RSGu3502

Residential Seamless Mobility Gateway

User Guide

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Important VoIP Telephone Service and 112 Information for Denmark

Your VoIP Telephone Company provides customer with access to public emergency call services. When you dial 112, your call is routed from their network to emergency operators who will handle your call. Contact your provider for information about their VoIP 112 services.

IMPORTANT: When using this residential gateway, you CANNOT make any calls, including an emergency call, and the emergency call operator WILL NOT be able to locate where you are calling from, under the following circumstances:

- Your broadband Internet Service Provider (ISP) connection goes down, is lost, or otherwise fails
- You lose electrical power
- Your broadband, ISP, or VoIP telephone service is suspended or terminated.

When using this residential gateway, you may be able to make an emergency call to an operator, but it may not be possible to locate where you are calling from, under the following circumstances:

- You have changed the physical address of your voice gateway, and you did not update or otherwise advise your VoIP telephone service provider of this change.
- You are using a non-Danish telephone number.
- There are delays in making your location information available in or through the local automatic location information database.

Note:

Your VoIP service provider, not Motorola, is responsible for the provisioning of telephone services through this equipment. Motorola shall not be liable for, and expressly disclaims, any direct or indirect liabilities, damages, losses, claims, demands, actions, causes of action, risks or harms arising from or related to the services provided through this equipment.

Internet Telephone Service and 999/112 in the United Kingdom

Your VoIP Telephone Company provides customer with access to public emergency call services. When you dial 999/112, your call may be routed from your VoIP provider's network to a national emergency operator who will handle your call. Contact your provider for information about their VoIP 999/112 services.

IMPORTANT: When using this residential gateway, you CANNOT make any calls, including an emergency call, and 999 location services WILL NOT be available, under the following circumstances:

- Your broadband Internet Service Provider (ISP) connection goes down, is lost, or otherwise fails
- You lose electrical power
- Your broadband, ISP, or VoIP service is suspended or terminated

When using this residential gateway, you may be able to make an emergency call to an operator, but E999 location services may not be available, under the following circumstances:

- You have changed the physical address of your voice gateway, and you did not update or otherwise advise your VoIP telephone provider of this change.
- You are using a non-U.K. telephone number.
- There are delays in making your location information available in or through the local automatic location information database.

Note:
Your VoIP service provider, not Motorola, is responsible for the provision of VoIP telephone services through this equipment. Motorola shall not be liable for, and expressly disclaims, any direct or indirect liabilities, damages, losses, claims, demands, actions, causes of action, risks or harms arising from or related to the services provided through this equipment.

Internet Telephone Service and 911 in Canada

Your VoIP telephone company provides customer with access to public emergency call services. VoIP telephone companies may offer a form of 9-1-1 service (9-1-1 Dialing) that is similar to traditional 9-1-1 (911) service but could have some important differences and limitations when compared with enhanced 9-1-1 service (E911) available in most locations in conjunction with traditional telephone service. Contact your provider for information about their VoIP 911 services.

!

IMPORTANT: When using this residential gateway, you CANNOT make any calls, including an emergency call, and E911 location services WILL NOT be available, under the following circumstances:

- Your broadband Internet Service Provider (ISP) connection goes down, is lost, or otherwise fails
- You lose electrical power
- Your broadband, ISP, or VoIP service is suspended or terminated

You should inform any household residents, guests and other persons who may be present at the physical location where you utilize VoIP telephone service, of the important differences in and possible limitations of VoIP 9-1-1 Dialing services.

Note:
Your VoIP service provider, not Motorola, is responsible for the provisioning of telephone services through this equipment. Motorola shall not be liable for, and expressly disclaims, any direct or indirect liabilities, damages, losses, claims, demands, actions, causes of action, risks or harms arising from or related to the services provided through this equipment.

Internet Telephone Service and 911 in the United States

IMPORTANT: When using this residential gateway, you CANNOT make any calls, including an emergency call, and E911 location services WILL NOT be available, under the following circumstances:

- Your broadband Internet Service Provider (ISP) connection goes down, is lost, or otherwise fails
- You lose electrical power
- Your broadband, ISP, or VoIP service is suspended or terminated

When using this residential gateway, you may be able to make an emergency call to an operator, but E911 location services may not be available, under the following circumstances:

- You have changed the physical address of your residential gateway, and you did not update or otherwise advise your service provider of this change.
- You are using a non-U.S. telephone number.
- There are delays in making your location information available in or through the local automatic location information database.

Contact your VoIP Service Provider for additional information on their 911 protocols.

Note:
Your VoIP Service Provider, not Motorola, is responsible for the provision of telephone services through this equipment. Motorola shall not be liable for, and expressly disclaims, any direct or indirect liabilities, damages, losses, claims, demands, actions, causes of action, risks or harms arising from or related to the services provided through this equipment.

Important Safety Information

When using your telephone equipment, 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 device. Give particular attention to all safety precautions. Retain the instructions for future reference.
- This device must be installed and used in strict accordance with manufacturer's instructions as described in the user documentation that is included with the device.
- Comply with all warning and caution statements in the instructions. Observe all warning and caution symbols that are affixed to this device.
- To prevent fire or shock hazard, do not expose this device to rain or moisture. The device must not be exposed to dripping or splashing. Do not place objects filled with liquids, such as vases, on the device.
- To prevent electric shock, this device may require a grounding conductor in the line cord. Connect the device to a grounding type AC wall outlet using the power cord supplied with the device.
- This device was qualified under test conditions that included the use of the supplied cables between systems components. To ensure regulatory and safety compliance, use only the provided power and interface cables and install them properly.

- 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 device safety requirements of the country of use.
- Installation of this device must be in accordance with national wiring codes and conform to local regulations.
- Operate this device only from the type of power source indicated on the device's marking label. If you are not sure of the type of power supplied to your home, consult your dealer or local power company.
- 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 device.
- Place this device in a location that is close enough to an electrical outlet to accommodate the length of the power cord.
- Place device to allow for easy access when disconnecting the power cord of the device from the AC wall outlet.

- Do not connect the plug into an extension cord, receptacle, or other outlet unless the plug can be fully inserted with no part of the blades exposed.
- Place this device on a stable surface.
- 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 device by local lightning strikes and other electrical surges.
- Postpone installation until there is no risk of thunderstorm or lightning activity in the area.
- Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning. For added protection, unplug the device from the wall outlet and disconnect the cables to avoid damage to this device due to lightning and power surges.
- 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.
- Wipe the device with a clean, dry cloth. Never use cleaning fluid or similar chemicals. Do not spray cleaners directly on the device or use forced air to remove dust.
- CAUTION: To reduce the risk of fire, use only No. 26 AWG or larger (e.g., 24 AWG) UL Listed or CSA Certified Telecommunication Line Cord, or national equivalent.
- Disconnect TNV circuit connector(s) before disconnecting power.

- Disconnect TNV circuit connector before removing cover.
- Do not use this product near water; for example, near a bathtub, washbowl, kitchen sink or laundry tub, in a wet basement, or near a swimming pool.
- Do not use the telephone to report a gas leak in the vicinity of the leak.
- Use only the power cord and batteries indicated in this manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for possible disposal instructions.
- Upon completion of any service or repairs to this device, ask the service technician to perform safety checks to determine that the device is in safe operating condition.
- Do not open the device. Do not perform any servicing other than that contained in the installation and troubleshooting instructions. Refer all servicing to qualified service personnel.
- SAVE THESE INSTRUCTIONS

FCC and IC Compliance Information

FCC Interference Statement

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 device off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the device 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.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

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

FCC Radiation Exposure Statement

IMPORTANT NOTE:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. 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 operated 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 destinations. The firmware setting is not accessible by the end user.

Industry Canada (IC) Statement

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 2dBi. An 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 equivalent isotropically radiated power (e.i.r.p) is not more than that permitted for successful communications.

IC Radiation Exposure Statement

MPORTANT NOTE:
This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm (approximately 8 inches) between the radiator and your body.

This Class B digital apparatus complies with Canadian ICES-003.Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Wireless LAN Information

This device is a wireless network product that uses Direct Sequence Spread Spectrum (DSSS) radio technology. The device is designed to be inter-operable with any other wireless DSSS 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

Restrictions on the 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 the interference caused by such unauthorized modification, substitution, or attachment is the responsibility of the user.

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

International Declaration of Conformity

We,
Motorola, Inc.
Connected Home Solutions
101 Tournament Drive
Horsham, PA 19044, USA
1-215-323-1000

declare under our sole responsibility that the
RSGu3502 Residential Seamless Mobility Gateway

To which the declaration relates is in conformity with the following standards:

- EN 60950-1
- EN 300 328
- EN 301 489-1/-17
- EN 61000-3-2
- EN 61000-3-3

The following provisions of the Directive(s) of the Council of the European Union:

- EMC Directive 89/336/EEC
- Low Voltage Directive 73/23/EEC
- R&TTE Directive 1999/5/EC
- Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC
- Restriction of the Use of Certain Hazardous Substances in Electrical Equipment (RoHS) Directive 2002/95/EC

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.

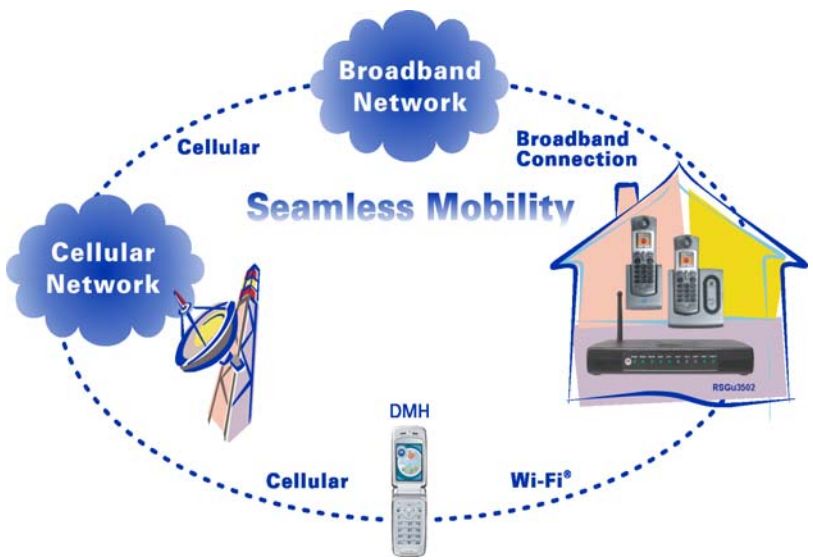
Recycling your Motorola Equipment

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.

Overview

Congratulations on your purchase of a Motorola RSGu3502 Residential Seamless Mobility Gateway. A key feature of the RSGu3502 is the ability to seamlessly transfer calls between Broadband and Cellular Networks.

Construction materials and other objects, such as appliances and televisions, often interfere with mobile service indoors. Use the RSGu3502 with a dual mode mobile handset (DHM) and you can use your home's WiFi™ network to stay connected. Voice traffic is prioritized over Internet traffic, giving you high-quality voice calls even while surfing the Web.



You will need:

- A computer with Internet browsing capability
- An established DSL or cable Internet connection
- Windows® 2000, Windows XP™

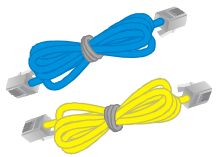
Additional Needs

- For a DSL connection *only*, your user name and password
- For a cable modem connection using static IP addresses *only*, your IPaddress, subnet mask, default gateway, and DNS and server IP address or addresses

In the box with your RSGu3502:

AC Adapter

CD ROM w/ User Guide



Ethernet Cables

RSGu3502
Quick Start
Guide

Vertical Mounting Stand
(not pictured)

RSGu3502 Features

Your new residential gateway is designed to:

- Support up to two telephone lines with full-featured service (Voice mail, caller ID, call waiting, three-way calling, and other CLASS services)
- Provide seamless mobile and landline voice and data communication
- Optimize dual-mode handset battery performance
- Plug and play—plugs into any broadband connection (cable or DSL)
- Give voice-over-data prioritization (talk on the phone while using the Internet, without a noticeable reduction in voice quality)
- Eliminate the need for stand-alone routers, hubs, and access points—the RSGu3502 has a built-in router and firewall with 802.11b/g wireless access point
- Allow VPN pass-through for remote access via IPSEC/PPTP/L2TP NAT tunneling

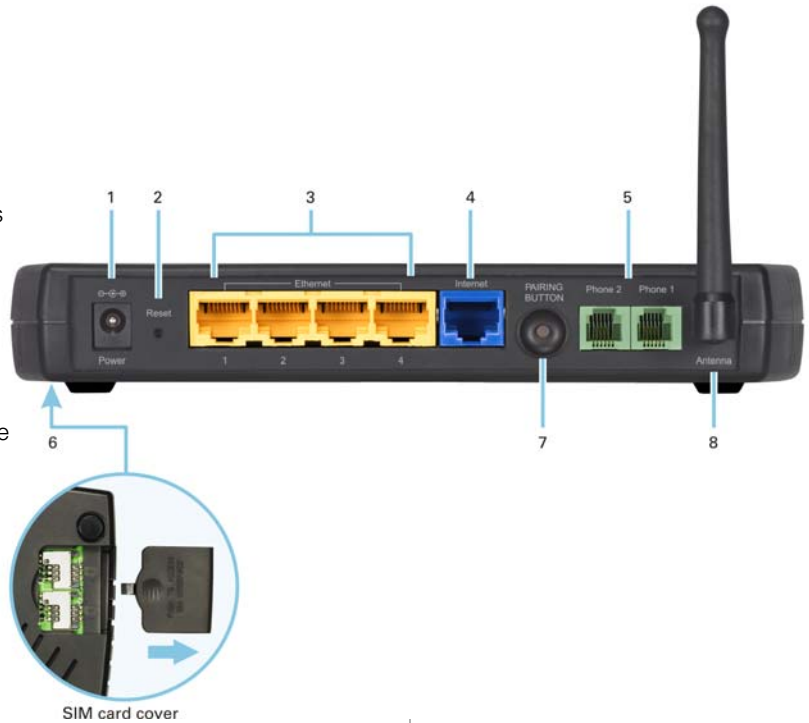
RSGu3502 Front Panel Overview

Light	Description
Wireless	Indicates the status of the wireless network: • Solid green, the wireless network is available. • Green and flashing, there is wireless network activity. • Off, the wireless network is not engaged.
Phone 1, 2	• Solid green, registration is complete, the phone for that line is on hook and ready for use. No voice mail present. • Green and flashing, registration is complete, the phone is ringing, and/or voice mail is present. • Orange and flashing, indicates that the phone is off hook and no SIM card is present. • Flashing in unison with the other LED lights, the residential gateway is downloading a firmware upgrade. *Please do not unplug or disconnect your residential gateway while it is downloading firmware.* • Red blinking, phone off hook and registration error. • LED off, registration error, the phone is on hook, and/or no SIM card is present. You cannot use it for phone calls.
Internet	Indicates the Internet connection speed: • Solid green, your connection speed is 100Base-T • Solid yellow, your connection speed is 10Base-T The LED flashes when there is activity on the Internet connection.

Light	Description
Ethernet 1, 2, 3, and 4	Indicates that a device is connected to the port and the speed of the Ethernet connection: • Off, no device is connected to the port • Solid green, a device is connected to the port (100Base-T) • Solid yellow, a device is connected to the port (10Base-T) A flashing yellow or green LED indicates that there is activity on the Ethernet connection.
Power	*If the Power LED is red or orange — flashing or solid — restart the residential gateway.* During the power up, the residential gateway flashes several times while connecting, retrieving the IP address, and downloading configuration information. • Solid green, configuration download complete. • During firmware downloads (optional), the Phone and Power LEDs flash rapidly. *Please do not unplug or disconnect your residential gateway while it is downloading firmware.*
Pairing	This is a future feature. It will be enabled in a future update.

RSGu3502 Rear Panel Overview

Key	Item	Description
1	**Power**	Connector for the AC power adapter.
2	**Reset**	One quick press will restart the unit. Hold the button for 10 seconds to reset the unit.
3	**Ethernet 1, 2, 3, 4**	Use the yellow Ethernet ports to connect up to four devices (computers, gaming machines, printers, etc.)
4	**Internet**	Connect your cable or DSL modem to the RSGu3502.
5	**Phone 1 and 2**	Connect one or two phones to one and two (optional).
6	**SIM Card Compartment**	Holds the SIM Card(s) used to make and receive calls on the landline phone connected to the residential gateway. A valid and active SIM card must be connected to the corresponding telephone port (e.g., If your phone is connected to port one insert your SIM card in slot one).
7	**Pairing**	Future feature
8	**Antenna**	Rotatable antenna used for wireless connections.



Positioning Your RSGu3502 for Optimal Wireless Performance

Review the guidelines below before deciding where to place your RSGu3502 in order to achieve the best wireless performance:

- Connect at least one computer through a wired Ethernet connection.
- Placing your RSGu3502 in the physical center of your network is best, because its antenna sends out signals in all directions.
- Placing the RSGu3502 in a higher location, such as on top of a cabinet, helps disperse the signal cleanly, especially to upper floors.
- If possible, position your RSGu3502 in direct line of sight with other home network devices using a wireless connection.
- Avoid placing the RSGu3502 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 RSGu3502.
- Mirrors, especially those that are silver-coated, can reduce transmission performance.

Anti-Fraud Protection Information

To prevent the RSGu3502 Residential Gateway and/or your Subscriber Identity Module (SIM) Card from being stolen and reused, please incorporate the security options listed below:

If your device is stolen

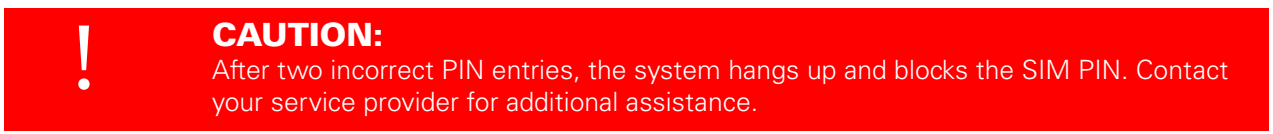
Immediately notify your service provider if the RSGu3502 is stolen.

SIM Fraud Control

Your service provider will give you a PIN that you are prompted to enter at every power-up. The SIM PIN is enabled when you purchase your RSGu3502.

To enter you SIM PIN, first make sure your telephone is connected:

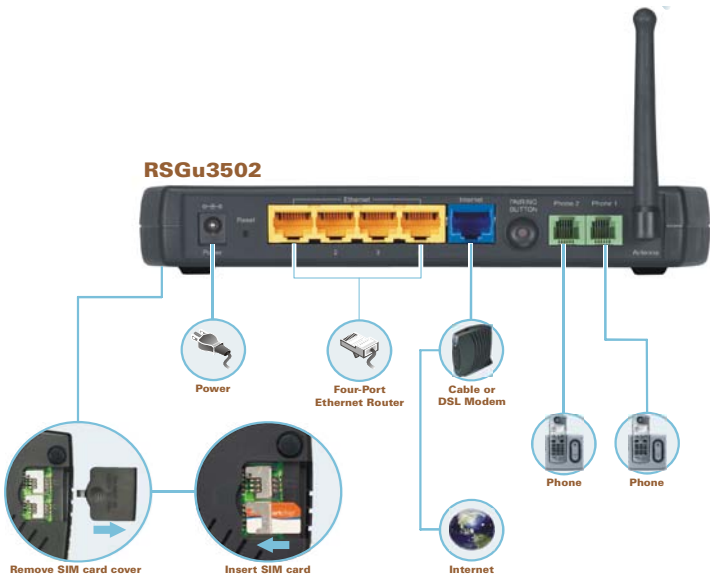
1. Power up your residential gateway.
2. Wait for your handset to ring.
3. Pick up the telephone handset. You will hear a stutter tone.
4. Enter you SIM PIN. If you enter the incorrect PIN you will hear the stutter tone again.
5. Listen for a dial tone. When you hear the dial tone, you have completed the validation process.



Use this space to keep your PIN information

Connecting Your RSGu3502

NOTES: At least one computer on your network must be connected to the RSGu3502 using an Ethernet cable. Also, to prevent damage, only insert your SIM card with the power off.



1. Shut down your computer and unplug your cable or DSL modem power cord.
2. Disconnect your computer from the modem. Do not disconnect your modem from the cable or phone line that provides your Internet connection.
3. Connect one end of the blue Ethernet cable to the Ethernet port on your modem. Plug the other end to the blue Ethernet port on the rear panel of your residential gateway.
4. Connect one end of the yellow Ethernet cable to the yellow Ethernet port on your residential gateway, and the other end of the cable to the port on your computer.
5. Open the SIM slot and insert your card. (Note: Place your SIM card and telephone in the corresponding ports (SIM Port 1:Phone1/SIM Port2:Phone2). Replace the door.
6. Connect a landline telephone.
7. Plug your cable or DSL modem back into an electrical outlet.
8. Connect the power adapter to the Power port on the rear panel of the RSG, and plug the other end into an electrical outlet.

9 Turn on your computer. The Ethernet light on the RSGu3502 front panel should light.

10 Test your connection. Open a web browser and enter any website address (you can try www.motorola.com). If you have DSL, you will need to enter your Username and Password ("WAN Setup for PPPoE (DSL)" on page 17). If you can access the site, you have successfully installed your residential gateway.

11 Repeat step four to connect additional devices using Ethernet cables.

Troubleshooting RSGu3502 Connections

If your test (STEP 10) is not successful, and you connect to the Internet using a:

Cable Modem — Turn your cable modem off again for at least 10 minutes. If this does not correct your problem, you may need to register your RSGu3502 with your cable provider. Please contact them to update your information. Be sure to have the WAN MAC ID (located on the bottom of the RSGu3502) available.

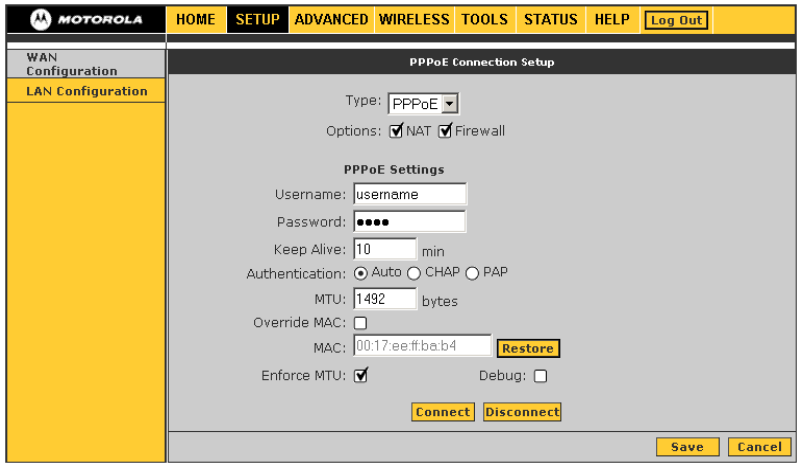
DSL Modem — You may need to set the PPPoE configurations.

1 Open a web browser from a computer connected to one of the RSGu3502 Ethernet ports.

2 Type http://192.168.15.1 in the address field and press ENTER to access the sign in window.

3 Type router in the Username and Password fields (the default is router for both fields).

4 Click SETUP (located on the top menu bar), and then click on WAN Configuration (located on menu bar at the left side of the page).



5 Select PPPoE from the Type drop down menu. Note: It is recommended that the NAT and Firewall options remain checked.

6 Type the Username and Password you normally use to log into your DSL service.

7 Type 0 in the Keep Alive field to ensure that your DSL link is always active.

8 Click Connect to start your Internet connection and then Click Save.

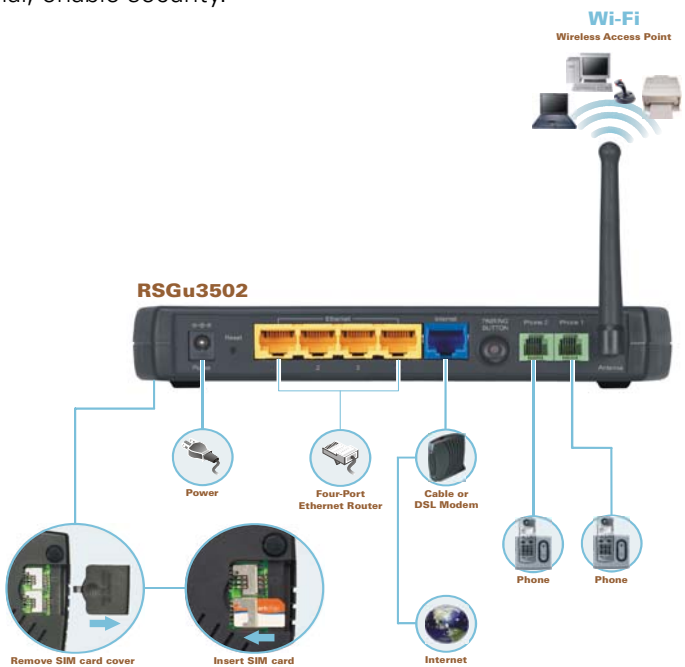
9 Open a web browser and enter a web address (try www.motorola.com). If you can access the site, you have successfully completed the installation process.

Connecting Wirelessly to the RSGu3502

To connect to your RSGu3502 wirelessly, your computer must have a 802.11b or 802.11g wireless adapter installed. If all wireless security and encryption are disabled on the adapter and the RSGu3502, the computer will automatically connect to the residential gateway.

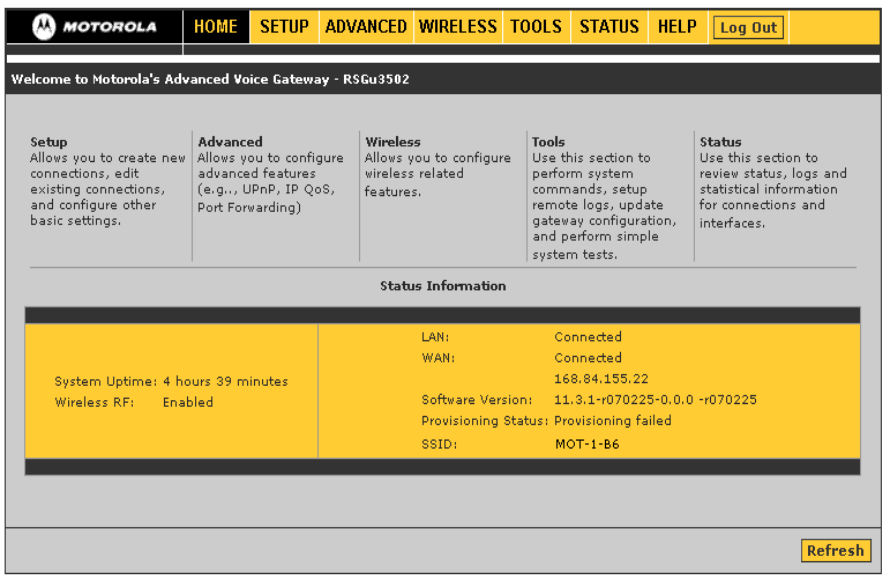
Note: Motorola ships the RSGu3502 with all wireless security functions disabled.

Remember, at least one computer must be connected to the RSGu3502 using a wired connection in order to perform the configuration. Do not attempt to configure the RSGu3502 over a wireless connection. After your wireless LAN is operational, enable security.



RSGu3502 Setup — Basic Configurations

In most cases, you can start using your RSGu3502 with no modifications to the default settings. When you need to or wish to modify the settings, the residential gateway has an easy to use GUI interface. Each section is defined on the **HOME** page.



Logging into the RSGu3502

1. Open a Web browser on a computer connected to the RSGu3502.
2. Type **http://192.168.15.1** in the address field, and press enter.
3. Type **router** in both the **Username** and **Password** fields (the default for both fields is "router").
4. Click **Log In** to display the **HOME** page.

TIP:
If DHCP is enabled on each computer connected to your network (LAN), there is no need to change the default LAN settings. It is recommended that you do not change the LAN settings unless you have sufficient networking knowledge.

Exporting the RSGu3502 Configuration

If you decide to modify the current RSGu3502 configuration, it is recommend that you create a backup. Follow the steps below to export the current configuration.

1. Click **TOOLS** from the top menu.
2. Click **Import/Export Configuration** on the side menu.
3. Click **Export**. The residential gateway configuration is saved to a file named **config.bin** on your computer's hard drive.

Importing the Saved Configuration

To return to the previous configuration, import the saved configuration.

1. Click **TOOLS**.
2. Click **Import/Export Configuration**.
3. Click **Import**. A new import window opens.
4. Click **Browse** or type the path and filename of the item you wish to import.
5. Click **Import**. The update status appears at the bottom of the window. When the update is complete, the residential gateway restarts automatically. You will need to log in again.

Restoring the Defaults for the RSGu3502

1. Click **TOOLS**.
2. Click **Restore Defaults** on the side menu.
3. Click the **Restore Defaults** button.

WAN Configuration

After logging into the residential gateway:

1. Click **SETUP**.
2. Click **WAN Configuration**.
3. Select **PPPoE**, **Static**, or **DHCP** from the pull down menu.

PPPoE

Used with all DSL modems. See WAN Setup for PPPoE (DSL).

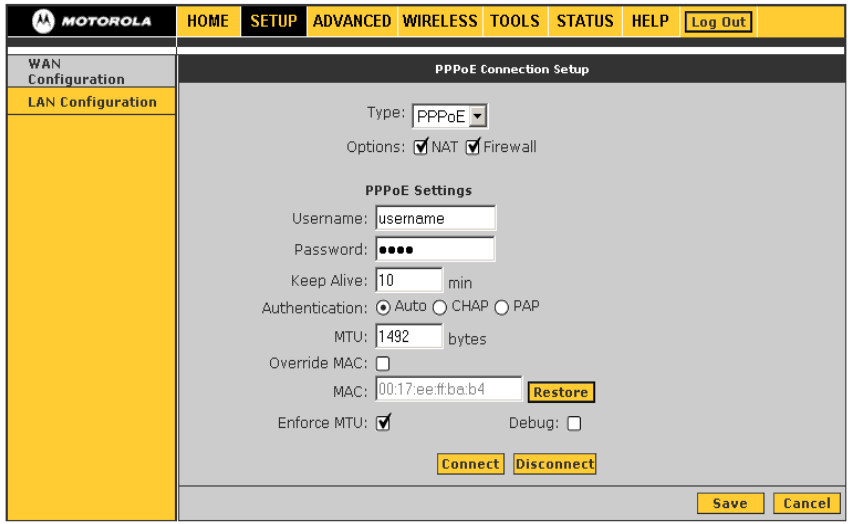
Static

For some cable modems, the cable company assigns the cable modem a static (unchanging) IP address. You must provide the IP address, subnet mask, default gateway, and one to three domain name server (DNS) addresses. See WAN Setup for a Static IP Address (Cable Modem).

DHCP

Most cable modems have a dynamic IP address assigned by the cable company DHCP server. Typically, no additional configuration is needed for the residential gateway. See DCHCP Settings.

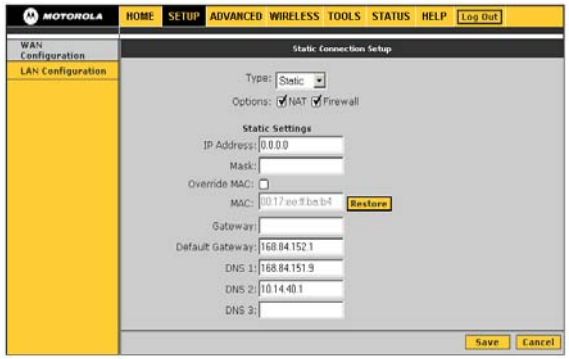
WAN Setup for PPPoE (DSL)



Field or Button	Description
Options	• NAT — Enables Network Address Translation (It is recommended that this item remain selected) • Firewall — Enables the residential gateway firewall (It is recommended that this item remain selected)
User name	Your PPPoE user name provided by your DSL provider.
Password	Your PPPoE password provided by your DSL provider.
Keep Alive	Enables persistent connection to the internet.

Field or Button	Description
Authentication	Sets the authentication: • Auto — Automatic • CHAP — Challenge Handshake Authentication Protocol • PAP — Password Authentication Protocol Microsoft CHAP v2 is supported in the Auto and CHAP options. MS CHAP v1 is not supported.
MTU	The maximum transmission unit for the DSL connection. It is a negotiated value that represents the maximum size in bytes of the packets sent over the connection. The default is 1492. The maximum is 1500. The minimum is 64.
Override MAC	If your cable or DSL provider associates a particular service to a specific device, such as your computer, select this field and type that MAC address in the **MAC** field to use as a "virtual" WAN MAC address instead of the residential gateway MAC address. By default, the MAC address printed on the residential gateway is displayed in this field.
Restore	Restores the actual residential gateway MAC address.
Enforce MTU	If enabled (the default), all TCP segments must have a size within the PPPoE MTU. *If you disable this, you may have problems accessing some Internet sites.*
Debug	Enables PPPoE debugging for use by technical support personnel *only.*
Connect	Establishes the DSL connection.
Disconnect	Ends the DSL connection. *If you disconnect your DSL connection, your VoIP service cannot work.*

WAN Setup for a Static IP Address (Cable Modem)



Options

- NAT — EnablesNetwork Address Translation (It is recommended that this item remain selected)
- Firewall — Enables the residential gateway firewall (It is recommended that this item remain selected)

Type the following in dotted-decimal format as assigned by your cable provider.

IP Address The static IP address

Mask The *subnet mask*

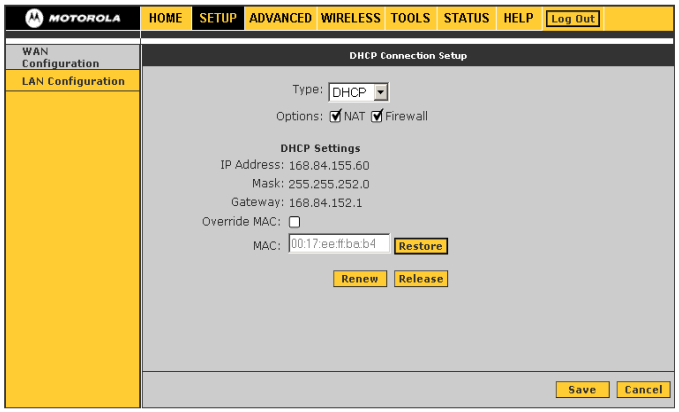
Gateway The gateway IP address

Override MAC If your cable or DSL provider associates a particular service to a specific device, such as your computer, select this field and type that MAC address in the **MAC** field to use as a "virtual" WAN MAC address instead of the residential gateway MAC address. By default, the MAC address printed on the residential gateway is displayed in this field.

Default Gateway The default gateway IP address

DNS 1, 2, and 3 One to three domain name server IP addresses

WAN Setup for DHCP (Cable Modem)



Options

- NAT — Enables Network Address Translation (It is recommend that this item remain selected)
- Firewall — Enables the residential gateway firewall (It is recommend that this item remain selected)

Optional fields and buttons are:

Override MAC — If your cable or DSL provider associates a particular service to a specific device, such as your computer, select this field and type that MAC address in the **MAC** field to use as a "virtual" WAN MAC address instead of the residential gateway MAC address. By default, the MAC address printed on the residential gateway is displayed in this field.

Restore — Restores the actual residential gateway MAC address.

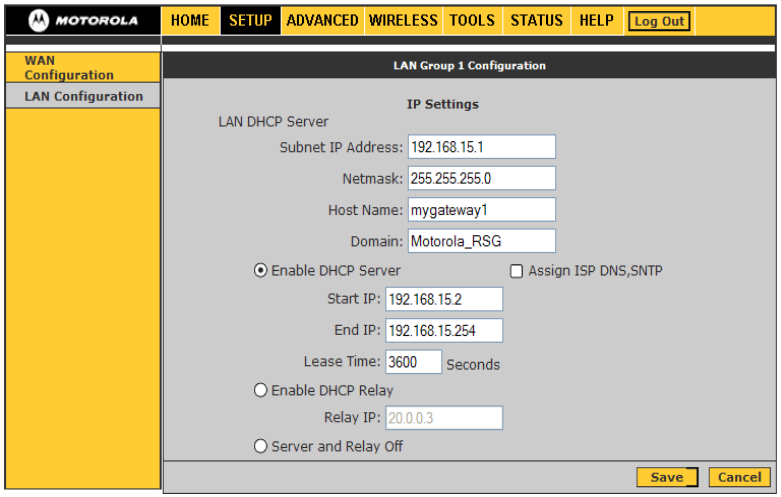
Renew — Requests a new WAN IP address for your residential gateway from the DHCP server.

Release — Releases the residential gateway WAN IP address.

Setup - LAN Configuration

If DHCP is enabled on all of the computers on your home network (LAN), you should not need to change any of the default LAN settings. For information about enabling DHCP, see "Configuring TCP/IP" on page 61.

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



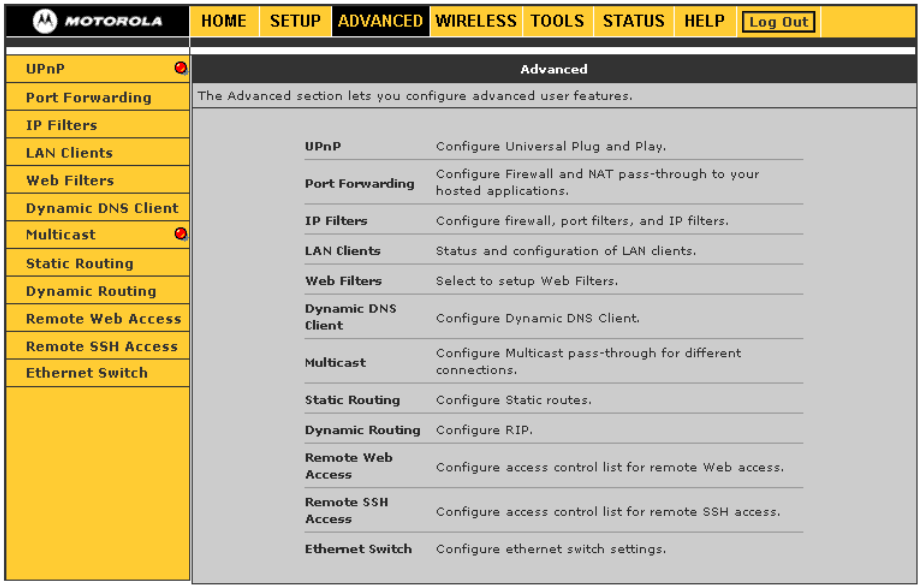
Field or Button	Description
Subnet IP Address	Sets your LAN subnetwork IP address in dotted-decimal format. *We recommend not changing the default 192.168.15.1.*
Netmask	Sets the residential gateway subnet mask, in dotted-decimal format. The default is 255.255.255.0, which enables the residential gateway router to support up 253 users connected through multiple hubs, switches, routers, or wireless access points.
Host Name	Sets the residential gateway host name. It can contain any alphanumeric characters, except spaces.
Domain	Sets the domain name. It is used in conjunction with the host name to uniquely identify the residential gateway. To access the web pages of the residential gateway, you can type 192.168.15.1 (the IP address) or mygateway1.Motorola_VT (hostmame.domain).
Enable DHCP Server	If selected, the DHCP server on the residential gateway assigns IP addresses to the computers and other hosts on your network, if they have DHCP enabled (see "Configuring TCP/IP" on page 61). By default, the residential gateway DHCP server is enabled. *If there is another DHCP server running on your network (on another router), you must disable one of the DHCP servers.*
Assign ISP DNS, SNTP	The residential gateway will use the DNS servers and time server (SNTP) provided by your ISP.

Field or Button	Description
Start IP	Sets the first IP address assigned by the DHCP server, in dotted-decimal format. It must be greater than the IP address value of the residential gateway. For example, if the IP address of the residential gateway is 192.168.15.1 (default), the starting IP address must be 192.168.15.2 (or higher).
End IP	Sets the final IP address assigned by the DHCP server, in dotted-decimal format. It cannot exceed the subnet limit of 254. For example, the default is 192.168.15.254. If the DHCP server runs out of DHCP addresses, users cannot access network resources. If this happens, increase the End IP (to the limit of 254) or reduce the Lease Time. If you change Start IP or End IP, be sure they are in the range specified by the Subnet IP Address and Netmask. For example, if the residential gateway IP address is 192.168.15.1 (the default) and you set Start IP and End IP to 192.168.0.2 and 192.168.0.100 respectively, computers with DHCP enabled cannot communicate with the residential gateway.

Field or Button	Description
Lease Time	Sets the time, in seconds, that a network computer remains connected to the residential gateway using its current assigned IP address. At the end of this time, the DHCP server renews the lease or assigns the computer a new IP address. The default is 3600 seconds (1 hour). The maximum is 999999 seconds (about 278 hours).
Enable DHCP Relay	If selected, the residential gateway forwards requests and responses between the computers on your network (the DHCP clients) and the DHCP server you chose to use for your network.
Relay IP	If you select Enable DHCP Relay, type the IP address of the DHCP server in dotted-decimal format.
Server and Relay Off	If selected, you must carefully configure the IP address, Subnet Mask, and DNS settings of every host on your network. Do not assign the same IP address to more than one host. Your residential gateway must be on the same subnet as the other hosts.

RSGu3502 — Advanced Configuration

See the main Advanced page for quick descriptions of each feature.

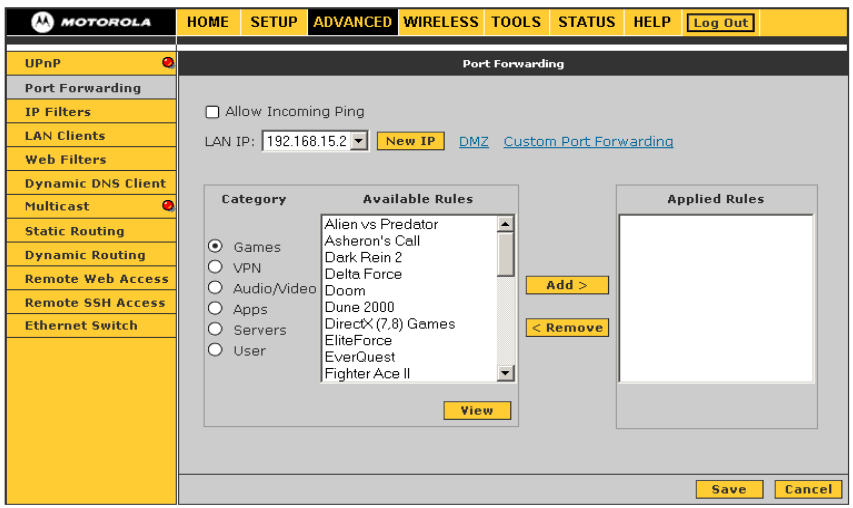


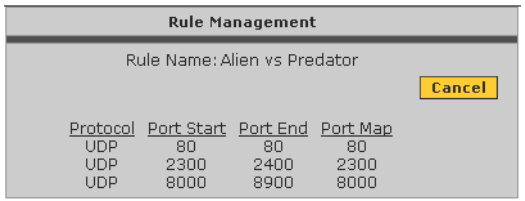
TIP: A red bullet point indicates that the feature is not enabled; a green bullet point indicates that the feature is enabled. Universal Plug and Play (UPnP) requires one active WAN connection and the host should support this feature.

Port Forwarding

Port forwarding enables you to direct incoming traffic to specific LAN hosts (computers on your network) based on the protocol and port number. It is used to play Internet games or provide local services (such as web hosting) for a LAN group.

Port forwarding is also referred to as "virtual servers." Use Port Forwarding to apply predefined rules, and, if you have the necessary networking knowledge, create, edit, or delete your own port forwarding rules. You can also add a computer to the DMZ.



Field or Button	Description
Allow Incoming Ping	Enables the residential gateway to respond to a ping from the Internet.
LAN IP	Selects the IP address to host the service.
New IP	Displays the LAN Clients window to reserve an IP address.
DMZ	Displays the IP Filters page.
Custom Port Forwarding	Displays the DMZ Settings page.
Available Rules	Lists the available rules in the selected Category.
View	Displays the protocols and port ranges for the selected Available Rule. For example, if you select Alien vs. Predator and click **View**, the following is displayed:  Click **Cancel** to return to the Port Forwarding page.
Add	Adds the selected Available Rule to the Applied Rules list.
Remove	Deletes the selected rule from the Applied Rules list.
Applied Rules	Lists the IP filtering rules you selected to apply for each given category.

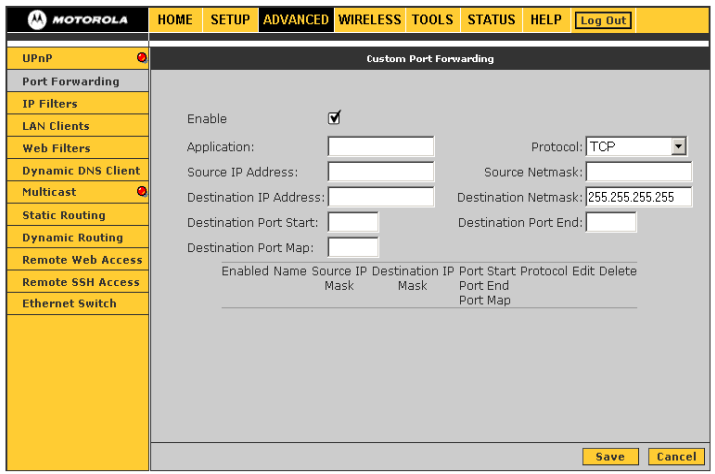
DMZ Settings

Configuring a computer as a demilitarized zone (DMZ) forwards any network traffic that is not redirected to another computer through port forwarding to the IP address of the computer. This allows access to the DMZ host from the Internet.

Field	Description
Enable DMZ	Enables or disables the DMZ feature. It is disabled by default.
Select a LAN IP Address	Selects the LAN IP address of the DMZ computer to expose to the Internet with no protection from the RSGu3502 firewall. *This may expose your network to security risks.*
LAN Clients	Displays the LAN Clients page to configure the DMZ computer.

Custom Port Forwarding

You can create up to 20 custom port forwarding entries to support specific services or applications, such as concurrent NAT/NAPT operation.

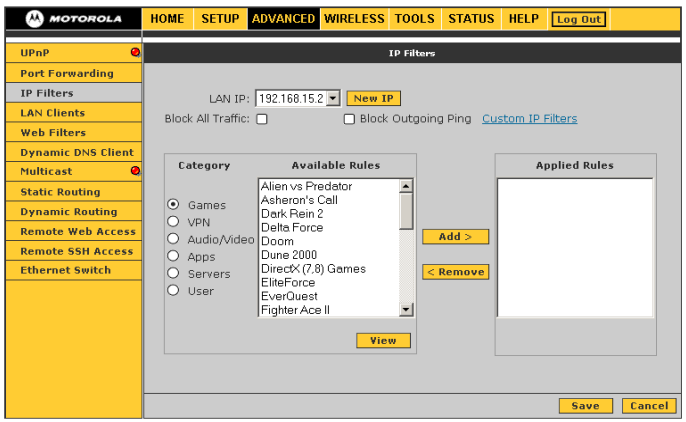


Field	Description
Enable	It is selected by default and automatically applies when you click Save.
Application	The name of the application for which ports are opened.
Protocol	Can be TCP, UDP and TCP, or UDP.
Source IP Address	Sets the source IP address from which incoming traffic is allowed.
Source Netmask	Sets a subnet mask used in conjunction with the Source IP Address to set a range of IP addresses. Enter **0.0.0.0** for all.

Field	Description
Destination IP Address	The LAN's destination IP address for incoming traffic.
Destination Netmask	Subnet mask used in conjunction with the Destination IP Address to set a range of IP addresses. The default is 255.255.255.255.
Destination Port Start	The starting port number that is opened for this application.
Destination Port End	The ending port number that is opened for this application.
Destination Port Map	Destination port mapped on the LAN (destination) side to which packets are forwarded. There are two types of port mapping: • One-to-one (one port mapped to one) (WAN = 500 to 600; LAN = 500 to 600) • Multiple-to-one (several ports mapped to one) (WAN = 500 to 600; LAN = 700) Wildcard (*) entries are allowed for the IP Address, Netmask, and Port range fields.

IP Filters

IP filtering enables you to block applications and services based on the IP address of a LAN device. You can apply one or more predefined IP filtering rules to one or more LAN computers. You can view the rules associated with a predefined filter and add the available rules for a given category. You can also create, edit, or delete your own IP filter rules.

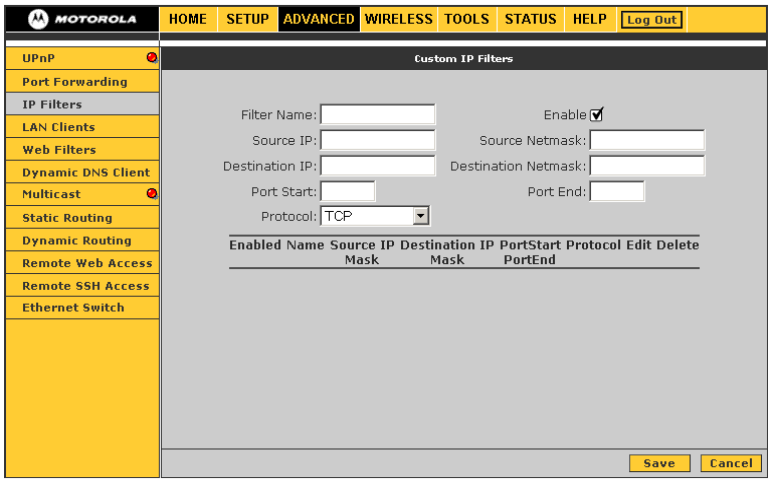


Field or Button	Description
LAN IP	The IP address in the LAN group to which the IP filters are applied.
New IP	Displays the LAN Clients page.
Block All Traffic	If selected, network access is blocked for the IP address.
Block Outgoing Ping	If selected, outgoing pings are blocked for the IP address. Blocking outgoing pings can be useful if a computer has a virus that attempts a Ping-of-Death denial of service attack.

Field or Button	Description
Custom IP Filters	Displays the Custom IP Filters page
Category	Sets the category for which rules are displayed in the Available Rules list — Games, VPN, Audio/Video, Apps (applications), Servers, or User (custom rules you can define and edit).
Available Rules	Predefined and user-defined IP filtering rules for each category.
View	Displays the settings for the selected Available Rule.
Add	Adds the selected Available Rule to the Applied Rules list.
Remove	Removes the selected rule from the Applied Rules list.
Applied Rules	Lists the IP filtering rules selected for the category.

Custom IP Filters

You can define up to 20 custom filters to block services or applications based on the source and destination IP address, subnet mask, TCP port, and protocol.

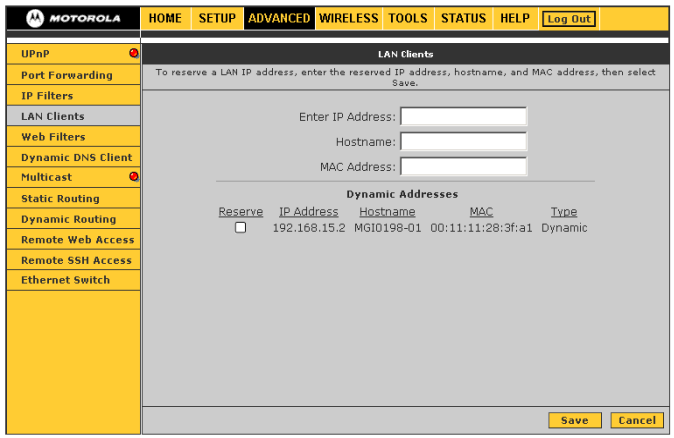


Field	Description
Filter Name	The IP filter rule name
Enable	Selected by default and automatically applied when you click **Save**
Source IP	The LAN source IP address assigned to outgoing traffic on which filtering is applied
Source Netmask	Subnet mask of the source IP address
Destination IP	Sets the destination IP address to which your source IP address is denied access

Field	Description
Destination Netmask	Subnet mask of the destination IP address. Enter **0.0.0.0** for all
Port Start	The starting port number that will be blocked for this application
Port End	The ending port number that will be blocked for this application
Protocol	The options are TCP, UDP, TCP and UDP, ICMP, or Any

LAN Clients

To save a LAN IP address, enter the IP address, host name, and MAC address.

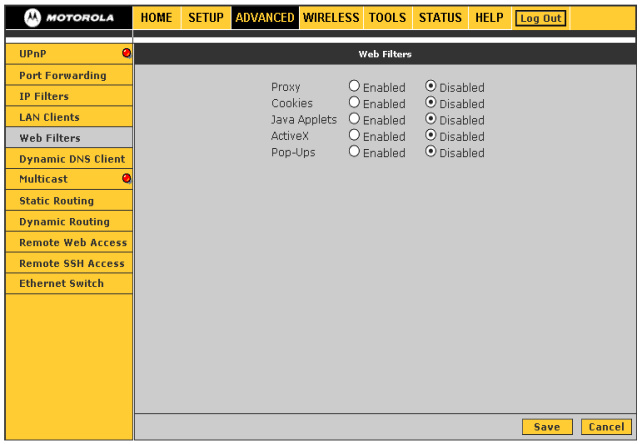


Field	Description
Enter IP Address	Type the static IP address to assign to the computer or other host. For that host, type its **Hostname** (optional) and MAC address (required).
Dynamic Addresses	Lists the currently assigned dynamic IP addresses and the hostname, MAC address, and address Type (always Dynamic in this table) of the assigned computer. To assign a dynamic IP address to the computer as a static IP address, select Reserve.

Web Filters

Web Filters enable you to manage the type of web content that passes through your residential gateway:

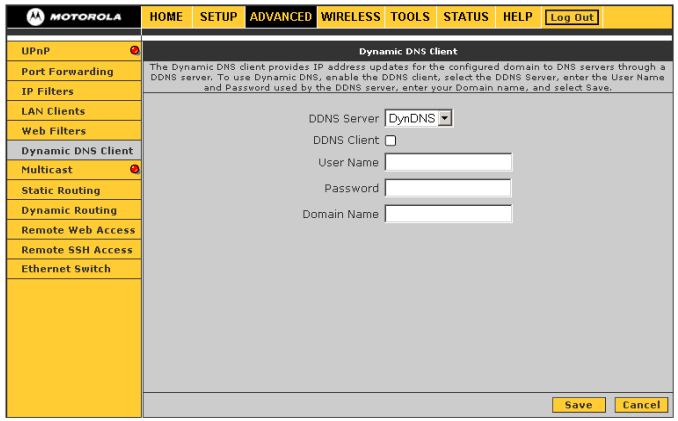
-



Field	Description
Proxy	Disabled by default.
Cookies	Disabled by default.
Java Applets	Disabled by default.
ActiveX	Disabled by default.
Pop-Ups	Disabled by default.

Dynamic DNS Client

You can register your residential gateway with a DNS server to access the residential gateway from the Internet using its host name.



Field	Description
DDNS Server	Selects a DDNS service provider from the list. A charge may occur, depending on the service selected.
DDNS Client	Enables or disables the DDNS client feature for the WAN connection. It is disabled by default.
User Name	The user name assigned by the DDNS service provider.
Password	The password assigned by the DDNS service provider.
Domain Name	The dynamic domain name to be registered with the DDNS server.

Multicast

Multicasting is a form of limited broadcast. UDP is used to send datagrams to all computers in a host group, one or more hosts identified by the same destination IP address. The following statements apply to host groups:

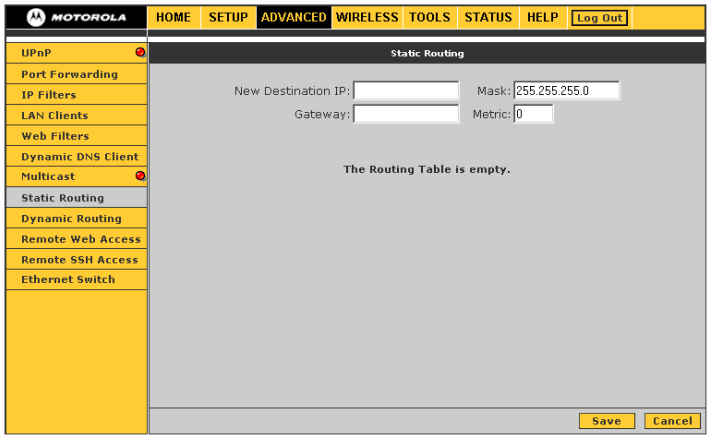
- Anyone can join or leave a host group.
- There are no restrictions on the host location.
- There are no restrictions on the number of members that may belong to a host group.
- A host may belong to multiple host groups.
- Non-members can send UDP datagrams to the host group.

Multicasting is useful when the same data needs to be sent to more than one device; for example, if one device is responsible for acquiring data that many other devices need. Using multicasting uses less network bandwidth than sending the same data to individual devices.
Multicasting also enables you to receive multicast video streams from multicast servers. The residential gateway supports an Internet Group Management Protocol (IGMP) proxy that handles IGMP messages. When enabled, the residential gateway acts as a proxy for a LAN host making requests to join and leave multicast groups.

Field	Description
Enable IGMP Multicast	Enables an IGMP proxy for multicast messages. The residential gateway acts as a proxy for a LAN computer requesting to join or leave multicast groups.

Static Routing

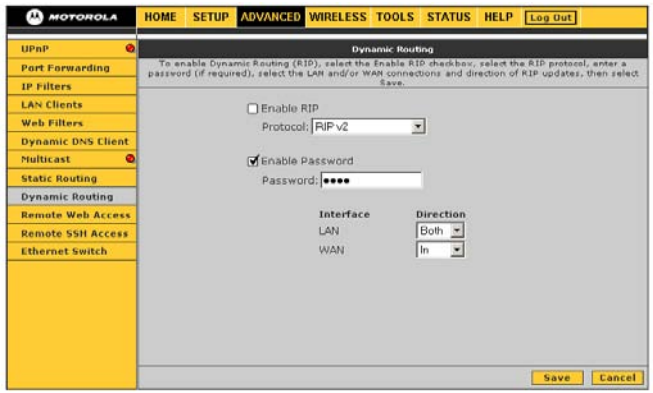
You can define up to 16 static routes in the residential gateway routing table for specific WAN and LAN subnets.



Field	Description
New Destination IP	The network IP address of the subnet. (You can also enter the IP address of each individual station in the subnet.)
Mask	The network mask of the destination subnet.
Gateway	The IP address of the next hop through which traffic will flow towards the destination subnet.
Metric	Defines the number of hops between the network nodes through which data packets travel. The default is 0, which means the subnet is directly one hop away on the LAN.

Dynamic Routing

Enables you to define dynamic routes using Routing Information Protocol (RIP) to exchange routing information with other network routers across the WAN (Internet) and LAN interfaces.

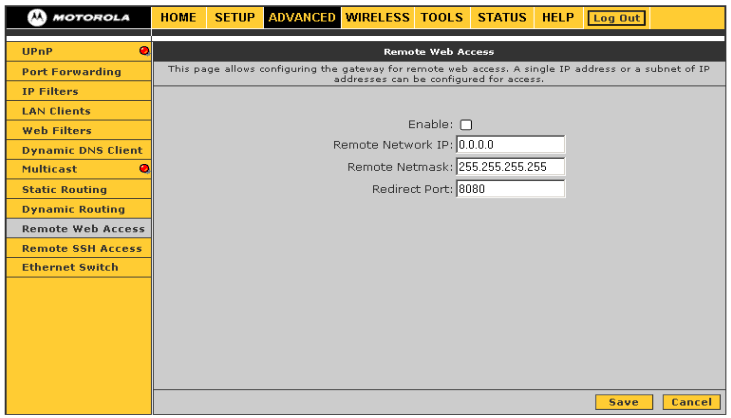


Field	Description
Enable RIP	Enables RIP. Any RIP-enabled router: • Sends automatic update packets containing its routing table periodically (every 30 seconds) • Adds, deletes, or modifies routes in its routing table based on periodic updates from other routers • Responds to requests for its routing table
Protocol	Sets the RIP version: • RIP v1 (UDP protocol) • RIP v2 (multicast protocol) • RIP v1 Compatible (UDP protocol with multicast format) Routers using RIP v1 or a compatible protocol can communicate with each other, but not to routers using RIP v2.

Field	Description
Enable Password	(Optional) RIP v2 enables simple plain-text password-based authentication for RIP packets. It is disabled if RIP v1 is selected.
Password	The password can have up to 16 characters.
Interface	Normally, when it is enabled on a router, RIP dynamically provides routes on all configured interfaces. On the residential gateway, you can select which routes are distributed through the network: • **LAN** — Sets the direction in which RIP messages are sent on the LAN interface • **WAN** — Sets the direction in which RIP messages are sent on the WAN interface The options for LAN and WAN are: • Both — receive and send updates of the routing table to other routers on the interface • In — receive but do not send routing updates on that interface • Out — send but do not receive routing updates on the interface • None — do not send or receive routing updates through the interface

Remote Web Access

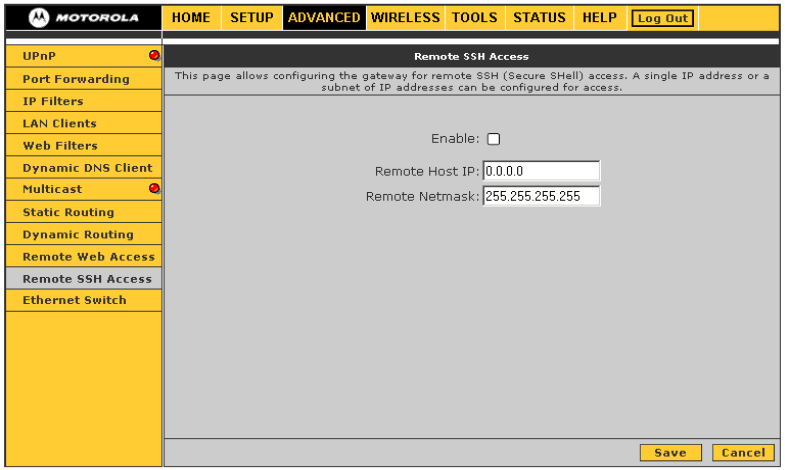
Web access control enables you to access the residential gateway remotely over the Web.



Field	Description
Enable	Enables and disables the remote web access feature.
Remote Network IP	Enter the IP address of the remote host (for example, 10.10.10.1).
Remote Netmask	Enter the subnet mask of the remote host.
Redirect Port	You can enter a port in this field that is different from port 8080. The port you enter is viewed externally and mapped to port 8080 internally on the residential gateway.

Remote SSH Access

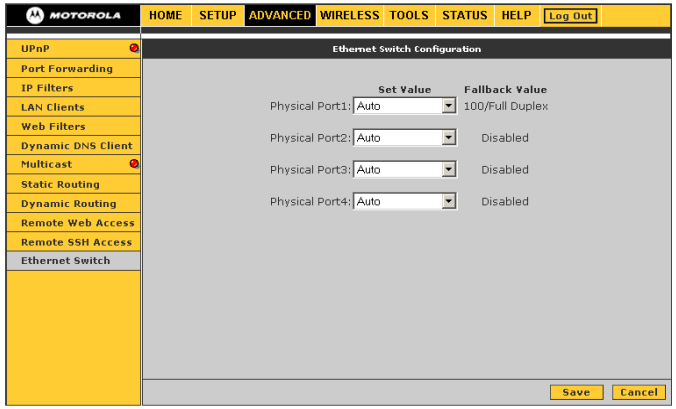
You can access the residential gateway remotely through secure shell (SSH) over the Internet.



Field	Description
Enable	Enables or disables remote SSH access.
Remote Host IP	Sets the IP address of the remote SSH host.
Remote Netmask	Sets the subnet mask of the remote SSH host.

Ethernet Switch

If automatic detection does not work for some reason, you can configure Ethernet switch settings to meet your requirements.

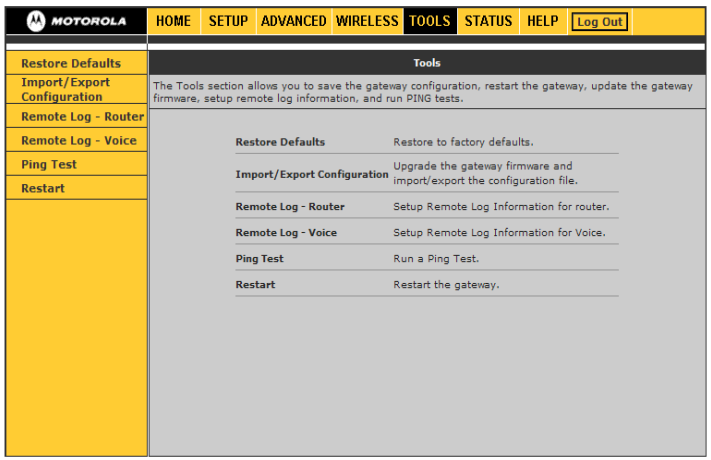


Field	Description
Physical Ports 1 to 4	Sets the speed for Ethernet ports 1 to 4. It can be Auto detect (the default), 10 Mbps half duplex, 10 Mbps full duplex, 100 Mbps half duplex, or 100 Mbps full duplex.

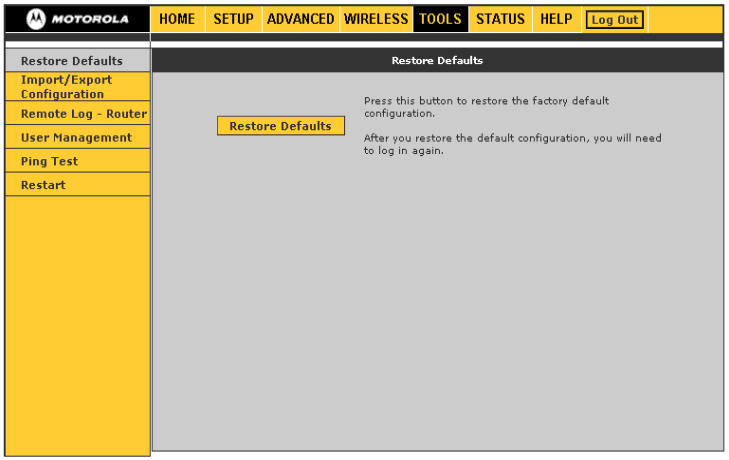
RSGu3502 — Tools

The TOOLS menu provides the following links:

- Restore Defaults — resets the residential gateway to the default configurations
- Import/Export Configuration — import or export the residential gateway configuration
- Remote Log — Router — specify the log messages the residential gateway sends to remote computers
- User Management — change the residential gateway password
- Ping Test — determine whether a computer can be reached over the network
- Restart — save the configuration or restart the residential gateway

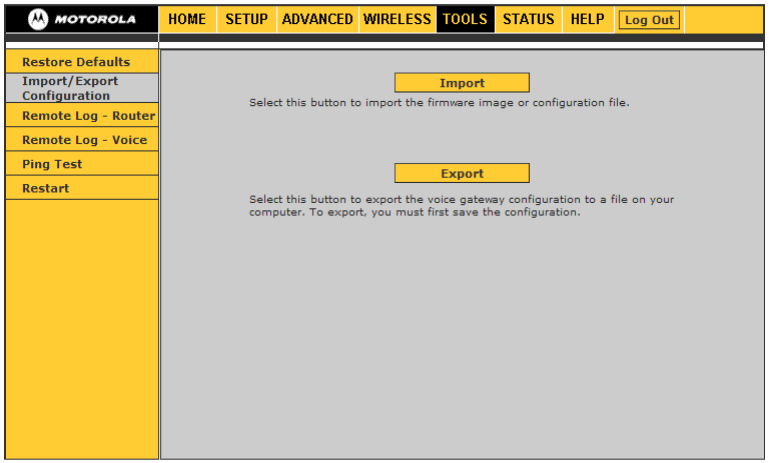


Restore Defaults



Button	Description
Restore Defaults	Restores the factory default configuration. After you restore the defaults, you must log in again to the residential gateway.

Import/Export Configuration



Field or Button	Description
Import	Imports the selected configuration file. The update status appears at the bottom of the window. When the update is finished, the residential gateway restarts and you will need to log in again.
Export	Downloads a copy of the configuration file (config.bin) saved in the residential gateway flash memory to your hard drive.

Remote Log — Router

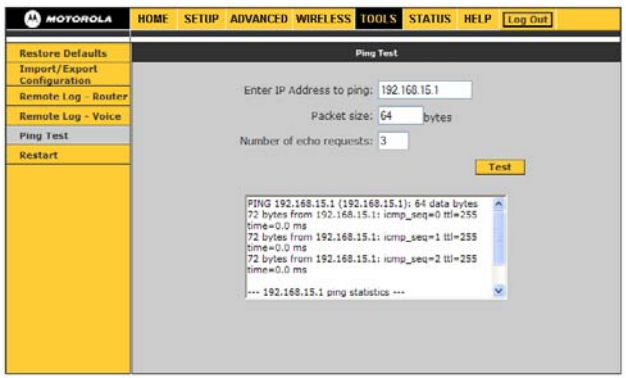
You can forward logged events to a remote computer. Each log message is assigned a severity level indicating its affect to the residential gateway functions.

Field	Description
Log Level	Messages having the severity level you specify, or higher, are logged to the logging destination you select. The levels are, in order of severity: • Panic — system panic or other condition that causes the residential gateway to stop functioning • Alert — conditions that require immediate correction, such as a corrupted system database • Critical — critical conditions, such as hard drive errors • Error — error conditions that generally have less serious consequences than panic, alert, or critical • Warning — conditions that warrant monitoring • Notice — conditions that are not errors but might warrant special handling; this is the default Log Level setting • Info — events or non-error conditions of interest • Debug — software debugging messages; *specify only when directed by a support representative*

Field	Description
Add an IP Address	Type the IP address of the remote host where you want log information sent and click **Add**. You can add multiple IP addresses using the Add button. Any IP address you add here appears in the Select a logging destination drop-down list.
Select a logging destination	From the list, select the IP address to which you want the log information sent.

Ping Test

Use this page to determine whether you can access an IP address from your computer.



Field or Button	Description
Enter IP Address to ping	Sets the IP address to ping; the default is the residential gateway default IP address 192.168.15.1.
Packet size	Sets the packet size of the ping test. The default is 64 bytes.

Field or Button	Description
Number of echo requests	Sets how many times the IP address is pinged. The default is 3.
Test	Starts the test. The results display in the scroll window: • If the test is successful, you can access the IP address. • If the test is unsuccessful, you should restart the residential gateway.

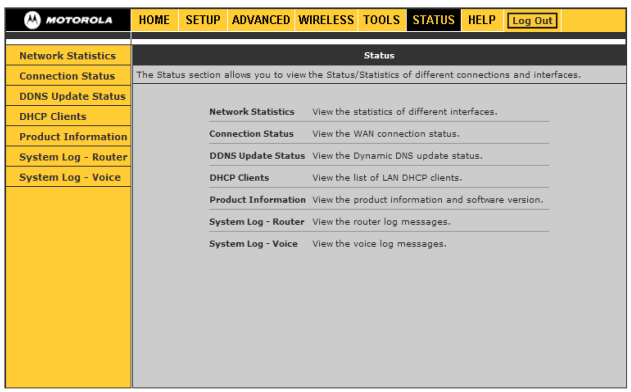
Restart

Field	Description
Restart	Restarts the residential gateway. *Be sure to save the configuration before you restart.* If you restart the residential gateway without saving your changes, it reverts to the previously saved configuration. Your changes are lost. After you restart the residential gateway, you must log in again.

RSGu3502 — Status

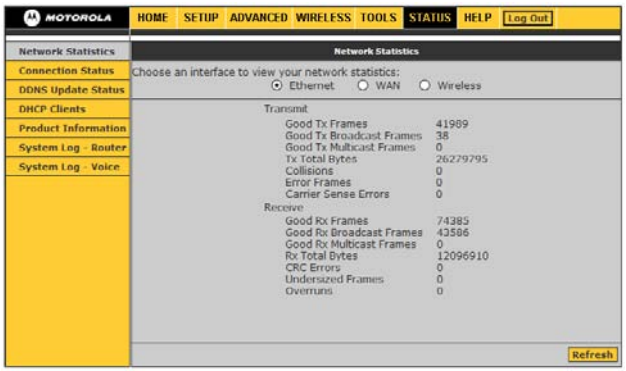
The STATUS menu provides links to view the Network Statistics, Connection Status, DDNS Update Status, DHCP Clients, Product Information, and System Log — Router.

The **Refresh** button on every STATUS page, except for Product Information, refreshes the information so it is up to date.



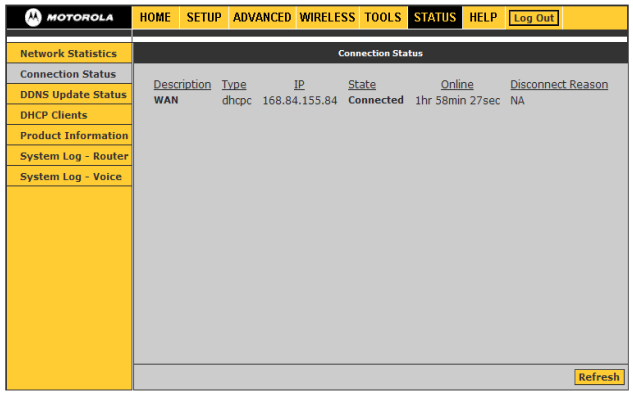
Network Statistics

Use this page to view, transmit, and receive statistics for the **Ethernet** (local network), WAN, or wireless (Internet) interfaces.



Connection Status

Use this page to view the WAN connection status.



Field	Description
Description	A description of the connection component
Type	The type of component
IP	The IP address of the component
State	The component state — connected or disconnected
Online	The amount of time it has been connected
Disconnect Reason	The reason it was disconnected

DDNS Update Status

The residential gateway DDNS client is disabled by default. When the DDNS client is enabled, it updates every time the residential gateway gets a new IP address.

Field	Description
DDNS Server	Sets the DDNS server — DynDNS or TZO
Status	It can be *one* of: • Updated — the IP address of the client has been changed and an update has been sent to the DDNS server • No change — the IP address of the client has not been changed • Error — there is an error with the DDNS update
Error	If the Status is Error, displays a description of the error.

DHCP Clients

Use this page to view the list of LAN DHCP client devices.

Product Information

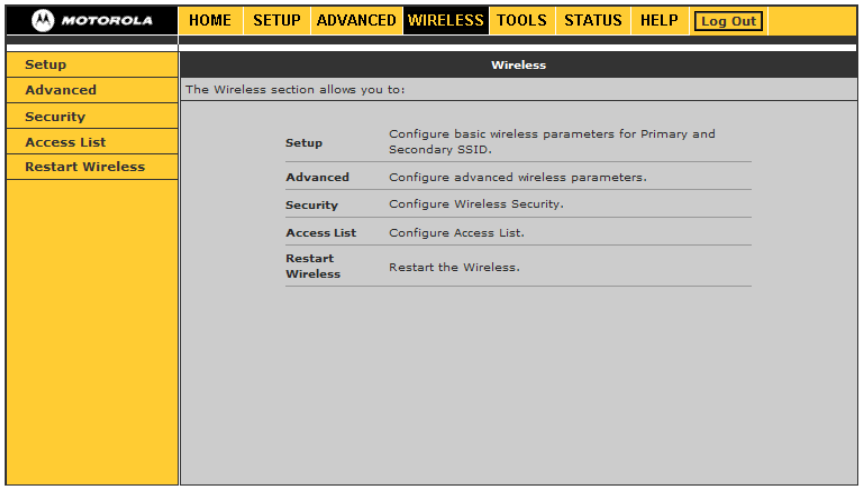
Use this page to view product hardware and software information, such as model number, hardware revision, and the software and boot loader versions.

System Log – Router

The system log displays router-related events. Depending on the severity, the event is sent to a remote host if remote logging is enabled on the Remote — Log Router page.

RSGu3502 — Wireless Configuration

Setting Up Your Wireless LAN (WLAN)



CAUTION *To prevent unauthorized eavesdropping or access to WLAN data, you must enable wireless security. The default* residential gateway *settings provide no wireless security. After your WLAN is operational, be sure to enable wireless security. Connect at least one computer to the residential gateway Ethernet port to perform configuration. Do not attempt to configure the residential gateway over a wireless connection.*

1. Click the **Wireless** tab to access the features (Setup, Advanced, Security, Access List, Restart Wireless).
2. Click the **Enable Wireless** box.
3. Enter the **Primary SSID** information.
4. Select the **Channel B/G** from the pull down menu.
5. Select the **802.11 Mode** (Mixed, B only B+, G only, G+)

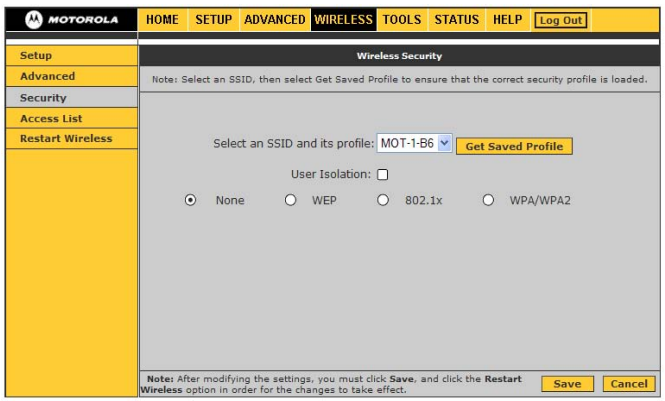
   Set the transmission protocol for your WLAN:
   Mixed — 802.11b/g
   B only — 802.11b only
   B+ — 802.11b+
   G only — 802.11g
   G+ -- 802.11g+
6. Click **Save**. You must use the **Restart Wireless** feature in order for your changes to take effect.

Establishing Security for Your Wireless LAN

To prevent unauthorized viewing of data transmitted over your WLAN, you must encrypt your wireless transmissions.

If all of your wireless clients support WPA encryption, we recommend using WPA instead of WEP. The benefits of using WPA:

- Provides a much stronger encryption and is more secure
- Provides authentication to ensure that *only* authorized users can log on to your WLAN
- It is much easier to configure
- It uses a standard algorithm on all compliant products to generate a key from a textual passphrase



Configuring WPA for Your Residential Gateway

1 Select the WPA option on the Wireless Security page.

2 Select the encryption type (WPA, WPA2, WPA/WPA2).

3 Enter the **Group Key Interval**.

4 Select the **Radius Server** if the authentication type is remote; if it is local, select **Pre-Shared Key**.

5 Enter the **IP Address, Port, Secret** (code), and **PSK String**.

6 Click **Save**.

Configuring WEP on the Residential Gateway

Use Wired Equivalent Privacy (WEP) if you have wireless clients that do not support WPA.

CAUTION
If you use WEP encryption, you must configure the same WEP key on the residential gateway access point and all wireless clients (stations). *Never provide your WEP key or passphrase to anyone who is not authorized to use your WLAN.*

1 Click the **WEP** radio button to display the page.

Notes: If you enable the multiple SSID, select the SSID to which you wish to apply wireless security. Also, when you use the drop-down to select a SSID, click the Get Saved Profile button after each SSID selection to ensure correct security profile is loaded.

2 Check the **Enable WEP Wireless Security** box to enable the setting.

3 Select the Authentication Type (Open, Shared, Both) from the pull down menu.

Open System — Any WLAN client can transmit data to other clients without authentication. (This is the default when the Security Mode is set to WEP.)

Shared Key — Your RSGu3502 authenticates and transfers data to and from clients who have enabled the shared key. It is a recommended setting.
Both — If both is selected, the access point will perform shared-key authentication, then open-system authentication.

4 Select the active key index (0 to 3). Only one key can be active.

5 Enter the Encryption Key.

- 64-bit encryption;enter 10 hexadecimal digits for the 64bit encryption key. For use with wireless clients that do not support 128-bit encryption only.
- 128-bit encryption; enter 26 hexadecimal digits for the 128-bit encryption key. Highly recommend for stronger encryption; it is supported by the Motorola WN825G and WPCI810G wireless adapters and most current wireless adapters.
- 256-bit encryption; enter 58 hexadecimal digits for the 256-bit encryption key.

6 Select the corresponding Cipher. You can select from 64 bits, 128-bits, and 256-bits. The key length must match the WEP cipher.

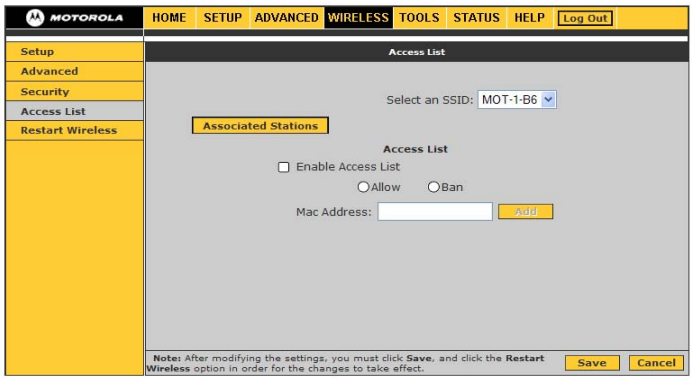
TIP: Frequently changing your WEP key is highly recommend. Never give your WEP to anyone who is not authorized to use your WLAN.

7 Click Save. You must restart the wireless system in order for the changes to take effect.

Creating an Access List for Your Wireless LAN

The default residential gateway wireless settings enable any computer with a compatible wireless adapter to access your WLAN. To protect your network from unauthorized intrusions, you can restrict access to your WLAN to a limited number of computers using the **Access List** feature.

- Only wireless clients configured with your network name can communicate with the residential gateway
- It is more difficult for unauthorized individuals who scan for unsecured WLANs to access your WLAN



Configuring TCP/IP

All client computers on your network must be configured for TCP/IP (the protocol that controls communication among computers). To configure a computer, select the link with the corresponding operating system:

- Configuring TCP/IP in Windows 2000
- Configuring TCP/IP in Windows XP
- Follow the instructions in your Macintosh or UNIX user manual

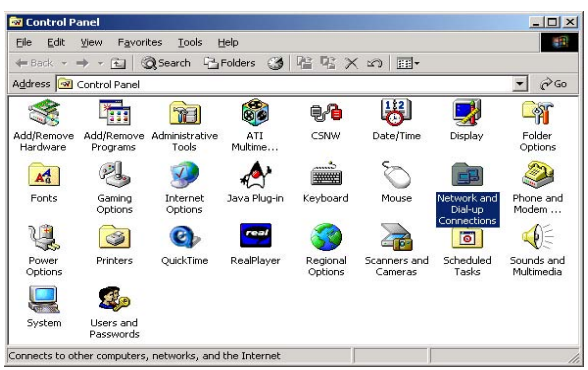
After configuring TCP/IP, on all computers, perform *one* of the following to verify its IP address:

- Verifying the IP Address in Windows 2000 or Windows XP
- Follow the instructions in your Macintosh or UNIX user manual

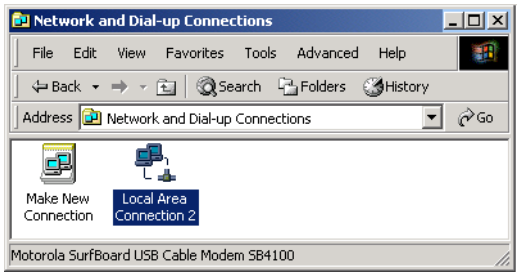
Configuring TCP/IP in Windows 2000

1 On the Windows Desktop, click **Start**.

2 Select **Settings** and then **Control Panel** from the pop-up menus to display the Control Panel window:



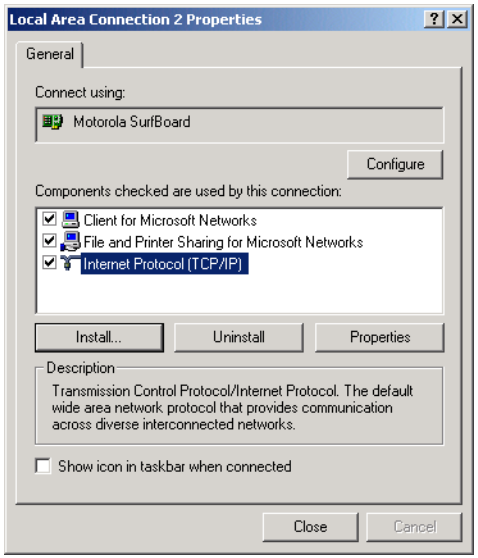
3 Double-click the **Network and Dial-up Connections** icon to display the Network and Dial-up Connections window:



In the steps that follow, a connection ***number*** like 1, 2, 3, etc., is a reference that is displayed on computers with multiple network interfaces. On computers with only one network interface, you may only see the label: Local Area Connection.

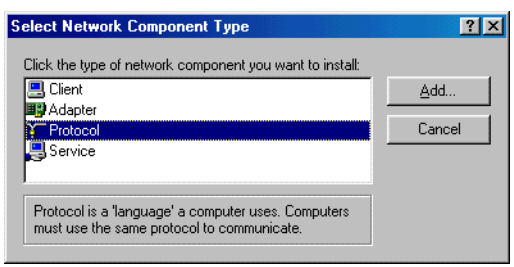
4 Click **Local Area Connection** *number*. The value of *number* varies from system to system. The Local Area Connection *number* Status window is displayed:

5 Click **Properties**. Information similar to the following window is displayed:

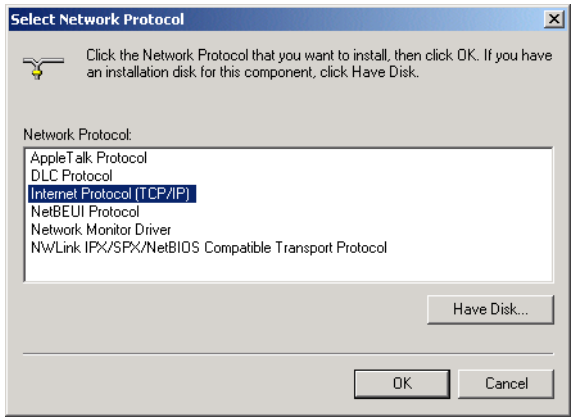


6 If Internet Protocol (TCP/IP) is in the list of components, TCP/IP is installed. You can skip to step 10.

If Internet Protocol (TCP/IP) is not in the list, click **Install**. The Select Network Component Type window is displayed:



7 Click **Protocol** on the Select Network Component Type window and click **Add**. The Select Network Protocol window is displayed:

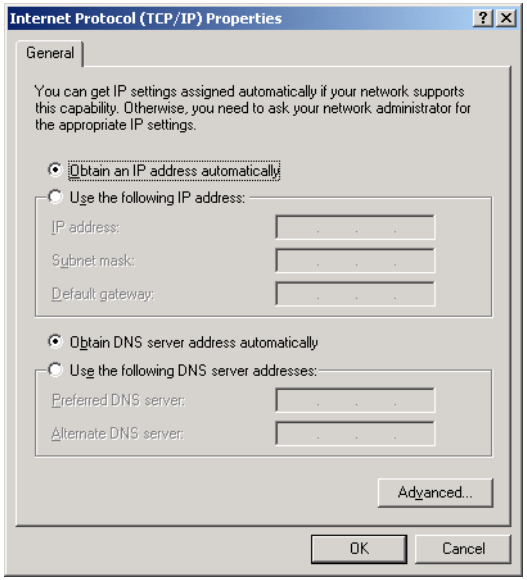


8 Click **Internet Protocol (TCP/IP)**.

9 Click **OK**. The Local Area Connection *number* Properties window is re-displayed.

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

11 Click **Properties**. The Internet Protocol (TCP/IP) Properties window is displayed:



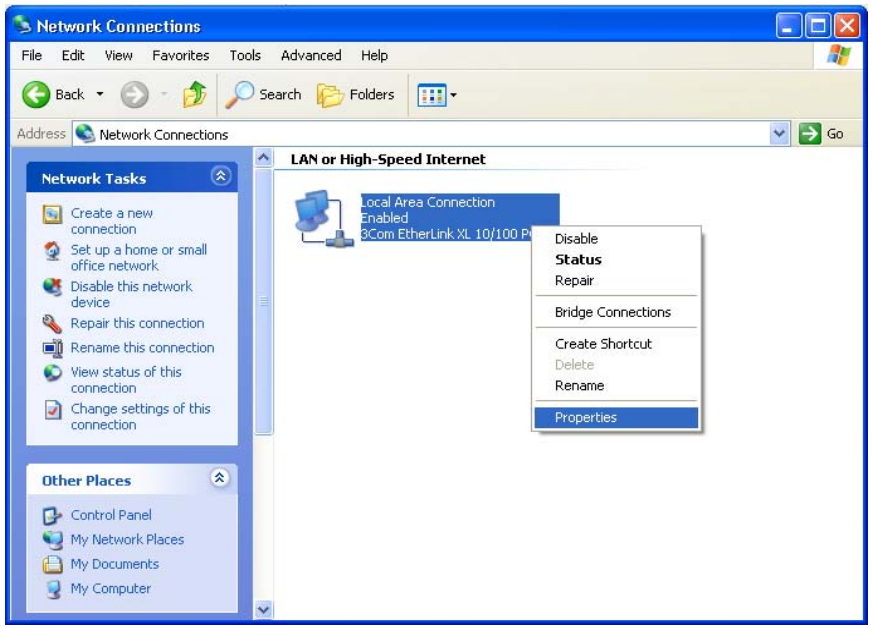
12 Be sure **Obtain IP address automatically** and **Obtain DNS server address automatically** are selected.

13 Click **OK** to accept the TCP/IP settings and Click **Close**.

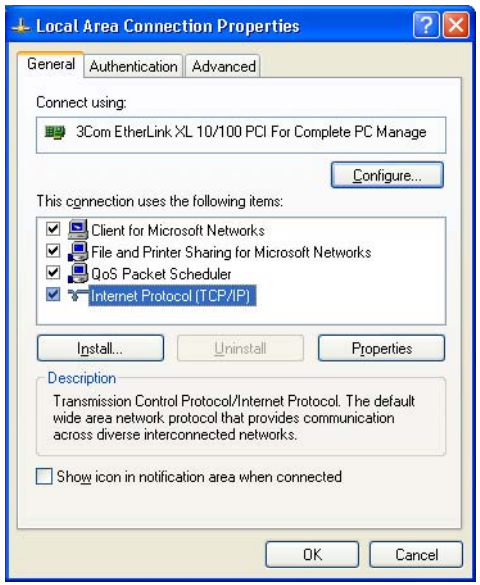
14 Click **OK** when prompted to restart the computer and click **OK** again.

Configuring TCP/IP in Windows XP

1. On the Windows desktop, click **Start**.
2. Click **Settings**.
3. Click **Network Connections**. (Note: The display varies depending on your Windows XP view options.)
4. Click **Network and Internet Connections** to display the Network and Internet Connections window:
5. Right-click **Local Area Connection**. If more than one connection is displayed, be sure to select the one for your network interface.

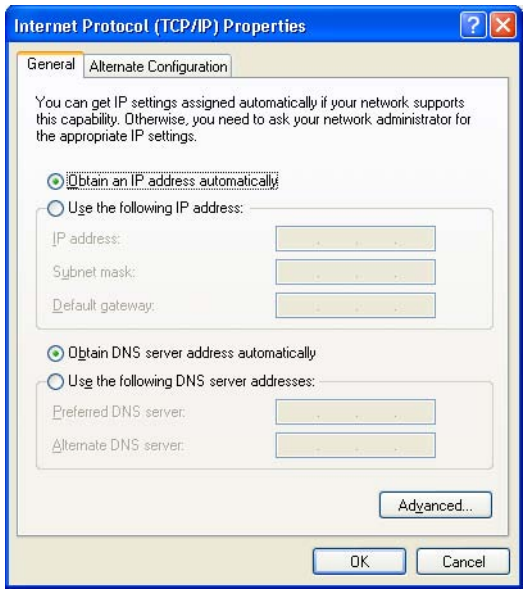


6 Select **Properties** from the pop-up menu to display the Local Area Connection Properties window:



7 On the Local Area Connection Properties window, select **Internet Protocol (TCP/IP)** if it is not selected.

8 Click **Properties** to display the Internet Protocol (TCP/IP) Properties window:



9 Be sure **Obtain IP address automatically** and **Obtain DNS server address automatically** are selected.

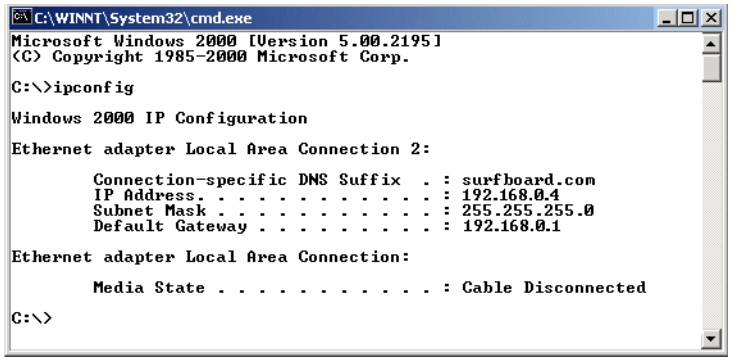
10 Click **OK** to close the TCP/IP Properties window.

11 Click **OK** to close the Local Area Connection Properties window.

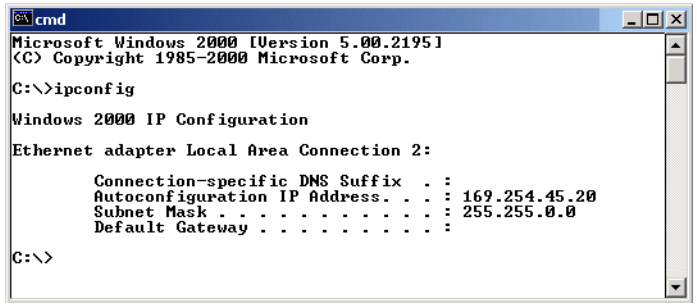
Verifying the IP Address in Windows 2000 or Windows XP

To check the IP address:

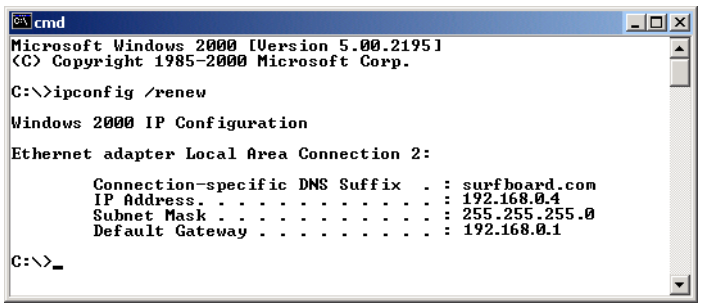
1. On the Windows Desktop, click **Start**.
2. Select **Run**. The Run window is displayed.
3. Type **cmd** and click **OK** to display a command prompt window.
4. Type **ipconfig** and press **ENTER** to display the IP configuration. A display similar to the following indicates a normal configuration:



If an Autoconfiguration IP Address is displayed, as in the following window, there is an incorrect connection between the PC, the residential gateway, and the Internet:



5 After verifying your connections, type **ipconfig /renew** and press **ENTER** to renew the IP address. If a valid IP address is displayed as shown, Internet access should be available.



6 Type **exit** and press **ENTER** to return to Windows.

If after performing this procedure the computer cannot access the Internet, call your cable or DSL provider for help.

Frequently Asked Questions

If you do not understand a term or abbreviation, check the Glossary.

Q What does the Motorola RSGu3502 Residential Gateway do?

A The RSGu3502 Residential Gateway is a stand-alone media terminal adapter (S-MTA) containing a home router:

- As an S-MTA, it converts analog voice signals to and from a standard telephone to digital data that can be transmitted through a broadband connection across the Internet. It provides an alternate means to make voice calls.
- Its built-in router provides full network connectivity, a firewall, and VPN passthrough.

Q Will the RSGu3502 Residential Gateway work with a cable modem or DSL modem?

A Yes. The RSGu3502 Residential Gateway supports DHCP, which is specified for DOCSIS® cable modems, and PPPoE, which is used by most DSL providers.

Q Can I operate a virtual private network (VPN) application behind the RSGu3502?

A Yes. The RSGu3502 Residential Gateway supports IPSec and the most common VPN protocols.

Q Can I play online games through my RSGu3502?

A By default, the residential gateway blocks all unsolicited messages to the computer or local network as a standard security measure. However, for online games that require some unsolicited messages to be transmitted through the residential gateway, you can specify ports and IP addresses on which to allow unsolicited messages. The RSGu3502 enables you to set up virtual servers or a DMZ.

Q How do I configure the RSGu3502?

A Most people can send and receive calls immediately after completing installation. You can configure your home or office network through a GUI using a connected computer configured to obtain its IP address using DHCP. Or, you can configure the computer statically to 192.168.15.xxx (xxx is from 2 to 254), subnet mask 255.255.255.0, and default gateway 192.168.15.1.

Q What is included with the built-in router?

A The RSGu3502 supports a firewall, RIP, port triggers, advanced ALGs such as RSVP, POP3, SNMP, and streaming media. No separate routers are needed.

Q Is any Quality of Service (QoS) implemented on the RSGu3502 Residential Gateway?

A Although VoIP service is typically best-effort, the RSGu3502 provides upstream voice prioritization to ensure that upstream voice data has priority over other Web data. This ensures good voice quality even during heavy upstream data transfers, such as e-mail synchronization or file sharing.

Troubleshooting Your RSGu3502

Problem	Possible Solutions
Power light is off	Check that the AC power adapter is properly plugged into the electrical outlet and the RSGu3502. Check that the electrical outlet is working.
Cannot send or receive data or phone calls **or** **No dial tone**	If you subscribed to just one phone line, be sure your phone is connected to Phone 1 port on the RSGu3502. Check all other cabling between the modem, the RSGu3502, and the computer. Be sure you used the cables provided with the RSGu3502. All Ethernet cables must be straight-through cables. Check the lights on the modem front panel. For information, see your cable or DSL modem user guide. Can you access Web pages? If not, check to see if your ISP (cable or DSL) is having connection issues in your area. Be sure the telephone connected to the RSGu3502 is disconnected from the wall jacks that traditional phone companies use. Compare your device connections to those shown in "Connecting Your RSGu3502" on page 9. The order in which you turn the devices on is very important. Review the order listed at the bottom of Resetting All of Your Equipment (see page 74).

Problem	Possible Solutions
A computer cannot send or receive data	Check that the Ethernet cable is properly connected to the RSGu3502 and the computer. If you have a cable modem *only*, check that your TV is working and the picture is clear. If you cannot receive TV channels, your cable data service will not function. Contact your cable provider. If you have a DSL modem *only*, check that your DSL service is working. Contact your DSL provider.
My high-speed Internet connection uses a USB port, not an Ethernet port	You need to switch your high-speed Internet connection from USB to Ethernet to use Internet Phone Service. If your computer does not have an Ethernet adapter, you can purchase an Ethernet adapter or a USB to Ethernet Converter to connect your computer to the RSGu3502, and ultimately the Internet.

Resetting All of Your Equipment

You can resolve many installation issues by resetting all of your equipment.
To reset all of your equipment:

1. Turn off your computer, RSGu3502 residential gateway, router (if you have one), and DSL or cable modem.
2. Turn the devices back on, one at a time, in this order:
   - Modem
   - Router (if present)
   - RSGu3502
   - Computer

Glossary

This glossary defines terms and abbreviations used in this manual.

10/100Base-T See *Ethernet*.

adapter A device or card that connects a computer, printer, or other peripheral device to the network or to some other device. An Ethernet adapter connects a computer to the LAN.

broadband High-speed telecommunication over a wide range of frequencies, typically 256 Kbps or faster. Broadband enables more information to be transmitted in less time. The most common broadband service types available to homes and small-offices are cable modem and DSL. Both cable modem and DSL are much faster than a traditional dial-up Internet connection.

broadband provider If you have a cable modem, the cable company from which you subscribe to high-speed data service. If you have a DSL modem, the telephone company from which you subscribe to DSL service.

cable modem A device enabling a broadband connection to the Internet over cable television lines. It requires a subscription for high-speed data service from your local cable provider.

coaxial cable (coax) A type of wire consisting of a center wire surrounded by insulation and a grounded shield of braided wire traditionally used mainly to carry cable television signals. The shield minimizes electrical and radio frequency interference.

default gateway A designated router that forwards all traffic not addressed to a host on the local subnet.

DHCP A Dynamic Host Configuration Protocol server dynamically assigns IP addresses to client hosts on an IP network. DHCP eliminates the need to manually assign static IP addresses by "leasing" an IP address and subnet mask to each client. It enables the automatic reuse of unused IP addresses.

The RSGu3502 can simultaneously be a DHCP client and a DHCP server:

- A DHCP server assigns a WAN IP address to your RSGu3502.
- The RSGu3502 contains a built-in DHCP server that assigns private IP addresses to each computer on its LAN.

DMZ	A "de-militarized zone" is one or more hosts logically located between a private LAN and the Internet. A DMZ prevents direct access by outside users to private data. (The term comes from the geographic buffers located between some conflicting countries such as North and South Korea.) In a typical small DMZ configuration, the DMZ host receives requests from private LAN users to access external web sites and initiates sessions for these requests. The DMZ host cannot initiate a session back to the private LAN. Internet users outside the private LAN can access only the DMZ host. You can use a DMZ to set up a web server or for gaming without exposing confidential data.
DOCSIS	The Data-Over-Cable Service Interface Specification define a standard interface for cable modems to deliver data between a cable network and computer systems. Euro-DOCSIS is DOCSIS adapted for use in Europe.
DNS	The Domain Name System is the Internet system for converting domain names to IP addresses. A DNS server contains a table matching domain names such as Internetname.com to IP addresses such as 192.169.9.1. When you access the Web, a DNS server translates the URL displayed on the browser to the destination website IP address. The DNS lookup table is a distributed Internet database; no one DNS server lists all domain-to-IP address matches.
domain name	A unique name, such as motorola.com, that maps to an IP address. Domain names are typically much easier to remember than IP addresses.
dotted-decimal format	Method of representing an IP address or subnet mask using four decimal numbers called octets. Each octet represents eight bits. In a class C IP address, the octets are "network.network.network.host." The first three octets together represent the network address and the final octet is the host address. In the RSGu3502 LAN default configuration, 192.168.15 represents the network address. In the final octet, the host address can be from 2 to 254.
download	To copy a file from one computer or other network device to another. You can use the Internet to download files from a server to your home computer. Your residential gateway downloads its configuration file and firmware.

downstream In a cable data or DSL network, the direction of data received by your computer from the Internet.

driver Software that enables a computer to interact with a network or other device. For example, there are drivers for printers, monitors, graphics adapters, modems, Ethernet, USB, and many others.

DSL A digital subscriber line enables a broadband connection to the Internet over traditional telephone lines that support DSL. You need a subscription for DSL service from your local telephone company.

dynamic IP address An IP address that is temporarily leased to a host by a DHCP server. The opposite of *static IP address*.

Ethernet The most widely used type of local area network (LAN). The most commonly installed Ethernet networks are called 10Base-T. 10Base-T provides transmission speeds up to 10 megabits per second (Mbps), usually over twisted-pair wire. Fast Ethernet (100Base-T) provides transmission speeds up to 100 Mbps.

F-type connector A type of connector used to connect coaxial cable to equipment such as the RSGu3502.

firewall A security software system on the RSGu3502 that enforces an access control policy between the Internet and the RSGu3502 LAN.

flow A data path moving in one direction.

GUI graphical user interface

HFC A hybrid fiber/coaxial cable network uses fiber-optic cable as the trunk and coaxial cable to the subscriber premises.

host Any computer or similar device supporting end-user applications or services with full two-way network access. Each host has a unique host number that combined with the network number forms its IP address.

hub On a LAN, a device that connects multiple hosts to the LAN. A hub performs no data filtering. See also *router*.

IGMP	Internet Group Management Protocol
Internet	A worldwide collection of interconnected networks, all using TCP/IP.
IP	Internet Protocol is a set of standards that enable different types of computers to communicate with one another and exchange data through the Internet. IP provides the appearance of a single, seamless communication system and makes the Internet a virtual network.
IP address	An Internet Protocol address identifies a computer or other device on a TCP/IP network. Networks using the TCP/IP protocol route messages based on the destination IP address.
IPSec	The Internet Protocol Security protocols are authentication and encryption standards for secure data exchange over the Internet.
ISP	Internet service provider
LAN	A local area network provides a full-time, high-bandwidth connection over a limited area, such as a building, campus, office, or home. The computers and other devices you connect to your residential gateway, except for the telephones, form a LAN. Ethernet is the most widely used LAN standard.
MAC address	The Media Access Control address uniquely identifies each device that can be connected to an Ethernet network. It is permanently written to read-only memory (ROM) at the factory and printed on your RSGu3502.
MHz	Mega hertz. A measure of frequency; one MHz means one million cycles per second.
MPPC	Microsoft Point-To-Point Compression protocol is a method for compressing PPP packets to optimize processor and bandwidth usage for many simultaneous connections. MPPC is patented in the United States by Hifn Inc.
MPPE	Microsoft Point-to-Point Encryption is a protocol for encrypting data across PPP and VPNs. It is frequently used in conjunction with MPPC.

NAT	Network Address Translation is a standard for a LAN to use one set of IP addresses for internal traffic and a second set of IP addresses for external traffic.
NAPT	Network Address Port Translation is the most common form of translation between public and private IP addresses.
network	Two or more computers connected to communicate with each other. Networks have traditionally been connected using some kind of wiring.
NIC	Network interface card is another name for network adapter. A NIC is installed in an expansion slot or can be built-in. Every Ethernet NIC has a MAC address permanently saved in its ROM.
OOB DTMF	Out-of-Band Dual-Tone Multi-Frequency protocol for voice traffic.
PING	A network utility that tests host reachability by sending a small packet to the host and waiting for a reply. If you PING a computer IP address and receive a reply, you know the computer is reachable over the network. It also stands for "Packet InterNet Groper."
port	On a computer or other electronic device, a port is a socket or plug used to physically connect it to the network or to other devices. In TCP/IP, a port is a number from 0 to 65536 used logically by a client program to specify a server program. Ports 0 to 1024 are reserved.
port triggering	A mechanism that enables incoming communication with specified applications. Primarily used for gaming applications.
POTS	"Plain old telephone service;" basic analog telephone service. POTS uses the lowest 4 kHz of bandwidth on twisted pair wiring.
PPP	Point-to-Point Protocol is a method to establish a network connection or session between hosts.
PPPoE	Point-to-Point Protocol over Ethernet is a specification for connecting to the Internet used with DSL modems.

PPTP Point-to-Point Tunneling Protocol encapsulates other protocols to create VPNs. It is developed jointly by several vendors.

private IP address An IP address assigned to a computer on the RSGu3502 LAN by the DHCP server on the RSGu3502 for a specified lease time. Private IP addresses are used by the RSGu3502 LAN only; they are invisible to devices on the Internet. See also *public IP address*.

PSTN The public switched telephone network is the traditional circuit-switched, voice-oriented telephone network. See also *POTS*.

public IP address A public IP address is visible to devices on the Internet. See also *private IP address*.

QoS quality of service

RIP Routing Information Protocol enables routers to exchange routing information with other network routers. Any RIP-enabled router:

- Sends automatic update packets containing its routing table periodically (every 30 seconds)
- Accepts periodic updates from other routers and adds, deletes, or modifies routes in its routing table accordingly
- Responds to requests for its routing table

RTP Real Time Protocol for voice traffic.

RJ-11 The most common type of connector for household or office phones.

RJ-45 The most common type of port for Ethernet networks.

router On IP networks, a device connecting at least two networks, which may or may not be similar. A router filters data based on the IP address, examining the source and destination IP addresses to determine the best route on which to forward it.

server A dedicated computer that supplies files, data, or services to other “client” computers or devices.

SIP Session Initiation Protocol for voice traffic.

S-MTA A standalone media terminal adapter converts analog voice signals to and from a standard telephone to digital data that can be transmitted through a broadband connection over the Internet.

SSH secure shell

stateful inspection A type of firewall that tracks each connection traversing all firewall interfaces to ensure validity. In addition to examining the source and destination in the packet header based on static rules, a stateful inspection firewall:

- Examines packet headers on context established by previous packets that traversed the firewall
- Monitors the connection state and saves it in a table
- Closes ports until a connection to a specific port is requested
- May examine the packet contents up through the application layer to determine more than just the source and destination

A stateful-inspection firewall is more advanced than a static filter firewall.

static filter A type of firewall that examines the source and destination in the packet header based on administrator-defined rules *only*.

static IP address An IP address that is permanently assigned to a host. Normally, a static IP address must be assigned manually. The opposite of dynamic IP address.

subnet mask A bit mask that is logically ANDed with the destination IP address of a packet to determine the network address. A router routes packets using the network address.

subnetwork A part of a network; commonly abbreviated "subnet." When subnetting is used, the host portion of the IP address is divided into a subnet and host number. Hosts and routers use the subnet mask to identify the bits used for the network and subnet number.

TCP Transmission Control Protocol provides reliable transport over the network for data transmitted using IP. It defines rules and procedures for data exchange.

TCP/IP	The Transmission Control Protocol/Internet Protocol is a set of protocols that provides rules for communication between networks. It is the worldwide internetworking standard and the basic communications protocol of the Internet.
TFTP	Trivial File Transfer Protocol is a very simple protocol used to transfer files.
UPnP	Universal Plug and Play protocol.
UPS	A uninterruptible power supply provides battery back-up for a specified time during a power outage.
upstream	In a cable data or DSL network, the direction of data sent from your computer to the Internet.
USB	Universal Serial Bus
wireless access point (WAP)	A device that provides network connectivity to one or more client computers using radio signals over a wireless connection. One example you could use with your residential gateway is the Motorola Wireless Access Point WA840G.
VoIP	Voice over Internet Protocol is a method to exchange voice, fax, and other information over the Internet. Voice and fax have traditionally been carried over telephone lines using a dedicated circuit for each line. VoIP enables calls to travel as discrete data on shared lines.
VoIP provider	The company from which you purchase VoIP telephone service.
VPN	A virtual private network is a private network that uses "virtual" connections (tunnels) routed over a public network (usually the Internet) to provide a secure and fast connection, usually to users working remotely at home or in small branch offices. A VPN connection provides security and performance similar to a dedicated link (for example, a leased line), but at much lower cost.
WAN	A wide-area network provides a connection over a large geographic area, such as a country or the whole world. The bandwidth depends on need and cost, but is usually much lower than for a LAN. For the residential gateway, "WAN" refers to the VoIP and broadband provider networks.
World Wide Web	An interface to the Internet that you use to navigate and hyperlink to information.

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