WESTELL

ULTRALINE II (MODEL 800015)

USER GUIDE

030-300459 Rev. A

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1. PRODUCT DESCRIPTION

Your Westell® UltraLine II gateway is designed to deliver high speed data tand 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.

⚠ **<u>WARNING</u>** ⚠

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.

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 (E1,E2,E3,E4)	• Pentium® or equivalent class machines • Microsoft® Windows® (98 SE, ME, 2000, NT 4.0, or XP) Macintosh® OS X, or Linux installed • 64 MB RAM (128 MB recommended) • 10 MB of free hard drive space • TCP/IP Protocol stack installed • 10/100 Base-T Network Interface Card (NIC) • Computer Operating System CD-ROM on hand
WAN Ethernet (E5)	• Pentium® or equivalent class machines • Microsoft® Windows® (98 SE, ME, 2000, NT 4.0, or XP) Macintosh® OS X, or Linux installed • 64 MB RAM (128 MB recommended) • 10 MB of free hard drive space • TCP/IP Protocol stack installed • 10/100 Base-T Network Interface Card (NIC) • Computer Operating System CD-ROM on hand
WIRELESS IEEE 802.11g	• Pentium® or equivalent class machines • Microsoft® Windows® (98 SE, ME, 2000, or XP) or Macintosh® OS X installed • Computer Operating System CD-ROM 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 • An available IEEE 802.11b/g PC adapter

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

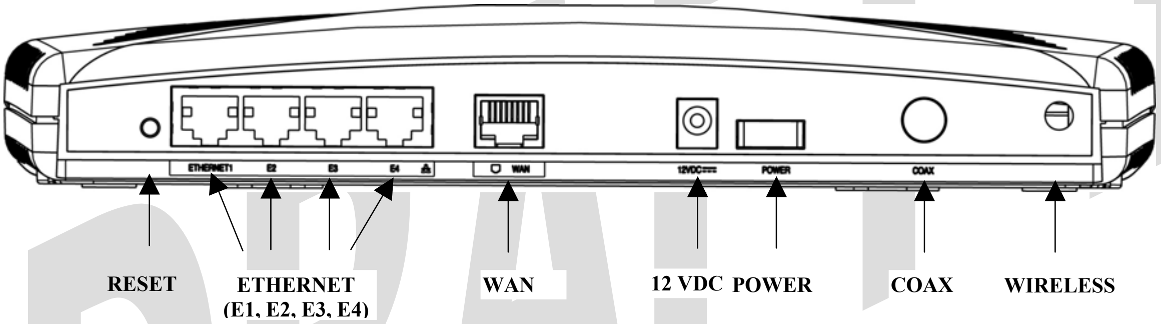
	Off	Wireless is disabled or not functioning.

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 (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.
12VDC ⎓	POWER	Barrel connector	Connection to DC (12V) Power Connector.

SYMBOL	NAME	TYPE	FUNCTION
Wireless	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 (Ethernet E5)	1	Rx+
	2	Rx-
	3	Tx+
	4,5,7,8	Not Used
	6	Tx-
ETHERNET 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' 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 as 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.

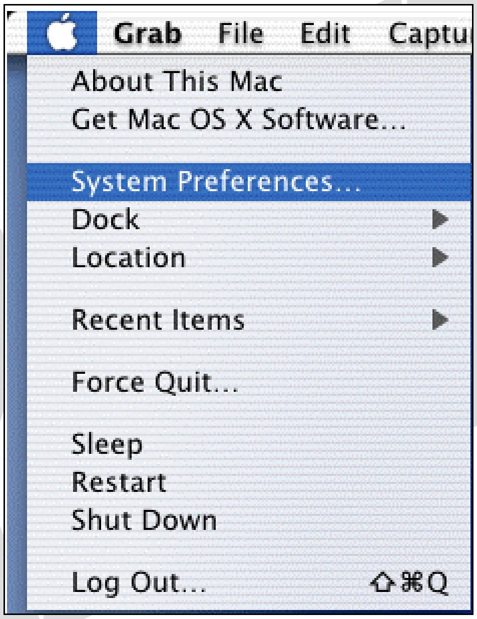
7. SETTING UP MACINTOSH OS X

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).

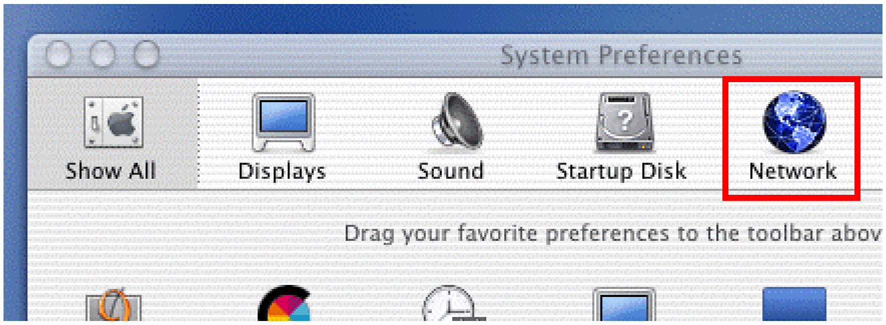
7.1 Opening the System Preference Screen

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

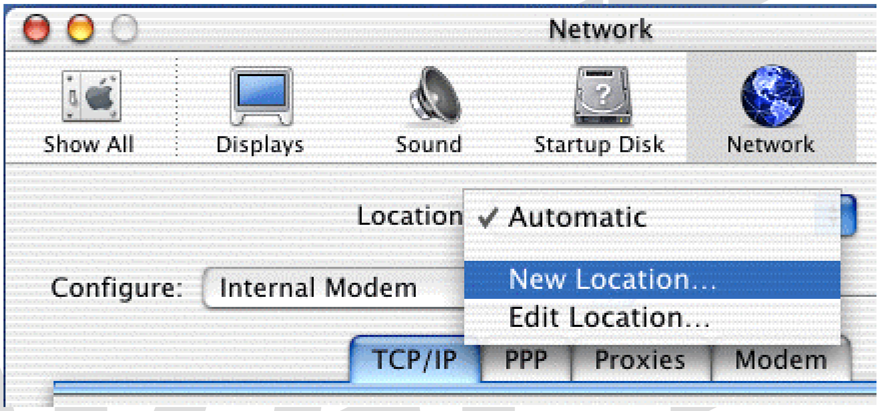
After selecting **System Preferences…**, from the previous screen, the **System Preferences** screen will be displayed. From the **System Preferences** screen, click on the **Network** icon.



Drag your favorite preferences to the toolbar abov

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.

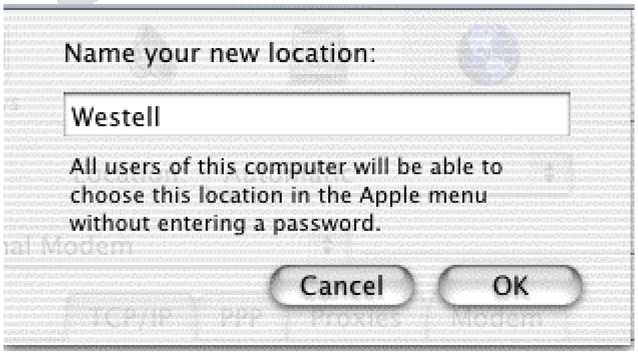


Location: Automatic

Configure: Internal Modem

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**.


Name your new location:

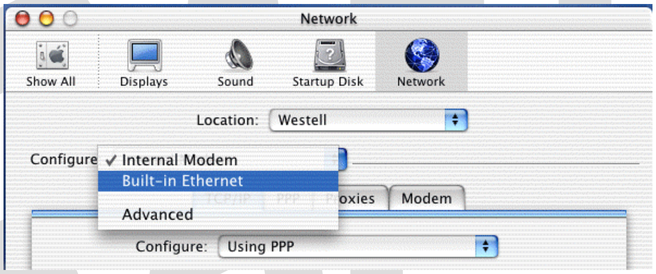
Westell

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

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.

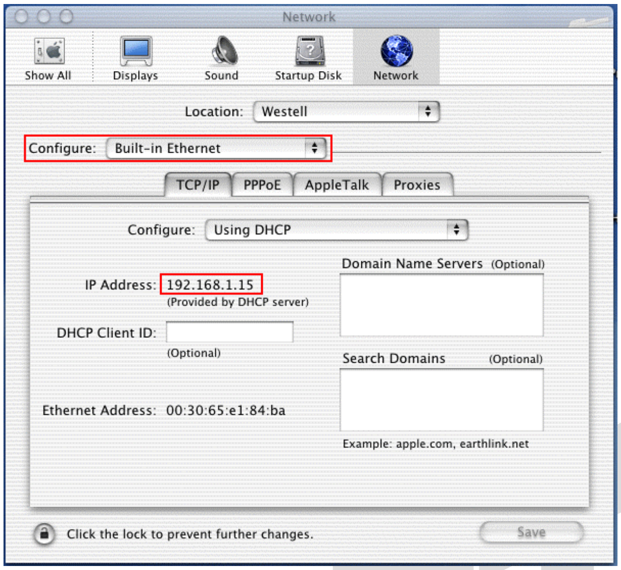


7.6 Checking the IP Connection

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.



Location: Westell

Configure: Built-in Ethernet

Configure: Using DHCP

IP Address: 192.168.1.15
(Provided by DHCP server)

DHCP Client ID:
(Optional)

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

Domain Name Servers (Optional)

Search Domains (Optional)

Example: apple.com, earthlink.net

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 you 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
	DOWN = No PPP session established.

Connect/Disconnect	Click Connect to establish a PPP session. 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 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 Manual: Selecting this feature allows you to manually establish your PPP session. 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. 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 When Enabled, the Maximum Received Unit (MRU) will enforce MRU negotiations. If Disabled, this function will not be activated.
LCP Echo	Factory Default = Enable If 'Disabled' is selected, this option will disable the Modem LCP Echo transmissions.
LCP Echo Failures	Factory Default = 6 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 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 The interval between LCP. Echo after no response. 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.

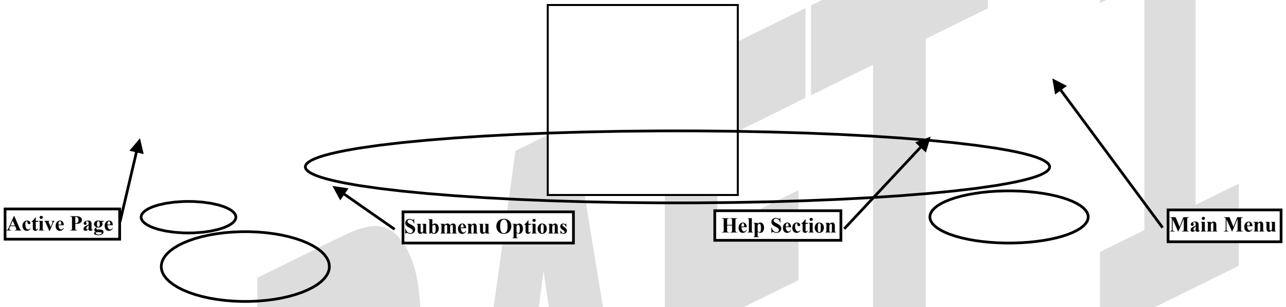
If you disconnected your PPP session, the **PPP Status** field will display **Down.** When you are ready to establish a PPP session, click **Connect**. (If you powered down the Modem, you must first power up the Modem, and then log on to your account profile to establish a PPP session.)

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
	DOWN = No PPP session established.

Connect/Disconnect	Click Connect to establish a PPP session. 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. Possible Responses: DSL Ethernet WAN

	The second line displays the Protocol used to establish the session. Possible Responses: PPPoE PPPoATM RoutedBridge Bridge
Status	The first line displays the status of the physical interface connection Possible Responses: UP – The interface connection is Up. Down – The interface connection is Down.
	The second line indicates the status of the Protocol. Possible Responses: Connected – The protocol is connected. Disconnected – The protocol is disconnected.
Test Description / Test Results	
DNS	Performs a test to try to resolve the name of a particular host. The host name is entered in the input box. Possible responses are: Success: The Router has successfully obtained the resolved address. The IP address is shown below the host name input box. No Response: The Router has failed to obtain the resolved address. Host not found: The DNS Server was unable to find an address for the given host name. No data, enter host name: No host name is specified. 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 (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. Possible responses are: Success: The Remote Host computer was detected. No Response: There was no response to the Ping from the remote computer. No name or address to PING: No host name or IP address was specified. 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.”

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 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 If Enabled (box is checked), this function will be activated.
Log all permitted outbound traffic	Factory Default = Disabled If Enabled (box is checked), this function will be activated.
Log all blocked inbound traffic	Factory Default = Disabled If Enabled (box is checked), this function will be activated.
Log all blocked outbound traffic	Factory Default = Disabled If Enabled (box is unchecked), this function will be activated.
Log traffic specified in rules	Factory Default = Disabled If Enabled (box is checked), this function will be activated.
Log administrative access	Factory Default = Disabled If Enabled (box is checked), this function will be activated.
Remote Logging	
Enable	Factory Default = Disable 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 If Enabled (box is checked), this will only allow outgoing connections from any local PC. 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 The outgoing protocol for the triggered ports. Possible Responses: TCP – Transmission Control Protocol 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 The incoming protocol for the triggered ports. Possible Responses: TCP- Transmission Control Protocol UDP- User Datagram Protocol 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). To disable the service, click to uncheck the box.

If you clicked **Edit**, the following page will be displayed. To enabled 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 When enabled (box is checked), SIP ALG service will be activated. 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.

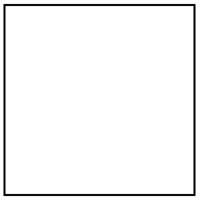
15.5 IGMP Service

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 When this box is checked, IGMP service will be activated. To disable IGMP service, click to uncheck the box.
MulticastFilter	Factory Default = Disable When enabled (box is checked), MulticastFilter is activated. 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.

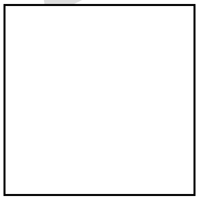
If you clicked **Show Status** in the preceding screen, the following screen will be displayed.

[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. Possible Responses: WAN – The WAN MoCA port 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	Factory Default = Enable 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.) Possible Responses: If this box is checked, the DHCP server will be turned On. If this box is unchecked, the DHCP server will be turned Off. Note: These addresses will be overwritten if the Internet Service Provider supports dynamic setting of these values.
Modem IP Address	The IP Address of the Modem.
Subnet Mask	The Subnet Mask of the Modem.
Address Range	
DHCP Start Address	Factory Default = 192.168.1.10 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.
DHCP End Address	Factory Default = 192.168.1.20 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.

DHCP Lease Time	Factory Default = 01:00:00:00 Displays the amount of time the provided addresses will be valid, after which the DHCP client will usually re-submit a request. 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.

15.7.2 DNS

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

DNS	
Domain Name Note: Some ISP's may require the name for identification purposes.	This field allows you to enter a Domain Name for the Modem. To add a Domain Name, in the field under User Assigned DNS, type in your new domain name and click **Set.**
Static Host Assignment	
Host Name	This field allows you to enter a HOST name for the Modem. 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 **Add.** To delete a Host name, click the **Delete** 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.

Alternate LAN	
Select DHCP Network	Factory Default = Private LAN2 Factory Default = Enable 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. (These options are available only if the DHCP server is enabled.) Possible Responses: Public LAN = DHCP addresses will be saved into the Public LAN configuration. Private LAN2 = DHCP addresses will be saved into the Private LAN configuration. Private LAN3 = DHCP addresses will be saved into the Private LAN configuration.
Enable DHCP Server	Factory Default = Enable If this box is checked, the DHCP server will be turned On. If this box is unchecked, the DHCP server will be turned Off.
IP Address	Displays the IP address that is assigned to the Host.
Subnet Mask	Displays the subnet mask that is assigned to the Host.
Address Range	
DHCP Start Address	Factory Default = 192.168.1.10 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.
DHCP End Address	Factory Default = 192.168.1.20 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.
DHCP Lease Time	Factory Default = 01:00:00:00 Displays the amount of time the provided addresses will be valid, after which the DHCP client will usually re-submit a request. 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.

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 Possible Responses: 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. 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 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. 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 **Seconds** field at DHCP Lease Time
Minutes must be between 0 and 59	Check the **Minutes** field at DHCP Lease Time
Hours must be between 0 and 23	Check the **Hours** 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 Possible Responses: 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. 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 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. 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 **Seconds** field at DHCP Lease Time
Minutes must be between 0 and 59	Check the **Minutes** field at DHCP Lease Time
Hours must be between 0 and 23	Check the **Hours** 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 Possible Responses: 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. 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 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. 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 **Seconds** field at DHCP Lease Time
Minutes must be between 0 and 59	Check the **Minutes** field at DHCP Lease Time
Hours must be between 0 and 23	Check the **Hours** 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 Passthough 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 The software defined virtual LAN group to which the port should be assigned: Possible Responses: Private LAN – The selected port will appear as a member of the Private LAN group. Private LAN2 – The selected port will appear as a member of the Private LAN2 group Public LAN – The selected port will appear as a member of the Public LAN Group. 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. 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. Possible Responses: Ethernet –The Ethernet port MoCA – The Multimedia over Coax Alliance port.
Ethernet Settings	
Protocol	Select the protocol you will use. Possible Respones: PPPoE – Point-to-Point Protocol over Ethernet 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. To activate tunneling, click Disable. 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 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 (enable DHCP client)	Factory Default = Enabled Select this option if you want the Modem to obtain its IP address from the ISP's DHCP server.
Use the following static addresses (disable DHCP client)	Factory Default = Disabled 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 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 (enable DHCP client)	Factory Default = Enabled Select this option if you want the Modem to obtain its IP address from the ISP's DHCP server.
Use the following static addresses (disable DHCP client)	Factory Default = Disabled 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.

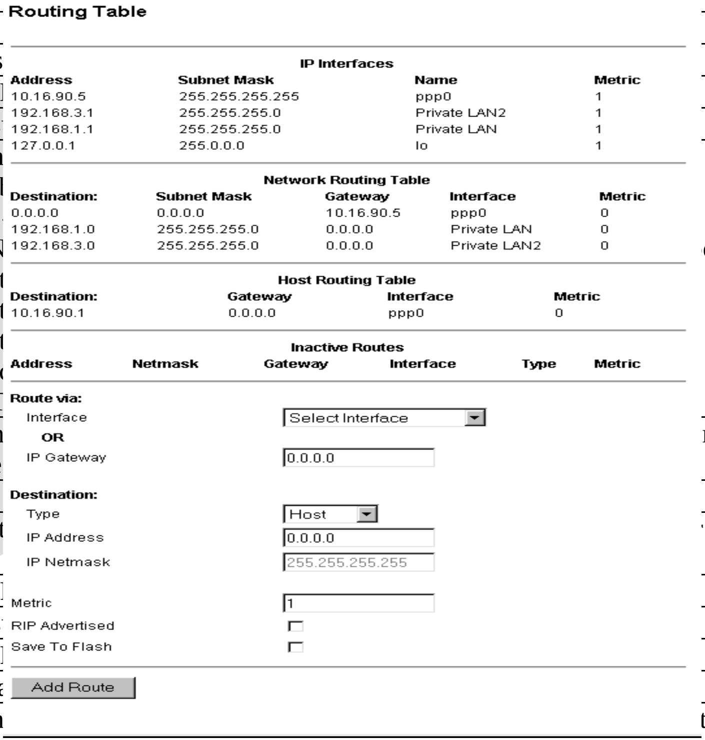
QOS	
Enable QOS Services	Factory Default = Enabled If Enabled (box is checked) this function will be activated. If Disabled, this function will be deactivated.
Class of Service	This enables you to partition network traffic into multiple priority levels or classes or service.
Peak Info Rate	The maximum 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

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

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

Host Routing Table

Destination:	Gateway	Interface	Metric
10.16.90.1	0.0.0.0	ppp0	0

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 □

Save To Flash □

The list of active interfaces	
Address	The I
Subnet Mask	The s
Name	The n Possil ppp0 - WAN de. Privat Privat Privat Public l0 – T
Metric	The n route to a destination addre
The list of the network rout static routes that have been entered.	
Destination	The I
Subnet Mask	The s
Gateway	The I
Interface	Indica
Metric	The n te to a destination network.
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.
Inactive Routes	
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.	
Route Via	
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.
Destination	
Allows you to specify the destination network or host.	
Type	Factory Default = Host Possible Responses: Host – The static route is assigned to a single IP host. Network – The static route is assigned to a network. 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.) If Enabled (box is checked), RIP Advertised will be activated. 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.

Wireless Basic Configuration	
Wireless Operation	Displays the current setting of the Modem’s wireless operation. Factory Default = Enabled 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. Possible Responses: 1 through 11
Mode	This setting allows station to communicate with the Modem. Possible Responses: Mixed: Station using any of the 802.11b, 802.11b+, and 802.11g rates can communicate with the Modem. Legacy Mixed: Same as Mixed, but also allows older 802.11b cards to communicate with the Modem. 11b only: Communication with the Modem is limited to 802.11b 11g only: Communication with the Modem is limited to 802.11g
Frameburst Mode	If enabled, additional algorithms are used for increased throughput. 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). 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/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	Factory Default = Disable Possible Responses: Disabled: No security is used. 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. WPA-PSK: WPA encryption methods are used to encrypt and secure the connection and the data being sent to and from the Modem. 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.

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	Factory Default = Open System Possible Responses: 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. 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.
Key Select	Factory Default = Key 1 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.
Key n (where n is 1 - 4 for WEP and is blank for WPA-PSK)	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.

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 of 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 Possible Responses: TKIP- Selecting this option enables the Temporal Key Integrity Protocol for data encryption. AES- Selecting this option enables the Advanced Encryption Standard for data encryption. 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 If Blocked is selected, the station will be blocked (it cannot access the Modem).
MAC Address	Factory Default = 00:00:00:00:00:00 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 802.11b Rates (Mbps) 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.

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.
Remote Logging	
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.

Remote Logging

Enable	Factory Default = Disable 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 appropriates 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 If Enabled (box is checked) this will activate the Remote Access timeout function. If Disabled, the Remote Access timeout function will be deactivated.
Enable Remote Access	Factory Default = Disable If Enabled (box is checked), Remote Access will be activated. 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

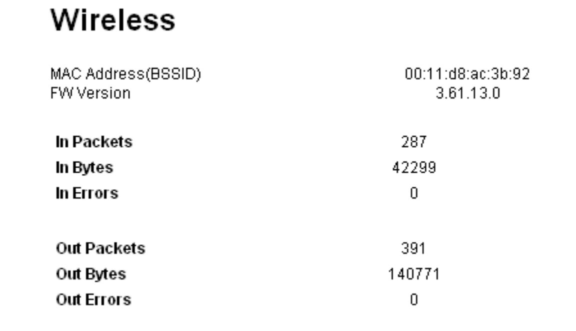
The following settings will be displayed if you select **Switch Ports** from the **Statistics** menu.

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.



Wireless

```
MAC Address(BSSID)                     00:11:d8:ac:3b:92
FW Version                                3.61.13.0

In Packets                               287
In Bytes                                42299
In Errors                                  0

Out Packets                              391
Out Bytes                              140771
Out Errors                                 0
```

Wireless Statistics	
NOTE: Data listed in … odem to a station; the Modem is the source. Data listed in … ; the Modem is the destination.	
MAC Address (BSSII	(the hardware address of the Modem). It … er (BSSID) for your Modem.
FW Version	.
In-Packets	l packets.
In-Bytes	l bytes.
In-Errors	n an error.
Out-Packets	tted packets.
Out-Bytes	tted bytes.
Out-Errors	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

Application/Game	Port/Protocol
Aliens vs. Predator	80 UDP, 2300 UDP, 8000-8999 UDP
Age of Empires II: The Conquerors	6073 UDP, 47624 TCP, 2300-2400 TCP/UDP This service will open up port’s for both traffic directions
Americas Army	TCP - 20045 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 TCP 21 TCP 7430 TCP 80 UDP 1029 UDP 1144 UDP 65436 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 UDP 6515 TCP 6667 UDP 12203 TCP/UDP 13139UDP 27900 UDP 28900 UDP 29900 UDP 29901
Ghost Recon	TCP 80 UDP 1038 UDP 1032 UDP 53 UDP 2347 UDP 2346
GNUtella	6346 TCP/UDP, 1214 TCP
Half Life Server	27005 UDP(client only) 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) 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 UDP 53 UDP 2093 UDP 12201 TCP 12300

Application/Game	Port/Protocol
	UDP 2135 UDP 2139 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 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 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: 1. Right click on the QIII icon 2. Choose "Properties" 3. In the Target field you'll see a line like "C:\Program Files\Quake III Arena\quake3.exe" 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 5. Click OK. 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 UDP - 6970 to 7170
Real Audio	6970-7170 UDP
Return To Castle Wolfenstein	Default -27960 TCP/UDP UDP - 27950 to 27980
Roger Wilco	TCP/UDP 3782 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 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) 7778 (server query port 7779,7779+ are allocated dynamically for each helper UdpLink objects, including UdpServerUplin objects. Try starting with 7779-7781 and add ports if needed 27900 server query, if master server uplink is enabled. Home master servers use other ports like 27500 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 443 TCP (SSL) 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	U.K./Europe
Phone: 1-630-375-4500	Phone: (44) 01256 843311

Visit Westell at www.Westell.com to view frequently asked questions and enter on-line service requests, or send email to 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.

21. PUBLICATION INFORMATION

Westell® UltraLineII (Model 800015)
User Guide Part Number 030-300459 Rev. A

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Aurora, Illinois 60504 USA
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