



**WESTELL**  
**ULTRALINE II (MODEL 800015)**

---

**USER GUIDE**

DRAFT 1

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DRAFT 1

## 1. PRODUCT DESCRIPTION

Your Westell® UltraLine II gateway is designed to deliver high speed data and high-quality, multicast IP video delivery over a variety of WAN access methods. The UltraLine II supports wireless 802.11b/g, Ethernet, and Coax networking interfaces and functions as a modem enabling you to connect multiple PCs on your LAN to the Internet. The WAN interface on the UltraLine II allows you to uplink to ADSL networking devices. The 802.11 wireless interface allows you to establish a secure wireless connection with mobile computing devices, and the digital Coax interface allows you to connect the UltraLine II directly to your existing in-home coaxial cabling. To experience the Internet using your UltraLine II, simply connect the hardware, apply power, and perform the simple software configuration for your Gateway.

Hereafter, the Westell® UltraLine II will be referred to as the “Gateway” or the “Modem.”

## 2. SAFETY INSTRUCTIONS

The following important safety instructions should be applied when using your telephone equipment.

**WARNING:** Please save these instructions.

- Do not use this product near water, for example, near a bathtub, washbowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.
- Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
- Do not use the telephone to report a gas leak in the vicinity of the leak.
- Do not connect this equipment in an environment that is unsuitable.
- Never install 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 non-insulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.
- The Ultraline2 coaxial interface is intended only for connection to indoor wiring within the home. The coaxial connector must not be connected to coaxial cable leading to an external antenna or to an external cable distribution system.



### **WARNING**



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

### 3. REGULATORY INFORMATION

#### 3.1 FCC Compliance Note

(FCC ID: CH8A9080YYXX-07)

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.

**Modifications made to the product, unless expressly approved by Westell Inc., could void the users' right to operate the equipment.**

#### RF EXPOSURE

The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

#### 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. Refer to the installations instructions in 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. Refer to the installation instructions in this User Guide for details.

If this terminal equipment (Model 800015) 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 800015), do not try to repair the equipment yourself. The equipment cannot be repaired in the field. Contact your ISP, or contact the original provider of your equipment.

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 800015) 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 specification were met. It does not imply that Industry Canada approved the equipment. The Ringer Equivalence Number (REN) is 0.0. The Ringer Equivalence Number that is assigned to each piece of terminal equipment provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed five.

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

If your home has specially wired alarm equipment connected to the telephone line, ensure that the installation of this equipment (Model 800015) 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 800015) 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. Refer to section 20 in this User Guide for further details. 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.

Operation of this equipment (Model 800015) is subject to the following conditions: (1) This device may not cause harmful interference, and (2) This equipment must accept any interference received, including interference that may cause undesired operation.

To reduce potential radio interference to users when a detachable antenna is used with this equipment the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (EIRP) is not more than that required for successful communication."

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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## 4. NETWORKING REQUIREMENTS

The following system specifications are required for optimum performance of the Modem via 10/100 Base-T Ethernet or Wireless.

| CONNECTION TYPE           | MINIMUM SYSTEM REQUIREMENTS                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ETHERNET<br>(E1,E2,E3,E4) | <ul style="list-style-type: none"> <li>• Pentium® or equivalent class machines</li> <li>• Microsoft® Windows® (98 SE, ME, 2000, NT 4.0, or XP) Macintosh® OS X, or Linux installed</li> <li>• 64 MB RAM (128 MB recommended)</li> <li>• 10 MB of free hard drive space</li> <li>• TCP/IP Protocol stack installed</li> <li>• 10/100 Base-T Network Interface Card (NIC)</li> <li>• Computer Operating System CD-ROM on hand</li> </ul>        |
| WAN<br>Ethernet (E5)      | <ul style="list-style-type: none"> <li>• Pentium® or equivalent class machines</li> <li>• Microsoft® Windows® (98 SE, ME, 2000, NT 4.0, or XP) Macintosh® OS X, or Linux installed</li> <li>• 64 MB RAM (128 MB recommended)</li> <li>• 10 MB of free hard drive space</li> <li>• TCP/IP Protocol stack installed</li> <li>• 10/100 Base-T Network Interface Card (NIC)</li> <li>• Computer Operating System CD-ROM on hand</li> </ul>        |
| WIRELESS<br>IEEE 802.11g  | <ul style="list-style-type: none"> <li>• Pentium® or equivalent class machines</li> <li>• Microsoft® Windows® (98 SE, ME, 2000, or XP) or Macintosh® OS X installed</li> <li>• Computer Operating System CD-ROM on hand</li> <li>• Internet Explorer 4.x or Netscape Navigator 4.x or higher</li> <li>• 64 MB RAM (128 MB recommended)</li> <li>• 10 MB of free hard drive space</li> <li>• An available IEEE 802.11b/g PC adapter</li> </ul> |
|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## 5. HARDWARE FEATURES

### 5.1 LED Indicators

This section explains the LED States and Descriptions of your Modem. LED indicators are used to verify the unit's operation and status.

**LED States and Descriptions**

| LED                                          | State                           | Description                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>POWER</b>                                 | <b>Solid Green</b>              | Modem power is ON.                                                                                                                                                                                                                                                                                                                                                                                  |
|                                              | <b>Solid Red</b>                | Modem is in reset mode.                                                                                                                                                                                                                                                                                                                                                                             |
|                                              | <b>OFF</b>                      | Modem power is OFF.                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>WAN<br/>(Ethernet or MoCA)</b>            | <b>Solid Yellow</b>             | MoCA link impaired less than 30 Mbs                                                                                                                                                                                                                                                                                                                                                                 |
|                                              | <b>Solid Green</b>              | Ethernet Link                                                                                                                                                                                                                                                                                                                                                                                       |
|                                              | <b>Flashing Green or Yellow</b> | Ethernet or MoCA activity present ( traffic in either direction).                                                                                                                                                                                                                                                                                                                                   |
|                                              | <b>Off</b>                      | Modem power is OFF, no cable, or no powered device is connected to the associated port.                                                                                                                                                                                                                                                                                                             |
| <b>INTERNET</b>                              | <b>Solid Green</b>              | Internet link established.                                                                                                                                                                                                                                                                                                                                                                          |
|                                              | <b>Flashing Green</b>           | IP connection established and IP Traffic is passing through device (in either direction).<br>Note: If the IP or PPP session is dropped due to an idle timeout, the light will remain solid green, if an ADSL connection is still present.<br>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). |
|                                              | <b>Yellow</b>                   | Device attempted to become IP connected and failed (no DHCP response, no PPP response, PPP authentication failed, no IP address from IPCP, etc.).                                                                                                                                                                                                                                                   |
|                                              | <b>OFF</b>                      | Modem power is OFF, Modem is in Bridge Mode, or the connection is not present.                                                                                                                                                                                                                                                                                                                      |
| <b>ETHERNET<br/>(LAN)<br/>E1, E2, E3, E4</b> | <b>Solid Green</b>              | Powered device is connected to the associated port (includes devices with wake-on LAN capability where slight voltage is supplied to an Ethernet connection).                                                                                                                                                                                                                                       |
|                                              | <b>Flashing Green</b>           | 10/100 Base-T Ethernet LAN activity is present (LAN traffic in either direction).                                                                                                                                                                                                                                                                                                                   |
|                                              | <b>OFF</b>                      | Modem power is OFF, no cable or no powered device is connected to the associated port.                                                                                                                                                                                                                                                                                                              |
| <b>MoCA</b>                                  | <b>Solid Yellow</b>             | MoCA link impaired less than 30 Mbs.                                                                                                                                                                                                                                                                                                                                                                |
|                                              | <b>Solid Green</b>              | Ethernet Link.                                                                                                                                                                                                                                                                                                                                                                                      |
|                                              | <b>Flashing Green or Yellow</b> | Ethernet or MoCA activity is present (traffic in either direction).                                                                                                                                                                                                                                                                                                                                 |
|                                              | <b>OFF</b>                      | Modem power is OFF, no cable or no powered device is connected to the associated port.                                                                                                                                                                                                                                                                                                              |
| <b>WIRELESS</b>                              | <b>Solid Green</b>              | Wireless is enabled and functioning.                                                                                                                                                                                                                                                                                                                                                                |
|                                              | <b>Flashing Green</b>           | Wireless LAN activity present (traffic in either direction).                                                                                                                                                                                                                                                                                                                                        |

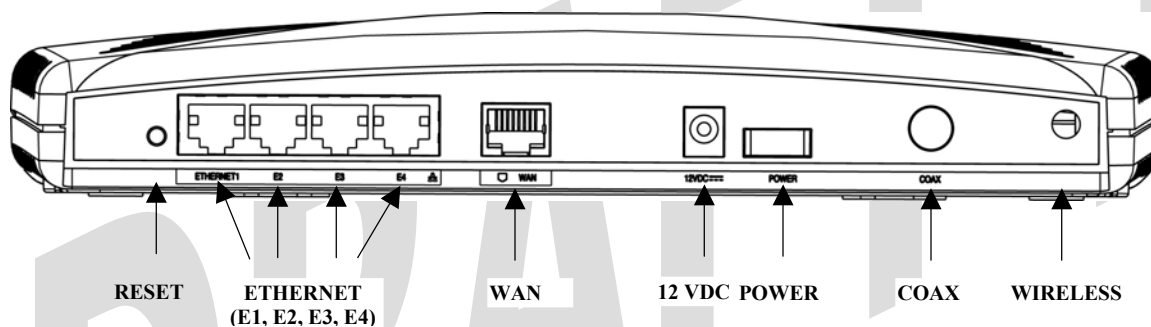
|  |            |                                          |
|--|------------|------------------------------------------|
|  | <b>Off</b> | Wireless is disabled or not functioning. |
|--|------------|------------------------------------------|

NOTE: Safe Boot is reflected when the Power and Internet LED's are both Red and all other LED's are off.

## 5.2 Cable Connectors and Switch Locations

- Reset switch
- 4 Ethernet connectors (RJ-45)
- WAN connector (RJ-45) yellow
- Power connector (barrel)
- On/Off power switch
- Coax connector
- Wireless IEEE 802.11b/g SMA connector and antenna

Figure 1. Rear View of UltraLine II



## 5.3 Connector Descriptions

The following chart displays the connector types for the UltraLine II.

| SYMBOL | NAME                         | TYPE             | FUNCTION                                                                                                                                                                                   |
|--------|------------------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        | ETHERNET<br>(E1, E2, E3, E4) | RJ-45            | 10/100 Base-T Ethernet Connection to PC or Hub.                                                                                                                                            |
|        | WAN                          | RJ-45            | WAN can function as a 10/100 Base-T Ethernet connection to a WAN-side networking device. (e.g., xDSL, etc.), a DMZ LAN Port, or a fifth Ethernet LAN Port, depending on the configuration. |
|        | POWER                        | Barrel connector | Connection to DC (12V) Power Connector.                                                                                                                                                    |

| SYMBOL          | NAME    | TYPE          | FUNCTION                                    |
|-----------------|---------|---------------|---------------------------------------------|
| <b>Wireless</b> | ANTENNA | SMA connector | Connects to wireless IEEE 802.11b/g device. |

## 5.4 Pin-out Descriptions

The following table lists the Modem's port pin-outs and descriptions.

| Port                       | Pin-out | Description |
|----------------------------|---------|-------------|
| WAN<br>(Ethernet E5)       | 1       | Rx+         |
|                            | 2       | Rx-         |
|                            | 3       | Tx+         |
|                            | 4,5,7,8 | Not Used    |
|                            | 6       | Tx-         |
| ETHERNET<br>E1, E2, E3, E4 | 1       | Rx+         |
|                            | 2       | Rx-         |
|                            | 3       | Tx+         |
|                            | 4,5,7,8 | Not Used    |
|                            | 6       | Tx-         |

## 6. INSTALLING THE HARDWARE

### 6.1 Installation Requirements

To install your UltraLine II, you will need one of the following:

- A Network Interface Card (NIC) installed in your PC
- An IEEE 802.11b/g adapter

**NOTE:** Internet service provider subscriber software and connection requirements may vary. Consult your ISP for installation instructions. If you are using this Modem with an ADSL device, Please wait until you have received notification from your ISP that your DSL line has been activated before installing this Modem and the software.

### 6.2 Before you begin

Make sure your kit contains the following items:

- Westell® UltraLine II
- Power Supply
- RJ-45 Ethernet cable (straight-through) (yellow)
- SMA Antenna
- Westell CD-ROM containing User Guide in PDF format
- Quick Start Guide

### 6.3 Hardware Installations

**WARNING:** Westell recommends the use of a surge suppressor to protect equipment attached to the power supply. Use only the power supply provided with your kit.

**NOTE:** An additional Ethernet cable may be required depending on the installation method you are using. Ethernet cables can be purchased at your local computer hardware retailer.

#### 6.3.1 Installation via Ethernet WAN Uplink

1. Connect the yellow Ethernet cable (provided with your kit) from the Ethernet jack marked **WAN** on the rear panel of the UltraLine II to the Ethernet port on the attached ADSL device, and then power up the attached ADSL device.
2. Connect the attached ADSL device to the ADSL-equipped jack on the wall. **IMPORTANT:** If the attached ADSL device is a Modem, do not use a DSL filter on this connection. You must use the phone cord that was provided with your kit.
3. Connect an Ethernet cable from any one of the four Ethernet jacks marked **ETHERNET** on the rear panel of the Modem to the Ethernet port on your computer. Repeat this step to connect up to three additional PCs to the UltraLine II.

NOTE: You may connect to any of the four Ethernet jacks on the rear panel of the UltraLine II because they serve as an Ethernet switch.

4. Connect the power supply cord to the power connector marked **12 VDC** on the rear panel of the UltraLine II. Plug the other end of the power supply into a wall socket, and then turn on the power switch (if it is not already turned on).
5. Check to see if the UltraLine's POWER LED is solid green. This indicates that the UltraLine II is powered on.
6. Check to see if the UltraLine's WAN LED is solid green. Solid green indicates that the WAN connection is functioning properly. (The UltraLine's LAN and WAN traffic will be uplinked to the attached ADSL device.)

NOTE: You may need to set the UltraLine II to uplink mode. Refer to section 15.9 "WAN Configuration," for instructions.

7. Check to see if the UltraLine's ETHERNET LED is solid green. Solid green indicates that the Ethernet connection is functioning properly.
8. Check to see if the UltraLine's INTERNET LED is solid green. Solid green indicates that the Internet link has been established.

Congratulations! You have completed the WAN installation for your Modem. Next, you must now proceed to section 8, "Accessing the UltraLine II," for instructions on configuring the Modem for Internet connection.

### 6.3.2 Connecting PCs via Wireless

**IMPORTANT:** If you are connecting to the Modem via a wireless network adapter, the SSID must be the same for both the Modem and your PC's wireless network adapter. The default SSID for the Modem is the serial number of the unit (located below the bar code on the bottom of the unit and also on the Westell shipping carton). Locate and run the utility software provided with your PC's Wireless network adapter and enter the SSID value. The PC's wireless network adapter must be configured with the SSID (in order to communicate with the Modem) before you begin the account setup and configuration procedures. Later, for privacy you can change the SSID by following the procedures outlined in section 15.10 (Wireless Configuration).

Client PCs can use any Wireless Fidelity (Wi-Fi) 802.11b/g/g+ certified card to communicate with the Modem. The Wireless card and Modem must use the same security code type. **If you use WPA-PSK or WEP wireless security, you must configure your computer's wireless adapter for the security code that you use. You can access the settings in the advanced properties of your wireless network adapter.**

To network the Modem to additional computers in your home or office using a wireless installation, you will need to confirm the following:

1. Ensure that an 802.11b/g wireless network adapter has been installed in each PC on your wireless network.
2. Install the appropriate drivers for your Wireless IEEE802.11b or IEEE802.11g adapter.
3. Make sure the SMA antenna connector is loose. Orient the antenna in the proper configuration. Then, tighten the antenna knob to lock it into place.
9. Connect the yellow Ethernet cable (provided with your kit) from the Ethernet jack marked **WAN** on the rear panel of the UltraLine II to the Ethernet port on the attached ADSL device, and then power up the attached ADSL device.

10. Connect the attached ADSL device to the ADSL-equipped jack on the wall. **IMPORTANT:** If the attached ADSL device is a Modem, do not use a DSL filter on this connection. You must use the phone cord that was provided with your kit.
11. Connect an Ethernet cable from any one of the four Ethernet jacks marked **ETHERNET** on the rear panel of the Modem to the Ethernet port on your computer. Repeat this step to connect up to three additional PCs to the UltraLine II.

NOTE: You may connect to any of the four Ethernet jacks on the rear panel of the UltraLine II because they serve as an Ethernet switch.

4. Connect the power supply cord to the power connector marked **12 VDC** on the rear panel of the UltraLine II. Plug the other end of the power supply into a wall socket, and then turn on the power switch (if it is not already turned on).
5. Check to see if the UltraLine's POWER LED is solid green. This indicates that the UltraLine II is powered on.
6. Check to see if the UltraLine's Ethernet LED is solid green. Solid green indicates that the Ethernet connection is functioning properly.
7. Check to see if the UltraLine's WAN LED is solid green. Solid green indicates that the WAN connection is functioning properly. (The UltraLine's LAN and WAN traffic will be uplinked to the attached ADSL device.)

NOTE: You may need to set the UltraLine II to uplink mode. Refer to section 15.9 "WAN Configuration," for instructions.

8. Check to see if the UltraLine's WIRELESS LED is solid green. This means that the Wireless interface is functioning properly.
9. Check to see if the UltraLine's INTERNET LED is solid green. Solid green indicates that an Internet link has been established.

Congratulations! You have completed the Wireless installation for your Modem. You must now proceed to section 8, "Accessing the UltraLine II," for instructions on configuring the Modem for Internet connection.

### 6.3.3 Connecting via Coax

1. Connect the Coax cable from the wall to the jack labeled **Coax** on the rear panel of the UltraLine II.
2. Connect an Ethernet cable from any one of the four Ethernet jacks marked **ETHERNET** on the rear panel of the UltraLine II to the Ethernet port on your computer. Repeat this step to connect up to three additional PCs to the Modem.

NOTE: You may connect to any of the four Ethernet jacks on the rear panel of the UltraLine II because they serve as an Ethernet switch.

3. Connect the power supply cord to the power connector marked **12 VDC** on the rear panel of the UltraLine II. Plug the other end of the power supply into a wall socket, and then turn on the power switch (if it is not already turned on). Check to see if the Modem's Wireless LED is solid green. This means that the Wireless interface is functioning properly.
4. Check to see if the UltraLine's POWER LED is solid green. This indicates that the UltraLine II is powered on.
5. Check to see if the UltraLine's WAN LED is solid green. Solid green indicates that the WAN connection is functioning properly.

6. Check to see if the UltraLine's MoCA LED is solid green. Solid green indicates that a MoCA link as been established.
7. Check to see if the UltraLine's ETHERNET LED is solid green. Solid green indicates that the Ethernet connection is functioning properly.

Congratulations! You have completed the Coax installation for your Modem. You must now proceed to section 8, "Accessing the UltraLine II," for instructions on configuring the Modem for Internet connection.

DRAFT 1



## 7. SETTING UP MACINTOSH OS X

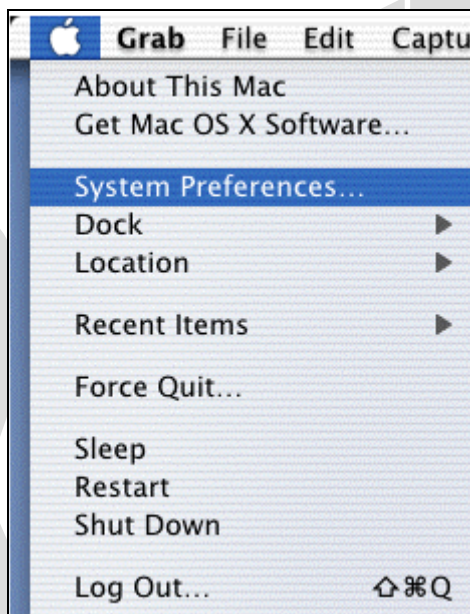
This section provides instructions on how to use Macintosh Operating System 10 with the Modem. Follow the instructions in this section to create a new network configuration for Macintosh OS X.



NOTE: Macintosh computers must use the Modem Ethernet installation. Refer to section 6 (INSTALLING THE HARDWARE).

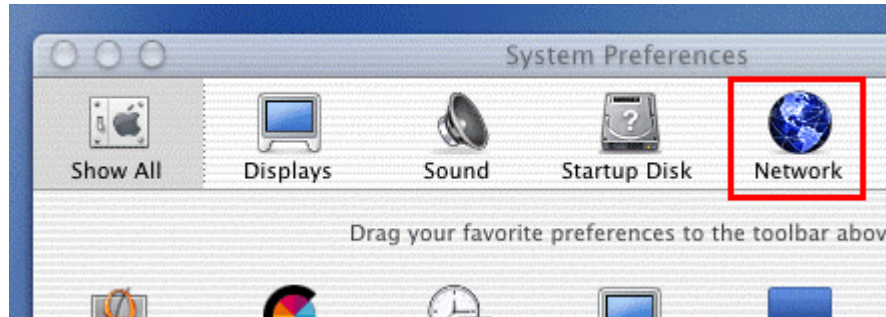
### 7.1 Opening the System Preference Screen

After you have connected the Westell Modem to the Ethernet port of your Macintosh, the screen below will appear. Click on the “**Apple**” icon in the upper-right corner of the screen and select **System Preferences**.



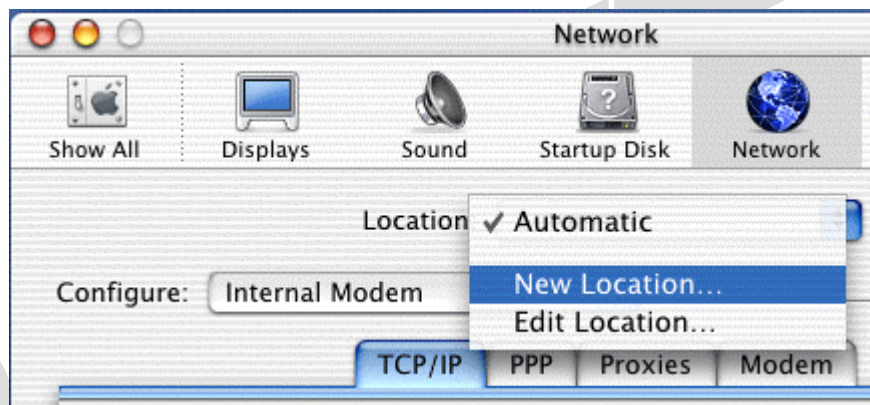
### 7.2 Choosing the Network Preferences

After selecting **System Preferences...**, from the previous screen, the **System Preferences** screen will be displayed. From the **System Preferences** screen, click on the **Network** icon.



### 7.3 Creating a New Location

After selecting the **Network** icon at the **System Preferences** screen, the **Network** screen will be displayed. Select **New Location** from the **Location** field.



### 7.4 Naming the New Location

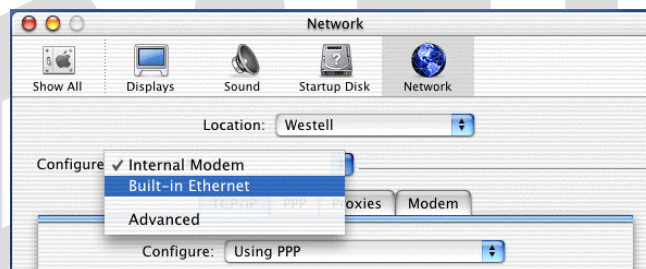
After selecting **New Location** from the **Network** screen, the following screen will be displayed. In the field labeled **Name your new location:**, change the text from “Untitled” to “Westell.” Click **OK**.



## 7.5 Selecting the Ethernet Configuration

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

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

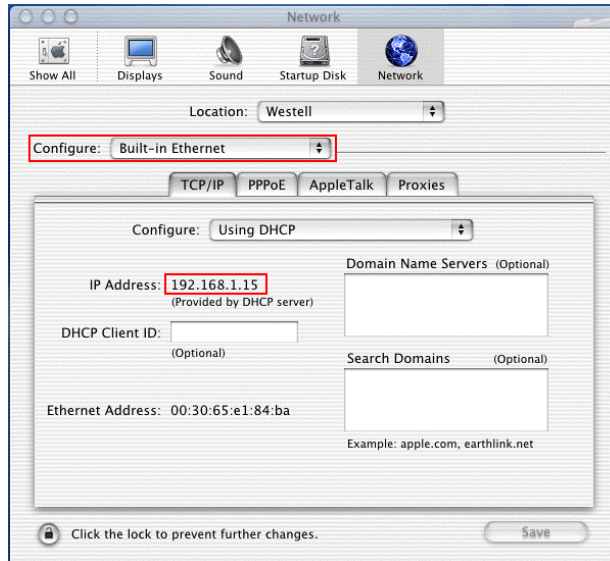


## 7.6 Checking the IP Connection

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

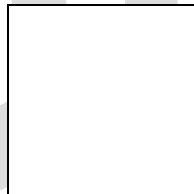
1. Go to the “**Apple**” icon in the upper-right corner of the screen and select **System Preferences**.
2. From the **System Preferences** screen, click on the **Network** icon. The **Network** screen will be displayed.
3. From the **Configure** field in the **Network** screen, select **Built-in Ethernet**.
4. View the IP address field. An IP address that begins with **192.168.1** should be displayed.

**NOTE:** The DHCP server provides this IP address. If this IP address is not displayed, check the Modem’s wiring connection to the PC. If necessary, refer to section 5 for hardware installation instructions.

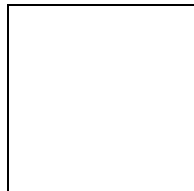


## 7.7 Accessing the Modem's User Interface

To access your Modem's user interface from your Macintosh, first launch your web browser. Next, type **http://dslrouter/** in the browser's address bar and press "Enter" on your keyboard.



Once you have accessed the Modem's user interface, the following screen will be displayed. You must proceed to section 8.1, "Establishing a WAN Connection."



## 8. ACCESSING THE ULTRALINE II

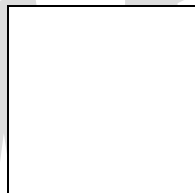
To access the UltraLine's user interface from your PC, launch your web browser. Next, type **http://192.168.1.1** in the browser's address bar and press "Enter" on your keyboard. The following **Connection** screen will be displayed.

### 8.1 Establishing a WAN Connection

To browse the Internet using your UltraLine II, you must first establish a WAN connection. View the **Connection** screen. If the **WAN Connection** field displays **Down**, you do not have a WAN connection. Check to see that you have connected your UltraLine II to the appropriate WAN device and that the WAN Connection field displays **Up** before proceeding with your Modem's configuration. (Refer to section 6, "Installing the Hardware," for installation instructions.)

**IMPORTANT:** Ensure that your WAN Connection is **Up** before proceeding with the Modem's configuration.

After you have established a WAN connection, you are ready to set up your account profile. Click **Edit** to continue.



| Connection          |                                                                                           |
|---------------------|-------------------------------------------------------------------------------------------|
| Connection Overview | Displays your WAN Connection status.                                                      |
| Connection Name     | The Connection Name is from the connection profile that you set up.                       |
| PPP Status          | UP = PPP session established<br>DOWN = No PPP session established.                        |
| Connect/Disconnect  | Click Connect to establish a PPP session.<br>Click Disconnect to disconnect a PPP session |
| Edit                | Click Edit to edit or add a connection profile.                                           |

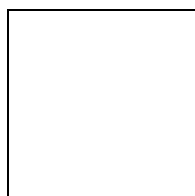
### 8.2 Setting Up Connection Profiles

If you clicked **Edit** in the preceding **Connection** screen, the following screen will be displayed. This screen enables you to add new connection profiles to or to edit existing connection profiles in your account. Connection profiles can be associated with specific service settings, such as connection settings or NAT services, enabling you to customize your Modem for specific users. The **Connection Name** field enables you to enter the desired name that you wish to use for each profile that you set up. You may create and store up to eight unique connection profiles in your Modem, which you can use once you establish a PPP session with your ISP.

**Important:** Before you set up a connection profile, you must obtain your **Account ID**, **Account Password**, from your Internet service provider. You will use information when you set up your account parameters. If you are at a screen and need help, refer to the **Help** section located at the right of the screen.

Profile Parameters include:

- **Connection Name**-the Connection Name is a word or phrase that you use to identify your account. (You may enter up 64 characters in this field.)
- **Account ID**-the Account ID is provided by your Internet Service Provider. (You may enter up 255 characters in this field.)
- **Account Password**-the Account Password is provided by your Internet Service Provider. (You may enter up 255 characters in this field.)

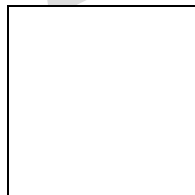


| Connection        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Edit Connection   | Factory Default = MainPPP<br>The name of the default connection profile. Westell recommends that you use the Default parameter.                                                                                                                                                                                                                                                                                                                                                                                            |
| Connection Name   | This field allows you to enter a new connection name of your choice (up to 64 characters).                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Account ID        | The account ID (provided by your Internet service provider ).                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Account Password  | The account password that you are using to connect to your Internet service provider (provided by your Internet service provider ).                                                                                                                                                                                                                                                                                                                                                                                        |
| Connection        | Factory default = Always On<br>Manual: Selecting this feature allows you to manually establish your PPP session.<br>On Demand: Selecting this feature allows the Modem to automatically re-establish your PPP session on demand anytime your PC requests Internet activity (for example, browsing the Internet, email, etc.). When you have traffic, it may cause a delay.<br>Always On: Selecting this feature allows the Modem to automatically establish a PPP session when you log on or if the PPP session goes down. |
| MRU Negotiation   | Factory Default = Enabled<br>When Enabled, the Maximum Received Unit (MRU) will enforce MRU negotiations.<br>If Disabled, this function will not be activated.                                                                                                                                                                                                                                                                                                                                                             |
| LCP Echo          | Factory Default = Enable<br>If 'Disabled' is selected, this option will disable the Modem LCP Echo transmissions.                                                                                                                                                                                                                                                                                                                                                                                                          |
| LCP Echo Failures | Factory Default = 6<br>Indicates number of continuous LCP echo non-responses received before the PPP session is terminated. This value must be between 1 and 30 inclusive.                                                                                                                                                                                                                                                                                                                                                 |
| LCP Echo Duration | Factory Default = 30<br>The interval between LCP Echo transmissions with responses. This value must be between 5 and 300 seconds inclusive and greater than or equal to the Retry                                                                                                                                                                                                                                                                                                                                          |

|                         |                                                                                                                                     |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
|                         | Duration.                                                                                                                           |
| LCP Echo Retry Duration | Factory Default = 5<br>The interval between LCP. Echo after no response.<br>This value must be between 5 and 300 seconds inclusive. |

At the **Edit Connection** screen, type your Connection Name, Account ID and Account Password (the Account Password will be masked for security). The Connection Name is the name that you will use for this connection profile. The Account ID and Account Password are provided by your Internet service provider. At the field labeled **Connection**, select the connection type (i.e., Manual, On Demand, Always On) that you want to use with this Connection Name. The factory default Connection Name is “MainPPP,” and the factory default connection setting is “Always On.” If you change any settings in this screen, you must click **Save** to save the settings. Click **Back** if you do not want to add or edit a connection profile.

NOTE: If you click **Back** before you click **Save**, the previously saved settings will remain active, and any recent changes that you have made to this screen will not take effect. You must click **Save** to save the settings.



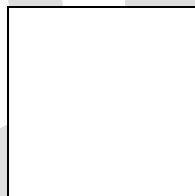
### 8.3 Establishing a PPP Session

After you have saved your connection profile and clicked **Back** in the preceding screen, the following screen will be displayed. Confirm that the **PPP Status** field displays **Up**. When **PPP Status** displays **Up**, this means that you have established a PPP session with your Internet service provider (ISP). If the PPP Status displays **Down**, first ensure that the **WAN Connection** field displays **Up**, and then click the **Connect** button to establish a PPP session. (Note: The WAN Connection status must be **Up** to establish PPP connectivity.)

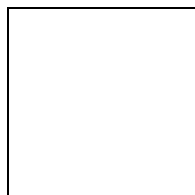
**IMPORTANT:** Whenever the PPP Status displays **Down**, you do not have a PPP session established. If your Modem's connection profile is set to "Always On" or "On Demand," after a brief delay, the PPP session will be established automatically and the PPP Status will display **Up**. If the connection setting is set to "Manual," you must click on the **Connect** button to establish a PPP session. Once the PPP session has been established (PPP Status displays **UP**), you may proceed with your Modem's configuration. (Refer to the preceding **Edit Connection** screen if you desire to change your connection settings.) The factory default connection setting is "Always On."

The following screen displays **Up** in the **PPP Status** field. This indicates that **MainPPP** is the active account profile and that you have established a PPP session with your ISP. If you have set up multiple account profiles, they will also be displayed in the **Connection Name** field, and then you must select the option button adjacent to the connection name you want to use. Refer to section 8.2 for details on setting up connection profiles.

**NOTE:** If you experience problems establishing a PPP session, contact your ISP for further instructions.



After a PPP session has been established, you may browse the Internet. For example, to visit Westell's home page, type **http://www.westell.com** in your browser's address bar and then press 'Enter' on your keyboard.



When you are ready to return to the Modem's interface, type **http://192.168.1.1** in your browser's address bar, and then press 'Enter' on your keyboard. Next, proceed to section 9, "Basic Mode," to begin the basic configurations of your Modem.

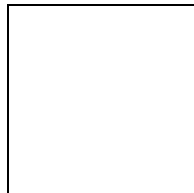


## 8.4 Disconnecting a PPP Session

If you have finished browsing the Internet and want to disconnect from your Internet service provider, click the **Disconnect** button in the **Connection Overview** screen. A pop-up screen will appear. Click **OK** to disconnect the PPP session.

**CAUTION:** If you disconnect the PPP session, this means that your Modem no longer has an Internet connection with your ISP. Thus, the Internet connection for all PCs connected to the Modem will also be disconnected until the PPP session is re-established. However, your WAN connection will not be affected and it should remain **Up**. When you are ready to end your WAN connection, simply power down the Modem via the power switch on the Modem's rear panel.

If you disconnected your PPP session, the **PPP Status** field will display **Down**. When you are ready to establish a PPP session, click **Connect**. (If you powered down the Modem, you must first power up the Modem, and then log on to your account profile to establish a PPP session.)

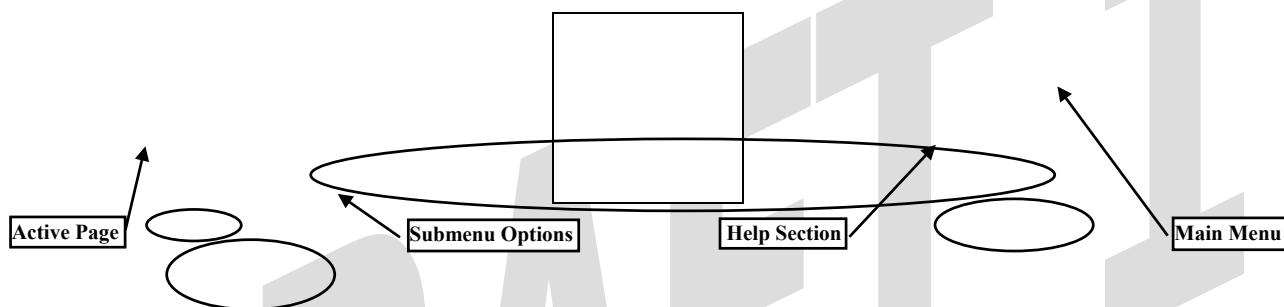


**NOTE:** When you are ready to exit the Modem's interface, click the **X** (close) in the upper-right corner of the screen. Closing the screen will not affect your PPP Status or your WAN connection. When you are ready to restore the Modem's interface, you must launch your Internet browser and type **http://192.168.1.1/** in the browser's address bar, and then press 'Enter' on your keyboard.

## 9. BASIC MODE

The following sections explain the basic configurations of your Modem. The Modem's web pages contain a main navigation menu, displayed at the top of the screens. As you navigate through the various pages of the Modem, the active page that you have selected from the Main menu will appear in the left corner of the screen. The submenu options for that page will appear in the left-side navigation menu, as shown below. A red arrow will be displayed adjacent to the active submenu option. Please note that the values displayed in the screens might differ from the actual values reported by your Modem. If you are at a screen and need help, refer to the Help section, displayed on the right side of the screen. Additional details are displayed in the tables below the screens.

Some screens require that you save your settings. To save your settings, click the **Save** button. To discard changes that you have made to the screen, click the **Discard** button. If you click the **Discard** button, the previously saved settings will be displayed in the screen.



## 10. HOME

### 10.1 Connection

The following screen will be displayed if you select **Connection** at the **Home** main menu. The **Connection** screen enables you to view your WAN connection status, set up connection profiles (via the Edit button), and establish your PPP session.

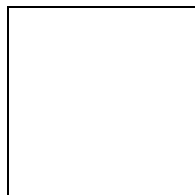
NOTE: The following screen displays **MainPPP** as the active connection name for this profile. However, if you have created multiple connection profiles, they will also be displayed in the **Connection Name** field, and then you must click the option button adjacent to the connection name you want to use. Refer to section 8.2, “Setting Up Connection Profiles,” for details. You may store up to eight unique connection profiles in your Modem.



|                    |                                                                                                            |
|--------------------|------------------------------------------------------------------------------------------------------------|
| WAN Connection     | Displays status of your WAN connection.                                                                    |
| Connection Name    | The Connection Name is from the connection profile that you set up in section 8.2.                         |
| PPP Status         | UP = PPP session established<br>DOWN = No PPP session established.                                         |
| Connect/Disconnect | Click Connect to establish a PPP session.<br>Click Disconnect to disconnect a PPP session                  |
| Edit               | Click Edit to edit or add a connection profile. Refer to section 8.2. for details on connections profiles. |

### 10.2 Connection Summary

The following screen will be displayed if you select **Connection Summary** at the **Home** main menu. Refer to this screen for information about your Modem’s connections.



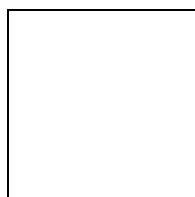
|                     |                                                                                                   |
|---------------------|---------------------------------------------------------------------------------------------------|
| Internet IP Address | The WAN side or Gateway’s IP address to the Internet. Provided by your Internet service provider. |
|---------------------|---------------------------------------------------------------------------------------------------|

|                     |                                                                                                                                                                                |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Internet IP Gateway | The IP address of your ISP's server to the Internet. Provided by your Internet service provider.                                                                               |
| Primary DNS         | The IP address of your ISP's primary DNS server. Provided by your Internet service provider.                                                                                   |
| Secondary DNS       | The IP address of your ISP's secondary DNS server. Provided by your Internet service provider.                                                                                 |
| User ID             | The same as your Account ID. Provided by your Internet service provider.                                                                                                       |
| Connection Mode     | The Gateway's mode of connection to your ISP. This can be PPPoE or Routed IP.                                                                                                  |
| Connection State    | The Gateway's PPP connectivity status to the Internet. The WAN status must be Up in order for the PPP connectivity to be Up.                                                   |
| Connection Up Time  | The duration of your PPP time status. This time field tell how long the UltraLine II has had a PPP connection established, displayed in the format of (hours:minutes:seconds). |
| Device's IP Address | The IP Address on the LAN side of your UltraLine II.                                                                                                                           |
| WAN Status          | The status of the WAN connection.                                                                                                                                              |

## 11. STATUS

### 11.1 About

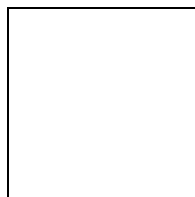
The following screen will be displayed if you select **About** at the **Status** menu. This screen displays the manufacturer's information for this device.



| About            |                                                             |
|------------------|-------------------------------------------------------------|
| Gateway Type     | The manufacturer's description for this device.             |
| Model Number     | The manufacturer's model number.                            |
| Serial Number    | The manufacturer's serial number.                           |
| Software Version | The version of the application software and the build date. |
| Boot Loader      | The manufacturer's boot loader software version number.     |
| INI File         | The manufacturer's INI information for the device.          |
| MAC Address      | Media Access Controller (MAC) i.e., hardware address.       |
| Warranty Date    | The warranty start date for this device.                    |

### 11.2 LAN Devices

The following screen will be displayed if you select **LAN Devices** at the **Status** menu. This screen displays all the devices on your LAN.



| LAN Devices |                                                                                                                                                |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| IP Address  | The assigned IP address of the networking devices on your LAN.                                                                                 |
| MAC Address | The assigned Ethernet MAC (i.e., hardware) address of the networking devices on your LAN.                                                      |
| Name        | The computer's assigned name provided to the Gateway through DNS lookup. (The computer name or the IP address may be displayed in this field.) |

## 11.3 Wireless Stations

The following screen will be displayed if you select **Wireless Stations** at the **Status** menu. This screen displays the information about the wireless stations that are associated with your Modem.

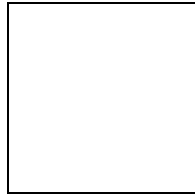
Note: The **Station** and **MAC Address** fields in this screen will be blank if no stations are associated with your Modem.



| Wireless Stations |                                                                                                                                                                                                                                                                                                                |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Station           | A number indicating the order in which the stations first access the AP. This list can contain a maximum of 10 stations.                                                                                                                                                                                       |
| MAC Address       | The Media Access Controller (MAC) address (i.e., the hardware address of the associated station). This is a unique number entered into the WLAN device's permanent memory during production. A station's MAC address is typically printed on the card or can be viewed using the card's configuration utility. |

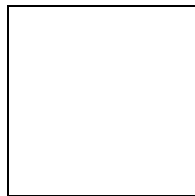
## 12. DIAGNOSTICS

The following screen will be displayed if you select **Diagnostics** at the main menu. This screen allows you to run diagnostic tests on your Modem.



- To run a DNS test, type the appropriate host name in the field provided, and then click **Test**.
- To run a PING test, type the appropriate IP address or host name in the field provided, and then click **Test**.
- To run a Trace Route, type the appropriate IP address or host name in the field provided, and then click **Trace**.

If you click **Test All**, the following screen will be displayed, and the results will be displayed in the window labeled **Test Results**.



| Connection/Status |                                                                                                    |
|-------------------|----------------------------------------------------------------------------------------------------|
| Connection        | The first line displays the physical interface used.<br>Possible Responses:<br>DSL<br>Ethernet WAN |

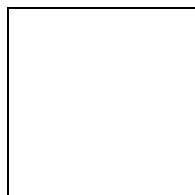
|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                        | The second line displays the Protocol used to establish the session.<br>Possible Responses:<br>PPPoE<br>PPPoATM<br>RoutedBridge<br>Bridge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Status                                 | The first line displays the status of the physical interface connection<br>Possible Responses:<br>UP – The interface connection is Up.<br>Down – The interface connection is Down.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                        | The second line indicates the status of the Protocol.<br>Possible Responses:<br>Connected – The protocol is connected.<br>Disconnected – The protocol is disconnected.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Test Description / Test Results</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| DNS                                    | Performs a test to try to resolve the name of a particular host. The host name is entered in the input box.<br>Possible responses are:<br>Success: The Router has successfully obtained the resolved address. The IP address is shown below the host name input box.<br>No Response: The Router has failed to obtain the resolved address.<br>Host not found: The DNS Server was unable to find an address for the given host name.<br>No data, enter host name: No host name is specified.<br>Could not test: The test could not be executed due to the Router's settings. Check your DSL sync or your PPP session. You must have both a DSL sync and a PPP connection established to execute a PING. |
| IP Address                             | IP Address of the Host Name.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| PING<br>(via IP Address or Host Name)  | Performs an IP connectivity check to a remote computer either within or beyond the Service Provider's network. You can PING a remote computer via the IP address or the DNS address. If your PING fails, try a different IP or DNS address.<br>Possible responses are:<br>Success: The Remote Host computer was detected.<br>No Response: There was no response to the Ping from the remote computer.<br>No name or address to PING: No host name or IP address was specified.<br>Could not test: The test could not be executed due to the Router settings. Check your DSL sync or your PPP session. You must have both a DSL sync and a PPP connection established to execute a PING.                |
| Trace Route                            | Determines the route taken to destination by sending Internet Control Message Protocol (ICMP) echo packets with varying IP Time-To-Live (TTL) values to the destination. Trace Route is used to determine where the packet is stopped on the network.                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Max hops                               | The number of hops from the Router to the specified destination.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Test All                               | Allows you to run a full diagnostic test.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |



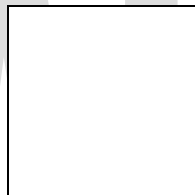
## 13. RESTART

The following screen will be displayed if you select **Restart** at the main menu. If you want to erase the stored configuration, click the check box labeled **Reset device to configuration to factory defaults** (a check mark will appear in the box). Next, click the **Restart** button to restart the Modem.

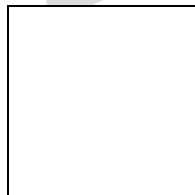
**CAUTION:** To reset the Modem to factory default configuration, you must click the check box prior to clicking the **Restart** button. If the box is checked, when you click **Restart**, all custom configuration information will be erased. To retain the Modem's present configuration, leave the box unchecked and click **Restart** button.



After you click the **Restart** button, the following pop-up screen will be displayed. Click **OK** to continue. Click **Cancel** if you do not want to restart the Modem.

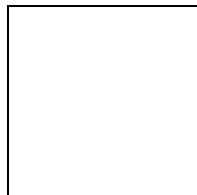


If you clicked **OK** in the preceding pop-up screen, the following screen will be displayed. Please wait for your Modem to restart. After your Modem has restarted, the **Edit Connection** screen will be displayed.



At the **Edit Connection** screen, confirm that the **PPP Status** field displays “Up” before proceeding with your Modem's configuration.

**NOTE:** If you have chosen to reset the Modem to the factory default configuration, you must set up your account profile and establish your connection as previously explained in section 8.2 “Setting Up Connection Profiles.”



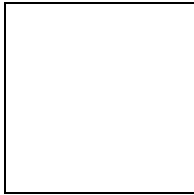
**DRAFT 1**

## 14. ADVANCED MODE

To configure the advanced operations of your Modem, select **Advanced Mode** (if you are in Basic Mode) at the main menu. The following screen will be displayed.

NOTE: The basic operations of your Modem were discussed earlier in this User Guide and provided details on the **Home, Status, Diagnostics, and Restart** features. For instructions on configuring any of these features, refer to the Basic Mode sections (beginning with section 9).

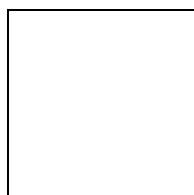
The advanced operations of your Modem will be discussed in sections 15, 16, and 17.



## 15. CONFIGURATION

### 15.1 Firewall Configuration

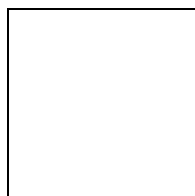
The following screen will be displayed if you select **Firewall** from the **Configuration** menu. If you configure any settings in this screen, you must click **Save** to save the settings.



| Security Level                     |                                                                                                                                                                                                                            |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| High                               | High security level only allows basic Internet functionality. Only Mail, News, Web, FTP, and IPSEC are allowed. All other traffic is prohibited.                                                                           |
| Medium                             | Like High security, Medium security only allows basic Internet functionality by default. However, Medium security allows customization through NAT configuration so that you can enable the traffic that you want to pass. |
| Low                                | Factory Default = Low<br>The Low security setting will allow all traffic except for known attacks. If security is set to Low, the Modem will be visible to other computers on the Internet.                                |
| Off                                | Firewall is disabled. (All traffic is passed)                                                                                                                                                                              |
| Firewall Logging                   |                                                                                                                                                                                                                            |
| Log all permitted inbound traffic  | Factory Default = Disabled<br>If Enabled (box is checked), this function will be activated.                                                                                                                                |
| Log all permitted outbound traffic | Factory Default = Disabled<br>If Enabled (box is checked), this function will be activated.                                                                                                                                |
| Log all blocked inbound traffic    | Factory Default = Disabled<br>If Enabled (box is checked), this function will be activated.                                                                                                                                |
| Log all blocked outbound traffic   | Factory Default = Disabled<br>If Enabled (box is unchecked), this function will be activated.                                                                                                                              |
| Log traffic specified in rules     | Factory Default = Disabled<br>If Enabled (box is checked), this function will be activated.                                                                                                                                |
| Log administrative access          | Factory Default = Disabled<br>If Enabled (box is checked), this function will be activated.                                                                                                                                |
| Remote Logging                     |                                                                                                                                                                                                                            |
| Enable                             | Factory Default = Disable<br>If Enabled (box is checked), the Modem will send firewall logs to a syslog server.                                                                                                            |
| Remote IP Address                  | The IP address of the syslog server machine to which the diagnostics logs will be sent.                                                                                                                                    |

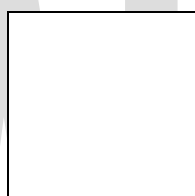
## 15.2 Port Forwarding Configuration

The following screen will be displayed if you select **Port Forwarding** from the **Configuration** menu. Port Forwarding enables you to set up the Modem's port forwarding attributes for the services that you want to add to your profile.

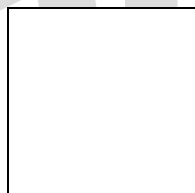


To set up port forwarding, select a service from the **Service Name** drop-down menu.

**NOTE:** You may add an unlimited numbers of services to your profile.

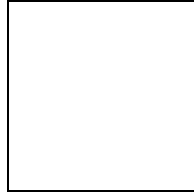


After you have selected a service name from the **Service Name** drop-down menu, the following **Port Forwarding – Add an Application Service** screen will be displayed. Enter the appropriate IP address or machine name in the fields provided and then click **Add Service**. Repeat these steps to add additional services to your profile.

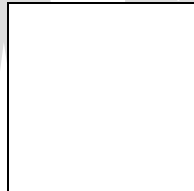


|                      |                                                                                                                                                                                               |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Application Protocol | The IP Protocol type that is assigned to this service.                                                                                                                                        |
| Start Port           | The start port that is assigned to the service                                                                                                                                                |
| End Port             | The end port that is assigned to the service                                                                                                                                                  |
| LAN Port             | The LAN port that is assigned to the service.                                                                                                                                                 |
| Direction            | The traffic direction assigned to the service.                                                                                                                                                |
| IP Address           | The LAN IP address or the machine name assigned to your service                                                                                                                               |
| Dynamic Application  | Factory Default = Disabled<br>If Enabled (box is checked), this will only allow outgoing connections from any local PC.<br>If Disabled, packets will be forwarded to the designated local PC. |

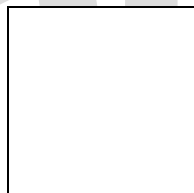
If you clicked **Add Service**, the following screen will be displayed. To view the details of a service that you have added, click the **Details** button adjacent to the service you want to view.



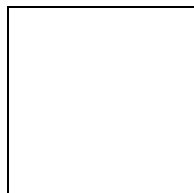
If you clicked the **Details** button, the following screen will be displayed. After viewing the details, click **Back** to return to the preceding **Port Forwarding** screen.



To delete a service that you have added, click the **Delete** button adjacent to the service you want to remove.

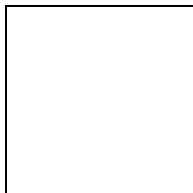


If you clicked **Delete** in the preceding screen, the following pop-up screen will be displayed. Click **OK** in the pop-up screen; the service will be removed from the list of selected services. Click **Cancel** if you do not want to delete the service.

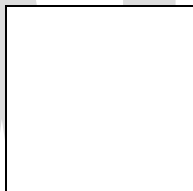


## 15.3 Port Triggering

The following screen will be displayed if you select **Port Triggering** from the **Configuration** menu. To create a trigger port, click **New**.



If you clicked **New**, the following screen will be displayed. Select the desired options from the drop-down menus, and then enter the appropriate values in the fields provide. Click **Save** to save your settings.

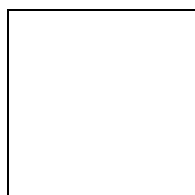


| Port Triggering Configuration |                                                                                                                                                                                           |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Outgoing Protocol             | Factory Default = TCP<br>The outgoing protocol for the triggered ports.<br>Possible Responses:<br>TCP – Transmission Control Protocol<br>UDP – User Datagram Protocol                     |
| Outgoing Port Start           | The WAN-side TCP/UDP starting port                                                                                                                                                        |
| Outgoing Port End             | The WAN-side TCP/UDP ending port                                                                                                                                                          |
| Incoming Protocol             | Factory Default = TCP<br>The incoming protocol for the triggered ports.<br>Possible Responses:<br>TCP- Transmission Control Protocol<br>UDP- User Datagram Protocol<br>Both – TCP and UDP |
| Incoming Port Start           | The local LAN-side starting port.                                                                                                                                                         |
| Incoming Port End             | The local LAN-side ending port.                                                                                                                                                           |

## 15.4 ALG Configuration

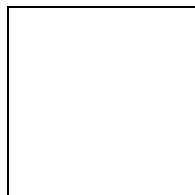
The following screen will be displayed if you select **ALG** from the **Configuration** menu. This screen enables you to configure the application level gateway (ALG) services for your Modem. Click on the box of each service that you want to enable (a check mark will appear in the box). Then, click **Save** to save the settings. To edit your SIP ALG settings, click **Edit**.

NOTE: When the firewall level is set to “High,” some services may not be configurable.



| ALG     |                                                                                                                                              |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Name    | The name of the ALG service.                                                                                                                 |
| Enabled | To enable the service, click on the adjacent box (a check mark will appear in the box).<br>To disable the service, click to uncheck the box. |

If you clicked **Edit**, the following page will be displayed. To enable SIP ALG service configuration, click on the box labeled **Enable** (a check mark will appear in the box). Next, enter the appropriate values in the fields provided and click **Save** to save your settings.



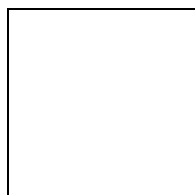
| SIP ALG Service Configuration |                                                                                                                                                      |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Enabled                       | Factory Default = Disabled<br>When enabled (box is checked), SIP ALG service will be activated.<br>If disabled, SIP ALG service will be deactivated. |
| SIP Port                      | The SIP port to proxy.                                                                                                                               |
| RTP Port Low                  | The lowest port for incoming RTP connections.                                                                                                        |
| RTP Port High                 | The highest port for incoming RTP connection. The highest port must be greater                                                                       |



|                          |                                                     |
|--------------------------|-----------------------------------------------------|
|                          | than the lowest port.                               |
| RTP Timeout (in seconds) | The number of seconds until a stream will time out. |

## 15.5 IGMP Service

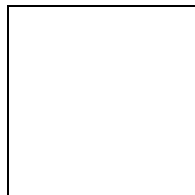
The following screen will be displayed if you select **IGMP** from the **Configuration** menu. This screen enables you to configure the IGMP services for your Modem. Enter the appropriate settings and then click **Save Settings** to save the settings. To view the status of the settings, click **Show Status**.



| IGMP                                                                                             |                                                                                                                                                |
|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Internet Group Management Protocol (IGMP) enables you to configure IGMP services for your Modem. |                                                                                                                                                |
| Enabled                                                                                          | Factory Default = Enabled<br>When this box is checked, IGMP service will be activated.<br>To disable IGMP service, click to uncheck the box.   |
| MulticastFilter                                                                                  | Factory Default = Disable<br>When enabled (box is checked), MulticastFilter is activated.<br>If disabled, MulticastFilter will be deactivated. |
| Multicast Address Range 1                                                                        | The first multicast address for IGMP.                                                                                                          |
| Multicast Address Mask Range 1                                                                   | The network address mask for Multicast Address Range 1.                                                                                        |
| Multicast Address Range 2                                                                        | The second multicast address for IGMP.                                                                                                         |
| Multicast Address Mask Range 2                                                                   | The network address mask for Multicast Address Range 2.                                                                                        |
| General Query (seconds)                                                                          | The value in seconds (5 through 300) for doing queries.                                                                                        |

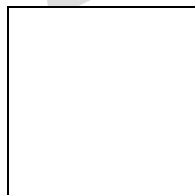
If you clicked **Show Status** in the preceding screen, the following screen will be displayed.

[Need Screen w/ info.]



## 15.6 MoCA Service

The following screen will be displayed if you select **MoCA** from the **Configuration** menu. This screen enables you to configure the multimedia over coax alliance (MoCA) services for your Modem. Enter the appropriate settings and then click **Save** to save the settings.



| MoCA Service  |                                                                                                                                                         |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| MoCA port     | Select the MoCA Port that you want to configure.<br>Possible Responses:<br>WAN – The WAN MoCA port<br>LAN – The LAN MoCA port                           |
| Channel Index | The channel index selects the operating frequency.                                                                                                      |
| CM Ratio      | The CM Ratio is a values between 0 – 100 that defines the ration of time spent during network acquisition that a node will spend a network coordinator. |
| Tx Power      | The transmit power level.                                                                                                                               |
| Phy Margin    | This function controls the number of dB margin.                                                                                                         |

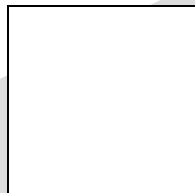
|               |                                                                |
|---------------|----------------------------------------------------------------|
| Phy MBit Mask | This function sets the upper limit for the modulation density. |
|---------------|----------------------------------------------------------------|

## 15.7 LAN Configuration

### 15.7.1 DHCP

The following screen will be displayed if you select **LAN > DHCP** from the **Configuration** menu. This screen enables you to control how the Modem interacts with local devices to which it is connected. Enter the appropriate values, and then click **Save** to save your settings.

**NOTE:** It is recommended that you do not change these settings unless instructed by your service provider.

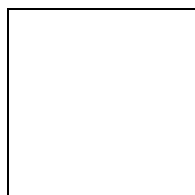


| DHCP Configuration for Private LAN |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Enable DHCP Server                 | <p>Factory Default = Enable</p> <p>This setting allows the Modem to automatically assign IP addresses to local devices connected on the LAN. Westell advises setting this to enabled for the private LAN. Private LAN = DHCP addresses will be saved into the Private LAN configuration. Public LAN = DHCP addresses will be saved into the Public LAN configuration. (These options are available only if the DHCP server is enabled.)</p> <p>Possible Responses:</p> <p>If this box is checked, the DHCP server will be turned On.</p> <p>If this box is unchecked, the DHCP server will be turned Off.</p> <p>Note: These addresses will be overwritten if the Internet Service Provider supports dynamic setting of these values.</p> |
| Modem IP Address                   | The IP Address of the Modem.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Subnet Mask                        | The Subnet Mask of the Modem.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Address Range                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| DHCP Start Address                 | <p>Factory Default = 192.168.1.10</p> <p>This field displays the first IP address that the DHCP server will provide. The DHCP Start Address must be within the Modem's IP subnet and lower than the DHCP End Address. You may use any number from 0 to 254 in this address.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| DHCP End Address                   | <p>Factory Default = 192.168.1.20</p> <p>This field displays the last IP address that the DHCP server will provide. The DHCP End Address must be within the Modem's IP subnet and higher than the DHCP Start Address. You may use any number from 0 to 254 in this address.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

|                 |                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DHCP Lease Time | <p>Factory Default = 01:00:00:00</p> <p>Displays the amount of time the provided addresses will be valid, after which the DHCP client will usually re-submit a request.</p> <p>Note: DHCP Lease Time is displayed in the format (day:hour:min:sec)*. This value must be greater than 10 seconds. Seconds must be between 0 and 59, minutes must be between 0 and 59, and hours must be between 0 and 23.</p> |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 15.7.2 DNS

The following screen will be displayed if you select **LAN > DNS** from the **Configuration** menu.

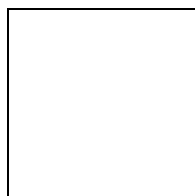


| DNS                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Domain Name<br>Note: Some ISP's may require the name for identification purposes.                                                                                                                                                                                                                                                 | This field allows you to enter a Domain Name for the Modem.<br>To add a Domain Name, in the field under User Assigned DNS, type in your new domain name and click <b>Set</b> .                                                                                                                                                        |
| Static Host Assignment                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                       |
| Host Name                                                                                                                                                                                                                                                                                                                         | This field allows you to enter a HOST name for the Modem.<br>To add a new Host name, in the field under Static Host Assignment, type in the Host Name and the associated IP address and then click <b>Add</b> .<br>To delete a Host name, click the <b>Delete</b> button adjacent to the Host Name and IP Address you want to delete. |
| IP Address                                                                                                                                                                                                                                                                                                                        | Displays the IP address that is assigned to the Host Name.                                                                                                                                                                                                                                                                            |
| Discovered Local Devices                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                       |
| This field displays a list of the computers on the LAN that have been assigned a DHCP Address. The DNS name and IP address entry of each discovered device is displayed. (Note: The values in this field will be displayed barring any propagation delays. If 'No Discovered Devices' is displayed, manually refresh the screen.) |                                                                                                                                                                                                                                                                                                                                       |

## 15.7.3 Alternate LAN

The following screen will be displayed if you select **LAN > Alternate LAN** from the **Configuration** menu. This screen contains the settings that control how the Modem interacts with the local devices to which it is connected.

**NOTE:** It is recommended that you do not change these settings unless instructed by your service provider.



| <b>Alternate LAN</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Select DHCP Network  | <p>Factory Default = Private LAN2</p> <p>Factory Default = Enable</p> <p>This setting allows the Modem to automatically assign IP addresses to local devices connected on the LAN. It is advised that this is enabled for Public LAN. Note: These addresses will be overwritten if the Internet service provider supports dynamic setting of these values.</p> <p>(These options are available only if the DHCP server is enabled.)</p> <p>Possible Responses:</p> <p>Public LAN = DHCP addresses will be saved into the Public LAN configuration.</p> <p>Private LAN2 = DHCP addresses will be saved into the Private LAN configuration.</p> <p>Private LAN3 = DHCP addresses will be saved into the Private LAN configuration.</p> |
| Enable DHCP Server   | <p>Factory Default = Enable</p> <p>If this box is checked, the DHCP server will be turned On.</p> <p>If this box is unchecked, the DHCP server will be turned Off.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| IP Address           | Displays the IP address that is assigned to the Host.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Subnet Mask          | Displays the subnet mask that is assigned to the Host.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Address Range</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| DHCP Start Address   | <p>Factory Default = 192.168.1.10</p> <p>This field displays the first IP address that the DHCP server will provide. The DHCP Start Address must be within the IP address and lower than the DHCP End Address. You may use any number from 0 to 254 in this address.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| DHCP End Address     | <p>Factory Default = 192.168.1.20</p> <p>This field displays the last IP address that the DHCP server will provide. The DHCP End Address must be within the IP address and higher than the DHCP Start Address. You may use any number from 0 to 254 in this address.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| DHCP Lease Time      | <p>Factory Default = 01:00:00:00</p> <p>Displays the amount of time the provided addresses will be valid, after which the DHCP client will usually re-submit a request.</p> <p>Note: DHCP Lease Time is displayed in the format (day:hour:min:sec)*. This value must be greater than 10 seconds. Seconds must be between 0 and 59, minutes must be between 0 and 59, and hours must be between 0 and 23.</p>                                                                                                                                                                                                                                                                                                                         |

### 15.7.3.1 Public LAN – Multiple IP Address Passthrough

If you selected **Public LAN** from the **Select DHCP Network** drop-down menu, the following screen will be displayed. Enter the appropriate values and click **Save** to save the settings.

NOTE: Selecting Public LAN will enable your computer to have global address ability. To use the Public LAN feature, your ISP must support Public LAN and Static IP. Contact your ISP for details.



| Alternate LAN - Public LAN Settings |                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Select DHCP Network                 | Displays the DHCP Network that you have selected.                                                                                                                                                                                                                                                                                                                                                             |
| Enable DHCP Server                  | Factory Default = Disable<br>Possible Responses:<br>If Enabled (box is checked), this will enable the Public LAN DHCP server and allow IP address to be server from the DHCP Public LAN pool.<br>If Disabled (box is unchecked), this will disable the Public LAN DHCP server.                                                                                                                                |
| Modem's Public IP Address           | The Modem's public IP address                                                                                                                                                                                                                                                                                                                                                                                 |
| Subnet Mask                         | The Subnet Mask, which determines what portion of an IP address is controlled by the network and which portion is controlled by the host.                                                                                                                                                                                                                                                                     |
| Address Range                       |                                                                                                                                                                                                                                                                                                                                                                                                               |
| DHCP Start Address                  | Displays the first IP address that the Public LAN DHCP Server will provide. The DHCP Start Address must be within the IP address and lower than the DHCP End Address.                                                                                                                                                                                                                                         |
| DHCP End Address                    | Displays the last IP address that the Public LAN DHCP Server will provide. The DHCP End Address must be within the IP address and higher than the DHCP Start Address.                                                                                                                                                                                                                                         |
| DHCP Lease Time                     | Factory Default = 01:00:00:00<br>Displays the amount of time the provided addresses will be valid, after which time the Public LAN DHCP client will usually re-submit a request.<br>Note: DHCP Lease Time is displayed in the format (day:hour:min:sec)*. This value must be greater than 10 seconds. Seconds must be between 0 and 59, minutes must be between 0 and 59, and hours must be between 0 and 23. |

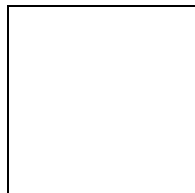
If the settings you have entered in the **Public LAN Settings** fields are incorrect, the following warnings messages may be displayed via pop-up screens. If this occurs, check the **Public LAN** settings.

| Warning Message | Check Public LAN DHCP Settings |
|-----------------|--------------------------------|
|-----------------|--------------------------------|

|                                            |                                                   |
|--------------------------------------------|---------------------------------------------------|
| Start Address is not part of the Subnet    | Check the value in the DHCP Start Address field   |
| End Address is not part of the Subnet      | Check the value in the DHCP End Address field     |
| End Address is below the Start Address     | Check the value in the DHCP End Address field     |
| Lease time must be greater than 10 seconds | Check the values in the DHCP Lease Time fields    |
| Seconds must be between 0 and 59           | Check the <b>Seconds</b> field at DHCP Lease Time |
| Minutes must be between 0 and 59           | Check the <b>Minutes</b> field at DHCP Lease Time |
| Hours must be between 0 and 23             | Check the <b>Hours</b> field at DHCP Lease Time   |

### 15.7.3.2 Private LAN2 – Multiple IP Address Passthrough

If you selected **Private LAN2** from the **Select DHCP Network** drop-down menu, the following screen will be displayed. Enter the appropriate values and click **Save** to save the settings.



| Alternate LAN - Private LAN2 Settings |                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Select DHCP Network                   | Displays the DHCP Network that you have selected.                                                                                                                                                                                                                                                                                                                                                             |
| Enable DHCP Server                    | Factory Default = Disable<br>Possible Responses:<br>If Enabled (box is checked), this will enable the Private LAN DHCP server and allow IP address to be server from the DHCP Private LAN pool.<br>If Disabled (box is unchecked), this will disable the Private LAN DHCP server.                                                                                                                             |
| Modem's Public IP Address             | The Modem's public IP address                                                                                                                                                                                                                                                                                                                                                                                 |
| Subnet Mask                           | The Subnet Mask, which determines what portion of an IP address is controlled by the network and which portion is controlled by the host.                                                                                                                                                                                                                                                                     |
| Address Range                         |                                                                                                                                                                                                                                                                                                                                                                                                               |
| DHCP Start Address                    | Displays the first IP address that the Public LAN DHCP Server will provide. The DHCP Start Address must be within the IP address and lower than the DHCP End Address.                                                                                                                                                                                                                                         |
| DHCP End Address                      | Displays the last IP address that the Public LAN DHCP Server will provide. The DHCP End Address must be within the IP address and higher than the DHCP Start Address.                                                                                                                                                                                                                                         |
| DHCP Lease Time                       | Factory Default = 01:00:00:00<br>Displays the amount of time the provided addresses will be valid, after which time the Public LAN DHCP client will usually re-submit a request.<br>Note: DHCP Lease Time is displayed in the format (day:hour:min:sec)*. This value must be greater than 10 seconds. Seconds must be between 0 and 59, minutes must be between 0 and 59, and hours must be between 0 and 23. |

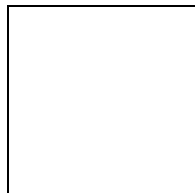
If the settings you have entered in the **Private LAN2 Settings** fields are incorrect, the following warnings messages may be displayed via pop-up screens. If this occurs, check the **Private LAN** settings.

| Warning Message                            | Check Public LAN DHCP Settings                    |
|--------------------------------------------|---------------------------------------------------|
| Start Address is not part of the Subnet    | Check the value in the DHCP Start Address field   |
| End Address is not part of the Subnet      | Check the value in the DHCP End Address field     |
| End Address is below the Start Address     | Check the value in the DHCP End Address field     |
| Lease time must be greater than 10 seconds | Check the values in the DHCP Lease Time fields    |
| Seconds must be between 0 and 59           | Check the <b>Seconds</b> field at DHCP Lease Time |
| Minutes must be between 0 and 59           | Check the <b>Minutes</b> field at DHCP Lease Time |
| Hours must be between 0 and 23             | Check the <b>Hours</b> field at DHCP Lease Time   |

### 15.7.3.3 Private LAN3 – Multiple IP Address Passthrough

If you selected **Private LAN3** from the **Select DHCP Network** drop-down menu, the following screen will be displayed. Enter the appropriate values and click **Save** to save the settings.





| Alternate LAN - Private LAN3 Settings |                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Select DHCP Network                   | Displays the DHCP Network that you have selected.                                                                                                                                                                                                                                                                                                                                                             |
| Enable DHCP Server                    | Factory Default = Disable<br>Possible Responses:<br>If Enabled (box is checked), this will enable the Private LAN DHCP server and allow IP address to be server from the DHCP Private LAN pool.<br>If Disabled (box is unchecked), this will disable the Private LAN DHCP server.                                                                                                                             |
| Modem's Public IP Address             | The Modem's public IP address                                                                                                                                                                                                                                                                                                                                                                                 |
| Subnet Mask                           | The Subnet Mask, which determines what portion of an IP address is controlled by the network and which portion is controlled by the host.                                                                                                                                                                                                                                                                     |
| Address Range                         |                                                                                                                                                                                                                                                                                                                                                                                                               |
| DHCP Start Address                    | Displays the first IP address that the Public LAN DHCP Server will provide. The DHCP Start Address must be within the IP address and lower than the DHCP End Address.                                                                                                                                                                                                                                         |
| DHCP End Address                      | Displays the last IP address that the Public LAN DHCP Server will provide. The DHCP End Address must be within the IP address and higher than the DHCP Start Address.                                                                                                                                                                                                                                         |
| DHCP Lease Time                       | Factory Default = 01:00:00:00<br>Displays the amount of time the provided addresses will be valid, after which time the Public LAN DHCP client will usually re-submit a request.<br>Note: DHCP Lease Time is displayed in the format (day:hour:min:sec)*. This value must be greater than 10 seconds. Seconds must be between 0 and 59, minutes must be between 0 and 59, and hours must be between 0 and 23. |

If the settings you have entered in the **Private LAN3 Settings** fields are incorrect, the following warnings messages may be displayed via pop-up screens. If this occurs, check the **Private LAN** settings.

| Warning Message                            | Check Public LAN DHCP Settings                    |
|--------------------------------------------|---------------------------------------------------|
| Start Address is not part of the Subnet    | Check the value in the DHCP Start Address field   |
| End Address is not part of the Subnet      | Check the value in the DHCP End Address field     |
| End Address is below the Start Address     | Check the value in the DHCP End Address field     |
| Lease time must be greater than 10 seconds | Check the values in the DHCP Lease Time fields    |
| Seconds must be between 0 and 59           | Check the <b>Seconds</b> field at DHCP Lease Time |
| Minutes must be between 0 and 59           | Check the <b>Minutes</b> field at DHCP Lease Time |
| Hours must be between 0 and 23             | Check the <b>Hours</b> field at DHCP Lease Time   |

## 15.7.4 IP Passthrough – Single IP Address Passthrough

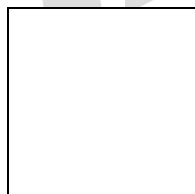
IP Passthrough enables you to select the device on your LAN that will share your Single Static IP address. Before you begin this section, configure your PC settings to obtain an IP address from your Modem automatically. (Refer to your computer's Windows® Help screen for instructions.)

NOTE: IP Passthrough enables the user to share the WAN assigned IP address with one device on the LAN. By doing this, the device with the single static IP address becomes visible on the Internet. Network Address Translation (NAT) and Firewall rules do not apply to the device configured for IP Passthrough. If you are using Routed IP protocol, IP Passthrough configuration will not be available.

### 15.7.4.1 Enabling IP Passthrough – Single IP Address PassThrough (Applicable for PPPoE Connections Only)

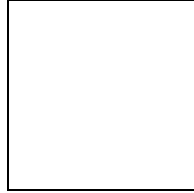
To enable IP Passthrough, select a device that will share your Single Static IP from the options listed in the window.. Click on **enable**.

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

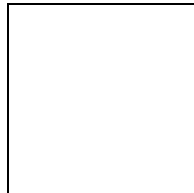


If you clicked **Enable**, the following pop-up screen will be displayed. Click **OK** to continue.

WARNING: Enabling IP Passthrough severely increases the vulnerability of the selected computer.



If you clicked **OK** in the preceding pop-up screen, the Modem will be reset and the new configuration will take effect, as shown in the following screen.

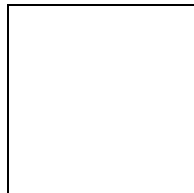


**STOP! After you enable IP Passthrough, you must reboot your computer.**

**IMPORTANT:** If you chose to enable **User Configured PC**, wait for the Modem to reset and then manually enter the WAN IP, Gateway, and Subnet mask addresses you obtained from your Internet service provider into a PC.

#### 15.7.4.2 Disabling IP Passthrough – Single IP Address PassThrough

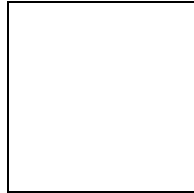
To disable IP Passthrough (if it has previously been enabled), select **IP Passthrough** from the **Configuration>LAN** menu. Click on **Disable**.



If you clicked **Disable** following pop-up screen will be displayed. Click **OK** to continue.



If you clicked **OK** in the preceding pop-up screen, the following screen will be displayed. The Modem will be reset and the new configuration will take effect.



**STOP! After you disable IP Passthrough, you must reboot your computer.**

**IMPORTANT:** If you chose to enable **User Configured PC**, wait for the Modem to reset and then manually enter the WAN IP, Gateway, and Subnet mask addresses you obtained from your Internet service provider into a PC.

### 15.7.5 Static NAT

The following screen will be displayed if you select **LAN > Static NAT** from the **Configuration** menu. This screen enables you to configure your Modem to work with the special NAT services.

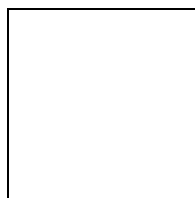
**NOTE:** When your Modem is configured for Static NAT, any unsolicited packets arriving at the WAN would be forwarded to this device. This feature is used in cases where the user wants to host a server for a specific application.

IMPORTANT: IP Passthrough must be disabled (if it has been previously enabled) before you enable **static NAT**. Refer to section 15.7.4.2 for instructions on disabling IP Passthrough.

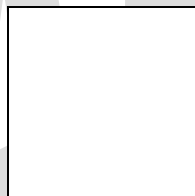
### 15.7.5.1 Enabling Static NAT

To enable Static NAT, select an IP address or device name from the options listed in the **Static NAT** screen and then click **Enable**.

NOTE: The actual IP addresses or device names may differ from the those displayed in the following screen.

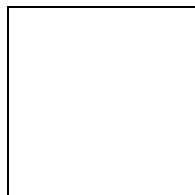


If you clicked **Enable**, the following screen will be displayed, with Static NAT enabled for the IP address or device name you selected.



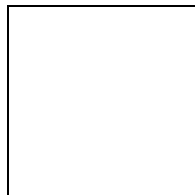
### 15.7.5.2 Disabling Static NAT

To disable Static NAT, click **Disable** in the **Static NAT** screen. The following screen will be displayed.



## 15.7.6 Port Mapping

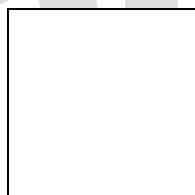
The following screen will be displayed if you select **LAN > Port Mapping** from the **Configuration** menu. This screen enables you to assign the physical ports to software groups. Select the appropriate options from the drop-down menus, and then click **Save** to save your settings.



| Interface | The physical ports available for mapping                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Group     | Factory Default: Private LAN<br>The software defined virtual LAN group to which the port should be assigned:<br>Possible Responses:<br>Private LAN – The selected port will appear as a member of the Private LAN group.<br>Private LAN2 – The selected port will appear as a member of the Private LAN2 group<br>Public LAN – The selected port will appear as a member of the Public LAN Group.<br>Private LAN3 – The selected port will appear as a member of the Private LAN3 group |

## 15.8 Spanning Tree

The following screen will be displayed if you select **LAN > Spanning Tree** from the **Configuration** menu. This screen enables you to assign the Modem's physical ports to software groups. To enable Spanning Tree functionality for your Modem, click the box adjacent to **Enable** (a check mark will appear in the box). Next, click **Save** to save your settings. Note: By factory default, Spanning Tree is disabled.



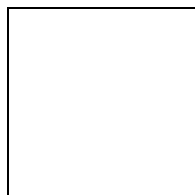
| Spanning Tree |                                                                                                                |
|---------------|----------------------------------------------------------------------------------------------------------------|
| Enable        | When this box is checked Spanning Tree is activated.<br>If the box is unchecked, Spanning Tree is deactivated. |

## 15.9 WAN Configuration

### 15.9.1 WAN Port Configuration

The following screen will be displayed if you select **WAN Port** from the **Configuration** menu. This function will enable you to configure the Uplink Port settings for your Modem. From the options provided, select how the Uplink port will be used (Ethernet or MoCA). Click **Save** to save your settings.

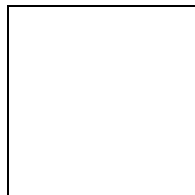
**NOTE:** Tunneling enables you to use a PPPoE shim on the host computer to connect to the Internet service provider, by bypassing the Modem's capability to do this. Tunneling is available in PPPoE mode only.



| UPLINK Port Configuration |                                                                                                                                                                                                                                                                                           |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Select UpLink Port        | Select WAN Uplink port that you will use.<br>Possible Responses:<br>Ethernet –The Ethernet port<br>MoCA – The Multimedia over Coax Alliance port.                                                                                                                                         |
| Ethernet Settings         |                                                                                                                                                                                                                                                                                           |
| Protocol                  | Select the protocol you will use.<br>Possible Responses:<br>PPPoE – Point-to-Point Protocol over Ethernet<br>Routed IP – IP over ATM                                                                                                                                                      |
| Tunneling                 | Tunneling enables you to use a PPPoE shim on the host computer to connect to the Internet service provider, by bypassing the Modem's capability to do this. Tunneling is available in PPPoE mode only.<br>To activate tunneling, click Disable.<br>To deactivate tunneling, click Enable. |

#### 15.9.1.1 Configuring Ethernet as the WAN UpLink Port

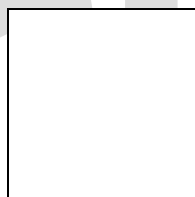
If you select **Ethernet** from the **Select UpLink Port** drop-down menu, the following screen will be displayed. Next, select the protocol that you will use from **Protocol** drop-down menu.



If you selected **PPPoE** as the protocol, the following screen will be displayed. Click **Save** to save your settings.



If you selected **Routed IP** as the Protocol, the following screen will be displayed. Enter the appropriate values and click **Save** to save your settings.



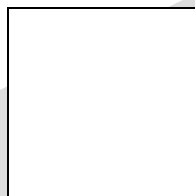
| Routed IP Settings for Ethernet Uplink Port                 |                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tunneling                                                   | Factory Default = Disable<br>If Enabled, this option enables PPP traffic from the LAN to be bridged to the WAN. This feature enables you to use a PPP shim on the host computer to connect to the Internet service provider, by bypassing the Modem's capability to do this.<br>Note: Tunneling is available in PPPoE mode only. |
| Obtain IP address automatically<br>(enable DHCP client)     | Factory Default = Enabled<br>Select this option if you want the Modem to obtain its IP address from the ISP's DHCP server.                                                                                                                                                                                                       |
| Use the following static addresses<br>(disable DHCP client) | Factory Default = Disabled<br>Select this option if you want to manually enter static IP addresses in                                                                                                                                                                                                                            |



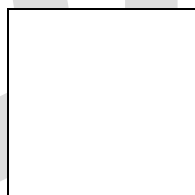
|               |                                                                                                             |
|---------------|-------------------------------------------------------------------------------------------------------------|
|               | your Modem. The following addresses are provided by your Internet service:                                  |
| IP Address    | Enter the Modem's IP network address, provided by your ISP.                                                 |
| Subnet        | Enter the Modem's subnet mask settings, provided by your ISP.                                               |
| Gateway       | Enter the Modem's IP gateway address, provided by your ISP.                                                 |
| DNS Primary   | Enter the IP address of primary Domain Name Service (DNS) server your Modem is using, provided by your ISP. |
| DNS Secondary | Enter the IP address of secondary DNS server your Modem is using, provided by your ISP.                     |

### 15.9.1.2 Configuring MoCA as the WAN UpLink Port

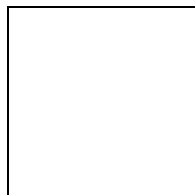
If you select **MoCA** from the **Select UpLink Port** drop-down menu, the following screen will be displayed. Next, select the protocol that you will use from **Protocol** drop-down menu.



If you selected **PPPoE** as the protocol, the following screen will be displayed. Click **Save** to save your settings.



If you selected **Routed IP** as the Protocol, the following screen will be displayed. Enter the appropriate values and click **Save** to save your settings.



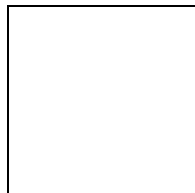
| Routed IP Settings for MoCA Uplink Port |                                                                                                                                                                                                                                                                              |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tunneling                               | Factory Default = Disable<br>If Enabled, this option enables PPP traffic from the LAN to be bridged to the WAN. This feature enables you to use a PPP shim on the host computer to connect to the Internet service provider, by bypassing the Modem's capability to do this. |

|                                                             |                                                                                                                                                                                  |
|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                             | Note: Tunneling is available in PPPoE mode only.                                                                                                                                 |
| Obtain IP address automatically<br>(enable DHCP client)     | Factory Default = Enabled<br>Select this option if you want the Modem to obtain its IP address from the ISP's DHCP server.                                                       |
| Use the following static addresses<br>(disable DHCP client) | Factory Default = Disabled<br>Select this option if you want to manually enter static IP addresses in your Modem. The following addresses are provided by your Internet service: |
| IP Address                                                  | Enter the Modem's IP network address, provided by your ISP.                                                                                                                      |
| Subnet                                                      | Enter the Modem's subnet mask settings, provided by your ISP.                                                                                                                    |
| Gateway                                                     | Enter the Modem's IP gateway address, provided by your ISP.                                                                                                                      |
| DNS Primary                                                 | Enter the IP address of primary Domain Name Service (DNS) server your Modem is using, provided by your ISP.                                                                      |
| DNS Secondary                                               | Enter the IP address of secondary DNS server your Modem is using, provided by your ISP.                                                                                          |

## 15.9.2 QOS

The following screen will be displayed if you select **WAN > QOS** from the **Configuration** menu. This screen enables you to configure the QOS services for your Modem. If you change the settings in this screen, you must click **Save Config** to save the settings.

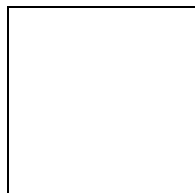
**CAUTION:** Changing the parameters on this screen could cause severe disruption of your service. It is recommended that you do not change any settings in this screen unless instructed by your service provider.



| QOS                              |                                                                                                                                              |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Enable QOS Services              | Factory Default = Enabled<br>If Enabled (box is checked) this function will be activated.<br>If Disabled, this function will be deactivated. |
| Class of Service                 | This enables you to partition network traffic into multiple priority levels or classes or service.                                           |
| Peak Info Rate                   | The maximum allow rate for this priority.                                                                                                    |
| QOS Services Committed Info Rate | The committed rate for this priority.                                                                                                        |
| Max Queue Size                   | The number of packets that can be queued for this priority.                                                                                  |

### 15.9.3 VPN

The following screen will be displayed if you select **WAN > VPN** from the **Configuration** menu. This screen enables you to configure the VPN services for your Modem. If you change the settings in this screen, you must click **Save Config** to save the settings.



## 15.9.4 Routing Table

The following settings will be displayed if you select **WAN > Routing Table** from the **Configuration** menu. To add a route to the Network Routing Table, select the desired options from the drop-down menus, and then enter the appropriate values in the fields provided. Next, click **Add Route**.

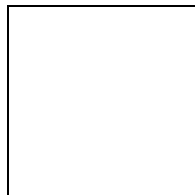
| Routing Table                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                     |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|-----------------------|--------------|--------------------------------------------------------------------------|--------|-------------|-----------------------------------------|-------------|-------------------------------------------------------|-----------|---------------------------------------------------------------------|------------|-----------------|------------|------|---|-------------|---------------|--------------|-------------|--------------------|-------------|---------------|-------------|--------------|----|-----------|-----------|----|---|--|------------|-----------|--|--|--|--|--------------|--|--|--|--|--|------|--------|--|--|--|--|------------|-----------|--|--|--|--|------------|-------------------|--|--|--|--|--------|-----|--|--|--|--|----------------|--------------------------|--|--|--|--|---------------|--------------------------|--|--|--|--|-------------|--|--|--|--|--|
| The list of active interfaces                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                     |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| Address                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | The IP address of the interface.                                    |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| Subnet Mask                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | The subnet mask of the interface.                                   |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | The name of the interface.                                          |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| Metric                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | The metric of the interface.                                        |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| <table border="1"> <thead> <tr> <th colspan="5">IP Interfaces</th> </tr> <tr> <th>Address</th> <th>Subnet Mask</th> <th>Name</th> <th>Metric</th> <th></th> </tr> </thead> <tbody> <tr> <td>10.16.90.5</td> <td>255.255.255.255</td> <td>ppp0</td> <td>1</td> <td></td> </tr> <tr> <td>192.168.3.1</td> <td>255.255.255.0</td> <td>Private LAN2</td> <td>1</td> <td></td> </tr> <tr> <td>192.168.1.1</td> <td>255.255.255.0</td> <td>Private LAN</td> <td>1</td> <td></td> </tr> <tr> <td>127.0.0.1</td> <td>255.0.0.0</td> <td>lo</td> <td>1</td> <td></td> </tr> </tbody> </table>                                                                                                                                                                                                                                                                                                                                                                            |                                                                     | IP Interfaces         |              |                                                                          |        |             | Address                                 | Subnet Mask | Name                                                  | Metric    |                                                                     | 10.16.90.5 | 255.255.255.255 | ppp0       | 1    |   | 192.168.3.1 | 255.255.255.0 | Private LAN2 | 1           |                    | 192.168.1.1 | 255.255.255.0 | Private LAN | 1            |    | 127.0.0.1 | 255.0.0.0 | lo | 1 |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| IP Interfaces                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                     |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| Address                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Subnet Mask                                                         | Name                  | Metric       |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| 10.16.90.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 255.255.255.255                                                     | ppp0                  | 1            |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| 192.168.3.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 255.255.255.0                                                       | Private LAN2          | 1            |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| 192.168.1.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 255.255.255.0                                                       | Private LAN           | 1            |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| 127.0.0.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 255.0.0.0                                                           | lo                    | 1            |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| The list of the network routes that have been entered.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                     |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| Destination                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | The IP address of the destination host.                             |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| Subnet Mask                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | The subnet mask of the destination host.                            |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| Gateway                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | The IP address of the default gateway for this route.               |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| Interface                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Indicates the name of the router's interface to use for this route. |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| Metric                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | The metric of the route.                                            |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| <table border="1"> <thead> <tr> <th colspan="5">Network Routing Table</th> </tr> <tr> <th>Destination</th> <th>Subnet Mask</th> <th>Gateway</th> <th>Interface</th> <th>Metric</th> </tr> </thead> <tbody> <tr> <td>0.0.0.0</td> <td>0.0.0.0</td> <td>10.16.90.5</td> <td>ppp0</td> <td>0</td> </tr> <tr> <td>192.168.1.0</td> <td>255.255.255.0</td> <td>0.0.0.0</td> <td>Private LAN</td> <td>0</td> </tr> <tr> <td>192.168.3.0</td> <td>255.255.255.0</td> <td>0.0.0.0</td> <td>Private LAN2</td> <td>0</td> </tr> </tbody> </table>                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                     | Network Routing Table |              |                                                                          |        |             | Destination                             | Subnet Mask | Gateway                                               | Interface | Metric                                                              | 0.0.0.0    | 0.0.0.0         | 10.16.90.5 | ppp0 | 0 | 192.168.1.0 | 255.255.255.0 | 0.0.0.0      | Private LAN | 0                  | 192.168.3.0 | 255.255.255.0 | 0.0.0.0     | Private LAN2 | 0  |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| Network Routing Table                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                     |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| Destination                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Subnet Mask                                                         | Gateway               | Interface    | Metric                                                                   |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| 0.0.0.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 0.0.0.0                                                             | 10.16.90.5            | ppp0         | 0                                                                        |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| 192.168.1.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 255.255.255.0                                                       | 0.0.0.0               | Private LAN  | 0                                                                        |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| 192.168.3.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 255.255.255.0                                                       | 0.0.0.0               | Private LAN2 | 0                                                                        |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
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| Host Routing Table                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                     |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| Destination                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Gateway                                                             | Interface             | Metric       |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| 10.16.90.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0.0.0.0                                                             | ppp0                  | 0            |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| <table border="1"> <thead> <tr> <th colspan="6">Inactive Routes</th> </tr> <tr> <th>Address</th> <th>Netmask</th> <th>Gateway</th> <th>Interface</th> <th>Type</th> <th>Metric</th> </tr> </thead> <tbody> <tr> <td colspan="6">Route via:</td> </tr> <tr> <td>Interface</td> <td colspan="5">[Select Interface]</td> </tr> <tr> <td>OR</td> <td colspan="5"></td> </tr> <tr> <td>IP Gateway</td> <td colspan="5">[0.0.0.0]</td> </tr> <tr> <td colspan="6">Destination:</td> </tr> <tr> <td>Type</td> <td colspan="5">[Host]</td> </tr> <tr> <td>IP Address</td> <td colspan="5">[0.0.0.0]</td> </tr> <tr> <td>IP Netmask</td> <td colspan="5">[255.255.255.255]</td> </tr> <tr> <td>Metric</td> <td colspan="5">[1]</td> </tr> <tr> <td>RIP Advertised</td> <td colspan="5"><input type="checkbox"/></td> </tr> <tr> <td>Save To Flash</td> <td colspan="5"><input type="checkbox"/></td> </tr> <tr> <td colspan="6">[Add Route]</td> </tr> </tbody> </table> |                                                                     | Inactive Routes       |              |                                                                          |        |             |                                         | Address     | Netmask                                               | Gateway   | Interface                                                           | Type       | Metric          | Route via: |      |   |             |               |              | Interface   | [Select Interface] |             |               |             |              | OR |           |           |    |   |  | IP Gateway | [0.0.0.0] |  |  |  |  | Destination: |  |  |  |  |  | Type | [Host] |  |  |  |  | IP Address | [0.0.0.0] |  |  |  |  | IP Netmask | [255.255.255.255] |  |  |  |  | Metric | [1] |  |  |  |  | RIP Advertised | <input type="checkbox"/> |  |  |  |  | Save To Flash | <input type="checkbox"/> |  |  |  |  | [Add Route] |  |  |  |  |  |
| Inactive Routes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                     |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| Address                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Netmask                                                             | Gateway               | Interface    | Type                                                                     | Metric |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| Route via:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                     |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| Interface                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | [Select Interface]                                                  |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| OR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                     |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| IP Gateway                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | [0.0.0.0]                                                           |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| Destination:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                     |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | [Host]                                                              |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| IP Address                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | [0.0.0.0]                                                           |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| IP Netmask                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | [255.255.255.255]                                                   |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| Metric                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | [1]                                                                 |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| RIP Advertised                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <input type="checkbox"/>                                            |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| Save To Flash                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <input type="checkbox"/>                                            |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| [Add Route]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                     |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| <table border="1"> <thead> <tr> <th colspan="2">Host Routing Table</th> </tr> </thead> <tbody> <tr> <td colspan="2">The list of host routes. A host route is an IP route with a 32-bit mask.</td> </tr> <tr> <td>Destination</td> <td>The IP address of the destination host.</td> </tr> <tr> <td>Gateway</td> <td>The IP address of the default gateway for this route.</td> </tr> <tr> <td>Interface</td> <td>Indicates the name of the router's interface to use for this route.</td> </tr> </tbody> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                     | Host Routing Table    |              | The list of host routes. A host route is an IP route with a 32-bit mask. |        | Destination | The IP address of the destination host. | Gateway     | The IP address of the default gateway for this route. | Interface | Indicates the name of the router's interface to use for this route. |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| Host Routing Table                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                     |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| The list of host routes. A host route is an IP route with a 32-bit mask.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                     |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| Destination                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | The IP address of the destination host.                             |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| Gateway                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | The IP address of the default gateway for this route.               |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |
| Interface                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Indicates the name of the router's interface to use for this route. |                       |              |                                                                          |        |             |                                         |             |                                                       |           |                                                                     |            |                 |            |      |   |             |               |              |             |                    |             |               |             |              |    |           |           |    |   |  |            |           |  |  |  |  |              |  |  |  |  |  |      |        |  |  |  |  |            |           |  |  |  |  |            |                   |  |  |  |  |        |     |  |  |  |  |                |                          |  |  |  |  |               |                          |  |  |  |  |             |  |  |  |  |  |

|                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Metric                                                                                                                                                                                                                                    | The numeric value assigned to this route, used to calculate the best route to a destination network.                                                                                                                                                            |
| <b>Inactive Routes</b>                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                 |
| The list of routes whose interface is currently not in service.                                                                                                                                                                           |                                                                                                                                                                                                                                                                 |
| Address                                                                                                                                                                                                                                   | The IP address of the destination network.                                                                                                                                                                                                                      |
| Netmask                                                                                                                                                                                                                                   | The subnet mask of the destination network.                                                                                                                                                                                                                     |
| Gateway                                                                                                                                                                                                                                   | The IP address of the default gateway for this route.                                                                                                                                                                                                           |
| Interface                                                                                                                                                                                                                                 | The name of the router's interface associated with this route.                                                                                                                                                                                                  |
| Type                                                                                                                                                                                                                                      | Indicates if this route is a network route, a host route, or a default route.                                                                                                                                                                                   |
| Metric                                                                                                                                                                                                                                    | The numeric value assigned to this route used to calculate the best route to a destination network.                                                                                                                                                             |
| The following sections allow you to add static routes to the gateway's routing table.                                                                                                                                                     |                                                                                                                                                                                                                                                                 |
| <b>Route Via</b>                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                 |
| Allows you to specify either the interface or the default gateway that the router should use for this static route. If an interface is not specified, the correct interface will be automatically chosen, based on the gateway addresses. |                                                                                                                                                                                                                                                                 |
| Interface                                                                                                                                                                                                                                 | Select the interface that will be used for this static route. If you enter an interface, you cannot specify a default gateway.                                                                                                                                  |
| IP Gateway                                                                                                                                                                                                                                | Enter the IP address of the default gateway used for this static route. The specified gateway must be reachable; this means that the Modem must have a route to the gateway. You must specify either an interface or a gateway for each static route.           |
| <b>Destination</b>                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                 |
| Allows you to specify the destination network or host.                                                                                                                                                                                    |                                                                                                                                                                                                                                                                 |
| Type                                                                                                                                                                                                                                      | Factory Default = Host<br>Possible Responses:<br>Host – The static route is assigned to a single IP host.<br>Network – The static route is assigned to a network.<br>Default – The static route is assigned to a default route.                                 |
| IP Address                                                                                                                                                                                                                                | The IP subnet of the destination network or host.                                                                                                                                                                                                               |
| IP Netmask                                                                                                                                                                                                                                | The subnet mask of the destination network. If the route type was a host, a 32-bit subnet mask will be automatically populated.                                                                                                                                 |
| Metric                                                                                                                                                                                                                                    | The numeric value assigned to this route, used to calculate the best route to a destination network.                                                                                                                                                            |
| RIP Advertised                                                                                                                                                                                                                            | This determines whether or not to advertise the static route using RIP. (RIP must also be enabled before the route will be advertised.)<br>If Enabled (box is checked), RIP Advertised will be activated.<br>If Disabled, RIP Advertised will not be activated. |
| Save to Flash                                                                                                                                                                                                                             | If Enabled (box is checked), the route will be made permanent by saving it to flash memory. If Disabled, the route will disappear the next time the Modem restarts.                                                                                             |
| Add Route                                                                                                                                                                                                                                 | This button enables you to add a new static route in the Modem. Note: When adding a route, you may need to reload the page for the route to appear in the "active" Routes.                                                                                      |

## 15.10 Wireless Configuration

### 15.10.1 Basic

The following settings will be displayed if you select **Wireless > Basic** from the **Configuration** menu. Enter the appropriate values, and then click **Save** to save your settings.

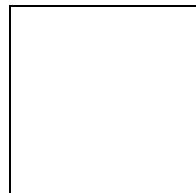


| <b>Wireless Basic Configuration</b> |                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wireless Operation                  | Displays the current setting of the Modem's wireless operation.<br>Factory Default = Enabled<br>When disabled, no wireless stations will be able to connect to the Modem.                                                                                                                                                                                                                                                    |
| Network Name (SSID)                 | This string (32 characters or less) is the name associated with the Modem. To connect to the Modem, the SSID on a Station card must match the SSID on the Modem card or be set to "ANY." (Note: If the SSID on a Modem is hidden, at the station card you must manually type the SSID of the Modem to which you are trying to connect.)                                                                                      |
| Channel                             | The AP transmits and receives data on this channel. The number of channels to choose from is pre-programmed into the AP card. The Modem transmits and receives data on this channel. Station cards do not have to be set to the same channel as the AP; the station cards scan all channels and look for the Modem with the correct SSID.<br>Possible Responses:<br>1 through 11                                             |
| Mode                                | This setting allows station to communicate with the Modem.<br>Possible Responses:<br>Mixed: Station using any of the 802.11b, 802.11b+, and 802.11g rates can communicate with the Modem.<br>Legacy Mixed: Same as Mixed, but also allows older 802.11b cards to communicate with the Modem.<br>11b only: Communication with the Modem is limited to 802.11b<br>11g only: Communication with the Modem is limited to 802.11g |
| Frameburst Mode                     | If enabled, additional algorithms are used for increased throughput.<br>If Disabled, this feature will not be activated.                                                                                                                                                                                                                                                                                                     |
| Hide SSID                           | If enabled, the Modem will not broadcast the SSID. To connect to the Modem, each Station must configure its SSIDs so that it matches the Modem's Network Name (SSID).<br>If Disabled, this function will not be activated.                                                                                                                                                                                                   |

## 15.10.2 Wireless Security

The following screen will be displayed if you select **Wireless > Security** from the **Configuration** menu. Select the desired security option from the **Wireless Security** drop-down menu. After you configured your wireless security settings, click **Save** to save the settings.

**IMPORTANT:** Client PCs can use any Wireless Fidelity (Wi-Fi) 802.11b/g/+ certified card to communicate with the Modem. The Wireless card and Modem must use the same security code type. **If you use WPA-PSK or WEP wireless security, you must configure your computer's wireless adapter for the security code that you use. You can access the settings in the advanced properties of the wireless network adapter.**

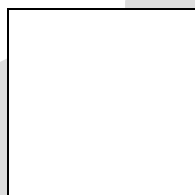


Wireless Security

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wireless Security | <p>Factory Default = Disable</p> <p>Possible Responses:</p> <p>Disabled: No security is used.</p> <p>WEP: WEP encryption used to secure the data being sent to and from the Modem; when WEP is enabled, the risk of someone nearby accessing the Modem is minimized.</p> <p>WPA-PSK: WPA encryption methods are used to encrypt and secure the connection and the data being sent to and from the Modem.</p> <p>This string (8 to 63 characters of 64 hex characters) is the key used for encrypting packets being sent to and from the Modem. This key must be the same in both the Modem and the station.</p> |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 15.10.2.1 Enabling WEP Security

If you select **WEP** from the **Wireless Security** drop-down menu, the following screen will be displayed. Enter the appropriate values, and then click **Save** to save the settings.



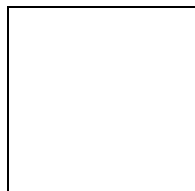
| Wireless Security (WEP)                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wireless Security                                            | WEP has been selected as the wireless security method used.                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Authentication Type                                          | <p>Factory Default = Open System</p> <p>Possible Responses:</p> <p>Open System: Open System authentication allows any station to associate with the wireless network but only stations with the valid WEP key can send or receive data from the Modem. Open System authentication is considered to be more secure than Shared Key authentication.</p> <p>Shared Key: Shared Key authentication requires the station to authenticate with the Modem using the WEP key before it can associate with the wireless network.</p> |
| Key Select                                                   | <p>Factory Default = Key 1</p> <p>Select Key 1 to Key 4 as the WEP key to be used. Note: The key position must be the same in both the Modem and the wireless station.</p>                                                                                                                                                                                                                                                                                                                                                  |
| Key n<br>(where n is 1 - 4 for WEP and is blank for WPA-PSK) | <p>The WEP key is treated as either text or hexadecimal (hex) characters. The number of characters is based on the key size selected. The key size 64 bit is either 5 text or 10 hex characters, 128 bit is either 13 text or 26 hex characters, and 256 bit is either 29 text or 58 hex characters. Hexadecimal characters are 0-9 and A-F (or a-f). This key must be the same in both the Modem and the station. Some station cards use a "Pass Phrase." This is not the same as "text" and should not be used.</p>       |

### 15.10.2.2 Enabling WPA-PSK Security

If you select **WPA-PSK** from the **Wireless Security** drop-down menu, the following screen will be displayed. Enter the appropriate values, and then click **Save** to save the settings.



NOTE: The WPA key must be 8 to 63 characters or 64 hexadecimal digits in length.



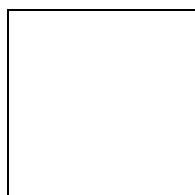
| Wireless Security (WPA-PSK) |                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wireless Security           | WPA-PSK has been selected as the wireless security method used.                                                                                                                                                                                                                                                                        |
| WPA Shared Key              | This string (8 to 63 characters or 64 hex characters) is the key used for encrypting packets being sent to and from the Modem. This is a passphrase (also called a shared secret) that must be entered in both the wireless Modem and the wireless station. The more random your WPA Shared Key, the more secure it is.                |
| WPA Group Rekey Interval    | The number of seconds between rekeying the WPA group key. A value of “0” means that rekeying is disabled. The Shared Key is the initial key and new keys are created and used, based on that key, at each Rekey Interval.                                                                                                              |
| Data Encryption             | Factory Default = TKIP<br>Possible Responses:<br>TKIP- Selecting this option enables the Temporal Key Integrity Protocol for data encryption.<br>AES- Selecting this option enables the Advanced Encryption Standard for data encryption.<br>TKIP/AES- Selecting this option enables the Modem to accept either TKIP or AES encryption |

### 15.10.3 MAC Filter

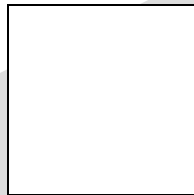
The following settings will be displayed if you select **Wireless > MAC Filter** from the **Configuration** menu. This screen enables you to configure the MAC filter settings for your Modem.

After you have finished adding, editing or deleting MAC addresses from the MAC Filter table (as explained in the following paragraphs), click the box adjacent to **Enable MAC Address Filtering** (a check mark will appear in the box). Next, click **Save** to save your settings.

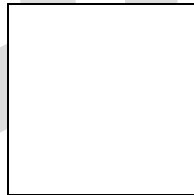
NOTE: When the MAC address Filter is enabled (box is checked), only the stations that are in the MAC Filter table and that are set to **Allowed** will be accepted by the Modem. All other stations will be blocked.



To add stations to the MAC Address table, click the **Add** button.



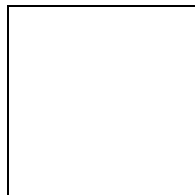
If you clicked **Add**, the following screen will be displayed. Enter the appropriate values in the fields provided, and then click **Save** to save the settings.



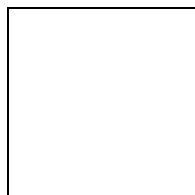
| MAC Address Settings |                                                                                                                |
|----------------------|----------------------------------------------------------------------------------------------------------------|
| Traffic              | Factory Default = Allowed<br>If Blocked is selected, the station will be blocked (it cannot access the Modem). |
| MAC Address          | Factory Default = 00:00:00:00:00:00<br>The MAC address of the wireless station you want to add.                |
| Station Name         | The name of the wireless station you want to add.                                                              |

If you clicked **Save**, the following pop-up screen will be displayed. Click **OK** to continue.

NOTE: Wireless access will be interrupted and the wireless stations may require reconfiguration.



If you clicked **OK**, in the preceding pop-up screen, the following screen will be displayed. The screen displays the list of MAC addresses added to the **MAC Address Filter Table**. You may now **add**, **edit**, or **delete** MAC addresses from the table by clicking on the desired MAC address (displayed in the window) and then by clicking either **Add**, **Edit**, or **Delete**. Next, click **OK** in the pop-up screen.

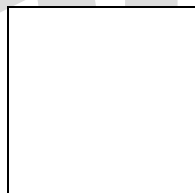


After you have finished adding, editing or deleting MAC addresses in the MAC Filter table, click the box adjacent to **Enable MAC Address Filtering** (a check mark will appear in the box). Click **Save** to save your settings.

NOTE: When the MAC address Filter is enabled (box is checked), only the stations that are in MAC Filter table and that are set to **Allowed** will be accepted by the Modem. All other stations will be blocked.

### 15.10.4 Advanced Wireless Settings

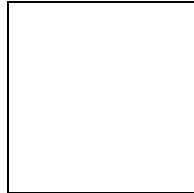
The following settings will be displayed if you select **Wireless > Advanced** from the **Configuration** menu. Enter the appropriate values, and then click **Save** to save the settings.



| Wireless Advanced Configuration |                                                                                                                                                                                                                                                                                                                    |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Beacon Period                   | The time interval between beacon frame transmissions. Beacons contain rate and capability information. Beacons received by stations can be used to identify the access points in the area.                                                                                                                         |
| RTS Threshold                   | RTS/CTS handshaking will be performed for any data or management MPDU containing a number of bytes greater than the threshold. If this value is larger than the MSDU size (typically set by the fragmentation threshold), no handshaking will be performed. A value of zero will enable handshaking for all MPDUs. |
| Fragmented Threshold            | Any MSDU or MPDU larger than this value will be fragmented into an MPDU of the specified size.                                                                                                                                                                                                                     |
| DTIM Interval                   | The number of Beacon intervals between DTIM transmissions. Multicast and broadcast frames are delivered after every DTIM                                                                                                                                                                                           |

|                                                                 |                                                                                                                                                                                  |
|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Supported Rates<br>802.11b Rates (Mbps)<br>802.11g Rates (Mbps) | These are the allowable communication rates that the Modem will attempt to use. The rates are also broadcast within the connection protocol as the rates supported by the Modem. |
|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

If you clicked **save**, the following pop-up screen will be displayed. Click **OK** to continue.



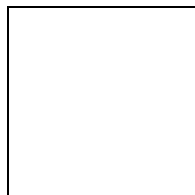
DRAFT 1

## 16. MAINTENANCE

### 16.1 Login Administration

The following screen will be displayed if you select **Login Administration** from the **Maintenance** menu. Enter the appropriate values, and then click **Save** to save the settings.

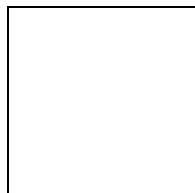
NOTE: Password must be at least 6 characters and must not exceed 12 characters long. Alphanumeric values are permitted. The **Password** and **Confirm Password** fields are masked with “\*” for security measures.



| Login Administration |                                                                                                                   |
|----------------------|-------------------------------------------------------------------------------------------------------------------|
| Username             | The administrator's username. This is a free-format character string between 5 and 12 characters long, no spaces. |
| Password             | The administrator's password. This is a free-format character string between 6 and 12 characters long, no spaces. |
| Confirm Password     | The identical value that was entered in the password field.                                                       |

### 16.2 Event Log

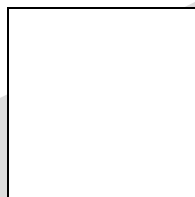
The following screen will be displayed if you select **Event Log** from the **Maintenance** menu. The **Remote Logging** function enables event logs to be sent to a machine running a syslog server. To enable Remote Logging, click the box adjacent to **Enable** (a check mark will appear in the box). Then, enter an IP address in the **Remote IP Address** field. Click **Save** to save your settings.



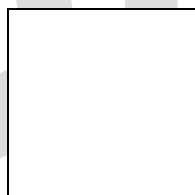
| Event Log |                              |
|-----------|------------------------------|
| User ID   | The name of your connection. |

|                       |                                                                                                         |
|-----------------------|---------------------------------------------------------------------------------------------------------|
| Connection Mode       | The mode of connection used to connect to your ISP.                                                     |
| Connection State      | The state of the PPP connection.                                                                        |
| Ethernet WAN          | The state of the Ethernet WAN connection.                                                               |
| <b>Remote Logging</b> |                                                                                                         |
| Enable                | Enables remote logging of Event Logs                                                                    |
| Remote IP Address     | The IP address of the syslog server machine on the local area network to which the Event Logs are sent. |

To view logged events, select an option from the **Available LOGS** drop-down menu.

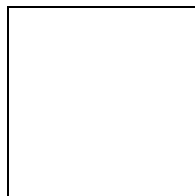


If you select **All**, the following screen will be displayed. To obtain a printable version of the Event logs, click on **Printable**.



## 16.3 Firewall Log

The following screen will be displayed if you select **Firewall Log** from the **Maintenance** menu. To obtain a printable version of the firewall logs, click on **Printable**. Click on **Refresh** to refresh the screen. To enable Remote Logging, click the box adjacent to **Enable** (a check mark will appear in the box) and then enter an IP address in the **Remote IP Address** field. Click **Save** to save your settings.



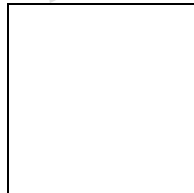
|                   |                                                                                                                                      |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Enable            | Factory Default = Disable<br>If enabled (a check mark will appear in the box), the Modem will send firewall logs to a syslog server. |
| Remote IP Address | The IP address of the syslog server machine to which the diagnostics logs to be sent.                                                |

## 16.4 Update Device

The following screen will be displayed if you select **Update Device** from the **Maintenance** menu. This screen enables you to identify the version of software in your device. You can also update the software in your device to the latest version supported.

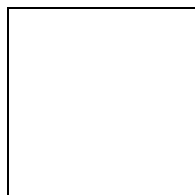
To update your Modem to the latest software version supported, perform the following steps:

1. Download the update file and store it to a location on your PC.
2. Click the **Browse** button in the **Update Modem** screen, and then navigate to the update file stored on your PC.
3. Click on the update file and then click **Open**. The path to the update file will appear in the **Browse** bar.
4. Click **Begin upgrade process** to begin the software update for your Modem.
5. After your Modem has been updated, wait a brief moment for the Modem to reset and establish a WAN connection and a PPP session.
6. Confirm that the **WAN LED** on your Modem is solid green before continuing your Modem's configuration.



## 16.5 Remote Access

The following screen will be displayed if you select **Remote Access** from the **Maintenance** menu. This screen enables you to configure Remote Access on your Modem. Enter the appropriate values in the fields provided and then click **Save** to save the settings.

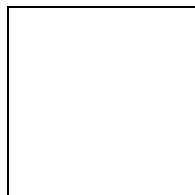


| Remote Access        |                                                                                                                                                                                        |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| User Name            | The name used for Remote Access session. The only valid characters are (a-z, A-Z, 0-9). The User Name must be at least 6 characters and must not exceed 12 characters long.            |
| Password             | The password used for Remote Access session. Do not use spaces or double-quotes in the password. The password must be at least 6 characters and must not exceed 12 characters long.    |
| Confirm Password     | Enter the same values as the password.                                                                                                                                                 |
| Timeout              | The interval (in minutes) after which the Remote Access session will disconnect, if it is idle.                                                                                        |
| Enable Timeout       | Factory Default = Enable<br>If Enabled (box is checked) this will activate the Remote Access timeout function.<br>If Disabled, the Remote Access timeout function will be deactivated. |
| Enable Remote Access | Factory Default = Disable<br>If Enabled (box is checked), Remote Access will be activated.<br>If Disabled, Remote Access will be deactivated.                                          |
| Remote URL           | Displays the URL for the Remote Access session.                                                                                                                                        |

## 16.6 Statistics

### 16.6.1 Ethernet Port Statistics

The following settings will be displayed if you select **Ethernet** from the **Statistics** menu.



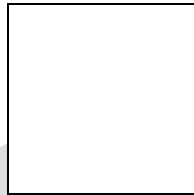
| Ethernet Port Statistics |                                                                             |
|--------------------------|-----------------------------------------------------------------------------|
| Interface Description    | The description of the Ethernet interface on the Modem.                     |
| In Errors                | The number of error packets received on the Ethernet interface.             |
| In Discard Packets       | The number of discarded packets received.                                   |
| In Unicast Packets       | The number of Unicast packets received on the Ethernet interface.           |
| In Octets                | The number of bytes received on the Ethernet interface.                     |
| Out Errors               | The number of outbound packets that could not be transmitted due to errors. |



|                     |                                                                      |
|---------------------|----------------------------------------------------------------------|
| Out Discard Packets | The number of outbound packets discarded.                            |
| Out Unicast Packets | The number of Unicast packets transmitted on the Ethernet interface. |
| Out Octets          | The number of bytes transmitted on the Ethernet interface.           |

## 16.6.2 Switch Ports Statistics

The following settings will be displayed if you select **Switch Ports** from the **Statistics** menu.

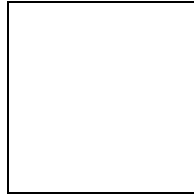


| Switch Ports Statistics |                                                           |
|-------------------------|-----------------------------------------------------------|
| Link State              | The status of the switch port.                            |
| Speed                   | The negotiated speed of the Ethernet link.                |
| Duplex                  | The communication mode of the switch port.                |
| Transmit Packets        | The number of Ethernet packets transmitted from this port |
| Receive Packets         | The number of Ethernet packets received on this port.     |

## 16.6.3 Wireless Statistics

The following settings will be displayed if you select **Wireless** from the **Statistics** menu.

NOTE: The fields in this screen will be blank if no stations are associated with the Modem.



|                                                                 |  |                                                              |  |                                                                                 |  |
|-----------------------------------------------------------------|--|--------------------------------------------------------------|--|---------------------------------------------------------------------------------|--|
| NOTE: Data listed in source. Data listed in MAC Address (BSSID) |  | <b>Wireless</b>                                              |  | Modem to a station; the Modem is the destination; the Modem is the destination. |  |
| MAC Address (BSSID)                                             |  | MAC Address(BSSID)                                           |  | ; the Modem is the destination.                                                 |  |
| FW Version                                                      |  | FW Version                                                   |  | (the hardware address of the Modem). It                                         |  |
| In-Packets                                                      |  | In Packets                                                   |  | er (BSSID) for your Modem.                                                      |  |
| In-Bytes                                                        |  | In Bytes                                                     |  | l packets.                                                                      |  |
| In-Errors                                                       |  | In Errors                                                    |  | l bytes.                                                                        |  |
| Out-Packets                                                     |  | Out Packets                                                  |  | n an error.                                                                     |  |
| Out-Bytes                                                       |  | Out Bytes                                                    |  | ted packets.                                                                    |  |
| Out-Errors                                                      |  | Out Errors                                                   |  | ted bytes.                                                                      |  |
|                                                                 |  | The number of packets that did not transmit due to an error. |  |                                                                                 |  |

## 17. NAT SERVICES

For your convenience, the Modem supports protocols for Applications, Games, and VPN-specific programs. The following chart provides protocol information for the services supported by the Modem.

NOTE: To configure the Modem for a service or application, follow the steps in section 15.2, “Port Forwarding Configuration.”

**Applications/Games/VPN Support**

| <b>Application/Game</b>           | <b>Port/Protocol</b>                                                                                   |
|-----------------------------------|--------------------------------------------------------------------------------------------------------|
| Aliens vs. Predator               | 80 UDP, 2300 UDP, 8000-8999 UDP                                                                        |
| Age of Empires II: The Conquerors | 6073 UDP, 47624 TCP, 2300-2400 TCP/UDP<br>This service will open up port's for both traffic directions |
| Americas Army                     | TCP - 20045<br>UDP - 1716 to 1718, 8777, 27900                                                         |
| America Online                    | 5190 TCP/UDP                                                                                           |
| Anarchy Online                    | TCP/UDP – 7012,7013, 7500 -7505                                                                        |
| AOL Instant Messenger             | 4099 TCP, 5190 TCP                                                                                     |
| Asheron's Call                    | 9000-9013 UDP, 28800-29000 TCP                                                                         |
| Battlecom                         | 2300-2400 TCP/UDP, 47624 TCP/UDP                                                                       |
| Battlefield 1942                  | UDP - 14567, 22000, 23000 to 23009, 27900, 28900                                                       |
| Black and White                   | 2611-2612 TCP, 6667 TCP, 6500 UDP, 27900 UDP                                                           |
| Blizzard Battle.net (Diablo II)   | 4000 TCP, 6112 TCP/UDP                                                                                 |
| Buddy Phone                       | 700, 701 UDP                                                                                           |
| Bungie.net, Myth, Myth II Server  | 3453 TCP                                                                                               |
| Calista IP Phone                  | 3000 UDP, 5190 TCP                                                                                     |
| Citrix Metaframe                  | 1494 TCP                                                                                               |
| Client POP/IMAP                   | 110 TCP                                                                                                |
| Client SMTP                       | 25 TCP                                                                                                 |
| Counter Strike                    | 27015 TCP/UDP, 27016 TCP/UDP                                                                           |
| Dark Reign 2                      | 26214 TCP/UDP                                                                                          |
| Delta Force (Client and Server )  | 3568 UDP, 3100-3999 TCP/UDP                                                                            |
| Delta Force 2                     | 3568-3569 UDP                                                                                          |
| DeltaForce: Land Warrior          | UDP 53<br>TCP 21<br>TCP 7430<br>TCP 80<br>UDP 1029<br>UDP 1144<br>UDP 65436<br>UDP 17478               |
| DNS                               | 53 UDP                                                                                                 |
| Elite Force                       | 2600 UDP, 27500 UDP, 27910 UDP, 27960 UDP                                                              |
| Everquest                         | 1024-7000 TCP/UDP                                                                                      |
| F-16, Mig 29                      | 3863 UDP                                                                                               |
| F-22 Lightning 3                  | 4660-4670 TCP/UDP, 3875 UDP, 4533-4534 UDP, 4660-4670 UDP                                              |
| F-22 Raptor                       | 3874-3875 UDP                                                                                          |

| Application/Game                       | Port/Protocol                                                                                                         |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Fighter Ace II                         | 50000-50100 TCP/UDP                                                                                                   |
| Fighter Ace II for DX play             | 50000-50100 TCP/UDP, 47624 TCP, 2300-2400 TCP/UDP                                                                     |
| FTP                                    | 20 TCP, 21 TCP                                                                                                        |
| GameSpy Online                         | UDP 3783<br>UDP 6515<br>TCP 6667<br>UDP 12203<br>TCP/UDP 13139UDP 27900<br>UDP 28900<br>UDP 29900<br>UDP 29901        |
| Ghost Recon                            | TCP 80<br>UDP 1038<br>UDP 1032<br>UDP 53<br>UDP 2347<br>UDP 2346                                                      |
| GNUtella                               | 6346 TCP/UDP, 1214 TCP                                                                                                |
| Half Life Server                       | 27005 UDP(client only)<br>27015 UDP                                                                                   |
| Heretic II Server                      | 28910 TCP                                                                                                             |
| Hexen II                               | 26900 (+1) each player needs their own port. Increment by one for each person                                         |
| Hotline Server                         | 5500, 5503 TCP 5499 UDP                                                                                               |
| HTTPS                                  | 443 TCP/UDP                                                                                                           |
| ICMP Echo                              | 4 ICMP                                                                                                                |
| ICQ OLD                                | 4000 UDP, 20000-20019 TCP                                                                                             |
| ICQ 2001b                              | 4099 TCP, 5190 TCP                                                                                                    |
| ICUII Client                           | 2000-2038 TCP, 2050-2051 TCP, 2069 TCP, 2085 TCP, 3010-3030 TCP                                                       |
| ICUII Client Version 4.xx              | 1024-5000 TCP, 2050-2051 TCP, 2069 TCP, 2085 TCP, 3010-3030 TCP, 2000-2038 TCP6700-6702 TCP, 6880 TCP, 1200-16090 TCP |
| IMAP                                   | 119 TCP/UDP                                                                                                           |
| IMAP v.3                               | 220 TCP/UDP                                                                                                           |
| Internet Phone                         | 22555 UDP                                                                                                             |
| IPSEC ALG                              | ENABLES ALG                                                                                                           |
| IPSEC ESP                              | PROTOCOL 50                                                                                                           |
| IPSEC IKE                              | 500 UDP                                                                                                               |
| Ivisit                                 | 9943 UDP, 56768 UDP                                                                                                   |
| JKII:JO (Jedi Knight II: Jedi Outcast) | UDP - 28070 (default)<br>UDP- 27000 to 29000                                                                          |
| KALI, Doom & Doom II                   | 2213 UDP, 6666 UDP (EACH PC USING KALI MUST USE A DIFFERENT PORT NUMBER STARTING WITH 2213 + 1                        |
| KaZaA                                  | 1214 TCP/UDP                                                                                                          |
| Limewire                               | 6346 TCP/UDP, 1214 TCP                                                                                                |
| Medal Of Honor: Allied Assault         | TCP 80<br>UDP 53<br>UDP 2093<br>UDP 12201<br>TCP 12300                                                                |

| Application/Game              | Port/Protocol                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                               | UDP 2135<br>UDP 2139<br>TCP/UDP 28900                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| mIRC Chat                     | 6660-6669 TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Motorhead Server              | 16000 TCP/UDP, 16010-16030 TCP/UDP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| MSN Game Zone                 | 6667 TCP, 28800-29000 TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| MSN Game Zone (DX 7 & 8 play) | 6667 TCP, 6073 TCP, 28800-29000 TCP, 47624 TCP, 2300-2400 TCP/UDP<br>This service will open up port's for both traffic directions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| MSN Messenger                 | 6891-6900 TCP, 1863 TCP/UDP, 5190 UDP, 6901 TCP/UDP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Napster                       | 6699 TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Need for Speed 3, Hot Pursuit | 1030 TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Need for Speed, Porsche       | 9442 UDP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Net2Phone                     | 6801 UDP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| NNTP                          | 119 TCP/UDP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Operation FlashPoint          | 47624 UDP, 6073 UDP, 2300-2400 TCP/UDP, 2234 TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Outlaws                       | 5310 TCP/UDP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Pal Talk                      | 2090-2091 TCP/UDP, 2095 TCP, 5001 TCP, 8200-8700 TCP/UDP, 1025-2500 UDP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| pcAnywhere host               | 5631 TCP, 5632 UDP, 22 UDP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Phone Free                    | 1034-1035 TCP/UDP, 9900-9901 UDP, 2644 TCP, 8000 TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Quake 2                       | 27910 UDP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Quake 3                       | 27660 UDP<br>Each computer playing QuakeIII must use a different port number, starting at 27660 and incrementing by 1. You'll also need to do the following:<br>1. Right click on the QIII icon<br>2. Choose "Properties"<br>3. In the Target field you'll see a line like "C:\Program Files\Quake III Arena\quake3.exe"<br>4. Add the Quake III net_port command to specify a unique communication port for each system. The complete field should look like this: "C:\Program Files\Quake III Arena\quake3.exe" +set net_port 27660<br>5. Click OK.<br>6. Repeat for each system behind the NAT, adding one to the net_port selected (27660,27661,27662) |
| Quicktime 4/Real Audio        | 6970-32000 UDP, 554 TCP/UDP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Rainbow Six & Rogue Spear     | 2346 TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| RealOne Player                | TCP - 554, 7070 to 7071<br>UDP - 6970 to 7170                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Real Audio                    | 6970-7170 UDP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Return To Castle Wolfenstein  | Default -27960 TCP/UDP<br>UDP - 27950 to 27980                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Roger Wilco                   | TCP/UDP 3782<br>UDP 3783 (BaseStation)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| ShoutCast Server              | 8000-8005 TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Spinner Radio/Netscape Music  | TCP - 554                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| SSH Secure Shell              | 22 TCP/UDP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Starcraft                     | 2346 TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

| Application/Game                                       | Port/Protocol                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Starfleet Command                                      | 2300-2400 TCP/UDP, 47624 TCP/UDP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| SOF/SOFII (Soldier of Fortune / Soldier of Fortune II) | UDP - 28910 to 28915                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Telnet                                                 | 23 TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Tiberian Sun & Dune 2000                               | 1140-1234, 4000 TCP/UDP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Tribes2                                                | TCP - 15104, 15204, 15206, 6660 to 6699<br>UDP - 27999 to 28002                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Ultima Online                                          | 5001-5010 TCP, 7775-7777 TCP, 8800-8900 TCP, 9999 UDP, 7875 UDP                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Unreal Tournament server                               | 7777 (default gameplay port)<br>7778 (server query port)<br>7779,7779+ are allocated dynamically for each helper UdpLink objects, including UdpServerUplink objects. Try starting with 7779-7781 and add ports if needed<br>27900 server query, if master server uplink is enabled. Home master servers use other ports like 27500<br>Port 8080 is for UT Server Admin. In the [UWeb.WebServer] section of the server.ini file, set the ListenPort to 8080 and ServerName to the IP assigned to the Modem from your ISP. |
| USENET News Service                                    | 143 TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| VNC, Virtual Network Computing                         | 5500 TCP, 5800 TCP, 5900 TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Westwood Online, C&C                                   | 4000 TCP/UDP, 1140-1234 TCP/UDP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| World Wide Web (HTTP)                                  | 80 TCP<br>443 TCP (SSL)<br>8008 OR 8080 TCP (PROXY)                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Yahoo Messenger Chat                                   | 5000-5001 TCP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Yahoo Messenger Phone                                  | 5055 UDP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| IPSec Encryption                                       | IPSec using AH can not be supported through NAT. IPSec using ESP and L2TP can be supported via an ALG                                                                                                                                                                                                                                                                                                                                                                                                                    |
| L2TP                                                   | IPSec using ESP and L2TP can be supported via an ALG.                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| PPTP                                                   | Works through NAT.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## 18. PRODUCT SPECIFICATIONS

### Data Features

- Network Address Port Translation
- DHCP client/server
- DNS server/relay
- Static Routes
- Dynamic Routing with RIP v1 and v2
- PPTP/L2TP/IPSEC VPN NAPT passthrough
- NAT ALG support for common applications
- Stateful Inspection Firewall with logging
- Diffserv IP QOS

### WAN Protocol Features

- Bridge Encapsulation per RFC 1483
- Routed IP over ATM per RFC 2684
- PPP over Ethernet per RFC 2516
- PPP over ATM per RFC 2364
- Auto Protocol Detect

### ATM Features

- Multi PVC support
- Auto PVC detect
- CBR, VBR-rt, VBR-nrt and UBR traffic shaping
- OAM F4/F5 Loop-back

### WAN/LAN

- Single 10/100 Base-T Ethernet
- Auto MDI/MDI-X detection
- Operates as an uplink, public LAN (DMZ) or as a fifth LAN port

### Uplink Features

- PPP over Ethernet per RFC 2516
- DHCP client
- Static IP address

### Public LAN Features

- Dedicated DMZ port
- DHCP server
- Bridge mode mapped to a separate PVC

### Ethernet LAN

- Four port 10/100 Base-T Ethernet switch
- Auto MDI/MDI-X detection
- VLAN tagging

### Wireless LAN

- IEEE 802.11b/g with frame bursting
- WEP and WPA-PSK security
- MAC address filtering
- Upgradeable to 802.11i, 802.11e, WME
- High gain removable external antenna

### Management

- Web-based GUI
- Remote management via TR-069 or WT-087

### System Requirements

#### Ethernet

- Pentium® or equivalent and above machines
- Microsoft Windows (98 SE, 2000, ME, NT 4.0, or XP), Macintosh OS X, or Linux installed
- Internet Explorer 4.x or Netscape Navigator 4.x or higher
- Ethernet 10/100 Base-T interface
- TCP/IP Protocol stack installed

#### Wireless

- Pentium® or equivalent and above class machines
- Microsoft® Windows® (98 ME, 2000, or XP) or Macintosh® OS X installed
- Operating System CD on hand
- Internet Explorer 4.x or Netscape Navigator 4.x or higher
- 64 MB RAM (128 MB recommended)
- 10 MB of free hard drive space
- IEEE 802.11b/g/g+ PC adapter

### Physical Specifications

#### Dimensions/Weight

- Height: 1.5 in (3.81 cm)
- Width: 10.0 in (25.4 cm)
- Depth: 6.50 in (16.5 cm)
- Weight: Approx. 1.26 lbs. (0.57 kg)

### Environmental

- Ambient Operating Temperature: +32° to +104° F (0° to +40° C)
- Relative Humidity: 5 to 95%, non-condensing

### Network Interface

- WAN: 10/100 Base-T RJ-45 port
- LAN: 10/100 Base-T RJ-45 port (to PC or Hub)

### Power

- Power Adapter:
  - Input: AC 120V/
  - Output: DC +12V
- Power Consumption: Less than 14W typical from 120 VAC

### LED Indicators

- Power
- WAN
- Internet
- Ethernet
- MoCA
- Wireless

### Connectors

- WAN: Ethernet 8-pin RJ-45
- Four Ethernet: 8-pin RJ-45
- Power: Barrel connector
- Wireless IEEE 802.11b/g SMA connector and antenna
- Coax

### Compliance

#### EMC

- FCC Part 15 Class B

#### Safety

- ANSI/UL 60950-1
- CAN/CSA C22.2 No. 60950-1 First Edition dated April 1, 2003 with revisions through November 26, 2003

#### Regulatory Approval

- UL, CSA, FCC Part 68, ACTA 968-A-3 Industry Canada CS03



## 19. TECHNICAL SUPPORT INFORMATION

### Westell Technical Support

If technical assistance is required, contact your Internet service provider for support. By using one of the following options:

North America

Phone: 1-630-375-4500

U.K./Europe

Phone: (44) 01256 843311

Visit Westell at [www.Westell.com](http://www.Westell.com) to view frequently asked questions and enter on-line service requests, or send email to [global\\_support@westell.com](mailto:global_support@westell.com) to obtain additional information.

## 20. WARRANTY AND REPAIRS

### Warranty

Westell warrants this product free from defects at the time of shipment. Westell also warrants this product fully functional for the period specified by the terms of the warranty. Any attempt to repair or modify the equipment by anyone other than an authorized representative will void the warranty.

### Repairs

Westell will repair any defective Westell equipment without cost during the warranty period if the unit is defective for any reason other than abuse, improper use, or improper installation, or acts of nature. Before returning the defective equipment, request a **Return Material Authorization (RMA)** number from Westell. An RMA number must be quoted on all returns. When requesting an RMA, please provide the following information:

- Product model number (on product base)
- Product serial number (on product base)
- Customer ship-to address
- Contact name
- Problem description
- Purchase date

After an RMA number is obtained, return the defective unit, freight prepaid, along with a brief description of the problem to one of the following options:

North America

Westell, Inc.

ATTN: R.G.M Department

750 N. Commons Drive

Aurora, IL 60504-7940 USA

U.K./Europe

Westell, Ltd.

Ringway House

Bell Road

Daneshill

Basingstoke

RG24 8FB

United Kingdom

Westell will continue to repair faulty equipment beyond the warranty period for a nominal charge. Contact a Westell Technical Support Representative for details.

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## 21. PUBLICATION INFORMATION

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