Verizon FiOS® Router Model 9100EM

User Guide

www.verizon.com/fios

CONTENTS

1. PRODUCT DESCRIPTION

The Verizon® FiOS® Router is designed to deliver today's most exciting broadband services to and throughout your home. Built around a state of the art, dual-core network processor, this versatile product helps ensure that data and services reach your connected home devices without interruption or delay. The Router allows you to transfer data over your existing in-home coax cables and simultaneously supports both "wired" and "wireless" connection options. This flexibility allows for the connection of a wide range of network enabled devices such as desktop computers, laptop computers, digital media players, and network attached storage (NAS) units.

Hereafter, the Verizon FiOS Router will be referred to as the "Router."

Key Features:

- Multimedia over Coax interface (MoCA)
- 4-Port 10/100 BaseT Ethernet LAN switch
- Integrated 802.11g Access Point
- Embedded Firewall
- IP Quality of Service
- IGMP Proxy Functionality

This User Guide is intended to provide installation and configuration information on the Verizon® FiOS® Router and assumes the user of this Router has a medium to advanced understanding of computing, routing and internet networking.

2. REGULATORY INFORMATION

2.1 FCC Compliance Note

(FCC ID: CH89100VMXX-10)

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

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to a different circuit from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.
- This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

WARNING: While this device is in operation, a separation distance of at least 20 cm (8 inches) must be maintained between the radiating antenna and users exposed to the transmitter in order to meet the FCC RF exposure guidelines. Making changes to the antenna or the device is not permitted. Doing so may result in the installed system exceeding RF exposure requirements. This device must not be co-located or operated in conjunction with any other antenna or radio transmitter. Installers and end users must follow the installation instructions provided in this guide.

Modifications made to this device, unless expressly approved, could void the users' rights to operate this device.

PART 68 – COMPLIANCE REGISTRATION

This equipment is designated to connect to the telephone network or premises wiring using a compatible modular jack that is Part 68 compliant. An FCC compliant telephone cord and modular plug is provided with the equipment. See the Installation Information section of this User Guide for details.

A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. A compliant telephone cord and modular plug is provided with this product. It is designed to be connected to a compatible modular jack that is also compliant. See installation instruction for details.

If this terminal equipment (Model 9100EM) causes harm to the telephone network, the telephone company may request you to disconnect the equipment until the problem is resolved. The telephone company will notify you in advance if temporary discontinuance of service is required. If advance notification is not practical, the telephone company will notify you as soon as possible. You will be advised of your right to file a complaint with the FCC if you believe such action is necessary. If you experience trouble with this equipment (Model 9100EM), do not try to repair the equipment yourself. The equipment cannot be repaired in the field. Contact Verizon for instructions.

The telephone company may make changes to their facilities, equipment, operations, or procedures that could affect the operation of this equipment. If this happens, the telephone company will provide advance notice in order for you to make the modifications necessary to maintain uninterrupted service.

If your home has specially wired alarm equipment connected to the telephone line, ensure that the installation of this equipment (Model 9100EM) does not disable your alarm equipment. If you have questions about what will disable alarm equipment, consult your telephone company or a qualified installer. This equipment cannot be used on public coin phone service provided by the telephone company. Connection of this equipment to party line service is subject to state tariffs.

2.2 Canada Certification Notice

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operations and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The department does not guarantee the equipment will operate to the user's satisfaction.

This equipment meets the applicable Industry Canada Terminal Equipment Technical Specification. This is confirmed by the registration number. The abbreviation, IC, before the registration number signifies that registration was performed based on a Declaration of Conformity indicating that Industry Canada technical specifications were met. It does not imply that Industry Canada approved the equipment. The Ringer Equivalence Number (REN) is 0.0. The Ringer Equivalence Number that is assigned to each piece of terminal equipment provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed five.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local Telecommunication Company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations. Connection to a party line service is subject to state tariffs. Contact the state public utility commission, public service commission, or corporation commission for information.

If your home has specially wired alarm equipment connected to the telephone line, ensure that the installation of this equipment (Model 9100EM) does not disable your alarm equipment. If you have questions about what will disable alarm equipment, consult your telephone company or a qualified installer.

If you experience trouble with this equipment (Model 9100EM), do not try to repair the equipment yourself. The equipment cannot be repaired in the field and must be returned to the manufacturer. Repairs to certified equipment should be coordinated by a representative, and designated by the supplier. Contact Verizon for instructions.

The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed five. Users should ensure, for their own protection, that the electrical ground connections of the power utility, telephone lines, and internal, metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

⚠ CAUTION ⚠

Users should not attempt to make such connections themselves, but should contact the appropriate electrical inspection authority, or electrician, as appropriate.

3. NETWORKING REQUIREMENTS

The following minimum system specifications are required for optimum performance of your Router.

Requirements for 10/100 Base-T/Ethernet

- Pentium® or equivalent class machines or higher
- Microsoft® Windows® (XP, 2000, ME, NT 4.0, 98 SE) Macintosh® OS X, or Linux installed
- 64 MB RAM (128 MB recommended)
- 10 MB of free hard drive space
- 10/100 Base-T Network Interface Card (NIC)
- Internet Explorer 5.5 or later or Netscape Navigator 7.x or higher or Firefox 1.0.7 or later
- Computer Operating System CD-ROM

Requirements for Wireless

- Pentium® or equivalent class machines or higher
- Microsoft® Windows® (XP, 2000, ME, 98 SE) installed
- 64 MB RAM (128 MB recommended)
- 10 MB of free hard drive space
- Internet Explorer 5.5 or later or Netscape Navigator 7.x or higher or Firefox 1.0.7 or later
- IEEE 802.11b/g PC adapter
- Computer operating system CD-ROM

System Requirements for Coax

- Pentium® or equivalent class machines or higher
- Microsoft® Windows® (XP, 2000, ME, 98 SE) installed
- 64 MB RAM (128 MB recommended)
- 10 MB of free hard drive space
- Internet Explorer 5.5 or later or Netscape Navigator 7.x or higher or Firefox 1.0.7 or later
- Computer operating system CD-ROM

4. HARDWARE FEATURES

4.1 LED Indicators

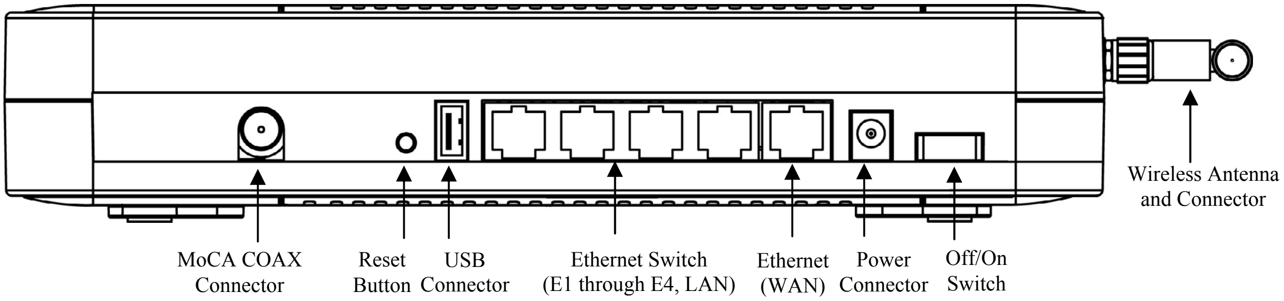
This section explains the Router's LED states and descriptions. View the LEDs to confirm the unit's operation and status.

Front Panel LEDs		
LED	**State**	**Description**
POWER	Solid Green	Power is ON.
	Flashing Green	Router is performing power on self test (POST).
	Solid Red	Router failed POST or Device Malfunction. Note: The Power LED should be red no longer than two seconds after the power on self test passes.
	OFF	Power is OFF.
COAX WAN	Solid Green	WAN physical link established.
	Flashing Amber	Low signal rate or noisy Coax line. Service should not be affected.
	OFF	Router power is OFF or no WAN signal detected.
ETHERNET WAN	Solid Green	WAN link established.
	OFF	Router power is OFF or no WAN signal detected.
INTERNET	Solid Green	Internet link established; the Router has a WAN connection and IP address.
	Flashing Green	Internet link established; IP traffic is passing through the device in either direction.
	Amber	Internet link not established or attempting to establish.
	OFF	Router power is OFF or the Router does not have a WAN address.
WIRELESS SETUP	Solid Green	LED currently disabled
	OFF	LED currently disabled
1,2,3,4 (LAN ETHERNET)	Solid Green	Powered device is connected to the associated port.
	Flashing Green	10/100 Base-T LAN activity is present (traffic in either direction).
	OFF	Router power is OFF, or no cable or no powered device is connected to the associated port.
COAX	Solid Green	A physical connection has been established.
	Flashing Green	Activity is present on the Coax link.
	OFF	Router power is OFF.
WIRELESS	Solid Green	Wireless link established. Wireless LAN activity is present (traffic in either direction). IP connection established and IP traffic is passing through device.
	OFF	Router power is OFF or No wireless link.
Rear Panel LEDs		
Left Ethernet LED	Solid Green	100 Mbps link established.
	Flashing Green	LAN activity at 100 Mbps (traffic in either direction).
	OFF	No 100 Mbps link.
Right Ethernet LED	Solid Green	10 Mbps link established.
	Flashing Green	LAN activity at 10 Mbps (traffic in either direction).
	OFF	No 10 Mbps link.

4.2 Cable Connectors and Switch Locations

- Coax connector
- Reset push button
- USB connector
- Four LAN Ethernet connectors (RJ-45)
- WAN Ethernet connector (RJ-45)
- Power connector (12 VDC) barrel
- OFF/ON power switch
- Wireless 802.11b/g SMA connector and antenna

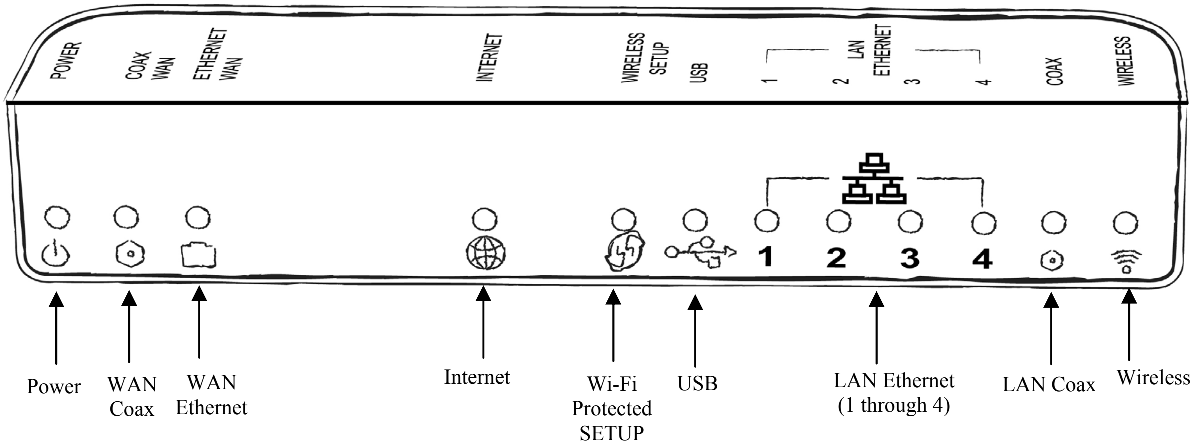
Verizon FiOS Router - Rear Panel



4.3 Front Panel LEDs

- Power
- WAN Coax
- WAN Ethernet
- Internet
- Wi-Fi Protected SETUP (Currently Disabled)
- USB
- LAN Ethernet (1,2,3,4)
- LAN Coax
- Wireless

Verizon FiOS Router - Front Panel



4.4 Connector Descriptions

The following chart describes the Router's rear panel connector and switches.

NAME	TYPE	FUNCTION
COAX	F-type coaxial connector	Connects the Router to the in home coaxial cabling. Compatible with the Multimedia over Coax Alliance (MoCA) standards.
USB	USB Connector	Connects the Router to peripheral devices (e.g. storage) via USB. Note: This port may not be enabled in all UltraLine Series3 units.
LAN	8-pin (RJ-45) modular jack	Connects the the Router's 10/100 Base-T Ethernet swtich to a local computer or other Ethernet-enabled device.
WAN	8-pin (RJ-45) modular jack	Connects the Router to a broadband modem or router, enabling access to the Internet or Wide Area Network (WAN).
POWER	Barrel connector	Connects to the Router's DC 12V power supply. **Only use the power supply provided with the Router.**
OFF/ON	Off/On Switch	Allows you to turn the Router on or off.
WIRELESS ANTENNA and CONNECTOR	SMA connector and antenna	Antenna for trasmitting and receiving wireless signals for Wi-Fi (802.11b/g) connected devices.

5. INSTALLING THE ROUTER

This section explains the hardware installation procedures for connecting your Router to your broadband service as well as to devices in your home, such as computers or media players.

Before you begin

Make sure that your kit contains the following items:

- Verizon FiOS Router
- Power Supply
- RJ-45 Ethernet cable (straight-through) (yellow)
- RJ-45 Ethernet cable (straight-through) (white)
- Verizon CD-ROM containing User Guide in PDF format
- Wireless antenna
- Router Stand

Before you install your Router, please read the following notes:

NOTE:

1. It is recommended that you use a surge suppressor to protect equipment attached to the power supply. **Use only the power supply provided with your kit.**
2. If the Ethernet card in your PC does not auto-negotiate, set it to half duplex. Refer to the Ethernet card manufacturer's instructions for installing and configuring your Ethernet card.
3. Additional Ethernet cables may be required depending on the installation method you are using. Ethernet cables can be purchased at your local computer hardware retailer.

5.1 Connecting Your Router to Your Broadband (Internet) Service

1. Connect one end of your coaxial cable to the coax connection on you wall. Connect the other end of the coaxial cable to the connector marked **Coax** on the Router.
2. Connect the power supply cord to the power connector marked **12 VDC** on the back of the Router. Plug the other end of the power supply into an AC wall socket, and then turn on the Router by pressing the Off/ON switch on the back of the Router.
3. Check to see if the Router's **POWER** LED is solid green. This indicates that the Router is powered on.
4. Check to see if the Router's **Coax WAN** LED is solid green. This means the COAX connection is functioning properly. (Note: Your **Coax WAN** Led may also be amber which is acceptable)

Now that you have connected your Router to your broadband service and turned on the Router, you can connect Ethernet and Wireless devices to the Router, allowing for Internet connection throughout your home without disrupting your cable or satellite television services. Refer to the following sections for instructions on connecting devices to your Router:

- Section 5.2 explains how to connect Ethernet devices to your broadband Router.
- Section 5.3 explains how to connection Wireless devices to your broadband Router.

5.2 Connecting Ethernet Devices to Your Router

To connect PCs to your Router using 10/100-BaseT Ethernet installation, please follow the steps below:

1. Connect your Router to your broadband service as explained in section 5.1.
2. Connect the yellow Ethernet cable (provided with your kit) from any one of the four Ethernet jacks marked **1, 2, 3, 4** on the back of the Router to the Ethernet port on your computer. Turn on the computer.

   NOTE: Use any of the four LAN Ethernet jacks on the Router's rear panel; each jack serves as an Ethernet switch. Repeat this step to connect up to three additional PCs to the Router.

3. Check to see if the Router's **POWER** LED is solid green. This indicates that the Router is powered on.
4. Check to see if any of the Router's **ETHERNET** LEDs (1,2,3,4) are solid green. Solid green indicates that the Ethernet connection is functioning properly. Check the **ETHERNET** LED for each Ethernet jack to which you are connected at the rear of the Router.
5. Check to see if the Router's **COAX WAN** LED is solid green (or flashing amber). This means the Coax connection is functioning properly.
6. After you have logged on to you account and established an Internet connection, as explained later in this document, check to see if the Router's **INTERNET** LED is solid green. Solid green indicates that the Internet link has been established.

Congratulations! You have completed the steps to connect Ethernet devices to your Router. Now proceed to section 6 to access your Router's Web pages.

5.3 Connecting Wireless Devices to Your Router

IMPORTANT: If you are connecting to the Router via a wireless network adapter, the SSID must be the same for both the Router and your PC's wireless network adapter. The default SSID for the Router is the serial number of the unit (located below the bar code on the bottom of the router and also on the shipping carton). The SSID is also provided in the Router's Web pages, in the Wireless section. On your PC, locate and run the utility software provided with your PC's wireless network adapter. Then, enter the Router's SSID value (in order to communicate with the Router, the PC's wireless network adapter must be configured with the SSID). Later, for privacy, you can change the SSID by following the procedures outlined in section 11.2, "Basic Security Settings."

NOTE: Client PCs can use any Wireless 802.11b/g card to communicate with the Router. By default your Router is enabled for Wired Equivalent Privacy (WEP) security. Whenever, WEP is configured in the Router, the PC's wireless card must use the same WEP security code type as the one provided in Router. The WEP security code is also located on a label on the bottom of the Router. Always check that your PC's wireless adapter is configured properly for whichever network setting you use: WEP or WPA. You can configure the settings in the advanced properties of the PC's wireless network adapter.

To network your Router to PCs in your home or office using a wireless installation, follow the steps below:

1. Connect your Router to your broadband service as explained in section 5.1.
5. Ensure that each PC on your wireless network has an 802.11b/g wireless network adapter installed.
6. Ensure that appropriate drivers for your wireless adapter have been installed on each PC.
7. Make sure the wireless antenna is screwed on to the connector on the rear of the router and firmly locked into place. Then, orient the antenna to appropriate position.
8. Connect the power supply cord to the power connector marked **12 VDC** on the back of the Router. Plug the other end of the power supply into an AC wall socket, and then power up the Router.
9. Check to see if the Router's **POWER** LED is solid green. This indicates that Router is powered on.
10. Check to see if the Router's **COAX WAN** LED is solid Green. This means the COAX connection is functioning properly.
11. Check to see if the Router's **WIRELESS** LED is solid Green. This means that the wireless interface is functioning properly.
12. After you have logged on to your account and established an Internet connection, as explained later in this document, check to see if the Router's **INTERNET** LED is solid green. Solid green indicates that an Internet link has been established.

Congratulations! You have completed the steps to connect wireless devices to your Router. Now proceed to section 6 to access your Router's Web pages.

6. ACCESSING YOUR ROUTER

6.1 Logging on to Your Router

This section explains the logon procedures for your Verizon Broadband Router. This procedure should be used any time you want to access or make changes to the Router's configurable settings, such as wireless security and firewall.

IMPORTANT: Your Router is capable of automatically sensing protocol type (DHCP or PPPoE). This process is designed to start after you have connected the Router. To access your Router, your PC must be configured for DHCP. Refer to your Windows help screen for information on configuring your computer for DHCP. At your PC, click **Start**, then click **Help** to access the Windows help screen.

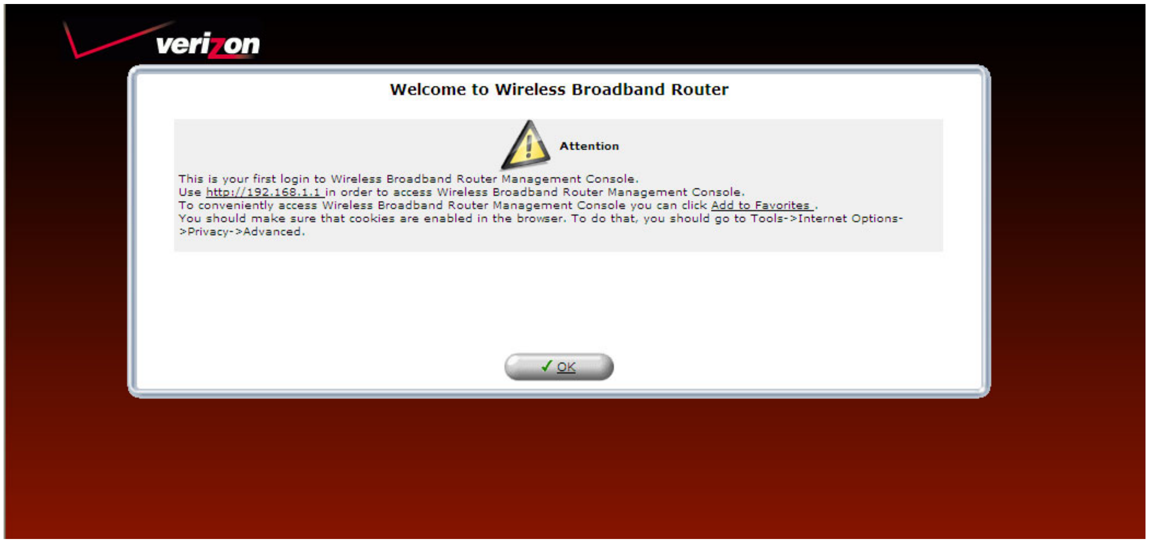
To log on to the Router, start your Web browser, and then type the following IP address in the browser's address bar:

http://192.168.1.1

After you type the IP address, press **Enter** on your keyboard. The following screen will display the message:

> This is your first login to the Management Console. Use http://192.168.1.1 in order to access the Router's Management Console. To conveniently access the Management Console, you can click Add to Favorites. You should make sure that cookies are enabled in the browser. To enable cookies, go to Tools->Internet Options->Privacy->Advanced.

Click **OK** in the **Welcome** screen.



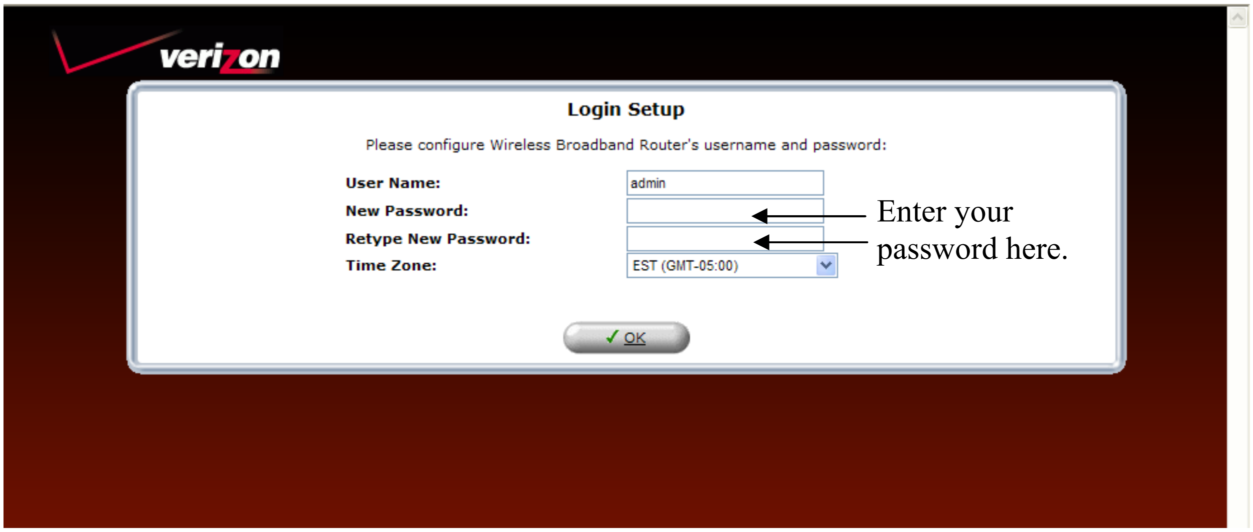
Welcome to Wireless Broadband Router

Attention

This is your first login to Wireless Broadband Router Management Console.
Use http://192.168.1.1 in order to access Wireless Broadband Router Management Console.
To conveniently access Wireless Broadband Router Management Console you can click Add to Favorites .
You should make sure that cookies are enabled in the browser. To do that, you should go to Tools->Internet Options->Privacy->Advanced.

By default **admin** appears in the **User Name** field; however, you can change this to the user name of your choice. Type your password in the **New Password** fields. Your password must be 6 or more characters long and contain at least 1 numeral. As you type your password, asterisks will appear for security purposes.

NOTE: Please write down your user name and password and save them for future use.



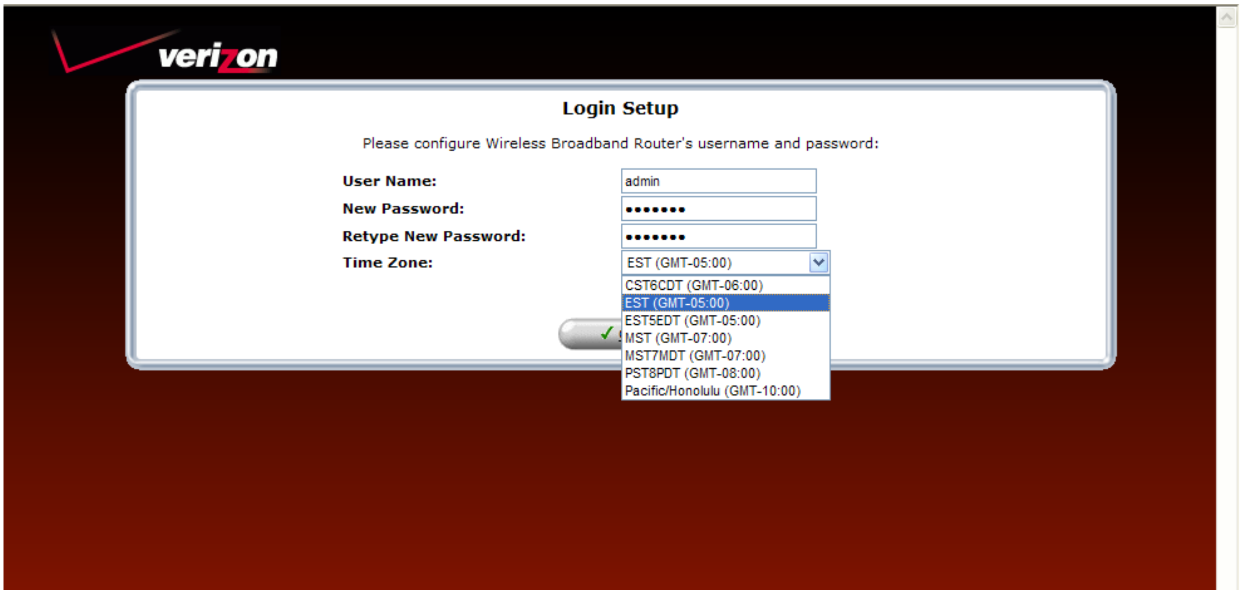
Login Setup

Please configure Wireless Broadband Router's username and password:

User Name: admin
New Password:
Retype New Password:
Time Zone: EST (GMT-05:00)

Enter your password here.

After you have entered your password, select the desired option from the **Time Zone** drop-down menu. Then click **OK** to continue.

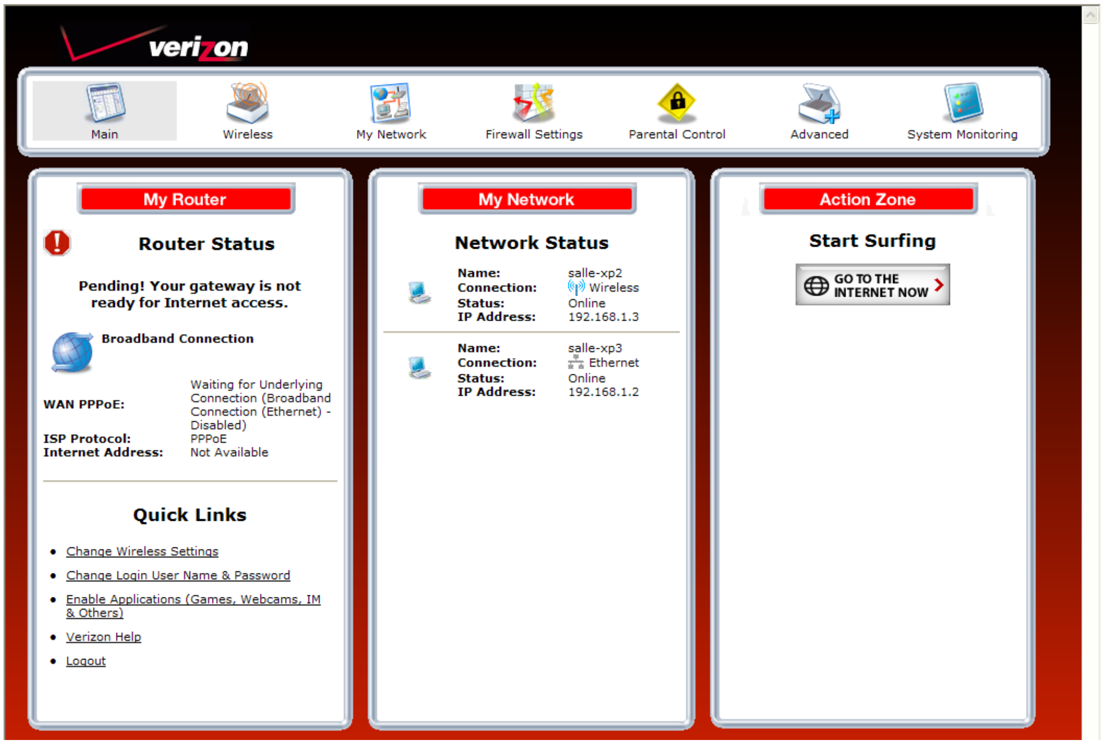


Login Setup

Please configure Wireless Broadband Router's username and password:

User Name: admin
New Password: •••••••
Retype New Password: •••••••
Time Zone: EST (GMT-05:00)

After you have logged on to your Router, the following screen will appear. This is the main page of your Router's Web pages, also referred to in this document as the home page. You can access this page by clicking **Main** in the navigation menu located across the top of the Router's Web pages. Details on this page will be explained in the following sections.



Router Status

Pending! Your gateway is not ready for Internet access.

Broadband Connection

WAN PPPoE: Waiting for Underlying Connection (Broadband Connection (Ethernet) - Disabled)
ISP Protocol: PPPoE
Internet Address: Not Available

Quick Links

- Change Wireless Settings
- Change Login User Name & Password
- Enable Applications (Games, Webcams, IM & Others)
- Verizon Help
- Logout

Network Status

Name: salle-xp2
Connection: Wireless
Status: Online
IP Address: 192.168.1.3

Name: salle-xp3
Connection: Ethernet
Status: Online
IP Address: 192.168.1.2

Start Surfing

Throughout this User Guide, the following icons are used to indicate clicking actions that you can take with your mouse to configure your Router's settings.

Icon	Description
✎	**Edit** Clicking this icon allows you to edit the assocaiated entry/setting.
✚	**Add/New** Clicking this icon allows you to add a new entry/setting.
✖	**Delete** Clicking this icon deletes the associated entry/setting from your Router.
🔍	**View** Clicking this icon allows you to view or run a diagnostics test on your Router.
↓	**Move Down** Click this icon allows you to change the order of your list by moving an entry down in the list.
↑	**Move Up** Click this icon allows you to change the order of your list by moving an entry up in the list.

7. CONFIGURING YOUR BROADBAND CONNECTION

To browse the Internet using your Router, first confirm your coax link and establish an Internet connection with Verizon. The procedures for configuring your Router for Internet connection are explained in this section.

7.1 Confirming Your Coax Connection

IMPORTANT: You must have active broadband service before the Router can synchronize with Verizon's equipment and establish an Internet connection.

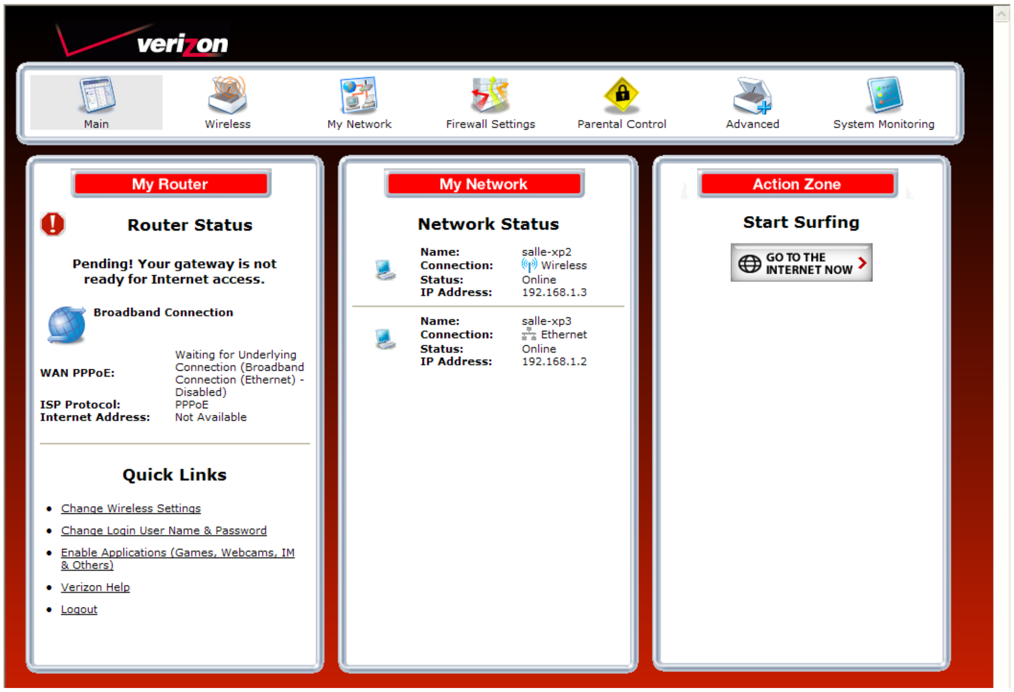
To determine if the Router has established coax link, at the Router's front panel, check to see if the Router's **COAX WAN** LED is solid green or flashing amber— this indicates that a coax link is established.

After confirming your coax link, proceed to section 7.2 to configure your Router's Internet connection settings.

7.2 Connecting to the Internet

After you have logged on to the Router, the following home page will appear. Use this page to determine the Router's Internet connection status. If you do not have an Internet connection, the **Internet Address** field will display "Not Available."

To begin your connection setup, at top navigation menu, click **My Network**.



Router Status

Pending! Your gateway is not ready for Internet access.

Broadband Connection

WAN PPPoE: Waiting for Underlying Connection (Broadband Connection (Ethernet) - Disabled)
ISP Protocol: PPPoE
Internet Address: Not Available

Quick Links

- Change Wireless Settings
- Change Login User Name & Password
- Enable Applications (Games, Webcams, IM & Others)
- Verizon Help
- Logout

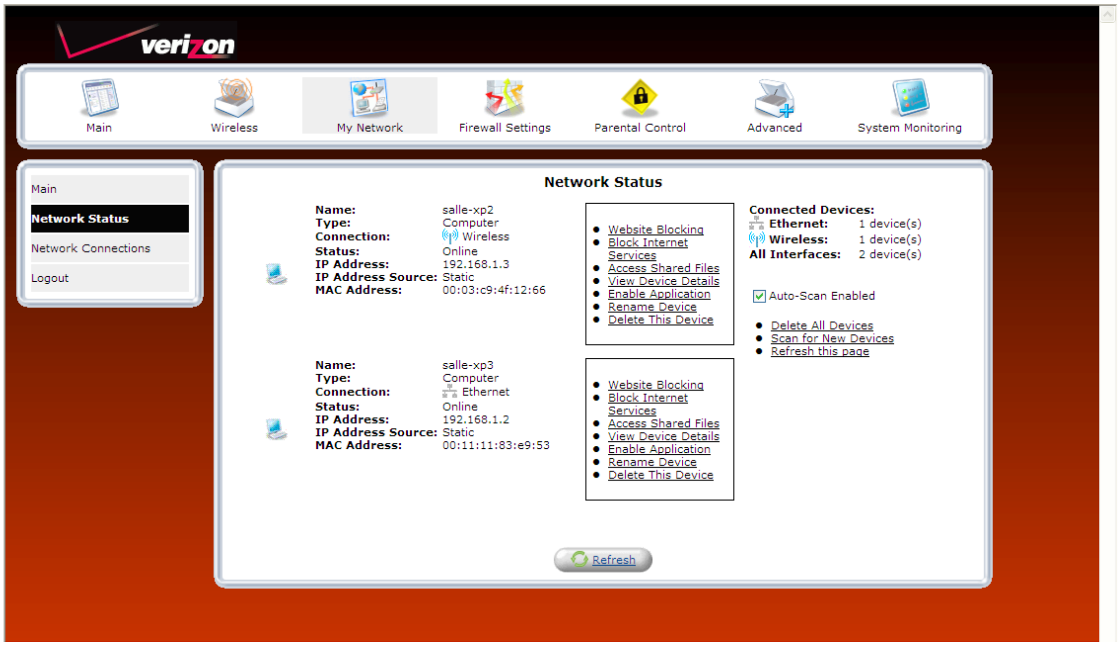
Network Status

Name: salle-xp2
Connection: Wireless
Status: Online
IP Address: 192.168.1.3

Name: salle-xp3
Connection: Ethernet
Status: Online
IP Address: 192.168.1.2

Start Surfing

The **Network Status** page will appear. Next, in the left submenu, click **Network Connections**.



Network Status

Name: salle-xp2
Type: Computer
Connection: Wireless
Status: Online
IP Address: 192.168.1.3
IP Address Source: Static
MAC Address: 00:03:c9:4f:12:66

Name: salle-xp3
Type: Computer
Connection: Ethernet
Status: Online
IP Address: 192.168.1.2
IP Address Source: Static
MAC Address: 00:11:11:83:e9:53

Connected Devices:

Ethernet:	1 device(s)
Wireless:	1 device(s)
All Interfaces:	2 device(s)

☑ Auto-Scan Enabled

In the **Network Connections** screen, click the **Quick Setup** button.

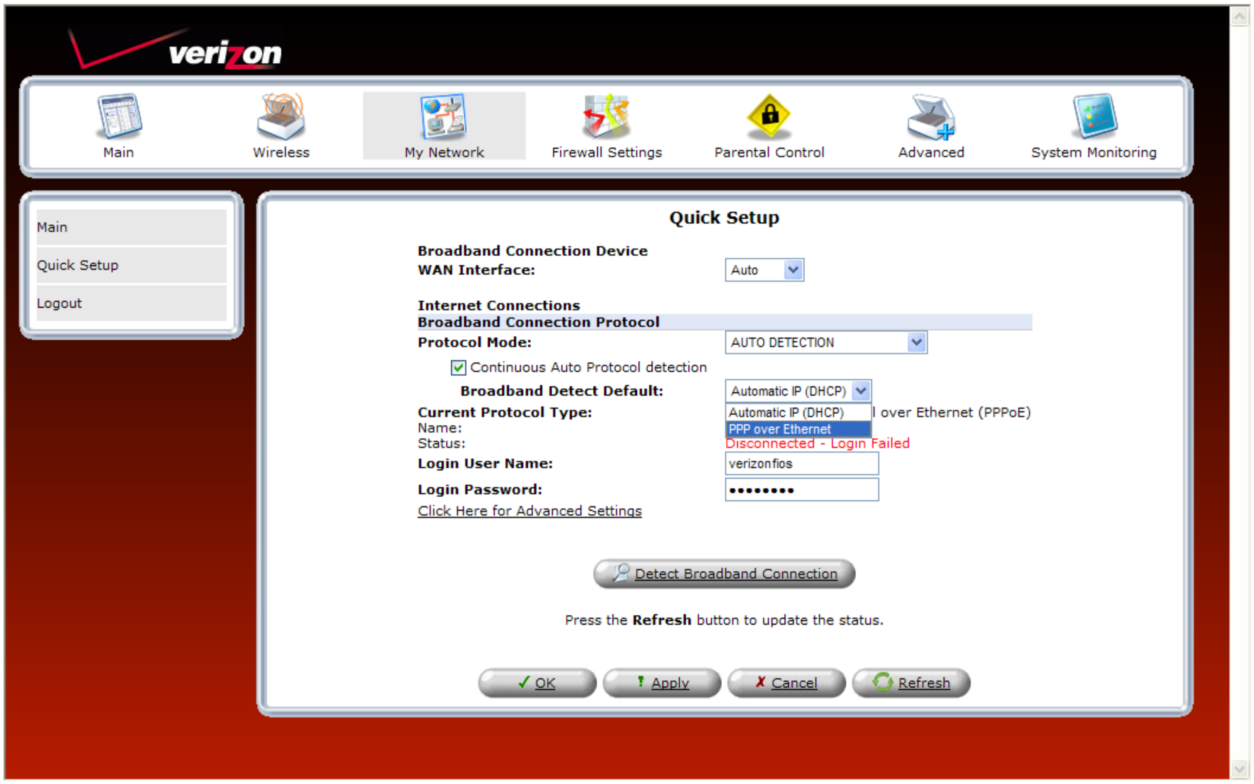
The **Quick Setup** page allows you to select the protocol type for your Internet connection, or choose to configure a static IP address. Verizon will inform you of which protocol to use to establish your Internet connection.

7.2.1 DHCP Protocol Type

IMPORTANT: Do not change the settings in the **Quick Setup** screen unless Verizon instructs you to change the settings. Your Router is designed to automatically detect the correct connection type to the network.

If you need to change the configuration to only use DHCP protocol to connect to Internet, at the **Quick Setup** screen, do the following:

1. From the **Broadband Detect Default** drop-down menu, select **Automatic IP (DHCP**). Note: DHCP is the Router's default protocol type. If you use this protocol, you do not need to enter a Login User Name or Login Password.
2. Click **Apply** to save the settings.
3. Click **OK** to continue.



Quick Setup

Broadband Connection Device
WAN Interface: Auto

Internet Connections
Broadband Connection Protocol
Protocol Mode: AUTO DETECTION
☑ Continuous Auto Protocol detection
Broadband Detect Default: Automatic IP (DHCP)
Automatic IP (DHCP)
PPP over Ethernet
Current Protocol Type: l over Ethernet (PPPoE)
Name:
Status: Disconnected - Login Failed
Login User Name: verizonfios
Login Password: ••••••••
Click Here for Advanced Settings

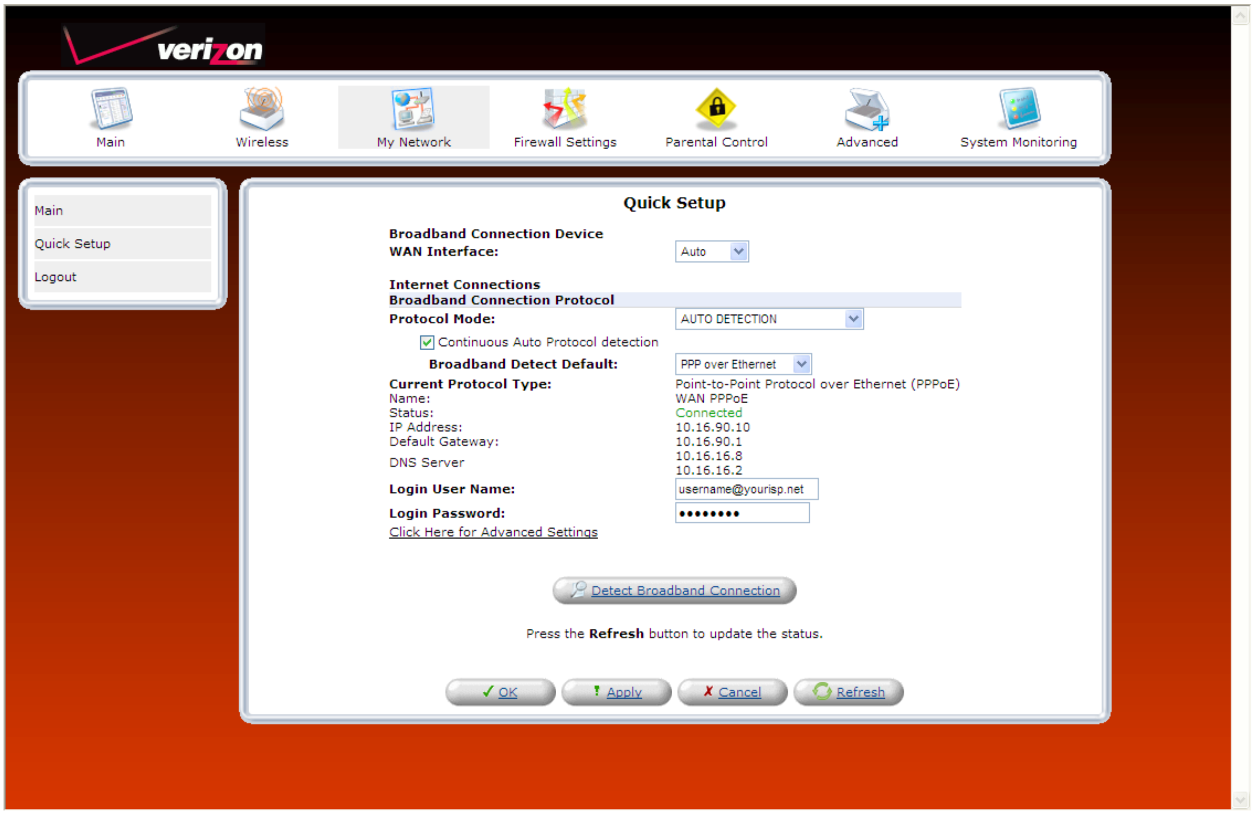
Press the **Refresh** button to update the status.

7.2.2 PPPoE Protocol Type

IMPORTANT: Do not change the settings in the **Quick Setup** screen unless Verizon instructs you to change the settings. Your Router is designed to automatically detect the correct connection type to the network.

If you need to change the configuration to only use PPPoE protocol to connect to Internet, at the **Quick Setup** screen, do the following:

1. From the **Broadband Detect Default** drop-down menu, select **PPP over Ethernet**.
2. Enter your Login User Name and Password (provided by Verizon) in the fields provided.
3. Click **Apply** to save the settings.
4. Click **OK** to continue.



Quick Setup

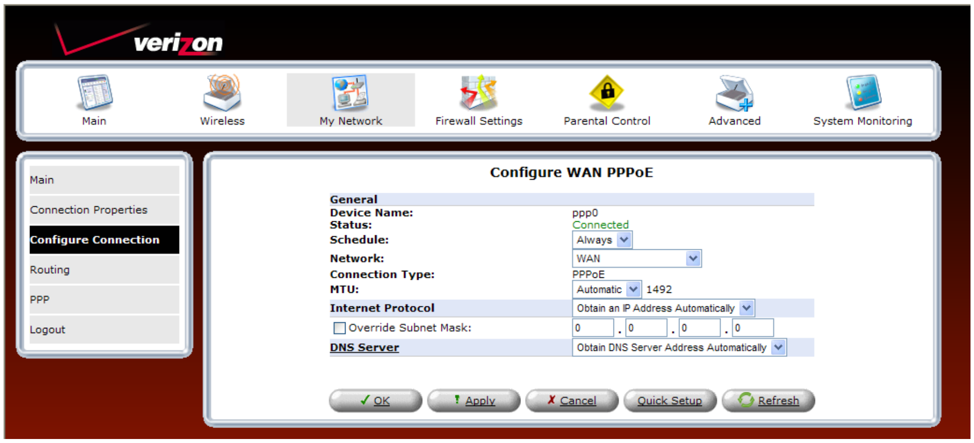
Broadband Connection Device
WAN Interface: Auto

Internet Connections
Broadband Connection Protocol
Protocol Mode: AUTO DETECTION
☑ Continuous Auto Protocol detection
Broadband Detect Default: PPP over Ethernet
Current Protocol Type: Point-to-Point Protocol over Ethernet (PPPoE)
Name: WAN PPPoE
Status: Connected
IP Address: 10.16.90.10
Default Gateway: 10.16.90.1
DNS Server 10.16.16.8
10.16.16.2
Login User Name: username@yourisp.net
Login Password: ••••••••
Click Here for Advanced Settings

Press the **Refresh** button to update the status.

To configure additional PPPoE settings, in **Quick Setup** screen, click the link labeled **Click Here for Advanced Settings**. The following screen appears.

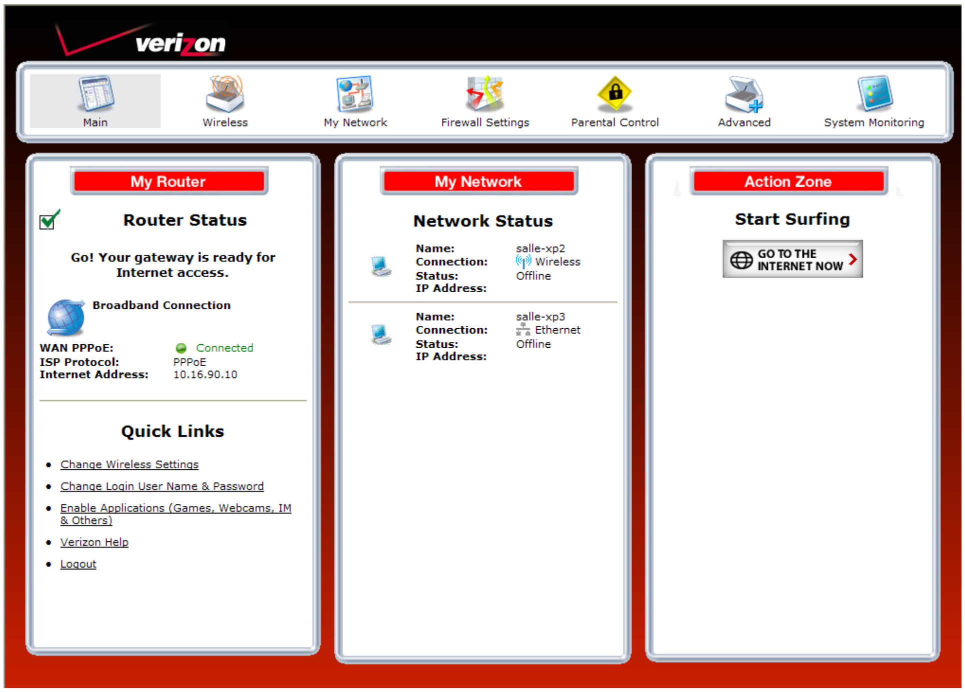
NOTE: To configure additonal WAN PPPoE properties, select **Routing** and **PPP** in the left submenu. If you change any settings in these screens, click **Apply** to save the settings.



Configure WAN PPPoE

General	
Device Name:	ppp0
Status:	Connected
Schedule:	Always
Network:	WAN
Connection Type:	PPPoE
MTU:	Automatic 1492
Internet Protocol	Obtain an IP Address Automatically
□ Override Subnet Mask:	0 . 0 . 0 . 0
DNS Server	Obtain DNS Server Address Automatically

After you have selected your protocol and clicked **OK** in the preceding screen, click **Main** to return to the home page. In the **My Router** panel, the message **Go! Your gateway is ready for Internet access** should now be displayed. In addition, the **Internet Address** field will display the WAN IP address of your Router.To quickly access your default Web page, in the **Action Zone** panel, click **GO TO THE INTERNET NOW.**



My Router

Router Status

Go! Your gateway is ready for Internet access.

Broadband Connection

WAN PPPoE: Connected
ISP Protocol: PPPoE
Internet Address: 10.16.90.10

Quick Links

- Change Wireless Settings
- Change Login User Name & Password
- Enable Applications (Games, Webcams, IM & Others)
- Verizon Help
- Logout

My Network

Network Status

Name: salle-xp2
Connection: Wireless
Status: Offline
IP Address:

Name: salle-xp3
Connection: Ethernet
Status: Offline
IP Address:

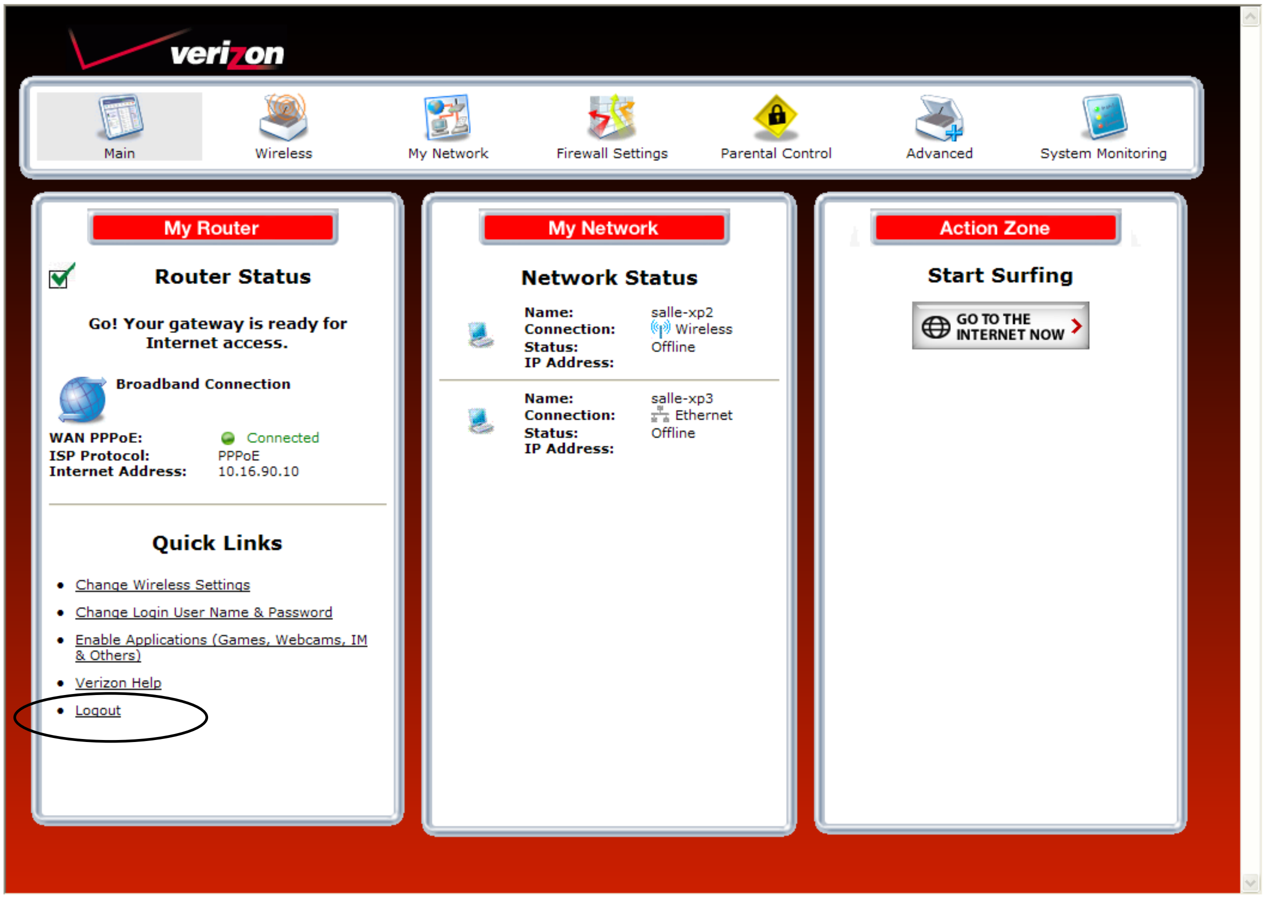
Action Zone

Start Surfing

7.3 Logging Out of the Router's Web Pages

When you are ready to log out of the Router's web pages, click the **Logout** link in the left submenu in any of the Web screens.

NOTE: If you want to close the Router's Web page, simply click the "X" in the upper-right corner of the window. Logging out or closing the window does not affect your Internet connection. However, you will need to log in to the Router again when you are ready to access the Router's pages.



Router Status

Go! Your gateway is ready for Internet access.

Broadband Connection

WAN PPPoE: Connected
ISP Protocol: PPPoE
Internet Address: 10.16.90.10

Quick Links

- Change Wireless Settings
- Change Login User Name & Password
- Enable Applications (Games, Webcams, IM & Others)
- Verizon Help
- Logout

Network Status

Name: salle-xp2
Connection: Wireless
Status: Offline
IP Address:

Name: salle-xp3
Connection: Ethernet
Status: Offline
IP Address:

Start Surfing

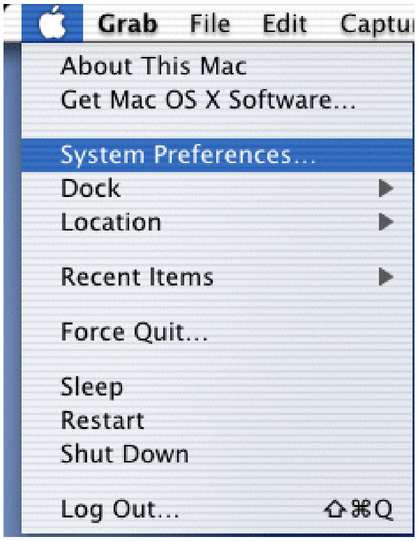
8. SETTING UP MACINTOSH OS X

This section provides instructions on how to use Macintosh Operating System 10 with the Router. Follow the instructions in this section to create a new network configuration for Macintosh OS X.

NOTE: Macintosh computers must use the Router's Ethernet installation. Refer to section 5, "Installing the Hardware," for details.

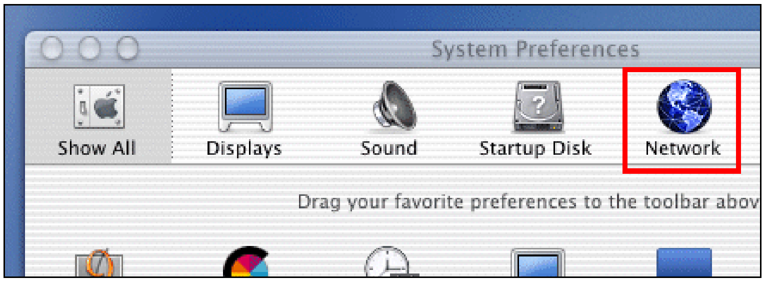
8.1 Opening the System Preference Screen

After you have connected the Router to the Ethernet port of your Macintosh, the screen below will appear. Click the "**Apple**" icon in the upper-left corner of the screen and select **System Preferences**.



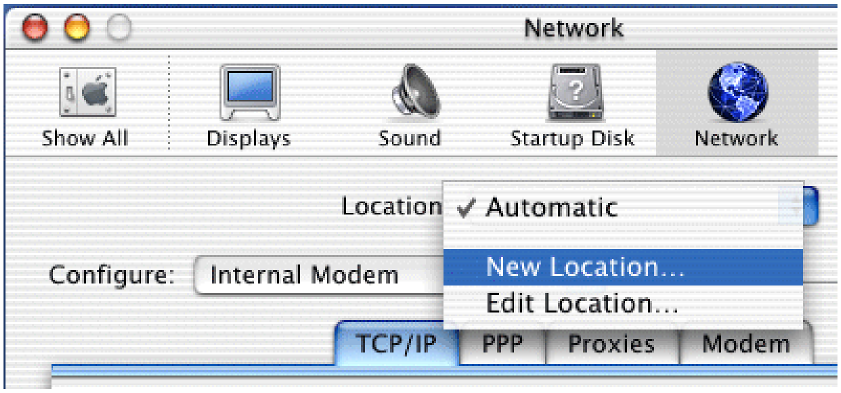
8.2 Choosing the Network Preferences

After selecting **System Preferences** from the previous screen, the **following** screen will appear. Click the **Network** icon.



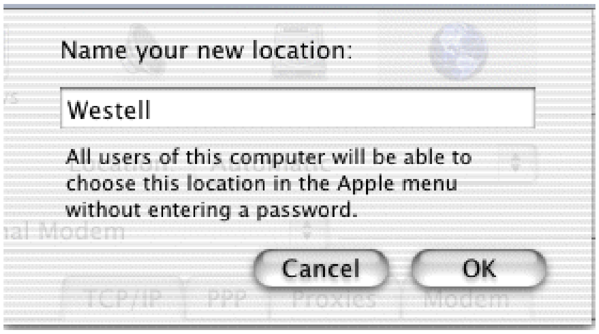
8.3 Creating a New Location

After clicking the **Network** icon, the **Network** screen will appear. Select **New Location** from the **Location** field.



8.4 Naming the New Location

After selecting **New Location** in the **Network** screen, the following screen will appear. In the field labeled **Name your new location:**, change the text from "**Untitled**" to "**Westell**." Click **OK**.



Name your new location:

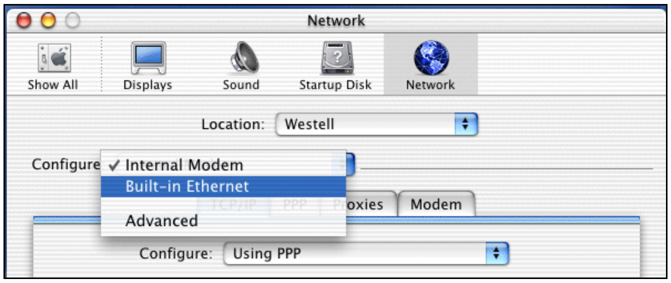
Westell

All users of this computer will be able to choose this location in the Apple menu without entering a password.

8.5 Selecting the Ethernet Configuration

After clicking **OK** in the preceding screen, the **Network** screen will appear. The **Network** screen shows the settings for the newly created location. From the **Configure** field in the **Network** screen, select **Built-in Ethernet**. Click **Save** to save the settings.

NOTE: Default settings for the Built-in Ethernet configuration are sufficient to operate the Router.



Location: Westell

Configure: Built-in Ethernet

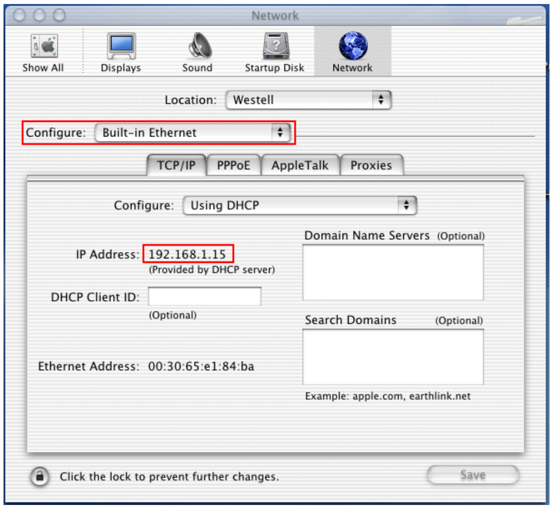
Configure: Using PPP

8.6 Checking the IP Connection

To verify that the computer is communicating with the Router, follow the instructions below.

1. Go to the "**Apple**" icon in the upper-left corner of the screen and select **System Preferences**.
2. In the **System Preferences screen**, click the **Network** icon. The **Network** screen will appear.
3. In the **Configure** field in the **Network** screen, select **Built-in Ethernet**.
4. View the **IP address** field. An IP address that begins with **192.168.1** should appear.

NOTE: The Router's DHCP server provides this IP address. If this IP address is not displayed, check the Router's wiring connection to the PC. If necessary, refer to section 5, "Installing the Hardware," for installation instructions.



Location: Westell

Configure: Built-in Ethernet

Configure: Using DHCP

IP Address: 192.168.1.15
(Provided by DHCP server)

DHCP Client ID:
(Optional)

Ethernet Address: 00:30:65:e1:84:ba

Domain Name Servers (Optional)

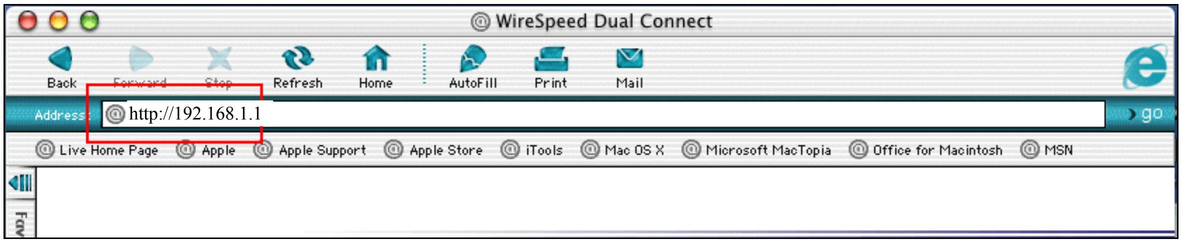
Search Domains (Optional)

Example: apple.com, earthlink.net

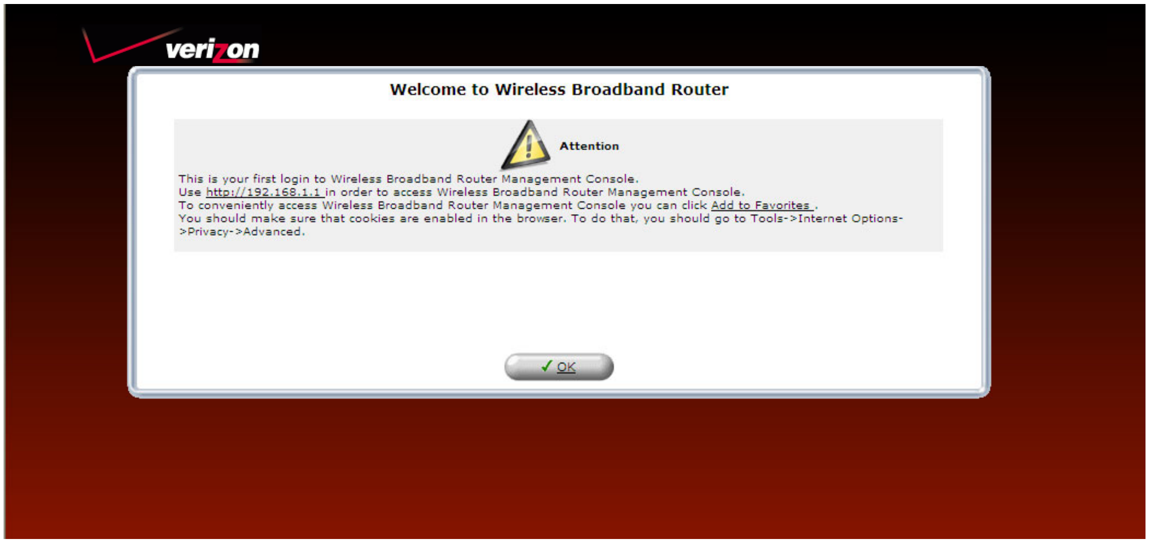
Click the lock to prevent further changes.

8.7 Accessing Your Router

In your Internet Explorer Web browser's address bar, type **http://192.168.1.1**, and then press **Enter** on your keyboard.



The **Login** screen will appear. Please refer to the **Login** screen in section 6.1 of this User Guide for logon instructions.



Welcome to Wireless Broadband Router

Attention

This is your first login to Wireless Broadband Router Management Console.
Use http://192.168.1.1 in order to access Wireless Broadband Router Management Console.
To conveniently access Wireless Broadband Router Management Console you can click Add to Favorites .
You should make sure that cookies are enabled in the browser. To do that, you should go to Tools->Internet Options->Privacy->Advanced.

9. BASIC CONFIGURATION

IMPORTANT: The following sections assume that you have active broadband Internet service.

The Router allows you to make changes to the configurable features such as connection settings, routing configurations, and firewall settings. The following sections explain each feature and show you how to make changes to the Router's settings. The navigation menu displayed at the top of each page allows you to navigate to the various configuration screens of your Router. Whenever you change settings in your Router, you must click **Apply** to allow the changes to take effect in the Router.

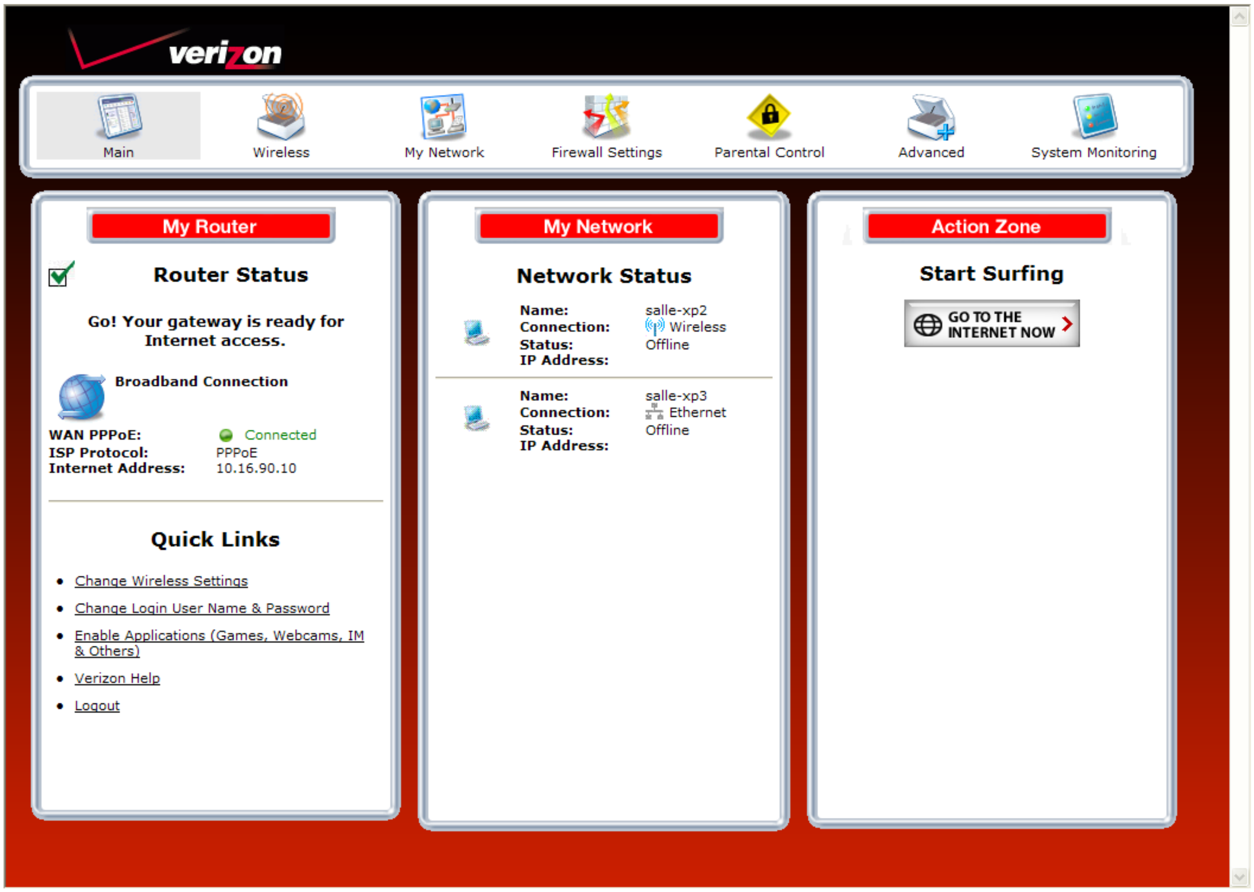
NOTE:

1. If you need help, go to the **Quick Links** section in the home page and then click the **Verizon Help** link. Clicking this link takes you to Verizon's Online Help site where you can find additional information about your Router.
2. If you click **OK** or **Apply** in a screen and then experience a delay, you may need to refresh the screen; press the **Refresh** button (where applicable) or press **F5** on your keyboard.
3. If you want to logout of the Router's Web page, click the **logout** link in the home page. Clicking this link does not affect your Internet connection; it only closes the Router's Web page. To log in, you will need to enter your username and password in the **Login** screen.

To configure the basic settings in your Router, follow the instructions provided in sections 10 through 14.

10. MAIN (HOME PAGE)

After you have logged on to your Router and established an Internet connection with Verizon, click **Main** in the top navigation menu. The following home page will appear. The home page allows you to view connection information reported by your Router and quickly access Internet services provided by Verizon. The following sections discuss each panel in the Main page. The Main page will be referred to as the home page throughout this User Guide.



Router Status

Go! Your gateway is ready for Internet access.

Broadband Connection

WAN PPPoE:	Connected
ISP Protocol:	PPPoE
Internet Address:	10.16.90.10

Quick Links

- Change Wireless Settings
- Change Login User Name & Password
- Enable Applications (Games, Webcams, IM & Others)
- Verizon Help
- Logout

Network Status

Name:	salle-xp2
Connection:	Wireless
Status:	Offline
IP Address:	
Name:	salle-xp3
Connection:	Ethernet
Status:	Offline
IP Address:	

Start Surfing

10.1 Router Status

In the home page, the **Router Status** pane allows you to view the status of your Router's Internet connection. Whenever you have an Internet connection, a green check mark is displayed. This signals you to Go! You can now browse the Internet. In addition, the Router's connection type and WAN IP address will also be displayed.

10.2 Quick Links

The **Quick Links** pane allows access to your broadband connection settings, and provides a link to Help information related to your Router. The following links are displayed in the **Quick Links** panel.

Quick Links	
Change Wireless Settings	Click this link to access the Router's wireless settings pages.
Change Login User Name & Password Password	Click this link to changea permissions needed to manage network connections, or to set up privileges for new users and groups on your network.
Enable Applications (Games, Web Cams, Instant Messaging, & Others)	Click this link to open a tunnel between remote (Internet) computers and a specific device port inside your local area network (LAN).
Verizon Help	Click this link to access Verizon's Online Help site.
Logout	Click this link to log out of the Router's Web pages.

10.3 Network Status

In the home page, the **Network Status** pane allows you to view information about devices that are connected to your network. If your network provides access to shared files, you can access the files by clicking the **Access Shared Files** link. The following details are displayed in the **Network Connections** panel.

Network Status	
Computer Name	The ASCII (text) name or MAC address of the device connected to the network.
Connection Type	The physical or wireless connection used to interface with your Router.
Status	The Internet status of the connected device: Offline or Online.
IP Address	The IP address assigned to a device on your network.

10.4 Start Surfing

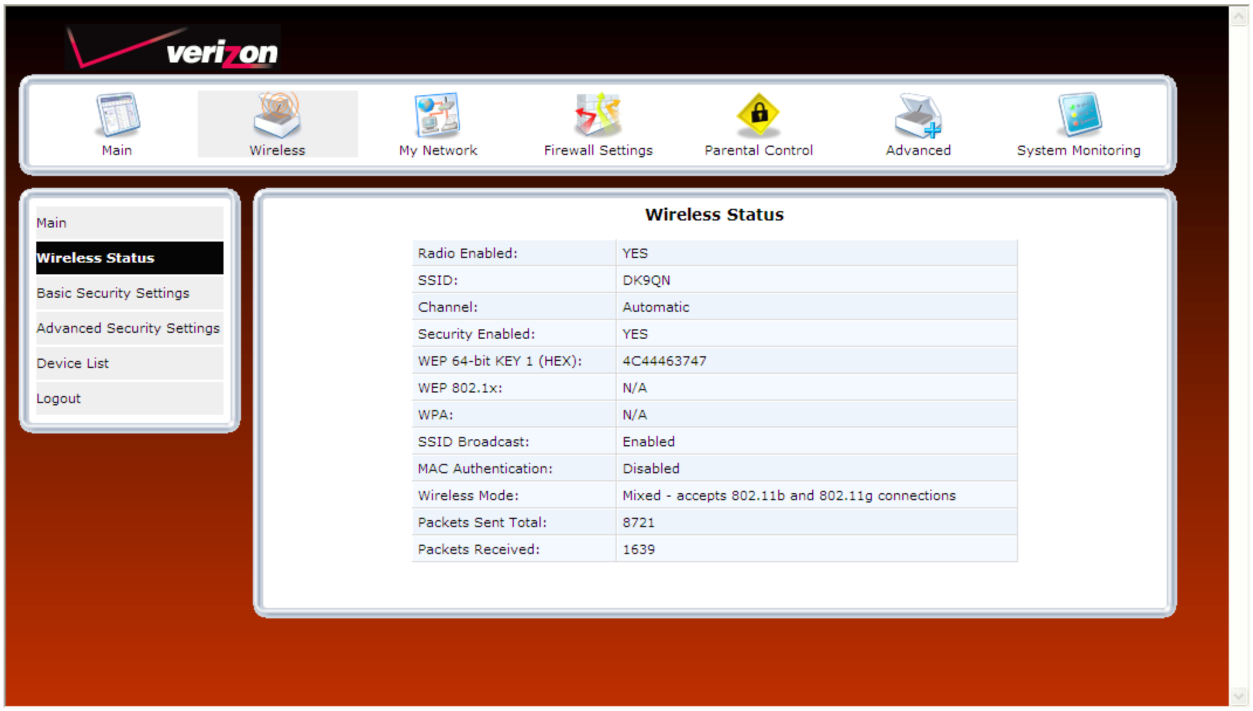
In the home page, the **Start Surfing** pane allows quick access to Internet services provided by Verizon. Click **GO TO THE INTERNET NOW** to go to your PCs default Web page.

11. WIRELESS

11.1 Wireless Status

If you click **Wireless** in the top navigation menu and then select **Wireless Status** in the left submenu, the following screen will appear. This screen allows you to view details about your wireless connection.

NOTE: If you change the Router's wireless settings, wireless access to the Router may be interrupted and wireless stations may require reconfiguration.



Wireless Status

Radio Enabled:	YES
SSID:	DK9QN
Channel:	Automatic
Security Enabled:	YES
WEP 64-bit KEY 1 (HEX):	4C44463747
WEP 802.1x:	N/A
WPA:	N/A
SSID Broadcast:	Enabled
MAC Authentication:	Disabled
Wireless Mode:	Mixed - accepts 802.11b and 802.11g connections
Packets Sent Total:	8721
Packets Received:	1639

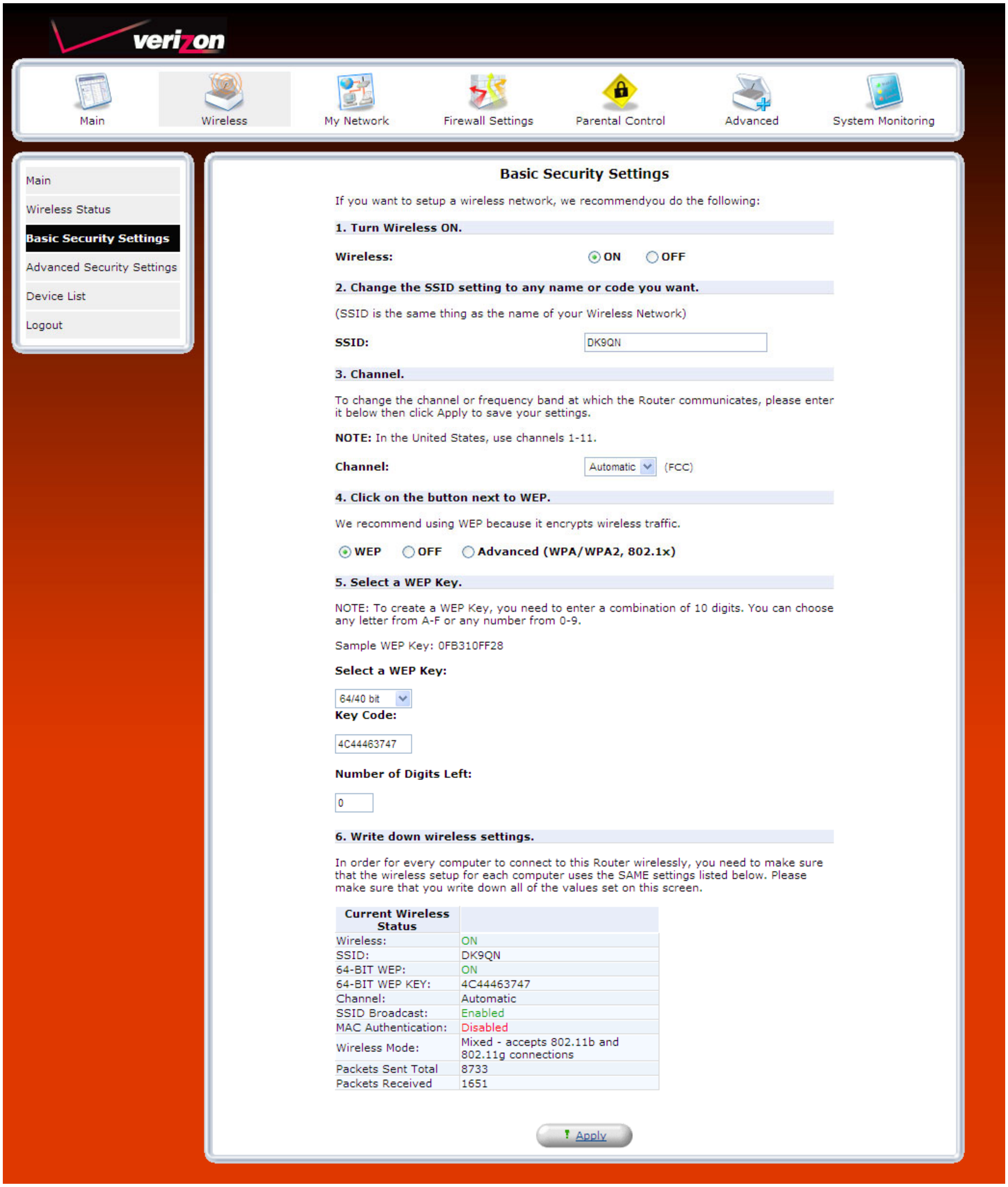
11.2 Basic Security Settings

If you select **Wireless** from the top navigation menu and then select **Basic Security Settings** in the left submenu, the following screen will appear. Your Router also functions as a wireless access point for wireless devices. To configure your wireless settings, enter the appropriate values in the fields provided. Then, click **Apply** to allow the settings to take effect. The following table explains the details of this screen.

IMPORTANT:

1. If you are connecting to the Router via a wireless network adapter, the computer's wireless network adapter must be configured with the Router's Service Set ID (SSID); that is, the SSID used in the wireless network adapter must be identical to the Router's SSID. The default SSID and WEP key for the Router are both located on the right-hand side of the label, which is located on the bottom of the router. Locate and run the utility software provided with the wireless network adapter, and then enter the identical SSID and WEP encryption security settings displayed in the Router into the wireless adapter. For privacy, you can change the SSID and security settings to your desired values. SSIDs are case sensitive and can contain up to 32 alphanumeric characters, including spaces.

2. In order for every computer on your network to connect to your Router wirelessly, confirm that each computer's wireless adapater is using the same security settings that you have configured in the Router's Basic Security Settings screen. After you have configured all the settings in this screen, please record the settings for future reference.



Basic Security Settings

If you want to setup a wireless network, we recommendyou do the following:

1. Turn Wireless ON.

Wireless: ● **ON** ○ **OFF**

2. Change the SSID setting to any name or code you want.

(SSID is the same thing as the name of your Wireless Network)

SSID: DK9QN

3. Channel.

To change the channel or frequency band at which the Router communicates, please enter it below then click Apply to save your settings.

NOTE: In the United States, use channels 1-11.

Channel: Automatic (FCC)

4. Click on the button next to WEP.

We recommend using WEP because it encrypts wireless traffic.

● **WEP** ○ **OFF** ○ **Advanced (WPA/WPA2, 802.1x)**

5. Select a WEP Key.

NOTE: To create a WEP Key, you need to enter a combination of 10 digits. You can choose any letter from A-F or any number from 0-9.

Sample WEP Key: 0FB310FF28

Select a WEP Key:

64/40 bit

Key Code:

4C44463747

Number of Digits Left:

0

6. Write down wireless settings.

In order for every computer to connect to this Router wirelessly, you need to make sure that the wireless setup for each computer uses the SAME settings listed below. Please make sure that you write down all of the values set on this screen.

Current Wireless Status	
Wireless:	ON
SSID:	DK9QN
64-BIT WEP:	ON
64-BIT WEP KEY:	4C44463747
Channel:	Automatic
SSID Broadcast:	Enabled
MAC Authentication:	Disabled
Wireless Mode:	Mixed - accepts 802.11b and 802.11g connections
Packets Sent Total	8733
Packets Received	1651

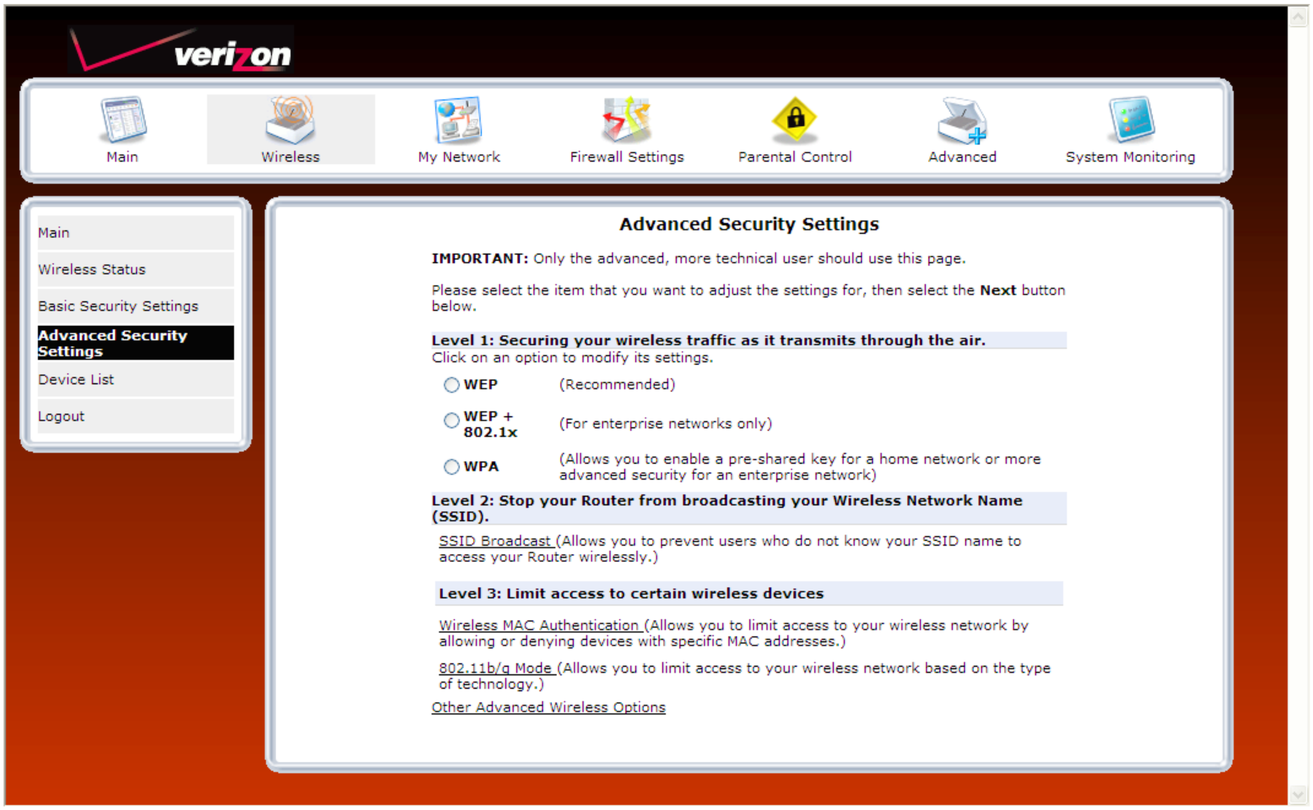
Wireless Settings	
Wireless (ON/OFF)	By default, the wireless feature is enabled. To completely turn off the wireless networking feature and the Router's internal wireless radio, select OFF.
Change SSID	The SSID is the name of your wireless network. This string is case-sensitive and must be 30 characters or less. To connect to the Router, the SSID on a computer's wireless card must be identical the SSID on the Router. The Router comes pre-configured with the SSID; however, you can change the SSID to any name or code you want.
Channel	This is the channel of the frequency band at which the Router communicates. The Router transmits and receives data on this channel. The number of channels to choose from is pre-programmed into the Router. A computer's wireless card does not have to be set to the same channel as the Router; the wireless card can scan all channels and look for a Router to connect to. (In the United States, use channels 1 through 11). For better performance, select a channel that is not being used or being used the least by other wireless devices such as cordless phones or other Routers in the area. If "Automatic" is selected, the Router will determine the optimal channel to use.
WEP Security	Factory Default = WEP WEP security encrypts the Router's wireless traffic and prevents unauthorized access to the Router's network. If "Advanced" is selected, it means that current wireless security setting is configured using advanced options (See 'Advanced Security Settings' for additional security options.) Selecting "NO SECURITY" will disable wireless security and is not recommended.
WEP Key Length	A WEP encryption key is used to protect your wireless transmissions. These keys are of varying lengths. The key can include the numbers *0-9* and letters *a,b,c,d,e, and f.* The number of characters must be either 10 (for 64/40 bit encryption) or 26 (for 104 bit encryption). If this page is used to configure WEP, key 1 will be used as the active key. You should note this value as you will have to enter it into each device which is connecting wirelessly
WEP Key	This is the actual security key value. You should note this value as you will have to enter it into each device which is connecting wirelessly.
Number of Required Digits	This field indicates how many more characters are needed to complete the security key. The security key is not complete unless this counter indicates 0.
Configure Wireless Client Settings to match Router's settings	For wireless clients, such as computers and other devices with wireless cards to establish a wireless connection to this Router, the clients' settings, especially the SSID, channel, wireless mode, and security (i.e., WEP) settings must match the Router's settings as summarized in the table. If channel is set to Automatic, the Router will determine the optimal channel to use. (If settings, particularly if using advance security options, are changed in other or "Advanced" sections, the sections where the changes were made must be consulted for reference.)

11.3 Advanced Security Settings

If you select **Wireless** from the top navigation menu and then select **Advanced Security Settings** in the left submenu, the following screen will appear. Generally, most owners of the Router will not need to modify these wireless options.

From this menu, you can change your wireless security level by selecting the desired choice: WEP, WEP + 802.1x, or Wireless Protected Access (WPA). You can also enable/disable the SSID broadcast feature for the product.
If you want to limit connected wireles dievces to only the 802.11g (54Mbps) standard, chose the 802.11 b/g mode link and select the desired mode.

For full access to all wireless and secuity settings on one page, click on the **Other Advanced Wireless Options** link at the bottom of the page. Details on this page are provided in section 11.3.4.



Advanced Security Settings

IMPORTANT: Only the advanced, more technical user should use this page.

Please select the item that you want to adjust the settings for, then select the **Next** button below.

Level 1: Securing your wireless traffic as it transmits through the air.
Click on an option to modify its settings.

○ **WEP** (Recommended)

○ **WEP + 802.1x** (For enterprise networks only)

○ **WPA** (Allows you to enable a pre-shared key for a home network or more advanced security for an enterprise network)

Level 2: Stop your Router from broadcasting your Wireless Network Name (SSID).

SSID Broadcast (Allows you to prevent users who do not know your SSID name to access your Router wirelessly.)

Level 3: Limit access to certain wireless devices

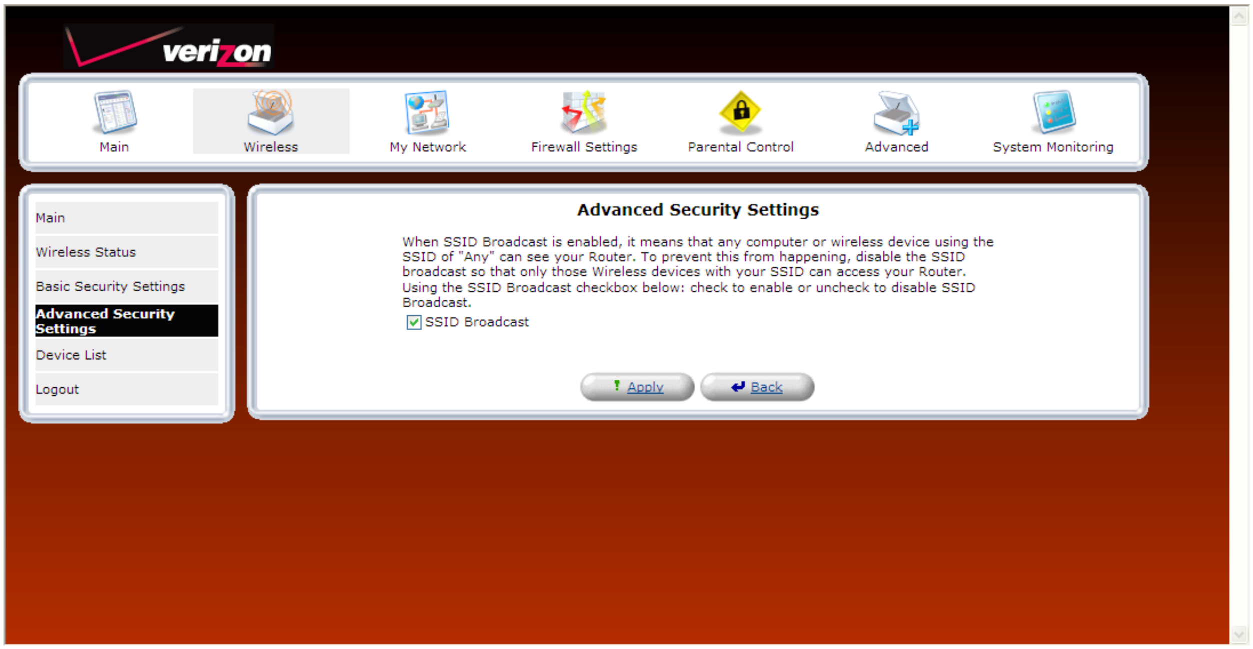
Wireless MAC Authentication (Allows you to limit access to your wireless network by allowing or denying devices with specific MAC addresses.)

802.11b/g Mode (Allows you to limit access to your wireless network based on the type of technology.)

Other Advanced Wireless Options

11.3.1 SSID Broadcast

If you clicked the **SSID Broadcast** link, the following screen will appear. By disabling the SSID broadcast, your Router will no longer send out messages indicating that it is in place. Disabling the SSID broadcast does not disable the wireless interface and clients configured with the correct SSID and wireless security key (when enabled) will still be able to connect. If you enable or disable SSID Broadcast, you must click **Apply** to save the change.



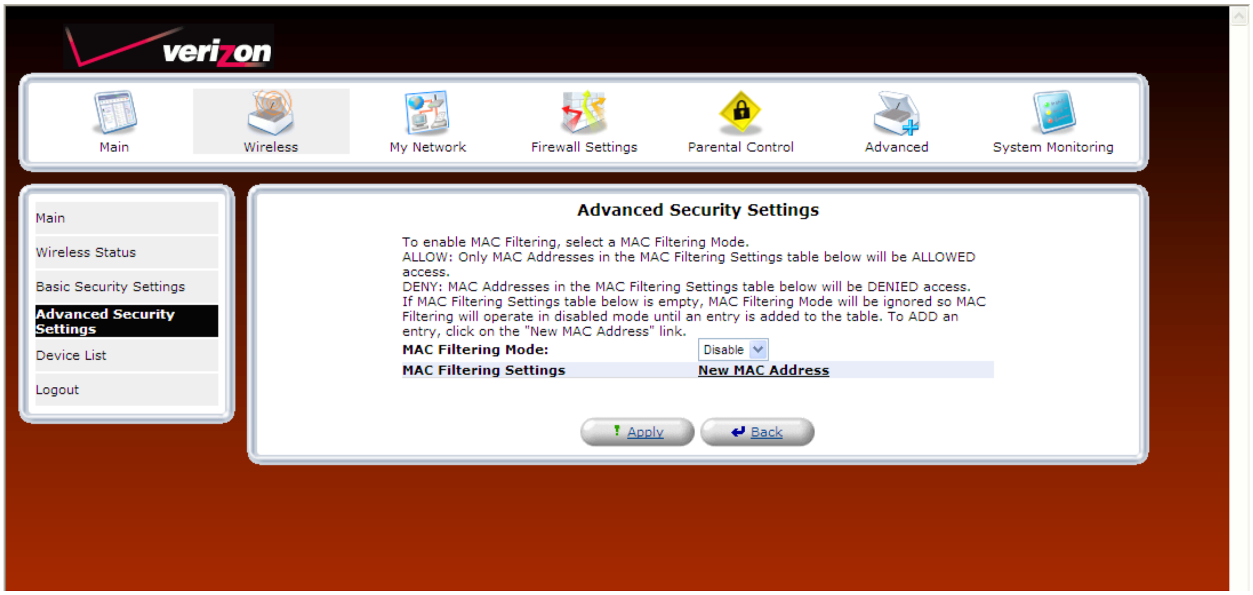
Advanced Security Settings

When SSID Broadcast is enabled, it means that any computer or wireless device using the SSID of "Any" can see your Router. To prevent this from happening, disable the SSID broadcast so that only those Wireless devices with your SSID can access your Router. Using the SSID Broadcast checkbox below: check to enable or uncheck to disable SSID Broadcast.

☑ SSID Broadcast

11.3.2 Wireless MAC Authentication

If you clicked the **Wireless MAC Authenticaton** link, the following screen will appear. Set up your MAC Filtering settings, and then click **Apply** to save the settings.



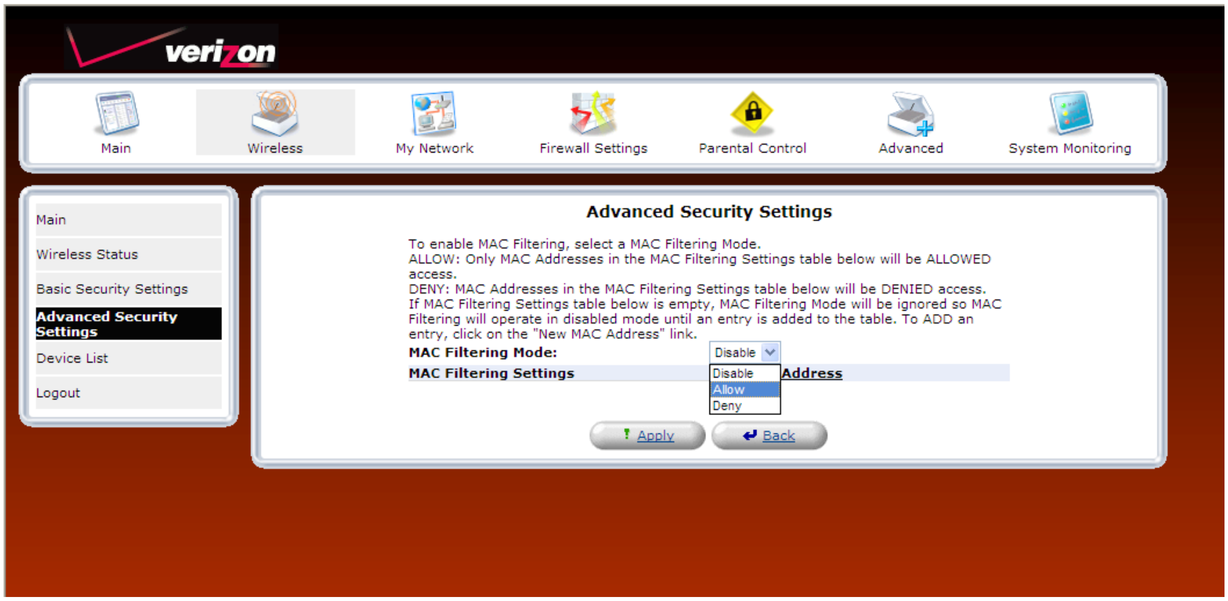
Advanced Security Settings

To enable MAC Filtering, select a MAC Filtering Mode.
ALLOW: Only MAC Addresses in the MAC Filtering Settings table below will be ALLOWED access.
DENY: MAC Addresses in the MAC Filtering Settings table below will be DENIED access.
If MAC Filtering Settings table below is empty, MAC Filtering Mode will be ignored so MAC Filtering will operate in disabled mode until an entry is added to the table. To ADD an entry, click on the "New MAC Address" link.

MAC Filtering Mode: Disable

MAC Filtering Settings **New MAC Address**

For example, if you select “Allow” from the **MAC filtering Mode** drop-down list, this option will allow only the devices whose MAC Addresses are active in the list to connect to the Router. To add a MAC address, click the **New MAC Address** link.



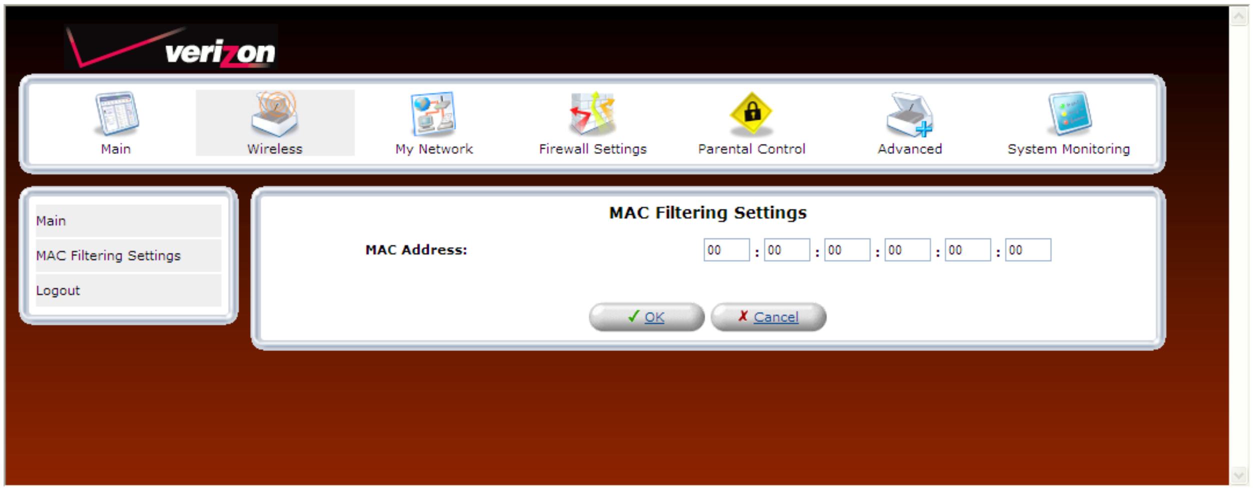
Advanced Security Settings

To enable MAC Filtering, select a MAC Filtering Mode.
ALLOW: Only MAC Addresses in the MAC Filtering Settings table below will be ALLOWED access.
DENY: MAC Addresses in the MAC Filtering Settings table below will be DENIED access.
If MAC Filtering Settings table below is empty, MAC Filtering Mode will be ignored so MAC Filtering will operate in disabled mode until an entry is added to the table. To ADD an entry, click on the "New MAC Address" link.

MAC Filtering Mode: Disable

MAC Filtering Settings **Address**

The following screen will appear. Enter the MAC address of the device that you want to allow access to the Router. Then, click **OK** to continue.

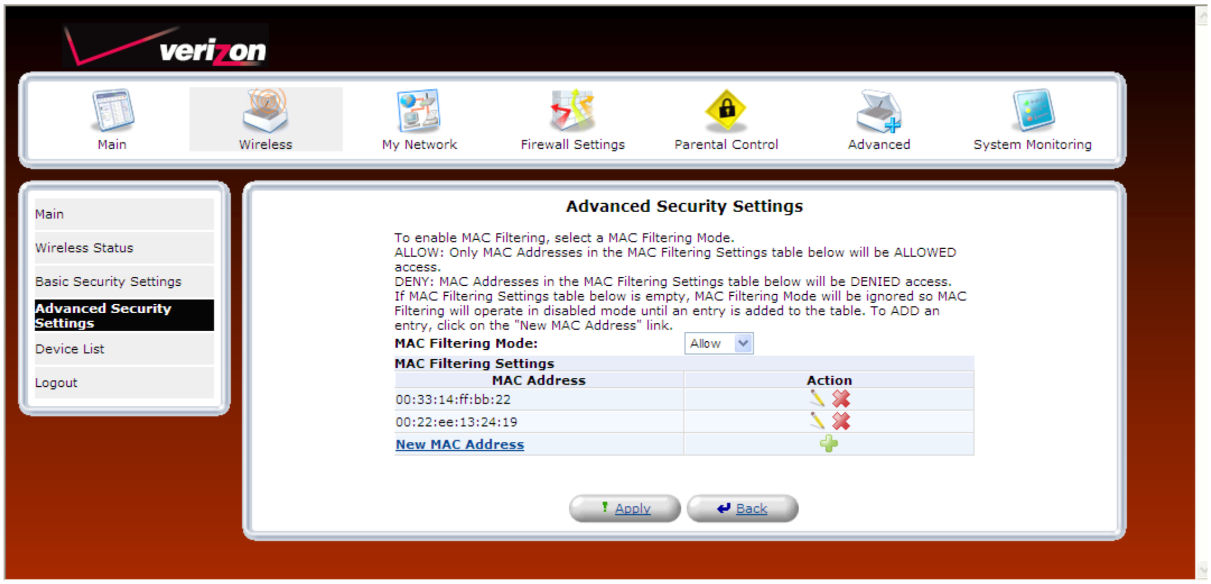


MAC Filtering Settings

MAC Address: 00 : 00 : 00 : 00 : 00 : 00

After you have entered a valid MAC address, the following **Advanced Security Settings** screen will display all the MAC addresses that have been added to the MAC filtering table. Be sure to select the desired option from the **MAC Filtering Mode** drop-down list. Then, click **Apply** to allow the settings to take effect in the Router.

To edit a MAC address, click the pencil icon next to the address you want to edit. To delete a MAC Address, click the “X” icon next to the address you want to delete. To add a new MAC address, click the plus icon, or click the **New MAC Address** link.



Advanced Security Settings

To enable MAC Filtering, select a MAC Filtering Mode.
ALLOW: Only MAC Addresses in the MAC Filtering Settings table below will be ALLOWED access.
DENY: MAC Addresses in the MAC Filtering Settings table below will be DENIED access.
If MAC Filtering Settings table below is empty, MAC Filtering Mode will be ignored so MAC Filtering will operate in disabled mode until an entry is added to the table. To ADD an entry, click on the "New MAC Address" link.

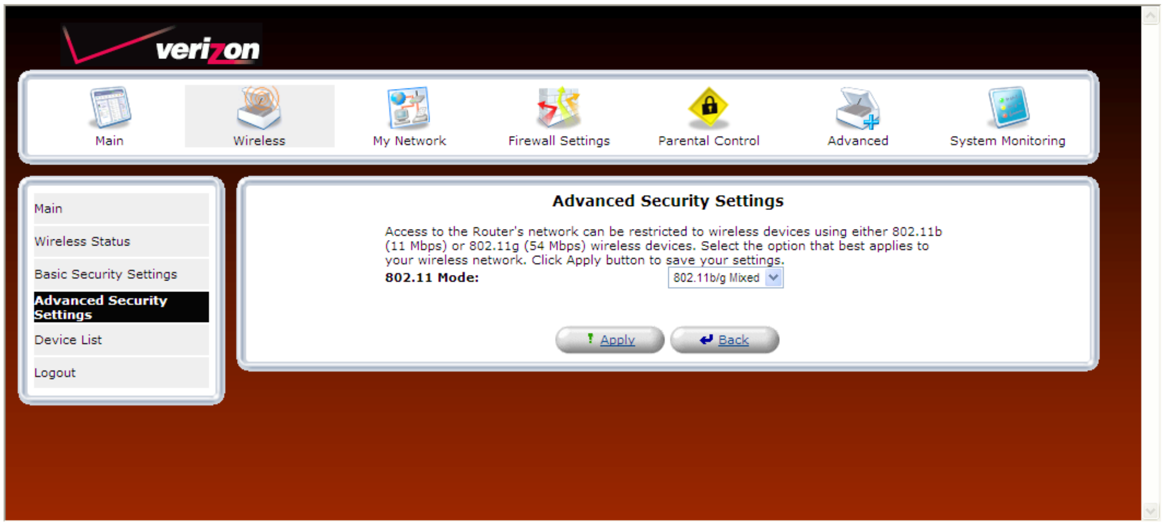
MAC Filtering Mode: Allow

MAC Filtering Settings

MAC Address	Action
00:33:14:ff:bb:22	✎ ✗
00:22:ee:13:24:19	✎ ✗
New MAC Address	+

11.3.3 802.11b/g Mode

If you clicked the **802.11b/g Mode** link, the following screen will appear. Access to the Router’s wireless network can be controlled by designating a wireless LAN technology specification 802.11b (11 Mbps) or 802.11g (54 Mbps). Use an option that is most compatible with your wireless clients.

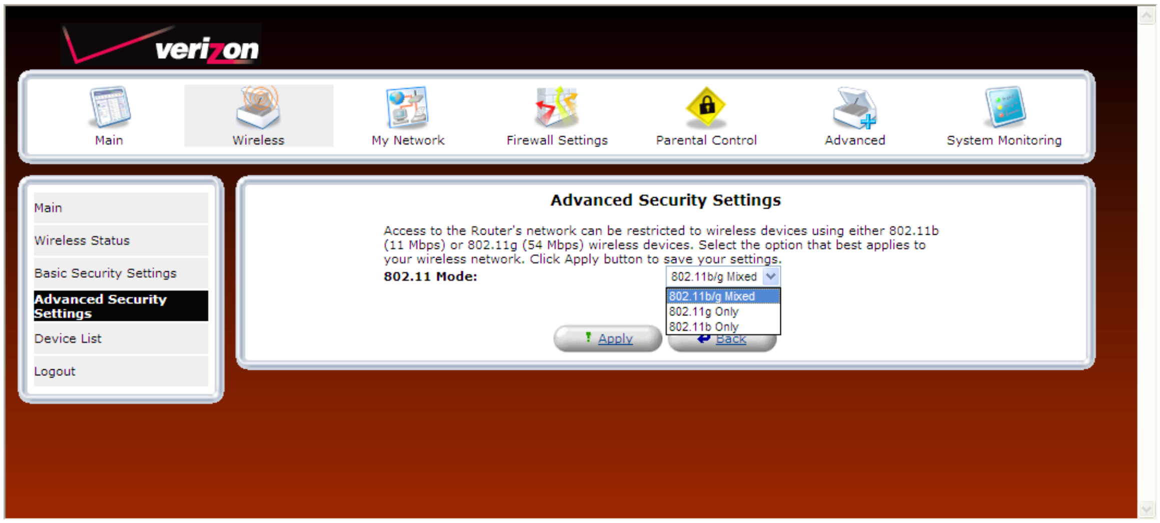


Advanced Security Settings

Access to the Router's network can be restricted to wireless devices using either 802.11b (11 Mbps) or 802.11g (54 Mbps) wireless devices. Select the option that best applies to your wireless network. Click Apply button to save your settings.

802.11 Mode: 802.11b/g Mixed

Select the desired mode from the drop-down list, and then click **Apply** to save the settings.



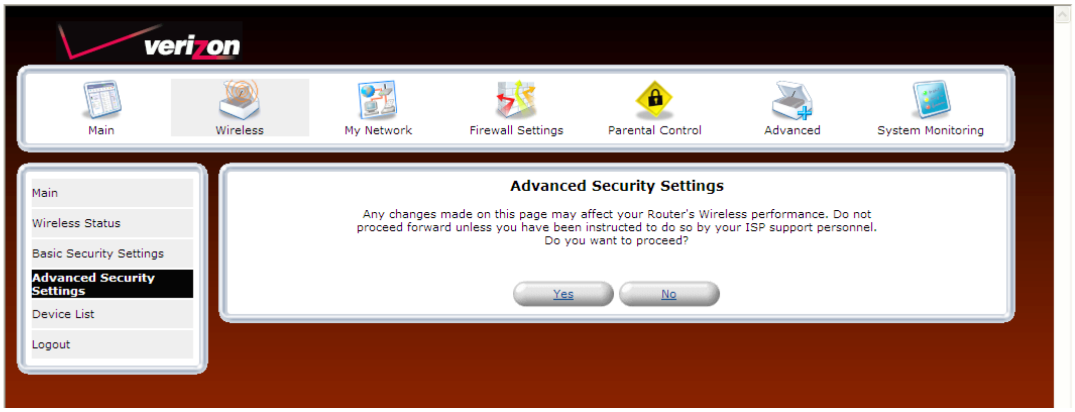
Advanced Security Settings

Access to the Router's network can be restricted to wireless devices using either 802.11b (11 Mbps) or 802.11g (54 Mbps) wireless devices. Select the option that best applies to your wireless network. Click Apply button to save your settings.

802.11 Mode: 802.11b/g Mixed

11.3.4 Other Advanced Wireless Options

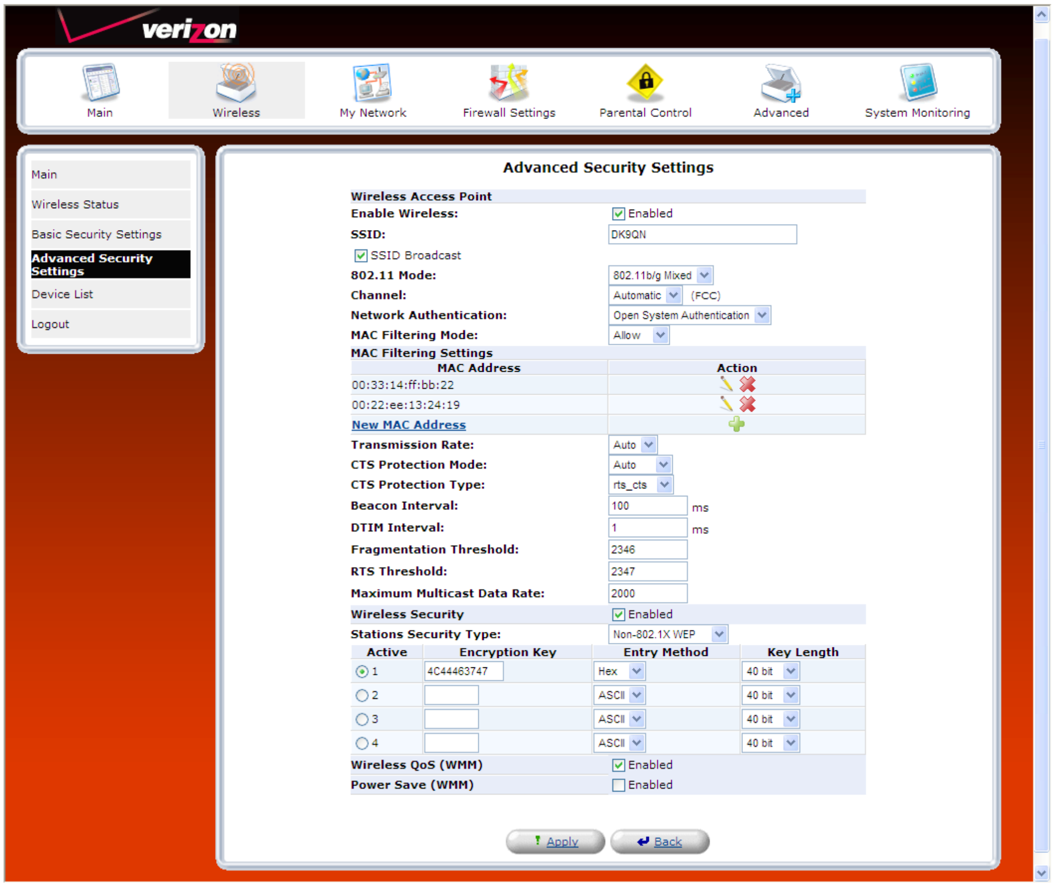
If you clicked the **Other Advanced Wireless Options** link, the following screen will appear. Click **Yes** to proceed.



Advanced Security Settings

Any changes made on this page may affect your Router's Wireless performance. Do not proceed forward unless you have been instructed to do so by your ISP support personnel.
Do you want to proceed?

The following screen will appear. Enter the desired values, and then click **Apply** to save the settings. The following table explains the details of this screen.



Advanced Security Settings

Wireless Access Point	
Enable Wireless:	☑ Enabled
SSID:	DK9QN
☑ SSID Broadcast	
802.11 Mode:	802.11b/g Mixed
Channel:	Automatic (FCC)
Network Authentication:	Open System Authentication
MAC Filtering Mode:	Allow
MAC Filtering Settings	
MAC Address	**Action**
00:33:14:ff:bb:22	✎ ✖
00:22:ee:13:24:19	✎ ✖
New MAC Address	✚
Transmission Rate:	Auto
CTS Protection Mode:	Auto
CTS Protection Type:	rts_cts
Beacon Interval:	100 ms
DTIM Interval:	1 ms
Fragmentation Threshold:	2346
RTS Threshold:	2347
Maximum Multicast Data Rate:	2000
Wireless Security	☑ Enabled
Stations Security Type:	Non-802.1X WEP

Active	Encryption Key	Entry Method	Key Length
● 1	4C44463747	Hex	40 bit
○ 2		ASCII	40 bit
○ 3		ASCII	40 bit
○ 4		ASCII	40 bit

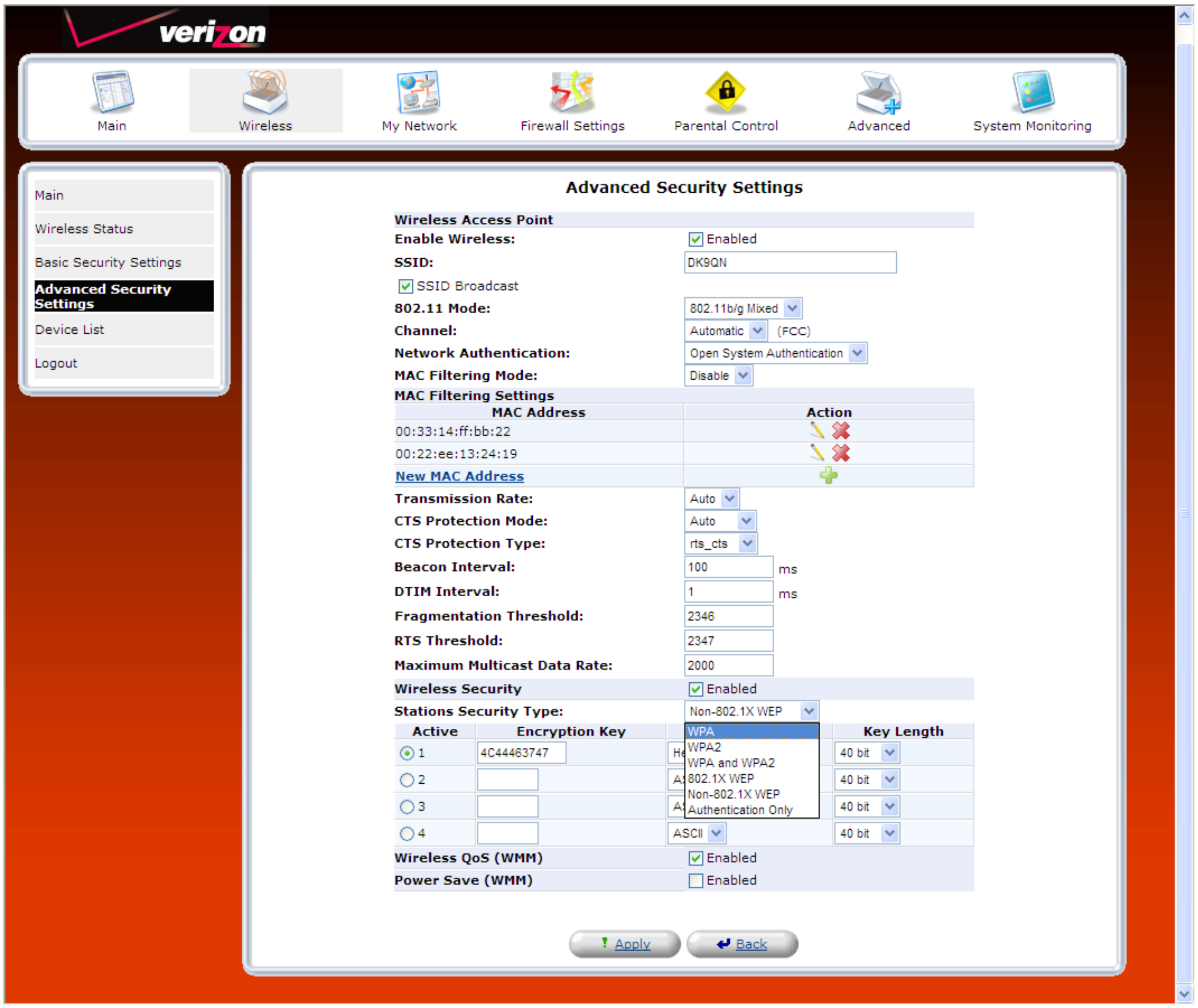
Wireless QoS (WMM)	☑ Enabled
Power Save (WMM)	□ Enabled

Advanced Security Settings	
Wireless Access Point	The Router also functions as a wireless access point for wireless devices.
Enable Wireless	By default, the wireless feature is enabled. To disable this feature, clear the check box.
SSID	The SSID is the name of your wireless network. This string is case-sensitive and must be 30 characters or less. To connect to the Router, the SSID on a computer's wireless card must be identical the SSID on the Router. The Router comes pre-configured with the SSID; however, you can change the SSID to any name or code you want.
SSID Broadcast	Select this check box to enable SSID (a check mark will appear in the box). When this box is cleared, the Router will not broadcast its SSID. When SSID Broadcast is enabled, any computer or wireless device using the SSID of "ANY" can see the Router. To prevent this from happening, click the **Disable** option button. This will disable SSID Broadcast so that only the wireless devices that are configured with your SSID can access your Router.
802.11 Mode	Allows you to limit access to your Router based on technology type. 11b only: Communication with the Router is limited to 802.11b 11g only: Communication with the Router is limited to 802.11g 802.11 b/g Mixed: Computers using 802.11b or 802.11g rates can communicate with the Router.
Channel	This is the channel of the frequency band at which the Router communicates. The Router transmits and receives data on this channel. The number of channels to choose from is pre-programmed into the Router. A computer's wireless card does not have to be set to the same channel as the Router; the wireless card can scan all channels and look for a Router to connect to. (In the United States, use channels 1 through 11).
Network Authentication	Open System Authentication: If Open System authentication is selected, this will allow any station to associate with the wireless network, but only stations with a valid WEP key can send or receive data from the Router. Shared Key Authentication: If Shared Key Authentication is selected, a station must authenticate with the Router (using the WEP key) before it can connect to the Router's wireless network. Both: If "Both" is selected, the Router will allow both Open System and Shared Key Authentication to be used.
MAC Filtering Mode	Disable: If Disable is selected, MAC Filtering Mode will be deactivated. Allow: If Allow is selected, the Router will allow only the devices that are configured in the MAC filter table. Deny: If Deny is selected, the Router will deny all devices that are configured in the MAC filter table.
MAC Filtering Settings	Click this link to add a MAC address to the MAC filtering list. Details on this feature are discussed later in this section.
Transmission Rate	Selecting a transmission rate allows you to adjust the bit rate of the Router's wireless transmissions. Select a transmission rate from the drop-down list, or select Auto to allow the Router to automatically select the best transmission rate.
CTS Protection Mode	Clear to Send (CTS) allows the 802.11 b/g networks to operate a maximum efficiency. Auto: Select Auto to activate CTS. None: Select None to deactivate CTS. Always: Select Always to allow CTS to always be activated.
CTS Protection Type	CTS (Clear to Send) protection mode allows mixed 802.11b/g networks to operate at maximum efficiency. RTS (Request to Send) controls what size data packet the low level RF protocol issues to an RTS packet.

	Select cts_only to activate this feature. Select cts_rts to activate this feature.
Beacon Interval (in milliseconds)	Enter the beacon interval value. The beacon interval is the time between beacon frame transmissions. Beacons are transmitted by the Router to help identify wireless networks. Beacons contain rate and capability information. Beacons received by stations can be used to identify the wireless access points in the area.
DTIM Interval (in milliseconds)	Enter the DTIM (Delivery Traffic Indication Message) interval value. A DTIM is a countdown mechanism for the Router. It informs wireless network clients of the next window for listening to broadcast and multicast messages.
Fragmentation Threshold	Setting the fragmentation threshold can increase the reliability of frame transmissions on the wireless network. Any MAC Service Data Unit (MSDU) or MAC Protocol Data Unit (MPDU) larger than this value will be fragmented into an MPDU of the specified size.
RTS Threshold	Enter the RTS (Request to Send) threshold. This setting controls what size data packet the low level RF protocol issues to an RTS packet. RTS/CTS handshaking will be performed for any data or management MPDU containing a number of bytes greater than the threshold. If this value is larger than the MSDU size (typically set by the fragmentation threshold), no handshaking will be performed. A value of zero will enable handshaking for all MPDUs.
Maximum Multicast Data Rate	The maximum rate (in kb/s) at which multicast packets are transmitted over your network.
Wireless Security	When this feature is enabled (the box contains a check mark), wireless security is activated, and the security type can be configured. When the box is clear, wireless security is deactivated. By factory default, Wireless Security is disabled.
Stations Security Type	Set the type of security for the Router’s wireless network. Choose from the following options: WPA, WPA2, WPA and WPA2, 802.1x WEP, Non-802.1x WEP, Authentication Only. Details on these options are discussed later in this section.
Authentication Method	This is the authentication method used with the security type.
Wireless QoS (WMM)	Wi-Fi Multimedia (WMM) is a Wi-Fi Alliance certification, based on the IEEE 802.11e draft standard. It provides basic Quality of Service (QoS) features to IEEE 802.11 networks. If your wireless card supports WMM, enable this feature by checking its 'Enabled' check-box.
Power Save (WMM)	WMM® Power Save is a set of features for Wi-Fi networks that help conserve battery power in small devices such as phones, PDAs, and audio players.

11.3.5 Configuring the Stations Security Type

To configure the Router's wireless security type for the wireless network, in the **Advanced Security Settings** screen, select an option from the **Stations Security Type** drop-down list. The following sections describe each security type.



Advanced Security Settings

Wireless Access Point	
Enable Wireless:	☑ Enabled
SSID:	DK9QN
☑ SSID Broadcast	
802.11 Mode:	802.11b/g Mixed
Channel:	Automatic (FCC)
Network Authentication:	Open System Authentication
MAC Filtering Mode:	Disable
MAC Filtering Settings	
MAC Address	**Action**
00:33:14:ff:bb:22	
00:22:ee:13:24:19	
New MAC Address	
Transmission Rate:	Auto
CTS Protection Mode:	Auto
CTS Protection Type:	rts_cts
Beacon Interval:	100 ms
DTIM Interval:	1 ms
Fragmentation Threshold:	2346
RTS Threshold:	2347
Maximum Multicast Data Rate:	2000
Wireless Security	☑ Enabled
Stations Security Type:	Non-802.1X WEP

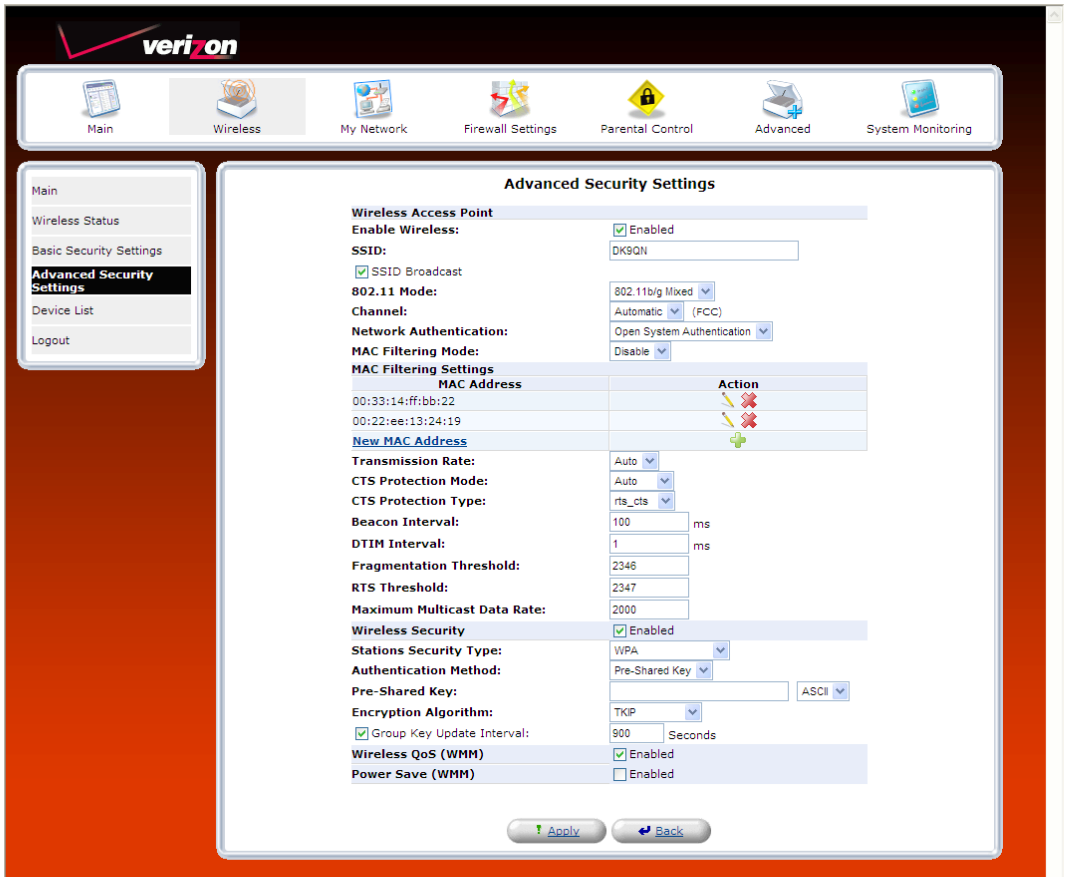
Stations Security Type drop-down list: WPA, WPA2, WPA and WPA2, 802.1X WEP, Non-802.1X WEP, Authentication Only

Active	Encryption Key		Key Length
● 1	4C44463747	He	40 bit
○ 2		A	40 bit
○ 3		A	40 bit
○ 4		ASCII	40 bit

Wireless QoS (WMM)	☑ Enabled
Power Save (WMM)	□ Enabled

11.3.5.1 WPA (Wi-Fi Protected Access v.1)

If you select **WPA** in the **Stations Security Type** drop-down list, the following screen will appear. WPA allows you to enable a pre-shared key for your home network or for advanced security for an enterprise network. This option allows stations that support WPA v.1 to connect to the Router.



Advanced Security Settings

Wireless Access Point

Enable Wireless: ☑ Enabled

SSID: DK9QN

☑ SSID Broadcast

802.11 Mode: 802.11b/g Mixed

Channel: Automatic (FCC)

Network Authentication: Open System Authentication

MAC Filtering Mode: Disable

MAC Filtering Settings

MAC Address	Action
00:33:14:ff:bb:22	✎ ✖
00:22:ee:13:24:19	✎ ✖
New MAC Address	✚

Transmission Rate: Auto

CTS Protection Mode: Auto

CTS Protection Type: rts_cts

Beacon Interval: 100 ms

DTIM Interval: 1 ms

Fragmentation Threshold: 2346

RTS Threshold: 2347

Maximum Multicast Data Rate: 2000

Wireless Security ☑ Enabled

Stations Security Type: WPA

Authentication Method: Pre-Shared Key

Pre-Shared Key: ASCII

Encryption Algorithm: TKIP

☑ Group Key Update Interval: 900 Seconds

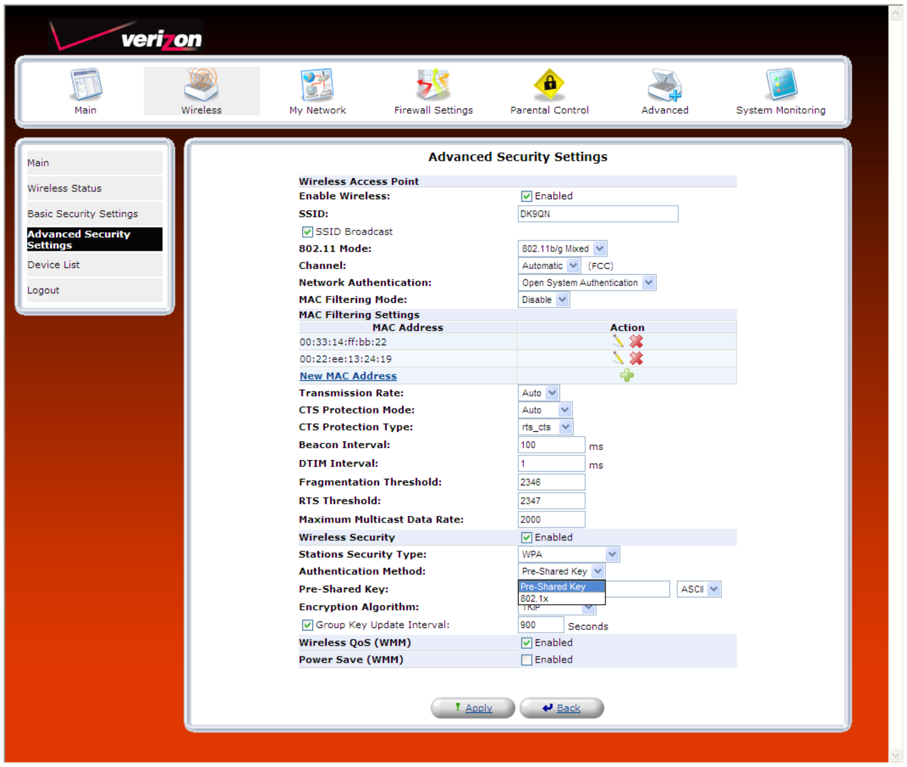
Wireless QoS (WMM) ☑ Enabled

Power Save (WMM) □ Enabled

WPA Wireless Security	
Wireless Security	Factory Default = Enabled When this feature is enabled (the box contains a check mark), wireless security in activated. If the box is cleared, wireless security will be deactivated.
Stations Security Type	Factory Default = Non-8.2.1x WEP Set the type of security for the Router's wireless network. Choose from the following options: Details on these options are discussed later in this section. WPA – Allows stations that support WPA v.1 to connect to the Router. WPA2 – Allows stations that support WPA v.2 to connect to the Router. WPA and WPA2 – Allows stations that support WPA and WPA2 to connect to the Router. 802.1x WEP – Allows stations that support 802.1x WEP to connect to the Router. Non-802.1x WEP – Allows stations that support Non-802.1x WEP to connect to the Router. Authentication Only – Allows stations that support Authentication Only to connect to the Router.
Authentication Method	Factory Default = Personal (Pre-Shared Key)

	Pre-Shared Key – WPA stations share a pre-shared key (string format) with the Router and do not authenticate with the RADIUS server. 802.1x – WPA stations authenticate with the RADIUS server using EAP-TLS over 802.1x, a standard for passing extensible authentication protocol (EAP) for authentication purposes. EAP is used to communicate authentication information between the supplicant and the authentication server. With 802.1x, EAP messages are packaged in Ethernet frames, rather than using and PPP.
Pre-Authentication	Factory Default = Disabled To Enable this feature, click the box (a check mark will appear in the box).
WPA Pre-Shared Key	The WPA key can be either 8 to 63 text (ASCII) characters or 64 hexadecimal (Hex) characters. The only allowable hexadecimal characters are: A-F and 0-9.
Encryption Algorithm	Factory Default = TKIP Select the encryption algorithm you want to use (TKIP, AES, or TKIP and AES). TKIP: Select this option to enable the Temporal Key Integrity Protocol for data encryption. AES: Select this option to enable the Advanced Encryption Standard for data encryption. TKIP and AES: Select this option to enable the Router to accept TKIP and AES encryption.
Group Key Update Interval (in seconds)	The number of seconds between rekeying the WPA group key. A value of zero means that rekeying is disabled.

After you have selected WPA as the security type, select the desired authentication method from the **Authentication Method** drop-down list.



Advanced Security Settings

Wireless Access Point	
Enable Wireless:	☑ Enabled
SSID:	DK9QN
☑ SSID Broadcast	
802.11 Mode:	802.11b/g Mixed
Channel:	Automatic (FCC)
Network Authentication:	Open System Authentication
MAC Filtering Mode:	Disable
MAC Filtering Settings	
MAC Address	**Action**
00:33:14:ff:bb:22	
00:22:ee:13:24:19	
New MAC Address	
Transmission Rate:	Auto
CTS Protection Mode:	Auto
CTS Protection Type:	rts_cts
Beacon Interval:	100 ms
DTIM Interval:	1 ms
Fragmentation Threshold:	2346
RTS Threshold:	2347
Maximum Multicast Data Rate:	2000
Wireless Security	☑ Enabled
Stations Security Type:	WPA
Authentication Method:	Pre-Shared Key Pre-Shared Key 802.1x
Pre-Shared Key:	ASCII
Encryption Algorithm:	TKIP
☑ Group Key Update Interval:	900 Seconds
Wireless QoS (WMM)	☑ Enabled
Power Save (WMM)	□ Enabled

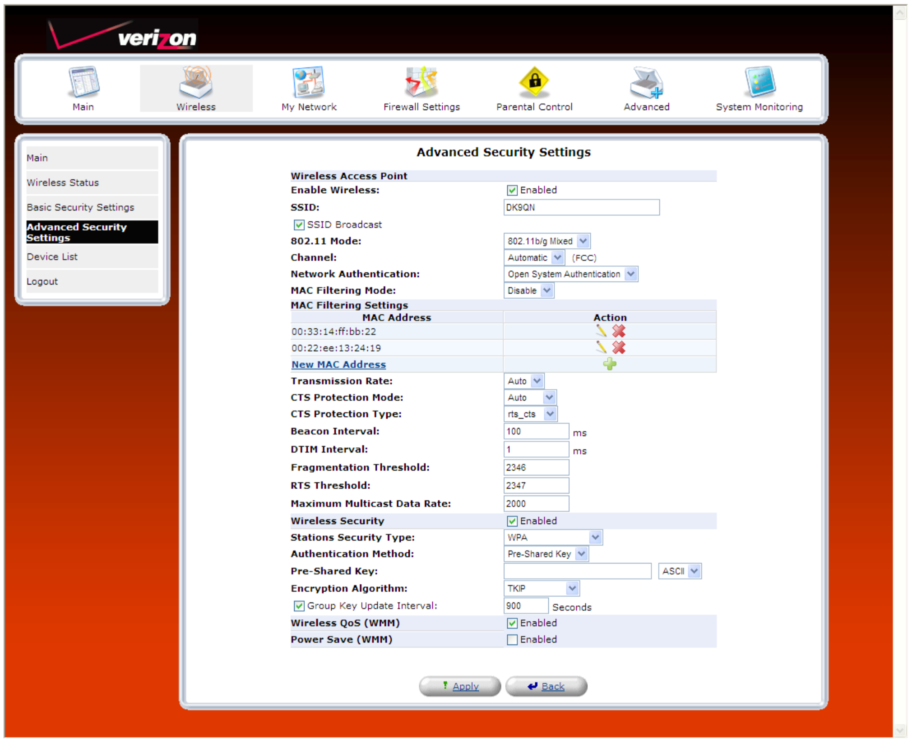
11.3.5.1.1 Authentication Method—Pre-Shared Key

If you select **Pre-Shared key** as the authentication method for WPA, the following screen will appear. Configuring Pre-Shared Key in the Router allows devices that know the pre-shared key to connect to the Router.

> **NOTE:** A WPA pre-shared key is treated as either a string of text (ASCII) characters or a set of hexadecimal (Hex) characters. The key can be either 8 to 63 text (ASCII) characters or 64 hexadecimal (Hex) characters. The only allowable hexadecimal characters are: 0-9 and A-F.

To configure the WPA Pre-Shared Key, do the following:

1. Select the string type (ASCII or HEX) in the **Pre-Shared Key** drop-down list.
2. Enter the desired pre-shared key values in the field provided.
3. Select the desired option from the **Encryptoin Algorithm** drop-down list.
   - TKIP: Select this option to enable the Temporal Key Integrity Protocol for data encryption.
   - AES: Select this option to enable the Advanced Encryption Standard for data encryption.
   - TKIP and AES: Select this option to enable the Router to accept TKIP and AES encryption.
4. Enter the desired Group Key Update Interval, and confirm that the adjacent box contains a check mark. (By factory default, Group Key Interval is enabled for 900 seconds.)
5. Click **OK** to save the wireless settings in the Router.



Advanced Security Settings

Wireless Access Point	
Enable Wireless:	☑ Enabled
SSID:	DK9QN
☑ SSID Broadcast	
802.11 Mode:	802.11b/g Mixed
Channel:	Automatic (FCC)
Network Authentication:	Open System Authentication
MAC Filtering Mode:	Disable
MAC Filtering Settings	
MAC Address	**Action**
00:33:14:ff:bb:22	
00:22:ee:13:24:19	
New MAC Address	
Transmission Rate:	Auto
CTS Protection Mode:	Auto
CTS Protection Type:	rts_cts
Beacon Interval:	100 ms
DTIM Interval:	1 ms
Fragmentation Threshold:	2346
RTS Threshold:	2347
Maximum Multicast Data Rate:	2000
Wireless Security	☑ Enabled
Stations Security Type:	WPA
Authentication Method:	Pre-Shared Key
Pre-Shared Key:	ASCII
Encryption Algorithm:	TKIP
☑ Group Key Update Interval:	900 Seconds
Wireless QoS (WMM)	☑ Enabled
Power Save (WMM)	☐ Enabled

11.3.5.1.2 Authentication Method—802.1x

If you select **802.1x** as the authentication method for WPA, the following screen will appear. Configuring 802.1x allows devices that support 802.1x to connect to the Router.

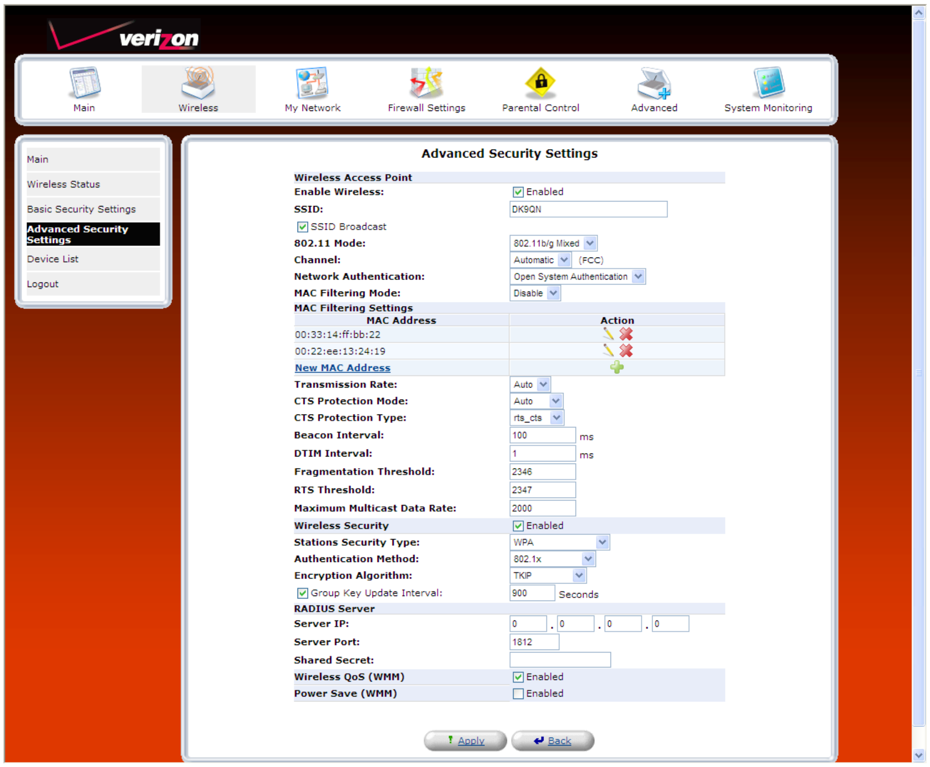
To configure WPA authentication for 802.1x, do the following:

1. Select the desired option from the **Encryptoin Algorithm** drop-down list.
   - TKIP: Select this option to enable the Temporal Key Integrity Protocol for data encryption.
   - AES: Select this option to enable the Advanced Encryption Standard for data encryption.
   - TKIP and AES: Select this option to enable the Router to accept either TKIP or AES encryption.
2. Enter the desired Group Key Update Interval, and confirm that the box contains a check mark. (By factory default, Group Key Interval is enabled for 900 seconds.)
3. Configure the Radius Server:

   a. Enter the Radius Server IP address in the fields provided.

   b. Enter the desired Server Port value.

   c. Enter the Shared Secret.
4. Click **OK** to save the wireless settings in the Router.

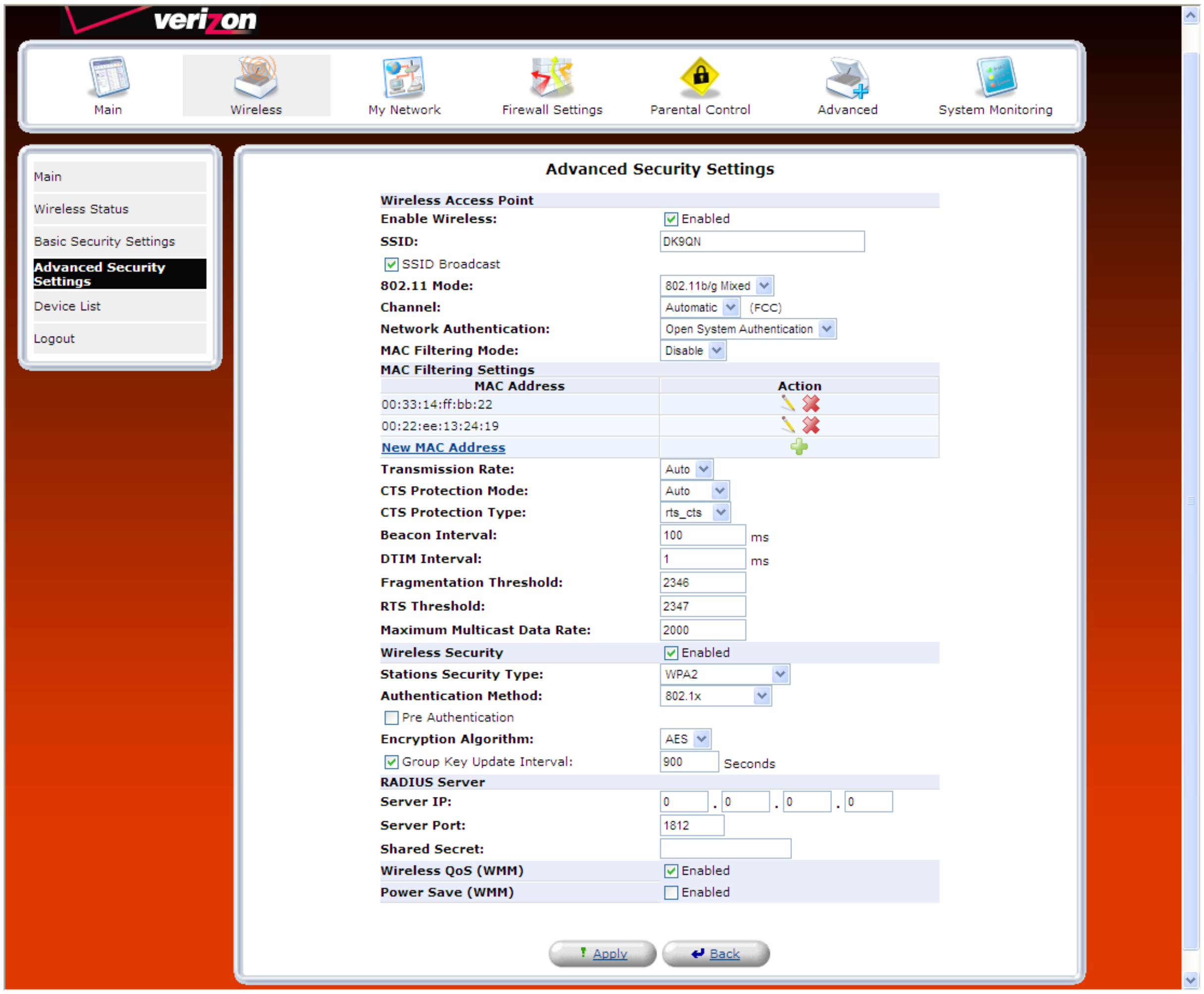


Advanced Security Settings

Wireless Access Point	
Enable Wireless:	☑ Enabled
SSID:	DK9QN
☑ SSID Broadcast	
802.11 Mode:	802.11b/g Mixed
Channel:	Automatic (FCC)
Network Authentication:	Open System Authentication
MAC Filtering Mode:	Disable
MAC Filtering Settings	
MAC Address	**Action**
00:33:14:ff:bb:22	
00:22:ee:13:24:19	
New MAC Address	
Transmission Rate:	Auto
CTS Protection Mode:	Auto
CTS Protection Type:	rts_cts
Beacon Interval:	100 ms
DTIM Interval:	1 ms
Fragmentation Threshold:	2346
RTS Threshold:	2347
Maximum Multicast Data Rate:	2000
Wireless Security	☑ Enabled
Stations Security Type:	WPA
Authentication Method:	802.1x
Encryption Algorithm:	TKIP
☑ Group Key Update Interval:	900 Seconds
RADIUS Server	
Server IP:	0 . 0 . 0 . 0
Server Port:	1812
Shared Secret:	
Wireless QoS (WMM)	☑ Enabled
Power Save (WMM)	□ Enabled

11.3.5.2 WPA2 (Wi-Fi Protected Access v. 2)

If you select **WPA2** in the **Stations Security Type** drop-down list, the following screen will appear. This option allows stations that support WPA v.2 to connect to the Router. The configuration settings for WPA2 are similar to the settings in WPA. Please refer to section 11.3.5.1 for instructions on configuring WPA2.

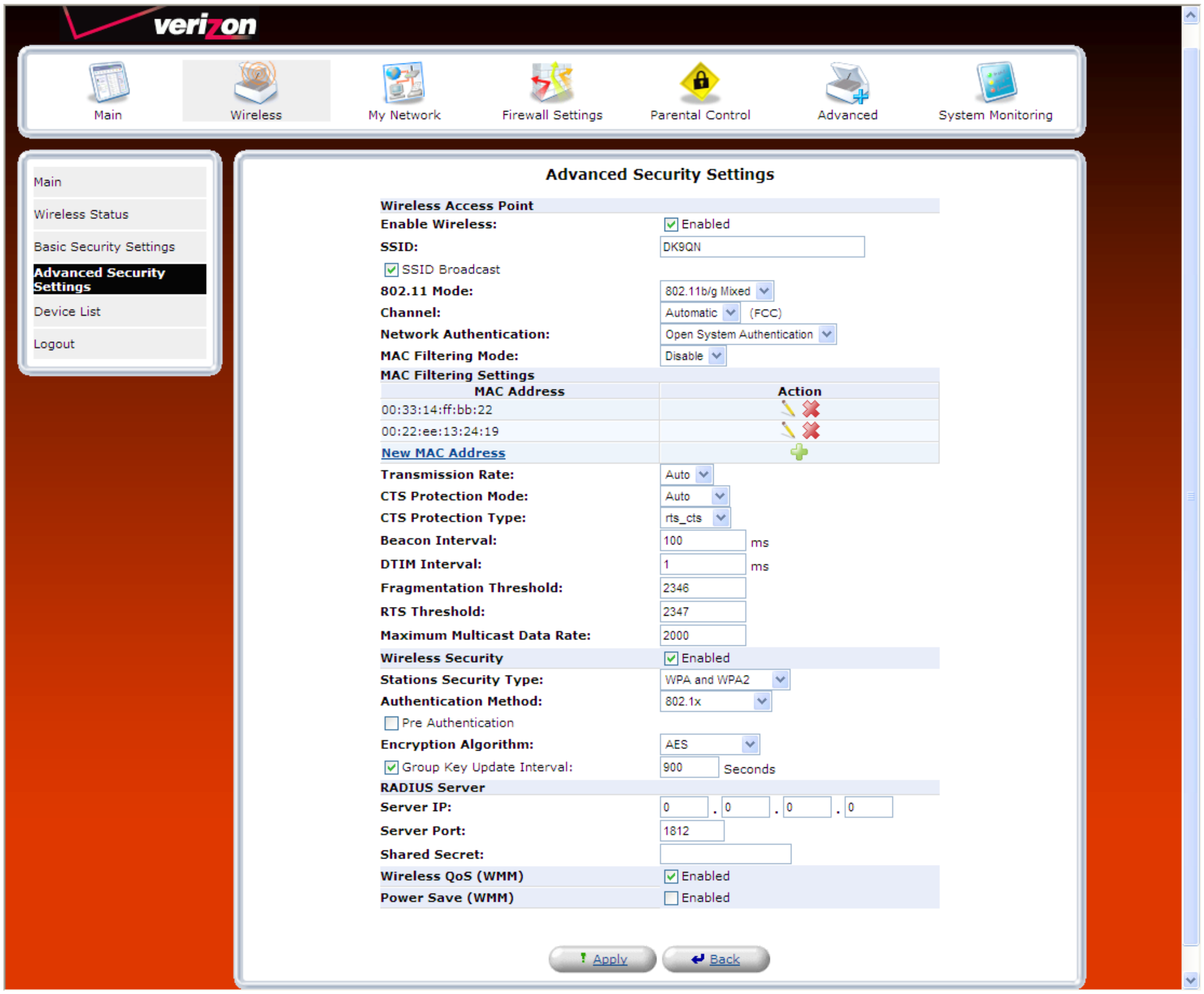


Advanced Security Settings

Wireless Access Point	
Enable Wireless:	☑ Enabled
SSID:	DK9QN
☑ SSID Broadcast	
802.11 Mode:	802.11b/g Mixed
Channel:	Automatic (FCC)
Network Authentication:	Open System Authentication
MAC Filtering Mode:	Disable
MAC Filtering Settings	
MAC Address	**Action**
00:33:14:ff:bb:22	
00:22:ee:13:24:19	
New MAC Address	
Transmission Rate:	Auto
CTS Protection Mode:	Auto
CTS Protection Type:	rts_cts
Beacon Interval:	100 ms
DTIM Interval:	1 ms
Fragmentation Threshold:	2346
RTS Threshold:	2347
Maximum Multicast Data Rate:	2000
Wireless Security	☑ Enabled
Stations Security Type:	WPA2
Authentication Method:	802.1x
□ Pre Authentication	
Encryption Algorithm:	AES
☑ Group Key Update Interval:	900 Seconds
RADIUS Server	
Server IP:	0 . 0 . 0 . 0
Server Port:	1812
Shared Secret:	
Wireless QoS (WMM)	☑ Enabled
Power Save (WMM)	□ Enabled

11.3.5.3 WPA and WPA2

If you select **WPA2 and WPA2** in the **Stations Security Type** drop-down list, the following screen will appear. This option allows stations that support both WPA v.1 and WPA v.2 to connect to the Router. The configuration settings for this feature are similar to the settings in WPA. Please refer to section 11.3.5.1 for instructions on configuring WPA and WPA2.



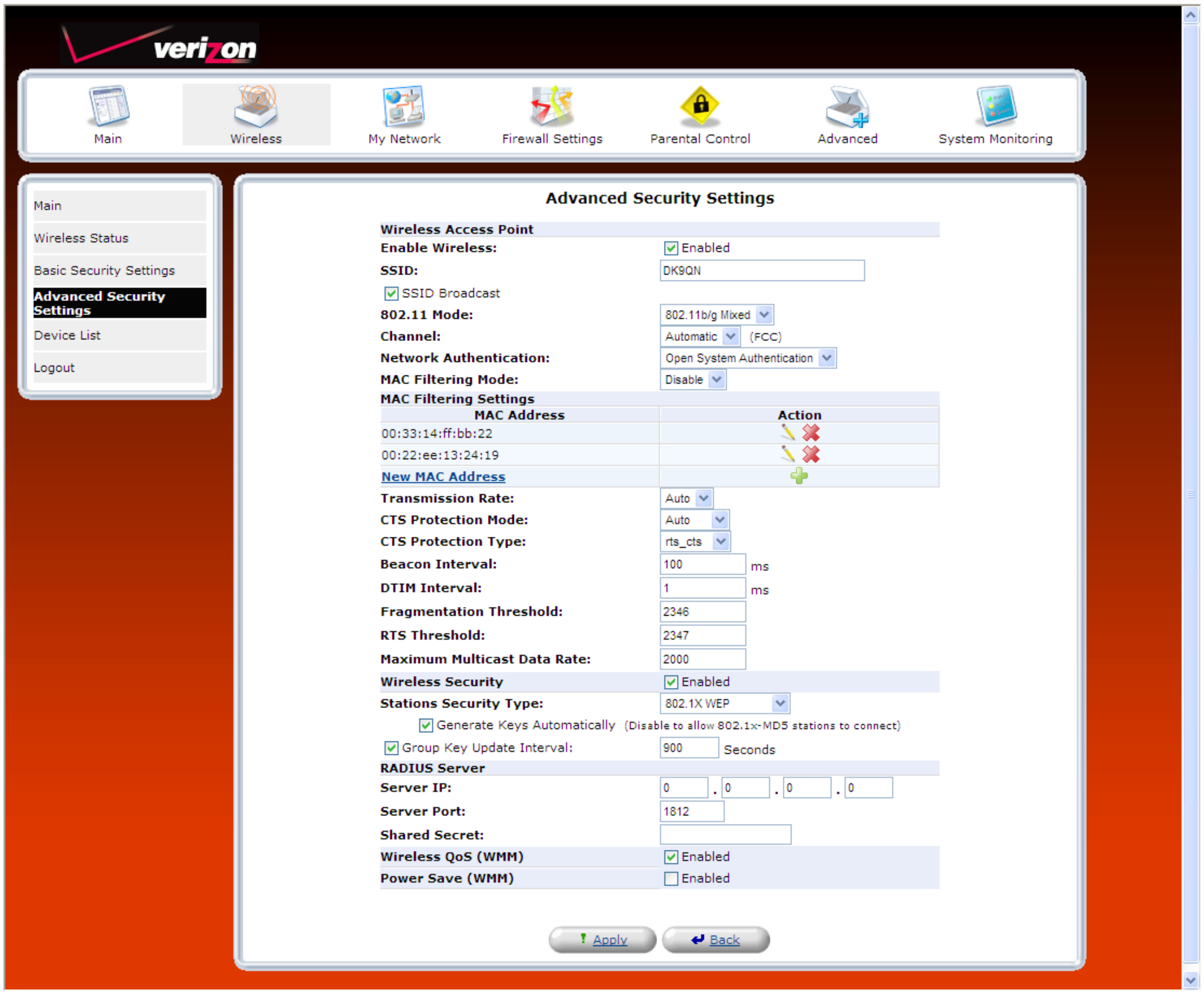
Advanced Security Settings

Wireless Access Point	
Enable Wireless:	☑ Enabled
SSID:	DK9QN
☑ SSID Broadcast	
802.11 Mode:	802.11b/g Mixed
Channel:	Automatic (FCC)
Network Authentication:	Open System Authentication
MAC Filtering Mode:	Disable
MAC Filtering Settings	
MAC Address	**Action**
00:33:14:ff:bb:22	
00:22:ee:13:24:19	
New MAC Address	
Transmission Rate:	Auto
CTS Protection Mode:	Auto
CTS Protection Type:	rts_cts
Beacon Interval:	100 ms
DTIM Interval:	1 ms
Fragmentation Threshold:	2346
RTS Threshold:	2347
Maximum Multicast Data Rate:	2000
Wireless Security	☑ Enabled
Stations Security Type:	WPA and WPA2
Authentication Method:	802.1x
□ Pre Authentication	
Encryption Algorithm:	AES
☑ Group Key Update Interval:	900 Seconds
RADIUS Server	
Server IP:	0 . 0 . 0 . 0
Server Port:	1812
Shared Secret:	
Wireless QoS (WMM)	☑ Enabled
Power Save (WMM)	□ Enabled

11.3.5.4 802.1x WEP

If you select **802.1x WEP** in the **Stations Security Type** drop-down list, the following screen will appear. The 802.1x WEP feature allows you to enable WEP keys for wireless security. In addition, 802.1x WEP security uses a Remove Authentication Dial-in Service (RADIUS) server for authentication purposes. The server must be physically connected to the Router. The Router's card supports 40-bit or 104-bit WEP encryption. If 802.1x WEP is used, any station can connect to the Router as long as its SSID and WEP key values match the Router's values.

NOTE: Client PCs can use any Wireless 802.11b/g card to communicate with the Router. By default your Router is configured (enabled) for 802.1X WEP (Wired Equivalent Privacy) security. Whenever, WEP is configured, the PC's wireless card must use the same WEP security code type as the one provided in Router. The WEP security code is located on a label on the bottom of the Router. Always check that your PC's wireless adapter is configured properly for whichever network setting you use: WEP or WPA. You can configure the settings in the advanced properties of the PC's wireless network adapter.



Advanced Security Settings

Wireless Access Point

Enable Wireless:	☑ Enabled
SSID:	DK9QN
☑ SSID Broadcast	
802.11 Mode:	802.11b/g Mixed
Channel:	Automatic (FCC)
Network Authentication:	Open System Authentication
MAC Filtering Mode:	Disable

MAC Filtering Settings

MAC Address	Action
00:33:14:ff:bb:22	
00:22:ee:13:24:19	
New MAC Address	

Transmission Rate:	Auto
CTS Protection Mode:	Auto
CTS Protection Type:	rts_cts
Beacon Interval:	100 ms
DTIM Interval:	1 ms
Fragmentation Threshold:	2346
RTS Threshold:	2347
Maximum Multicast Data Rate:	2000
Wireless Security	☑ Enabled
Stations Security Type:	802.1X WEP
☑ Generate Keys Automatically (Disable to allow 802.1x-MD5 stations to connect)	
☑ Group Key Update Interval:	900 Seconds

RADIUS Server

Server IP:	0 . 0 . 0 . 0
Server Port:	1812
Shared Secret:	
Wireless QoS (WMM)	☑ Enabled
Power Save (WMM)	☐ Enabled

11.3.5.4.1 Configuring Automatic WEP Encryption Keys

The 802.1x WEP security protocol uses port control with dynamically changing encryption keys automatically updated over the network. To configure 802.1x WEP to generate keys automatically, do the following:

1. Select the **Generate Keys Automatically** check box if you want the Router to automataically create the WEP security keys. A check mark will appear in the box, and the **Encryption Key** table will be removed from the screen.

   NOTE: Disable (clear) the **Generation Keys Automatically** check box to allow 802.1x-MD5 stations to connect to the Router

2. Enter the desired Group Key Update Interval, and confirm that the box contains a check mark. (By factory default, Group Key Interval is enabled for 900 seconds.)
3. Configure the Radius Server:

   a. Enter the Radius Server IP address in the fields provided.

   b. Enter the desired Server Port value.

   c. Enter the Shared Secret.
4. Click **OK** to save the wireless settings in the Router.

11.3.5.4.2 Configuring Manual WEP Encryption Keys

To configure 802.1x WEP with manual encryption keys, do the following:

1. Clear the **Generate Keys Automatically** check box. The Key Encryption table will appear in the screen.

   NOTE: Disable (clear) the Generation Keys Automatically check box to allow 802.1x-MD5 stations to connect to the Router.

2. At the Key Encryption table, select a key (1 through 4) that you want to activate.
3. Enter the desired encryption key.

   NOTE: A WEP encryption key is treated as either a string of text (ASCII) characters or a set of hexadecimal (Hex) characters. The number of text characters must be either 5 (for 40 bit encryption) or 13 (for 104 bit encryption). The number of Hex characters must be either 10 (for 40 bit encryption) or 26 (for 104 bit encryption). The only allowable hexadecimal characters are: A-F and 0-9.

4. Select the Entry Method (ASCII or Hex) from the drop-down list.
5. Select the Key Length (40 bit or 104 bit) from the drop-down list.
6. Enter the desired Group Key Update Interval, and confirm that the box contains a check mark. (By factory default, Group Key Interval is enabled for 900 seconds.)
7. Configure the Radius Server by doing the following:

   a. Enter the Radius Server IP address in the fields provided.

   b. Enter the desired Server Port value.

   c. Enter the Shared Secret.
8. Click **OK** to save the wireless settings in the Router.

11.3.5.5 Non-802.1x WEP

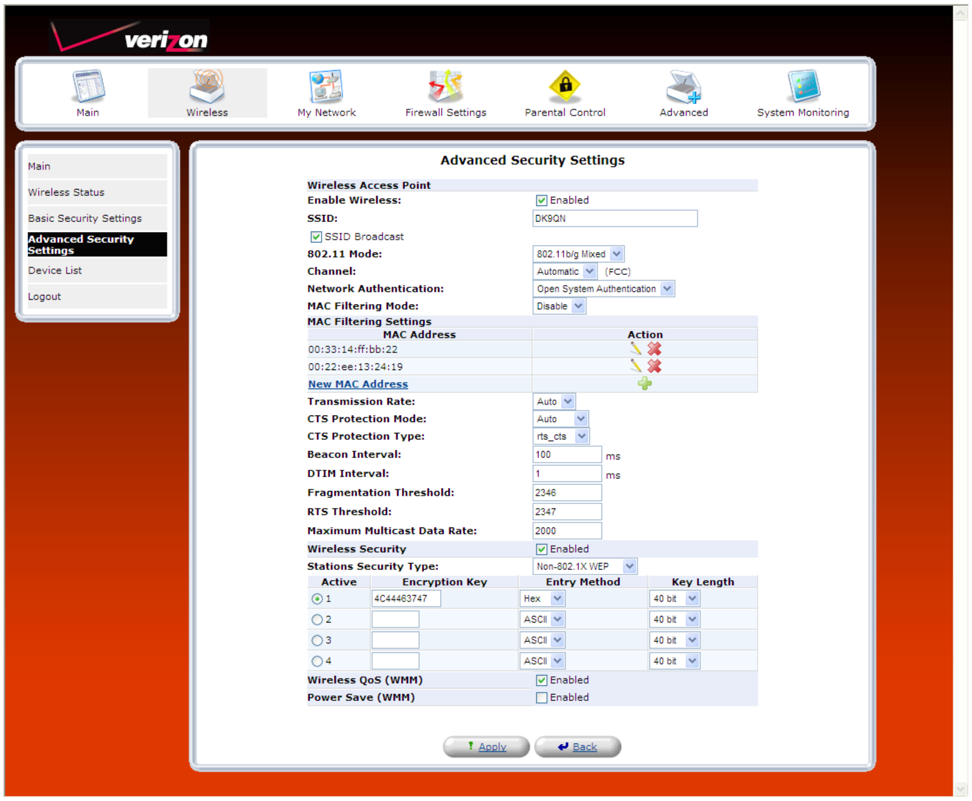
If you select **Non-802.1x WEP** in the **Stations Security Type** drop-down list, the following screen will appear. The Non-802.1x WEP feature allows you to enable a WEP key for wireless security without using a RADIUS server. The Router's card supports 40-bit or 104-bit WEP encryption. Whenever Non-802.1x WEP is used, any station can connect to the Router as long as its SSID and WEP key values match the Router's values.

To configure the Router for Non-802.1x WEP, do the following:

1. At the Key Encryption table, select a key (1 through 4) that you want to activate.
2. Enter the desired encryption key.

> **NOTE:** A WEP encryption key is treated as either a string of text (ASCII) characters or a set of hexadecimal (Hex) characters. The number of text characters must be either 5 (for 40-bit encryption) or 13 (for 104-bit encryption). The number of Hex characters must be either 10 (for 40-bit encryption) or 26 (for 104-bit encryption). The only allowable hexadecimal characters are: A-F and 0-9.

3. Select the Entry Method (ASCII or Hex) from the drop-down list.
4. Select the Key Length (40 bit or 104 bit) from the drop-down list.
5. Click **OK** to save the wireless settings in the Router.



Advanced Security Settings

Wireless Access Point

Enable Wireless:	☑ Enabled
SSID:	DK9QN
☑ SSID Broadcast	
802.11 Mode:	802.11b/g Mixed
Channel:	Automatic (FCC)
Network Authentication:	Open System Authentication
MAC Filtering Mode:	Disable

MAC Filtering Settings

MAC Address	Action
00:33:14:ff:bb:22	
00:22:ee:13:24:19	
New MAC Address	

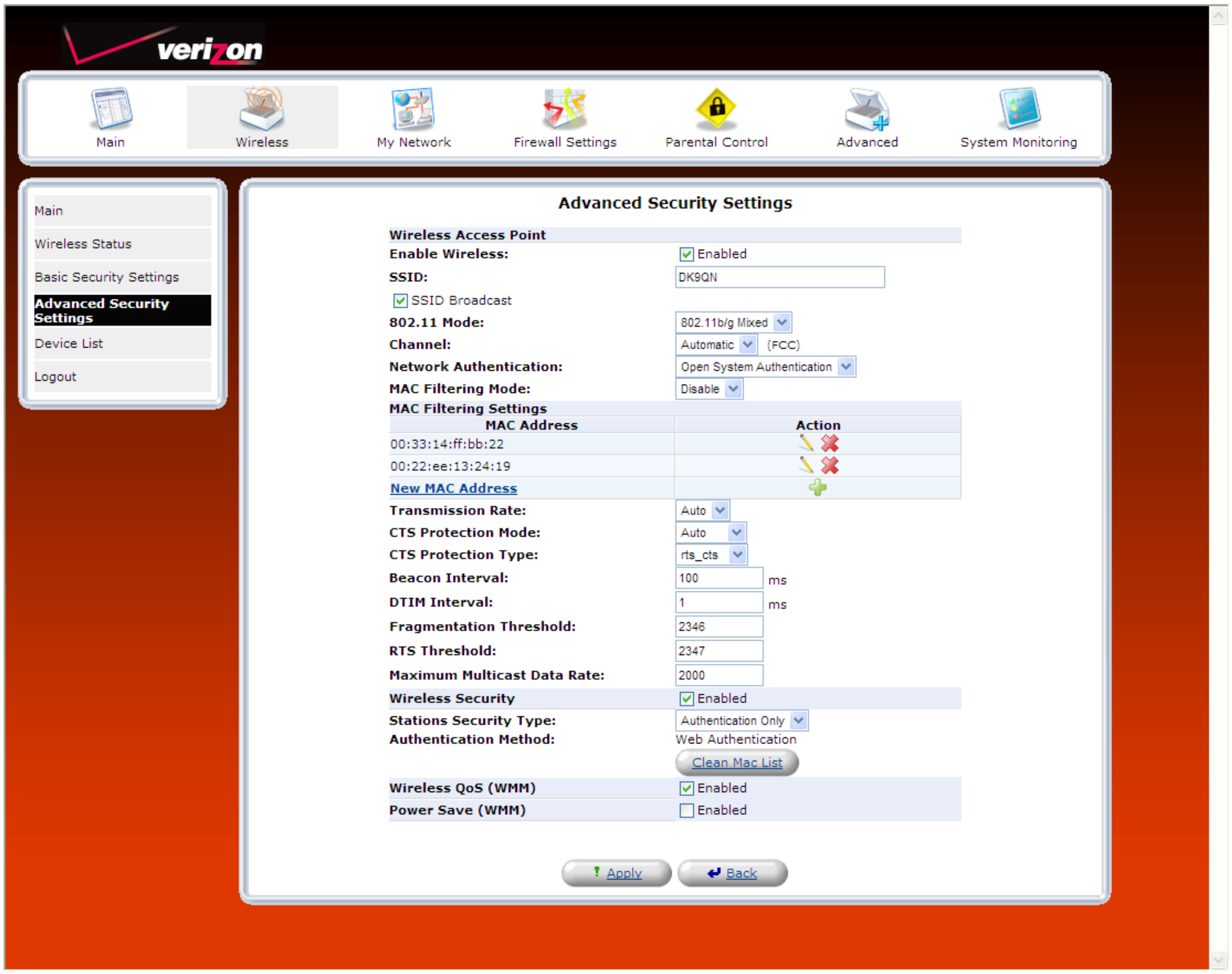
Transmission Rate:	Auto
CTS Protection Mode:	Auto
CTS Protection Type:	rts_cts
Beacon Interval:	100 ms
DTIM Interval:	1 ms
Fragmentation Threshold:	2346
RTS Threshold:	2347
Maximum Multicast Data Rate:	2000
Wireless Security	☑ Enabled
Stations Security Type:	Non-802.1X WEP

Active	Encryption Key	Entry Method	Key Length
● 1	4C44463747	Hex	40 bit
○ 2		ASCII	40 bit
○ 3		ASCII	40 bit
○ 4		ASCII	40 bit

Wireless QoS (WMM)	☑ Enabled
Power Save (WMM)	□ Enabled

11.3.5.6 Authentication Only

If you select **Authentication Only** in the **Stations Security Type** drop-down list, the following screen will appear. This feature allows you to enable wireless security in your Router without using encryption keys or a RADIUS server. However, a station's SSID must match the Router's SSID in order to connect to the Router.



Advanced Security Settings

Wireless Access Point

Enable Wireless:	☑ Enabled
SSID:	DK9QN
☑ SSID Broadcast	
802.11 Mode:	802.11b/g Mixed
Channel:	Automatic (FCC)
Network Authentication:	Open System Authentication
MAC Filtering Mode:	Disable

MAC Filtering Settings

MAC Address	Action
00:33:14:ff:bb:22	
00:22:ee:13:24:19	
New MAC Address	

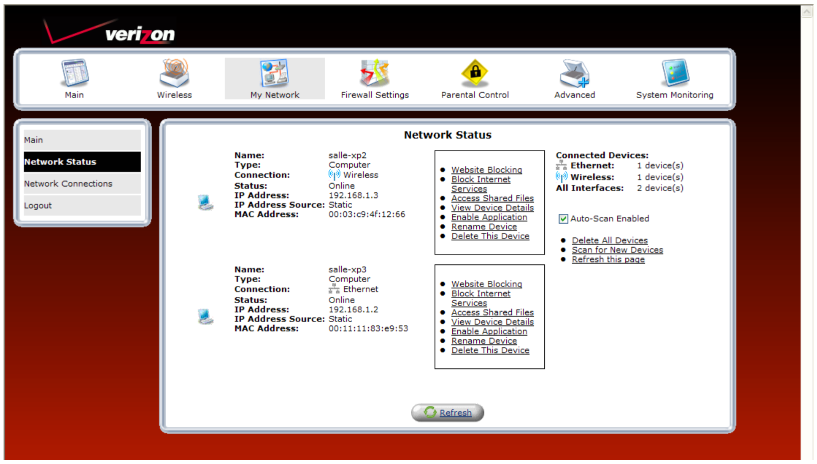
Transmission Rate:	Auto
CTS Protection Mode:	Auto
CTS Protection Type:	rts_cts
Beacon Interval:	100 ms
DTIM Interval:	1 ms
Fragmentation Threshold:	2346
RTS Threshold:	2347
Maximum Multicast Data Rate:	2000
Wireless Security	☑ Enabled
Stations Security Type:	Authentication Only
Authentication Method:	Web Authentication
	Clean Mac List
Wireless QoS (WMM)	☑ Enabled
Power Save (WMM)	□ Enabled

12. MY NETWORK

This section provides details on your Router's network connections.

12.1 Network Status

To view your Router's network settings, from the top navigation menu, select **Network Connections**. The following screen appears. This screen displays information about the devices connected to your local area network (LAN). Click **Refresh** to update this screen and display the most current information about devices on your network.



Network Status

Name: salle-xp2
Type: Computer
Connection: Wireless
Status: Online
IP Address: 192.168.1.3
IP Address Source: Static
MAC Address: 00:03:c9:4f:12:66

Name: salle-xp3
Type: Computer
Connection: Ethernet
Status: Online
IP Address: 192.168.1.2
IP Address Source: Static
MAC Address: 00:11:11:83:e9:53

Connected Devices:
Ethernet: 1 device(s)
Wireless: 1 device(s)
All Interfaces: 2 device(s)

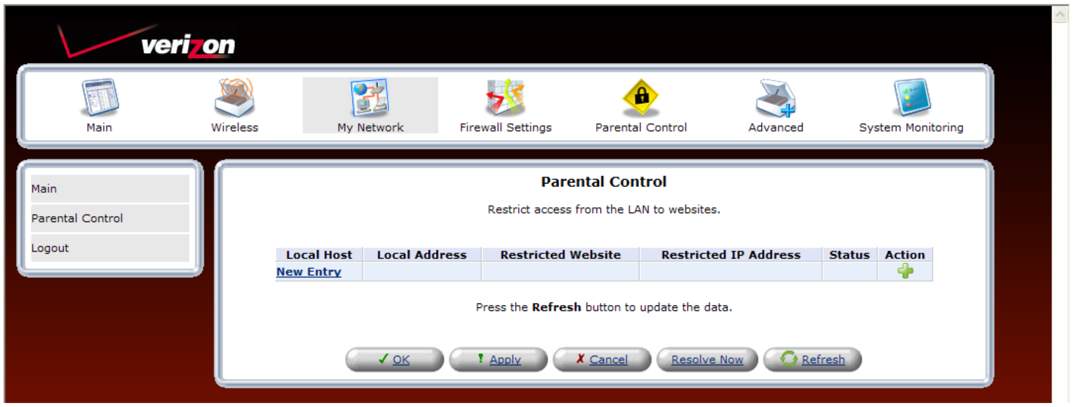
☑ Auto-Scan Enabled

Network Status	
Name	The name of the device.
Type	The type of device connected to the network.
Connection	The interface used to connect to the Router. Ethernet: Displays the number of devices that are connected to the Router via Ethernet 10/100 BaseT connection. Wireless: Displays the number of devices that are connected to the Router wirelessly. Note: If you have computers on your network that are not being displayed, check the firewall setting on the PCs to ensure that the firewall is disabled.
Status	The status of the Inernet connection.
IP Address	The IP address assigned to the computer.
IP Address Source	The method by which the computer receives its IP address.
MAC Address	The Media Access Controller; the hardware address assigned to the device by the manufacturer.
Connected Devices	The interface used to connect the device to the Router, and the devices connected. Ethernet: Displays the number of devices that are connected to the Router via Ethernet 10/100 BaseT connection. Wireless: Displays the number of devices that are connected to the Router wirelessly. Note: If you have computers on your network that are not being displayed, check the firewall setting on the PCs to ensure that the firewall is disabled.
Delete All Devices	Click this link to delete all devices from your network.
Scan for New Devices	Click this link to allow the Router to scan the network for new devices that may have recently connected to the network.

12.1.1 Website Blocking

You can configure your Router to restrict access to certain websites to computers on your network. On the **Network Status** page, when you click the **Website Blocking** link it will take you to the **Parental Control** section.

Note: Please refer to the **Parental Control** Section for more information on setting up parental controls.



Parental Control

Restrict access from the LAN to websites.

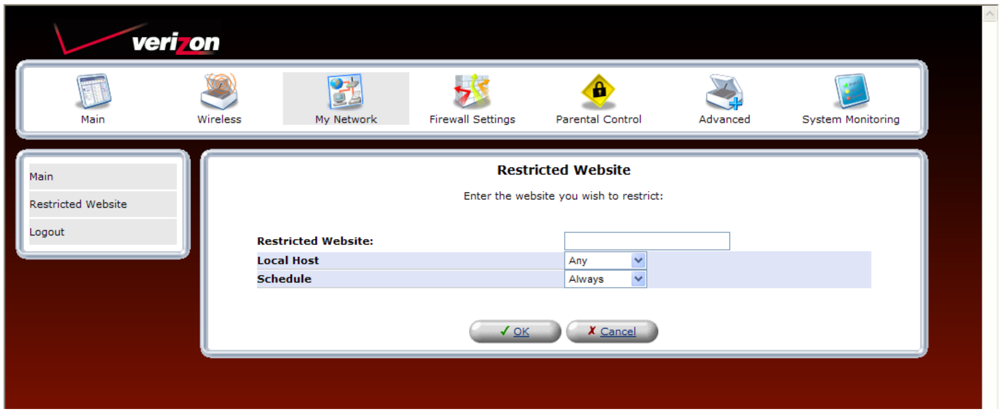
Local Host	Local Address	Restricted Website	Restricted IP Address	Status	Action
New Entry					✚

Press the **Refresh** button to update the data.

The following screen will appear. In the **Restricted Website** field, enter the URL of the website to which you want to restrict access. From the Local Host drop-down list, select the local host device to which you want to apply this restriction.

- Select **Always** to allow the rule to be active all the time.
- Select **User Defined** to allow the rule to be active only at certain time, as defined by the rules you set up.

If desired, select a schedule from the **Schedule** drop-down list. If you select **User Defined**, refer to the procedure explained in section 15.19, "Scheduler Rules," to set up a schedule rule. Otherwise, select **Always**, and then click **OK** to continue.

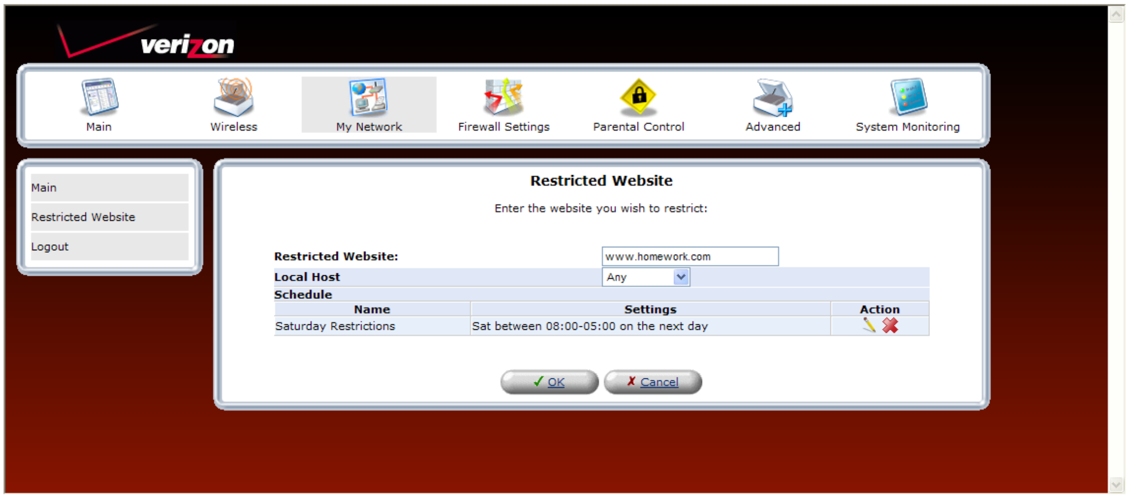


Restricted Website

Enter the website you wish to restrict:

Restricted Website:	
Local Host	Any
Schedule	Always

After you have entered the desired values in the preceding **Restricted Website** screen and click **OK**, the following screen will appear. To edit an entry, click the pencil icon. To delete an entry, click the "X" icon.



Restricted Website

Enter the website you wish to restrict:

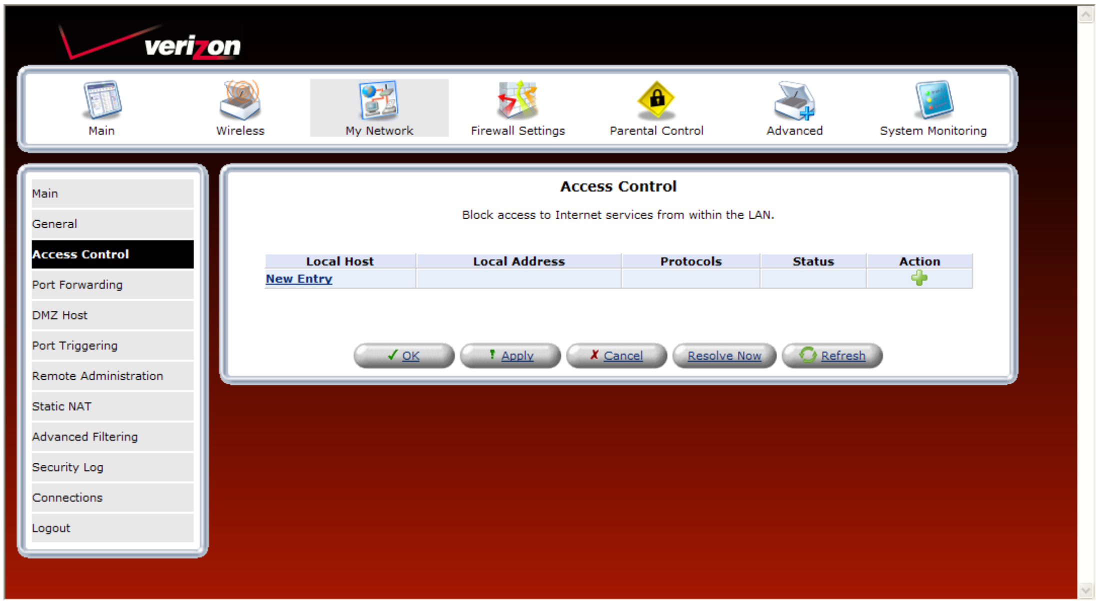
Restricted Website:	www.homework.com
Local Host	Any

Schedule

Name	Settings	Action
Saturday Restrictions	Sat between 08:00-05:00 on the next day	✎ ✗

12.1.2 Block Internet Services

In the **Network Status** page, click the **Block Internet Services** link. The following **Access Control** screen will appear. This feature allows you to block specific computers within the local network (or even the entire network) from accessing certain services on the Internet. For example, one computer can be prohibited from surfing the Internet, another computer from transferring files using FTP, and the whole network from receiving incoming email. To configure Access Control, click the **New Entry** link.

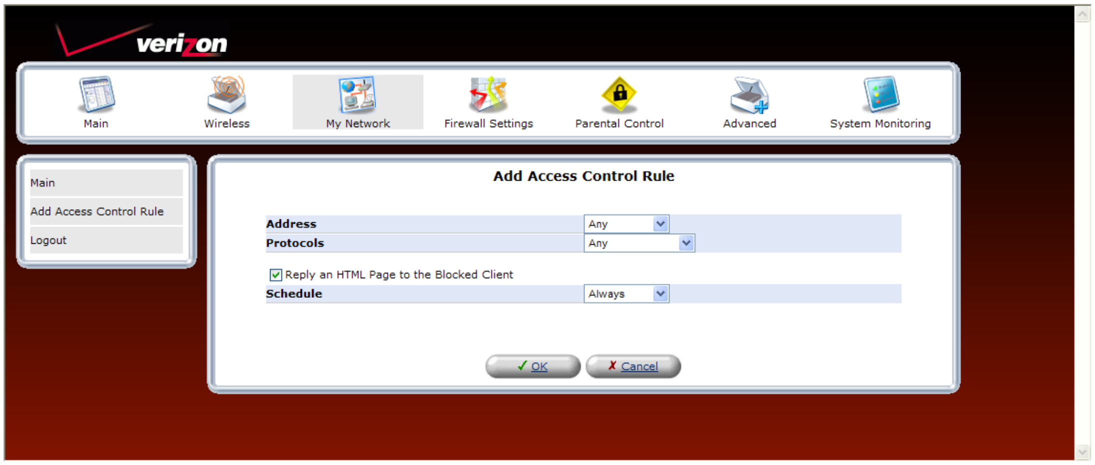


Access Control

Block access to Internet services from within the LAN.

Local Host	Local Address	Protocols	Status	Action
New Entry				✚

If you clicked **New Entry**, the following screen will appear. Enter the desired values in this screen, and then click **OK** to save the settings.



Add Access Control Rule

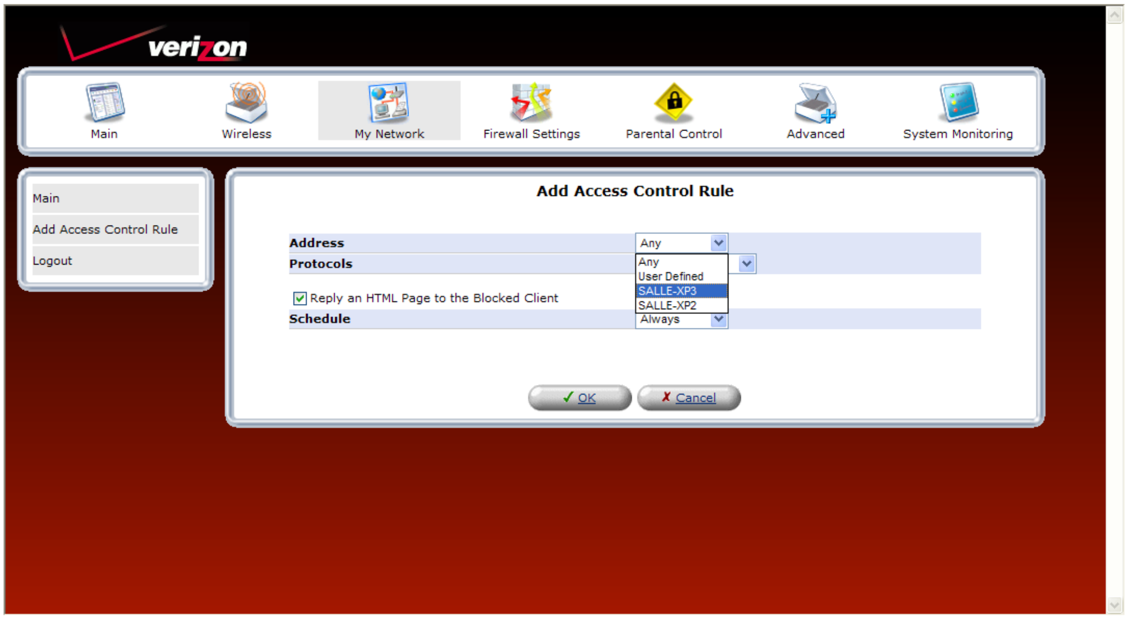
Address	Any
Protocols	Any

☑ Reply an HTML Page to the Blocked Client

Schedule	Always

12.1.2.1 Selecting an Address

From the **Address** drop-down list, select the desired computer for which you want to apply access. Your detected computers should appear in the list.



Add Access Control Rule

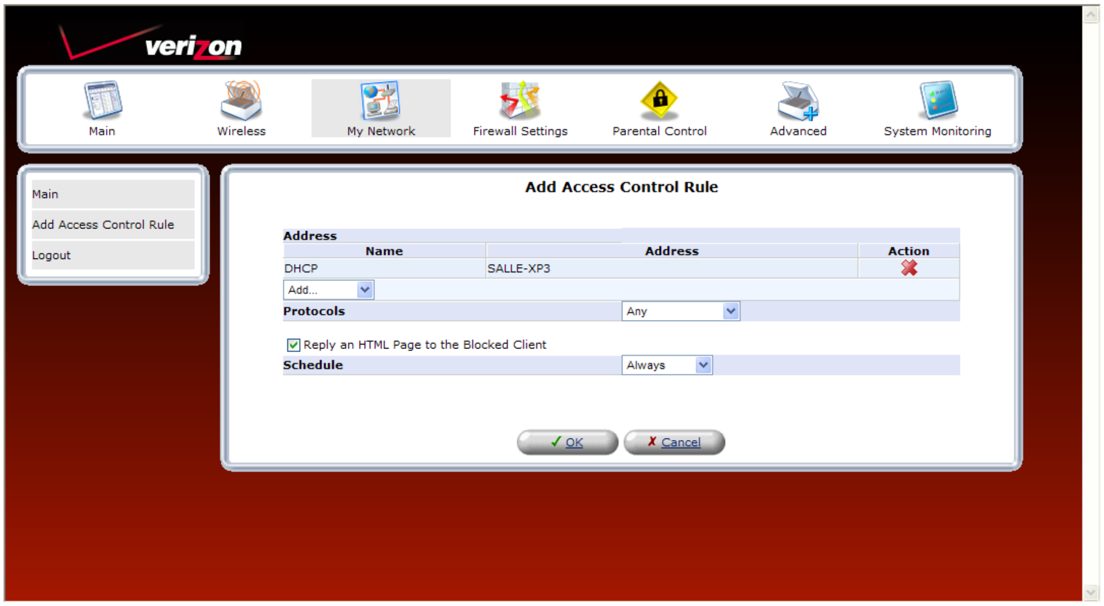
Address Any
- Any
- User Defined
- SALLE-XP3
- SALLE-XP2

Protocols

☑ Reply an HTML Page to the Blocked Client

Schedule Always

After you have selected a computer, the following screen will appear. Proceed to section 12.1.2.2 to select a protocol.



Add Access Control Rule

Address

Name	Address	Action
DHCP	SALLE-XP3	✖
Add...		

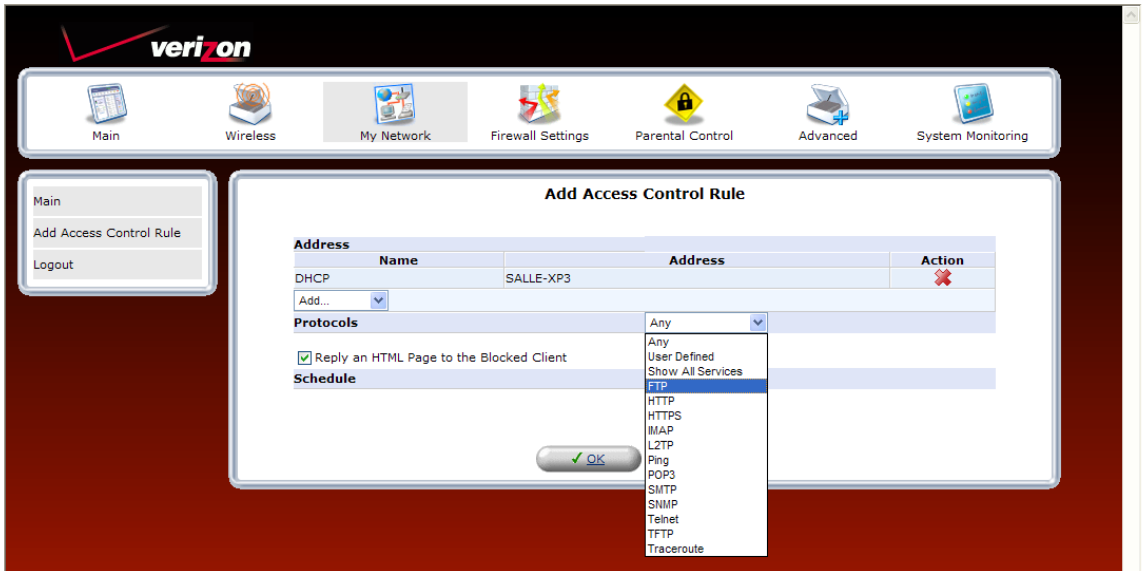
Protocols Any

☑ Reply an HTML Page to the Blocked Client

Schedule Always

12.1.2.2 Selecting a Protocol

From the **Protocols** drop-down list, select the desired option that you want to prohibit the computer from using. You can opt to redirect the user to a browser message (HTML page) by clicking the check box. To disable this feature, click to clear the check box.



Add Access Control Rule

Address

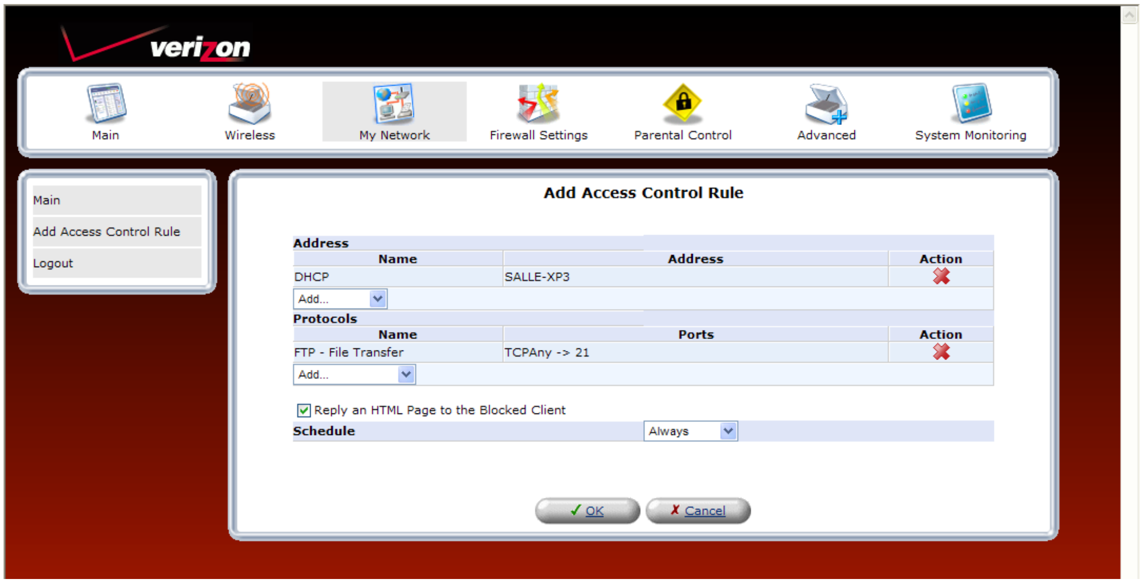
Name	Address	Action
DHCP	SALLE-XP3	✗
Add...		

Protocols Any

☑ Reply an HTML Page to the Blocked Client

Schedule

After you have selected the protocol, the following screen will appear. Proceed to section 15.19 to configure a schedule rule.



Add Access Control Rule

Address

Name	Address	Action
DHCP	SALLE-XP3	✗
Add...		

Protocols

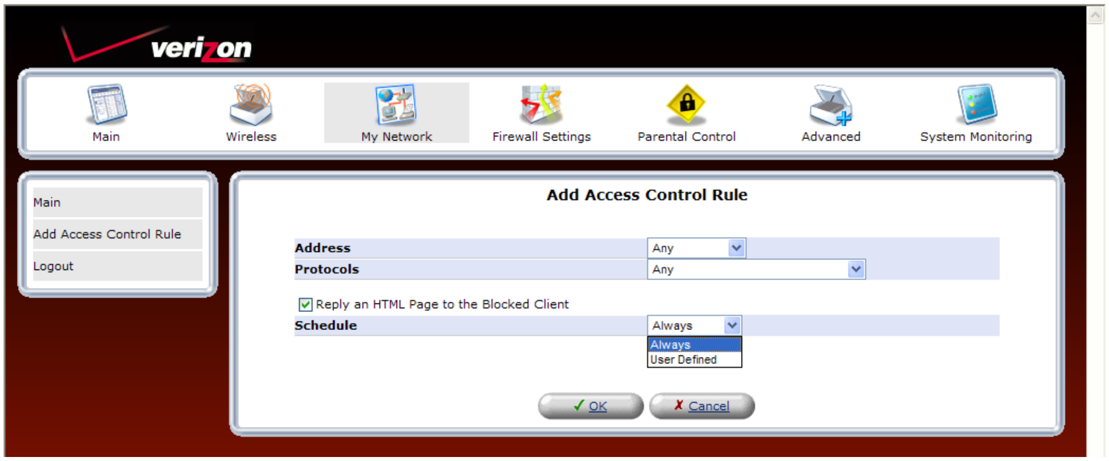
Name	Ports	Action
FTP - File Transfer	TCPAny -> 21	✗
Add...		

☑ Reply an HTML Page to the Blocked Client

Schedule Always

12.1.2.3 Configuring a Schedule Rule

You can choose to only apply the rule during a particular time, or a particular day. This is done via the Schedule Rule. You may select and already defined schedule from the drop down list, or define your own schedule. If you select **User Defined**, refer to the procedure explained in section 15.19, “Scheduler Rules,” to set up a schedule rule. Otherwise, select **Always** to always enforce the rule, and then click **OK** to continue.



Add Access Control Rule

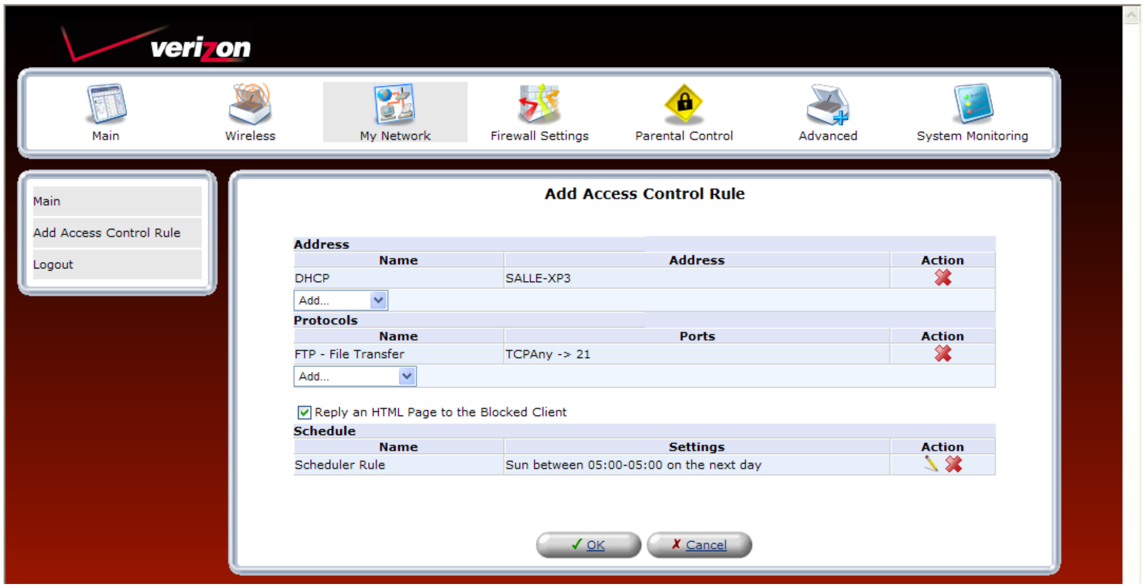
Address	Any
Protocols	Any

☑ Reply an HTML Page to the Blocked Client

Schedule	Always

12.1.2.4 Completing the Access Control Rule Configuration

After you have entered the desired values in the **Access Control Rule** screen and clicked **OK,** following screen will appear. Click **OK** to save the settings.



Add Access Control Rule

Address

Name	Address	Action
DHCP	SALLE-XP3	✗
Add...		

Protocols

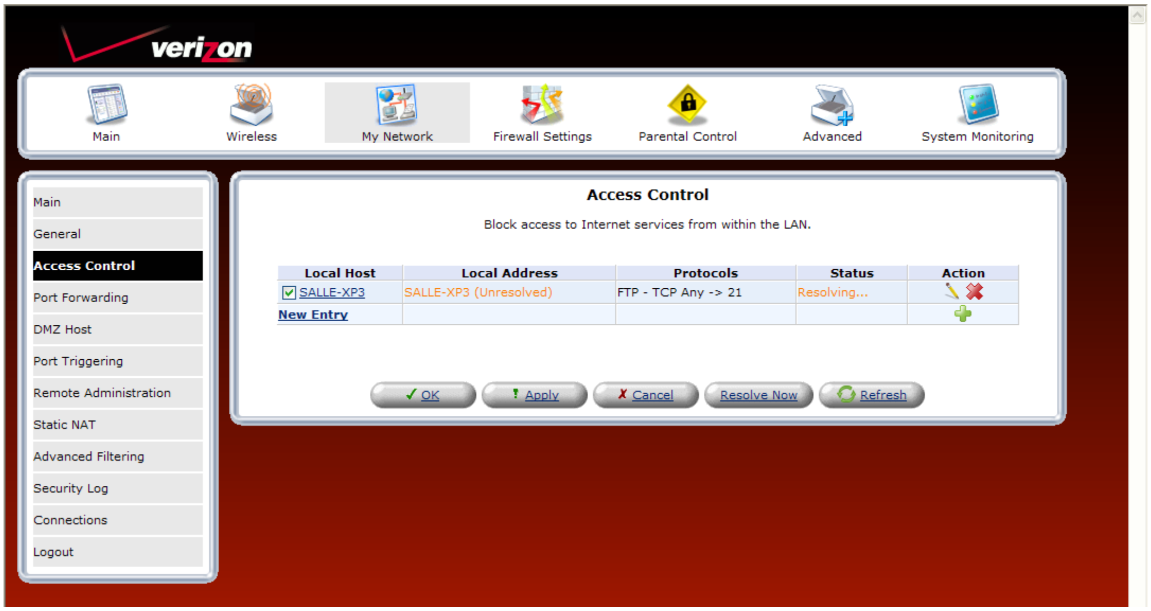
Name	Ports	Action
FTP - File Transfer	TCPAny -> 21	✗
Add...		

☑ Reply an HTML Page to the Blocked Client

Schedule

Name	Settings	Action
Scheduler Rule	Sun between 05:00-05:00 on the next day	✎ ✗

If you clicked **OK**, the following screen will appear. The Router is attempting to resolve the configuration. Click **Resolve Now** to continue.

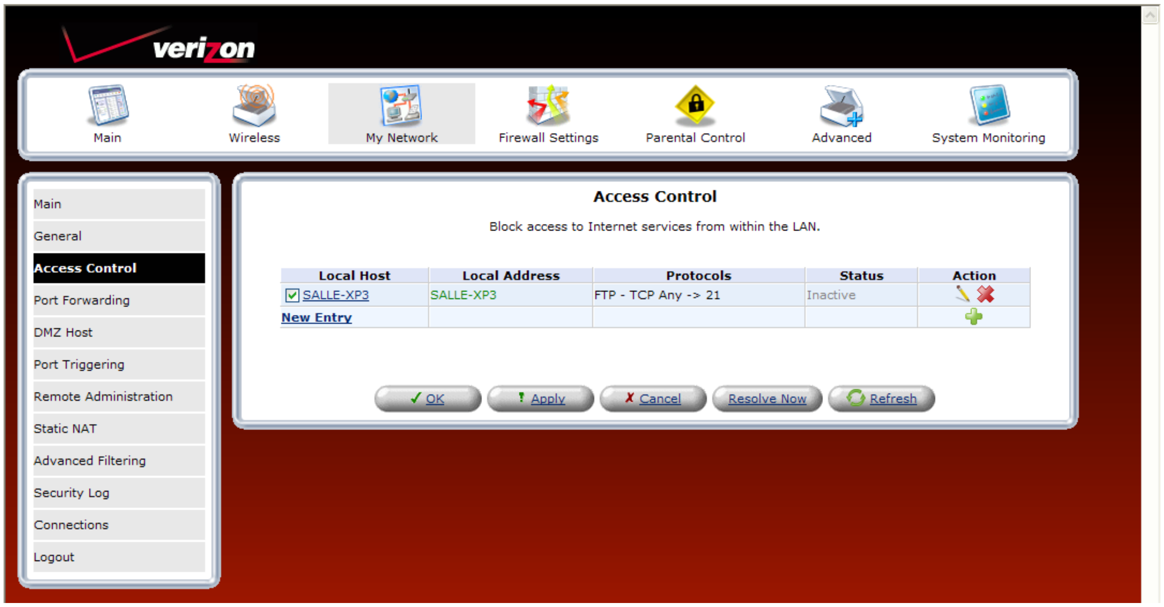


Access Control

Block access to Internet services from within the LAN.

Local Host	Local Address	Protocols	Status	Action
☑ SALLE-XP3	SALLE-XP3 (Unresolved)	FTP - TCP Any -> 21	Resolving...	
New Entry				

The **Resolve Now button** will translate the rule from the computer name to the correct IP address (all rules are actually controlled by the IP address) If you clicked **Resolve Now,** the following screen will appear. The rule has been added to the list of security rules. To disable the security rule for an entry, click the adjacent check box, and then click **Apply**. To add additional access control rules, click the **New Entry** link.



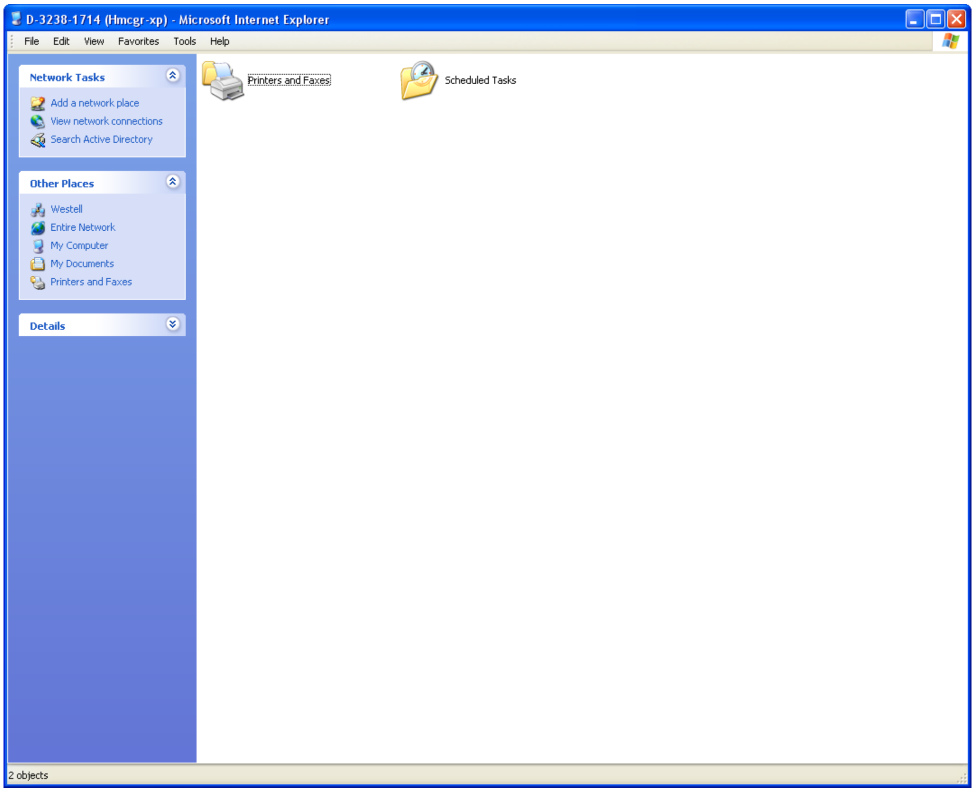
Access Control

Block access to Internet services from within the LAN.

Local Host	Local Address	Protocols	Status	Action
☑ SALLE-XP3	SALLE-XP3	FTP - TCP Any -> 21	Inactive	
New Entry				

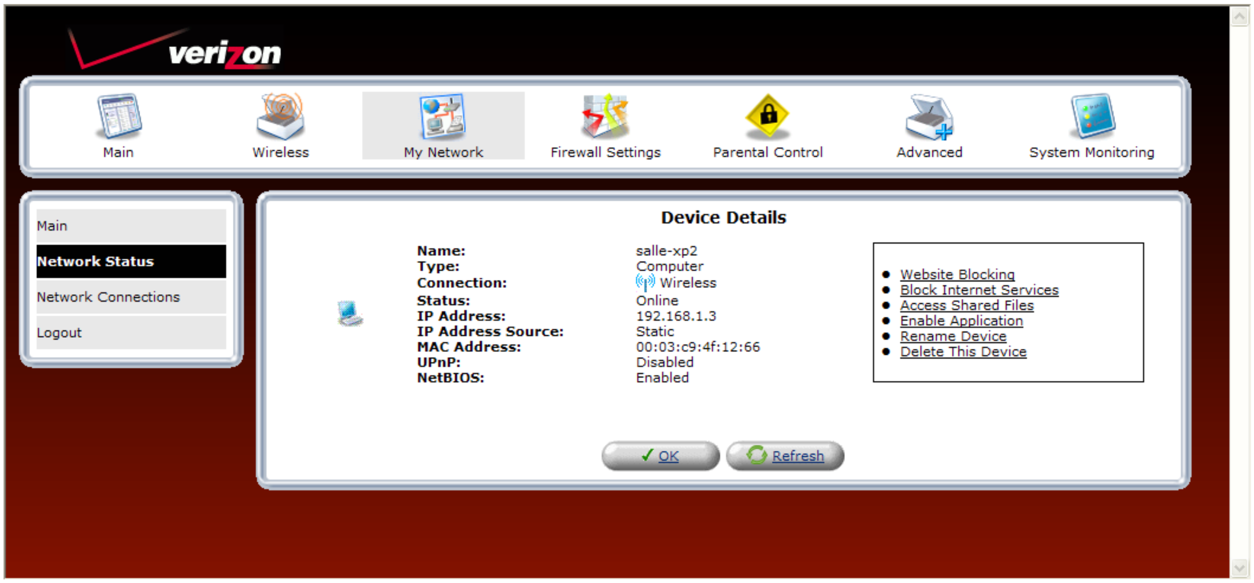
12.1.3 Access Shared Files

In the **Network Status** page, click the **Access Shared Files** link to access files from a device on your local network. (The device from which you will access files must have file sharing enabled.) If the device has a firewall turned on, you will not be able to access shared files from the device.



12.1.4 View Device Details

In the **Network Status** page, click the **View Device Details** link. The following screen will appear. Click **Refresh** to refresh the details on this screen. After you have finished viewing this screen, click **OK** to return to the **Network Status** page.



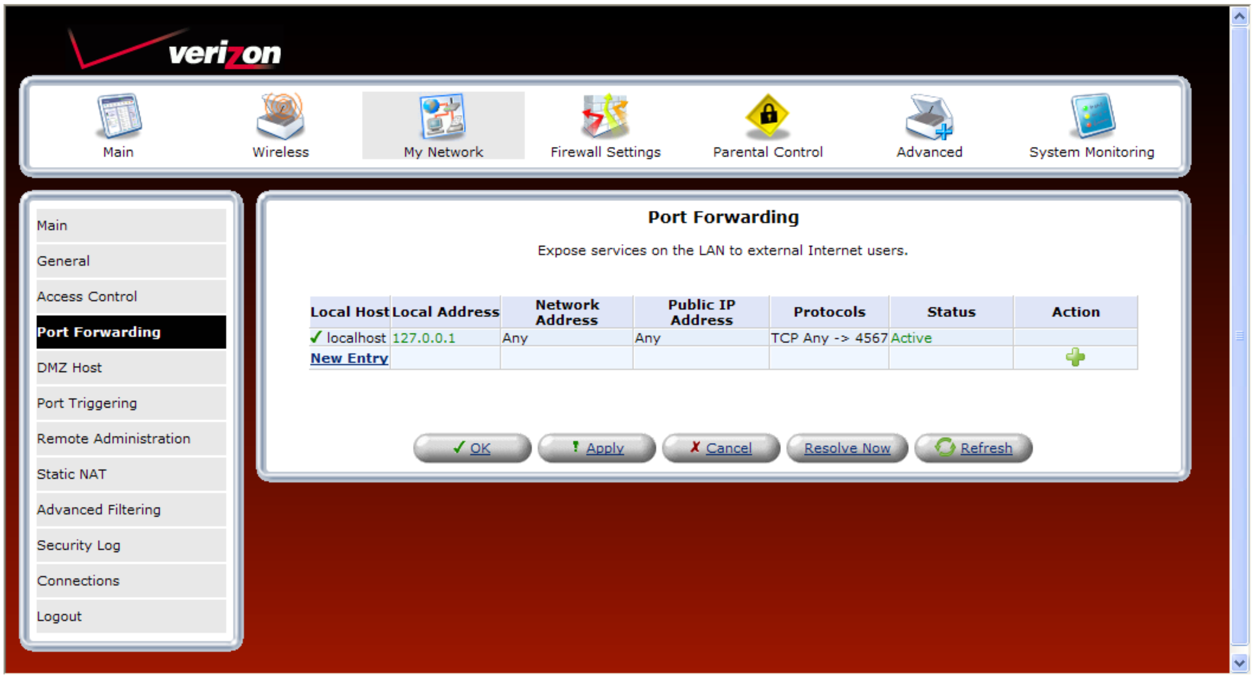
Device Details

Name:	salle-xp2
Type:	Computer
Connection:	Wireless
Status:	Online
IP Address:	192.168.1.3
IP Address Source:	Static
MAC Address:	00:03:c9:4f:12:66
UPnP:	Disabled
NetBIOS:	Enabled

- Website Blocking
- Block Internet Services
- Access Shared Files
- Enable Application
- Rename Device
- Delete This Device

12.1.5 Enable Application

In the **Network Status** page, click the **Enable Application** link to set up applications for your service profile, such as port forwarding services. This feature enables applications (Games, Webcams, IM & Others) by opening a tunnel between remote (Internet) computers and a specific device port inside your local area network (LAN). Details on this screen are discussed later in section 13.3, "Port Forwarding."



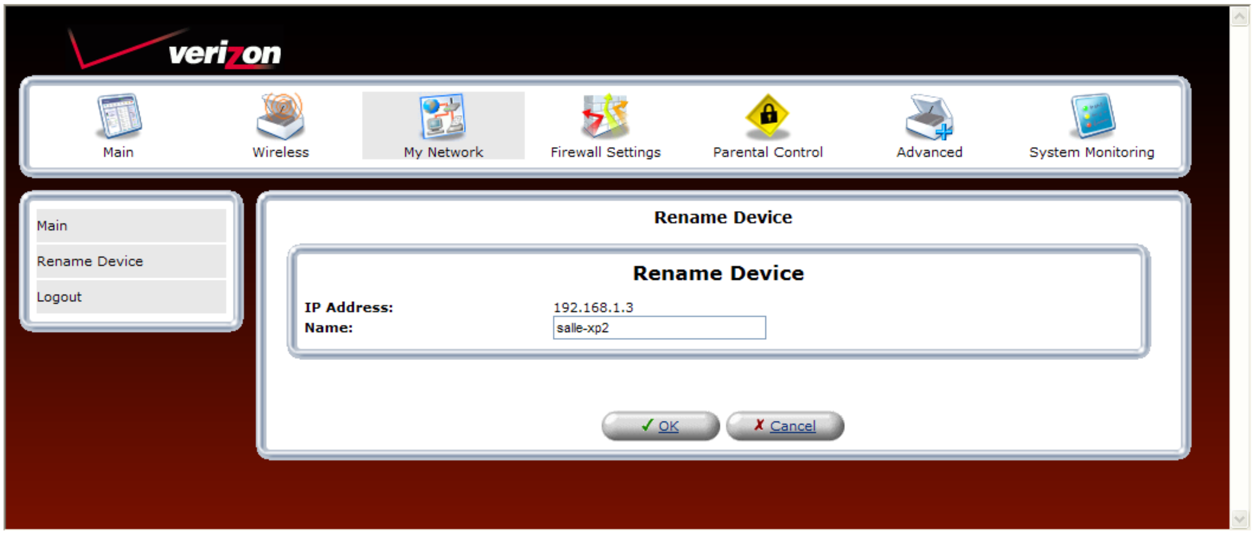
Port Forwarding

Expose services on the LAN to external Internet users.

Local Host	Local Address	Network Address	Public IP Address	Protocols	Status	Action
✓ localhost	127.0.0.1	Any	Any	TCP Any -> 4567	Active	
New Entry						+

12.1.6 Rename Device

In the **Network Status** page, click the **Rename Device** link. This screen allows you to rename a device on your network. In the following screen, type the desired name in the **Name** field. Next, click **OK** to allow the changes to take effect. Click **Cancel** to return to the **Network Status** page.



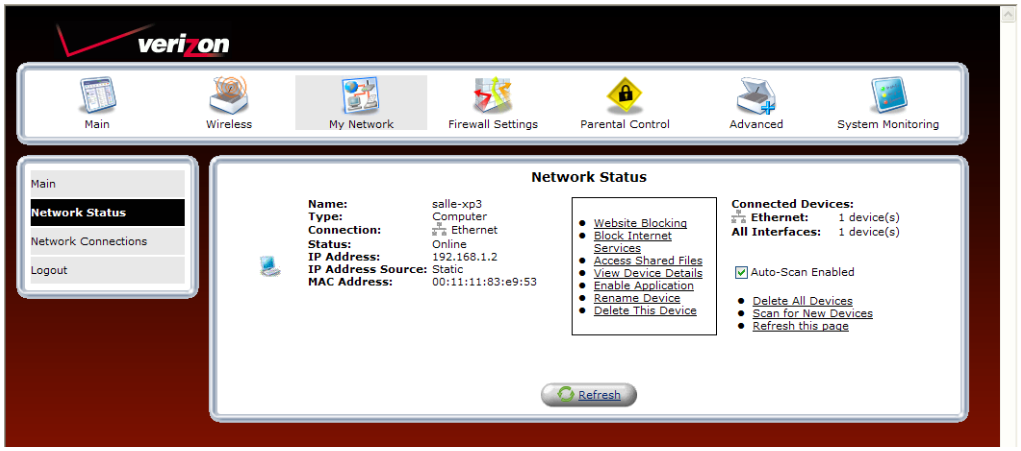
Rename Device

IP Address: 192.168.1.3

Name: salle-xp2

12.1.7 Delete Device

In the **Network Status** page, click the **Delete Device** link to remove a device from your network.



Network Status

Name:	salle-xp3
Type:	Computer
Connection:	Ethernet
Status:	Online
IP Address:	192.168.1.2
IP Address Source:	Static
MAC Address:	00:11:11:83:e9:53

Connected Devices:

Ethernet:	1 device(s)
All Interfaces:	1 device(s)

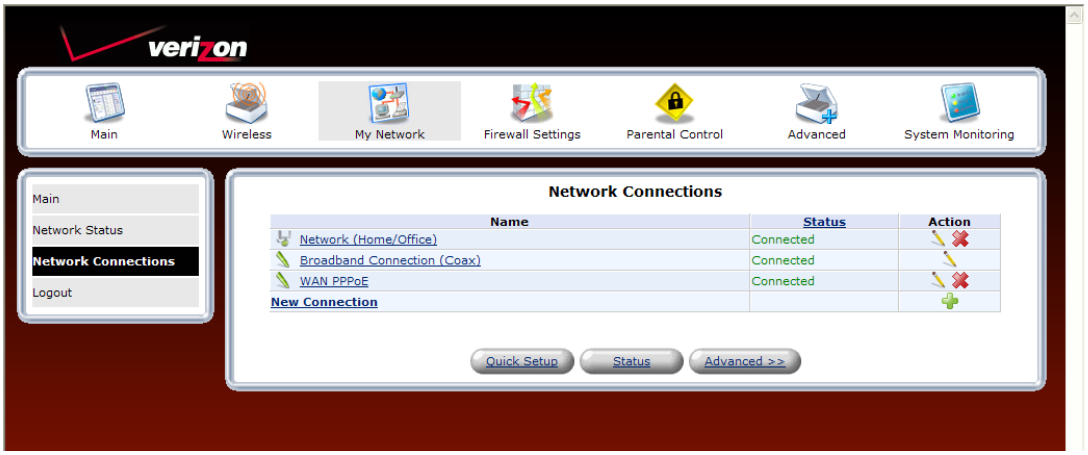
☑ Auto-Scan Enabled

12.2 Network Connections

Your Router supports various local area network (LAN) and wide area network (WAN, on Internet) connections via Ethernet or coaxial cables. The Network Connections screen is used to configure the various parameters of the Router's network and Internet connections, and to create new connections.

To edit your connection settings, from the top navigation menu, select **My Network.** Next, select **Network Connections** in the left submenu. The following screen will be displayed.

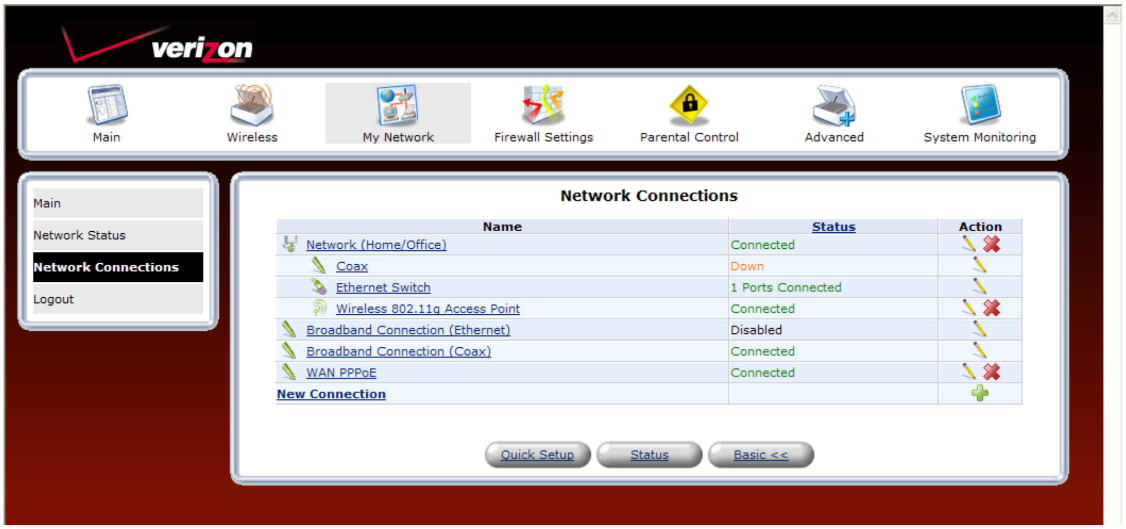
First, determine which screen you are viewing by looking at the buttons on the bottom of the page. If the third button from the left displays **Advanced**, as shown below, this means you are viewing the basic Network Connections screen. To go to the advanced Network Connections screen, click the **Advanced** button.



Network Connections

Name	Status	Action
Network (Home/Office)	Connected	✎ ✖
Broadband Connection (Coax)	Connected	✎
WAN PPPoE	Connected	✎ ✖
New Connection		✚

If the third button from the left displays **Basic**, as shown below, this means you are viewing the advanced Network Connections screen. To go to the basic screen, click the **Basic** button. The advanced Network Connections screen displays links that allow you to access various connection settings in your Router. The following sections describe different network connections available on the Router, as well as the connection types that can be created.



Network Connections

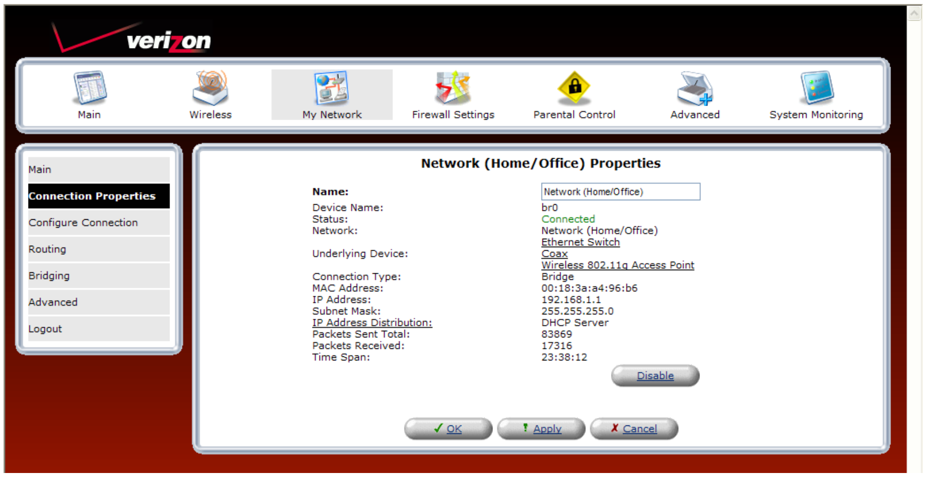
Name	Status	Action
Network (Home/Office)	Connected	✎ ✖
Coax	Down	✎
Ethernet Switch	1 Ports Connected	✎
Wireless 802.11g Access Point	Connected	✎ ✖
Broadband Connection (Ethernet)	Disabled	✎
Broadband Connection (Coax)	Connected	✎
WAN PPPoE	Connected	✎ ✖
New Connection		✚

12.2.1 Network (Home/Office) Properties

In the **Network Connections** screen, click the **Network (Home/Office)** link to access the Router's local network properties. The Network (Home/Office) connection is a bridge that is used to combine several network devices under one single "virtual network". For example, a home/office network can be created that includes your Ethernet Switch as well as your Wireless computers. Network (Home/Office) is the Router's default setting.

At this screen, do any of the following:

- Click the **Ethernet Switch** link to edit the Router's Ethernet Switch properties.
- Click the **Coax** link to edit the Router's Coax properties.
- Click the **Wireless 802.11g Access Point** link to edit the Router's Wireless 802.11g Access Point properties.
- Click the **IP Address Distribution** link to access the Router's IP Address Distribution settings.

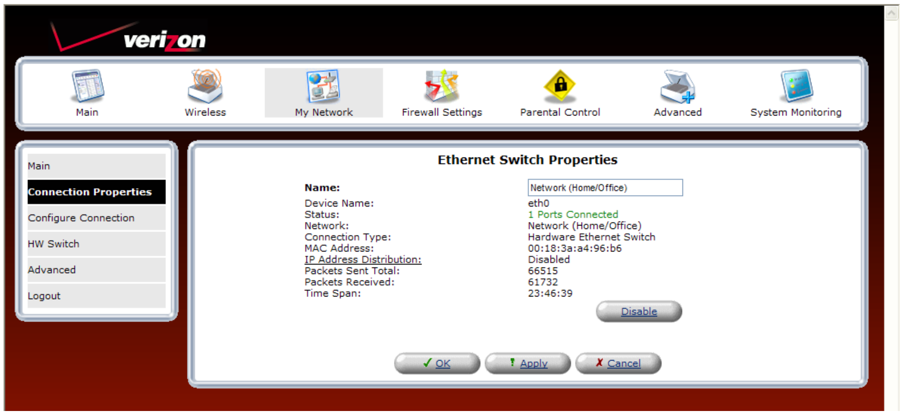


Network (Home/Office) Properties

Name:	Network (Home/Office)
Device Name:	br0
Status:	Connected
Network:	Network (Home/Office)
Underlying Device:	Ethernet Switch Coax Wireless 802.11g Access Point
Connection Type:	Bridge
MAC Address:	00:18:3a:a4:96:b6
IP Address:	192.168.1.1
Subnet Mask:	255.255.255.0
IP Address Distribution:	DHCP Server
Packets Sent Total:	83869
Packets Received:	17316
Time Span:	23:38:12

12.2.1.1 Ethernet Switch Properties

For example, if you click the **Ethernet Switch** link in the **Network (Home/Office) Properties** screen, the following screen appears. View the properties in this screen. If you change the connection name, click **Apply** to save the changes. Then, click **OK** to return to the **Network Connections** screen.

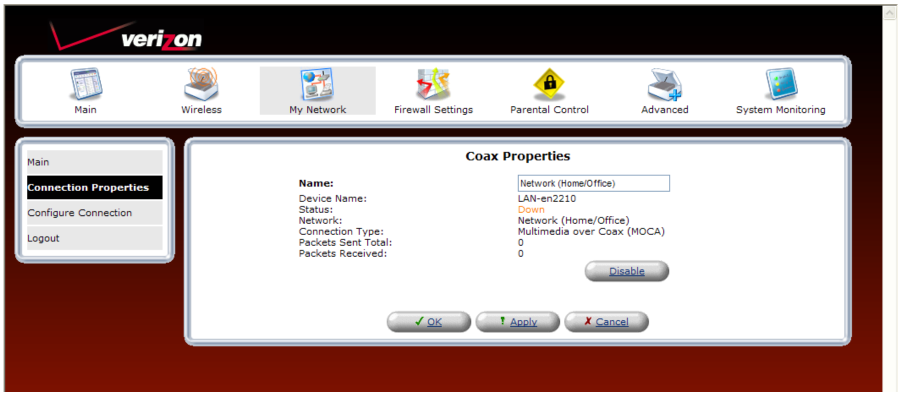


Ethernet Switch Properties

Name:	Network (Home/Office)
Device Name:	eth0
Status:	1 Ports Connected
Network:	Network (Home/Office)
Connection Type:	Hardware Ethernet Switch
MAC Address:	00:18:3a:a4:96:b6
IP Address Distribution:	Disabled
Packets Sent Total:	66515
Packets Received:	61732
Time Span:	23:46:39

12.2.1.2 COAX

If you click the **Coax** link in the **Network (Home/Office) Properties** screen, the following screen will appear. View the coax properties in this screen. If you change the connection name, click **Apply** to save the changes. Then, click **OK** to return to the **Network Connections** screen.



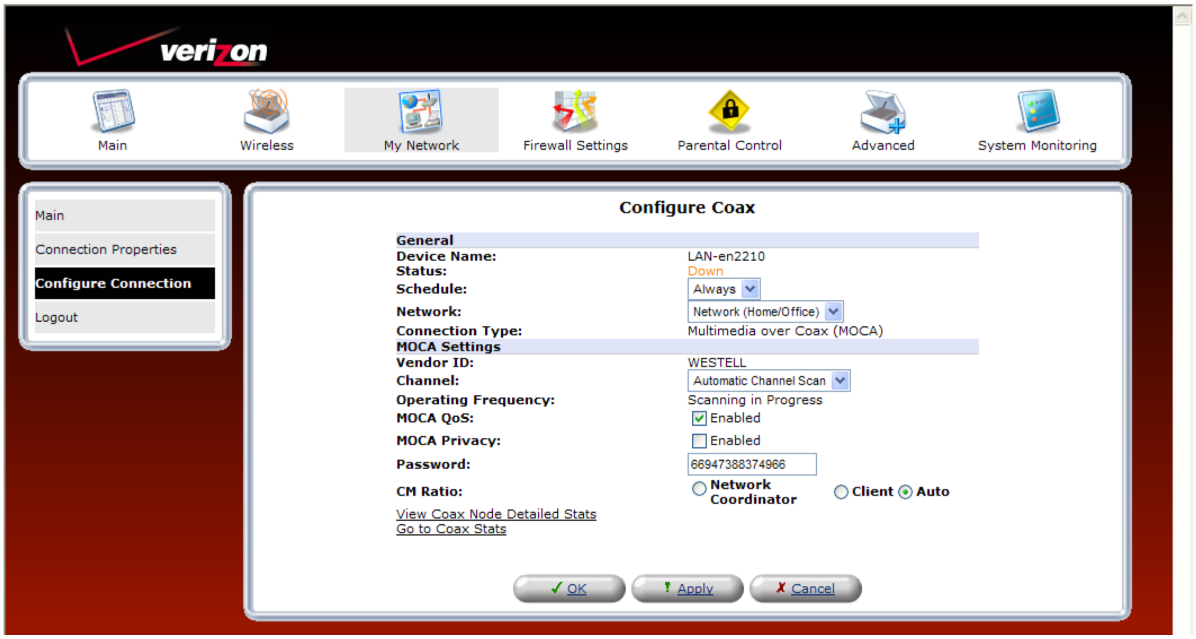
Coax Properties

Name:	Network (Home/Office)
Device Name:	LAN-en2210
Status:	Down
Network:	Network (Home/Office)
Connection Type:	Multimedia over Coax (MOCA)
Packets Sent Total:	0
Packets Received:	0

Configure Connection (Coax)

If you select **Configure Connection** from the left submenu, the following screen will appear. In this screen, you can do any of the following:

- Enter the desired properties for the coax connection, and then click **Apply** to save the settings.
- Click the **View Coax Node Detailed Stats** link to view the Coax statistics page
- Click the **Go to Coax Stat** link to view the coax statistics



Configure Coax

General

Device Name: LAN-en2210
Status: Down
Schedule: Always
Network: Network (Home/Office)
Connection Type: Multimedia over Coax (MOCA)

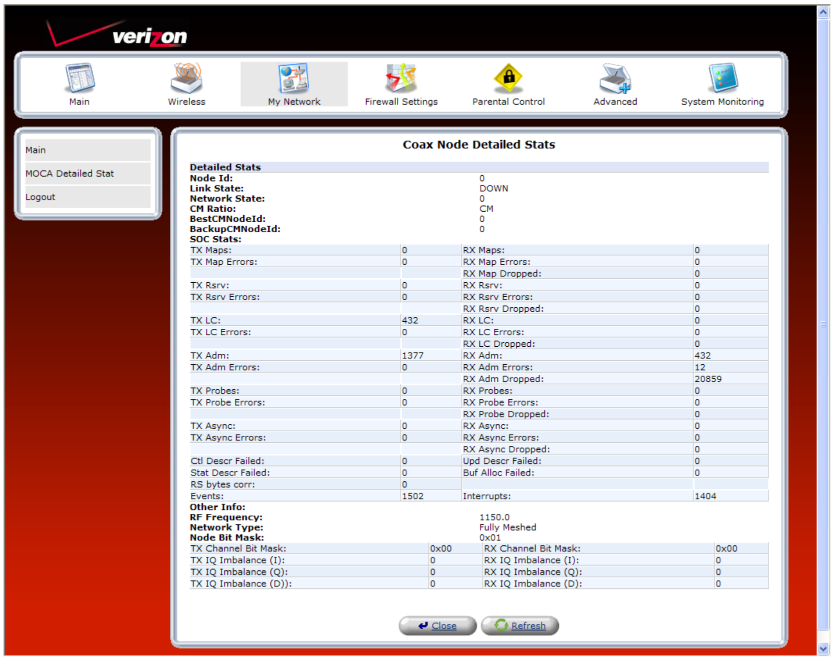
MOCA Settings

Vendor ID: WESTELL
Channel: Automatic Channel Scan
Operating Frequency: Scanning in Progress
MOCA QoS: ☑ Enabled
MOCA Privacy: □ Enabled
Password: 66947388374966
CM Ratio: ○ Network Coordinator ○ Client ● Auto

View Coax Node Detailed Stats
Go to Coax Stats

View Coax Node Detailed Stats

If you clicked the **View Coax Node Detailed Stats** link in the **Configure Coax** screen, the following screen appears. This screen displays information on the Router's MoCA stats.



Coax Node Detailed Stats

Detailed Stats
Node Id: 0
Link State: DOWN
Network State: 0
CM Ratio: CM
BestCMNodeId: 0
BackupCMNodeId: 0
SOC Stats:

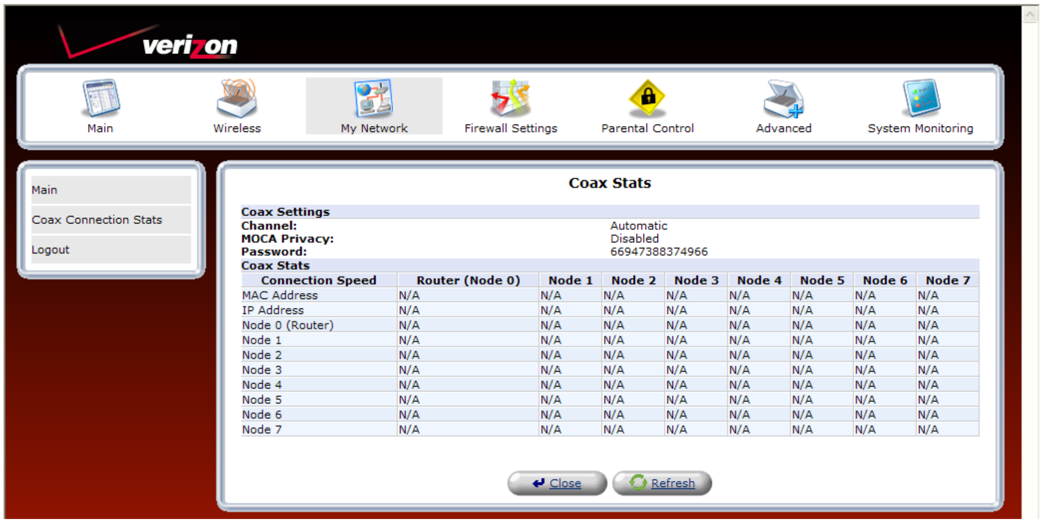
TX Maps:	0	RX Maps:	0
TX Map Errors:	0	RX Map Errors:	0
		RX Map Dropped:	0
TX Rsrv:	0	RX Rsrv:	0
TX Rsrv Errors:	0	RX Rsrv Errors:	0
		RX Rsrv Dropped:	0
TX LC:	432	RX LC:	0
TX LC Errors:	0	RX LC Errors:	0
		RX LC Dropped:	0
TX Adm:	1377	RX Adm:	432
TX Adm Errors:	0	RX Adm Errors:	12
		RX Adm Dropped:	20859
TX Probes:	0	RX Probes:	0
TX Probe Errors:	0	RX Probe Errors:	0
		RX Probe Dropped:	0
TX Async:	0	RX Async:	0
TX Async Errors:	0	RX Async Errors:	0
		RX Async Dropped:	0
Ctl Descr Failed:	0	Upd Descr Failed:	0
Stat Descr Failed:	0	Buf Alloc Failed:	0
RS bytes corr:	0		
Events:	1502	Interrupts:	1404

Other Info:
RF Frequency: 1150.0
Network Type: Fully Meshed
Node Bit Mask: 0x01

TX Channel Bit Mask:	0x00	RX Channel Bit Mask:	0x00
TX IQ Imbalance (I):	0	RX IQ Imbalance (I):	0
TX IQ Imbalance (Q):	0	RX IQ Imbalance (Q):	0
TX IQ Imbalance (D)):	0	RX IQ Imbalance (D):	0

Go to Coax Stats

If you clicked the **Go to Coax Stats** link in the **Configure Coax** screen, the following screen appears. This screen displays the Tx/Rx rate between the Router and other devices or nodes in a MoCA network. View the information in this screen, and then click **Close** to return to the **Configure Coax** screen.



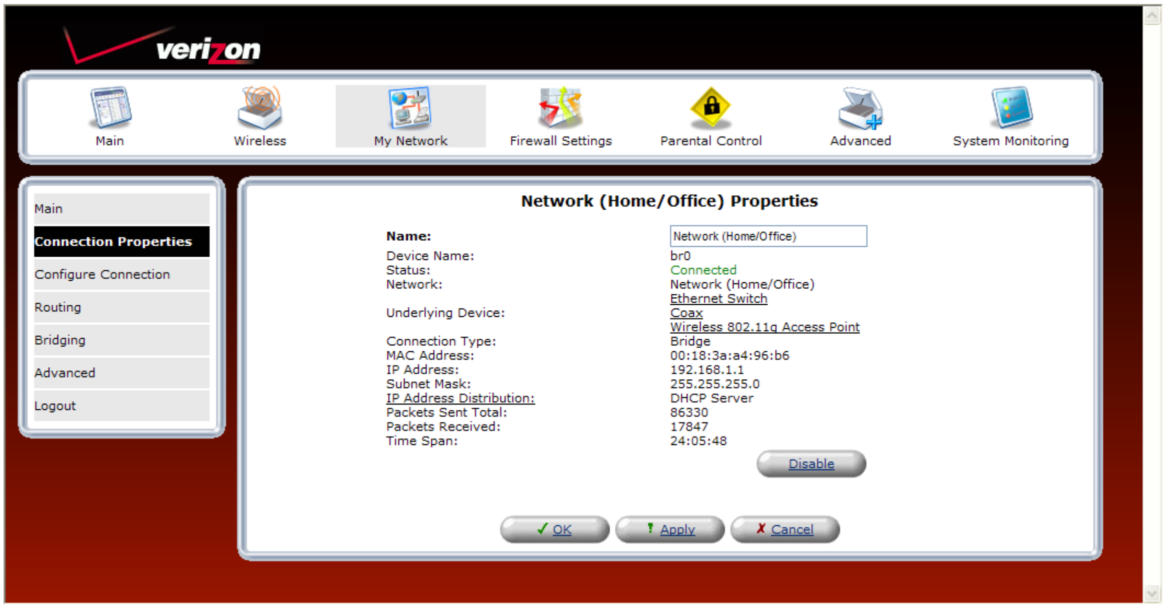
Coax Stats

Coax Settings
Channel: Automatic
MOCA Privacy: Disabled
Password: 66947388374966
Coax Stats

Connection Speed	Router (Node 0)	Node 1	Node 2	Node 3	Node 4	Node 5	Node 6	Node 7
MAC Address	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
IP Address	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Node 0 (Router)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Node 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Node 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Node 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Node 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Node 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Node 6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Node 7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

12.2.1.3 Wireless 802.11g Access Point

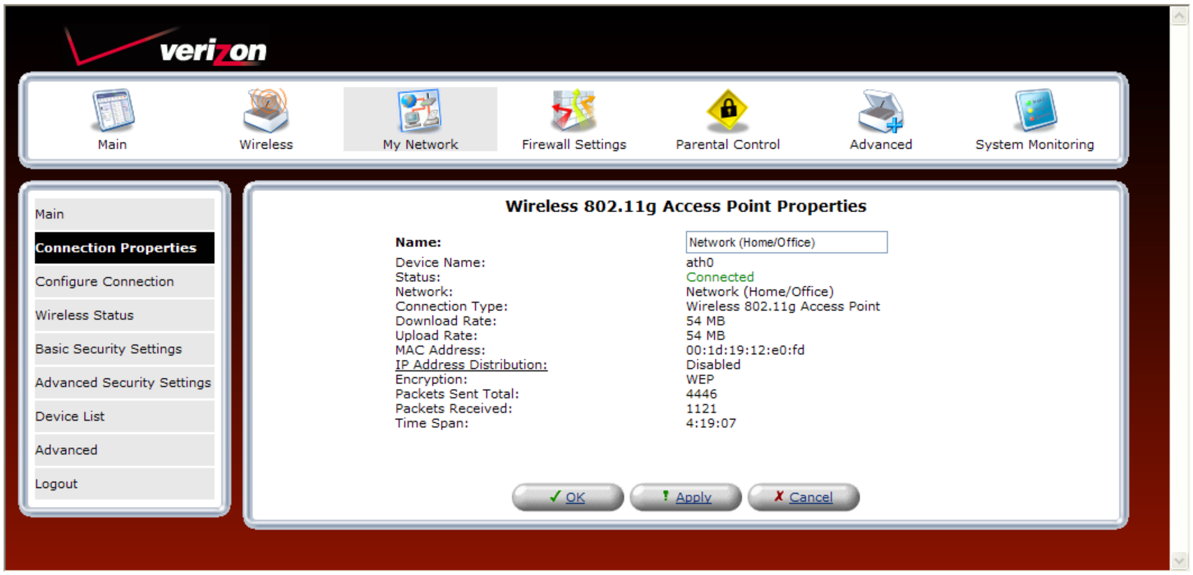
To view the wireless access properties, in the **Network (Home/Office) Properties** screen, click the **Wireless 802.11g Access Point** link.



Network (Home/Office) Properties

Name:	Network (Home/Office)
Device Name:	br0
Status:	Connected
Network:	Network (Home/Office)
Underlying Device:	Ethernet Switch Coax Wireless 802.11g Access Point
Connection Type:	Bridge
MAC Address:	00:18:3a:a4:96:b6
IP Address:	192.168.1.1
Subnet Mask:	255.255.255.0
IP Address Distribution:	DHCP Server
Packets Sent Total:	86330
Packets Received:	17847
Time Span:	24:05:48

The following screen will appear. View the wireless properties in this screen. If you change the connection name, click **Apply** to save the changes. Then, click **OK** to return to the **Network Connections** screen.



Wireless 802.11g Access Point Properties

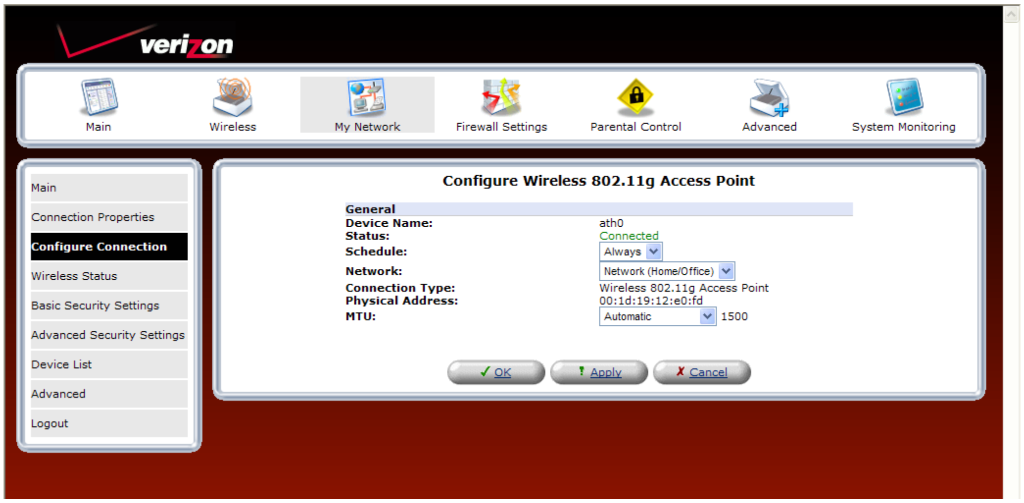
Name:	Network (Home/Office)
Device Name:	ath0
Status:	Connected
Network:	Network (Home/Office)
Connection Type:	Wireless 802.11g Access Point
Download Rate:	54 MB
Upload Rate:	54 MB
MAC Address:	00:1d:19:12:e0:fd
IP Address Distribution:	Disabled
Encryption:	WEP
Packets Sent Total:	4446
Packets Received:	1121
Time Span:	4:19:07

Configure Connection—Wireless Access Point

If you select **Configure Connection** from the left submenu, the following screen will appear. Configure your wireless access point properties, and then click **Apply** to save the settings.

Please refer to section 11, “Wireless,” for details on the following wireless features listed in the left submenu of this screen.

- Wireless Status
- Basic Security Settings
- Advanced Security Settings
- Device List
- Advanced



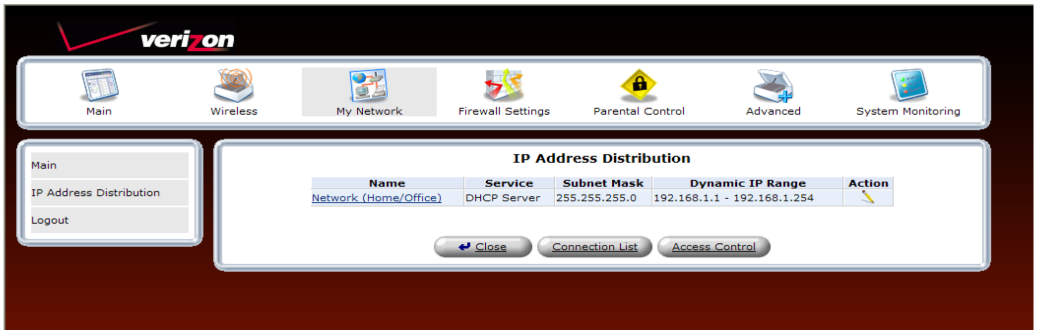
Configure Wireless 802.11g Access Point

General

Device Name:	ath0
Status:	Connected
Schedule:	Always
Network:	Network (Home/Office)
Connection Type:	Wireless 802.11g Access Point
Physical Address:	00:1d:19:12:e0:fd
MTU:	Automatic 1500

12.2.1.4 IP Address Distribution

If you click the **IP Address Distribution** link in the **Network (Home/Office) Properties** screen, the following screen appears. This screen allows you to access your Router’s DHCP settings. See section for details on DHCP settings.



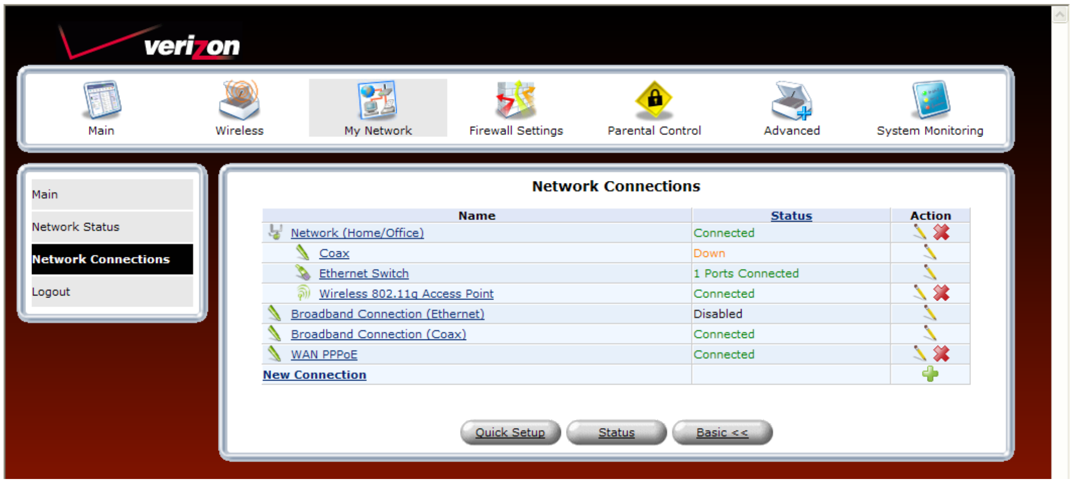
IP Address Distribution

Name	Service	Subnet Mask	Dynamic IP Range	Action
Network (Home/Office)	DHCP Server	255.255.255.0	192.168.1.1 - 192.168.1.254	✎

12.2.2 Broadband Connection (Ethernet)

The Router's Broadband Connection describes the hardware used to connect the Router to the Internet. A Broadband Ethernet connection connects the Router to the Internet using an Ethernet cable. By default Broadband Connection Ethernet is Disabled. However, you can use the Ethernet port labeled **WAN** on the back of the Router to connect your Router to the Internet. In this setup, you will install the Router so that it connects (via Ethernet) to another Internet device that provides WAN access. If you use the Router's **WAN** port, you will also need to change the Router's network connection settings.

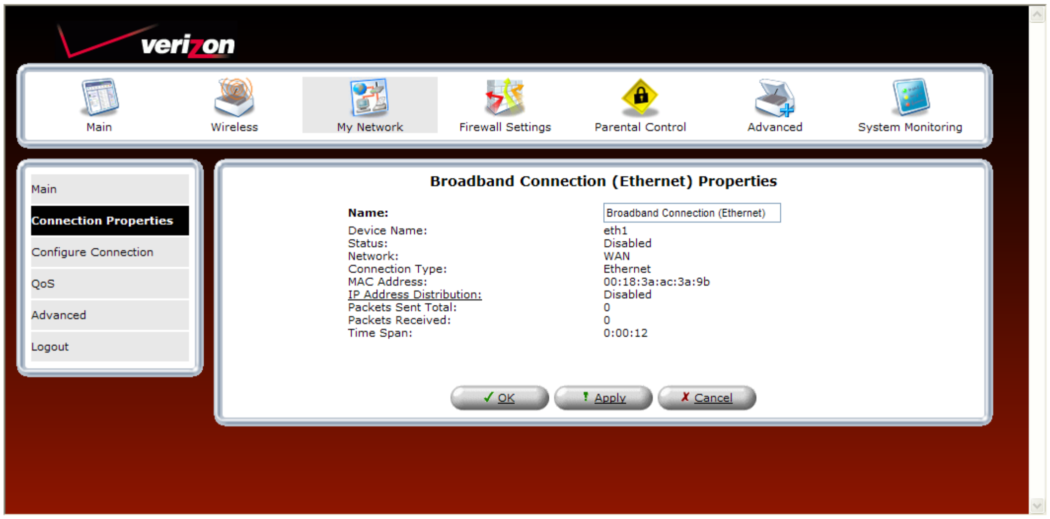
To change the Router's network connection settings, in the **Network Connections** screen, click the **Broadband Connection (Ethernet)** link.



Network Connections

Name	Status	Action
Network (Home/Office)	Connected	✎ ✖
Coax	Down	✎
Ethernet Switch	1 Ports Connected	✎
Wireless 802.11g Access Point	Connected	✎ ✖
Broadband Connection (Ethernet)	Disabled	✎
Broadband Connection (Coax)	Connected	✎
WAN PPPoE	Connected	✎ ✖
New Connection		✚

The following screen appears. View the connection setting properties in this screen. If you change the connection name, click **Apply** to save the changes.

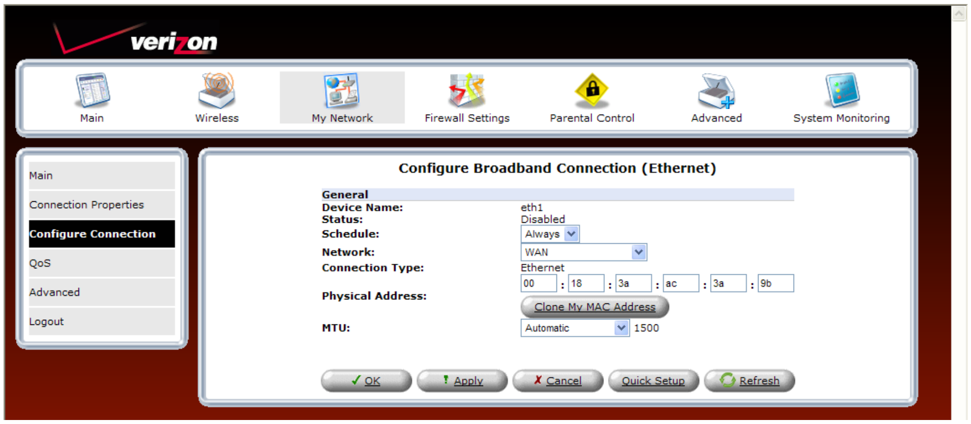


Broadband Connection (Ethernet) Properties

Name:	Broadband Connection (Ethernet)
Device Name:	eth1
Status:	Disabled
Network:	WAN
Connection Type:	Ethernet
MAC Address:	00:18:3a:ac:3a:9b
IP Address Distribution:	Disabled
Packets Sent Total:	0
Packets Received:	0
Time Span:	0:00:12

12.2.2.1 Configure Connection—Broadband Connection Ethernet

In the **Broadband Connection (Ethernet) Properties** screen, select **Configure Connection** in the left submenu. The following screen appears. Next, click the **Quick Setup** button.



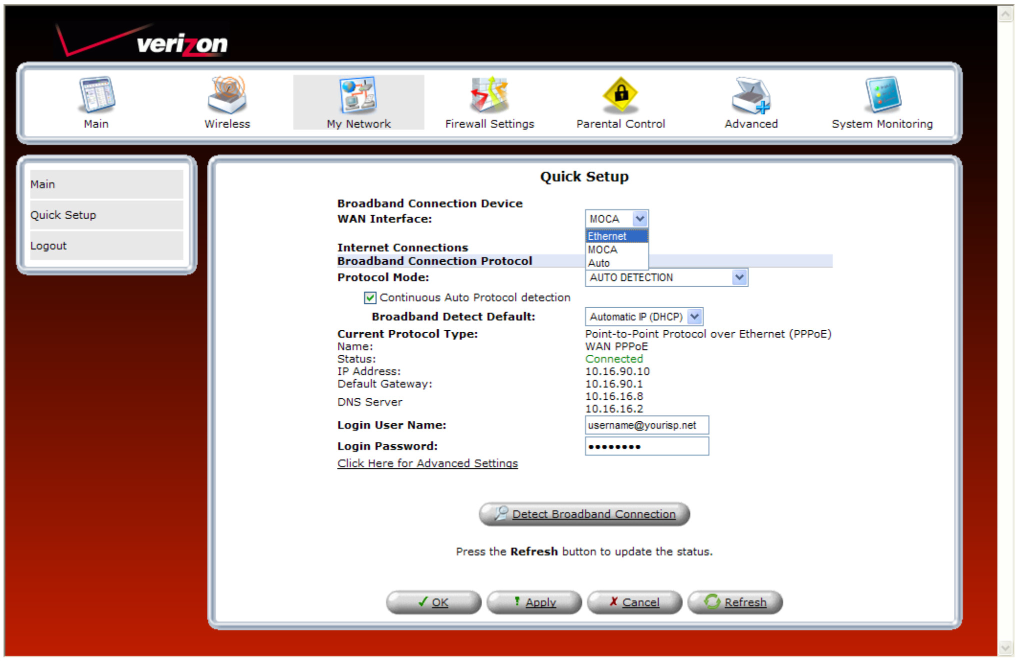
Configure Broadband Connection (Ethernet)

General

Device Name:	eth1
Status:	Disabled
Schedule:	Always
Network:	WAN
Connection Type:	Ethernet
Physical Address:	00 : 18 : 3a : ac : 3a : 9b
MTU:	Automatic 1500

The following screen appears. Select **Ethernet** from the **WAN Interface** drop-down list. Selecting **Ethernet** means that the WAN Ethernet port on the rear of the Router will be Enabled, ready for connection to another device through which you will connect to the Internet. Click **Apply** to save the settings.

NOTE: Verizon provides the protocol mode for your connection to the Internet. Depending on your connection type, a login user name and password may be required. These values are provided by Verizon.



Quick Setup

Broadband Connection Device

WAN Interface:	MOCA

Internet Connections

Broadband Connection Protocol

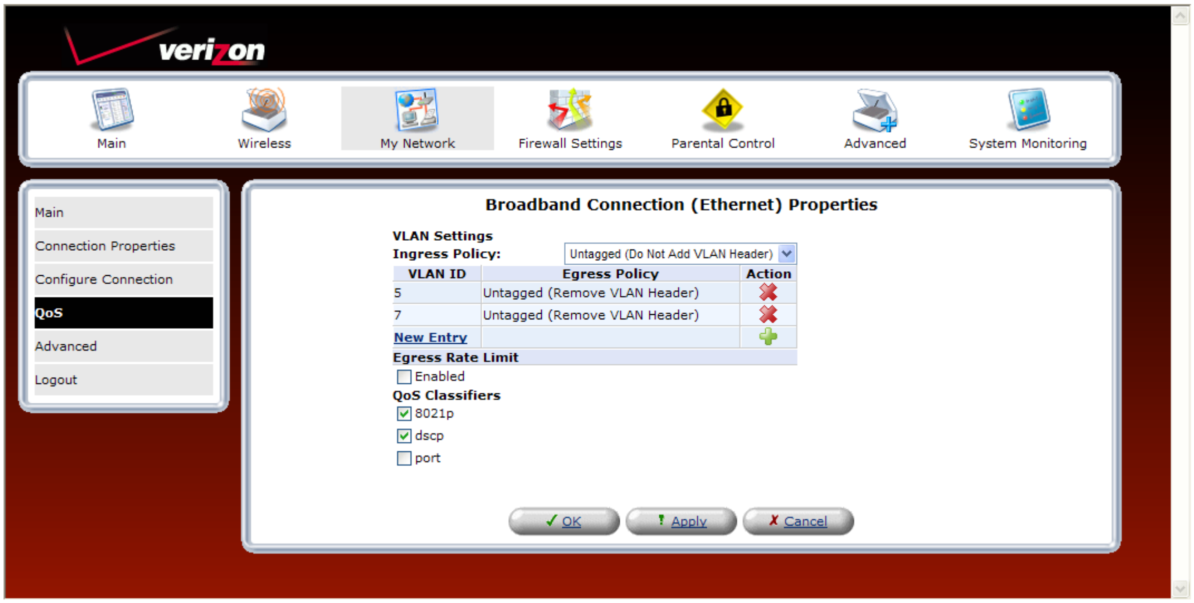
Protocol Mode:	AUTO DETECTION
☑ Continuous Auto Protocol detection	
Broadband Detect Default:	Automatic IP (DHCP)
Current Protocol Type:	Point-to-Point Protocol over Ethernet (PPPoE)
Name:	WAN PPPoE
Status:	Connected
IP Address:	10.16.90.10
Default Gateway:	10.16.90.1
DNS Server	10.16.16.8 10.16.16.2
Login User Name:	username@yourisp.net
Login Password:	••••••••

Press the **Refresh** button to update the status.

12.2.2.2 QoS—Broadband Connection Ethernet

NOTE: This section is only intended to be modified by a Verizon technician. Any changes to this section may result in a disruption of service.

If you select **QoS** in the left submenu of the **Broadband Connection (Ethernet) Properties** screen, the following screen appears.



Broadband Connection (Ethernet) Properties

VLAN Settings

Ingress Policy: Untagged (Do Not Add VLAN Header)

VLAN ID	Egress Policy	Action
5	Untagged (Remove VLAN Header)	✗
7	Untagged (Remove VLAN Header)	✗
New Entry		+

Egress Rate Limit

□ Enabled

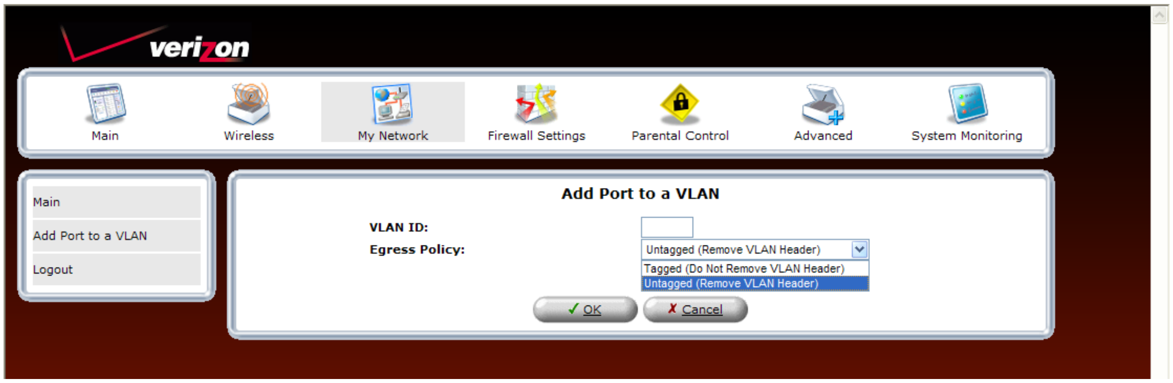
QoS Classifiers

☑ 8021p

☑ dscp

□ port

You may use this section to remove VLAN tags to your incoming (Ingress) packets, or allow specific tagged packets to enter. To add a new entry, click the **New Entry** link. The following screen appears. Enter the desired port in the **VLAN ID** in the field, and then select an Egress Policy from the drop-down list. Click **OK**.



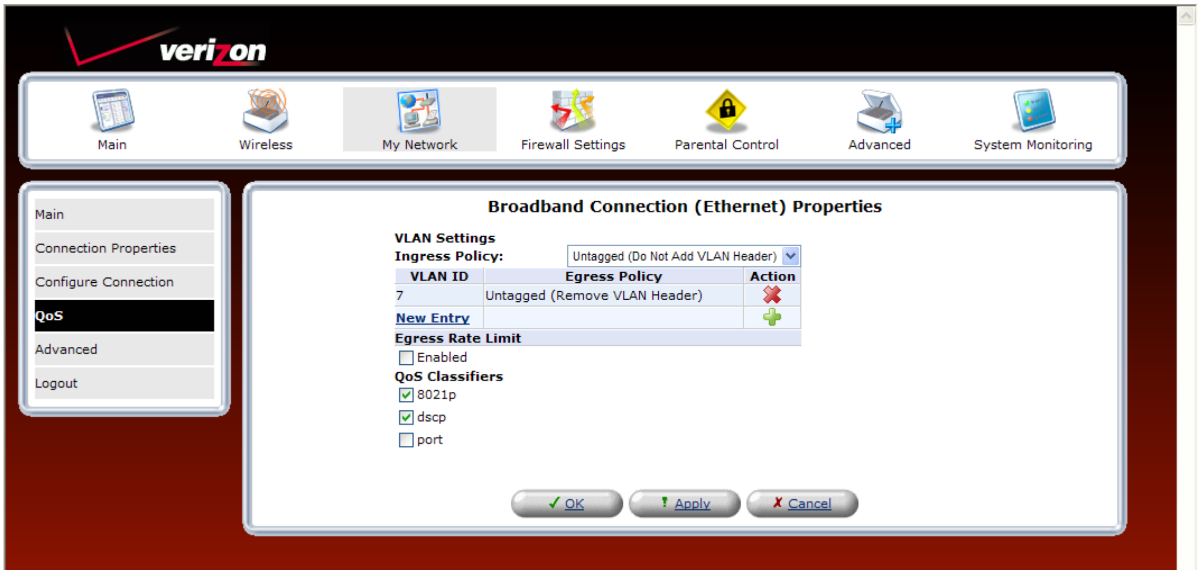
Add Port to a VLAN

VLAN ID:

Egress Policy: Untagged (Remove VLAN Header)

Tagged (Do Not Remove VLAN Header)
Untagged (Remove VLAN Header)

The following screen appears. The VLAN ID displays the port that you added and the policy assigned to the port. Click **Apply** to save the settings.



Broadband Connection (Ethernet) Properties

VLAN Settings

Ingress Policy: Untagged (Do Not Add VLAN Header)

VLAN ID	Egress Policy	Action
7	Untagged (Remove VLAN Header)	✗
New Entry		+

Egress Rate Limit

□ Enabled

QoS Classifiers

☑ 8021p

☑ dscp

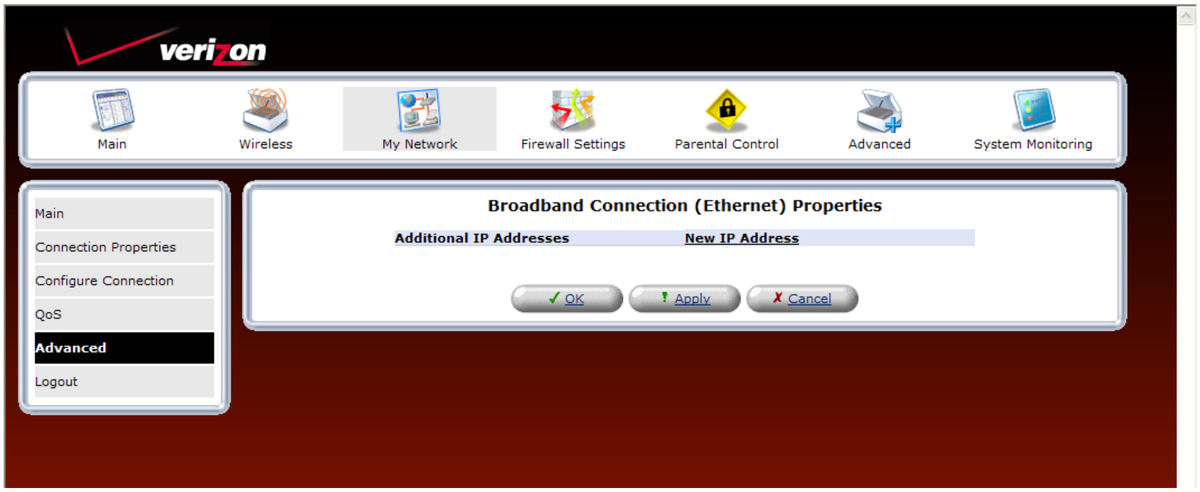
□ port

For outgoing (Egress) packets you may enable a **Rate Limit** by checking the rate limit check box, and you may also enable the pass through of standard QoS classifiers. These are 802.1p, DSCP, and port tags. **Note that any changes to your egress setting will likely result in a disruption of your FiOS service.**

12.2.2.3 Advanced—Broadband Connection Ethernet

If you select **Advanced** in the left submenu of the **Broadband Connection (Ethernet) Properties** screen, the following screen appears.

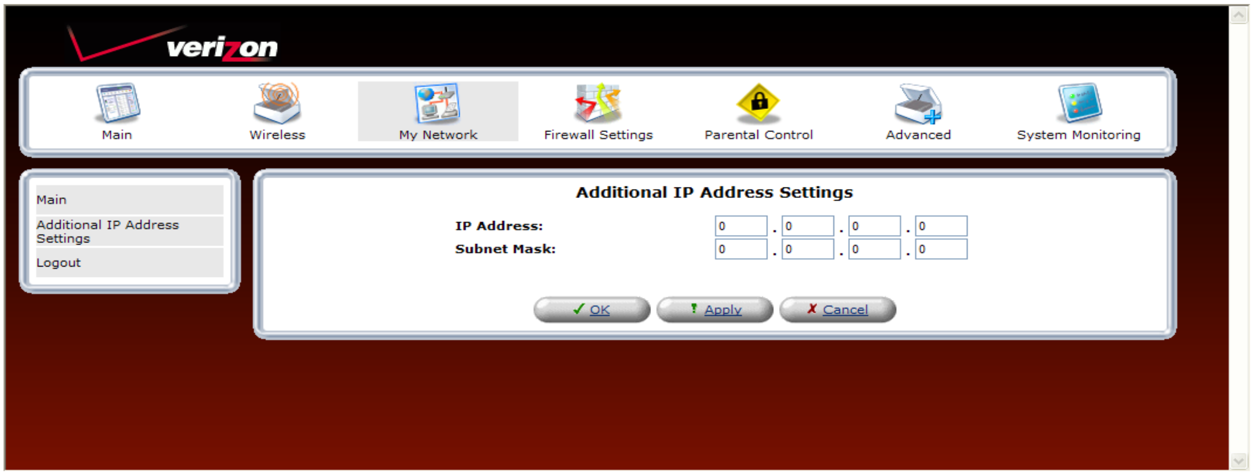
To add a new IP address, click the **New IP Address** link.



Broadband Connection (Ethernet) Properties

Additional IP Addresses **New IP Address**

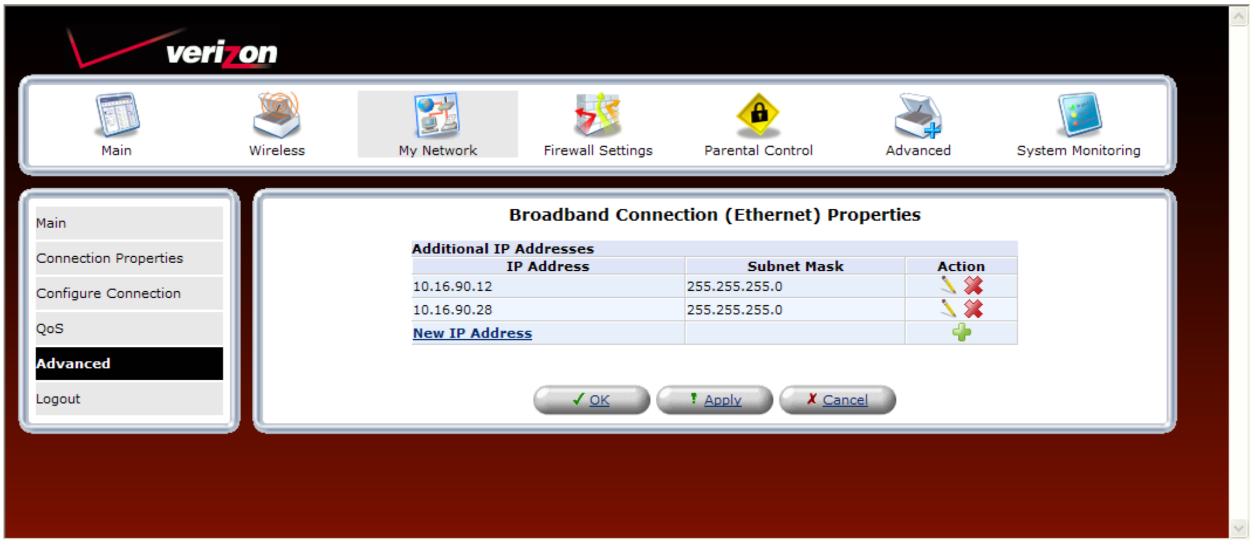
The following screen appear. Enter the desired IP Address and Subnet Mask in the fields provided. Then, click **Apply** to allow the settings to take effect.



Additional IP Address Settings

IP Address:	0 . 0 . 0 . 0
Subnet Mask:	0 . 0 . 0 . 0

The entry will be added to the list of broadband connection IP addresses.



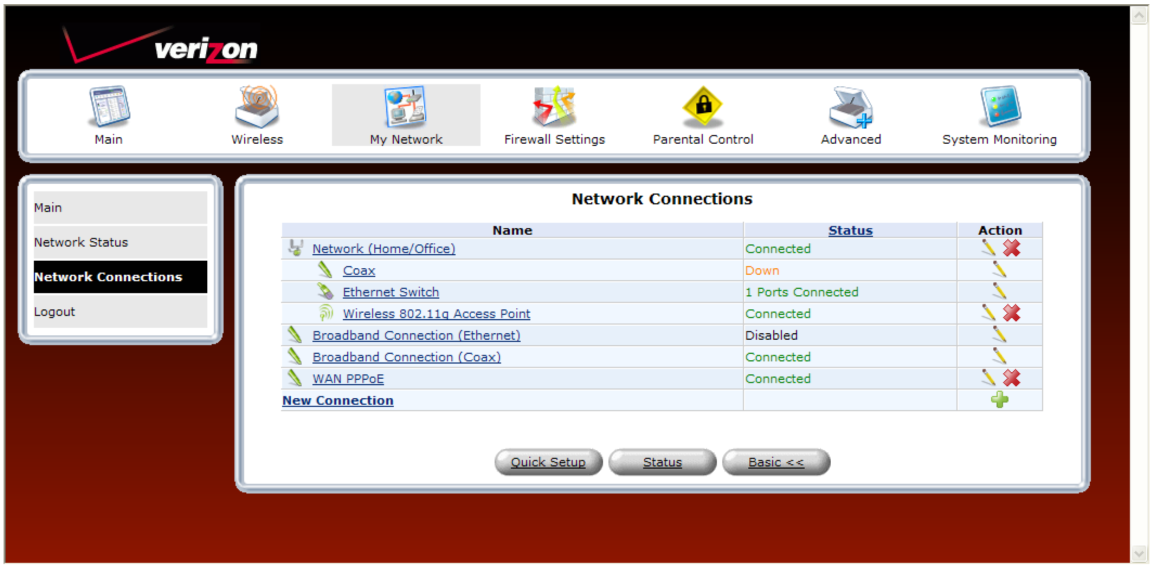
Broadband Connection (Ethernet) Properties

Additional IP Addresses

IP Address	Subnet Mask	Action
10.16.90.12	255.255.255.0	✎ ✗
10.16.90.28	255.255.255.0	✎ ✗
New IP Address		+

12.2.3 Broadband Connection (Coax)

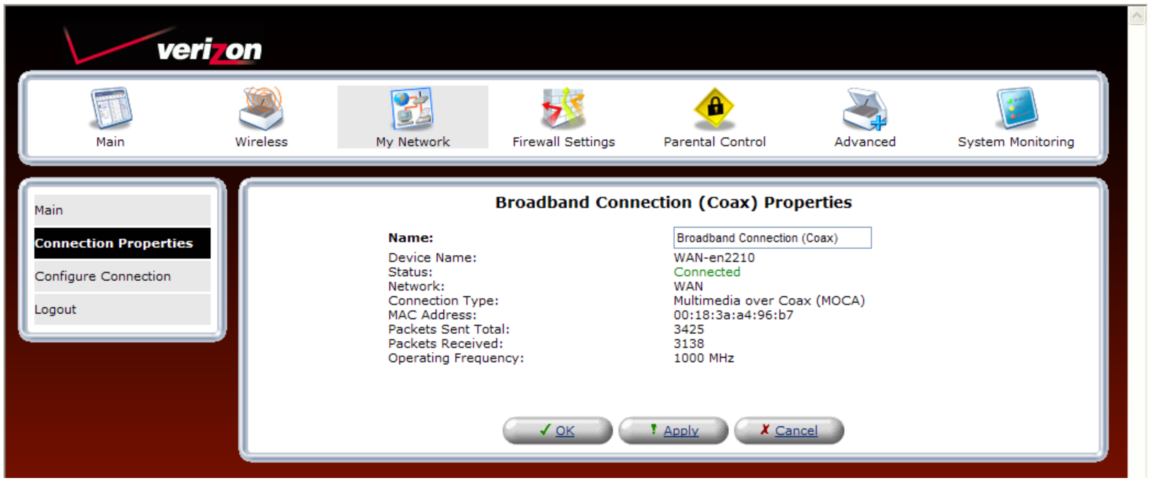
To access the Router's broadband configurations (Coax), click **My Network** in the main menu. Then click **Network Connections** in the left submenu. The following screen appears. Broadband Connection describes the hardware used to connect the Router to the Internet. This screen displays Ethernet and Coax as broadband connection options. In this setup, Coax is Connected, and Ethernet is Disabled. This means that Coax is the hardware used to connect the Router to the Internet.



Network Connections

Name	Status	Action
Network (Home/Office)	Connected	✎ ✖
Coax	Down	✎
Ethernet Switch	1 Ports Connected	✎
Wireless 802.11g Access Point	Connected	✎ ✖
Broadband Connection (Ethernet)	Disabled	✎
Broadband Connection (Coax)	Connected	✎
WAN PPPoE	Connected	✎ ✖
New Connection		+

To view the Router's broadband connection properties, in the preceding **Network Connections** screen, click the **Broadband Connection (Coax)** link. The following screen appears. If you change the name, click **Apply** to save the change.

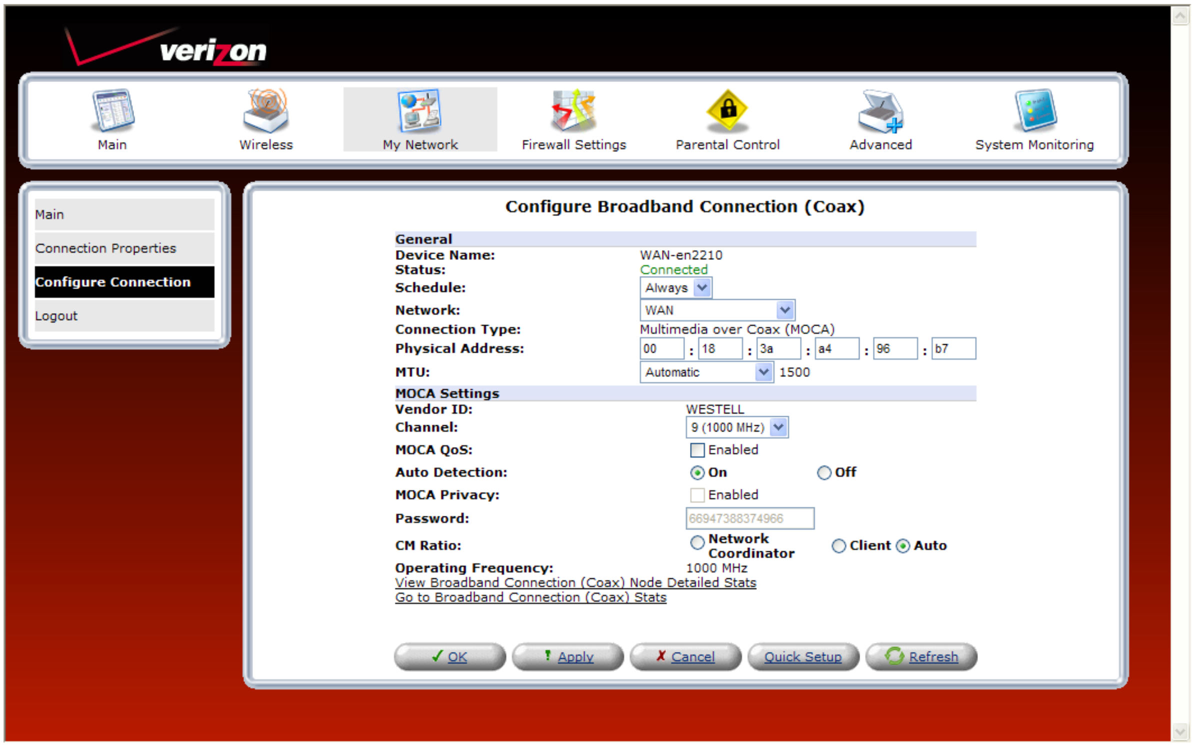


Broadband Connection (Coax) Properties

Name:	Broadband Connection (Coax)
Device Name:	WAN-en2210
Status:	Connected
Network:	WAN
Connection Type:	Multimedia over Coax (MOCA)
MAC Address:	00:18:3a:a4:96:b7
Packets Sent Total:	3425
Packets Received:	3138
Operating Frequency:	1000 MHz

12.2.3.1 Configure Connection —Broadband Connection Coax

To configure the Router's Coax settings, click **Configure Connection** in the left submenu. The following screen appears. Enter the desired settings for your broadband connection (coax), and then click **Apply** to save the settings.



Configure Broadband Connection (Coax)

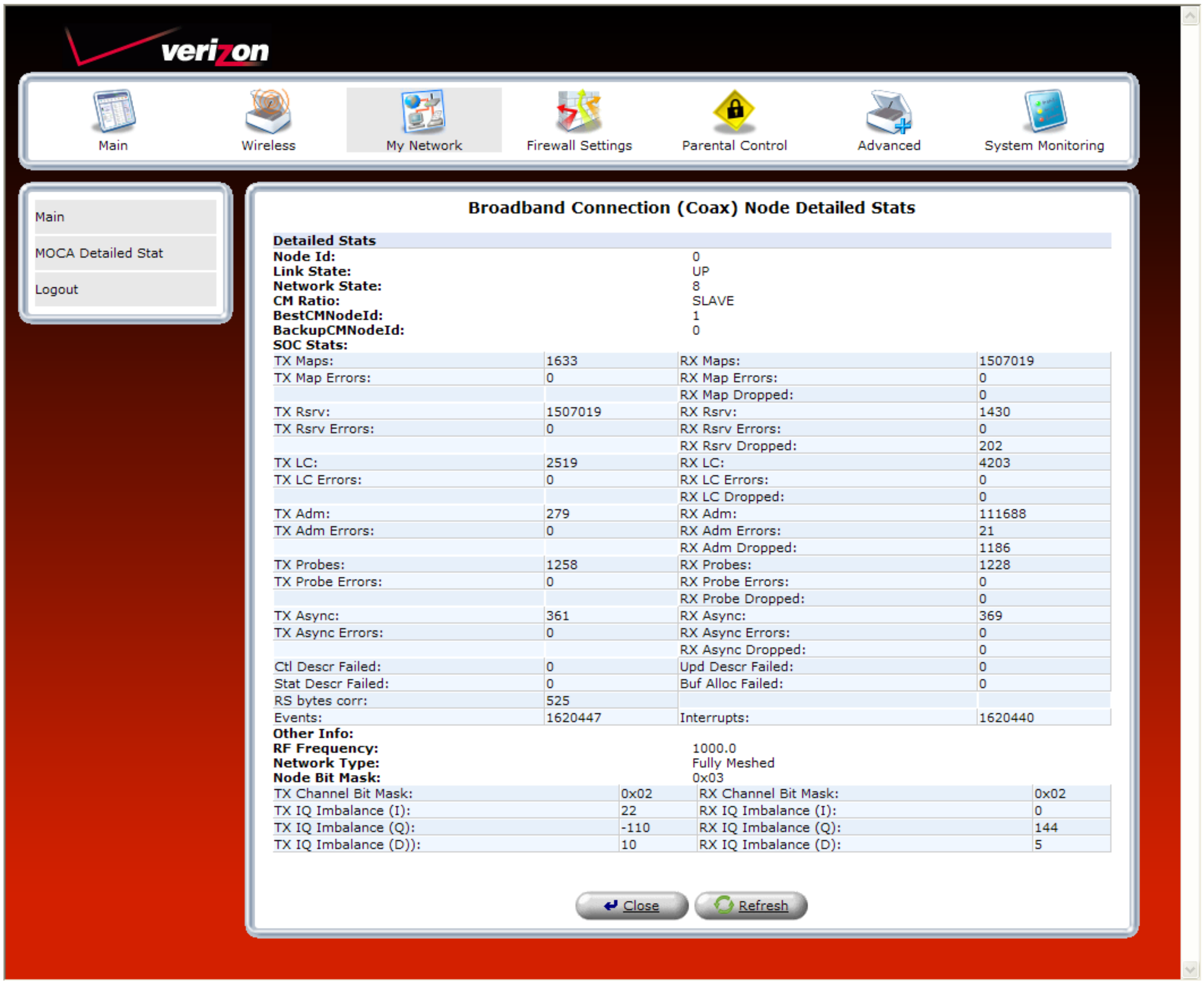
General	
Device Name:	WAN-en2210
Status:	Connected
Schedule:	Always
Network:	WAN
Connection Type:	Multimedia over Coax (MOCA)
Physical Address:	00 : 18 : 3a : a4 : 96 : b7
MTU:	Automatic 1500
MOCA Settings	
Vendor ID:	WESTELL
Channel:	9 (1000 MHz)
MOCA QoS:	☐ Enabled
Auto Detection:	● On ○ Off
MOCA Privacy:	☐ Enabled
Password:	66947388374966
CM Ratio:	○ Network Coordinator ○ Client ● Auto
Operating Frequency:	1000 MHz

View Broadband Connection (Coax) Node Detailed Stats
Go to Broadband Connection (Coax) Stats

View Broadband Connection (Coax) Node Detailed Stats

If you click the **View Broadband Connection (Coax) Node Detailed Stats** link in the **Configure Broadband Connection (Coax)** screen, the following screen appears. View the information in this screen, and then click **Close** to return to the **Configure Broadband Connection (Coax)** screen.

NOTE: This screen is only intended for use by Verizon technicians. Any errors indicated do not necessarily indicate a problem with your service.



Broadband Connection (Coax) Node Detailed Stats

Detailed Stats

Node Id:	0
Link State:	UP
Network State:	8
CM Ratio:	SLAVE
BestCMNodeId:	1
BackupCMNodeId:	0

SOC Stats:

TX Maps:	1633	RX Maps:	1507019
TX Map Errors:	0	RX Map Errors:	0
		RX Map Dropped:	0
TX Rsrv:	1507019	RX Rsrv:	1430
TX Rsrv Errors:	0	RX Rsrv Errors:	0
		RX Rsrv Dropped:	202
TX LC:	2519	RX LC:	4203
TX LC Errors:	0	RX LC Errors:	0
		RX LC Dropped:	0
TX Adm:	279	RX Adm:	111688
TX Adm Errors:	0	RX Adm Errors:	21
		RX Adm Dropped:	1186
TX Probes:	1258	RX Probes:	1228
TX Probe Errors:	0	RX Probe Errors:	0
		RX Probe Dropped:	0
TX Async:	361	RX Async:	369
TX Async Errors:	0	RX Async Errors:	0
		RX Async Dropped:	0
Ctl Descr Failed:	0	Upd Descr Failed:	0
Stat Descr Failed:	0	Buf Alloc Failed:	0
RS bytes corr:	525		
Events:	1620447	Interrupts:	1620440

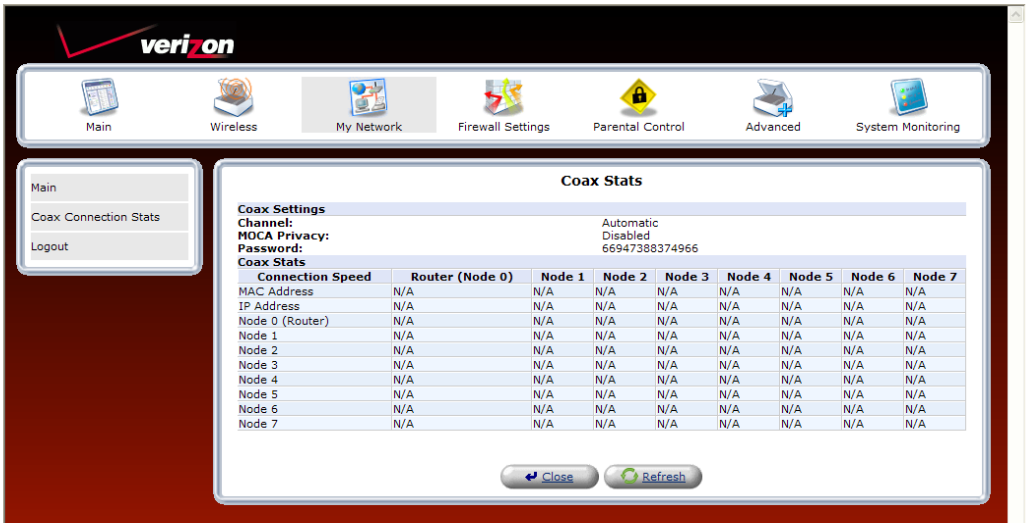
Other Info:

RF Frequency:	1000.0
Network Type:	Fully Meshed
Node Bit Mask:	0x03

TX Channel Bit Mask:	0x02	RX Channel Bit Mask:	0x02
TX IQ Imbalance (I):	22	RX IQ Imbalance (I):	0
TX IQ Imbalance (Q):	-110	RX IQ Imbalance (Q):	144
TX IQ Imbalance (D)):	10	RX IQ Imbalance (D):	5

Go to Broadband Connection (Coax) Stats

If you click the **Go to Broadband Connection (Coax) Stats** link in the **Configure Broadband Connection (Coax)** screen, the following screen appears. View the information in this screen, and then click **Close** to return to the **Configure Broadband Connection (Coax)** screen.



Coax Stats

Coax Settings

Channel:	Automatic
MOCA Privacy:	Disabled
Password:	66947388374966

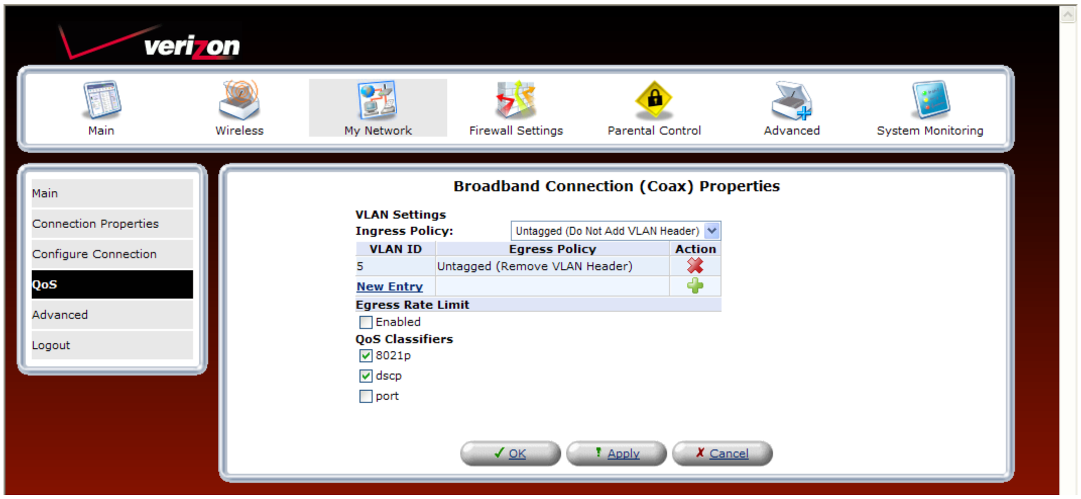
Coax Stats

Connection Speed	Router (Node 0)	Node 1	Node 2	Node 3	Node 4	Node 5	Node 6	Node 7
MAC Address	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
IP Address	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Node 0 (Router)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Node 1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Node 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Node 3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Node 4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Node 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Node 6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Node 7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

12.2.3.2 QoS—Broadband Connection Coax

NOTE: This section is only intended to be modified by a Verizon technician. Any changes to this section may result in a disruption of service.

If you select **QoS** in the left submenu of the **Broadband Connection (Coax) Properties** screen, the following screen appears.



Broadband Connection (Coax) Properties

VLAN Settings

Ingress Policy: Untagged (Do Not Add VLAN Header)

VLAN ID	Egress Policy	Action
5	Untagged (Remove VLAN Header)	✗
New Entry		✚

Egress Rate Limit

☐ Enabled

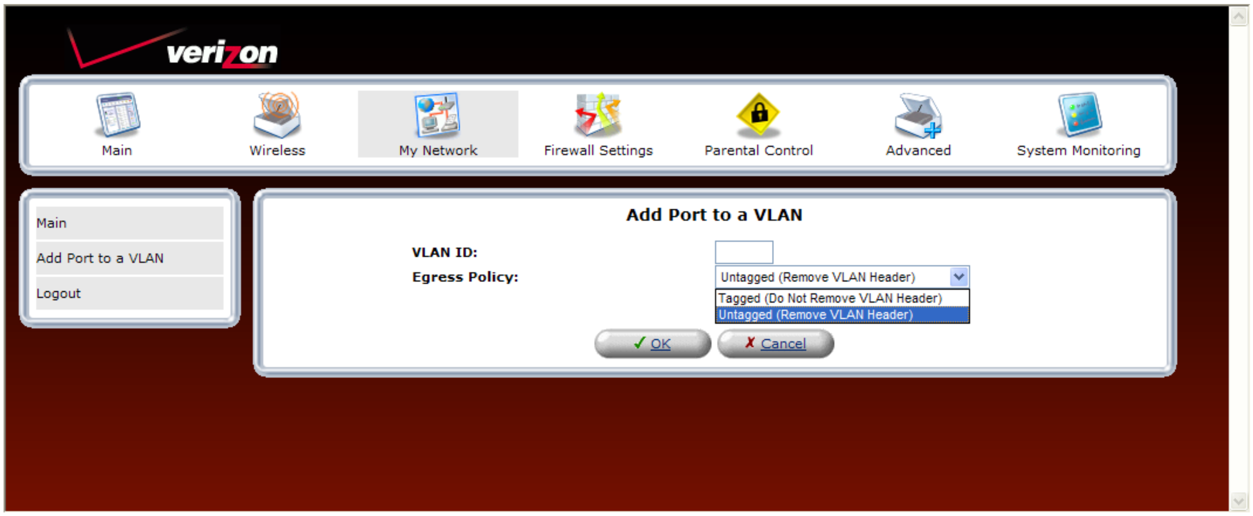
QoS Classifiers

☑ 8021p

☑ dscp

☐ port

You may use this section to remove VLAN tags to your incoming (Ingress) packets, or allow specific tagged packets to enter. To add a new entry, click the **New Entry** link. The following screen appears. Enter the desired port in the **VLAN ID** in the field, and then select an Egress Policy from the drop-down list. Click **OK**.



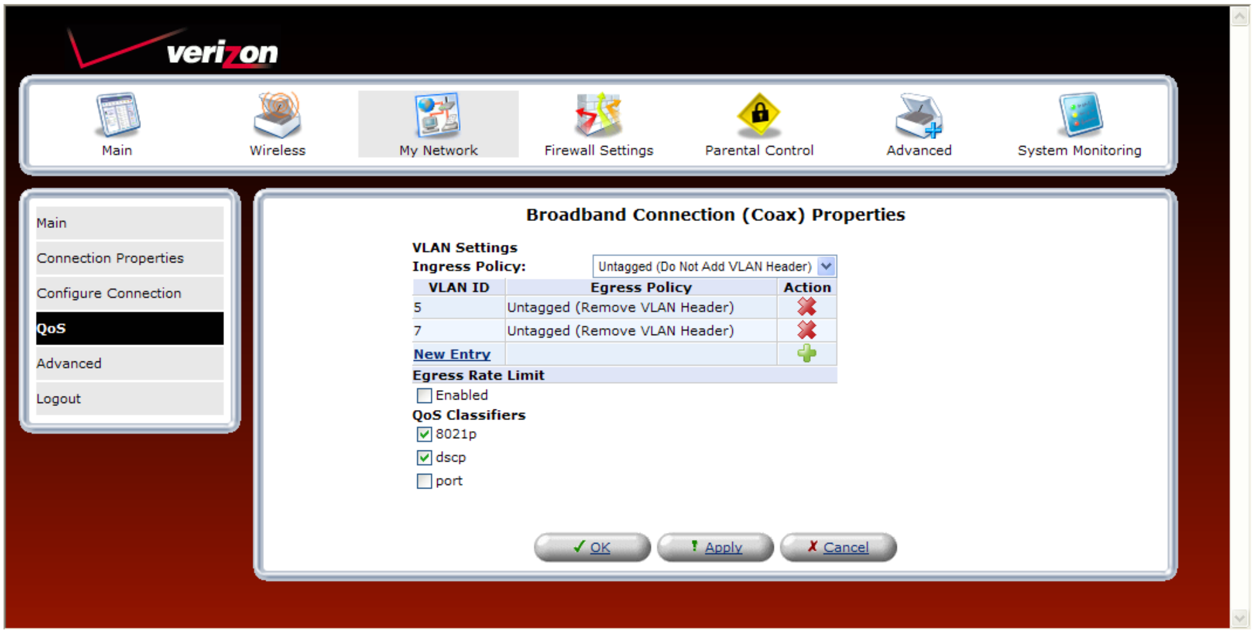
Add Port to a VLAN

VLAN ID:

Egress Policy: Untagged (Remove VLAN Header)

Tagged (Do Not Remove VLAN Header)
Untagged (Remove VLAN Header)

The following screen appears. The VLAN ID displays the port that you added. Click **Apply** to save the settings.



Broadband Connection (Coax) Properties

VLAN Settings

Ingress Policy: Untagged (Do Not Add VLAN Header)

VLAN ID	Egress Policy	Action
5	Untagged (Remove VLAN Header)	✗
7	Untagged (Remove VLAN Header)	✗
New Entry		+

Egress Rate Limit

☐ Enabled

QoS Classifiers

☑ 8021p

☑ dscp

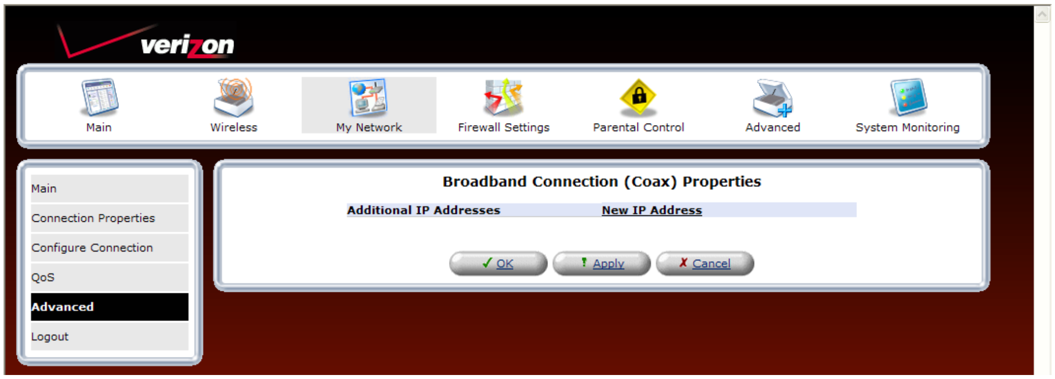
☐ port

For outgoing (Egress) packets you may enable a **Rate Limit** by checking the rate limit check box, and you may also enable the pass through of standard QoS classifiers. These are 802.1p, DSCP, and port tags. **Note that any changes to your egress setting will likely result in a disruption of your FiOS service.**

12.2.3.3 Advanced—Broadband Connection Coax

If you select **Advanced** in the left submenu of the **Broadband Connection (Coax) Properties** screen, the following screen appears.

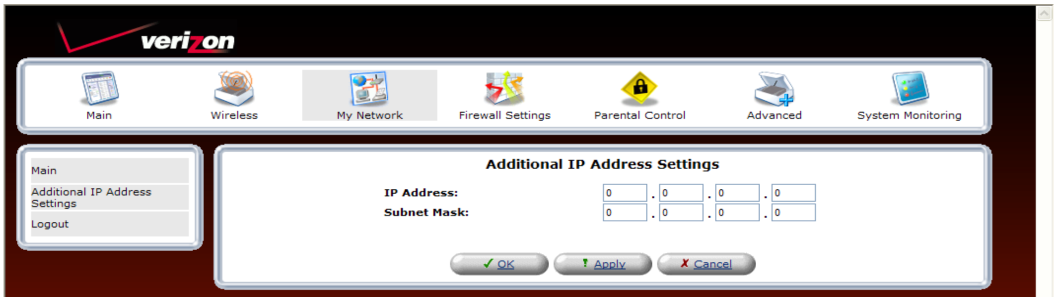
To add a new IP address, click the **New IP Address** link.



Broadband Connection (Coax) Properties

Additional IP Addresses	New IP Address

The following screen appear. Enter the desired IP Address and Subnet Mask in the fields provided. Then, click **Apply** to allow the settings to take effect.

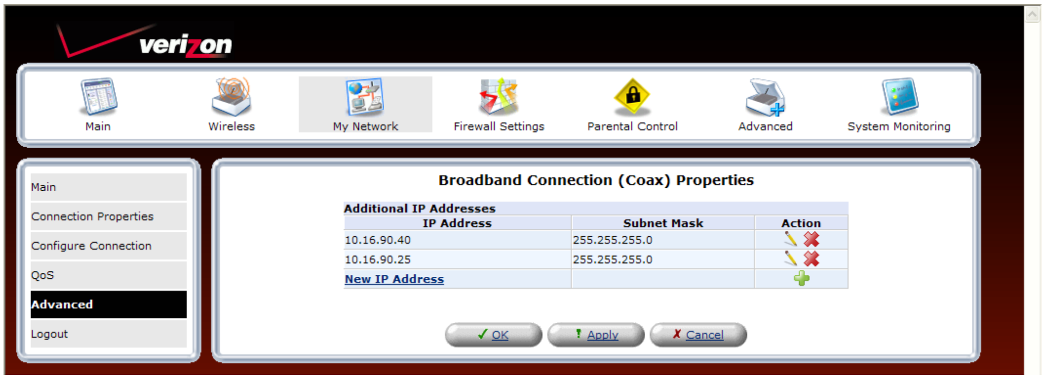


Additional IP Address Settings

IP Address: 0 . 0 . 0 . 0

Subnet Mask: 0 . 0 . 0 . 0

The entry will be added to the list of broadband connection IP addresses.



Broadband Connection (Coax) Properties

Additional IP Addresses

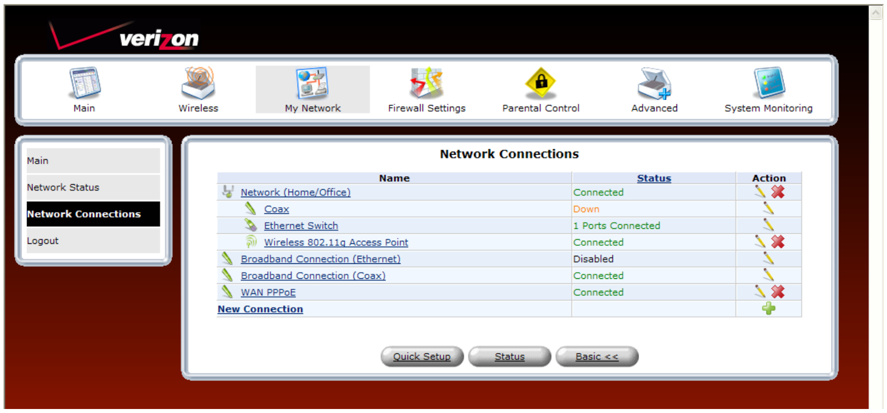
IP Address	Subnet Mask	Action
10.16.90.40	255.255.255.0	✎ ✗
10.16.90.25	255.255.255.0	✎ ✗
New IP Address		+

12.2.4 WAN PPPoE

WAN Point-to-Point Protocol over Ethernet (PPPoE) is a protocol used to connect the Router to the Internet. PPPoE enables Ethernet-networked computers to exchange information with computers on the Internet.

NOTE: The protocol used for your Internet connection is determined by Verizon. The Router is capable of automatically detecting the protocol used for your Internet connection.

If you are configuring your Router's protocol setting for WAN PPPoE, in the **Network Connections** screen, select the **WAN PPPoE** link.

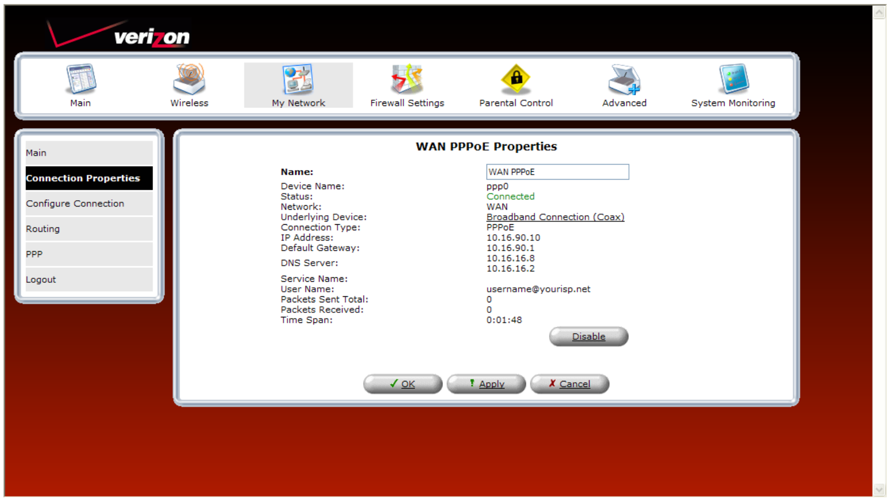


Network Connections

Name	Status	Action
Network (Home/Office)	Connected	✎ ✖
Coax	Down	✎
Ethernet Switch	1 Ports Connected	✎
Wireless 802.11g Access Point	Connected	✎ ✖
Broadband Connection (Ethernet)	Disabled	✎
Broadband Connection (Coax)	Connected	✎
WAN PPPoE	Connected	✎ ✖
New Connection		✚

The following screen will appear. View the details in this screen. If you change the name, click **Apply** to save the changes. Select the menu option in the left submenu to access the desired configuration page:

- Select **Configure Connection** to access the **WAN PPPoE Properties** screen.
- Select **Routing** to configure the Routing properties for your WAN PPPoE. Refer to section 15.21 for details on Routing.
- Select **PPP** to configure the Router's PPP settings.

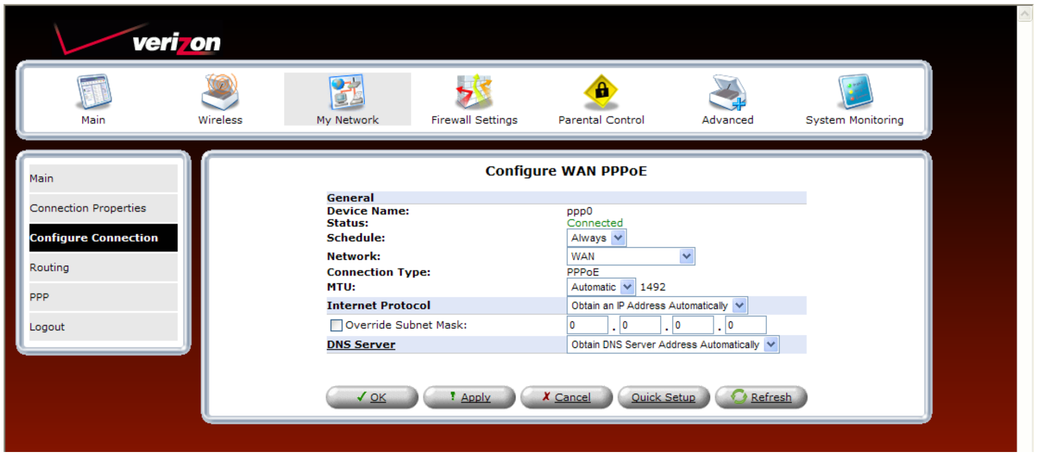


WAN PPPoE Properties

Name:	WAN PPPoE
Device Name:	ppp0
Status:	Connected
Network:	WAN
Underlying Device:	Broadband Connection (Coax)
Connection Type:	PPPoE
IP Address:	10.16.90.10
Default Gateway:	10.16.90.1
DNS Server:	10.16.16.8 10.16.16.2
Service Name:	
User Name:	username@yourisp.net
Packets Sent Total:	0
Packets Received:	0
Time Span:	0:01:48

Configure Connection—WAN PPPoE

To configure the WAN PPPoE properties, click **Configure Connection** in the left submenu of the **WAN PPPoE Properties** screen. The following screen appears. Enter the desired settings and click **Apply** to save the settings.



Configure WAN PPPoE

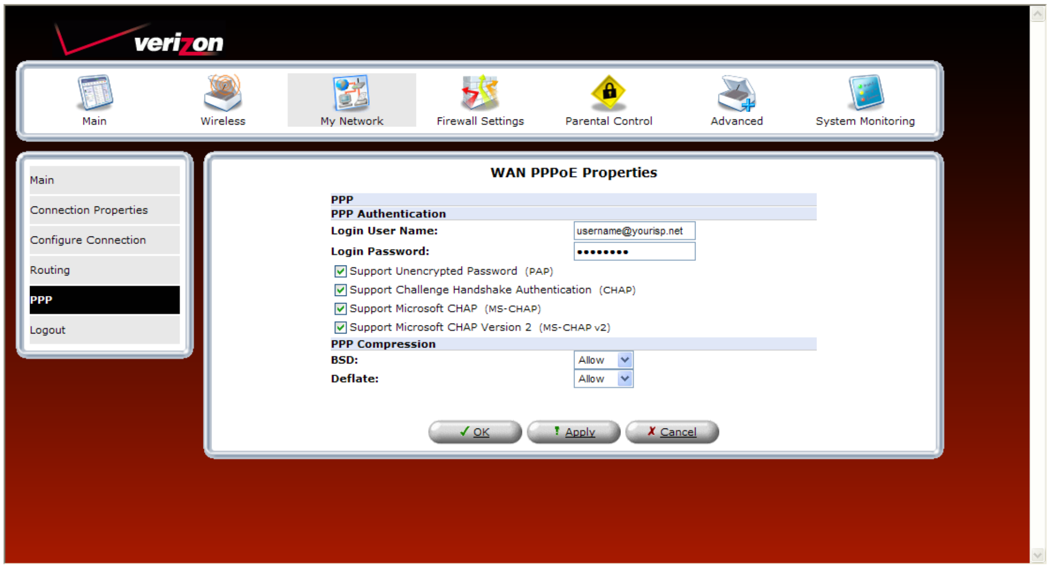
General

Device Name:	ppp0
Status:	Connected
Schedule:	Always
Network:	WAN
Connection Type:	PPPoE
MTU:	Automatic 1492
Internet Protocol	Obtain an IP Address Automatically
□ Override Subnet Mask:	0 . 0 . 0 . 0
DNS Server	Obtain DNS Server Address Automatically

PPP—WAN PPPoE

NOTE: The settings in the screen are provided by Verizon. Do not change the settings unless instructed by Verizon.

To configure the Router's PPP properties, click **PPP** in the left submenu screen. The following screen appears. If you change the settings in this screen, click **Apply** to save the settings.



WAN PPPoE Properties

PPP

PPP Authentication

Login User Name:	username@yourisp.net
Login Password:	••••••••

☑ Support Unencrypted Password (PAP)
☑ Support Challenge Handshake Authentication (CHAP)
☑ Support Microsoft CHAP (MS-CHAP)
☑ Support Microsoft CHAP Version 2 (MS-CHAP v2)

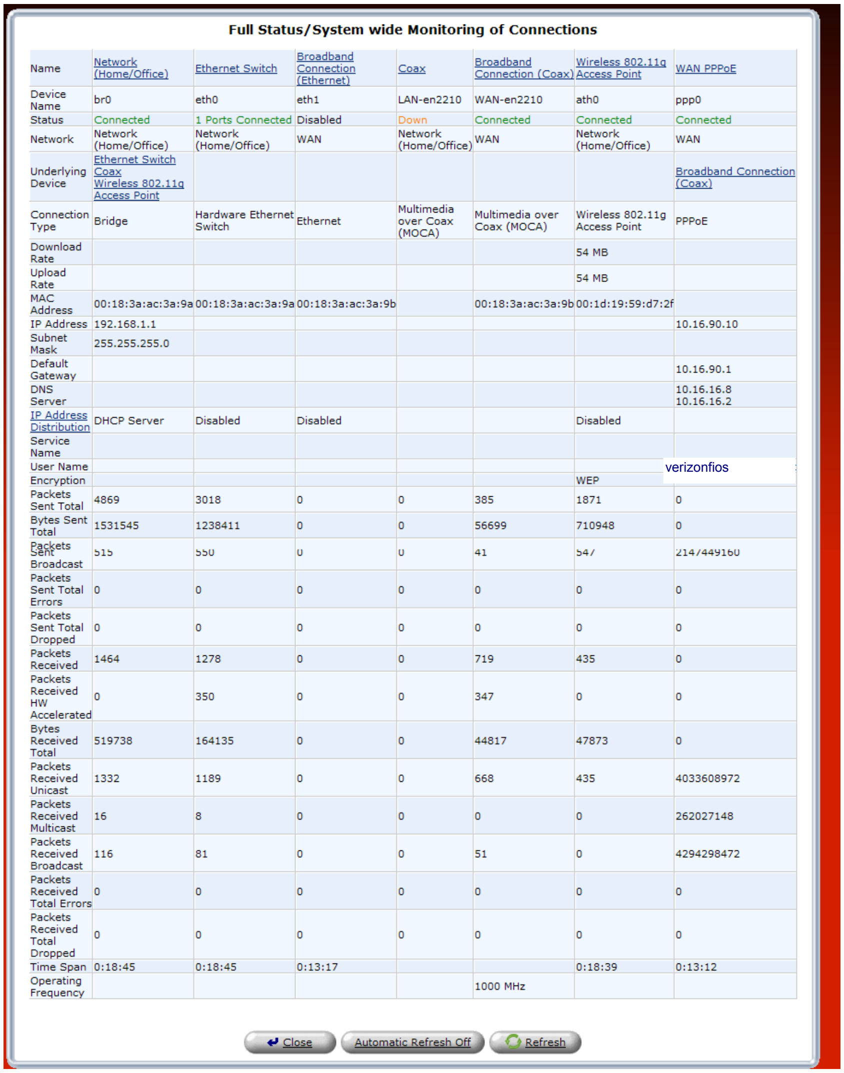
PPP Compression

BSD:	Allow
Deflate:	Allow

12.2.5 Status

To view the status of the Router's connections, in the **Network Connections** screen, click the **Status** button. The following screen will appear. This screen displays connection information for devices connected to your Router. At this screen, do any the following:

- Turn off Automatic Refresh by clicking the **Automatic Refresh Off** button. When Automatic Refresh is enabled, the screen will be updated automatically to display the most current statistics.
- Manually refresh this screen by clicking the **Refresh** button.
- Click the links in this screen to access the Router's connection settings.
- Click **Close** to return to the **Network Connections** screen.



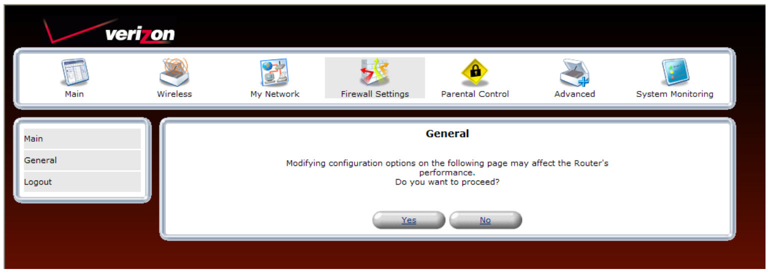
Full Status/System wide Monitoring of Connections

Name	Network (Home/Office)	Ethernet Switch	Broadband Connection (Ethernet)	Coax	Broadband Connection (Coax)	Wireless 802.11g Access Point	WAN PPPoE
Device Name	br0	eth0	eth1	LAN-en2210	WAN-en2210	ath0	ppp0
Status	Connected	1 Ports Connected	Disabled	Down	Connected	Connected	Connected
Network	Network (Home/Office)	Network (Home/Office)	WAN	Network (Home/Office)	WAN	Network (Home/Office)	WAN
Underlying Device	Ethernet Switch Coax Wireless 802.11g Access Point						Broadband Connection (Coax)
Connection Type	Bridge	Hardware Ethernet Switch	Ethernet	Multimedia over Coax (MOCA)	Multimedia over Coax (MOCA)	Wireless 802.11g Access Point	PPPoE
Download Rate						54 MB	
Upload Rate						54 MB	
MAC Address	00:18:3a:ac:3a:9a	00:18:3a:ac:3a:9a	00:18:3a:ac:3a:9b		00:18:3a:ac:3a:9b	00:1d:19:59:d7:2f	
IP Address	192.168.1.1						10.16.90.10
Subnet Mask	255.255.255.0						
Default Gateway							10.16.90.1
DNS Server							10.16.16.8 10.16.16.2
IP Address Distribution	DHCP Server	Disabled	Disabled			Disabled	
Service Name							
User Name							verizonfios
Encryption						WEP	
Packets Sent Total	4869	3018	0	0	385	1871	0
Bytes Sent Total	1531545	1238411	0	0	56699	710948	0
Packets Sent Broadcast	515	550	0	0	41	547	2147449160
Packets Sent Total Errors	0	0	0	0	0	0	0
Packets Sent Total Dropped	0	0	0	0	0	0	0
Packets Received	1464	1278	0	0	719	435	0
Packets Received HW Accelerated	0	350	0	0	347	0	0
Bytes Received Total	519738	164135	0	0	44817	47873	0
Packets Received Unicast	1332	1189	0	0	668	435	4033608972
Packets Received Multicast	16	8	0	0	0	0	262027148
Packets Received Broadcast	116	81	0	0	51	0	4294298472
Packets Received Total Errors	0	0	0	0	0	0	0
Packets Received Total Dropped	0	0	0	0	0	0	0
Time Span	0:18:45	0:18:45	0:13:17			0:18:39	0:13:12
Operating Frequency					1000 MHz		

13. FIREWALL SETTINGS

The **Firewall Settings** section provide access to all your router security functions. Click **Firewall Settings** in the top navigation menu to enter the settings menu.

CAUTION: Only Advanced Users should access the firewall settings.



General

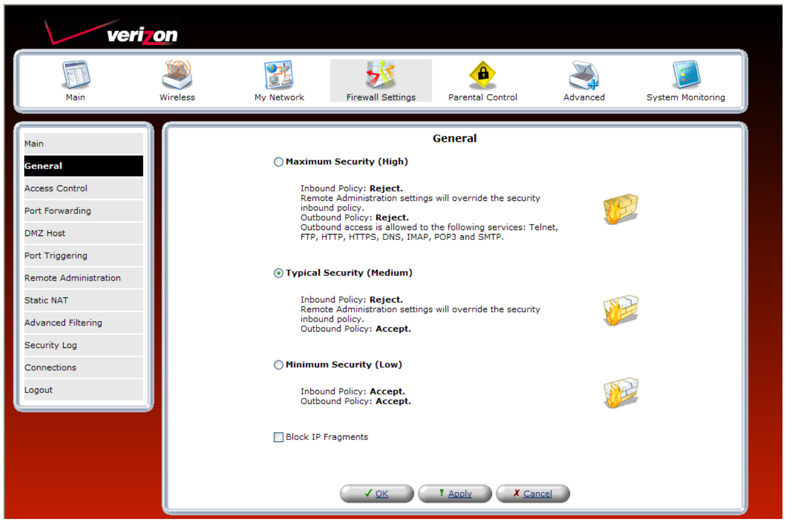
Modifying configuration options on the following page may affect the Router's performance.
Do you want to proceed?

13.1 General Firewall Security Settings

This section explains how to configure your Router's firewall security features. The Router's firewall security settings allow you to reduce the risk of unauthorized access to your network by prohibiting certain types of inbound and outbound network traffic and by allowing you to configure specific firewall rules.

IMPORTANT: If you need help, click **Main** in the top navigation menu to go to the home page. In the **Quick Links** section of the home page, click **Verizon Help**. Clicking this link takes you to Verizon's Online Help site, where you can access additional information about your Router.

To change your firewall security level, click the option button next to the desired security setting. Next, click **Apply** to allow the changes to take effect.



General

○ **Maximum Security (High)**

Inbound Policy: **Reject.**
Remote Administration settings will override the security inbound policy.
Outbound Policy: **Reject.**
Outbound access is allowed to the following services: Telnet, FTP, HTTP, HTTPS, DNS, IMAP, POP3 and SMTP.

● **Typical Security (Medium)**

Inbound Policy: **Reject.**
Remote Administration settings will override the security inbound policy.
Outbound Policy: **Accept.**

○ **Minimum Security (Low)**

Inbound Policy: **Accept.**
Outbound Policy: **Accept.**

□ Block IP Fragments

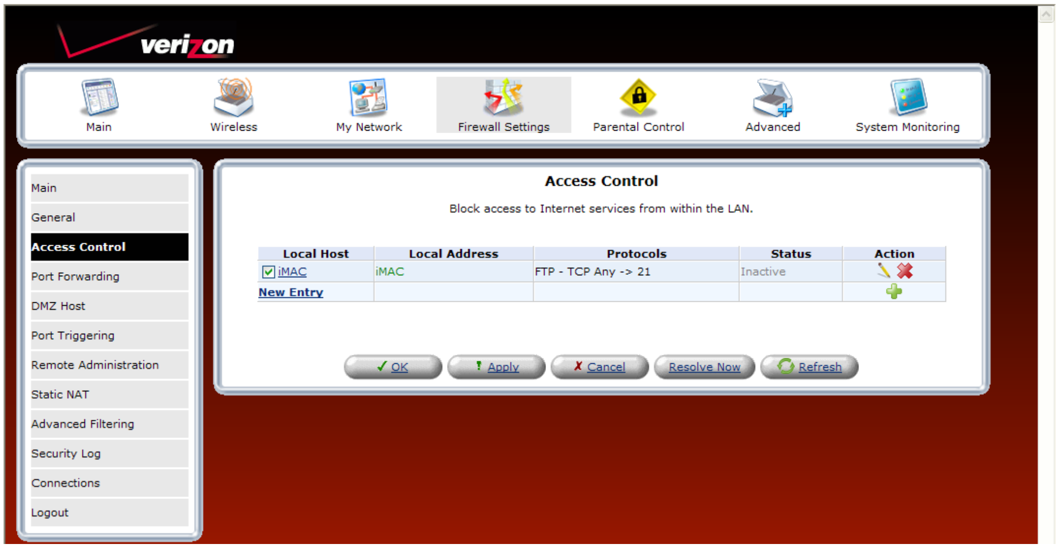
General Firewall Settings	
Maximum Security (High)	High security level only allows basic Internet functionality. Only Mail, News, Web, FTP, VoIP/SIP and IPSEC traffic is allowed. All other traffic is prohibited.
Typical Security (Medium)	Like High security, Medium security only allows basic Internet functionality by default. However, Medium security allows customization of Network Address Translation (NAT) so you can enable certain types of traffic. This is the factory default security level.
Minimum Security (Low)	Low security setting will allow all traffic except for known malicious attacks. With Low security, your Router is visible to other computers on the Internet.
Block IP Fragments	This option can prevent hackers from using fragmented data packets to possibly sabotage your network. Note: Some VPN and UDP services use IP fragments, and this feature may need to be disabled. If you have questions about this feature, check with Verizon technical support. It is disabled by default.

13.2 Access Control

If you select **Firewall Settings** in the top navigation menu and then select **Access Control** in the left submenu, the following screen will appear.

Access Control is used to block specific computers within the local network (or even the whole network) from accessing certain services on the Internet. For example, one computer can be prohibited from surfing the Internet, another computer from transferring files using FTP, and the whole network from receiving incoming E-mail. Access control defines restrictions on the types of requests that can pass from the local network out to the Internet, and thus may block traffic flowing in both directions.

To add an Access Control rule, click the **New Entry** link or, alternatively, click the plus icon.



Access Control

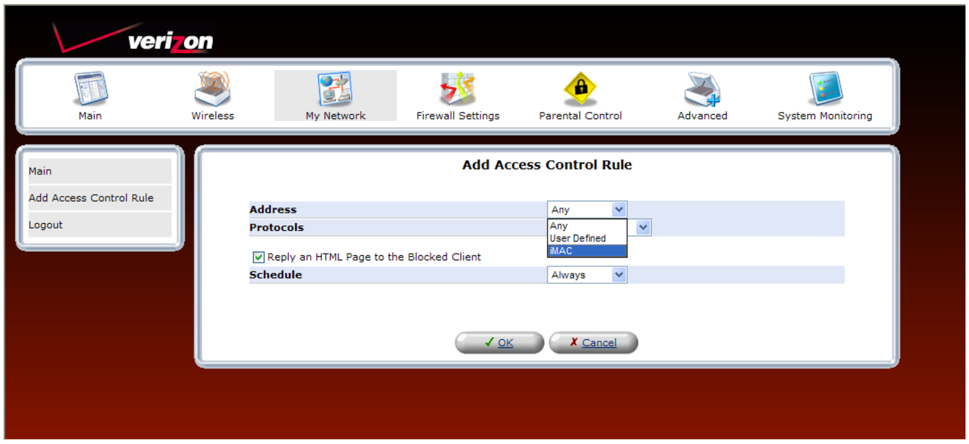
Block access to Internet services from within the LAN.

Local Host	Local Address	Protocols	Status	Action
☑ iMAC	iMAC	FTP - TCP Any -> 21	Inactive	✎ ✗
New Entry				+

Adding a new entry will allow you to choose a device from the known network devices (Ex. Your computers) or enter a MAC address of a new device. Then you must choose the Protocol (or service) to be blocked.

13.2.1 Selecting an Address

From the **Address** drop-down list, select the desired computer to which you want this rule applied.



Add Access Control Rule

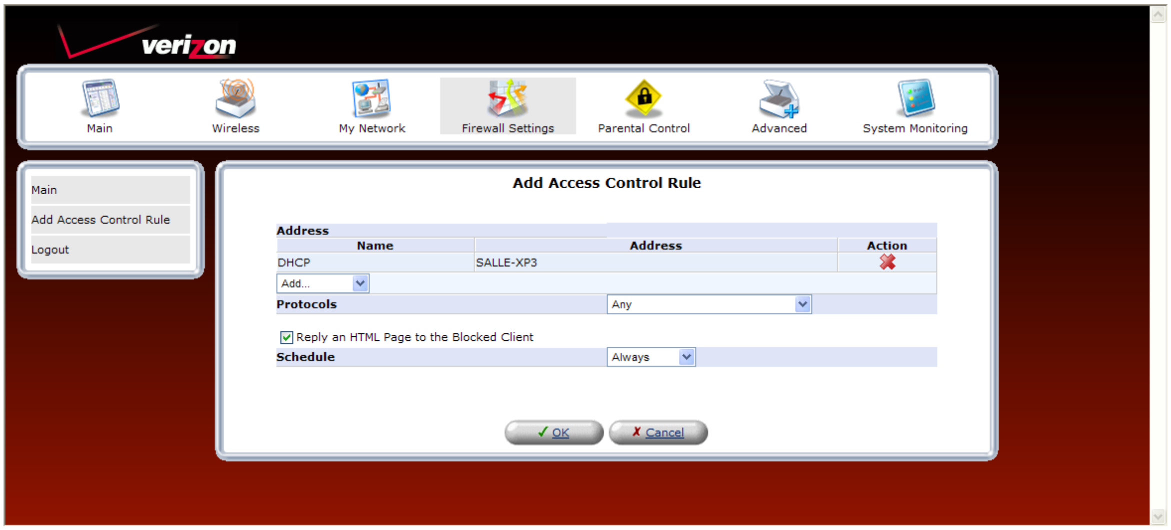
Address	Any Any User Defined iMAC
Protocols	

☑ Reply an HTML Page to the Blocked Client

Schedule	Always

If your computer or device is not listed in the drop-down, you may create a new Network Object manually by choosing the **User Defined** option. Please see the Network Object section for more details on setting up a network object (Section 15.11).

After you have selected a computer, the following screen will appear. Next, proceed to section 13.2.2 to select a protocol.



Add Access Control Rule

Address

Name	Address	Action
DHCP	SALLE-XP3	✗
Add...		

Protocols	Any

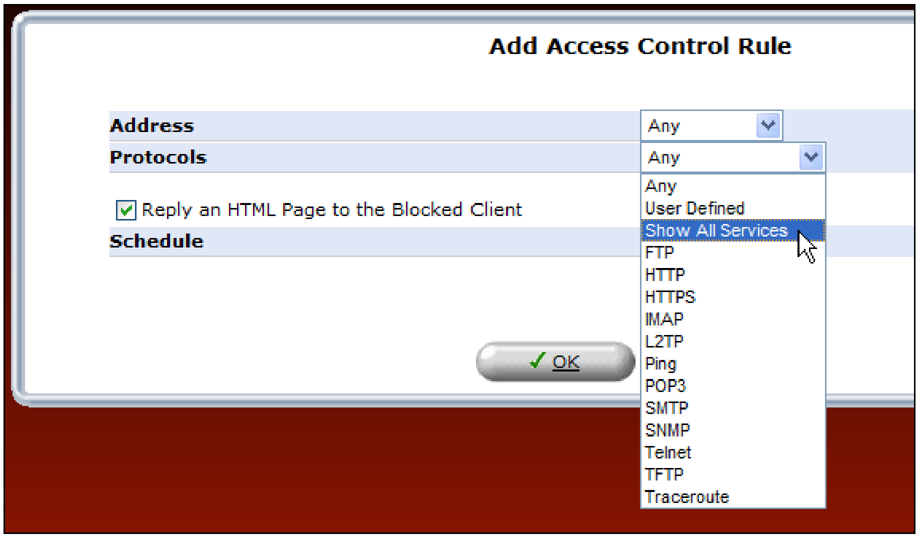
☑ Reply an HTML Page to the Blocked Client

Schedule	Always

13.2.2 Selecting an Protocol

From the **Protocols** drop-down list, select the desired option that you want to prohibit the computer from using. To notify the user of this blockage via an HTML (Web) page, click the check box (a check mark will appear in the box). Note: This feature only works for HTTP services.

To see more than the basic listed services choose **Show All Services** from the **Protocols** drop-down. This will show you many pre-defined services such as games and IM clients.



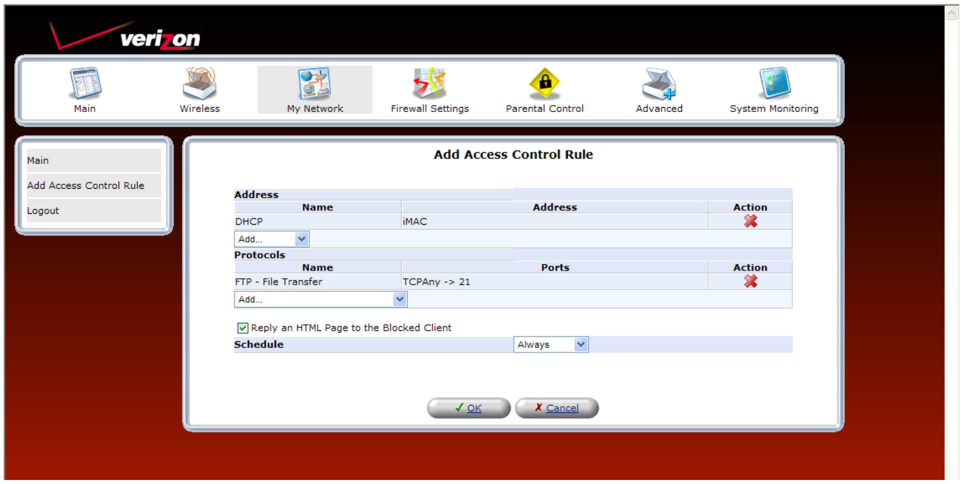
Add Access Control Rule

Address	Any
Protocols	Any

☑ Reply an HTML Page to the Blocked Client

Schedule

After you have selected the protocol, the following screen will appear. Proceed to section 15.19 to configure a schedule rule.



Add Access Control Rule

Address

Name	Address	Action
DHCP	iMAC	✗
Add...		

Protocols

Name	Ports	Action
FTP - File Transfer	TCPAny -> 21	✗
Add...		

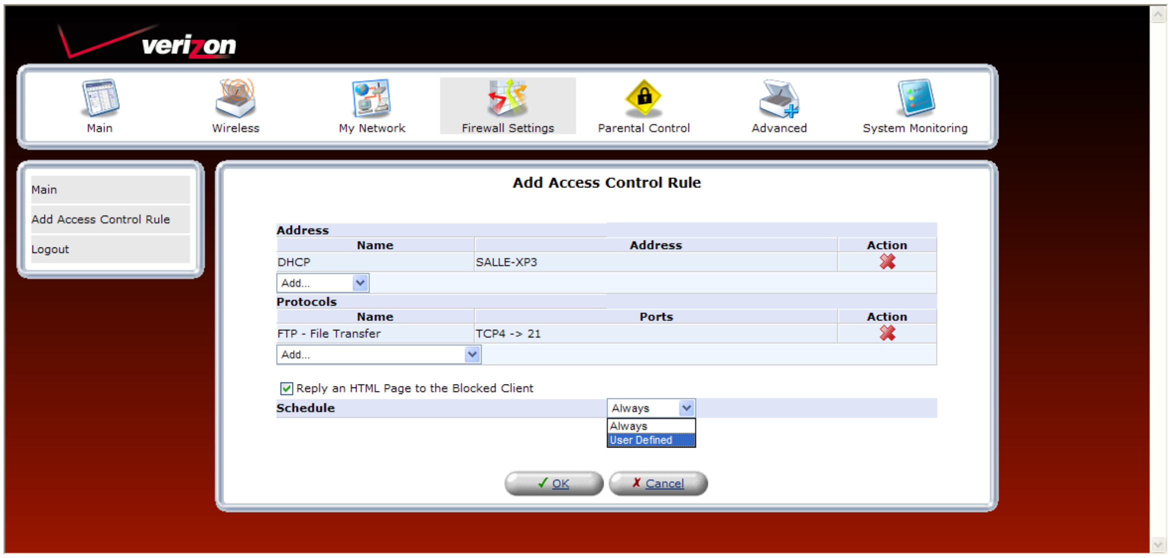
☑ Reply an HTML Page to the Blocked Client

Schedule: Always

13.2.3 Configuring a Schedule Rule

After you have selected the protocol, the following screen will appear. If desired, select a schedule from the **Schedule** drop-down menu. If you select **User Defined**, refer to the procedure explained in section 15.19, "Scheduler Rules," to set up a schedule rule. Otherwise, select **Always**, and then click **OK** to continue.

- Select **Always** to allow the rule to be active all the time.
- Select **User Defined** to allow the rule to be active only at certain time, as defined by the rules you set up.



Add Access Control Rule

Address

Name	Address	Action
DHCP	SALLE-XP3	✗
Add...		

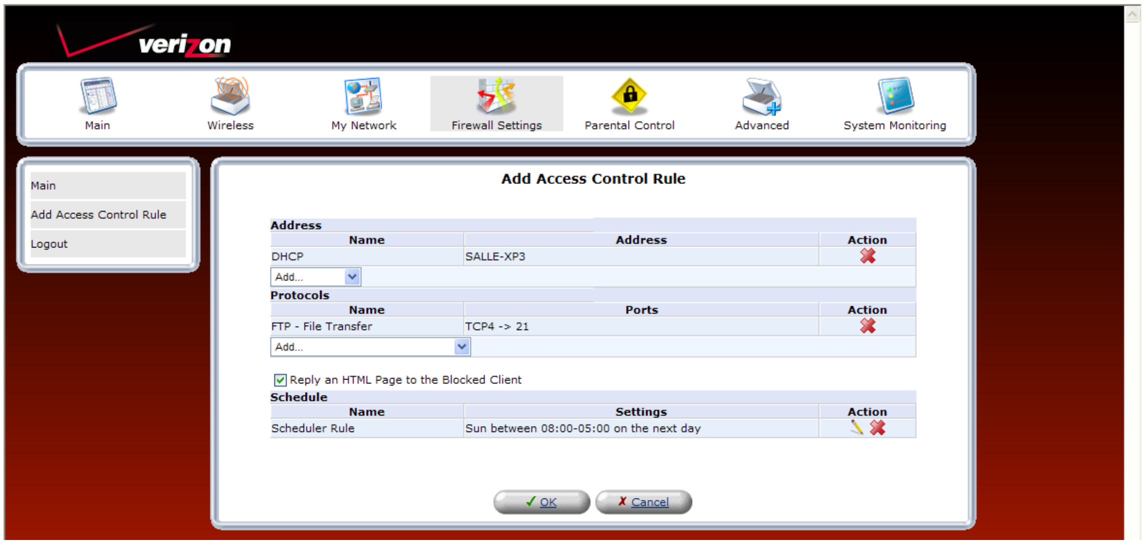
Protocols

Name	Ports	Action
FTP - File Transfer	TCP4 -> 21	✗
Add...		

☑ Reply an HTML Page to the Blocked Client

Schedule Always (Always / User Defined)

If you clicked **OK** in the preceding screen, the following screen will appear. Click **OK** to save the settings.



Add Access Control Rule

Address

Name	Address	Action
DHCP	SALLE-XP3	✗
Add...		

Protocols

Name	Ports	Action
FTP - File Transfer	TCP4 -> 21	✗
Add...		

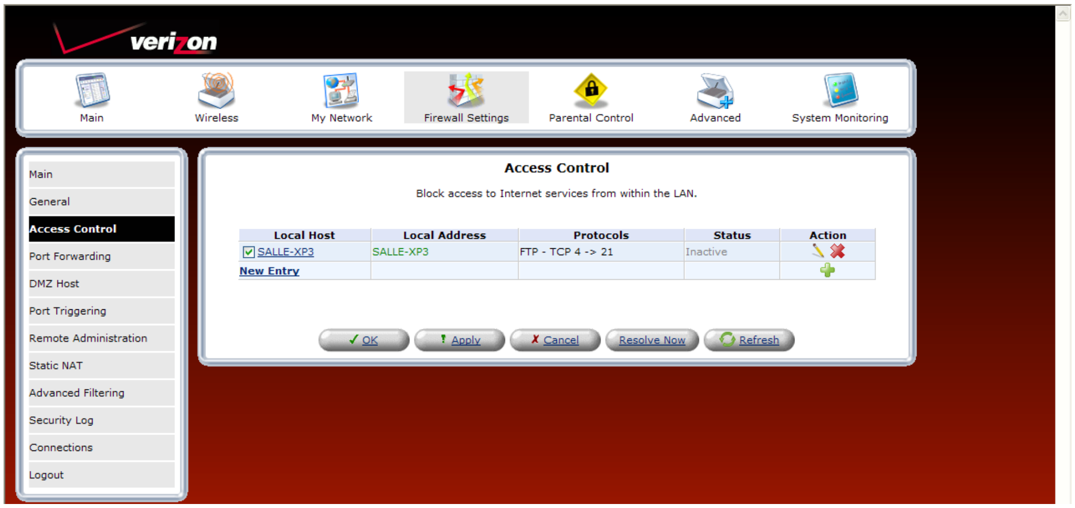
☑ Reply an HTML Page to the Blocked Client

Schedule

Name	Settings	Action
Scheduler Rule	Sun between 08:00-05:00 on the next day	✎ ✗

13.2.4 Completing the Access Control Rule Configuration

If you clicked **OK**, the following screen will appear. The rule has been added to the list of security rules. To disable the security rule for an entry, click the adjacent check box, and then click **Apply**. To add additional access control rules, click the **New Entry** link.



Access Control

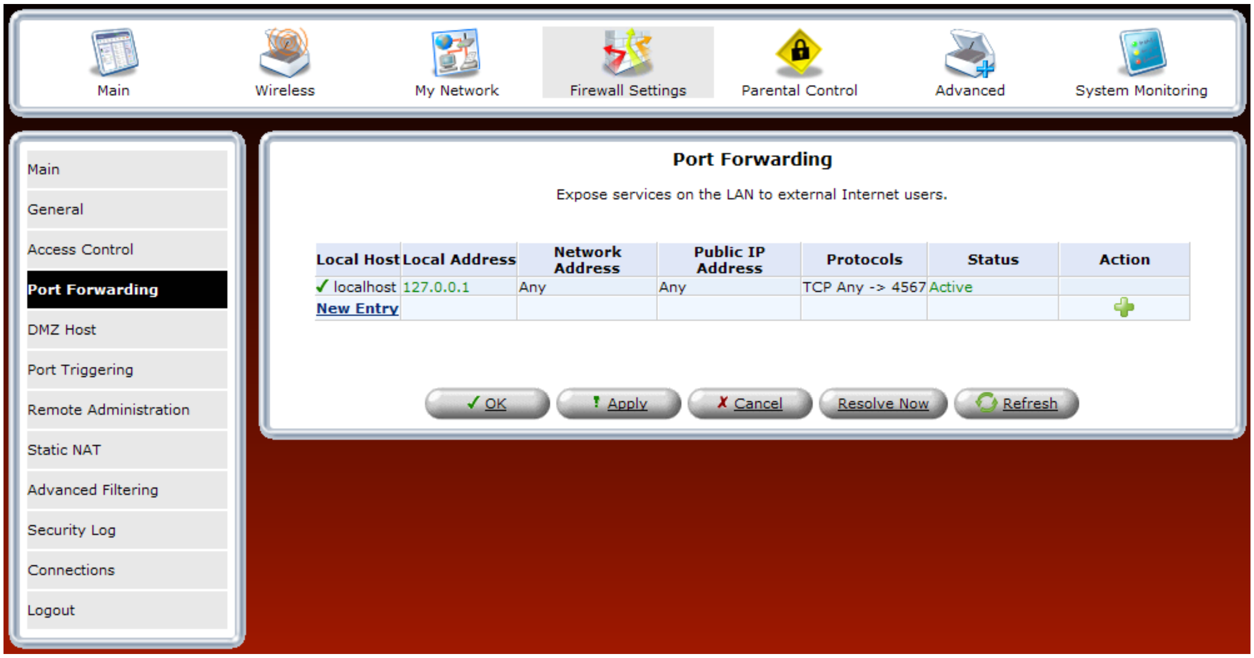
Block access to Internet services from within the LAN.

Local Host	Local Address	Protocols	Status	Action
☑ SALLE-XP3	SALLE-XP3	FTP - TCP 4 -> 21	Inactive	✎ ✖
New Entry				+

13.3 Port Forwarding

If you select **Firewall Settings** in the top navigation menu and then select **Port Forwarding** in the left submenu, the following screen will appear.

By default the Router blocks all external users from connecting to your network. However, you can configure specific applications on your network to be accessible from the Internet. Port Forwarding allows the Router to enable applications (Games, Webcams, IM & Others) by opening a tunnel between remote (Internet) computers and a specific device port inside your local area network (LAN). Services on the LAN will be exposed to external Internet users.



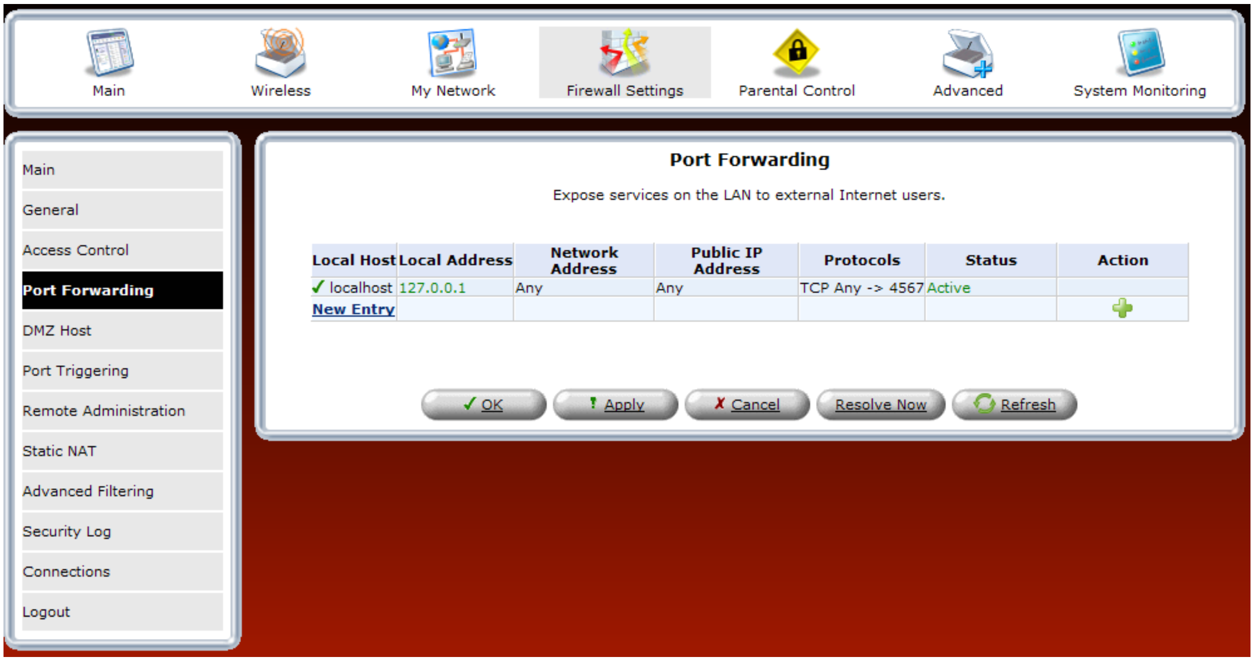
Port Forwarding

Expose services on the LAN to external Internet users.

Local Host	Local Address	Network Address	Public IP Address	Protocols	Status	Action
✓ localhost	127.0.0.1	Any	Any	TCP Any -> 4567	Active	
New Entry						+

13.3.1 Setting Up a Predefined Port Forwarding Rule

To set up a predefined port forwarding rule, at the **Security** screen, click the **New Entry** link.



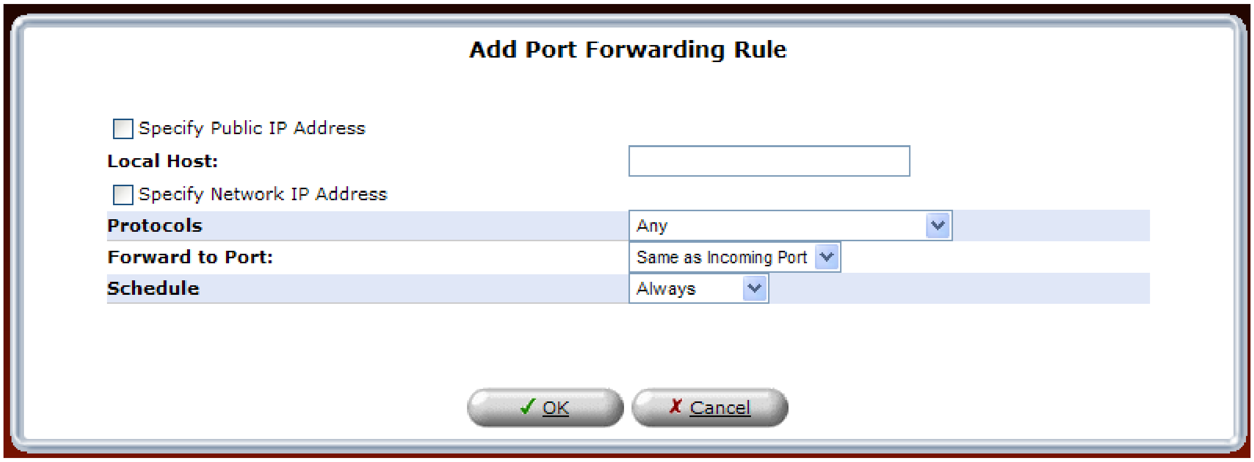
Port Forwarding

Expose services on the LAN to external Internet users.

Local Host	Local Address	Network Address	Public IP Address	Protocols	Status	Action
✓ localhost	127.0.0.1	Any	Any	TCP Any -> 4567	Active	
New Entry						✚

If you clicked **New Entry,** the following screen will appear. In the **Local Host** field, enter a local host name or IP address of the computer providing the service. If you will use a public IP address, click the check box next to **Specify Public IP Address.**

NOTE: Only one computer can be assigned to provide a specific service or application. If you use public IP addresses in your Router's configuration, you must first obtain them from Verizon.



Add Port Forwarding Rule

☐ Specify Public IP Address

Local Host:	

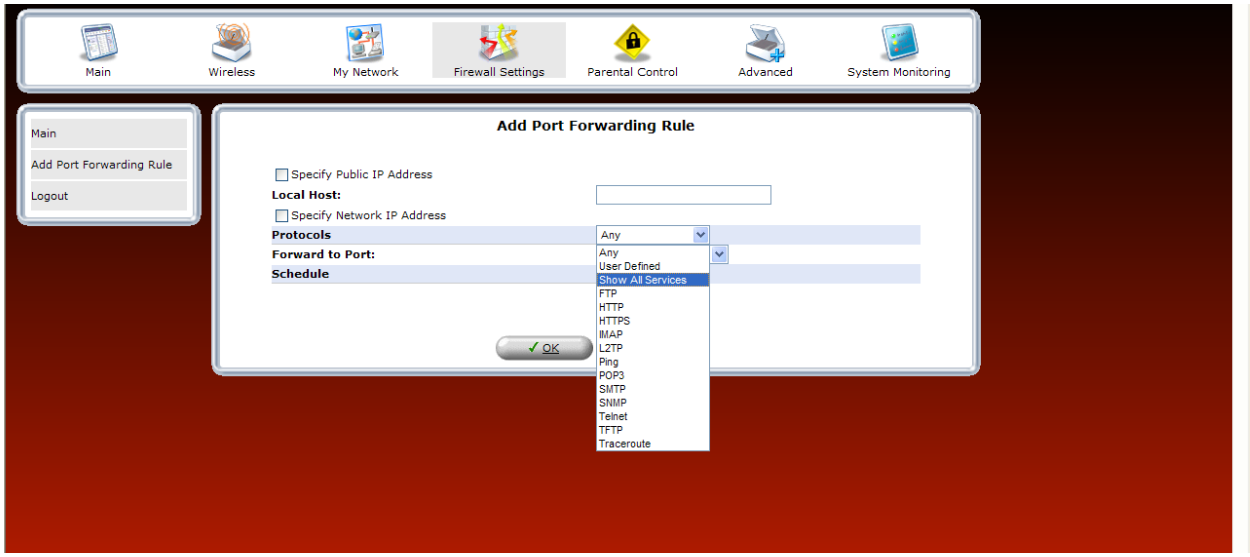
☐ Specify Network IP Address

Protocols	Any
Forward to Port:	Same as Incoming Port
Schedule	Always

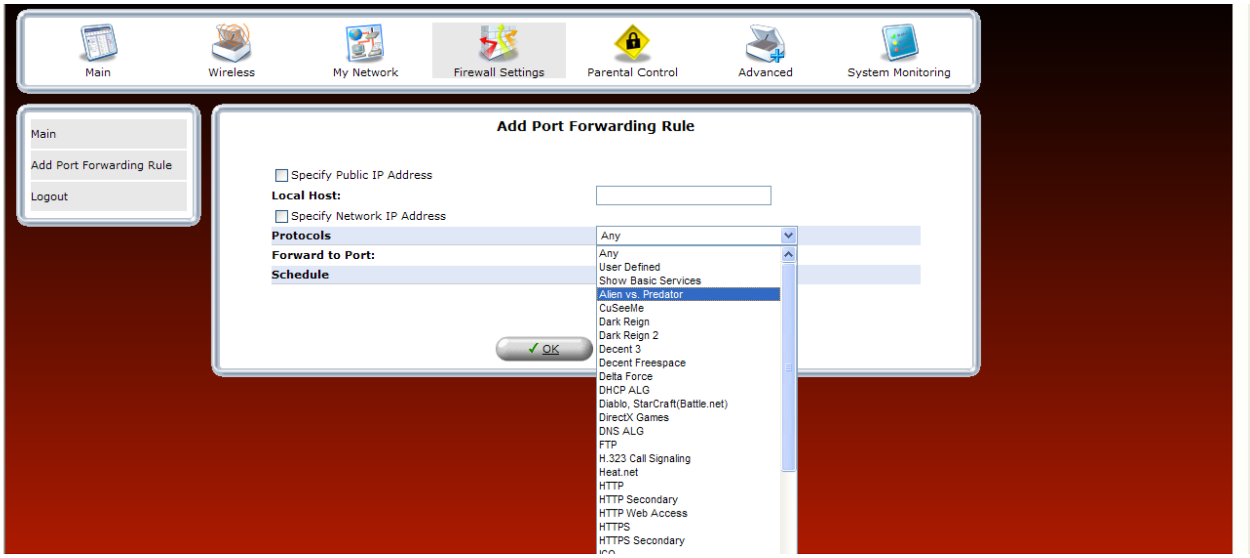
Next, select a predefined service from the **Protocol** drop-down list.

NOTE: For your convenience, the Router provides predefined protocols for applications, games, and VPN-specific programs.

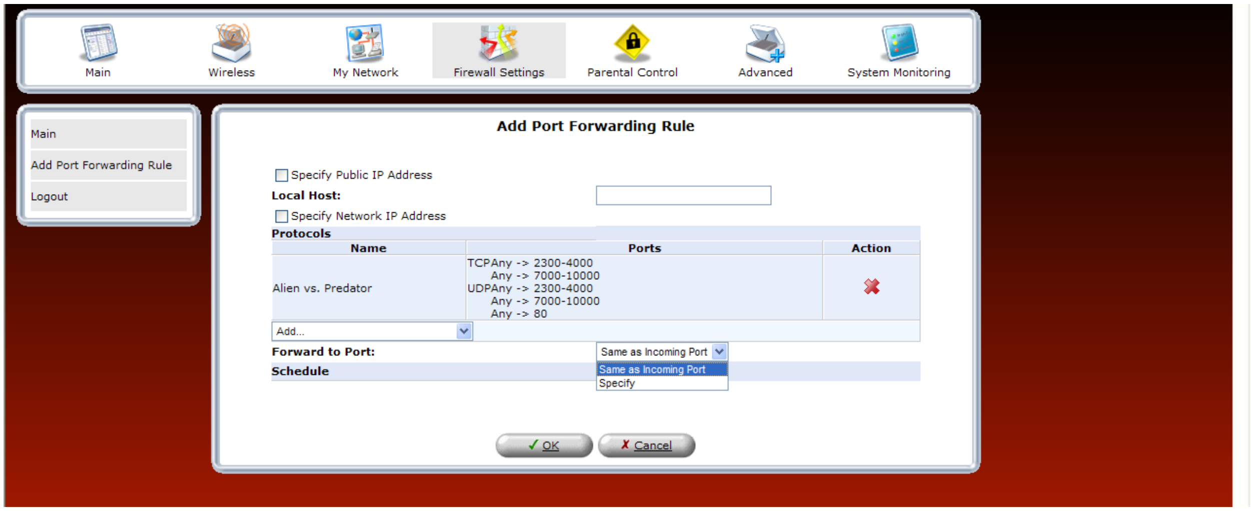
The screen below displays the protocols of basic services provided in the Router. If you select **Show All Services** from the **Protocol** drop-down list, all available services will be displayed in the drop-down list.



Select a predefined service from the protocol drop-down list.



After you have selected a predefined service, the following screen will appear. Next select an option from the **Forward to Port** drop-down list to indicate the port to which traffic will be forwarded.



Add Port Forwarding Rule

□ Specify Public IP Address

Local Host:

□ Specify Network IP Address

Protocols

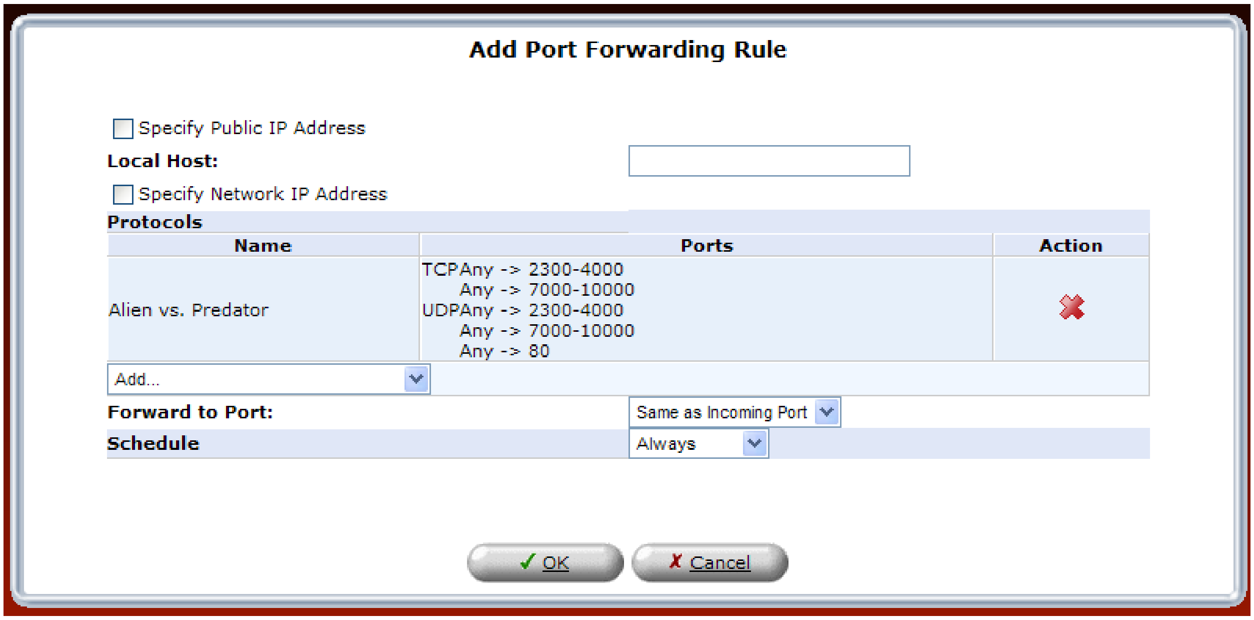
Name	Ports	Action
Alien vs. Predator	TCPAny -> 2300-4000 Any -> 7000-10000 UDPAny -> 2300-4000 Any -> 7000-10000 Any -> 80	✖

Add...

Forward to Port: Same as Incoming Port (Same as Incoming Port / Specify)

Schedule

If you selected **Same as Incoming Port** from the **Forward to Port** drop-down list, the following screen will appear. Click **OK** to continue.



Add Port Forwarding Rule

□ Specify Public IP Address

Local Host:

□ Specify Network IP Address

Protocols

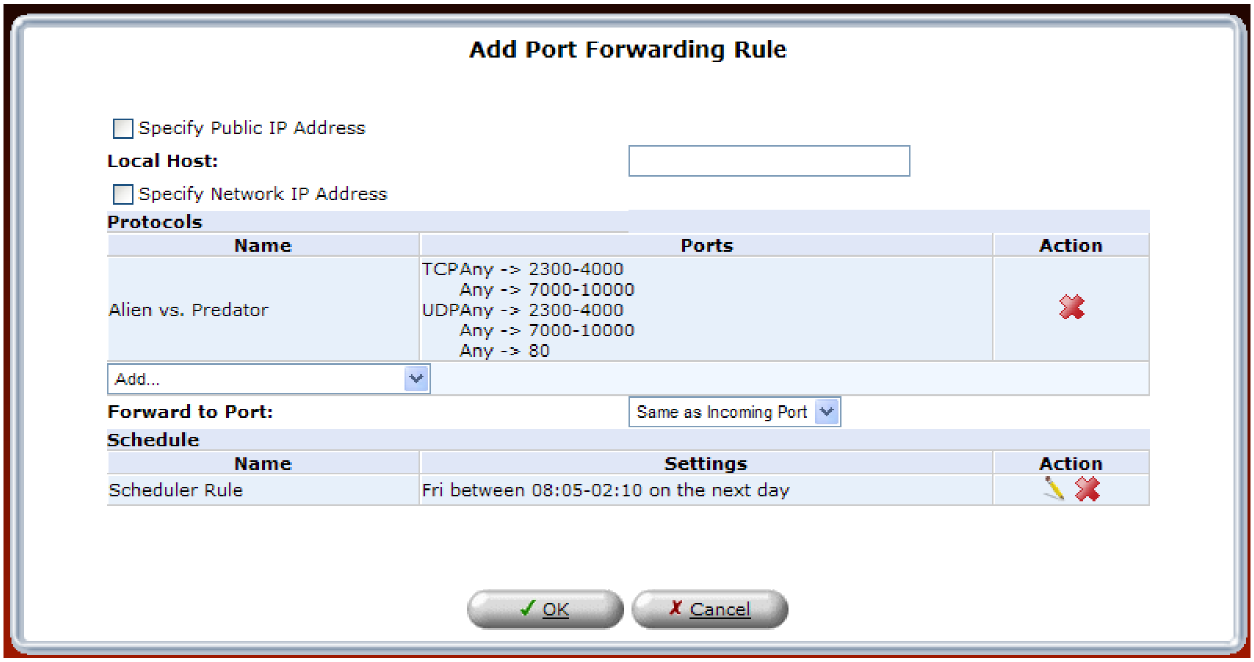
Name	Ports	Action
Alien vs. Predator	TCPAny -> 2300-4000 Any -> 7000-10000 UDPAny -> 2300-4000 Any -> 7000-10000 Any -> 80	✖

Add...

Forward to Port: Same as Incoming Port

Schedule Always

Next, set up a schedule rule using the instructions explained in section 15.19 “Configuring a Schedule.” After you have set up a schedule, enter the address of the local Host, and then click **OK** to save the settings.



Add Port Forwarding Rule

□ Specify Public IP Address

Local Host: [ ]

□ Specify Network IP Address

Protocols

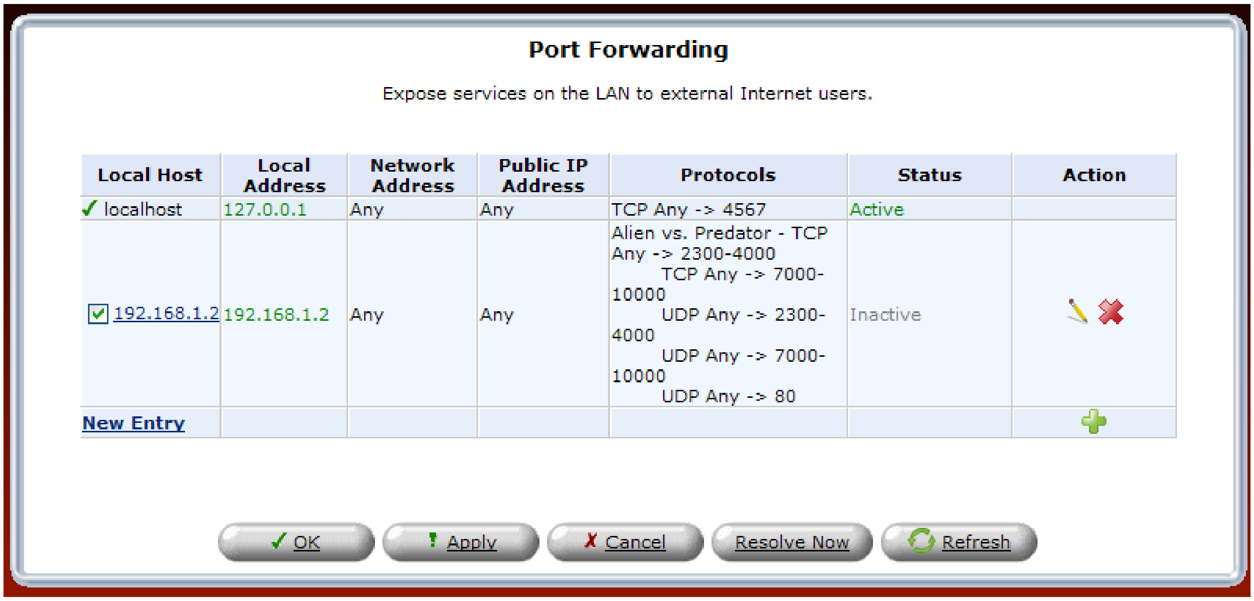
Name	Ports	Action
Alien vs. Predator	TCPAny -> 2300-4000 Any -> 7000-10000 UDPAny -> 2300-4000 Any -> 7000-10000 Any -> 80	✗
Add...		

Forward to Port: Same as Incoming Port

Schedule

Name	Settings	Action
Scheduler Rule	Fri between 08:05-02:10 on the next day	✎ ✗

If you clicked **OK** the following screen will appear. The predefined port forwarding rule has been assigned.



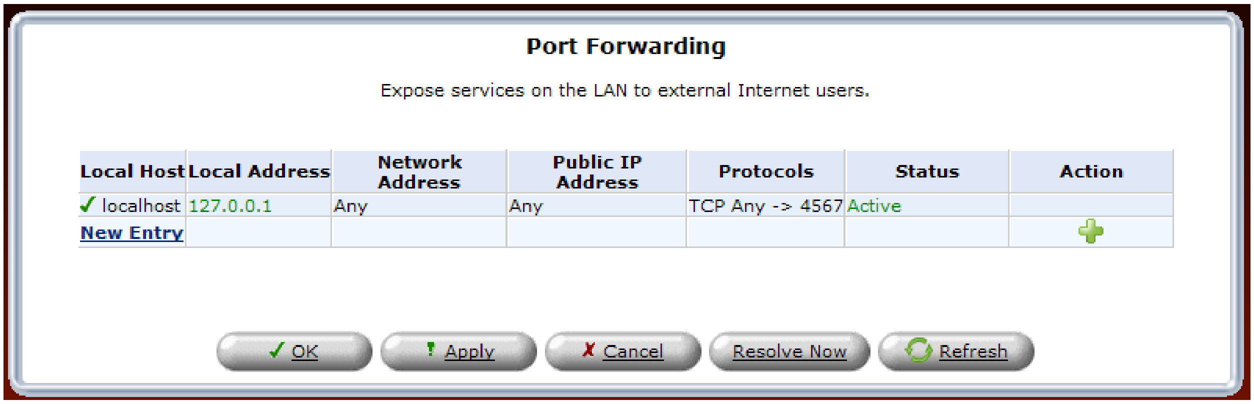
Port Forwarding

Expose services on the LAN to external Internet users.

Local Host	Local Address	Network Address	Public IP Address	Protocols	Status	Action
✓ localhost	127.0.0.1	Any	Any	TCP Any -> 4567	Active	
☑ 192.168.1.2	192.168.1.2	Any	Any	Alien vs. Predator - TCP Any -> 2300-4000 TCP Any -> 7000-10000 UDP Any -> 2300-4000 UDP Any -> 7000-10000 UDP Any -> 80	Inactive	✎ ✗
New Entry						+

13.3.2 Setting Up a User Defined Port Forwarding Rule

To set up a user-defined port forwarding rule, in the **Security** screen, click the **New Entry** link.



Port Forwarding

Expose services on the LAN to external Internet users.

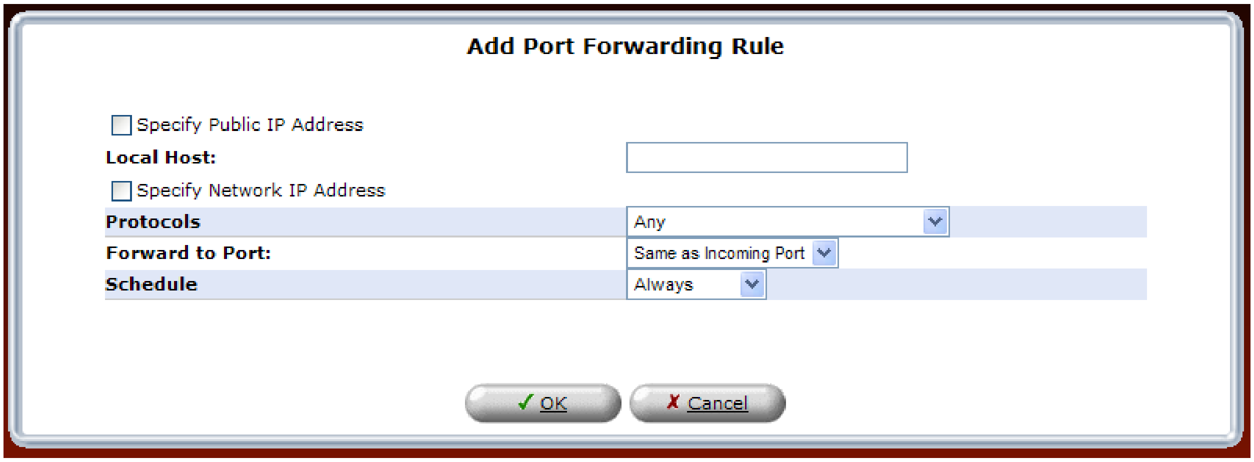
Local Host	Local Address	Network Address	Public IP Address	Protocols	Status	Action
✓ localhost	127.0.0.1	Any	Any	TCP Any -> 4567	Active	
New Entry						✚

- Specify the local computer that the port forwarding rule will apply to. This is done in the **Local Host** field. The field will accept either your computer name (the NetBios name; for example DADS-PC) or the computer IP address. These values can be found on your **My Network page.**

- If you are setting up a NAT/NAPT rule you must also specify the public IP address that data will be coming in on. Check the **Specify Public IP Address** check-box and enter a specific external IP address such as the WAN IP address of the router or a Static NAT IP address.

- Optionally you can specify a remote network (to forward packets to (this is a network that it outside the control of your Router). This is common in a small business or advanced configuration that uses multiple routers. Select the **Specify Network IP Address** check-box if you would like to apply this rule to send packets to a host IP address outside the local network (such as a remote gaming server). The screen will refresh and present you with a field in which to insert this IP address.

NOTE: Only one computer can be assigned to provide a specific service or application. If you use public IP addresses in your Router's configuration, you must first obtain them from Verizon.



Add Port Forwarding Rule

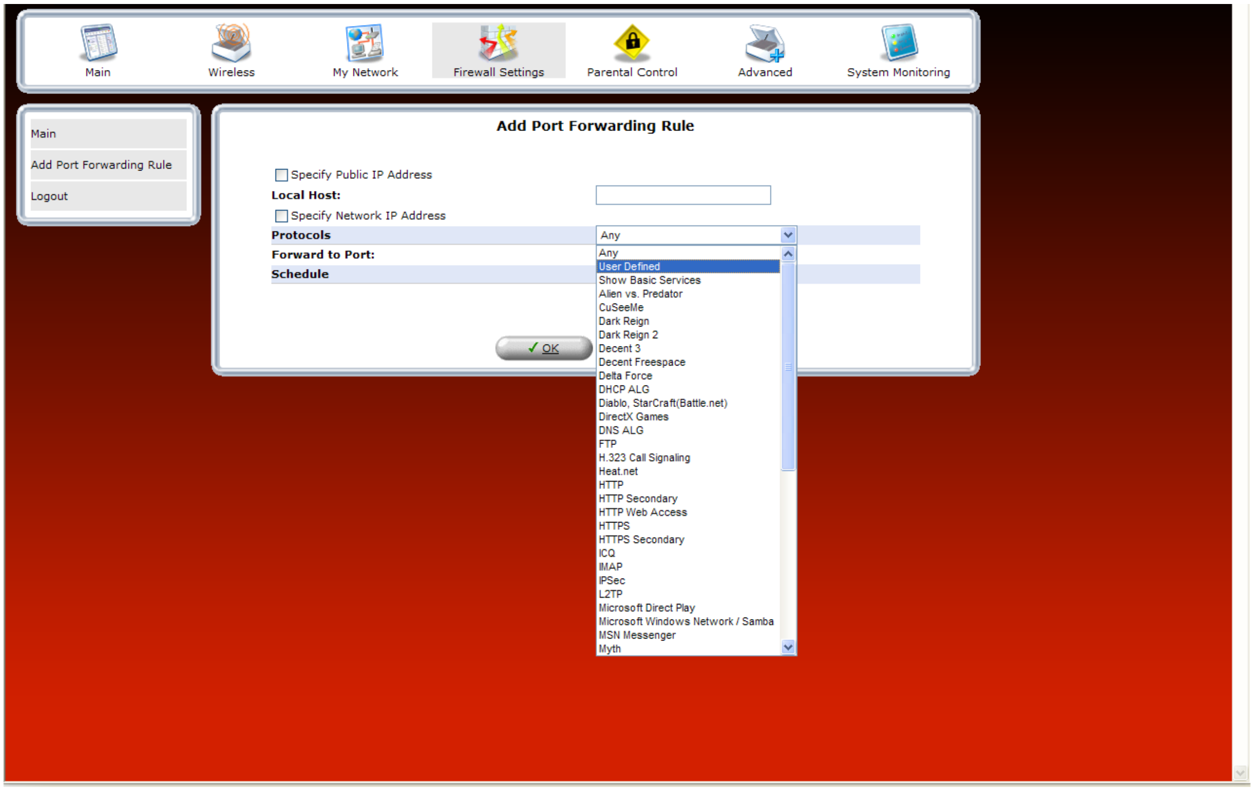
☐ Specify Public IP Address

Local Host:	

☐ Specify Network IP Address

Protocols	Any
Forward to Port:	Same as Incoming Port
Schedule	Always

Next you must choose the protocol that you want to forward. A large list is provided of many common applications. If you need to define your own select **User Defined.**



Add Port Forwarding Rule

☐ Specify Public IP Address

Local Host:

☐ Specify Network IP Address

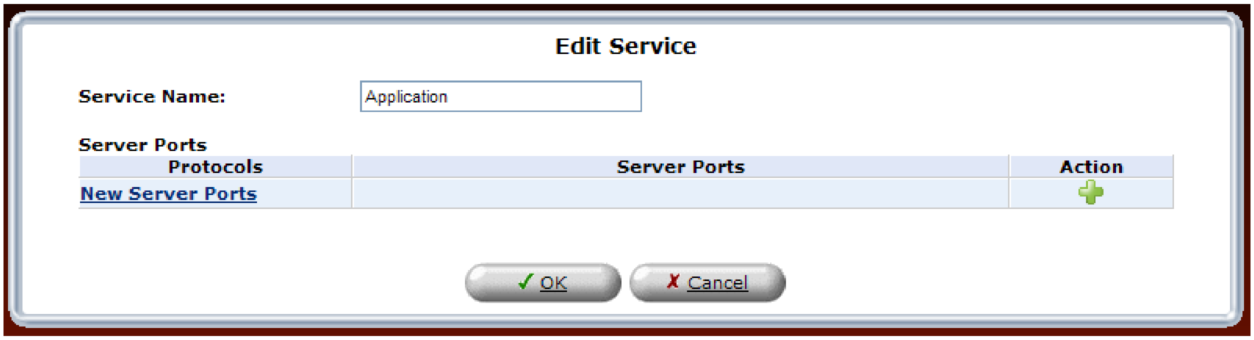
Protocols Any

Forward to Port:

Schedule

If you selected **User Defined**, the following screen will appear. Give your service a name using the text box and then define the ports that define your newly created service.

NOTE: At least one server port entry must be defined before you can enter a service name.



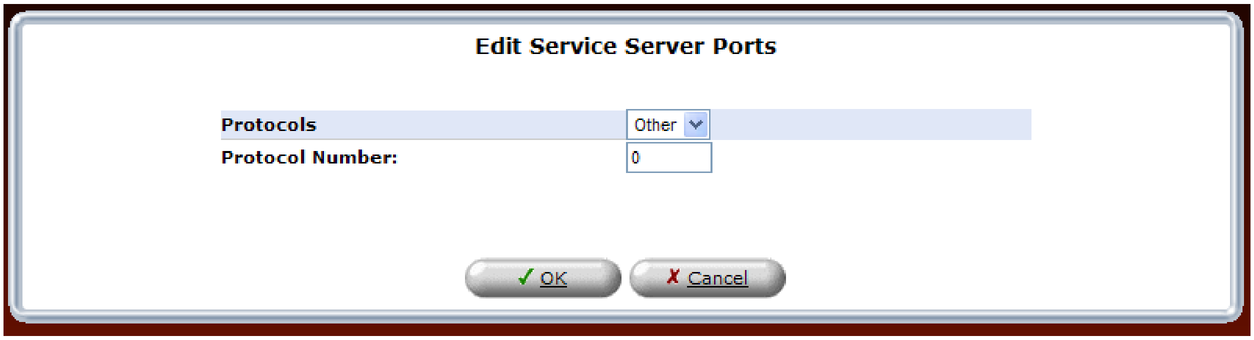
Edit Service

Service Name: Application

Server Ports

Protocols	Server Ports	Action
New Server Ports		✚

Clicking the **New Server Ports** link, will bring up the following screen that allows you to define your ports.

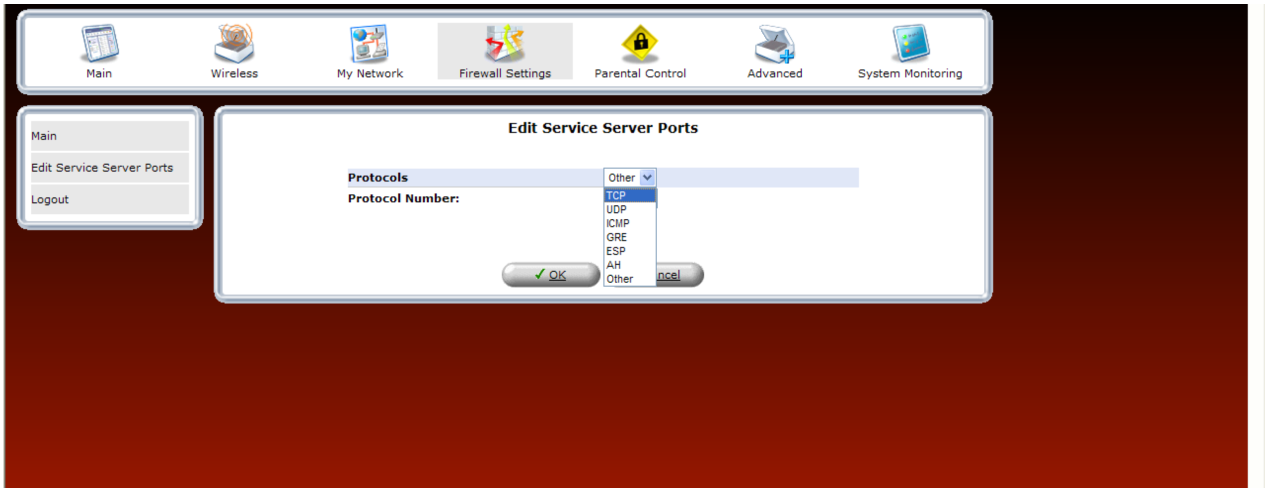


Edit Service Server Ports

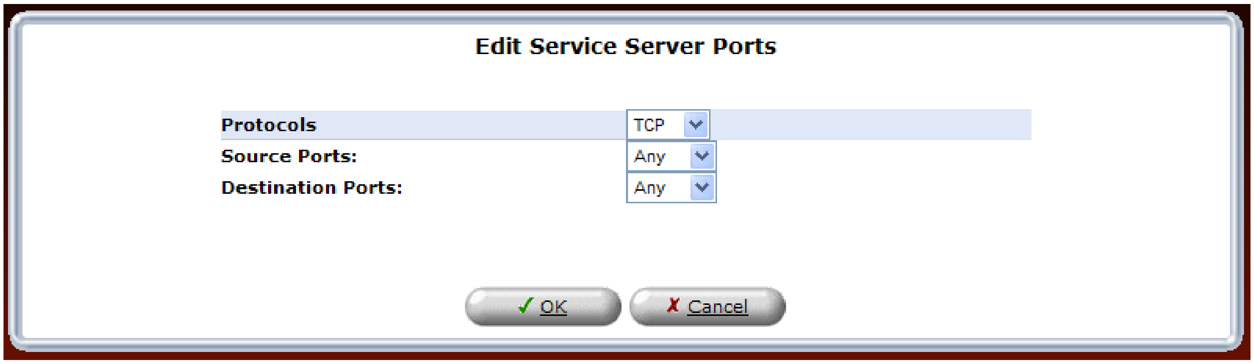
Protocols: Other

Protocol Number: 0

Next, select the desired protocol from the **Protocol** drop-down list. This information should be provided by your application developer or documentation.



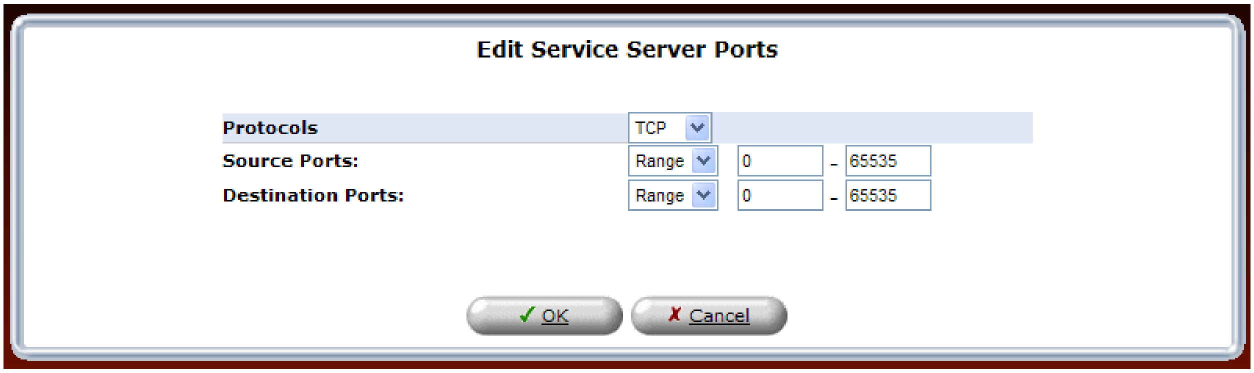
For example, if you selected **TCP**, from the drop-down list, the following screen will appear. Select the desired source and destination port settings from the drop-down lists.



Edit Service Server Ports

Protocols	TCP
Source Ports:	Any
Destination Ports:	Any

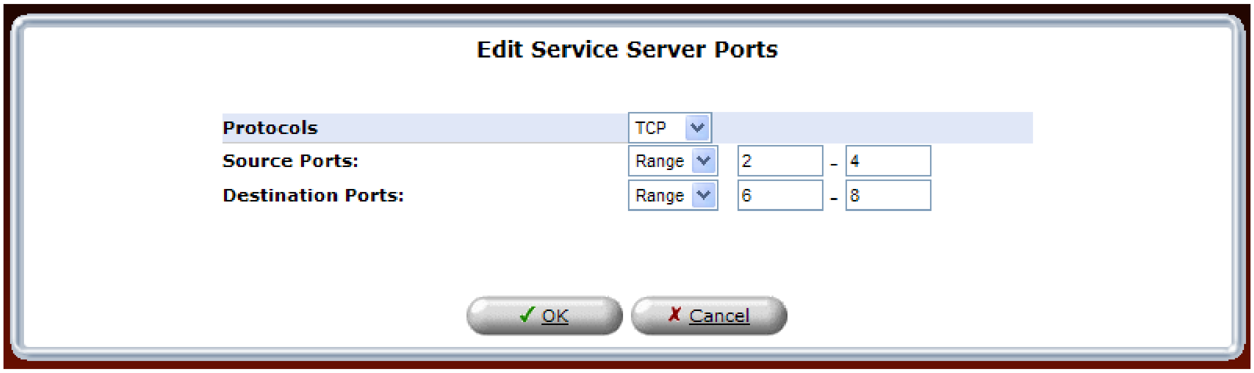
To set up a range of ports, select “Range” from the **Source Ports** and **Destination Ports** drop-down lists.



Edit Service Server Ports

Protocols	TCP			
Source Ports:	Range	0	-	65535
Destination Ports:	Range	0	-	65535

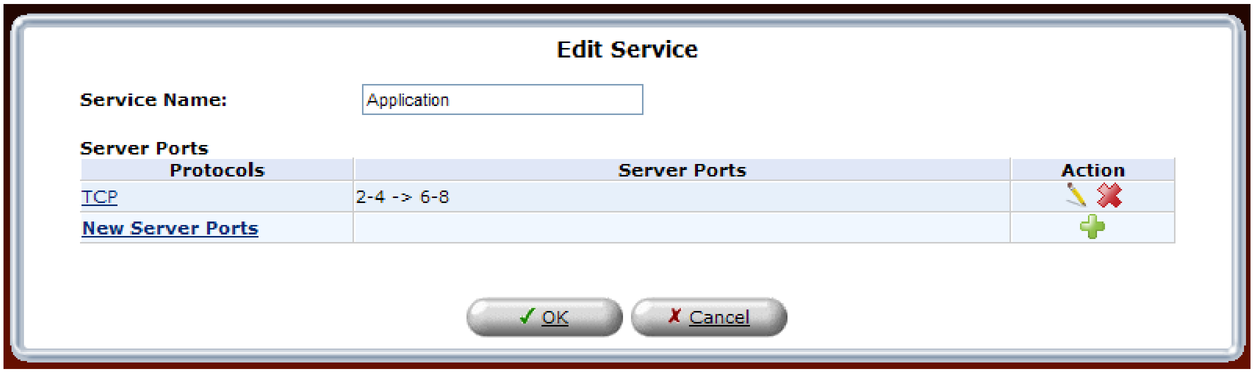
Next, enter the desired port range values in the fields provided, and then click **OK** to continue.



Edit Service Server Ports

Protocols	TCP			
Source Ports:	Range	2	-	4
Destination Ports:	Range	6	-	8

If clicked **OK** in the preceding screen, the following screen will appear. Click **OK** to save the settings.



Edit Service

Service Name: Application

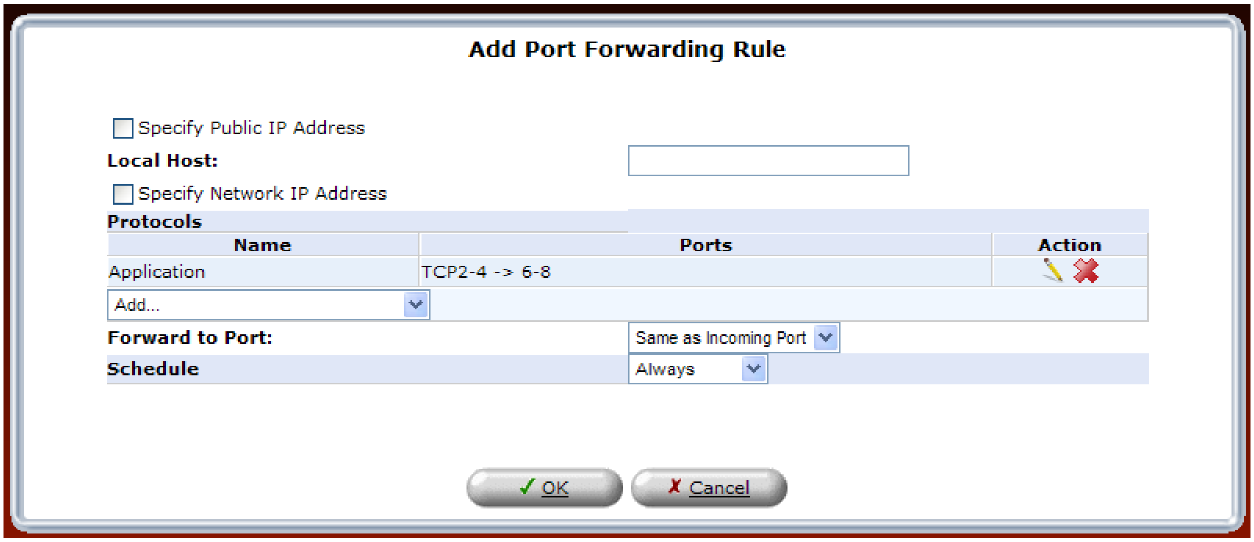
Server Ports

Protocols	Server Ports	Action
TCP	2-4 -> 6-8	✎ ✗
New Server Ports		+

Now you must specify a local host for which you to assign this user-defined port forwarding rule. To assign the rule to a public IP address, click the **Specify Public IP Address** check box.

NOTE: Only one computer can be assigned to provide a specific service or application. If you use public IP addresses in your Router's configuration, you must first obtain them from Verizon.

At the **Add Port Forwarding Rule** screen you can enter the name of a local host or click the **Specify Public IP Address** check box to indicate the host or IP Address to which the port forwarding rule will be assigned.



Add Port Forwarding Rule

□ Specify Public IP Address

Local Host:

□ Specify Network IP Address

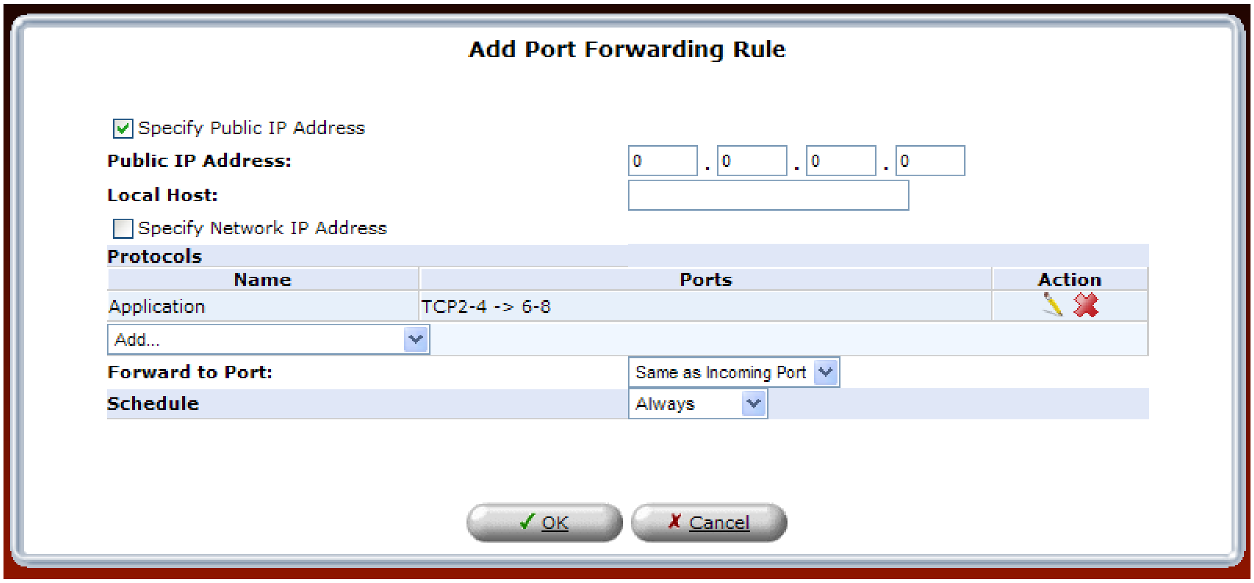
Protocols

Name	Ports	Action
Application	TCP2-4 -> 6-8	✎ ✗
Add...		

Forward to Port: Same as Incoming Port

Schedule: Always

To assign the port forward rule to a NAT policy (or external IP address) click the **Specify Public IP Address** check box and enter the appropriate IP address.



Add Port Forwarding Rule

☑ Specify Public IP Address

Public IP Address: 0 . 0 . 0 . 0

Local Host:

☐ Specify Network IP Address

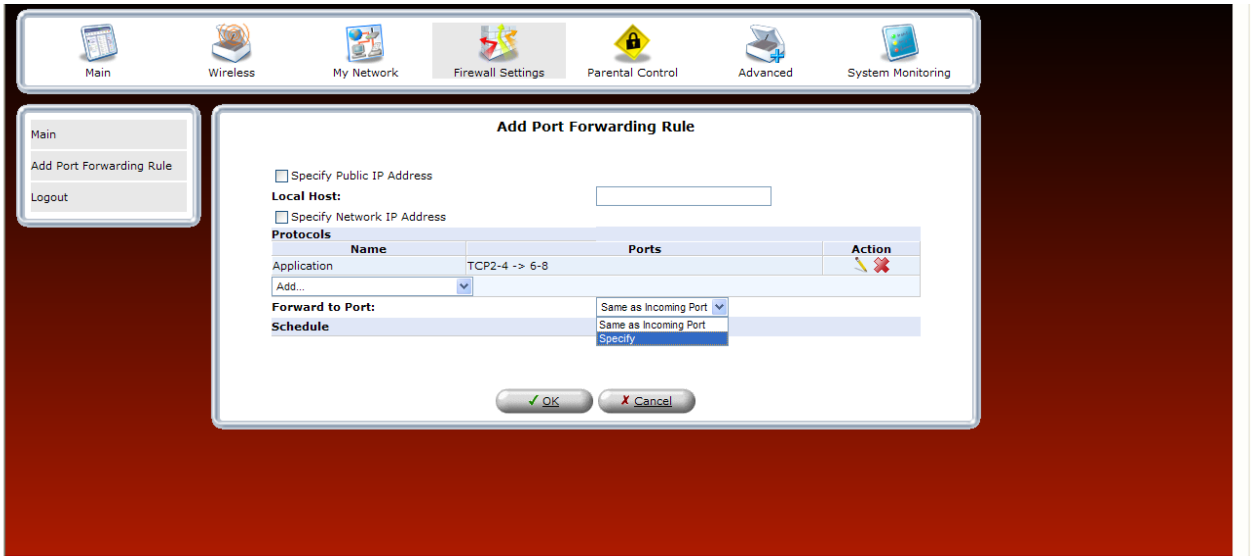
Protocols

Name	Ports	Action
Application	TCP2-4 -> 6-8	✎ ✖
Add...		

Forward to Port: Same as Incoming Port

Schedule Always

From the **Forward to Port** drop-down list, select the desired option to indicate the port to which traffic will be forwarded. This is almost always the same as the incoming port. You may define a custom port map by specifying a new port to send this traffic to. (For example you could forward all the incoming traffic to an external IP address coming in on Port 80 to your internal computer but Port 81)



Add Port Forwarding Rule

☐ Specify Public IP Address

Local Host:

☐ Specify Network IP Address

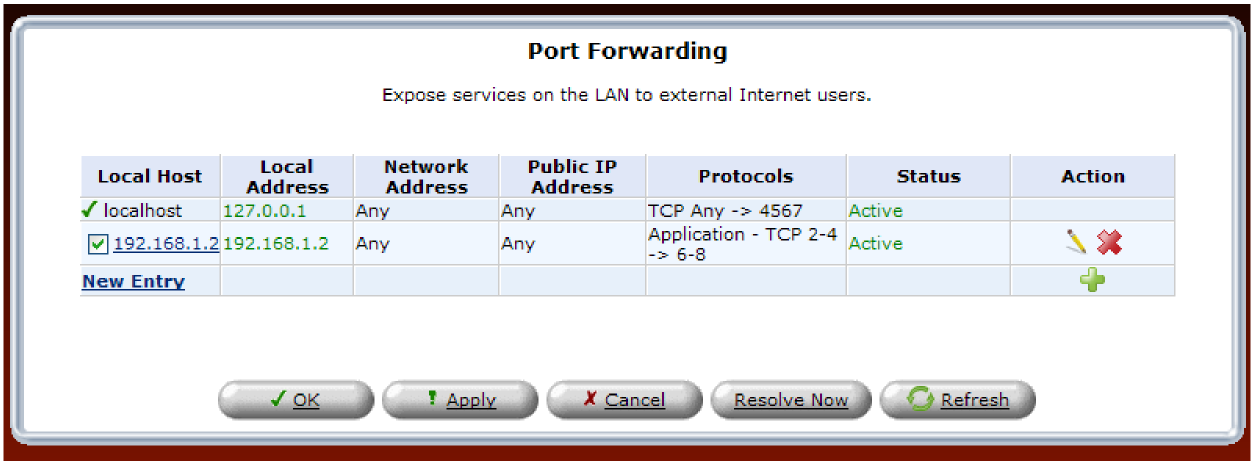
Protocols

Name	Ports	Action
Application	TCP2-4 -> 6-8	✎ ✖
Add...		

Forward to Port: Same as Incoming Port

Schedule

After you have entered a local host, specified a port, and clicked **OK** in the preceding screen, the following screen will appear. The user-defined rule has been added to the port forwarding table, and the status is **Active**. You may need to click **Resolve Now** while the Router is attempting to save the rule to the local host.

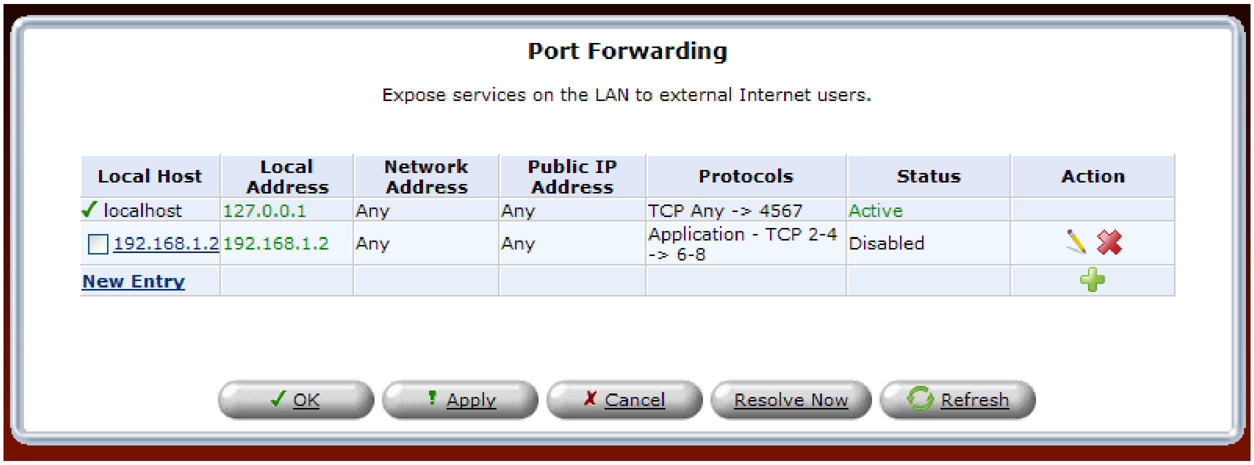


Port Forwarding

Expose services on the LAN to external Internet users.

Local Host	Local Address	Network Address	Public IP Address	Protocols	Status	Action
✓ localhost	127.0.0.1	Any	Any	TCP Any -> 4567	Active	
☑ 192.168.1.2	192.168.1.2	Any	Any	Application - TCP 2-4 -> 6-8	Active	✎ ✖
New Entry						✚

If you want to disable a port forwarding rule, clear the check box next to the host name or IP address. Then click **Apply** to save the setting.



Port Forwarding

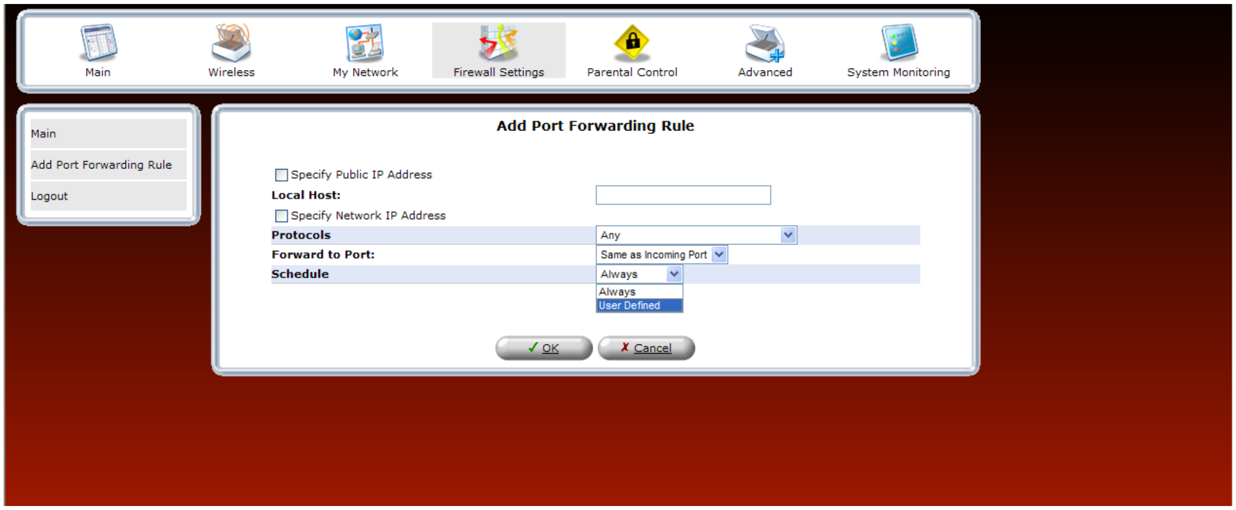
Expose services on the LAN to external Internet users.

Local Host	Local Address	Network Address	Public IP Address	Protocols	Status	Action
✓ localhost	127.0.0.1	Any	Any	TCP Any -> 4567	Active	
□ 192.168.1.2	192.168.1.2	Any	Any	Application - TCP 2-4 -> 6-8	Disabled	✎ ✖
New Entry						✚

13.3.3 Configuring a Schedule Rule

If desired, select a schedule from the **Schedule** drop-down menu. If you select **User Defined**, refer to the procedure explained in section 15.19, "Scheduler Rules," to set up a schedule rule. Otherwise, select **Always**, and then click **OK** to continue.

- Select **Always** to allow the rule to be active all the time.
- Select **User Defined** to allow the rule to be active only at certain time, as defined by the rules you set up.



Add Port Forwarding Rule

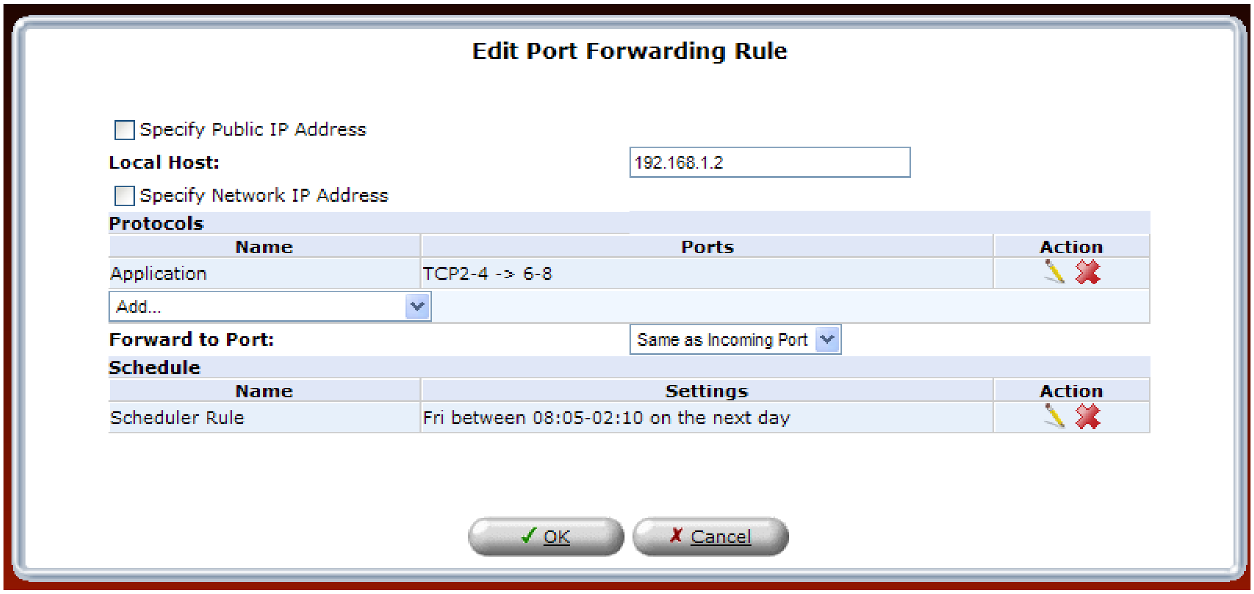
□ Specify Public IP Address

Local Host:

□ Specify Network IP Address

Protocols	Any
Forward to Port:	Same as Incoming Port
Schedule	Always Always User Defined

After you have added port forwarding rules and clicked OK, in the **Port Forwarding** screen, the following screen will appear. Enter the domain name in the **Local Host** field or click the check box to specify a public IP address or to specify a network IP address. Then, click **OK** to continue.



Edit Port Forwarding Rule

□ Specify Public IP Address

Local Host: 192.168.1.2

□ Specify Network IP Address

Protocols

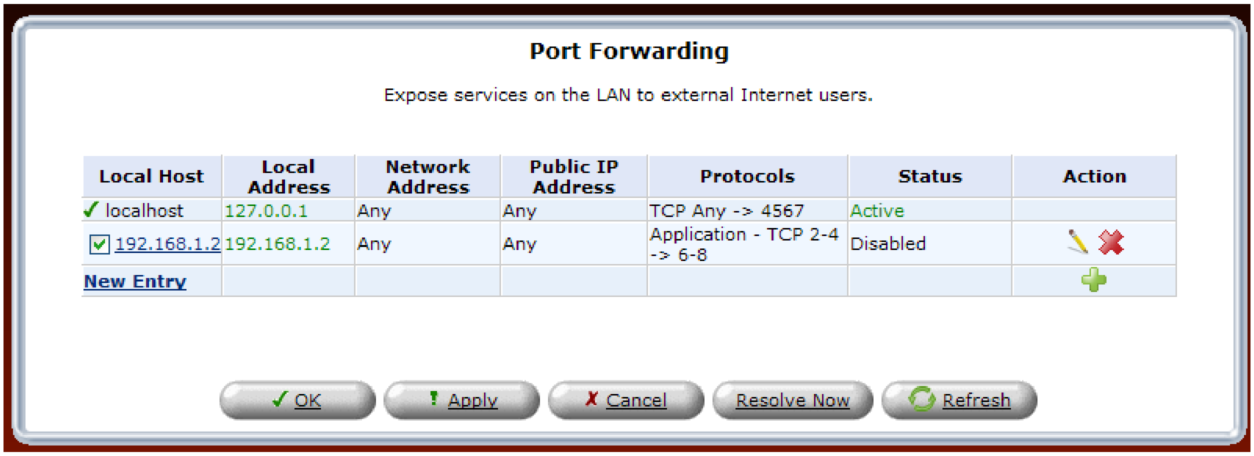
Name	Ports	Action
Application	TCP2-4 -> 6-8	
Add...		

Forward to Port: Same as Incoming Port

Schedule

Name	Settings	Action
Scheduler Rule	Fri between 08:05-02:10 on the next day	

If you clicked **OK**, the following screen will appear. Click **Apply** to save the settings.



Port Forwarding

Expose services on the LAN to external Internet users.

Local Host	Local Address	Network Address	Public IP Address	Protocols	Status	Action
✓ localhost	127.0.0.1	Any	Any	TCP Any -> 4567	Active	
☑ 192.168.1.2	192.168.1.2	Any	Any	Application - TCP 2-4 -> 6-8	Disabled	
New Entry						

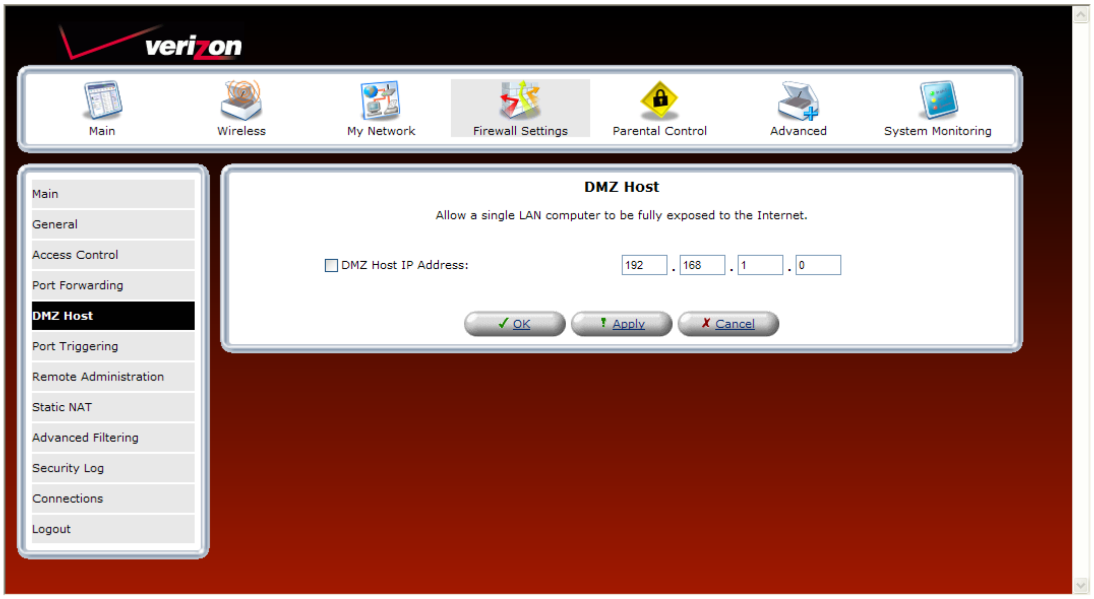
13.4 DMZ Host

If you select Firewall Settings in the top navigation menu and then select DMZ Host in the left submenu, the following screen will appear. The DMZ (Demilitarized) Host feature allows the user to forward unsolicited inbound WAN traffic to any single IP on the LAN. One computer on your LAN will be fully exposed to the Internet. The designated computer will be connected to your network without regard to firewall security or restrictions. Use this feature in cases where you want to use Internet services that are not available in the Port Forwarding list, such as Web games or video-conferencing.

WARNING: The computer that is configured as a DMZ Host will not have security or firewall protection.

To configure a computer for DMZ Host, click the **DMZ Host IP Address** check box, and then enter the IP Address of the computer that you want to be accessible from the Internet. The computer will answer to the default WAN IP address of the Router. Click **Apply** to save the settings.

To disable DMZ Host (if previously enabled), click to clear the check box. Then click **Apply** to save the settings.



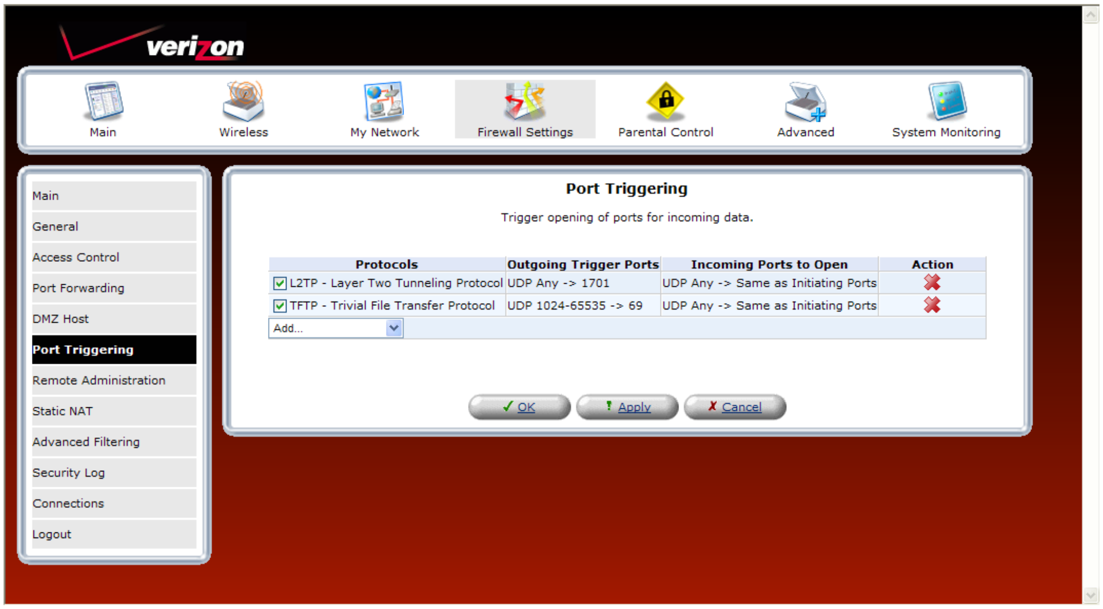
DMZ Host

Allow a single LAN computer to be fully exposed to the Internet.

☐ DMZ Host IP Address: 192 . 168 . 1 . 0

13.5 Port Triggering

If you select **Firewall Settings** in the top navigation menu and then select **Port Triggering** in the left submenu, the following screen will appear. You can define port triggering rules to dynamically open the firewall for specific protocols or ports. The specified ports will be opened for incoming traffic. Port triggering can be used for dynamic port forwarding configuration. By setting port triggering rules, you can allow inbound traffic to arrive at a specific LAN host, using ports different than those used for the outbound traffic. This is called port triggering because the outbound traffic triggers the ports to which inbound traffic is directed.



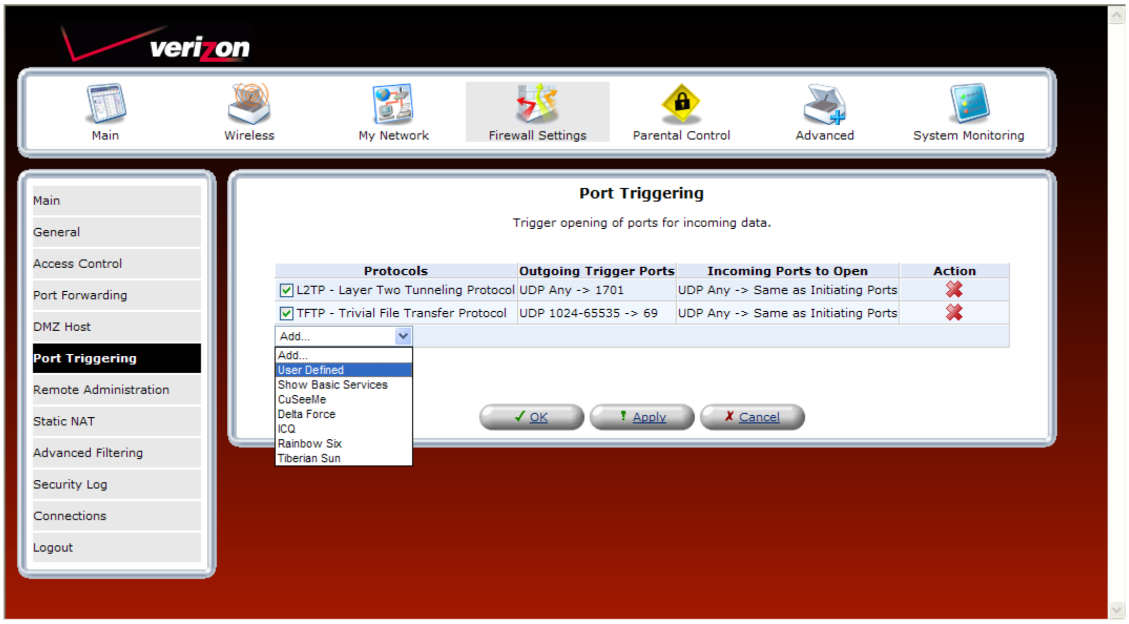
Port Triggering

Trigger opening of ports for incoming data.

Protocols	Outgoing Trigger Ports	Incoming Ports to Open	Action
☑ L2TP - Layer Two Tunneling Protocol	UDP Any -> 1701	UDP Any -> Same as Initiating Ports	✗
☑ TFTP - Trivial File Transfer Protocol	UDP 1024-65535 -> 69	UDP Any -> Same as Initiating Ports	✗
Add...			

13.5.1 Setting Up a User Defined Port Triggering Rule

To set up a user-defined port triggering rule, in the **Add** drop-down list, select **User Defined**.



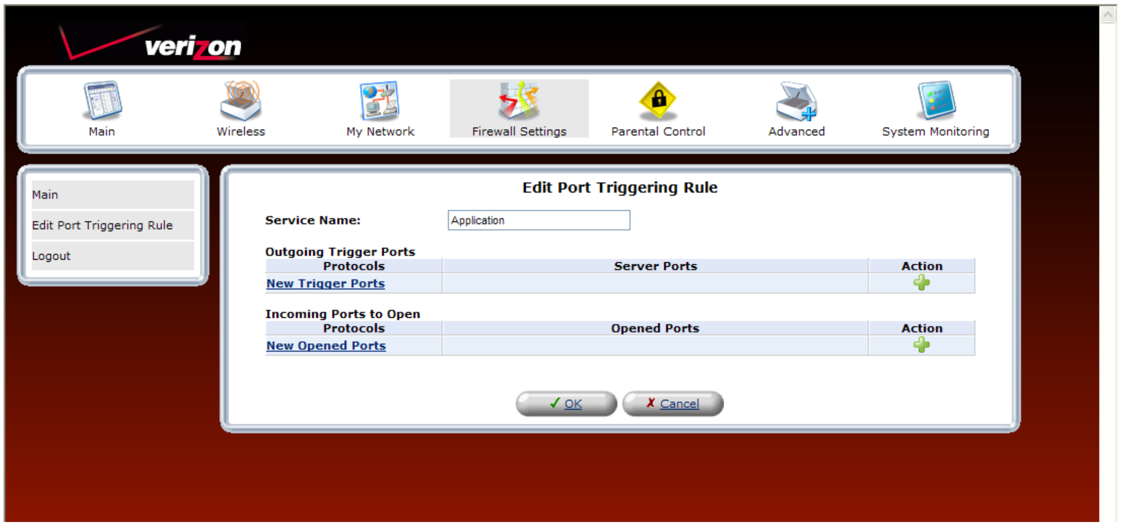
Port Triggering

Trigger opening of ports for incoming data.

Protocols	Outgoing Trigger Ports	Incoming Ports to Open	Action
☑ L2TP - Layer Two Tunneling Protocol	UDP Any -> 1701	UDP Any -> Same as Initiating Ports	✗
☑ TFTP - Trivial File Transfer Protocol	UDP 1024-65535 -> 69	UDP Any -> Same as Initiating Ports	✗
Add...			

13.5.1.1 Configuring Outgoing Trigger Ports

If you selected **User Defined** in the preceding screen, the following screen will appear. Enter the desired name in the **Service Name** field. Next, click the **New Trigger Ports** link to configure outgoing trigger ports.



Edit Port Triggering Rule

Service Name: Application

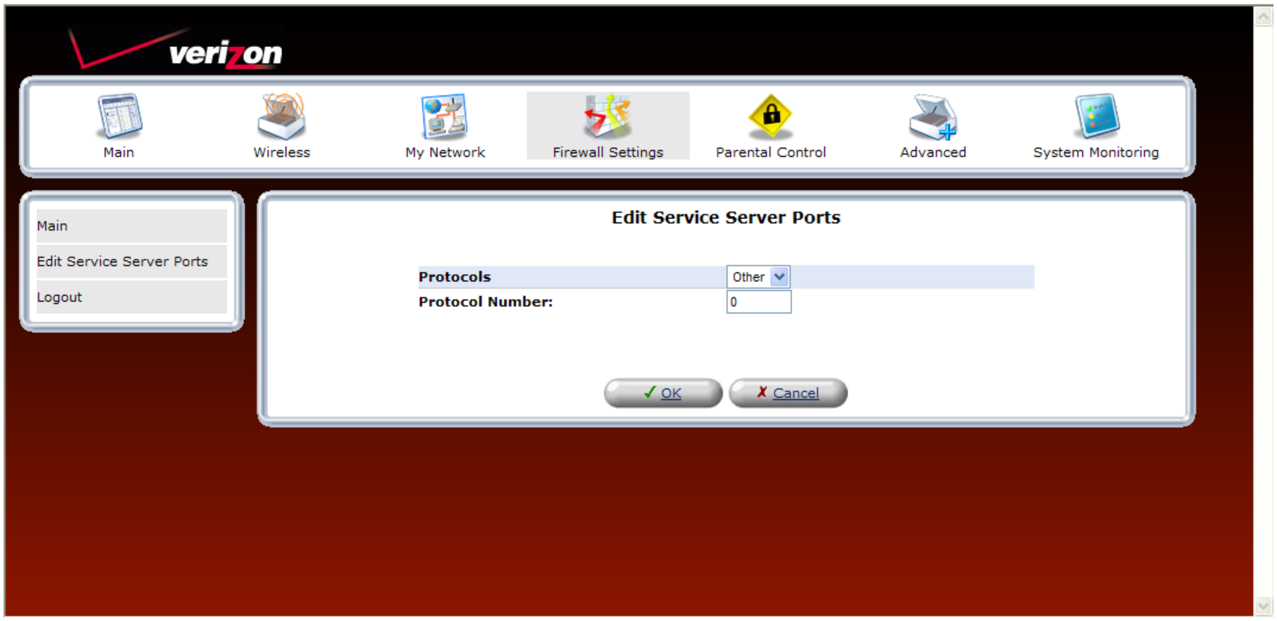
Outgoing Trigger Ports

Protocols	Server Ports	Action
New Trigger Ports		+

Incoming Ports to Open

Protocols	Opened Ports	Action
New Opened Ports		+

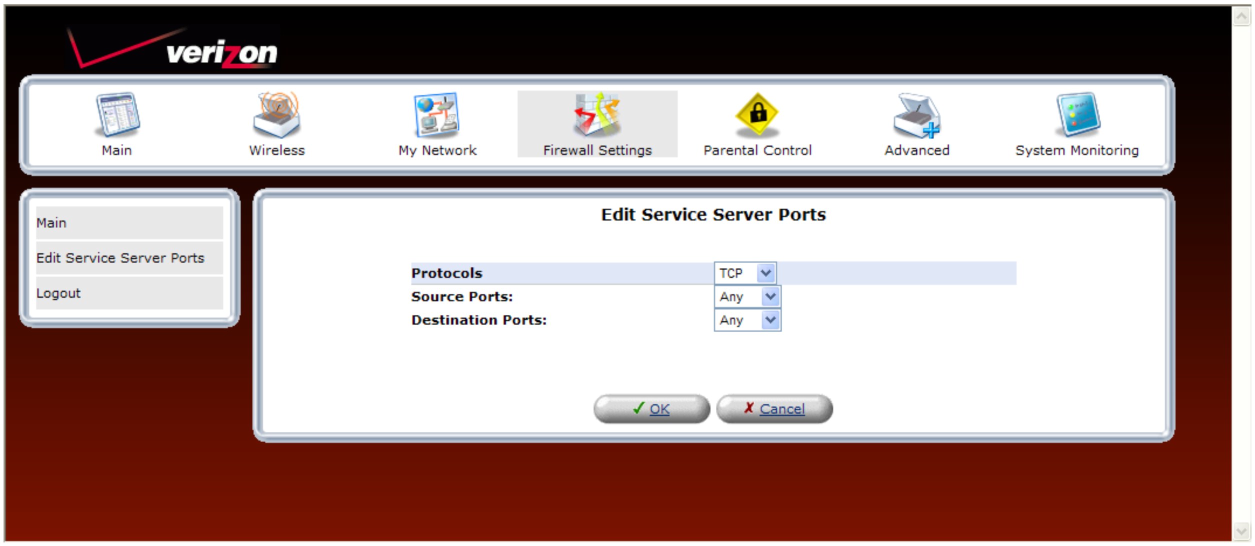
If you clicked **New Trigger Ports,** the following screen will appear. Select the desired protocol from the **Protocol** drop-down list.



Edit Service Server Ports

Protocols	Other
Protocol Number:	0

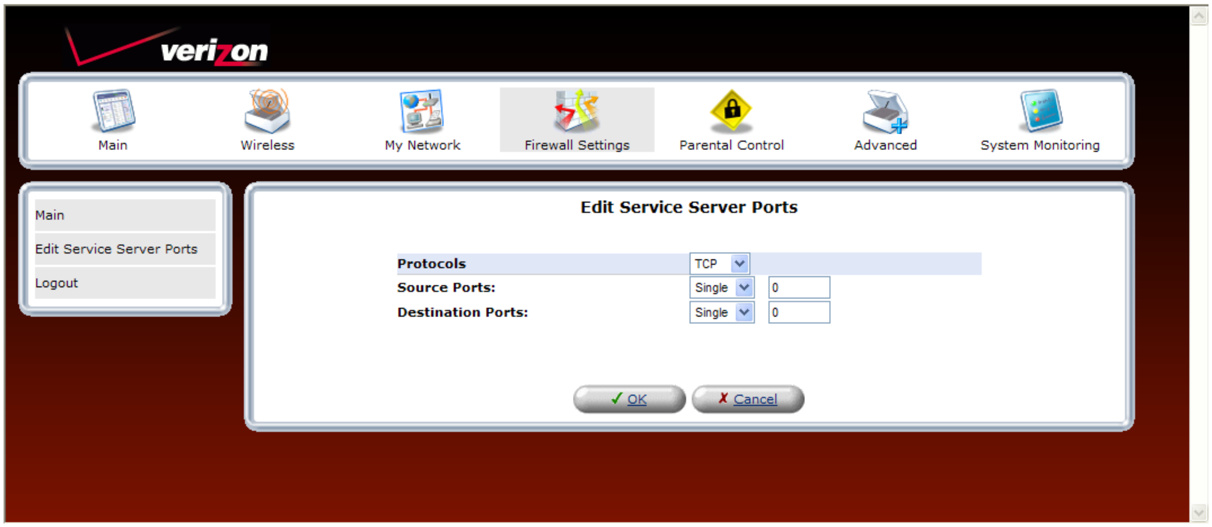
For example, if you selected **TCP** from the **Protocol** drop-down list, the following screen will appear. Select the desired source and destination settings from the drop-down lists.



Edit Service Server Ports

Protocols	TCP
Source Ports:	Any
Destination Ports:	Any

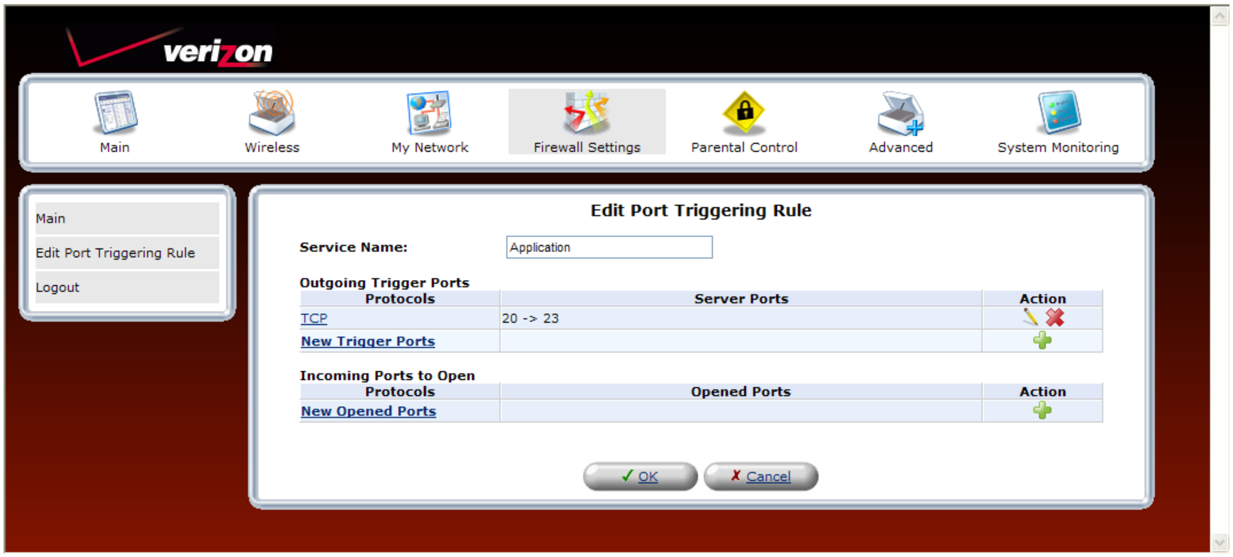
For example, if you selected **Single,** the following screen will appear. Enter the desired source port and destination port values, and then click **OK** to save the settings.



Edit Service Server Ports

Protocols	TCP	
Source Ports:	Single	0
Destination Ports:	Single	0

If you entered source and destination port values clicked **OK** in the preceding screen, the following screen will appear. If you desire to configure incoming trigger port, proceed to section 13.5.1.2. Otherwise, click **OK** to continue.



Edit Port Triggering Rule

Service Name: Application

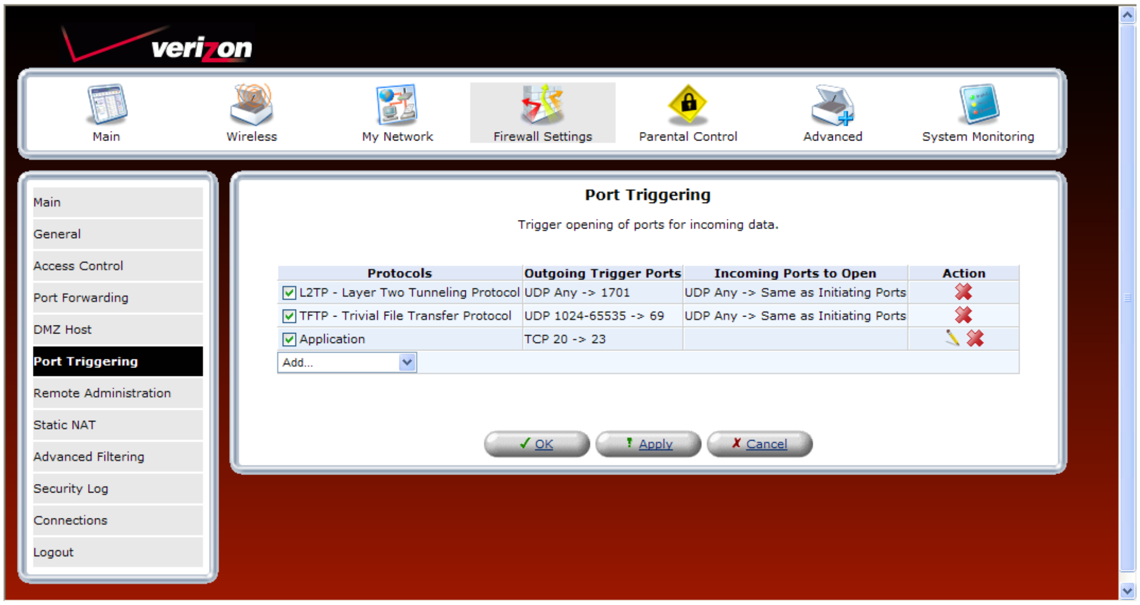
Outgoing Trigger Ports

Protocols	Server Ports	Action
TCP	20 -> 23	✎ ✗
New Trigger Ports		+

Incoming Ports to Open

Protocols	Opened Ports	Action
New Opened Ports		+

If you clicked **OK**, the following screen will appear. Click **Apply** to save the settings. If you want to edit a rule, click the pencil icon next to the rule that you want to edit. To delete a rule, click the "X" icon next to the rule that you want to delete.



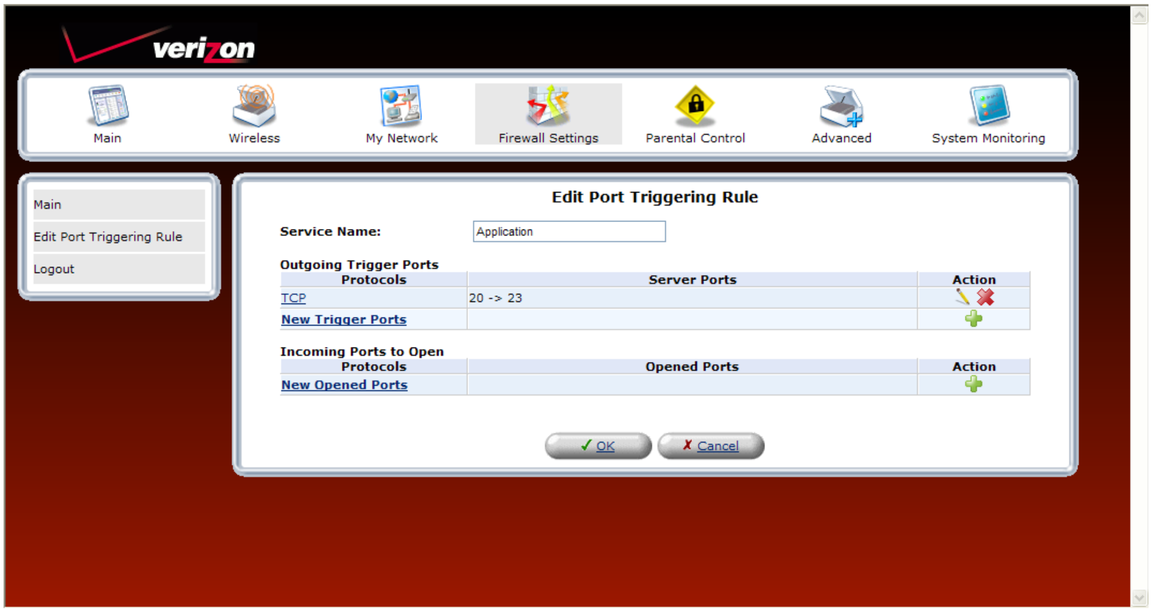
Port Triggering

Trigger opening of port for incoming data.

Protocols	Outgoing Trigger Ports	Incoming Ports to Open	Action
☑ L2TP - Layer Two Tunneling Protocol	UDP Any -> 1701	UDP Any -> Same as Initiating Ports	✗
☑ TFTP - Trivial File Transfer Protocol	UDP 1024-65535 -> 69	UDP Any -> Same as Initiating Ports	✗
☑ Application	TCP 20 -> 23		✎ ✗
Add...			

13.5.1.2 Configuring Incoming Trigger Ports

To configure incoming trigger ports, in the **Edit Port Triggering Rule** screen, click the **New Opened Ports** link.



Edit Port Triggering Rule

Service Name: Application

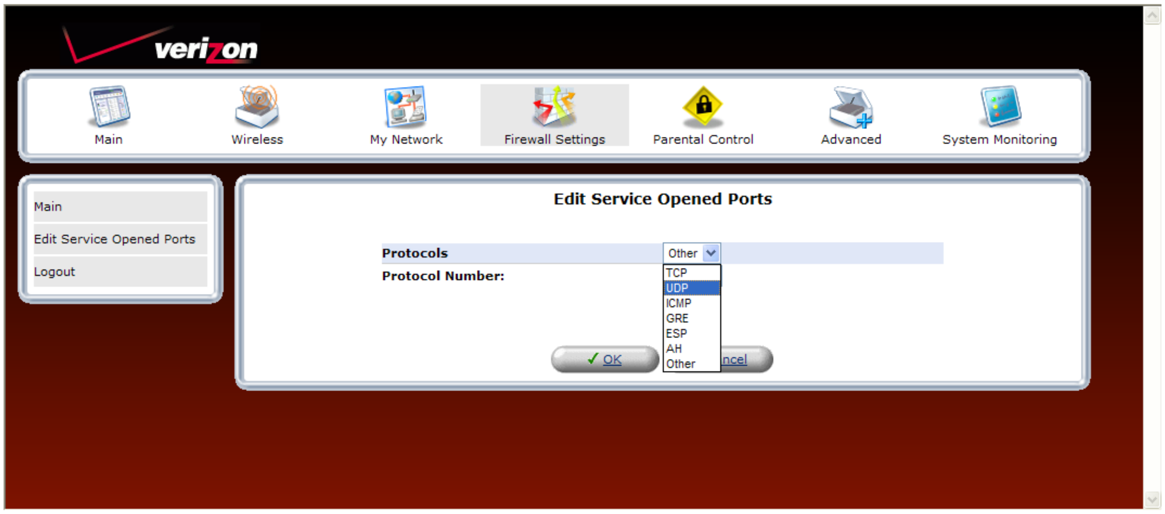
Outgoing Trigger Ports

Protocols	Server Ports	Action
TCP	20 -> 23	✎ ✗
New Trigger Ports		+

Incoming Ports to Open

Protocols	Opened Ports	Action
New Opened Ports		+

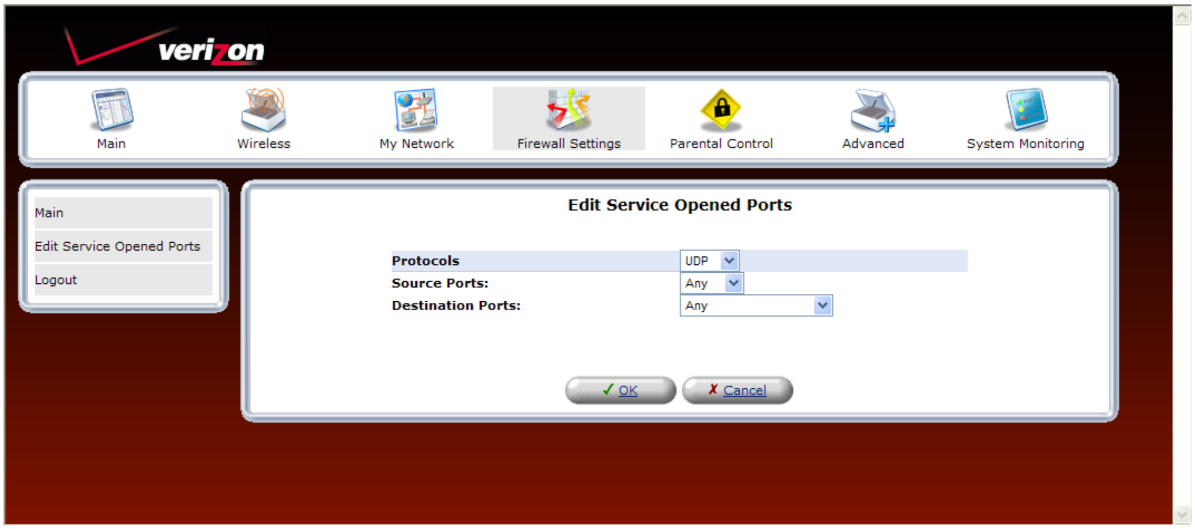
If you clicked **New Opened Ports,** the following screen will appear. Select a protocol from the **Protocol** drop-down list.



Edit Service Opened Ports

Protocols: Other
Protocol Number:

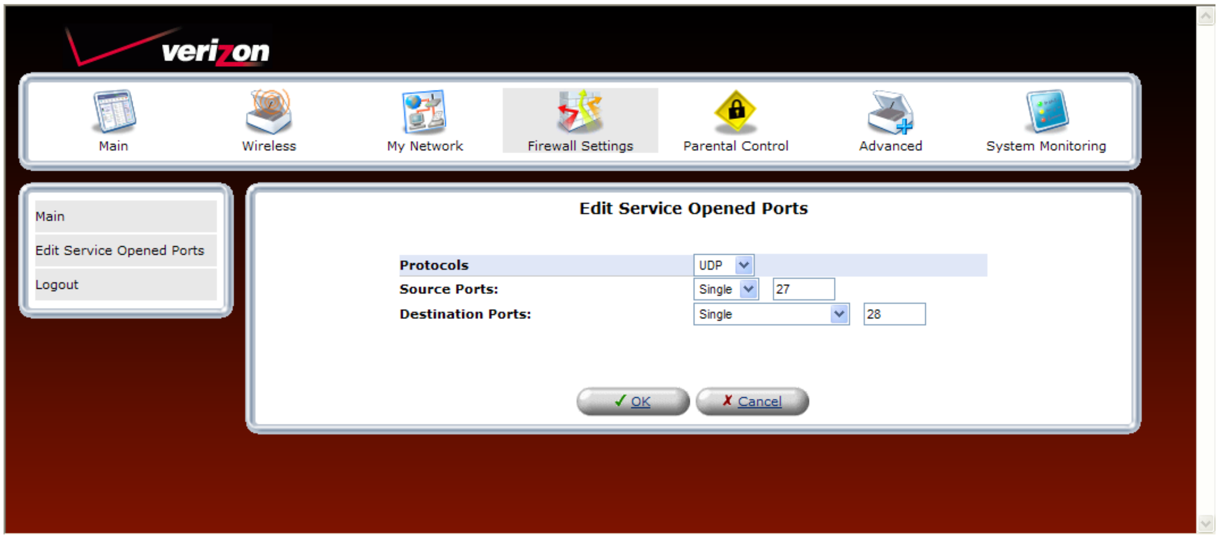
For example, if you select **UDP**, the following screen will appear. Select the desired source port and destination port settings from the drop-down lists.



Edit Service Opened Ports

Protocols: UDP
Source Ports: Any
Destination Ports: Any

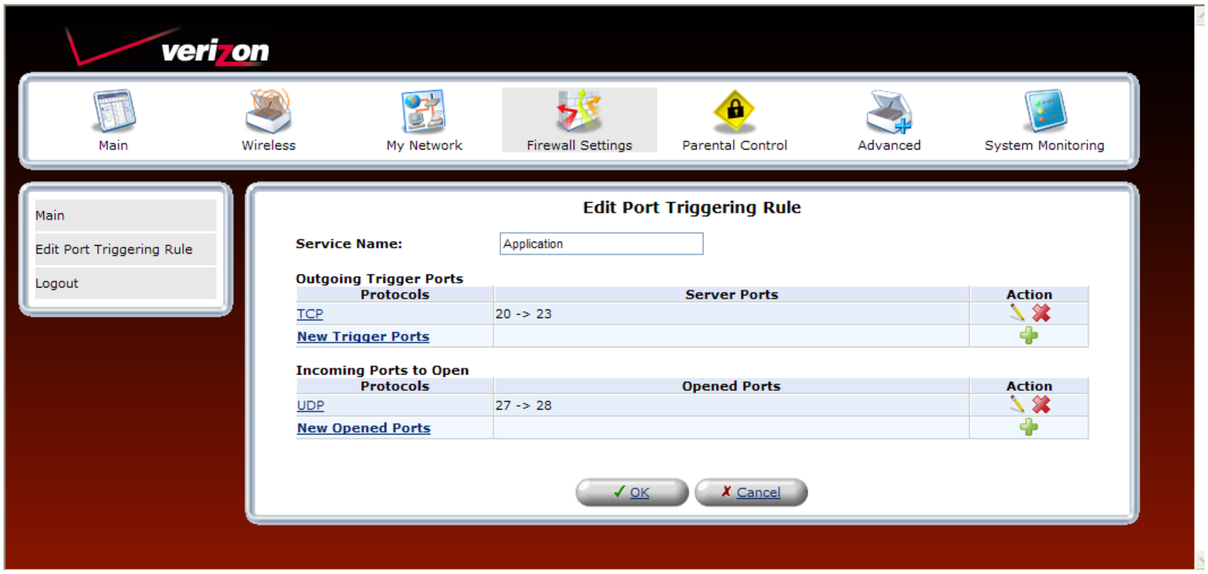
Next, enter the desired source and destination port values in the fields provided, and click **OK** to continue.



Edit Service Opened Ports

Protocols	UDP	
Source Ports:	Single	27
Destination Ports:	Single	28

If you clicked **OK**, the following screen will appear. Click **OK** to continue.



Edit Port Triggering Rule

Service Name: Application

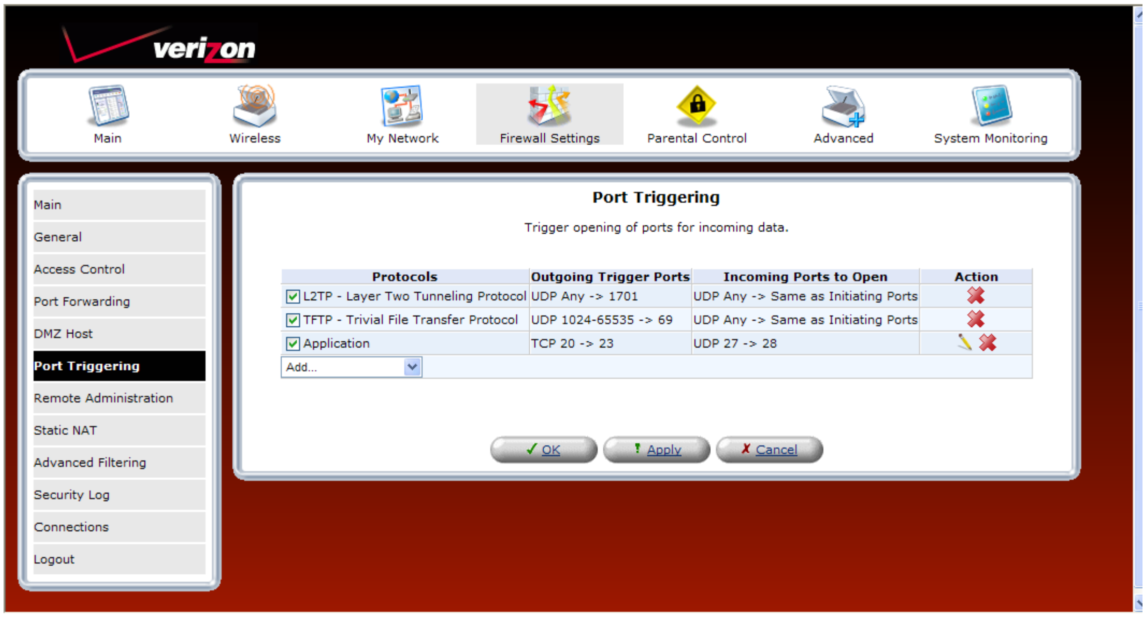
Outgoing Trigger Ports

Protocols	Server Ports	Action
TCP	20 -> 23	✎ ✗
New Trigger Ports		+

Incoming Ports to Open

Protocols	Opened Ports	Action
UDP	27 -> 28	✎ ✗
New Opened Ports		+

If you clicked **OK**, the following screen will appear. This screen shows that the triggering rule has been added to the list of triggering services. Click **Apply** to save the settings. If you want to edit a rule, click the pencil icon next to the rule that you want to edit. To delete a rule, click the "X" icon next to the rule that you want to delete.



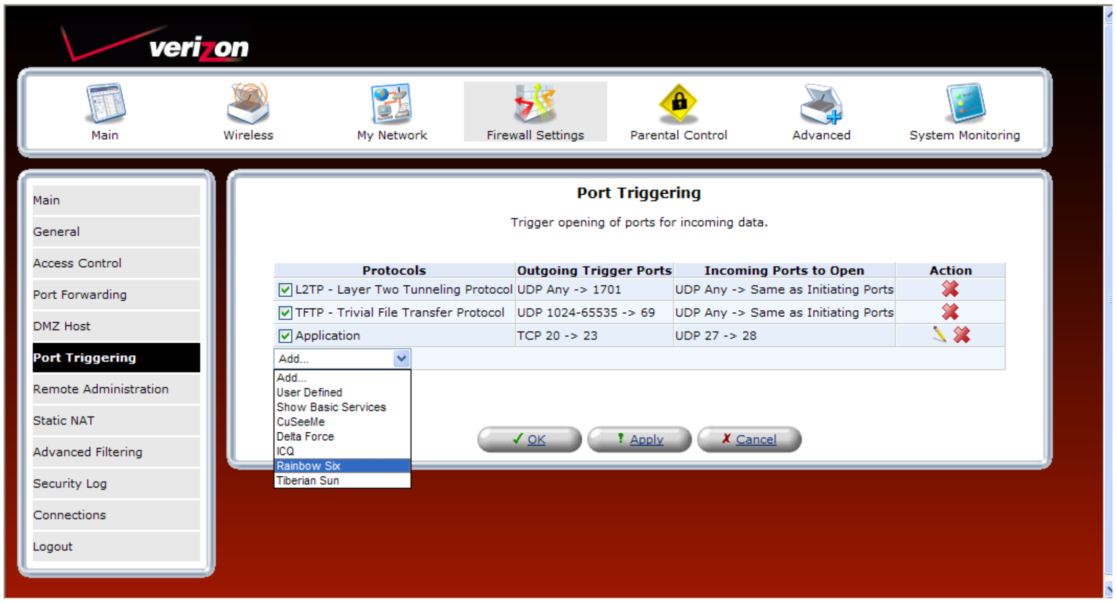
Port Triggering

Trigger opening of ports for incoming data.

Protocols	Outgoing Trigger Ports	Incoming Ports to Open	Action
☑ L2TP - Layer Two Tunneling Protocol	UDP Any -> 1701	UDP Any -> Same as Initiating Ports	✗
☑ TFTP - Trivial File Transfer Protocol	UDP 1024-65535 -> 69	UDP Any -> Same as Initiating Ports	✗
☑ Application	TCP 20 -> 23	UDP 27 -> 28	✎ ✗
Add...			

13.5.2 Setting Up a Predefined Port Triggering Rule

To set up a predefined port triggering rule, in the **Add** drop-down list, select a predefined service.



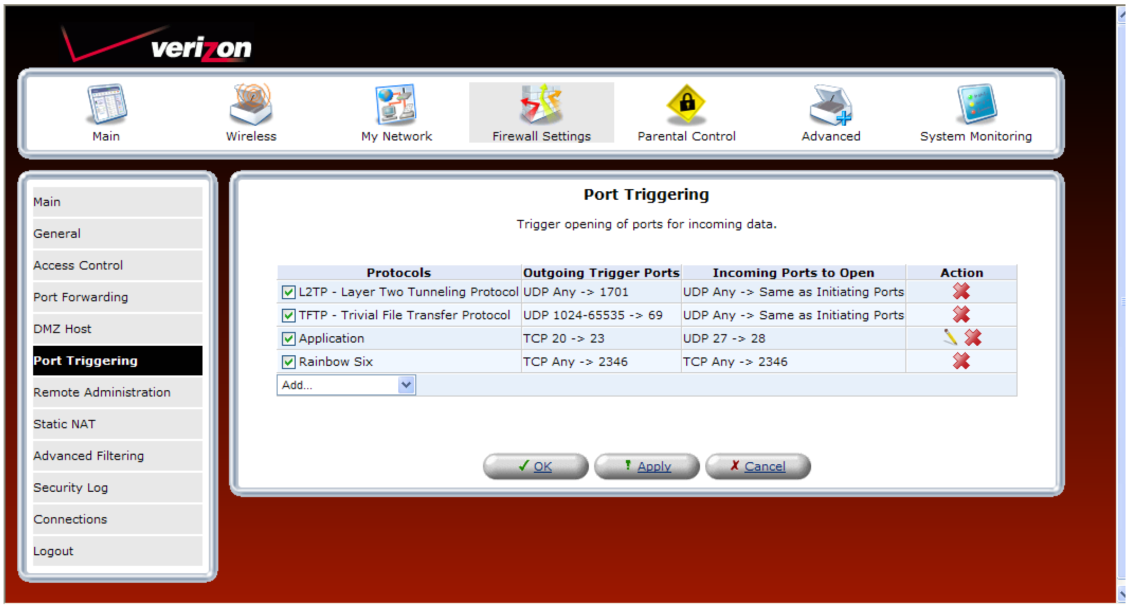
Port Triggering

Trigger opening of ports for incoming data.

Protocols	Outgoing Trigger Ports	Incoming Ports to Open	Action
☑ L2TP - Layer Two Tunneling Protocol	UDP Any -> 1701	UDP Any -> Same as Initiating Ports	✗
☑ TFTP - Trivial File Transfer Protocol	UDP 1024-65535 -> 69	UDP Any -> Same as Initiating Ports	✗
☑ Application	TCP 20 -> 23	UDP 27 -> 28	✎ ✗

Add...

After you have selected a service, the following screen will appear. The service that you selected will be displayed. Click **Apply** to save the settings.



Port Triggering

Trigger opening of ports for incoming data.

Protocols	Outgoing Trigger Ports	Incoming Ports to Open	Action
☑ L2TP - Layer Two Tunneling Protocol	UDP Any -> 1701	UDP Any -> Same as Initiating Ports	✗
☑ TFTP - Trivial File Transfer Protocol	UDP 1024-65535 -> 69	UDP Any -> Same as Initiating Ports	✗
☑ Application	TCP 20 -> 23	UDP 27 -> 28	✎ ✗
☑ Rainbow Six	TCP Any -> 2346	TCP Any -> 2346	✗

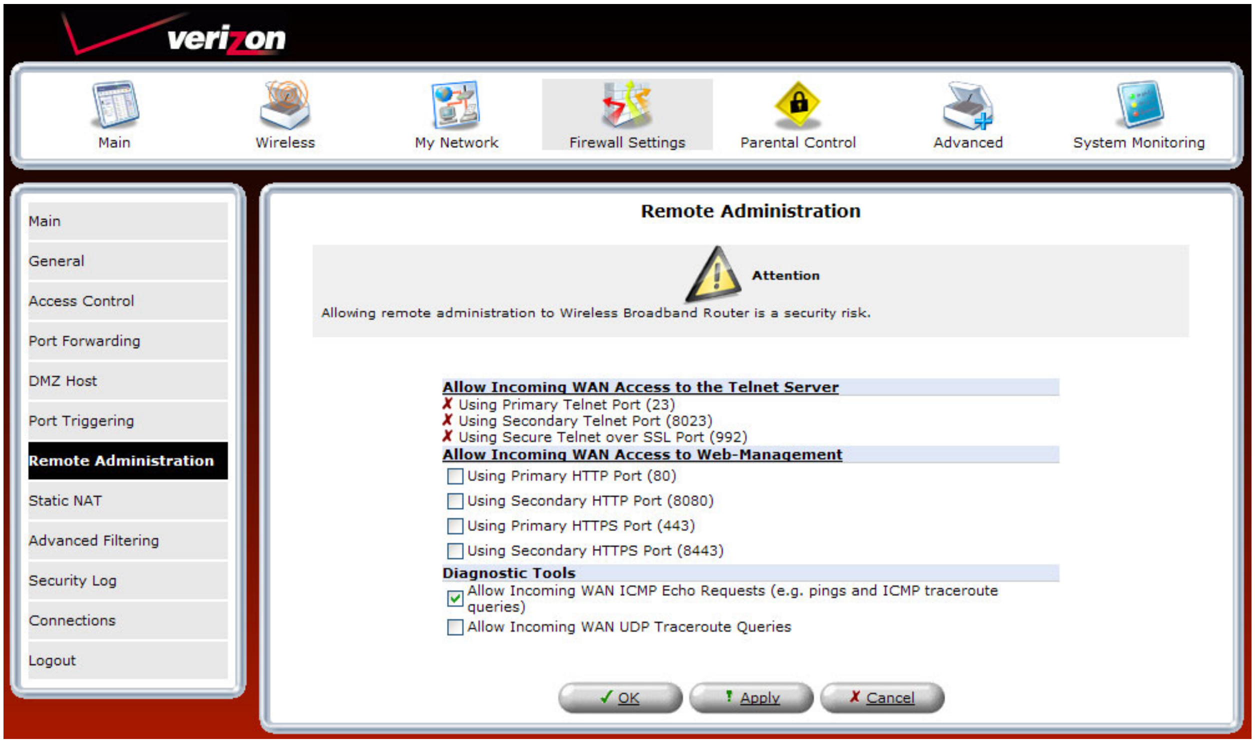
13.6 Remote Admin

If you select **Firewall Settings** in the top navigation menu and then select **Remote Administration** in the left submenu, the following screen will appear.

It is possible to access and control your Router not only from within the home network, but also from the Internet. This allows you to view or change settings while traveling. It also enables you to allow your service provider to change settings or help you troubleshoot functionality or communication issues from a remote location. Remote access to your Router is blocked by default to ensure the security of your network. However, your Router supports the following services, and you can use the Remote Administration screen to selectively enable these services if they are needed.

WARNING: With Remote Administration enabled, your network will be at risk from outside attacks. Note that remote command line access (Telnet) is not enabled on this Router.

To configure Remote Administration, enter the appropriate settings, and then click **Apply** to save the settings.



Remote Administration

Attention

Allowing remote administration to Wireless Broadband Router is a security risk.

Allow Incoming WAN Access to the Telnet Server
✗ Using Primary Telnet Port (23)
✗ Using Secondary Telnet Port (8023)
✗ Using Secure Telnet over SSL Port (992)

Allow Incoming WAN Access to Web-Management
☐ Using Primary HTTP Port (80)
☐ Using Secondary HTTP Port (8080)
☐ Using Primary HTTPS Port (443)
☐ Using Secondary HTTPS Port (8443)

Diagnostic Tools
☑ Allow Incoming WAN ICMP Echo Requests (e.g. pings and ICMP traceroute queries)
☐ Allow Incoming WAN UDP Traceroute Queries

13.7 Static NAT

If you select **Firewall Settings** in the top navigation menu and then select **Static NAT** in the left submenu, the following screen will appear.

NOTE: A block of static IP addresses must be purchased from Verizon to configure this feature. This Router supports 253 static IP addresses.

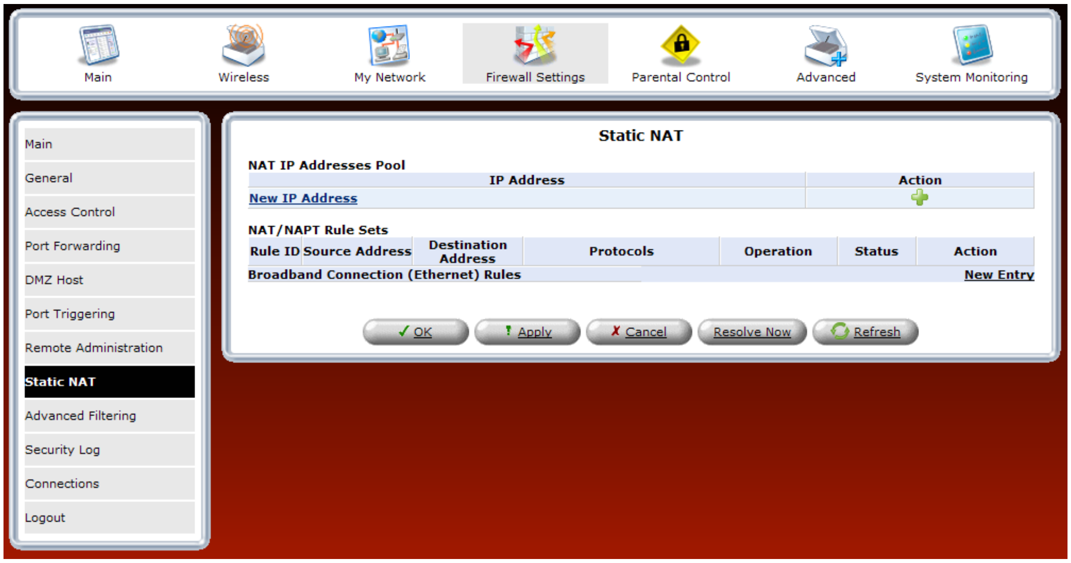
Static NAT allows LAN devices to use public IP addresses (different from the Router's public IP address). The LAN devices are still configured with private IP addresses (either statically or dynamically through DHCP). Traffic between the LAN devices and the Internet is still "NAT'ed", but the Static NAT mappings allow packets from specific devices to use a distinct public IP address; and packets sent to different public IP addresses to be forwarded to specific devices.

With Static NAT, devices that are behind the firewall and that are configured with private IP addresses appear to have public IP addresses on the Internet. This allows an internal host, such as a Web server, to have an unregistered (private) IP address and still be reachable over the Internet. This section also allows you to perform port translations (NAPT)

There are three steps to setting up a Static NAT entry:

1. **Create an address pool** – These are addresses on your WAN network side
2. **Create a NAT rule** – This defines the local computer to be NATd, the external IP address from the pool and the services that are allowed
3. **Create a Port Forwarding Rule** – This matches the NAT rule you created above and forwards the packets received on the WAN side to reach your internal computer.

To configure Static NAT, you must first define what external addresses are available. You add them to the address pool by clicking the **New IP Address** link or the plus icon. These addresses should be provided by your ISP.



Static NAT

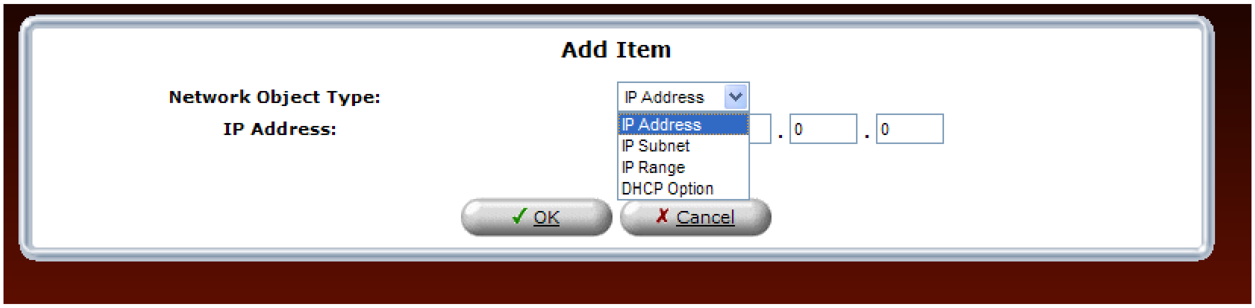
NAT IP Addresses Pool

IP Address	Action
New IP Address	+

NAT/NAPT Rule Sets

Rule ID	Source Address	Destination Address	Protocols	Operation	Status	Action
Broadband Connection (Ethernet) Rules						New Entry

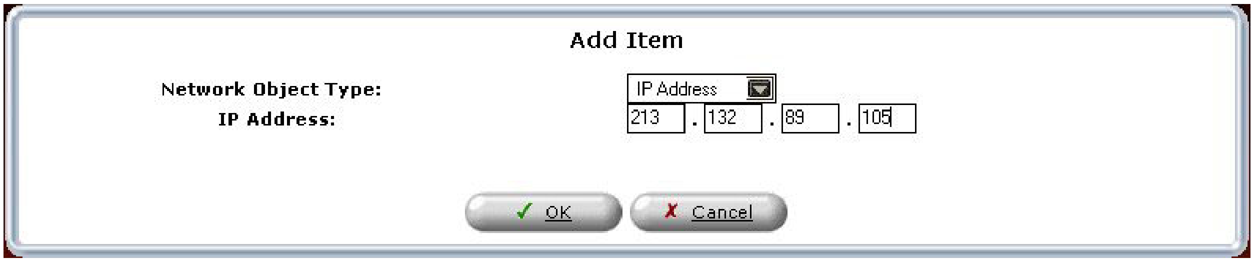
Select the **Network Object Type** from drop-down list, select the desired object type. A single IP address, an entire subnet, a range of addresses or a specific DHCP Vendor option. (These are generic "Network" objects that are defined in the **Network Objects** section.)



Add Item

Network Object Type:	IP Address
IP Address:	. 0 . 0

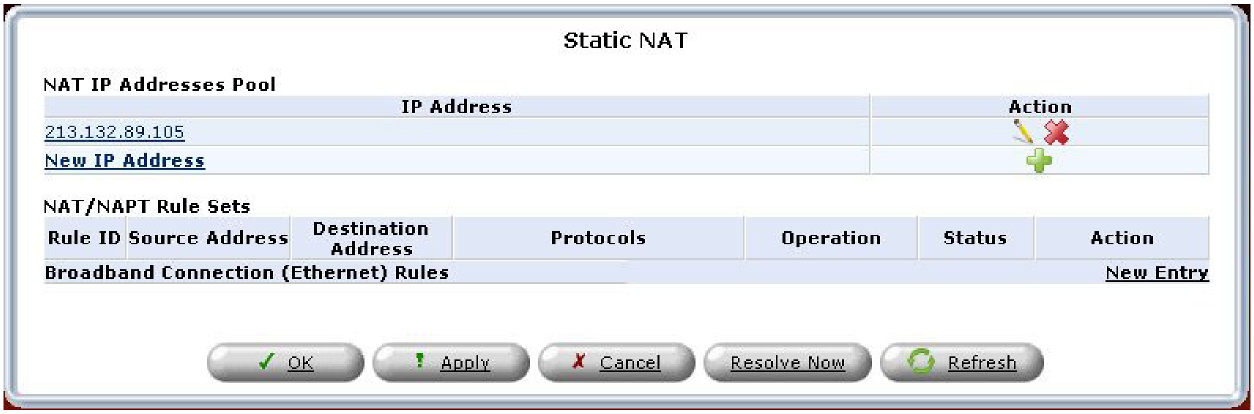
For example, if you select **IP Address** as the network object type you must specify a single WAN IP address to add to the pool. Enter a valid WAN IP address then click **OK** to continue.



Add Item

Network Object Type:	IP Address
IP Address:	213 . 132 . 89 . 105

If you have entered an IP Address and clicked **OK** in the **Add Item** screen, you are directed back to the main screen and your network address is shown in the pool. You now must create the **NAT/NAPT Rule Set** for this new external IP Address. To create rule, under **NAT/NAPT Rule Sets**, click the **New Entry** link.



Static NAT

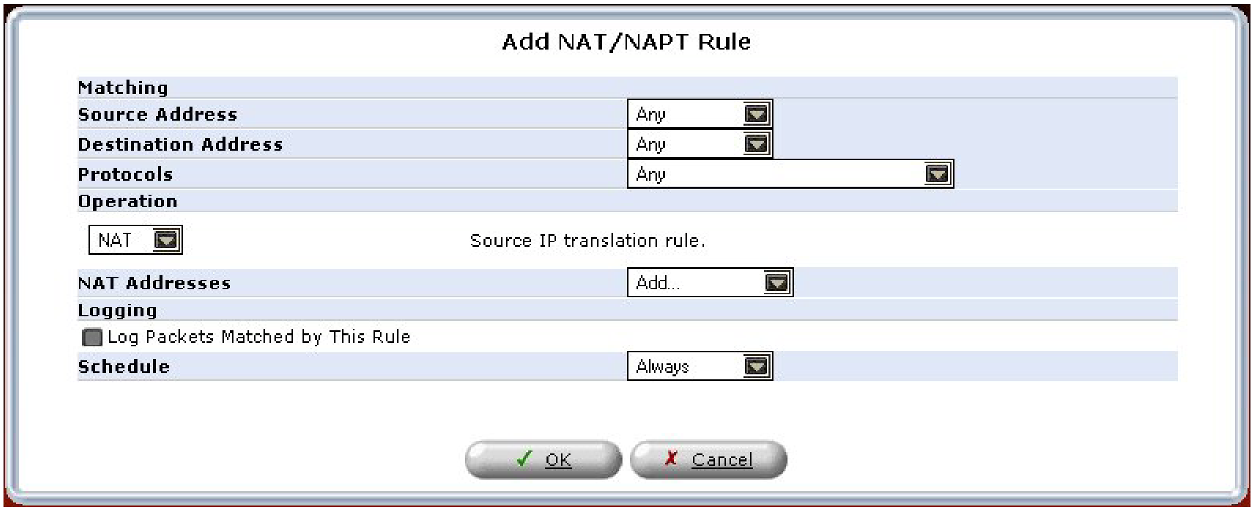
NAT IP Addresses Pool

IP Address	Action
213.132.89.105	✎ ✗
New IP Address	+

NAT/NAPT Rule Sets

Rule ID	Source Address	Destination Address	Protocols	Operation	Status	Action
Broadband Connection (Ethernet) Rules						New Entry

If you clicked **New Entry**, the following screen will appear.



Add NAT/NAPT Rule

Matching	
Source Address	Any
Destination Address	Any
Protocols	Any
Operation	
NAT	Source IP translation rule.
NAT Addresses	Add...
Logging	
□ Log Packets Matched by This Rule	
Schedule	Always

This screen is divided into two main sections, 'Matching' and 'Operation'. The 'Matching' section defines the LAN addresses to be translated to the external addresses, which are defined in the 'Operation' section. You define the type of traffic that should be "matched" – that is a specific source of the traffic, a specific destination and the type of traffic.

Matching: Use this section to define the rule's conditions, which are the LAN computer's parameters to be matched.

Source Address: The source address of packets sent or received from the LAN computer. The combo box displays all the host names or IP addresses of currently connected LAN computers, as well as the options 'Any' and 'User Defined'. Select an address from the list, or 'Any' to apply the rule on all computers. If you would like add a new address, select the 'User Defined' option in the combo-box. This will commence a sequence that will add a new *network object*, representing the LAN computer.

Destination Address: The specific destination address of packets coming from the above Source address. You will want to keep this set at **Any** in most cases to allow any remote destination to receive packets from the **Source Address**.

Protocol You may also specify a specific protocol. Selecting the 'Show All Services' option in the combo-box will expand the list of available protocols. Select a protocol or add a new one using the 'User Defined' option. This will commence a sequence that will add a new *service*, representing the protocol.

In most cases your **Destination Address** and **Protocols** will be set to **Any**. This example shows setting up a NAT'd web server on your local LAN on a computer at 192.168.1.50.

Operation: Use this section to define the operation that will be applied on the IP addresses matching the criteria defined above. The operations available are NAT or NAPT. Selecting each from the combo-box will refresh the screen accordingly.

NAT Addresses The NAT address into which the original IP address will be translated. The combo box displays all of your added NAT addresses/ranges, from which you can select an entry. If you would like to add a new address, select the 'User Defined' option in the combo-box. Similarly, this will commence a sequence that will add a new network object.

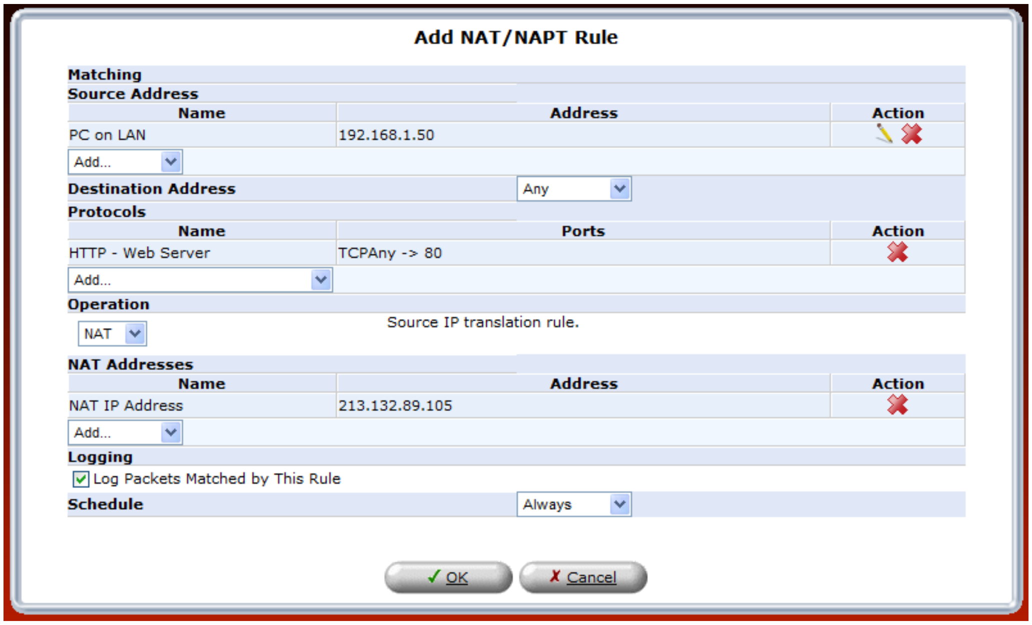
NAPT Address: The NAPT address into which the original IP address will be translated. The combo box displays all of your added NAPT addresses/ranges, from which you can select an entry. If you would like to add a new address, select the 'User Defined' option in the combo-box. Similarly, this will commence a sequence that will add a new network object. Note, however, that in this case the network object may only be an IP address, as NAPT is port-specific.

NAPT Ports: Specify the port(s) of the IP address into which the original IP address will be translated. Enter a single port or select **Range** in drop-down list. The screen will refresh, enabling you to enter a range of ports.

Log Packets Matched by This Rule: Check this check box to log the first packet from a connection that was matched by this rule.

Schedule: By default, the rule will always be active. However, you can configure scheduler rules by selecting **User Defined**, in order to define time segments during which the rule may be active. Refer to section 15.19 for details on setting up schedule rules.

After you select the desired NAT/NAPT rules, click **OK** to continue.



Add NAT/NAPT Rule

Matching

Source Address

Name	Address	Action
PC on LAN	192.168.1.50	✎ ✖
Add...		

Destination Address: Any

Protocols

Name	Ports	Action
HTTP - Web Server	TCPAny -> 80	✖
Add...		

Operation

NAT — Source IP translation rule.

NAT Addresses

Name	Address	Action
NAT IP Address	213.132.89.105	✖
Add...		

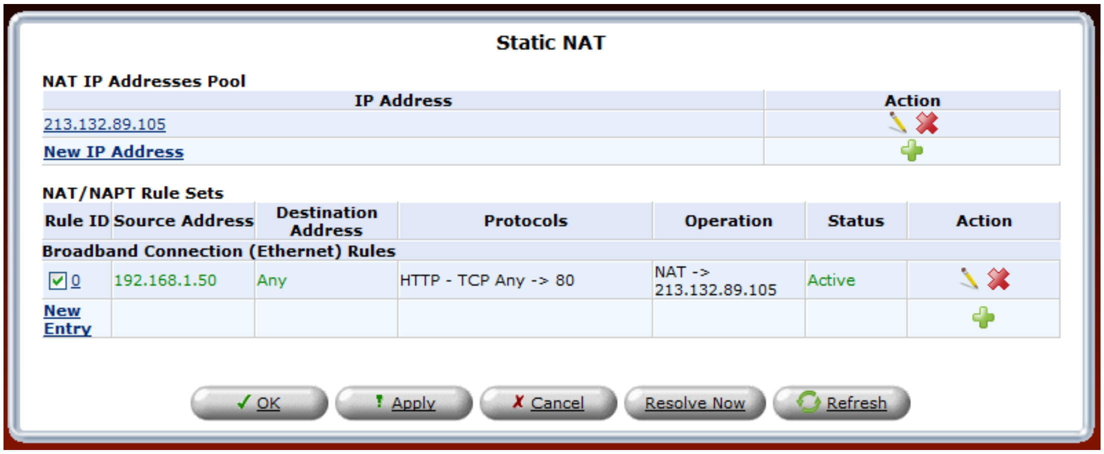
Logging

☑ Log Packets Matched by This Rule

Schedule: Always

If you clicked **OK**, the following screen will appear. This screen displays the active rules for the designated address.

NOTE: After you create the rule LAN devices, you can verify it works by checking your external IP address. You can do this from another internet connection or by using one of many public websites that display your external IP address. Note this only works if you have specified **Any** or one of the **HTTP** protocols.



Static NAT

NAT IP Addresses Pool

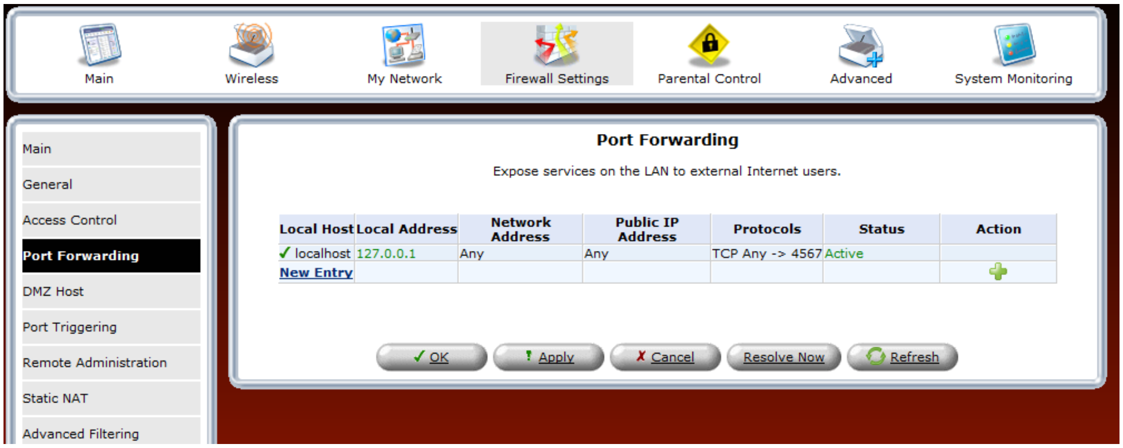
IP Address	Action
213.132.89.105	✎ ✖
New IP Address	✚

NAT/NAPT Rule Sets

Rule ID	Source Address	Destination Address	Protocols	Operation	Status	Action
Broadband Connection (Ethernet) Rules						
☑ 0	192.168.1.50	Any	HTTP - TCP Any -> 80	NAT -> 213.132.89.105	Active	✎ ✖
New Entry						✚

After setting up your NAT/NAPT rule set you must also setup a **Port Forwarding** entry so that all incoming traffic is directed to the LAN computer you setup in the above steps.

Click on **Port Forwarding** in the left-hand navigation bar to start making your inbound rule. Create a **New Entry** by clicking the link or + sign.



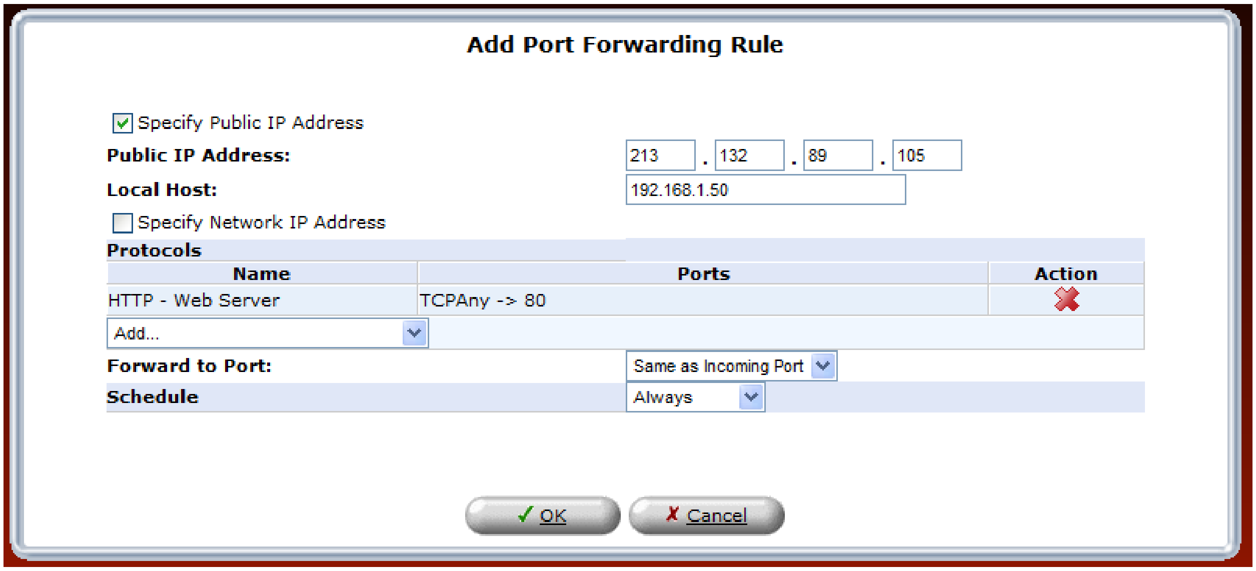
Port Forwarding

Expose services on the LAN to external Internet users.

Local Host	Local Address	Network Address	Public IP Address	Protocols	Status	Action
✓ localhost	127.0.0.1	Any	Any	TCP Any -> 4567	Active	
New Entry						✚

As in the example below, you will need to specify your external IP address that you used for your NAT/NAPT rule and also specify the local host (IP or name). Also make sure that you use the same protocol as your NAT/NAPT rule. For our web server example this information is shown filled in below.

NOTE: When setting up your Port Forwarding setting please ensure that you enter in the same external IP address information as well as match what protocols were defined in the NAT/NAPT rule you just created.



Add Port Forwarding Rule

☑ Specify Public IP Address

Public IP Address: 213 . 132 . 89 . 105

Local Host: 192.168.1.50

□ Specify Network IP Address

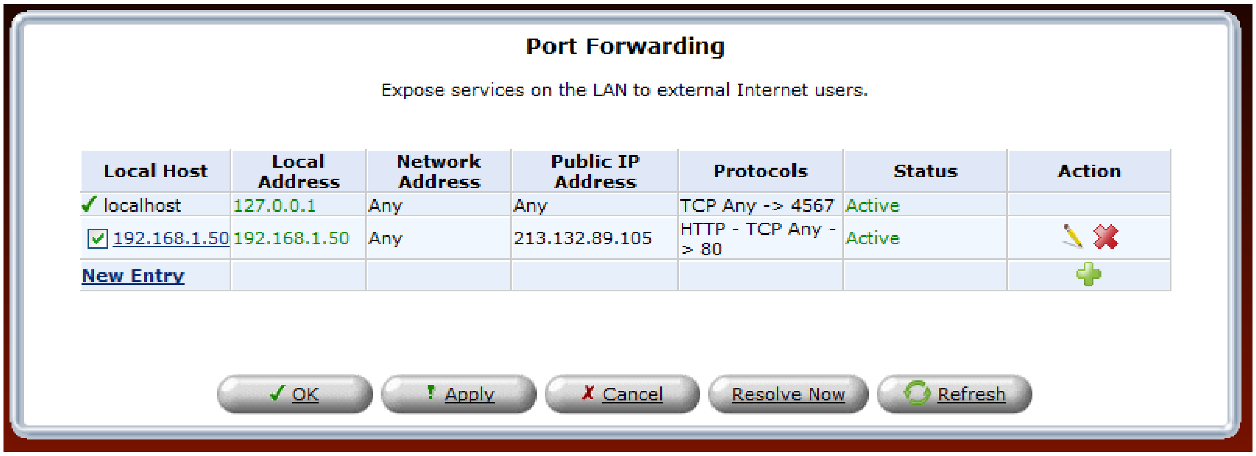
Protocols

Name	Ports	Action
HTTP - Web Server	TCPAny -> 80	✖
Add...		

Forward to Port: Same as Incoming Port

Schedule Always

Clicking **OK** will take you back to the main port forwarding page and it will show your newly created rule.



Port Forwarding

Expose services on the LAN to external Internet users.

Local Host	Local Address	Network Address	Public IP Address	Protocols	Status	Action
✓ localhost	127.0.0.1	Any	Any	TCP Any -> 4567	Active	
☑ 192.168.1.50	192.168.1.50	Any	213.132.89.105	HTTP - TCP Any -> 80	Active	✎ ✖
New Entry						✚

Refer to the **Port Forwarding** Section for more information on other options for port forwards.

Your NAT/NAPT rule has now been created and your machine should be accessible via the IP address you specified in your rule.

13.8 Advanced Filtering

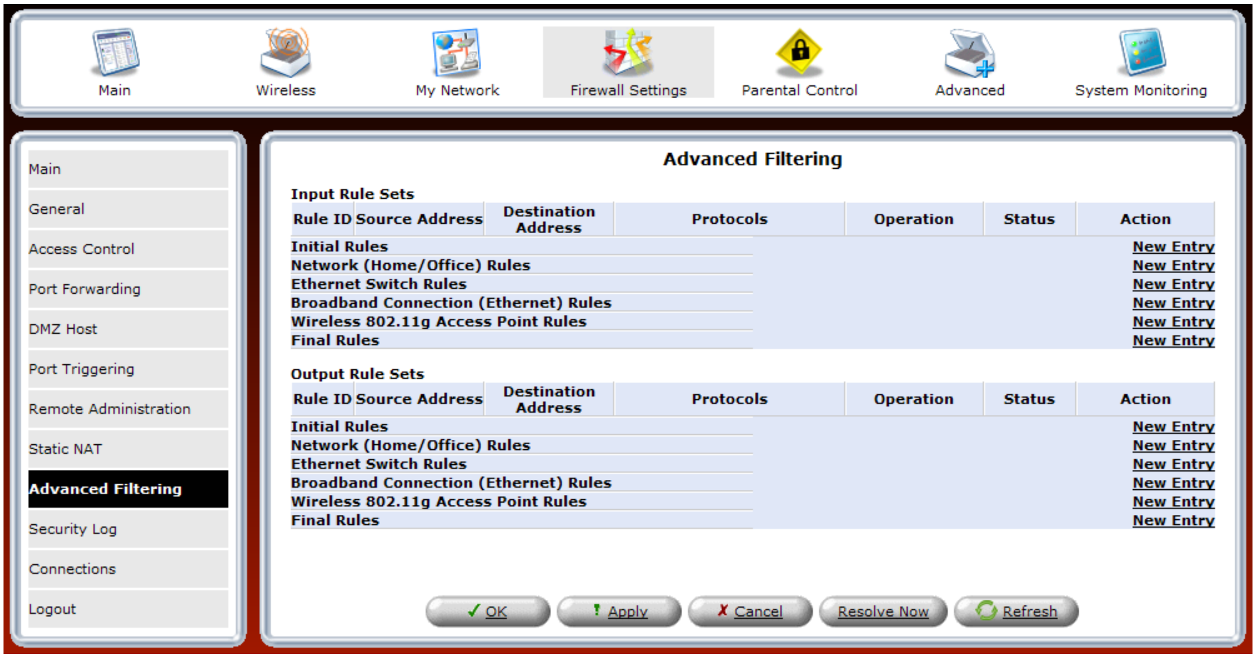
If you select **Firewall Settings** in the top navigation menu and then select **Advanced Filtering** in the left submenu, the following screen will appear.

Advanced filtering is designed to allow comprehensive control over the firewall's behavior. You can define specific input and output rules, control the order of logically similar sets of rules and make a distinction between rules that apply to WAN and LAN devices.

This screen is divided into two sections, one for Input Rule Sets and the other for Output Rule Sets, which are for configuring inbound and outbound traffic, respectively. Each section comprises subsets, which can be grouped into three main subjects:

- Initial rules—rules defined here will be applied first, on all gateway devices.
- Network device rules—rules can be defined per each gateway device.
- Final rules—rules defined here will be applied last, on all gateway devices.

To add rules to Input or Output rules sets, click the adjacent **New Entry** link.



Advanced Filtering

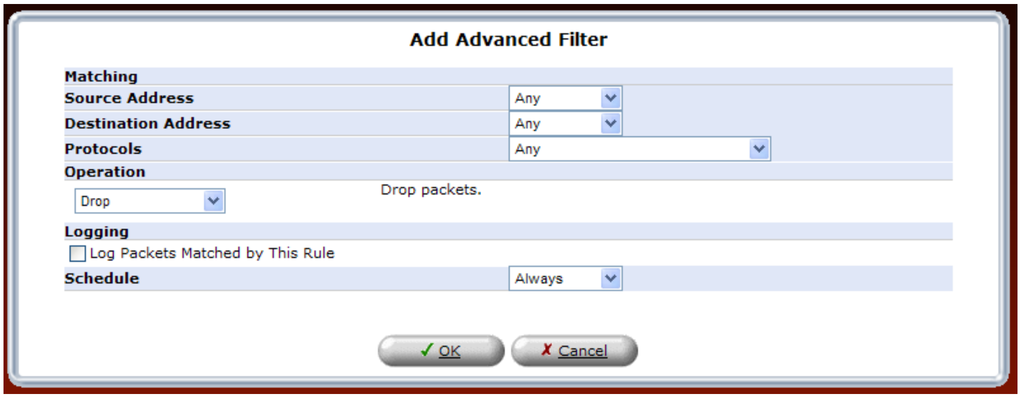
Input Rule Sets

Rule ID	Source Address	Destination Address	Protocols	Operation	Status	Action
Initial Rules						New Entry
Network (Home/Office) Rules						New Entry
Ethernet Switch Rules						New Entry
Broadband Connection (Ethernet) Rules						New Entry
Wireless 802.11g Access Point Rules						New Entry
Final Rules						New Entry

Output Rule Sets

Rule ID	Source Address	Destination Address	Protocols	Operation	Status	Action
Initial Rules						New Entry
Network (Home/Office) Rules						New Entry
Ethernet Switch Rules						New Entry
Broadband Connection (Ethernet) Rules						New Entry
Wireless 802.11g Access Point Rules						New Entry
Final Rules						New Entry

For example, if you clicked the **New Entry** link for input Network (Home/Office) Rules, the following screen will appear.



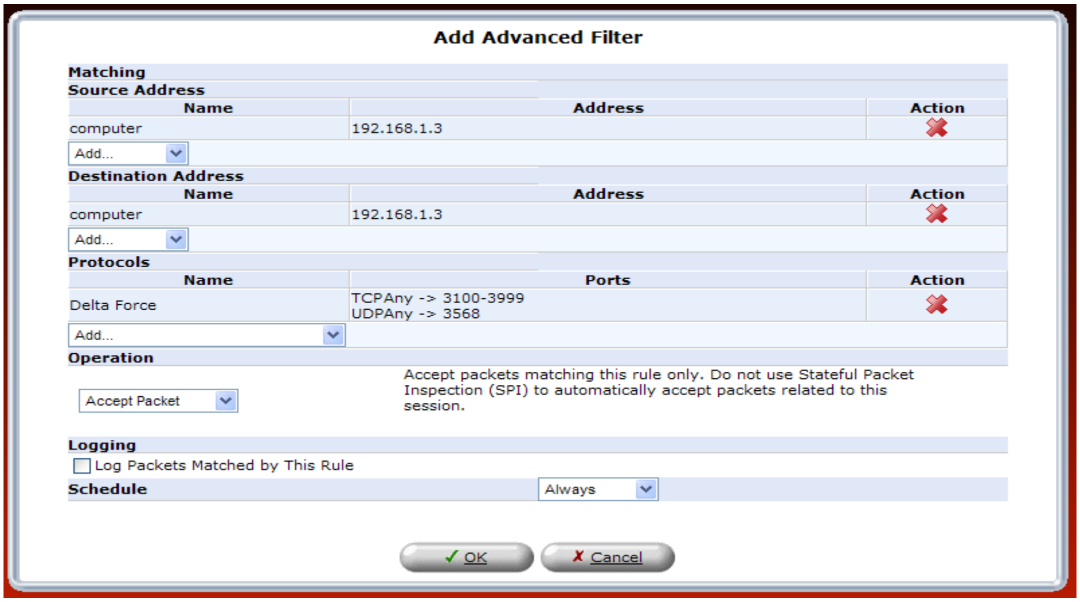
Add Advanced Filter

Matching	
Source Address	Any
Destination Address	Any
Protocols	Any
Operation	
Drop	Drop packets.
Logging	
□ Log Packets Matched by This Rule	
Schedule	Always

Select one of the following operation settings:

- Select **Drop** to drop packets.
- Select **Reject** to drop packets, and to send TCP Reset or ICMP Host Unreachable packets to the sender.
- Select **Accept Connection** to accept all packets related to this session.
- Select **Accept Packet** to accept packets matching this rule only. Do not use Stateful Packet Inspection (SPI) to automatically accept packets related to this session.

After you have entered the desired values, click **OK** to continue.



Add Advanced Filter

Matching

Source Address

Name	Address	Action
computer	192.168.1.3	✖
Add...		

Destination Address

Name	Address	Action
computer	192.168.1.3	✖
Add...		

Protocols

Name	Ports	Action
Delta Force	TCPAny -> 3100-3999 UDPAny -> 3568	✖
Add...		

Operation

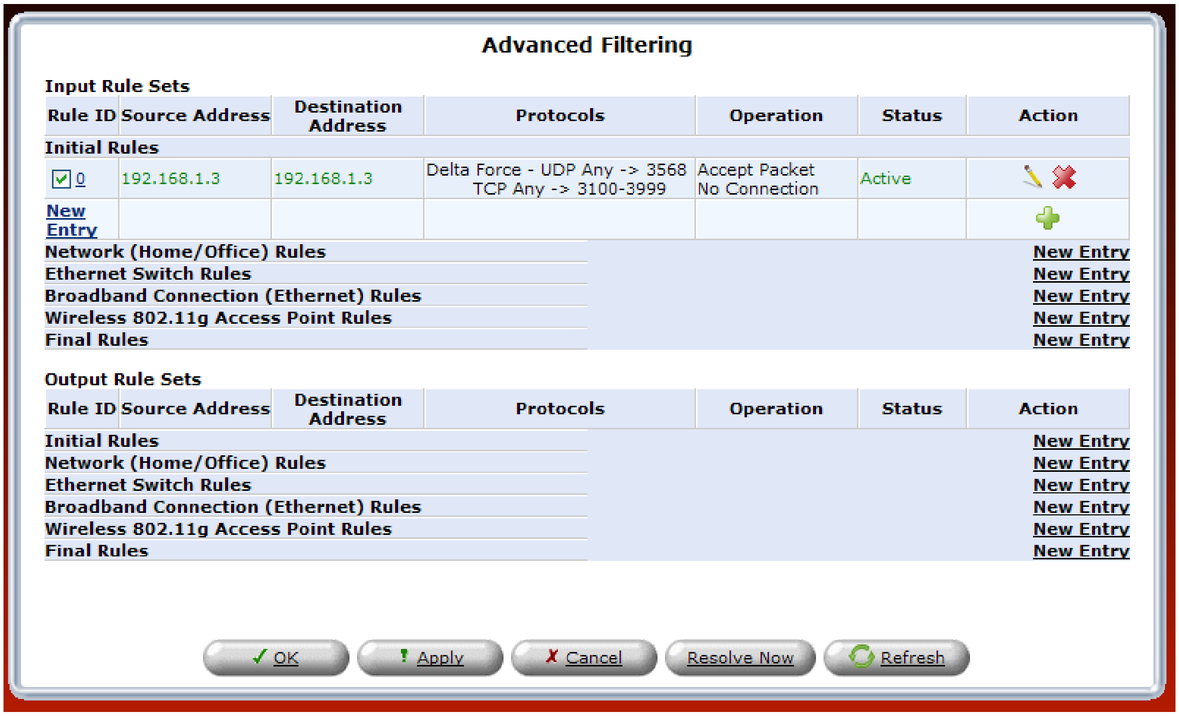
Accept Packet — Accept packets matching this rule only. Do not use Stateful Packet Inspection (SPI) to automatically accept packets related to this session.

Logging

□ Log Packets Matched by This Rule

Schedule Always

If you clicked **OK**, the following screen will appear. The rule is now active.



Advanced Filtering

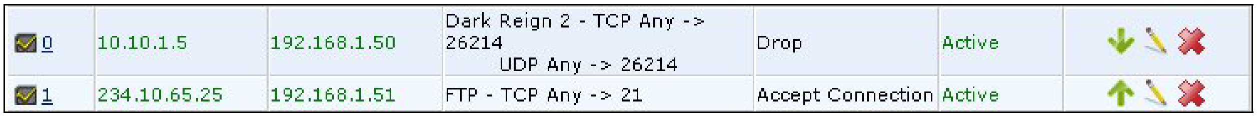
Input Rule Sets

Rule ID	Source Address	Destination Address	Protocols	Operation	Status	Action
Initial Rules						
☑ 0	192.168.1.3	192.168.1.3	Delta Force - UDP Any -> 3568 TCP Any -> 3100-3999	Accept Packet No Connection	Active	✎ ✖
New Entry						✚
Network (Home/Office) Rules						New Entry
Ethernet Switch Rules						New Entry
Broadband Connection (Ethernet) Rules						New Entry
Wireless 802.11g Access Point Rules						New Entry
Final Rules						New Entry

Output Rule Sets

Rule ID	Source Address	Destination Address	Protocols	Operation	Status	Action
Initial Rules						New Entry
Network (Home/Office) Rules						New Entry
Ethernet Switch Rules						New Entry
Broadband Connection (Ethernet) Rules						New Entry
Wireless 802.11g Access Point Rules						New Entry
Final Rules						New Entry

The order of the rules appearance represents both the order in which they were defined and the sequence by which they will be applied. By clicking the Move Up and Move Down action icons, you can change this order after your rules are already defined (without having to delete and then re-add them). After you click the desired icon, the screen will refresh and display the change.



☑ 0	10.10.1.5	192.168.1.50	Dark Reign 2 - TCP Any -> 26214 UDP Any -> 26214	Drop	Active	↓ ✎ ✖
☑ 1	234.10.65.25	192.168.1.51	FTP - TCP Any -> 21	Accept Connection	Active	↑ ✎ ✖

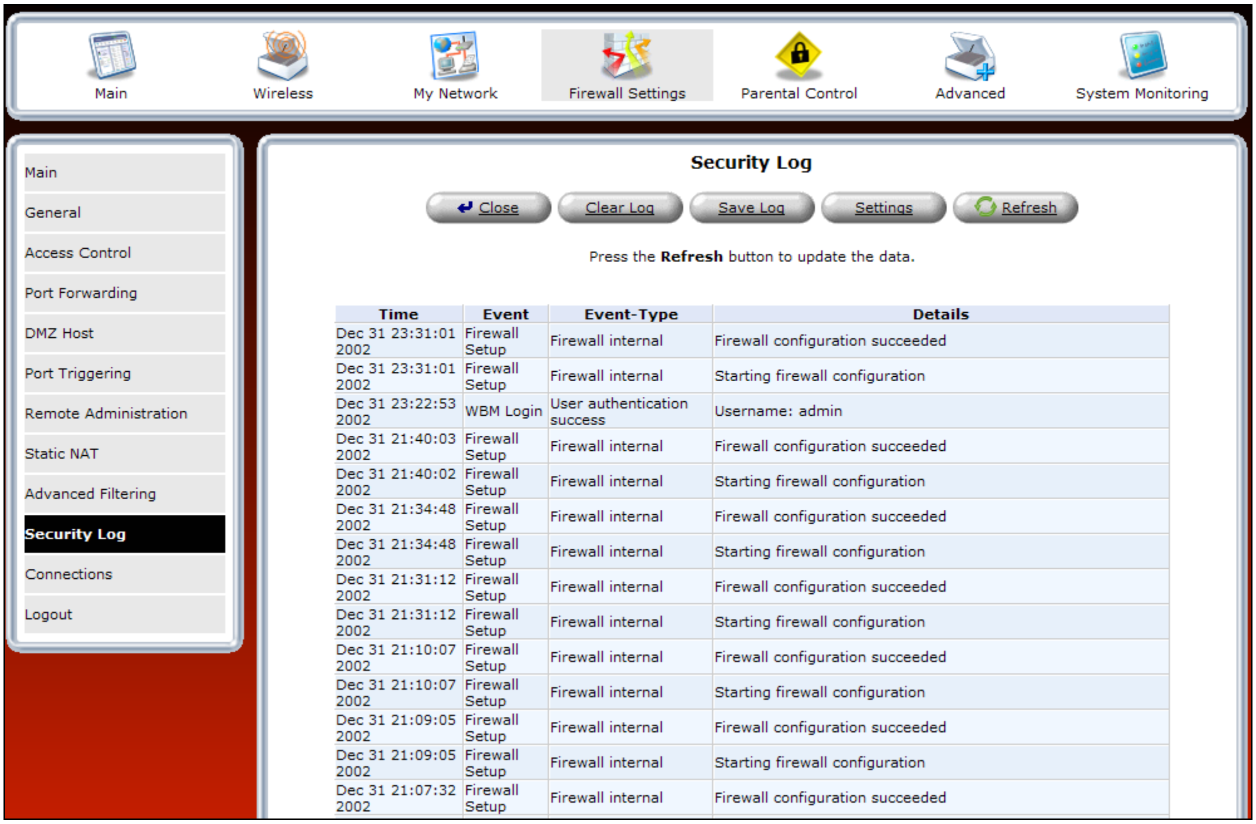
13.9 Security Log

If you select **Firewall Settings** in the top navigation menu and then select **Security Log** in the left submenu, the following screen will appear.

This screen alerts you of noteworthy information sent to Router from the Internet. The screen can contain 1000 entries, but a maximum of 50 entries are displayed at a time. Once 1000 entries have been logged, the oldest entry is removed to make space for the new entries as they occur. In this screen, do any of the following:

- Click **Close** to close the security log screen.
- Click **Clear** Log to remove all entries from the log.
- Click **Save** to save the settings to a syslog server.
- Click Settings to configure the security settings. Clicking this button opens a new window that contains configuration options for selecting the information that you want logged.
- Click **Refresh** to refresh the security log screen.

To configure the security log settings, click the **Settings** button.

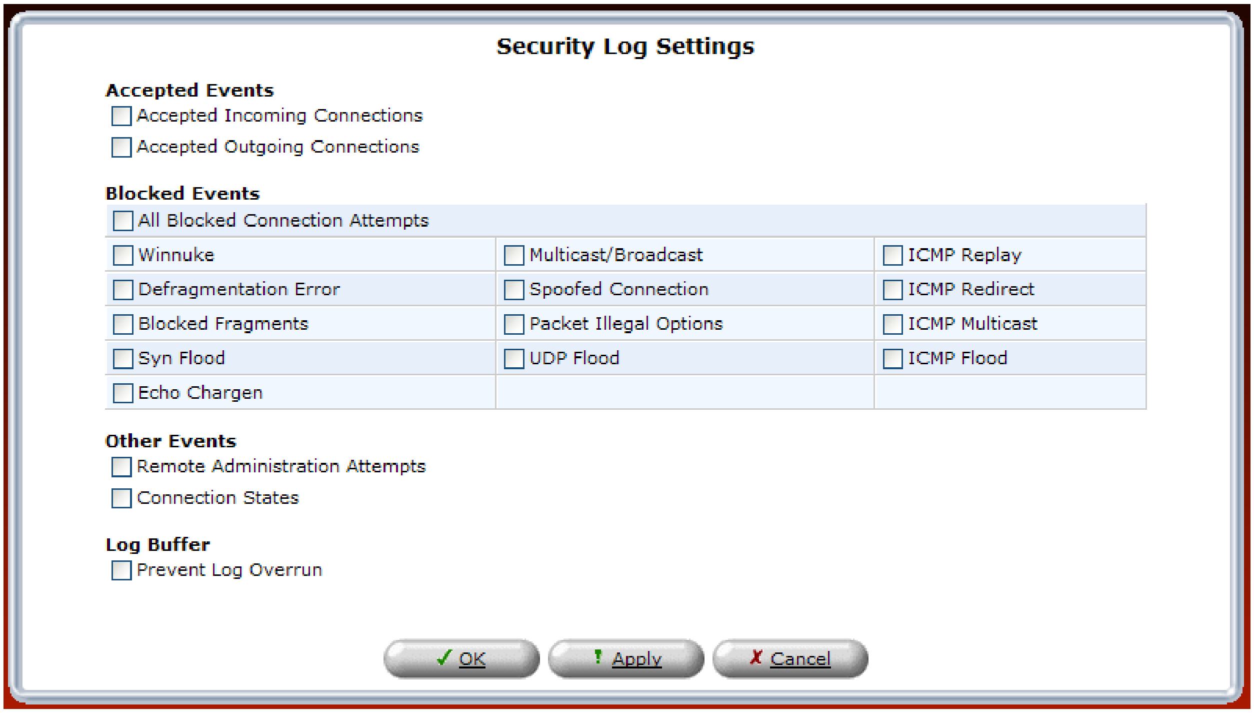


Security Log

Press the **Refresh** button to update the data.

Time	Event	Event-Type	Details
Dec 31 23:31:01 2002	Firewall Setup	Firewall internal	Firewall configuration succeeded
Dec 31 23:31:01 2002	Firewall Setup	Firewall internal	Starting firewall configuration
Dec 31 23:22:53 2002	WBM Login	User authentication success	Username: admin
Dec 31 21:40:03 2002	Firewall Setup	Firewall internal	Firewall configuration succeeded
Dec 31 21:40:02 2002	Firewall Setup	Firewall internal	Starting firewall configuration
Dec 31 21:34:48 2002	Firewall Setup	Firewall internal	Firewall configuration succeeded
Dec 31 21:34:48 2002	Firewall Setup	Firewall internal	Starting firewall configuration
Dec 31 21:31:12 2002	Firewall Setup	Firewall internal	Firewall configuration succeeded
Dec 31 21:31:12 2002	Firewall Setup	Firewall internal	Starting firewall configuration
Dec 31 21:10:07 2002	Firewall Setup	Firewall internal	Firewall configuration succeeded
Dec 31 21:10:07 2002	Firewall Setup	Firewall internal	Starting firewall configuration
Dec 31 21:09:05 2002	Firewall Setup	Firewall internal	Firewall configuration succeeded
Dec 31 21:09:05 2002	Firewall Setup	Firewall internal	Starting firewall configuration
Dec 31 21:07:32 2002	Firewall Setup	Firewall internal	Firewall configuration succeeded

If you clicked **Settings**, the following screen will appear. Select the desired settings by clicking the check boxes (a checkmark will appear in the box when a setting is enabled). Then, click **Apply** to save the settings.



Security Log Settings

Accepted Events

□ Accepted Incoming Connections

□ Accepted Outgoing Connections

Blocked Events

□ All Blocked Connection Attempts		
□ Winnuke	□ Multicast/Broadcast	□ ICMP Replay
□ Defragmentation Error	□ Spoofed Connection	□ ICMP Redirect
□ Blocked Fragments	□ Packet Illegal Options	□ ICMP Multicast
□ Syn Flood	□ UDP Flood	□ ICMP Flood
□ Echo Chargen		

Other Events

□ Remote Administration Attempts

□ Connection States

Log Buffer

□ Prevent Log Overrun

Select the types of activities for which you would like to have a log message generated:

- Accepted Events

  Accepted Incoming Connections Write a log message for each successful attempt to establish an inbound connection to the home network.
  Accepted Outgoing Connections Write a log message for each successful attempt to establish an outgoing connection to the public network.

- Blocked Events

  All Blocked Connection Attempts Write a log message for each blocked attempt to establish an inbound connection to the home network or vice versa. You can enable logging of blocked packets of specific types by disabling this option, and enabling some of the more specific options below it.
  Specific Events Specify the blocked events that should be monitored. Use this to monitor specific event such as SynFlood. A log message will be generated if either the corresponding check-box is checked, or the "All Blocked Connection Attempts" check-box is checked.

- Other Events

  Remote Administration Attempts Write a log message for each remote-administration connection attempt, whether successful or not.

  Connection States Provide extra information about every change in a connection opened by the firewall. Use this option to track connection handling by the firewall and Application Level Gateways (ALGs).

- Log Buffer

  Prevent Log Overrun Select this check box in order to stop logging firewall activities when the memory allocated for the log fills up.

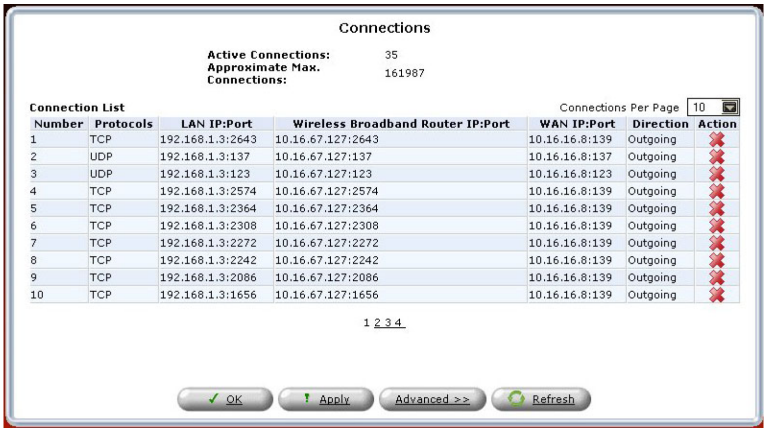
13.10 Connections

If you select **Firewall Settings** in the top navigation menu and then select **Connections** in the left submenu, the following screen will appear.

The connections list displays all the connections that are currently open on the firewall, as well as various details and statistics. You can use this list to close undesired connections by clicking the "X" icons. The basic display includes the protocol type, the different ports it uses, and the direction of the secured traffic.

- Active Connections—this value represents the number of active concurrent connections.
- Approximate Max. Connections—this value represents the amount of additional concurrent connections possible.
- Connections Per Page—use this drop-down list to select the number of connections to display at once.

Click the **Advanced** button to display a more detailed connection list.



Connections

Active Connections: 35
Approximate Max. Connections: 161987

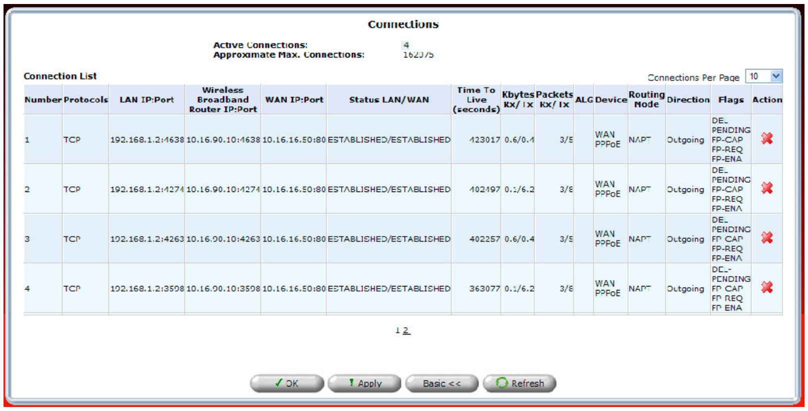
Connection List

Connections Per Page 10

Number	Protocols	LAN IP:Port	Wireless Broadband Router IP:Port	WAN IP:Port	Direction	Action
1	TCP	192.168.1.3:2643	10.16.67.127:2643	10.16.16.8:139	Outgoing	✖
2	UDP	192.168.1.3:137	10.16.67.127:137	10.16.16.8:137	Outgoing	✖
3	UDP	192.168.1.3:123	10.16.67.127:123	10.16.16.8:123	Outgoing	✖
4	TCP	192.168.1.3:2574	10.16.67.127:2574	10.16.16.8:139	Outgoing	✖
5	TCP	192.168.1.3:2364	10.16.67.127:2364	10.16.16.8:139	Outgoing	✖
6	TCP	192.168.1.3:2308	10.16.67.127:2308	10.16.16.8:139	Outgoing	✖
7	TCP	192.168.1.3:2272	10.16.67.127:2272	10.16.16.8:139	Outgoing	✖
8	TCP	192.168.1.3:2242	10.16.67.127:2242	10.16.16.8:139	Outgoing	✖
9	TCP	192.168.1.3:2086	10.16.67.127:2086	10.16.16.8:139	Outgoing	✖
10	TCP	192.168.1.3:1656	10.16.67.127:1656	10.16.16.8:139	Outgoing	✖

1 2 3 4

If you clicked **Advanced**, the following screen will appear. Additional details in this page include connection status (LAN/WAN), time-to-live, number of kilo-bytes and packets received and transmitted, ALG device, routing mode, and flags. To close undesired connections, click their adjacent "X" icons.



Connections

Active Connections: 4
Approximate Max. Connections: 162075

Connection List

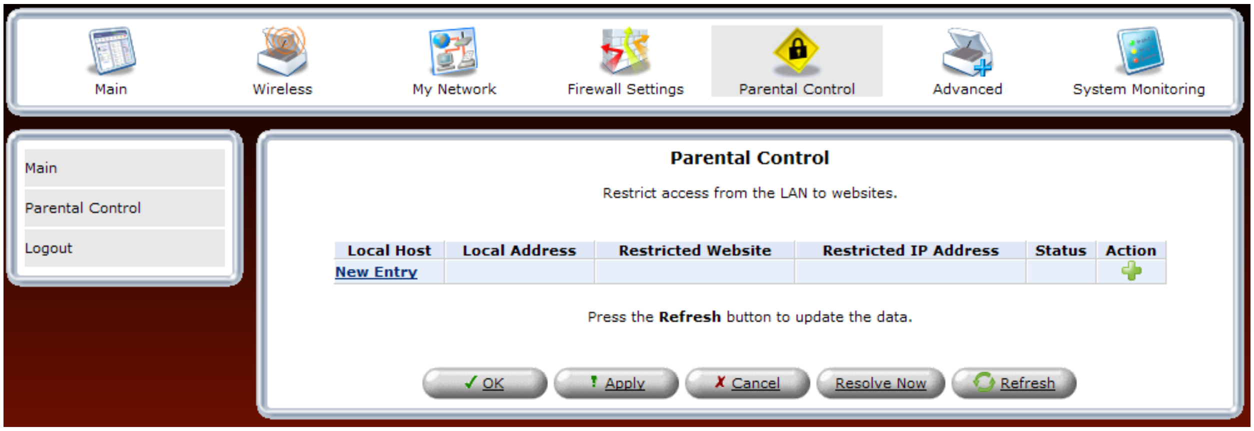
Connections Per Page 10

Number	Protocols	LAN IP:Port	Wireless Broadband Router IP:Port	WAN IP:Port	Status LAN/WAN	Time To Live (seconds)	Kbytes Rx/Tx	Packets Rx/Tx	ALG	Device	Routing Mode	Direction	Flags	Action
1	TCP	192.168.1.2:4638	10.16.90.10:4638	10.16.16.50:80	ESTABLISHED/ESTABLISHED	423017	0.6/0.4	3/5		WAN PPPoE	NAPT	Outgoing	DEL PENDING FP-CAP FP-REQ FP-ENA	✖
2	TCP	192.168.1.2:4274	10.16.90.10:4274	10.16.16.50:80	ESTABLISHED/ESTABLISHED	402497	0.1/6.2	3/8		WAN PPPoE	NAPT	Outgoing	DEL PENDING FP-CAP FP-REQ FP-ENA	✖
3	TCP	192.168.1.2:4263	10.16.90.10:4263	10.16.16.50:80	ESTABLISHED/ESTABLISHED	402257	0.6/0.4	3/5		WAN PPPoE	NAPT	Outgoing	DEL PENDING FP CAP FP-REQ FP-ENA	✖
4	TCP	192.168.1.2:3598	10.16.90.10:3598	10.16.16.50:80	ESTABLISHED/ESTABLISHED	363077	0.1/6.2	3/8		WAN PPPoE	NAPT	Outgoing	DEL- PENDING FP CAP FP REQ FP ENA	✖

1 2

14. PARENTAL CONTROLS

If you select **Parental Controls** in the top navigation menu and then select **Website Restrictions** in the left submenu, the following screen will appear. This feature allows you to block LAN access to certain hosts on the Internet or to certain Web sites. To configure a website restriction, click the **New Entry** link.



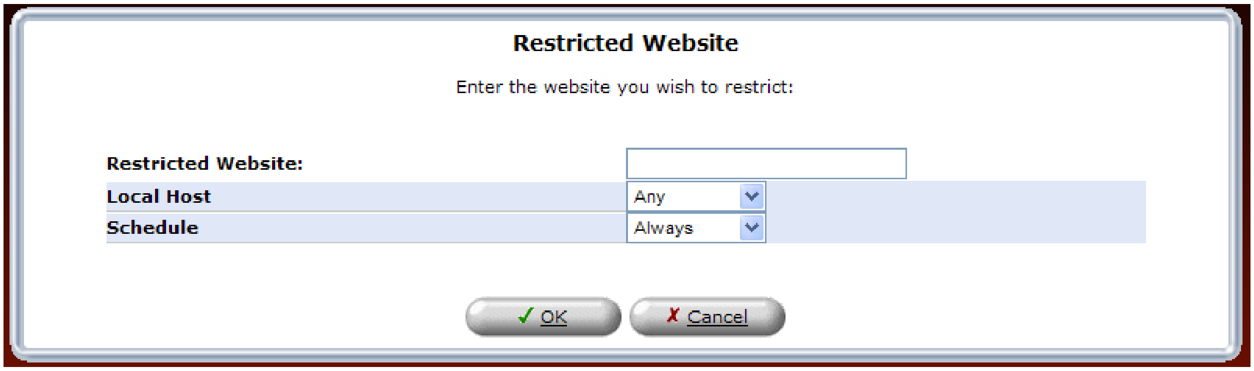
Parental Control

Restrict access from the LAN to websites.

Local Host	Local Address	Restricted Website	Restricted IP Address	Status	Action
New Entry					+

Press the **Refresh** button to update the data.

If you clicked **New Entry,** the following screen will appear. In the **Restricted Website** field, enter the desired website to which you want to restrict access. You can enter a valid IP address or domain name. Next, select a host from the **Local Host** drop-down list.

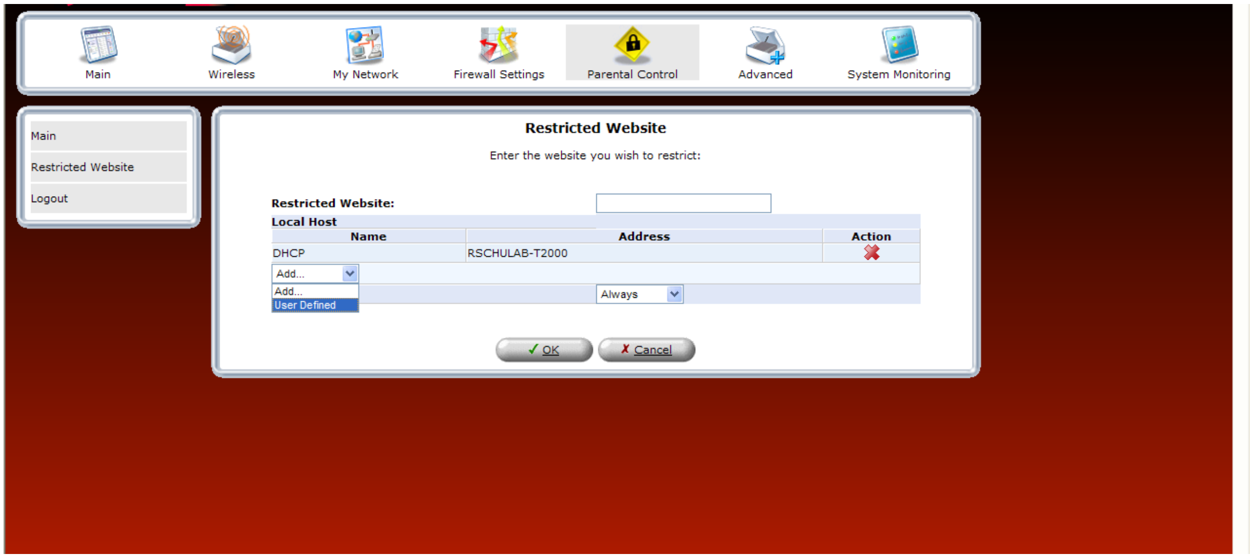


Restricted Website

Enter the website you wish to restrict:

Restricted Website:	
Local Host	Any
Schedule	Always

After you have selected a local host, the following screen will appear. Click **OK** to continue. To add a user-defined host to your list of restricted access, click **User Defined** in the **Add** drop-down list.



Restricted Website

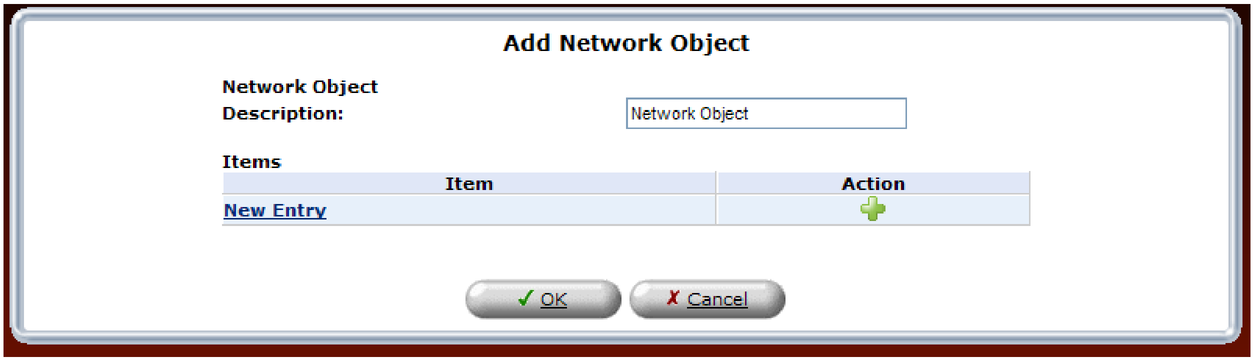
Enter the website you wish to restrict:

Restricted Website:

Local Host

Name	Address	Action
DHCP	RSCHULAB-T2000	✖

If you selected **User Defined,** the following screen will appear. Click the **New Entry** link.



Add Network Object

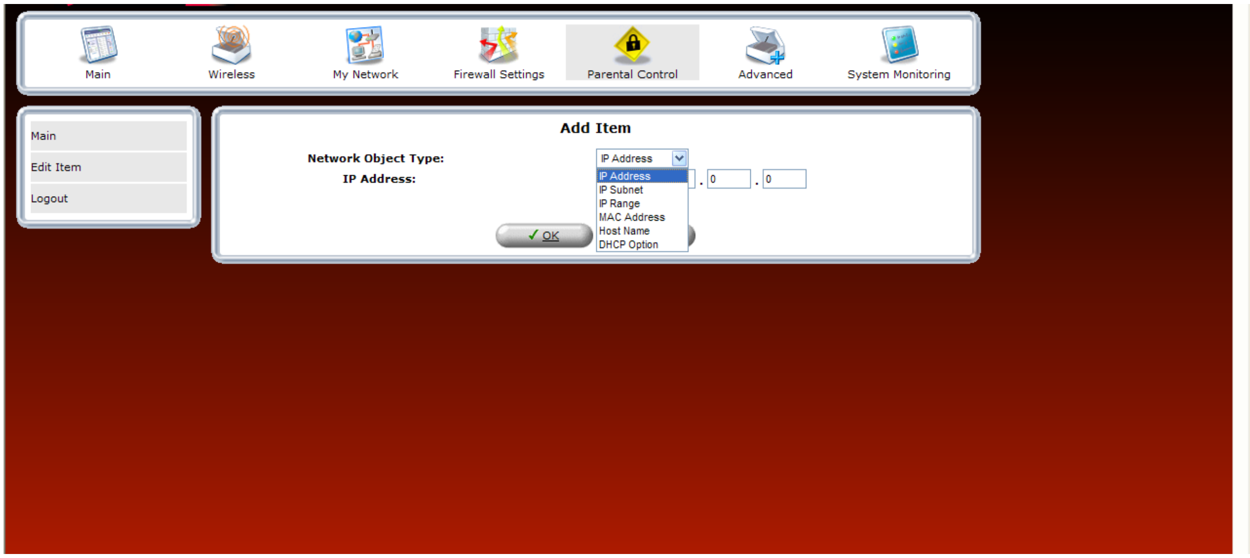
Network Object Description: Network Object

Items

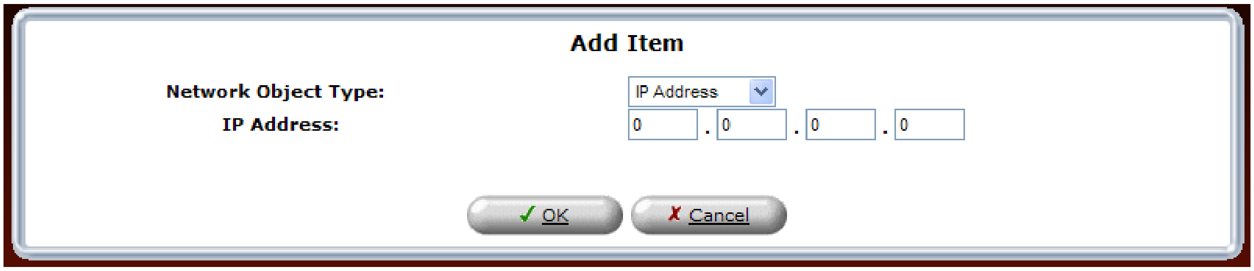
Item	Action
New Entry	✚

If you clicked **New Entry,** the following screen will appear. Select the desired object type from the **Network Object Type** drop-down list.

NOTE: You can select any option from the **Network Object Type** drop-down list, and then configure the screen accordingly.



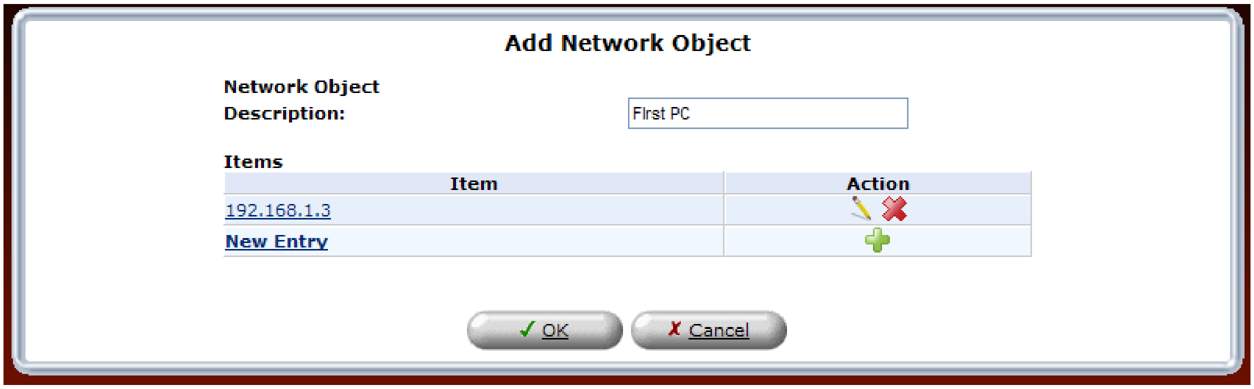
For example, if you selected **IP Address,** the following screen will appear. Enter the desired IP address in the field provided, and then click **OK** to continue.


Add Item

Network Object Type: IP Address

IP Address: 0 . 0 . 0 . 0

If you clicked **OK**, the following screen will appear. Enter the desired description in the **Network Object Description** field, and then click **OK** to continue.



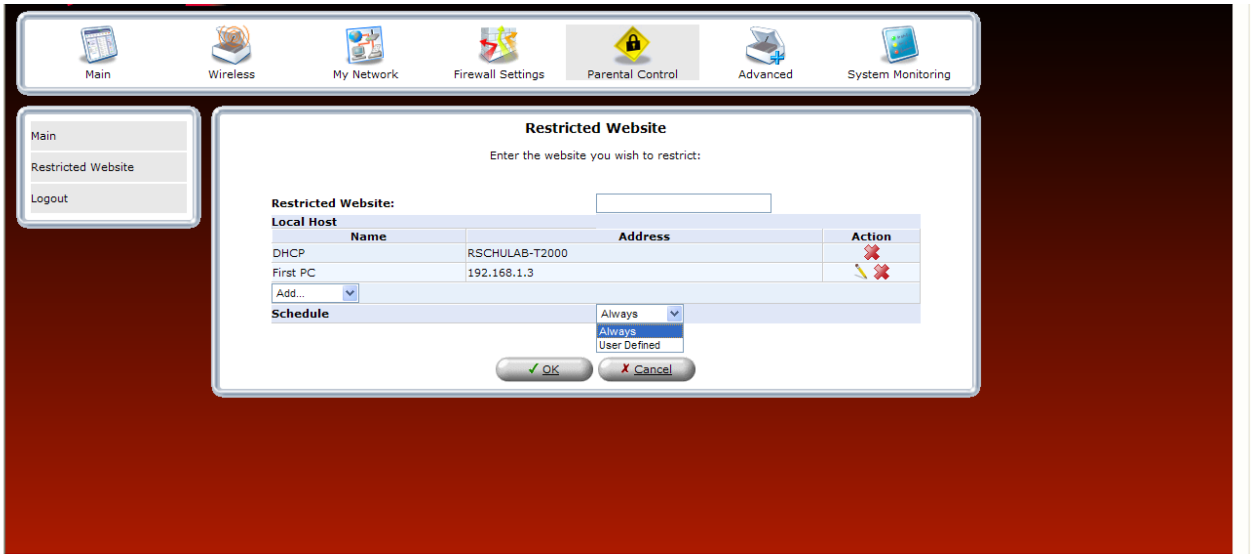
Add Network Object

Network Object Description: First PC

Items

Item	Action
192.168.1.3	✎ ✖
New Entry	✚

Next, select the desired schedule from the **Schedule** drop-down list, and then click **OK** to continue.



Restricted Website

Enter the website you wish to restrict:

Restricted Website:

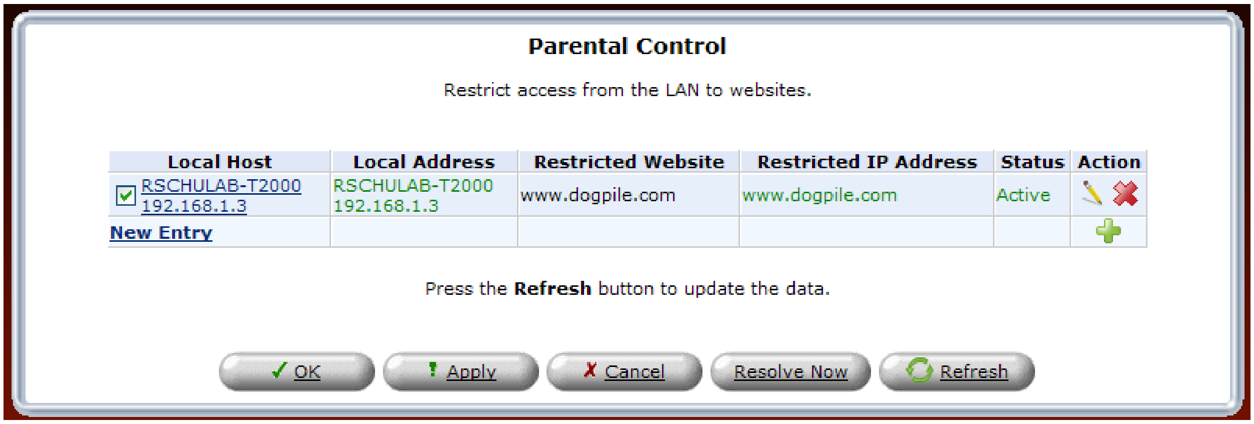
Local Host

Name	Address	Action
DHCP	RSCHULAB-T2000	✖
First PC	192.168.1.3	✎ ✖
Add...		

Schedule Always

For example, if you selected **Always**, and then clicked **OK** in the preceding screen, the following screen will appear. This screen shows the IP address with an active website restriction. In this example, the PC that has IP address "192.168.1.3" will be prohibited from accessing the specified Web site.

NOTE: If the **Status** field displays **Resolving**, this means that the Router is attempting to locate the restricted Web site. Click **Resolve Now**; the restricted Web site will be resolved into the IP address that you have specified, and the **Status** field will display **Active**.



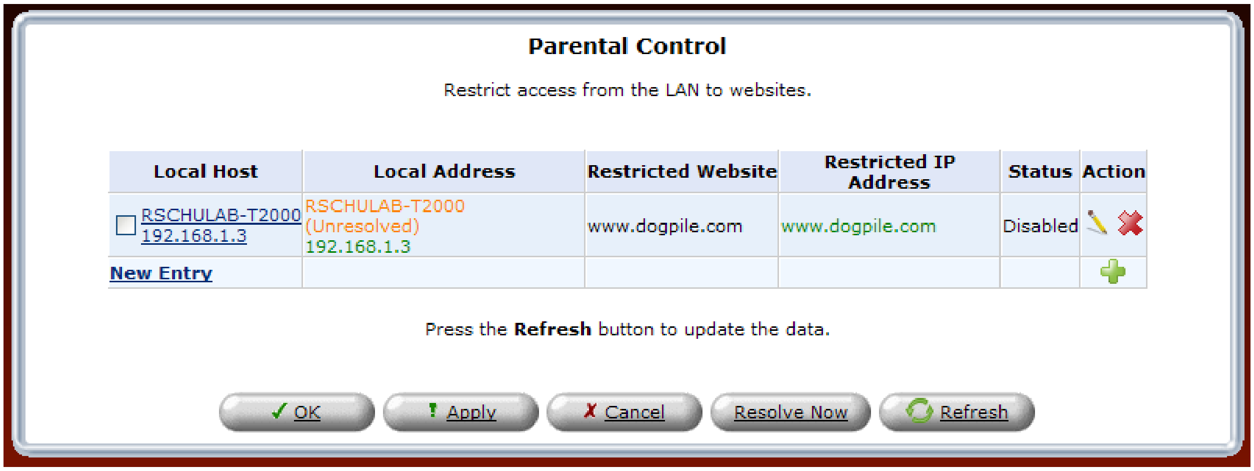
Parental Control

Restrict access from the LAN to websites.

Local Host	Local Address	Restricted Website	Restricted IP Address	Status	Action
☑ RSCHULAB-T2000 192.168.1.3	RSCHULAB-T2000 192.168.1.3	www.dogpile.com	www.dogpile.com	Active	✎ ✖
New Entry					✚

Press the **Refresh** button to update the data.

To disable the website restriction, click to clear the check box adjacent to the IP address. Then, click **Apply** to allow the settings to take effect. When the restriction status displays **Disabled**, the computer will have permission to access the Web site.



Parental Control

Restrict access from the LAN to websites.

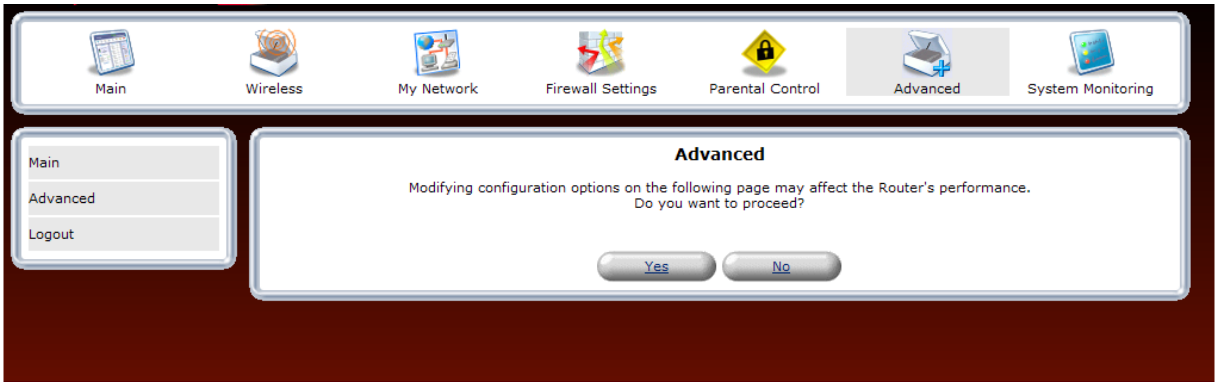
Local Host	Local Address	Restricted Website	Restricted IP Address	Status	Action
□ RSCHULAB-T2000 192.168.1.3	RSCHULAB-T2000 (Unresolved) 192.168.1.3	www.dogpile.com	www.dogpile.com	Disabled	✎ ✖
New Entry					✚

Press the **Refresh** button to update the data.

15. ADVANCED

If you select **Advanced** in the top navigation menu, the following screen will appear. The Advanced section of this User Guide is intended to provide assistance with configuring the Advanced features of your Verizon FiOS Router and assumes the user has an in-depth understanding of computers, routing, and internet networking.

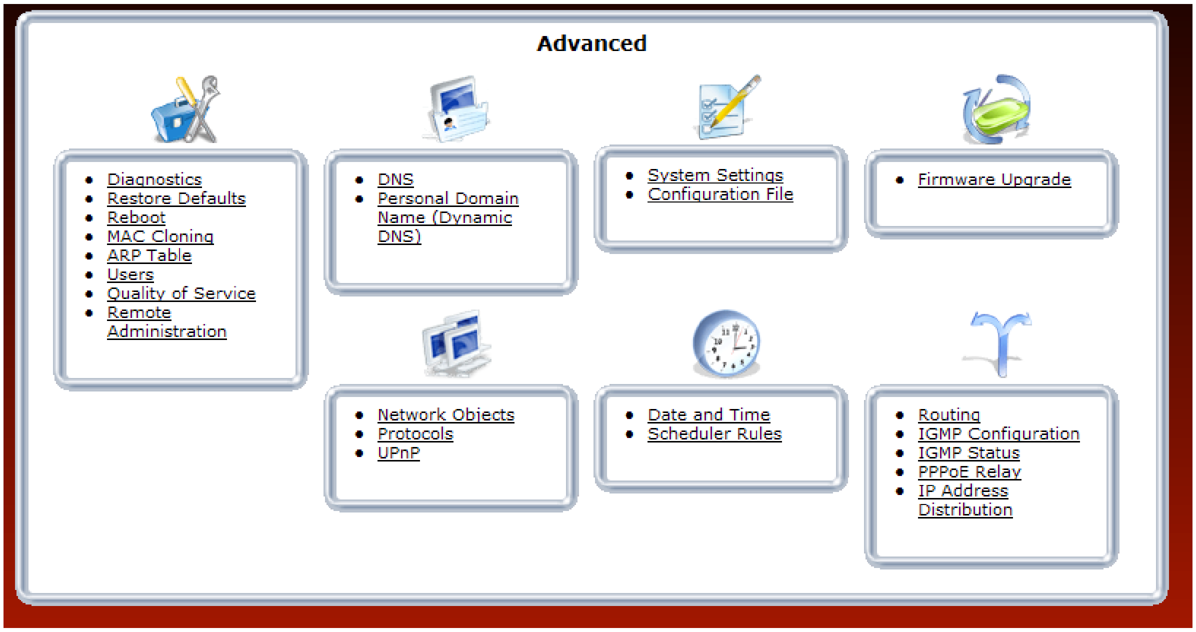
Click **Yes** to proceed to the Router's **Advanced** screen.



Advanced

Modifying configuration options on the following page may affect the Router's performance.
Do you want to proceed?

Clicking the links in the **Advanced** screen allows you to access various configurable settings in your Router.



Advanced

- Diagnostics
- Restore Defaults
- Reboot
- MAC Cloning
- ARP Table
- Users
- Quality of Service
- Remote Administration

- DNS
- Personal Domain Name (Dynamic DNS)

- System Settings
- Configuration File

- Firmware Upgrade

- Network Objects
- Protocols
- UPnP

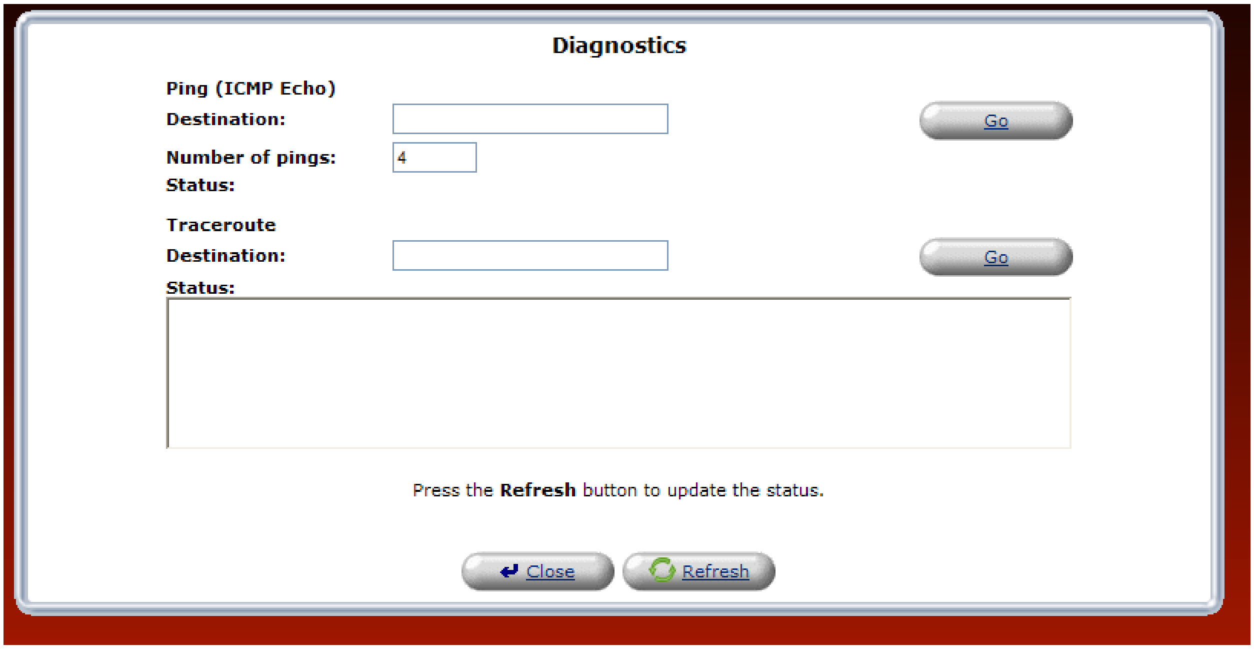
- Date and Time
- Scheduler Rules

- Routing
- IGMP Configuration
- IGMP Status
- PPPoE Relay
- IP Address Distribution

15.1 Diagnostics

If you click the **Diagnostics** link in the **Advanced** screen, the following screen will appear. Using this screen, you can run the following diagnostics tests:

- To run a PING test, type the appropriate IP address or host name in the field provided, and then click **Go.**
- To run a Traceroute test, type the appropriate IP address or host name in the field provided, and then click **Go.**



Diagnostics

Ping (ICMP Echo)

Destination:

Number of pings: 4

Status:

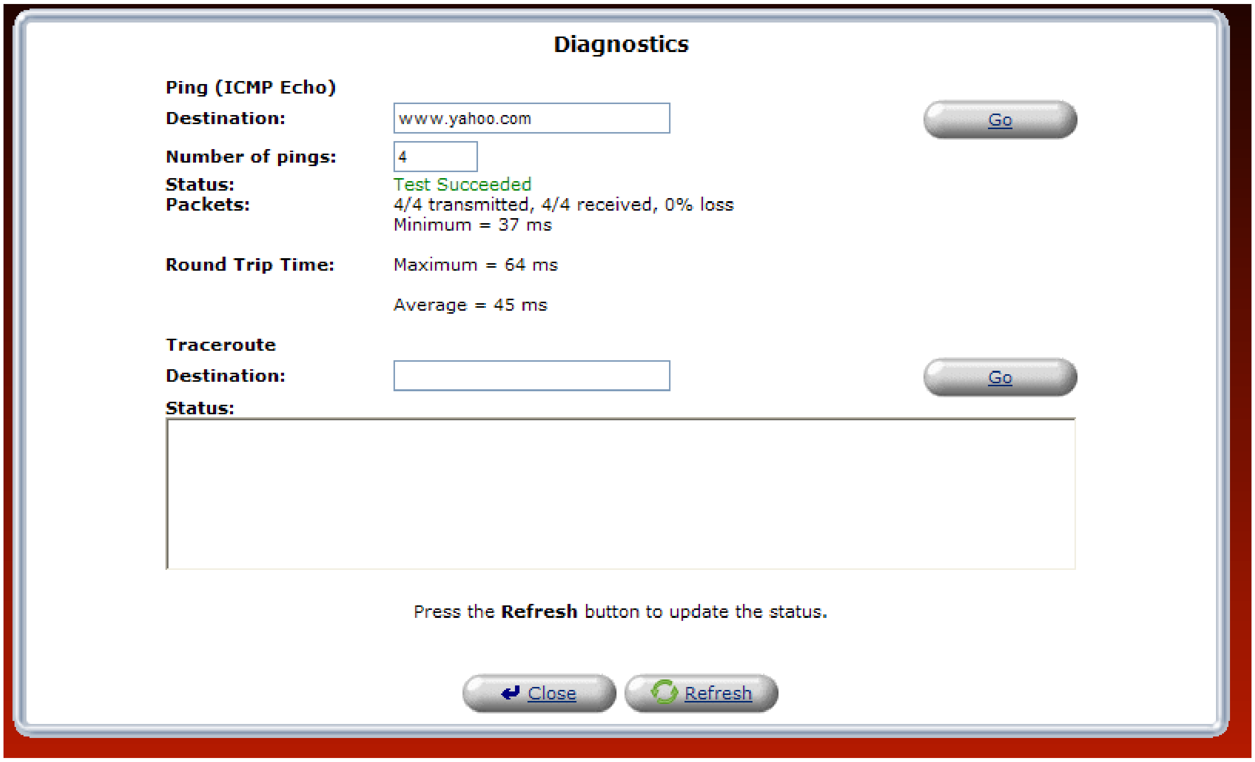
Traceroute

Destination:

Status:

Press the **Refresh** button to update the status.

For example, if you enter a host name in the **Destination** field and then click **Go**, the following screen will appear. This screen shows that the Ping test succeeded. Click **Close** to return to the **Advanced** screen.



Diagnostics

Ping (ICMP Echo)

Destination: www.yahoo.com

Number of pings: 4

Status: Test Succeeded

Packets: 4/4 transmitted, 4/4 received, 0% loss

Round Trip Time: Minimum = 37 ms
Maximum = 64 ms
Average = 45 ms

Traceroute

Destination:

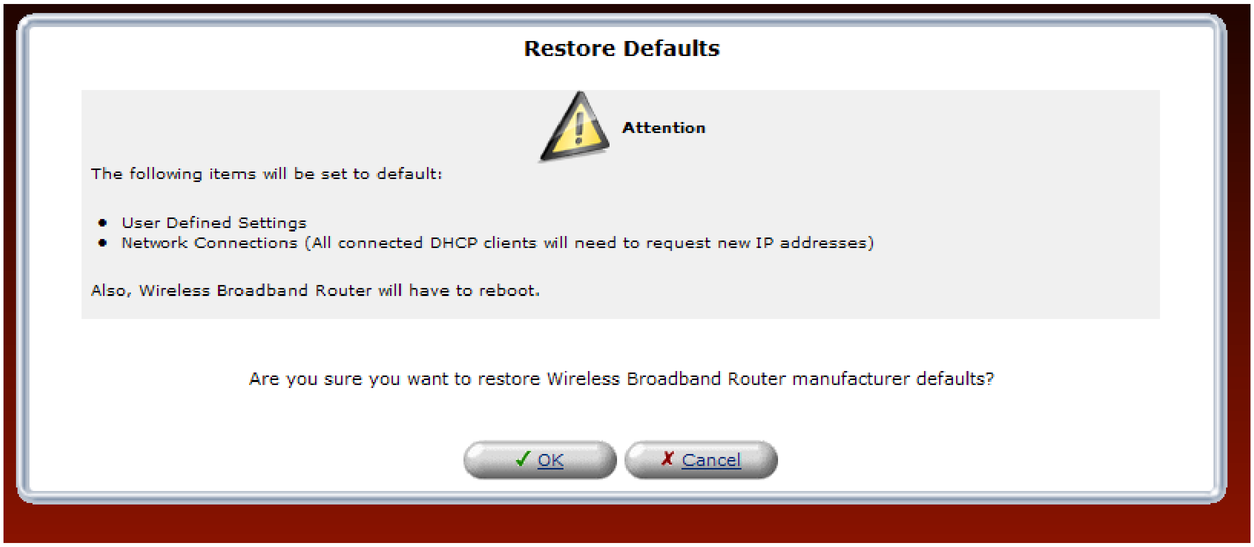
Status:

Press the **Refresh** button to update the status.

15.2 Restore Defaults

If you click the **Restore Defaults** link in the **Advanced** screen, the following screen will appear. Click **OK** to allow the Router to be reset to factory default settings. After the Router has rebooted, you will need to log in to the Router.

IMPORTANT: If you click **OK**, any settings that you have configured in the Router will be erased, and any data that the Router has reported will be lost.



Restore Defaults

Attention

The following items will be set to default:

- User Defined Settings
- Network Connections (All connected DHCP clients will need to request new IP addresses)

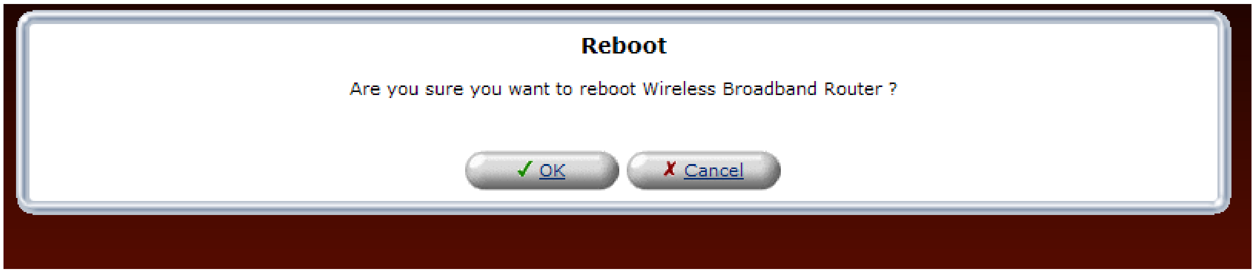
Also, Wireless Broadband Router will have to reboot.

Are you sure you want to restore Wireless Broadband Router manufacturer defaults?

15.3 Reboot

If you click the **Reboot** link in the **Advanced** screen, the following screen will appear. Rebooting the Router allows the Router to be restarted. Click **OK** to allow the Router to reboot. Please wait a brief moment while the Router is rebooting. Afterwards, you will need to log in to the Router.

IMPORTANT: The **Reboot** feature does not reset the Router to factory default settings. If you want to reset the Router to factory default settings, follow the instructions in section 15.2, "Restore Defaults."



Reboot

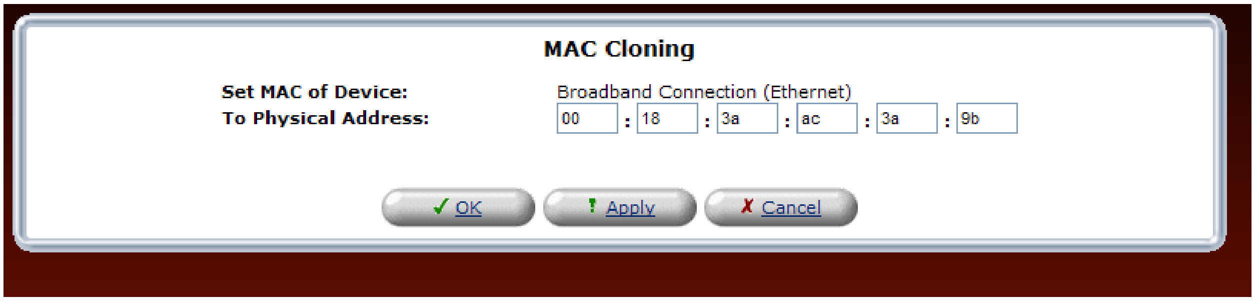
Are you sure you want to reboot Wireless Broadband Router ?

15.4 MAC Cloning

If you click the **MAC Cloning** link in the **Advanced** screen, the following screen will appear. A Media Access Control (MAC) address is a hexadecimal code that identifies a device on a network, such as a router. All networking devices have a MAC address, and in some cases, your service provider may need you to provide the MAC address of your network device. If you use MAC Cloning, you can simply enter the MAC address of the "old" Router into your Verizon Broadband Router, bypassing the need to contact the service provider with "new" MAC Address values (from the Verizon Broadband Router).

To configure MAC Cloning, enter the MAC Address of the Router you are replacing. Then, click **Apply** to save the settings.

NOTE: By default, this screen displays the MAC address of the Verizon Broadband Router. Replace these values with the MAC address of your "old" Router and click **Apply.**



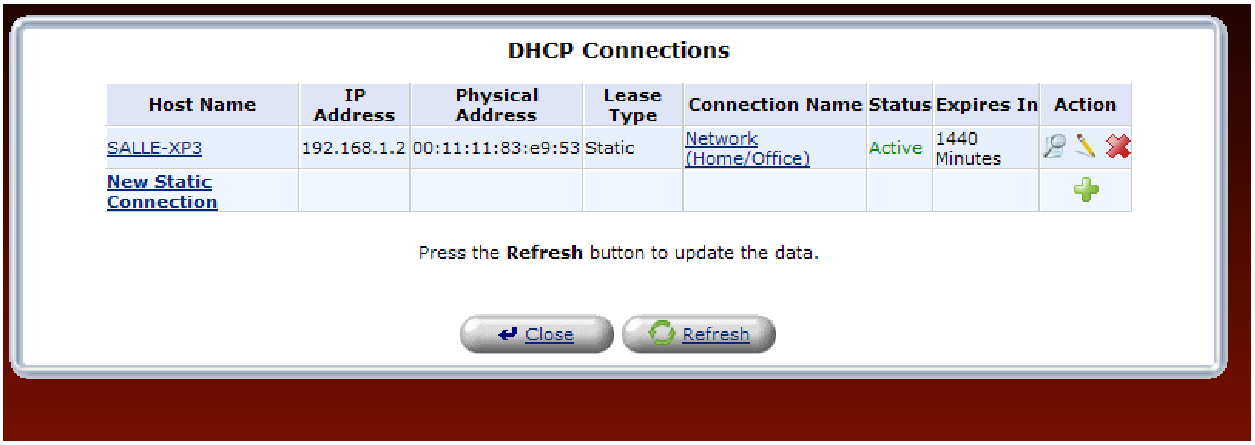
MAC Cloning

Set MAC of Device: Broadband Connection (Ethernet)

To Physical Address: 00 : 18 : 3a : ac : 3a : 9b

15.5 ARP Table

If you click the **ARP Table** link in the **Advanced** screen, the following screen will appear. This screen allows you to set up static DHCP connections using Host Names, IP Addresses, or MAC addresses. To configure a static DHCP connection, click the **New Static Connection** link.



DHCP Connections

Host Name	IP Address	Physical Address	Lease Type	Connection Name	Status	Expires In	Action
SALLE-XP3	192.168.1.2	00:11:11:83:e9:53	Static	Network (Home/Office)	Active	1440 Minutes	
New Static Connection							+

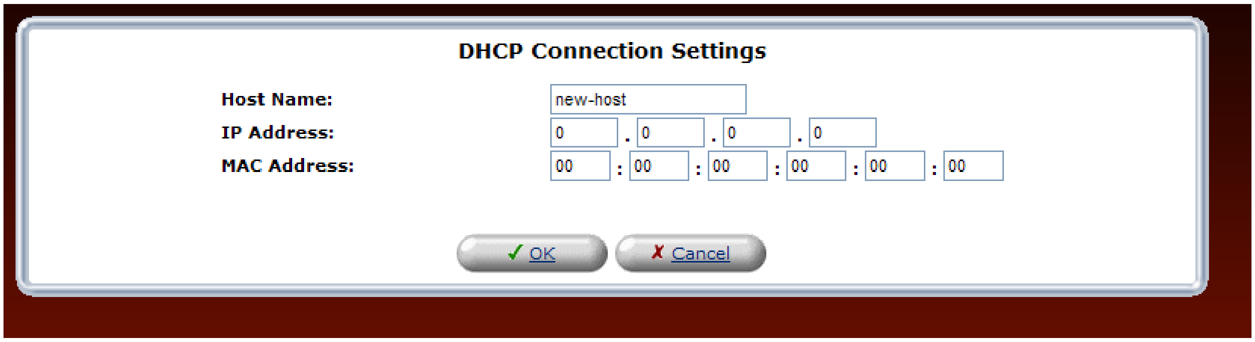
Press the **Refresh** button to update the data.

If you clicked **New Static Connection,** the following screen will appear. Enter the appropriate values in the fields provided, and then click **OK** to continue.

NOTE: You can have a total of 253 static LAN devices connected to your Verizon Router.

- Enter a host name for this connection.
- Enter the fixed IP address to assign to the computer.
- Enter the MAC address of the computer's network card.

NOTE: A device's fixed IP address is actually assigned to the specific network card's MAC address installed on the network computer. If this network card is replaced, the device's entry in the DHCP Connections list must be updated with the new network card's MAC address.



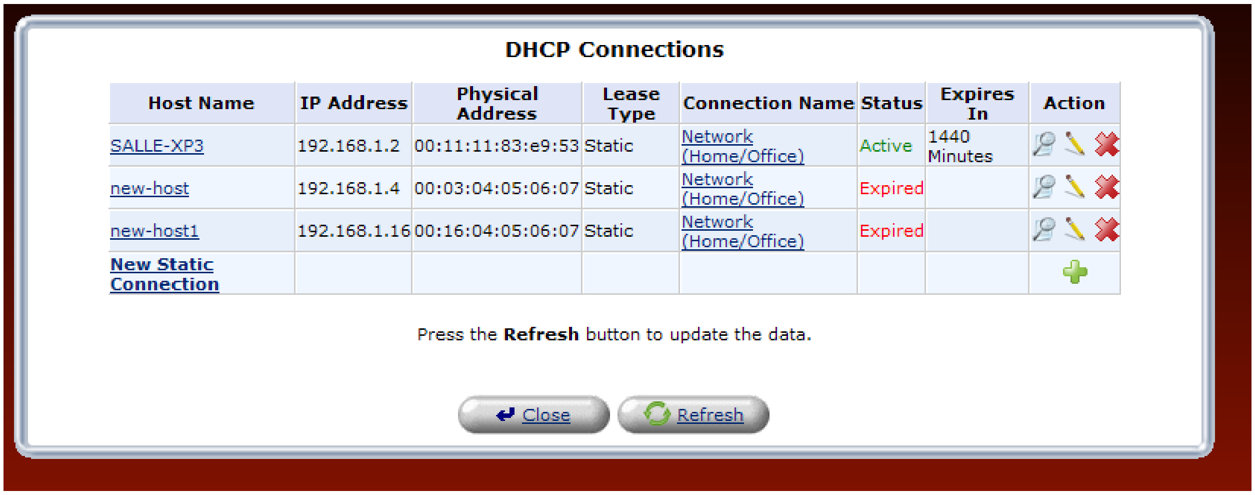
DHCP Connection Settings

Host Name: new-host

IP Address: 0 . 0 . 0 . 0

MAC Address: 00 : 00 : 00 : 00 : 00 : 00

For example, if you enter an IP Address and a MAC address and then click **OK**, the following screen will appear. The screen shows that the entry has been added to the list of static DHCP connections. To run a diagnostics test on a DHCP connection, click the diagnostics icon 🔍 adjacent to the connection you want to test. To remove a host from the table, click the appropriate "X" icon in the Action column.

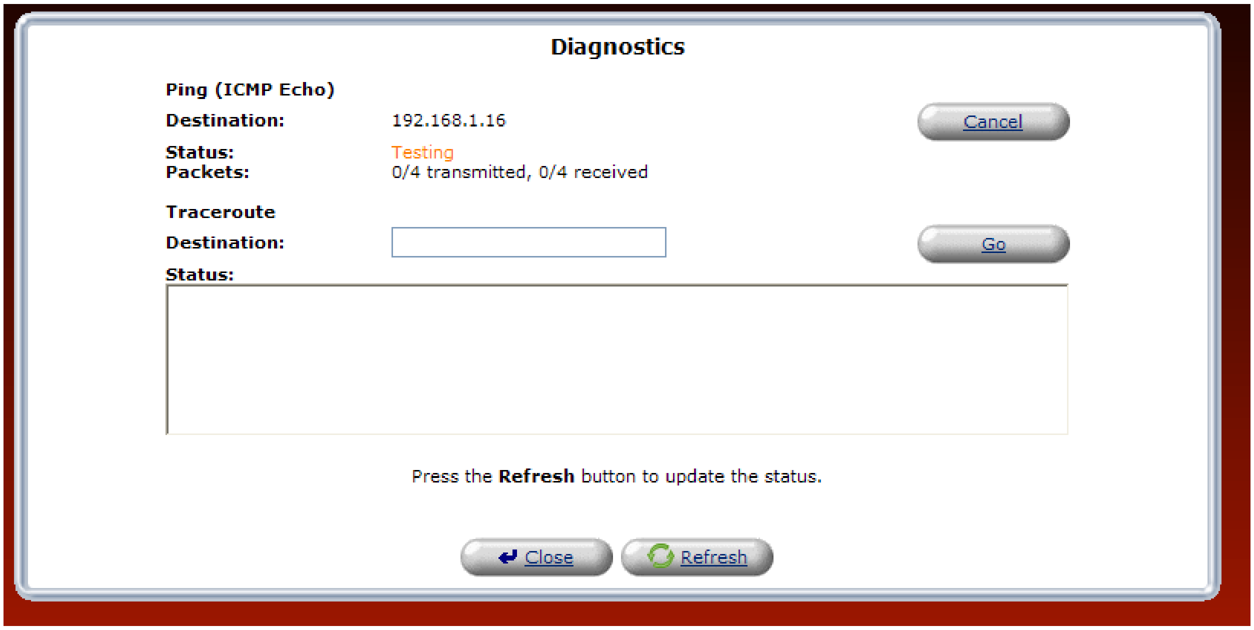


DHCP Connections

Host Name	IP Address	Physical Address	Lease Type	Connection Name	Status	Expires In	Action
SALLE-XP3	192.168.1.2	00:11:11:83:e9:53	Static	Network (Home/Office)	Active	1440 Minutes	🔍 ✎ ✖
new-host	192.168.1.4	00:03:04:05:06:07	Static	Network (Home/Office)	Expired		🔍 ✎ ✖
new-host1	192.168.1.16	00:16:04:05:06:07	Static	Network (Home/Office)	Expired		🔍 ✎ ✖
New Static Connection							✚

Press the **Refresh** button to update the data.

If you clicked the diagnostics icon, the following screen will appear. Review the status of the diagnostics test, and then click **Close** to return to the **DHCP Connections** screen.



Diagnostics

Ping (ICMP Echo)

Destination: 192.168.1.16

Status: Testing

Packets: 0/4 transmitted, 0/4 received

Traceroute

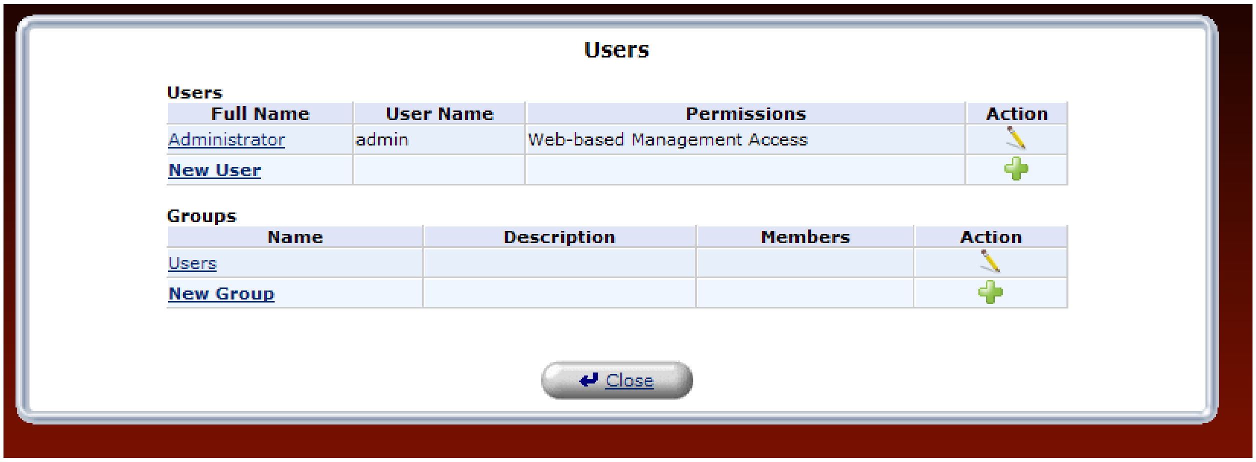
Destination:

Status:

Press the **Refresh** button to update the status.

15.6 Users

If you click the **Users** link in the **Advanced** screen, the following screen will appear. This feature allows you to configure user settings in the Router.



Users

Users

Full Name	User Name	Permissions	Action
Administrator	admin	Web-based Management Access	✎
New User			✚

Groups

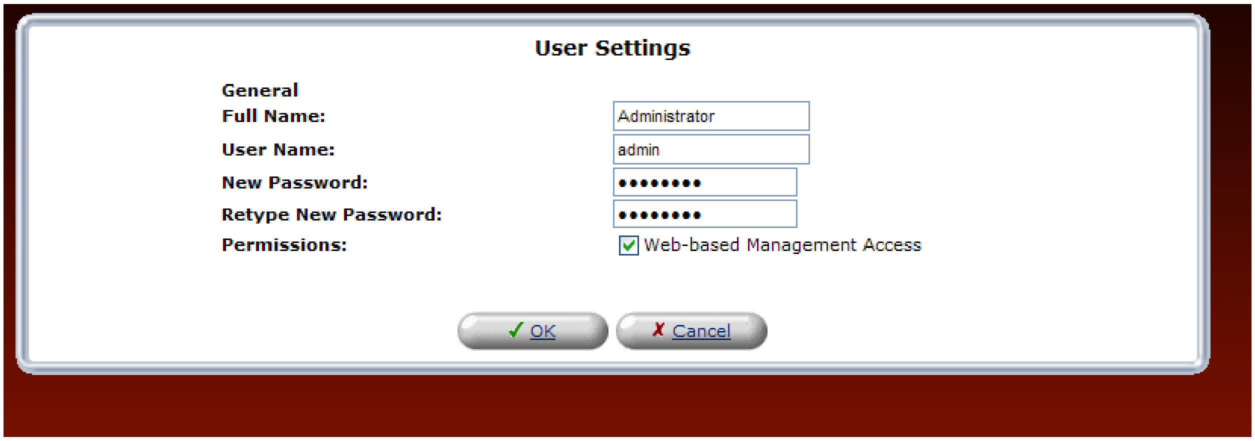
Name	Description	Members	Action
Users			✎
New Group			✚

15.6.1 Users—Adding a New Administrator

If you click the **Administrator** link in the **Users** screen, the following screen will appear. This screen allows you to set up the desired Administrator values. Enter the appropriate values, and then click **OK** to save the changes.

NOTE: If the Router is password protected and you are not an authorized user, you will not be allowed to change and save the values in this screen. (The Router cannot be configured unless the user is logged in.) Contact your network administrator for further instructions.

- Full Name—Enter the user's full name.
- User Name—Enter the name a remote user will use to access the home or office network. This field is case-sensitive.
- New Password/Retype New Password—Enter the password for the user (and enter it again to confirm).
- Permissions—Click the check box to enable web-based management access.



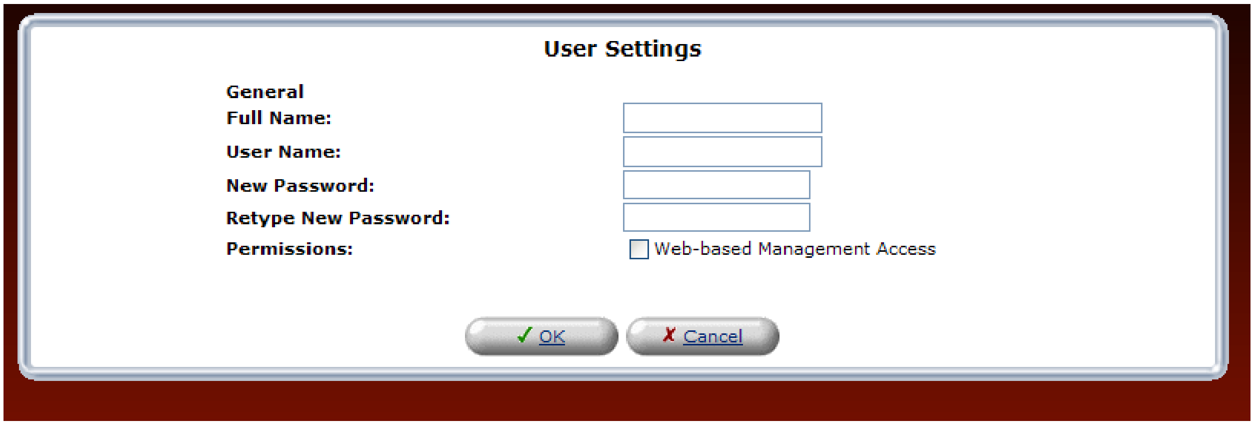
User Settings

General

Full Name:	Administrator
User Name:	admin
New Password:	••••••••
Retype New Password:	••••••••
Permissions:	☑ Web-based Management Access

15.6.2 Users—Adding a New User

If you click the **New User** link, the following screen will appear. This screen allows specific users to have administrative permissions in the Router.



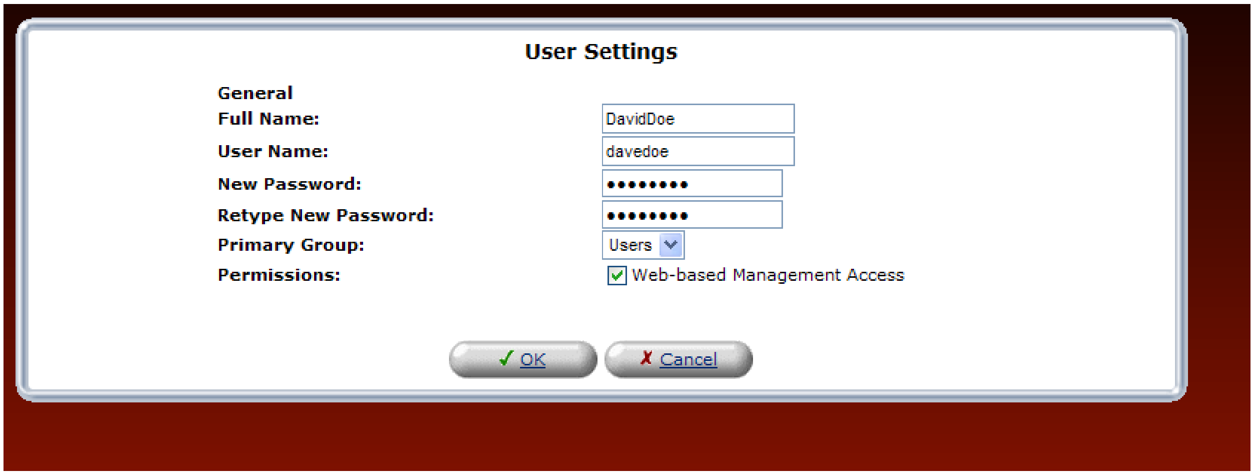
User Settings

General

Full Name:	
User Name:	
New Password:	
Retype New Password:	
Permissions:	□ Web-based Management Access

To configure User Settings, enter the appropriate values, and then click **OK** to save the changes.

NOTE: The User Name and Password values must be at least 6 characters, and should consist of standard characters only (ASCII 32-126), excluding the special character space and any of these characters **:@"**|\/=+<>**[]*?,;**. Also, user names containing capital letters are not recommended. It might cause connectivity problems on Windows 98 hosts.

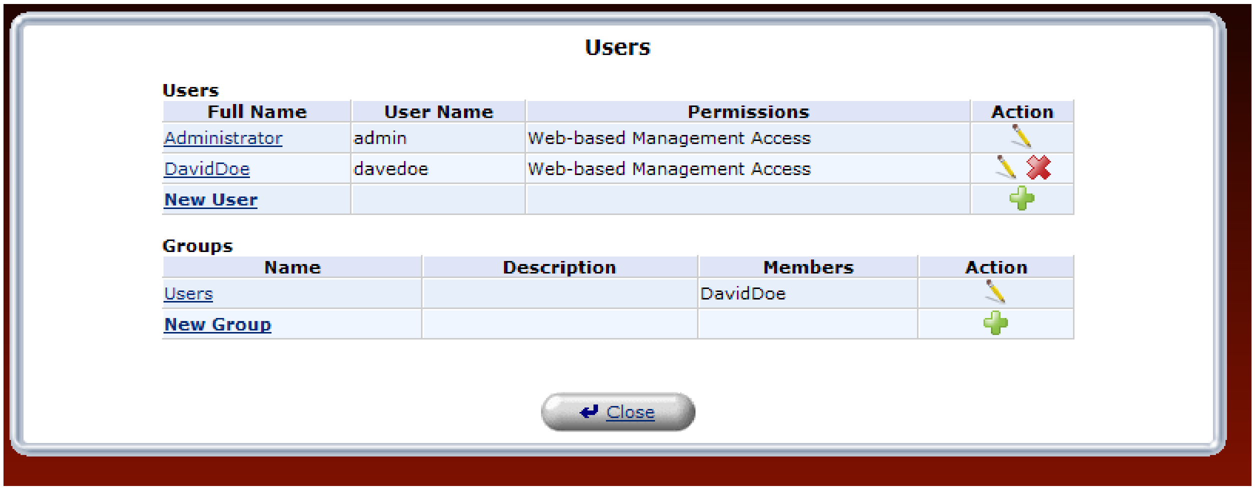


User Settings

General

Full Name:	DavidDoe
User Name:	davedoe
New Password:	••••••••
Retype New Password:	••••••••
Primary Group:	Users
Permissions:	☑ Web-based Management Access

After you have entered the appropriate values and click **OK**, the following screen will appear. The user information has been added to the Router. If desired, repeat the preceding instructions to add additional users to the administrator permissions list.



Users

Users

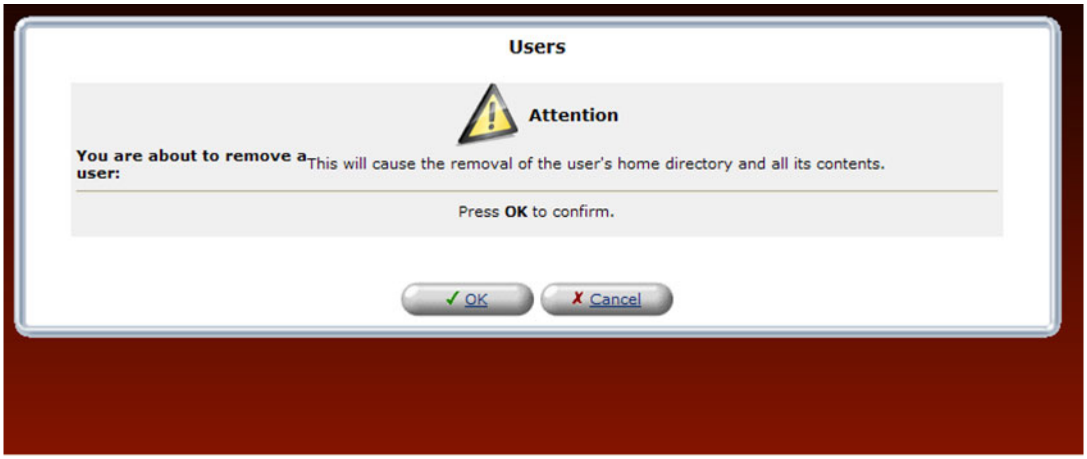
Full Name	User Name	Permissions	Action
Administrator	admin	Web-based Management Access	✎
DavidDoe	davedoe	Web-based Management Access	✎ ✖
New User			✚

Groups

Name	Description	Members	Action
Users		DavidDoe	✎
New Group			✚

15.6.3 Users—Removing a User

To remove a user from the list, click the “X” icon. The following screen will appear. Click **OK** to continue.



Users

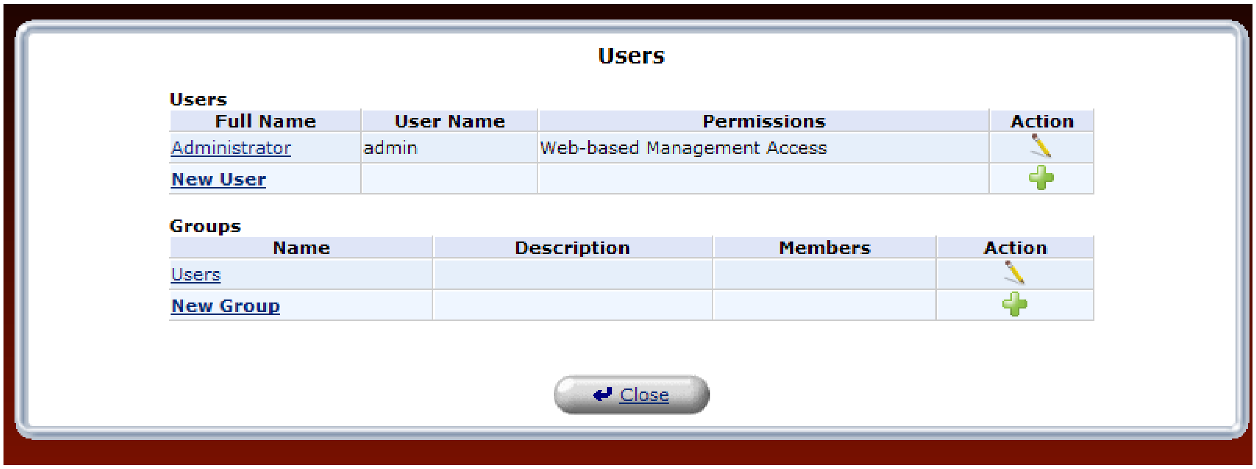
Attention

You are about to remove a user: This will cause the removal of the user's home directory and all its contents.

Press **OK** to confirm.

15.6.4 Groups—Adding a New Group

To add a new group, click the **New Group** link.



Users

Users

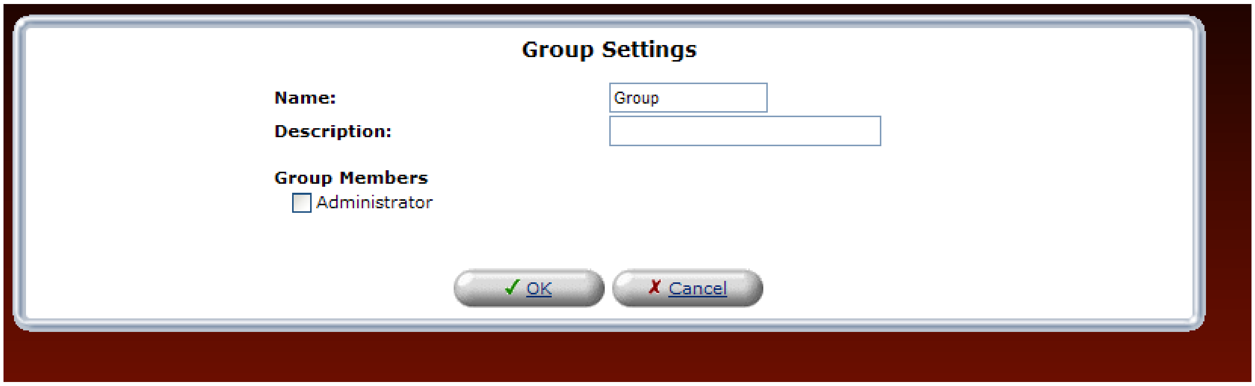
Full Name	User Name	Permissions	Action
Administrator	admin	Web-based Management Access	✎
New User			✚

Groups

Name	Description	Members	Action
Users			✎
New Group			✚

If you click the **New Group**, the following screen will appear. Using this screen, you can configure additional groups in the Router. At this screen, do the following:

1. Enter a Group Name of your choice.
2. Enter a description of your choice.
3. If you want to assign administrative permissions to the group, click the **Group Members Administrator** check box; otherwise, leave this box empty.
4. Click **OK** to save the settings.



Group Settings

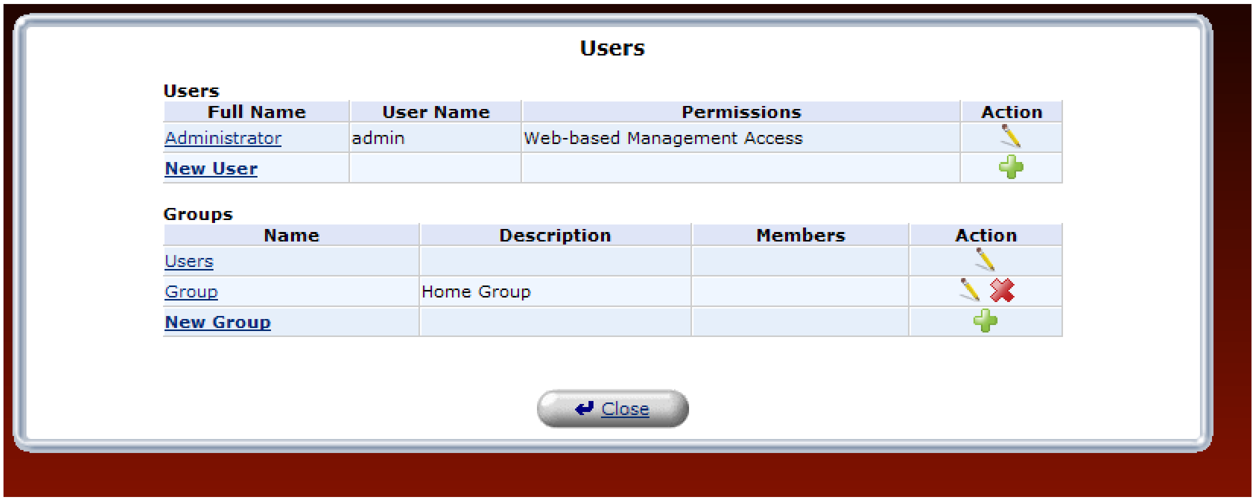
Name: Group

Description:

Group Members

□ Administrator

After you have entered the desired values and clicked **OK**, the following screen will display the group attributes. Click **Close** to return to the **Advanced** screen.



Users

Users

Full Name	User Name	Permissions	Action
Administrator	admin	Web-based Management Access	✎
New User			✚

Groups

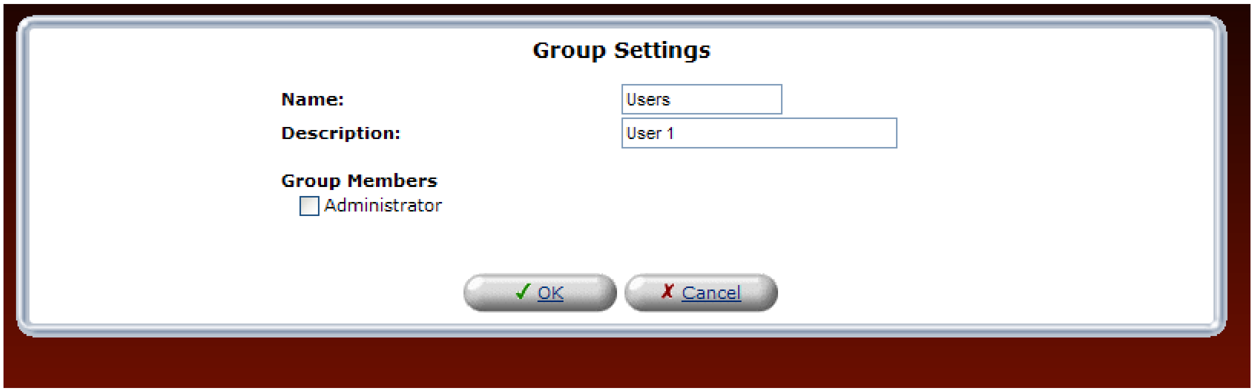
Name	Description	Members	Action
Users			✎
Group	Home Group		✎ ✖
New Group			✚

15.6.5 Groups—Add a User to a Group

To set up new users for a group, click the **User** link in the **Groups** section of the screen. The following screen will appear. Using this screen, you can assign users to a designated group.

At this screen, do the following:

1. Enter a User name of your choice.
2. Enter a description of your choice.
3. If you want to assign administrative permissions to the user, click the **Group Members Administrator** check box; otherwise, leave this box empty.
4. Click **OK** to save the settings.

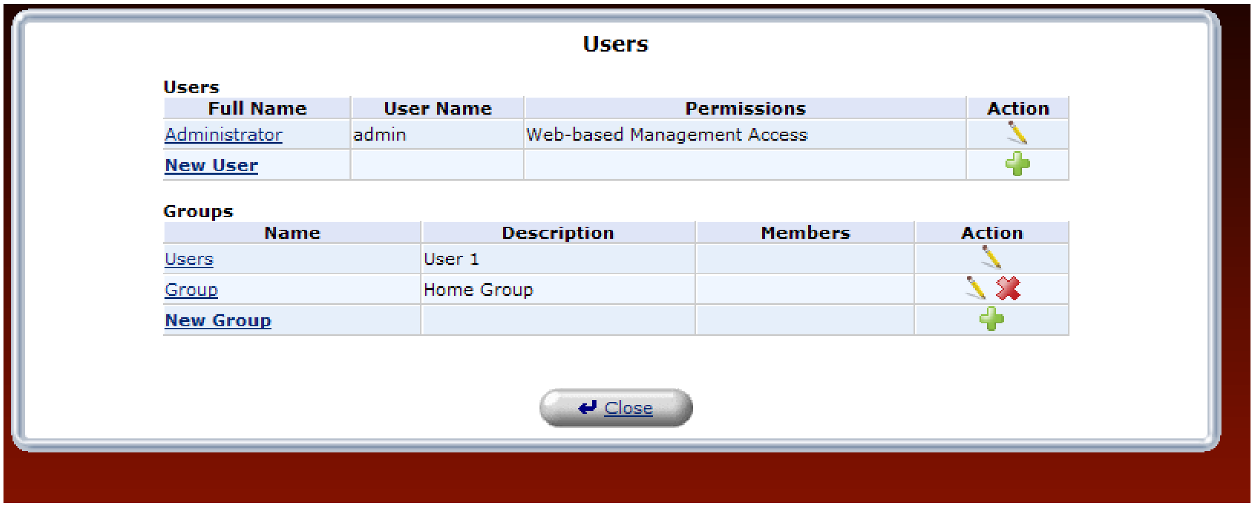


Group Settings

Name:	Users
Description:	User 1

Group Members
□ Administrator

After you have entered the desired values and clicked **OK**, the following screen will display the group attributes. Click **Close** to return to the **Advanced** screen.



Users

Users

Full Name	User Name	Permissions	Action
Administrator	admin	Web-based Management Access	✎
New User			✚

Groups

Name	Description	Members	Action
Users	User 1		✎
Group	Home Group		✎ ✖
New Group			✚

15.7 Quality of Service

The QoS feature allows you to configure Quality of Service parameters in your Router. Network-based applications and traffic are growing at a high rate, producing an ever-increasing demand for bandwidth and network capacity. Bandwidth and capacity cannot be expanded infinitely, requiring that bandwidth-demanding services be delivered over existing infrastructure, without incurring additional expensive investments. The next logical means of ensuring optimal use of existing resources are Quality of Service (QoS) mechanisms for congestion management and avoidance. Quality of Service refers to the capability of a network device to provide better service to selected network traffic. This is achieved by shaping the traffic and processing higher priority traffic before lower priority traffic.

15.7.1 General

If you click the **Quality of Service** link in the **Advanced** screen, the following screen appears. This screen allows you to configure general QoS settings. Enter the appropriate settings, and then click **Apply**.

NOTE: Choosing a new QoS profile will cause all previous QoS settings to be lost.

Before selecting the QoS profile that mostly suits your needs, select your bandwidth from this combo-box. If you do not see an appropriate entry, select 'User Defined', and enter your Tx and Rx bandwidths manually.

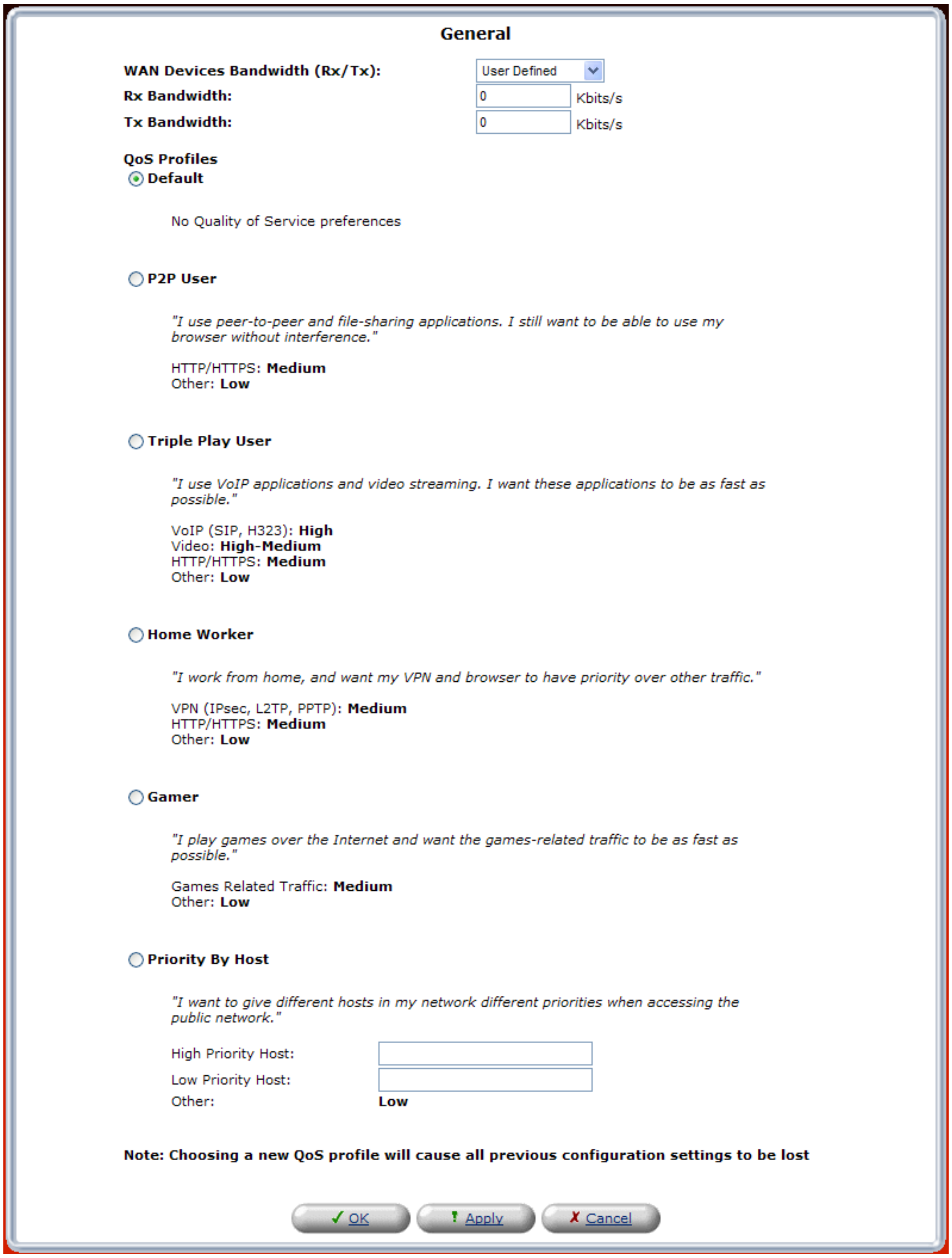
- Enter your Tx bandwidth in Kbits per second.
- Enter your Rx bandwidth in Kbits per second.

Select the profile that mostly suits your bandwidth usage. Each profile entry displays a quote describing what the profile is best used for, and the QoS priority levels granted to each bandwidth consumer in this profile.

- Default - No QoS preferences
- P2P User - Peer-to-peer and file sharing applications will receive priority
- Triple Play User - VoIP and video streaming will receive priority
- Home Worker - VPN and browsing will receive priority
- Gamer - Game-related traffic will receive priority
- Priority By Host - This entry provides the option to configure which computer in your LAN will receive the highest priority and which the lowest. If you have additional computers, they will receive medium priority.

  High Priority Host: Enter the host name or IP address of the computer to which you would like to grant the highest bandwidth priority.

  Low Priority Host: Enter the host name or IP address of the computer to which you would like to grant the lowest bandwidth priority.



General

WAN Devices Bandwidth (Rx/Tx):	User Defined
Rx Bandwidth:	0 Kbits/s
Tx Bandwidth:	0 Kbits/s

QoS Profiles

● **Default**

No Quality of Service preferences

○ **P2P User**

"I use peer-to-peer and file-sharing applications. I still want to be able to use my browser without interference."

HTTP/HTTPS: **Medium**
Other: **Low**

○ **Triple Play User**

"I use VoIP applications and video streaming. I want these applications to be as fast as possible."

VoIP (SIP, H323): **High**
Video: **High-Medium**
HTTP/HTTPS: **Medium**
Other: **Low**

○ **Home Worker**

"I work from home, and want my VPN and browser to have priority over other traffic."

VPN (IPsec, L2TP, PPTP): **Medium**
HTTP/HTTPS: **Medium**
Other: **Low**

○ **Gamer**

"I play games over the Internet and want the games-related traffic to be as fast as possible."

Games Related Traffic: **Medium**
Other: **Low**

○ **Priority By Host**

"I want to give different hosts in my network different priorities when accessing the public network."

High Priority Host:	
Low Priority Host:	
Other:	**Low**

Note: Choosing a new QoS profile will cause all previous configuration settings to be lost

15.7.2 Traffic Priority

If you click the **Quality of Service** link in the **Advanced** screen and then click **Traffic Priority** in the left submenu, the following screen will appear. This screen allows you to configure QoS to prioritize input and output traffic.

Traffic Priority manages and avoids traffic congestion by defining inbound and outbound priority rules for each device on the Router. These rules determine the priority that packets, traveling through the device, will receive. QoS parameters (DSCP marking and packet priority) are set per packet, on an application basis.

QoS can be configured using flexible rules, according to the following parameters:

- Source/destination IP address, MAC address, or host name
- Device
- Source/destination ports
- Limit the rule for specific days and hours

The Router supports two priority marking methods for packet prioritization:

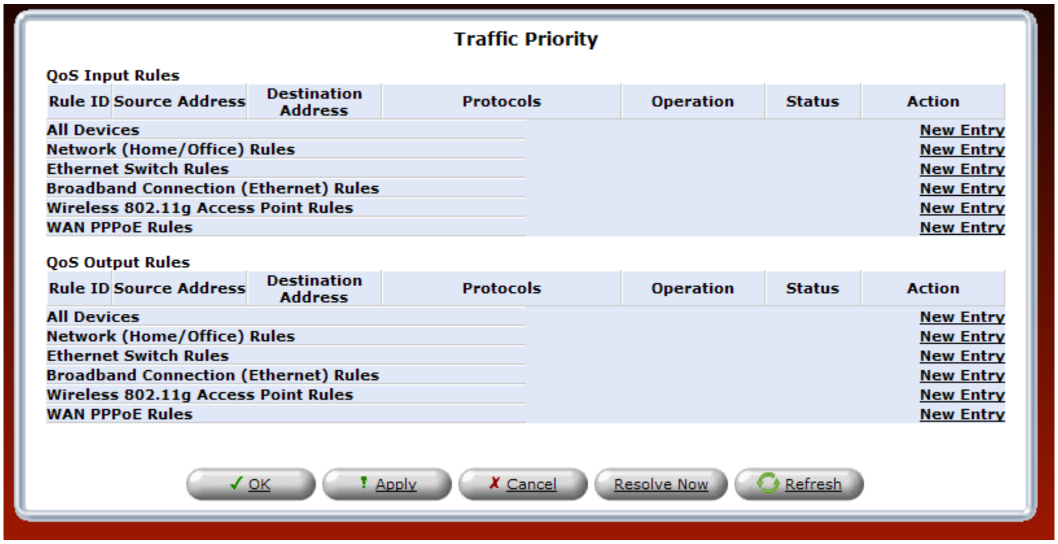
- DSCP
- 802.1p Priority

The matching of packets by rules, also known as Stateful Packet Inspection is connection-based and uses the Router's firewall mechanism. Once a packet matches a rule, all subsequent packets with the same attributes receive the same QoS parameters, both inbound and outbound.

A packet can match more than one rule. Therefore:

- The first class rule has precedence over all other class rules (scanning is stopped once the first rule is reached).
- The first traffic-priority (classless) rule has precedence over all other traffic-priority rules.
- There is no prevention of a traffic-priority rule conflicting with a class rule. In this case, the priority and DSCP setting of the class rule (if given) will take precedence.

To set up a traffic priority rule, click the adjacent **New Entry** link for the input/output device you want to configure.



Traffic Priority

QoS Input Rules

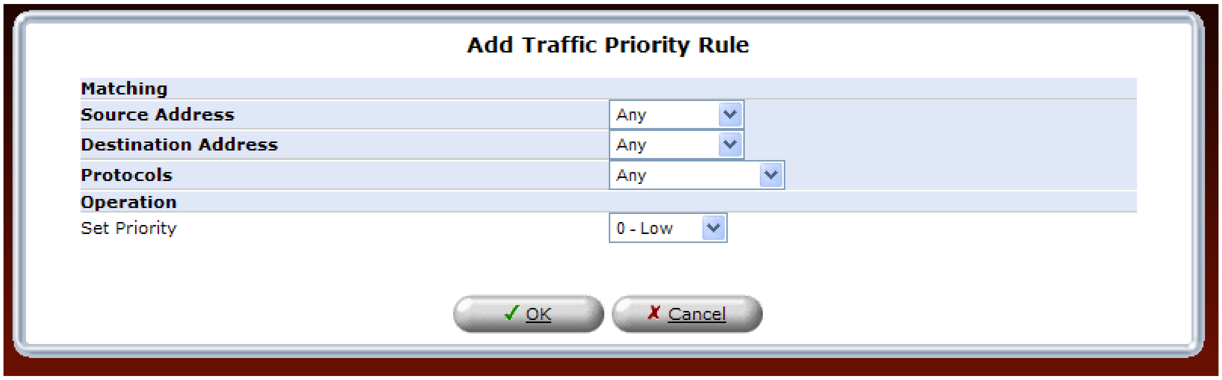
Rule ID	Source Address	Destination Address	Protocols	Operation	Status	Action
All Devices						New Entry
Network (Home/Office) Rules						New Entry
Ethernet Switch Rules						New Entry
Broadband Connection (Ethernet) Rules						New Entry
Wireless 802.11g Access Point Rules						New Entry
WAN PPPoE Rules						New Entry

QoS Output Rules

Rule ID	Source Address	Destination Address	Protocols	Operation	Status	Action
All Devices						New Entry
Network (Home/Office) Rules						New Entry
Ethernet Switch Rules						New Entry
Broadband Connection (Ethernet) Rules						New Entry
Wireless 802.11g Access Point Rules						New Entry
WAN PPPoE Rules						New Entry

If you clicked **New Entry,** the following screen will appear. At this screen, do the following:

1. Select the desired **Source Address, Destination Address, and Protocol** options from the drop-down lists.
2. Click the **Device** check box if you will apply the settings to a device. By default this box is cleared.
3. Select the desired option from the **Set Priority** drop-down list. (Zero is the lowest priority level.)
4. Click **OK** to save the settings.



Add Traffic Priority Rule

Matching	
Source Address	Any
Destination Address	Any
Protocols	Any
Operation	
Set Priority	0 - Low

Source Address—The source address of packets sent or received from the LAN computer. The drop-down list displays all the host names or IP addresses of currently connected LAN computers, as well as the options 'Any' and 'User Defined'. Select an address from the list, or select **Any** to apply the rule on all computers. If you would like add a new address, select the **User Defined** option in the drop-down list. This will commence a sequence that will add a new network object, representing the LAN computer. The network object may be an IP address, subnet or range, a MAC address or a host name.

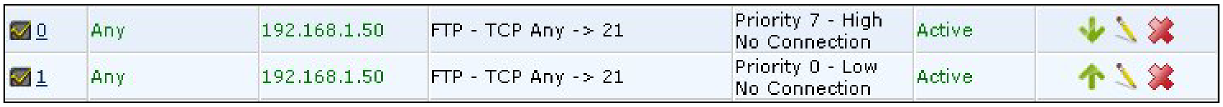
Destination Address—The destination address of packets sent or received from the network object. This address can be configured in the same manner as the source address. This entry enables further filtration of the packets.

Protocols—You may also specify a traffic protocol. Selecting the **Show All Services** option in the drop-down list will expand the list of available protocols. Select a protocol or add a new one using the **User Defined** option. This will commence a sequence that will add a new service, representing the protocol.

Operation—Set rule priority with Quality of Service:

Set Priority—Check this check-box to add a priority to the rule then select between one of eight priority levels, zero being the lowest and seven the highest (each priority level is mapped to low/medium/high priority). This sets the priority of a packet on the connection matching the rule, while routing the packet.

The order of the rules' appearance represents both the order in which they were defined and the sequence by which they will be applied. You may change this order after your rules are already defined (without having to delete and then re-add them), by using the Move Up and Move Down action icons as shown in the following image.



☑ 0	Any	192.168.1.50	FTP - TCP Any -> 21	Priority 7 - High No Connection	Active	↓ ✎ ✗
☑ 1	Any	192.168.1.50	FTP - TCP Any -> 21	Priority 0 - Low No Connection	Active	↑ ✎ ✗

15.7.3 Traffic Shaping

If you click the **Quality of Service** link in the **Advanced** screen and then click **Traffic Shaping** in the left submenu, the following screen will appear.

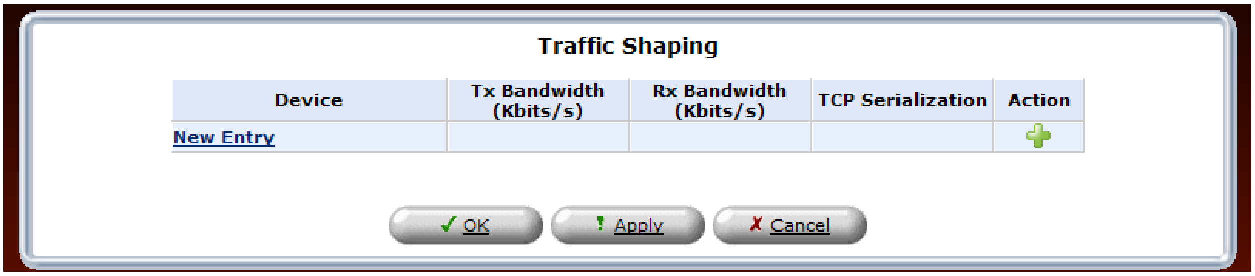
Traffic Shaping is the solution for managing and avoiding congestion where the network meets limited broadband bandwidth. Typical networks use a 100 Mbps Ethernet LAN with a 100 Mbps WAN interface router. This is where most bottlenecks occur. A traffic shaper is essentially a regulated queue that accepts uneven and/or bursty flows of packets and transmits them in a steady, predictable stream so that the network is not overwhelmed with traffic. While traffic priority allows basic prioritization of packets, traffic shaping provides more sophisticated definitions, such as:

- Bandwidth limit for each device
- Bandwidth limit for classes of rules
- Prioritization policy
- TCP serialization on a device

Additionally, QoS traffic shaping rules can be defined for a default device. These rules will be used on a device that has no definitions of its own. This enables the definition of QoS rules on the default WAN, for example, and their maintenance even if the PPP or bridge device over the WAN is removed.

The matching of packets by rules is connection-based, known as Stateful Packet Inspection (SPI), using the Router's firewall mechanism. Once a packet matches a rule, all subsequent packets with the same attributes receive the same QoS parameters, both inbound and outbound. Connection-based QoS also allows inheriting QoS parameters by some of the applications that open subsequent connections. For instance, QoS rules can be defined on SIP, and the rules will apply to both control and data ports (even if the data ports are unknown). Applications that support such inheritance have an application-level gateway (ALG) in the firewall.

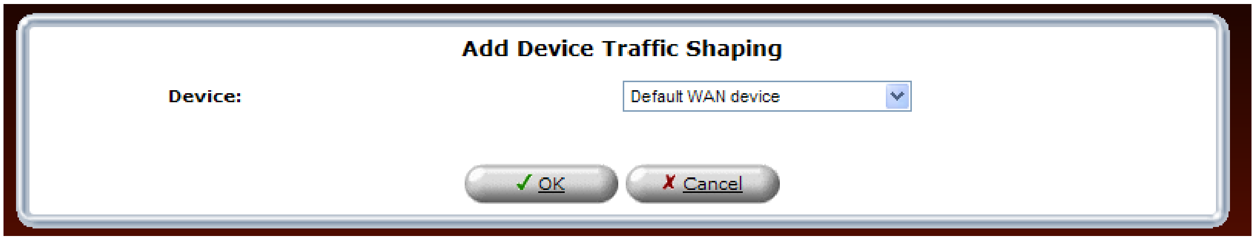
To add a traffic shaping rule, click the **New Entry** link.



Traffic Shaping

Device	Tx Bandwidth (Kbits/s)	Rx Bandwidth (Kbits/s)	TCP Serialization	Action
New Entry				✚

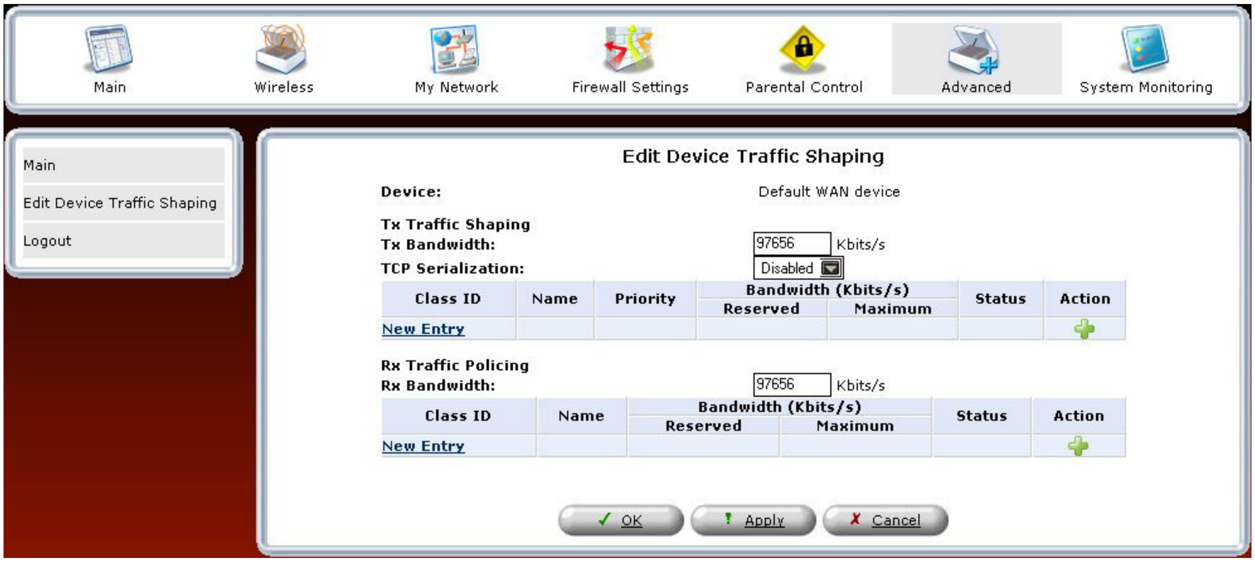
If you clicked **New Entry**, the following screen will appear. Select a device from the **Device** drop-down list. Then, click **OK** to continue.



Add Device Traffic Shaping

Device: Default WAN device

After you have selected a device and clicked **OK** in the preceding screen, the following screen will appear. Enter the bandwidth values for transmit (Tx) and receive (Rx), and then select the desired option from the TCP Serialization drop-down list. Next, click the desired **New Entry** link to add a class.



Edit Device Traffic Shaping

Device: Default WAN device

Tx Traffic Shaping

Tx Bandwidth: 97656 Kbits/s

TCP Serialization: Disabled

Class ID	Name	Priority	Bandwidth (Kbits/s)		Status	Action
			Reserved	Maximum		
New Entry						✚

Rx Traffic Policing

Rx Bandwidth: 97656 Kbits/s

Class ID	Name	Bandwidth (Kbits/s)		Status	Action
		Reserved	Maximum		
New Entry					✚

Tx Traffic Shaping

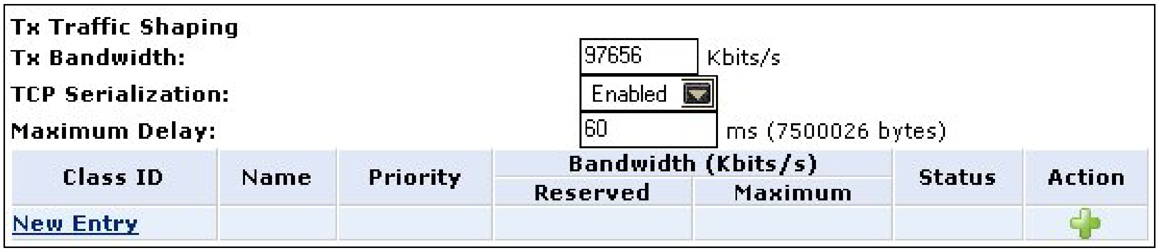
The bandwidth of a device can be divided in order to reserve constant portions of bandwidth to predefined traffic types. Such a portion is known as a Shaping Class. When not used by its predefined traffic type, or owner (for example VoIP), the class will be available to all other traffic. However when needed, the entire class is reserved solely for its owner. Moreover, you can limit the maximum bandwidth that a class can use even if the entire bandwidth is available. Configure the following fields:

Tx Bandwidth

This parameter limits the gateway's bandwidth transmission rate. The purpose is to limit the bandwidth of the WAN device to that of the weakest outbound link, for instance, the DSL speed provided by the ISP. This forces the router to be the network bottleneck, where sophisticated QoS prioritization can be performed. If the device's bandwidth is not limited correctly, the bottleneck will be in an unknown router or modem on the network path, rendering this router’s QoS useless.

TCP Serialization

You can enable TCP Serialization in its combo box, either for active voice calls only or for all traffic. The screen will refresh, adding a 'Maximum Delay' field. This function allows you to define the maximal allowed transmission time frame (in milliseconds) of a single packet. Any packet that requires a longer time to be transmitted, will be fragmented to smaller sections. This avoids transmission of large, bursty packets that may cause delay or jitter for real-time traffic such as VoIP. If you insert a delay value in milliseconds, the delay in number of bytes will be automatically updated on refresh.



Tx Traffic Shaping

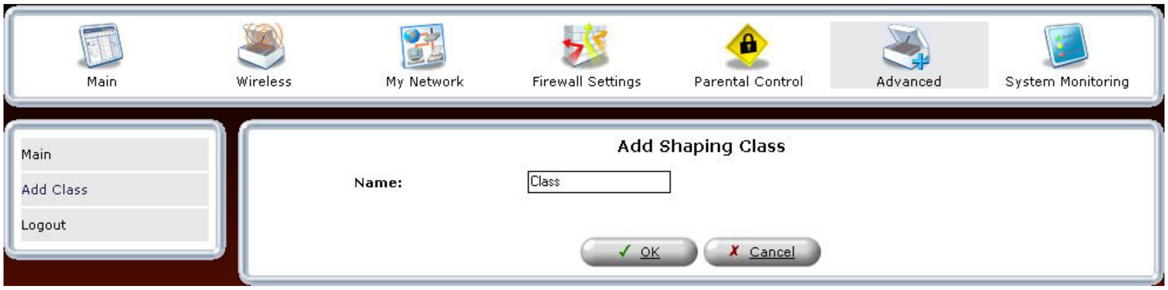
Tx Bandwidth: 97656 Kbits/s

TCP Serialization: Enabled

Maximum Delay: 60 ms (7500026 bytes)

Class ID	Name	Priority	Bandwidth (Kbits/s)		Status	Action
			Reserved	Maximum		
New Entry						✚

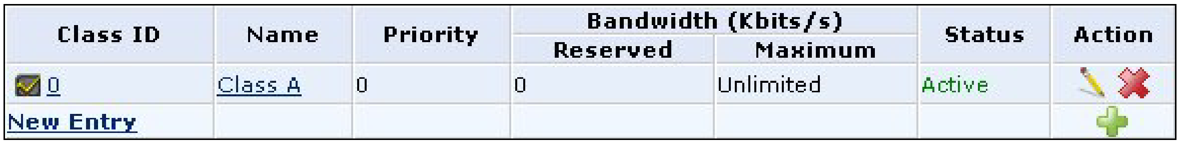
For example, if you click the New Entry link in the **Tx Traffic Shaping** section of the **Edit Device Traffic Shaping** screen the **Add Shaping Class** screen will appear.



Add Shaping Class

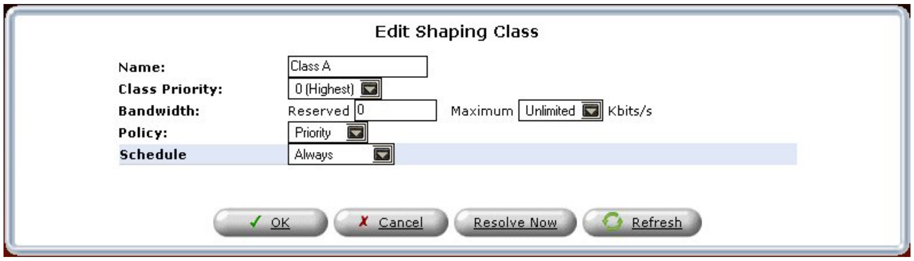
Name: Class

Name the new class and click **OK** to save the settings, e.g., Class A. Now click the class name to edit the shaping class or alternatively, click its pencil (edit) icon in the Action column.



Class ID	Name	Priority	Bandwidth (Kbits/s)		Status	Action
			Reserved	Maximum		
☑ 0	Class A	0	0	Unlimited	Active	✎ ✖
New Entry						✚

If you clicked the edit icon in the preceding screen, the **Edit Shaping Class** screen will appear.



Edit Shaping Class

Name:	Class A
Class Priority:	0 (Highest)
Bandwidth:	Reserved 0 Maximum Unlimited Kbits/s
Policy:	Priority
Schedule	Always

Configure the following fields by entering or selecting the desired values:

Name—The name of the class.

Class Priority—The class can be granted one of eight priority levels, zero being the highest and seven the lowest (note the obversion when compared to the rules priority levels). This level sets the priority of a class in comparison to other classes on the device.

Bandwidth—The reserved transmission bandwidth in kilo-bits per second. You can limit the maximum allowed bandwidth by selecting **Specify** in the drop-down list. The screen will refresh, adding yet another Kbits/s.

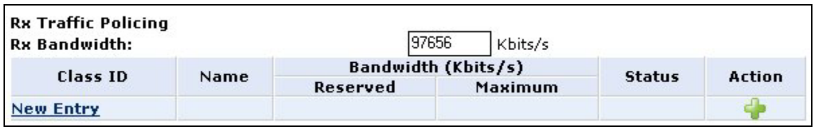
Policy—The class policy determines the policy of routing packets inside the class. Select one of the four options:

> Priority—Priority queuing utilizes multiple queues, so that traffic is distributed among queues based on priority. This priority is defined according to packet's priority, which can be defined explicitly, by a DSCP value, or by a 802.1p value.
>
> FIFO—The "First In, First Out" priority queue. This queue ignores any previously-marked priority that packets may have.
>
> Fairness—The fairness algorithm ensures no starvation by granting all packets a certain level of priority.
>
> RED— The Random Early Detection algorithm utilizes statistical methods to drop packets in a "probabilistic" way before queues overflow. Dropping packets in this way slows a source down enough to keep the queue steady and reduces the number of packets that would be lost when a queue overflows and a host is transmitting at a high rate.

Schedule—By default, the class will always be active. However, you can configure scheduler rules in order to define time segments during which the class may be active. Refer to section 15.19, "Scheduler Rule," for details on setting up schedule rules.

Rx Traffic Policing: Allows you to configure the following fields:

Rx Bandwidth This parameter specifies the maximum traffic the policing can receive from the ISP.

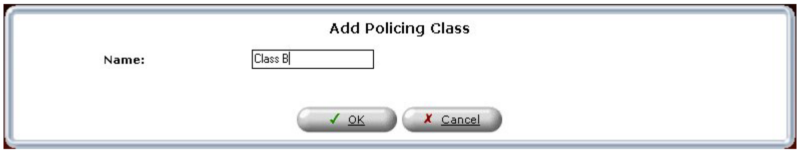


Rx Traffic Policing

Rx Bandwidth: 97656 Kbits/s

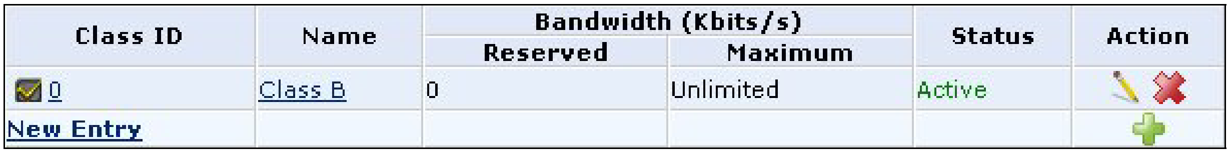
Class ID	Name	Bandwidth (Kbits/s)		Status	Action
		Reserved	Maximum		
New Entry					✚

For example, if you click the **New Entry** link in the **Rx Traffic Policing** section of the **Edit Device Traffic Shaping** screen, the **Add Policing Class** screen will appear.


Add Policing Class

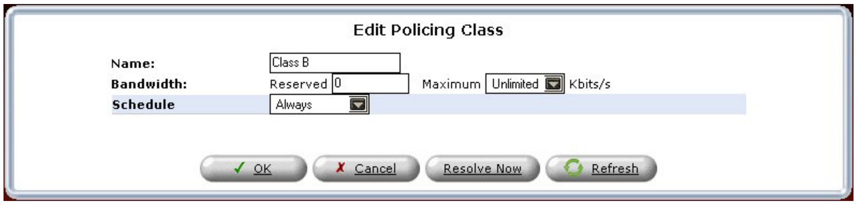
Name: Class B

Name the new class and click **OK** to save the settings, e.g. Class B. Next, click the class name to edit the shaping class or alternatively, click its pencil (edit) action icon in the Action column.



Class ID	Name	Bandwidth (Kbits/s)		Status	Action
		Reserved	Maximum		
☑ 0	Class B	0	Unlimited	Active	✎ ✖
New Entry					✚

The **Edit Policing Class** screen will appear.


Edit Policing Class

Name: Class B
Bandwidth: Reserved 0 Maximum Unlimited Kbits/s
Schedule: Always

Configure the following fields:

Name—The name of the class.
Bandwidth—The reserved reception bandwidth in kilo-bits per second. You can limit the maximum allowed bandwidth by selecting the 'Specify' option in the combo box. The screen will refresh, adding yet another Kbits/s field.
Schedule—By default, the class will always be active. However, you can configure scheduler rules in order to define time segments during which the class may be active. Refer to section 15.19, "Scheduler Rule," for details on setting up schedule rules.

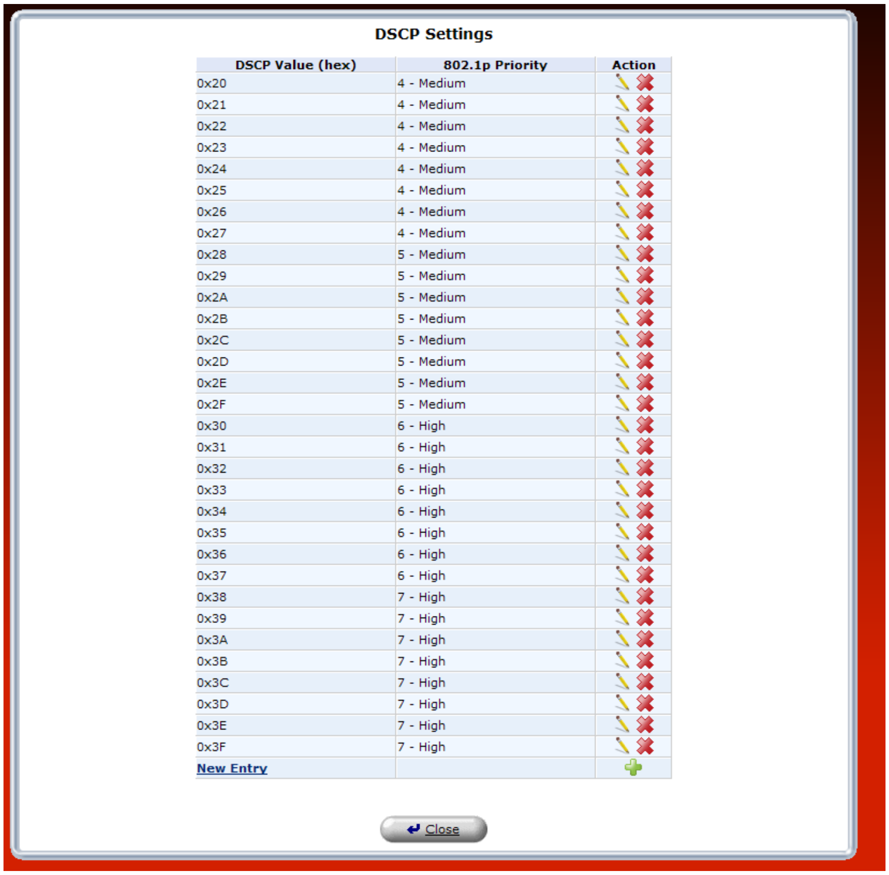
15.7.4 Differentiated Service Code Point (DSCP) Settings

If you click the **Quality of Service** link in the **Advanced** screen and then click **DSCP Settings** in the left submenu, the following screen will appear.

Familiarity with the Differentiated Services model is essential to understanding DSCP. Differentiated Services (Diffserv) is a Class of Service (CoS) model that enhances best-effort Internet services by differentiating traffic by users, service requirements, and other criteria. Packets are specifically marked, allowing network nodes to provide different levels of service, as appropriate for voice calls, video playback, or other delay-sensitive applications, via priority queuing or bandwidth allocation, or by choosing dedicated routes for specific traffic flows.

Diffserv defines a field in IP packet headers referred to as the Differentiated Services Codepoint (DSCP). Hosts or routers passing traffic to a Diffserv-enabled network will typically mark each transmitted packet with an appropriate DSCP. The DSCP markings are used by Diffserv network routers to appropriately classify packets and to apply a particular queue handling or scheduling behavior to packets.

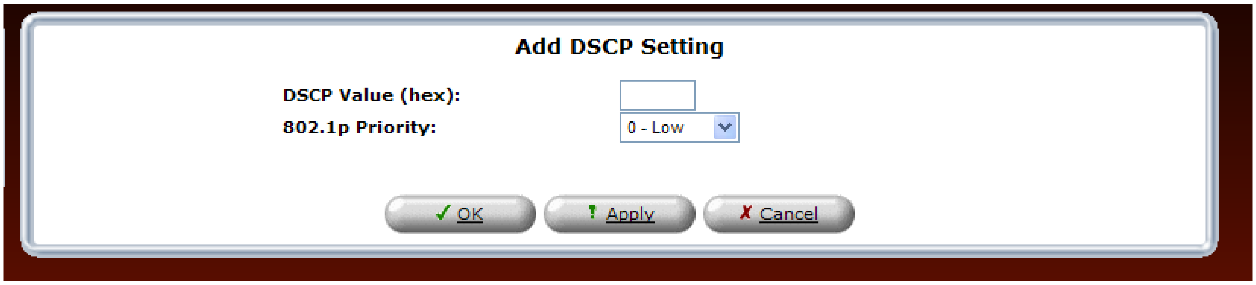
The Router provides a table of predefined DSCP values, which are mapped to 802.1p priority marking method. Any of the existing DSCP setting can be edited or deleted, and new entries can be added. To add a new DSCP value, press the **New Entry** link at the bottom of this screen.



DSCP Settings

DSCP Value (hex)	802.1p Priority	Action
0x20	4 - Medium	✎ ✖
0x21	4 - Medium	✎ ✖
0x22	4 - Medium	✎ ✖
0x23	4 - Medium	✎ ✖
0x24	4 - Medium	✎ ✖
0x25	4 - Medium	✎ ✖
0x26	4 - Medium	✎ ✖
0x27	4 - Medium	✎ ✖
0x28	5 - Medium	✎ ✖
0x29	5 - Medium	✎ ✖
0x2A	5 - Medium	✎ ✖
0x2B	5 - Medium	✎ ✖
0x2C	5 - Medium	✎ ✖
0x2D	5 - Medium	✎ ✖
0x2E	5 - Medium	✎ ✖
0x2F	5 - Medium	✎ ✖
0x30	6 - High	✎ ✖
0x31	6 - High	✎ ✖
0x32	6 - High	✎ ✖
0x33	6 - High	✎ ✖
0x34	6 - High	✎ ✖
0x35	6 - High	✎ ✖
0x36	6 - High	✎ ✖
0x37	6 - High	✎ ✖
0x38	7 - High	✎ ✖
0x39	7 - High	✎ ✖
0x3A	7 - High	✎ ✖
0x3B	7 - High	✎ ✖
0x3C	7 - High	✎ ✖
0x3D	7 - High	✎ ✖
0x3E	7 - High	✎ ✖
0x3F	7 - High	✎ ✖
New Entry		➕

If you clicked **New Entry**, the following screen will appear. Enter your hexadecimal value, and then set the priority for this value. Click **Apply** to continue.

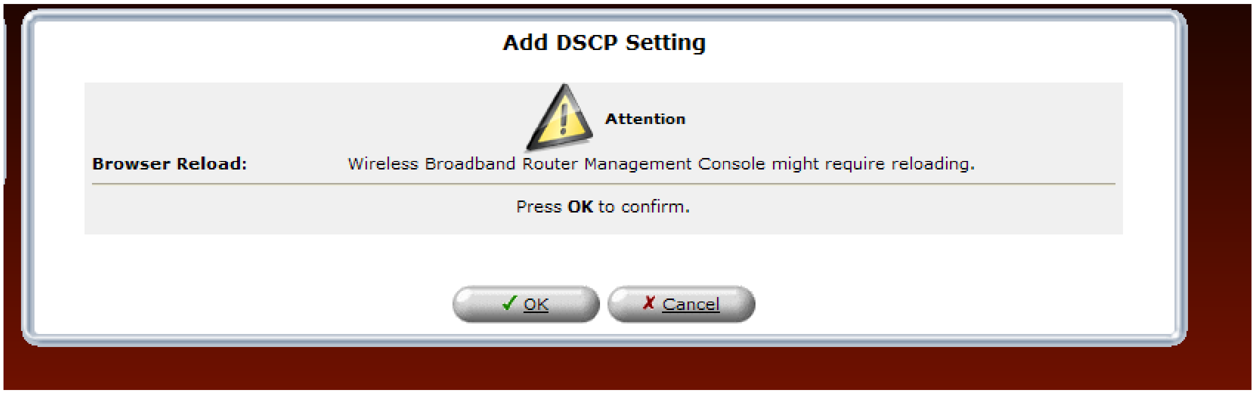


Add DSCP Setting

DSCP Value (hex):

802.1p Priority: 0 - Low

If you clicked **Apply**, the following screen will appear. Click **OK** to confirm. Value will be added to the **DSCP Settings** screen.



Add DSCP Setting

Attention

Browser Reload: Wireless Broadband Router Management Console might require reloading.

Press **OK** to confirm.

15.7.5 802.1P Settings

If you click the **Quality of Service** link in the **Advanced** screen and then click **802.1P Settings** in the left submenu, the following screen will appear.

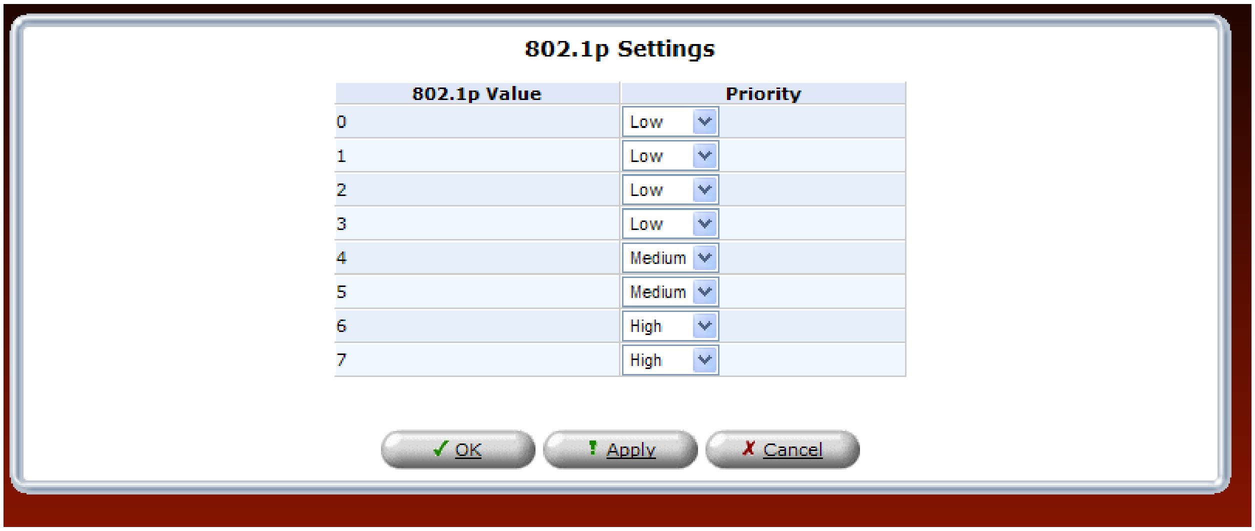
The IEEE 802.1p priority marking method is a standard for prioritizing network traffic at the data link/Mac sub-layer. 802.1p traffic is simply classified and sent to the destination, with no bandwidth reservations established.

The 802.1p header includes a 3-bit prioritization field, which allows packets to be grouped into eight levels of priority. By default, the highest priority is seven, which might be assigned to network-critical traffic. Values five and six may be applied to delay-sensitive applications such as interactive video and voice. Data classes four through one range from controlled-load applications down to “loss eligible” traffic. Zero is the value for unassigned traffic and is used as a best effort default, invoked automatically when no other value has been set.

A packet can match more than one rule. This means the following:

- The first class rule has precedence over all other class rules (scanning is stopped once the first rule is reached).
- The first traffic-priority (classless) rule has precedence over all other traffic priority rules.
- There is no prevention of a traffic-priority rule conflicting with a class rule. In this case, the priority and DSCP setting of the class rule (if given) will take precedence.

Select the desired values from the drop-down lists, and then click **Apply** to save the settings.



802.1p Settings

802.1p Value	Priority
0	Low
1	Low
2	Low
3	Low
4	Medium
5	Medium
6	High
7	High

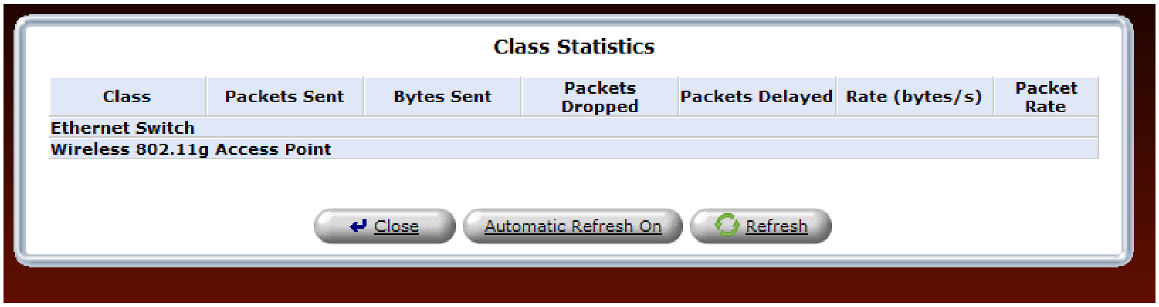
15.7.6 Class Statistics

If you click the **Quality of Service** link in the **Advanced** screen and then click **Class Statistics** in the left submenu, the following screen will appear.

The Router provides accurate, real-time information on the traffic moving through the defined device classes. For example, the amount of packets sent, dropped, or delayed are just a few of the parameters monitored per each shaping class.

NOTE: Class statistics will be available only after defining at least one class (otherwise the screen will not display any values).

If you do not want the screen to refresh automatically, click **Automatic Refresh Off.**



Class Statistics

Class	Packets Sent	Bytes Sent	Packets Dropped	Packets Delayed	Rate (bytes/s)	Packet Rate
Ethernet Switch						
Wireless 802.11g Access Point						

15.8 Remote Administration

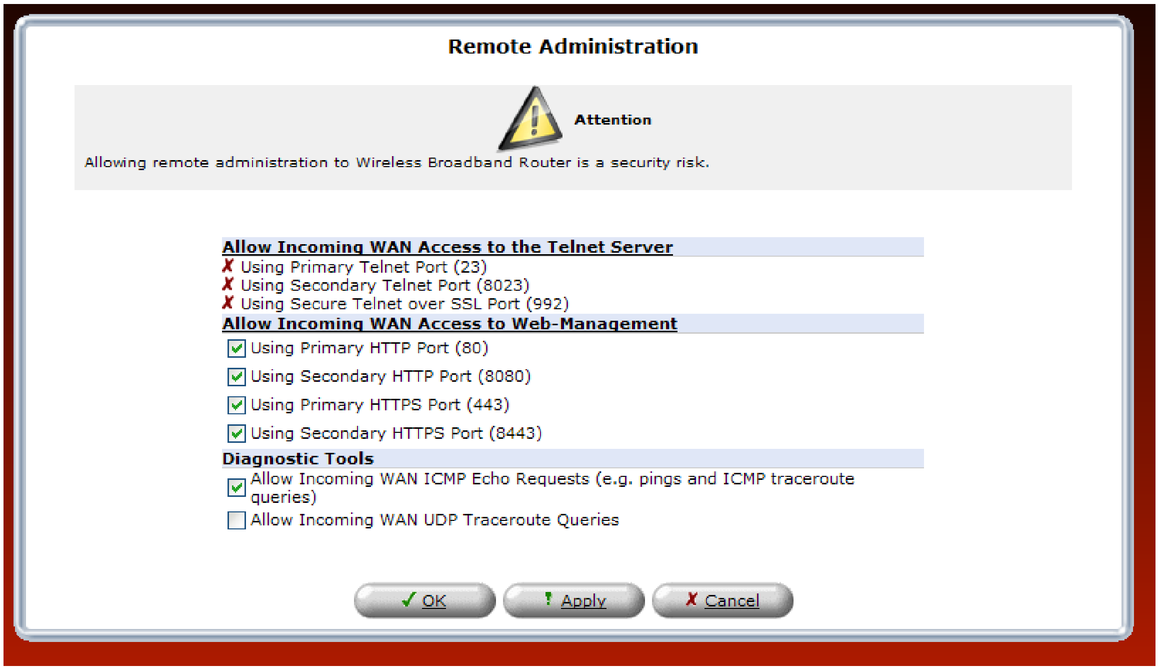
If you click **Advanced** in the top navigation menu and then select the **Remote Administration** link, the following screen will appear.

It is possible to access and control your Router not only from within the home network, but also from the Internet. This allows you to view or change settings while traveling. It also enables you to allow Verizon to change settings or help you troubleshoot functionality or communication issues from a remote location. Remote access to your Router is blocked by default to ensure the security of your network. However, your Router supports the following services, and you may use the Remote Administration Security screen to selectively enable these services if they are needed.

WARNING: With Remote Administration enabled, your network will be at risk from outside attacks.

To configure Remote Administration, enter the appropriate settings, and then click **Apply** to save the settings.

NOTE: This Router ships with Telnet disabled.



Remote Administration

Attention

Allowing remote administration to Wireless Broadband Router is a security risk.

Allow Incoming WAN Access to the Telnet Server

✗ Using Primary Telnet Port (23)
✗ Using Secondary Telnet Port (8023)
✗ Using Secure Telnet over SSL Port (992)

Allow Incoming WAN Access to Web-Management

☑ Using Primary HTTP Port (80)
☑ Using Secondary HTTP Port (8080)
☑ Using Primary HTTPS Port (443)
☑ Using Secondary HTTPS Port (8443)

Diagnostic Tools

☑ Allow Incoming WAN ICMP Echo Requests (e.g. pings and ICMP traceroute queries)
☐ Allow Incoming WAN UDP Traceroute Queries

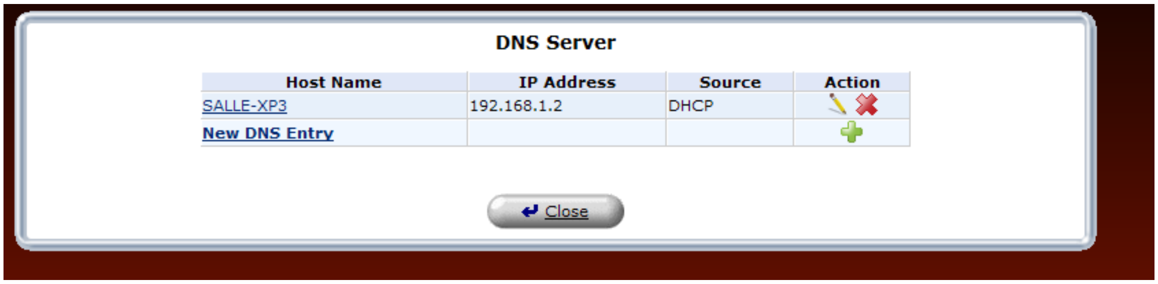
15.9 DNS

If you click **Advanced** in the top navigation menu and then select the **DNS** link, the following screen will appear.

The Router contains a built-in DNS server. When an IP address is assigned, the Router will interrogate the new device for a machine name using several well-known networking protocols. Any names learned will dynamically be added to the DNS server's table of local hosts.

Do any of the following:

- To rename the domain name, click a host name link.
- To add a host name, click the **New DNS Entry** link.

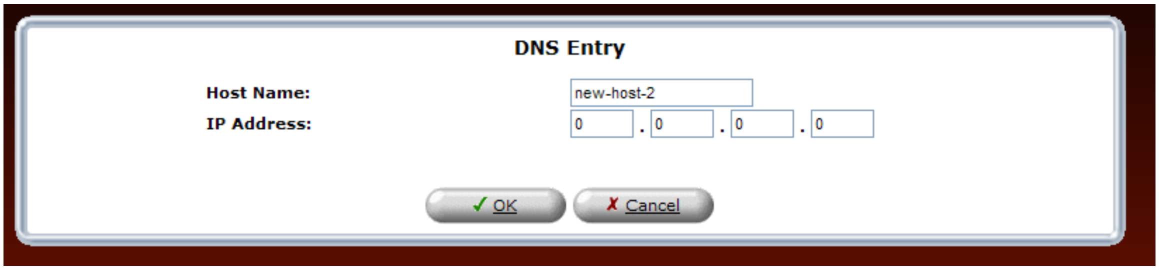


DNS Server

Host Name	IP Address	Source	Action
SALLE-XP3	192.168.1.2	DHCP	✎ ✖
New DNS Entry			✚

To add a new entry, click the **New DNS Entry** link. The following screen will appear. Enter the desired host name, and then enter the appropriate IP address. Next, click **OK** to continue.

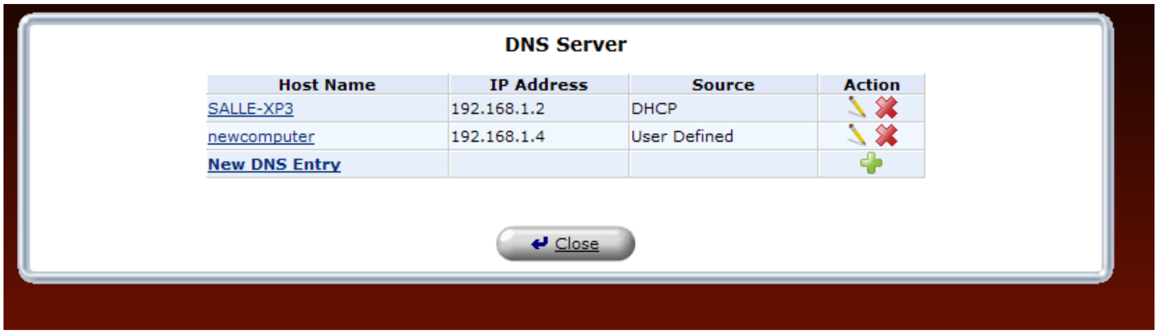
NOTE: Names may not contain spaces. Only letters, digits and the special characters dash (-), underscore (_) and dot (.) may be used. These special characters may not appear at the beginning or at the end of a name. The maximum length of a name can be is 63 characters.



DNS Entry

Host Name: new-host-2
IP Address: 0 . 0 . 0 . 0

If you have entered values in the preceding screen and clicked **OK**, the following screen will appear. The changes have been saved to the Router.



DNS Server

Host Name	IP Address	Source	Action
SALLE-XP3	192.168.1.2	DHCP	✎ ✖
newcomputer	192.168.1.4	User Defined	✎ ✖
New DNS Entry			✚

15.10 Personal Domain (Dynamic DNS)

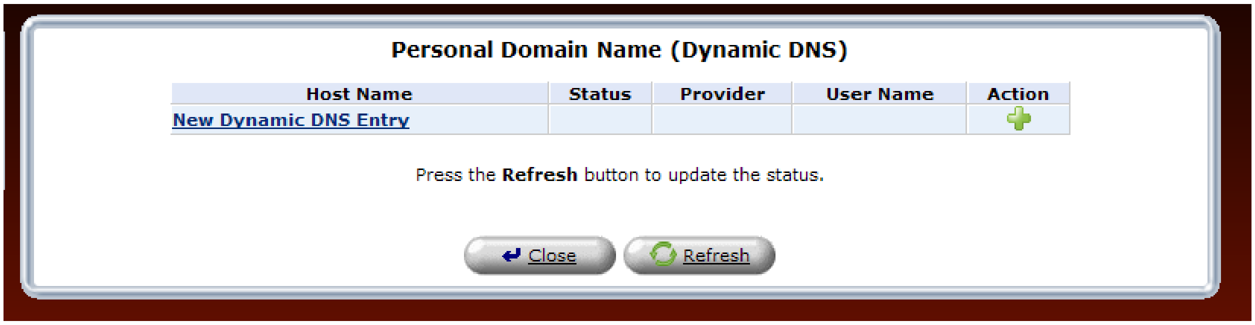
If you click **Advanced** in the top navigation menu and then select the **Personal Domain Name** link, the following screen will appear.

Dynamic DNS (Domain Name Server) a dynamic IP address to be aliased to a static hostname, allowing a computer on the network to be more easily accessible from the Internet. Typically, when connecting to the Internet, the service provider assigns an unused IP address from a pool of IP addresses, and this address is used only for the duration of a specific connection. Dynamically assigning addresses extends the usable pool of available IP addresses, while maintaining a constant domain name. This allows to user to access a device from a remote location, since the device will always have the same IP address.

When using Dynamic DNS, each time the IP address provided by the service provider changes, the DNS database changes accordingly to reflect the change. If the IP address of the computer changes often, its domain name remains constant and accessible.

NOTE: To use Dynamic DNS, you must subscribe to this service via your service provider.

To configure a new dynamic DNS entry, click the **New Dynamic DNS Entry** link.



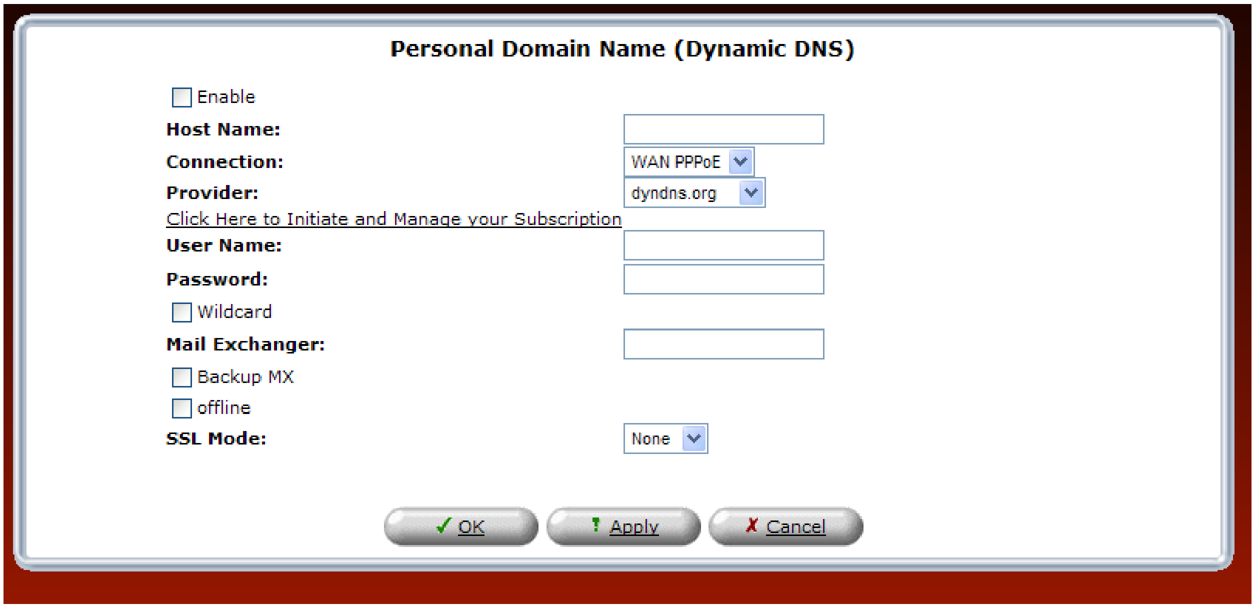
Personal Domain Name (Dynamic DNS)

Host Name	Status	Provider	User Name	Action
New Dynamic DNS Entry				✚

Press the **Refresh** button to update the status.

The following screen will appear. Enter the appropriate values in the fields provided, and then click **OK** to continue.

NOTE: Your service provider will provide you with the appropriate values to use in this screen.



Personal Domain Name (Dynamic DNS)

□ Enable

Host Name:

Connection: WAN PPPoE

Provider: dyndns.org

Click Here to Initiate and Manage your Subscription

User Name:

Password:

□ Wildcard

Mail Exchanger:

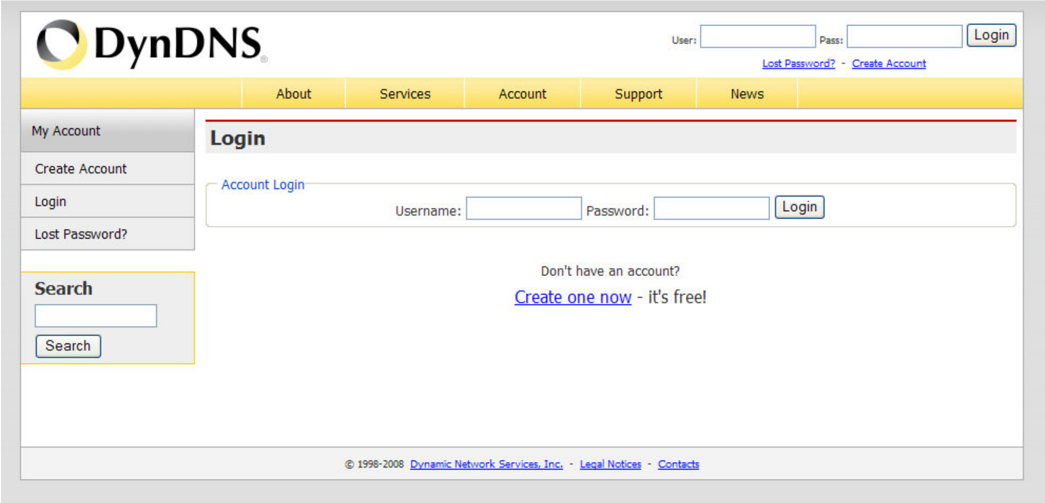
□ Backup MX

□ offline

SSL Mode: None

If you click the **Click Here to Initiate and Manage your Subscription** link, the following screen will appear. Enter the user name and password (provided by your service provider) in the fields provided to access your account.

NOTE: The screen displayed in this document may differ from the actual screen.



Login

Account Login

Username: Password: Login

Don't have an account?

Create one now - it's free!

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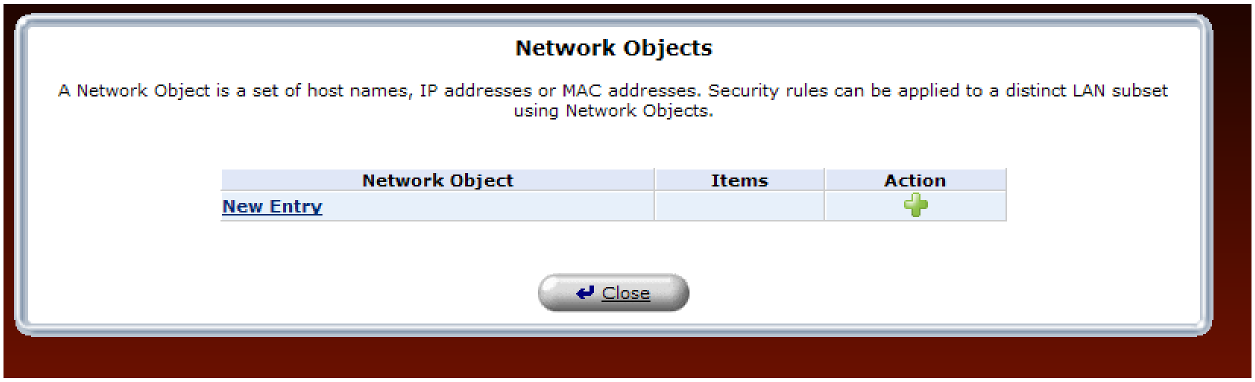
15.11 Network Objects

Network Objects is a method used to abstractly define a set of LAN hosts, according to one or more MAC address, IP address, and host name. Defining such a group can assist when configuring system rules. For example, network objects can be used when configuring the Router's security filtering settings such as IP address filtering, host name filtering or MAC address filtering. You can use network objects in order to apply security rules based on host names instead of IP addresses. This may be useful, since IP addresses change from time to time. Moreover, it is possible to define network objects according to MAC addresses, making rule application more persistent against network configuration settings.

If you click **Advanced** in the top navigation menu and then select the **Network Objects** link, the following screen will appear. To configure a new network object, click the **New Entry** link.

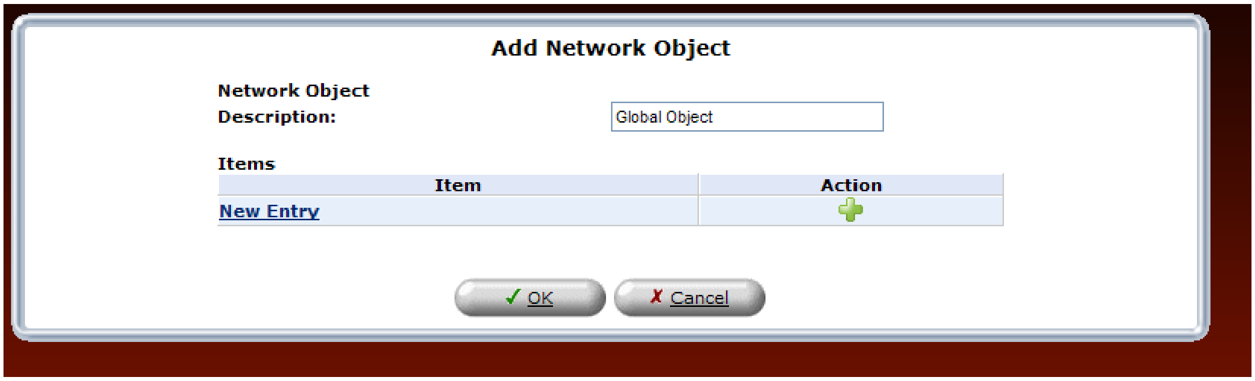


Network Objects

A Network Object is a set of host names, IP addresses or MAC addresses. Security rules can be applied to a distinct LAN subset using Network Objects.

Network Object	Items	Action
New Entry		✚

If you clicked **New Entry** in the preceding screen, the following screen will appear. Enter a name for the network object in the **Network Object Description** field, and then click the **New Entry** link or the plus icon to create it.



Add Network Object

Network Object Description: Global Object

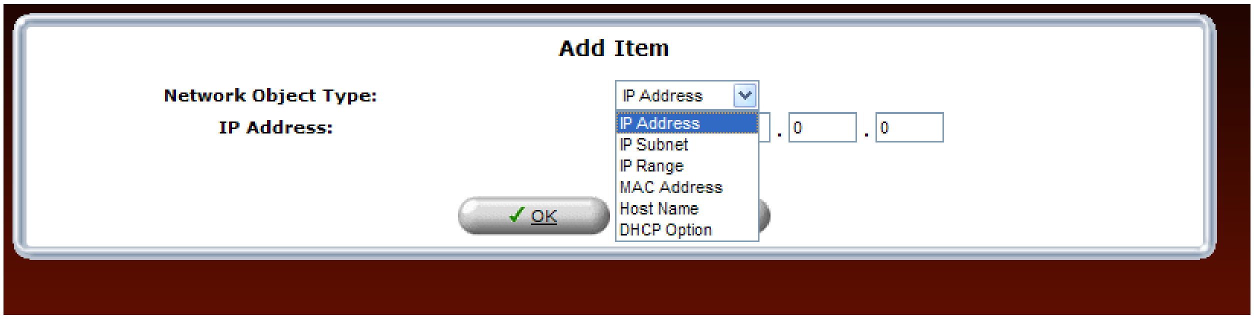
Items

Item	Action
New Entry	✚

If you clicked **New Entry**, the following screen will appear. The source address can be entered using one of the following methods listed in the **IP Address** drop-down menu:

- IP Address
- IP Subnet
- IP Range
- MAC Address
- Host Name
- DHCP Option

After you select the desired method, the screen will refresh. Enter the appropriate values in the fields provided, and then click **OK** to save the settings.

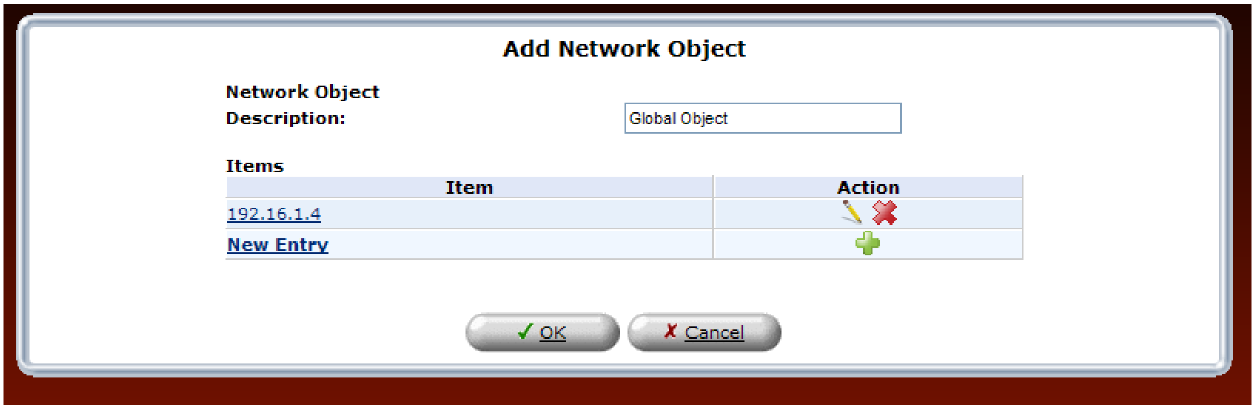


Add Item

Network Object Type: IP Address

IP Address: . 0 . 0

If you have entered the desired values in the preceding screen and clicked **OK**, the following screen will appear. The network object has been configured. Click **OK** to save the configuration.



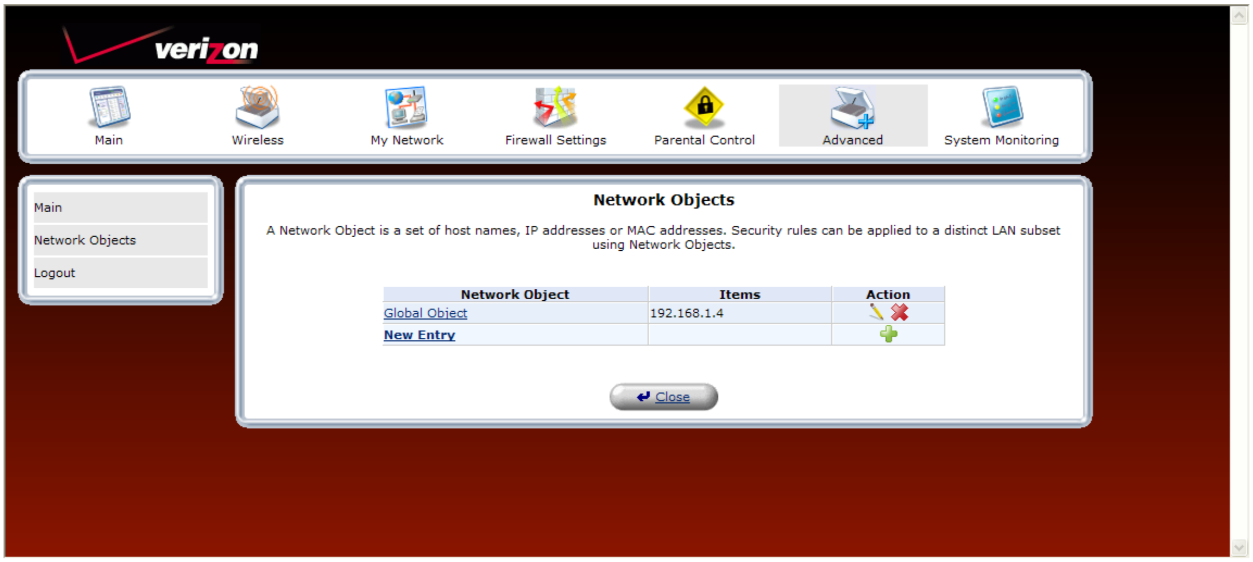
Add Network Object

Network Object Description: Global Object

Items

Item	Action
192.16.1.4	✎ ✖
New Entry	✚

If you clicked **OK**, the following screen will appear. The network object has been saved to the Router. Click **Close** to return to the **Advanced** screen.



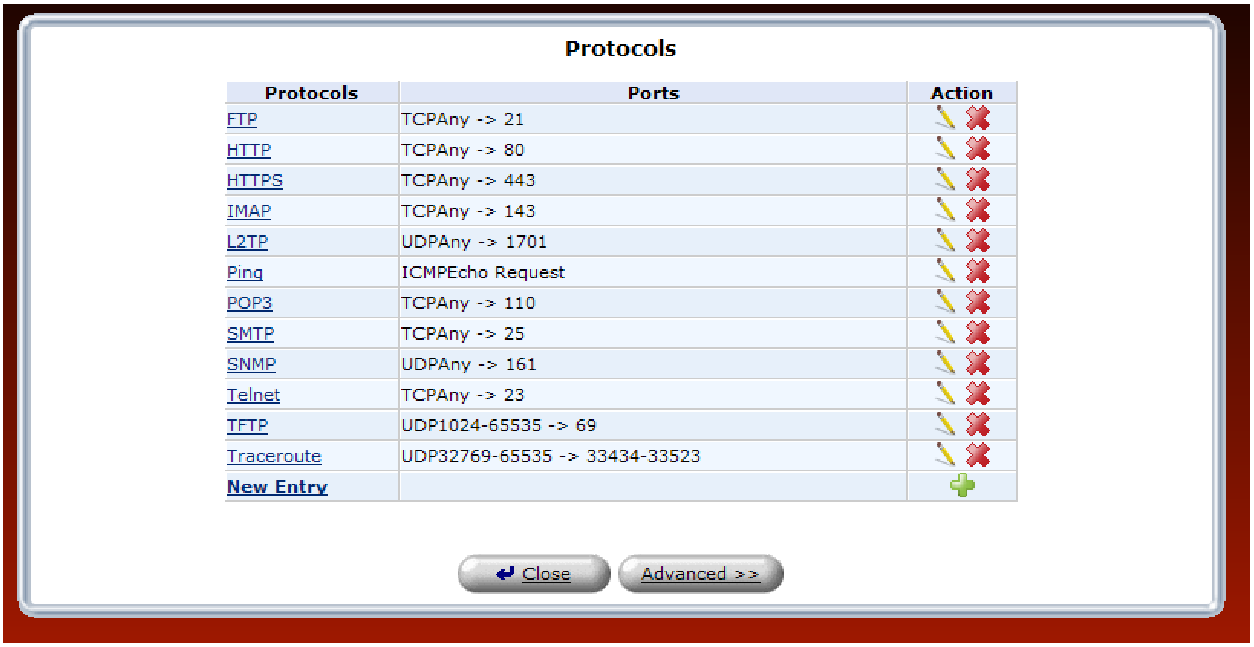
Network Objects

A Network Object is a set of host names, IP addresses or MAC addresses. Security rules can be applied to a distinct LAN subset using Network Objects.

Network Object	Items	Action
Global Object	192.168.1.4	✎ ✖
New Entry		✚

15.12 Protocol

If you click **Advanced** in the top navigation menu and then select the **Protocol** link, the following screen will appear. For your convenience, the Router supports protocols for Applications, Games, and VPN-specific programs. The following chart provides port/protocol information for the supported services. The Protocol screen allows you to select the desired view: Basic Service and Advanced Service. The following sections explain the features of each service.

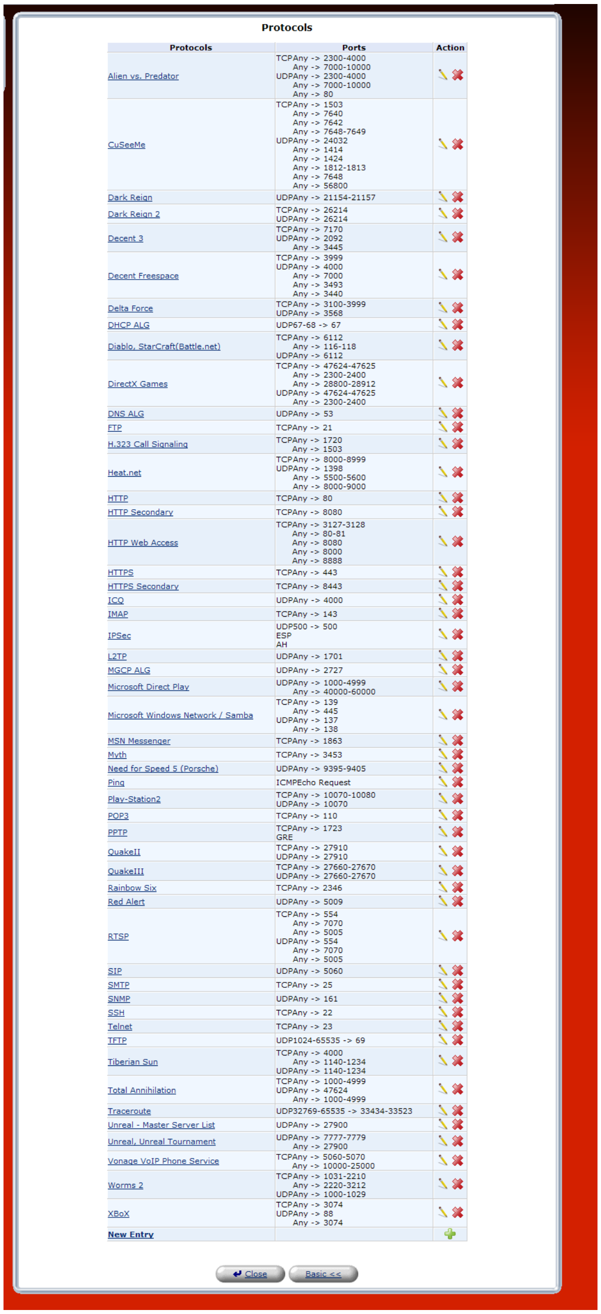


Protocols

Protocols	Ports	Action
FTP	TCPAny -> 21	✎ ✖
HTTP	TCPAny -> 80	✎ ✖
HTTPS	TCPAny -> 443	✎ ✖
IMAP	TCPAny -> 143	✎ ✖
L2TP	UDPAny -> 1701	✎ ✖
Ping	ICMPEcho Request	✎ ✖
POP3	TCPAny -> 110	✎ ✖
SMTP	TCPAny -> 25	✎ ✖
SNMP	UDPAny -> 161	✎ ✖
Telnet	TCPAny -> 23	✎ ✖
TFTP	UDP1024-65535 -> 69	✎ ✖
Traceroute	UDP32769-65535 -> 33434-33523	✎ ✖
New Entry		✚

15.12.1 Basic Service

To access the basic service **Protocols** screen (if you are in the **Advanced** screen), click the **Basic** button.



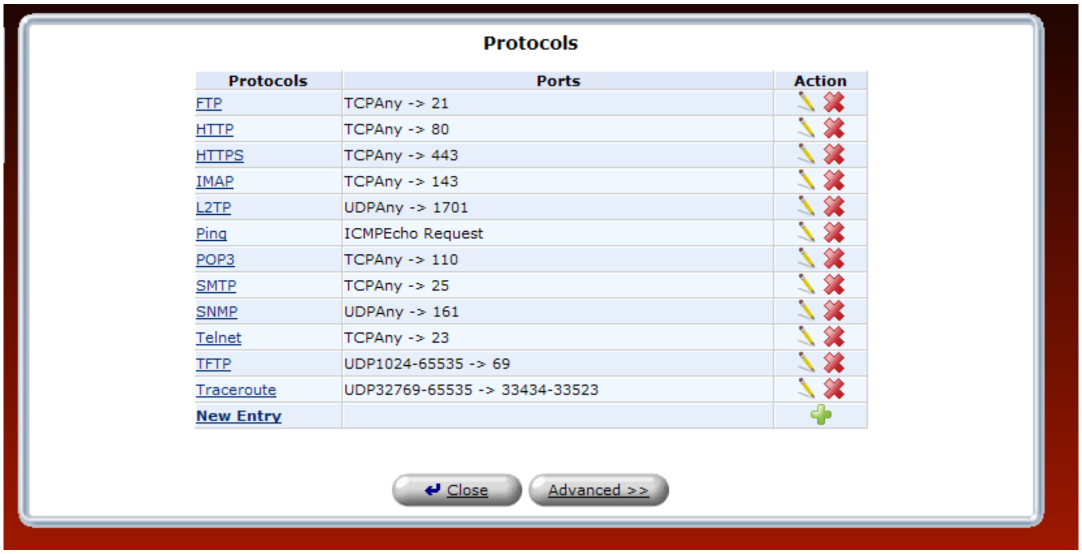
Protocols

Protocols	Ports	Action
Alien vs. Predator	TCPAny -> 2300-4000 Any -> 7000-10000 UDPAny -> 2300-4000 Any -> 7000-10000 Any -> 80	✎ ✖
CuSeeMe	TCPAny -> 1503 Any -> 7640 Any -> 7642 Any -> 7648-7649 UDPAny -> 24032 Any -> 1414 Any -> 1424 Any -> 1812-1813 Any -> 7648 Any -> 56800	✎ ✖
Dark Reign	UDPAny -> 21154-21157	✎ ✖
Dark Reign 2	TCPAny -> 26214 UDPAny -> 26214	✎ ✖
Decent 3	TCPAny -> 7170 UDPAny -> 2092 Any -> 3445	✎ ✖
Decent Freespace	TCPAny -> 3999 UDPAny -> 4000 Any -> 7000 Any -> 3493 Any -> 3440	✎ ✖
Delta Force	TCPAny -> 3100-3999 UDPAny -> 3568	✎ ✖
DHCP ALG	UDP67-68 -> 67	✎ ✖
Diablo, StarCraft(Battle.net)	TCPAny -> 6112 Any -> 116-118 UDPAny -> 6112	✎ ✖
DirectX Games	TCPAny -> 47624-47625 Any -> 2300-2400 Any -> 28800-28912 UDPAny -> 47624-47625 Any -> 2300-2400	✎ ✖
DNS ALG	UDPAny -> 53	✎ ✖
FTP	TCPAny -> 21	✎ ✖
H.323 Call Signaling	TCPAny -> 1720 Any -> 1503	✎ ✖
Heat.net	TCPAny -> 8000-8999 UDPAny -> 1398 Any -> 5500-5600 Any -> 8000-9000	✎ ✖
HTTP	TCPAny -> 80	✎ ✖
HTTP Secondary	TCPAny -> 8080	✎ ✖
HTTP Web Access	TCPAny -> 3127-3128 Any -> 80-81 Any -> 8080 Any -> 8000 Any -> 8888	✎ ✖
HTTPS	TCPAny -> 443	✎ ✖
HTTPS Secondary	TCPAny -> 8443	✎ ✖
ICQ	UDPAny -> 4000	✎ ✖
IMAP	TCPAny -> 143	✎ ✖
IPSec	UDP500 -> 500 ESP AH	✎ ✖
L2TP	UDPAny -> 1701	✎ ✖
MGCP ALG	UDPAny -> 2727	✎ ✖
Microsoft Direct Play	UDPAny -> 1000-4999 Any -> 40000-60000	✎ ✖
Microsoft Windows Network / Samba	TCPAny -> 139 Any -> 445 UDPAny -> 137 Any -> 138	✎ ✖
MSN Messenger	TCPAny -> 1863	✎ ✖
Myth	TCPAny -> 3453	✎ ✖
Need for Speed 5 (Porsche)	UDPAny -> 9395-9405	✎ ✖
Ping	ICMPEcho Request	✎ ✖
Play-Station2	TCPAny -> 10070-10080 UDPAny -> 10070	✎ ✖
POP3	TCPAny -> 110	✎ ✖
PPTP	TCPAny -> 1723 GRE	✎ ✖
QuakeII	TCPAny -> 27910 UDPAny -> 27910	✎ ✖
QuakeIII	TCPAny -> 27660-27670 UDPAny -> 27660-27670	✎ ✖
Rainbow Six	TCPAny -> 2346	✎ ✖
Red Alert	UDPAny -> 5009	✎ ✖
RTSP	TCPAny -> 554 Any -> 7070 Any -> 5005 UDPAny -> 554 Any -> 7070 Any -> 5005	✎ ✖
SIP	UDPAny -> 5060	✎ ✖
SMTP	TCPAny -> 25	✎ ✖
SNMP	UDPAny -> 161	✎ ✖
SSH	TCPAny -> 22	✎ ✖
Telnet	TCPAny -> 23	✎ ✖
TFTP	UDP1024-65535 -> 69	✎ ✖
Tiberian Sun	TCPAny -> 4000 Any -> 1140-1234 UDPAny -> 1140-1234	✎ ✖
Total Annihilation	TCPAny -> 1000-4999 UDPAny -> 47624 Any -> 1000-4999	✎ ✖
Traceroute	UDP32769-65535 -> 33434-33523	✎ ✖
Unreal - Master Server List	UDPAny -> 27900	✎ ✖
Unreal, Unreal Tournament	UDPAny -> 7777-7779 Any -> 27900	✎ ✖
Vonage VoIP Phone Service	TCPAny -> 5060-5070 Any -> 10000-25000	✎ ✖
Worms 2	TCPAny -> 1031-2210 Any -> 2220-3212 UDPAny -> 1000-1029	✎ ✖
XBoX	TCPAny -> 3074 UDPAny -> 88 Any -> 3074	✎ ✖
New Entry		✚

If you clicked the **Basic** button in the preceding screen, the following screen will appear.

At this screen, you can:

- Configure ports for predefined protocols by clicking the desired link.
- Configure a new user-defined port for a protocol by clicking the **New Entry** link.

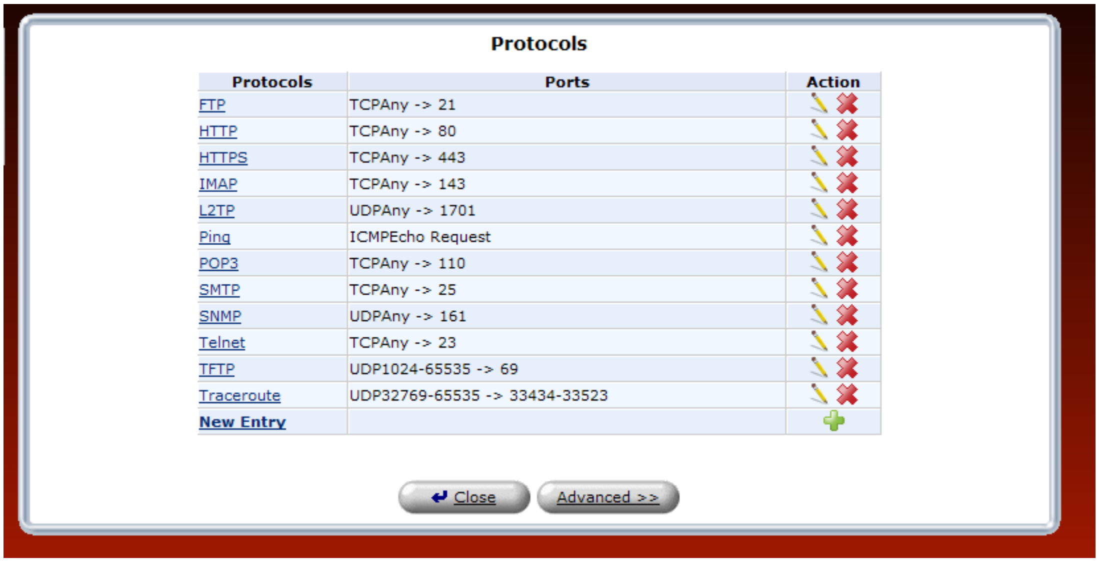


Protocols

Protocols	Ports	Action
FTP	TCPAny -> 21	✎ ✖
HTTP	TCPAny -> 80	✎ ✖
HTTPS	TCPAny -> 443	✎ ✖
IMAP	TCPAny -> 143	✎ ✖
L2TP	UDPAny -> 1701	✎ ✖
Ping	ICMPEcho Request	✎ ✖
POP3	TCPAny -> 110	✎ ✖
SMTP	TCPAny -> 25	✎ ✖
SNMP	UDPAny -> 161	✎ ✖
Telnet	TCPAny -> 23	✎ ✖
TFTP	UDP1024-65535 -> 69	✎ ✖
Traceroute	UDP32769-65535 -> 33434-33523	✎ ✖
New Entry		+

15.12.1.1 Configuring a Predefined Protocol Service

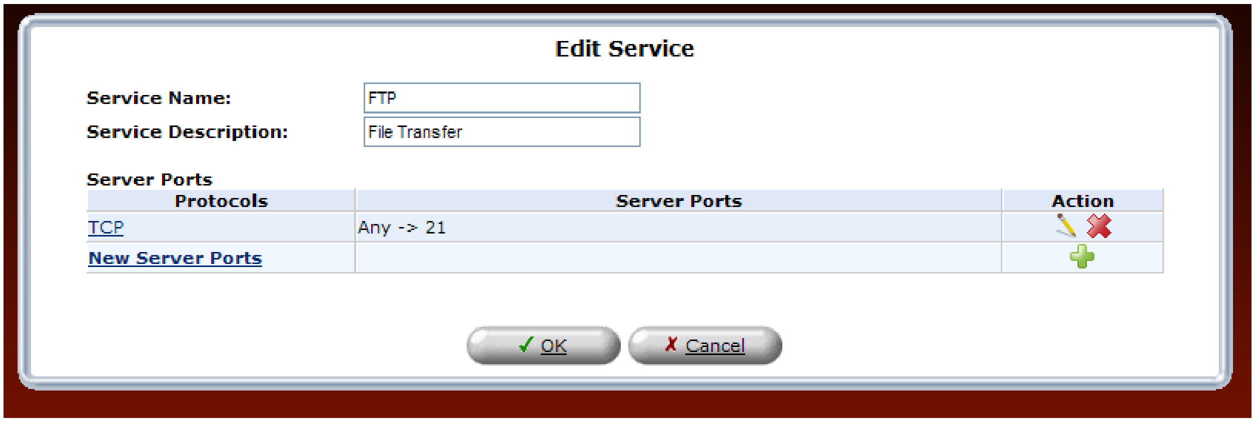
To configure the Router for a predefined protocol service, click the desired link.



Protocols

Protocols	Ports	Action
FTP	TCPAny -> 21	✎ ✖
HTTP	TCPAny -> 80	✎ ✖
HTTPS	TCPAny -> 443	✎ ✖
IMAP	TCPAny -> 143	✎ ✖
L2TP	UDPAny -> 1701	✎ ✖
Ping	ICMPEcho Request	✎ ✖
POP3	TCPAny -> 110	✎ ✖
SMTP	TCPAny -> 25	✎ ✖
SNMP	UDPAny -> 161	✎ ✖
Telnet	TCPAny -> 23	✎ ✖
TFTP	UDP1024-65535 -> 69	✎ ✖
Traceroute	UDP32769-65535 -> 33434-33523	✎ ✖
New Entry		+

For example, if you clicked **FTP** in the preceding screen, the following screen will appear. Next, click the **TCP** link to configure the service protocol values.



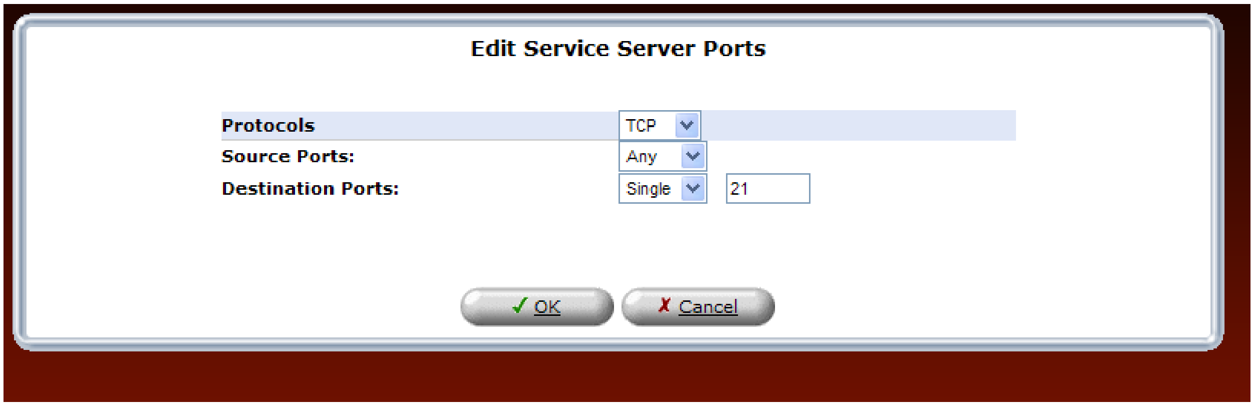
Edit Service

Service Name:	FTP
Service Description:	File Transfer

Server Ports

Protocols	Server Ports	Action
TCP	Any -> 21	✎ ✖
New Server Ports		✚

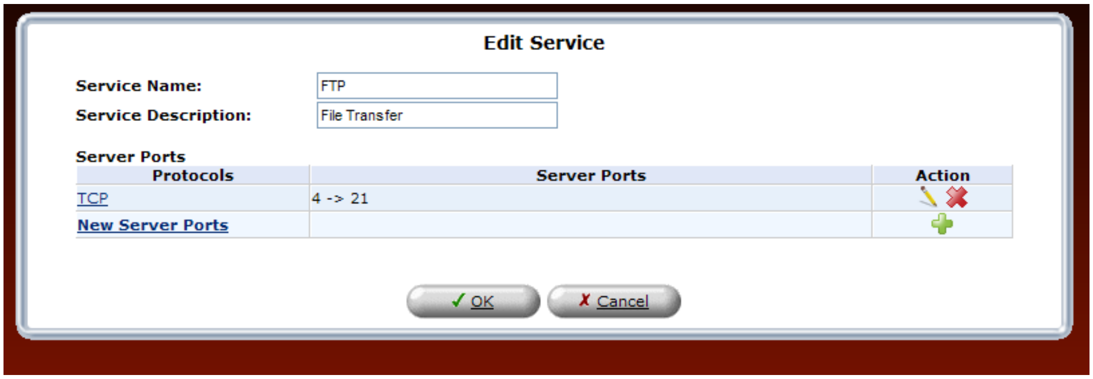
If you clicked **TCP** in the **Edit Service** screen, the following screen will appear. Enter the desired values, and then click **OK** to continue.



Edit Service Server Ports

Protocols	TCP
Source Ports:	Any
Destination Ports:	Single 21

If you have entered values and clicked **OK** in the preceding screen, the following screen will appear. A protocol service has been configured. Click **OK** to save the settings.



Edit Service

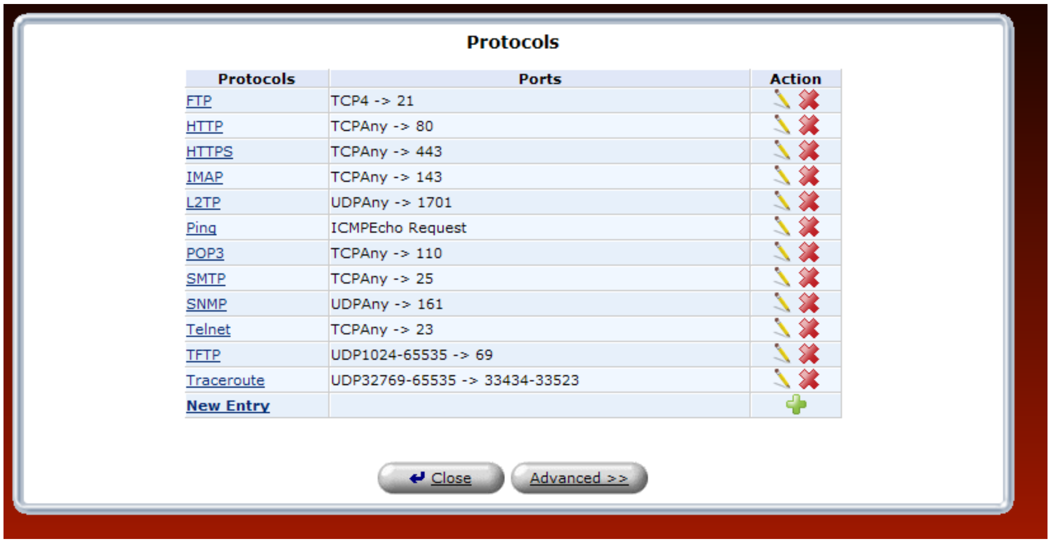
Service Name: FTP

Service Description: File Transfer

Server Ports

Protocols	Server Ports	Action
TCP	4 -> 21	
New Server Ports		

If you clicked **OK** in the preceding screen, the following screen will appear. The protocol service has been saved to the Router.

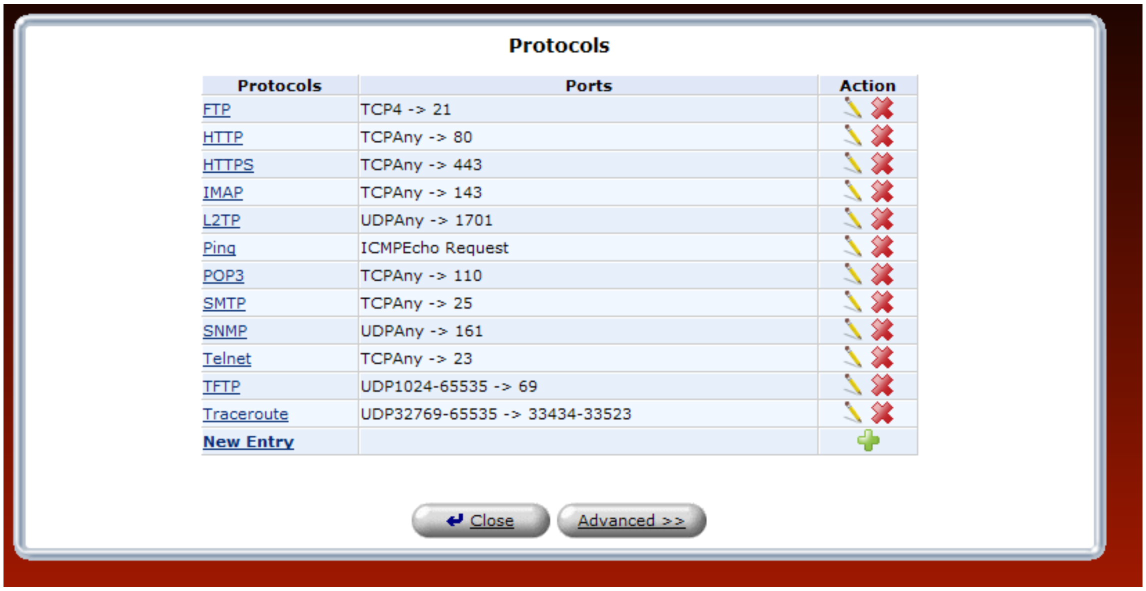


Protocols

Protocols	Ports	Action
FTP	TCP4 -> 21	
HTTP	TCPAny -> 80	
HTTPS	TCPAny -> 443	
IMAP	TCPAny -> 143	
L2TP	UDPAny -> 1701	
Ping	ICMPEcho Request	
POP3	TCPAny -> 110	
SMTP	TCPAny -> 25	
SNMP	UDPAny -> 161	
Telnet	TCPAny -> 23	
TFTP	UDP1024-65535 -> 69	
Traceroute	UDP32769-65535 -> 33434-33523	
New Entry		

15.12.1.2 Configuring a User-defined Protocol Service

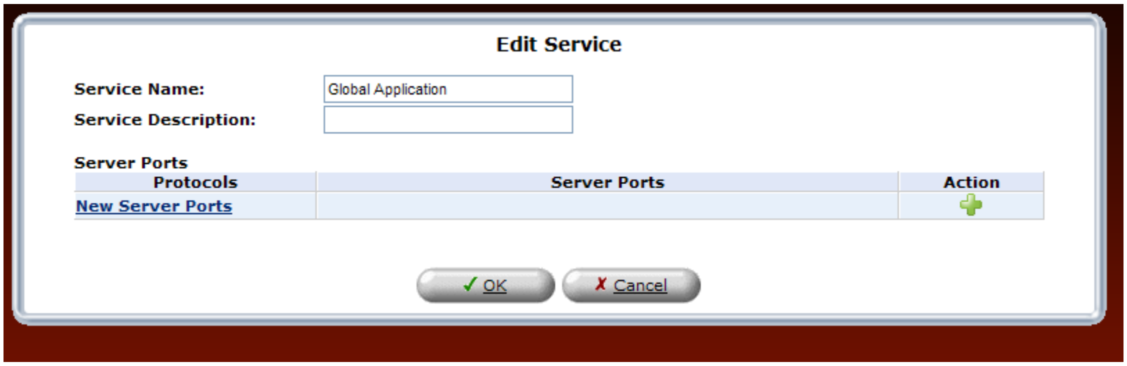
To configure the Router for a user-defined protocol service, click the **New Entry** link.



Protocols

Protocols	Ports	Action
FTP	TCP4 -> 21	✎ ✖
HTTP	TCPAny -> 80	✎ ✖
HTTPS	TCPAny -> 443	✎ ✖
IMAP	TCPAny -> 143	✎ ✖
L2TP	UDPAny -> 1701	✎ ✖
Ping	ICMPEcho Request	✎ ✖
POP3	TCPAny -> 110	✎ ✖
SMTP	TCPAny -> 25	✎ ✖
SNMP	UDPAny -> 161	✎ ✖
Telnet	TCPAny -> 23	✎ ✖
TFTP	UDP1024-65535 -> 69	✎ ✖
Traceroute	UDP32769-65535 -> 33434-33523	✎ ✖
New Entry		✚

If you clicked **New Entry,** the following screen will appear. Enter a service name and service description in the fields provided. Next, click the **New Server Ports** link.



Edit Service

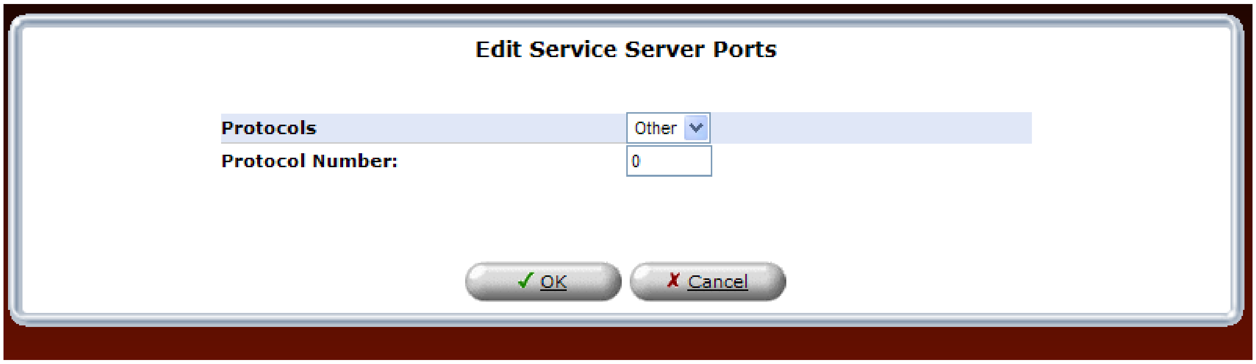
Service Name: Global Application

Service Description:

Server Ports

Protocols	Server Ports	Action
New Server Ports		✚

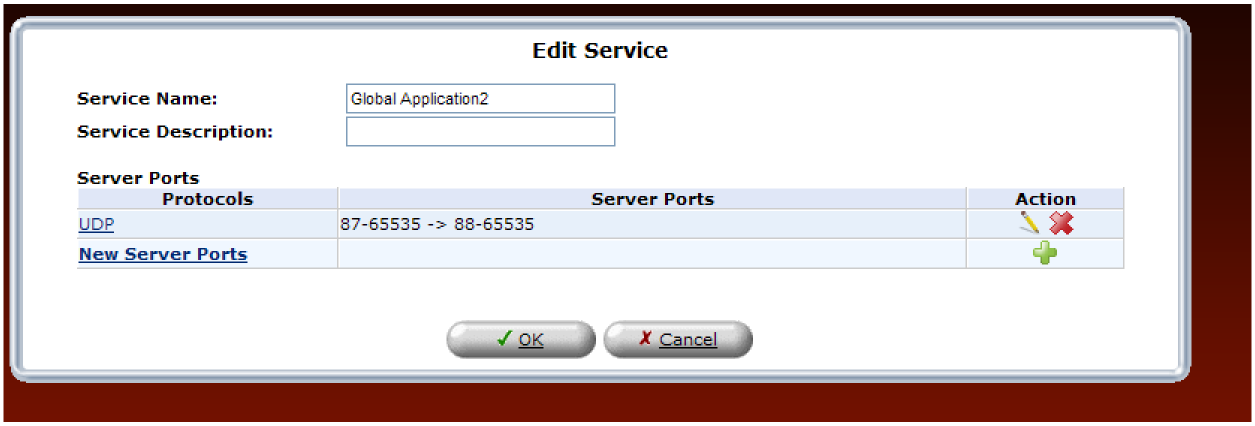
If you clicked **New Server Ports,** the following screen will appear. Select a protocol from the drop-down list, and then enter a protocol number. Click **OK** to continue.



Edit Service Server Ports

Protocols	Other
Protocol Number:	0

If you clicked **OK**, the following screen will appear. Click **OK** to save the settings.



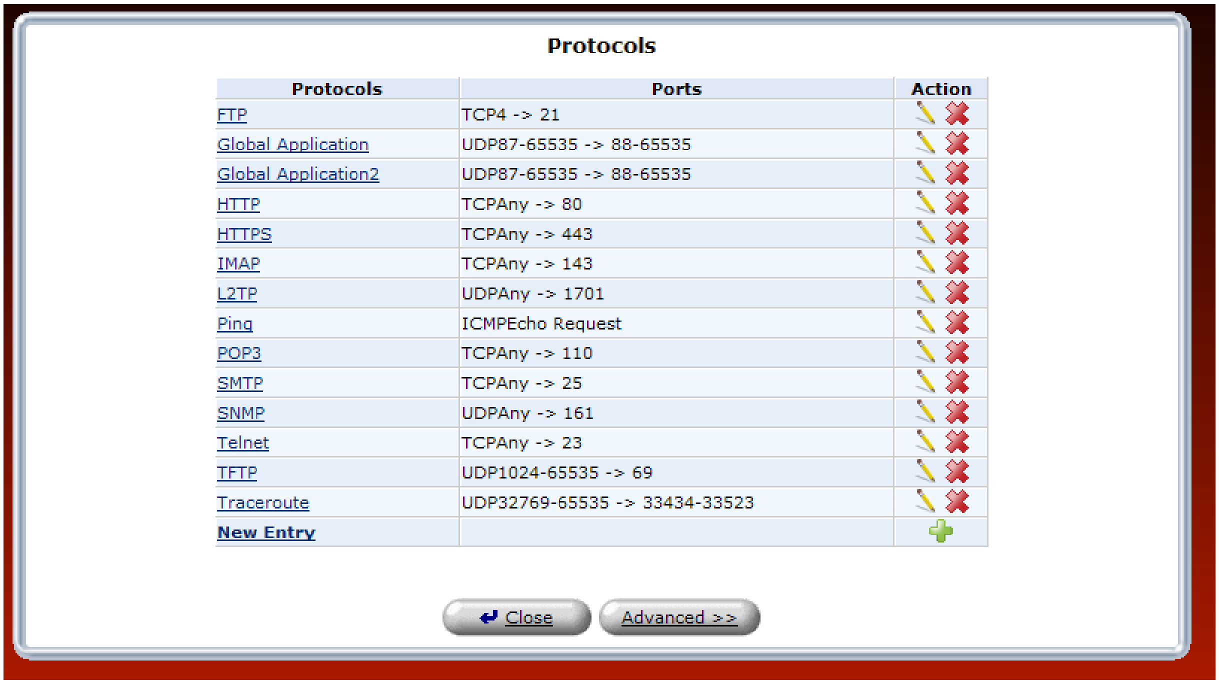
Edit Service

Service Name:	Global Application2
Service Description:	

Server Ports

Protocols	Server Ports	Action
UDP	87-65535 -> 88-65535	✎ ✗
New Server Ports		✚

If you clicked **OK**, the following screen will appear. The protocol settings have been saved to the Router.



Protocols

Protocols	Ports	Action
FTP	TCP4 -> 21	✎ ✖
Global Application	UDP87-65535 -> 88-65535	✎ ✖
Global Application2	UDP87-65535 -> 88-65535	✎ ✖
HTTP	TCPAny -> 80	✎ ✖
HTTPS	TCPAny -> 443	✎ ✖
IMAP	TCPAny -> 143	✎ ✖
L2TP	UDPAny -> 1701	✎ ✖
Ping	ICMPEcho Request	✎ ✖
POP3	TCPAny -> 110	✎ ✖
SMTP	TCPAny -> 25	✎ ✖
SNMP	UDPAny -> 161	✎ ✖
Telnet	TCPAny -> 23	✎ ✖
TFTP	UDP1024-65535 -> 69	✎ ✖
Traceroute	UDP32769-65535 -> 33434-33523	✎ ✖
New Entry		✚

15.12.2 Advanced Protocol Service

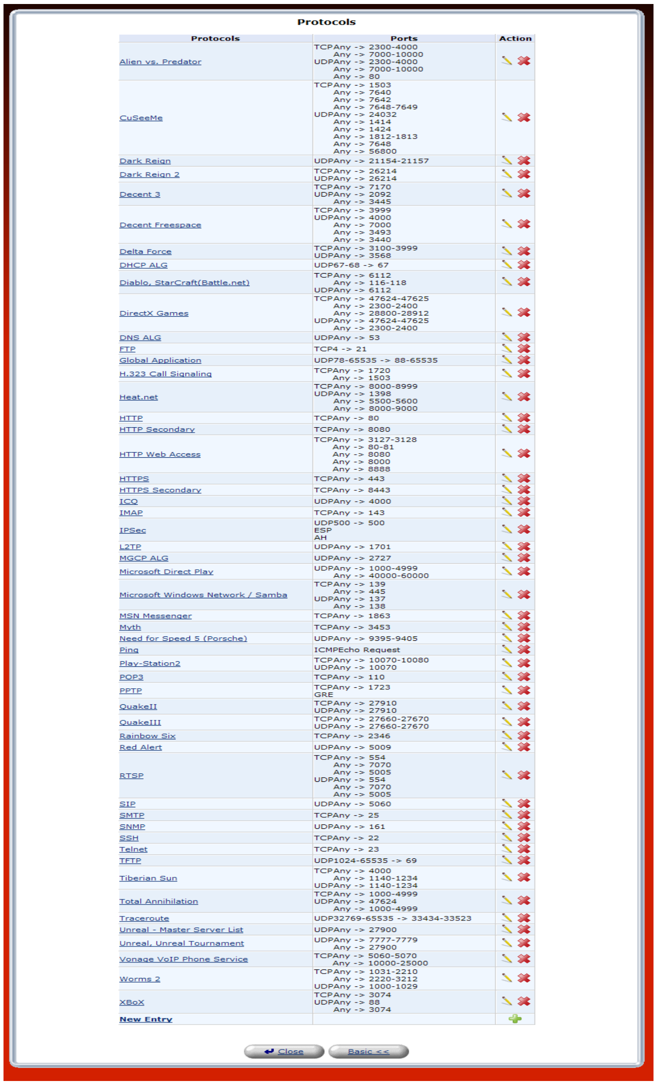
To access the advanced service **Protocols** screen (if you are in the Basic screen), click the **Advanced** button. The following advanced **Protocols** screen will appear.

At the Advanced screen, you can:

- Configure predefined application by clicking the desired link.
- Configure a new user-defined application by clicking the **New Entry** link.

15.12.2.1 Configuring a Predefined Application

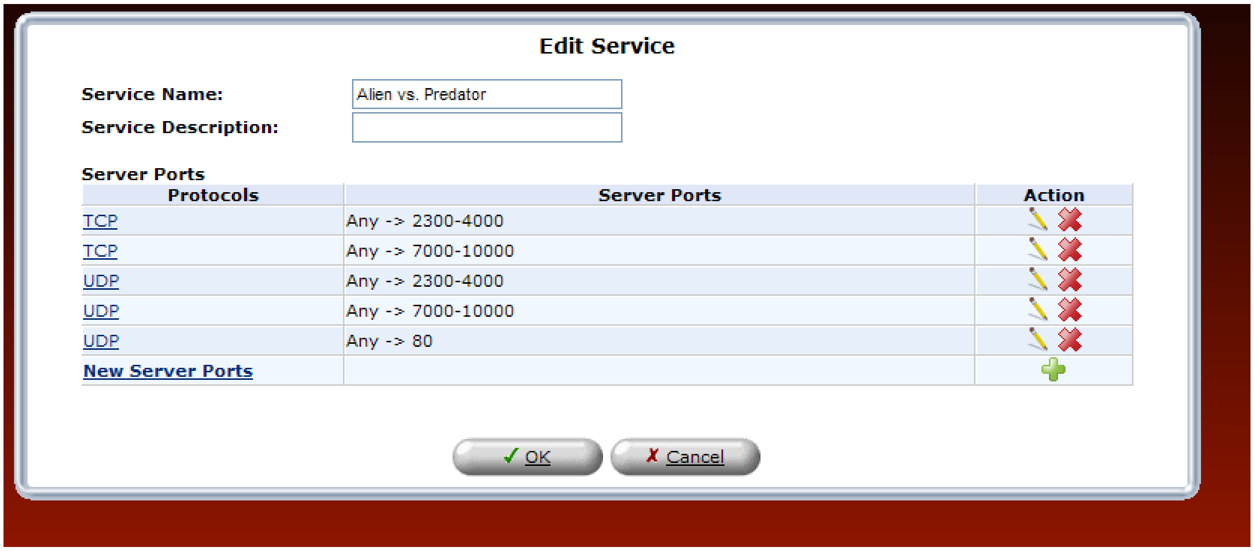
To configure the Router for a predefined application, click the desired link.



Protocols

Protocols	Ports	Action
Alien vs. Predator	TCPAny -> 2300-4000 Any -> 7000-10000 UDPAny -> 2300-4000 Any -> 7000-10000 Any -> 80	✎ ✖
CuSeeMe	TCPAny -> 1503 Any -> 7640 Any -> 7642 Any -> 7648-7649 UDPAny -> 24032 Any -> 1414 Any -> 1424 Any -> 1812-1813 Any -> 7648 Any -> 56800	✎ ✖
Dark Reign	UDPAny -> 21154-21157	✎ ✖
Dark Reign 2	TCPAny -> 26214 UDPAny -> 26214	✎ ✖
Decent 3	TCPAny -> 7170 UDPAny -> 2092 Any -> 3445	✎ ✖
Decent Freespace	TCPAny -> 3999 UDPAny -> 4000 Any -> 7000 Any -> 3493 Any -> 3440	✎ ✖
Delta Force	TCPAny -> 3100-3999 UDPAny -> 3568	✎ ✖
DHCP ALG	UDP67-68 -> 67	✎ ✖
Diablo, StarCraft(Battle.net)	TCPAny -> 6112 Any -> 116-118 UDPAny -> 6112	✎ ✖
DirectX Games	TCPAny -> 47624-47625 Any -> 2300-2400 Any -> 28800-28912 UDPAny -> 47624-47625 Any -> 2300-2400	✎ ✖
DNS ALG	UDPAny -> 53	✎ ✖
FTP	TCP4 -> 21	✎ ✖
Global Application	UDP78-65535 -> 88-65535	✎ ✖
H.323 Call Signaling	TCPAny -> 1720 Any -> 1503	✎ ✖
Heat.net	TCPAny -> 8000-8999 UDPAny -> 1398 Any -> 5500-5600 Any -> 8000-9000	✎ ✖
HTTP	TCPAny -> 80	✎ ✖
HTTP Secondary	TCPAny -> 8080	✎ ✖
HTTP Web Access	TCPAny -> 3127-3128 Any -> 80-81 Any -> 8080 Any -> 8000 Any -> 8888	✎ ✖
HTTPS	TCPAny -> 443	✎ ✖
HTTPS Secondary	TCPAny -> 8443	✎ ✖
ICQ	UDPAny -> 4000	✎ ✖
IMAP	TCPAny -> 143	✎ ✖
IPSec	UDP500 -> 500 ESP AH	✎ ✖
L2TP	UDPAny -> 1701	✎ ✖
MGCP ALG	UDPAny -> 2727	✎ ✖
Microsoft Direct Play	UDPAny -> 1000-4999 Any -> 40000-60000	✎ ✖
Microsoft Windows Network / Samba	TCPAny -> 139 Any -> 445 UDPAny -> 137 Any -> 138	✎ ✖
MSN Messenger	TCPAny -> 1863	✎ ✖
Myth	TCPAny -> 3453	✎ ✖
Need for Speed 5 (Porsche)	UDPAny -> 9395-9405	✎ ✖
Ping	ICMPEcho Request	✎ ✖
Play-Station2	TCPAny -> 10070-10080 UDPAny -> 10070	✎ ✖
POP3	TCPAny -> 110	✎ ✖
PPTP	TCPAny -> 1723 GRE	✎ ✖
QuakeII	TCPAny -> 27910 UDPAny -> 27910	✎ ✖
QuakeIII	TCPAny -> 27660-27670 UDPAny -> 27660-27670	✎ ✖
Rainbow Six	TCPAny -> 2346	✎ ✖
Red Alert	UDPAny -> 5009	✎ ✖
RTSP	TCPAny -> 554 Any -> 7070 Any -> 5005 UDPAny -> 554 Any -> 7070 Any -> 5005	✎ ✖
SIP	UDPAny -> 5060	✎ ✖
SMTP	TCPAny -> 25	✎ ✖
SNMP	UDPAny -> 161	✎ ✖
SSH	TCPAny -> 22	✎ ✖
Telnet	TCPAny -> 23	✎ ✖
TFTP	UDP1024-65535 -> 69	✎ ✖
Tiberian Sun	TCPAny -> 4000 Any -> 1140-1234 UDPAny -> 1140-1234	✎ ✖
Total Annihilation	TCPAny -> 1000-4999 UDPAny -> 47624 Any -> 1000-4999	✎ ✖
Traceroute	UDP32769-65535 -> 33434-33523	✎ ✖
Unreal - Master Server List	UDPAny -> 27900	✎ ✖
Unreal, Unreal Tournament	UDPAny -> 7777-7779 Any -> 27900	✎ ✖
Vonage VoIP Phone Service	TCPAny -> 5060-5070 Any -> 10000-25000	✎ ✖
Worms 2	TCPAny -> 1031-2210 Any -> 2220-3212 UDPAny -> 1000-1029	✎ ✖
XBoX	TCPAny -> 3074 UDPAny -> 88 Any -> 3074	✎ ✖
New Entry		✚

For example, if you clicked the link of a predefined service in the preceding screen, the following screen will appear. If desired, enter a description in the **Service Description** field. Next, click the desired TCP or UDP link.



Edit Service

Service Name: Alien vs. Predator

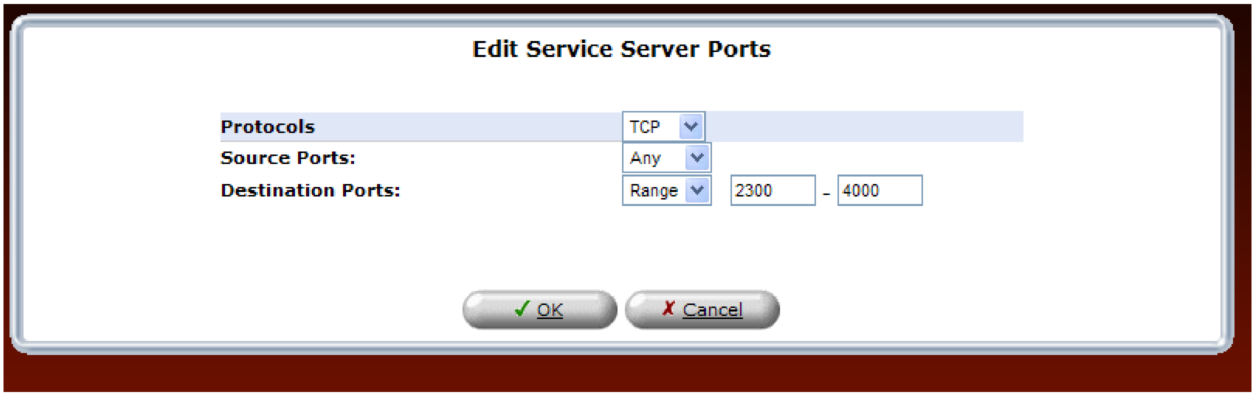
Service Description:

Server Ports

Protocols	Server Ports	Action
TCP	Any -> 2300-4000	✎ ✗
TCP	Any -> 7000-10000	✎ ✗
UDP	Any -> 2300-4000	✎ ✗
UDP	Any -> 7000-10000	✎ ✗
UDP	Any -> 80	✎ ✗
New Server Ports		+

If you selected TCP (Any -> 2300-4000) the following screen will appear. Select the desired source port and destination port values from the drop-down lists, and then click **OK**.

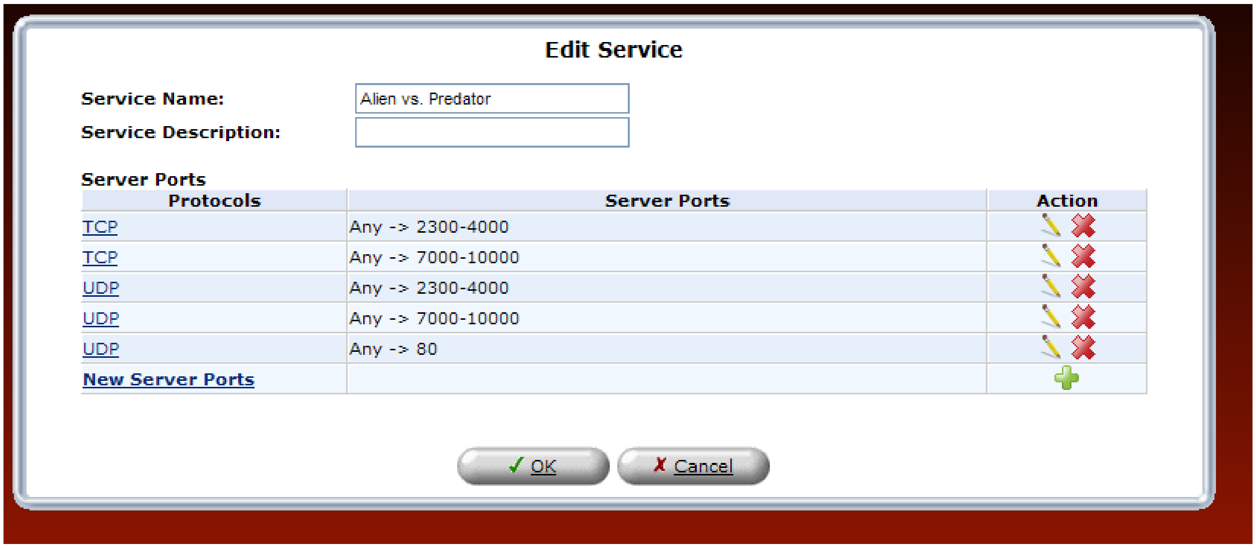
NOTE: For the Source and Destination ports, you can select a single port or a range of ports. In this example, the range for the Source port can be any value from 0 through 65535. And the range for the Destination port can be any value from 2300-4000.



Edit Service Server Ports

Protocols	TCP
Source Ports:	Any
Destination Ports:	Range 2300 - 4000

After you have entered the desired values and click **OK** in the preceding screen, the following screen will appear. The TCP protocol values have been configured. Next, click **OK** to save the settings.



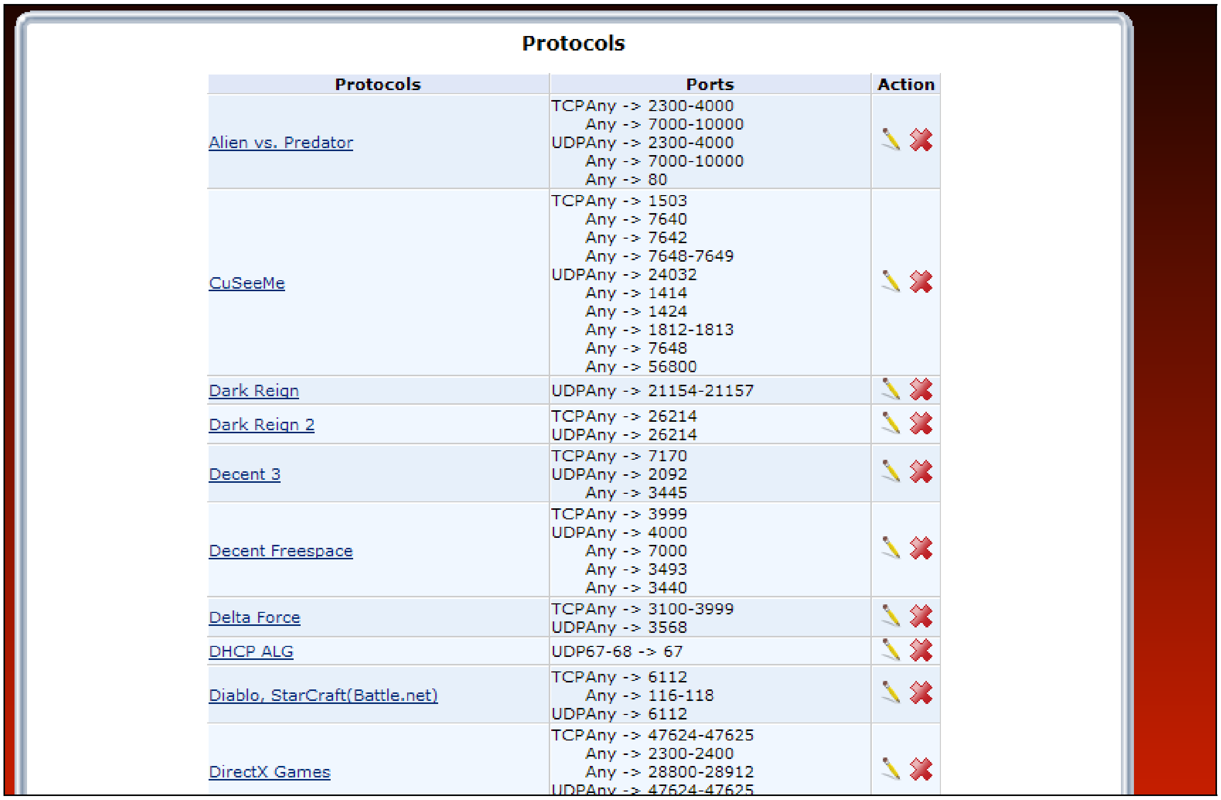
Edit Service

Service Name:	Alien vs. Predator
Service Description:	

Server Ports

Protocols	Server Ports	Action
TCP	Any -> 2300-4000	✎ ✖
TCP	Any -> 7000-10000	✎ ✖
UDP	Any -> 2300-4000	✎ ✖
UDP	Any -> 7000-10000	✎ ✖
UDP	Any -> 80	✎ ✖
New Server Ports		➕

If you clicked **OK**, the protocol values will be saved to the Router, and the following screen will display the entry.

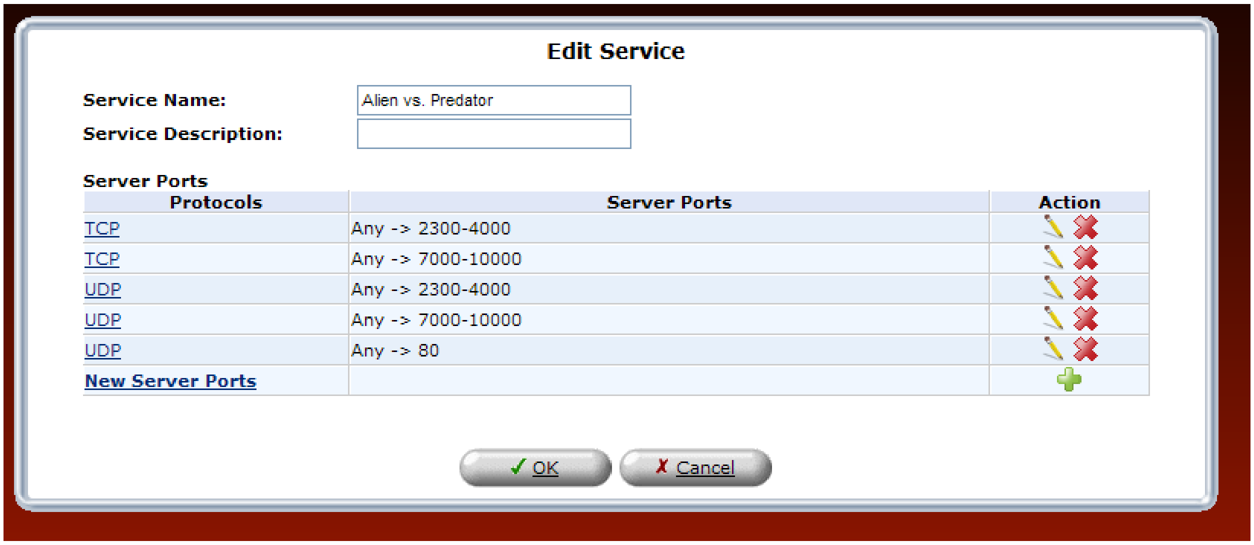


Protocols

Protocols	Ports	Action
Alien vs. Predator	TCPAny -> 2300-4000 Any -> 7000-10000 UDPAny -> 2300-4000 Any -> 7000-10000 Any -> 80	✎ ✖
CuSeeMe	TCPAny -> 1503 Any -> 7640 Any -> 7642 Any -> 7648-7649 UDPAny -> 24032 Any -> 1414 Any -> 1424 Any -> 1812-1813 Any -> 7648 Any -> 56800	✎ ✖
Dark Reign	UDPAny -> 21154-21157	✎ ✖
Dark Reign 2	TCPAny -> 26214 UDPAny -> 26214	✎ ✖
Decent 3	TCPAny -> 7170 UDPAny -> 2092 Any -> 3445	✎ ✖
Decent Freespace	TCPAny -> 3999 UDPAny -> 4000 Any -> 7000 Any -> 3493 Any -> 3440	✎ ✖
Delta Force	TCPAny -> 3100-3999 UDPAny -> 3568	✎ ✖
DHCP ALG	UDP67-68 -> 67	✎ ✖
Diablo, StarCraft(Battle.net)	TCPAny -> 6112 Any -> 116-118 UDPAny -> 6112	✎ ✖
DirectX Games	TCPAny -> 47624-47625 Any -> 2300-2400 Any -> 28800-28912 UDPAny -> 47624-47625	✎ ✖

15.12.2.2 *Configuring a New User-Defined Application*

To configure new user-defined application, click the **New Server Ports** link in the **Edit Service** screen.



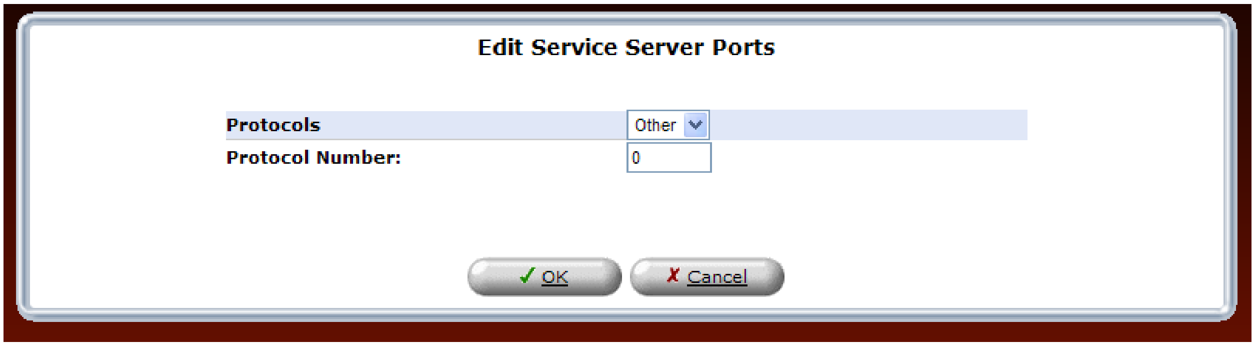
Edit Service

Service Name:	Alien vs. Predator
Service Description:	

Server Ports

Protocols	Server Ports	Action
TCP	Any -> 2300-4000	✎ ✖
TCP	Any -> 7000-10000	✎ ✖
UDP	Any -> 2300-4000	✎ ✖
UDP	Any -> 7000-10000	✎ ✖
UDP	Any -> 80	✎ ✖
New Server Ports		✚

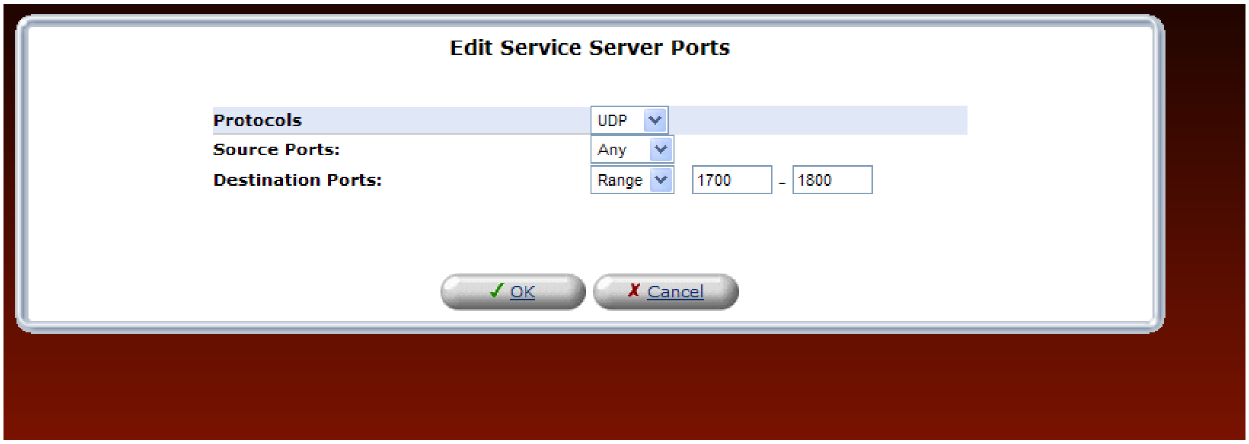
If you clicked **New Server Ports**, the following screen will appear. Select the desired protocol from the **Protocol** drop-down list, and then enter the protocol number.



Edit Service Server Ports

Protocols	Other
Protocol Number:	0

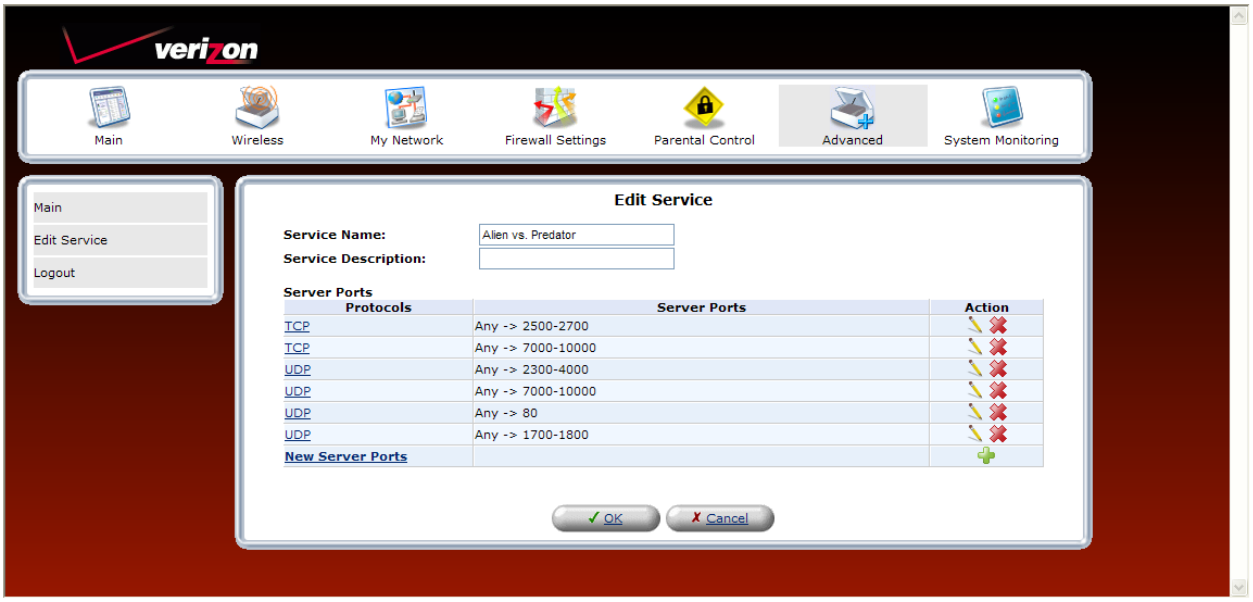
For example, this screen shows appropriate values, click **OK** to continue.



Edit Service Server Ports

Protocols	UDP
Source Ports:	Any
Destination Ports:	Range 1700 - 1800

If you clicked **OK**, the following screen will appear. The UDP port values have been configured. Next, click **OK** to save the settings.



Edit Service

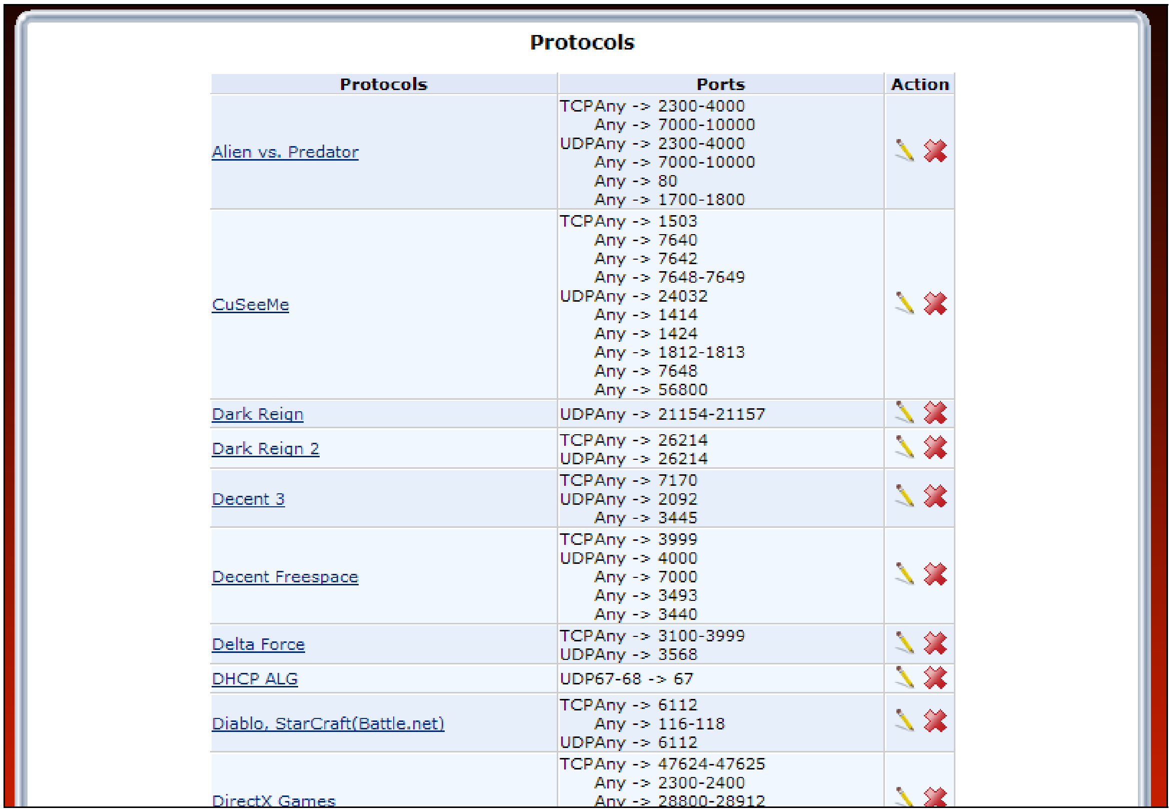
Service Name: Alien vs. Predator

Service Description:

Server Ports

Protocols	Server Ports	Action
TCP	Any -> 2500-2700	
TCP	Any -> 7000-10000	
UDP	Any -> 2300-4000	
UDP	Any -> 7000-10000	
UDP	Any -> 80	
UDP	Any -> 1700-1800	
New Server Ports		

If you clicked **OK**, the following screen will appear. The user-defined UDP port settings have been saved to the Router.



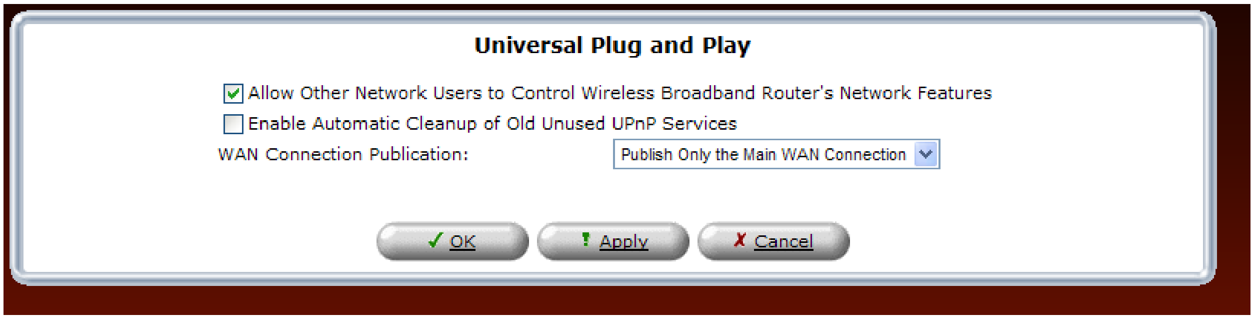
Protocols

Protocols	Ports	Action
Alien vs. Predator	TCPAny -> 2300-4000 Any -> 7000-10000 UDPAny -> 2300-4000 Any -> 7000-10000 Any -> 80 Any -> 1700-1800	✎ ✖
CuSeeMe	TCPAny -> 1503 Any -> 7640 Any -> 7642 Any -> 7648-7649 UDPAny -> 24032 Any -> 1414 Any -> 1424 Any -> 1812-1813 Any -> 7648 Any -> 56800	✎ ✖
Dark Reign	UDPAny -> 21154-21157	✎ ✖
Dark Reign 2	TCPAny -> 26214 UDPAny -> 26214	✎ ✖
Decent 3	TCPAny -> 7170 UDPAny -> 2092 Any -> 3445	✎ ✖
Decent Freespace	TCPAny -> 3999 UDPAny -> 4000 Any -> 7000 Any -> 3493 Any -> 3440	✎ ✖
Delta Force	TCPAny -> 3100-3999 UDPAny -> 3568	✎ ✖
DHCP ALG	UDP67-68 -> 67	✎ ✖
Diablo, StarCraft(Battle.net)	TCPAny -> 6112 Any -> 116-118 UDPAny -> 6112	✎ ✖
DirectX Games	TCPAny -> 47624-47625 Any -> 2300-2400 Any -> 28800-28912	✎ ✖

15.13 UPnP

If you click **Advanced** in the top navigation menu and then select the **UPnP** link, the following screen will appear. This feature advertises the presence of your Router on the LAN. Universal Plug-and-Play is a networking architecture that provides compatibility among networking equipment, software and peripherals. Products that have UPnP can seamlessly connect and communicate with other Universal Plug-and-Play enabled devices, without the need for user configuration, centralized servers, or product-specific device drivers.

To configure UPnP enter the desired values and then click **Apply** to save the settings.



Universal Plug and Play

☑ Allow Other Network Users to Control Wireless Broadband Router's Network Features

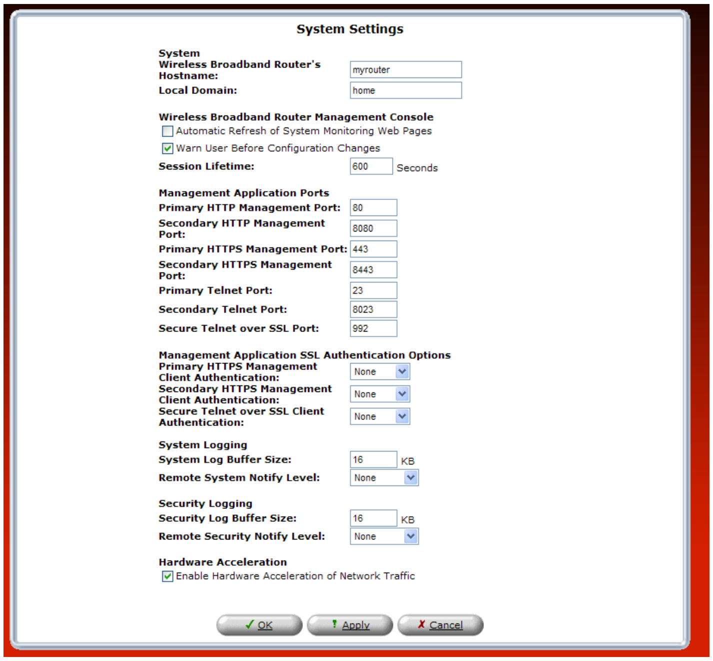
□ Enable Automatic Cleanup of Old Unused UPnP Services

WAN Connection Publication: Publish Only the Main WAN Connection

15.14 System Settings

If you click **Advanced** in the top navigation menu and then select the **System Settings** link, the following screen will appear. Use this page to configure various system settings. Enter the desired system settings and then click **Apply** to save the settings.

NOTE: This Router ships with Telnet disabled. If Telnet is enabled, you can configure Secure Telnet over SSL Port/Client Authentication.



System Settings

System

Wireless Broadband Router's Hostname: myrouter

Local Domain: home

Wireless Broadband Router Management Console

□ Automatic Refresh of System Monitoring Web Pages

☑ Warn User Before Configuration Changes

Session Lifetime: 600 Seconds

Management Application Ports

Primary HTTP Management Port: 80

Secondary HTTP Management Port: 8080

Primary HTTPS Management Port: 443

Secondary HTTPS Management Port: 8443

Primary Telnet Port: 23

Secondary Telnet Port: 8023

Secure Telnet over SSL Port: 992

Management Application SSL Authentication Options

Primary HTTPS Management Client Authentication: None

Secondary HTTPS Management Client Authentication: None

Secure Telnet over SSL Client Authentication: None

System Logging

System Log Buffer Size: 16 KB

Remote System Notify Level: None

Security Logging

Security Log Buffer Size: 16 KB

Remote Security Notify Level: None

Hardware Acceleration

☑ Enable Hardware Acceleration of Network Traffic

Hostname—Specify the Router's host name. The host name is the Router's URL address.
Local Domain—Specify your network's local domain.

Wireless Broadband Router Management Console

Automatic Refresh of System Monitoring Web Pages—select this check box to enable the automatic refresh of system monitoring web pages.

Warn User Before Network Configuration Changes—select this check box to activate user warnings before network configuration changes take effect.

Session Lifetime—this value represents duration of idle time (in seconds) in which the Router will remain active. When this duration times out, the user will have to re-login.

Management Application Ports

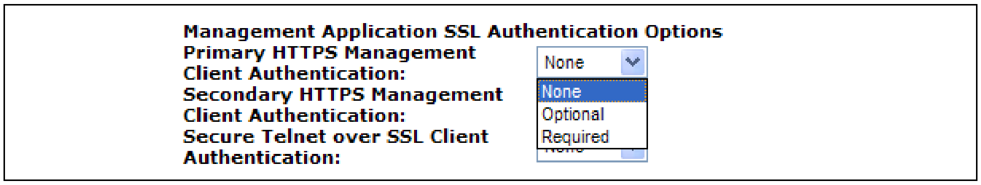
You can configure the following management application ports:

- Primary/Secondary HTTP Management Port
- Primary/Secondary HTTPS Management Port
- Primary/Secondary Telnet Port HTTPs
- Secure Telnet over SSL Port

Management Application SSL Authentication Options

You can configure the Primary and Secondary HTTPS Management Client Authentication. Select the desired option from the drop-down lists:

- Select **None** if you do not want to use client authentication.
- Select **Optional** if you want client authentication to be optional.
- Select **Required** if you want client authentication to be required.



Management Application SSL Authentication Options

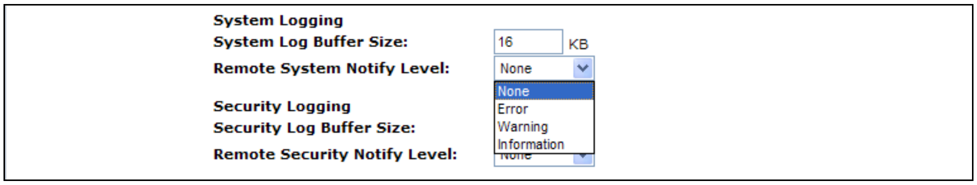
Primary HTTPS Management Client Authentication: None

Secondary HTTPS Management Client Authentication:

Secure Telnet over SSL Client Authentication:

System Logging—configure system logging parameters.
System Log Buffer Size—set the size of the system log buffer in Kilobytes.
Remote System Notify Level—select one of the following remote system notification level from the drop-down list:

- None
- Error
- Warning
- Information



System Logging

System Log Buffer Size: 16 KB

Remote System Notify Level: None

Security Logging

Security Log Buffer Size:

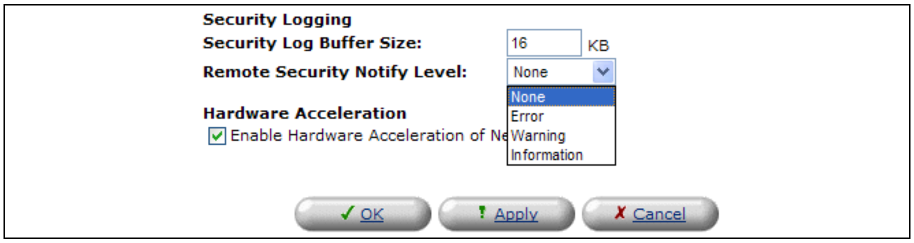
Remote Security Notify Level:

Security Logging—configure security logging parameters.
Security Log Buffer Size—set the size of the security log buffer in Kilobytes.
Remote Security Notify Level—select one of the following remote security notification levels from the drop-down list:

- None
- Error
- Warning
- Information

Hardware Acceleration—To enable this feature, click the **Enable Hardware Acceleration of Network Traffic** check box (if it is not already checked).

After you have configured the desired settings, click **Apply** to allow the settings to take effect in the Router.



Security Logging

Security Log Buffer Size: 16 KB

Remote Security Notify Level: None

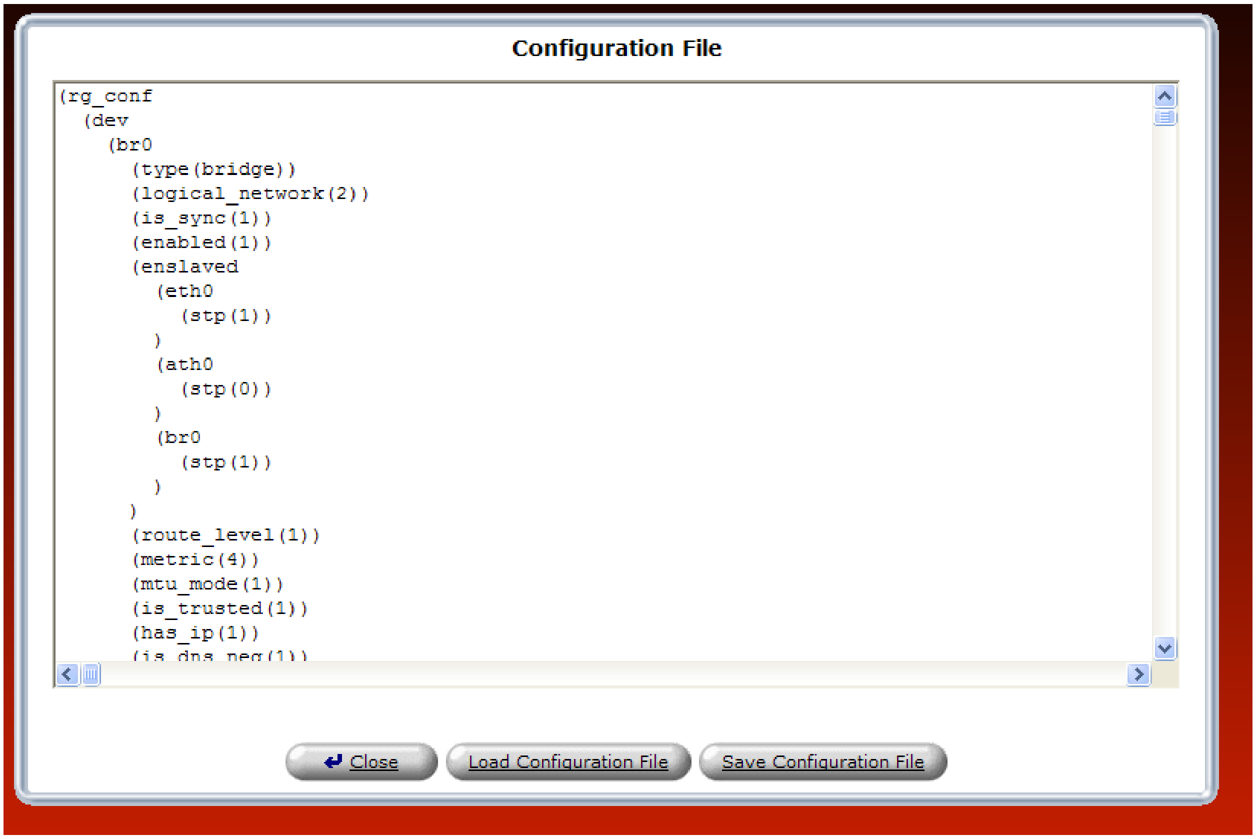
Hardware Acceleration

☑ Enable Hardware Acceleration of Ne

15.15 Configuration File

If you click **Advanced** in the top navigation menu and then select the **Configuration File** link, the following screen will appear.

IMPORTANT: Do not change the settings in this page unless instructed by Verizon.



Configuration File

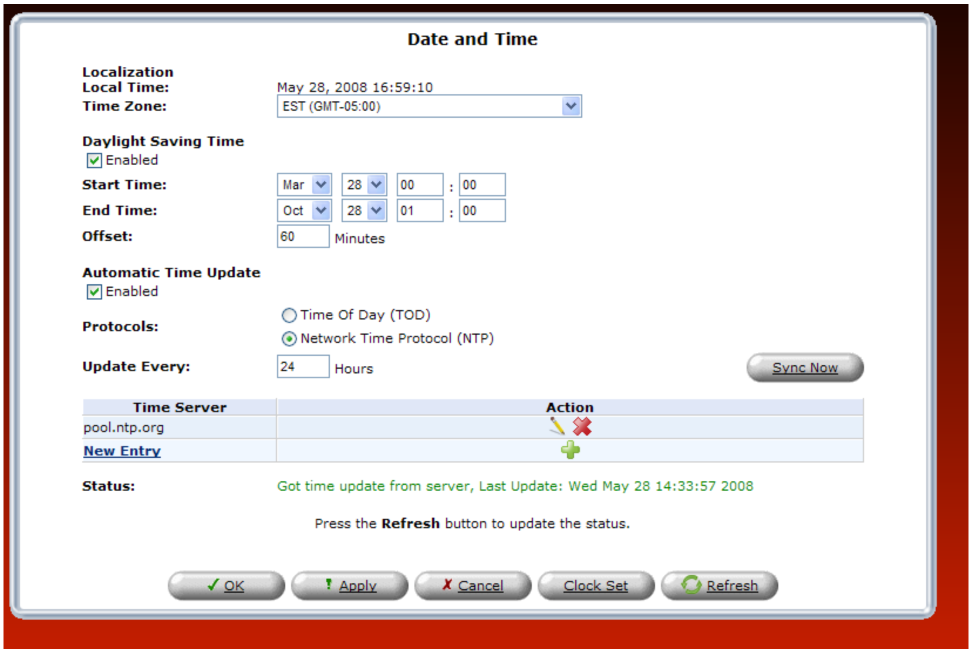
```
(rg_conf
  (dev
    (br0
      (type(bridge))
      (logical_network(2))
      (is_sync(1))
      (enabled(1))
      (enslaved
        (eth0
          (stp(1))
        )
        (ath0
          (stp(0))
        )
        (br0
          (stp(1))
        )
      )
      (route_level(1))
      (metric(4))
      (mtu_mode(1))
      (is_trusted(1))
      (has_ip(1))
      (is_dns_neg(1))
```

15.16 Date and Time Rules

If you click **Advanced** in the top navigation menu and then select the **Date and Time** link, the following screen will appear. Enter the desired values in this screen, and then click **Apply** to save the settings.

The Router can automatically detect daylight saving setting for selected time zones. If the daylight saving settings for a time zone are not automatically detected, the following fields will be displayed:

- Enabled—Click this check box to enable daylight saving time (a check mark will appear in the box).
- Start—Enter the date and time when daylight saving starts.
- End—Enter the date and time when daylight saving ends.
- Offset—Enter the time amount daylight saving time changes.
- Automatic Time Update—Click the check box to activate automatic time update (a check mark will appear in the box).
- Protocols—Click the radio button for the protocol used to perform the time update.
- Update Every—Enter the desired value (in Hours) to specify how often to perform the update.
- Time Server—This table lists the address of the time server.
- Status—Displays a time update status.
- Sync Now—Click this button to synchronize the Router's time with your computer operating system's time.



Date and Time

Localization
Local Time: May 28, 2008 16:59:10
Time Zone: EST (GMT-05:00)

Daylight Saving Time
☑ Enabled
Start Time: Mar 28 00 : 00
End Time: Oct 28 01 : 00
Offset: 60 Minutes

Automatic Time Update
☑ Enabled
Protocols: ○ Time Of Day (TOD) ● Network Time Protocol (NTP)
Update Every: 24 Hours

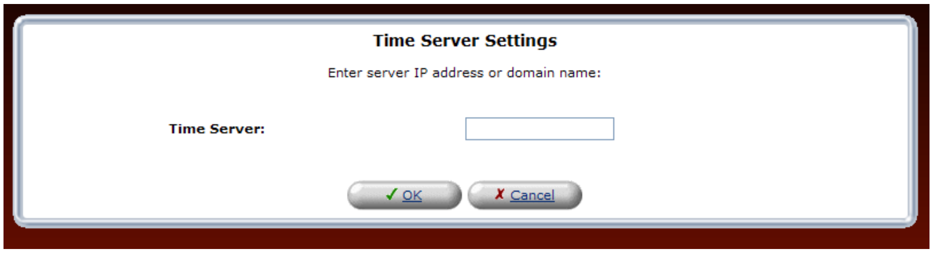
Time Server	Action
pool.ntp.org	
New Entry	

Status: Got time update from server, Last Update: Wed May 28 14:33:57 2008

Press the **Refresh** button to update the status.

15.17 Editing the Time Server Table

If you click the **New Entry** link under **Time Server,** the following screen appears. Enter a server IP address or domain name in the field provided, and then click **OK** to continue.

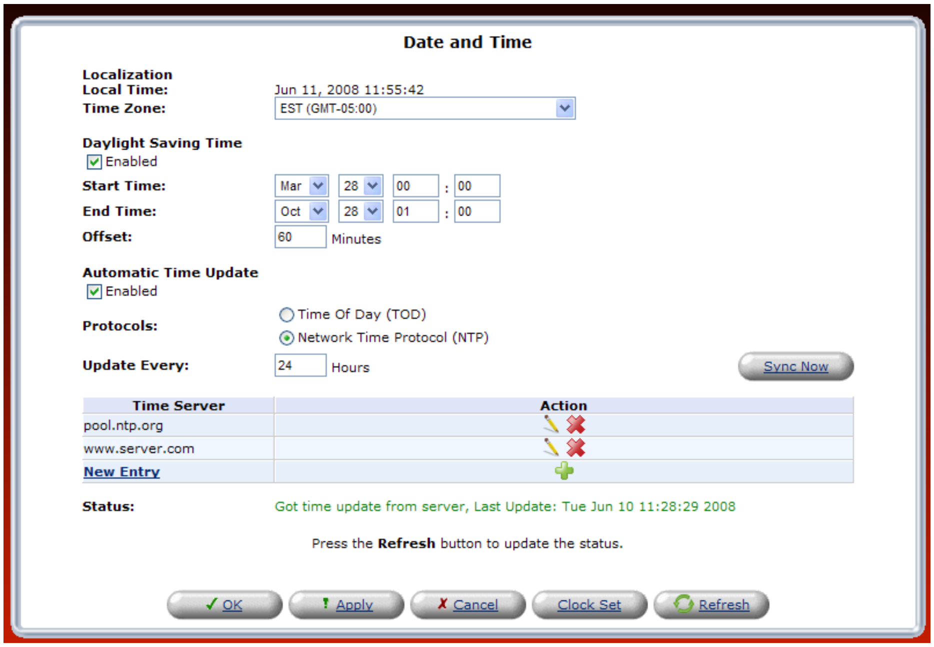


Time Server Settings

Enter server IP address or domain name:

Time Server:

The entry will be added to the time server table. To remove server address from the Time Server table, click the "X" icon next to the server to want to remove. Then, click **Apply** to save the changes.



Date and Time

Localization
Local Time: Jun 11, 2008 11:55:42
Time Zone: EST (GMT-05:00)

Daylight Saving Time
☑ Enabled
Start Time: Mar 28 00 : 00
End Time: Oct 28 01 : 00
Offset: 60 Minutes

Automatic Time Update
☑ Enabled
Protocols: ○ Time Of Day (TOD)
● Network Time Protocol (NTP)
Update Every: 24 Hours

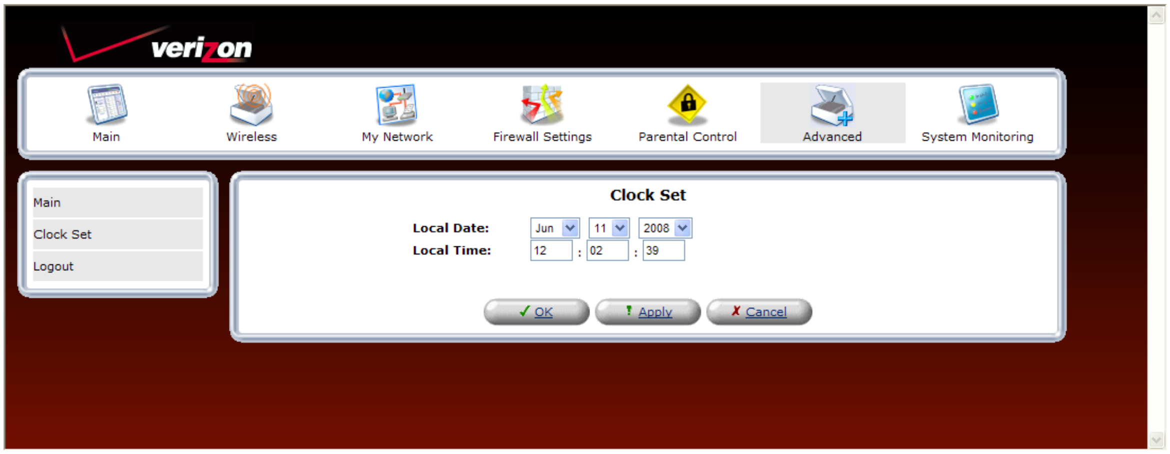
Time Server	Action
pool.ntp.org	✎ ✖
www.server.com	✎ ✖
New Entry	✚

Status: Got time update from server, Last Update: Tue Jun 10 11:28:29 2008

Press the **Refresh** button to update the status.

15.18 Editing Clock Set

If you click the **Clock Set** button in the **Date and Time** screen, the following screen appears. Enter your local time by selecting the appropriate values from the month, day, and year drop-down lists. Next, enter your local time (starting with hours, minutes, and seconds) in the fields provided. Click **Apply** to save the settings. Then click **OK** to return to the **Date and Time** screen.



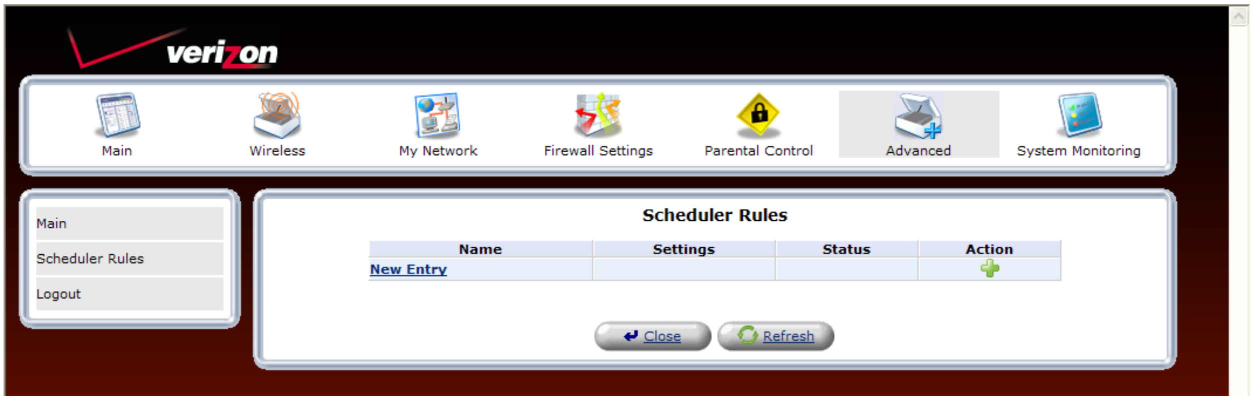
Clock Set

Local Date: Jun 11 2008

Local Time: 12 : 02 : 39

15.19 Scheduler Rules

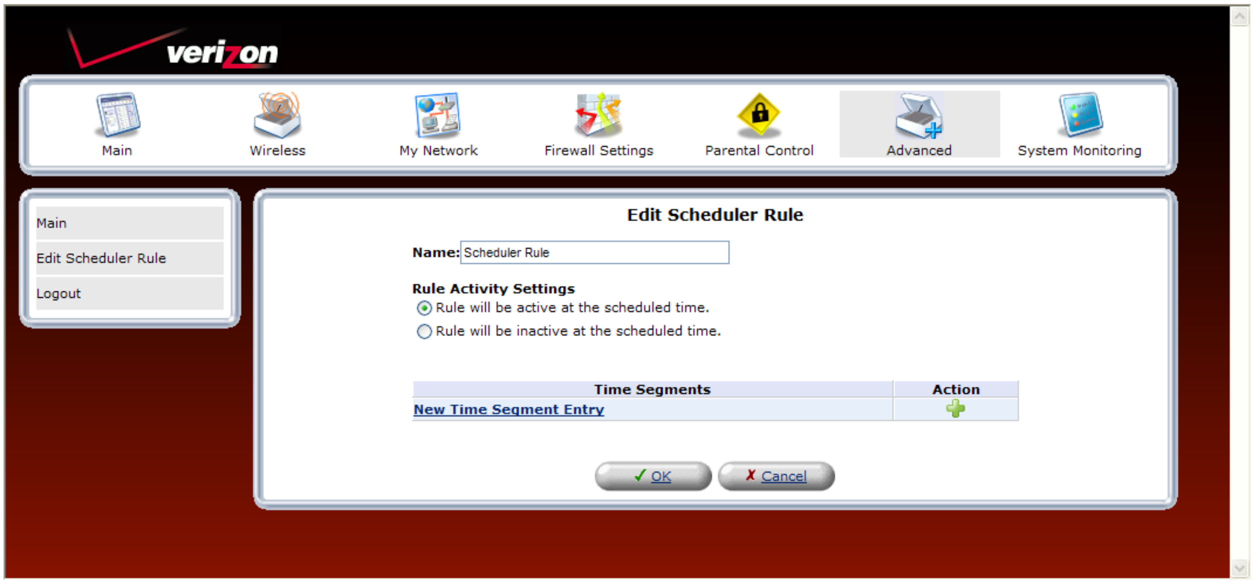
If you click **Advanced** in the top navigation menu and then select the **Scheduler Rules** link, the following screen will appear. To configure a schedule rule, click the **New Entry** link.



Scheduler Rules

Name	Settings	Status	Action
New Entry			✚

The following screen appears. Click the **New Time Segment Entry** link or, alternatively, click the plus icon.



Edit Scheduler Rule

Name: Scheduler Rule

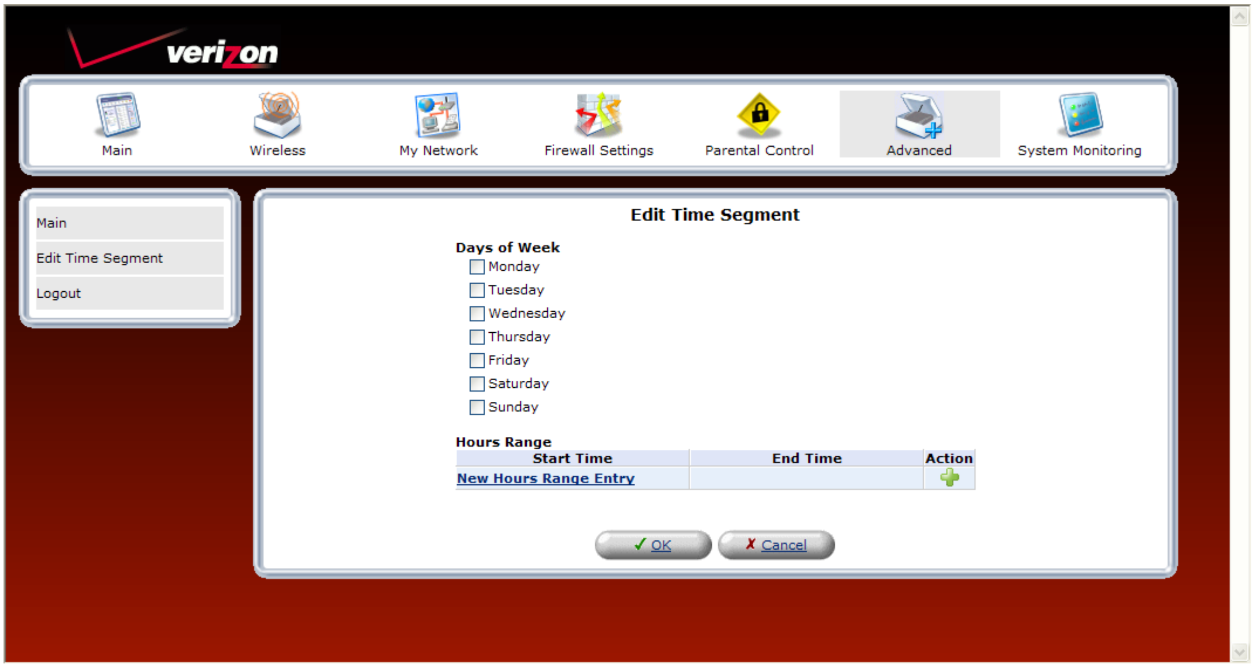
Rule Activity Settings

● Rule will be active at the scheduled time.

○ Rule will be inactive at the scheduled time.

Time Segments	Action
New Time Segment Entry	✚

If you clicked **New Time Segment Entry,** the following appears. Click the **New Hours Range Entry** link.



Edit Time Segment

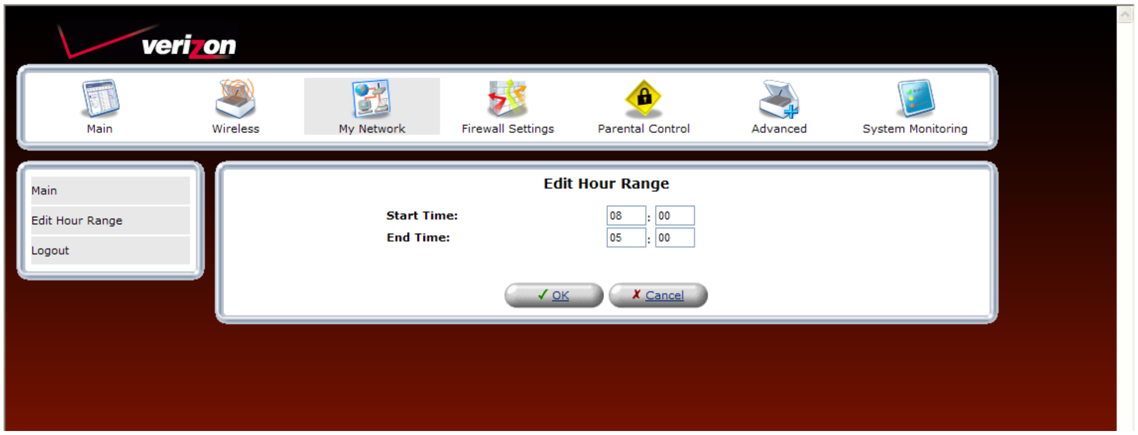
Days of Week

□ Monday
□ Tuesday
□ Wednesday
□ Thursday
□ Friday
□ Saturday
□ Sunday

Hours Range

Start Time	End Time	Action
New Hours Range Entry		✚

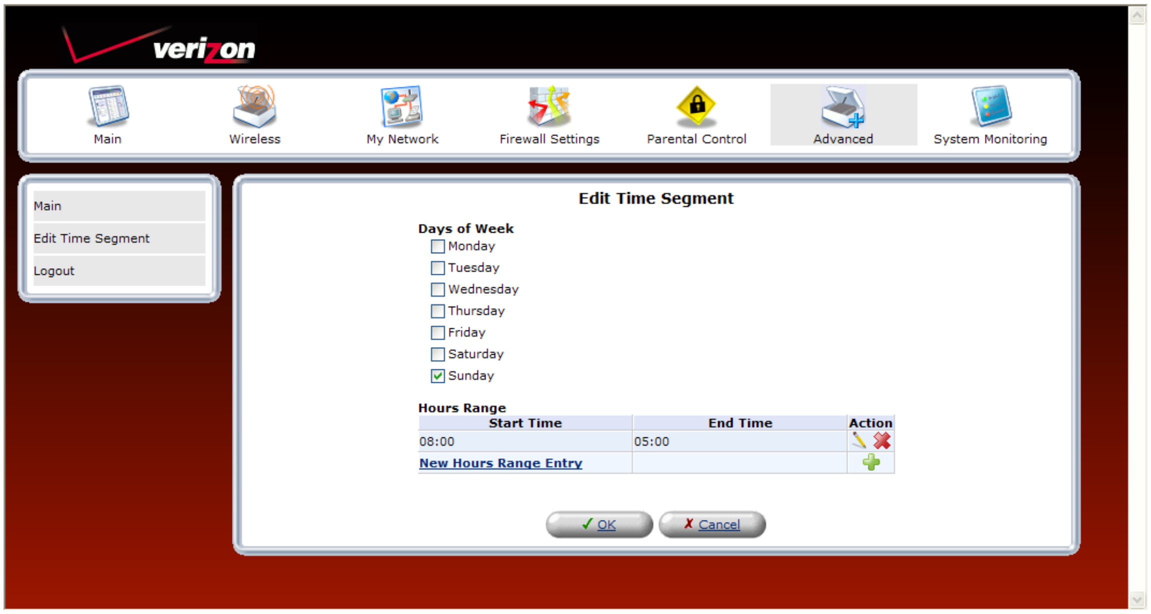
The following screen appears. Enter the desired start time and end time values in the fields provided, and then click **OK** to continue.



Edit Hour Range

Start Time: 08 : 00
End Time: 05 : 00

If you clicked **OK** the following screen will appear. Click the check box of each day that you want in the time segment (a check mark will appear in the box.) Click **OK** to continue.



Edit Time Segment

Days of Week
□ Monday
□ Tuesday
□ Wednesday
□ Thursday
□ Friday
□ Saturday
☑ Sunday

Hours Range

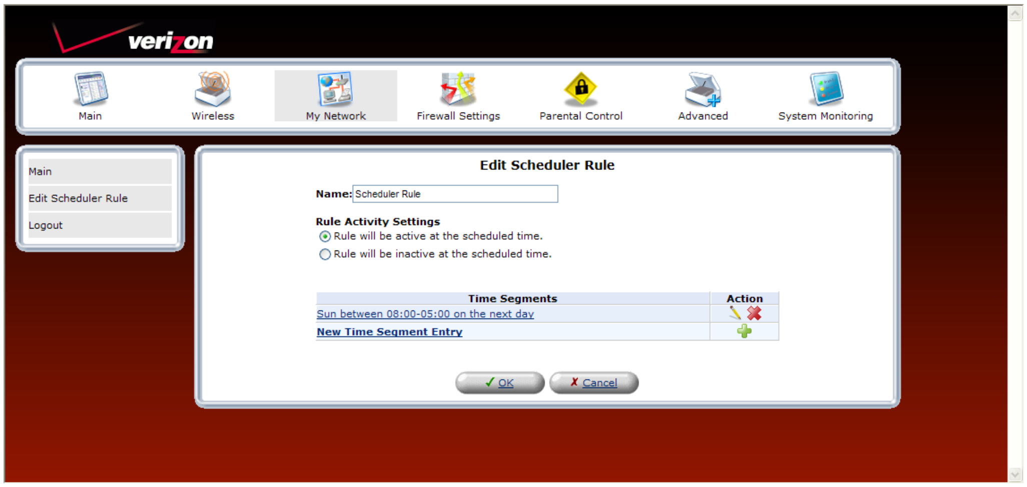
Start Time	End Time	Action
08:00	05:00	✎ ✗
New Hours Range Entry		+

After you have set up the desired time segment and clicked **OK**, the following screen will appear. If desired, you can enter a name for the schedule rule in the **Name** field.

Under **Rule Activity Settings,** be sure to click the setting that you want assigned to the rule:

- Click the first radio button to allow the rule to be active at the scheduled time.
- Click the second radio button to allow the rule to be inactive at the scheduled time.

For example, this screen shows that a schedule has been added to the **Time Segments** table, and that the rule will be active at the scheduled time. To add additional schedule rules to your Router, repeat the preceding scheduler rules instructions. Then, click **OK** in the **Edit Scheduler Rule** screen to allow the settings to take effect in the Router.



Edit Scheduler Rule

Name: Scheduler Rule

Rule Activity Settings

● Rule will be active at the scheduled time.

○ Rule will be inactive at the scheduled time.

Time Segments	Action
Sun between 08:00-05:00 on the next day	✎ ✗
New Time Segment Entry	+

15.20 Firmware Upgrade

If you click **Advanced** in the top navigation menu and then select the **Firmware Upgrade** link, the following screen will appear. This screen is used to update the firmware that controls the operation of your Router. The updated firmware may be loaded from a CD-ROM, from a file stored on a local hard drive within your network, or from an update file stored on an Internet server.

IMPORTANT: The configurable settings of your Router may be erased during the upgrade process.

Do any of the following:

- Select the desired option from the **Upgrade from the Internet** drop-down list. You can choose to perform an automatic check at the specified number of hours and URL. Or you can disable automatic check.

  NOTE: The URL must be in the format: protocol://user:password@host:port/path where protocol is one of http, https, ftp or tftp. Either user or password, or both, may be left out. The port number is also optional.

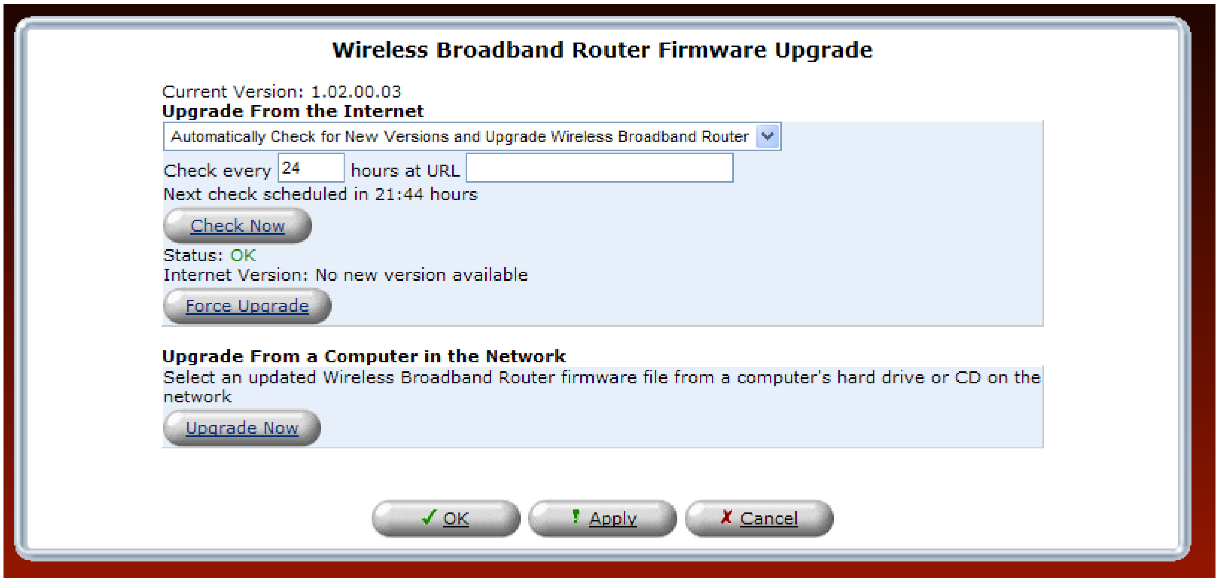
- Click **Check Now** to retrieve the firmware update file and display any available update information. You must be connected to the Internet to use this option.

  NOTE: If you click **Check Now** and the page returns "No new version available," this indicates that the firmware update file is not available.

- Click **Force Upgrade** to download the firmware update file and to automatically update the Router firmware if an update is available and applicable. You must be connected to the Internet to use this option.

  NOTE: The URL must be in the format: protocol://user:password@host:port/path where protocol is one of http, https, ftp or tftp. Either user or password, or both, may be left out. The port number is also optional.

- Click **Upgrade Now** to retrieve the firmware update file from a local hard drive or CD-ROM on your Network. Internet connection is not required for this option.



Wireless Broadband Router Firmware Upgrade

Current Version: 1.02.00.03

Upgrade From the Internet

Automatically Check for New Versions and Upgrade Wireless Broadband Router

Check every 24 hours at URL

Next check scheduled in 21:44 hours

Status: OK

Internet Version: No new version available

Upgrade From a Computer in the Network

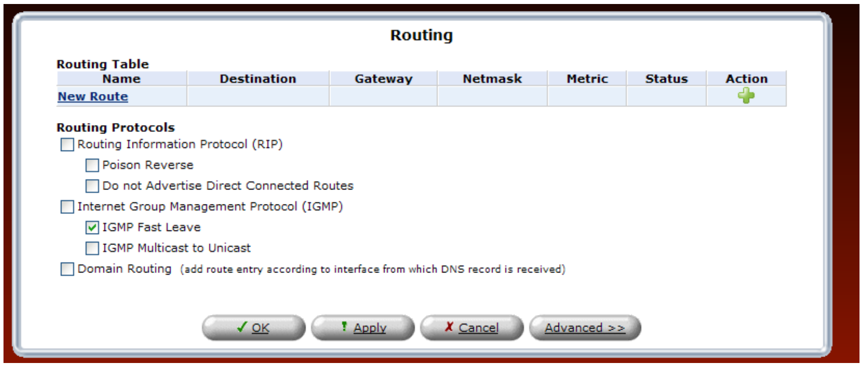
Select an updated Wireless Broadband Router firmware file from a computer's hard drive or CD on the network

15.21 Routing

If you click **Advanced** in the top navigation menu and then select the **Routing** link, the following screen will appear. You can choose to setup your Router to use static or dynamic routing. Dynamic routing automatically adjusts how packets travel on the network, whereas static routing specifies a fixed routing path to neighboring destinations.

15.21.1 Basic Routing Settings

To create a new route, click the **New Route** link. If you change any settings in this screen, click **Apply** to save the settings.



Routing

Routing Table

Name	Destination	Gateway	Netmask	Metric	Status	Action
New Route						✚

Routing Protocols

□ Routing Information Protocol (RIP)

- □ Poison Reverse
- □ Do not Advertise Direct Connected Routes

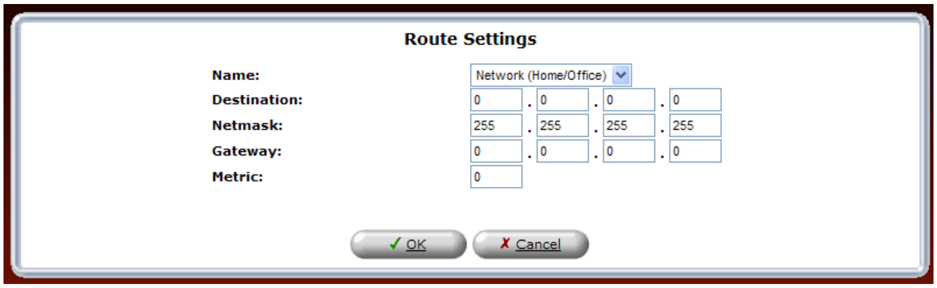
□ Internet Group Management Protocol (IGMP)

- ☑ IGMP Fast Leave
- □ IGMP Multicast to Unicast

□ Domain Routing (add route entry according to interface from which DNS record is received)

If you clicked **New Route,** the following screen will appear. Configure the settings in this screen, and then click **OK** to continue.

- Rule Name—Select the type of network from the drop-down list.
- Destination—Enter the destination is the destination host, subnet address, network address, or default route. The destination for a default route is 0.0.0.0.
- Netmask—Enter the network mask is used in conjunction with the destination to determine when a route is used.
- Gateway—Enter the Router's IP address.
- Metric—Enter the desired measurement of the preference of a route. Typically, the lowest metric is the most preferred route. If multiple routes exist to a given destination network, the route with the lowest metric is used.

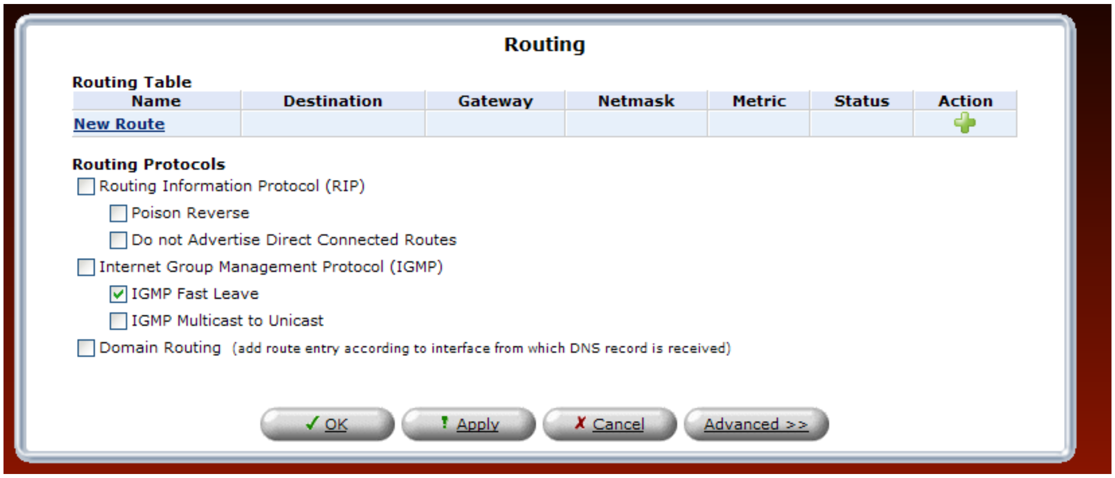


Route Settings

Name:	Network (Home/Office)
Destination:	0 . 0 . 0 . 0
Netmask:	255 . 255 . 255 . 255
Gateway:	0 . 0 . 0 . 0
Metric:	0

15.21.2 Advanced Routing Settings

To configure advanced routing settings, click the **Advanced** button in the **Routing** screen.



Routing

Routing Table

Name	Destination	Gateway	Netmask	Metric	Status	Action
New Route						✚

Routing Protocols

□ Routing Information Protocol (RIP)

□ Poison Reverse

□ Do not Advertise Direct Connected Routes

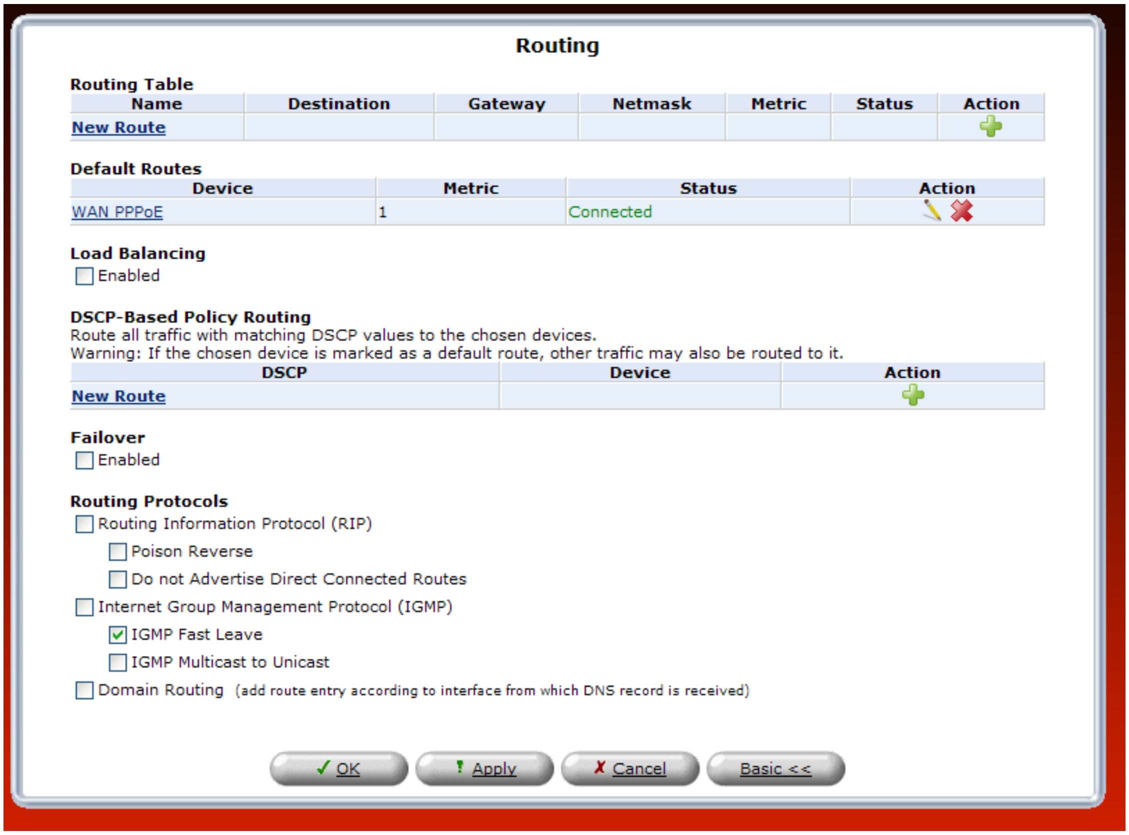
□ Internet Group Management Protocol (IGMP)

☑ IGMP Fast Leave

□ IGMP Multicast to Unicast

□ Domain Routing (add route entry according to interface from which DNS record is received)

If you clicked the **Advanced** button, the following screen will appear. If you change any settings in this screen, click **Apply** to save the settings.



Routing

Routing Table

Name	Destination	Gateway	Netmask	Metric	Status	Action
New Route						✚

Default Routes

Device	Metric	Status	Action
WAN PPPoE	1	Connected	✎ ✖

Load Balancing

□ Enabled

DSCP-Based Policy Routing

Route all traffic with matching DSCP values to the chosen devices.
Warning: If the chosen device is marked as a default route, other traffic may also be routed to it.

DSCP	Device	Action
New Route		✚

Failover

□ Enabled

Routing Protocols

□ Routing Information Protocol (RIP)

□ Poison Reverse

□ Do not Advertise Direct Connected Routes

□ Internet Group Management Protocol (IGMP)

☑ IGMP Fast Leave

□ IGMP Multicast to Unicast

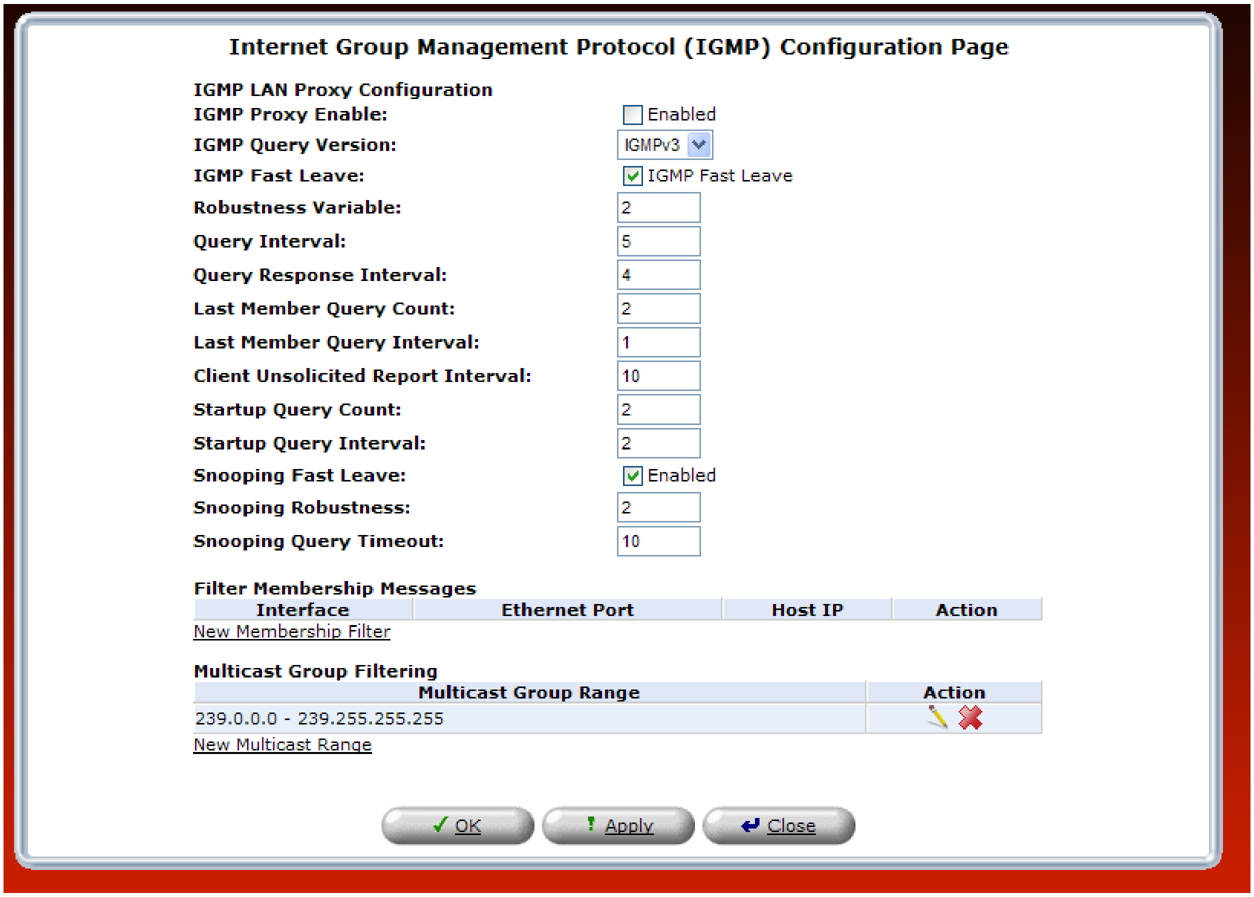
□ Domain Routing (add route entry according to interface from which DNS record is received)

15.22 IGMP Configuration

If you click **Advanced** in the top navigation menu and then select the **IGMP Configuration** link, the following screen will appear. This screen allows you to configure IGMP LAN Proxy configuration settings in your Router.

The Router supports IGMP multicasting, which allows hosts connected to a network to be updated whenever an important change occurs in the network. A multicast is simply a message that is sent simultaneously to a predefined group of recipients. Each member of the multicast group will receive all messages addressed to the group.

IGMP proxy enables multicast packets to be routed according to the IGMP requests of local network devices requesting to join multicast groups. To enable IGMP Proxy, click the adjacent check box, a check mark will appear in the box. Next, enter the appropriate values in the fields provided and click **Apply** to save the settings.



Internet Group Management Protocol (IGMP) Configuration Page

IGMP LAN Proxy Configuration

IGMP Proxy Enable:	□ Enabled
IGMP Query Version:	IGMPv3
IGMP Fast Leave:	☑ IGMP Fast Leave
Robustness Variable:	2
Query Interval:	5
Query Response Interval:	4
Last Member Query Count:	2
Last Member Query Interval:	1
Client Unsolicited Report Interval:	10
Startup Query Count:	2
Startup Query Interval:	2
Snooping Fast Leave:	☑ Enabled
Snooping Robustness:	2
Snooping Query Timeout:	10

Filter Membership Messages

Interface	Ethernet Port	Host IP	Action

New Membership Filter

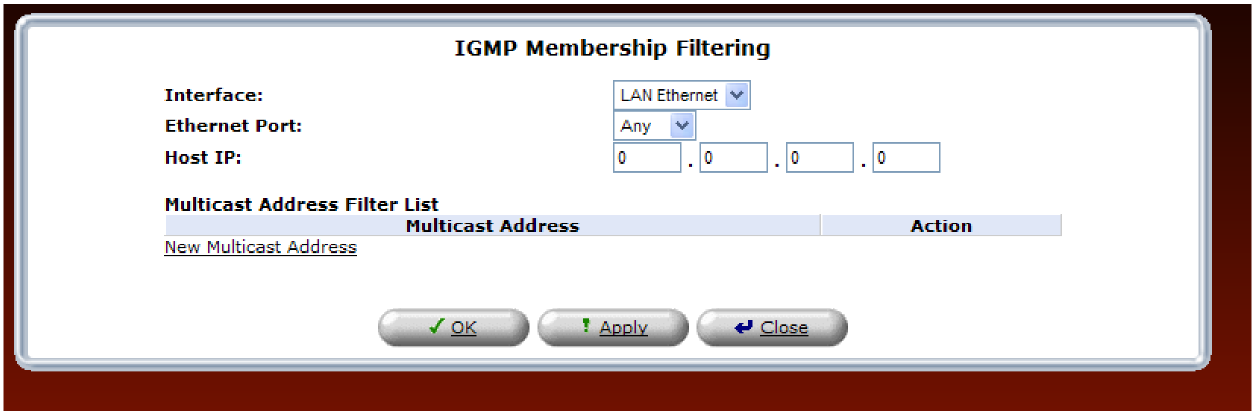
Multicast Group Filtering

Multicast Group Range	Action
239.0.0.0 - 239.255.255.255	✎ ✖

New Multicast Range

15.22.1 New Membership Filter

If you clicked the **New Membership Filter** link in the preceding screen, the following screen will appear.



IGMP Membership Filtering

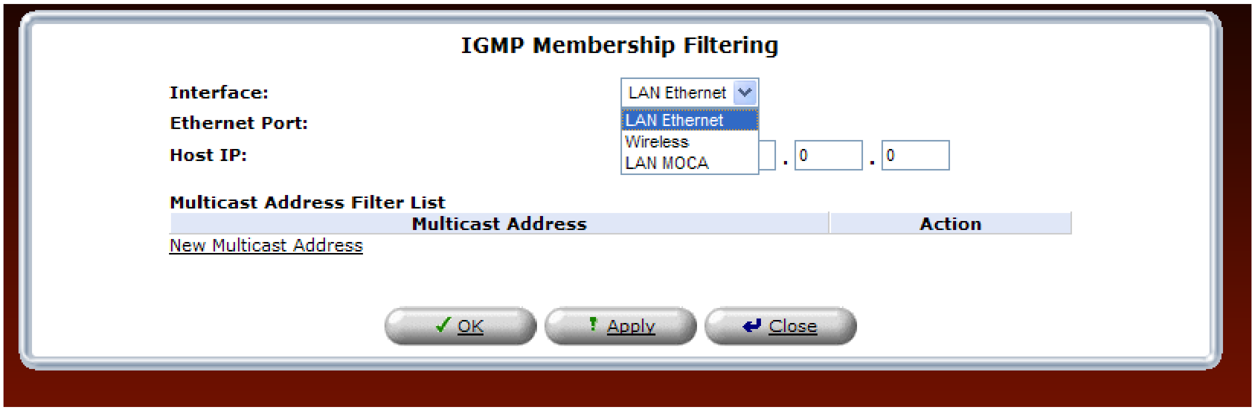
Interface:	LAN Ethernet
Ethernet Port:	Any
Host IP:	0 . 0 . 0 . 0

Multicast Address Filter List

Multicast Address	Action

New Multicast Address

Select the desired settings for the membership filter you want to create. Then click **Apply** to save the settings.



IGMP Membership Filtering

Interface:	LAN Ethernet
Ethernet Port:	
Host IP:	. 0 . 0

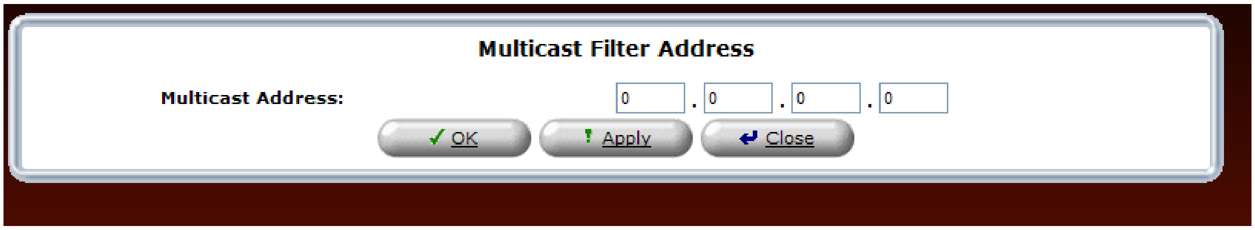
Multicast Address Filter List

Multicast Address	Action

New Multicast Address

15.22.2 New Multicast Address

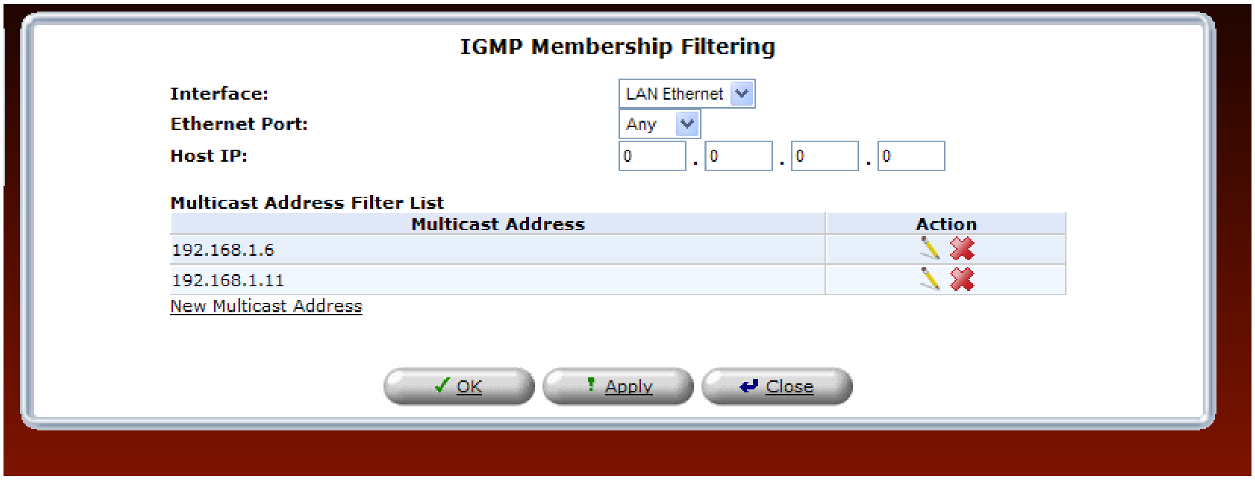
If you clicked the **New Multicast Address** link in the preceding screen, the following screen will appear. Enter multicast address and then click **Apply**.



Multicast Filter Address

Multicast Address: 0 . 0 . 0 . 0

If you clicked **Apply**, the address will be displayed in the list of Multicast Addresses.



IGMP Membership Filtering

Interface: LAN Ethernet

Ethernet Port: Any

Host IP: 0 . 0 . 0 . 0

Multicast Address Filter List

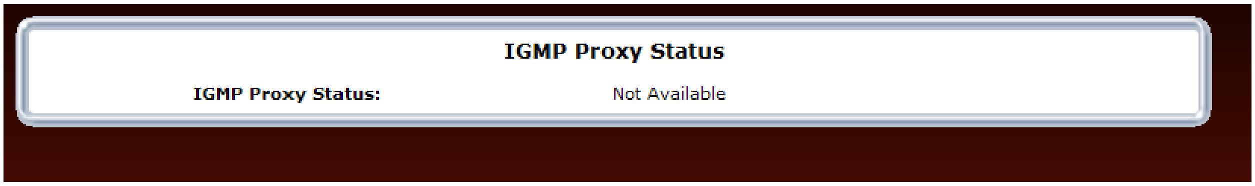
Multicast Address	Action
192.168.1.6	✎ ✖
192.168.1.11	✎ ✖

New Multicast Address

15.22.3 IGMP Status

If you click **Advanced** in the top navigation menu and then select the **IGMP Status** link, the following screen will appear.

NOTE: If IGMP proxy is not enabled, the IGMP Proxy Status panel will be empty.



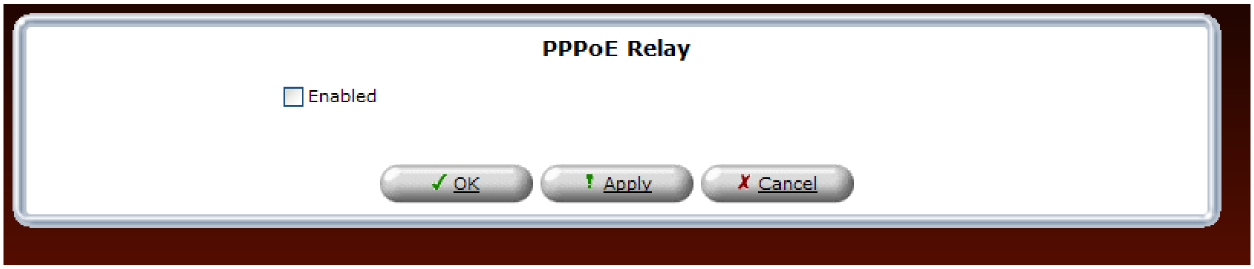
IGMP Proxy Status

IGMP Proxy Status: Not Available

15.23 PPPoE Relay

If you click **Advanced** in the top navigation menu and then select the **PPPoE Relay** link, the following screen will appear. PPPoE Relay enables the Router to relay packets on PPPoE connections, while keeping its designated functionality for any additional connections.

To activate PPPoE Relay, click the check box (check mark will appear in the box). Click **Apply** to save the settings.



PPPoE Relay

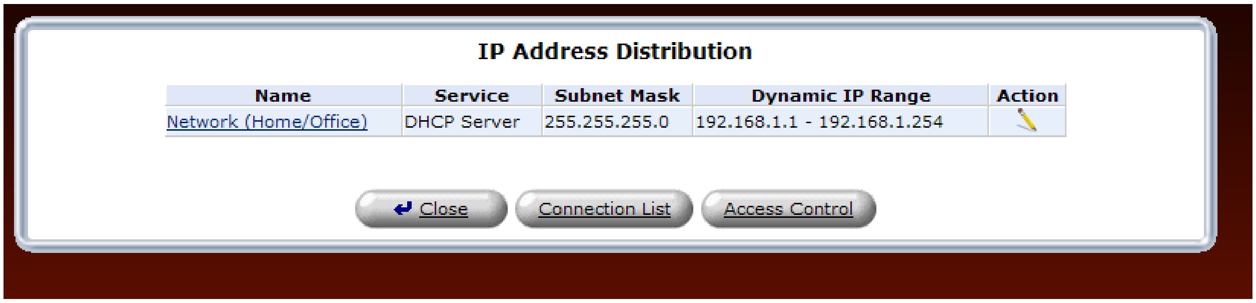
□ Enabled

15.24 IP Address Distribution

If you click **Advanced** in the top navigation menu and then select the **IP Address Distribution** link, the following screen will appear.

Your Router's Dynamic Host Configuration Protocol (DHCP) server makes it possible to easily add computers that are configured as DHCP clients to the home network. It provides a mechanism for allocating IP addresses and delivering network configuration parameters to such hosts. The Router's default DHCP server is the LAN bridge.

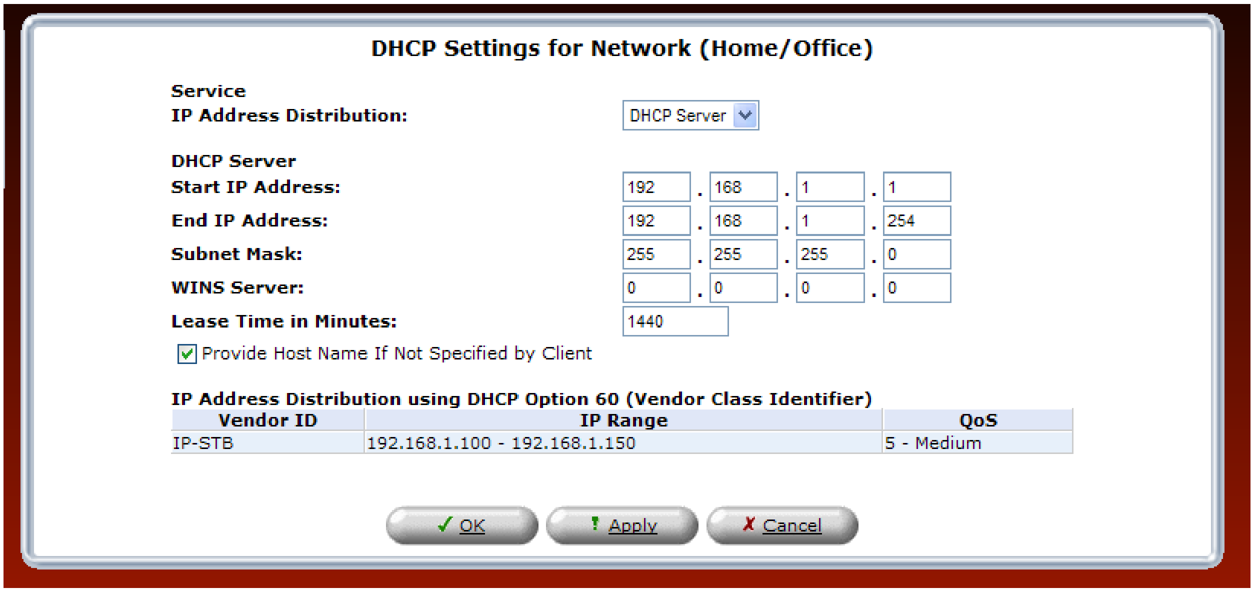
A client (host) sends out a broadcast message on the LAN requesting an IP address for itself. The DHCP server then checks its list of available addresses and leases a local IP address to the host for a specific period of time and simultaneously designates this IP address as "taken." At this point the host is configured with an IP address for the duration of the lease.



IP Address Distribution

Name	Service	Subnet Mask	Dynamic IP Range	Action
Network (Home/Office)	DHCP Server	255.255.255.0	192.168.1.1 - 192.168.1.254	✎

To configure the DHCP Sever settings, click the Network (Home/Office) link, the following screen will appear. Enter the desired DHCP settings in the fields provided, and then click **Apply** to save the settings.



DHCP Settings for Network (Home/Office)

Service

IP Address Distribution: DHCP Server

DHCP Server

Start IP Address:	192 . 168 . 1 . 1
End IP Address:	192 . 168 . 1 . 254
Subnet Mask:	255 . 255 . 255 . 0
WINS Server:	0 . 0 . 0 . 0
Lease Time in Minutes:	1440

☑ Provide Host Name If Not Specified by Client

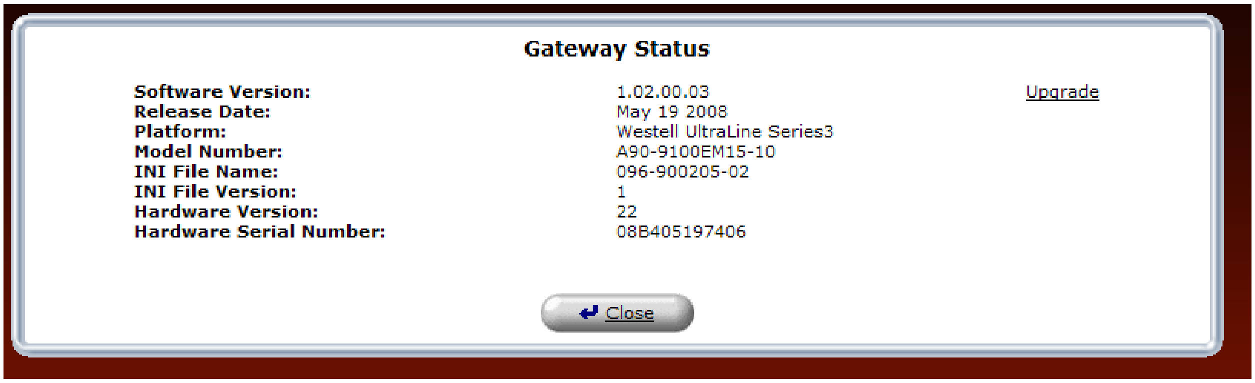
IP Address Distribution using DHCP Option 60 (Vendor Class Identifier)

Vendor ID	IP Range	QoS
IP-STB	192.168.1.100 - 192.168.1.150	5 - Medium

16. SYSTEM MONITORING

16.1 Gateway Status

If you click **System Monitoring** in the top navigation menu, and then click Gateway Status in the left submenu, the following screen will appear. After you have finished viewing information about your Router, click **Close**.



Gateway Status

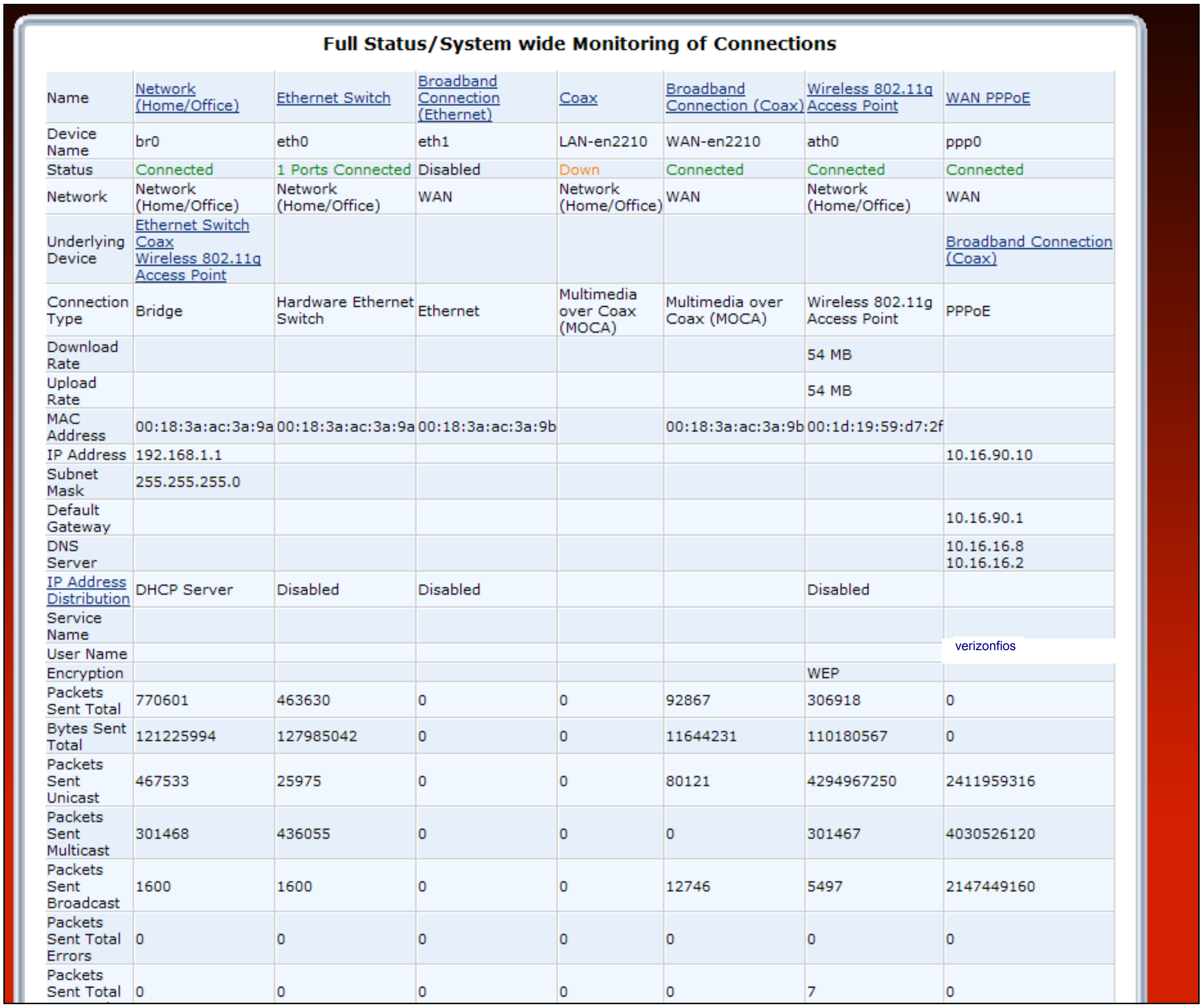
Software Version:	1.02.00.03	Upgrade
Release Date:	May 19 2008	
Platform:	Westell UltraLine Series3	
Model Number:	A90-9100EM15-10	
INI File Name:	096-900205-02	
INI File Version:	1	
Hardware Version:	22	
Hardware Serial Number:	08B405197406	

Gateway Status	
Software Version	Router's software version.
Release Date	Router's software release date.
Platform	Router manufacturer's model name.
Model Number	Router manufacturer's model number.
INI File Name	Router's INI file name.
INI File Version	Router's INI file version.
Hardware Version	Router's hardware version.
Hardware Serial Number	Router's serial number.
Upgrade	Click this link to upgrade the Router's firmware. Refer to section 15.20 for details on this feature.

16.2 Gateway Status

If you click **System Monitoring** in the top navigation menu, and then click **Full Status/System wide Monitoring of Connections** in the left submenu, the following screen will appear. This screen displays connection information for devices connected to your Router. At this screen, you can do any of the following:

- Turn off Automatic Refresh by clicking the **Automatic Refresh Off** button. When Automatic Refresh is enabled, the screen will be updated automatically to display the most current statistics.
- Manually refresh this screen by clicking the **Refresh** button.
- Click the links in this screen to access the Router's connection settings.
- Click **Close** to return to the **Network Connections** screen.

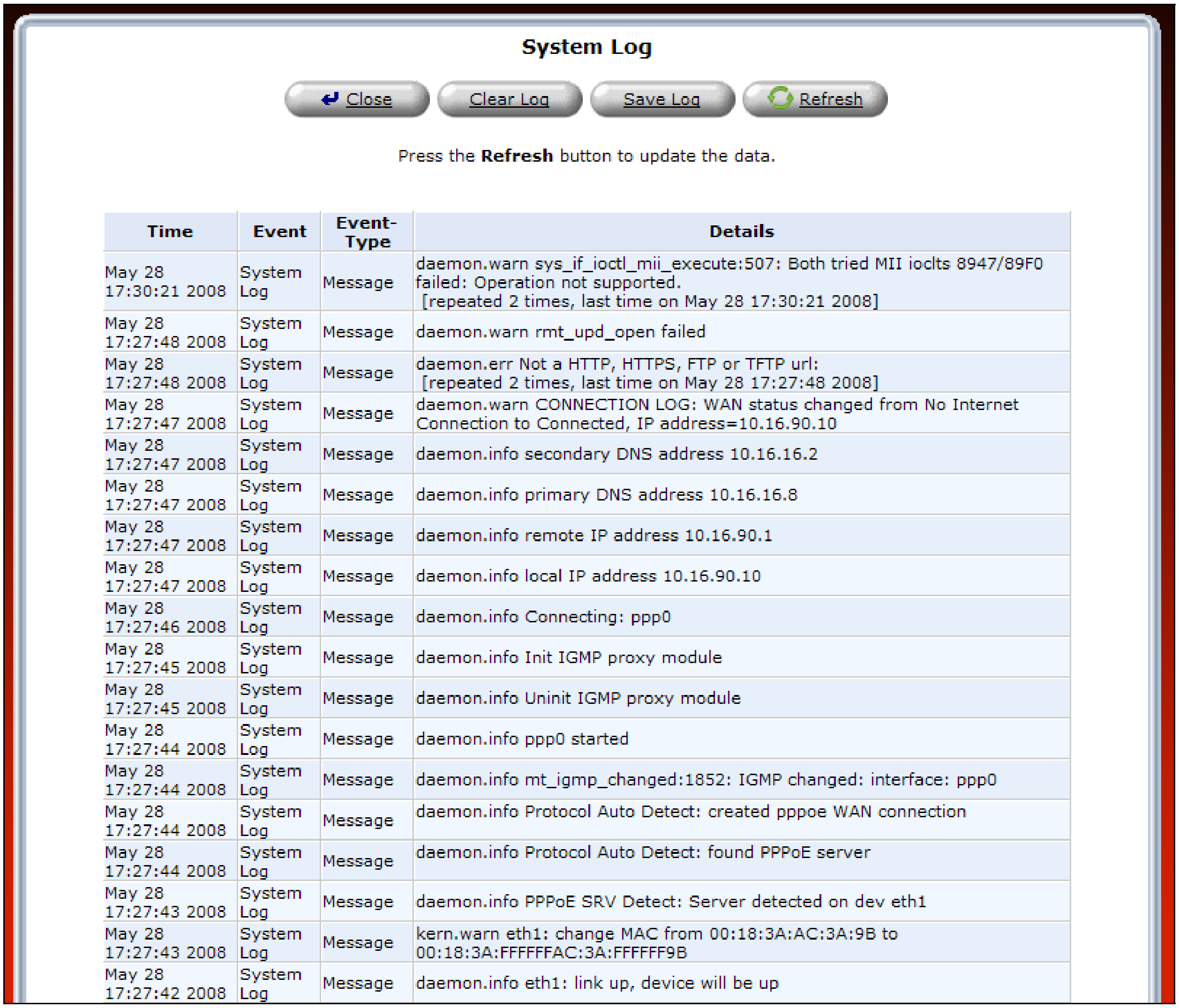


Full Status/System wide Monitoring of Connections

Name	Network (Home/Office)	Ethernet Switch	Broadband Connection (Ethernet)	Coax	Broadband Connection (Coax)	Wireless 802.11g Access Point	WAN PPPoE
Device Name	br0	eth0	eth1	LAN-en2210	WAN-en2210	ath0	ppp0
Status	Connected	1 Ports Connected	Disabled	Down	Connected	Connected	Connected
Network	Network (Home/Office)	Network (Home/Office)	WAN	Network (Home/Office)	WAN	Network (Home/Office)	WAN
Underlying Device	Ethernet Switch Coax Wireless 802.11g Access Point						Broadband Connection (Coax)
Connection Type	Bridge	Hardware Ethernet Switch	Ethernet	Multimedia over Coax (MOCA)	Multimedia over Coax (MOCA)	Wireless 802.11g Access Point	PPPoE
Download Rate						54 MB	
Upload Rate						54 MB	
MAC Address	00:18:3a:ac:3a:9a	00:18:3a:ac:3a:9a	00:18:3a:ac:3a:9b		00:18:3a:ac:3a:9b	00:1d:19:59:d7:2f	
IP Address	192.168.1.1						10.16.90.10
Subnet Mask	255.255.255.0						
Default Gateway							10.16.90.1
DNS Server							10.16.16.8 10.16.16.2
IP Address Distribution	DHCP Server	Disabled	Disabled			Disabled	
Service Name							
User Name							verizonfios
Encryption						WEP	
Packets Sent Total	770601	463630	0	0	92867	306918	0
Bytes Sent Total	121225994	127985042	0	0	11644231	110180567	0
Packets Sent Unicast	467533	25975	0	0	80121	4294967250	2411959316
Packets Sent Multicast	301468	436055	0	0	0	301467	4030526120
Packets Sent Broadcast	1600	1600	0	0	12746	5497	2147449160
Packets Sent Total Errors	0	0	0	0	0	0	0
Packets Sent Total	0	0	0	0	0	7	0

16.3 System Log

If you click **System Monitoring** in the top navigation menu and then click **System Log** in the left submenu, the following screen will appear. This screen displays the details of your system's logged events. To save the system log, click **Save Log,** and then follow the instructions to save the log to the desired location.



System Log

Press the **Refresh** button to update the data.

Time	Event	Event-Type	Details
May 28 17:30:21 2008	System Log	Message	daemon.warn sys_if_ioctl_mii_execute:507: Both tried MII ioclts 8947/89F0 failed: Operation not supported. [repeated 2 times, last time on May 28 17:30:21 2008]
May 28 17:27:48 2008	System Log	Message	daemon.warn rmt_upd_open failed
May 28 17:27:48 2008	System Log	Message	daemon.err Not a HTTP, HTTPS, FTP or TFTP url: [repeated 2 times, last time on May 28 17:27:48 2008]
May 28 17:27:47 2008	System Log	Message	daemon.warn CONNECTION LOG: WAN status changed from No Internet Connection to Connected, IP address=10.16.90.10
May 28 17:27:47 2008	System Log	Message	daemon.info secondary DNS address 10.16.16.2
May 28 17:27:47 2008	System Log	Message	daemon.info primary DNS address 10.16.16.8
May 28 17:27:47 2008	System Log	Message	daemon.info remote IP address 10.16.90.1
May 28 17:27:47 2008	System Log	Message	daemon.info local IP address 10.16.90.10
May 28 17:27:46 2008	System Log	Message	daemon.info Connecting: ppp0
May 28 17:27:45 2008	System Log	Message	daemon.info Init IGMP proxy module
May 28 17:27:45 2008	System Log	Message	daemon.info Uninit IGMP proxy module
May 28 17:27:44 2008	System Log	Message	daemon.info ppp0 started
May 28 17:27:44 2008	System Log	Message	daemon.info mt_igmp_changed:1852: IGMP changed: interface: ppp0
May 28 17:27:44 2008	System Log	Message	daemon.info Protocol Auto Detect: created pppoe WAN connection
May 28 17:27:44 2008	System Log	Message	daemon.info Protocol Auto Detect: found PPPoE server
May 28 17:27:43 2008	System Log	Message	daemon.info PPPoE SRV Detect: Server detected on dev eth1
May 28 17:27:43 2008	System Log	Message	kern.warn eth1: change MAC from 00:18:3A:AC:3A:9B to 00:18:3A:FFFFFFAC:3A:FFFFFF9B
May 28 17:27:42 2008	System Log	Message	daemon.info eth1: link up, device will be up

17. TECHNICAL SUPPORT INFORMATION

Contact your Internet service provider for technical support.

18. PRODUCT SPECIFICATIONS

System Requirements for 10/100 Base-T/Ethernet

- Pentium® or equivalent class machines or higher
- Microsoft® Windows® (XP, 2000, ME, NT 4.0, 98 SE) Macintosh® OS X, or Linux installed
- 64 MB RAM (128 MB recommended)
- 10 MB of free hard drive space
- 10/100 Base-T Network Interface Card (NIC)
- Internet Explorer 5.5 or higher or Netscape Navigator 7.x or higher
- Computer Operating System CD-ROM

System Requirements for Wireless

- Pentium® or equivalent class machines or higher
- Microsoft® Windows® (XP, 2000, ME, 98 SE) installed
- 64 MB RAM (128 MB recommended)
- 10 MB of free hard drive space
- Internet Explorer 5.5 or higher or Netscape Navigator 7.x or higher
- Computer operating system CD-ROM
- IEEE 802.11b/g PC adapter

System Requirements for Coax

- Pentium® or equivalent class machines or higher
- Microsoft® Windows® (XP, 2000, ME, 98 SE) installed
- 64 MB RAM (128 MB recommended)
- 10 MB of free hard drive space
- Internet Explorer 5.5 or later or
- Netscape Navigator 7.x or higher or
- Firefox 1.0.7 or later
- Computer operating system CD-ROM

LEDs

- Power
- Coax WAN
- Ethernet WAN
- Internet
- Wireless Setup
- USB
- LAN Ethernet 1 through 4
- Coax
- Wireless

Connectors

- COAX
- USB
- Ethernet: Four 8-pin RJ-45 modular jacks
- WAN: 8-pin RJ-45 modular jack
- Power: Barrel connector

Power

- Power Supply: 120 VAC to 12 VDC wall-mount power supply

Dimensions

- Height: 1.9 in. (4.8 cm)
- Width: 10.8 in. (27.4 cm)
- Depth: 5.75 in. (14.6 cm)

Weight

- Approx. 1.32 lb (0.60 kg)

Environmental

- Relative Humidity: 5 to 95%, non-condensing
- Storage Temperature: -20 °C to 85 °C (-4 °F to 185 °F)
- Ambient Temperature: 23 °C (73 °F)

EMC/Safety/Regulatory Certifications

- FCC Part 15, Class B
- FCC Part 68
- ANSI/UL Standard 60950-1
- CAN/CSA C22.2 No. 6090-1

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20. PUBLICATION INFORMATION

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