/Internet <input type="checkbox"/> Politics <input type="checkbox"/> Remote proxies	<input type="checkbox"/> Finance <input type="checkbox"/> Real Estate <input type="checkbox"/> Search Engine	<input type="checkbox"/> Job Search/Career <input type="checkbox"/> Reference <input type="checkbox"/> Web Mail
Others <input type="button" value="Select All"/> <input type="button" value="Clear All"/>	<input type="checkbox"/> Education <input type="checkbox"/> News <input type="checkbox"/> Usenet news	<input type="checkbox"/> Hosting sites <input type="checkbox"/> Religion <input type="checkbox"/> Block all uncategorised sites	<input type="checkbox"/> Kid Sites <input type="checkbox"/> Sex Education

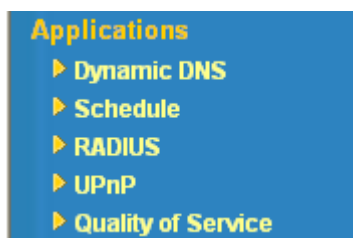
Time Schedule

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

Note: Action and Idle Timeout settings will be ignored.

3.5 Applications

Below shows the menu items for Applications.



3.5.1 Dynamic DNS

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

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

Enable the Function and Add a Dynamic DNS Account

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

[Applications >> Dynamic DNS Setup](#)

Dynamic DNS Setup

Enable Dynamic DNS Setup

Accounts :

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

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

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

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

Active Display if this account is active or inactive.

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

[Applications >> Dynamic DNS Setup >> Dynamic DNS Account Setup](#)

Index : 1

Enable Dynamic DNS Account

Service Provider:

Service Type:

Domain Name:

Login Name: (max. 23 characters)

Password: (max. 23 characters)

Wildcards

Backup MX

Mail Extender:

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

Service Provider Select the service provider for the DDNS account.

Service Type Select a service type (Dynamic, Custom, Static).

Domain Name Type in a domain name that you applied previously.

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

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

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

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

Disable the Function and Clear all Dynamic DNS Accounts

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

Delete a Dynamic DNS Account

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

3.5.2 Schedule

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

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

[Applications >> Schedule](#)

Schedule:

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

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

Clear All

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.

Index No. 1

Enable Schedule Setup

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

Start Time (hh:mm) 0 : 0

Duration Time (hh:mm) 0 : 0

Action Force On

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

How Often

Once

Weekdays

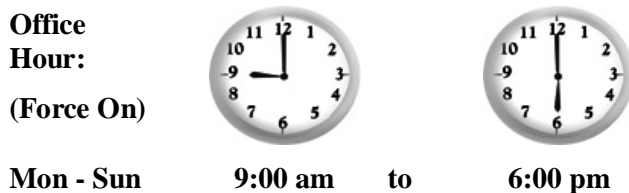
Sun Mon Tue Wed Thu Fri Sat

OK Clear Cancel

- 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).



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.

3.5.3 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.

Applications >> RADIUS

RADIUS Setup

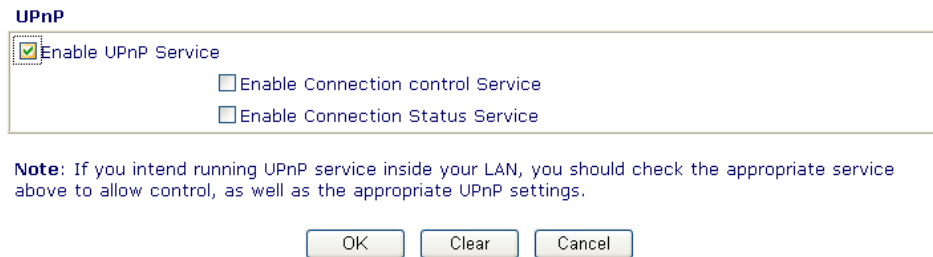
<input checked="" type="checkbox"/> Enable	
Server IP Address	<input type="text"/>
Destination Port	<input type="text" value="1812"/>
Shared Secret	<input type="text"/>
Re-type Shared Secret	<input type="text"/>

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.
Re-type Shared Secret	Re-type the Shared Secret for confirmation.

3.5.4 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 provides the associated support for MSN Messenger to allow full use of the voice, video and messaging features.

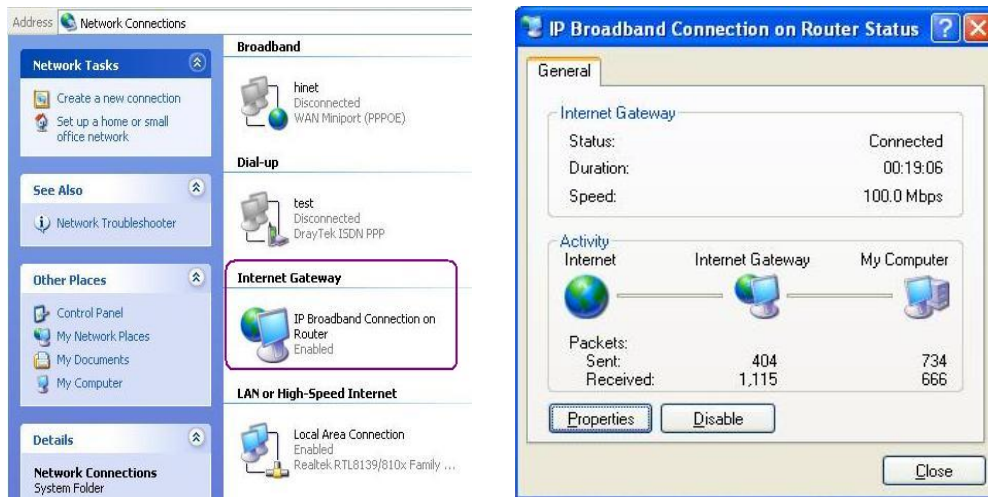
Applications >> UPnP



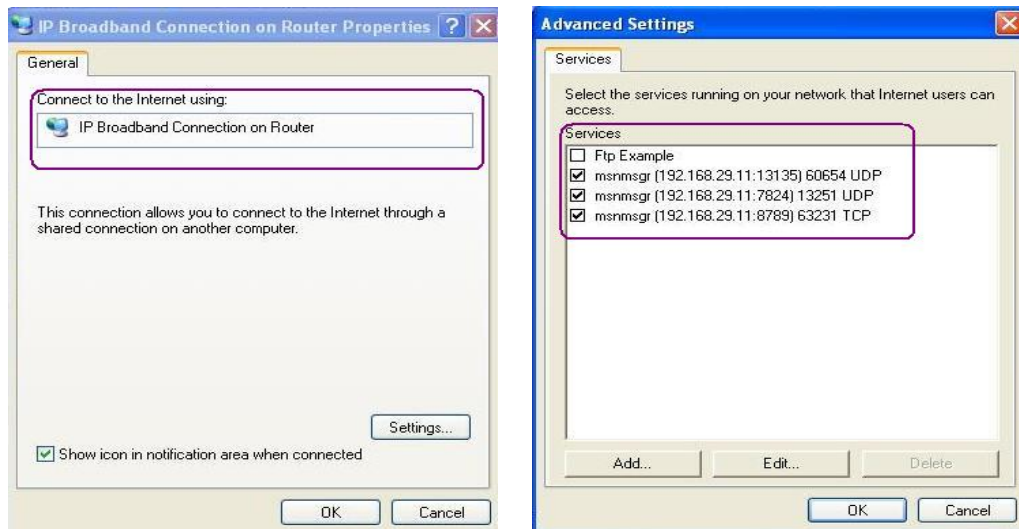
Enable UPnP Service

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.

3.5.5 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), such as voice over IP, videoconferencing, streaming video or data.

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?

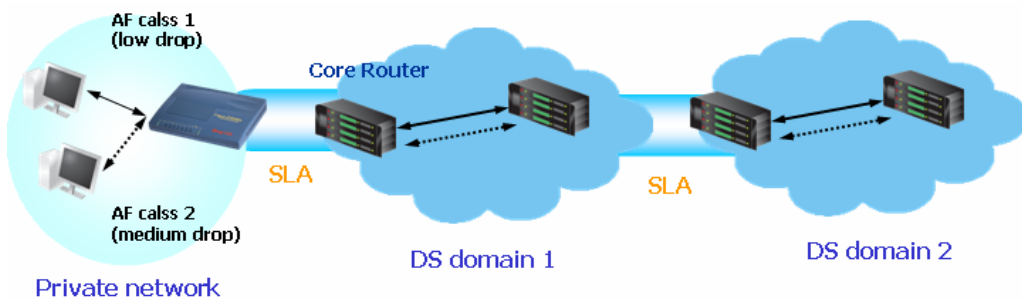
There are two components within Primary configuration of QoS deployment:

- **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.

For more effective QoS deployment, you should check the available ADSL upstream and downstream speed in **Online Status** as indicated below before you configure the QoS setting.

ADSL Information		(ADSL Firmware Version : D.16.2.1)					
ATM Statistics		TX Blocks	RX Blocks	Corrected Blocks	Uncorrected Blocks		
		6484317	17414603	0	2		
ADSL Status		Mode	State	Up Speed	Down Speed	SNR Margin	Loop Att.
		G.DMT	SHOWTIME	256000	2048000	32.0	27.0

The following QoS policies will be defined in the form of ratio of upstream/downstream speed. We will also provide application QoS requirement as reference to help you accomplish this task. The setting values will vary depending on the network condition.

Click on **Application >>QoS Control**. The following screen will appear.

Quality of Service [Set to Factory Default](#)

Enable the QoS Control

Direction OUT

Index	Class Name	Reserved_bandwidth Ratio	Setup
1.	<input style="width: 80%;" type="text"/>	<input style="width: 80%;" type="text" value="25"/> %	<input type="button" value="Basic"/> <input type="button" value="Advanced"/>
2.	<input style="width: 80%;" type="text"/>	<input style="width: 80%;" type="text" value="25"/> %	<input type="button" value="Basic"/> <input type="button" value="Advanced"/>
3.	<input style="width: 80%;" type="text"/>	<input style="width: 80%;" type="text" value="25"/> %	<input type="button" value="Basic"/> <input type="button" value="Advanced"/>
4.	Others	<input style="width: 80%;" type="text" value="25"/> %	

Enable UDP Bandwidth Control Limited_bandwidth Ratio %

[Online Statistics](#)

Enable the QoS Control

For V models, the factory default for this is checked to enable.

Direction

Define which traffic the QoS Control settings apply to.

IN- apply to incoming traffic only.

OUT- apply to outgoing traffic only.

BOTH- apply to both incoming and outgoing traffic.

Index

The group index number of QoS Control settings. There are total 4 groups.

Class Name

Define the name for the group index.

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**.

Setup

There are two-level of settings:

Basic - setup Reserved Bandwidth Ratio according to the traffic service type. We provide a list of common service types.

Advance - custom setting of Reserved Bandwidth Ratio based on the source address, destination address, DiffServ CodePoint, and service type.

Enable UDP Bandwidth Control

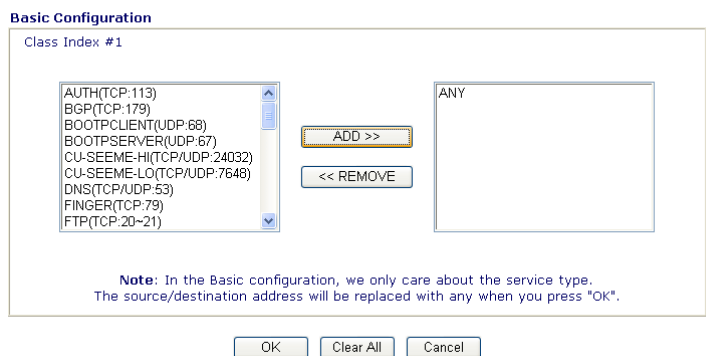
Check this and set the limited bandwidth ratio on the right field. This is a protection of TCP application traffic since UDP application traffic such as streaming video will exhaust lots of bandwidth.

Limited_bandwidth Ratio

The ratio typed here is used to limit the total bandwidth of UDP application.

Basic button

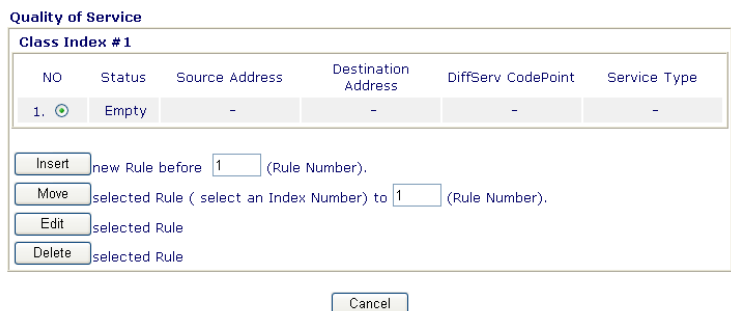
Click this button to open basic configuration for each index number.



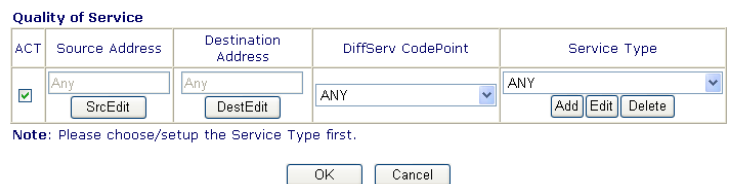
Choose one of the items from the left box and click **ADD>>**. The selected one will be shown on the right box. To remove the selected one from the right box, simply choose the one again and click **<<Remove**.

Advanced button

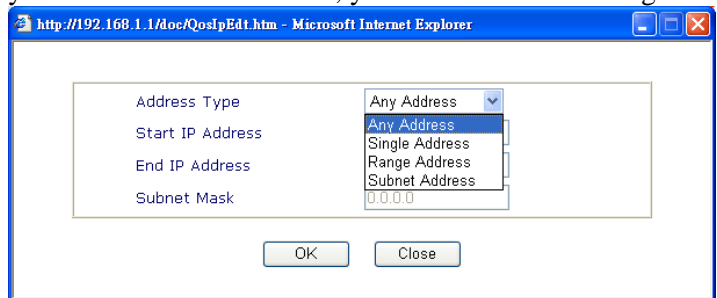
Click this button to open advanced configuration for each index number. You can insert, move, edit or delete select rule in this page.



For inserting a rule, click **Insert** to open the following page.



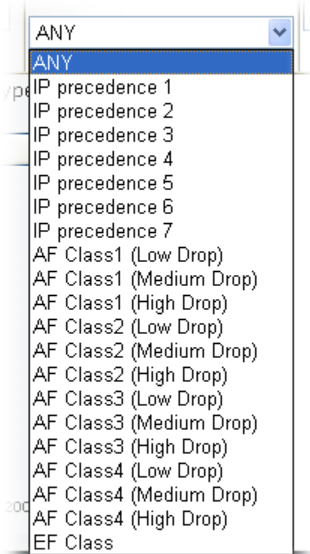
SrcEdit - allows you to edit source address information.
DestEdit - allows you to edit destination address information. If you click one of the buttons, you will see the following dialog.



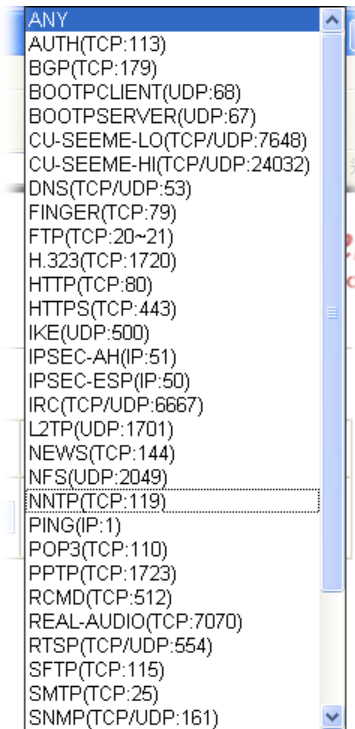
From the Address Type drop-down list, please choose one of the selections as the address type. And type in start IP and end

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. Simply click **Add/Edd/Delete** button to access into the following page.



You can add a new service name for your necessity. Also, you can **Edit/Delete** to change the one that you added before.

Service Type

Service Name	<input type="text"/>
Service Type	TCP
Port Configuration	
Type	<input checked="" type="radio"/> Single <input type="radio"/> Range
Port Number	0 - 0

Please type in the service name, select **Service type** (TCP/UDP and both). Next choose either one of the port configuration type (Single or Range) and type in the range for the **Port Number**.

3.6 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.



3.6.1 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.

[VPN and Remote Access >> Remote Access Control Setup](#)

Remote Access Control Setup

<input checked="" type="checkbox"/>	Enable PPTP VPN Service
<input checked="" type="checkbox"/>	Enable IPsec VPN Service
<input checked="" type="checkbox"/>	Enable L2TP VPN Service
<input type="checkbox"/>	Enable ISDN Dial-In

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

3.6.2 PPP General Setup

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

PPP General Setup	
PPP/MP Protocol Dial-In PPP Authentication: PAP or CHAP Dial-In PPP Encryption (MPPE): Optional MPPE Mutual Authentication (PAP): <input type="radio"/> Yes <input checked="" type="radio"/> No Username: <input type="text"/> Password: <input type="text"/>	IP Address Assignment for Dial-In Users Start IP Address: 192.168.1.200

OK

Dial-In PPP Authentication PAP Only PAP or CHAP

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

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.

Optional MPPE
Optional MPPE
Require MPPE(40/128 bit)
Maximum MPPE(128 bit)

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 1280-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 bits) 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.

Start IP Address

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. But, you have to notice that the first two

IP addresses of 192.168.1.200 and 192.168.1.201 are reserved for ISDN remote dial-in user.

3.6.3 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.

VPN and Remote Access >> IPsec General Setup

VPN IKE/IPsec General Setup

Dial-in Set up for Remote Dial-in users and Dynamic IP Client (LAN to LAN).

IKE Authentication Method	
Pre-Shared Key	<input type="text"/>
Re-type Pre-Shared Key	<input type="text"/>
IPsec Security Method	
<input checked="" type="checkbox"/> Medium (AH)	Data will be authentic, but will not be encrypted.
<input type="checkbox"/> High (ESP)	<input checked="" type="checkbox"/> DES <input checked="" type="checkbox"/> 3DES <input checked="" type="checkbox"/> AES
Data will be encrypted and authentic.	

OK Cancel

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

Re-type Pre-Shared Key-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.

3.6.4 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	Index	Name
1.	???	9.	???
2.	???	10.	???
3.	???	11.	???
4.	???	12.	???
5.	???	13.	???
6.	???	14.	???
7.	???	15.	???
8.	???	16.	???

<< [1-16](#) | [17-32](#) >> [Next >>](#)

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.

Next

Click this link to access into next page for setting more accounts.

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 Index : 1

Profile Name

Accept Any Peer ID

Accept Subject Alternative Name
 Type

Accept Subject Name

Country (C)

State (ST)

Location (L)

Organization (O)

Organization Unit (OU)

Common Name (CN)

Email (E)

- Profile Name** Type in a name in this file.
- 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)**.

3.6.5 Remote User Profiles

You can manage remote access by maintaining a table of remote user profile, so that users can be authenticated to dial-in or build the VPN connection. You may set parameters including specified connection peer ID, connection type (VPN 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	9.	???	x
2.	???	x	10.	???	x
3.	???	x	11.	???	x
4.	???	x	12.	???	x
5.	???	x	13.	???	x
6.	???	x	14.	???	x
7.	???	x	15.	???	x
8.	???	x	16.	???	x

<< [1-16](#) | [17-32](#)>> [Next](#) >>

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

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.

Next

Click this link to access into next page for setting more accounts.

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.

Index No. 1

<p>User account and Authentication</p> <p><input checked="" type="checkbox"/> Enable this account</p> <p>Idle Timeout <input type="text" value="300"/> second(s)</p>		<p>Username <input data-bbox="1007 315 1197 344" type="text" value="???"/></p> <p>Password <input data-bbox="1007 353 1182 383" type="password"/></p>
<p>Allowed Dial-In Type</p> <p><input checked="" type="checkbox"/> ISDN</p> <p><input checked="" type="checkbox"/> PPTP</p> <p><input checked="" type="checkbox"/> IPsec Tunnel</p> <p><input checked="" type="checkbox"/> L2TP with IPsec Policy <input type="text" value="None"/></p> <p><input type="checkbox"/> Specify Remote Node</p> <p>Remote Client IP or Peer ISDN Number <input data-bbox="384 622 571 651" type="text"/></p> <p>or Peer ID <input data-bbox="464 660 655 689" type="text"/></p>		<p>IKE Authentication Method</p> <p><input checked="" type="checkbox"/> Pre-Shared Key</p> <p>IKE Pre-Shared Key <input data-bbox="1007 465 1190 495" type="text"/></p> <p><input checked="" type="checkbox"/> Digital Signature (X.509)</p> <p><input data-bbox="783 533 839 562" type="text" value="???"/></p>
		<p>IPsec Security Method</p> <p><input checked="" type="checkbox"/> Medium (AH)</p> <p>High (ESP)</p> <p><input checked="" type="checkbox"/> DES <input checked="" type="checkbox"/> 3DES <input checked="" type="checkbox"/> AES</p> <p>Local ID <input data-bbox="863 696 1046 725" type="text"/> (optional)</p>
		<p>Callback Function</p> <p><input type="checkbox"/> Check to enable Callback function</p> <p><input type="checkbox"/> Specify the callback number</p> <p>Callback Number <input data-bbox="1007 837 1197 866" type="text"/></p> <p><input checked="" type="checkbox"/> Check to enable Callback Budget Control</p> <p>Callback Budget <input type="text" value="30"/> minute(s)</p>

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.

ISDN

Allow the remote ISDN dial-in connection. You can further set up Callback function below. You should set the User Name and Password of remote dial-in user below. This feature is for *i* model only.

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 a IPsec VPN connection through Internet.

L2TP

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 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**.

User Name

This field is applicable when you select PPTP or L2TP w/ or w/out IPsec policy above.

Password

This field is applicable when you select PPTP or L2TP w/ or w/out 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 w/ or w/o 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 in the X.509 Peer ID Profiles.

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.

Callback Function

The callback function provides a callback service only for the ISDN dial-in user (for *i* model only). The router owner will be charged the connection fee by the telecom.

Check to enable Callback function-Enables the callback function.

Specify the callback number-The option is for extra security. Once enabled, the router will ONLY call back to the specified Callback Number.

Check to enable callback budget control-By default, the callback function has a time restriction. Once the callback budget has been exhausted, the callback mechanism will be disabled automatically.

Callback Budget (Unit: minutes)- Specify the time budget for the dial-in user. The budget will be decreased automatically per callback connection.

3.6.6 LAN to LAN Profiles

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 including PPTP, IPsec Tunnel, and L2TP by itself or over IPsec) and corresponding security methods, etc.

The router provides up to 32 profiles, which also means supporting 32 VPN tunnels simultaneously. The following figure shows the summary table.

VPN and Remote Access >> LAN to LAN

LAN-to-LAN Profiles: | [Set to Factory Default](#) |

Index	Name	Status	Index	Name	Status
1.	???	x	9.	???	x
2.	???	x	10.	???	x
3.	???	x	11.	???	x
4.	???	x	12.	???	x
5.	???	x	13.	???	x
6.	???	x	14.	???	x
7.	???	x	15.	???	x
8.	???	x	16.	???	x

<< [1-16](#) | [17-32](#) >> [Next](#) >>

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

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 Index : 1

1. Common Settings

Profile Name <input type="text" value="???"/> <input type="checkbox"/> Enable this profile	Call Direction <input checked="" type="radio"/> Both <input type="radio"/> Dial-Out <input type="radio"/> Dial-In <input type="checkbox"/> Always on Idle Timeout <input type="text" value="300"/> second(s) <input type="checkbox"/> Enable PING to keep alive PING to the IP <input type="text"/>
---	---

2. Dial-Out Settings

Type of Server I am calling <input checked="" type="radio"/> ISDN <input type="radio"/> PPTP <input type="radio"/> IPsec Tunnel <input type="radio"/> L2TP with IPsec Policy <input type="text" value="None"/>	Link Type <input type="text" value="64k bps"/> Username <input type="text" value="???"/> Password <input type="text"/> PPP Authentication <input type="text" value="PAP/CHAP"/> VJ Compression <input checked="" type="radio"/> On <input type="radio"/> Off
Dial Number for ISDN or Server IP/Host Name for VPN. (such as 5551234, draytek.com or 123.45.67.89) <input type="text"/>	IKE Authentication Method <input checked="" type="radio"/> Pre-Shared Key <input type="text" value="IKE Pre-Shared Key"/> <input type="text"/> <input type="radio"/> Digital Signature(X.509) <input type="text" value="???"/>
	IPsec Security Method <input checked="" type="radio"/> Medium(AH) <input type="radio"/> High(ESP) <input type="text" value="DES without Authentication"/> <input type="button" value="Advanced"/>
	Index(1-15) in Schedule Setup: <input type="text"/> , <input type="text"/> , <input type="text"/> , <input type="text"/>
	Callback Function (CBCP) <input type="checkbox"/> Require Remote to Callback <input type="checkbox"/> Provide ISDN Number to Remote

3. Dial-In Settings

- Profile Name** Specify a name for the profile of the LAN-to-LAN connection.
- Enable this profile** Check here to activate this profile.
- 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).

ISDN	Build ISDN dial-out connection to the server. You should set up Link Type and identity like User Name and Password for the authentication of remote server. You can further set up Callback (CBCP) function below. This feature is useful for <i>i</i> model only.
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 a IPSec VPN connection to the server through Internet.
L2TP with ...	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 w/ or w/out IPSec policy above.
Password	This field is applicable when you select PPTP or L2TP w/ or w/out IPSec policy above.
PPP Authentication	This field is applicable when you select PPTP or L2TP w/ or w/out 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 w/ or w/out 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 in the X.509 Peer ID Profiles.
IPSec Security Method	This group of fields is a must for IPSec Tunnels and L2TP with IPSec Policy.
Medium	Authentication Header (AH) 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.

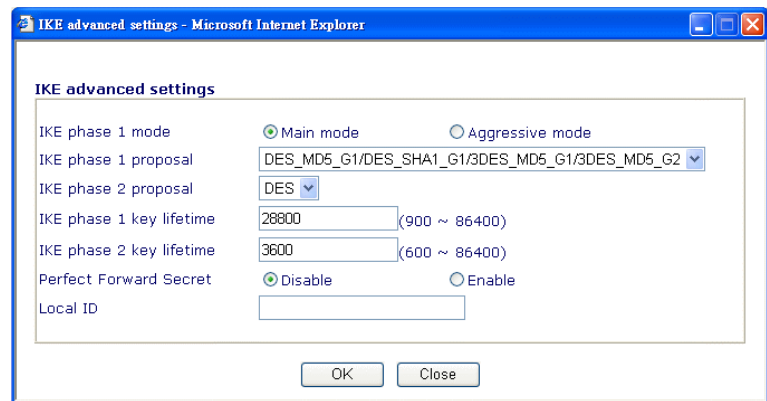
AES without Authentication-Use AES encryption algorithm and not apply any authentication scheme.

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.

Callback Function (for I models only)

The callback function provides a callback service as a part of PPP suite only for the ISDN dial-in user. The router owner will be charged the connection fee by the telecom.

Require Remote to Callback-Enable this to let the router to require the remote peer to callback for the connection afterwards.

Provide ISDN Number to Remote-In the case that the remote peer requires the Vigor router to callback, the local ISDN number will be provided to the remote peer. Check here to allow the Vigor router to send the ISDN number to the remote router. This feature is useful for *i* model only.

The screenshot shows a configuration window with two main sections:

- 3. Dial-In Settings**:
 - Allowed Dial-In Type**:
 - ISDN
 - PPTP
 - IPsec Tunnel
 - L2TP with IPsec Policy: None (dropdown)
 - Specify ISDN CLID or Remote VPN Gateway
 - Peer ISDN Number or Peer VPN Server IP:
 - or Peer ID:
- Authentication and Security**:
 - Username**:
 - Password**:
 - VJ Compression**: On Off
 - IKE Authentication Method**:
 - Pre-Shared Key
 - IKE Pre-Shared Key:
 - Digital Signature(X.509)
 - ???:
 - IPsec Security Method**:
 - Medium (AH)
 - High (ESP): DES 3DES AES
- Callback Function (CBCP)**:
 - Enable Callback Function
 - Use the Following Number to Callback
 - Callback Number:
 - Callback Budget: minute(s)

- 4. TCP/IP Network Settings**:
- My WAN IP**:
- Remote Gateway IP**:
- Remote Network IP**:
- Remote Network Mask**:
-
- RIP Direction**: TX/RX Both (dropdown)
- RIP Version**: Ver. 2 (dropdown)
- For NAT operation, treat remote sub-net as: Private IP (dropdown)
- Change default route to this VPN tunnel

Buttons:

Allowed Dial-In Type

Determine the dial-in connection with different types.

ISDN:

Allow the remote ISDN dial-in connection. You can further set up Callback function below. You should set the User Name and Password of remote dial-in user below. This feature is useful for *i* model only.

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 a IPSec VPN connection through Internet.
L2TP	<p>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:</p> <p>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.</p> <p>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.</p> <p>Must- Specify the IPSec policy to be definitely applied on the L2TP connection.</p>
Specify CLID or Remote VPN Gateway	<p>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. Enter Peer ISDN number if you select ISDN above (This feature is useful for <i>i</i> model only.). Also, you should further specify the corresponding security methods on the right side.</p> <p>If you uncheck the checkbox, the connection type you select above will apply the authentication methods and security methods in the general settings.</p>
User Name	This field is applicable when you select PPTP or L2TP w/ or w/out IPSec policy above.
Password	This field is applicable when you select PPTP or L2TP w/ or w/out 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 w/ or w/out IPSec policy above.
IKE Authentication Method	<p>This group of fields is applicable for IPSec Tunnels and L2TP with IPSec Policy when you Specify ISDN CLID (for <i>i</i> model only) or Remote VPN Gateway Peer ISDN Number (for <i>i</i> model only) or Peer VPN Server IP. The only exception is Digital Signature (X.509) can be set when you select IPSec tunnel either w/ or w/o specify the CLID or IP address of the remote node.</p> <p>Pre-Shared Key - Input 1-63 characters as pre-shared key.</p> <p>Digital Signature (X.509) - Select one predefined in the X.509 Peer ID Profiles.</p>
IPSec Security Method	<p>This group of fields is a must for IPSec Tunnels and L2TP with IPSec Policy when you specify the remote node.</p> <p>Medium- Authentication Header (AH) means data will be authenticated, but not be encrypted. By default, this option is active.</p> <p>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.</p>
Callback Function	The callback function provides a callback service only for the ISDN dial-in user (this feature is useful for <i>i</i> model only). The

router owner will be charged the connection fee by the telecom.

Check to enable Callback function-Enables the callback function.

Callback number-The option is for extra security. Once enabled, the router will ONLY call back to the specified Callback Number.

Callback budget- By default, the callback function has limitation of callback period. Once the callback budget is exhausted, the function will be disabled automatically.

Callback Budget (Unit: minutes)- Specify the time budget for the dial-in user. The budget will be decreased automatically per callback connection. The default value 0 means no limitation of callback period.

My WAN IP

This field is only applicable when you select PPTP or L2TP w/ or w/out 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.

Remote Gateway IP

This field is only applicable when you select PPTP or L2TP w/ or w/out 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.

**Remote Network IP/
Remote Network Mask**

Add a static router 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.

More

Add a static router 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.

RIP Version

Select the RIP protocol version. Specify Ver. 2 for greatest compatibility.

For NAT operation, treat remote sub-net as

While communicating with remote subnet, the router can treat it as private subnet by sending packets with the router's private IP address, or treat it as public subnet by sending packets with the router's public IP address.

3.6.7 VPN 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.

VPN and Remote Access >> Connection Management

Dial-out Tool Refresh Seconds : 10

(test2) 220.135.240.210

VPN Connection Status

Current Page: 2

VPN	Type	Remote IP	Virtual Network	Tx Pkts	Tx Rate	Rx Pkts	Rx Rate	UpTime
						xxxxxxx	Data is encrypted.	
						xxxxxxx	Data isn't encrypted.	

Dial

Click this button to execute dial out function.

Refresh Seconds

Choose the time for refresh the dail information among 5, 10, and 30.

Refresh

Click this button to refresh the whole connection status.

3.7 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.



3.7.1 Local Certificate

Certificate Management >> Local Certificate

X509 Local Certificate Configuration

Name	Subject	Status	Modify
Local	---	---	<input type="button" value="View"/> <input type="button" value="Delete"/>

X509 Local Certificate

Generate

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

Generate Certificate Request

Subject Alternative Name	
Type	<input type="text" value="Domain Name"/>
Domain Name	<input type="text"/>
Subject Name	
Country (C)	<input type="text"/>
State (ST)	<input type="text"/>
Location (L)	<input type="text"/>
Organization (O)	<input type="text"/>
Organization Unit (OU)	<input type="text"/>
Common Name (CN)	<input type="text"/>
Email (E)	<input type="text"/>
Key Type	<input type="text" value="RSA"/>
Key Size	<input type="text" value="1024 Bit"/>

Type in all the information that the window request. 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:

X509 Local Certificate Configuration

Name	Subject	Status	Modify
Local	/C=TW/O=DrayTek/emailAddress...	Requesting	<input type="button" value="View"/> <input type="button" value="Remove"/>

X509 Local Certificate Request

```

-----BEGIN CERTIFICATE REQUEST-----
MIIBqjCCARMCQAwwQTELMakGA1UEBhMCVFcxEADAQBgNVBAoTBORyYX1UZWsxIDAe
BgkqhkiG9wOBCQEWEXByZXNzQGRyYX10ZWsuY29tMIGfMA0GCsqGSIB3DQEB&QUA
A4GNADCBiQKBgQDQYB7wmZFfHn9/ IeQnG03Xk++hqFb297aPJ6+gksBer1wa5wO
hX4bp89cUF9d1oACGGiM/ tcBOckdcZdPFFvIXcP3s3uxa2Fj8aeTj9W+ELxwhI1o
x/GDA7CTvO/ fQzpxroCwLJTJLSjS0/Bn9v50951Gve3aGly1cEcmU7jqeQIDAQAB
oCkwJwYJKoZIhvcNAQkOMRowGDAWBgNVHREEDzANggtkcmF5dGVrLmNvbTANBgkq
hkiG9wOBAQUFAA0BgQBUIWx4Mf18xeLQN7nz30cKVC4h574hnm/MEkgemB/eNrIN
Yo6xQghiXfnaRX4rdLj6ywBQ9aVdNHr+t1lLgVqOCxxcNj1LfLm9tJFw14iw3Oci
vvVXnhWUx2ggq/QIQ6tYs+Stws+51pU+UNGSnj6je+gEQ7PBqHuzf6tN6EAgA+Q==
-----END CERTIFICATE REQUEST-----

```

3.7.2 Trusted CA Certificate

Trusted CA certificate lists three sets of trusted CA certificate.

Certificate Management >> Trusted CA Certificate

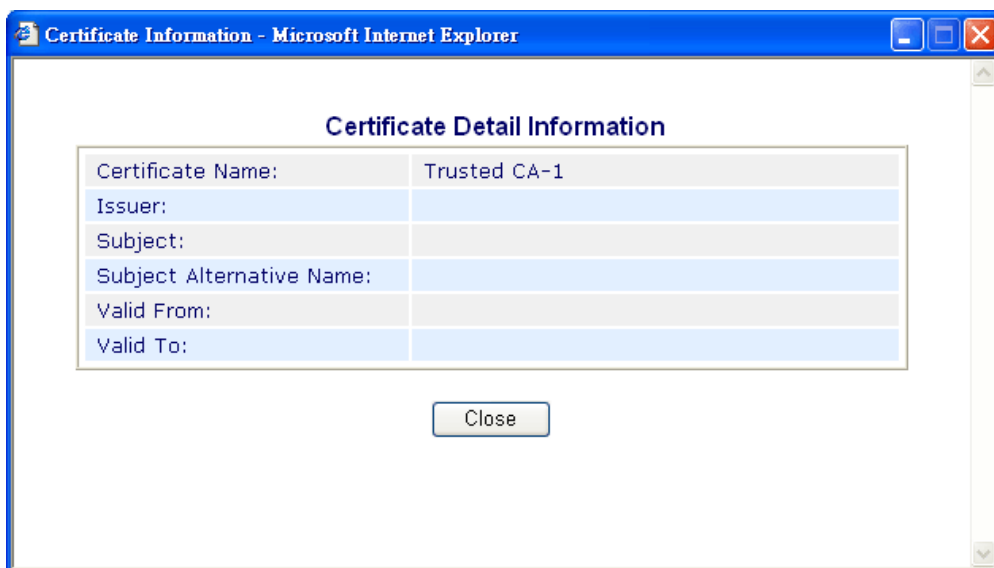
X509 Trusted CA Certificate Configuration

Name	Subject	Status	Modify
Trusted CA-1	---	---	<input type="button" value="View"/> <input type="button" value="Delete"/>
Trusted CA-2	---	---	<input type="button" value="View"/> <input type="button" value="Delete"/>
Trusted CA-3	---	---	<input type="button" value="View"/> <input type="button" value="Delete"/>

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.



3.8 VoIP

Voice over IP network (VoIP) enables you to use your broadband Internet connection to make toll quality voice calls over the Internet.

There are many different call signaling protocols, methods by which VoIP devices can talk to each other. The most popular protocols are SIP, MGCP, Megaco and H.323. These protocols are not all compatible with each other (except via a soft-switch server).

The Vigor V models support the SIP protocol as this is an ideal and convenient deployment for the ITSP (Internet Telephony Service Provider) and softphone and is widely supported. SIP is an end-to-end, signaling protocol that establishes user presence and mobility in VoIP structure. Every one who wants to talk using his/her SIP Uniform Resource Identifier, “SIP Address”. The standard format of SIP URI is

sip: user:password @ host: port

Some fields may be optional in different use. In general, “host” refers to a domain. The “userinfo” includes the user field, the password field and the @ sign following them. This is very similar to a URL so some may call it “SIP URL”. SIP supports peer-to-peer direct calling and also calling via a SIP proxy server (a role similar to the gatekeeper in H.323 networks), while the MGCP protocol uses client-server architecture, the calling scenario being very similar to the current PSTN network.

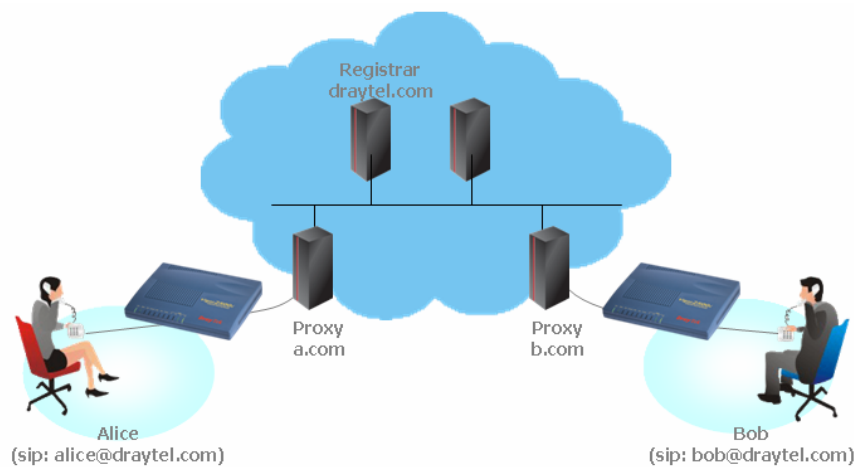
After a call is setup, the voice streams transmit via RTP (Real-Time Transport Protocol). Different codecs (methods to compress and encode the voice) can be embedded into RTP packets. Vigor V models provide various codecs, including G.711 A/ μ -law, G.723, G.726 and G.729 A & B. Each codec uses a different bandwidth and hence provides different levels of voice quality. The more bandwidth a codec uses the better the voice quality, however the codec used must be appropriate for your Internet bandwidth.

Usually there will be two types of calling scenario, as illustrated below:

- **Calling via SIP Servers**

First, the Vigor V models of yours will have to register to a SIP Registrar by sending registration messages to validate. Then, both parties' SIP proxies will forward the sequence of messages to caller to establish the session.

If you both register to the same SIP Registrar, then it will be illustrated as below:



The major benefit of this mode is that you don't have to memorize your friend's IP address, which might change very frequently if it's dynamic. Instead of that, you will only have to use **dial plan** or directly dial your friend's **account name** if you are with the same SIP Registrar. Please refer to the **Example 1 and 2 in the Calling Scenario**.

- **Peer-to-Peer**

Before calling, you have to know your friend's IP Address. The Vigor VoIP Routers will build connection between each other. Please refer to the **Example 3 in the Calling Scenario**.



Our Vigor V models firstly apply efficient codecs designed to make the best use of available bandwidth, but Vigor V models also equip with automatic QoS assurance. QoS Assurance assists to assign high priority to voice traffic via Internet. You will always have the required inbound and outbound bandwidth that is prioritized exclusively for Voice traffic over Internet but you just get your data a little slower and it is tolerable for data traffic.

Below shows the menu items for Certificate Management.



3.8.1 DialPlan

This page allows you to set phone book and digit map for the VoIP function. Click the **Phone Book** and **Digit Map** links on the page to access into next pages for dialplan settings.

[VoIP >> DialPlan Setup](#)

DialPlan Configuration



Phone Book

In this section, you can set your VoIP contacts in the “phonebook” we called DialPlan - help you to make calls quickly and easily by using “speed-dial” **Phone Number**. There are total 60 index entries in the DialPlan for you to store all your friends and family members’ SIP addresses.

Phone Book

Index	Phone number	Display Name	SIP URL	Status
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

[Next >>](#)

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

Click any index number to display the dial plan setup page.

VoIP >> DialPlan Setup

Phone Book Index No. 1

<input checked="" type="checkbox"/> Enable	Phone Number	<input type="text" value="1"/>
	Display Name	<input type="text" value="Polly"/>
	SIP URL	<input type="text" value="1112"/> @ <input type="text" value="fwd.pulver.com"/>

Enable

Click this to enable this entry.

Phone Number

The speed-dial number of this index. This can be any number you choose, using digits **0-9** and *****.

Display Name

The Caller-ID that you want to be displayed on your friend's screen. This let your friend can easily know who's calling without memorizing lots of SIP URL Address.

SIP URL

Enter your friend's SIP Address

Digit Map

For the convenience of user, this page allows users to edit prefix number for the SIP account with adding number, stripping number or replacing number. It is used to help user having a quick and easy way to dial out through VoIP interface.

Digit Map Setup

Enable	Prefix Number	Mode	OP Number	Min Len	Max Len	Interface
<input checked="" type="checkbox"/>	<input type="text" value="03"/>	Replace	<input type="text" value="8863"/>	<input type="text" value="7"/>	<input type="text" value="9"/>	VoIP1
<input checked="" type="checkbox"/>	<input type="text" value="886"/>	Strip	<input type="text" value="886"/>	<input type="text" value="7"/>	<input type="text" value="9"/>	VoIP4
<input type="checkbox"/>	<input type="text"/>	None	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	VoIP1
<input type="checkbox"/>	<input type="text"/>	None	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	VoIP1
<input type="checkbox"/>	<input type="text"/>	None	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	VoIP1
<input type="checkbox"/>	<input type="text"/>	None	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	VoIP1
<input type="checkbox"/>	<input type="text"/>	None	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	VoIP1
<input type="checkbox"/>	<input type="text"/>	None	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	VoIP1
<input type="checkbox"/>	<input type="text"/>	None	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	VoIP1
<input type="checkbox"/>	<input type="text"/>	None	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	VoIP1
<input type="checkbox"/>	<input type="text"/>	None	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	VoIP1
<input type="checkbox"/>	<input type="text"/>	None	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	VoIP1
<input type="checkbox"/>	<input type="text"/>	None	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	VoIP1
<input type="checkbox"/>	<input type="text"/>	None	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	VoIP1
<input type="checkbox"/>	<input type="text"/>	None	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	VoIP1
<input type="checkbox"/>	<input type="text"/>	None	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	VoIP1
<input type="checkbox"/>	<input type="text"/>	None	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	VoIP1
<input type="checkbox"/>	<input type="text"/>	None	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	VoIP1
<input type="checkbox"/>	<input type="text"/>	None	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	VoIP1
<input type="checkbox"/>	<input type="text"/>	None	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	VoIP1
<input type="checkbox"/>	<input type="text"/>	None	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	VoIP1
<input type="checkbox"/>	<input type="text"/>	None	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	VoIP1

Enable

Check this box to invoke this setting.

Prefix Number

The phone number set here is used to add, strip, or replace the OP number.

Mode

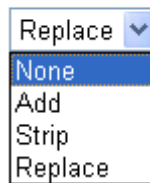
None - No action.

Add - When you choose this mode, the OP number will be added with the prefix number for calling out through the specific VoIP interface.

Strip - When you choose this mode, the OP number will be deleted by the prefix number for calling out through the specific VoIP interface. Take the above picture (Prefix Table Setup web page) as an example, the OP number of 886 will be deleted completely for the prefix number is set with 886.

Replace - When you choose this mode, the OP number will be replaced by the prefix number for calling out through the specific VoIP interface. Take the above picture (Prefix Table Setup web page) as an example, the OP number of 8863 will be replaced completely by 03 for the prefix number is set with 03.

Mode



OP Number The front number you type here is the first part of the account number that you want to execute special function (according to the chosen mode) by using the prefix number.

Min Len Set the minimal length of the dial number for applying the prefix number settings. Take the above picture (Prefix Table Setup web page) as an example, if the dial number between 7 and 9, that number can apply the prefix number settings here.

Max Len Set the maximum length of the dial number for applying the prefix number settings.

Interface Choose the one that you want to enable the prefix number settings from the **six** pre-saved SIP accounts.

3.8.2 SIP Accounts

In this section, you set up your own SIP settings. When you apply for an account, your SIP service provider will give you an **Account Name** or user name, **SIP Registrar**, **Proxy**, and **Domain name**. (The last three might be the same in some case). Then you can tell your folks your SIP Address as in **Account Name@ Domain name**

As Vigor VoIP Router is turned on, it will first register with Registrar using AuthorizationUser@Domain/Realm. After that, your call will be bypassed by SIP Proxy to the destination using AccountName@Domain/Realm as identity.

VoIP >> SIP Accounts

SIP Accounts List Refresh

Index	Profile	Domain/Realm	Proxy	Account Name	Ring Port	Status
1				change_me	<input type="checkbox"/> VoIP1 <input type="checkbox"/> VoIP2	-
2				change_me	<input type="checkbox"/> VoIP1 <input type="checkbox"/> VoIP2	-
3				change_me	<input type="checkbox"/> VoIP1 <input type="checkbox"/> VoIP2	-
4				change_me	<input type="checkbox"/> VoIP1 <input type="checkbox"/> VoIP2	-
5				change_me	<input type="checkbox"/> VoIP1 <input type="checkbox"/> VoIP2	-
6				change_me	<input type="checkbox"/> VoIP1 <input type="checkbox"/> VoIP2	-

R: success registered on SIP server
-: fail to register on SIP server

NAT Traversal Setting

STUN server:	<input type="text"/>
External IP:	<input type="text"/>
SIP PING interval:	<input type="text" value="150"/> sec

OK

Index	Click this link to access into next page for setting SIP account.
Profile	Display the profile name of the account.
Domain/Realm	Display the domain name or IP address of the SIP registrar server.
Proxy	Display the domain name or IP address of the SIP proxy server.
Account Name	Display the account name of SIP address before @.
Ring Port	Specify which port will ring when receiving a phone call.
STUN Server	Type in the IP address of the STUN server.
External IP	Type in the gateway IP address.
SIP PING interval	The default value is 150sec. It is useful for a Nortel server NAT Traversal Support.
Status	Show the status for the corresponding SIP account. R means such account is registered on SIP server successfully. - means the account is failed to register on SIP server.

SIP Account Index No. 1

Profile Name	<input type="text"/>	(11 char max.)
Register via	None <input type="checkbox"/> make call without register	
SIP Port	<input type="text" value="5060"/>	
Domain/Realm	<input type="text"/>	(63 char max.)
Proxy	<input type="text"/>	(63 char max.)
<input type="checkbox"/> Act as outbound proxy		
Display Name	<input type="text"/>	(23 char max.)
Account Number/Name	<input type="text" value="change_me"/>	(63 char max.)
<input type="checkbox"/> Authentication ID	<input type="text"/>	(63 char max.)
Password	<input type="text"/>	(63 char max.)
Expiry Time	1 hour <input type="text" value="3600"/> sec	
NAT Traversal Support	None	
Ring Port	<input type="checkbox"/> VoIP1 <input type="checkbox"/> VoIP2	
Ring Pattern	1	

OK Cancel

Profile Name

Assign a name for this profile for identifying. You can type similar name with the domain. For example, if the domain name is *draytel.org*, then you might set *draytel-1* in this field.

Register via

If you want to make VoIP call without register personal information, please choose **None** and check the box to achieve the goal. Some SIP server allows user to use VoIP function without registering. For such server, please check the box of **make call without register**. Choosing **Auto** is recommended. The system will select a proper way for your VoIP call.



SIP Port

Set the port number for sending/receiving SIP message for building a session. The default value is **5060**. Your peer must set the same value in his/her Registrar.

Domain/Realm

Set the domain name or IP address of the SIP Registrar server.

Proxy

Set domain name or IP address of SIP proxy server. By the time you can type:**port** number after the domain name to specify that port as the destination of data transmission (e.g., *nat.draytel.org:5065*)

Act as Outbound Proxy

Check this box to make the proxy acting as outbound proxy.

Display Name

The caller-ID that you want to be displayed on your friend's screen.

Account Number/Name

Enter your account name of SIP Address, e.g. every text before @.

Authentication ID

Check the box to invoke this function and enter the name or number used for SIP Authorization with SIP Registrar. If this setting value is the same as Account Name, it is not necessary for you to check the box and set any value in this field.

Password

The password provided to you when you registered with a SIP service.

Expiry Time

The time duration that your SIP Registrar server keeps your registration record. Before the time expires, the router will send another register request to SIP Registrar again.

NAT Traversal Support

If the router (e.g., broadband router) you use connects to internet by other device, you have to set this function for your necessity.



None – Disable this function.

Stun – Choose this option if there is Stun server provided for your router.

Manual – Choose this option if you want to specify an external IP address as the NAT traversal support.

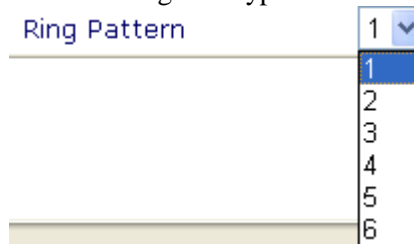
Nortel – If the soft-switch that you use supports nortel solution, you can choose this option.

Ring Port

Set VoIP 1 or VoIP 2 as the default ring port.

Ring Pattern

Choose a ring tone type for the VoIP phone call.



Below shows successful SIP accounts for your reference.

VoIP >> SIP Accounts

Refresh

Index	Profile	Domain/Realm	Proxy	Account Name	Ring Port	Status
1	draytel_1	draytel.org	draytel.org	813177	<input checked="" type="checkbox"/> VoIP1 <input type="checkbox"/> VoIP2	R
2	draytel_2	draytel.org	draytel.org	812862	<input type="checkbox"/> VoIP1 <input checked="" type="checkbox"/> VoIP2	-
3	draytel_3	draytel.org	draytel.org	811997	<input checked="" type="checkbox"/> VoIP1 <input type="checkbox"/> VoIP2	-
4	IPTEL	iptel.org	iptel.org	kevinyu	<input type="checkbox"/> VoIP1 <input checked="" type="checkbox"/> VoIP2	R
5	FWD	fwd.pulver.com	fwd.pulver.com	56984	<input checked="" type="checkbox"/> VoIP1 <input checked="" type="checkbox"/> VoIP2	R
6	SeedNet	seed.net.tw	139.175.232.13	070901002	<input checked="" type="checkbox"/> VoIP1 <input checked="" type="checkbox"/> VoIP2	R

R: success registered on SIP server
-: fail to register on SIP server

NAT Traversal Setting

STUN server:

External IP:

SIP PING interval: sec

OK

3.8.3 Phone Settings

This page allows user to set phone settings for VoIP 1 and VoIP 2 respectively.

VoIP >> Phone Settings

Phone List

Index	Port	Call feature	Codec	Tone	Gain (Mic/Speaker)	Default SIP Account	DTMF Relay
1	VoIP1		G.729A/B	User Defined	5/5		InBand
2	VoIP2		G.729A/B	User Defined	5/5		InBand

RTP

Symmetric RTP
 Dynamic RTP port start:
 Dynamic RTP port end:
 RTP TOS:

OK

RTP

Symmetric RTP – Check this box to invoke the function. To make the data transmission going through on both ends of local router and remote router not misleading due to IP lost (for example, sending data from the public IP of remote router to the private IP of local router), you can check this box to solve this problem.

Dynamic RTP port start - Specifies the start port for RTP stream. The default value is 10050.

Dynamic RTP port end - Specifies the end port for RTP stream. The default values is 15000.

RTP TOS – It decides the level of VoIP package. Use the drop down list to choose any one of them.

RTP

Symmetric RTP
 Dynamic RTP port start
 Dynamic RTP port end
 RTP TOS:

- Manual
- IP precedence 1
- IP precedence 2
- IP precedence 3
- IP precedence 4
- IP precedence 5
- IP precedence 6
- IP precedence 7
- AF Class1 (Low Drop)
- AF Class1 (Medium Drop)
- AF Class1 (High Drop)
- AF Class2 (Low Drop)
- AF Class2 (Medium Drop)
- AF Class2 (High Drop)
- AF Class3 (Low Drop)
- AF Class3 (Medium Drop)
- AF Class3 (High Drop)
- AF Class4 (Low Drop)
- AF Class4 (Medium Drop)
- AF Class4 (High Drop)
- EF Class

Click the number 1 or 2 link under Index column, you can access into the following page for configuring Phone settings.

Phone Index No. 1

Call feature <input type="checkbox"/> Hotline <input type="checkbox"/> Session Timer 3600 sec <input type="checkbox"/> T.38 Fax function Call Forwarding: disable SIP URL: _____ Time Out: 30 sec <input type="checkbox"/> DND(Do Not Disturb) mode Index(1-15) in Schedule Setup : _____ <input type="checkbox"/> Call Waiting <input type="checkbox"/> Call Transfer		Codecs Prefer Codec: G.729A/B (8Kbps) <input type="checkbox"/> Single Codec Packet Size: 20ms Voice Active Detector: Off Default SIP Account : _____ <input type="checkbox"/> play dial tone only when account registered	
---	--	---	--

Hotline Check the box to enable it. Type in the SIP URL in the field for dialing automatically when you pick up the phone set.

Session Timer Check the box to enable the function. In the limited time that you set in this field, if there is no response, the connecting call will be closed automatically.

T.38 Fax function If the remote end also supports FAX function, you can check this box to enable this function.

Call Forwarding There are four options for you to choose. **Disable** is to close call forwarding function. **Always** means all the incoming calls will be forwarded into SIP URL without any reason. **Busy** means the incoming calls will be forwarded into SIP URL only when the local system is busy. **No answer** means if the incoming calls do not receive any response, they will be forwarded to the SIP URL by the time out.



SIP URL – Type in the SIP URL (e.g., aaa@draytel.org or abc@iptel.org) as the site for call forwarded.

Time Out – Set the time out for the call forwarding. The default setting is 30 sec.

DND (Do Not Disturb) mode Set a period of peace time without disturbing by VoIP phone call. During the period, the one who dial in will listen busy tone, yet the local user will not listen any ring tone.

Schedule - Enter the index of schedule profiles to control the DND mode according to the preconfigured schedules. Refer to section **3.5.2 Schedule** for detailed configuration.

Call Waiting Check this box to invoke this function. A notice sound will appear to tell the user new phone call is waiting for your response. Click hook flash to pick up the waiting phone call.

Call Transfer Check this box to invoke this function. Click hook flash to initiate another phone call. When the phone call connection

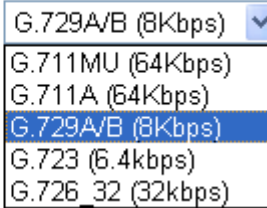
succeeds, hang up the phone. The other two sides can communicate, then.

Prefer Codec

Select one of five codecs as the default for your VoIP calls. The codec used for each call will be negotiated with the peer party before each session, and so may not be your default choice. The default codec is G.729A/B; it occupies little bandwidth while maintaining good voice quality. If your upstream speed is only 64Kbps, do not use G.711 codec. It is better for you to have at least 256Kbps upstream if you would like to use G.711.

Codecs

Prefer Codec	<input type="text" value="G.729A/B (8Kbps)"/>
Packet Size	<input type="text" value="G.729A/B (8Kbps)"/>
Voice Active Detector	<input type="text" value="G.723 (6.4kbps)"/>



Single Codec – If the box is checked, only the selected Codec will be applied.

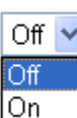
Packet Size-The amount of data contained in a single packet. The default value is 20 ms, which means the data packet will contain 20 ms voice information.

Packet Size	<input type="text" value="20ms"/>
-------------	-----------------------------------



Voice Active Detector - This function can detect if the voice on both sides is active or not. If not, the router will do something to save the bandwidth for other using. Click On to invoke this function; click off to close the function.

Voice Active Detector	<input type="text" value="Off"/>
-----------------------	----------------------------------



Default SIP Account

There are six groups of SIP accounts that you can set. Use the drop down list to choose the profile name of the account as the default one.

Play dial tone only when account registered

Check this box to invoke the function.

3.8.4 Status

On VoIP call status, you can find codec, connection and other important call status for both VoIP 1 and 2 ports.

[VoIP >> Status](#)

Status Refresh Seconds :

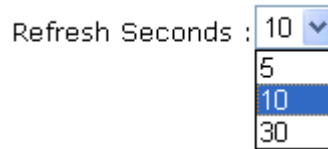
Port	Status	Codec	PeerID	Connect Time	Tx Pkts	Rx Pkts	Rx Losts	Rx Jitter (ms)	In Calls	Out Calls	Speaker Gain
VoIP1	IDLE			0	0	0	0	0	0	0	5
VoIP2	IDLE			0	0	0	0	0	0	0	5

Log

Date (mm-dd-yyyy)	Time (hh:mm:ss)	Duration (sec)	In/Out	Peer ID
00-00-00	00:00:00	0	-	
00-00-00	00:00:00	0	-	
00-00-00	00:00:00	0	-	
00-00-00	00:00:00	0	-	
00-00-00	00:00:00	0	-	
00-00-00	00:00:00	0	-	
00-00-00	00:00:00	0	-	
00-00-00	00:00:00	0	-	
00-00-00	00:00:00	0	-	
00-00-00	00:00:00	0	-	

Refresh Seconds

Specify the interval of refresh time to obtain the latest VoIP calling information. The information will update immediately when the Refresh button is clicked.



Port

It shows current connection status for the port of VoIP1 and VoIP2.

Status

It shows the VoIP connection status.
IDLE - Indicates that the VoIP function is idle.
HANG_UP - Indicates that the connection is not established (busy tone).
CONNECTING - Indicates that the user is calling out.
WAIT_ANS - Indicates that a connection is launched and waiting for remote user's answer.
ALERTING - Indicates that a call is coming.
ACTIVE-Indicates that the VoIP connection is launched.

Codec

Indicates the voice codec employed by present channel.

PeerID

The present in-call or out-call peer ID (the format may be IP or Domain).

Connect Time

The format is represented as seconds.

Tx Pkts

Total number of transmitted voice packets during this connection session.

Rx Pkts

Total number of received voice packets during this connection session.

Rx Losts

Total number of lost packets during this connection session.

Rx Jitter

The jitter of received voice packets.

In Calls	The accumulating in-call times.
Out Calls	The accumulating out-call times.
Speaker Gain	The volume of present call.
Log	Display logs of VoIP calls.

3.9 WLAN

Note: This function is used for G models only.

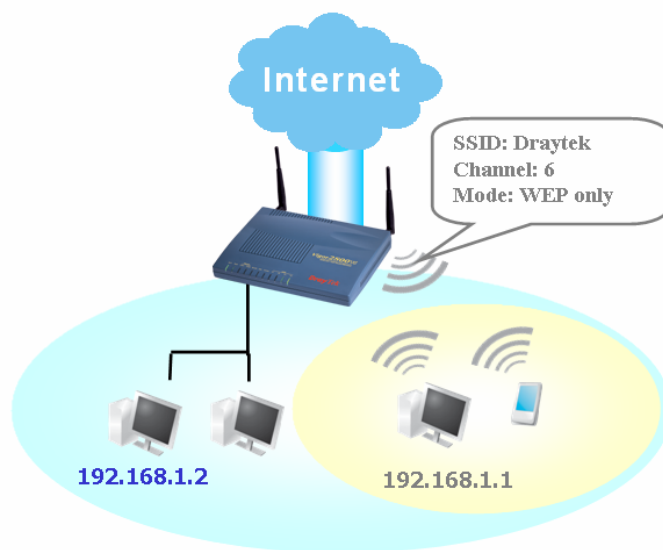
3.9.1 Basic Concepts

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 G 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 clod 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 802.11g protocol. To boost its performance further, the Vigor Router is also loaded with advanced wireless technology Super G™ to lift up data rate up to 108 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.

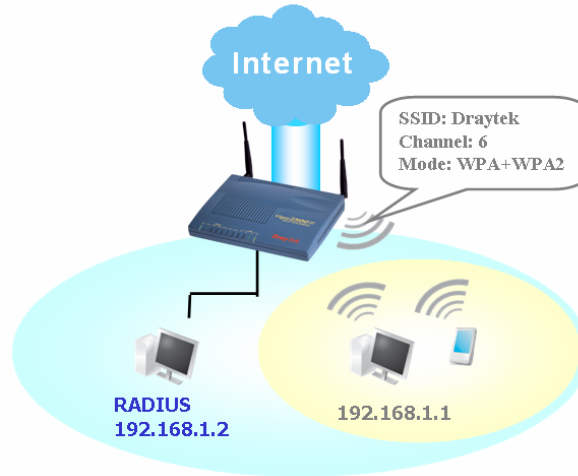
Example 1



Example 2



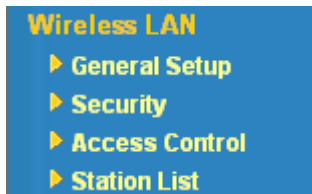
Example 3



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 a filter of MAC address to isolate single user's 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.



3.9.2 General Settings

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

Wireless LAN >> General Setup

General Setting (IEEE 802.11)

Enable Wireless LAN

Mode :

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

SSID :

Channel :

Note: If SuperG mode is enabled, channel is fixed at 6.

Hide SSID

Long Preamble

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

Enable Wireless LAN

Check the box to enable wireless function.

Mode

Select an appropriate wireless mode.

Mixed (11b+11g+SuperG) - The radio can support IEEE802.11b, IEEE802.11g and SuperG protocols simultaneously.

Mixed (11b+11g) - The radio can support both IEEE802.11b and IEEE802.11g protocols simultaneously.

SuperG - The radio only supports SuperG.

11g only - The radio only supports IEEE802.11g.

11b only - The radio only supports IEEE802.11b.

Mode :

11b Only	▼
Mixed(11b+11g+SuperG)	
Mixed(11b+11g)	
SuperG Only	
11g Only	
11b Only	

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 >> Call Schedule** setup. The default setting of this field is blank and the function will always work.

SSID

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

Channel

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.

Channel :

Channel 6, 2437MHz	▼
Channel 1, 2412MHz	
Channel 2, 2417MHz	
Channel 3, 2422MHz	
Channel 4, 2427MHz	
Channel 5, 2432MHz	
Channel 6, 2437MHz	
Channel 7, 2442MHz	
Channel 8, 2447MHz	
Channel 9, 2452MHz	
Channel 10, 2457MHz	
Channel 11, 2462MHz	

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 anything about Vigor wireless router while site surveying.

Long Preamble

This option is to define the length of the sync field in a 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.

3.9.3 Security

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

Wireless LAN >> Security Settings

Security Settings

Mode :

Set up [RADIUS Server](#) if 802.1x is enabled.

WPA:
Type: Mixed(WPA+WPA2) WPA2 Only

Pre-Shared Key(PSK)

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

WEP:
Encryption Mode:

Use WEP Key

Key 1 :

Key 2 :

Key 3 :

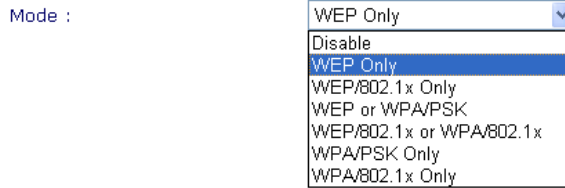
Key 4 :

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

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

Mode

There are several modes provided for you to choose.



Disable - Turn off the encryption mechanism.

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

WEP/802.1x Only - Accept WEP clients with 802.1x authentication. Since the key will be auto-negotiated during authentication, the field of key setting below will be not available for input.

WEP or WPA/PSK - Accepts WEP and WPA clients with legal key accordingly. Only Mixed (WPA+WPA2) is applicable if you select WPA/PSK.

WEP/802.1x or WPA/802.1x - Accept WEP or WPA clients with 802.1x authentication. Only Mixed(WPA+WPA2) is applicable if you select WPA/PSK. Since the key will be auto-negotiated during authentication, the field of key setting below will be not available for input.

WPA/PSK Only - Accepts WPA clients and the encryption key should be entered in PSK. Remember to select WPA type to define either Mixed or WPA2 only in the field below.

WPA/802.1x Only - Accept WPA clients with 802.1x authentication. Remember to select WPA type to define either Mixed or WPA2 only in the field below. Since the key will be auto-negotiated during authentication, the field of key setting below will be not available for input.

WPA

The WPA encrypts each frame transmitted from the radio using the key, which either PSK entered manually in this field below or automatically negotiated via 802.1x authentication.

Type - Select from Mixed (WPA+WPA2) or WPA2 only.

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

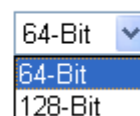
WEP

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

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

WEP:

Encryption Mode:



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.

3.9.4 Access Control

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

Wireless LAN >> Access Control

Access Control

Enable Access Control

Policy : Activate MAC address filter

MAC Address Filter

Index	Attribute	MAC Address
1	v	12 : 55 : 46 : 78 : 32 : 55
2	s	45 : 55 : 46 : 78 : 32 : 55
3		33 : 55 : 46 : 78 : 32 : 55

Client's MAC Address : : : : : :

Attribute :

v: Must Use VPN over WLAN

s: Isolate the station from LAN

Note: Two attributes cannot coexist with each other.

VPN server IP address for WLAN . . .

Enable Access Control

Select to enable the MAC Address access control feature.

Policy

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

Policy : Activate MAC address filter

Activate MAC address filter
Isolate WLAN from LAN

MAC Address Filter

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

Attribute

v - select to apply VPN to the connection of the wireless client of the MAC address.
s - select to isolate the wireless connection of the wireless client of the MAC address from LAN.

Add

Add a new MAC address into the list.

Remove	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.

3.9.5 Station List

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

[Wireless LAN >> Station List](#)

Station List

Status	MAC Address

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

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

Add to Access Control:

Client's MAC address : : : : :

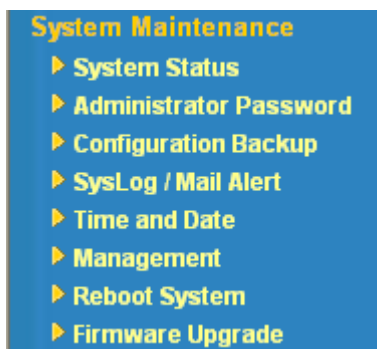
Refresh Click this button to refresh the status of station list.

Add Click this button to add current selected MAC address into **Access Control**.

3.10 System Maintenance

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

Below shows the menu items for System Maintenance.



3.10.1 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 : Vigor2800 series
Firmware Version : 2.6.3_RC1_D57214
Build Date/Time : Fri Nov 18 16:9:5.28 2005

LAN		WAN	
MAC Address	: 00-50-7F-00-00-00	MAC Address	: 00-50-7F-00-00-01
1st IP Address	: 192.168.1.1	Connection	: ---
1st Subnet Mask	: 255.255.255.0	IP Address	: ---
DHCP Server	: Yes	Default Gateway	: ---
		DNS	: 194.109.6.66

VoIP		Wireless LAN	
Port	: 1 2	MAC Address	: 00-0f-ea-f8-23-46
SIP registrar	:	Frequency Domain	: FCC
Account ID	:	Firmware Version	: v2.01.10.10.5.3
Register	:		
Codec	:		
In Calls	: 0 0		
Out Calls	: 0 0		

Model Name	Display the model name of the router.
Firmware Version	Display the firmware version of the router.
Build Date&Time	Display the date and time of the current firmware build.
MAC Address	Display the MAC address of the LAN Interface.
1st IP Address	Display the IP address of the LAN interface.
1st Subnet Mask	Display the subnet mask address of the LAN interface.
DHCP Server	Display the current status of DHCP server of the LAN interface.
MAC Address	Display the MAC address of the WAN Interface.
IP Address	Display the IP address of the WAN interface.

Default Gateway	Display the assigned IP address of the default gateway.
DNS	Display the assigned IP address of the primary DNS.
Port	Display the available VoIP ports.
SIP registrar	Display the registered SIP Server.
Account ID	Display the default account name.
Register	Display the result if the register is successful or not.
Codec	Display the used Codec.
In Calls	Display the number of in calls.
Out Calls	Display the number of out calls.
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 card.

3.10.2 Administrator Password

This page allows you to set new password.

[System Maintenance >> Administrator Password Setup](#)

Administrator Password

Old Password	
New Password	
Retype New Password	

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

New Password Type in new password in this field.

Retype New 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.

3.10.3 Configuration Backup

Backup the Configuration

Follow the steps below to backup your configuration.

1. Go to **System Maintenance >> Configuration Backup**. The following windows will be popped-up, as shown below.

System Maintenance >> Configuration Backup

Configuration Backup / Restoration

Restoration

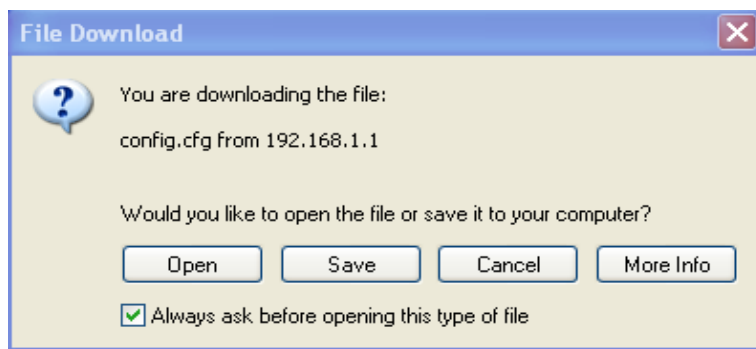
Select a configuration file.

Click Restore to upload the file.

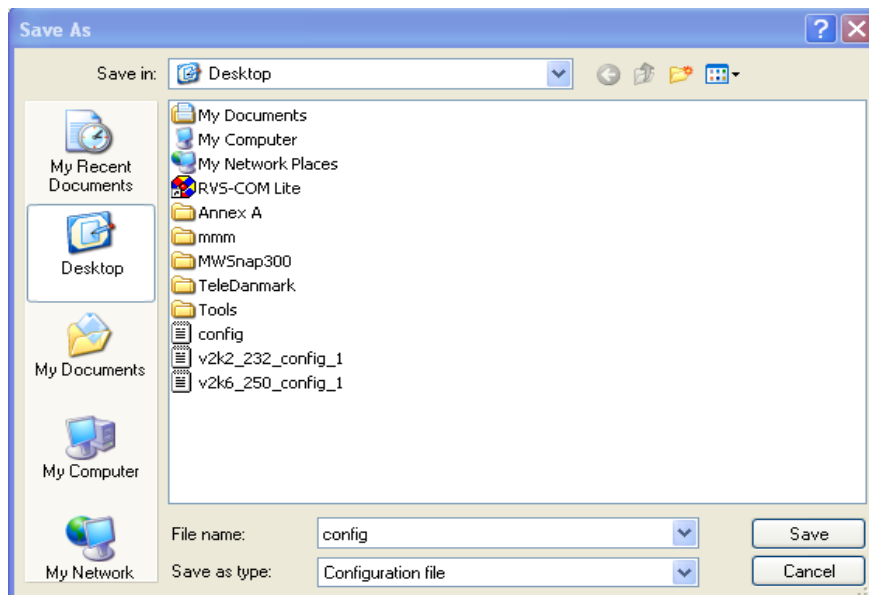
Backup

Click Backup to download current running configurations as a file.

2. Click **Backup** button to get into the following dialog. Click **Save** button to open another dialog for saving configuration as a file.



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.

Restore Configuration

1. Go to **System Maintenance >> Configuration Backup**. The following windows will be popped-up, as shown below.

System Maintenance >> Configuration Backup

Configuration Backup / Restoration

Restoration

Select a configuration file.

Click Restore to upload the file.

Backup

Click Backup to download current running configurations as a file.

2. Click **Browse** button to choose the correct configuration file for uploading to the router.
3. Click **Restore** button and wait for few seconds, the following picture will tell you that the restoration procedure is successful.

3.10.4 Syslog/Mail Alert

SysLog function is provided to help users to monitor router. There is no bother to directly get into the Web Configurator of the router or borrow debug equipments.

System Maintenance >> SysLog / Mail Alert Setup

SysLog Access Setup

Enable

Server IP Address

Destination Port

Mail Alert Setup

Enable

SMTP Server

Mail To

Return-Path

Enable

Click “**Enable**” to activate this function.

Syslog Server IP

The IP address of the Syslog server.

Destination Port

Assign a port for the Syslog protocol.

SMTP Server

The IP address of the SMTP server.

Mail To

Assign a mail address for sending mails out.

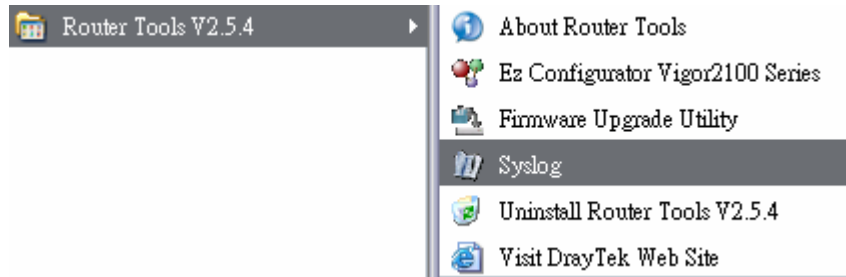
Return-Path

Assign a path for receiving the mail from outside.

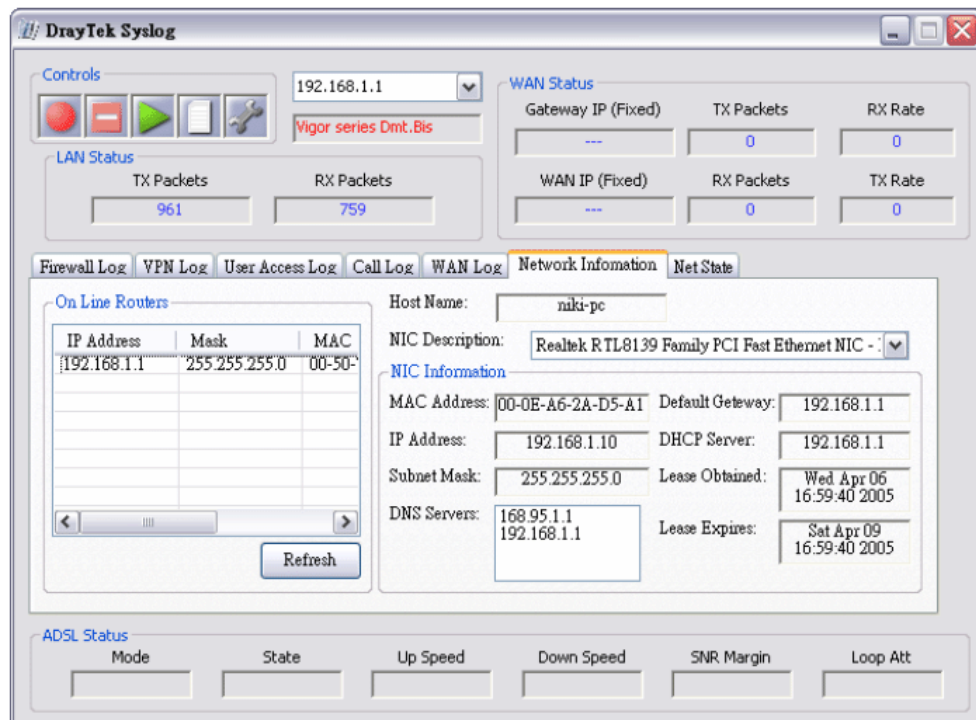
Click **OK** to save these settings.

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.



3.10.5 Time and Date

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

[System Maintenance >> Time and Date](#)

Time Information

Current System Time	2000 Jan 2 Sun 4 : 1 : 12	Inquire Time
---------------------	---------------------------	--------------

Time Setup

<input type="radio"/> Use Browser Time	
<input checked="" type="radio"/> Use Internet Time Client	
Time Protocol	NTP (RFC-1305) ▾
Server IP Address	pool.ntp.org
Time Zone	(GMT) Greenwich Mean Time : Dublin ▾
Automatically Update Interval	30 sec ▾

OK Cancel

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 sever.

Time Zone

Select the time zone where the router is located.

Automatically Update Interval

Select a time interval for updating from the NTP server.

Click **OK** to save these settings.

3.10.6 Management Setup

The port number used to send/receive SIP message for building a session. The default value is 5060 and this must match with the peer Registrar when making VoIP calls.

[System Maintenance >> Management](#)

Management Setup

<p>Management Access Control</p> <p><input type="checkbox"/> Enable remote firmware upgrade(FTP)</p> <p><input type="checkbox"/> Allow management from the Internet</p> <p><input checked="" type="checkbox"/> Disable PING from the Internet</p> <hr/> <p>Access List</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">List</th> <th style="text-align: left;">IP</th> <th style="text-align: left;">Subnet Mask</th> </tr> </thead> <tbody> <tr> <td>1</td> <td><input style="width: 100%;" type="text"/></td> <td><input style="width: 100%;" type="text"/></td> </tr> <tr> <td>2</td> <td><input style="width: 100%;" type="text"/></td> <td><input style="width: 100%;" type="text"/></td> </tr> <tr> <td>3</td> <td><input style="width: 100%;" type="text"/></td> <td><input style="width: 100%;" type="text"/></td> </tr> </tbody> </table>	List	IP	Subnet Mask	1	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>	2	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>	3	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>	<p>Management Port Setup</p> <p><input type="radio"/> Default Ports (Telnet: 23, HTTP: 80, HTTPS: 443, FTP: 21)</p> <p><input checked="" type="radio"/> User Define Ports</p> <p>Telnet Port <input style="width: 50px;" type="text" value="23"/></p> <p>HTTP Port <input style="width: 50px;" type="text" value="80"/></p> <p>HTTPS Port <input style="width: 50px;" type="text" value="443"/></p> <p>FTP Port <input style="width: 50px;" type="text" value="21"/></p> <hr/> <p>SNMP Setup</p> <p><input type="checkbox"/> Enable SNMP Agent</p> <p>Get Community <input style="width: 100%;" type="text" value="public"/></p> <p>Set Community <input style="width: 100%;" type="text" value="private"/></p> <p>Manager Host IP <input style="width: 100%;" type="text"/></p> <hr/> <p>Trap Community <input style="width: 100%;" type="text" value="public"/></p> <p>Notification Host IP <input style="width: 100%;" type="text"/></p> <p>Trap Timeout <input style="width: 50px;" type="text" value="10"/> seconds</p>
List	IP	Subnet Mask											
1	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>											
2	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>											
3	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>											

Enable remote firmware upgrade

Click the checkbox to allow remote firmware upgrade through FTP (File Transfer Protocol).

Allow management from the Internet

Enable the checkbox to allow system administrators to login from the Internet. By default, it is not allowed.

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 and HTTP 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.

3.10.7 Reboot System

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

[System Maintenance >> Reboot System](#)

Reboot System

Do You want to reboot your router ?

Using current configuration
 Using factory default configuration

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.

3.10.8 Firmware Upgrade (TFTP)

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](ftp://ftp.draytek.com).

Click **System Maintenance>> Firmware Upgrade** to launch the Firmware Upgrade Utility.

[System Maintenance >> Firmware Upgrade](#)

Firmware Upgrade


Current Firmware Version : 2.6.3_RC1_D57214

Firmware Upgrade Procedures:

- 1. Click "OK" to start the TFTP server.
- 2. Open the Firmware Upgrade Utility or other 3-party TFTP client software.
- 3. Check that the firmware filename is correct.
- 4. Click "Upgrade" on the Firmware Upgrade Utility to start the upgrade.
- 5. After the upgrade is complete, the TFTP server will automatically stop running.

Do you want to upgrade firmware ?

Click **OK**. The following screen will appear. Please execute the firmware upgrade utility first.

 TFTP server is running. Please execute a Firmware Upgrade Utility software to upgrade router's firmware. This server will be closed by itself when the firmware upgrading finished.

For the detailed information about firmware update, please go to Chapter 4.

3.11 Diagnostics

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

Below shows the menu items for Diagnostics.



3.11.1 WAN Connection

Click **Diagnostics** and click **WAN Connection** to open the web page.

Diagnostics >> WAN Connection

ISDN/PPPoE/PPPoA Diagnostics		Refresh
ISDN Link Status	DOWN	
Internet Access	>> Dial ISDN	
B Channel	B1	B2
Activity	Idle	Idle
Drop Connection	>> Drop B1	>> Drop B2
<hr/>		
Broadband Access Mode/Status	---	
Internet Access	>> Dial PPPoE/PPPoA	
WAN IP Address	---	
Drop Connection	>> Drop PPPoE/PPPoA	

Refresh To obtain the latest information, click here to reload the page.

Broadband Access Mode/Status Display the broadband access mode and status. If the broadband connection is active, it will show Internet access mode is enabled. If the connection is idle, it will show “---”.

WAN IP Address The WAN IP address for the active connection.

Dial PPPoE or PPPoA Click it to force the router to establish a PPPoE or PPPoA connection.

3.11.2 Dial-out Triggered

Click **Diagnostics** and click **Dial-out Trigger** to open the web page.

[Diagnostics >> Dial-out Trigger](#)

[Refresh](#)

Dial-out Triggered Packet Header

HEX Format:

```
00 00 00 00 00 00 00-00 00 00 00 00 00-00 00  
  
00 00 00 00 00 00 00 00 00-00 00 00 00 00 00 00  
00 00 00 00 00 00 00 00 00-00 00 00 00 00 00 00  
00 00 00 00 00 00 00 00 00-00 00 00 00 00 00 00  
00 00 00 00 00 00 00 00 00-00 00 00 00 00 00 00  
00 00 00 00 00 00 00 00 00-00 00 00 00 00 00 00
```

Decoded Format:

```
0.0.0.0 -> 0.0.0.0  
Pr 0 len 0 (0)
```

Refresh

Click it to reload the page.

3.11.3 Routing Table

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

[Diagnostics >> View Routing Table](#)

[Refresh](#)

Current Running Routing Table

```
Key: C - connected, S - static, R - RIP, * - default, ~ - private  
S~ 192.168.10.0/ 255.255.255.0 via 192.168.1.2, IFO  
C~ 192.168.1.0/ 255.255.255.0 is directly connected, IFO  
S~ 211.100.88.0/ 255.255.255.0 via 192.168.1.3, IFO
```

Refresh

Click it to reload the page.

3.11.4 ARP Cache Table

Click **Diagnostics** and click **ARP Cache Table** to view the content of the ARP (Address Resolution Protocol) cache held in the router. The table shows a mapping between an Ethernet hardware address (MAC Address) and an IP address.

[Diagnostics >> View ARP Cache Table](#)

IP Address	MAC Address
192.168.1.11	00-0E-A6-2A-D5-A1

Refresh

Click it to reload the page.

Clear

Click it to clear the whole table.

3.11.5 DHCP Table

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

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

[Diagnostics >> View DHCP Assigned IP Addresses](#)

Index	IP Address	MAC Address	Leased Time	HOST ID
1	192.168.1.1	00-50-7F-00-00-00	ROUTER IP	
2	192.168.1.11	00-0E-A6-2A-D5-A1	0:00:05.900	draytek-niki

Refresh

Click it to reload the page.

3.11.6 NAT Sessions Table

Click **Diagnostics** and click **NAT Sessions Table** to open the setup page.

[Diagnostics >> NAT Sessions Table](#)

NAT Active Sessions Table [Refresh](#)

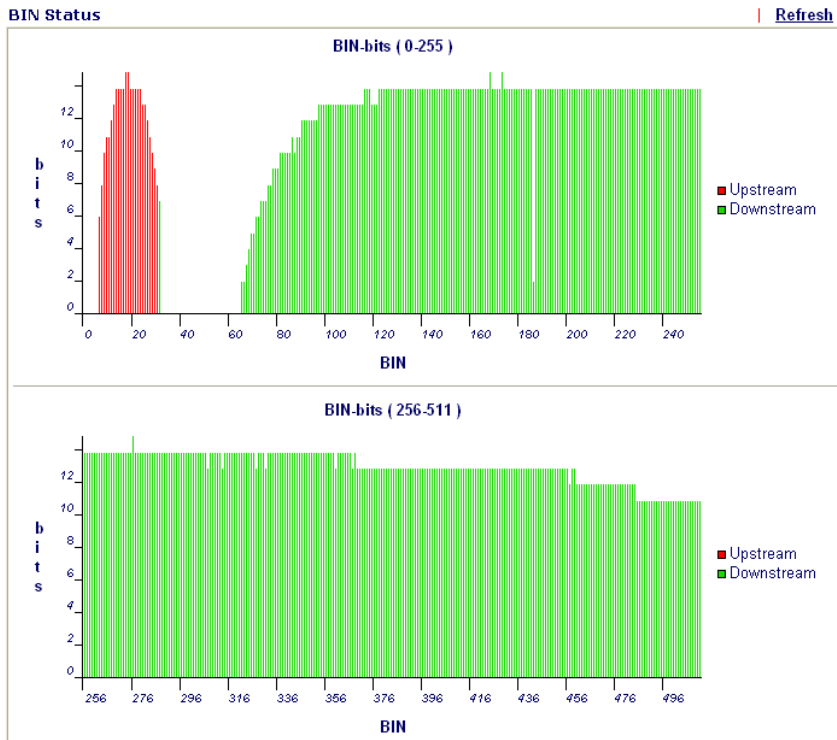
Private IP :Port	#Pseudo Port	Peer IP :Port	Ifno	Status
------------------	--------------	---------------	------	--------

Refresh

Click it to reload the page.

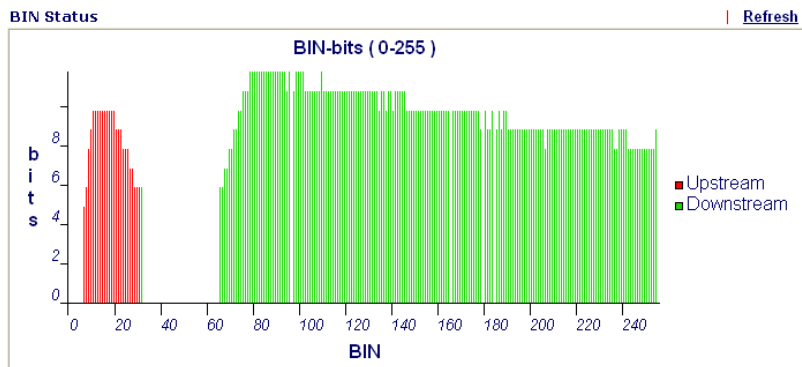
3.11.7 ADSL Spectrum Analysis

Click **Diagnostics** and click **NAT Active Sessions Table** to open the web page. Below shows two example diagrams for different type of Vigor router.



sample 1

System Maintenance >> BIN Status



sample 2

Refresh

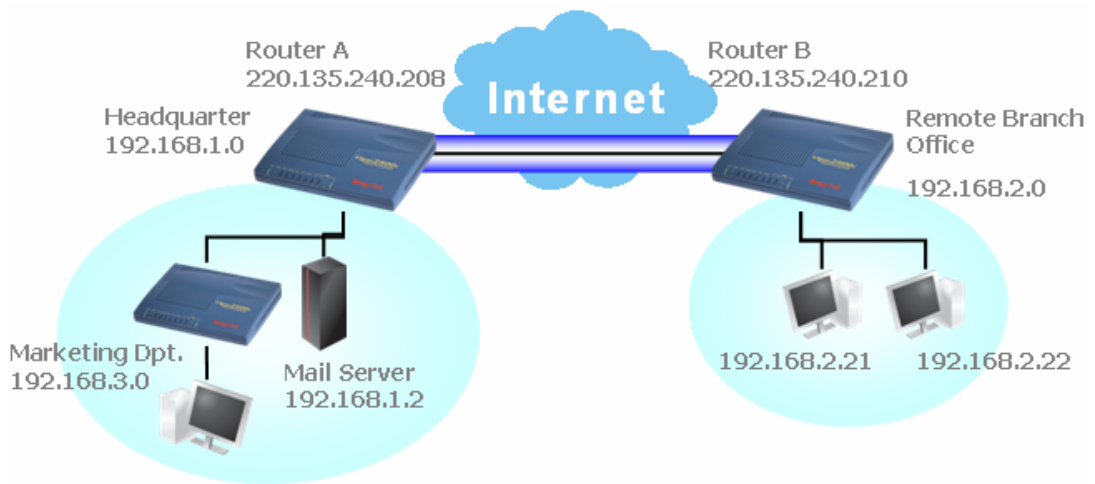
Click it to reload the page.

4

Application and Examples

4.1 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**.

VPN and Remote Access >> PPP General Setup

PPP General Setup	
PPP/MP Protocol	
Dial-In PPP Authentication	PAP or CHAP
Dial-In PPP Encryption (MPPE)	Optional MPPE
Mutual Authentication (PAP)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Username	<input type="text"/>
Password	<input type="text"/>
IP Address Assignment for Dial-In Users	
Start IP Address	192.168.1.200

OK

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.

VPN and Remote Access >> IPSec General Setup

VPN IKE/IPSec General Setup

Dial-in Set up for Remote Dial-in users and Dynamic IP Client (LAN to LAN).

IKE Authentication Method	
Pre-Shared Key	<input type="text"/>
Re-type Pre-Shared Key	<input type="text"/>
IPSec Security Method	
<input checked="" type="checkbox"/> Medium (AH)	Data will be authentic, but will not be encrypted.
High (ESP) <input checked="" type="checkbox"/> DES <input checked="" type="checkbox"/> 3DES <input checked="" type="checkbox"/> AES	Data will be encrypted and authentic.

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.

VPN and Remote Access >> LAN to LAN

Profile Index : 1

1. Common Settings

Profile Name <input type="text" value="Branch1"/>	Call Direction <input checked="" type="radio"/> Both <input type="radio"/> Dial-Out <input type="radio"/> Dial-In
<input type="checkbox"/> Enable this profile	<input type="checkbox"/> Always on
	Idle Timeout <input type="text" value="300"/> second(s)
	<input type="checkbox"/> Enable PING to keep alive
	PING to the IP <input type="text"/>

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.

2. Dial-Out Settings

Type of Server I am calling <input type="radio"/> ISDN <input type="radio"/> PPTP <input checked="" type="radio"/> IPsec Tunnel <input type="radio"/> L2TP with IPsec Policy <small>None</small> <input type="text"/> Dial Number for ISDN or Server IP/Host Name for VPN. (such as 5551234, draytek.com or 123.45.67.89) <input type="text" value="220.135.240.210"/>	Link Type <input type="text" value="64k bps"/> Username <input type="text" value="???"/> Password <input type="text"/> PPP Authentication <input type="text" value="PAP/CHAP"/> VJ Compression <input checked="" type="radio"/> On <input type="radio"/> Off IKE Authentication Method <input checked="" type="radio"/> Pre-Shared Key IKE Pre-Shared Key <input type="text" value="*****"/> <input type="radio"/> Digital Signature(X.509) <input type="text" value="???"/> IPsec Security Method <input checked="" type="radio"/> Medium(AH) <input type="radio"/> High(ESP) <small>DES without Authentication</small> <input type="text"/> <input type="button" value="Advanced"/> Index(1-15) in Schedule Setup: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Callback Function (CBCP) <input type="checkbox"/> Require Remote to Callback <input type="checkbox"/> Provide ISDN Number to Remote
--	--

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.

2. Dial-Out Settings

Type of Server I am calling <input type="radio"/> ISDN <input checked="" type="radio"/> PPTP <input type="radio"/> IPsec Tunnel <input type="radio"/> L2TP with IPsec Policy <small>None</small> <input type="text"/> Dial Number for ISDN or Server IP/Host Name for VPN. (such as 5551234, draytek.com or 123.45.67.89) <input type="text" value="220.135.240.210"/>	Link Type <input type="text" value="64k bps"/> Username <input type="text" value="draytek"/> Password <input type="text" value="*****"/> PPP Authentication <input type="text" value="PAP/CHAP"/> VJ Compression <input checked="" type="radio"/> On <input type="radio"/> Off IKE Authentication Method <input type="radio"/> Pre-Shared Key IKE Pre-Shared Key <input type="text" value="*****"/> <input type="radio"/> Digital Signature(X.509) <input type="text" value="???"/> IPsec Security Method <input checked="" type="radio"/> Medium(AH) <input type="radio"/> High(ESP) <small>DES without Authentication</small> <input type="text"/> <input type="button" value="Advanced"/> Index(1-15) in Schedule Setup: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Callback Function (CBCP) <input type="checkbox"/> Require Remote to Callback <input type="checkbox"/> Provide ISDN Number to Remote
--	---

- 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.

3. Dial-In Settings

Allowed Dial-In Type <input type="checkbox"/> ISDN <input type="checkbox"/> PPTP <input checked="" type="checkbox"/> IPsec Tunnel <input type="checkbox"/> L2TP with IPsec Policy None <input checked="" type="checkbox"/> Specify ISDN CLID or Remote VPN Gateway Peer ISDN Number or Peer VPN Server IP <input type="text" value="220.135.240.210"/> or Peer ID <input type="text"/>	Username <input type="text" value="???"/> Password <input type="text"/> VJ Compression <input checked="" type="radio"/> On <input type="radio"/> Off IKE Authentication Method <input checked="" type="checkbox"/> Pre-Shared Key <input type="text" value="IKE Pre-Shared Key"/> <input type="text" value="....."/> <input type="checkbox"/> Digital Signature(X.509) <input type="text" value="???"/> IPsec Security Method <input checked="" type="checkbox"/> Medium (AH) High (ESP) <input checked="" type="checkbox"/> DES <input checked="" type="checkbox"/> 3DES <input checked="" type="checkbox"/> AES Callback Function (CBCP) <input type="checkbox"/> Enable Callback Function <input type="checkbox"/> Use the Following Number to Callback Callback Number <input type="text"/> Callback Budget <input type="text" value="0"/> minute(s)
--	---

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.

3. Dial-In Settings

Allowed Dial-In Type <input type="checkbox"/> ISDN <input checked="" type="checkbox"/> PPTP <input type="checkbox"/> IPsec Tunnel <input type="checkbox"/> L2TP with IPsec Policy None <input checked="" type="checkbox"/> Specify ISDN CLID or Remote VPN Gateway Peer ISDN Number or Peer VPN Server IP <input type="text" value="220.135.240.210"/> or Peer ID <input type="text"/>	Username <input type="text" value="draytek"/> Password <input type="text" value="....."/> VJ Compression <input checked="" type="radio"/> On <input type="radio"/> Off IKE Authentication Method <input checked="" type="checkbox"/> Pre-Shared Key <input type="text" value="IKE Pre-Shared Key"/> <input type="text" value="....."/> <input type="checkbox"/> Digital Signature(X.509) <input type="text" value="???"/> IPsec Security Method <input checked="" type="checkbox"/> Medium (AH) High (ESP) <input checked="" type="checkbox"/> DES <input checked="" type="checkbox"/> 3DES <input checked="" type="checkbox"/> AES Callback Function (CBCP) <input type="checkbox"/> Enable Callback Function <input type="checkbox"/> Use the Following Number to Callback Callback Number <input type="text"/> Callback Budget <input type="text" value="0"/> minute(s)
--	---

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.

4. TCP/IP Network Settings

My WAN IP <input type="text" value="0.0.0.0"/> Remote Gateway IP <input type="text" value="0.0.0.0"/> Remote Network IP <input type="text" value="192.168.2.0"/> Remote Network Mask <input type="text" value="255.255.255.0"/> <input type="button" value="More"/>	RIP Direction <input type="text" value="TX/RX Both"/> RIP Version <input type="text" value="Ver. 2"/> For NAT operation, treat remote sub-net as <input type="text" value="Private IP"/> <input type="checkbox"/> Change default route to this VPN tunnel
---	--

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**.

- Then, for using **PPP based** services, such as PPTP, L2TP, you have to set general settings in **PPP General Setup**.

PPP General Setup

PPP/MP Protocol		IP Address Assignment for Dial-In Users	
Dial-In PPP Authentication	<input type="text" value="PAP or CHAP"/>	Start IP Address	<input type="text" value="192.168.2.200"/>
Dial-In PPP Encryption (MPPE)	<input type="text" value="Optional MPPE"/>		
Mutual Authentication (PAP)	<input type="radio"/> Yes <input checked="" type="radio"/> No		
Username	<input type="text"/>		
Password	<input type="text"/>		

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.

VPN IKE/IPSec General Setup
Dial-in Set up for Remote Dial-in users and Dynamic IP Client (LAN to LAN).

IKE Authentication Method	
Pre-Shared Key	<input type="text" value="....."/>
Re-type Pre-Shared Key	<input type="text" value="....."/>
IPSec Security Method	
<input checked="" type="checkbox"/> Medium (AH)	Data will be authentic, but will not be encrypted.
High (ESP) <input checked="" type="checkbox"/> DES <input checked="" type="checkbox"/> 3DES <input checked="" type="checkbox"/> AES	Data will be encrypted and authentic.

- Go to **LAN-to-LAN**. Click on one index number to edit a profile.
- Set **Common Settings** as shown below. You should enable both of VPN connections because any one of the parties may start the VPN connection.

1. Common Settings

Profile Name	<input type="text" value="Branch 1"/>	Call Direction	<input checked="" type="radio"/> Both <input type="radio"/> Dial-Out <input type="radio"/> Dial-In
<input checked="" type="checkbox"/> Enable this profile		<input type="checkbox"/> Always on	
		Idle Timeout	<input type="text" value="300"/> second(s)
		<input type="checkbox"/> Enable PING to keep alive	
		PING to the IP	<input type="text" value="192.168.2.21"/>

- 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.

2. Dial-Out Settings

Type of Server I am calling <input type="radio"/> ISDN <input type="radio"/> PPTP <input checked="" type="radio"/> IPsec Tunnel <input type="radio"/> L2TP with IPsec Policy: <input type="text" value="None"/>	Link Type: <input type="text" value="64k bps"/> Username: <input type="text" value="draytek"/> Password: <input type="password" value="....."/> PPP Authentication: <input type="text" value="PAP/CHAP"/> VJ Compression: <input checked="" type="radio"/> On <input type="radio"/> Off
Dial Number for ISDN or Server IP/Host Name for VPN. (such as 5551234, draytek.com or 123.45.67.89) <input type="text" value="220.135.240.208"/>	IKE Authentication Method <input checked="" type="radio"/> Pre-Shared Key IKE Pre-Shared Key: <input type="password" value="....."/> <input type="radio"/> Digital Signature(X.509) <input <="" td="" type="text" value="???"/>
	IPsec Security Method <input checked="" type="radio"/> Medium(AH) <input type="radio"/> High(ESP): <input type="text" value="DES without Authentication"/> <input type="button" value="Advanced"/>
	Index(1-15) in Schedule Setup: <input type="text" value=""/> <input type="text" value=""/> <input type="text" value=""/> <input type="text" value=""/>
	Callback Function (CBCP) <input type="checkbox"/> Require Remote to Callback <input type="checkbox"/> Provide ISDN Number to Remote

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.

2. Dial-Out Settings

Type of Server I am calling <input type="radio"/> ISDN <input checked="" type="radio"/> PPTP <input type="radio"/> IPsec Tunnel <input type="radio"/> L2TP with IPsec Policy: <input type="text" value="None"/>	Link Type: <input type="text" value="64k bps"/> Username: <input type="text" value="draytek"/> Password: <input type="password" value="....."/> PPP Authentication: <input type="text" value="PAP/CHAP"/> VJ Compression: <input checked="" type="radio"/> On <input type="radio"/> Off
Dial Number for ISDN or Server IP/Host Name for VPN. (such as 5551234, draytek.com or 123.45.67.89) <input type="text" value="220.135.240.208"/>	IKE Authentication Method <input checked="" type="radio"/> Pre-Shared Key IKE Pre-Shared Key: <input type="password" value="....."/> <input type="radio"/> Digital Signature(X.509) <input <="" td="" type="text" value="???"/>
	IPsec Security Method <input checked="" type="radio"/> Medium(AH) <input type="radio"/> High(ESP): <input type="text" value="DES without Authentication"/> <input type="button" value="Advanced"/>
	Index(1-15) in Schedule Setup: <input type="text" value=""/> <input type="text" value=""/> <input type="text" value=""/> <input type="text" value=""/>
	Callback Function (CBCP) <input type="checkbox"/> Require Remote to Callback <input type="checkbox"/> Provide ISDN Number to Remote

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.

3. Dial-In Settings

Allowed Dial-In Type <input type="checkbox"/> ISDN <input type="checkbox"/> PPTP <input checked="" type="checkbox"/> IPSec Tunnel <input type="checkbox"/> L2TP with IPSec Policy: <input type="text" value="None"/> <input checked="" type="checkbox"/> Specify ISDN CLID or Remote VPN Gateway Peer ISDN Number or Peer VPN Server IP <input type="text" value="220.135.240.208"/> or Peer ID: <input type="text"/>	Username: <input type="text" value="draytek"/> Password: <input type="password" value="....."/> VJ Compression: <input checked="" type="radio"/> On <input type="radio"/> Off IKE Authentication Method <input checked="" type="checkbox"/> Pre-Shared Key IKE Pre-Shared Key: <input type="password" value="....."/> <input type="checkbox"/> Digital Signature(X.509) ??? IPSec Security Method <input checked="" type="checkbox"/> Medium (AH) High (ESP) <input checked="" type="checkbox"/> DES <input checked="" type="checkbox"/> 3DES <input checked="" type="checkbox"/> AES Callback Function (CBCP) <input type="checkbox"/> Enable Callback Function <input type="checkbox"/> Use the Following Number to Callback Callback Number: <input type="text"/> Callback Budget: <input type="text" value="0"/> minute(s)
--	---

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.

3. Dial-In Settings

Allowed Dial-In Type <input type="checkbox"/> ISDN <input checked="" type="checkbox"/> PPTP <input type="checkbox"/> IPSec Tunnel <input type="checkbox"/> L2TP with IPSec Policy: <input type="text" value="None"/> <input checked="" type="checkbox"/> Specify ISDN CLID or Remote VPN Gateway Peer ISDN Number or Peer VPN Server IP <input type="text" value="220.135.240.208"/> or Peer ID: <input type="text"/>	Username: <input type="text" value="draytek"/> Password: <input type="password" value="....."/> VJ Compression: <input checked="" type="radio"/> On <input type="radio"/> Off IKE Authentication Method <input checked="" type="checkbox"/> Pre-Shared Key IKE Pre-Shared Key: <input type="password" value="....."/> <input type="checkbox"/> Digital Signature(X.509) ??? IPSec Security Method <input checked="" type="checkbox"/> Medium (AH) High (ESP) <input checked="" type="checkbox"/> DES <input checked="" type="checkbox"/> 3DES <input checked="" type="checkbox"/> AES Callback Function (CBCP) <input type="checkbox"/> Enable Callback Function <input type="checkbox"/> Use the Following Number to Callback Callback Number: <input type="text"/> Callback Budget: <input type="text" value="0"/> minute(s)
--	---

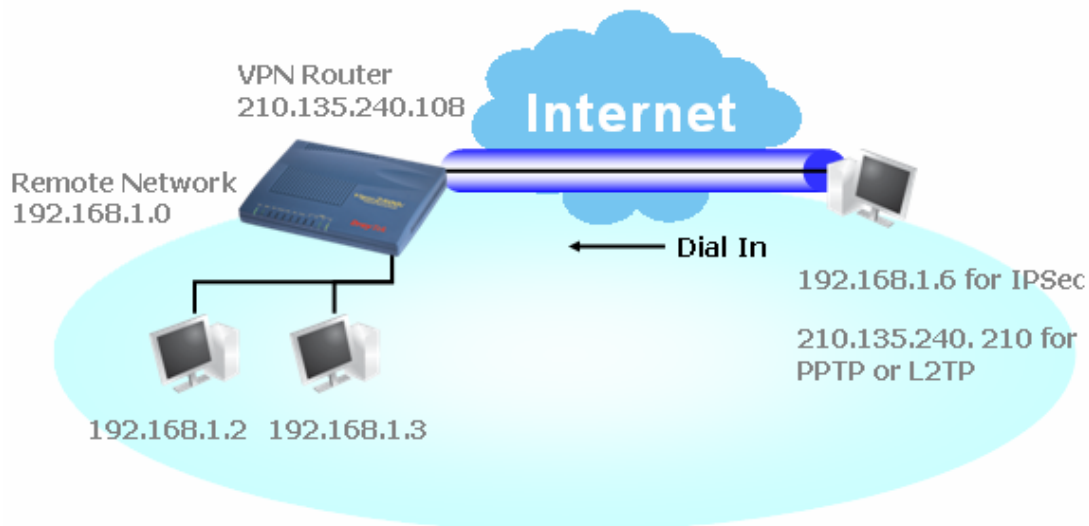
- At last, set the remote network IP/subnet in **TCP/IP Network Settings** so that Router B can direct the packets destined to the remote network to Router A via the VPN connection.

4. TCP/IP Network Settings

My WAN IP: <input type="text" value="0.0.0.0"/> Remote Gateway IP: <input type="text" value="0.0.0.0"/> Remote Network IP: <input type="text" value="192.168.1.0"/> Remote Network Mask: <input type="text" value="255.255.255.0"/> <input type="button" value="More"/>	RIP Direction: <input type="text" value="TX/RX Both"/> RIP Version: <input type="text" value="Ver. 2"/> For NAT operation, treat remote sub-net as: <input type="text" value="Private IP"/> <input type="checkbox"/> Change default route to this VPN tunnel
---	--

4.2 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**.

PPP General Setup	
PPP/MP Protocol	
Dial-In PPP Authentication	PAP or CHAP
Dial-In PPP Encryption (MPPE)	Optional MPPE
Mutual Authentication (PAP)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Username	<input type="text"/>
Password	<input type="text"/>
IP Address Assignment for Dial-In Users	
Start IP Address	192.168.1.200

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.

VPN IKE/IPSec General Setup

Dial-in Set up for Remote Dial-in users and Dynamic IP Client (LAN to LAN).

IKE Authentication Method	
Pre-Shared Key
Re-type Pre-Shared Key
IPSec Security Method	
<input checked="" type="checkbox"/> Medium (AH)	Data will be authentic, but will not be encrypted.
High (ESP)	<input checked="" type="checkbox"/> DES <input checked="" type="checkbox"/> 3DES <input checked="" type="checkbox"/> AES
Data will be encrypted and authentic.	

3. Go to **Remote Dial-In Users**. 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.

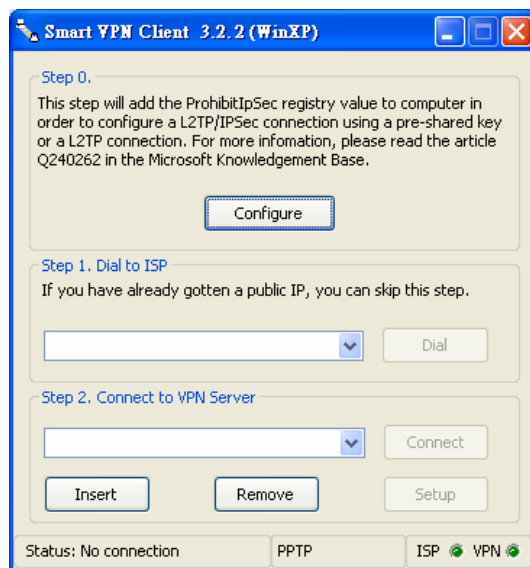
User account and Authentication <input checked="" type="checkbox"/> Enable this account Idle Timeout <input type="text" value="300"/> second(s)	Username <input type="text" value="draytek_user1"/> Password <input type="password" value="....."/>
Allowed Dial-In Type <input type="checkbox"/> ISDN <input type="checkbox"/> PPTP <input checked="" type="checkbox"/> IPSec Tunnel <input type="checkbox"/> L2TP with IPSec Policy <input type="text" value="None"/>	IKE Authentication Method <input checked="" type="checkbox"/> Pre-Shared Key IKE Pre-Shared Key <input type="text" value="....."/> <input type="checkbox"/> Digital Signature (X.509) <input type="text" value="111"/>
<input checked="" type="checkbox"/> Specify Remote Node Remote Client IP or Peer ISDN Number <input type="text" value="210.135.240.210"/> or Peer ID <input type="text"/>	IPSec Security Method <input checked="" type="checkbox"/> Medium (AH) High (ESP) <input checked="" type="checkbox"/> DES <input checked="" type="checkbox"/> 3DES <input checked="" type="checkbox"/> AES Local ID <input type="text"/> (optional)
	Callback Function <input type="checkbox"/> Check to enable Callback function <input type="checkbox"/> Specify the callback number Callback Number <input type="text"/> <input checked="" type="checkbox"/> Check to enable Callback Budget Control Callback Budget <input type="text" value="30"/> minute(s)

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.

User account and Authentication <input checked="" type="checkbox"/> Enable this account Idle Timeout: <input type="text" value="300"/> second(s)	
Allowed Dial-In Type <input type="checkbox"/> ISDN <input checked="" type="checkbox"/> PPTP <input type="checkbox"/> IPsec Tunnel <input type="checkbox"/> L2TP with IPsec Policy: <input type="text" value="None"/>	
<input checked="" type="checkbox"/> Specify Remote Node Remote Client IP or Peer ISDN Number: <input type="text" value="210.135.240.210"/> or Peer ID: <input type="text"/>	
Username: <input type="text" value="draytek_user1"/> Password: <input type="password" value="*****"/>	
IKE Authentication Method <input checked="" type="checkbox"/> Pre-Shared Key IKE Pre-Shared Key: <input type="password" value="*****"/> <input type="checkbox"/> Digital Signature (X.509) <input type="text" value="111"/>	
IPsec Security Method <input checked="" type="checkbox"/> Medium (AH) High (ESP) <input checked="" type="checkbox"/> DES <input checked="" type="checkbox"/> 3DES <input checked="" type="checkbox"/> AES Local ID: <input type="text"/> (optional)	
Callback Function <input type="checkbox"/> Check to enable Callback function <input type="checkbox"/> Specify the callback number Callback Number: <input type="text"/> <input checked="" type="checkbox"/> Check to enable Callback Budget Control Callback Budget: <input type="text" value="30"/> minute(s)	

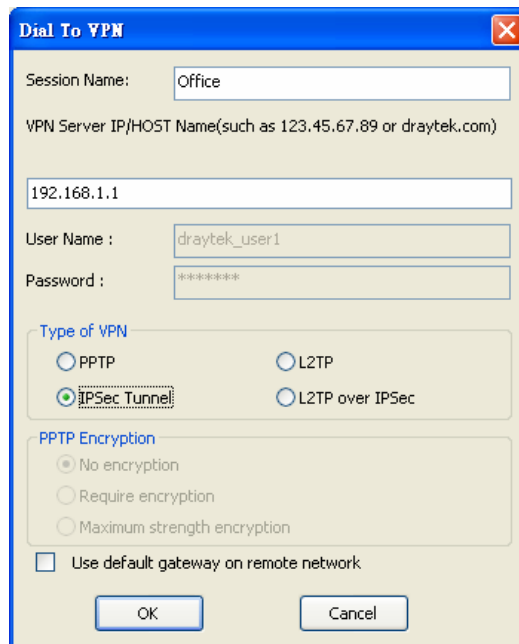
Settings in the remote host:

- 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.
- After successful installation, for the first time user, you should click on the **Step 0. Configure** button. Reboot the host.

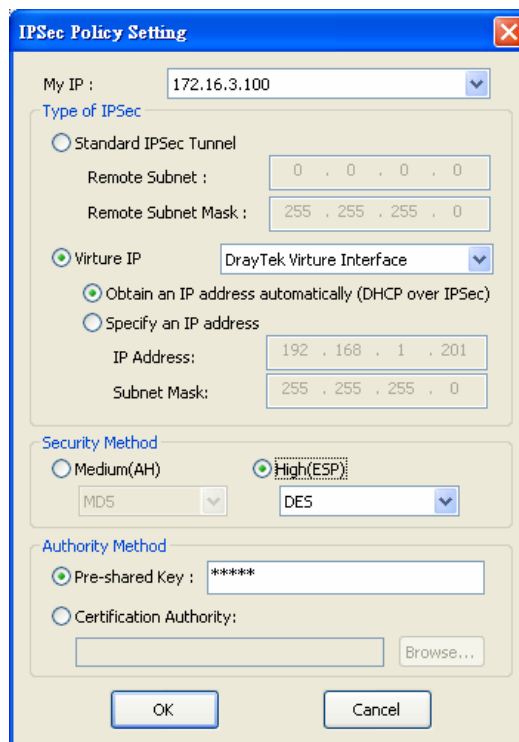


- In **Step 2. Connect to VPN Server**, click **Insert** button to add a new entry.

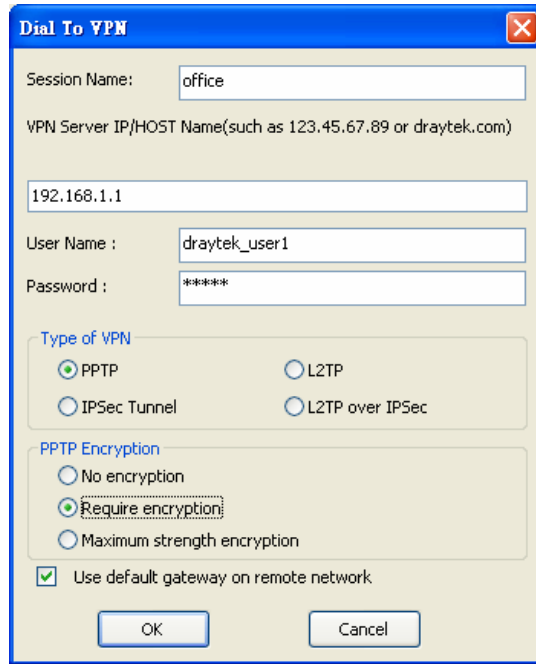
If an IPsec-based service is selected as shown below,



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.

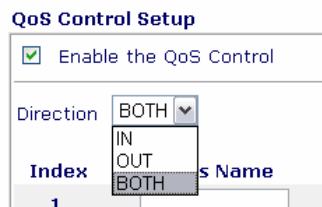


4. Click **Connect** button to build connection. When the connection is successful, you will find a green light on the right down corner.

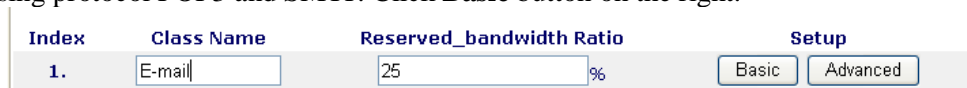
4.3 QoS Setting Example

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 VoIP or Skype in the restroom.

1. Make sure the QoS Control on the left corner is checked. And select BOTH in **Direction**.



2. Enter the Class Name of Index 1. In this index, she will set reserve bandwidth for Email using protocol POP3 and SMTP. Click **Basic** button on the right.



3. Select POP3 and SMTP on the left column and add to right column. Click OK to exit.



- Enter the Class Name of Index 2. In this index, she will set reserve bandwidth for HTTPS. And click Basic button on the right.

2.	HTTP	25	%	Basic	Advanced
----	------	----	---	-------	----------

- Select HTTPS in the list on the left column and click on ADD to add to right column. Click OK to exit.

AUTH(TCP:113) BGP(TCP:179) BOOTPCIENT(UDP:68) BOOTPSERVER(UDP:67) CU-SEEME-HI(TCP/UDP:24032) CU-SEEME-LO(TCP/UDP:7648) DNS(TCP/UDP:53) FINGER(TCP:79) FTP(TCP:20~21)	ADD >> << REMOVE	HTTPS(TCP:443)
--	---------------------	----------------

- Check the Enable UDP Bandwidth Control on the bottom to prevent enormous UDP traffic of VoIP influent other application.

Quality of Service | [Set to Factory Default](#) |

Enable the QoS Control

Direction: OUT

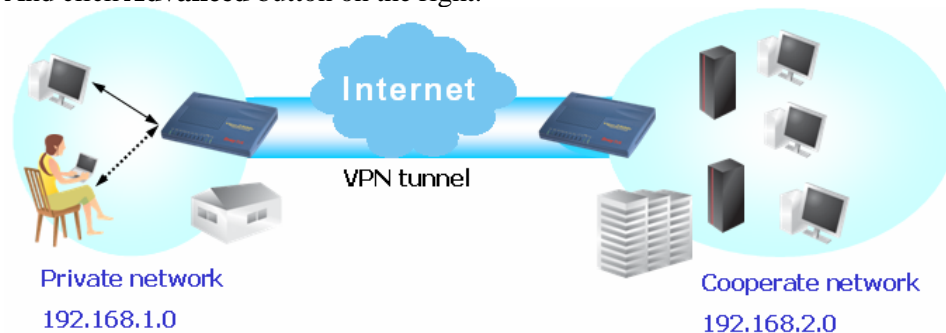
Index	Class Name	Reserved_bandwidth Ratio	Setup
1.	E-mail	25 %	Basic Advanced
2.	HTTP	25 %	Basic Advanced
3.		25 %	Basic Advanced
4.	Others	25 %	

Enable UDP Bandwidth Control Limited_bandwidth Ratio: 25 %

[Online Statistics](#)

OK Clear All

- 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 reserve bandwidth for 1 VPN tunnel. And click **Advanced** button on the right.



- Click edit to open a new window. First, check the ACT box. Then click **SrcEdit** to set a worker's subnet address. Click **DestEdit** to set headquarter's subnet address. Leave other fields and click OK.

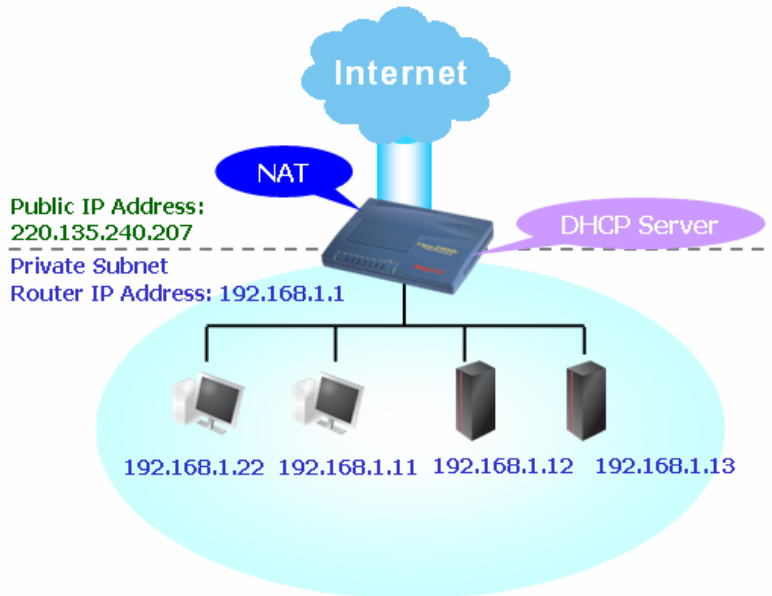
Quality of Service

ACT	Source Address	Destination Address	DiffServ CodePoint	Service Type
<input checked="" type="checkbox"/>	192.168.1.0 <input type="button" value="SrcEdit"/>	192.168.2.0 <input type="button" value="DestEdit"/>	ANY <input type="button" value="v"/>	ANY <input type="button" value="Add"/> <input type="button" value="Edit"/> <input type="button" value="Delete"/>

Note: Please choose/setup the Service Type first.

4.4 LAN – Created by Using NAT

An example of default setting and the corresponding deployment are shown below. The default Vigor router private IP address/Subnet Mask is 192.168.1.1/255.255.255.0. The built-in DHCP server is enabled so it assigns every local NATed host an IP address of 192.168.1.x starting from 192.168.1.10.



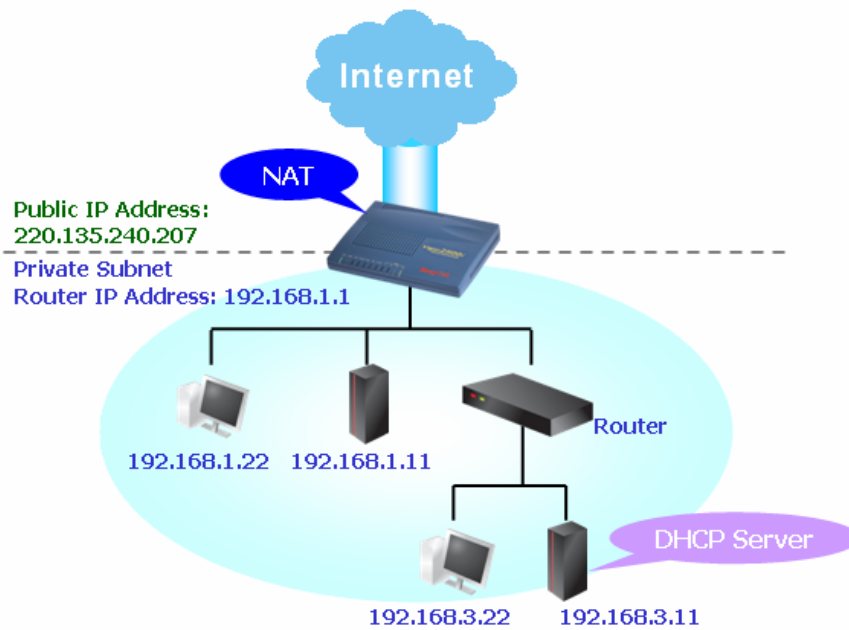
You can just set the settings wrapped inside the red rectangles to fit the request of NAT usage.

LAN >> General Setup

Ethernet TCP / IP and DHCP Setup

LAN IP Network Configuration	DHCP Server Configuration
For NAT Usage	<input checked="" type="radio"/> Enable Server <input type="radio"/> Disable Server
1st IP Address: 192.168.1.1	Relay Agent: <input type="radio"/> 1st Subnet <input type="radio"/> 2nd Subnet
1st Subnet Mask: 255.255.255.0	Start IP Address: 192.168.1.10
For IP Routing Usage: <input type="radio"/> Enable <input checked="" type="radio"/> Disable	IP Pool Counts: 50
2nd IP Address: 192.168.2.1	Gateway IP Address: 192.168.1.1
2nd Subnet Mask: 255.255.255.0	DHCP Server IP Address for Relay Agent: []
<input type="button" value="2nd Subnet DHCP Server"/>	DNS Server IP Address
RIP Protocol Control: Disable	Primary IP Address: []
	Secondary IP Address: []

To use another DHCP server in the network rather than the built-in one of Vigor Router, you have to change the settings as show below.



You can just set the settings wrapped inside the red rectangles to fit the request of NAT usage.

Ethernet TCP / IP and DHCP Setup

LAN IP Network Configuration	DHCP Server Configuration
For NAT Usage	<input type="radio"/> Enable Server <input checked="" type="radio"/> Disable Server
1st IP Address <input type="text" value="192.168.1.1"/>	Relay Agent: <input type="radio"/> 1st Subnet <input type="radio"/> 2nd Subnet
1st Subnet Mask <input type="text" value="255.255.255.0"/>	Start IP Address <input type="text" value="192.168.1.10"/>
For IP Routing Usage <input type="radio"/> Enable <input checked="" type="radio"/> Disable	IP Pool Counts <input type="text" value="50"/>
2nd IP Address <input type="text" value="192.168.2.1"/>	Gateway IP Address <input type="text" value="192.168.1.1"/>
2nd Subnet Mask <input type="text" value="255.255.255.0"/>	DHCP Server IP Address for Relay Agent <input type="text"/>
<input type="button" value="2nd Subnet DHCP Server"/>	DNS Server IP Address
RIP Protocol Control <input type="text" value="Disable"/>	Primary IP Address <input type="text"/>
	Secondary IP Address <input type="text"/>

4.5 Calling Scenario for VoIP function

4.5.1 Calling via SIP Sever

Example 1: Both John and David have SIP Addresses from different service providers.

John's SIP URL: 1234@draytel.org, David's SIP URL: 4321@iptel.org

Settings for John

DialPlan index 1
Phone Number: 1111
Display Name: David
SIP URL: 4321@iptel.org

SIP Accounts Settings ---

Profile Name: draytel1
Register via: Auto
SIP Port: 5060 (default)
Domain/Realm: draytel.org
Proxy: draytel.org
Act as outbound proxy:
unchecked
Display Name: John
Account Number/Name: 1234
Authentication ID: unchecked
Password: ****
Expiry Time: (use default value)

CODEC/RTP/DTMF ---

(Use default value)

Settings for David

DialPlan index 1
Phone Number: 2222
Display Name: John
SIP URL: 1234@draytel.org

SIP Accounts Settings ---

Profile Name: iptel 1
Register via: Auto
SIP Port: 5060 (default)
Domain/Realm: iptel.org
Proxy: iptel.org
Act as outbound proxy:
unchecked
Display Name: David
Account Name: 4321
Authentication ID: unchecked
Password: ****
Expiry Time: (use default value)

CODEC/RTP/DTMF ---

(Use default value)

VoIP >> DialPlan Setup

Index No. 1

Enable

Phone Number	1111
Display Name	David
SIP URL	4321@iptel.org

OK Cancel

VoIP >> SIP Accounts

SIP Account Index No. 1

Profile Name	draytel 1 (11 char max.)
Register via	Auto <input type="checkbox"/> make call without register
SIP Port	5060
Domain/Realm	draytel.org (63 char max.)
Proxy	draytel.org (63 char max.)
<input type="checkbox"/> Act as outbound proxy	
Display Name	John (23 char max.)
Account Number/Name	1234 (63 char max.)
<input type="checkbox"/> Authentication ID	(63 char max.)
Password	**** (63 char max.)
Expiry Time	1 hour 3600 sec
NAT Traversal Support	None
Ring Port	<input type="checkbox"/> VoIP1 <input type="checkbox"/> VoIP2
Ring Pattern	1

OK Cancel

John calls David ---

He picks up the phone and dials 1111#. (DialPlan Phone Number for David)

VoIP >> DialPlan Setup

Index No. 1

Enable

Phone Number	2222
Display Name	John
SIP URL	1234@draytel.org

OK Cancel

VoIP >> SIP Accounts

SIP Account Index No. 1

Profile Name	iptel 1 (11 char max.)
Register via	Auto <input type="checkbox"/> make call without register
SIP Port	5060
Domain/Realm	iptel.org (63 char max.)
Proxy	iptel.org (63 char max.)
<input type="checkbox"/> Act as outbound proxy	
Display Name	David (23 char max.)
Account Number/Name	4321 (63 char max.)
<input type="checkbox"/> Authentication ID	(63 char max.)
Password	**** (63 char max.)
Expiry Time	1 hour 3600 sec
NAT Traversal Support	None
Ring Port	<input type="checkbox"/> VoIP1 <input type="checkbox"/> VoIP2
Ring Pattern	1

OK Cancel

David calls John

He picks up the phone and dials 2222# (DialPlan Phone Number for John)

Example 2: Both John and David have SIP Addresses from the same service provider.

John's SIP URL: 1234@draytel.org , David's SIP URL: 4321@draytel.org

Settings for John

DialPlan index 1
Phone Number: 1111
Display Name: David
SIP URL: 4321@draytel.org

VoIP >> DialPlan Setup

Index No. 1

Enable

Phone Number: 1111

Display Name: David

SIP URL: 4321@draytel.org

OK Cancel

SIP Accounts Settings ---

Profile Name: draytel 1
Register via: Auto
SIP Port: 5060 (default)
Domain/Realm: draytel.org
Proxy: draytel.org
Act as outbound proxy: unchecked
Display Name: John
Account Number/Name: 1234
Authentication ID: unchecked
Password: ****
Expiry Time: (use default value)

VoIP >> SIP Accounts

SIP Account Index No. 1

Profile Name: draytel 1 (11 char max.)

Register via: Auto make call without register

SIP Port: 5060

Domain/Realm: draytel.org (63 char max.)

Proxy: draytel.org (63 char max.)

Act as outbound proxy

Display Name: John (23 char max.)

Account Number/Name: 1234 (63 char max.)

Authentication ID

Password: **** (63 char max.)

Expiry Time: 1 hour 3600 sec

NAT Traversal Support: None

Ring Port: VoIP1 VoIP2

Ring Pattern: 1

OK Cancel

CODEC/RTP/DTMF ---
(Use default value)

John calls David

He picks up the phone and dials 1111#. (DialPlan Phone Number for David) Or,
He picks up the phone and dials 4321#. (David's Account Name)

Settings for David

DialPlan index 1
Phone Number:2222
Display Name: John
SIP URL:1234@draytel.org

VoIP >> DialPlan Setup

Index No. 1

Enable

Phone Number: 2222

Display Name: John

SIP URL: 1234@draytel.org

OK Cancel

SIP Accounts Settings ---

Profile Name: John
Register via: Auto
SIP Port: 5060(default)
Domain/Realm: draytel.org
Proxy: iptel.org
Act as outbound proxy: unchecked
Display Name: David
Account Name: 4321
Authentication ID: unchecked
Password: ****
Expiry Time: (use default value)

VoIP >> SIP Accounts

SIP Account Index No. 1

Profile Name: John (11 char max.)

Register via: Auto make call without register

SIP Port: 5060

Domain/Realm: draytel.org (63 char max.)

Proxy: iptel.org (63 char max.)

Act as outbound proxy

Display Name: David (23 char max.)

Account Number/Name: 4321 (63 char max.)

Authentication ID: 4321 (63 char max.)

Password: **** (63 char max.)

Expiry Time: 1 hour 3600 sec

NAT Traversal Support: None

Ring Port: VoIP1 VoIP2

Ring Pattern: 1

OK Cancel

CODEC/RTP/DTMF---
(Use default value)

David calls John

He picks up the phone and dials 2222# (DialPlan Phone Number for John) Or,
He picks up the phone and dials 1234# (John's Account Name)

4.5.2 Peer-to-Peer Calling

Example 3: Arnor and Paulin have Vigor routers respectively, they can call each other *without* SIP Registrar. First they must have each other's IP address and assign an Account Name for the port used for calling.

Arnor's SIP URL: 1234@214.61.172.53 Paulin's SIP URL: 4321 @ 203.69.175.24

Settings for Arnor

DialPlan index 1
Phone Number: 1111
Display Name: paulin
SIP URL: 4321@
203.69.175.24

SIP Accounts Settings ---

Profile Name: Paulin
Register via: None
SIP Port: 5060(default)
Domain/Realm: (blank)
Proxy: (blank)
Act as outbound proxy:
unchecked
Display Name: Arnor
Account Name: 1234
Authentication ID: unchecked
Password: (blank)
Expiry Time: (use default
value)

VoIP >> DialPlan Setup

Index No. 1

Enable

Phone Number	<input type="text" value="1111"/>
Display Name	<input type="text" value="paulin"/>
SIP URL	<input type="text" value="4321"/> @ <input type="text" value="203.69.175.24"/>

VoIP >> SIP Accounts

VoIP >> SIP Accounts

SIP Account Index No. 1

Profile Name	<input type="text" value="Paulin"/> (11 char max.)
Register via	<input type="button" value="None"/> <input type="checkbox"/> make call without register
SIP Port	<input type="text" value="5060"/>
Domain/Realm	<input type="text"/> (63 char max.)
Proxy	<input type="text"/> (63 char max.)
<input type="checkbox"/> Act as outbound proxy	
Display Name	<input type="text" value="Arnor"/> (23 char max.)
Account Number/Name	<input type="text" value="1234"/> (63 char max.)
<input type="checkbox"/> Authentication ID	<input type="text"/> (63 char max.)
Password	<input type="text"/> (63 char max.)
Expiry Time	<input type="button" value="1 hour"/> <input type="text" value="3600"/> sec
NAT Traversal Support	<input type="button" value="None"/>
Ring Port	<input type="checkbox"/> VoIP1 <input type="checkbox"/> VoIP2
Ring Pattern	<input type="button" value="1"/>

CODEC/RTP/DTMF---

(Use default value)

Arnor calls Paulin

He picks up the phone and dials **1111#**. (DialPlan Phone Number for Arnor)

Settings for Paulin

DialPlan index 1
Phone Number:2222
Display Name: Arnor
SIP URL:
1234@214.61.172.53

SIP Accounts Settings ---

Profile Name: Arnor
Register via: None
SIP Port: 5060(default)
Domain/Realm: (blank)
Proxy: (blank)
Act as outbound proxy:
unchecked
Display Name: Paulin
Account Name: 4321
Authentication ID: unchecked
Password: (blank)
Expiry Time: (use default
value)

VoIP >> DialPlan Setup

Index No. 1

Enable

Phone Number	<input type="text" value="2222"/>
Display Name	<input type="text" value="Arnor"/>
SIP URL	<input type="text" value="1234"/> @ <input type="text" value="214.61.172.53"/>

VoIP >> SIP Accounts

VoIP >> SIP Accounts

SIP Account Index No. 1

Profile Name	<input type="text" value="Arnor"/> (11 char max.)
Register via	<input type="button" value="None"/> <input type="checkbox"/> make call without register
SIP Port	<input type="text" value="5060"/>
Domain/Realm	<input type="text"/> (63 char max.)
Proxy	<input type="text"/> (63 char max.)
<input type="checkbox"/> Act as outbound proxy	
Display Name	<input type="text" value="Paulin"/> (23 char max.)
Account Number/Name	<input type="text" value="4321"/> (63 char max.)
<input type="checkbox"/> Authentication ID	<input type="text"/> (63 char max.)
Password	<input type="text"/> (63 char max.)
Expiry Time	<input type="button" value="1 hour"/> <input type="text" value="3600"/> sec
NAT Traversal Support	<input type="button" value="None"/>
Ring Port	<input type="checkbox"/> VoIP1 <input type="checkbox"/> VoIP2
Ring Pattern	<input type="button" value="1"/>

CODEC/RTP/DTMF---
(Use default value)

Paulin calls Arnor
He picks up the phone and dials **2222#** (DialPlan Phone Number for John)

4.6 Upgrade Firmware for Your Router

Before upgrading your router firmware, you need to install the Router Tools. The **Firmware Upgrade Utility** is included in the tools.

1. Insert CD of the router to your CD ROM.
2. From the webpage, please find out **Utility** menu and click it.
3. On the webpage of Utility, click **Install Now!** (under Syslog description) to install the corresponding program.

Please remember to set as follows in your DrayTek Router :

- Server IP Address : IP address of the PC that runs the Syslog
- Port Number : Default value 514



4. The file **RTSxxx.exe** will be asked to copy onto your computer. Remember the place of storing the execution file.
5. Go to **www.draytek.com** to find out the newly update firmware for your router.
6. Access into **Support Center >> Downloads**. Find out the model name of the router and click the firmware link. The Tools of Vigor router will display as shown below.

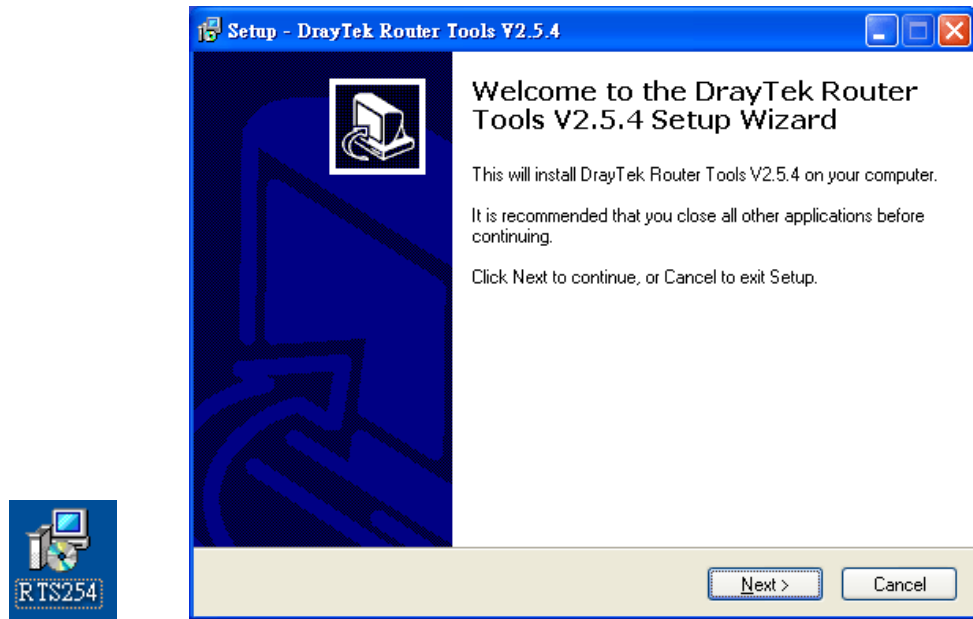
Note : [Brief introduction for Tools](#)

Tools of Vigor						
Name	Version	Language	Release Date	OS	File	Size
Router Tools	4.0	English	04/12/2003	MacOS9	hgx	6.13 MB
Router Tools	2.4.5	English	04/12/2003	MacOSX	hgx	4.48 MB
Router Tools	2.5.3	English	04/12/2003	Windows	zip	0.93 MB
Smart VPN Client	3.2.2	English	21/03/2005	Windows	zip	0.54 MB
VTA	2.8	English	20/06/2005	Windows2000/XP	zip	0.85 MB
LPR	1.0	English	20/06/2005	Windows	zip	0.54 MB

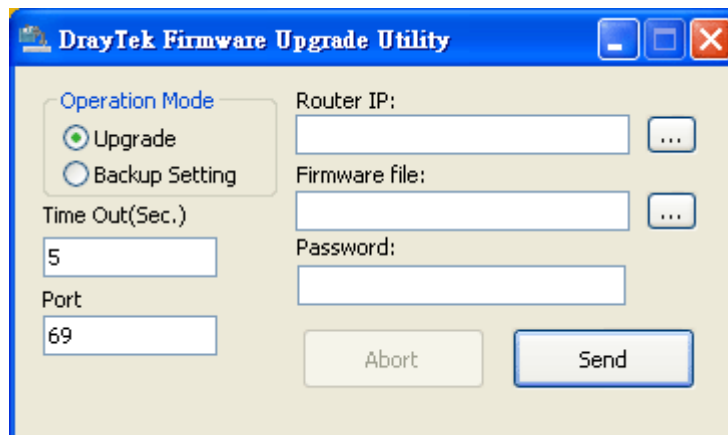
[TOP](#)

7. Choose the one that matches with your operating system and click the corresponding link to download correct firmware (zip file).
8. Next, decompress the zip file.

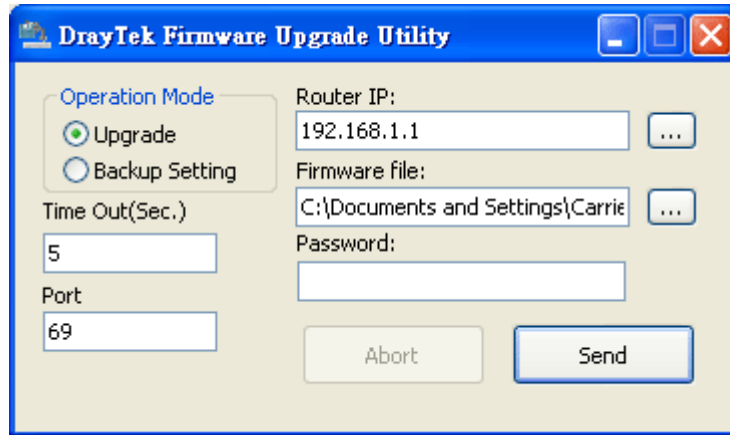
9. Double click on the icon of router tool. The setup wizard will appear.



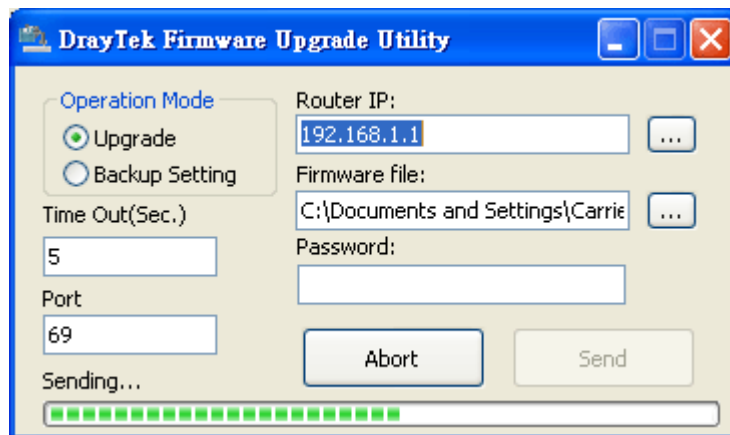
10. Follow the onscreen instructions to install the tool. Finally, click **Finish** to end the installation.
11. From the **Start** menu, open **Programs** and choose **Router Tools XXX >> Firmware Upgrade Utility**.



12. Type in your router IP, usually **192.168.1.1**.
13. 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.

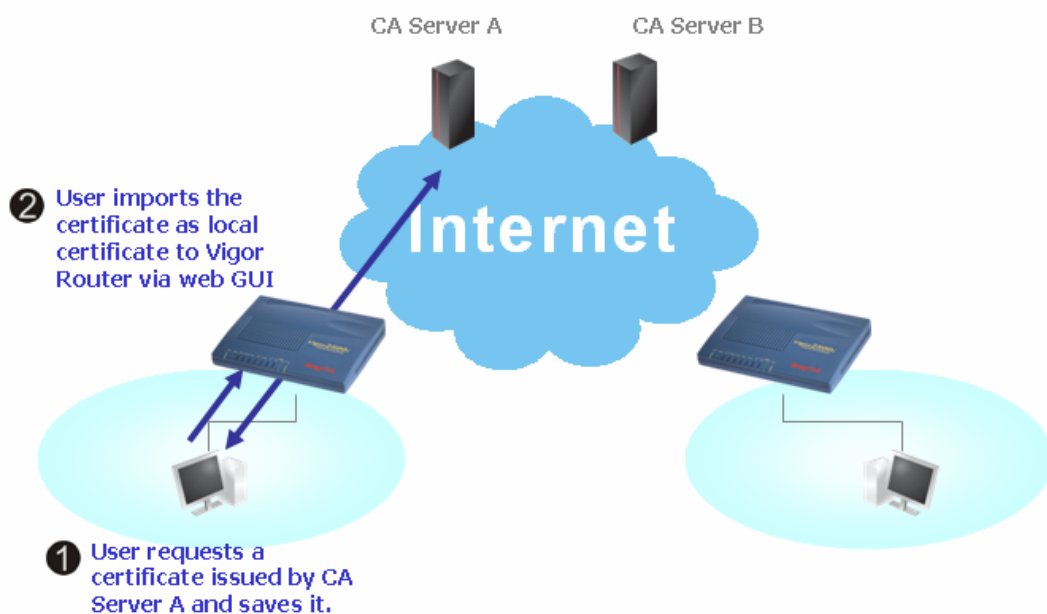


14. Click **Send**.



15. Now the firmware update is finished.

4.7 Request a certificate from a CA server on Windows CA Server



1. Go to **Certificate Management** and choose **Local Certificate**.

[Certificate Management >> Local Certificate](#)

X509 Local Certificate Configuration

Name	Subject	Status	Modify
Local	---	---	<input type="button" value="View"/> <input type="button" value="Delete"/>

X509 Local Certificate

2. You can click **GENERATE** button to start to edit a certificate request. Enter the information in the certificate request.

[Certificate Management >> Local Certificate](#)

Generate Certificate Request

Subject Alternative Name

Type: (Dropdown)

Domain Name:

Subject Name

Country (C):

State (ST):

Location (L):

Organization (O):

Organization Unit (OU):

Common Name (CN):

Email (E):

Key Type: (Dropdown)

Key Size: (Dropdown)

3. Copy and save the X509 Local Certificate Request as a text file and save it for later use.

X509 Local Certificate Configuration

Name	Subject	Status	Modify
Local	/C=TW/O=DrayTek/emailAddress...	Requesting	<input type="button" value="View"/> <input type="button" value="Remove"/>

X509 Local Certificate Request

```

-----BEGIN CERTIFICATE REQUEST-----
MIIBqjCCARMCQAwwQTELMakGA1UEBhMCVFcxEDAoBgNVBaoTBORyYX1UZWsxIDAe
BgkqhkiG9wOBCQEWEYB7wZFFhN9/ IeQnG03Xk++hqFb297aPJ6+gksBer1wa5w0
hX4bp89cUF9d1oACGGiM/ tcBOckdcZdPFFvIXcP3s3uxa2Fj8aeTj9W+ELxwhI1o
x/GDA7CTvO/ fQzpxroCw1JTjLSj80/ Bn9v50951Gve3aG1y1cEcmU7jqeQIDAQAB
oCkwJwYJKoZIhvcNAQkOMRowGDAwBgNVHREEDzANGgtkcmF5dGVrLmNvbTANBgkq
hkiG9wOBAQUFAAoBgQBUIWx4Mf18xeLQN7nz30cKVC4h574hlm/ MEkgemB/ eNr IN
Yo6xQghiXfnaRX4rdLj6ywbQ9aVdNHR+tl1LgVqOCxxcNj1Lflm9tJFWi4iw3Oci
vvVXnhWUx2gq/ QIQ6tYs+Stws+51pU+UNGSnj6je+gEQ7PBqHuzf6tN6EAgA+Q==
-----END CERTIFICATE REQUEST-----

```

- 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.

- 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 “-----BEGIN CERTIFICATE-----.....”

X509 Local Certificate Configuration

Name	Subject	Status	Modify
Local	/emailAddress=press@draytek....	Not Valid Yet	<input type="button" value="View"/> <input type="button" value="Remove"/>

X509 Local Certificate

```

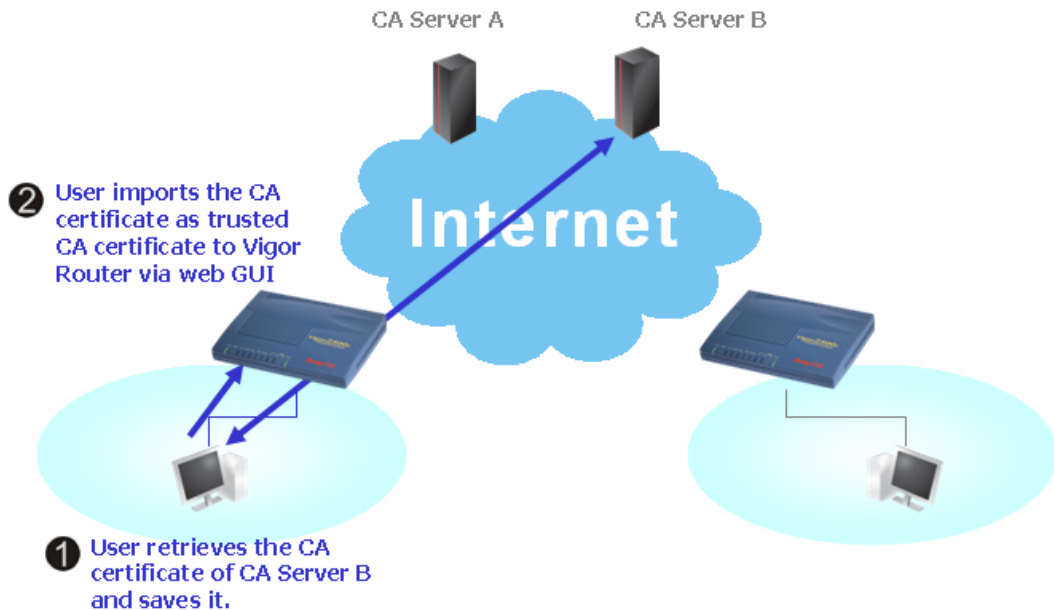
-----BEGIN CERTIFICATE-----
MIIE1zCCBECgAwIBAgIKYSRISAAABAAAABTANBgkqhkiG9wOBAQUFADAdMQswCQYD
VQQGEwJVUzEOMAwGA1UEAxMFdm1nb3IwHhcNMDUwODMwMjMxMjUzWhcNMDUwODMw
MjMxMjUzWjBBMSAwHgYJKoZIhvcNAQkBFhFwcmVzc0BkcmF5dGVrLmNvbTELMAGG
A1UEBhMCVFcxEDEAOBgNVBAoTBORyYX1UZSswZ8wDQYJKoZIhvcNAQEBBQADgYOA
MIGJAoGBANBgHvCZkV8WE338h5CcbTdeT76GoVvb3to8nr6CSwF6vXBrnA6Ffhun
z1xQX12WgAIYaIz+1wE5yR1x108UW8hdw/eze7FrYWPxp5OP1b4QvHCEjWjH8bQD
sJO8799DOnGugLCU1OMtKNLt8Gf2/nT3nUa97doaxLVwRyZTuOp5AgMBAAGjggL4
MIIC9DAMBgNVHREEdzANGgtkcmF5dGVrLmNvbTAdBgNVHQ4EFgQUunRLVGQYcZWM
Rjkw+dVoFVhyq4swVAYDVROjBEOwS4AUzQjEORhRac16217m2zH94TO280yhIaQf
MBOxCzAJBgNVBAYTA1VTMQ4wDAYDVOQDEwV2aWdvc0IQF93ZC3N6YoFGR+xqhbHB
FDCB/gYDVROfBIH2MIHzMIG3oIG0oIGxhoGubGRhcDovLy9DTj12aWdvcigxKSxD
    
```

- You may review the detail information of the certificate by clicking **View** button.

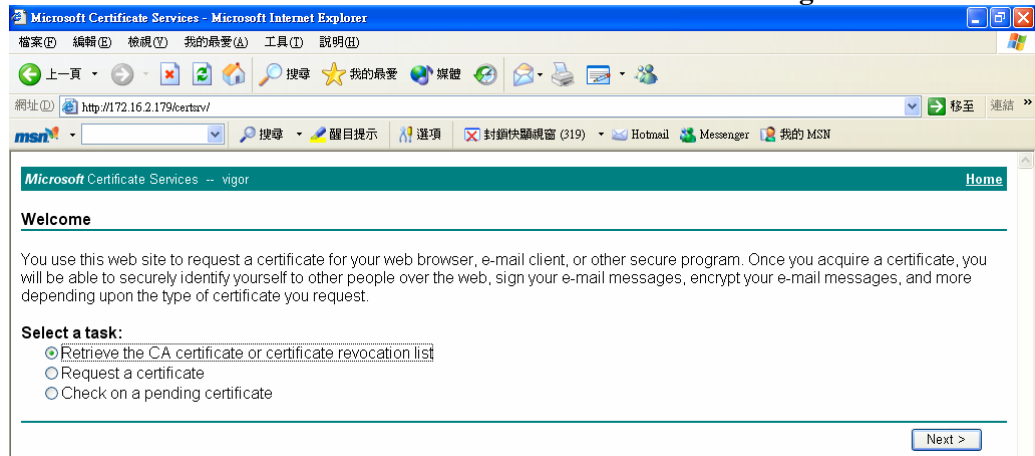
Certificate Information

Name :	Local
Issuer :	/C=US/CN=vigor
Subject :	/emailAddress=press@draytek.com/C=TW/O=DrayTek
Subject Alternative Name :	DNS: draytek.com
Valid From :	Aug 30 23:16:53 2005 GMT
Valid To :	Aug 30 23:16:53 2007 GMT

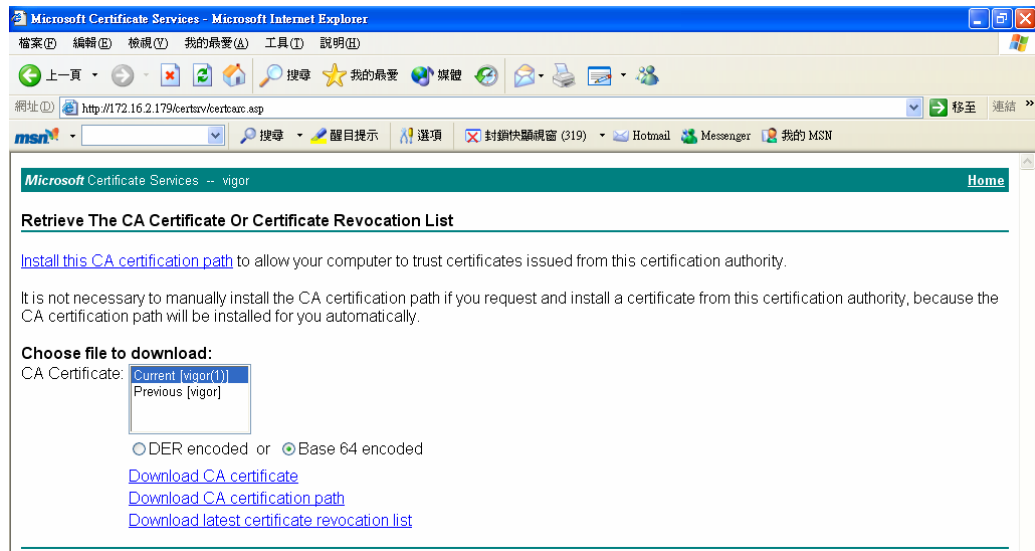
4.8 Request a CA Certificate and Set as Trusted on Windows CA Server



1. Use web browser connecting to the CA server that you would like to retrieve its CA certificate. Click **Retrieve 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.

X509 Trusted CA Certificate Configuration

Name	Subject	Status	Modify
Trusted CA-1	/C=US/CN=vigor	Not Yet Valid	<input type="button" value="View"/> <input type="button" value="Remove"/>
Trusted CA-2	---	---	<input type="button" value="View"/> <input type="button" value="Remove"/>
Trusted CA-3	---	---	<input type="button" value="View"/> <input type="button" value="Remove"/>

4. You may review the detail information of the certificate by clicking **View** button.

Certificate Detail Information

Certificate Name:	Trusted CA-1
Issuer:	/C=US/CN=vigor
Subject:	/C=US/CN=vigor
Subject Alternative Name:	
Valid From:	Aug 30 23:08:43 2005 GMT
Valid To:	Aug 30 23:17:47 2007 GMT

Note: Before setting certificate configuration, please go to **System Maintenance** >> **Time and Date** to reset current time of the router first.

5

Trouble Shooting

This section will guide you to solve abnormal situations if you cannot access into the Internet after installing the router and finishing the web configuration. Please follow sections below to check your basic installation status stage by stage.

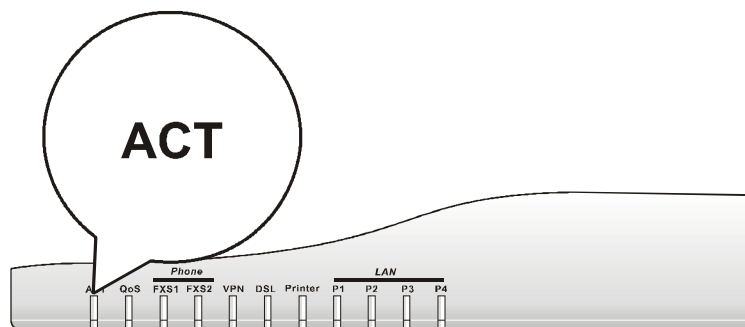
- Checking if the hardware status is OK or not.
- Checking if the network connection settings on your computer are OK or not.
- Pinging the router from your computer.
- Checking if the ISP settings are OK or not.
- Backing to factory default setting if necessary.

If all above stages are done and the router still cannot run normally, it is the time for you to contact your dealer for advanced help.

5.1 Checking If the Hardware Status Is OK or Not

Follow the steps below to verify the hardware status.

1. Check the power line and WLAN/LAN cable connections. Refer to “**2.1 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 “**2.1 Hardware Installation**” to execute the hardware installation again. And then, try again.

5.2 Checking If the Network Connection Settings on Your Computer Is OK or Not

Sometimes the link failure occurs due to the wrong network connection settings. After trying the above section, if the link is still failed, please do the steps listed below to make sure the network connection settings is OK.

For Windows

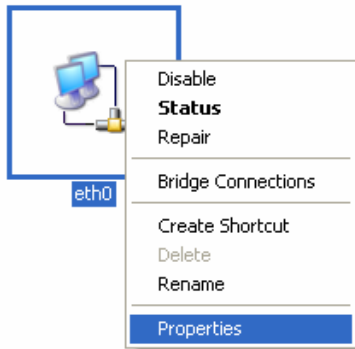


The example is based on Windows XP. As to the examples for other operation systems, please refer to the similar steps or find support notes in www.draytek.com.

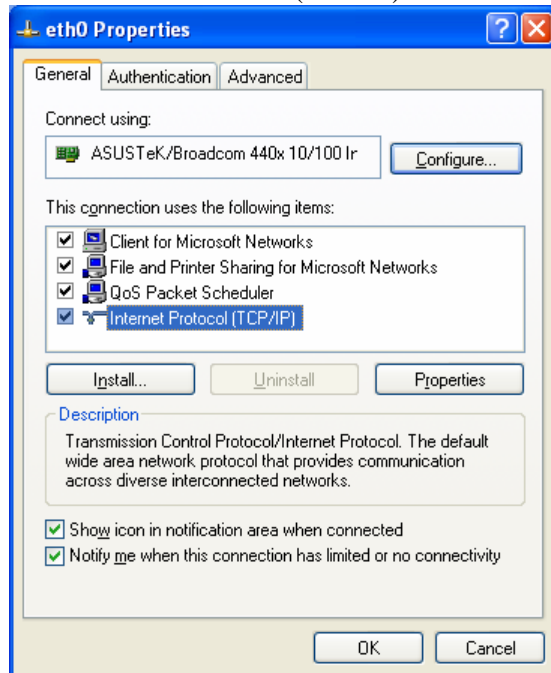
1. Go to Control Panel and then double-click on Network Connections.



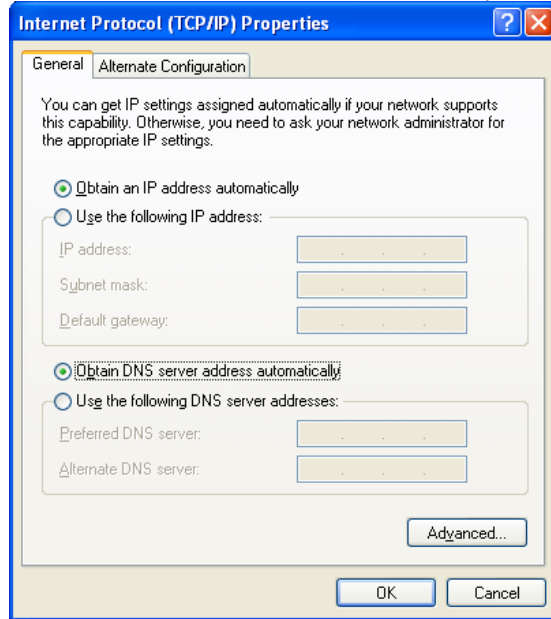
2. Right-click on Local Area Connection and click on Properties.



3. Select Internet Protocol (TCP/IP) and then click Properties.

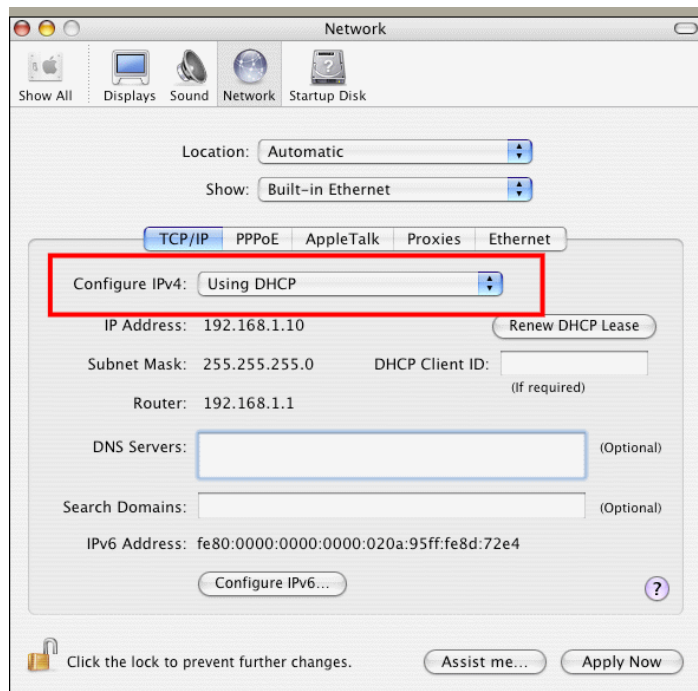


4. Select Obtain an IP address automatically and Obtain DNS server address automatically.



For MacOs

1. Double click on the current used MacOs on the desktop.
2. Open the **Application** folder and get into **Network**.
3. On the **Network** screen, select **Using DHCP** from the drop down list of Configure IPv4.



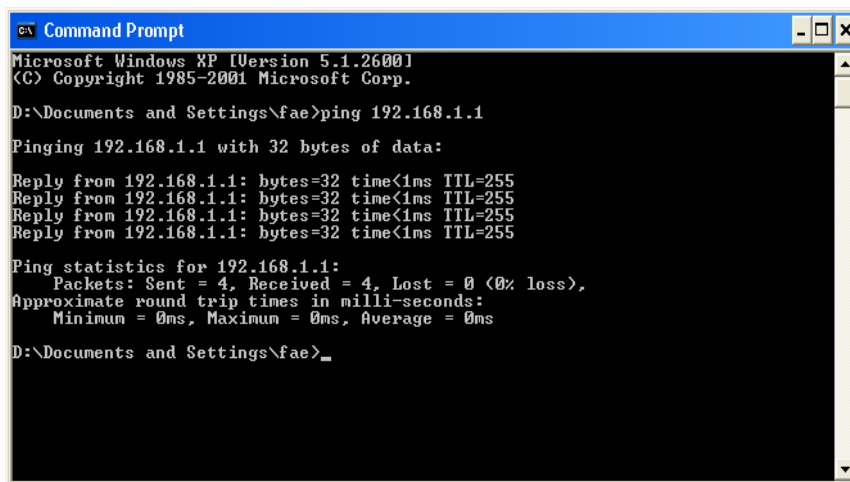
5.3 Pinging the Router from Your Computer

The default gateway IP address of the router is 192.168.1.1. For some reason, you might need to use “ping” command to check the link status of the router. **The most important thing is that the computer will receive a reply from 192.168.1.1.** If not, please check the IP address of your computer. We suggest you setting the network connection as **get IP automatically**. (Please refer to the section 4.2)

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). The DOS command dialog will appear.



```
ca Command Prompt
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

D:\Documents and Settings\fae>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

Reply from 192.168.1.1: bytes=32 time<1ms TTL=255
Reply from 192.168.1.1: bytes=32 time<1ms TTL=255
Reply from 192.168.1.1: bytes=32 time<1ms TTL=255
Reply from 192.168.1.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

D:\Documents and Settings\fae>_
```

3. Type **ping 192.168.1.1** and press [Enter]. If the link is OK, the line of “Reply from 192.168.1.1:bytes=32 time<1ms TTL=25” will appear.
4. If the line does not appear, please check the IP address setting of your computer.

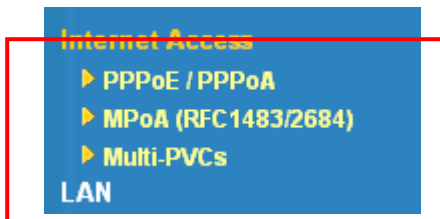
For MacOs (Terminal)

1. Double click on the current used MacOs on the desktop.
2. Open the **Application** folder and get into **Utilities**.
3. Double click **Terminal**. The Terminal window will appear.
4. Type **ping 192.168.1.1** and press [Enter]. If the link is OK, the line of “**64 bytes from 192.168.1.1: icmp_seq=0 ttl=255 time=xxxx ms**” will appear.


```
Terminal — bash — 80x24
Last login: Sat Jan  3 02:24:18 on ttys1
Welcome to Darwin!
Vigor10:~ draytek$ ping 192.168.1.1
PING 192.168.1.1 (192.168.1.1): 56 data bytes
64 bytes from 192.168.1.1: icmp_seq=0 ttl=255 time=0.755 ms
64 bytes from 192.168.1.1: icmp_seq=1 ttl=255 time=0.697 ms
64 bytes from 192.168.1.1: icmp_seq=2 ttl=255 time=0.716 ms
64 bytes from 192.168.1.1: icmp_seq=3 ttl=255 time=0.731 ms
64 bytes from 192.168.1.1: icmp_seq=4 ttl=255 time=0.72 ms
^C
--- 192.168.1.1 ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 0.697/0.723/0.755 ms
Vigor10:~ draytek$
```

5.4 Checking If the ISP Settings are OK or Not

Click **Internet Access** group and then check whether the ISP settings are set correctly.



For PPPoE/PPPoA Users

1. Check if the **Enable** option is selected.
2. Check if **Username** and **Password** are entered with correct values that you **got from** your **ISP**.

Internet Access >> PPPoE / PPPoA

PPPoE / PPPoA Client Mode

PPPoE/PPPoA Client Enable Disable

DSL Modem Settings

Multi-PVC channel: Channel 1
VPI: 8
VCI: 36
Encapsulating Type: LLC/SNAP
Protocol: PPPoE
Modulation: Multimode

PPPoE Pass-through

For Wired LAN

ISDN Dial Backup Setup

Dial Backup Mode: None

ISP Access Setup

ISP Name:

Username: 84005755@hinet.net
Password:

PPP Authentication: PAP or CHAP
 Always On
Idle Timeout: -1 second(s)

IP Address From ISP: WAN IP Alias
Fixed IP: Yes No (Dynamic IP)
Fixed IP Address:

* : Required for some ISPs
 Default MAC Address
 Specify a MAC Address
MAC Address : 00 . 50 . 7F . 00 . 00 . 01

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

OK

For MPoA Users

1. Check if the **Enable** option for Broadband Access is selected.

Internet Access >> MPoA (RFC1483/2684)

MPoA (RFC1483/2684) Mode
MPoA (RFC1483/2684) Enable Disable

DSL Modem Settings
Multi-PVC channel: Channel 2
Encapsulation: 1483 Routed IP LLC
VPI: 8
VCI: 36
Modulation: Multimode

WAN IP Network Settings
 Obtain an IP address automatically
Router Name: *
Domain Name: *
 Specify an IP address (WAN IP Alias)
IP Address: 0.0.0.0
Subnet Mask: 0.0.0.0
Gateway IP Address:

ISDN Dial Backup Setup
Dial Backup Mode: None

RIP Protocol
 Enable RIP

Bridge Mode
 Enable Bridge Mode

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

* : Required for some ISPs
 Default MAC Address
 Specify a MAC Address
MAC Address : 00 . 50 . 7F . 00 . 00 . 01

OK

2. Check if all parameters of **DSL Modem Settings** are entered with correct value that provided by your ISP. Especially, check if the encapsulation is selected properly or not (it should be the same with the setting on **Quick Start Wizard**).
3. Check if **IP Address**, **Subnet Mask** and **Gateway** are set correctly (must identify with the values from your ISP) if you choose **Specify an IP address**.

5.5 Backing to Factory Default Setting If Necessary

Sometimes, a wrong connection can be improved by returning to the default settings. Try to reset the router by software or hardware.



Warning: After pressing **factory default setting**, you will lose all settings you did before. Make sure you have recorded all useful settings before you pressing. The password of factory default is null.

Software Reset

You can reset the router to factory default via Web page.

Go to **System Maintenance** and choose **Reboot System** on the web page. The following screen will appear. Choose **Using factory default configuration** and click **OK**. After few seconds, the router will return all the settings to the factory settings.

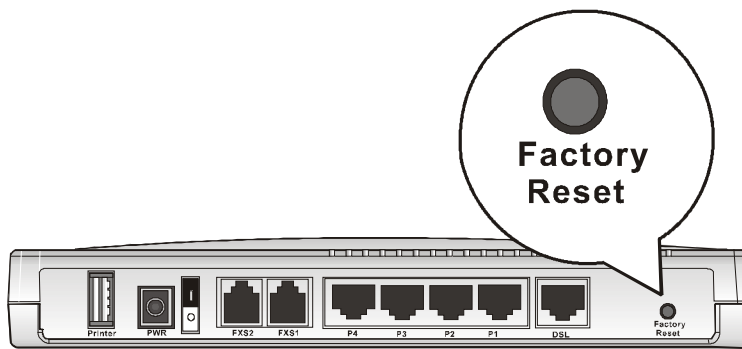
Reboot System

Do You want to reboot your router ?

Using current configuration
 Using factory default configuration

Hardware Reset

While the router is running (ACT LED blinking), press the **Factory Reset** button and hold for more than 5 seconds. When you see the **ACT LED** blinks rapidly, please release the button. Then, the router will restart with the default configuration.



After restore the factory default setting, you can configure the settings for the router again to fit your personal request.

5.6 Contacting Your Dealer

If the router still cannot work correctly after trying many efforts, please contact your dealer for further help right away. For any questions, please feel free to send e-mail to support@draytek.com.

