User's Guide

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The Verizon® Wireless Broadband Router provides reliable, high-speed, Internet access to your existing small office phone line and is capable of data rates hundreds of times faster than a traditional analog modem. But unlike analog modems, the Wireless Broadband Router allows you to use the same phone line for simultaneous voice/fax communications and high-speed Internet access, eliminating the need for dedicated phone lines for voice and data needs. In addition, your Wireless Broadband Router supports a variety of networking interfaces such as Wireless 802.11b/g, VDSL, COAX, and WAN Ethernet.

Hereafter, the Verizon® Wireless Broadband Router will be referred to as the "Router" or "Modem."

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 Function

[redacted]

- Never modify any telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.

⚠ **WARNING** ⚠

Risk of electric shock. Voltages up to 140 Vdc (with reference to ground) may be present on telecommunications circuits.

[redacted]

3.1 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 the product, unless expressly approved, could void the users' rights to operate the equipment.

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 9100) 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 9100), 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 9100) 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.

3.2 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 Telecommunications 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 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 9100) 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 9100), 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.

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

Connection Type	Minimum System Requirements
FIOS COAX	• 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 later • Computer Operating System CD-ROM on hand
ETHERNET (E1, E2, E3, E4, WAN)	• 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 later • Computer Operating System CD-ROM on hand
WIRELESS IEEE 802.11b/g	• Pentium® or equivalent class or higher machines • Microsoft® Windows® (XP, 2000, ME, NT 4.0, 98 SE) or Macintosh® OS X installed • 64 MB RAM (128 MB recommended) • 10 MB of free hard drive space • Internet Explorer 5.5 or Netscape Navigator 7.x or later • An available IEEE 802.11b/g PC adapter • Computer Operating System CD-ROM on hand

[redacted]

5.1 LED Indicators

This section explains the front-panel and rear-panel LED states and descriptions. LEDs are used to verify the unit's operation and status.

LED States and Descriptions

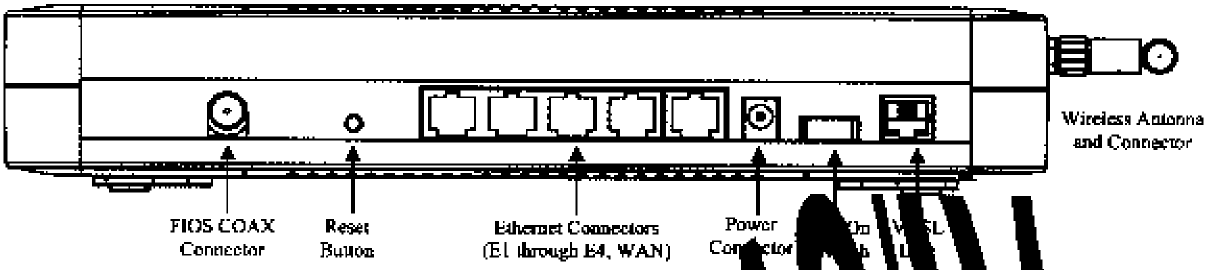
Wireless Broadband Router Front Panel LEDs		
LED	**State**	**Description**
POWER	Solid Green	Power is ON.
	Flashing Green	Router is performing POST.
	Solid Red	Router failed POST (Power On Self Test) or Device Malfunction. Note: The Power LED should be red no longer than two seconds after the power on self test passes.
	OFF	Power is OFF.
BROADBAND	Solid Green	VDSL link established.
	Flashing Green	VDSL attempting to sync.
	Solid Red	Router failed to sync.
	OFF	Router power is OFF or no VDSL signal detected.
INTERNET	Solid Green	Internet link established. VDSL link is Up, and the Router has a WAN IP address from IPCP or DHCP; or a static IP is configured; or PPP negotiation has successfully completed (if used) and no traffic is detected.
	Flashing Green	IP connection established and IP Traffic is passing through device (in either direction). Note: If the IP or PPP session is dropped due to an idle timeout, the light will remain solid green, if a VDSL connection is still present. If the session is dropped for any other reason, the light is turned OFF. The light will turn red when it attempts to reconnect and DHCP or PPP fails).
	Solid Amber	Router has attempted and failed to establish IP connectivity (no DHCP response, no PPP response, PPP authentication failed, no IP address from IPCP, etc.).
	OFF	Router power is OFF; or Router is performing POST; or Router is in Bridge Mode; or Router has not attempted Internet connectivity.
WIRELESS SETUP	Solid Green	Wireless link established.
	Flashing Green	Wireless LAN activity is present (traffic in either direction). IP connection established and IP traffic is passing through device (in either direction). Note: If the IP or PPP session is dropped due to an idle timeout, the light will remain solid green, if a VDSL connection is still present. If the session is dropped for any other reason, the light is turned OFF. The light will turn red when it attempts to reconnect and DHCP or PPP fails).
	OFF	Router power is OFF; or no wireless link; or wireless Easy Config not active.
E1, E2, E3, E4 (Ethernet LAN)	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.
MOCA	Solid Green	A physical connection has been established.

	Flashing Green	Activity is present on the MoCA link.
	OFF	Router power is OFF.
WIRELESS	Solid Green	Wireless link established.
	Flashing Green	Wireless LAN activity is present (traffic in either direction). IP connection established and IP traffic is passing through device (in either direction). Note: If the IP or PPP session is dropped due to an idle timeout, the light will remain solid green, if a VDSL connection is still present. If the session is dropped for any other reason, the light is turned OFF. The light will turn red when it attempts to reconnect and DHCP or PPP fails).
	Solid Red	Device attempted to become IP connected and failed (no DHCP response, no PPP response, PPP authentication failed, no IP address from IPCP, etc.).
	OFF	Router power is OFF. No wireless link.
	Rear Panel LEDs	
POWER	Solid Green	Router power is ON.
	OFF	Router power is OFF.
	Solid Red	POST (Power On Self Test) Failure (not bootable) or Device Malfunction. Note: The Power LED should be red no longer than two seconds after the power on self test passes.
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.

5.2 Cable Connectors and Switch Locations

- Reset pin button
- Four LAN Ethernet connectors (RJ-45)
- WAN Ethernet connector (RJ-45)
- Power connector (12 VDC) barrel
- OFF/ON power switch
- VDSL connector (RJ-11)
- Wireless 802.11b/g SMA connector and antenna

Wireless Broadband Router - Rear View


Wireless Antenna and Connector
FIOS COAX Connector
Reset Button
Ethernet Connectors (E1 through E4, WAN)
Power Connector
On/Off Switch
VDSL Line

5.3 Connector Descriptions

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

SYMBOL	NAME	TYPE	FUNCTION
COAX	FIOS COAX	F-type coax connector	Connects the Router to the in-home coaxial cabling. Compatible with the Multimedia over Coax Alliance (MoCA) 1.1 standard.
🖧	ETHERNET	8-pin (RJ-45) modular jack	Connects the Gataeway's 10/100 Base-T Ethernet switch to a local computer, Hub, or other Ethernet-enabled device.
🖧	WAN	8-pin RJ-45 modular jack	Connects the Router to a broadband modem or router via 10/100 Base-T Ethernet, enabling access to the Internet or Wide Area Network (WAN).
12 VDC	POWER	Barrel connector	Connects the Router's DC 12V power connector to an AC wall jack. Use only the power supply provided with the Router kit.
Wireless	Wireless Antenna and Connector	SMA connector and antenna	Antenna for transmitting and receiving wireless signals for Wi-Fi (802.11b/g) connected devices.
<none>	POWER	OFF/ON power switch	Allows you to turn on or turn off the Router.
□	VDSL	6-pin RJ-11 modular jack	Connects to a wall jack provisioned with VDSL service or to the VDSL jack of a POTS splitter.

[redacted]

This section explains the hardware installation procedures for connecting to your Router.

6.1 Installation Requirements

To install your Wireless Broadband Router, you will need the following:

- Active VDSL line
- Network Interface Card (NIC) installed in your PC
- 802.11 b/g wireless adapter (for wireless installation)
- COAX (for coax installation)

IMPORTANT: Please wait until you have received notification from Verizon that your VDSL line has been activated before installing your Router.

6.2 Before you begin

Make sure that your kit contains the following items:

- Verizon® Wireless Broadband 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 [illegible]
- Router Stand

6.3 Microfilters

VDSL signals must be blocked from reaching each telephone, answering machine, fax machine, computer modem or any similar conventional device. Failure to do so may degrade telephone voice quality and VDSL performance. Install a microfilter if you desire to use the VDSL-equipped line jack for telephone, answering machine, fax machine or other telephone device connections. Microfilter installation requires no tools or telephone rewiring. Just unplug the telephone device from the baseboard or wall mount and snap in a microfilter, next snap in the telephone device. You can purchase microfilters from your local electronics retailer, or contact the original provider of your VDSL equipment.

6.4 Hardware Installations

The following instructions explain how to install your Router using 10/100 Base-T Ethernet, Wireless or WAN Ethernet connections. Before you begin, please read the following notes:

NOTE:

1. If your Ethernet card does not auto-negotiate, set it to half duplex. Refer to the Ethernet card manufacturer's instructions for installing and configuring your Ethernet card.
2. If you are using Router in conjunction with an Ethernet Hub, Switch, or other VDSL devices, refer to the manufacturer's instructions for proper installation and configuration.
3. When using a Microfilter, confirm that the VDSL RJ-11 phone cable is connected to the VDSL port of the DSL/HPN non-filtered jack.
4. 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.**
5. Additional Ethernet cables may be required depending on the installation method you are using. Ethernet cables and filters can be purchased at your local computer hardware retailer.
6. The Router supports simultaneous use of 10/100 Base-T Ethernet, Wireless, and MoCA configurations. To use this installation method, follow the instructions provided in sections 6.4.1 and 6.4.2, and 6.4.4.

The Router supports the following modes for WAN access, which are configurable through the Router's Web pages: VDSL, WAN Ethernet, and MoCA.

- **VDSL** allows you to use the Router's VDSL port for WAN access. In this mode you should install the Router according to the instructions in the following sections:
  - Section 6.4.1, Connecting the Router via 10/100 Base-T Ethernet
  - Section 6.4.2, Connecting the Router via Wireless
- **WAN Ethernet** allows you to use the Router as an Ethernet Gateway (for example, to connect to another VDSL device that provides WAN access). In this mode you should install the Router according to the instructions in section 6.4.3, "Connecting the Router via WAN Ethernet."
- **MoCA** allows you to connect the Router via a COAX interface such a set-top box. In this mode you should install the Router according to the instructions in section 6.4.4, "Connecting the Router via COAX/Set-top Box."

6.4.1 Connecting the Router via 10/100 Base-T Ethernet

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

1. Connect the power supply cord to the power connector marked **12 VDC** on the rear panel of the Router. Plug the other end of the power supply into an AC wall socket, and then power up the Router.
2. Connect the Ethernet cable (provided with your kit) from any one of the four Ethernet jacks labeled **Ethernet 1, E2, E3, E4** on the rear panel of the Router to the Ethernet port on your computer. Repeat this step to connect up to three additional PCs to the Router.

   NOTE: Use any of the four LAN Ethernet jacks on the Router's rear panel; each jack serves as an Ethernet switch.

3. Connect the RJ-11 phone cable from the connector marked **VDSL** on the rear panel of the Router to the jack provisioned with VDSL service on the wall.

   IMPORTANT: If you use a microfilter, you must plug the RJ-11 phone cable from the Router into the VDSL port of the microfilter.

4. Check to see if the Router's **POWER LED** is solid green. This indicates that the Router is powered on.
5. Check to see if the Router's **ETHERNET LED** is 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.
6. Check to see if the Router's **BROADBAND LED** is solid green. This means the VDSL connection is functioning properly.
7. After you have logged in to access and established an Internet connection, as explained later in section 9, check to see if the Router's **INTERNET LED** is solid green. Solid green indicates that the Internet link has been established. (Flashing green indicates the presence of IP traffic.)

Congratulations! You have completed the Ethernet hardware installation. Now proceed to section 7 to access the Router's Web pages.

6.4.2 Connecting the Router via Wireless

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 modem 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). If desired, for privacy, you can change the SSID by following the procedures outlined in section 12.2, "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 the 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 computers in your home or office using a wireless installation, follow the steps below:

1. Ensure that each PC on your wireless network has an 802.11b/g wireless network adapter installed.
2. Ensure that appropriate drivers for the wireless adapters have been installed on each PC.
3. Make sure the wireless antenna is screwed onto the connector on the rear of the modem and firmly locked into place. Then, orient the antenna to the appropriate position.
4. Connect the RJ-11 phone cord from the connector marked **VDSL** on the rear panel of Router to the telephone jack provisioned with VDSL service on the wall.

   > **IMPORTANT:** If you use a splitter/filter, you must plug the RJ-11 phone cable from the Router into the VDSL port of the splitter/filter.

5. Connect the yellow Ethernet cable (provided with your kit) from any one of the four Ethernet jacks marked **E1, E2, E3,** or **E4** on the rear panel of the Router to the Ethernet port on your computer. Repeat this step to connect up to three additional PCs to the Router.

   > **NOTE:** Use any of the four LAN Ethernet jacks on the Router's rear panel; each jack serves as an Ethernet switch.

6. Connect the power supply cord to the power connector marked **12 VDC** on the rear panel of the Router. Plug the other end of the power supply into an AC wall socket, and then power up the Router.
7. Check to see if the Router's **POWER** LED is solid green. This indicates that Router is powered on.
8. Check to see if the Router's **BROADBAND** LED is solid Green. This means the VDSL connection is functioning properly.
9. Check to see if the **ETHERNET** LED is solid green. Solid green indicates that the Ethernet connection is functioning properly. Check the **ETHERNET** LED for the Ethernet jack you are using on the Router.
10. Check to see if the Router's **WIRELESS** LED is solid Green. This means that the Wireless interface is functioning properly.
11. After you have logged on to your account and established an Internet connection, as explained later in section 8, check to see if the Router's **INTERNET** LED is solid green. Solid green indicates that an Internet link has been established. (Flashing green indicates the presence of IP traffic.)

Congratulations! You have completed the Wireless installation for the Router. Now proceed to section 7 to access Router's Web pages.

6.4.3 Connecting the Router via WAN Ethernet

This section provides the installation instructions for connecting the Router via WAN Ethernet. The advantage to using the WAN Ethernet feature is that it allows you to connect multiple devices to your LAN beyond the number of physical ports provided by your Router. In this configuration, an Ethernet cable is used to connect the Router to a switch, gateway, or other VDSL device. Then, the other VDSL device makes the WAN connection to the Internet while still allowing you to use many of the networking features provided in the Router.

If you want to install your Router so that it connects to another VDSL device, follow the steps below:

1. Connect the attached VDSL device to the jack provisioned with VDSL on the wall using the RJ-11 phone cord that was provided with the kit. If you are using a microfilter at the wall jack, you must connect the RJ-11 VDSL phone cable from the VDSL port of the VDSL device to the VDSL port of the microfilter.

> **NOTE:** The VDSL device to which you are connecting will function as your WAN interface to the Internet. Be sure you have connected the VDSL device appropriately. If needed, refer to the manufacturer's instructions.

2. Connect the yellow Ethernet cable (provided with your kit) from the Ethernet jack marked **WAN** on the rear panel of the Router to the Ethernet port on the attached VDSL device, and then turn on the power switch of the attached VDSL device (if it is not already on).

> **NOTE:** Later, in Router's Web pages, be sure to configure the Router's WAN interface for "Ethernet" via the **WAN VDSL Properties** screen. When the Router's WAN interface is configured for "Ethernet," the Router's VDSL transceiver is not used to make the WAN connection. Instead the VDSL device to which the Router is connected will be your WAN interface to the Internet.

3. Connect an Ethernet cable from any one of the three Ethernet jacks marked **E2, E3, or E4** on the rear panel of the Router to the Ethernet port on your computer. Repeat this step to connect up to three additional PCs to the Router; the jacks serve as an Ethernet switch.
4. Connect the provided power cord to the power connector marked **12 VDC** on the rear panel of the Router. Plug the other end of the power supply into an AC wall socket, and then power up the Router.
5. Check to see if the Router's **POWER** LED is solid green. This indicates that the Router is powered on.
6. Check to see if the **ETHERNET** LED is solid green. Solid green indicates that the Ethernet connection is functioning properly. Check the **ETHERNET** LED for the Ethernet jack you are using on the Router.
7. After you have logged on to your account and established an Internet connection, as explained later in section 7, check to see if the Router's **INTERNET** LED is solid green. Solid green indicates that an Internet link has been established. (Flashing green indicates the presence of IP traffic.)

Congratulations! You have completed the WAN Ethernet installation for your Router. Now proceed to section 7 to access the Router's Web pages.

6.4.4 Connecting the Router via COAX/Set-top Box

To connect your Router using the COAX connection, please follow the steps below:

1. Make sure all your set-top box(es) are turned off.
2. Obtain a coax cable and connect one end into your high-speed wall outlet port. Connect the other end into your set-top box.
3. Power up your set-top box.
4. Connect the power supply cord to the power connector marked **12 VDC** on the rear panel of the Router. Plug the other end of the power supply into an AC wall socket, and then power on the Router.
5. Connect the Ethernet cable (provided with your kit) from any one of the four Ethernet jacks marked **Ethernet 1, E2, E3, E4** on the rear panel of the Router to the Ethernet port on your computer. Repeat this step to connect up to three additional PCs to the Router.

NOTE: Use any of the four LAN Ethernet jacks on the Router's rear panel. Each jack serves as an Ethernet switch.

6. Connect a COAX cable from the connector marked [illegible] **COAX** on the rear panel of the Router to a COAX connector on the wall.
7. Check to see if the Router's **POWER** LED is solid green. This indicates that the Router is powered on.
8. Check to see if the Router's **ETHERNET** LED is 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 [illegible] of the Router.
9. Check to see if the Router's **MoCA** LED is solid green. This means the MoCA connection is functioning properly.
10. After you have logged in to your Router and established an Internet connection, as explained later in section 9, check to see if the Router's **INTERNET** LED is solid green. Solid green indicates that the Internet link has been established. (Flashing green indicates the presence of IP traffic.)

Congratulations! You have completed the MoCA hardware installation. Now proceed to section 7 to access the Router's Web pages.

[redacted]

7.1 Logging on to the Router

This section explains the logon procedures for your Wireless Broadband Router. This procedure should be used any time you want to access or make changes to the Router's configurable settings.

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 the 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:

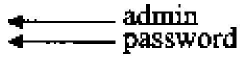
http://192.168.1.1

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->Ad

Click **OK** in the Welcome screen.

Next, type the default user name (which is **admin**) and the default password (which is **password**) in the fields provided. Click **OK** to continue.



After you have entered "admin" and [illegible] in the preceding screen, the following screen will prompt you to enter a new password. Enter the new password in the fields provided. (If desired, you can use "admin" as the user name or change this value to the name of your choice.) Then click **OK** to continue.

If you clicked **OK**, following screen will appear. The Router will attempt to detect the protocol that will be used to establish an Internet connection.

If the Router fails to detect the protocol, the following message will appear:

Auto Protocol Detection [illegible] (WAN device is not connected).

Check your physical connections and then if the problem persists, contact Verizon.

Next, enter your **Login User Name** and **Login Password** in the fields provided. These values are provided by Verizon and are used to identify your request for an Internet connection.

After you have entered your user na[redacted]ord, click [redacted]**ply** to connect.

If you clicked **Apply** in the preceding screen, 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.

[redacted]

To browse the Internet using your Router, you must confirm your VDSL connection and establish an Internet connection with Verizon. The procedures for configuring your Router's connection settings are explained in this section.

8.1 Confirming Your VDSL Connection

IMPORTANT: You must have active VDSL service before the Router can synchronize with Verizon's equipment.

To determine if the Router has established a VDSL link, at the Router's front panel, check to see if the Router's **BROADBAND** LED is solid green. Solid green indicates that a VDSL connection is established. The **BROADBAND** LED may flash while the connection is being established. Please wait a brief moment for the Router to connect.

After confirming your VDSL connection, proceed to section 8.2 to configure your Router's Internet connection settings.

8.2 Connecting to the Internet

After you have logged into 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 the home page, go to the **Quick Links** section, and then click the **Configure My Broadband Connection** link.

The following **Quick Setup** screen will be displayed. At this screen, do the following:

1. From the **Broadband [illegible] [illegible]** drop-down list, select **Point-to-Point Protocol over Ethernet (PPPoE).**
2. Enter the login user name and login password in the fields provided. (These values are provided by Verizon)
3. Click [illegible] to save the settings.

Next, click the **Click Here for Advanced Settings** link to go to the **WAN VDSL Properties** screen.

In the **WAN PPPoE Properties** screen, select **Settings** in the left submenu.

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.

If you selected **Settings** in the left submenu, the following screen will appear. Do the following:

1. Select **WAN** from the **Network** drop-down list.
2. Select **WAN VDSL** from the **Underlying Connection** drop-down list.
3. Click **Apply** to save the settings.

After you click **Apply**, the **Status** field will display **Connected.** Next, click **Main** in the left submenu to return to the home page.

At the home page, view the **Gateway Status** 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. Congratulations! You are ready to browse the Internet. To quickly access your default Web page, click **GO TO THE INTERNET NOW.**

8.3 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 any of the Web screens.

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

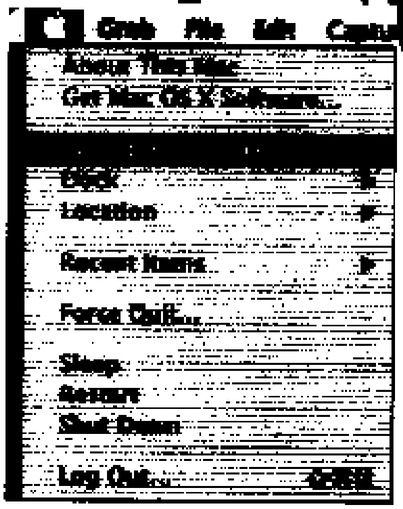
[redacted]

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 "Installing the Hardware," for details.

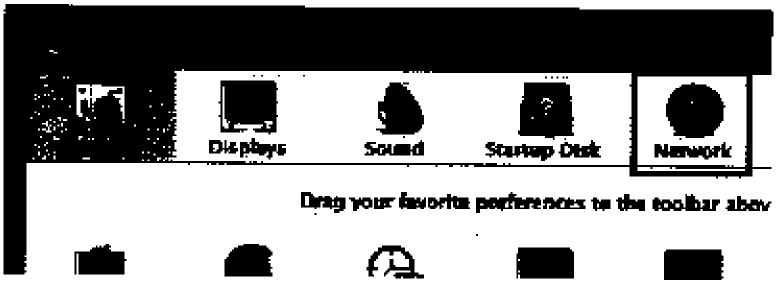
9.1 Opening the System Preference Screen

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**.



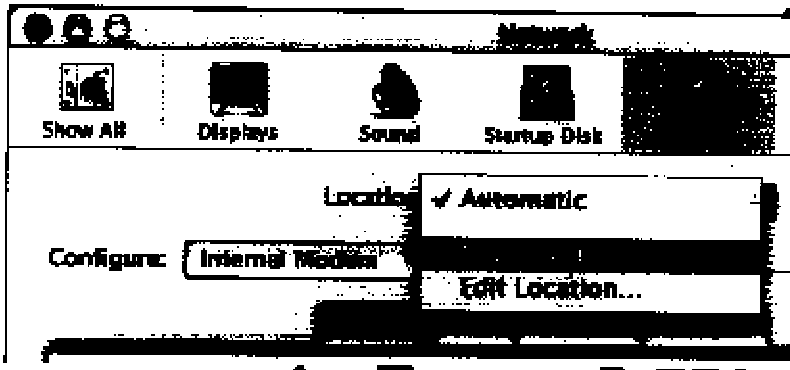
9.2 Choosing the Network Preferences

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



9.3 Creating a New Location

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

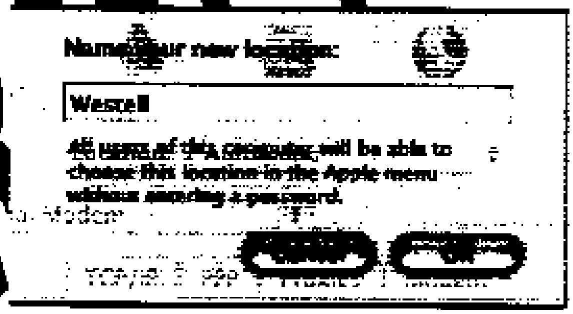


Location: Automatic

Configure: Internal Modem

9.4 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:

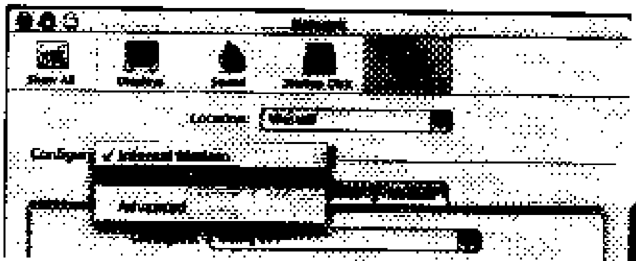
Westell

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

9.5 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.

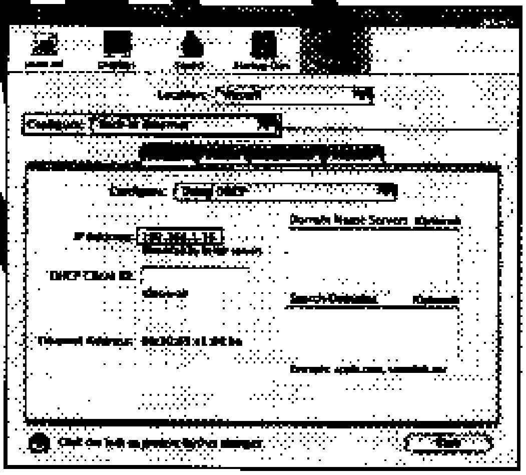


9.6 Checking the IP Connection

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

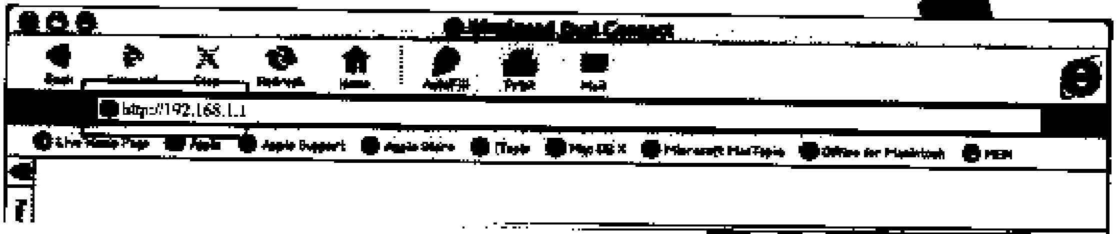
1. Go to the "**Apple**" icon in the upper-left corner of the screen and select **System Preferences**.
2. In the **System Preferences screen**, click the **Network** icon. The **Network** screen will appear.
3. In the **Configure** field in the **Network** screen, select **Built-in Ethernet**.
4. View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

NOTE: The Router's DHCP server provides the IP address. If this IP address is not displayed, check the Router's wiring connection to the PC. If necessary, refer to Section 6, "Installing the Hardware," for installation instructions.


Location:
Configure: Built-in Ethernet
Configure: Using DHCP
Domain Name Servers (Optional)
IP Address:
DHCP Client ID:
Search Domains (Optional)
Ethernet Address:
Apply Now

9.7 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.



http://192.168.1.1

The **Login** screen will appear. Please refer to the **Login** screen in section 7.1 [illegible] this User Guide [illegible] logon instructions.

[redacted]

IMPORTANT: The following sections assume that you have active VDSL and 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 VDSL 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 of your Router, follow the instructions provided in sections 11 through 15.

[redacted]

After you have logged on to your Router and established a PPP session with Verizon, click **Main** i[redacted] the top navigation menu. The following home page will appear. The home page allows you to view connection inf tion reported by your Router and to quickly access Internet services provided by Verizon. The following sectio uss each panel in the Main page. The Main page will be referred to as the home page throughout this User de.

11.1 Gateway Status

In the home page, the **Gateway Status** panel 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.

11.2 Quick Links

The **Quick Links** panel 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	
Configure My Broadband Connection	Click this link to access the Router's connection settings.
Change the Password Needed to **Manage Network Connections**	Click this link to change Administrator permissions, or to select user privileges for new users and groups on your network.
Enable Applications (Games, Web Cams, Instant Messaging, other)	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.

11.3 Network Connections

In the home page, the **Network Connections** panel 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 Connections	
Computer Name	The [illegible] (host) 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.

11.4 Start Surfing

In the home page, the **Start Surfing panel** allows quick access to Internet services provided by Verizon. The following details are displayed in the Start Surfing panel.

NOTE: The links displayed in the **Start Surfing** panel are specific to the services offered by Verizon and will be available only after you have established an Internet connection with Verizon.

Start Surfing	
Go to the Internet Now	Click this button to go to the default page of your Web browser.
Verizon	Click the links in this section to access networking services provides by Verizon.
Shop Westell	Click this button to go to Westell's home page.
Music	Click this button to go to the Verizon Surround - Music page.
Video	Click this button to go to the Verizon Surround - Movies page.

[redacted]

12.1 Wireless Status

If you click **Wireless** in the top navigation menu and then select **Wireless Status** in the left sub-menu, 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.

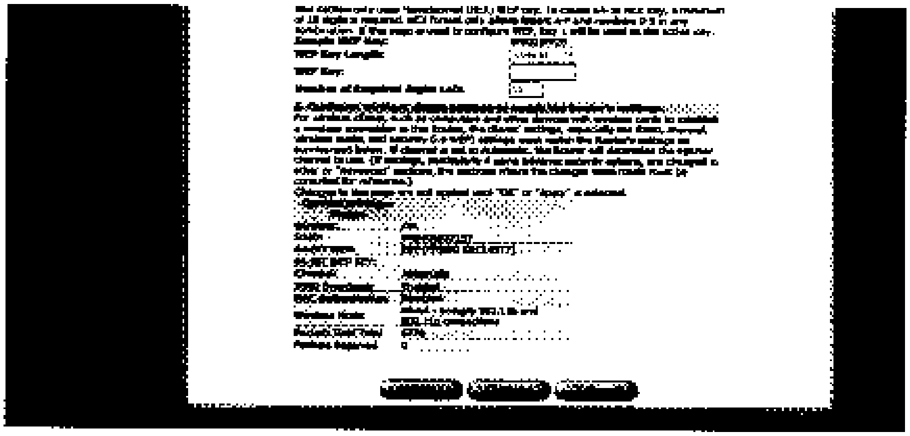
12.2 Basic Security Settings

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 by the wireless network adapter must be identical to the Router's SSID. The default SSID for the Router is the serial number of the unit (located below the bar code on the bottom of the unit and also on the shipping carton). 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 the settings in this screen, please record the settings for future reference.



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	Factory Default = 07B406037157 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 = OTHER SECURITY WEP security encrypts the Router's wireless traffic and prevents unauthorized access to the Router's network. If "OTHER SECURITY" is selected by default, it means that current wireless security setting is configured using advanced options. If "OTHER SECURITY" is manually selected on this page it will be ignored. (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.)

12.3 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 t [redacted] odify these wireless options.

From this menu, you can change your wireless security level by selecting the desired ch P, EP + 802.11x, or Wireless Protected Access (WPA). You can also enable/disable the SSID broadcas p the oduct. If you want to limit connected wircles dievces only to the 802.11g (54Mbps) st rd, 802 1 b/g mode link and select the desired mode.

For full access to all wireless and secuity settings one on page, click on th **th A e W les Options** link.

12.3.1 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.

12.3.2 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.

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. Next, click the **New MAC Address** link to add the desired MAC address.

If you clicked **New MAC 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.

NOTE: If you enter a duplicate MAC add[redacted] follo[redacted] screen[redacted]l appear[redacted]nte[redacted]alid MAC address and click **OK** to continue.

After you have entered a valid MAC address and clicked **OK**, the following screen will appear. Click **Apply** to save the settings. From this screen, you may add additional MAC address to the list or edit/delete existing MAC address. If you make any changes, be sure to click **Apply to save the changes.**

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 Addr** [illegible]

12.3.3 802.11b/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.

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

12.3.4 Other Advanced Wireless Options

If you clicked the **Other Advanced Wireless Options** link, the following screen will appear. Click **Yes** 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	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	Factory Default = 07B406037157 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 both 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 [illegible] through [illegible]
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 Filter 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 [illegible] to add a MAC address to the MAC filtering list. Details on this feature are described [illegible] 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 valuc of zero will enable handshaking for all MPDUs.
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.

12.3.5 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.

12.3.5.1 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.

W[illegible] Wireless Security	
Wireless Sec[illegible]	F[illegible]tory De[illegible]ult [illegible] Enabled [illegible]en t[illegible] is enabled (the box contains a check mark), wireless security in activated. [illegible] bo[illegible] wireless security will be deactivated.
Stations Securi[illegible] Ty[illegible]	[illegible] Defau[illegible] WPA [illegible] of security for the Router's wireless network. Choose from the following options: D[illegible]ai[illegible] these options are discussed later in this section. W[illegible]A – 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.
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 the security type, select the desired authentication method from the **Authentication Method** drop-down list.

12.3.5.1.1 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 created 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.

12.3.5.1.2 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 with Authentication 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.

12.3.5.2 WPA2 (Wi-Fi Protected Access 2)

If you select **WPA2** in the **Station Security Type** drop-down list, the following screen will appear. This option allows stations that support WPA2 to connect to the Router. The configuration settings for WPA2 are similar to the settings in WPA. Refer to Section 12.3.5.1 for instructions on configuring WPA2.

12.3.5.3 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 12.3.5.1 for instructions on configuring WPA and WPA2.

12.3.5.4 802.1x 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 [redacted]ust be physically connected to the Router. The Router's card supports 40-bit or 104-bit WEP encryption. If 802.[redacted]P is used, any station can connect to the Router as long as its SSID and WEP key values match the Rout[redacted]'s [redacted]

NOTE: Client PCs can use any Wireless 802.11b/g card to communicate with the Ro[redacted]efaul[redacted]our Router is configured (enabled) for 802.1X WEP (Wired Equivalent Privacy) security. W[redacted]ver[redacted]P[redacted]con[redacted]ured, the PC's wireless card must use the same WEP security code type as the one provided i[redacted]er. T[redacted]W[redacted]P se[redacted]rity code is located on a label on the bottom of the Router. Always check that your P[redacted]w[redacted]ad[redacted]is[redacted]nfi[redacted]red properly for whichever network setting you use: WEP or WPA. You can configure[redacted]s[redacted]ng[redacted]in[redacted]dv[redacted]ced[redacted]roperties of the PC's wireless network adapter.

12.3.5.4.1 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 automatically generate the WEP security keys. A check mark will appear in the box, and the **Encryption Key** table will be hidden 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.

12.3.5.4.2 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.

12.3.5.5 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 enabled, 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 to the Router.

12.3.5.6 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.

[redacted]

This section discusses details about your Router's network connections.

13.1 Network Status

To view your Router's network settings, from the top navigation menu, select **Network Connections**. Next, click **Network Status** in the submenu at the left of the screen. The following screen will appear. This screen displays information about the devices connected to your local area network (LAN).

Network Connections	
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 deviced by the manufacturer.
Connected Devices	The interface used to connect the device to the Router, and the number of 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.

13.1.1 Website Blocking

In the **Network Status** page, click the **Website Blocking** link. You can configure your Router to restrict access to certain websites. Click the **New Entry** link.

The following screen appears. Enter the URL of the desired site in the **Restricted Website** field. Then select the local host device to which you want to apply this restriction, and then a schedule for the restriction. Click **OK** to save the settings.

If you select **User Defined** from the **Schedule drop-down** list, the following screen will appear. Click the **New Time Segment Entry** link to set up a time for the restriction.

The following screen allows you to edit the defined time segment. Click the **New Hours Range Entry** link to add the time values to the entry.

After you have entered the desired time values, click **OK** to save the settings.

If you have set up time values and click **OK**, the following screen will appear. Next, select the desired **Days of Week** values and click **OK**.

After you have set up the Hours Range and Days of Week values and clicked **OK**, the following screen will appear. If desired, you can enter a name for this schedule rule in the **Name** field. This screen shows that rules have been added to the **Time Segments** table. To add additional schedule rules to your Router, repeat the preceding instructions. Click **OK** to continue.

If you clicked **OK**, the following screen will appear. Enter the website to which you want to restrict access, and then click **OK**.

If you clicked **OK** in the preceding screen, the following screen will appear. To edit an entry, click the pencil icon.

13.1.2 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.

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.

13.1.2.1 Selecting an Address

From the **Address** drop-down list, select the desired computer for which you want to apply access.

After you have selected a computer, [redacted]ing sc[redacted] will a[redacted]ar. Proc[redacted]d to section 13.1.2.2 to select a protocol.

13.1.2.2 Selecting a Protocol

From the **Protocols** drop-down list, select the desired option that you want to prohibit the computer from using. To reply an html page to the blocked client, click the check box (a check mark will appear in the box). To disable this feature click to clear the check box.

After you have selected the protocol, the following screen will appear. Proceed to section 13.1.2.3 to configure a schedule rule.

13.1.2.3 Configuring a Schedule Rule

Select the desired schedule from the **Schedule** drop-down list.

For example, if yo[redacted] drop-down list, the following screen will appear. Click the desired [redacted], and then select the **New Time Segment Entry** link.

If you clicked **New Time Segment Entry,** the following screen will appear. Click the **New Hours Range Entry** link.

If you clicked **New Hours Range Entry**, the following screen will appear. Enter the desired start time and end time values in the fields provided, and then click **OK** to continue.

If you clicked **OK** the following screen will appear. Next, select the desired **Days of Week** values and click **OK**.

After you have set up [redacted] and clicked **OK**, the following screen will appear. If desired, you can [redacted] field. This screen shows that rules have been added to the **Time S**[redacted] schedule rules to your Router, repeat the preceding instructions. [redacted]

13.1.2.4 Completing the Access Control Rule Configuration

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

If you click [redacted] The Router is attempting to resolve the configuration. Click **Resolve No**

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.

13.1.3 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.

13.1.4 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.

13.1.5 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 14.3, "Port Forwarding."

13.1.6 Rename Device

In the **Network Status** page, click the **Rename Device** link 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.

13.1.7 Delete Device

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

13.2 Network Connections

To edit your connection settings from the top navigation menu, select **My Network.** Next, select **Network Connections** from the left submenu. The following screen will be displayed. This screen allows you to access your Router's connection settings and local area network (LAN) settings. The following sections discuss the details of this screen.

13.2.1 LAN (NAT) Bridge Properties

To view the LAN (NAT) Bridge properties, in the **Network Connections** screen, click the **LAN (NAT) Bridge** link. Then select **General** in the left submenu. The following screen will appear. This screen displays information about your LAN connections and allows you to access the hardware Ethernet and Wireless properties. You can also access the IP Address Distribution settings from this screen by clicking the **IP Address Distribution** link.

13.2.1.1 LAN (NAT) Hardware Ethernet Switch—General

To view the Hardware Ethernet Switch properties, in the **LAN (NAT) Bridge Properties** screen, click the **LAN (NAT) Hardware Ethernet Switch** link.

If you clicked **LAN (NAT) Hardware Ethernet Switch**, the following screen will appear. If you change the connection name, click **Apply**. Then, click **OK** to return to the **Network Connections** screen.

13.2.1.2 LAN (NAT) Hardware Ethernet Switch Properties—Settings

If you select **Settings** in the left submenu, the following screen will appear. Enter the desired properties for the Ethernet switch and then click **Apply** to save the settings.

13.2.1.3 LAN (NAT) Hardware Ethernet Switch Properties—HW Switch

If you select **HW Switch** in the left submenu. The following screen will appear. Enter the desired settings, and then click **Apply** to save the settings.

13.2.1.4 LAN (NAT) Hardware Ethernet Switch Properties—Advanced

If you select **Advanced** in the left submenu, the following screen will appear. Click the **New IP Address** link to add additional IP Address settings.

If you clicked **New IP Address,** the following screen will appear. Enter the IP Address and Subnet Mask, and then click **Apply** to save the settings.

13.2.2 LAN (NAT) Wireless 802.11g Access Point

To view the LAN wireless properties, in the **LAN (NAT) Bridge Properties** screen, click LAN (NAT) **Wireless 802.11g Access Point**.

13.2.2.1 LAN (NAT) Wireless 802.11g Access Point Properties—General

If you click **LAN (NAT) Wireless 802.11g Access Point** and then click **General** in the left submenu, the following screen will appear. If you change the LAN connection name in this screen, click **Apply**. Then, click **OK** to return to the **Network Connections** screen.

13.2.2.2 LAN (NAT) Wireless 802.11g Access Point Properties—Settings

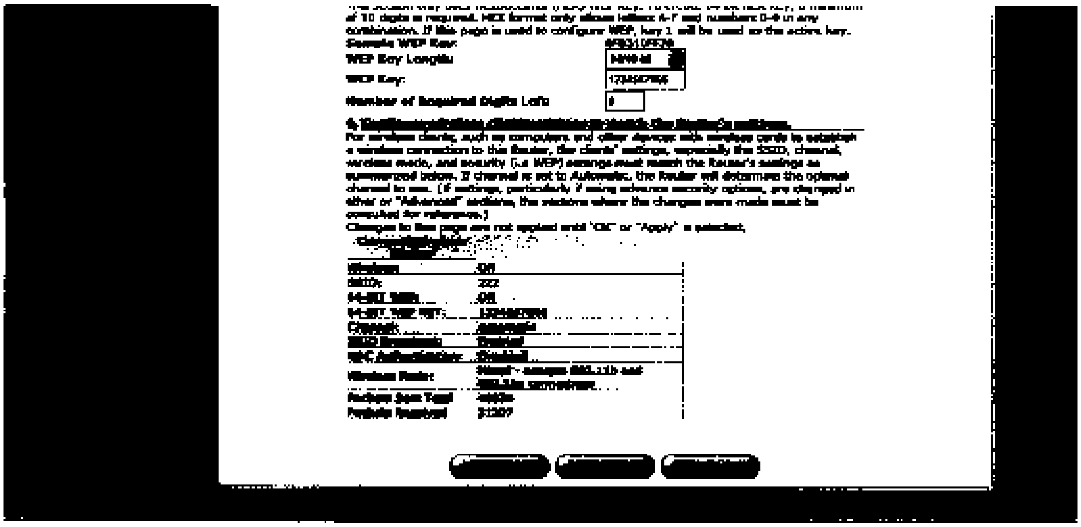
If you click **Settings** in the left submenu, the following screen will appear. If you change any settings in this screen, click **Apply**.

13.2.2.3 LAN (NAT) Wireless 802.11g Access Point Properties—Wireless Status

If you click **Wireless Status** in the left submenu, the following screen will appear. After viewing this screen, click **Cancel** to return to the preceding screen.

13.2.2.4 LAN (NAT) Wireless 802.11g Access Point Properties—Basic Security Settings

If you click **Basic Security Settings** in the left submenu, the following screen will appear. Please refer to section 12.2, "Basic Security Settings," for details on this screen.



of 10 digits is required. HEX format only allows letters A-F and numbers 0-9 in any combination. If this page is used to configure WEP, key 1 will be used as the active key.

Sample WEP Key:	[illegible]
WEP Key Length:	[illegible]
WEP Key:	1234567890
Number of Required Digits Left:	0

4. [illegible] match the 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 below. 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 either or "Advanced" sections, the sections where the changes were made must be consulted for reference.)

Changes to this page are not applied until "OK" or "Apply" is selected.

Wireless	On
SSID:	[illegible]
64-BIT WEP:	On
64-BIT WEP KEY:	1234567890
Channel:	Automatic
SSID Broadcast:	Enabled
MAC Authentication:	Disabled
Wireless Mode:	Mixed - accepts 802.11b and 802.11g connections
Packets Sent Total	[illegible]
Packets Received	[illegible]

13.2.2.5 LAN (NAT) Wireless 802.11g Access Point Properties—Advanced Security Settings

If you click **Advanced Security Settings** in the left submenu, the following screen will appear. Please refer to section 12.3, "Advanced Security Settings," for details on this screen.

13.2.2.6 LAN (NAT) Wireless 802.11g Access Point Properties—Advanced

If you click **Advanced** in the left submenu, the following screen will appear. Click the **New IP Address** link to configure additional IP address settings. Then click **Apply** to save the settings.

13.2.2.7 LAN (NAT) Bridge Properties—Settings

To configure the settings for the Router's LAN (NAT) Bridge connections, in the **Network Connections** screen, click the **LAN (NAT) Bridge** link. The following screen will appear. Enter the desired values, and then click **Apply** to save the settings.

13.2.2.8 LAN (NAT) Bridge Properties—Routing

To configure the routing values for the Router's LAN (NAT) Bridge connections, in the **Network Connections** screen, click the **LAN (NAT) Bridge link**. Then, select **Routing** in the left submenu. The following screen will appear. Select the desired setting from the **Routing** drop-down list.

If you selected **Basic** from the **Routing** drop-down list, the following screen will appear. [redacted]will use basic routing operations for your LAN IP traffic. Click **Apply** to save the settings.

If you selec[redacted] drop-do[redacted]n list, the following screen will appear. Use this screen to configure ad[redacted] traffic[redacted]ansmitted across your network. If you change any values in this screen, cl[redacted]o add a new Route, click the **New Route** link.

If you clicked **New Route**, the following screen will appear. Enter the appropriate values, and then click **OK.**

If you clicked **OK** in the preceding screen, the following screen will appear. This screen shows that a Route has been added. Next, click **Apply** to sa[illegible]s.

13.2.2.9 LAN (NAT) Bridge Properties—Bridging

To configure the bridging values for the Router's LAN (NAT) Bridge connections, in the **Network Connections** screen, click the **LAN (NAT) Bridge** link. Then, select **Bridging** in the left submenu. The following screen will appear. Enter the desired settings, and then click **Apply** to save the settings.

13.2.2.10 LAN (NAT) Bridge Properties – Advanced

To configure advanced settings for the Router's LAN (NAT) Bridge connections, in the **Network Connections** screen, click the **LAN (NAT) Bridge** link. Then, select **Advanced** in the left submenu. The following screen will appear. To add a new IP Address, click the **New IP Address** link.

If you clicked **New IP Address**, the following screen will appear. Enter the desired values and click **Apply.**

13.2.3 WAN VDSL Properties

To view the WAN VDSL properties, in the following **Network Connections** screen, click the **WAN VDSL** link.

13.2.3.1 WAN VDSL Properties—General

Select **General** in the left submenu. The following screen will appear. This screen displays information about your WAN VDSL connection. If you make changes to this screen, click **Apply** to save the settings.

13.2.3.2 WAN VDSL Properties—Settings

To configure the settings for your Router's WAN VDSL connection, in the **WAN VDSL Properties** screen, select **Settings** in the left submenu. The following screen will appear. Enter the appropriate values, and then click **Apply** to save the settings.

13.2.3.3 WAN VDSL Properties—Routing

To configure the routing for your WAN VDSL connection, in the **WAN VDSL Properties** screen, select **Routing** in the left submenu. Then, select the desired option from the **Routing** drop-down list, and then click **Apply** to save the settings.

If you select **Advanced** in the **Routing** drop-down list, the following screen will appear. Enter the desired values, and then click **Apply** to save the settings. To configure a new route, click the **New Route** link.

If you clicked **New Route**, the following screen will appear. Enter the appropriate values in the fields provided, and then click **OK** to save the settings.

13.2.3.4 WAN VDSL Properties: QOS

To configure the QoS settings for your Router, in the **WAN VDSL Properties** screen, select **QoS** in the left submenu. The following screen will appear. Enter the desired values, and then click **Apply** to save the settings.

13.2.3.5 WAN VDSL Properties—VDSL

If you select VDSL in the left submenu of the **WAN VDSL Properties** screen, the following screen will appear. View the transceiver information. To refresh this screen so that it displays the most current values, click **Refresh**.

13.2.3.6 WAN VDSL Properties—Advanced

To configure an additional IP address for your Router, in the **WAN VDSL Properties** screen, select **Advanced** in the left submenu. The following screen will appear. Click the **New IP Address** link.

If you clicked **New IP Address,** the following screen will appear. Enter the desired values in the fields, and then click **Apply** to save the settings.

13.2.4 WAN PPPoE Properties—Configuring WAN Ethernet

To configure the Router so that it connects to another DSL device via Ethernet, for example connecting to another VDSL device that provides WAN access, you will need to change the WAN interface settings in your Router. To do this, in the following **Network Connections** screen, click the **WAN PPPoE** link.

> **NOTE:** When the Router is configured for this setting, the Router's transceiver will be disabled. And the WAN Ethernet port on the rear of the Router will be used to connect to another VDSL device.

13.2.4.1 WAN PPPoE Properties—General

If you clicked WAN PPPoE [illegible] screen will appear. Next, select **Settings** in the left submenu.

13.2.4.2 WAN PPPoE Properties—Settings

If you selected **Settings** in the left submenu, the following screen will appear. This screen allows you to select the Router's WAN Ethernet port on the rear of the Router for connection to another VDSL device, through which you will connect to the Internet. Click the link labeled **Underlying Connection.**

If you clicked **Underlying Connections**, the following screen will appear. Select **Ethernet** from the **WAN Interface** drop-down list.

IMPORTANT: When Ethernet is selected as the WAN interface port, the VDSL port on the rear of the Router will not be used. (By factory default, the VDSL is the active WAN interface port.)

If you selected **Ethernet**, the following screen will be displayed. Enter the appropriate values, and then click **Apply** to save the settings.

NOTE: If you are using Ethernet as the WAN interface, be sure to install the Router according to the instructions provided in section 6.4.3, "Connecting the Router via WAN Ethernet."

13.2.4.3 WAN PPPoE Properties: Routing

To configure routing on the Router's WAN VDSL connection, in the **Network Connections** screen, click the **WAN PPPoE** link. Then select **Routing** from the submenu. The following screen will appear. Select the desired setting from the **Routing** drop-down list. Click **Apply** to save the settings.

For example, if you select **Basic** from the **Routing** drop-down list, the Router will use basic routing operations for WAN IP traffic transmitted across your network. Click **Apply** to save the settings.

If you selected **Advanced** from the **Routing** drop-down list, the following screen will appear. This screen allows you to configure advanced routing operations for WAN IP traffic transmitted across your network. If you change any values in this screen, click **Apply** to save the settings. To add a new Route, click the **New Route** link.

If you clicked **New Route**, the following screen will appear. Enter the desired values, and then click **OK**.

If you clicked **OK** in the preceding screen, the following screen will appear. This screen shows that a Route has been added to the Routing Table. Next, click **Apply** to save the settings.

13.2.4.4 WAN PPPoE Properties—PPP

To configure the PPP settings of the Router, in the **Network Connections** screen, click the **WAN PPPoE** link. Then, select PPP in the resulting submenu. The following screen will appear. Enter the appropriate values in the fields, and then click **Apply** to save the settings.

NOTE: The login user name and password are provided by Verizon.

13.2.5 LAN (NAT) Multimedia over COAX (MOCA)

To view the Router's connection type for COAX (MOCA), in the **Network Connections** screen, click the **LAN (NAT) Multimedia over COAX (MOCA)** link.

13.2.5.1 LAN (N[redacted]) Properties—General

Next, select [redacted]ng screen will appear. If you change any values in this screen, click **Apply** [redacted]

13.2.5.2 LAN (NAT) Multimedia over COAX (MOCA) Properties—Settings

To configure the Router's MOCA connection settings, in the **LAN (NAT) Multimedia over COAX (MOCA) Properties** screen, select **Settings** in the left submenu. Enter the desired values in this screen, and then click **Apply** to save the settings.

13.2.5.3 LAN (NAT) Multimedia over COAX (MOCA) Properties—MOCA

To configure [illegible] for the Router, in the **LAN (NAT) Multimedia over COAX (MOCA) Properties** screen, select **[illegible]** in the left submenu. Next, enter the desired values in this screen, and then click **Apply** to save the settings.

If you clicked the **View LAN MoCA Node Detailed Stats**, the following screen will appear. After viewing this screen, click **Close** to return to the preceding screen. To refresh this screen, click the **Refresh** button.

13.2.6 New Connection

To create a new network connection, in the **Network Connections** screen, click the **New Connection** link.

If you clicked **New Connection,** the following screen will appear. Choose the type of network connection you want to use based on your network configuration and networking needs. Then click **Next** to continue.

NOTE: The network connection types available to you are determined by Verizon. The Router's default network connection type is **Internet Connection**.

For example, if you click **Advanced Connection** in the **Connection Wizard** screen and then click **Next**, the following screen will appear. Click the desired connection type, and then click **Next** to continue.

If you clicked **Next**, the following screen will appear. Choose an underlying device for your connection. Then, click **Next** to continue.

For example, if you selected **WAN** [redacted] llowing scr[redacted] will appear. Enter your **Login User Name** and **Login Password** in the fields [redacted]

NOTE: The Login U[redacted]ame[redacted] Lo[redacted]swo[redacted] values are [redacted]ovided by Verizon.

After you have entered your user name and password, click **Next** to continue.

If you clicked **Next**, the following screen will appear. You have successfully completed the steps needed to create the following connection. Press **Finish**, and wait a few moments for the connection to be established.

13.2.7 Quick Setup

To quickly set up your network connection and wireless settings, in the **Network Connections** screen, click the **Quick Setup** button.

If you clicked **Quick Setup**, the following screen will appear. After you have finished configuring the settings in this screen, click **Apply** to save the settings.

13.2.8 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 status.
- 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.

13.2.9 Advanced

To view additional connection settings, in the **Network Connections** screen, click the **Advanced** button.

If you clicked **Advanced** in the preceding screen, the following screen will appear. Use the links in this screen to access the Router's connection settings.

[redacted]

If you click **Wireless** in the top navigation menu, the following screen will appear. Click **Yes** to proceed.

14.1 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 VDSL 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 Firewall Settings	
Maximum Security (High)	High security level only allows basic Internet functionality. Only Mail, News, Web, FTP, and IPSEC are allowed. All other traffic is prohibited.
Typical Security (Medium)	Like High security, Medium security only allows basic Internet func[illegible]nality by default. However, Medium security allows customization throug[illegible] configuration so that you can enable the traffic that you want to pass. This is th[illegible]y default security level.
Minimum Security (Low)	Low security setting will allow all traffic except for kno[illegible]s. W[illegible] Low security, your Router is visible to other computers [illegible] the [illegible]
Block IP Fragments	Select this check box to allow the Router to block [illegible]. [illegible]cki[illegible] fragments can prevent hackers from using fragmented [illegible]ta p[illegible] to [illegible] yo[illegible] network. Note. Some VPN and UDP services use IP f[illegible]s, [illegible] m[illegible] need to be disabled. If you have questions about this fe[illegible]e, [illegible]

14.2 Access Control

If you select **Firewall Settings** in the top n[illegible] me[illegible]d then s[illegible]ct **Acce[illegible] Co[illegible]** in the left submenu, the following screen will appear. This featu[illegible] ou to [illegible] speci[illegible] omputer within the local network (or even the entire network) from accessing [illegible] s on the In[illegible]net. F[illegible]example, [illegible] computer can be prohibited from surfing the Internet, another co[illegible] fro[illegible] transferring [illegible]es using FTP, and the whole network from receiving incoming email. To configure [illegible]cess [illegible]ntrol, c[illegible]k the **New [illegible]try** link.

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.

14.2.1 Selecting an Address

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

After you have selected a computer, the [illegible] screen will appear. Proceed to Section 14.2.2 to select a protocol.

14.2.2 Selecting a Protocol

From the **Protocols** drop-down list, select the desired option that you want to prohibit the computer from using. To reply an html page to the blocked client, click the check box (a check mark will appear in the box). To disable this feature, click to clear the check box.

After you have selected a protocol, the following screen will appear. Proceed to section 14.2.3 to configure a schedule rule.

14.2.3 Configuring a Schedule Rule

Select the desired schedule from the **Schedule** drop-down list.

For example, if you [redacted]-down list, the following screen will appear. Click the desired [redacted] then select the **New Time Segment Entry** link.

If you clicked **New Time Segment Entry,** the following screen will appear. Click the **New Hours Range Entry** link.

The following screen will appear. Enter the desired start time and end time values in the fields provided, and then click **OK** to continue.

If you clicked **OK** the following screen will appear. Next, select the desired **Days of Week** values and click **OK**.

After you have entered the desired values and clicked **OK**, the following screen will appear. If desired, you can enter a name for this [illegible] rule in the Name field. For example, this screen shows that rules have been added to the **Time Segments** [illegible] to add additional schedule rules to your Router, repeat the preceding instructions. Click **OK** to continue.

14.2.4 Completing the Access Control Rule Configuration

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

If you click [redacted] The Router is attempting to resolve the configuration. Click **Resolve Now**

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.

14.3 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.

14.3.1 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.

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 LAN 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.

Next, from the **Protocol** drop-down list, select **User Defined.**

If you selecte[redacted]creen will appear. Click the **New Server Ports** link.

NOTE: At leas[redacted]be defined before you can enter a service name.

If you clicked the **New Server Ports** link, the following screen will appear.

Next, select the desired protocol from the [illegible] drop-down list.

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.

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

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

If clicked **OK** in the preceding screen, the following screen will appear. Next, enter the desired service name in the **Service Name** field, and then click **OK** to save the settings.

If you clicked **OK**, the following screen will appear. Next, specify a local host for which you to assign this user-defined port forwarding rule. To assign this 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 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.

If you clicked the **Specify Public IP Address** check box, the following screen will appear. Enter the appropriate IP address in the fields provided.

From the **Forward to Port** drop-down list, select the desired option to indicate the port to which traffic will be forwarded.

For example, if you selected **Specify** from the **Forward to Port** drop-down list, the following screen will appear. Next, enter the desired port value in the adjacent field, and then click **OK** to continue.

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.

If you want to disable the rule, click the checkbox next to the host name or IP address. Then click **Apply** to save the setting.

14.3.2 Configuring a Schedule Rule

To set up a schedule rule, in the **Add Port Forwarding Rule** screen, select **User Defined** from the **Schedule** drop-down list.

The following screen will appear. Select the desired rule activity option:

- Rule will be active at the scheduled time.
- Rule will be inactive at the scheduled time.

Next, click the **New Time Segment Entry** link to schedule a time parameter.

If you clicked **New Time Segment Entry**, the following screen will appear. Click the **New Hours Range Entry** link.

If you clicked **New Hours Ra**[redacted]**Ent**[redacted] the fol[redacted]ing screen[redacted]ll appear. Enter the desired start and end time values in the fields p[redacted]d, a[redacted]en [redacted]**K** t[redacted]ontinue.

If you clicked **OK** the following screen will appear. Next, select the desired Days of Week, and then click **OK**.

If you have set up the Hours Range and Days of Week values and clicked **OK**, the following screen will appear. This screen shows that a rule has been added to the **Time Segments** table. Repeat this process to add additional schedule rules to your Router. Next, click **OK** to continue.

If you clicked **OK**, 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. Then, click **OK** to continue.

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

14.3.3 Setting Up a Predefined Port Forwarding Rule

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

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 used to provide a specific service or application. If you use public IP addresses in your Router configuration, you must first obtain them from Verizon.

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

NOTE: For your convenience, 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 [illegible] **All Services** from the **Protocol** drop-down list, all available services will be displayed in the drop-down list.

Select a predefined s[illegible] from [illegible] pro[illegible] 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.

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

Next, set up a schedule using the instructions explained in section 14.3.2, "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.

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

14.4 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 protections. 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. 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.

14.5 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 [redacted] for dynamic port forwarding configuration. By setting port triggering rules, you can allow inbound traffic t[redacted] at a specific LAN host, using ports different than those used for the outbound traffic. This is called po[redacted] because the outbound traffic triggers the ports to which inbound traffic is directed.

14.5.1 Se[redacted]ed Port Triggering Rule

To set up a use[redacted]e, in the **Add** drop-down list, select **User Defined.**

14.5.1.1 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.

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

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.

For example, if you selected **Single**, [redacted] screen [redacted] appear [redacted] ter the [redacted] red source port and destination port values, and then click **OK** to sa [redacted].

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 14.5.1.2. Otherwise, click **OK** to continue.

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.

14.5.1.2 Configuring Incoming Trigger Ports

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

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

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.

Next, enter the desired source and d[redacted] values in [redacted] fields provided, a[redacted] click **OK** to continue.

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

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.

14.5.2 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.

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.

14.6 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 als[redacted] the Internet. This allows you to view or change settings while traveling. It also enables you to allow yo[redacted]rovider to change settings or help you troubleshoot functionality or communication issues from [redacted]n. Remote access to your Router is blocked by default to ensure the security of your network. Ho[redacted]ter supports the following services, and you can use the Remote Administration screen to se[redacted]ervices if they are needed.

WARNING: With Remote Administration enabled, your network will be[redacted]cks.

To configure Remote Administration, enter the appropriate settings, and [redacted]ngs.

14.7 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.

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 settings 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.

To configure Static NAT, click the **New IP Address** link.

If you clicked **New IP Address,** the following screen will appear. Next, from the **Network Object Type** drop-down list, select the desired object type.

For example, if you select **IP Address**, the following screen will appear. Enter the appropriate IP address, and then click **OK** to continue.

If you clicked **OK**, the following screen will appear. To add a rule to this IP address, click the **New Entry** link.

If you clicked **New Entry**, the following screen will appear. Select the desired values for your NAT/NAPT rule, and then click **OK** to continue.

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

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

14.8 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 [illegible] 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.
- LAN/WAN rules - rules can be defined per each device.
- Final rules - rules defined here will be applied last, on all gateway devices.

To add rules to Input or Output rules sets, [illegible] adjacent **New Entry** link.

For example, if you clicked the **New Entry** link for input LAN (NAT) Bridge Rules, the following screen will appear.

Select one of the following operations:

- 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 settings, click **OK** to continue.

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

14.9 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.

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If you clicked **Settings**, the following screen will appear. Select the desired settings by clicking the check boxes. Then, click **Apply** to save the settings.

14.10 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 wel[redacted]ious details and statistics. You can use this list to close undesired connections by clicking the "X" ic[redacted] display includes the protocol type, the different ports it uses, and the direction of the secured [redacted]y a detailed list, click the **Advanced** button.

If you clicked **A**[redacted]g screen will appear. To close a connection, click the adjacent "X" icon.

[redacted]

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

If you clicke[redacted] en will ppear. In the **Restricted Website** field, enter the desired website to wh y w rest You can enter a valid IP address or domain name. Next, select a host from the **Loca os** r li

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.

If you selected **User** [redacted]**ed,** t[redacted]llo[redacted]cree[redacted]vill appear.[redacted]lick the **New Entry** link.

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.

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.

Next, select the desired schedule fro[redacted]le drop-do[redacted] list, [redacted]d then clic[redacted]**OK** to continue.

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 "192.168.1.4" 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 th[redacted] restricted Web site. Click **Resolve Now**; the restricted Web site will be resolved into the IP address that you h[redacted]ecified, and the **Status** field will display **Active**.

To disable t[redacted] ear the [redacted]ck box adjacent to the IP address. Then, click **Apply** to allow the settings t[redacted] status[redacted]isplays **Disabled**, the computer will have permission to access the We[redacted]

16.1 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.**

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.

16.3 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.

IMPORTANT: The **Reboot** feature does not reset the Router to factory default settings. [redacted]o reset the Router to factory default settings, follow the instructions in section 16.2, "Restore De[redacted]

If you clicked OK, the [redacted] Please wa[redacted] brief moment while the Router is rebooting. Afterwards, you wil[redacted]ter.

16.4 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 modem. 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 Wireless Broadband Router, bypassing the need to contact the service provider with "new" MAC address values (from the Wireless 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 Wireless Broadband Router. Replace these values with the MAC address of your "old" Router and click **Apply.**

16.5 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.

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.

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.

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

16.6 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.

16.6.1 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 Administrative values. Enter the appropriate values, and then click **OK** to save the changes.

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

16.6.2 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.

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 characters space and any of these characters :@"|\/=+<>[]*?,;. Also, user names containing capital letters are not recommended. It might cause connectivity problems on Windows 98 hosts.

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.

16.6.3 Users—Removing a User

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

16.6.4 Groups—Adding a New Group

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

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 Member Administrator** check box; otherwise, leave this box empty.
4. Click **OK** to save the settings.

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

16.6.5 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 [illegible] **Administrator** check box; otherwise, leave this box empty.
4. Click **OK** to save the settings.

After you hav[illegible] clicked **OK**, the following screen will display the group attributes. Click **Close** to [illegible]

16.7 Quality of Service

This 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.

16.7.1 General

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

16.7.2 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.

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

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.

16.7.3 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 defined 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 rule will apply to both control and data ports (even if the data ports are unknown). Applications that support such inheritance have an ALG in the firewall.

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

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

After you have selected a device and clicke[redacted]n the [redacted]ding sc[redacted]n, the fo[redacted]win[redacted]reen will appear. Enter the bandwidth values for transmit (Tx) and [redacted]), an[redacted] select[redacted] desired [redacted]tion [redacted]om the TCP Serialization drop-down list. Next, click the desir[redacted]y link to[redacted]a class[redacted]

For example, if you clicked **New Entry** in the receive (Rx) section, the following screen will appear. Enter the desired name and then click **OK** to continue.

If you entered a name, and then clicked **OK**, the following screen will appear. In this screen, you can do the following:

- To edit a rule, click the name of the rule you want to edit.
- If you do not want to edit a rule, click Apply to save the settings.

In this example, the **Class 2** link that was created in the preceding screen has been selected for editing. Enter the desired values, and then click **Resolve Now. Click OK** to continue.

If you clicked **OK** in the preceding s[redacted]llowing [redacted]n will [redacted]ear. This[redacted]reen shows that the class priority has been changed. If you change any[redacted]ttings in th[redacted]screen, click **Apply**. Otherwise, click **OK** to continue.

If you clicked **OK**, the following screen will appear. The values that you have configured will be displayed in this screen. To repeat this process, click the **New Entry** link.

16.7.4 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 the 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.

16.7.5 802.1P 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 res[illegible]tablished.

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. Ze[illegible] is [illegible] traffic and is used as a best effort default, invoked automatically when no other value h[illegible].

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

- The first class rule has precedence over all other class rules (scanning stops 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 [illegible] will take precedence.

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

16.7.6 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 shaping classes. For example, the amount of packets sent, dropped, or delayed are just a few of the parameters you can monitor 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**.

16.8 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 [illegible] the Internet. This allows you to view or change settings while traveling. It also enables you to [illegible] [illegible] to change settings or help you troubleshoot functionality or communication issues from [illegible] [illegible] [illegible]. Remote access to your Router is blocked by default to ensure the security of your [illegible] [illegible] your Router supports the following services, and you may use the Remote Administ[illegible] [illegible] [illegible] selectively enable these services if they are needed.

WARNING: With Remote Administration enabled, your network will be [illegible] [illegible] [illegible] [illegible].

To configure Remote Administration, enter the appropriate settings, and [illegible] [illegible] [illegible] [illegible] [illegible] settings.

16.9 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.

To add a new host, 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.

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.

16.10 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 Service) allows 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 automatically 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.

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.

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) in the fields provided to access your account.

NOTE: The screen displayed in this document may differ from the actual screen.

16.11 Network Objects

If you click **Advanced** in the top navigation menu and then select the **Network Objects** link, the following screen will appear. A network object is a set of host names, IP address or MAC addresses. Security rules can be applied to a distinct LAN subset using the Network Objects feature.

To configure a new network object, click the **New Entry** link.

If you clicke[illegible] the [illegible] screen, th[illegible] following screen will appear. Enter the desired object description in[illegible] [illegible]k the **New Entry** link in this screen.

If you clicked **New Entry**, the following screen will appear. Select an option from the **Network Object Type** drop-down list, and then enter the appropriate values in the fields provided. Click **OK** to continue.

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.

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.

16.12 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 is divided into two main sections: Basic Service and Advanced Service. The following sections explain the features of each service.

16.12.1 Basic Service

To access the basic protocol screen (if you are in the **Advanced** screen), click the **Basic** button.

If you clicked the **Basic** button in the preceding screen, the following screen will appear.

At this screen, you can do the following:

- 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.

16.12.1.1 Configuring a Predefined Protocol Service

To configure the Router for a predefined protocol service, click the desired link.

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.

If you clicked TCP in the **Edit Service** screen, the following screen will appear. Enter the desired values, and then click **OK** to continue.

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.

If you clicked **OK** in the preceding [redacted]lowing scr[redacted]n will [redacted]ppear. The [redacted]otocol service has been saved to the Router.

16.12.1.2 Configuring a User-defined Protocol Service

To configure the Router for a user-defined protocol service, click the **New Entry** link.

If you clicke[redacted]en will [redacted]ppear. Enter a service name and service description in the fields provide[redacted]**orts** link.

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.

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

If you clicked **OK**, the following screen will appear. The protocol settings have been saved to the Router.

16.12.2 Advanced Protocol Service

To access the **Advanced** 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 do the following:

- Configure predefined application by clicking the desired link.
- Configure a new user-defined application by clicking the **New Entry** link.

16.12.2.1 Configuring a Predefined Application

To configure the Router for a predefined application, click the desired link

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.

If you selected TCP (Any -> 21-4000), 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 21-4000.

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.

If you clicked **OK**, the protocol values will be saved to the Router, and the following screen will display the entry.

16.12.2.2 Configuring a New User-Defined Application

To configure new user-defined application, click the **New Server Ports** link in the **Edit Service** screen.

If you clicke [redacted] will appear. Select the desired protocol from the **Protocol** drop-down li [redacted] mber.

For example, this screen shows appropriate values, click **OK** to continue.

If you clicked **OK**, the following screen will appear. The UDP port values have been configured. Next, click **OK** to save the settings.

If you clicked **OK**, the following screen will appear. The user-defined UDP port settings have been saved to the Router.

16.13 UPnP

If you click Advanced on the top navigation menu and then select the **UPnP** link, the following screen will appear. This feature enables the user to see 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.

16.14 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 settings and then click **Apply** to save the settings.

16.15 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.

16.16 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.

16.17 Sch[redacted]

If you click **Adva**[redacted] th top navigation menu and then select the **Scheduler Rules** link, the following screen will appear. Please refe[redacted]structions discussed in section 13.1.2.3 "Configuring a Schedule Rule," to configure this feature.

16.18 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 checks.

  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.

16.19 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.

16.19.1 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.

If you clicked **New Route**, the following screen will appear. Configure the settings in this screen, and then click **OK** to continue.

16.19.2 Advanced Routing Settings

To configure advanced routing settings, click the **Advanced** button in the **Routing** screen.

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.

16.20 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.

16.20.1 New Membership Filter

If you clicked the **New Membership Filter** link in the preceding screen, the following screen will appear.

Select the desired settings for the membership filter you want to create. Then click **Apply** to save the settings.

16.20.2 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**.

If you clicked **Apply**, the addr[illegible] wil[illegible] displa[illegible] in the list [illegible] Multicast Addresses.

16.20.3 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.

16.21 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 in additional connection.

To activate PPPoE Relay, click the check box (check mark will appear in the box). Click **Apply** to save the settings.

16.22 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 [redacted] mputers that are configured as DHCP clients to the home network. It provides a mechanism for all sses and delivering network configuration parameters to such hosts. The Router's default DHC AN bridge.

A client (host) sends out a broadcast message on the LAN requesting an P server then checks its list of available addresses and leases a local IP address to the h e and simultaneously designates this IP address as "taken." At this point the hos ess for the duration of the lease.

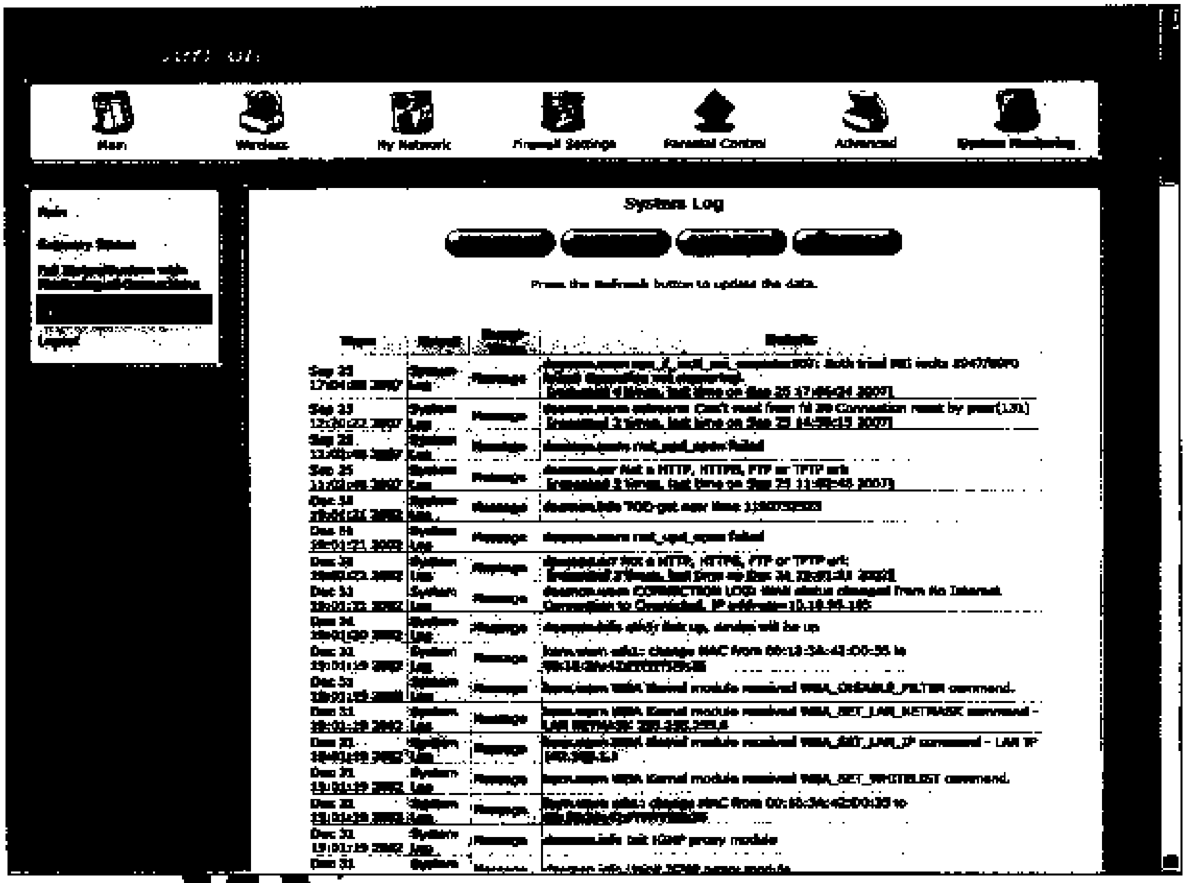
To configure [redacted] e LAN (NAT) Bridge link, the following screen will appear. Enter the desired DH ded, and then click **Apply** to save the settings.

[redacted]

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.

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 display 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	[illegible]	[illegible]	Details
Sep 25 17:04:[illegible] 2007	System Log	Message	[illegible]: Both tried [illegible] Operation not supported. (Repeated 4 times, last time on Sep 25 17:06:24 2007)
Sep 25 12:30:22 2007	System Log	Message	daemon.warn [illegible]: Can't read from fd 39 Connection reset by peer(131) (Repeated 3 times, last time on Sep 25 14:58:15 2007)
Sep 25 11:4[illegible] 2007	System Log	Message	daemon.[illegible] nat_upd_open failed
Sep 25 11:02:[illegible] 2007	System Log	Message	daemon.err Not a HTTP, HTTPS, FTP or TFTP url (Repeated 3 times, last time on Sep 25 11:4[illegible]:45 2007)
Dec 31 19:01:21 2002	System Log	Message	daemon.info TOD-got new time: [illegible]
Dec 31 19:01:21 2002	System Log	Message	daemon.warn nat_upd_open failed
Dec 31 19:01:21 2002	System Log	Message	daemon.err Not a HTTP, HTTPS, FTP or TFTP url: (Repeated 2 times, last time on Dec 31 19:01:21 2002)
Dec 31 19:01:21 2002	System Log	Message	daemon.warn CONNECTION LOG: WAN status changed from No Internet Connection to Connected. IP address=10.10.[illegible]
Dec 31 19:01:20 2002	System Log	Message	daemon.info [illegible] link up, device will be up
Dec 31 19:01:19 2002	System Log	Message	kern.warn [illegible]: change MAC from 00:18:3A:42:D0:35 to [illegible]
Dec 31 19:01:19 2002	System Log	Message	kern.warn WBA Kernel module received WBA_DISABLE_FILTER command.
Dec 31 19:01:19 2002	System Log	Message	kern.warn WBA Kernel module received WBA_SET_LAN_NETMASK command - LAN NETMASK 255.255.255.0
Dec 31 19:01:19 2002	System Log	Message	kern.warn WBA Kernel module received WBA_SET_LAN_IP command - LAN IP 192.168.1.1
Dec 31 19:01:19 2002	System Log	Message	kern.warn WBA Kernel module received WBA_SET_WHITELIST command.
Dec 31 19:01:19 2002	System Log	Message	kern.warn [illegible]: change MAC from 00:18:3A:42:D0:35 to [illegible]
Dec 31 19:01:19 2002	System Log	Message	daemon.info Init IGMP proxy module
Dec 31	System	Message	daemon.info [illegible] IGMP proxy module

[redacted]

Contact your Internet service provider for technical support.

[redacted]

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 MoCA

- 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

LEDs

- Power
- Broadband
- Internet
- Wireless Setup
- Ethernet 1, Ethernet 2, Ethernet 3, Ethernet 4
- MoCA
- Wireless

Connectors

- FIOS COAX
- VDSL: RJ-11, 6-pin modular jack-VDSL
- 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

[redacted]

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6. **Governing Law. This License Agreement shall be construed and governed in accordance with the laws of the State of Illinois. You submit to the jurisdiction of the state and federal courts of the state of Illinois and agree that venue is proper in those courts with regard to any litigation arising under this Agreement.**

7. **Costs of Litigation. If any action is brought by either party to this License Agreement against the other party regarding the subject matter hereof, the prevailing party shall be entitled to recover, in addition to any other relief granted, reasonable attorney fees and expenses of litigation.**

8. **Severability. Should any term of this License Agreement be declared void or unenforceable by any court of competent jurisdiction, such declaration shall have no effect on the remaining terms hereof.**

9. **No Waiver. The failure of either party to enforce any rights granted hereunder or to take action against the other party in the event of any breach hereunder shall not be deemed a waiver by that party as to subsequent enforcement of rights or subsequent actions in the event of future breaches.**

Verizon® Wireless Broadband Router (Model 9100)
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