User Guide

RSG2500
Residential Seamless
Mobility Gateway

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE. THE UNIT MUST NOT BE EXPOSED TO DRIPPING OR SPLASHING. DO NOT PLACE OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, ON THE UNIT.

CAUTION: TO ENSURE REGULATORY COMPLIANCE, USE ONLY THE PROVIDED POWER AND INTERFACE CABLES.

CAUTION: DO NOT OPEN THE UNIT. DO NOT PERFORM ANY SERVICING OTHER THAN THAT CONTAINED IN THE INSTALLATION AND TROUBLESHOOTING INSTRUCTIONS. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL.

This device must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product.

Postpone router installation until there is no risk of thunderstorm or lightning activity in the area.

Do not overload outlets or extension cords, as this can result in a risk of fire or electric shock. Overloaded AC outlets, extension cords, frayed power cords, damaged or cracked wire insulation, and broken plugs are dangerous. They may result in a shock or fire hazard.

Route power supply cords so that they are not likely to be walked on or pinched by items placed upon or against them. Pay particular attention to cords where they are attached to plugs and convenience receptacles, and examine the point where they exit from the product.

Place this equipment in a location that is close enough to an electrical outlet to accommodate the length of the power cord.

Place this equipment on a stable surface.

When using this device, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons, including the following:

- Read all of the instructions {listed here and/or in the user manual} before you operate this equipment. Give particular attention to all safety precautions. Retain the instructions for future reference.
- Comply with all warning and caution statements in the instructions. Observe all warning and caution symbols that are affixed to this equipment.
- Comply with all instructions that accompany this equipment.
- Avoid using this product during an electrical storm. There may be a risk of electric shock from lightning. For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet, and disconnect the cable system. This will prevent damage to the product due to lightning and power surges.
- Operate this product only from the type of power source indicated on the product's marking label. If you are not sure of the type of power supplied to your home, consult your dealer or local power company.
- Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in safe operating condition.

It is recommended that the customer install an AC surge protector in the AC outlet to which this device is connected. This is to avoid damaging the equipment by local lightning strikes and other electrical surges.

Different types of cord sets may be used for connections to the main supply circuit. Use only a main line cord that complies with all applicable product safety requirements of the country of use.

Installation of this product must be in accordance with national wiring codes.

Place unit to allow for easy access when disconnecting the power cord/adapter of the device from the AC wall outlet.

Wipe the unit with a clean, dry cloth. Never use cleaning fluid or similar chemicals. Do not spray cleaners directly on the unit or use forced air to remove dust.

This product was qualified under test conditions that included the use of the supplied cables between system components. To be in compliance with regulations, the user must use these cables and install them properly. Connect the unit to a grounding type AC wall outlet using the power adapter supplied with the unit.

Do not cover the device, or block the airflow to the device with any other objects. Keep the device away from excessive heat and humidity and keep the device free from vibration and dust.

Installation must at all times conform to local regulations.

FCC Compliance Class B Digital Device

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential environment. 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 of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION: Changes or modifications not expressly approved by Motorola for compliance could void the user's authority to operate the equipment.

FCC Declaration of Conformity

Motorola, Inc., Broadband Communications Sector, 101 Tournament Drive, Horsham, PA 19044, 1-215-323-1000, declares under sole responsibility that the RSG2500 complies with 47 CFR Parts 2 and 15 of the FCC Rules as Class B digital devices. These devices comply with Part 15 of FCC Rules. Operation of these devices is subject to the following two conditions: (1) These devices may not cause harmful interference, and (2) these devices must accept any interference that may cause undesired operation.

Wireless LAN Information

The RSG2500 Wireless LAN products are wireless network products that use Direct Sequence Spread Spectrum (DSSS) radio technology. These products are designed to be inter-operable with any other wireless DSSS type product that complies with:

- The IEEE 802.11 Standard on Wireless LANs (Revision B and Revision G), as defined and approved by the Institute of Electrical Electronics Engineers.
- The Wireless Fidelity (Wi-Fi) certification as defined by the Wireless Ethernet Compatibility Alliance (WECA).

Wireless LAN and your Health

The RSG2500, like other radio devices, emits radio frequency electromagnetic energy, but operates within the guidelines found in radio frequency safety standards and recommendations.

Restrictions on Use of Wireless Devices

In some situations or environments, the use of wireless devices may be restricted by the proprietor of the building or responsible representatives of the organization. For example, using wireless equipment in any environment where the risk of interference to other devices or services is perceived or identified as harmful.

If you are uncertain of the applicable policy for the use of wireless equipment in a specific organization or environment, you are encouraged to ask for authorization to use the device prior to turning on the equipment.

The manufacturer is not responsible for any radio or television interference caused by unauthorized modification of the devices included with this product, or the substitution or attachment of connecting cables and equipment other than specified by the manufacturer. Correction of interference caused by such unauthorized modification, substitution, or attachment is the responsibility of the user.

The manufacturer and its authorized resellers or distributors are not liable for any damage or violation of government regulations that may arise from failing to comply with these guidelines.

FCC Certification

The RSG2500 contains a radio transmitter and accordingly have been certified as compliant with 47 CFR Part 15 of the FCC Rules for intentional radiators. Products that contain a radio transmitter are labeled with FCC ID and the FCC logo.

Caution: Exposure to Radio Frequency Radiation

To comply with the FCC RF exposure compliance requirements, the separation distance between the antenna and any person's body (including hands, wrists, feet and ankles) must be at least 20 cm (8 inches).

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The availability of some specific channels and/or operational frequency bands are country dependent and are firmware programmed at the factory to match the intended destination. The firmware setting is not accessible by the end user.

Caring for the Environment by Recycling

When you see this symbol on a Motorola product, do not dispose of the product with residential or commercial waste.

Recycling your Motorola Equipment

Please do not dispose of this product with your residential or commercial waste. Some countries or regions, such as the European Union, have set up systems to collect and recycle electrical and electronic waste items. Contact your local authorities for information about practices established for your region. If collection systems are not available, call Motorola Customer Service for assistance.

Canada-Industry Canada (IC)

This device complies with RSS-210 of the Industry Canada Rules. Operation is subject to the following two conditions:
1) this device may not cause interference and
2) this device must accept any interference, including interference that may cause undesired operation of the device

This device has been designed to operate with an antenna having a maximum gain of 0 dBi.
Antenna having a higher gain is strictly prohibited per regulations of Industry Canada. The required antenna impedance is 50 ohms.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the EIRP is not more than required for successful communication.

IMPORTANT NOTE:

IC Radiation Exposure Statement:
This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

# Contents

Section 4: Troubleshooting

Section 1: Overview

Congratulations on purchasing the Motorola RSG2500 Residential Seamless Mobility Gateway. The RSG2500:

- Enables a caller using a compatible dual-mode handset (DMH) to seamlessly roam between a Wi-Fi® and cellular network without interrupting the call

- Offers wireless and wired home network connectivity, eliminating the need for standalone routers, hubs, and wireless access points:
    — IEEE 802.11b and 802.11g wireless access point
    — WPA or WEP wireless security
    — Four-port wired Ethernet 10/100Base-T auto-MDIX router
    — Firewall to protect against Internet intruders

- Provides Network Address Translation (NAT), IP, and MAC filtering to hide your LAN IP addresses from the Internet

- Prioritizes voice over Internet traffic using IEEE 802.11e admission control, enabling high-quality voice calls while surfing the Web

- Works with any active cable modem or DSL broadband connection

- Enables every connected device to share an Internet connection, files, pictures, printers, or other peripherals

- Supports VPN pass-through for IPSEC/PPTP/L2TP NAT tunneling

- Supports CLASS services, including caller ID, call waiting, and three-way calling

- Supports Universal Plug and Play (UPnP™)

- Supports Routing Interface Protocol (RIP)

- Provides parental control through site filtering and LAN client access control

- Has upgradeable firmware to keep your RSG2500 up-to-date

Package Contents
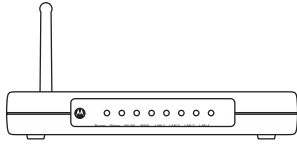
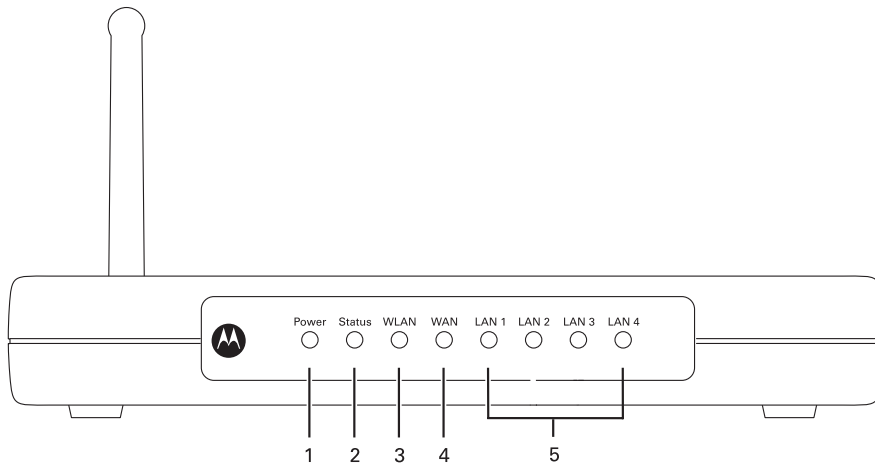

RSG2500   CD-ROM   Ethernet cable   Power supply   Vertical mounting
                                                                     stand (optional)

Front Panel

Key	LED	Condition	Status
1	Power	On (green)	The RSG2500 is plugged in and operating normally.
2	Status	Off	Wireless security is off (configured as No Security).
		Solid green	Wireless security is enabled
		Solid or flashing amber	The RSG2500 is waiting for a DMH handset to communicate.
		Solid or flashing green	The RSG2500 is pairing with a DMH handset.
3	WLAN	Off	The wireless interface is disabled or no wireless device is connected.
		Solid green	The wireless interface is enabled and a device is connected over wireless.
		Flashing green	There is wireless network activity.

Key	LED	Condition	Status
4	WAN	Off	The RSG2500 is not connected to a cable or DSL modem.
		Solid yellow	The RSG2500 is connected to a cable or DSL modem (10Base-T).
		Solid green	The RSG2500 is connected to a cable or DSL modem (100Base-T).
		Flashing (yellow or green)	There is activity on the WAN connection between your RSG2500 and modem.
5	LAN 1 to 4	Off	No device is connected to this Ethernet port.
		Solid yellow	A device is connected to this port (10Base-T).
		Solid green	A device is connected to this port (100Base-T).
		Flashing (yellow or green)	There is activity on this LAN connection.

Back Panel
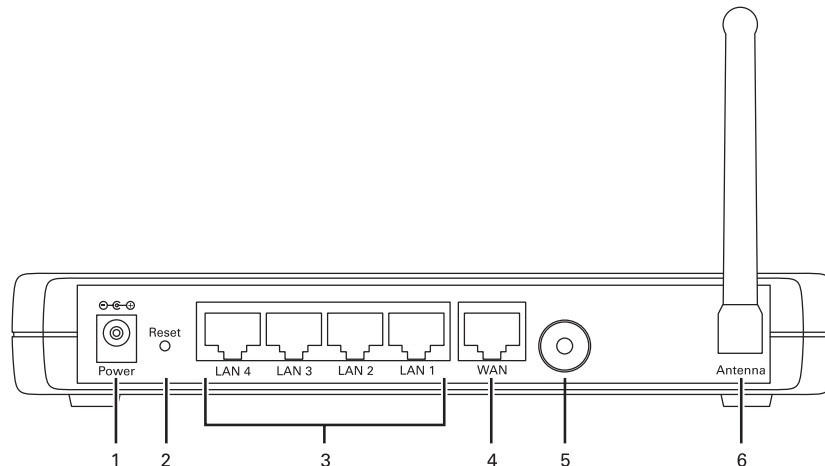
Key	Feature	Description
1	**Power**	Plug in the AC power adapter here.
2	**Reset**	If the RSG2500 experiences trouble connecting to the Internet, briefly press and release this button to re-establish your connection.
		To reset the RSG2500 to its factory default settings, press and hold this button for more than five seconds. This clears the user settings, including User ID, Password, IP Address, and Subnet Mask. To reconfigure the RSG2500, see Section 3, Configuration Utility Reference.
3	**LAN 1 to 4**	RJ-45 ports to connect up to four computers or other Ethernet devices directly to the RSG2500 using Ethernet cables. You can connect another router or a switch to any LAN port to expand your network to more than four devices.
		The connected devices can have a 10Base-T or 100Base-T Ethernet adapter. You can use a straight-through or crossover Ethernet cable.
4	**WAN**	Connect your modem to this RJ-45 port using the Ethernet cable supplied with the RSG2500. The connected modem can support 10Base-T or 100Base-T. You can use a straight-through or crossover Ethernet cable.
5	**Pairing Button**	Use this button to simplify Wi-Fi configuration with a compatible dual-mode handset.
6	**Antenna**	The antenna used for wireless connections. You can rotate the antenna to obtain the best signal reception.

Section 2: Installation

We recommend following the step-by-step easy install process on the included RSG2500 CD-ROM. The Installation Wizard automatically starts when you insert the CD-ROM in your Windows PC's CD drive and leads you through setting up your RSG2500.

If you cannot or prefer not to use the Installation Assistant, this section will help you:

- Physically connect your RSG2500

- Establish a first connection between a computer and the RSG2500

Once this first connection is made, you can configure the RSG2500 to support all of the wired or wireless connections you need. If you prefer to set up the RSG2500 software manually, refer to the Manual Software Setup found later in this section.

Positioning Your RSG2500 for Optimal Wireless Performance

To achieve the best wireless performance, review these guidelines before deciding where to place your RSG2500:

- Connect at least one computer through a wired Ethernet connection.

- Placing your RSG2500 in the physical center of your network is best, because its antenna sends out signal in all directions.

- Placing the RSG2500 in a higher location, such as on top of a cabinet, helps disperse the signal cleanly, especially to upper floors.

- If possible, position your RSG2500 so there is direct line of sight between it and other home network devices using a wireless connection.

- Avoid placing the RSG2500 next to large, solid objects like computer cases, monitors, walls, fireplaces, etc. This helps the signal penetrate more cleanly.

- Other wireless devices such as televisions, radios, microwaves, or 2.4 GHz cordless telephones can interfere with the signal. Keep these devices away from the RSG2500.

- Mirrors, especially those that are silver-coated, can reduce transmission performance.

Wireless Range and Transmission Speed

The following table lists the expected wireless range. It is only a guide. Your actual throughput and distance may vary. The radio waves radiate out in a donut-shaped pattern. The waves travel through walls and floors, but transmission power and distance are affected.

Data Rate	Open Area	Closed Area
54 Mbps	Up to 100 ft (30 m)	Up to 60 ft (18 m)
11 Mbps	Up to 900 ft (275 m)	Up to 160 ft (49 m)
5.5 Mbps	Up to 1300 ft (396 m)	Up to 200 ft (61 m)
1 or 2 Mbps	Up to 1500 ft (457 m)	Up to 300 ft (91 m)

Electrical Connection

The RSG2500 has no On/Off switch. It is powered on by plugging in its power adapter.

1 Connect the power adapter to the Power port on the back of the RSG2500.

2 Plug the power adapter into an unswitched, grounded, and surge-protected AC power outlet. The Power LED on the front panel lights green when connected properly.

## Establishing Your Connection to the RSG2500

You can now establish your first wired network connection:

- *We recommend following the step-by-step easy install process on the included RSG2500 CD-ROM.* The Installation Wizard automatically runs when you insert the RSG2500 CD-ROM in your computer CD-ROM drive. It confirms that the antenna and electrical connections have been made, and then leads you step-by-step through setting up your RSG2500.

- If you do not wish to use the Installation Wizard, you can manually configure this first wired connection.

Manual Install—Wired Connection

The computer must have an Ethernet adapter installed. *You need two Ethernet cables — one to connect the RSG2500 to the modem and one to connect the computer to the RSG2500.*

Wired connection
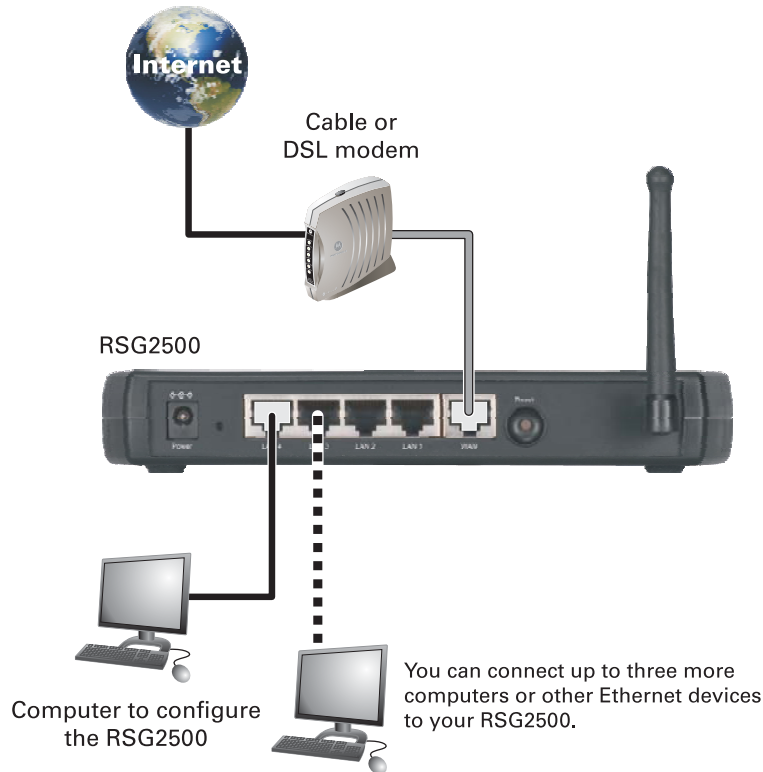
1   If you are currently running broadband to a single computer, unplug the Ethernet cable connecting your modem to your PC and plug it into the WAN port on the RSG2500. If you are not running broadband to a single computer, connect an Ethernet cable to the WAN port on the RSG2500.

2   Connect the other end of the same Ethernet cable to your cable or DSL modem.

    You may need to restart your modem after making this connection.

3   Connect a second Ethernet cable to the Ethernet port on the back of your PC.

4   Connect the other end of this cable to *one* of the LAN ports on your RSG2500.

5   To connect more devices, repeat steps 3 and 4.

Establishing a Wireless Connection

To connect to the RSG2500 wirelessly, a computer must have an 802.11b or 802.11g wireless adapter installed. If all wireless security and encryption are disabled on the adapter and the RSG2500, the computer will automatically connect to the RSG2500.

Motorola ships the RSG2500 with all wireless security measures disabled. For information about security defaults on your wireless adapter, refer to its documentation.

CAUTION!

> Connect at least one computer to an RSG2500 Ethernet port to perform configuration. *Do not attempt to configure the RSG2500 over a wireless connection.*
>
> *The default RSG2500 settings provide no wireless security. After your wireless LAN is operational, be sure to enable security.*

Wireless connection
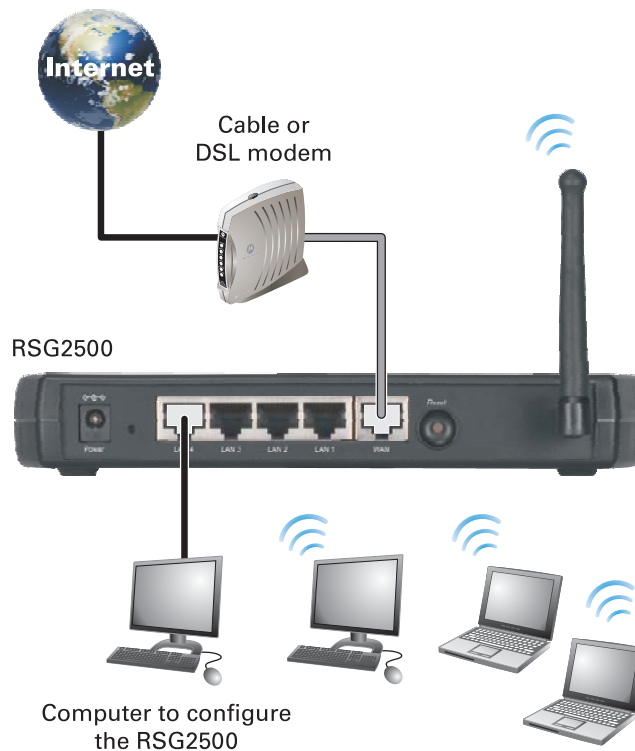
Configuring Your Computers to Communicate with the RSG2500

To enable each computer on your network to communicate with the RSG2500, you may need to configure it to automatically obtain an IP address. This section describes how to configure computers running:

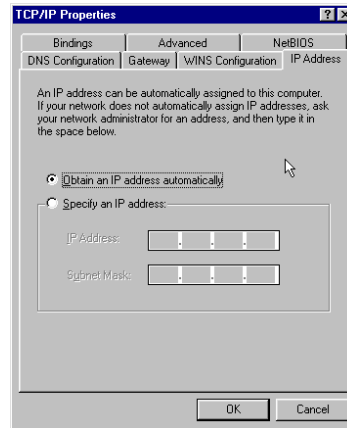- Windows® 98 SE

- Windows ME®

- Windows® 2000

- Windows XP™

Configuring Windows 98SE and ME

1 Click Start.

2 Select Settings > Control Panel.

**3** Double-click Network to display the Network window:
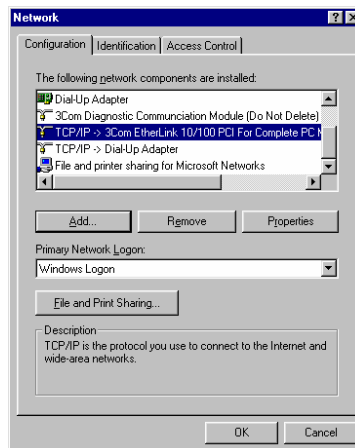
4 On the Configuration tab, select the TCP/IP line for the Ethernet adapter installed in your PC. There may be multiple TCP/IP components listed. Choose only the one that is configured for your adapter. In the example above, a 3Com Ethernet adapter card is installed and is the correct choice.

5   Click Properties. The TCP/IP Properties window is displayed:
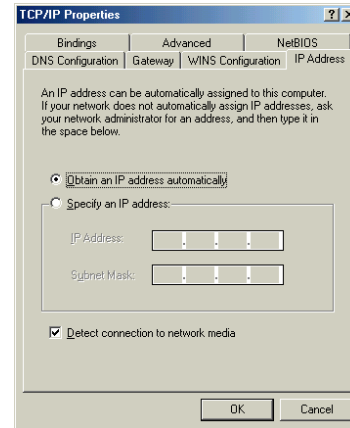
Windows 98SE   Windows ME

6   Click the **IP Address** tab.

7   Select *Obtain an IP address automatically*.

8   Click **OK**.

9   Click the **Gateway** tab and confirm that the *Installed Gateway* field is blank.

10 Click **OK** twice to exit and save your settings.

Windows may ask for the Windows Installation disk. First check to see if the installation files are installed at c:\windows\options\cabs. Otherwise, load your Windows CD and follow the prompts.

11 Restart your PC.
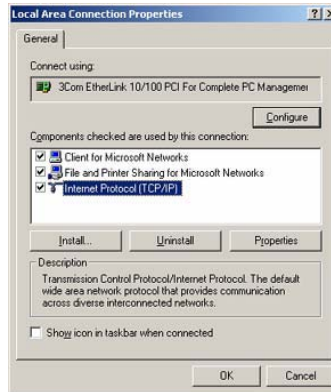
Configuring Windows 2000

1   Click Start.

2   Select Settings > Control Panel.

3   Double-click Network and Dial-Up Connections.

4   Double-click Local Area Connection. The Local Area Connection Status window is displayed:
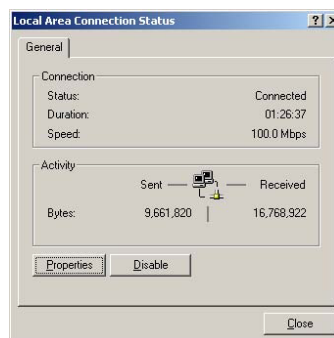
6   Click Properties. The Local Area Connection Properties window is displayed:

7   Be sure the box next to Internet Protocol (TCP/IP) is checked.

8   Click Internet Protocol (TCP/IP) and click Properties. The Internet Protocol (TCP/IP) Properties window is displayed:

9   Select Obtain an IP address automatically. Click OK twice to exit and save your settings.

10 Restart your PC.

Configuring Windows XP

This procedure assumes you are using the default Windows XP interface. If you are running the Classic interface, follow the instructions for Windows 2000.

1 Click Start.

2 Select Settings > Control Panel.

3 Double-click Network and Dial-Up Connections.

4 Double-click Local Area Connection. The Local Area Connection Status window is displayed:

5 Click Properties. The Local Area Connection Properties window is displayed:

6 Be sure the box next to Internet Protocol (TCP/IP) is selected.

7   Click to highlight Internet Protocol (TCP/IP) and click Properties. The Internet Protocol (TCP/IP) Properties window is displayed:
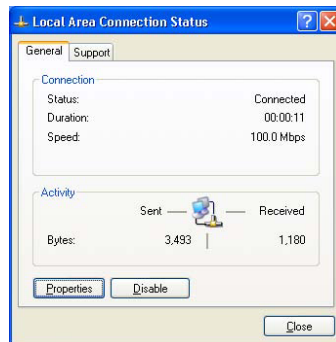

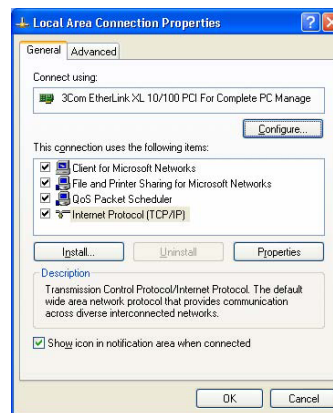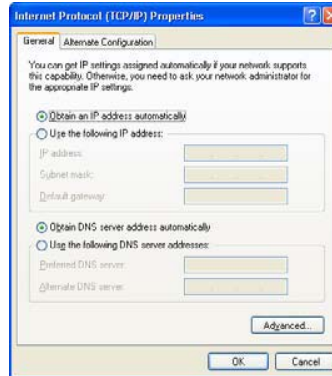**8**   Click Obtain an IP address automatically. Click OK twice to exit and save your settings.

Section 3: Configuration Utility Reference

This section describes using the RSG2500 configuration utility on a computer wired to the RSG2500. *Do not attempt to configure the RSG2500 over a wireless connection.*

Logging In

1 Open a Web browser.

2 In the URL field, type **http://192.168.0.1** and press **Enter** to display the login window.

3 In the **User Name** field, type the *User Name*.

   The default user name is admin.

4 In the **Password** field, type the *Password*.

   The default password is 12345. For security reasons, we recommend changing the Password on the Management > Admin window.

5 Click **OK**. The WAN – ROUTER window is displayed.

Main Menu

The main menu items are:

Click	To Configure
WAN	Connections to broadband services through cable or DSL
LAN	Local area network settings
Wireless	Wireless network settings, including security
Router	Static routes and Routing Interface Protocol (RIP) settings
Security	Blocked services and sites and security notifications
Management	Backups, the RSG2500 password, and firmware upgrades
Service	UPnP, port forwarding, or port triggering
Status	Display status information
Reboot	Restart your RSG2500
Logout	Log out of your RSG2500

The following buttons are available on most windows and always have the same function:

Apply	Click to save your settings
Cancel	Click to cancel any changes

Configuring WAN Settings

The WAN windows enable you configure the connection to your cable or DSL service:

- BASIC
- ROUTER – PPPoE
- ROUTER
- ADVANCED

WAN > BASIC

Select the **Operation Mode**:

Operation Mode	WAN Connection Type	NAT
Router-PPPoE	Through PPPoE	Enabled
Router	Dynamic Host Configuration Protocol (DHCP) client or static IP address	Enabled
Bridge	Bridge mode for all interfaces: LAN, WAN, WLAN	Disabled

WAN > Router – PPPoE

OPERATION MODE	
Operation Mode	⊙ Router-PPPoE ○ Router ○ Bridge

PPPoE CONNECTION ACCOUNT	
Login Account	guest
Password	
Service Name	
Idle Timeout	5 minute(s)

DOMAIN NAME SERVER (DNS)	
○ Get Automatically From ISP	
⊙ Use These DNS Servers	
DNS IP Address 1	168 . 95 . 1 . 1
DNS IP Address 2	. . .

Apply Cancel

Field or Button	Description

PPPoE Connection Account

Login Account	Type the account *name* provided by your DSL provider.
Password	Type the *password* provided by your DSL provider.
Service Name	Type the service *name* provided by your DSL provider.
Idle Timeout	Type the PPP *idle timeout*. It sets how long the connection can remain inactive before it is dropped. It works only when dial-on-demand is enabled.

Domain Name Server (DNS)

Get Automatically From ISP	If selected, the RSG2500 obtains the DNS server IP address automatically from your DSL provider.
Use These DNS Servers	If selected, you must enter the **DNS IP Address 1** and **DNS IP Address 2** provided by your DSL provider.

WAN > ROUTER

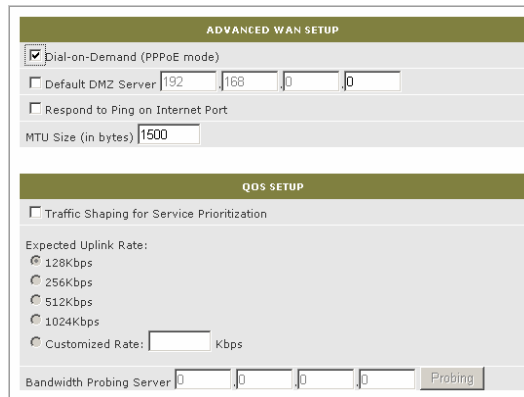| Field or Button	Description
WAN IP Address	
Host Name	Type the host *name* provided by your ISP.
Enable DHCP Client	If selected, the RSG2500 obtains its WAN IP address dynamically from your ISP.
Disable DHCP Client	If selected, the following fields are enabled. You must type the following, as provided by your ISP: ▪ **Static IP Address** ▪ **Static IP Subnet Mask** ▪ **WAN Default Gateway**
Domain Name Server (DNS)	
Get Automatically From ISP	If selected, the RSG2500 obtains the DNS server IP address automatically from your ISP.
Use These DNS Servers	If selected, you must enter the **DNS IP Address 1** and **DNS IP Address 2** provided by your ISP.

Field or Button	Description
Router MAC Address	
Use Default Address	Select to use the RSG2500 WAN MAC address. It is printed on the label on the bottom of your RSG2500.
Use Computer MAC Address	If your cable or DSL provider required you to register a MAC address for their service, select this option and connect the computer having that MAC address to the **LAN 1** port on the RSG2500.
Use this MAC Address	If your cable or DSL provider required you to register a MAC address for their service, select this option and type the *MAC address* you registered.

WAN > ADVANCED

Field or Button	Description
Advanced WAN Setup	
Dial-on-Demand (PPPoE Mode)	If selected, dial-on-demand is enabled for PPPoE. If the PPP session is in an idle timeout state, PPP dials automatically to establish a new connection when you access the Internet again. The default is enabled.
Default DMZ Server	If selected, you can specify a computer on your LAN as the DMZ (de-militarized zone). Type the computer *IP address* in the fields, in dotted-decimal format.
	Specifying a computer as the DMZ allows external Internet traffic to reach the specified computer without inspection from the RSG2500 firewall. Certain applications, such as some online games, may work better on a DMZ computer where there is no intervention from the firewall. *Use this option with extreme care because the DMZ computer has no protection from Internet attacks.*

Field or Button	Description
Respond to Ping on Internet	If selected, disables the WAN port ping function to protect your network from Internet ping attacks. The default is disabled.
MTU Size	Sets the maximum transmit unit size, in bytes. The default is 1500 bytes.

QoS Setup

Traffic Shaping for Service Prioritization	Select to enable traffic shaping for service (such as voice) prioritization for uplink traffic. Use only when your CPE device (ADSL, cable modem) does not support QoS packet prioritization and you have voice/video traffic to transmit uplink. Enabling this function can reduce the possibility of service packet loss.
Expected Uplink Rate	The traffic shaping limits the transmit uplink speed based on this parameter. The service packets will have a higher priority to transmit than data packets. Input a customized one if the predefined options are not matched. Predefined rates are: ▪ 128Kbps ▪ 256Kbps ▪ 512Kbps ▪ 1Mbps
Bandwidth Probing Server	For systems that support bandwidth probing *only*, it is a dynamic method to identify the available upstream bandwidth to optimize how the RSG2500 performs QoS. To use bandwidth probing, type the bandwidth probing server *IP address* provided by your service provider.

Configuring LAN Settings

The LAN configuration windows are:

▪ LAN SETUP

▪ ADVANCED

Unless you have sufficient networking knowledge, we recommend not changing the defaults for any LAN settings.

LAN > LAN SETUP

This window enables you to set the RSG2500 LAN IP address and DHCP server options. *We recommend using DHCP to administer your network.* All computers on your network must be configured to obtain an IP address automatically.

Field	Description
LAN IP Address	
IP Address	Sets the IP address for your private network. The default is 192.168.0.1.
IP Subnet Mask	Sets the subnet mask. The default is 255.255.255.0.
DHCP Server	
Use Router as DHCP Server	Enables or disables the DHCP server on the RSG2500. The default is enabled. *You can only run one DHCP server on your network.* In bridge mode, the RSG2500 DHCP server is always disabled.
Domain Name	Provides the DNS suffix to clients.
Starting IP Address	Sets the starting IP address for the DHCP address pool. The default is 192.168.0.100.
Ending IP Address	Sets the ending IP address for the DHCP address pool. The default is 192.168.0.163.
Reserved LAN Clients	Displays the MAC Address, IP Address, and Host Name for all reserved IP address LAN clients on your network. Select **Add**, **Edit**, **or Delete** to add, edit, or delete an entry.

Add a Reserved DHCP Entry

Field	Description
Current DHCP Leases	Displays the IP address and MAC address of each device that has an IP address assigned dynamically by the RSG2500 DHCP server.
Reserve New IP Address	
MAC Address	Type the *MAC address* of the device for which you reserving the IP address.
IP Address	Type the *IP address* to reserve.
Host Name	(Optional) Type the *host name* of the device for which you reserving the IP address.
Add	Adds the entry and return to the LAN Setup window
Cancel	Cancels your changes and return to the LAN Setup window
Refresh	Refreshes the Current DHCP Leases table

Edit a Reserved DHCP Entry

The fields have the same function as their counterparts for adding a reserved DHCP entry.

LAN > ADVANCED

Field   **Description**

802.1p   Select to give outgoing LAN traffic a VLAN tag. The default VLAN ID is 1.

Configuring Wireless Network Settings

The Wireless configuration windows are:

- NETWORK
- SECURITY
- ADVANCED

Wireless > NETWORK

Field or Button	Description
Wireless	
Enable Wireless Interface	Turns the wireless interface on or off. The default is enabled. If you disable the wireless interface, the RSG2500 wired network continues to operate.
ESSID	Sets the extended service set identifier (ESSID); the network name used by all devices on your wireless network. It can be up to 32 alphanumeric characters. The ESSID must be entered on every device on your wireless network to enable communication with the RSG2500.
	The default RSG2500 ESSID is Motorola. *We recommend changing the ESSID to a unique name that is easy for you to remember. Do not change this or any other setting over a wireless connection.*
Channel	Sets the channel on which the RSG2500 communicates. The default is channel 6. Each wireless client must use this channel. If changed wirelessly, once you restart the RSG2500, you will lose your wireless connection. *Do not change this or any other setting over a wireless connection.*
Operating Mode	Sets the transmission protocol for the wireless network:
	- **b only:** 802.11b *only*
	- **g only:** 802.11g *only*
	- **g and b:** 802.11b/g mixed mode; the default

Field or Button	Description
Advanced Setup	
RTS Threshold	Sets the packet size at which the RSG2500 issues a request to send. The range is 1 to 2347 bytes. The default is 2347.
Fragmentation Threshold	Sets the size at which packets are fragmented and transmitted a piece at a time instead of all at once. The range is 256 to 2346 bytes. The default is 2346.
Beacon Period	Sets the interval between network synchronization broadcasts. The range is 1 to 65535 milliseconds. The default is 100 milliseconds.
DTIM Period	Sets the Delivery Traffic Indicator Maps period value from 1 to 255, in multiples of the Beacon Period. The default is 1. *Because changing the Beacon and DTIM Period settings may affect wireless performance, we recommend not changing the defaults.*
Radio Transmit Power	Sets the percentage of wireless transmission power that is used — 100%, 75%, 50&, 25%, 12%, 6%, or 3%.

Wireless > SECURITY

This window enables you to configure wireless security settings.

		SECURITY MODE	
Security Mode	◉ None	○ WEP	○ WPA
	○ WPA2-Only	○ WPA2/WPA Mixed	

	WEP CONFIGURATION	
WEP Passphrase	[ ]	Generate WEP Keys
WEP Authentication	◉ Automatic ○ Open	○ Shared Key
Encryption	○ Enable 64-bit	◉ Enable 128-bit
Key Type	**Enter 10/26 HEX chars**	
◉ Key 1	[ ]	
○ Key 2	[ ]	
○ Key 3	[ ]	
○ Key 4	[ ]	

	WPA/WPA2 CONFIGURATION	
Group Rekey Interval	[60] (minutes)	
Authentication Type		
○ Remote (Radius):		
Radius Server IP Address	[ ] . [ ] . [ ] . [ ]	
Radius Port	[1812]	
Radius Key	[ ]	
○ Local (Pre-Shared Key):		
PSK Passphrase	[ ]	

[Apply] [Cancel]

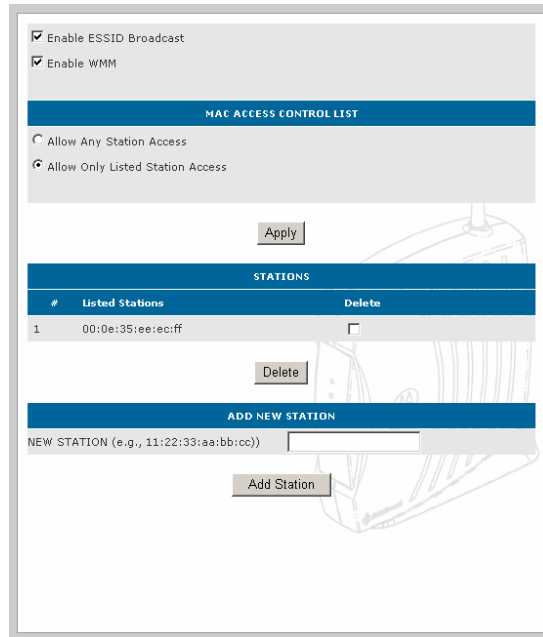| **Field**	**Description**	
Security Mode	Sets the security type for your wireless network.	
	None	No wireless security; the default
	WEP	Wired Equivalent Privacy
	WPA	Allows the association of Wi-Fi® Protected Access (WPA) clients *only*, but not WPA2 clients
	WPA2-Only	Allows the association of WPA2 clients *only*, but not WPA clients
	WPA2/WPA Mixed	Allows the association of WPA2 or WPA clients

Field	Description
WEP Configuration	
WEP Passphrase	Type a passphrase for easier WEP key setup on computers equipped with a Motorola wireless adapter. The Key Content fields (Key 1, Key 2, etc) are not filled with automatically-generated WEP keys until you click **Generate WEP Keys**.
	You cannot use the WEP Passphrase if you have any computers equipped with a non-Motorola wireless adapter. For non-Motorola adapters, you must type your WEP keys in the Key 1-4 fields.
Generate WEP Keys	Generates WEP keys based on the WEP Passphrase.
WEP Authentication	Sets the authentication method used when WEP is enabled:

	Automatic	(The default) Wireless clients can authenticate with the RSG2500 using Open System or Shared Key authentication.
	Open	Wireless clients can authenticate using Open System authentication *only*.
	Shared Key	Wireless clients can authenticate using Shared Key authentication *only*.

Field	Description	
Encryption	Sets the WEP key length:	
	Enable 64-bit	64-bit strength; the key must contain 10 hexadecimal characters (0 to 9 and A to F *only*)
	Enable 128-bit	128-bit strength; the key must contain 26 hexadecimal characters (0 to 9 and A to F *only*)

Field	Description
Key Type	Select *one* WEP key — the Key 1, Key 2, Key 3, or Key 4 field — to encrypt outgoing wireless packets on the RSG2500.
	You must use the Key selected here on every wireless client. For example, if you select Key 1 here, you must select Key 1 on every wireless client. The default is 1.
Key 1, Key 2, Key 3, Key 4	Enter WEP keys in these fields. Up to four different Keys (1, 2, 3, or 4) are available. Only the selected Key is used to encrypt wireless packets. *Do not enter all 0s. This is not a secure key.*

Field	Description
WPA/WPA2 Configuration	All of the following settings apply to WPA, WPA2-Only, or WPA2/WPA Mixed Security Mode:
Group Rekey Interval	Sets the time, in minutes, until the RSG2500 sends a new group key. The default is 60 minutes.
Authentication Type	Sets the authentication and key management type:

	Remote (Radius)	IEEE 802.1X is used for authentication and key management. A remote RADIUS authentication server is required to verify users.
	Local (Pre-Shared Key)	The Pre-Shared Key (PSK) method is used for authentication and key management. No remote authentication servers are required. *This is recommended for home users not using a remote RADIUS server.*

Field	Description
Radius Server IP Address	If the Authentication Type is Remote (Radius), enter the RADIUS server IP address in this field.
Radius Port	If the Authentication Type is Remote (Radius), enter the RADIUS server port number in this field. The default is 1812.
Radius Key	If the Authentication Type is Remote (Radius), enter the Radius shared secret. It must be from 1 to 64 characters.
PSK Passphrase	If the Authentication Type is Local (Pre-Shared Key), enter the key encryption passphrase. It must be from 8 to 63 characters. Record it to enter on your wireless LAN clients, if supported.

Wireless > ADVANCED

This window enables you to configure several advanced wireless features. Generally, these settings should remain at their default values.

Field	Description
Enable ESSID Broadcast	Enables ESSID broadcasting from the RSG2500. If selected, wireless clients receive the RSG2500 ESSID. The default is enabled.
Enable WMM	Enables Wi-Fi Multimedia (WMM). If selected, it provides multimedia enhancements for the wireless network. We recommend enabling WMM for better audio, video, and voice application services. The default is enabled.
MAC Access Control List	Enables you to control which devices access your wireless network based upon their MAC address. ▪ **Allow Any Station Access:** Disables the MAC access control list (ACL). When selected, the MAC ACL is not active and any wireless station can communicate with your RSG2500. This is the default. ▪ **Allow Only Listed Station Access:** Only the wireless devices in the ACL can communicate with your RSG2500.

Field	**Description**
	To add a MAC address to the ACL:

1   Type the wireless client *MAC address* in the **NEW STATION** field.

2   Click **Add Station**.

3   Click **Apply**.

To delete a MAC address from the ACL:

1   Select the **Delete** box to the right side of the MAC address.

2   Click **Delete**.

3   Click **Apply**.

Configuring Router Settings

The Router window enables you to configure static routes and Routing Information Protocol (RIP) settings:

Field or Button	**Description**
Static Route	You can **Add**, **Edit**, or **Delete** a static route.
Configure RIP	
RIP Direction	The direction of RIP information — None, Both, In Only, or Out Only
Version	Sets the RIP version:

- Disable — Disables RIP
- RIP1 — RIP V1
- RIP2B — RIP V2 broadcast
- RIP2M — RIP V2 multicast

Add a Static Route

Field or Button	Description
Route Name	Sets the static route name
Private	If selected, the RSG2500 does not broadcast the route in RIP messages.
Active	Activates the static route
Destination IP Address	Sets the route destination IP address
IP Subnet Mask	Sets the subnet mask of the route
Gateway IP Address	Sets the destination gateway
Metric	Not implemented in this version

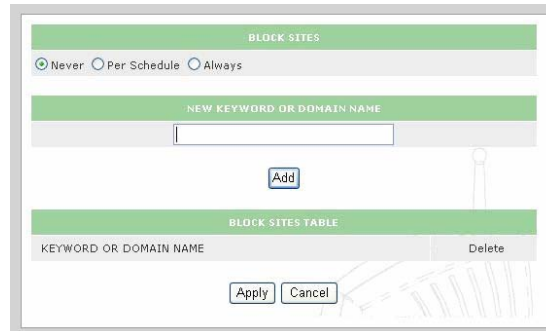## Configuring Security Settings

The Security configuration windows are:

- LOGS
- BLOCK SITE
- BLOCK SERVICE
- SCHEDULE
- EMAIL

Security > LOGS

Button	Description
Refresh	Refreshes the log
Clear Log	Clears the log
Send Log	Sends the log to the e-mail address specified on the Security > Email window

Security > BLOCK SITE

Field or Button	Description
Block Sites	Sets the time to block the sites: ▪ **Never —** Never block the sites ▪ **Per Schedule —** Block the sites based on the schedule set on the Security > Schedule page ▪ **Always —** Always block the sites
Add	Blocks the keywords you type in the field

Security > BLOCK SERVICE

You can block specific services by adding a predefined or user-defined service.

Field or Button	Description
Block Services	Select the time period to block the services: ▪ **Never —** Never block the services ▪ **Per Schedule —** Block the services based on the schedule set on the Security > Schedule page ▪ **Always —** Always block the services
Add	Adds the service to block
Edit	Edits the blocked service
Delete	Deletes the blocked service

Adding a Blocked Service

Field	Description
Service Type	You can create a service or select a predefined service from AIM, Age-of-Empire, FTP, HTTP, ICUII, IP_Phone, NetMeeting, News, PPTP, QuakeII/III, Real-Audio, or Telnet.
Protocol	Sets the service protocol — TCP, UDP, or TCP/UDP
Starting Port	Sets the service starting port
Ending Port	Sets the service ending port
Service Type/ User Defined	Sets the service name
Filter Services For	Sets the LAN address to associate with this service: ▪ **Only This IP Address** — Block the service from the IP address you type in this field *only* ▪ **IP Address Range** — Block the service from all IP addresses between the starting and ending IP address you type in the fields ▪ **All IP addresses** — Block the service from all IP addresses
Add	Adds the service to the blocked services list
Cancel	Cancels any changes

Editing a Blocked Service

Field	Description
Service Type	You can modify any predefined service or one you created. The **Protocol**, **Starting Port**, **Ending Port**, **Service Type/User Defined**, and **Filter Services For** fields have the same function as when you add a blocked service.
Accept	Finishes editing the service
Cancel	Cancels any changes

Security > SCHEDULE

Field or Button	Description
Day to Block	Select the days to block — Every Day, Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, or Saturday
Time of Day to Block	Select **All Day** to block the service all day or specify a range in the **Start Blocking** and **End Blocking** fields.

Security > EMAIL

Field or Button	Description
Turn E-mail notification On	Enables e-mail notification of RSG2500 alerts and logs.
Your Outgoing Mail Server	Sets the SMTP server for sending mail.
Send to This E-mail Address	Sets the e-mail address to which to send the notifications.
Send Alert Immediately When Someone Attempts to Visit Blocked Site	If selected, an e-mail is sent immediately when any network user visits a blocked site.
Send Logs According to Schedule	Sets how often e-mail notifications are sent: - When log is full - Hourly - Daily (you can specify the time of day) - Weekly (you can specify the day and time) - None
Time Zone	Sets the time zone by synchronizing with the NTP server
Adjust for Daylight Savings Time	If selected, adjusts for daylight saving time.

Configuring Management Settings

The management configuration windows are:

- BACKUP
- ADMIN
- UPGRADE

Management > BACKUP

Button	Description
Backup	Click to save the current settings.
Restore	Click to restore the settings saved in a file to the RSG2500 and reboot the RSG2500. You can click **Browse** to find the file containing the saved settings.
Erase	Click to restore the factory default settings to the RSG2500 and reboot the RSG2500.

Management > ADMIN

Field	Description
Old Password	Type the original *password*
New Password	Type the new *password*.
Verify Password	Type the new *password* again.

Management > UPGRADE

| Field or Button	Description
Firmware Version	Displays the current firmware version
Upload	Click to upgrade the firmware. You can click **Browse** to help find the firmware file.
Cancel	Click to cancel an in-process code upgrade.

Configuring Service Settings

The Service windows enable you to configure:

- UPnP
- PORT FORWARDING
- PORT TRIGGERING

Service > UPnP

Field	Description
Enable UPnP	Enables UPnP; the default is enabled
Advertisement Period (in minutes)	Sets the period to send a UPnP advertisement; the default is 30 minutes
Advertisement Time To Live (in hops)	Sets the maximum hop count for the UPnP advertisement transmission; the default is 4 hops

Service > PORT FORWARD
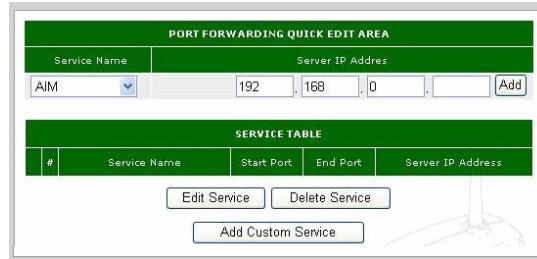
Field	Description

Port Forwarding Quick Edit Area

Service Name	Select AIM, Age-of-Empire, FTP, HTTP, ICUII, IP_Phone, NetMeeting, News, PPTP, QuakeII/III, Real-Audio, or Telnet
Server IP Address	Type the server *IP address*, in dotted-decimal format.
Add	Click to add the port forwarding entry.
Service Table	Displays all defined port forwarding rules.
Edit Service	Click to edit the selected port forwarding rule. The PORT – CUSTOM SERVICES window is displayed.
Delete Service	Click to delete the selected port forwarding rule.
Add Custom Service	Click to create a new port forwarding rule. The PORT – CUSTOM SERVICES window is displayed.

Editing or Adding a Port Forwarding Rule
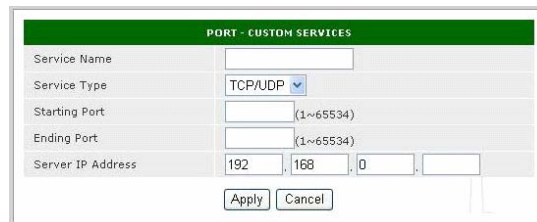
Field	Description
Service Name	Sets the service name
Service Type	Select TCP/UDP, TCP, or UDP
Starting Port	Sets the starting port 1 to 65534
Ending Port	Sets the ending port 1 to 65534
Server IP Address	Sets the LAN IP address

Service > PORT TRIGGER

You can configure up to 32 custom port triggers.

Field or Button	Description
Enable Port Triggers	Enables port triggers
Port Trigger Timeout (in minutes)	Sets the time until the port-trigger is terminated, in minutes.
Add	Click to add a port trigger.
Port Trigger Map Table	Displays all current port triggers.
Delete	Click to delete the selected port trigger.

Adding a Port Trigger

Field or Button	Description
Outbound Port Trigger	
Name	Rule name.
Host	Sets the host that triggers the rule — Any host or an IP address
Protocol	Can be TCP or UDP
Trigger Port	Can be from 1 to 65535
Inbound Port Triggered	
Protocol	Can be TCP/UDP, TCP, or UDP
Starting Port **Ending Port**	Can be from 1 to 65535

Displaying the RSG2500 Status

The Status windows are:

- ATTACHED DEVICE
- STATUS

Status > ATTACHED DEVICE

Field	Description
Attached Device Table	Displays information about each device on the RSG2500 network
Refresh	Click to update the device list

Status > STATUS

The fields displayed on the Status window vary depending on the Operation Mode set on the WAN > BASIC window.

You can click **Show Statistics** to display related to network performance.

You can click **Connection Status** to:

- Display detailed information about the Internet (WAN) connection
- Release or renew the WAN connection

Section 4: Troubleshooting

This section suggests solutions to home networking issues you may encounter. If you cannot find a solution here, please contact your service provider.

My computer cannot connect to the wireless network.

- Be sure your RSG2500 is connected to the AC adapter and the AC adapter is plugged in to an AC power outlet. If they are, the Power light on the RSG2500 front panel is on.

- Be sure the computer is in range of the RSG2500 and not behind an obstruction. Thick walls, metal structures, 2.4 GHz cordless phones, or microwave ovens all can interfere with the signal.

- Be sure the computer's wireless adapter is correctly installed with its radio signal enabled and its antenna properly connected. Refer to the adapter's documentation.

- Verify that the WEP or WPA settings for the computer wireless adapter match those on the RSG2500. Refer to the adapter's documentation.

- If you want to use WPA for more robust security, verify that the wireless adapter supports WPA. If it does not, replace the adapter or choose a different security method.

- For a non-Motorola wireless adapter, verify that you are not using a WEP passphrase. *You cannot use a WEP Passphrase if you have any computers equipped with a non-Motorola wireless adapter.*

- If you selected **Allow Only Listed Station Access** on the Wireless > ADVANCED window, be sure the computer's MAC address is one of the Listed Stations.

My computer cannot communicate with the RSG2500 through a wired connection.

- Be sure the cabling from the wall to your modem, from the modem to your RSG2500, and from the RSG2500 to your computer is correctly and firmly connected.

- Be sure no lights on the RSG2500 front panel are red or off. For more information, see Section 1 "Overview."

- Be sure you are using Ethernet cables rather than phone cables to connect the modem, RSG2500, and computer. An RJ-45 Ethernet plug is shown at left. A RJ-11 plug for a telephone is shown at right:
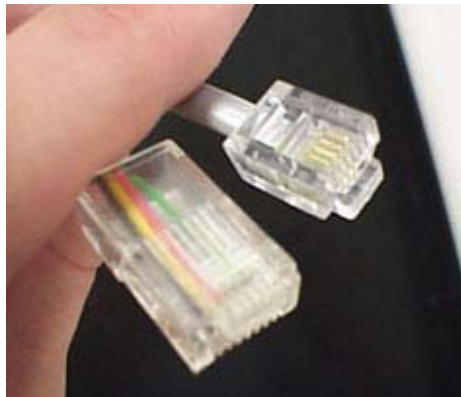
- Be sure your Ethernet adapter is enabled. To check the status of a PC adapter, click the monitor icon in the System Tray at the bottom right of your screen or select **Control Panel > Network and Dial-Up Connections**:

My broadband modem contains a built-in router.

Because the two routers will cancel each other out, turn off the NAT function in the modem to enable access for your router. Refer to your modem's documentation for further instructions.

How can I test my Internet connection?

1 Be sure **Obtain an IP address automatically** is selected on the computer and that an IP address is assigned.

2 Click **Start** and **Run**.

3 In Windows 98 or ME, in the Open field, type **command** and press **Enter** or **OK**.

In Windows 2000 or XP, type **cmd**.

4 In the Command window, type **ipconfig**. Text similar to the following is displayed:

```
Windows IP Configuration

Ethernet adapter Local Area Connection:
        Connection specific DNS suffix  . : xxx.xxx.xxx.com
        IP Address. . . . . . . . . . . . : 192.168.0.100
        Subnet Mask . . . . . . . . . . . : 255.255.255.0
        Default Gateway . . . . . . . . . : 192.168.0.1
```

5 Verify that your PC's IP address is displayed.

6 Type **ping *RSG2500-IP-address*** and press **Enter**.

- If you receive a reply, your computer is connected to the RSG2500. Continue with step 7.

- If you do not receive a reply, if there is another computer on the network, repeat steps 1 to 4 on that computer to verify that the first computer is not the cause of the problem. Your computer Default Gateway's IP address may also be your RSG2500 IP address. Verify the RSG2500's IP address by logging on to the RSG2500 Configuration Utility and reviewing the IP Address field on the LAN Page.

7 Start a Web browser and attempt to view a website; for example www.yahoo.com or www.google.com. If this works, your Internet connection is fine. Otherwise, contact your service provider.

I cannot browse past the first screen of the Configuration Utility.

Sometimes, especially when upgrading, some leftover files may be in your Internet cache. In Internet Explorer, to clear your cache, choose **Internet Options** from the **Tools** menu and click **Delete Files**. Then, restart your RSG2500.

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