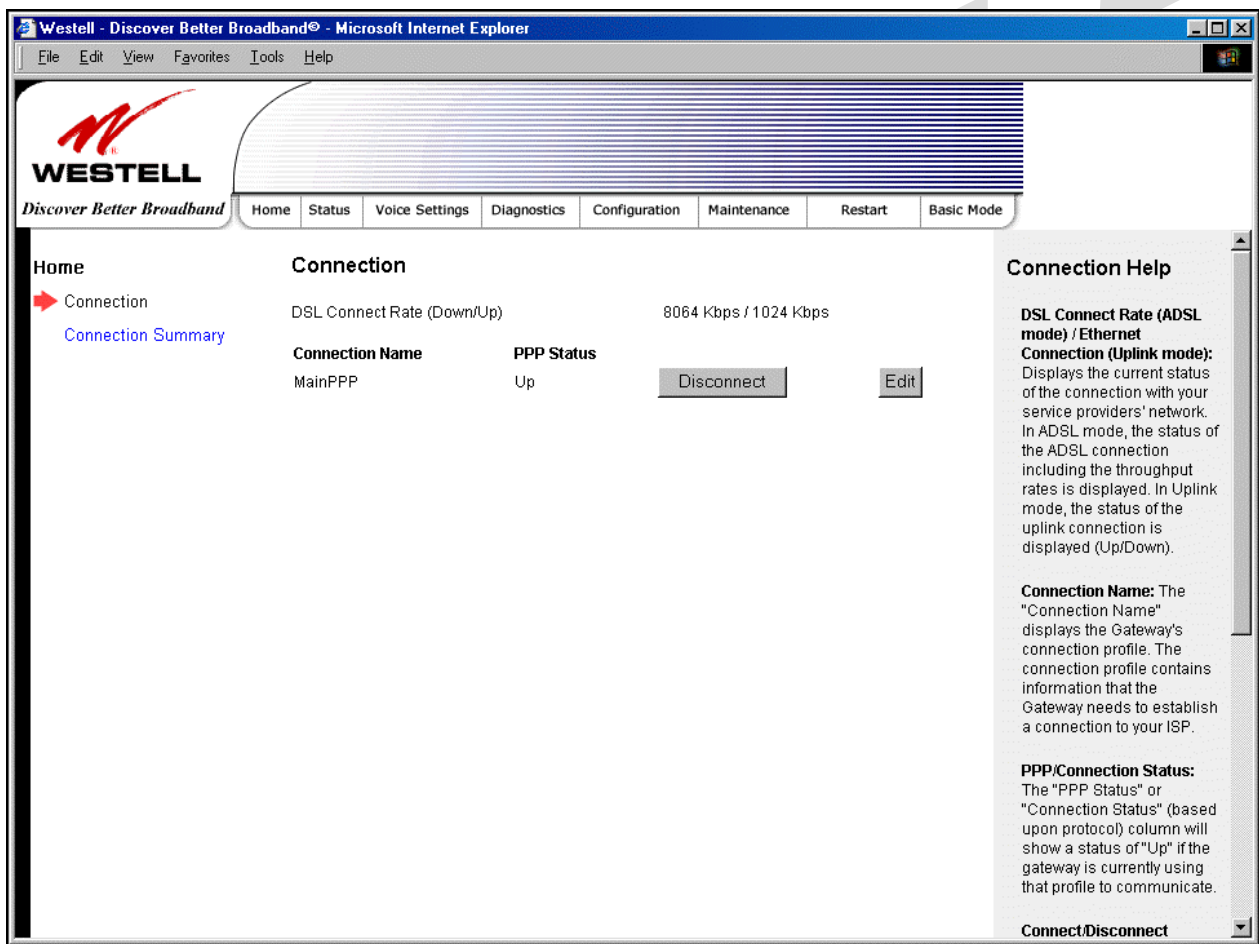


16. ADVANCED MODE

To set up the advanced configurations of your Router, select **Advanced Mode** (if you are in Basic Mode) from the main menu. The following screen will be displayed.

NOTE: The basic operations of your Router were discussed earlier in this User Guide and provided details on the **Home, Status, Voice Settings, Diagnostics, and Restart** features. For instructions on configuring any of these features, refer to the Basic Mode sections (beginning with section 10) of this User Guide.

The advanced features of your Router will be discussed in sections 17, 18, and 19.



Westell - Discover Better Broadband® - Microsoft Internet Explorer

File Edit View Favorites Tools Help

WESTELL
Discover Better Broadband

Home Status Voice Settings Diagnostics Configuration Maintenance Restart Basic Mode

Home

- Connection
- Connection Summary

Connection

DSL Connect Rate (Down/Up) 8064 Kbps / 1024 Kbps

Connection Name	PPP Status		
MainPPP	Up	Disconnect	Edit

Connection Help

DSL Connect Rate (ADSL mode) / Ethernet Connection (Uplink mode): Displays the current status of the connection with your service providers' network. In ADSL mode, the status of the ADSL connection including the throughput rates is displayed. In Uplink mode, the status of the uplink connection is displayed (Up/Down).

Connection Name: The "Connection Name" displays the Gateway's connection profile. The connection profile contains information that the Gateway needs to establish a connection to your ISP.

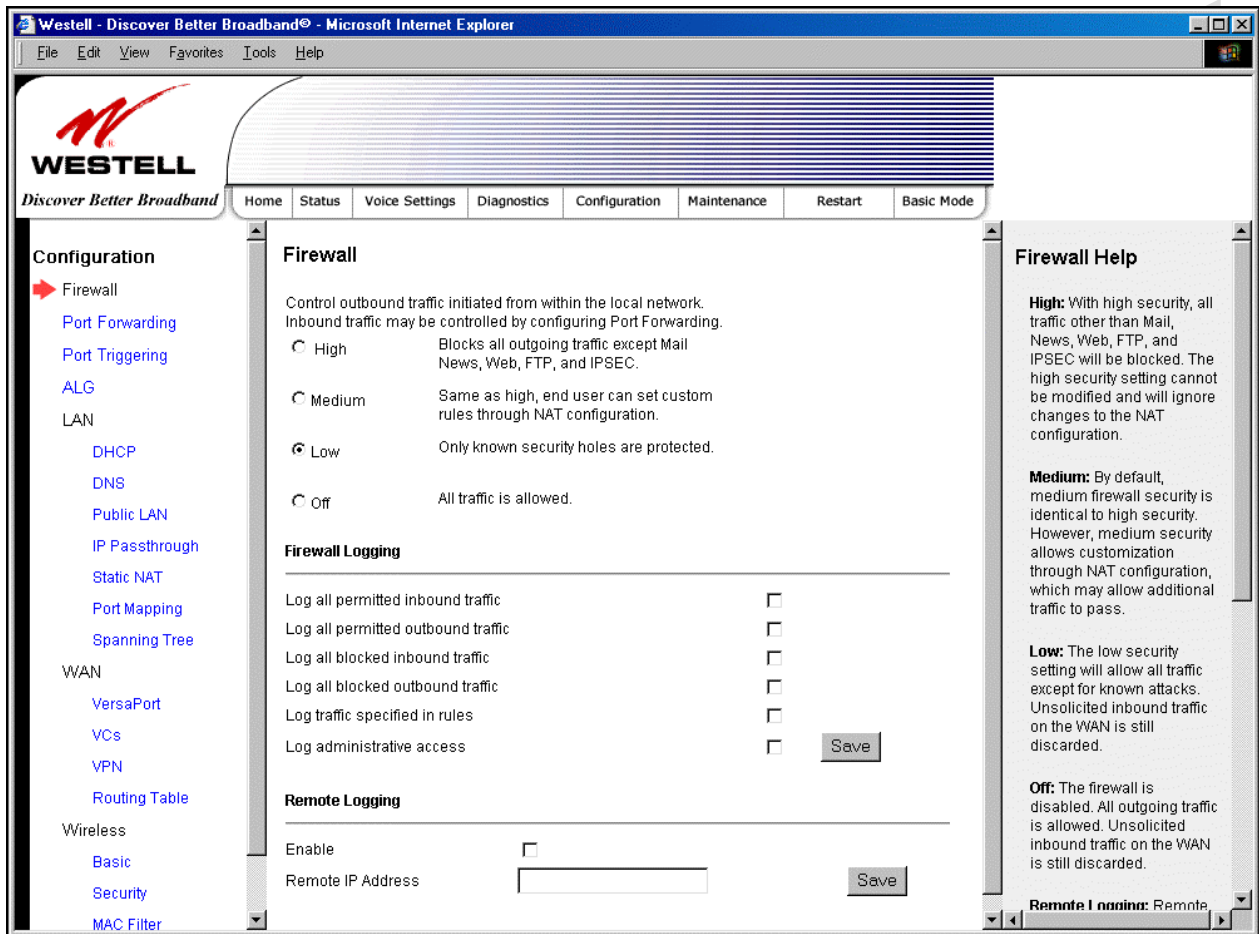
PPP/Connection Status: The "PPP Status" or "Connection Status" (based upon protocol) column will show a status of "Up" if the gateway is currently using that profile to communicate.

Connect/Disconnect

17. CONFIGURATION

17.1 Firewall Configuration

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

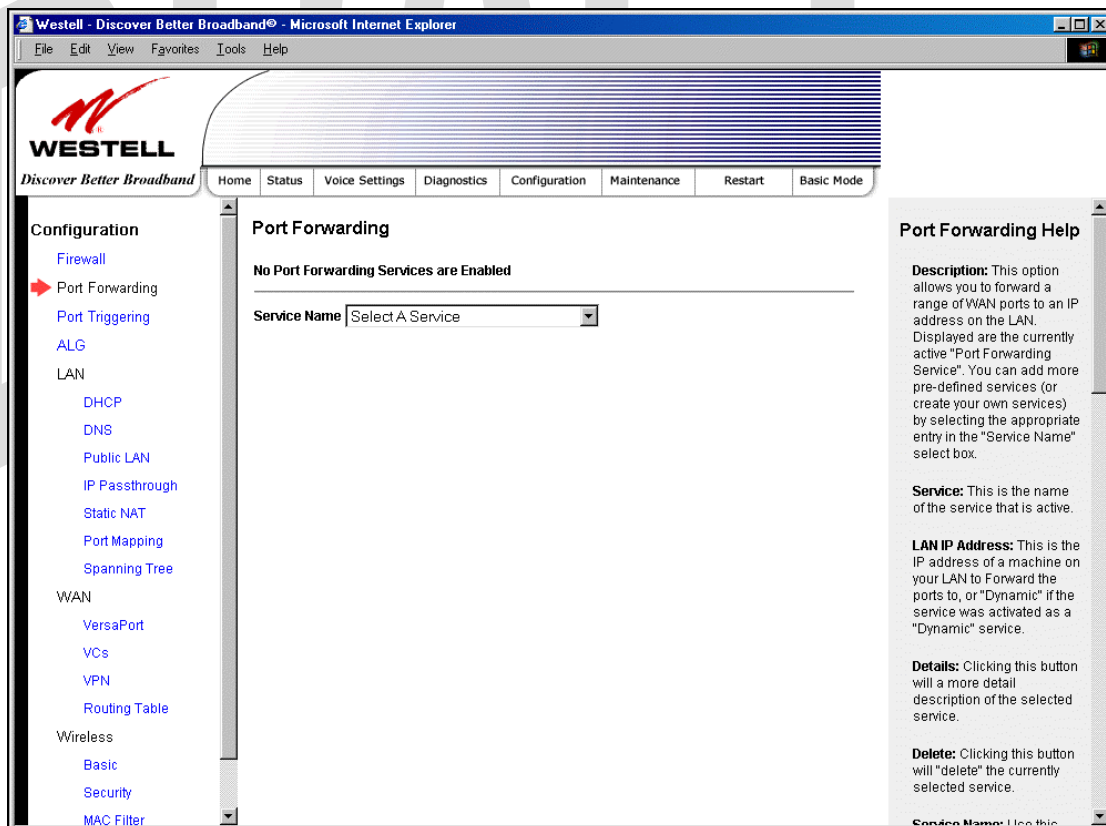


Security Level	
High	High security level only allows basic Internet functionality. Only Mail, News, Web, FTP, and IPSEC are allowed. All other traffic is prohibited.
Medium	Like High security, Medium security only allows basic Internet functionality by default. However, Medium security allows customization 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 Router 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 Router 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.

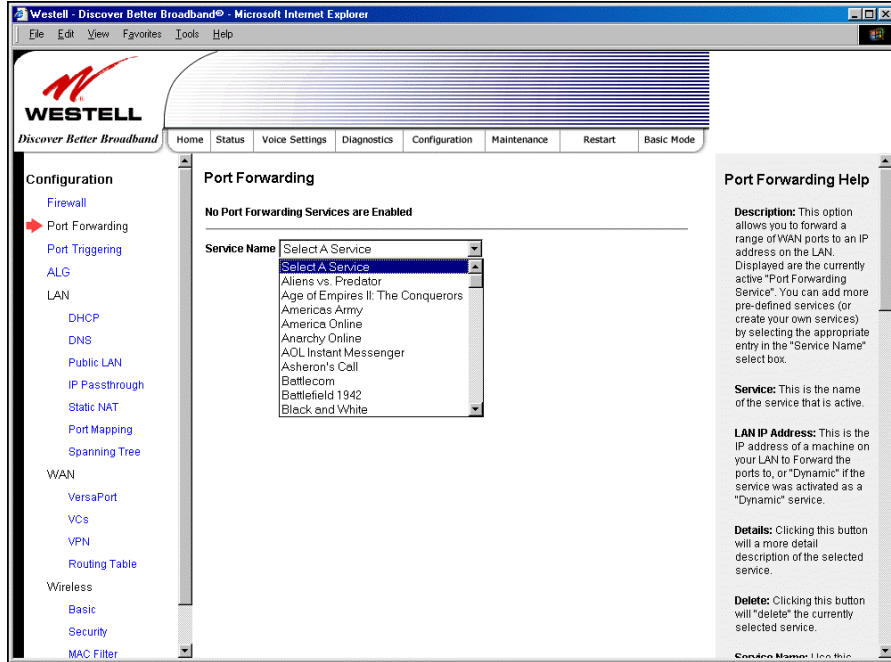
17.2 Port Forwarding Configuration

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

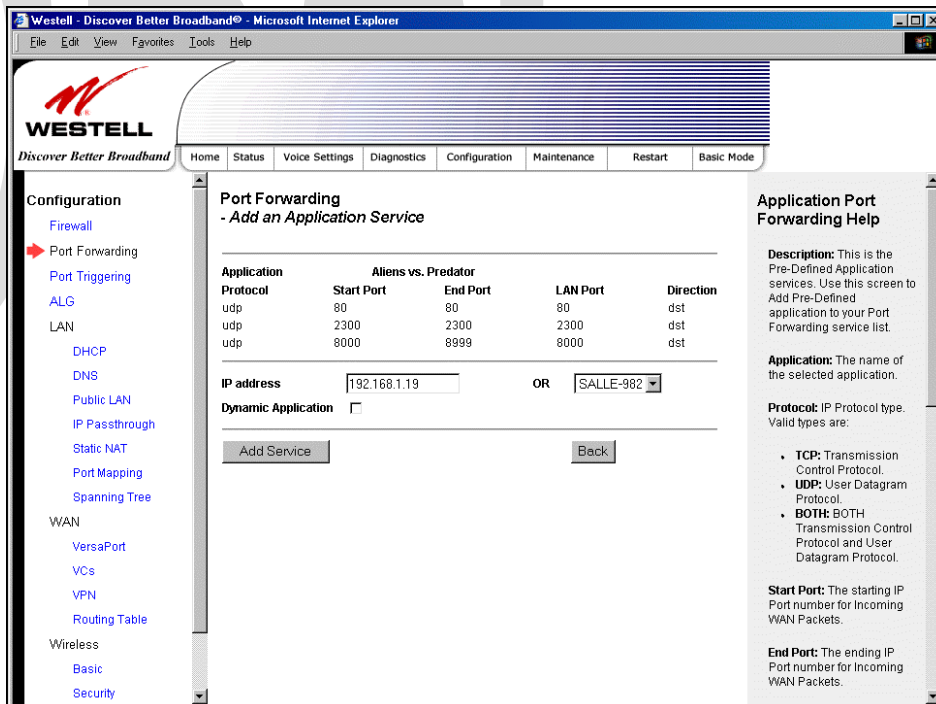


To set up port forwarding, select a service from the **Service Name** drop-down menu.

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

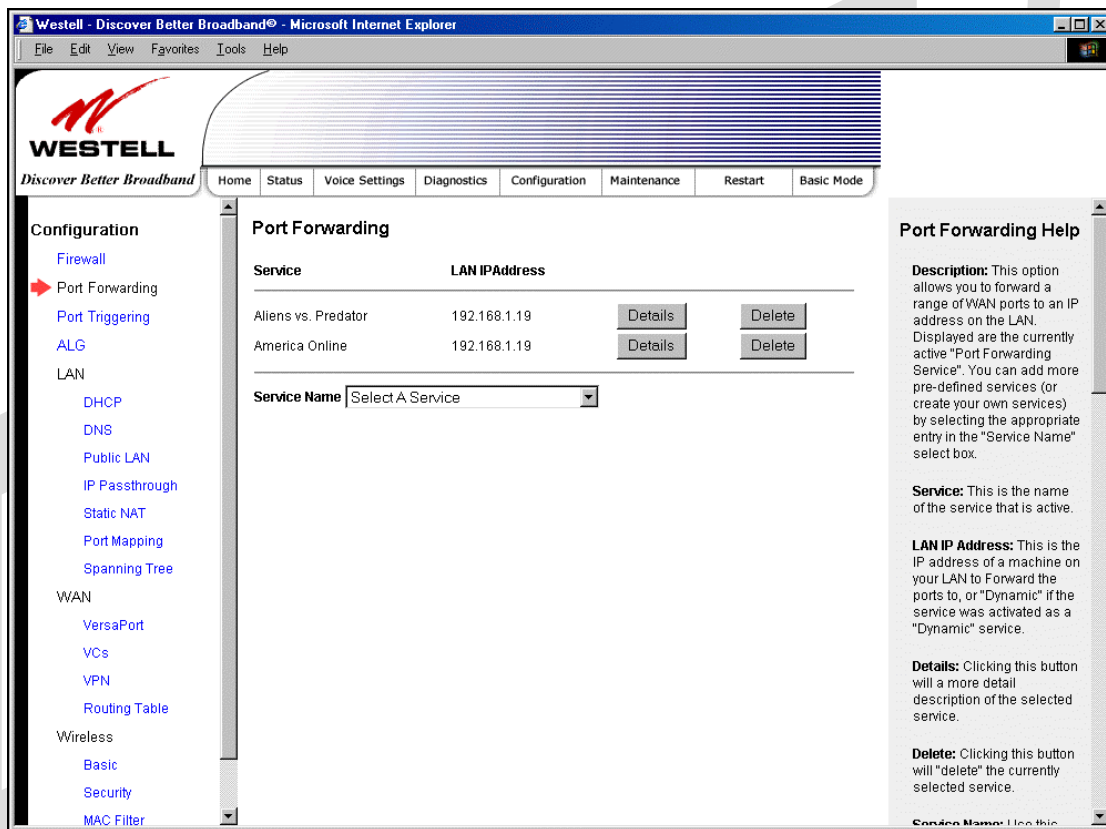


After you have selected a service name from the **Service Name** drop-down menu, the following **Port Forwarding – Add an Application Service** screen will be displayed. Enter the appropriate IP address or machine name in the fields provided and then click **Add Service**. Repeat these steps to add additional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

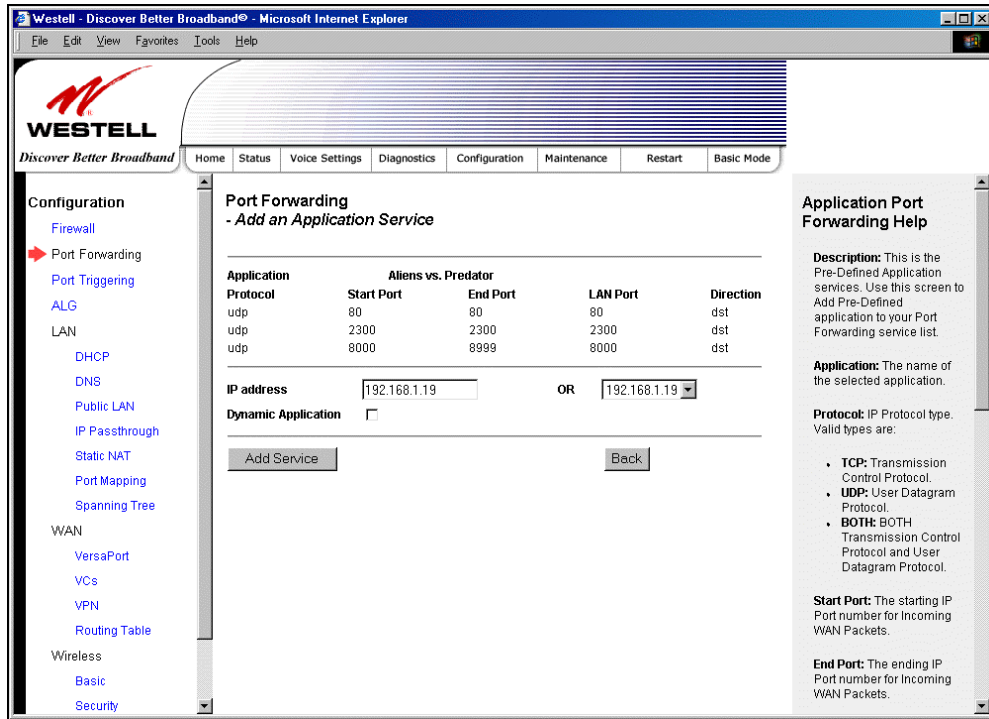


Application Protocol	The IP Protocol type that is assigned to this service.
Start Port	The start port that is assigned to the service
End Port	The end port that is assigned to the service
LAN Port	The LAN port that is assigned to the service.
Direction	The traffic direction assigned to the service.
IP 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 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 of your service, click **Back** to return to the preceding **Port Forwarding** screen.



WESTELL
Discover Better Broadband

Home Status Voice Settings Diagnostics Configuration Maintenance Restart Basic Mode

Configuration

- Firewall
- Port Forwarding
- Port Triggering
- ALG
- LAN
 - DHCP
 - DNS
 - Public LAN
 - IP Passthrough
 - Static NAT
 - Port Mapping
 - Spanning Tree
- WAN
 - VersaPort
 - VCs
 - VPN
 - Routing Table
- Wireless
 - Basic
 - Security

Port Forwarding
- Add an Application Service

Application	Start Port	End Port	LAN Port	Direction
Aliens vs. Predator				
udp	80	80	80	dst
udp	2300	2300	2300	dst
udp	8000	8999	8000	dst

IP address: 192.168.1.19 OR 192.168.1.19

Dynamic Application:

Add Service Back

Application Port Forwarding Help

Description: This is the Pre-Defined Application services. Use this screen to Add Pre-Defined application to your Port Forwarding service list.

Application: The name of the selected application.

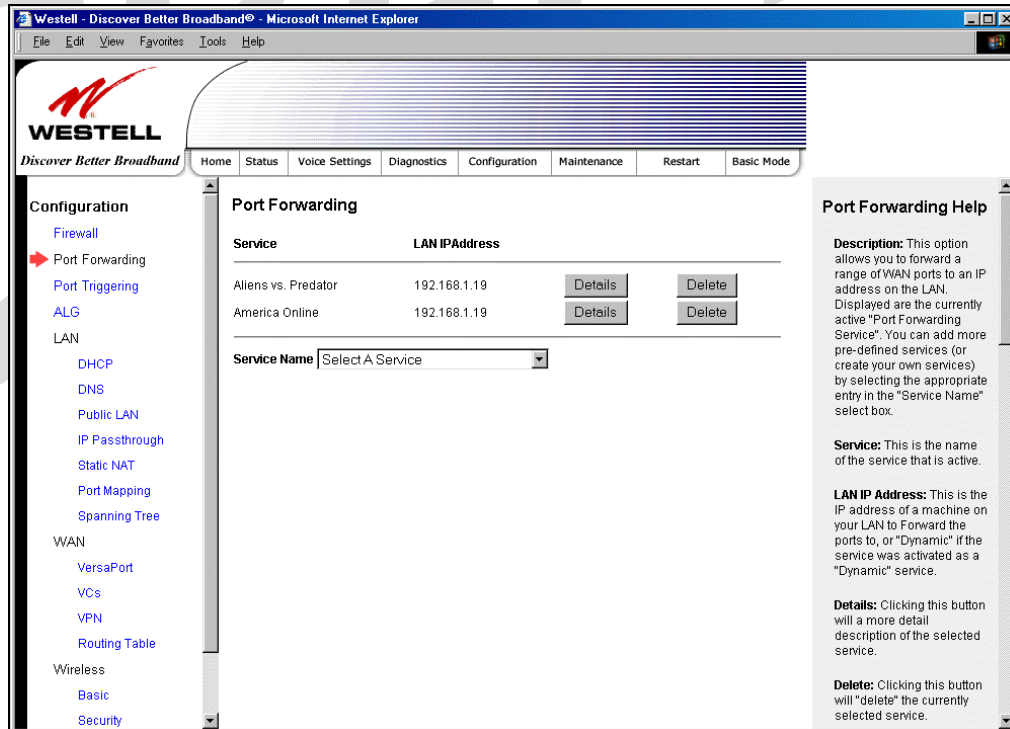
Protocol: IP Protocol type. Valid types are:

- TCP:** Transmission Control Protocol.
- UDP:** User Datagram Protocol.
- BOTH:** BOTH Transmission Control Protocol and User Datagram Protocol.

Start Port: The starting IP Port number for Incoming WAN Packets.

End Port: The ending IP Port number for Incoming WAN Packets.

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



WESTELL
Discover Better Broadband

Home Status Voice Settings Diagnostics Configuration Maintenance Restart Basic Mode

Configuration

- Firewall
- Port Forwarding
- Port Triggering
- ALG
- LAN
 - DHCP
 - DNS
 - Public LAN
 - IP Passthrough
 - Static NAT
 - Port Mapping
 - Spanning Tree
- WAN
 - VersaPort
 - VCs
 - VPN
 - Routing Table
- Wireless
 - Basic
 - Security

Port Forwarding

Service	LAN IP Address	Details	Delete
Aliens vs. Predator	192.168.1.19	Details	Delete
America Online	192.168.1.19	Details	Delete

Service Name: Select A Service

Port Forwarding Help

Description: This option allows you to forward a range of WAN ports to an IP address on the LAN. Displayed are the currently active "Port Forwarding Service". You can add more pre-defined services (or create your own services) by selecting the appropriate entry in the "Service Name" select box.

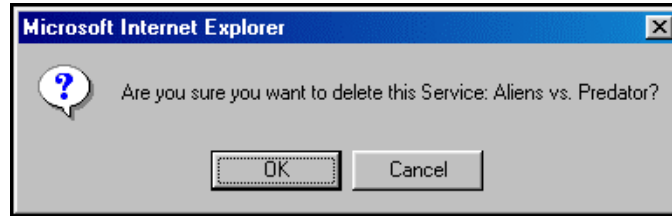
Service: This is the name of the service that is active.

LAN IP Address: This is the IP address of a machine on your LAN to Forward the ports to, or "Dynamic" if the service was activated as a "Dynamic" service.

Details: Clicking this button will a more detail description of the selected service.

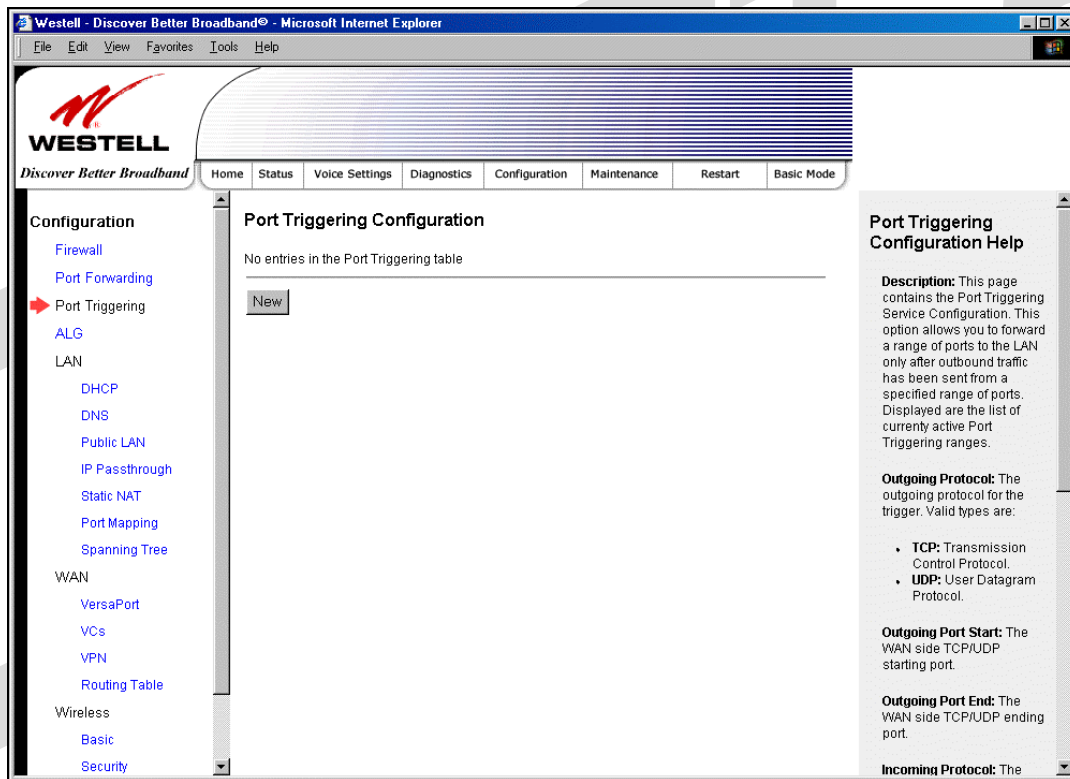
Delete: Clicking this button will "delete" the currently selected service.

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 then be removed from the list of selected services. Click **Cancel** if you do not want to delete the selected service.

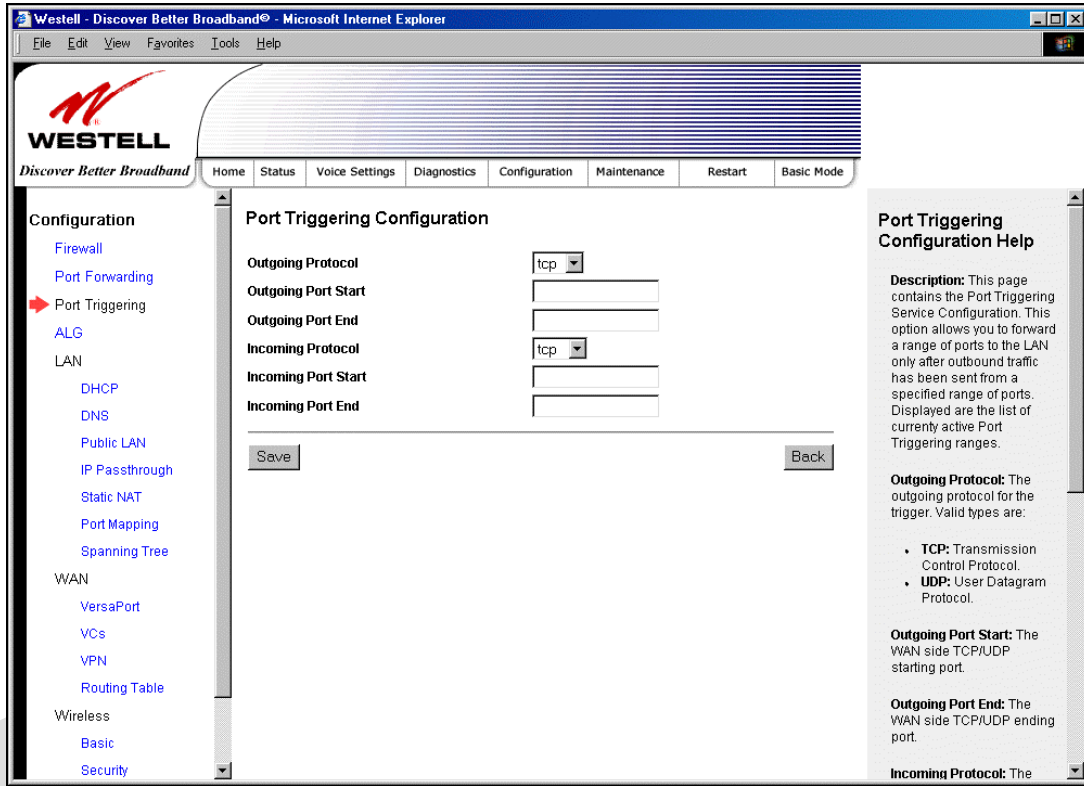


17.3 Port Triggering

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. Enter the appropriate values and click **Save** to save your settings.

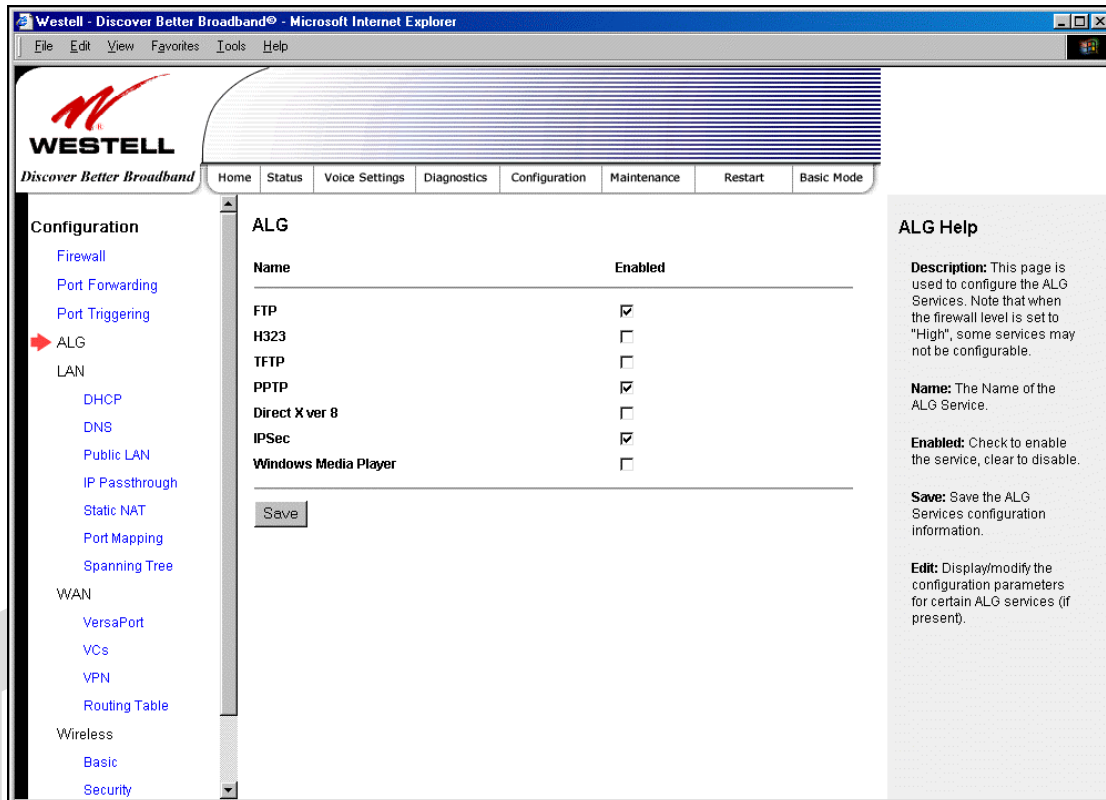


Port Triggering Configuration	
Outgoing Protocol	Factory Default = TCP The outgoing protocol for the triggered ports. Possible Response: TCP – Transmission Control Protocol UDP – User Datagram Protocol
Outgoing Port Start	The WAN-side TCP/UDP starting port
Outgoing Port End	The WAN-side TCP/UDP ending port
Incoming Protocol	Factory Default = TCP The incoming protocol for the triggered ports. Possible Response: 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.

17.4 ALG Configuration

The following screen will be displayed if you select **ALG** from the **Configuration** menu. This page enables you to configure ALG services for your Router. Enter the appropriate settings and then click **Save** to save the settings.

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



Name	Enabled
FTP	<input checked="" type="checkbox"/>
H323	<input type="checkbox"/>
TFTP	<input type="checkbox"/>
PPTP	<input checked="" type="checkbox"/>
Direct X ver 8	<input type="checkbox"/>
IPSec	<input checked="" type="checkbox"/>
Windows Media Player	<input type="checkbox"/>

ALG Help

Description: This page is used to configure the ALG Services. Note that when the firewall level is set to "High", some services may not be configurable.

Name: The Name of the ALG Service.

Enabled: Check to enable the service, clear to disable.

Save: Save the ALG Services configuration information.

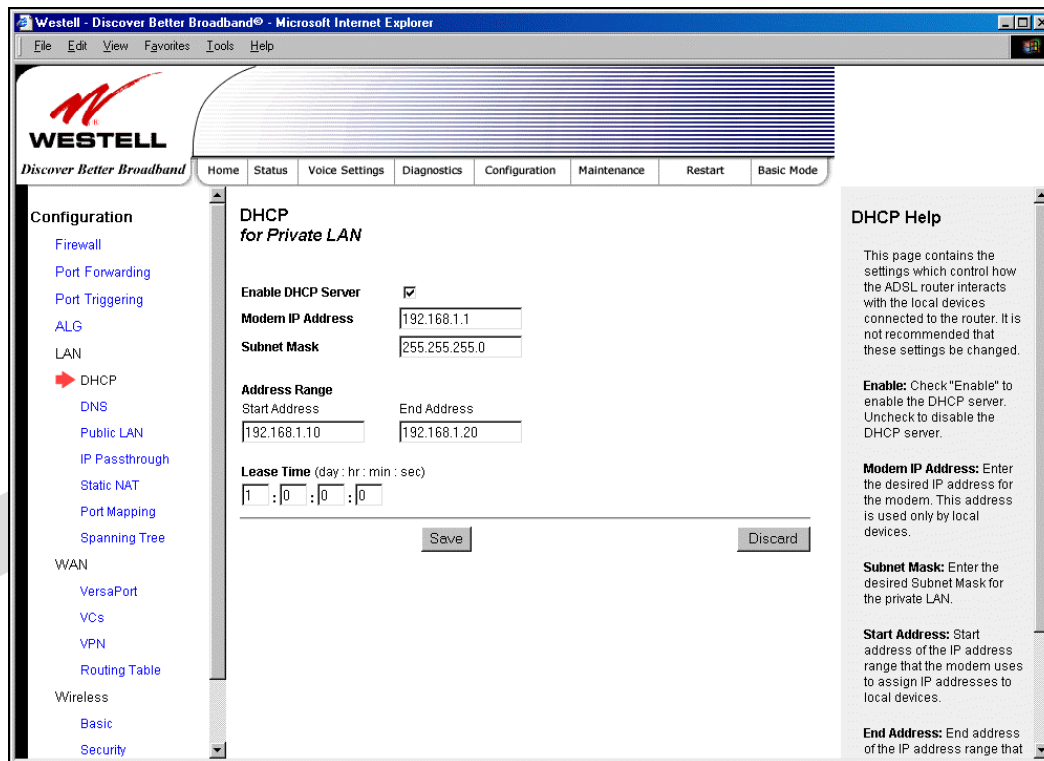
Edit: Display/modify the configuration parameters for certain ALG services (if present).

17.5 LAN Configuration

17.5.1 DHCP

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

Note: Westell recommends that you do not change these settings unless instructed by your Internet service provider.

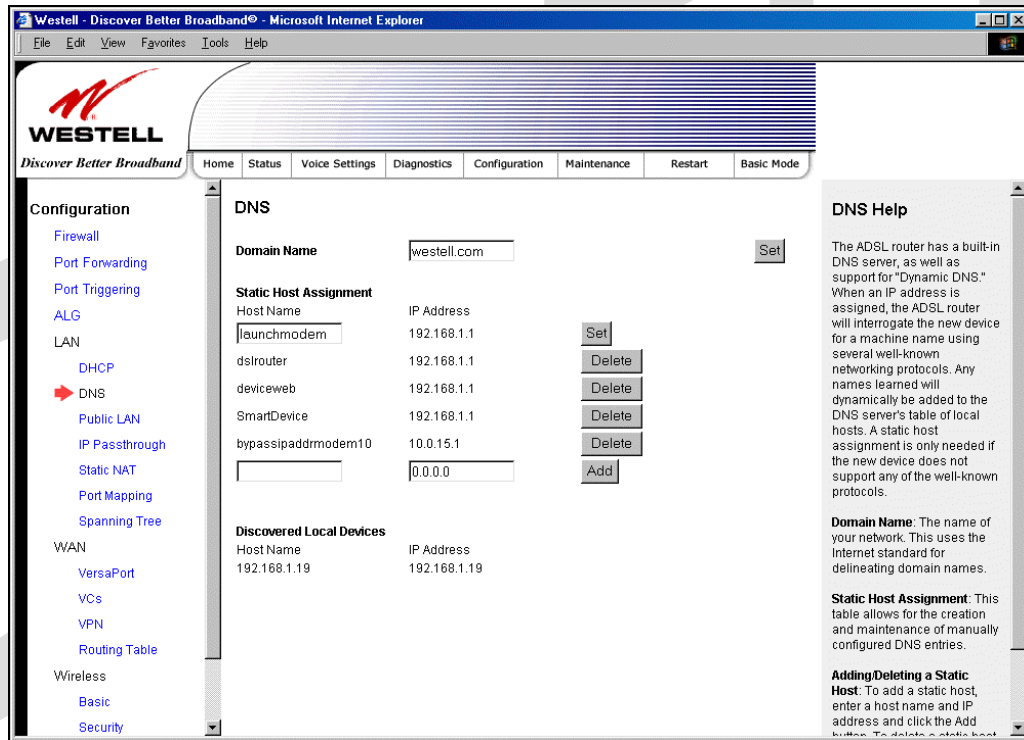


DHCP Configuration for Private LAN	
Enable DHCP Server	Factory Default = Enable This setting allows the Router to automatically assign IP addresses to local devices connected on the LAN. Westell advises setting this to enabled for the private LAN. Private LAN = DHCP addresses will be saved into the Private LAN configuration. Public LAN = DHCP addresses will be saved into the Public LAN configuration. (This option is only available if the Public LAN DHCP server is enabled.) Possible Response: 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 Router
Subnet Mask	The Subnet Mask of the Router
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.

17.5.2 DNS

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



DNS	
Domain Name	This field allows you to enter a Domain Name for the Router.
NOTE: Some ISP's may require the name for identification purposes.	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 Router. 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.

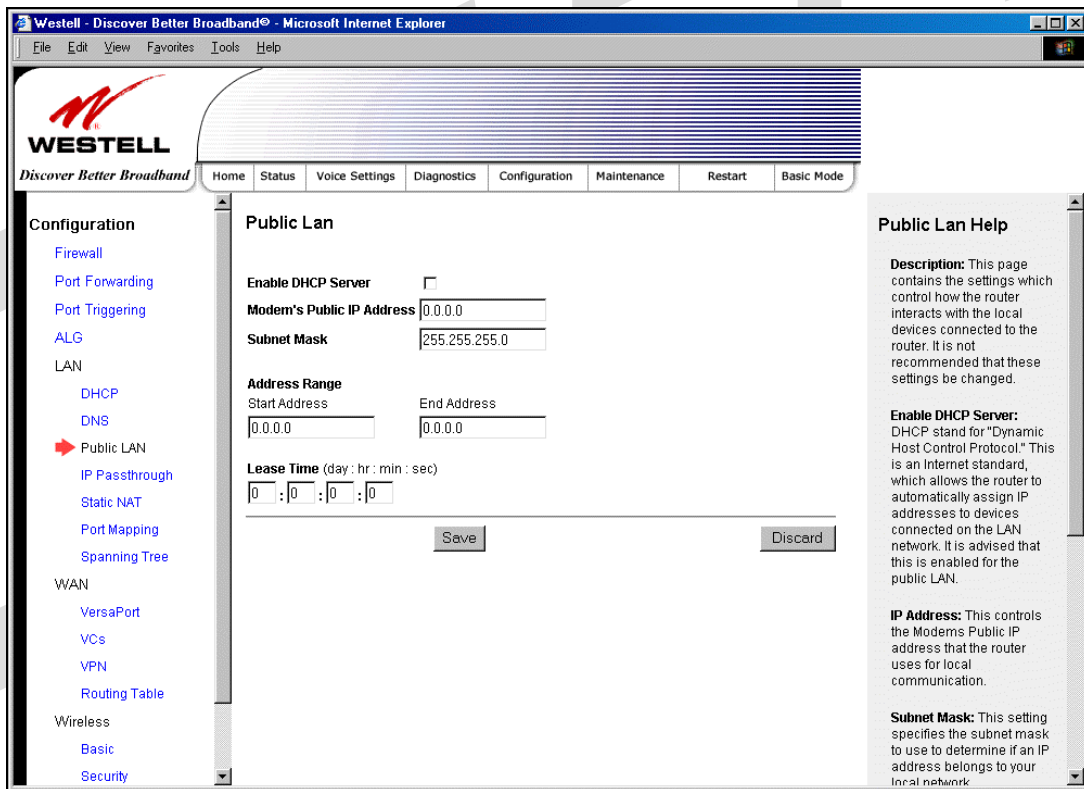
IP Address	Displays the IP address that is assigned to the Host Name.
Discovered Local Devices	
This field displays a list of the computers on the LAN that have been assigned a DHCP Address. The DNS name and IP address entry of each discovered device is displayed. (NOTE: The values in this field will be displayed barring any propagation delays. If 'No Discovered Devices' is displayed, manually refresh the screen.)	

17.5.3 Public LAN – Multiple IP Address Passthrough

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

NOTE: Selecting Public LAN will enable the VersaPort™2 port to function as an Ethernet LAN port allowing your Router to use LAN IP addresses that accessible from the WAN. This allows your computer to have global address ability. To use the Public LAN feature on the Router, your ISP must support Public LAN and Static IP. Contact your ISP for details. When VersaPort™2 is configured for Public LAN, the Router's DSL transceiver will be enabled.

Important: By enabling the Public LAN DHCP Server, you automatically disable the Private LAN DHCP Server on your Router.



Public LAN Settings	
Enable DHCP Server	Factory Default = Disable Possible Response: 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 (the box is unchecked), this will disable the Public LAN DHCP server.
Modem's Public IP Address	The Router'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

17.5.4 IP Passthrough – Single IP Address Passthrough

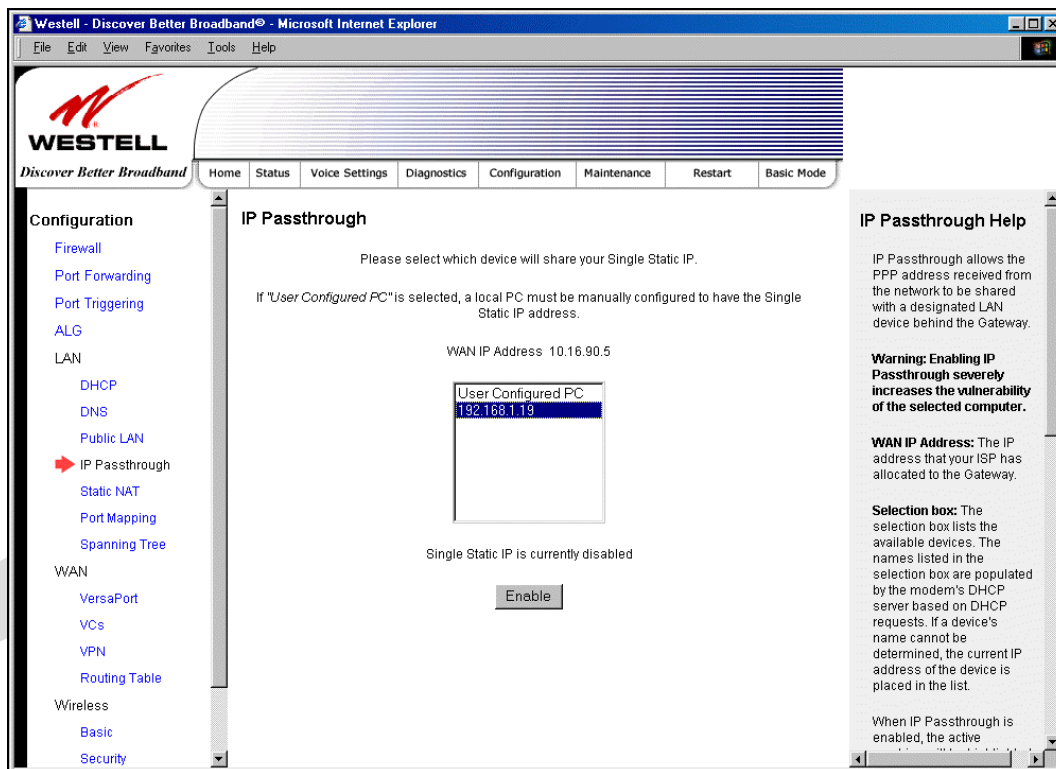
IP Passthrough enables you to select the device on your LAN that will share your Single Static IP address. Before you begin this section, configure your PC settings to obtain an IP address from your Router automatically. (Refer to your computer's Windows® Help screen for instructions.)

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.

17.5.4.1 Enabling IP Passthrough – Single IP Address PassThrough (Applicable for PPPoE or PPPoA Connections Only)

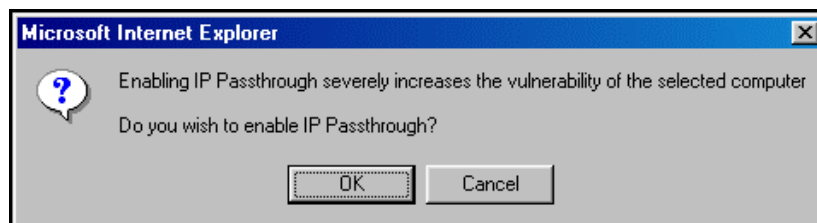
To enable IP Passthrough, select a device that will share your Single Static IP from the options listed in the window. This screen enables you to select the device on your LAN that will share your Single Static IP. Click on **enable**.

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

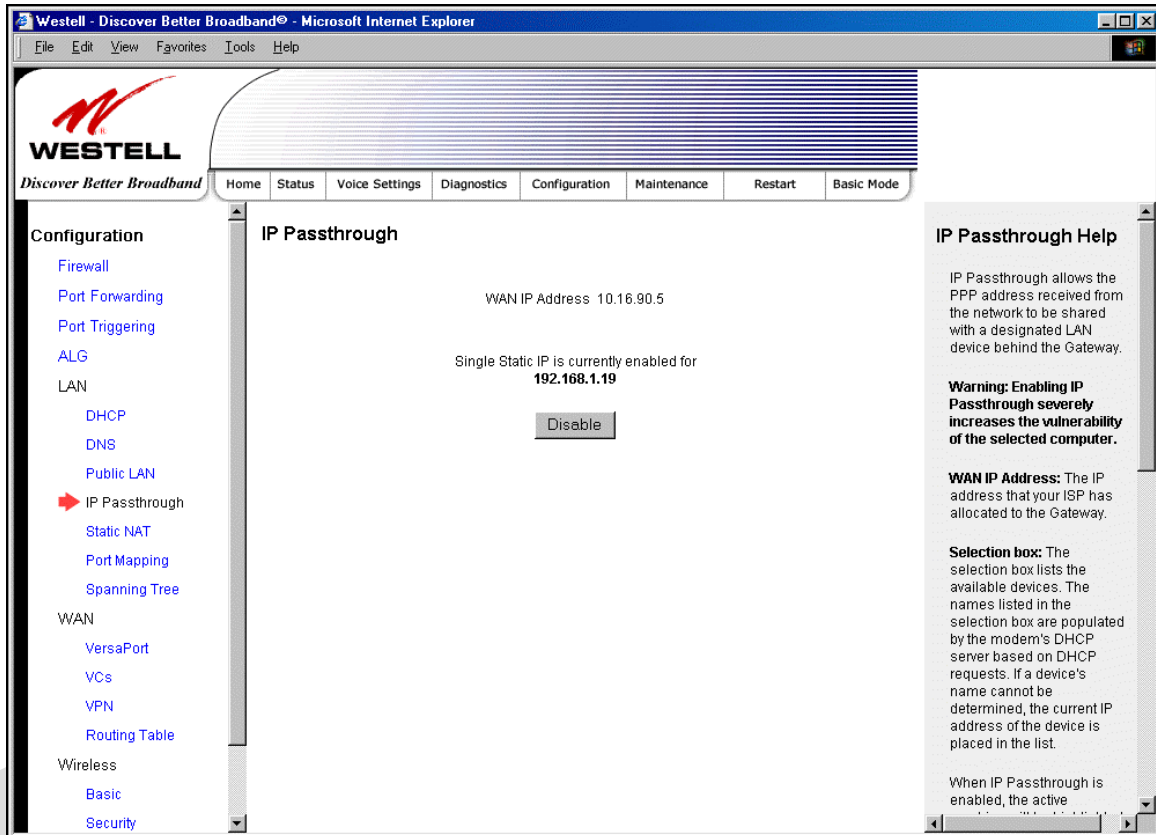


If you clicked **Enable**, the following pop-up screen will be displayed. Click **OK** to continue.

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



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

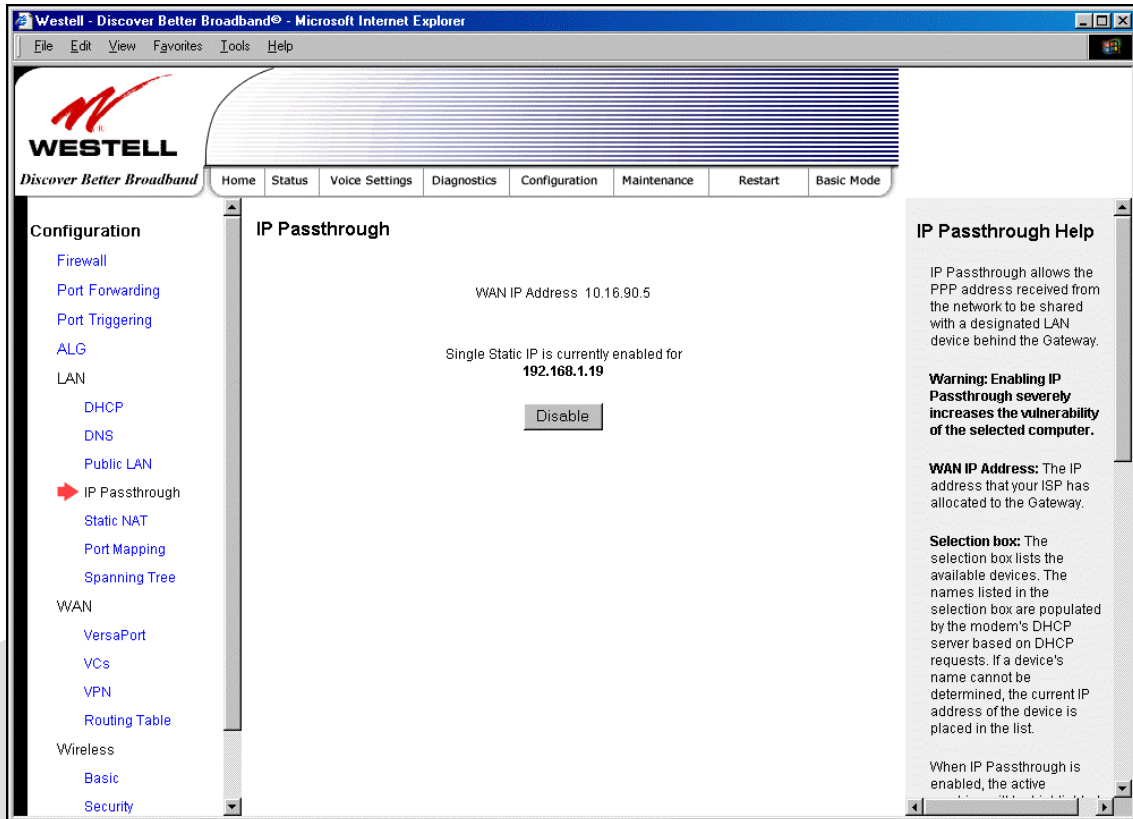


STOP! After you enable IP Passthrough, you must reboot your computer.

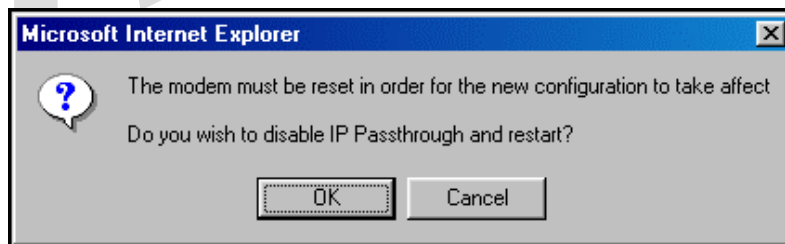
NOTE: If you chose to enable **User Configured PC**, wait for the Router to reset and then manually enter the WAN IP, Gateway, and Subnet mask addresses you obtained from your Internet service provider into a PC.

17.5.4.2 Disabling IP Passthrough – Single IP Address PassThrough

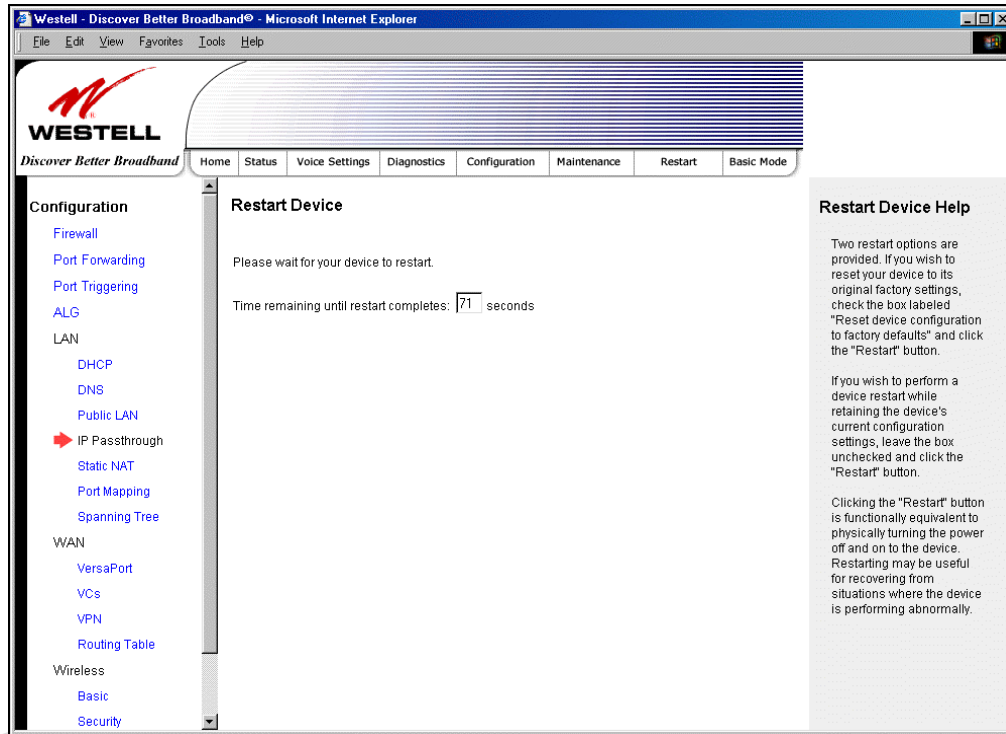
To disable IP Passthrough (if it has been previously enabled), select **IP Passthrough** from the **Configuration>LAN** menu. Click on **Disable**.



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 Router will be reset and the new configuration will take effect.



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

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

17.5.5 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 Router to work with the special NAT services.

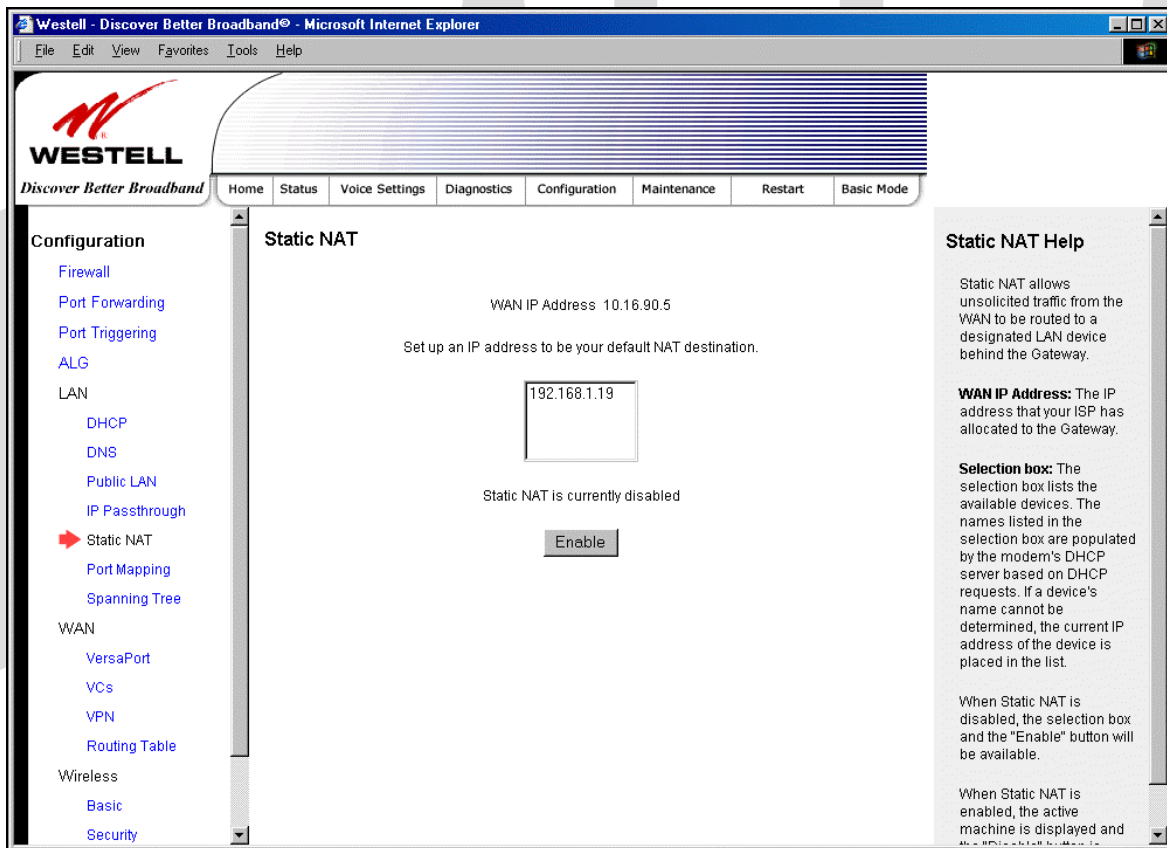
NOTE: When the Router is configured for Static NAT, any unsolicited packets arriving at the WAN would be forwarded to this device. This feature is used in cases where the user wants to host a server for a specific application.

STOP: IP Passthrough must be disabled (if it has been previously enabled) before you enable **static NAT**. Refer to section 17.5.4.2 for instructions on disabling IP Passthrough.

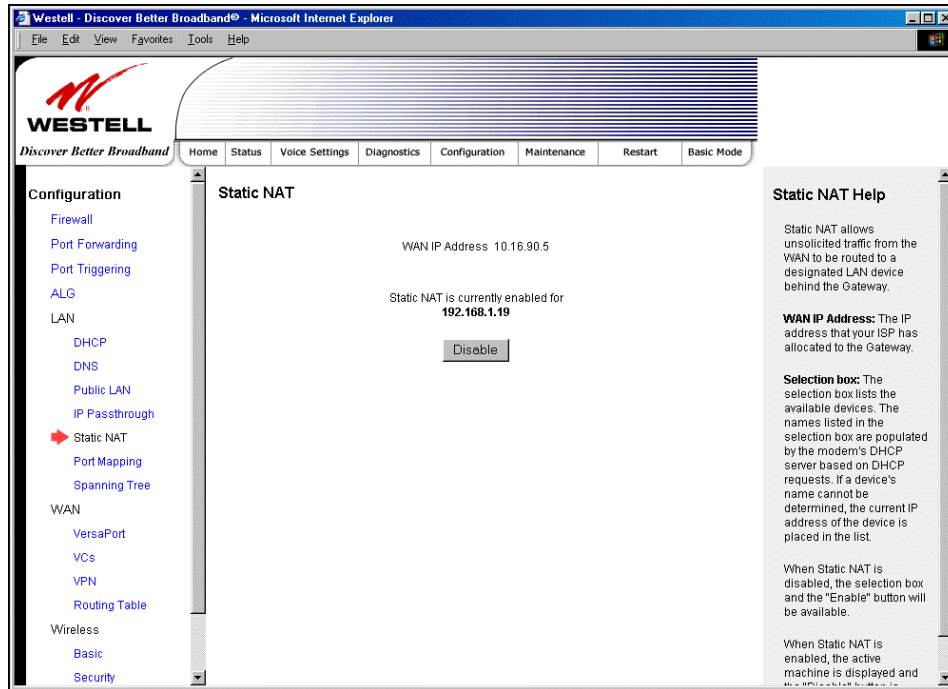
17.5.5.1 Enabling Static NAT

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.

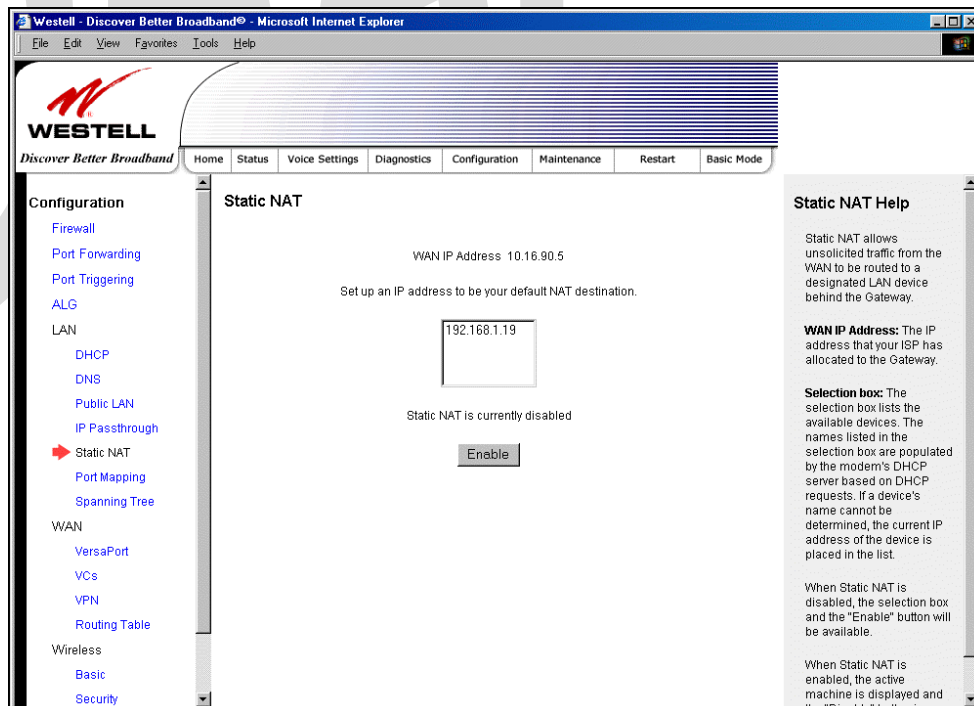


If you clicked **Enable**, the following screen will be displayed, with Static NAT enabled for the IP address or device name you selected.



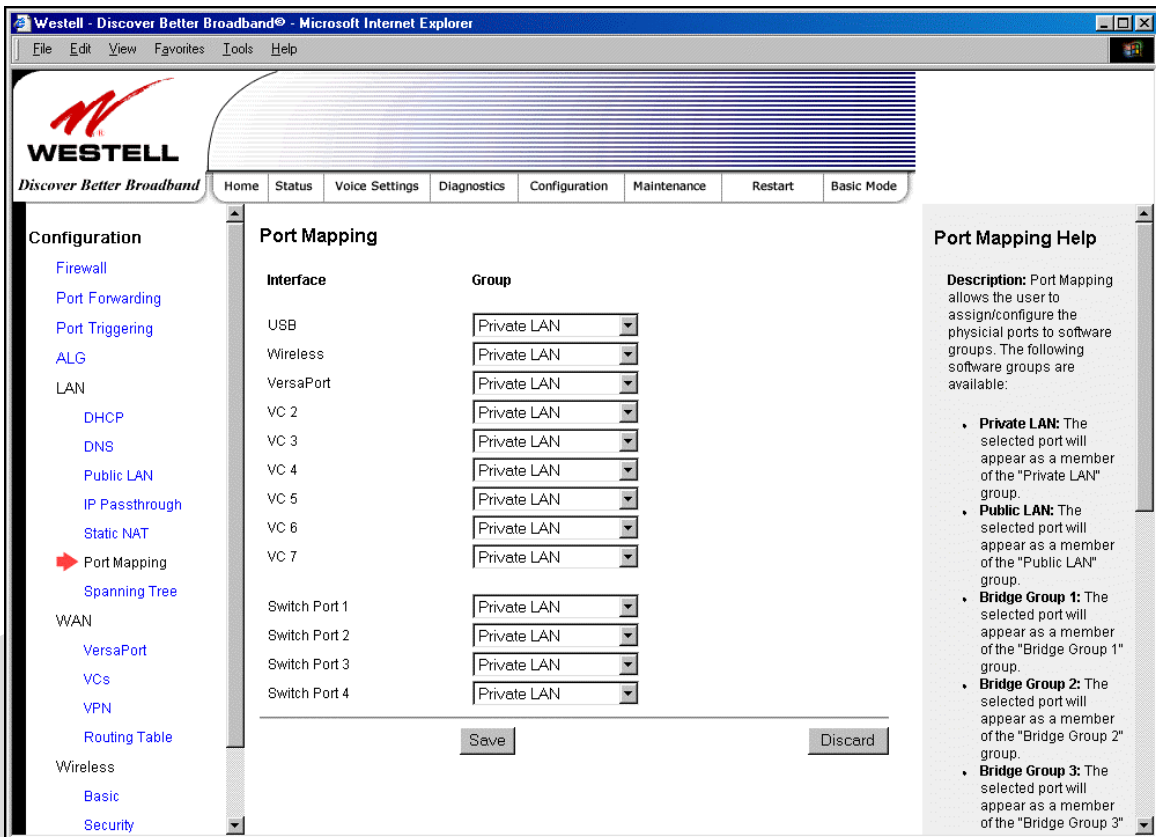
17.5.5.2 Disabling Static NAT

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



17.5.6 Port Mapping

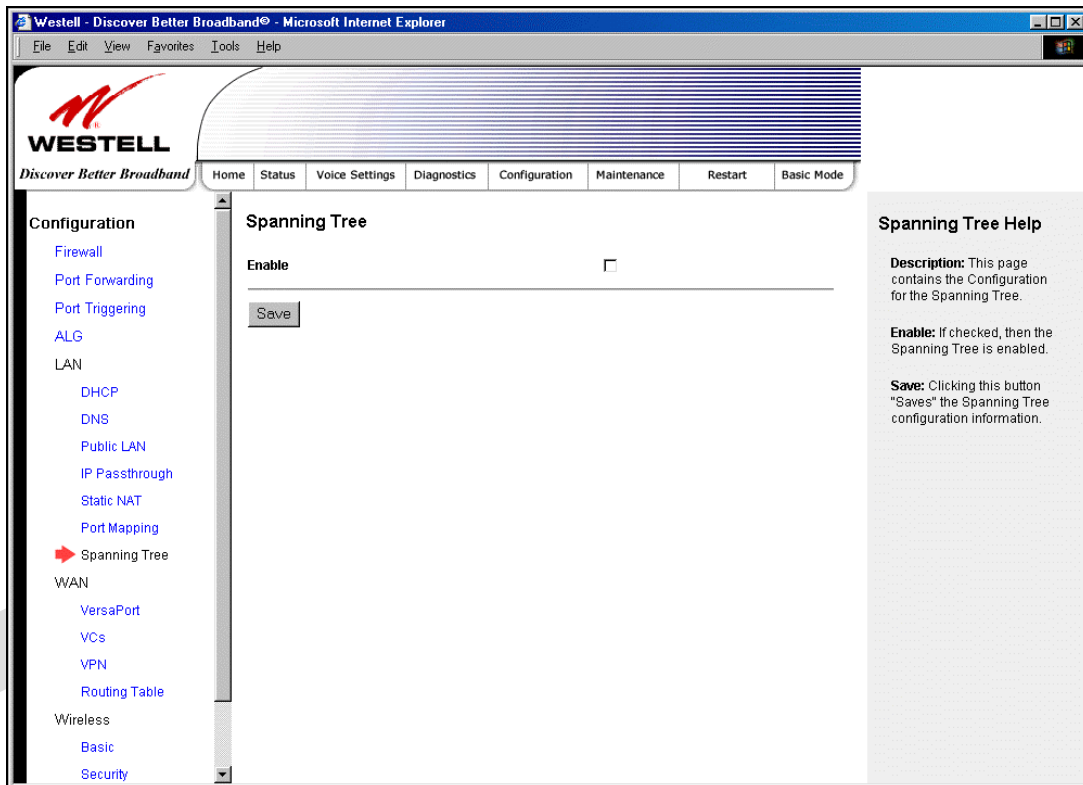
The following screen will be displayed if you select **LAN > Port Mapping** from the **Configuration** menu. This screen enables you to assign the physical ports to software groups. Enter the appropriate values, and then click **save** to save your settings.



Interface	The physical ports available for mapping
Group	<p>Factory Default: Private LAN</p> <p>The software defined virtual LAN group to which the port should be assigned:</p> <p>Possible Responses:</p> <p>Private LAN</p> <p>Public LAN</p> <p>Bridge Group One</p> <p>Bridge Group Two</p> <p>Bridge Group Three</p> <p>Bridge Group Four</p>

17.6 Spanning Tree

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

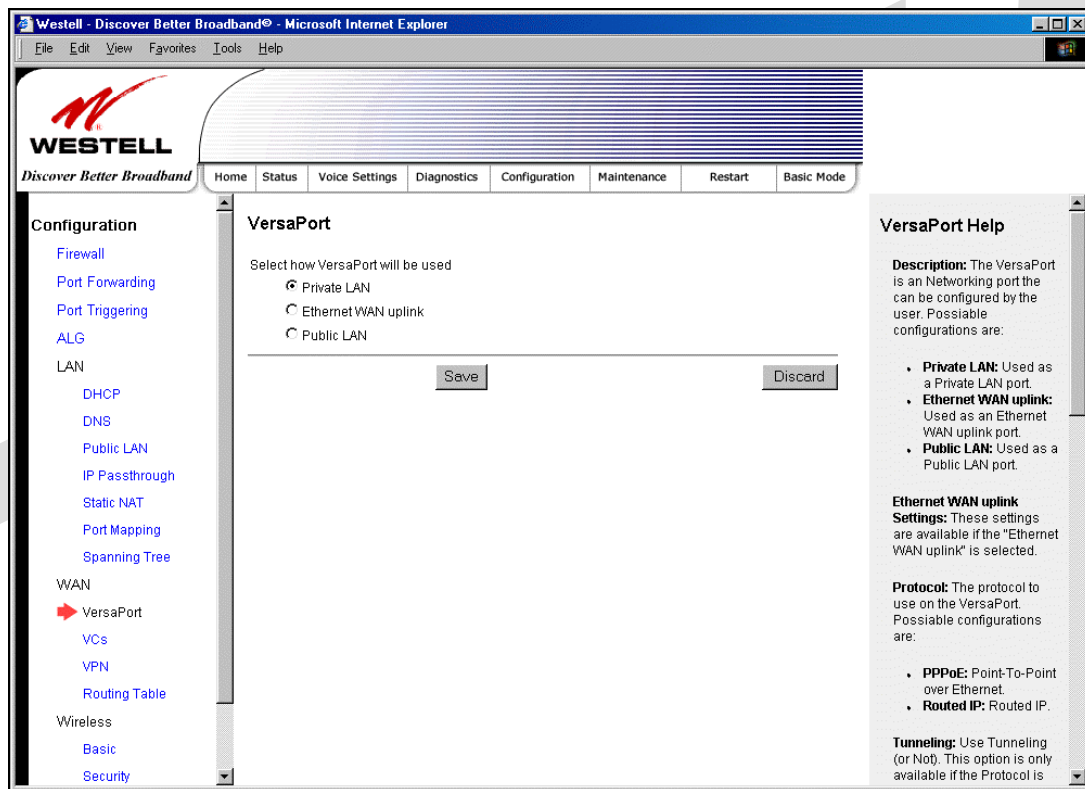


17.7 WAN Configuration

17.7.1 VersaPort

The following screen will be displayed if you select **VersaPort** from the **Configuration** menu. This function will enable you to configure the VersaPort settings for your Router. From the options provided, select how VersaPort will be used (Private LAN, Ethernet WAN Uplink, or Public LAN). Next, click **Save** to save your settings.

Important: Prior to configuring your Router’s VersaPort settings, please confirm that you are connected to the VersaPort on your Router. Refer to section 6.4.2 (Installation via VersaPort) for details on your Router’s hardware installation procedures.



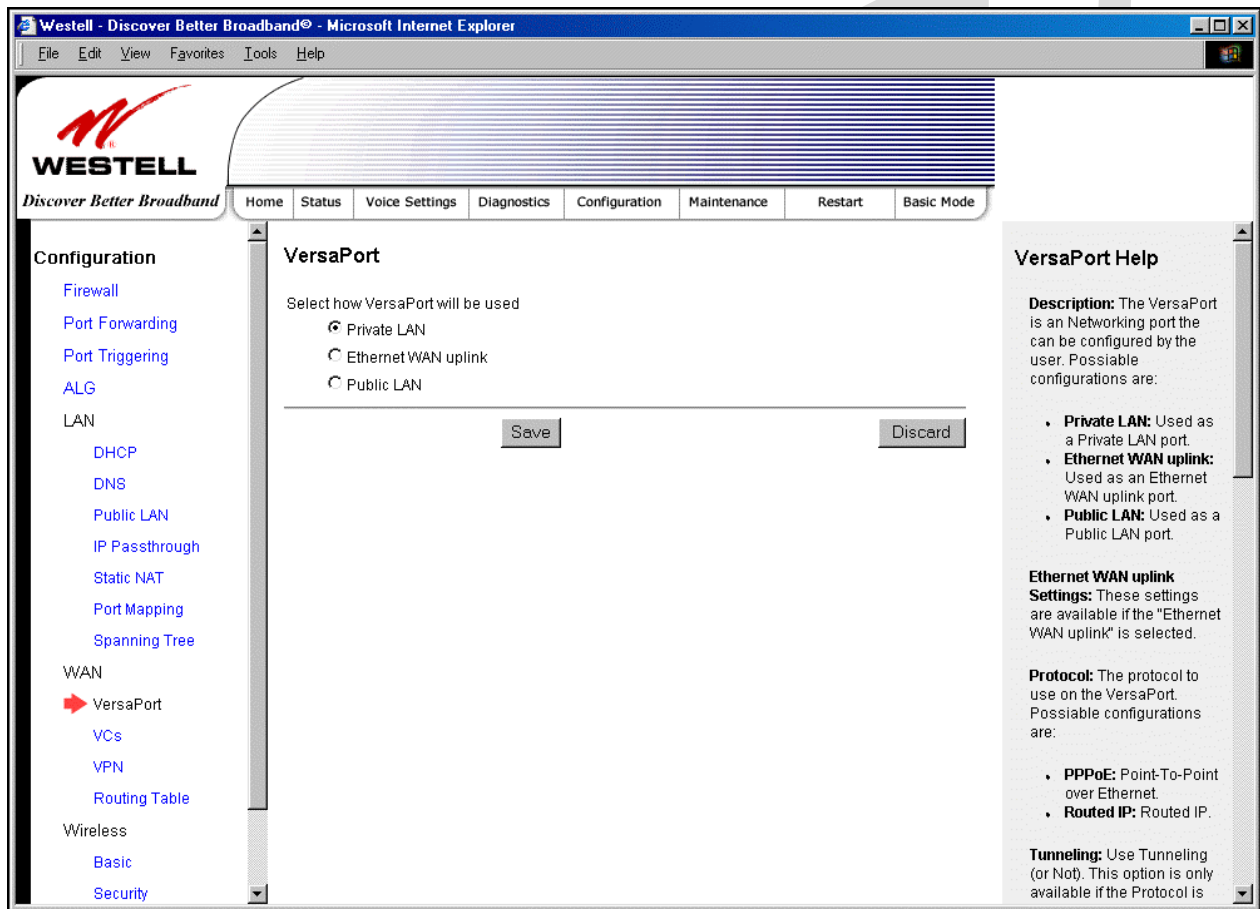
Private LAN	If selected, the VersaPort will function as a fifth Ethernet LAN port. Private LAN allows you to set up a network behind the Router. When using Private LAN, the Router’s DSL transceiver will be Enabled .
Ethernet WAN Uplink	If selected, the VersaPort will function as an Ethernet WAN Uplink port, and the Router’s DSL transceiver will be Disabled .
Public LAN	If selected, the VersaPort will function as an Ethernet LAN port allowing your Router to use LAN IP addresses that accessible from the WAN. This allows your computer to have global address ability. To use the Public LAN feature on the Router, your ISP must support Public LAN and Static IP. Contact your ISP for details. When using Public LAN, the Router’s DSL transceiver will be Enabled .

17.7.2 Private LAN – Configuring NAT

If you select **Private LAN** in the **VersaPort** screen, the following screen will be displayed. Private LAN enables you to set up a network behind the Router. After you have entered the appropriate values, click **Save** to save your settings.

NOTE: Selecting **Private LAN** will enable you to set up a network behind your Router. When your Router is configured for Private LAN, the VersaPort port functions as fifth Ethernet LAN port. To connection additional PCs to your Router, use the four black Ethernet ports on the rear of the Router as they function as an Ethernet switch. (Private LAN is the default VersaPort Configuration for your Router.)

Important: By enabling the Private LAN DHCP Server, you automatically disable the Public LAN DHCP Server on your Router.



WESTELL
Discover Better Broadband

Home Status Voice Settings Diagnostics Configuration Maintenance Restart Basic Mode

Configuration

- Firewall
- Port Forwarding
- Port Triggering
- ALG
- LAN
 - DHCP
 - DNS
 - Public LAN
 - IP Passthrough
 - Static NAT
 - Port Mapping
 - Spanning Tree
- WAN
 - VersaPort**
 - VCs
 - VPN
 - Routing Table
- Wireless
 - Basic
 - Security

VersaPort

Select how VersaPort will be used

- Private LAN
- Ethernet WAN uplink
- Public LAN

Save Discard

VersaPort Help

Description: The VersaPort is an Networking port the can be configured by the user. Possible configurations are:

- Private LAN:** Used as a Private LAN port.
- Ethernet WAN uplink:** Used as an Ethernet WAN uplink port.
- Public LAN:** Used as a Public LAN port.

Ethernet WAN uplink Settings: These settings are available if the "Ethernet WAN uplink" is selected.

Protocol: The protocol to use on the VersaPort. Possible configurations are:

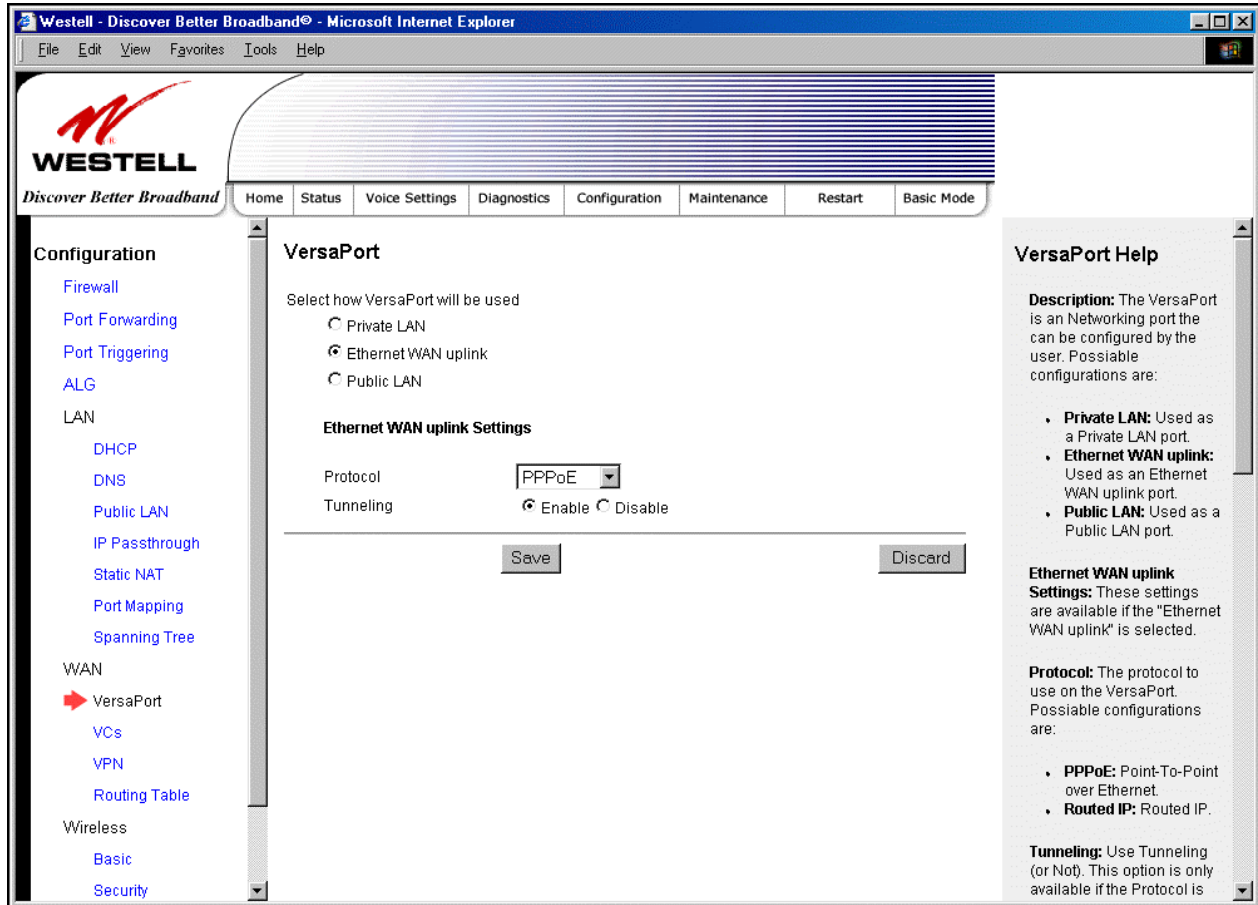
- PPPoE:** Point-To-Point over Ethernet.
- Routed IP:** Routed IP.

Tunneling: Use Tunneling (or Not). This option is only available if the Protocol is

17.7.3 Ethernet WAN Uplink

If you select **Ethernet WAN Uplink** in the **VersaPort Configuration** screen, the following screen will be displayed.

NOTE: Selecting **Ethernet WAN Uplink** will allow the Router's WAN interface to use the VersaPort. This will disable the Router's DSL transceiver.



WESTELL
Discover Better Broadband

Home Status Voice Settings Diagnostics Configuration Maintenance Restart Basic Mode

Configuration

- Firewall
- Port Forwarding
- Port Triggering
- ALG
- LAN
 - DHCP
 - DNS
 - Public LAN
 - IP Passthrough
 - Static NAT
 - Port Mapping
 - Spanning Tree
- WAN
 - VersaPort**
 - VCs
 - VPN
 - Routing Table
- Wireless
 - Basic
 - Security

VersaPort

Select how VersaPort will be used

- Private LAN
- Ethernet WAN uplink
- Public LAN

Ethernet WAN uplink Settings

Protocol:

Tunneling: Enable Disable

Save Discard

VersaPort Help

Description: The VersaPort is an Networking port the can be configured by the user. Possible configurations are:

- Private LAN:** Used as a Private LAN port.
- Ethernet WAN uplink:** Used as an Ethernet WAN uplink port.
- Public LAN:** Used as a Public LAN port.

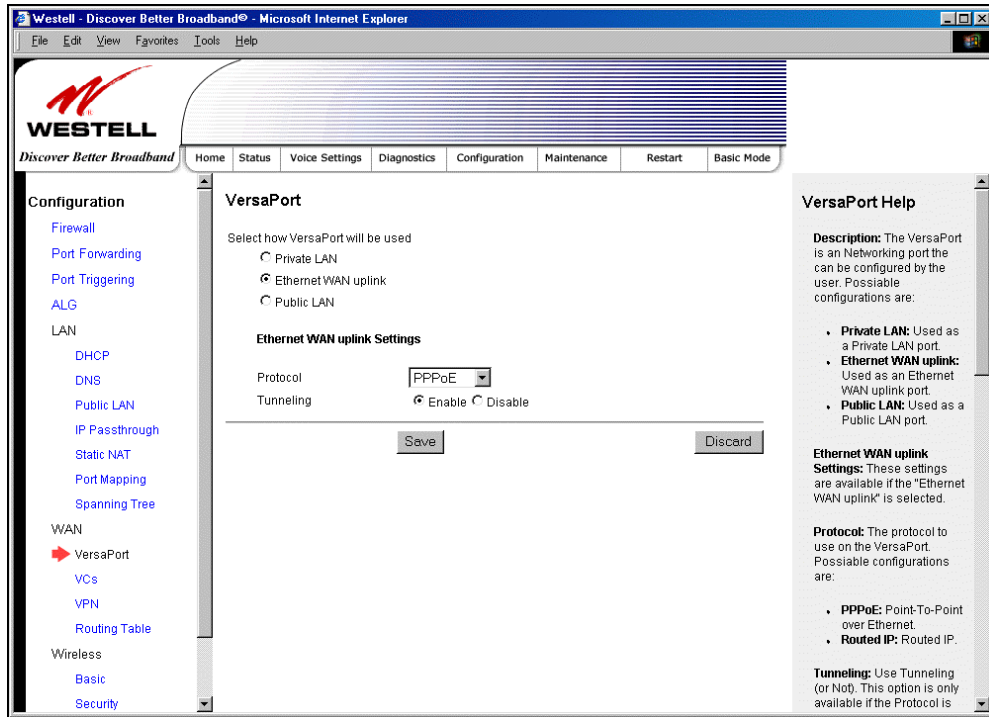
Ethernet WAN uplink Settings: These settings are available if the "Ethernet WAN uplink" is selected.

Protocol: The protocol to use on the VersaPort. Possible configurations are:

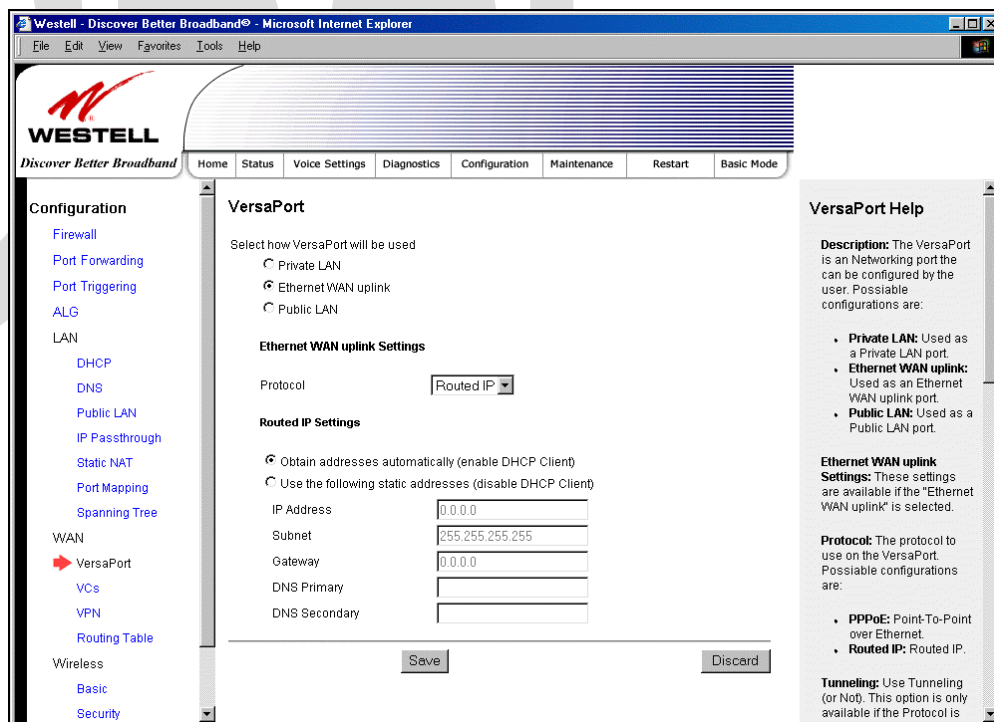
- PPPoE:** Point-To-Point over Ethernet.
- Routed IP:** Routed IP.

Tunneling: Use Tunneling (or Not). This option is only available if the Protocol is

If you select **PPPoE** as the protocol for your Ethernet WAN Uplink setting, the following screen will be displayed. Click **Save** to save your settings.



If you select **Routed IP** as the protocol for your Ethernet WAN Uplink setting, the following screen will be displayed. Enter the appropriate values in the fields provided, and then click **Save** to save your settings.

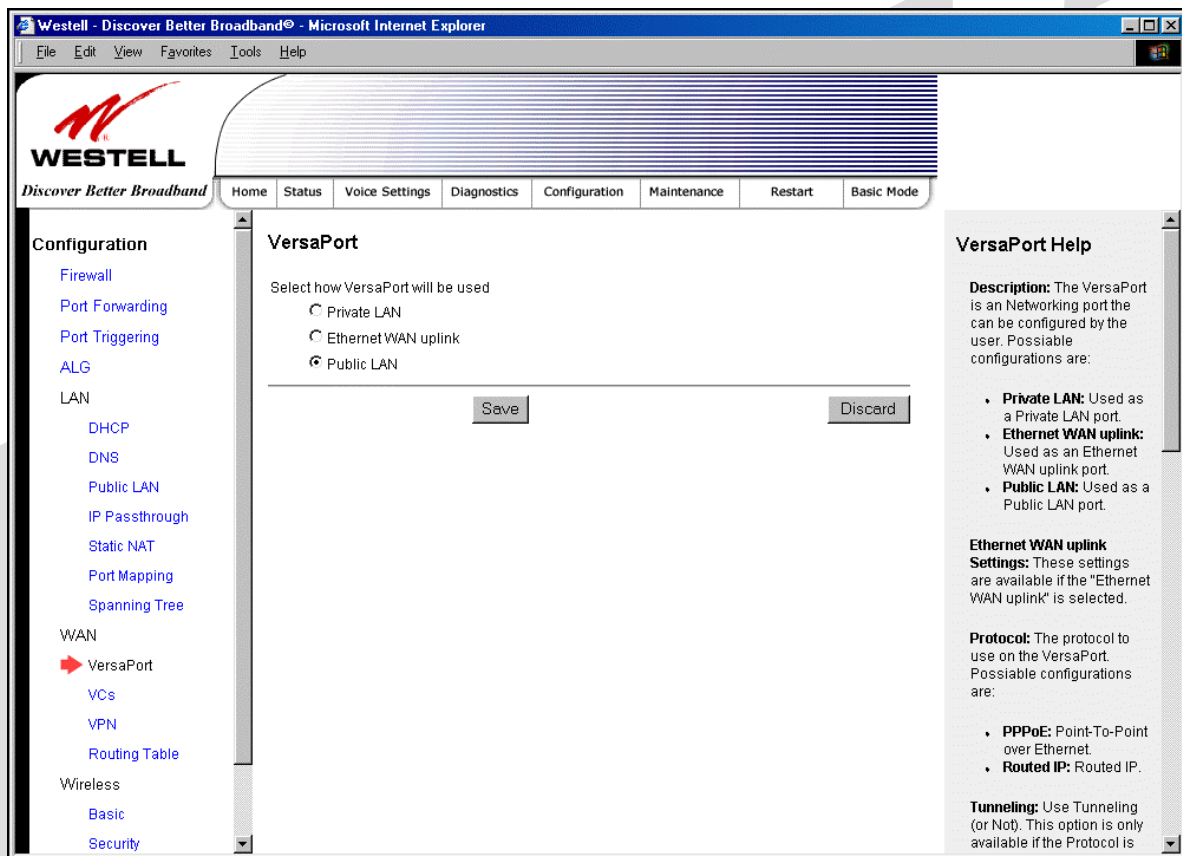


17.7.4 Public LAN – Multiple IP Address Passthrough

If you select **Public LAN** in the **VersaPort Configuration** screen, the following screen will be displayed.

NOTE: Selecting Public LAN will enable the VersaPort will function as an Ethernet LAN port allowing your Router to use LAN IP addresses that accessible from the WAN. This allows your computer to have global address ability. To use the Public LAN feature on the Router, your ISP must support Public LAN and Static IP. Contact your ISP for details. When VersaPort is configured for Public LAN, the Router's DSL transceiver will be enabled.

Important: By enabling the Public LAN DHCP Server, you automatically disable the Private LAN DHCP Server on your Router.



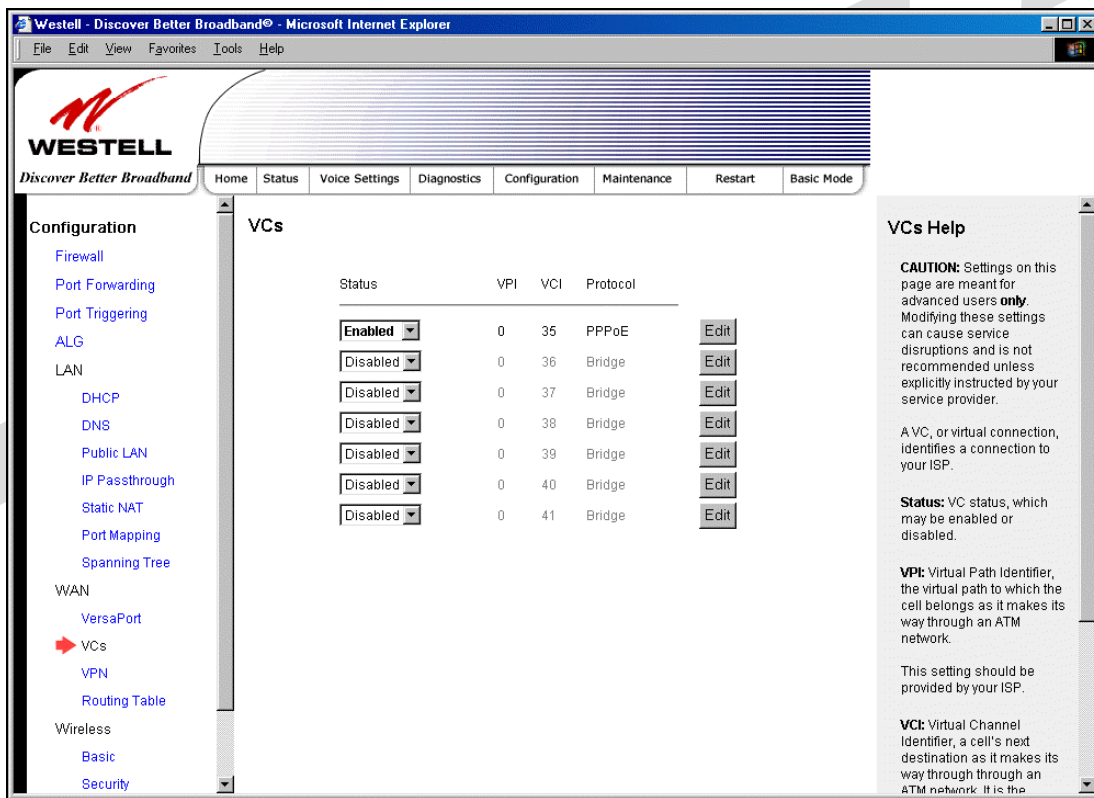
17.7.5 VCs

The following screen will be displayed if you select **WAN > VCs** from the **Configuration** screen.

NOTE: In order to enable or edit the VCs, first confirm that your Router is configured for 'Private LAN'. To configure your Router for Private LAN, return to the VersaPort screen and select **Private LAN**. Next, click **Save** to save your settings.

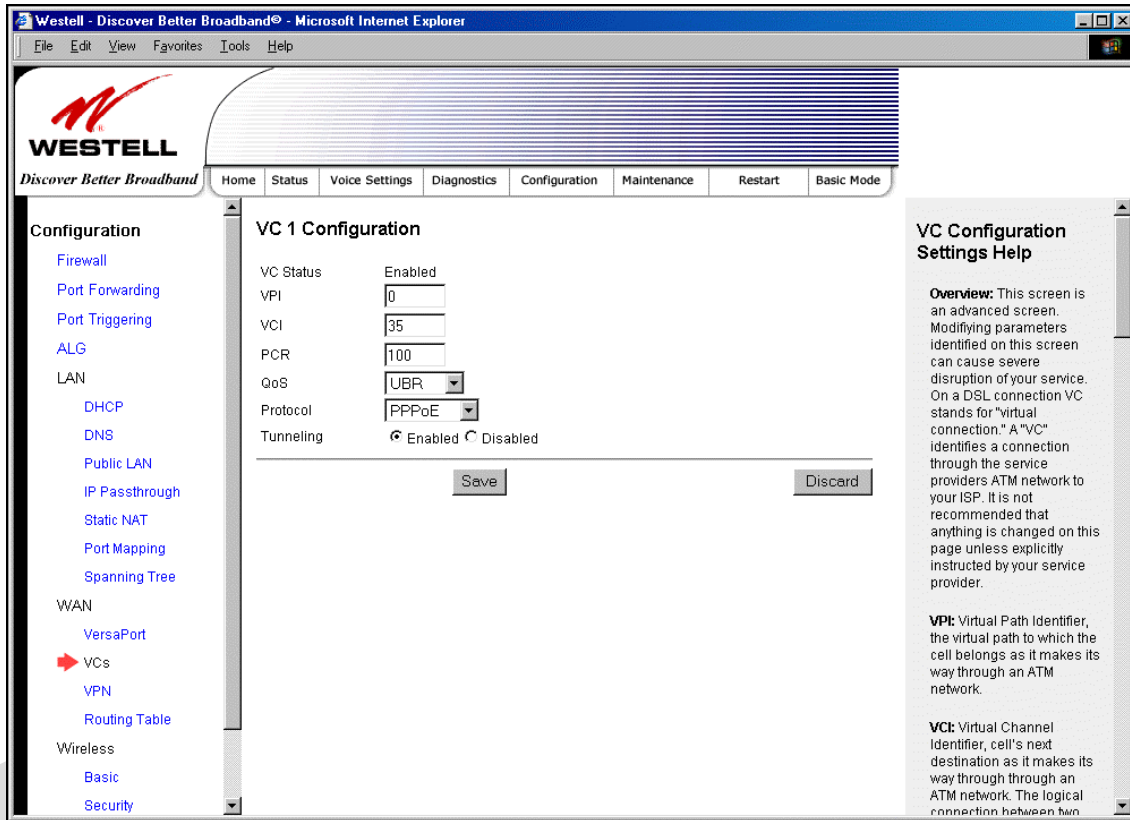
The **Edit** button enables you to change the VC configuration settings of the Router. Details on the **edit** button are explained later in this section.

NOTE: The actual information displayed in this screen may vary, depending on the network connection established.



Status	Allows you to enable or disable your VC (Virtual Connection)
VPI	Displays the VPI (Virtual Path Indicator) value for a particular VC, which is defined by your Service Provider.
VCI	Displays the VCI (Virtual Channel Indicator) value for a particular VC, which is defined by your Service Provider.
Protocol	Displays the Protocol for each VC, which is specified by your Service Provider. Possible Response: PPPoA = Point to Point Protocol over ATM (Asynchronous Transfer Mode) PPPoE = Point to Point Protocol over Ethernet Bridge = Bridge Protocol Routed IP = IP over ATM
NOTE: The configuration specified by your Service Provider will determine which Protocols are available to you.	

If you click **edit** in the **VCs Configuration** screen, the following screen will be displayed. Enter the appropriate values, and then click **Save** to save your settings.



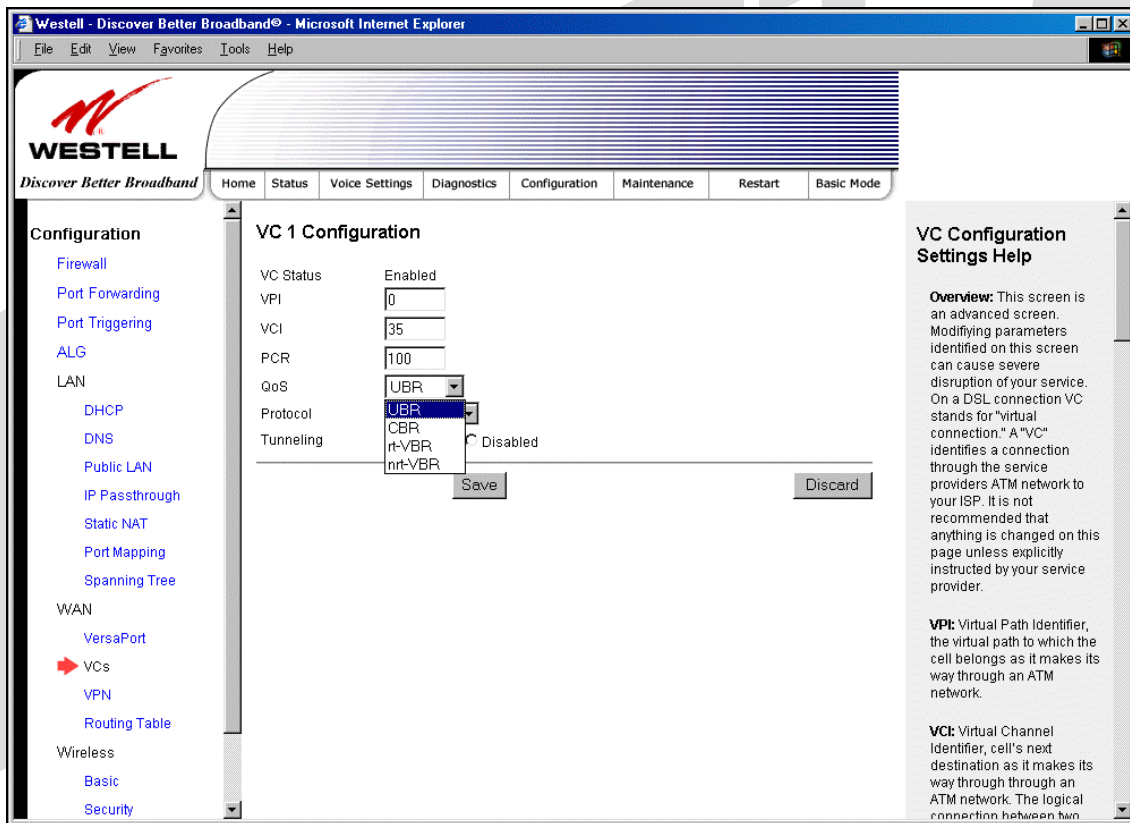
NOTE: The values for the IP Address, Gateway, DNS Primary, and DNS Secondary are all “Override of the value obtained from the PPP connection,” They default to “0.0.0.0,” in which case the override is ignored. Westell recommends that you do not change the values unless your Internet service provider instructs you to change them.

VC 1 Configuration	
VPI	This setting allows you to change your VPI (Virtual Path Indicator) value for a particular VC, which is defined by your Service Provider.
VCI	This setting allows you to change your VCI (Virtual Channel Indicator) value for a particular VC, which is defined by your Service Provider.
PCR	Factory Default = 100% Peak Cell Rate (PCR)-The maximum rate at which cells can be transmitted across a virtual circuit, specified in cells per second and defined by the interval between the transmission of the last bit of one cell and the first bit of the next. This value is a percentage of the current data rate. 100 allows this VC to use 100% of the available bandwidth. 80 allows this VC to use 80% of the available bandwidth.
QoS	Select the Quality of Service, which is determined by your Service Provider. Possible Responses: UBR = Unspecified Bit Rate CBR = Constant Bit Rate rt-VBR = real-time Variable Bit Rate nrt-VBR = non-real-time Variable Bit Rate
Protocol	The Protocol for each VC, which is specified by your Service Provider.

	<p>Possible Responses: PPPoA = Point to Point Protocol over ATM (Asynchronous Transfer Mode) PPPoE = Point to Point Protocol over Ethernet Bridge = Bridge Protocol Routed IP = IP over ATM</p>
Tunneling	<p>Factory Default = Enable If Enabled, this option enables PPP traffic to be bridged to the WAN. This feature enables you to use a PPPoE shim on the host computer to connect to the Internet service provider, by bypassing the Router's capability to do this. Note: Tunneling is available in PPPoE mode only.</p>

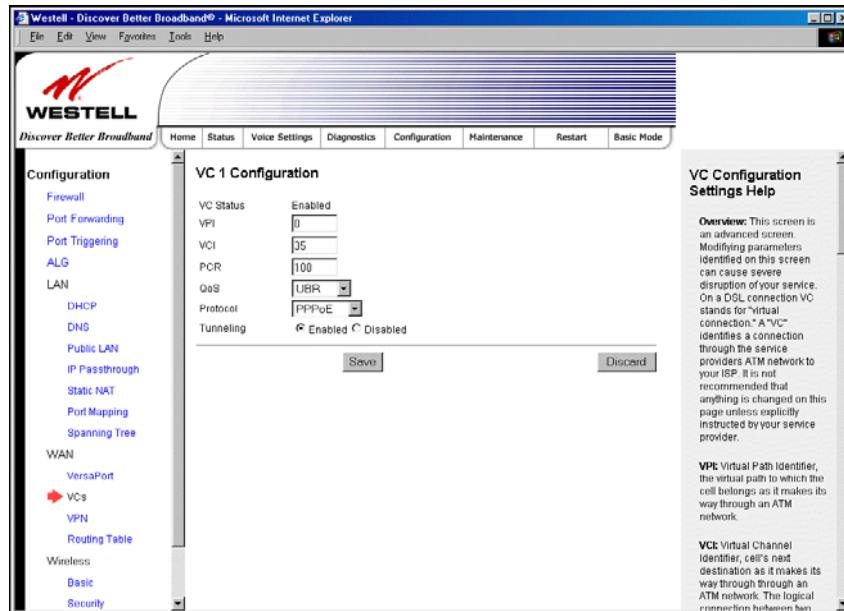
17.7.5.1 Selecting the Quality of Service

To set the Quality of Service, select the desired option from the **QoS** drop-down menu, and then click **Save** to save the settings.



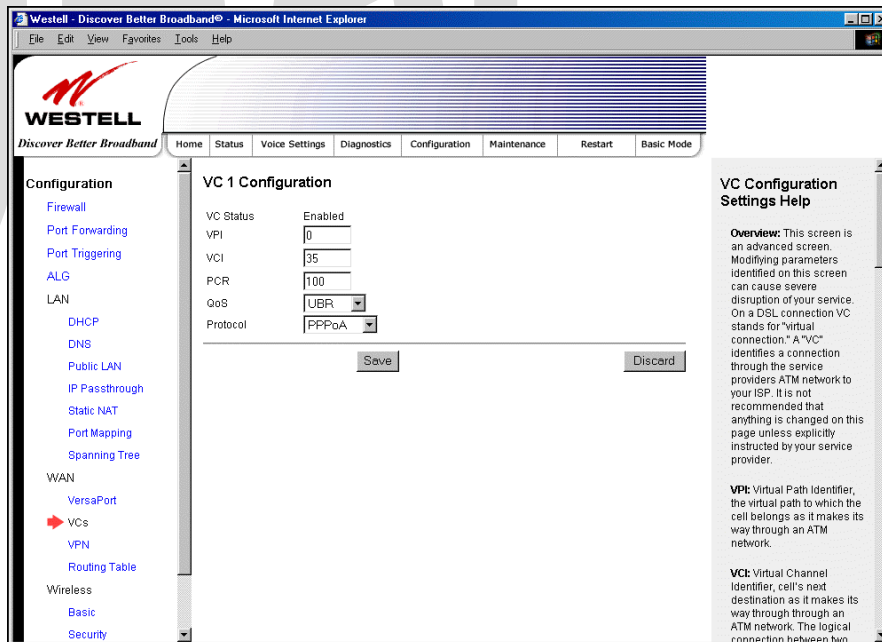
17.7.5.2 Configuring WAN VC Protocol for PPPoE mode

To configure the WAN VC Protocol for PPPoE mode, select **PPPoE** from the **Protocol** drop-down menu, the following screen will be displayed. Enter the appropriate values, and then click **save** to save your settings.



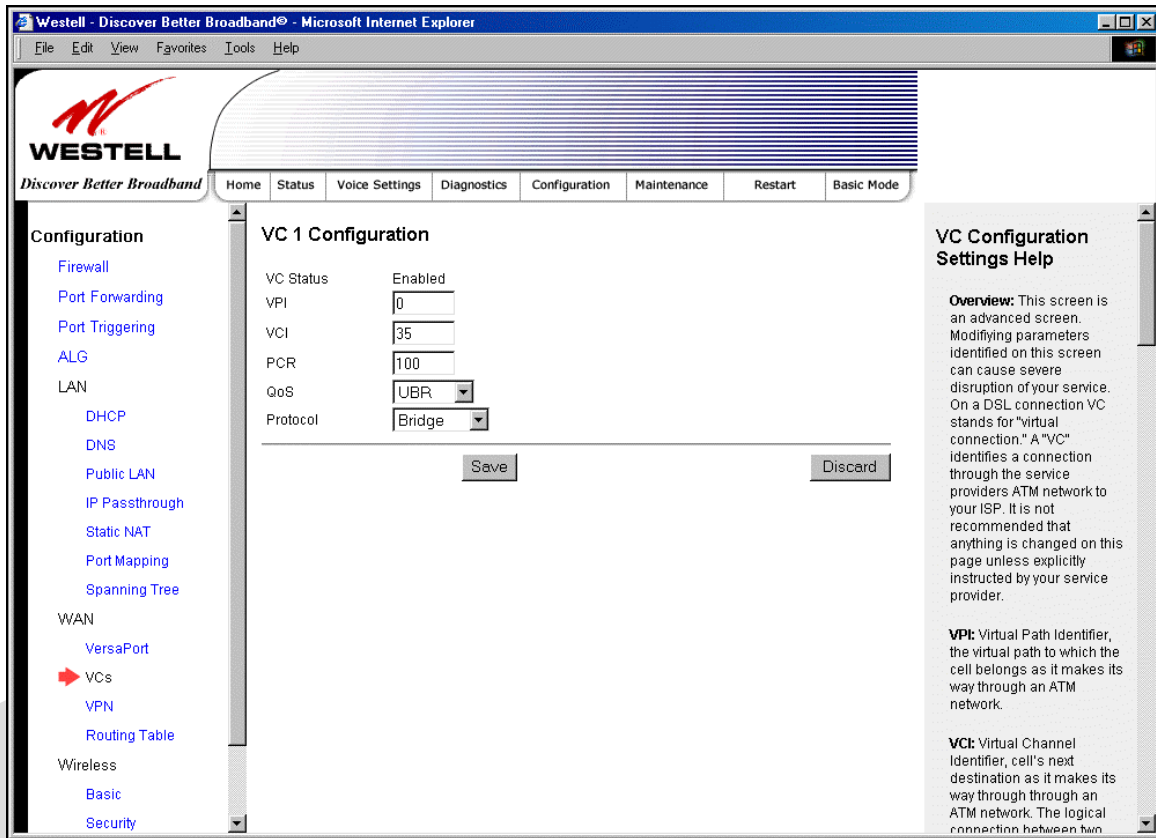
17.7.5.3 Configuring WAN VC Protocol for PPPoA mode

To configure the WAN VC Protocol for PPPoA mode, select **PPPoA** from the **Protocol** drop-down menu, the following screen will be displayed. Enter the appropriate values, and then click **save** to save your settings.



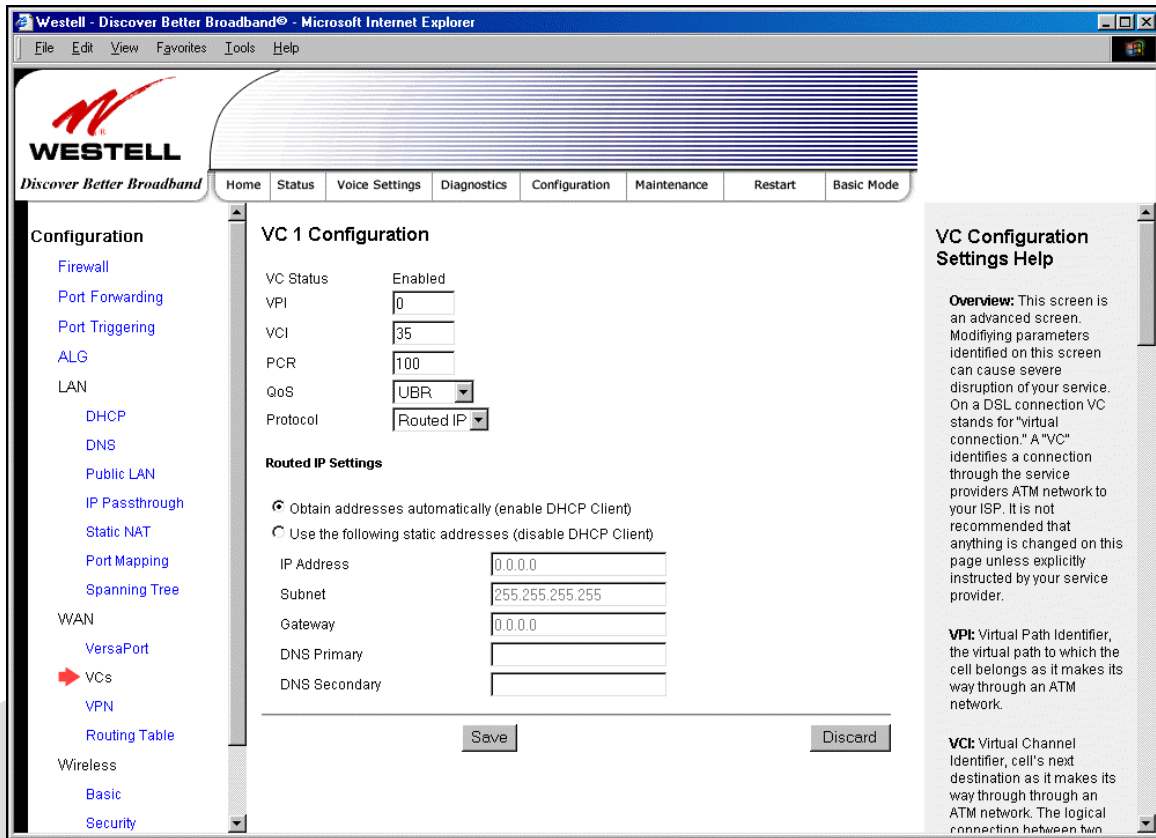
17.7.5.4 Configuring WAN VC Protocol for Bridge mode - (MAC Bridge)

To configure the WAN VC Protocol for Bridge mode, select **Bridge** from the **Protocol** drop-down menu, the following screen will be displayed. Enter the appropriate values, and then click **save** to save your settings.



17.7.5.5 Configuring WAN VC Protocol for Routed IP mode

If you select **Routed IP** from the **Protocol** drop-down menu, the following screen will be displayed. Enter the appropriate values, and then click **save** to save your settings.

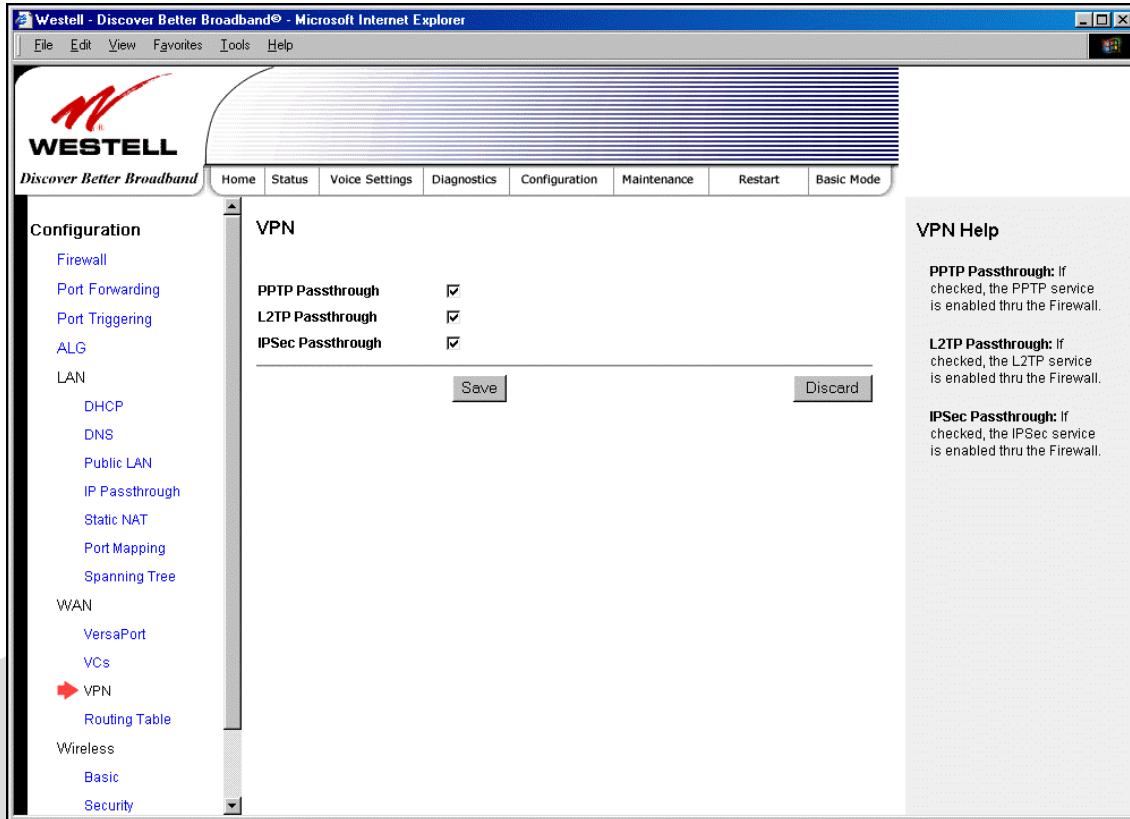


VC 1 Routed IP Settings

DHCP Client	<p>Factory Default = Enable</p> <p>If enabled the router will obtain its IP address, gateway address and DNS server address automatically from the network. If disabled you must manually enter the information.</p> <p>Possible Response:</p> <p>Select Enable to activate the DHCP client.</p> <p>Select Disable to deactivate the DHCP client.</p>
IP Address	Displays the Router's IP network address.
Subnet	Displays the Router's subnet mask settings.
Gateway	Displays the Router's IP gateway address
DNS Primary	Displays the IP address of primary Domain Name Service (DNS) server your router is using.
DNS Secondary	Displays the IP address of secondary DNS server your router is using.

17.7.6 VPN

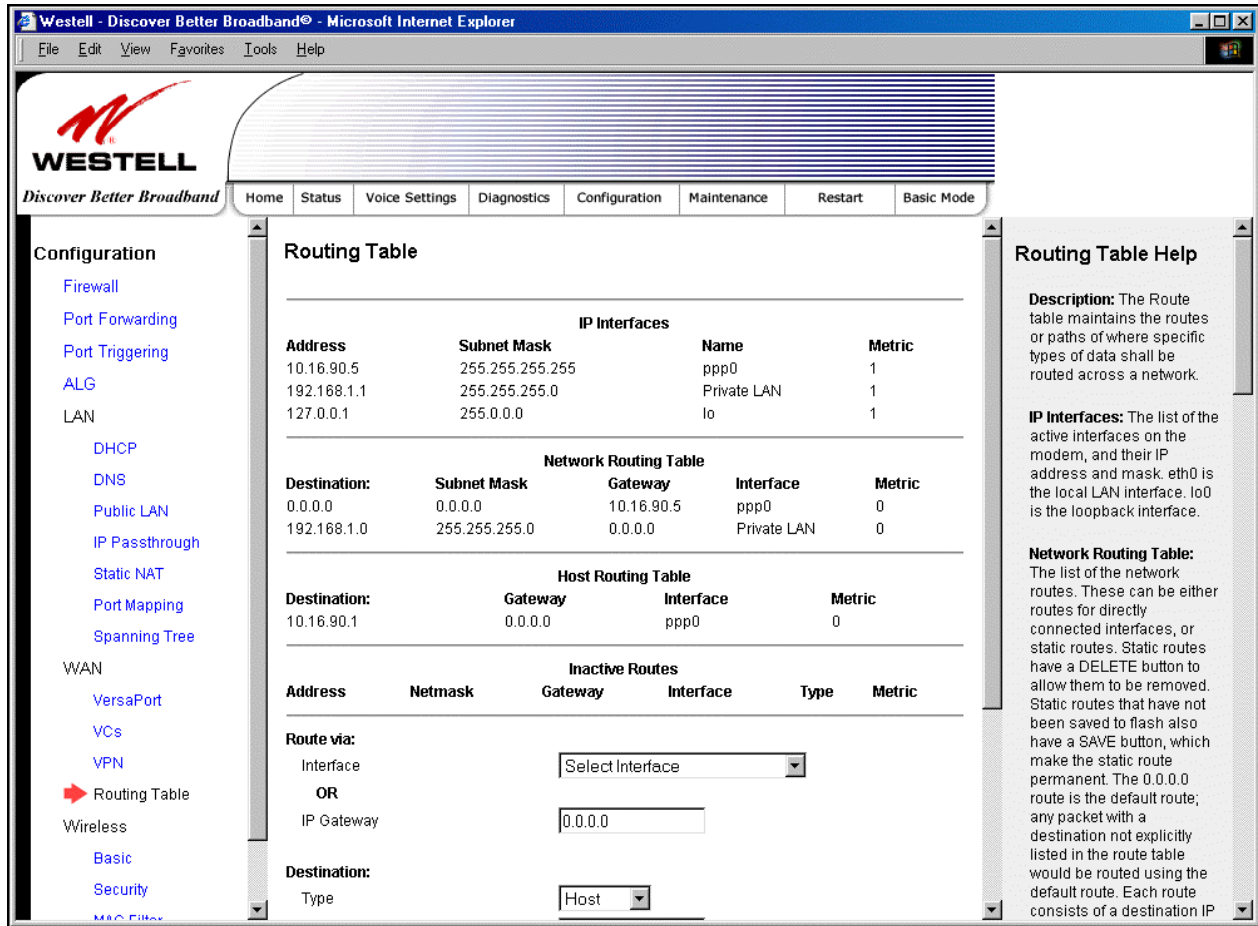
The following settings will be displayed if you select **WAN > VPN** from the **Configuration** menu. Enter the appropriate values, and then click **save** to save your settings.



PPTP Passthrough	Factory Default = Enabled If enabled (a check mark will appear in the box), PPTP will work through the Router's NAT function.
L2TP Passthrough	Factory Default = Enabled If enabled, IPsec using ESP and L2TP can be supported via an ALG.
IPsec Passthrough	Factory Default = Enabled If enabled, IPsec using ESP can be supported via an ALG. IPsec using AH cannot be supported through NAT.

17.7.7 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, enter the appropriate values, and then click **Add Route**.



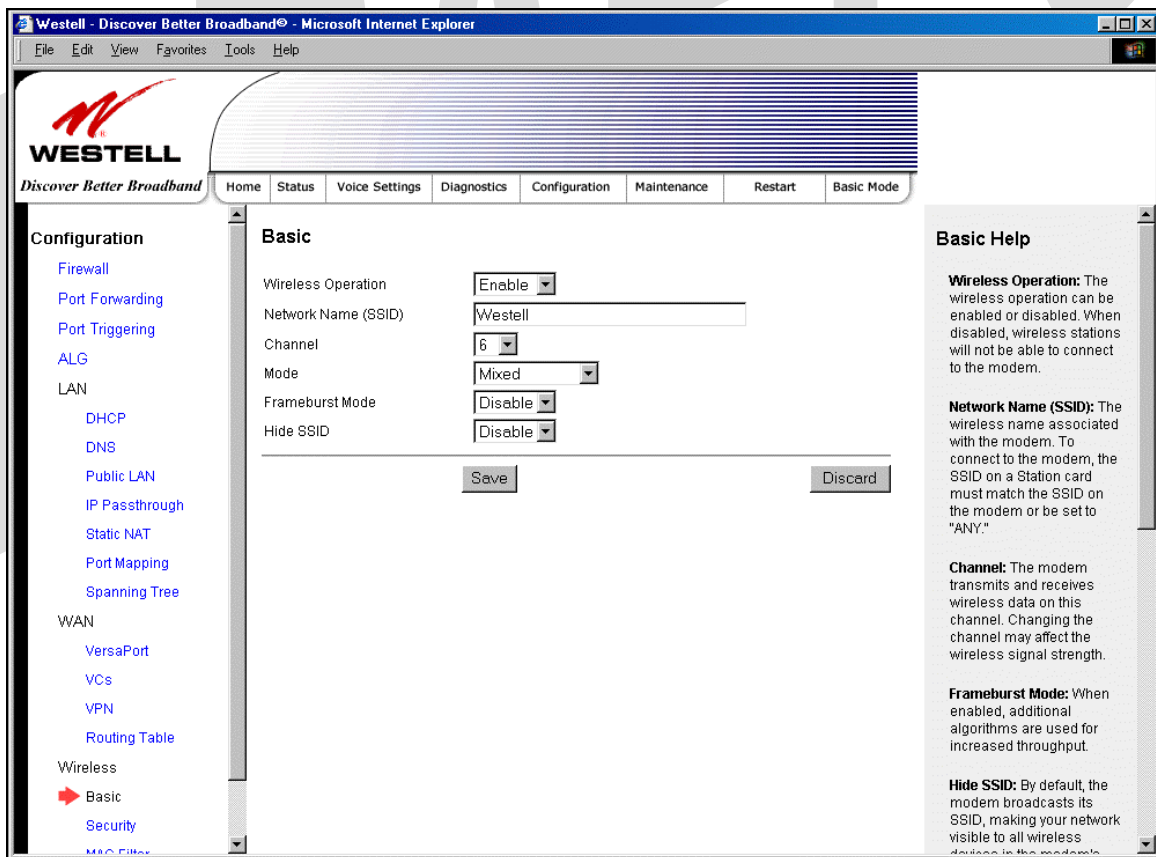
IP Interfaces	
Address	The IP interface address.
Subnet Mask	The IP interface subnet address.
Name	The IP interface device name.
Metric	
Networking Routing Table	
Destination	The IP address or subnet of the Route.
Subnet Mask	If the Route is a network route, Subnet Mask is used to specify the subnet address. If the Route is a Host route, then the Host Route check box is used.
Gateway	Indicates where to send the packet if it matches this route.
Interface	Indicates where to send the packet if it matches this route.
Metric	The RIP metric to be assigned to this route if and when it is advertised using RIP.
Rip	Indicates whether a static route should be advertised via RIP.
Host Routing Table	
Destination	
Gateway	
Interface	

Metric	
RIP	
Inactive Routes	
Address	
Netmask	
Gateway	
Interface Reference	
Route Type	
IP Destination	
IP Netmask	
IP Gateway	
Metric	
RIP Advertised	
Save to Flash	

17.8 Wireless Configuration

17.8.1 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.



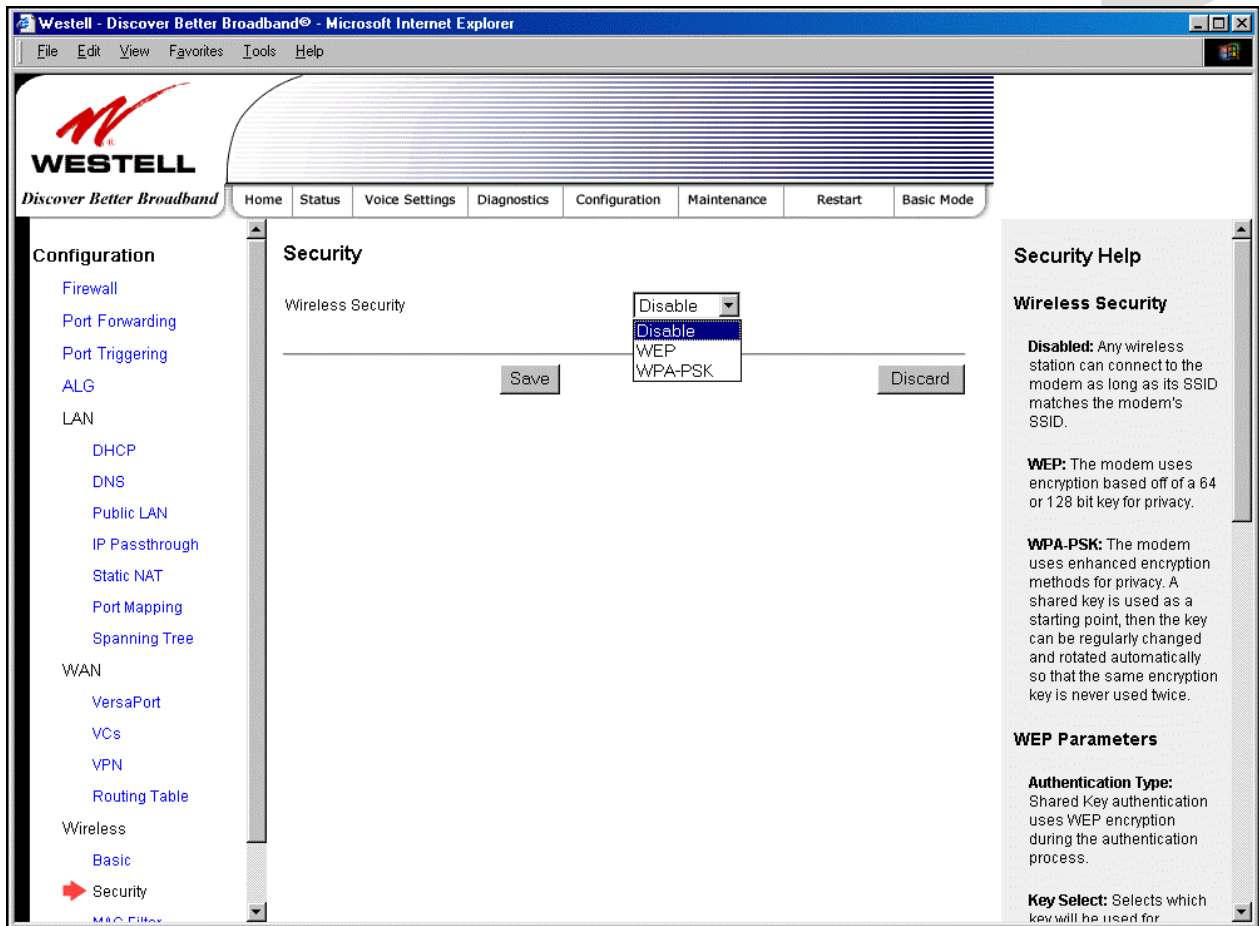


Wireless Basic Configuration	
Wireless Operation	Factory Default = Enabled When disabled, no wireless stations will be able to connect to the Router.
Network Name (SSID)	Factory Default = Westell This string (32 characters or less) is the name associated with the AP. To connect to the AP, the SSID on a Station card must match the SSID on the AP card or be set to “ANY.”
Channel	Factory Default = 6 The AP transmits and receives data on this channel. The number of channels to choose from is pre-programmed into the AP card. Station cards do not have to be set to the same channel as the AP; the Stations scan all channels and look for an AP to connect to. Possible Response: 1 through 11
Mode	Factory Default = Mixed This setting allows station to communicate with the Router. Possible Response: Mixed: Station using any of the 802.11b, 802.11b+, and 802.11g rates can communicate with the Router. Legacy Mixed: Same as Mixed, but also allows older 802.11b cards to communicate with the Router. 11b only: Communication with the Router is limited to 802.11b 11g only: Communication with the Router is limited to 802.11g
Frameburst Mode	Factory Default = Disable If enabled, additional algorithms are used for increased throughput.
Hide SSID	Factory Default = Disable If enabled, the Router will not broadcast the SSID. To connect to the Router, each Station must configure its SSIDs so that it matches the Router’s Network Name (SSID).

17.8.2 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 Router. The Wireless card and Router 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.**

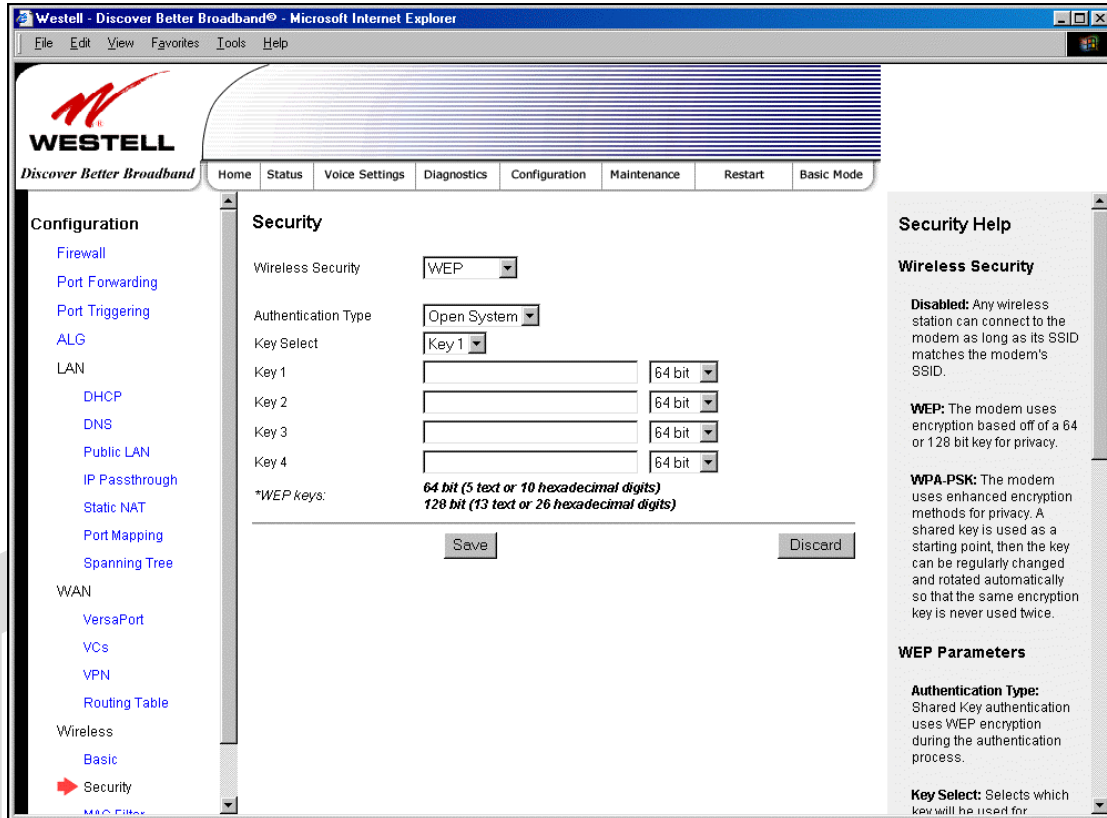


Wireless Security	
Disable	Factory Default = Disable If Disable is selected, wireless security will not be activated on your Router.
WEP	Selecting WEP enables you set up Wired Equivalent Privacy (WEP) on your Router. WEP uses encryption based on a 64- or 128-bit key for privacy.
WPA-PSK	Selecting WPA-PSK enables you set up Wi-Fi Protected Access-Pre-Shared Key on your Router. WPA-PSK uses enhanced encryption methods for privacy. A shared key is used as a starting point, and then the key can be regularly changed and rotated automatically so that the same encryption key is never used twice.

17.8.2.1 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.

NOTE: The WEP key must be 64 bit (5 text characters or 10 hexadecimal digits in length) or 128 bit (13 text characters or 26 hexadecimal digits in length).



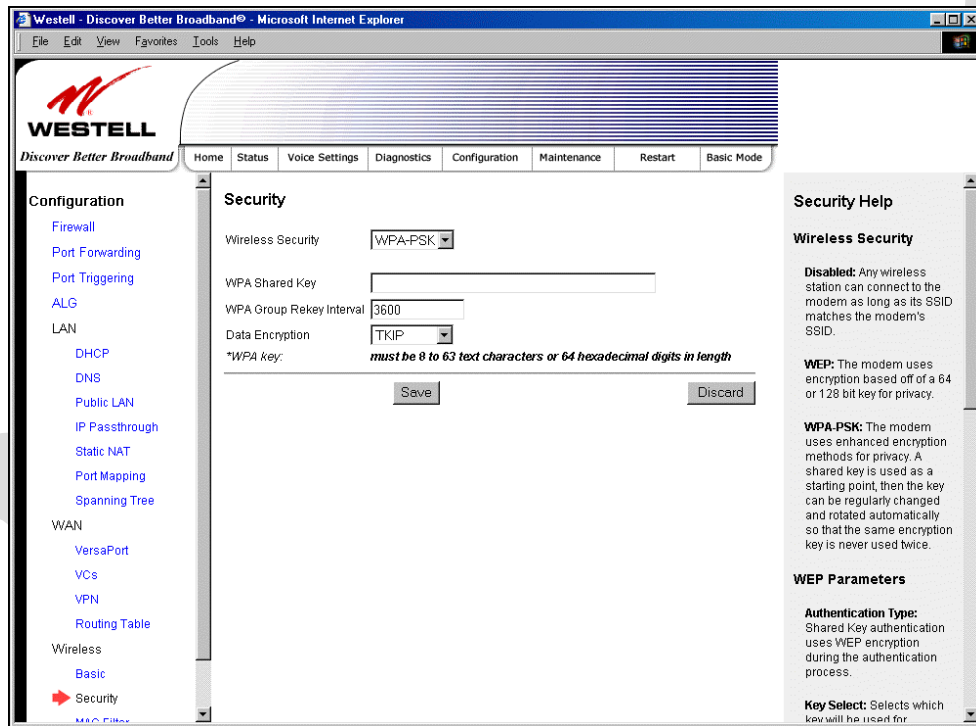
Wireless Security (WEP)	
Wireless Security	WEP has been selected.
Authentication Type	Factory Default = Open System Possible Response: Open System: Open System authentication allows any station to associate with the wireless network but only stations with the valid WEP key can send or receive data from the router. 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 router using the WEP key before it can associate with the wireless network.
Key Select	Factory Default = Key 1 Selects which WEP key the router should use. NOTE: The WEP key must be the same value and type for both the Router and the wireless network adapter.
Key 1 To Key 4	Select the length of the WEP key from the pull down menu and enter key WEP Key in the box. A 64-bit key must be either 5 text characters or 10 hexadecimal characters. A 128-bit key must be 13 text characters or 26 hexadecimal characters. The only

	allowable hexadecimal characters are 0-9 and A-F. NOTE: The WEP key must be the same value and type for both the Router and the wireless network adapter.
--	--

17.8.2.2 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.
--



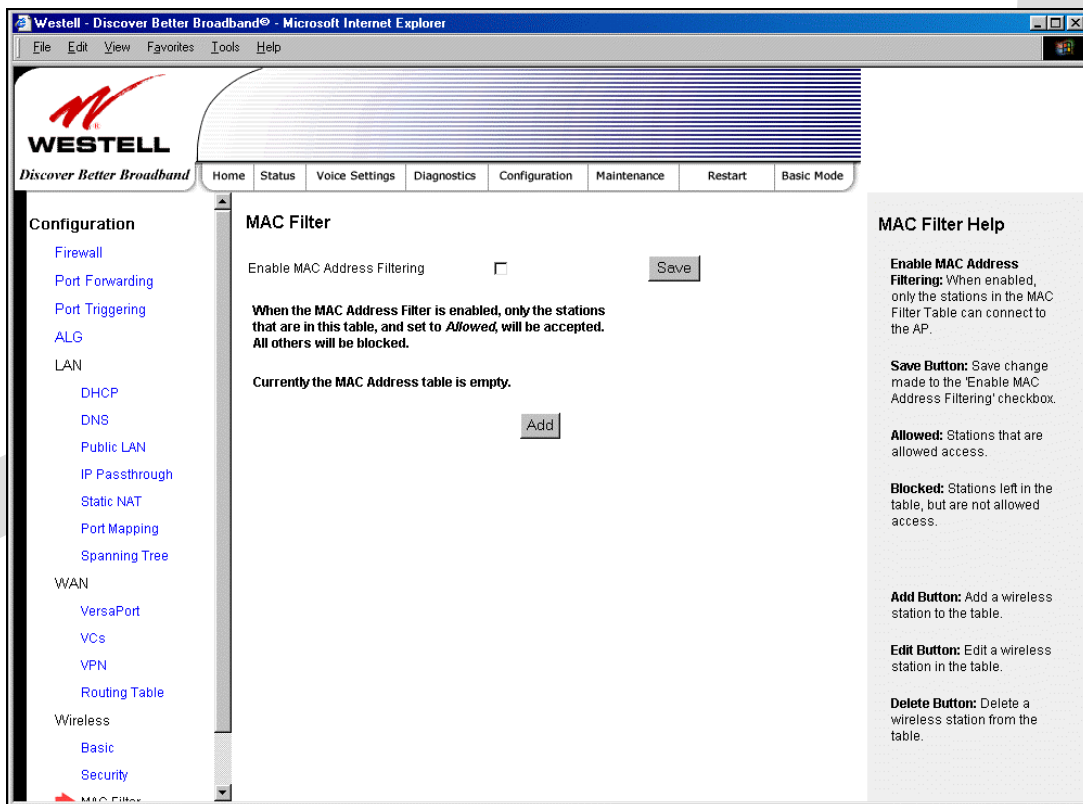
Wireless Security (WPA-PSK)	
Wireless Security	WPA-PSK has been selected.
WPA Shared Key	This is a passphrase (also called a shared secret) that must be entered in both the wireless router and the wireless client. This shared secret can be between 8 to 63 text characters and can include special characters and spaces. The more random your WPA Shared Key, the more secure it is.
WPA Group Rekey Interval	Factory Default = 3600 The number of seconds between rekeying the WPA group key. Zero "0" means that rekeying is disabled.
Data Encryption	Factory Default = TKIP Possible Response: 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 Router to accept either TKIP or AES encryption

17.8.3 MAC Filter

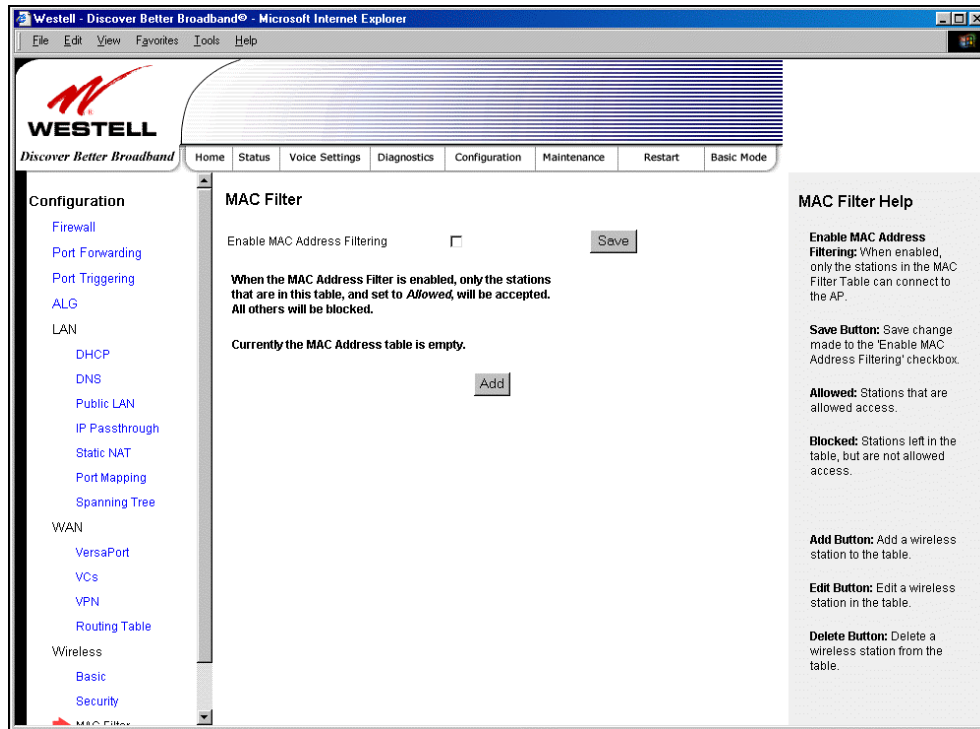
The following settings will be displayed if you select **Wireless > MAC Filter** from the **Configuration** menu. This screen enables you to configure the MAC filter settings for your Router.

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), and then click **Save** to save your settings.

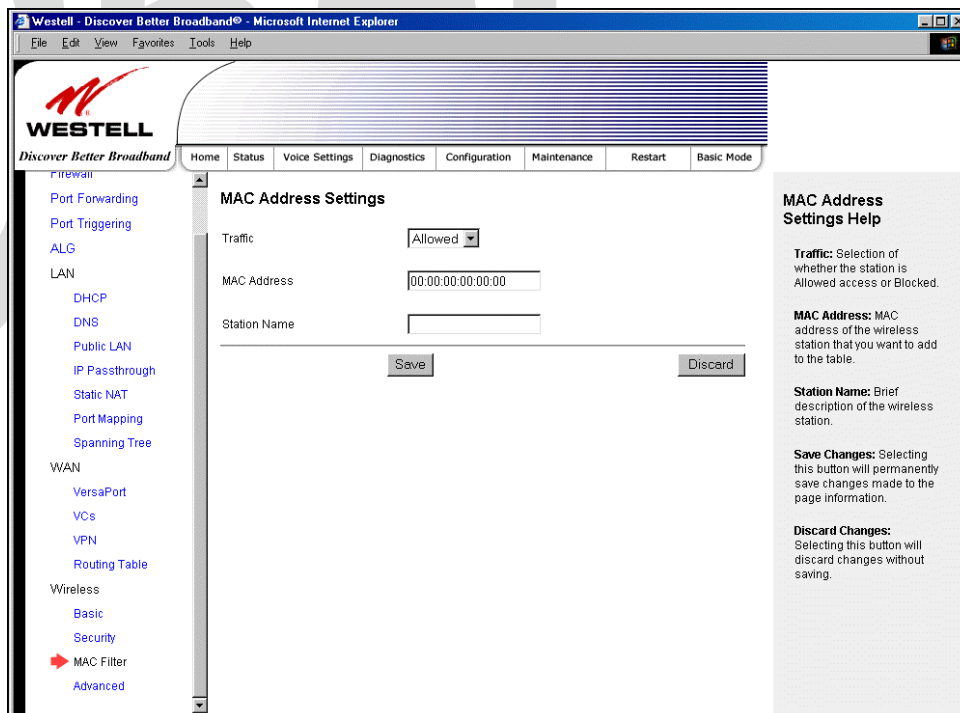
NOTE: When the MAC address Filter is enabled (box is checked), only the stations that are in the MAC Filter table and that are set to **Allowed** will be accepted by the Router. All other stations will be blocked.



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



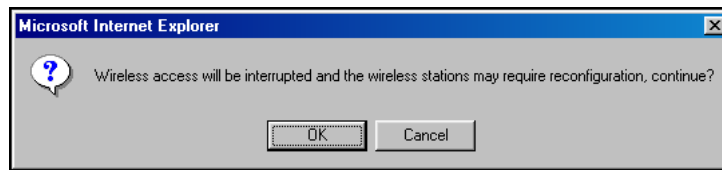
If you clicked **add**, the following screen will be displayed. Enter the appropriate values in the fields provided, and then click **Save** to save your settings.



MAC Address Settings	
Traffic	Factory Default = Allowed If Blocked is selected, the station will be blocked (it cannot access the Router).
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.

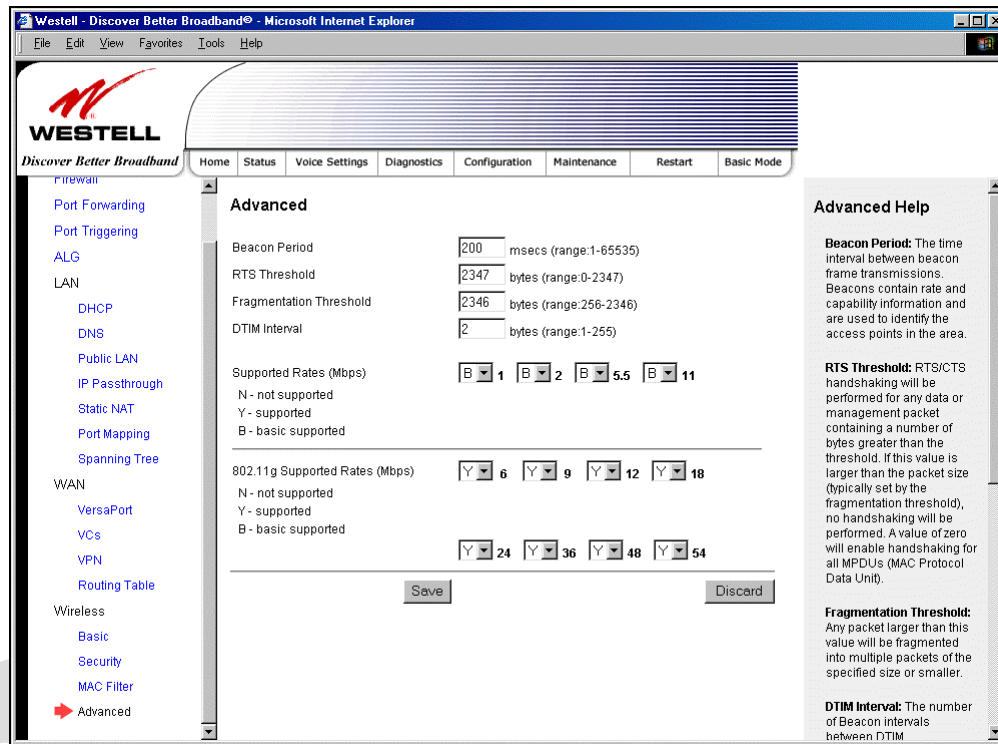


After you have finished adding, editing or deleting MAC addresses in the MAC Filter table, click the box adjacent to **Enable MAC Address Filtering** (a check mark will appear in the box). Click **Save** to save your settings.

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 Router. All other stations will be blocked.

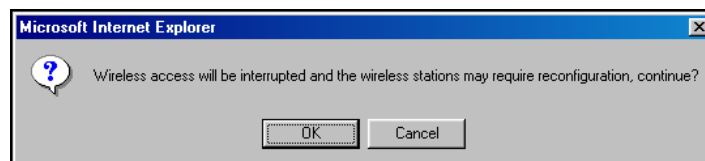
17.8.4 Advanced Wireless Settings

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 Router will attempt to use. The rates are also broadcast within the connection protocol as the rates supported by the Router.

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

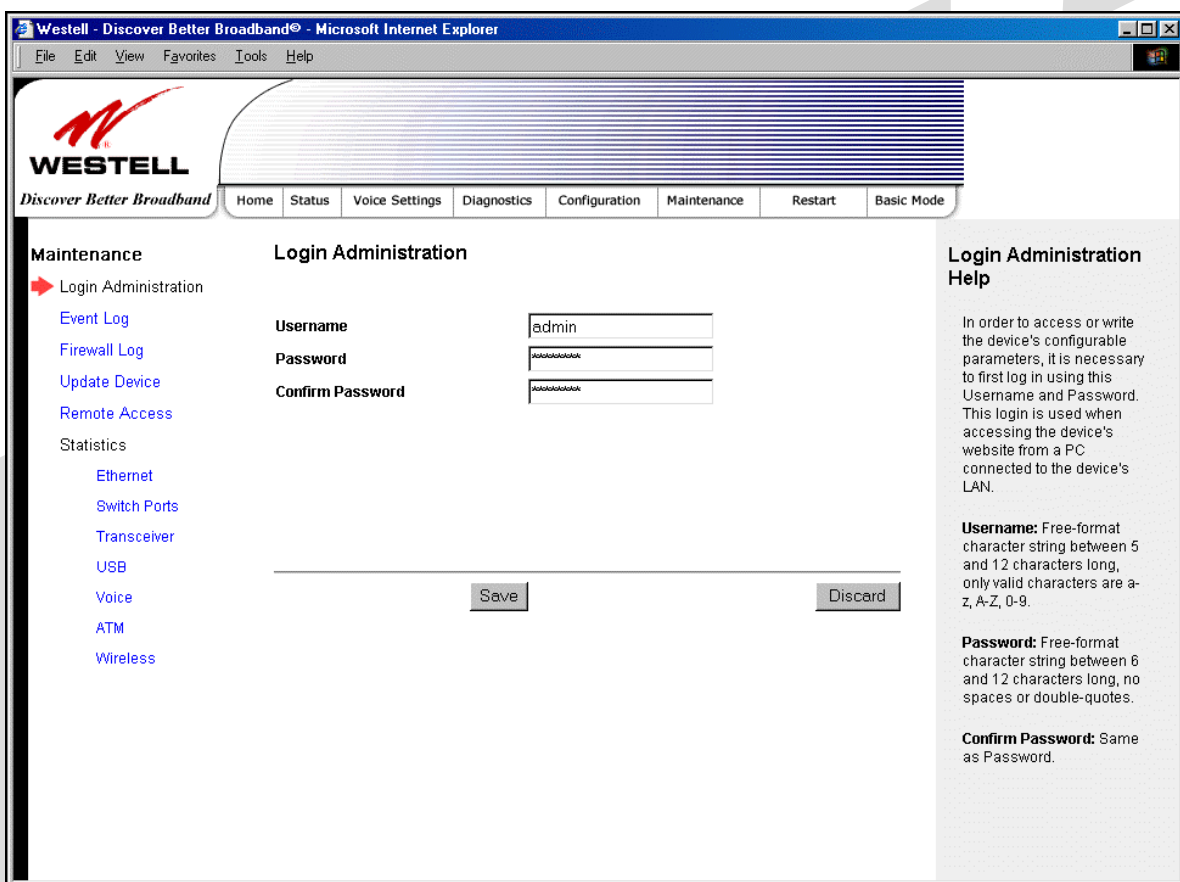


18. MAINTENANCE

18.1 Login Administration

The following screen will be displayed if you select **Admin Password** 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.



Westell - Discover Better Broadband® - Microsoft Internet Explorer

File Edit View Favorites Tools Help

WESTELL
Discover Better Broadband

Home Status Voice Settings Diagnostics Configuration Maintenance Restart Basic Mode

Maintenance

- ➔ Login Administration
- Event Log
- Firewall Log
- Update Device
- Remote Access
- Statistics
 - Ethernet
 - Switch Ports
 - Transceiver
 - USB
 - Voice
 - ATM
 - Wireless

Login Administration

Username

Password

Confirm Password

Login Administration Help

In order to access or write the device's configurable parameters, it is necessary to first log in using this Username and Password. This login is used when accessing the device's website from a PC connected to the device's LAN.

Username: Free-format character string between 5 and 12 characters long, only valid characters are a-z, A-Z, 0-9.

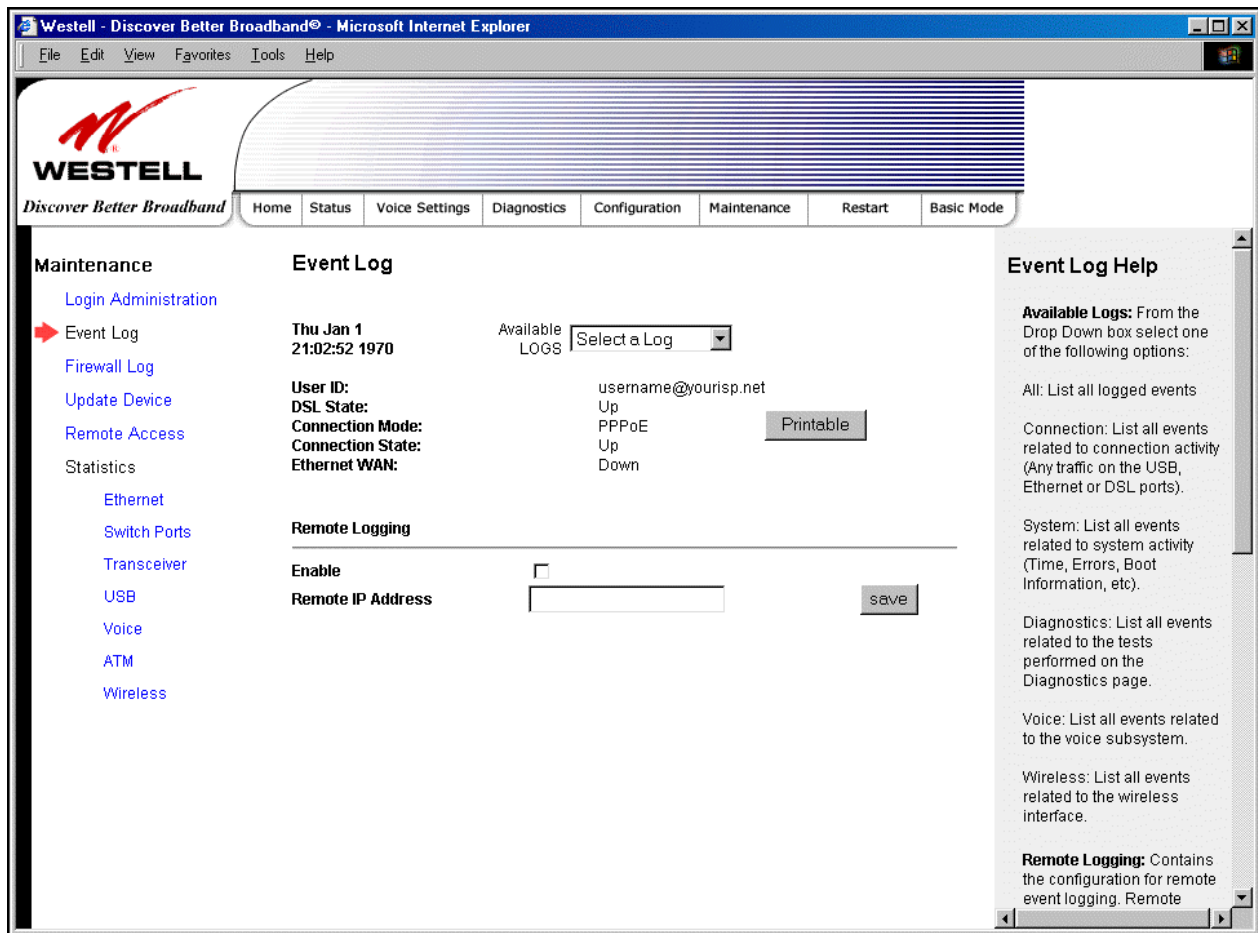
Password: Free-format character string between 6 and 12 characters long, no spaces or double-quotes.

Confirm Password: Same as Password.

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.

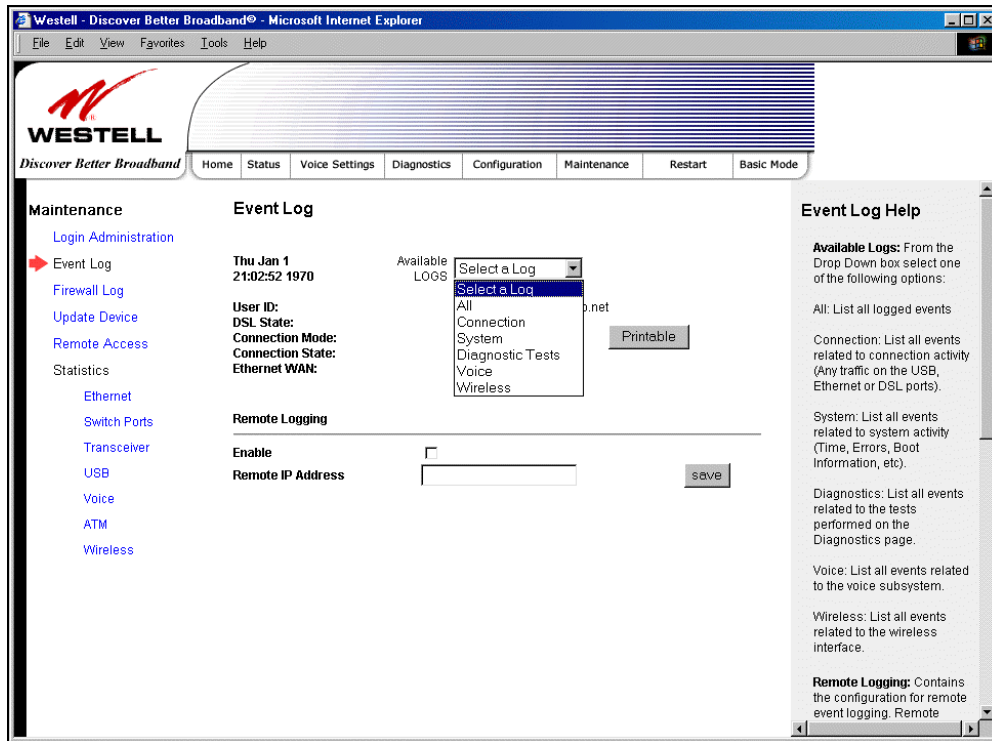
18.2 Event Log

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) and then enter an IP address in the **Remote IP Address** field. Click **Save** to save your settings.

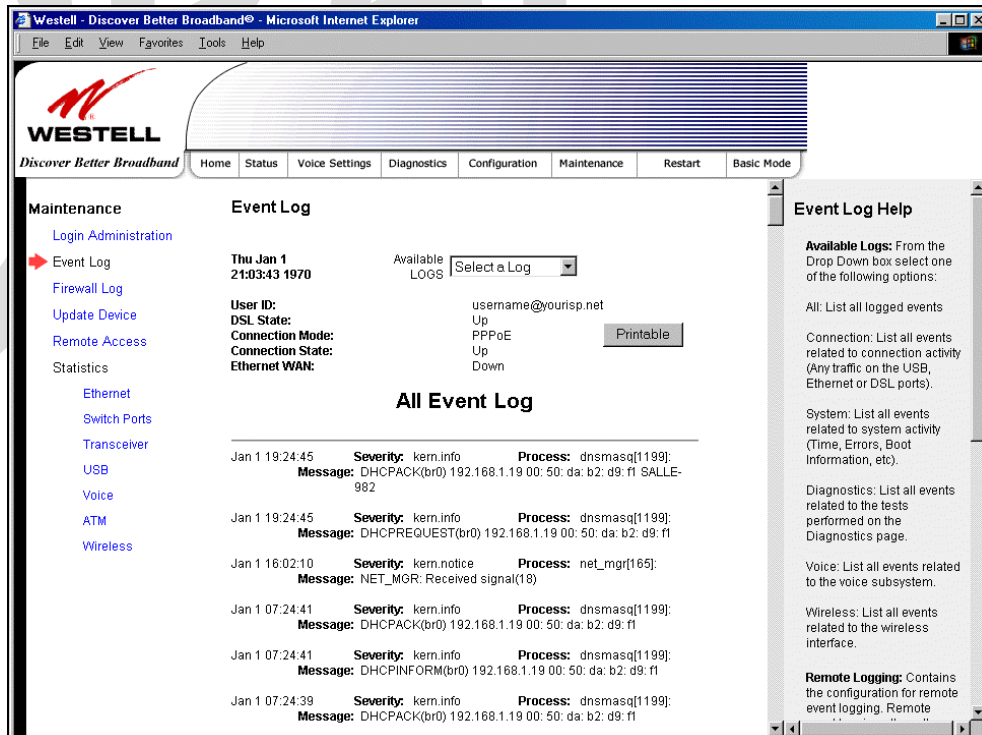


Event Log	
User ID	The name of your connection.
DSL State	The state of the DSL connection.
Connection Mode	The mode of connection used to connect to your ISP.
Connection State	The state of the PPP connection.
Ethernet WAN	The state of the Ethernet WAN connection.
Remote Logging	
Enable	Enables remote 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.

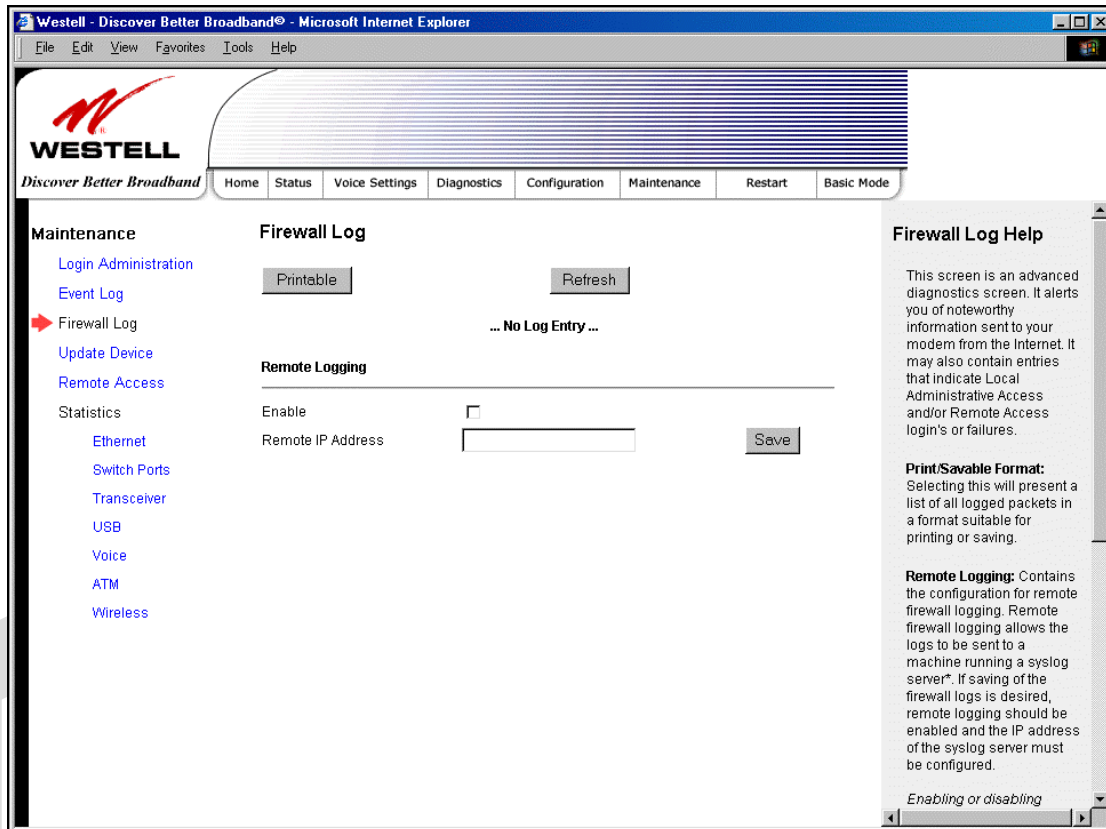


If you select **All**, the following screen will be displayed. To obtain a printable version of the Event logs, click on **Printable**.



18.3 Firewall Log

The following screen will be displayed if you select **Firewall Log** from the **Maintenance** menu. To obtain a printable version of the Event 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.



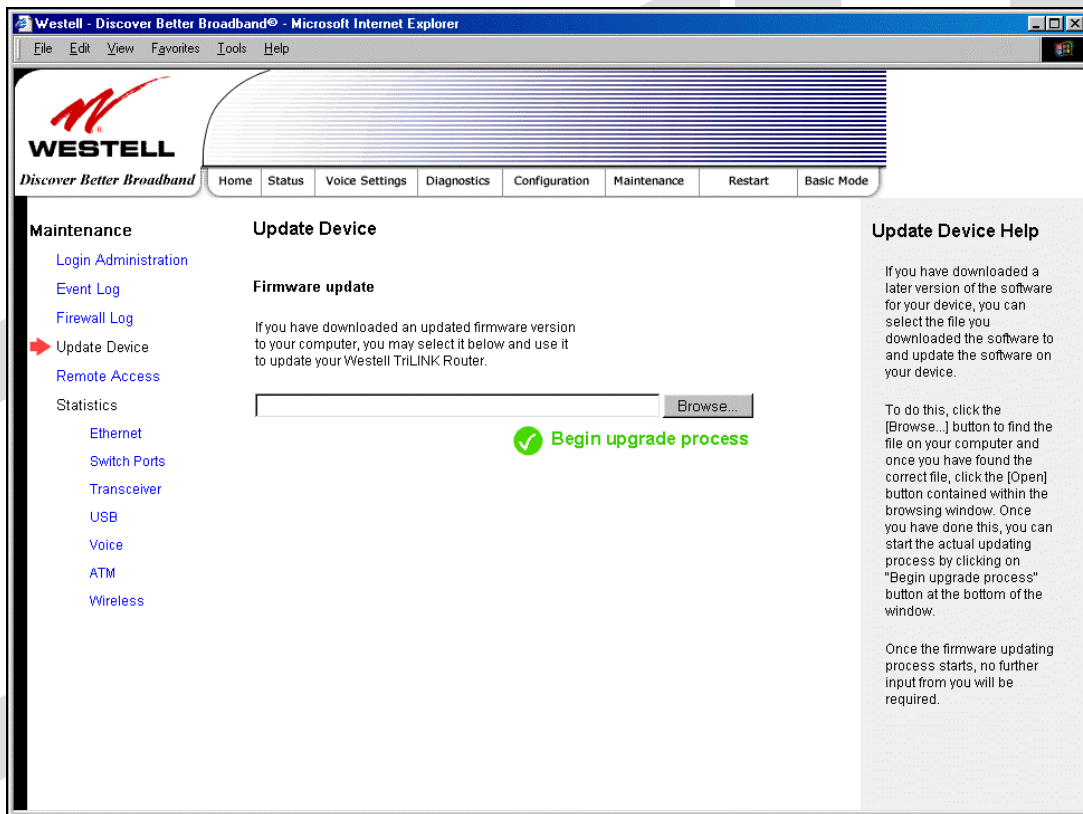
Remote Logging	
Enable	Factory Default = Disable If enabled (a check mark will appear in the box), the Router will send firewall logs to a syslog server.
Remote IP Address	The IP address of the syslog server machine to which the diagnostics logs to be sent.

18.4 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.

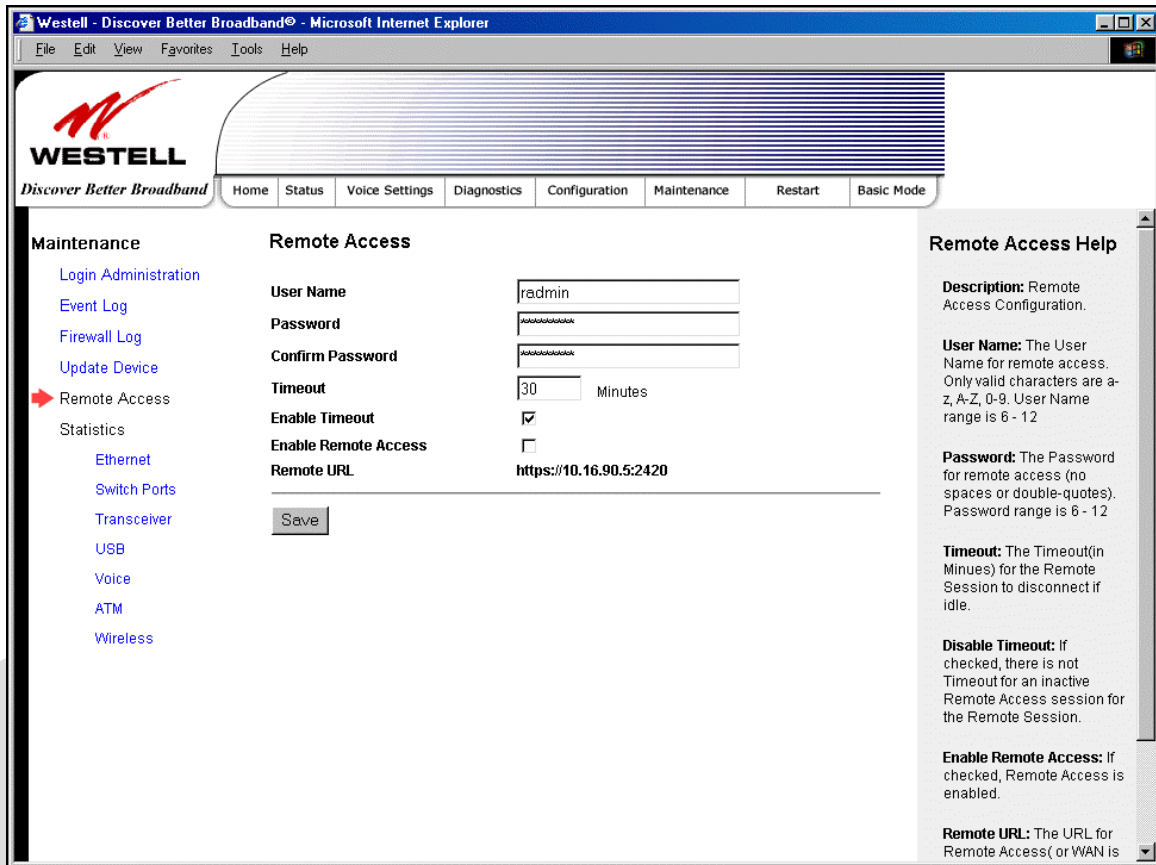
To update your modem to the latest software version supported, perform the following steps:

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 DSL sync.
6. Confirm that the DSL LED on your modem is solid green before continuing your modem's configuration.



18.5 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 for your Router. Enter the appropriate values in the fields provided and then click **Save** to save the settings.

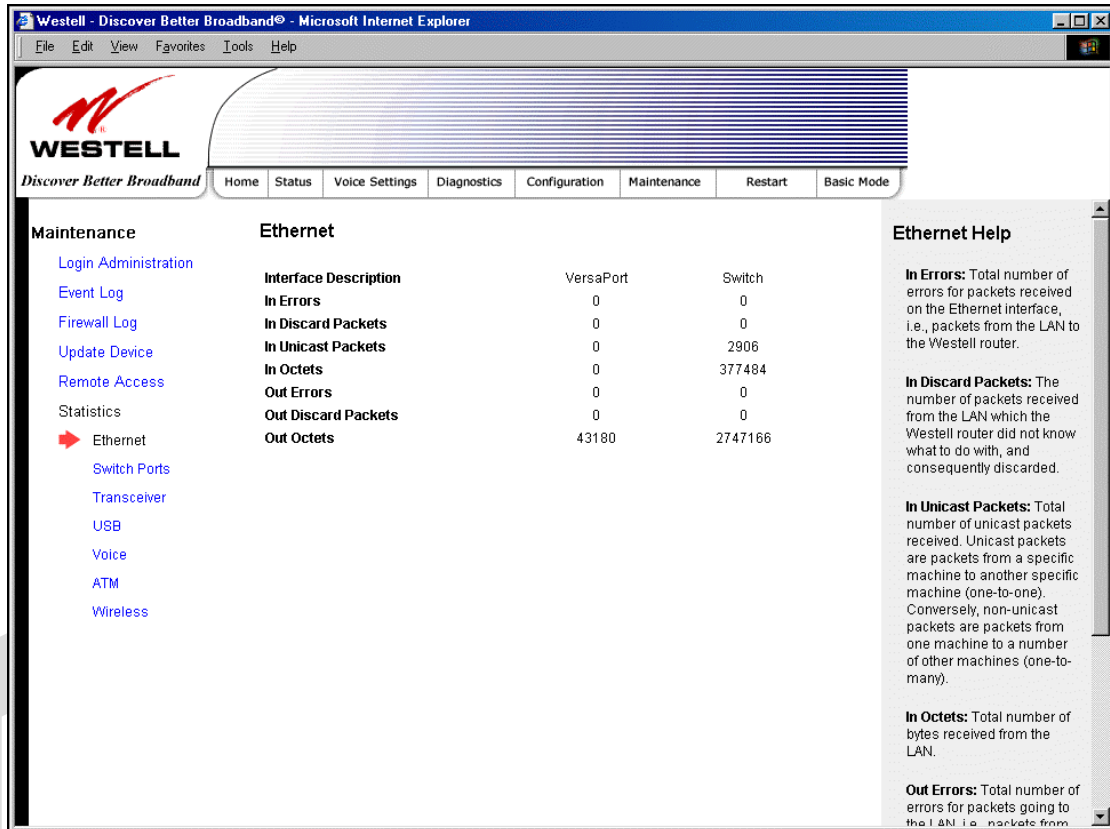


Remote Access	
User Name	The name used for Remote Access session. The only valid characters are (a-z, A-Z, 0-9). The User Name must be at least 6 characters and must not exceed 12 characters long.
Password	The password used for Remote Access session. Do not use spaces or double-quotes in the password. The password must be at least 6 characters and must not exceed 12 characters long.
Confirm Password	Enter the same values as the password.
Timeout	The interval (in minutes) after which the Remote Access session will disconnect, if it is idle.
Enable Timeout	Factory Default = Enable 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	The URL for the Remote Access session.

18.6 Statistics

18.6.1 Ethernet Port Statistics

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



The screenshot shows the Westell web interface in Microsoft Internet Explorer. The main content area displays the following Ethernet statistics:

Interface Description	VersaPort	Switch
In Errors	0	0
In Discard Packets	0	0
In Unicast Packets	0	2906
In Octets	0	377484
Out Errors	0	0
Out Discard Packets	0	0
Out Octets	43180	2747166

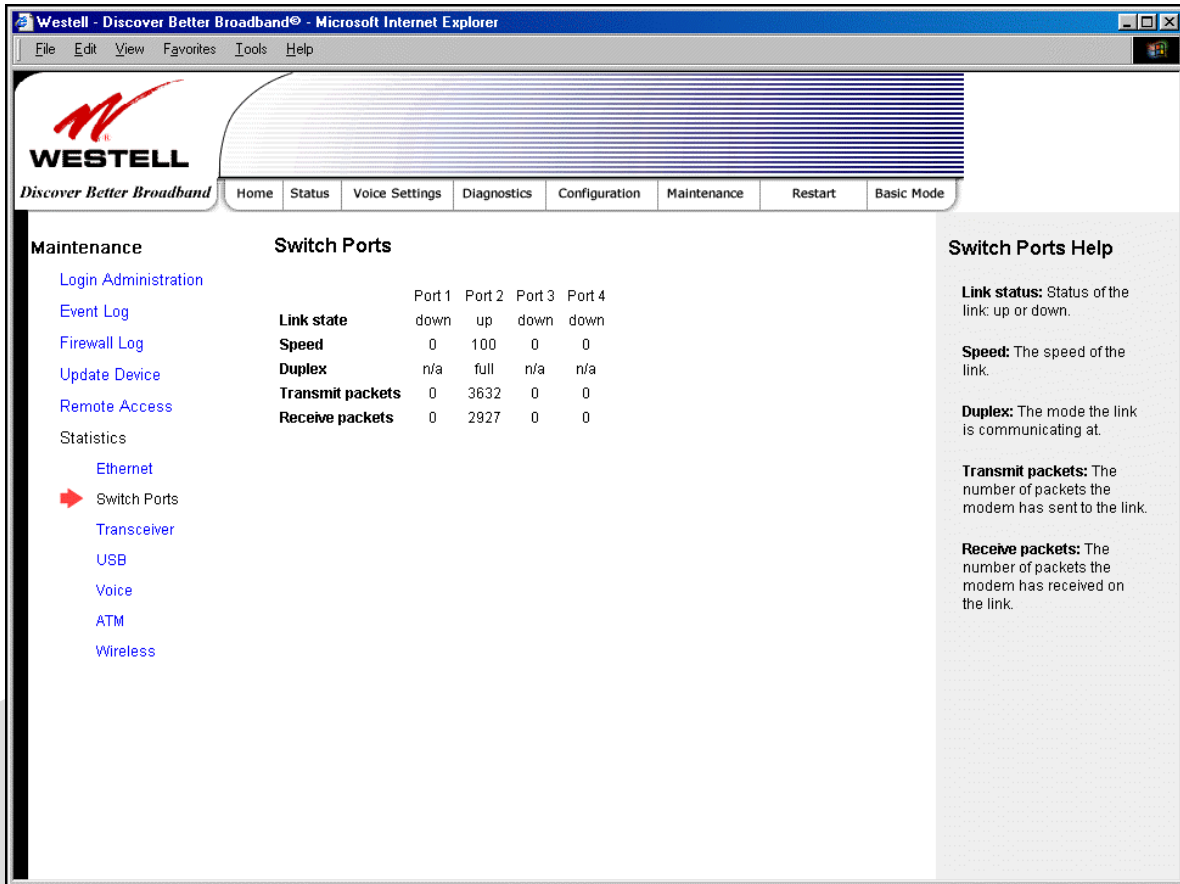
The 'Ethernet Help' sidebar on the right provides definitions for these terms:

- In Errors:** Total number of errors for packets received on the Ethernet interface, i.e., packets from the LAN to the Westell router.
- In Discard Packets:** The number of packets received from the LAN which the Westell router did not know what to do with, and consequently discarded.
- In Unicast Packets:** Total number of unicast packets received. Unicast packets are packets from a specific machine to another specific machine (one-to-one). Conversely, non-unicast packets are packets from one machine to a number of other machines (one-to-many).
- In Octets:** Total number of bytes received from the LAN.
- Out Errors:** Total number of errors for packets going to the LAN i.e. packets from

Ethernet Port Statistics	
Interface Description	The description of the Ethernet interface on the Router.
VersaPort	The VersaPort™2 on the rear of the Router. Note: When VersaPort is configured for Private LAN mode via the modem's VersaPort configuration screen, section 17.7.1, VersaPort™2 functions as a fifth Ethernet switch, (E5).
Switch	The Ethernet ports (E1, E2, E3, E4). Each functions as an Ethernet switch on the Router.
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.

18.6.2 Switch Ports Statistics

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



The screenshot shows the Westell web interface in Microsoft Internet Explorer. The main content area is titled 'Switch Ports' and displays a table with the following data:

	Port 1	Port 2	Port 3	Port 4
Link state	down	up	down	down
Speed	0	100	0	0
Duplex	n/a	full	n/a	n/a
Transmit packets	0	3632	0	0
Receive packets	0	2927	0	0

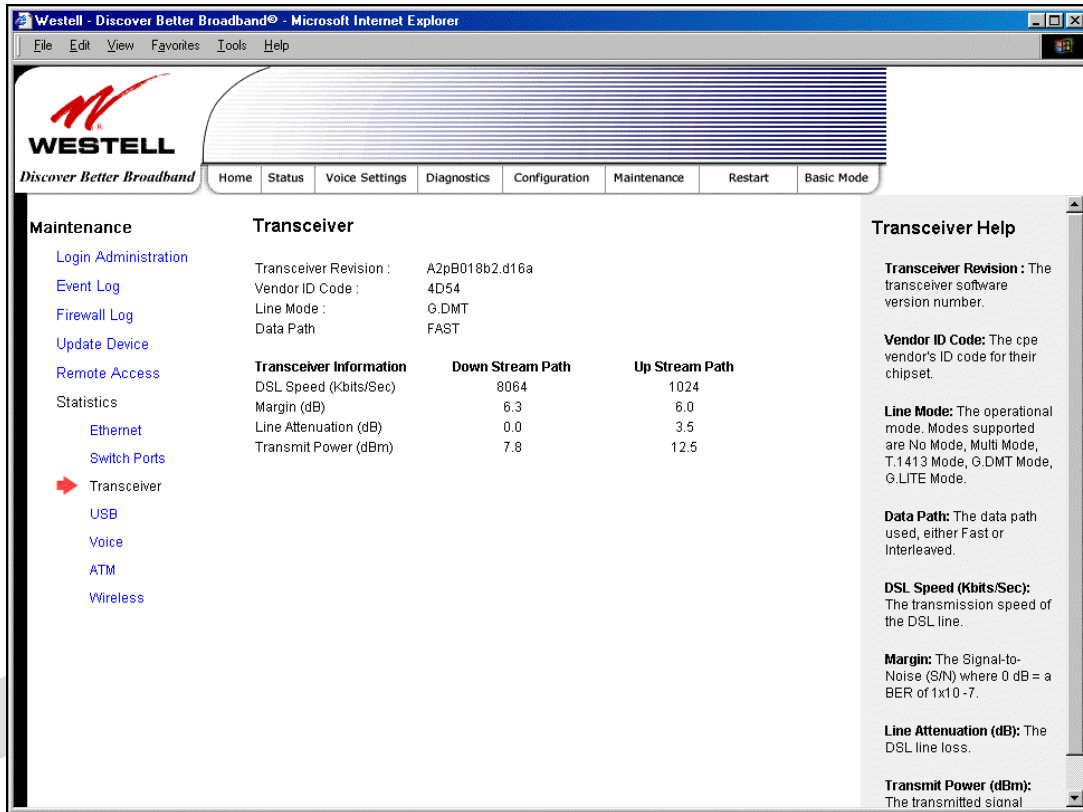
The 'Switch Ports Help' section provides the following definitions:

- Link status:** Status of the link: up or down.
- Speed:** The speed of the link.
- Duplex:** The mode the link is communicating at.
- Transmit packets:** The number of packets the modem has sent to the link.
- Receive packets:** The number of packets the modem has received on the link.

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.

18.6.3 Transceiver Statistics

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

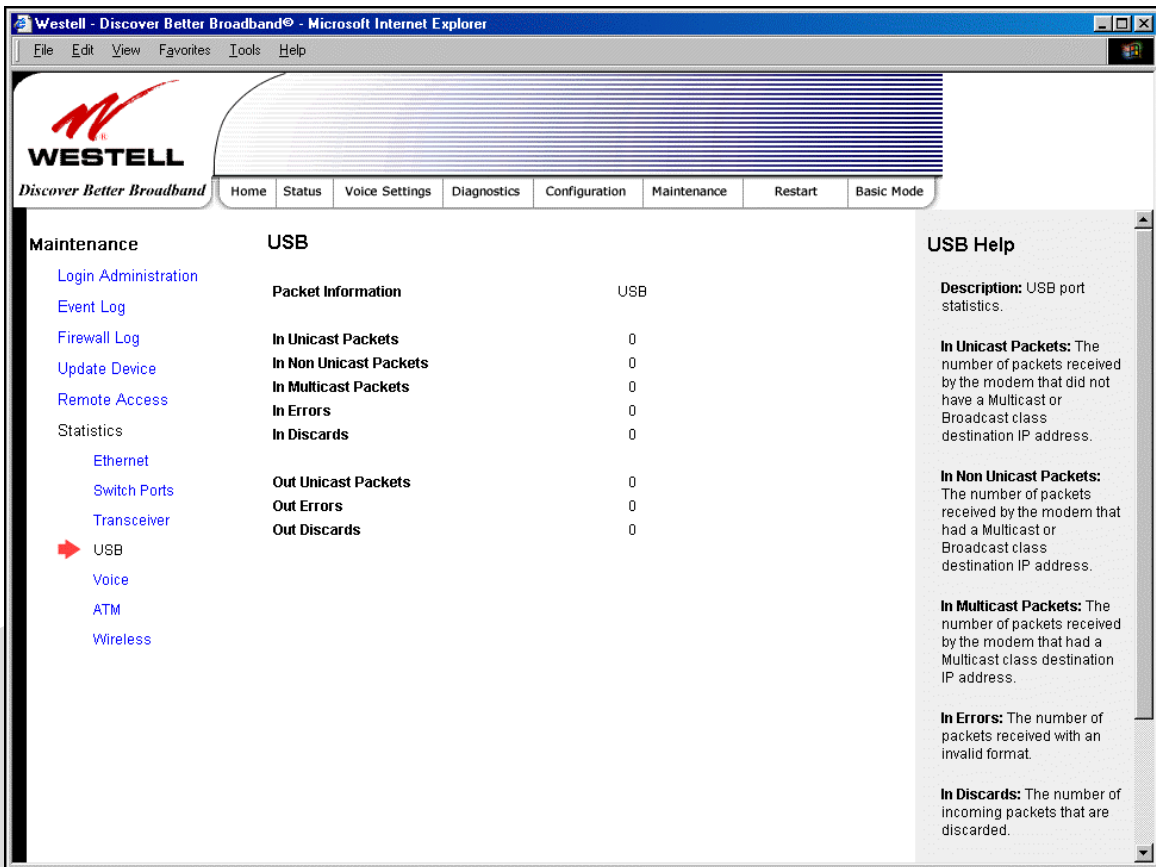


Transceiver Statistics	
Transceiver Revision	The transceiver software version number.
Vendor ID Code	The CPE Vendor's ID code for their chipset.
Line Mode	The operational mode. Modes supported are No Mode, Multi Mode, T.1413 Mode, G.DMT Mode, and G.LITE Mode.
Data Path	The data path used (either Fast or Interleaved).
Transceiver Information-Down Stream/Up Stream Path	
Down Stream Path	The path from the network to your Router.
Up Stream Path	The path from your Router to the network.
DSL Speed (Kbits/Sec)	The transmission rate that is provided by your Internet service provider (ISP).
SNR Margin (db)	The Signal-to-Noise Ratio (S/N) where 0 db = a BER of 1×10^{-7} , which inhibits your DSL speed.
Line Attenuation (dB)	The DSL line loss.
Transmit Power (db/Hz)	The transmitted signal strength.

18.6.4 USB Statistics

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

Note: The values in this screen will be “0” if no USB connection has been established.

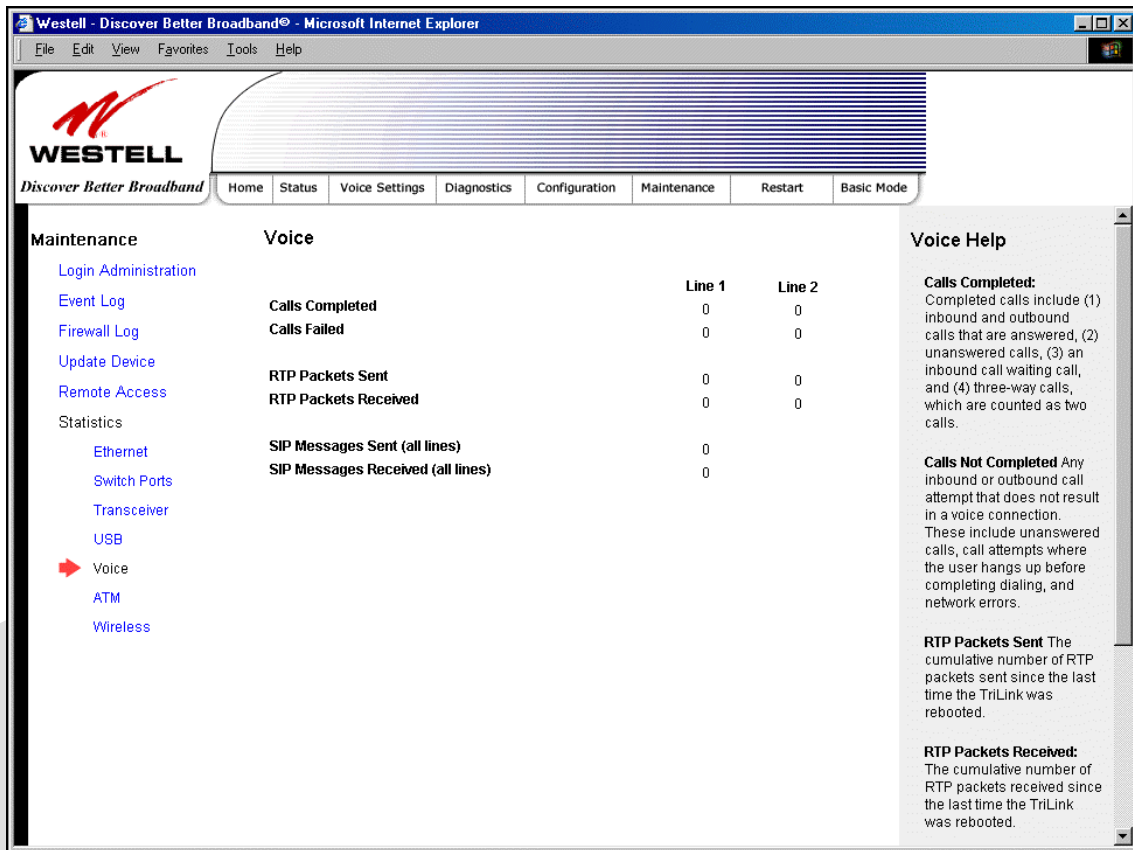


USB Statistics	
In Unicast Packets	The number of packets received by the Router that did not have a Multicast or Broadcast class destination IP address.
In Non Unicast Packets	The number of packets received by the Router that had a Multicast or Broadcast class destination IP address.
In Multicast Packets	The number of packets received by the Router that had a Multicast class destination IP address.
In Errors	The number of packets received with an invalid format.
In Discards	The number of incoming packets that were discarded.
Out Unicast Packets	The number of packets sent that did not have a Multicast or Broadcast class destination IP address.
Out Errors	The number of packets received by the Router but not sent to PC due to an error condition.
Out Discards	The number of outgoing packets that were discarded.

18.6.5 Voice Statistics

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

Note: The values in this screen will be “0” if no voice connections have been established.

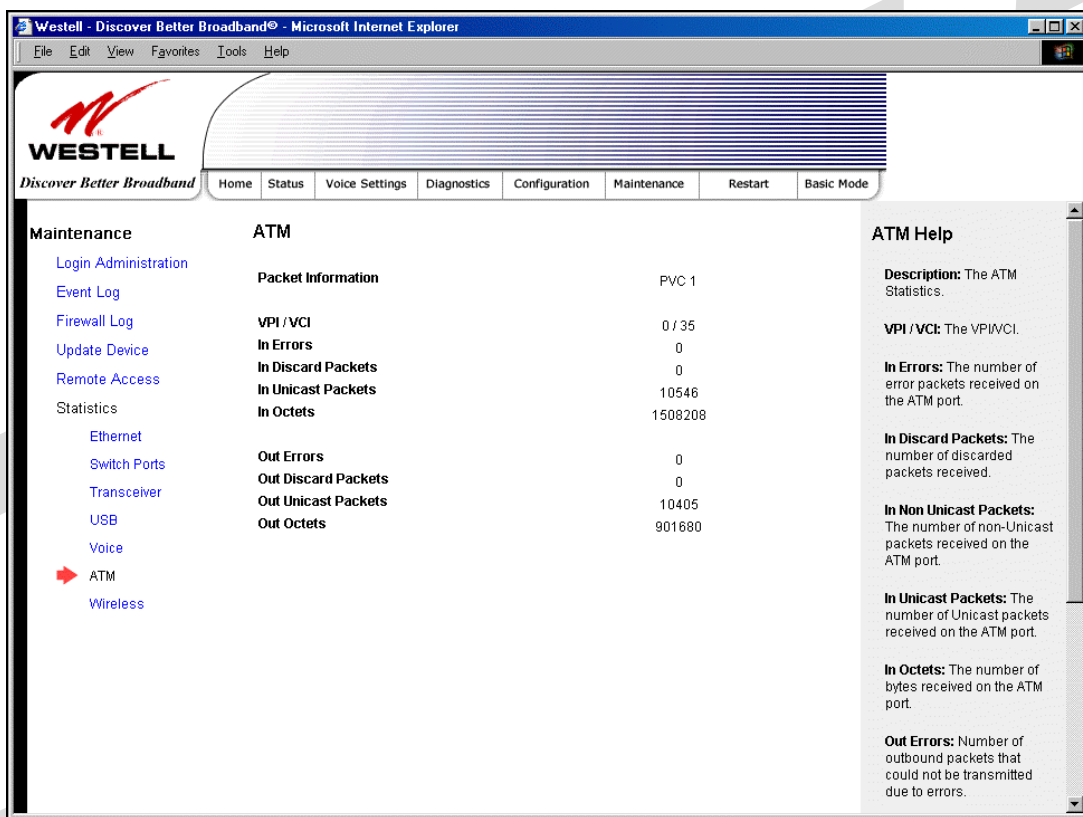


Voice Statistics	
<p><i>Line 1 = Calls associated with Telephone 1 on the Router.</i></p> <p><i>Line 2 = Calls associated with Telephone 2 on the Router.</i></p>	
Calls Completed	<p>The number of completed calls. Completed calls include:</p> <ol style="list-style-type: none"> 1) Inbound and Outbound Calls that were answered 2) Unanswered calls 3) An inbound call-waiting call 4) Three-way calls, which are counted as two calls
Called Failed	<p>The number of incomplete calls. Incomplete calls include:</p> <ol style="list-style-type: none"> 1) Any inbound or outbound call attempt that does not result in a voice connection. 2) Unanswered calls, call attempts where the user hangs up before completing dialing. 3) Incomplete calls due to network errors.
RTP Packets Sent	<p>The cumulative number of RTP packets sent since the last time the Router was rebooted.</p>

RTP Packets Received	The cumulative number of RTP packets received since the last time the Router was rebooted.
SIP Messages Sent (all lines)	The cumulative number of SIP messages sent since the last time the Router was rebooted. This number is the sum for all lines.
SIP Messages Received (all lines)	The cumulative number of SIP messages received since the last time the Router was rebooted. This number is the sum for all lines.

18.6.6 ATM Statistics

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



The screenshot shows the Westell web interface in Microsoft Internet Explorer. The main content area displays the following ATM statistics:

ATM	
Packet Information	PVC 1
VPI / VCI	0 / 35
In Errors	0
In Discard Packets	0
In Unicast Packets	10546
In Octets	1508208
Out Errors	0
Out Discard Packets	0
Out Unicast Packets	10405
Out Octets	901680

The right sidebar contains the **ATM Help** section with the following text:

Description: The ATM Statistics.

VPI / VCI: The VPI/VCI.

In Errors: The number of error packets received on the ATM port.

In Discard Packets: The number of discarded packets received.

In Non Unicast Packets: The number of non-Unicast packets received on the ATM port.

In Unicast Packets: The number of Unicast packets received on the ATM port.

In Octets: The number of bytes received on the ATM port.

Out Errors: Number of outbound packets that could not be transmitted due to errors.

ATM Statistics

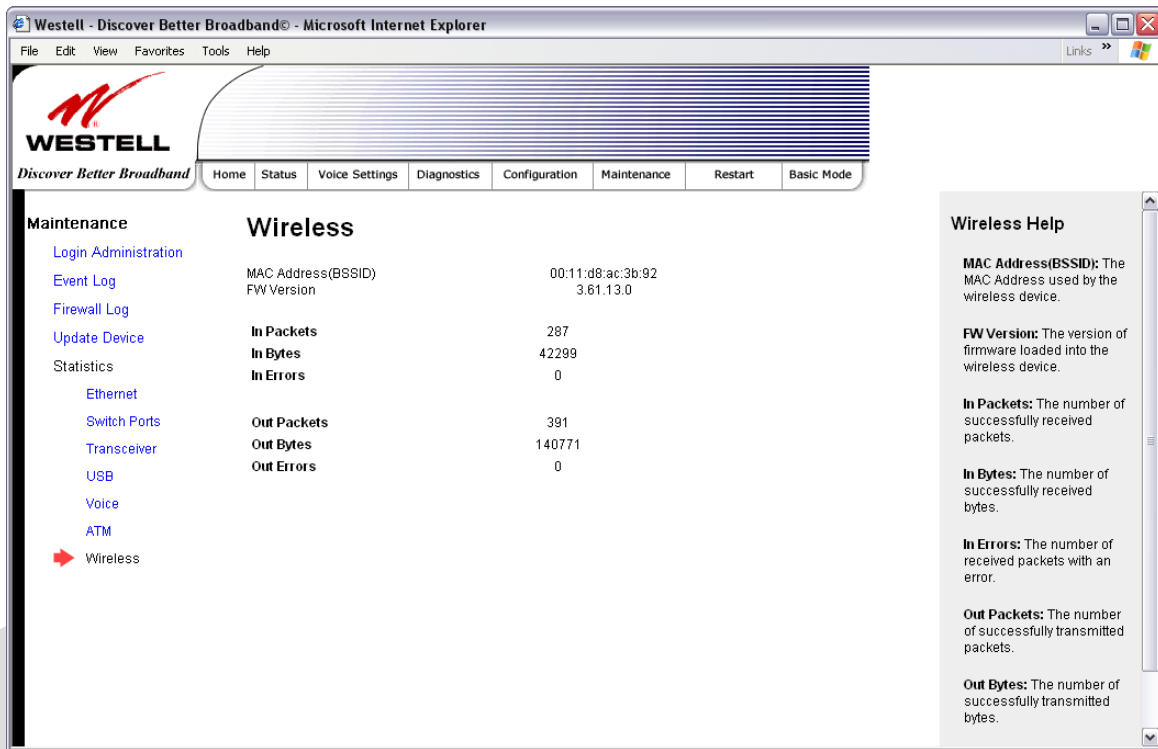
NOTE: Data listed in the **OUT** column pertains to transmissions from the Router's ATM port to the Internet; the Router is the source. Data listed in the **IN** column pertains to data received by the Router's ATM port from the Internet; the Router is the destination.

VPI/VCI	Displays the VPI/VCI values obtained from your Internet Service Provider.
In Errors	The number of error packets received on the ATM port.
In Discard Packets	The number of discarded packets received.
In Unicast Packets	The number of Unicast packets received on the ATM port.
In Octets	The number of bytes received on the ATM port.
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 ATM port.
Out Octets	The number of bytes transmitted on the ATM port.

18.6.7 Wireless Statistics

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

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



Wireless Statistics	
NOTE: Data listed in the OUT column pertains to transmissions from the AP to a station; the AP is the source. Data listed in the IN column pertains to data received by the AP; the AP is the destination.	
MAC Address (BSSID)	This is the Media Access Controller (the hardware address of the Router). It is also the Basic Service Set Identifier (BSSID) for your Router.
FW Version	The version of application firmware.
In-Packets	The number of successfully received packets.
In-Bytes	The number of successfully received bytes.
In-Errors	The number of received packets with an error.
Out-Packets	The number of successfully transmitted packets.
Out-Bytes	The number of successfully transmitted bytes.
Out-Errors	The number of packets that did not transmit due to an error.

19. NAT SERVICES

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

NOTE: To configure the Router for a service or application, follow the steps in section 17.2 (Port Forwarding) of this User Guide.

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
Fighter Ace II	50000-50100 TCP/UDP
Fighter Ace II for DX play	50000-50100 TCP/UDP, 47624 TCP, 2300-2400 TCP/UDP



Application/Game	Port/Protocol
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 UDP 2135 UDP 2139 TCP/UDP 28900
mIRC Chat	6660-6669 TCP
Motorhead Server	16000 TCP/UDP, 16010-16030 TCP/UDP



Application/Game	Port/Protocol
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
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

Application/Game	Port/Protocol
	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 UdpServerUplink 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 router 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.

20. PRODUCT SPECIFICATIONS

Voice Over IP Features

Signaling Protocol

- SIP version 2 (RFC 3261)

Voice Codecs

- G.711 μ -law
- G.711 A-law
- G.729A
- G.723.1

Voice Processing Features

- G.168 Echo Cancellation
- Silence Suppression and Voice Activity Detection functions
- Comfort Noise Generation
- DTMF detection and generation
- DTMF Relay per RFC 2833
- Caller ID generation
- Adaptive Jitter Buffer
- Packet loss recovery/concealment
- G.711 clear channel support for FAX, modem and alarm operation.

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

ADSL WAN

DSL Standards

- ANSI T1.413 issue 2
- ITU G.992.1 (G.DMT) and S=1/2
- ITU G.992.2 (G.lite)
- ITU G.992.3 (ADSL2 DMT)
- ITU G.992.3 Annex L READSL
- ITU G.992.4 (ADSL2 G.lite)
- ITU G.992.5 (ADSL2+)

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

VersaPort™2 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
- Upgradable 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

USB

- Pentium or equivalent and above class machines
- Microsoft Windows (98 SE, ME, 2000 or XP) 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
- USB Version 1.0 or higher compliant bus

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+ 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
- VersaPort™2
- Ethernet
- Wireless
- Telephone 1, Telephone 2
- Message waiting 1, Message waiting 2
- USB
- DSL
- Internet

Connectors

- DSL: 6-pin (RJ-11)
- USB: 4-pin Type B connector (Model 42710 only)
- VersaPort™2: Ethernet 8-pin RJ-45
- Four Ethernet: 8-pin RJ-45
- Two VoIP Jacks: Telephone 1, Telephone 2 6-pin (RJ-11)
- Power: Barrel connector
- Wireless IEEE 802.11b/g SMA connector and antenna

Compliance

EMC

- FCC Part 15 Class B

Safety

- UL 1950, 3rd Edition
- cUL, CAN/CSA-22.2 950-93

Regulatory Approval

- UL, CSA, FCC Part 68, Industry Canada CS03, LE



21. TECHNICAL SUPPORT INFORMATION

Westell Technical Support

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

North America
Phone: 1-630-375-4900

U.K./Europe
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.

22. 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.



User Guide

TriLink Gateway – Draft 5
030-300445 Rev. A
6/22/05

TriLink Gateway (Models 427V10, 427V11)

23. PUBLICATION INFORMATION

Westell® TriLink™ (Models 427V10, 427V11)
User Guide Part Number 030-300445 Rev. A

Copyright © 2005 Westell, Inc.
All rights reserved.

Westell, Inc.
750 North Commons Drive
Aurora, Illinois 60504 USA
www.westell.com

All trademarks and registered trademarks are the property of their respective owners.

DRAFT 5