Touchstone®
TR3300-AC 802.11ac Wireless Router

User Guide

Release 33 STANDARD 1.5 February 2015

TR3300-AC 802.11ac Wireless Router User Guide
Release 33 STANDARD 1.5

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Patent Notice

Table of Contents

Overview

Introduction

Get ready to experience the Internet's express lane! Whether you're checking out streaming media, downloading new software, or checking your email, the Touchstone TR3300-AC 802.11ac Wireless Router brings it all to you faster and more reliably.

The Touchstone TR3300-AC 802.11ac Wireless Router provides four Ethernet connections for use as the hub of your home/office Local Area Network (LAN). The TR3300-AC also provides 802.11a/b/g/n/ac wireless connectivity for enhanced mobility and versatility.

Installation is simple and your service provider will provide assistance to you for any special requirements.

Safety Requirements

The ARRIS TR3300-AC Wireless Router complies with the applicable requirements for performance, construction, labeling, and information when used as outlined below:

- Do not use product near water (i.e. wet basement, bathtub, sink or near a swimming pool, etc.), to avoid risk of electrocution.
- The product shall be cleaned using only a damp, lint-free, cloth. No solvents or cleaning agents shall be used.
- Do not use spray cleaners or aerosols on the Wireless Router.
- Avoid using and/or connecting the equipment during an electrical storm, to avoid risk of electrocution.
- Do not locate the equipment within 6 feet (1.9 m) of a flame or ignition source (i.e. heat registers, space heaters, fireplaces, etc.).
- Use only power supply and power cord included with the equipment.
- Equipment should be installed near the power outlet and should be easily accessible.
- In areas of high surge events or poor grounding situations and areas prone to lightning strikes, additional surge protection may be required (i.e. PF11VNT3 from American Power Conversion) on the AC and Ethernet lines.
- When the Wireless Router is connected to a local computer through Ethernet cables, the computer must be properly grounded to the building/residence AC ground network. All plug-in cards within the computer must be properly installed and grounded to the computer frame per the manufacturer's specifications.
- Ensure proper ventilation. Position the Wireless Router so that air flows freely around it and the ventilation holes on the unit are not blocked.
- Do not mount the Wireless Router on surfaces that are sensitive to heat and/or which may be damaged by the heat generated by the modem, its power supply, or other accessories.

FCC Part 15

This equipment has been tested and found to comply with the requirements for a Class B digital device under Part 15 of the Federal Communications Commission (FCC) rules. These requirements are intended to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and 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.

WARNING

Changes or modifications to this equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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.

RF Exposure

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 7.9 inches (20cm) between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Industry Canada Compliance

This device complies with Industry Canada's licence-exempt RSSs. 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.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :
(1) l'appareil ne doit pas produire de brouillage;
(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

The device meets the exemption from the routine evaluation limits in section 2.5 of RSS 102 and compliance with RSS-102 RF exposure, users can obtain Canadian information on RF exposure and compliance.

Le dispositif rencontre l'exemption des limites courantes d'évaluation dans la section 2.5 de RSS 102 et la conformité a l'exposition de RSS-102 rf, utilisateurs peut obtenir l'information canadienne sur l'exposition et la conformité de rf.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

Cet émetteur ne doit pas être Co-placé ou ne fonctionnant en même temps qu'aucune autre antenne ou émetteur. Cet équipement devrait être installé et actionné avec une distance minimum de 20 centimètres entre le radiateur et votre corps.

The device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems.

Les dispositifs fonctionnant dans la bande 5150-5250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux.

For Mexico

The operation of this equipment is subject to the following two conditions: (1) This equipment or device cannot cause harmful interference and (2) this equipment or device must accept any interference, including interference that may cause some unwanted operation of the equipment.

Product Overview

About The Wireless Router

The TR3300-AC Wireless Router is a 3x3 dual-band 802.11ac router for MSOs, allowing users to connect to the Internet through a separate modem.

The TR3300-AC Wireless Router has the following features:

- Remote management capability: allows you to make changes to the Wireless Router's configuration from anywhere on the Internet
- Smart stream management: StreamBoost™ technology automatically gives applications and devices the bandwidth they need for the best online experience
- Convenience: supports Ethernet and 802.11a/b/g/n/ac wireless connections; both wired and wireless connections can be used simultaneously
- Four Ethernet ports for connections to non-wireless devices
- A USB 2.0 host port (future support for external USB devices)

What's in the Box?

Make sure you have the following items before proceeding. Call your service provider for assistance if anything is missing.

- Wireless Router
- Power Adapter
- Wireless Installation Guide
- Ethernet Cable
- End User License Agreement

Items You Need

Make sure you have the following items on hand before continuing:

- **Wireless Router package:** see What's in the Box? (page 10) for a list of items in the package.
- **Ethernet Cable:** In addition to the Ethernet cable provided, you may need an additional Ethernet cable if you want to connect to wired clients. This is a standard Ethernet cable with RJ45 type connectors on both ends. You can buy Ethernet cables from any electronics retailer and many discount stores.
- **Information packet:** your service provider should furnish you with a packet containing information about your service and how to set it up. Read this information carefully and contact your service provider if you have any questions.

System Requirements

The Touchstone Wireless Router operates with most computers. The following describes requirements for each operating system; see the documentation for your system for details on enabling and configuring networking.

To use the Wireless Router, you need high-speed Internet service from your service provider.

Recommended Hardware

The following hardware configuration is recommended. Computers not meeting this configuration can still work with the TR3300-AC, but may not be able to make maximum use of TR3300-AC throughput.

- CPU: P4, 3GHz or faster
- RAM: 1GB or greater
- Ethernet: Gig-E (1000BaseT)
- Wi-Fi: 802.11a, b, g, n, or ac compliant Wi-Fi equipment

Windows

Windows XP , Windows Vista, Windows 7, or Windows 8. A supported Ethernet or wireless LAN connection must be available.

MacOS

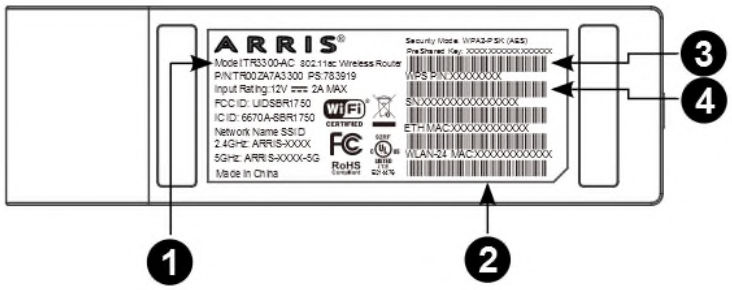
System 7.5 to MacOS 9.2 (Open Transport recommended) or MacOS X. A supported Ethernet or wireless LAN connection must be available.

Linux/other Unix

Hardware drivers, TCP/IP, and DHCP must be enabled in the kernel. A supported Ethernet or wireless LAN connection must be available.

About this Manual

This manual covers the Touchstone TR3300-AC Wireless Router. The model number is on the label affixed to the bottom of the Wireless Router.



1. Model number

2. WLAN-24 MAC address
3. PreShared Key
4. WPS PIN

What About Security?

Having a high-speed, always-on connection to the Internet requires a certain amount of responsibility to other Internet users—including the need to maintain a reasonably secure system. While no system is 100% secure, you can use the following tips to enhance the system's security:

- Keep the operating system of the computer updated with the latest security patches. Run the system update utility at least weekly.
- Keep the email program updated with the latest security patches. In addition, avoid opening email containing attachments, or opening files sent through chat rooms, whenever possible.
- Install a virus checker and keep it updated.
- Avoid providing web or file-sharing services over the Wireless Router. Besides certain vulnerability problems, most service providers prohibit running servers on consumer-level accounts and may suspend your account for violating the terms of service.
- Use the service provider's mail servers for sending email.
- Avoid using proxy software unless you are certain that it is not open for abuse by other Internet users (some are shipped open by default). Criminals can take advantage of open proxies to hide their identity when breaking into other computers or sending spam. If you have an open proxy, your service provider may suspend your account to protect the rest of the network.
- The TR3300-AC ships with wireless LAN security set by default (for the same reasons that you should run only secured proxies). See the security label on the product for the factory security settings. If you need to modify the default wireless security settings, see Configuring the Wireless Connection (page 18).

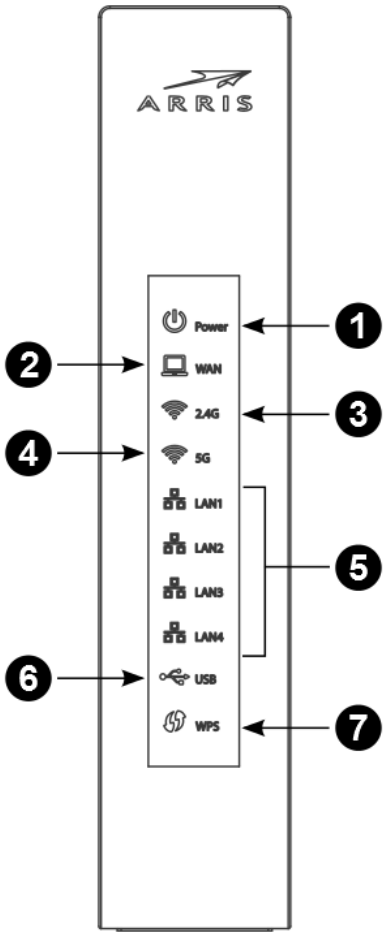
Installing the Wireless Router

Before you start, make sure that:

- You have all the Items You Need (page 10):
- The modem and power outlets are available nearby.

Front Panel

The front of the Wireless Router has the following indicators:



1. **Power:** indicates whether AC power is available to the unit.
2. **WAN:** indicates the status of Internet service connectivity.
3. **2.4G:** indicates the status of the 2.4 GHz wireless LAN.
4. **5G:** indicates the status of the 5 GHz wireless LAN.
5. **LAN (1 - 4):** indicates the status of LAN connectivity on each of the wired ports.

6. **USB:** indicates whether a USB device is attached.
7. **WPS:** indicates Wireless Protected Setup (WPS) is active.

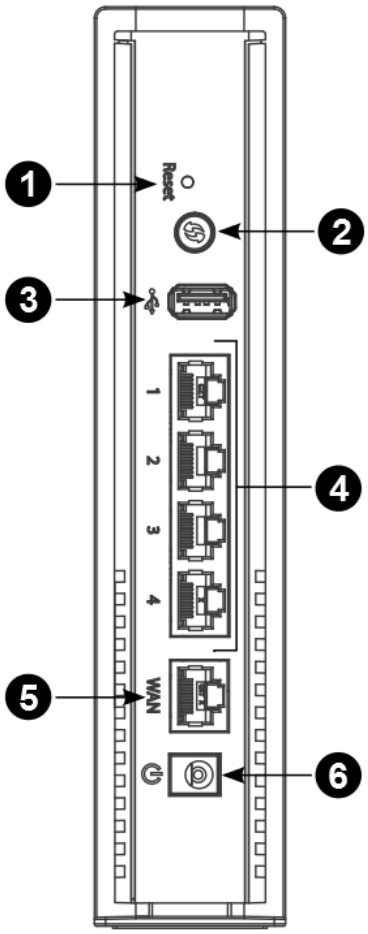
Indicator Lights for the TR3300-AC

The Wireless Router has several LED indicator lights to assist in troubleshooting.

LED	Color/Behavior	Description
Power	Solid green	System power is on.
WAN	Solid green	An IP address has been received and is ready to transmit data, or bridge mode is active.
	Flashing green	The Ethernet cable connection has been detected.
	Off	No Ethernet cable is connected to the Wireless Router.
2.4G Wi-Fi	Solid green	The wireless port has linked with a wireless client.
	Off	Wireless is disabled.
5G Wi-Fi	Solid green	The wireless port has linked with a wireless client.
	Off	Wireless is disabled.
WPS	Solid green	WPS has been started.
	Flashing green (slow flash)	WPS has been started, and Wireless Router is ready to accept a client connection.
	Flashing green (quick flash)	WPS error.
LAN 1 – 4	Solid green	10/100/1000Mbps link detected.
	Flashing green	Receiving/transmitting data at 10/100/1000Mbps.
	Off	No Ethernet connection.
USB	Solid green	USB device successfully connected and active.
	Flashing green	USB device read/write activity.
	Off	No USB device connected, or the attached USB device can now be safely removed.

Rear Panel

The rear of the Wireless Router has the following connectors and controls:



1. **Reset button:** resets the Wireless Router as if you power cycled the unit. Use a pointed non-metallic object to press this button.

Note: If you hold the Reset button for more than five seconds, the Wireless Router will be reset to the factory default settings and will reboot.

2. **WPS Button:** begins associating the Wireless Router with a wireless device.
3. **USB:** USB host connector - future support for external USB devices.
4. **Ethernet (1 - 4):** connectors for use with a computer LAN port.
5. **WAN:** connector for the modem.
6. **Power:** connector for the power cord.

Selecting an Installation Location

There are a number of factors to consider when choosing a location to install the Wireless Router:

- Is an AC outlet available nearby? For best results, the outlet should not be switched and should be close enough to the Wireless Router that extension cords are not required.
- Is the modem nearby? Can you easily run cables between the Wireless Router's location and the modem?
- If you are connecting devices to the Ethernet ports, can you easily run cables between the Wireless Router's location and those devices?
- If you want to install the Wireless Router on a desktop, is there enough space on either side to keep the vents clear? Blocking the vents may cause overheating.
- How close are the wireless devices? In general, the Wireless Router should be located close to the center of the user sphere. The Wireless Router wireless connection range is typically 100–200 feet (30m–65m) for 2.4 GHz signals and less for 5 GHz signals. A number of factors can affect connection range, as described below.

Desktop Mounting Instructions

Position the Wireless Router so that:

- air flows freely around it
- the back faces the nearest wall
- it will not fall to the floor if bumped or moved
- the sides of the unit are not blocked.

Note: Clean the Wireless Router using only a clean, slightly moistened, cloth. Do not use aerosols in the vicinity of the Wireless Router.

Factors Affecting Wireless Range

A number of factors can affect the usable range for wireless connections.

Increases range	■ Locating the unit centrally ■ Creating as much "line-of-sight" as possible with client devices
Decreases range	■ Metal or concrete walls between the Wireless Router and other devices ■ Large metal appliances, aquariums, or metal cabinets between the Wireless Router and other devices ■ Interference and RF noise (2.4 GHz wireless phones, microwave ovens, wireless speaker/receiver systems, or other wireless networks) ■ Placing the device in a cabinet or other enclosed space

Note: Decreasing the range of the wireless network may be beneficial, as long as the decreased range is sufficient for your needs. By limiting the network's range, you reduce interference with other networks and make it harder for unwanted users to find and connect to the network.

Note: Setting the transmit power level to High increases the range. Setting it to Medium or Low decreases the range proportionately. Medium or Low may be more appropriate for high-density residential locations.

Ethernet or Wireless?

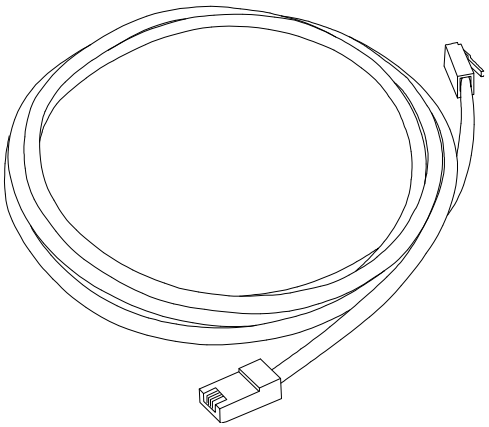
There are two ways to connect the computer (or other equipment) to the Wireless Router. The following will help you decide which is best for you:

Ethernet

Ethernet is a standard method of connecting two or more computers into a Local Area Network (LAN). You can use the Ethernet connection if the computer has built-in Ethernet hardware. The TR3300-AC provides support for up to four such connected devices.

Note: To connect more than four computers to the TR3300-AC through the Ethernet ports, you need an Ethernet switch (available at computer retailers).

The Wireless Router package comes with one 4-foot (1.2m) Ethernet cable (the connectors look like wide telephone connectors); you can purchase more cables if necessary at a computer retailer. If you are connecting the Wireless Router directly to a computer, or to an Ethernet switch with a cross-over switch, ask for Category 5e (CAT5e) straight-through cable. CAT5e cable is required for gigabit Ethernet (Gig-E), not regular CAT5 cable.



Wireless

Wireless access lets you connect additional (wireless-capable) devices to the Wireless Router. The 802.11 wireless LAN standard allows one or more computers to access the TR3300-AC using a wireless (radio) signal. These connections are in addition to the connections supported via Ethernet.

Note: You can use the wireless connection if the computer has a built-in or aftermarket plug-in wireless adapter. To learn more about which wireless hardware works best with the computer, see your computer dealer.

Both

If you have two or more computers, you can use Ethernet for up to four devices and wireless for the others. To connect five or more computers to the Ethernet ports, you will need an Ethernet switch (available at computer retailers.)

Connecting the Wireless Router

1. Unplug the power to turn off the modem.
2. Connect one end of the Ethernet cable (included) to the modem, and the other end to the WAN port on the Wireless Router.
3. Reconnect the plug on the modem to turn the modem back on. Wait approximately 2 minutes to allow the modem to fully power up.
4. Connect the power adapter (included) to the power connector on the back of the Wireless Router, and then connect the power adapter to an available AC outlet. Wait until the 2.4G and 5G LEDs on the front panel of the Wireless Router turn solid green.
5. To manage the setup of the Wireless Router, you can use a second Ethernet cable (not provided) to connect a computer to an available LAN port on the TR3300-AC, or you can connect wirelessly by using the preset wireless security settings printed on the security label located on the bottom of the Wireless Router.
6. Open a browser on the computer to access the management interface of the Wireless Router. If the webpage does not display correctly, try another browser. See Accessing the Configuration Interface (page 19) for more information.

Note: In some cases, the service provider may redirect the browser to their welcome page so that you can establish new service. This step may be required before you can manage the TR3300-AC configuration settings.

Configuring the Wireless Connection

The TR3300-AC ships with a secure SSID that is unique for every device. Wi-Fi network information is located on the label on the bottom of the Wireless Router. You should configure the Wireless Router's wireless settings.

Note: At a minimum, you should set a login password and set up wireless security. Refer to Configuring the Wireless Network (page 20) for complete instructions on configuring the wireless connection.

Basic Configuration

The Wireless Router ships with a basic factory default configuration that should allow you to immediately access the Internet after installing the hardware according to the User's Guide.

If you need to modify the Wireless Router's default basic settings, or if you want to configure advanced settings, refer to the appropriate instructions in this document.

As a minimum, it is recommended that you:

- Change the default login password
- Change the default wireless network name, also called the Service Set Identifier (SSID)

Wireless LAN Default Security Setting: The Wireless Router ships with wireless LAN security set by default. See the security label on the product for the factory security settings: network name (SSID), encryption method, network key, and WPS PIN.

If you need to modify the Wireless Router's default wireless security settings, or if you want to configure any other settings, refer to the appropriate instructions in this document.

Note: You must set up the computer and other client devices to work with the security settings on the Wireless Router. Refer to the documentation for the client device for instructions on setting security. If the computer or client device supports Wi-Fi Alliance WPS (Wireless Protected Setup), activate WPS on the computer or client device and the Wireless Router simultaneously to easily set up the system security.

Accessing the Configuration Interface

Perform the following steps to access the configuration interface.

1. If security has been properly set up on the computer to access the wireless LAN on the Wireless Router, use the connection utility for the operating system to connect to the wireless LAN using its network name (SSID), as shown on the security label.

Note: If you cannot access the wireless LAN, you must first establish a wired Ethernet connection between the computer and the Wireless Router.

2. In the web browser, open the page http://192.168.1.1/ to access the Wireless Router setup.

   The Login screen displays.

3. Enter the user name and password and click **Apply** to log in.

Note: The default user name is "admin". The default password is "password", in lower case letters.

The Basic Wireless Settings screen displays.

4. Set basic setup configuration parameters as required for the system.

Note: Most configuration parameters that you may want to set can be accessed on the Basic Wireless Settings screen or on the LAN Setup or Wireless tabs.

Configuring the Wireless Network

Perform the following procedures to make the basic configuration settings for the wireless network.

Enabling or Disabling the Wireless Network.

Perform the following steps to enable the wireless network.

1. Access and log into the configuration interface.
2. Click the **Basic Setup** tab.
3. Click the **Enable Wireless** checkbox in either the Wireless 2.4 GHz section or the Wireless 5 GHz section to enable wireless networking for that frequency.
4. Click **Apply**.

Changing the Login Password

You should change the login password to something other than the default password.

Note: The default user name is "admin," the default password is "password" (both lower case).

Perform the following steps to change the password.

1. Access and log into the configuration interface via a direct wired Ethernet or wireless connection.
2. Click the **Utilities** tab.
3. Click **System Settings** in the side menu.
4. Enter the old password in the **Current Password** field.
5. Enter the new password in both the **New Password** and **Confirm New Password** fields.

Note: Passwords are case-sensitive. Valid characters are the numbers 0 to 9, the letters a through z and A through Z, and printable special characters (such as $, !, ?, &, #, @, and others.)

6. Click **Apply**.
7. Record the new passwords here:

2.4 GHz Password: _____

5 GHz Password: _____

Changing the Default Wireless Network Name (SSID)

Perform the following steps to change the wireless 2.4 GHz and/or wireless 5 GHz network name.

1. Access and log into the configuration interface.
2. Click the **Basic Setup** tab.
3. Enter a unique user friendly name to identify the wireless network in the Wireless Network Name (SSID) field under either Wireless 2.4 GHz or Wireless 5 GHz.

Note: This name is also referred to as the Service Set Identifier (SSID). The name can be up to 32 characters long. Do not duplicate any other SSID names that may be operating in the area.

4. Click **Apply** at the bottom of the screen.
5. Record the new network names here:

2.4 GHz Network name (SSID): _____

5 GHz Network name (SSID): _____

Configuring Wi-Fi Protected Setup (WPS)

WPS is a standard method for easily configuring a secure connection between the Wireless Router and computers or other wireless devices (known as enrollees) that support WPS. When WPS is enabled you can attach other wireless devices by pressing the WPS buttons on the device (if equipped) and on the Wireless Router, or by entering the enrollee's PIN and then clicking the **Start WPS Association** icon.

Perform the following steps to enable the wireless network.

1. Access and log into the configuration interface.
2. Click the **Basic Setup** tab.
3. Click **WPS Settings** in the side menu.
4. Click the **Wi-Fi Protected Setup (WPS) Enable** checkbox and click **Apply** to enable WPS on the system.
5. a) If the client device has a WPS button, press the WPS buttons on the client device and on the Wireless Router simultaneously to start the WPS association.

   b) If the client device has a PIN number, enter the enrollee's PIN in the Enrollee PIN Code field, and then click the **Start WPS Association** icon. Enter the Wireless Router's PIN code in the Device PIN Code field if requested during connection.
6. If the connection is successful, the WPS indicator light on the Wireless Router stops flashing and remains lit. If unsuccessful, the WPS light continues to flash for up to two minutes (indicating that it's ready to accept a client connection) and then turns off. If the WPS light turns off, start the association process over.

Setting Up the WAN Connection

A Dynamic or DHCP (Dynamic Host Configuration Protocol) connection is the most commonly used WAN connection type.

Note: Do not change this setting unless your Internet Service Provider tells you to use another connection type.

Perform the following steps to change the connection type.

1. Access and log into the configuration interface.
2. Click the **WAN Setup** tab.
3. Click **Dynamic**, **Static**, **Dynamic (IPV6)**,or **Static (IPV6)** in the side menu to display the appropriate screen for configuring that type of WAN connection.
4. Set the required configuration parameters for the connection type you selected as provided by your service provider.

Note: Refer to WAN Setup in Wireless Router Configuration Screen Descriptions (page 29) for specific instructions on setting the various connection type configuration parameters.

5. Click **Apply** at the bottom of the screen.

Advanced Configuration Options

This section explains how to use the most common advanced configuration options for the Wireless Router in the following areas:

- LAN Setup
- Wireless Setup
- Firewall
- Utilities

Note: Refer to Wireless Router Configuration Screen Descriptions (page 29) for additional advanced configuration options.

LAN Setup – Configuring DHCP

DHCP (Dynamic Host Protocol Configuration) is enabled by default on the Wireless Router which allows the Wireless Router to act as a DHCP server and automatically assign an IP address to each device on the network.

DHCP is a set of rules used by devices such as a computer, Wireless Router, or network adapter to allow the device to request and obtain an IP address from a server which maintains a list of addresses available for use. The DHCP server ensures that all IP addresses are unique, e.g., no IP address is assigned to a second device while the first device's assignment is valid (its lease has not expired).

Without DHCP, the IP addresses must be entered manually at each computer or device and a new IP address must be entered each time it moves to a new location on the network.

Perform the following steps to configure DHCP.

1. Access and log into the configuration interface.
2. Click the **LAN Setup** tab.
3. Click **LAN Settings** or **LAN Settings (IPV6)** in the side menu to display the LAN Settings screen.
4. Click the **Enable DHCP Server** or **Enable DHCP Server (IPV6)** checkbox under DHCP Server Settings.
5. Enter the Start IP Address and End IP Address for the range of IP addresses that the DHCP Server will be allowed to assign to a network device.
6. Enter the Lease Time in seconds before the assigned IP address will expire. (After the lease time is up, the user is automatically assigned a new dynamic IP address.)

Note: Refer to LAN Setup (page 35) for specific instructions on setting the various DHCP configuration parameters.

7. Click **Apply** at the bottom of the screen.

LAN Setup – Adding and Deleting DHCP Clients

The Client List screen shows the host name, IP address, and MAC address of each computer that is connected to the network. If a computer does not have a specified host name, then the host name field will be blank.

Perform the following steps to configure the DHCP Clients.

1. Access and log into the configuration interface.
2. Click the **LAN Setup** tab.
3. Click **Client List** in the side menu to display the Client List screen.
4. Click **Add** to add a reserved IP client. Select an existing DHCP client and then click **Delete** to delete the client. Click **Refresh** to update the Clients List.

LAN Setup – Selecting the NAT Mode

NAT (Network Address Translation) allows the Wireless Router to manipulate IP addresses so that just one single IP address can represent an entire group of computers on the network and let them all communicate with the Internet. This conserves IP addresses and is necessary since there are a limited number of available IP addresses for use.

Perform the following steps to select the NAT Mode.

1. Access and log into the configuration interface.
2. Click the **LAN Setup** tab.
3. Click **LAN Settings** in the side menu to display the LAN Settings screen.
4. Select the **NAT Mode** from the NAT Mode field drop-down list. The optional modes are:

   Bridged - Data will pass through the device directly without any routing.

   Routed with NAT - Data will be routed by the device and all the outgoing packets will be NATed.

   Routed without NAT - Data will be routed by the device but all the outgoing packets will not be NATed.

5. Click **Apply** at the bottom of the screen.

Note: A dialog box prompts you to restart the Wireless Router. Click **OK** to restart.

Wireless Setup – Setting the Wireless Mode

You can set the wireless mode to optimize performance based on the type of network adapters being used by the network devices, e.g., 802.11b, 820.11g, and 802.11n. Select the proper mode to support all of the wireless devices that will connect to the Wireless Router.

Perform the following steps to set the wireless mode.

1. Access and log into the configuration interface.
2. Click the **Wireless** tab.
3. Click **Basic Setup** in the side menu to display the Advanced Settings screen.
4. Under Wireless 2.4 GHz or Wireless 5 GHz, select the proper mode from the Wireless Mode drop-down list.

   2.4 GHz Options: B only, G only, B/G mixed, and G/N mixed.

   5 GHz Options: A only, A/N mixed, and A/N/AC mixed.
5. Click **Apply** at the bottom of the screen.

Note: Refer to Advanced (page 42) for instructions on setting additional advanced wireless configuration parameters.

Note: If you have both A and B running in your network, then throughput on the entire wireless network will be reduced.

Firewall – General Firewall Configuration Settings

The Wireless Router is equipped with a firewall that will protect the network from a wide array of common Denial of Service (DoS) attacks, including Ping of Death (PoD) attacks.

You can disable the firewall function if needed. Turning off the firewall protection will not leave the network completely vulnerable to hacker attacks, but it is recommended that you enable the firewall whenever possible.

Perform the following steps to enable the firewall and make general firewall settings.

1. Access and log into the configuration interface.
2. Click the **Firewall** tab.
3. Click **Firewall Settings** in the side menu to display the Firewall Settings screen.
4. Check the **Enable Firewall** checkbox to enable the firewall on the network.
5. Click **Apply** at the bottom of the screen.
6. Click **WAN Ping Blocking** in the side menu to display the WAN Ping Blocking screen.
7. Check the **Block ICMP Ping Enable** checkbox to protect against PoD attacks.
8. Click **Apply** at the bottom of the screen.

Firewall – Configuring a Virtual Server (Port Forwarding)

The port forwarding function forwards inbound traffic from the Internet to a specified single device on the network. Examples include allowing access to a web server on the

network, peer-to-peer file sharing, applications that allow remote access to the computer, some gaming and videoconferencing applications, and others.

If you have a server in the network that you want to make available to the general Internet, you can configure a virtual server. The firewall passes requests from the Internet to the designated computer on the network. This function works by allowing you to route external (Internet) calls for services such as a web server (port 80), FTP server (Port 21), or other applications through the Wireless Router to the internal network.

Perform the following steps to configure a virtual server.

1. Access and log into the configuration interface.
2. Click the **Firewall** tab.
3. Click **Virtual Servers** in the side menu to display the Virtual Server Configuration screen.
4. Select the type of server that you want to add from the **Service List** drop-down box.
5. Click **Add** to add that virtual server.
6. If necessary, adjust the following parameters for the server that you are adding.

   Enable – Enable this virtual server

   Description – Enter a name for the virtual server.

   Inbound Port – Enter the inbound port range for the virtual server. It should be the same range as the local port.

   Type – Sets the format for the port. Options are TCP, UDP, or BOTH.

   Private IP Address – Enter the IP address of the machine on the LAN that you want the connections to go to.

   Private Port – Enter the private port range for the virtual server. It should be the same range as the inbound port.
7. Click **Apply** to save your settings.

Note: To delete a virtual server, first select a virtual server in the list and then click **Delete**.

Firewall – Configuring DMZ for Gaming or Conferencing Applications

The DMZ feature allows you to specify one computer on the network to be placed outside of the NAT firewall. This may be necessary if the NAT feature is causing problems with an application such as a game or video conferencing application.

Use this feature only on a temporary basis. The computer in the DMZ is not protected from hacker attacks.

Perform the following steps to put a computer in the DMZ.

1. Access and log into the configuration interface.
2. Click the **Firewall** tab.

3. Click **DMZ** in the side menu to display the DMZ Settings screen.
4. Enter the following parameters.

   Enable – Click this checkbox to enable DMZ on the network.

   Static IP – Displays the static IP address.

   Private IP – Enter the IP address of the computer to be placed in the DMZ. Be sure that the address is not in the range of addresses delivered by the DHCP server if enabled. After placing the computer in the DMZ, all ports on the computer are open to the Internet and not protected.
5. Click **Apply** at the bottom of the screen.

Note: To remove the computer from the DMZ, delete the entries and uncheck the **Enable DMZ** checkbox.

Utilities – Viewing Network System Information

You can view status and system information for the network on the System Information screen.

Perform the following steps to view system status information.

1. Access and log into the configuration interface.
2. Click the **Utilities** tab.
3. Click **System Information** in the side menu to display the System Information screen.

Note: Refer to System Information (page 51) for an explanation of the various status information parameters.

Utilities – Restarting the Wireless Router

It may be necessary to restart (reboot) the Wireless Router if it begins working improperly. Restarting the Wireless Router will not delete any of the configuration settings.

Perform the following steps to restart the Wireless Router.

1. Access and log into the configuration interface.
2. Click the **Utilities** tab.
3. Click **Restart Router** in the side menu to display the Restart Router screen.
4. Click the **Restart Router** button to restart the Wireless Router.

Utilities – Reverting to Factory Default Settings

This function restores all of the Wireless Router's configuration settings to the factory default setting. Perform the following steps to revert to factory default settings.

1. Access and log into the configuration interface.
2. Click the **Utilities** tab.
3. Click **Factory Default** in the side menu to display the Factory Defaults screen.
4. Click the **Factory Defaults** button to reset the Wireless Router to factory default settings.

Utilities – Viewing the System Logs

The System Logs screen displays the system logs.

Perform the following steps to configure the system logs.

1. Access and log into the configuration interface.
2. Click the **Utilities** tab.
3. Click **System Log** in the side menu to display the System Logs.

When viewing the logs, click **Refresh** to update the list.

Utilities – DDNS

DDNS (Dynamic DNS) allows you to provide Internet users with a fixed domain name (instead of an IP address which may periodically change). This allows various locations on the Internet to access the gateway and the applications that are set up in the gateway's virtual servers without knowing your current IP address.

Requirements

In order to use DDNS you must first create an account with a DDNS provider. The DDNS provider maps your chosen domain name to your IP address.

Once the account is established, perform the following steps to enable DDNS.

1. Access and log into the configuration interface.
2. Click the **Utilities** tab.
3. Click **DDNS** in the side menu to display the DDNS configuration screen.
4. Click the **DDNS Enable** checkbox.

Note: Refer to DDNS (page 55) for specific instructions on setting the various DDNS configuration parameters.

5. After setting the necessary configuration parameters, click **Apply** at the bottom of the screen.

Wireless Router Configuration Screen Descriptions

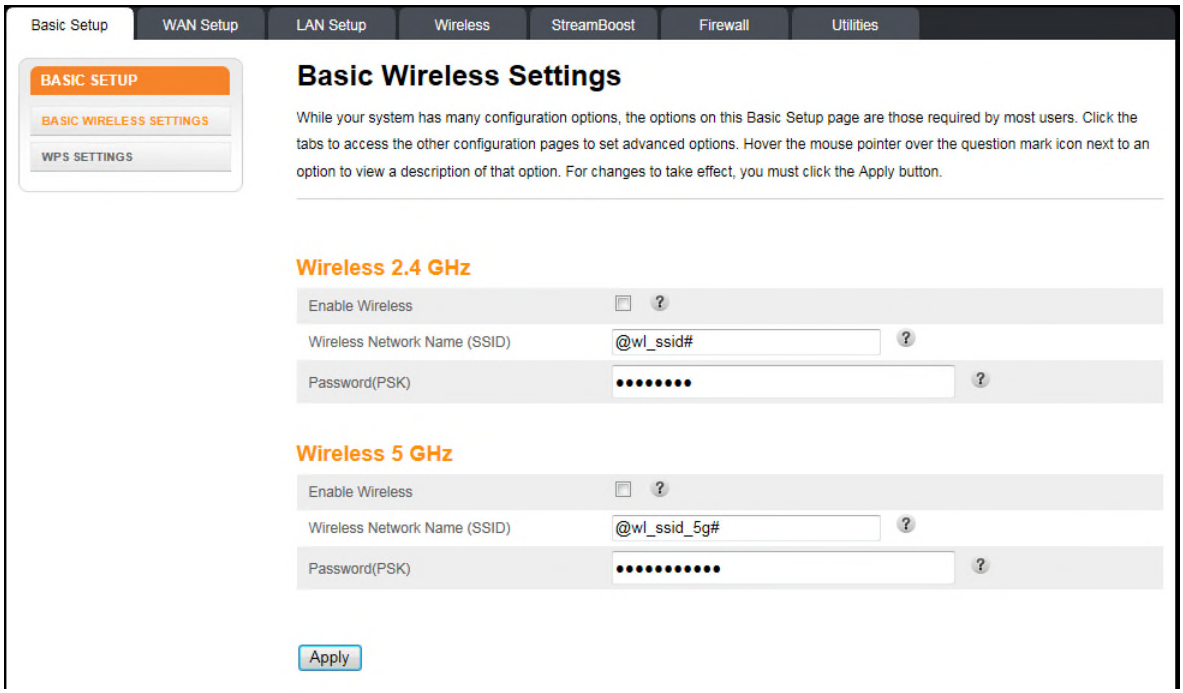
This section provides an overview of the ARRIS graphical user interface (GUI) Wireless Router setup screens.

Each of the following tabs in the GUI and their individual sub-menus and configuration parameters are explained in detail:

- Basic Setup
- WAN Setup
- LAN Setup
- Wireless
- StreamBoost
- Firewall
- Utilities

Basic Setup

Basic Wireless Settings



While the system has many configuration options, the options on this Basic Setup page are those required by most users. Click the tabs to access the other configuration pages to set advanced options. Hover the mouse pointer over the question mark icon next to an option to view a description of that option. For changes to take effect, you must click **Apply**.

Wireless 2.4 GHz/Wireless 5 GHz:

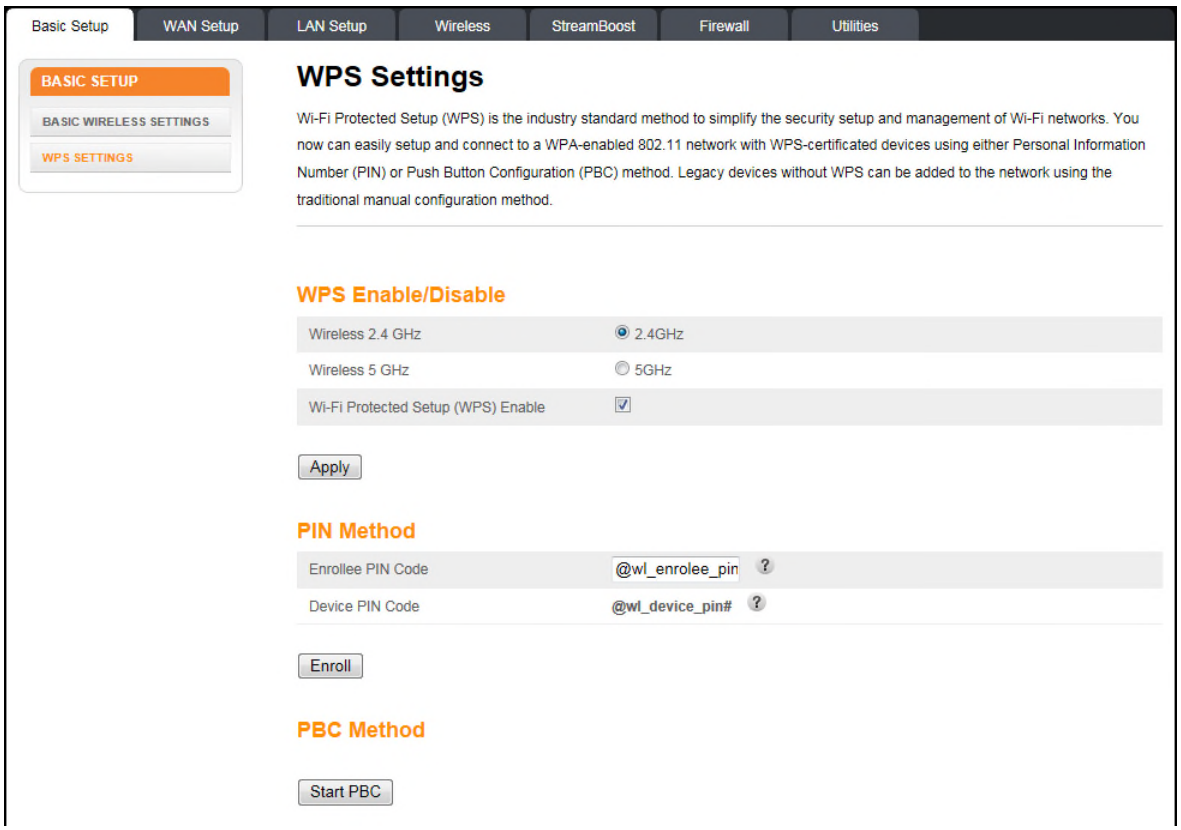
Enable Wireless – Click this checkbox to enable the wireless network on the system.

Wireless Network Name (SSID)– Enter a user friendly name to identify the wireless network. This name is also referred to as the Service Set Identifier (SSID). The name can be up to 32 characters long.

Password – Sets the Wi-Fi password. Use a password that will not be easy to guess. Passwords are case-sensitive. Valid characters are the numbers 0 to 9, the letters a through z and A through Z, and printable special characters (such as $, !, ?, &, #, @, and others). You must click **Apply** to save the new password.

Note: You must be logged into the configuration interface via a direct wired Ethernet connection to change the password.

WPS Settings



Wi-Fi Protected Setup (WPS) is the industry standard method to simplify the security setup and management of Wi-Fi networks. You can now easily set up and connect to a WPA-enabled 802.11 network with WPS-certified devices using either a Personal Information Number (PIN) or the Push Button Configuration (PBC) method. Legacy devices without WPS can be added to the network using the traditional manual configuration method.

WPS Enable/Disable:

Wireless 2.4 GHz/Wireless 5 GHz – Click the frequency for which you want to enable WPS.

WPS Enable – Click this checkbox to enable WPS on the system. WPS is a standard method for easily configuring a secure connection between the Wireless Router and computers or other wireless devices (known as enrollees) that support WPS. When WPS is enabled, you can attach other wireless devices by pressing the WPS buttons on the device (if equipped) and on the Wireless Router, or by entering the enrollee's PIN and then clicking the **Start WPS Association** icon.

PIN Method:

Enrollee PIN Code – If the client device has a WPS PIN number, enter it here, then click **Enroll**.

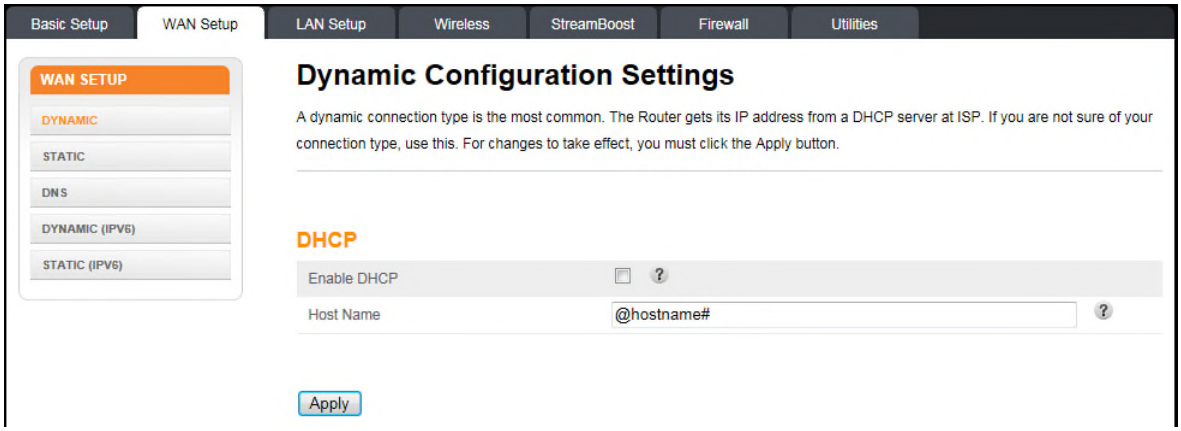
Device PIN Code – Enter this code on the computer if requested during connection.

PBC Method:

Start PBC – Click to start the PBC connection process.

WAN Setup

Dynamic



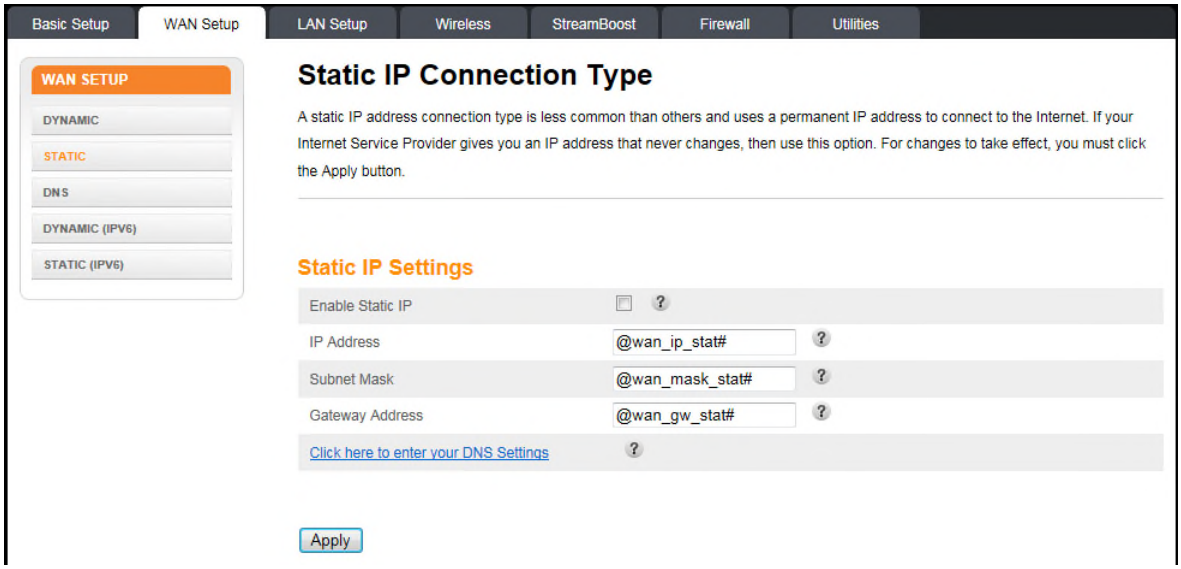
A dynamic connection type is the most common type of connection. The Wireless Router gets its IP address from a DHCP server at the service provider. If you are not sure of the connection type, use this type. For changes to take effect, you must click **Apply**.

DHCP:

Enable DHCP – Click this checkbox to enable a DHCP connection for the system.

Host name – This field displays the host name of the Wireless Router.

Static



A static IP address connection type is less common than others and uses a permanent IP address to connect to the Internet. If your service provider gives you an IP address that never changes, then use this option. For changes to take effect, you must click **Apply**.

Static IP Settings:

Enable Static IP – Click this checkbox to enable a static IP address connection for the system.

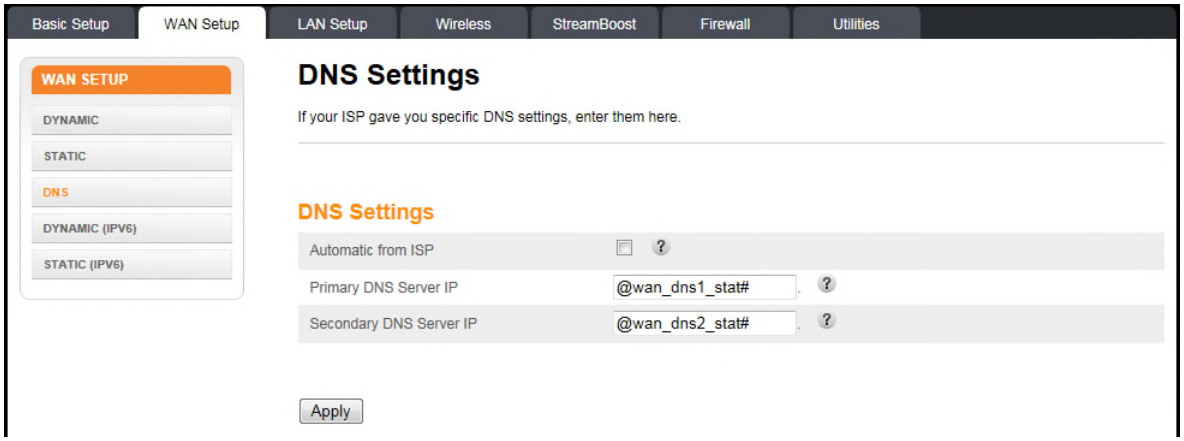
IP Address – Enter the IP address assigned by your service provider or static IP operation.

Subnet Mask – Enter the subnet mask assigned for the device by your service provider or static IP operation.

Gateway Address – Enter the gateway address assigned for the device by your service provider or static IP operation.

Click here to enter your DNS Settings – If your service provider gave you specific DNS settings, click here to go to the DNS Settings screen to enter those settings.

DNS



If your service provider gave you specific DNS settings, use this screen to enter them.

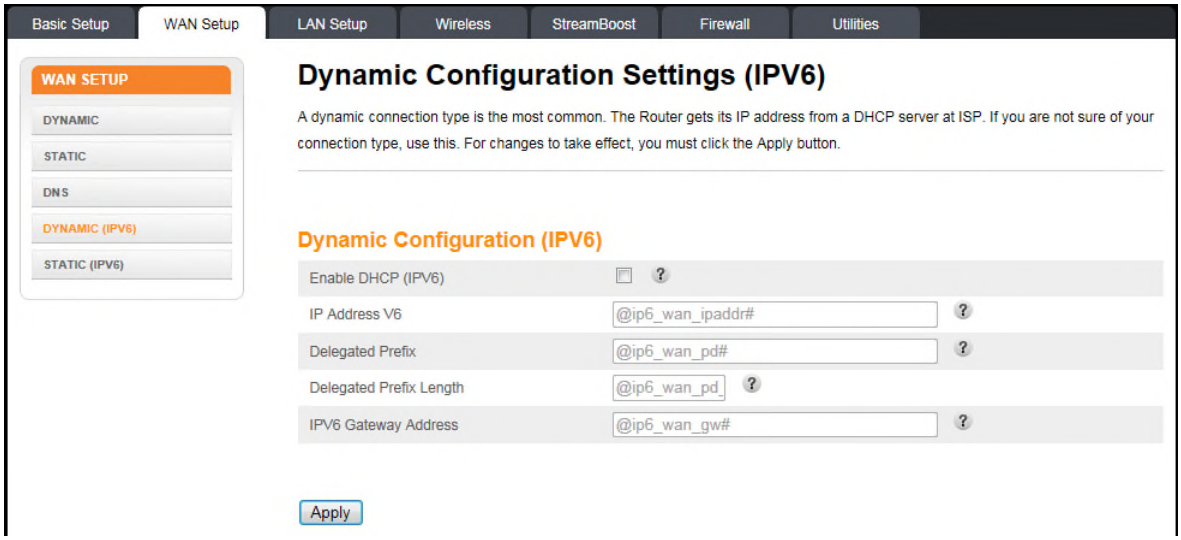
DNS Settings

Automatic from ISP – Click this checkbox if the Wireless Router should automatically get its DNS settings from your service provider.

Primary DNS Server IP – Enter the IP address of the primary DNS server.

Secondary DNS Server IP – Enter the IP address of the secondary DNS server.

Dynamic (IPV6)



This screen enables a DHCPv6 configured IPV6 stack. A dynamic connection type is the most common type of connection.

The Wireless Router gets its IP address from a DHCP server at your service provider. If you are not sure of the connection type, use this type. For changes to take effect, you must click **Apply**.

Dynamic Configuration (IPV6):

Enable DHCP (IPV6) – Click this checkbox to enable a DHCP (IPV6) connection for the system.

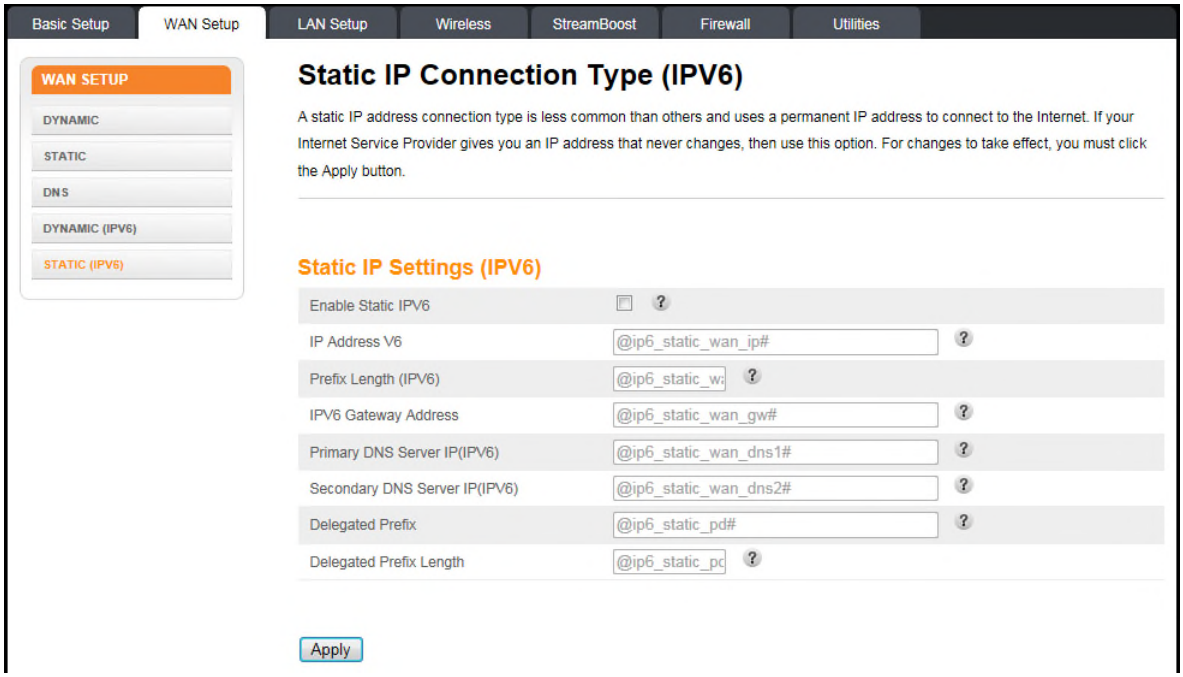
IP Address V6 – This field displays the IPV6 address automatically assigned by the service provider. An IPV6 address has eight groups of four hexadecimal digits (0-9, a-f). The groups are separated by colons (:) e.g. 2001:0db8:85a3:0000:0000:8a2e:0370:7334. A double colon (::) is shorthand for an address of all zeros.

Delegated Prefix – This field displays the assigned IPV6 prefix to be used by addresses allocated in the local network.

Delegated Prefix Length – This field displays the assigned IPV6 prefix length.

IPV6 Gateway Address – This field displays the gateway address.

Static (IPV6)



This screen enables a statically configured IPV6 stack. A static IP address connection type is less common than others and uses a permanent IP address to connect to the Internet. If your service provider gives you an IP address that never changes, then use this option. For changes to take effect, you must click **Apply**.

Static IP Settings (IPV6):

Enable Static IPV6 - Click this checkbox to enable a static IPV6 address connection for the system.

IP Address V6– Enter the IPV6 address assigned by your service provider or static IP operation. An IPV6 address has eight groups of four hexadecimal digits (0-9, a-f). The groups are separated by colons (:) e.g. 2001:0db8:85a3:0000:0000:8a2e:0370:7334. A double colon (::) is shorthand for an address of all zeros.

Prefix Length (IPV6) – The length of the network portion of this address.

IPV6 Gateway Address – Enter the gateway address assigned for the device by your service provider or static IP operation.

Primary DNS Server (IPV6) – Enter the IPV6 address of the primary DNS server. Your service provider will provide this information.

Secondary DNS Server (IPV6) – Enter the IPV6 address of the secondary DNS server. Your service provider will provide this information.

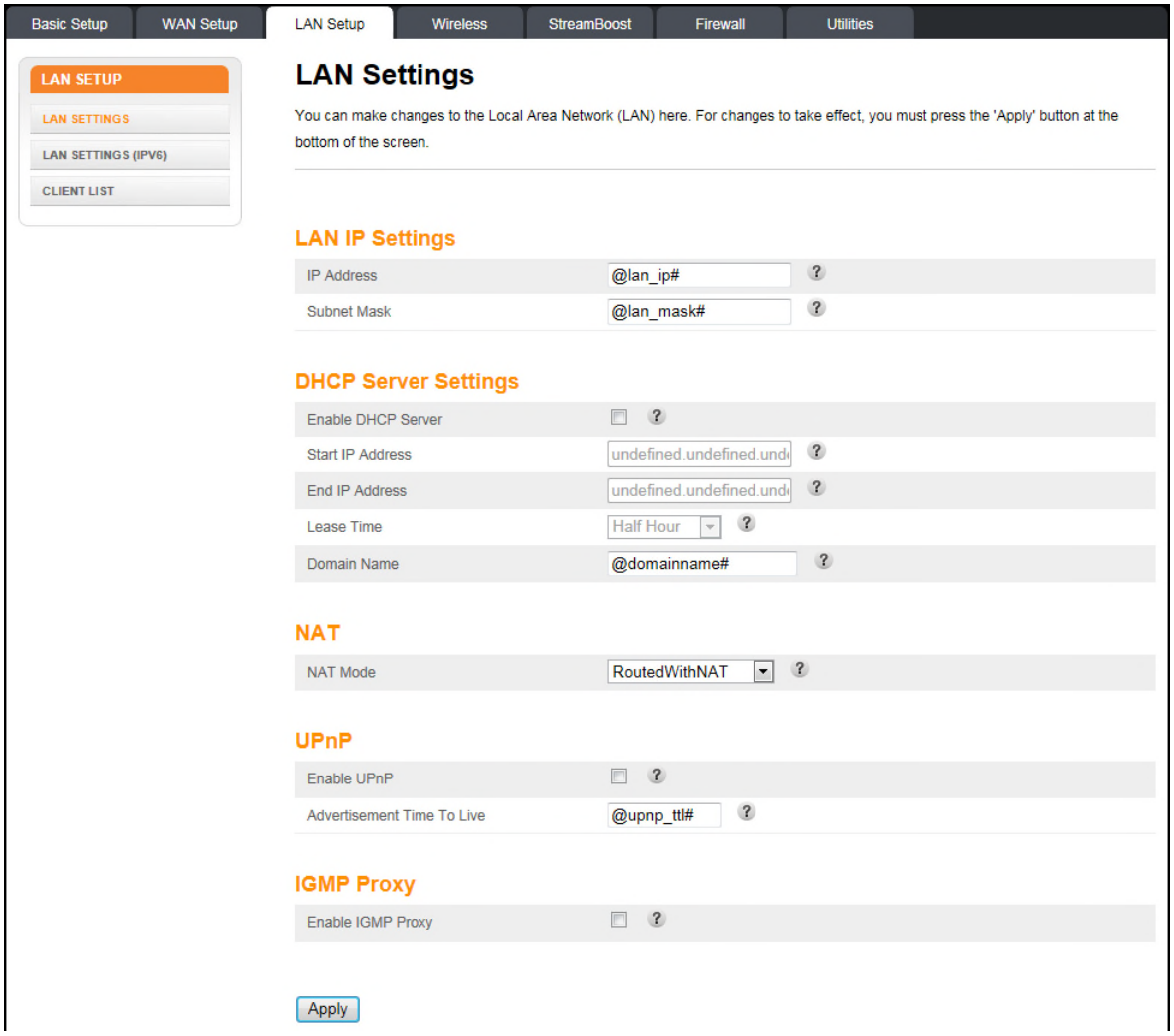
Domain Name – The entry here will be displayed as the domain name on the client devices. It can be specified by your service provider or by you.

Delegated Prefix – The network portion of the IPV6 addresses to be allocated to local clients.

Delegated Prefix Length – The length of the network portion of the IPV6 addresses to be allocated to local clients.

LAN Setup

LAN Settings



You can make changes to the Local Area Network (LAN) configuration here. For changes to take effect, you must click **Apply**.

Note: You can optionally set up the system so that there is more than one LAN in the network. This is most useful for commercial applications, not home use. All of the "LAN Setup" and "Wireless Setup" configuration parameters can be set independently for each individual LAN.

LAN IP Settings:

IP Address – This field displays the IP address of the LAN.

Subnet Mask – This field displays the subnet mask of the LAN.

DHCP Server Settings:

Enable DHCP Server – Click this checkbox to enable the use of a Dynamic Host Configuration Protocol (DHCP) Server on the network.

DHCP is a set of rules used by devices such as a computer, router, or network adapter to allow the device to request and obtain an IP address from a server which maintains a list of addresses available for use.

The DHCP server ensures that all IP addresses are unique, e.g., no IP address is assigned to a second device while the first device's assignment is valid (its lease has not expired).

Without DHCP, the IP addresses must be entered manually at each computer in an organization, and a new IP address must be entered each time a computer moves to a new location on the network.

Start IP Address/End IP Address – Enter the range of IP addresses that the DHCP Server will be allowed to assign to a network device.

Lease Time – Enter the lease time in seconds before the assigned IP address will expire. (After the lease time is up, the user is automatically assigned a new dynamic IP address.)

A "lease" is the amount of time that a given IP address will be valid for a computer or other network device. The lease time can vary depending on how long a user is likely to require the Internet connection at a particular location. Using very short leases, DHCP can dynamically reconfigure networks where there are more computers than available IP addresses, such as educational environments.

Domain Name – This field displays the domain name.

NAT:

NAT Mode – Select the NAT Mode.

- Routed with NAT - Data will be routed by the device and all the outgoing packets will be NATed.
- Routed without NAT - Data will be routed by the device but all the outgoing packets will not be NATed.
- Bridged - Data will pass through the device directly without any routing.

UPnP:

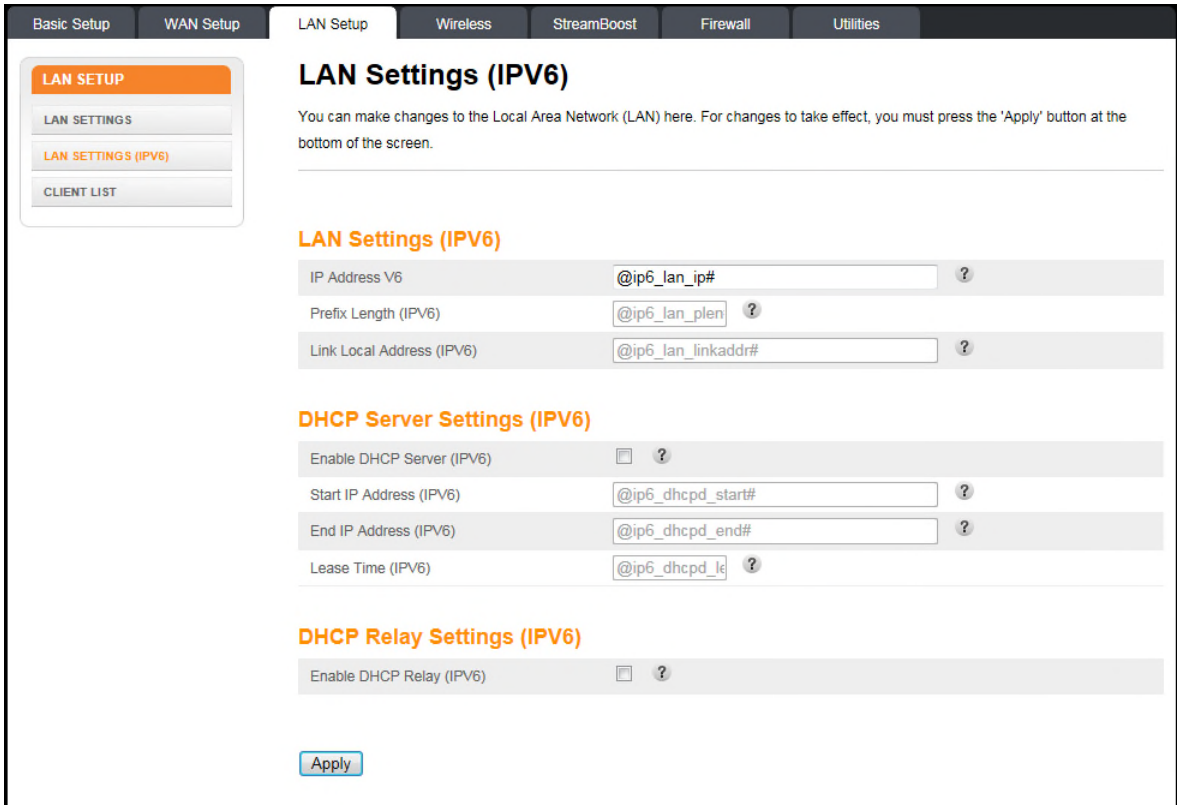
Enable UPnP – Click this checkbox to enable UPnP (Universal Plug and Play) on the system.

Advertisement Time To Live – Enter the maximum number of hops that each UPnP packet can be sent before it is disregarded. The default value is 4, which should be acceptable for most home networks.

IGMP Proxy:

Enable IGMP Proxy – Click this checkbox to enable the IGMP (Internet Group Management Protocol) proxy on the system.

LAN Settings (IPV6)



This screen configures LAN side support for IPV6. You can make changes to the Local Area Network (LAN) configuration here. For changes to take effect, you must click **Apply**.

Note: You can optionally set up the system so that there is more than one LAN in the network. This is most useful for commercial applications not home use. All of the "LAN Setup" and "Wireless Setup" configuration parameters can be set independently for each individual LAN.

LAN Settings (IPV6):

IP Address (IPV6) – This field displays the IPV6 address of the LAN. An IPV6 address has eight groups of four hexadecimal digits (0-9, a-f). The groups are separated by colons (:) e.g. 2001:0db8:85a3:0000:0000:8a2e:0370:7334. A double colon (::) is shorthand for an address of all zeros.

Prefix Length V6 – Length of the network portion of the IPV6 address.

Link Local Address (IPV6) – IPV6 address that can be used only on this network.

DHCP Server Settings (IPV6):

Enable DHCP Server (IPV6) – Click this checkbox to enable the use of a V6 Dynamic Host Configuration Protocol (DHCP) Server on the network.

DHCP is a set of rules used by devices such as a computer, router, or network adapter to allow the device to request and obtain an IP address from a server which maintains a list of addresses available for use.

The DHCP server ensures that all IP addresses are unique, e.g., no IP address is assigned to a second device while the first device's assignment is valid (its lease has not expired).

Without DHCP, the IP addresses must be entered manually at each computer in an organization, and a new IP address must be entered each time a computer moves to a new location on the network.

Start IP Address (IPV6)/End IP Address (IPV6) – Enter the range of IPV6 addresses that the DHCP Server will be allowed to assign to a network device.

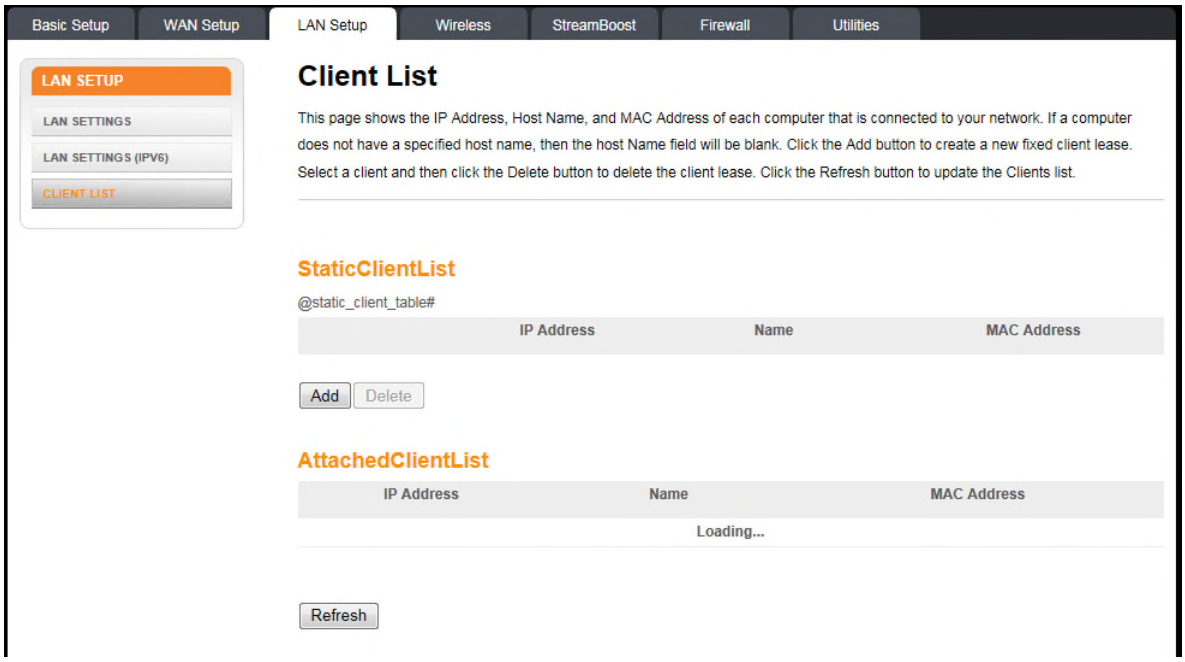
Lease Time V6 – Enter the lease time in seconds before the assigned IPV6 address will expire. (After the lease time is up, the user is automatically assigned a new dynamic IP address.)

A "lease" is the amount of time that a given IP address will be valid for a computer or other network device. The lease time can vary depending on how long a user is likely to require the Internet connection at a particular location. Using very short leases, DHCP can dynamically reconfigure networks where there are more computers than available IP addresses, such as educational environments.

DHCP Relay Settings (IPV6):

Enable DHCP Relay (IPV6) – Click this checkbox to enable DHCP Relay functionality on the system.

Client List



This page shows the host name, IP address, and MAC address of each computer that is connected to the network. If a computer does not have a specified host name, then the host name field will be blank.

Note: You can optionally set up the system so that there is more than one LAN in the network. This is most useful for commercial applications not home use. All of the "LAN Setup" and "Wireless Setup" configuration parameters can be set independently for each individual LAN.

Static Client List:

Click **Add** to create a new fixed client lease.

IP Address – Enter the client's IP address.

Name – Enter a name for the client.

MAC Address – Enter the client's MAC address.

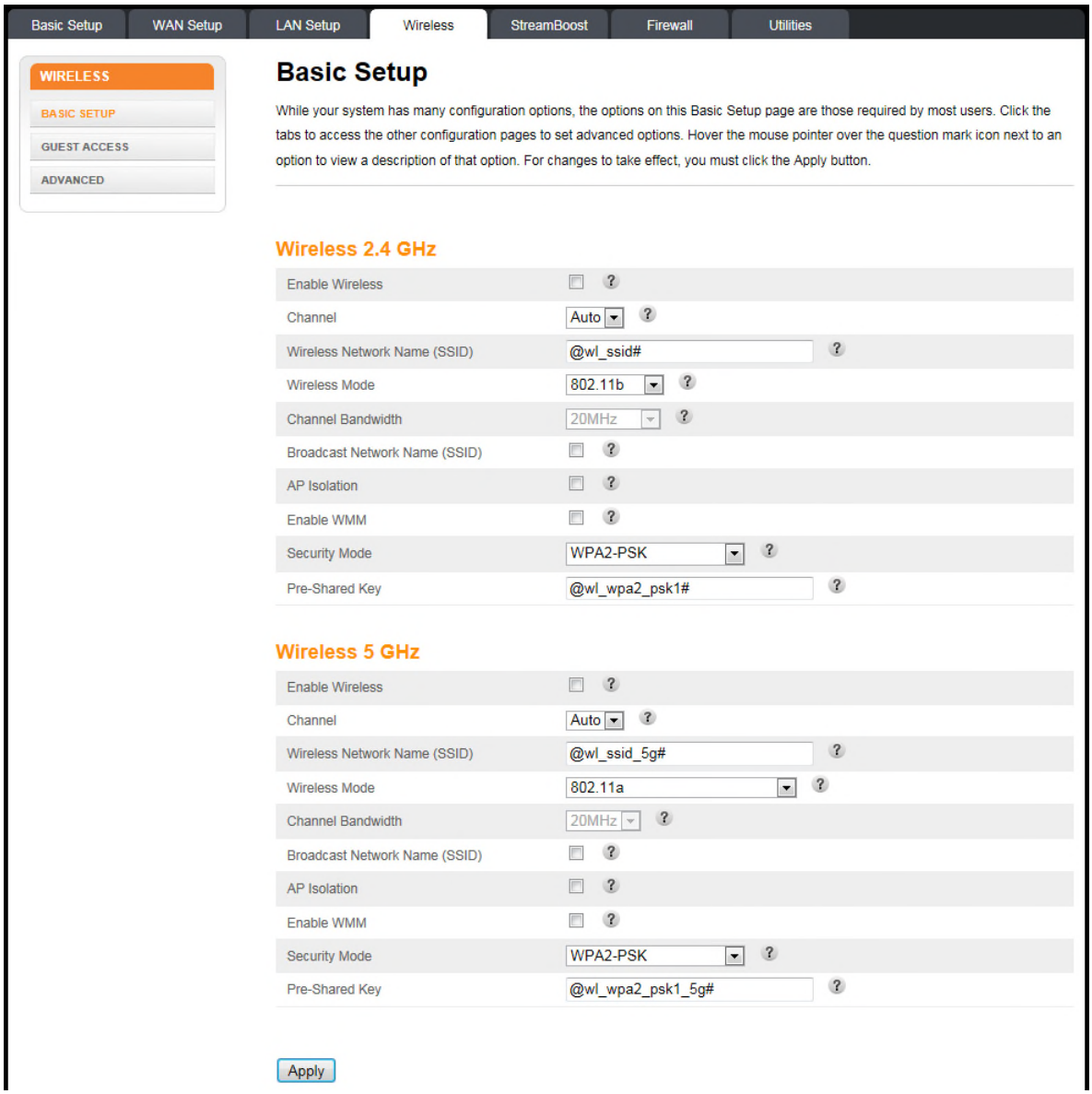
Select a client and then click **Delete** to delete the client lease.

Attached Client List:

Click **Refresh** to update the client list.

Wireless

Basic Setup



While the system has many configuration options, the options on this Basic Setup page are those required by most users. Click the tabs to access the other configuration pages to set

advanced options. Hover the mouse pointer over the question mark icon next to an option to view a description of that option. For changes to take effect, you must click **Apply**.

Note: You can optionally set up the system so that there is more than one LAN in the network. This is most useful for commercial applications not home use. All of the "LAN Setup" and "Wireless Setup" configuration parameters can be set independently for each individual LAN.

Wireless 2.4 GHz/Wireless 5 GHz:

Enable Wireless – Click this checkbox to enable the wireless network on the system.

Channel – Sets a communications channel for the Wireless Router. The default setting is "Auto", in which the Wireless Router selects a channel with the least amount of interference to use. For 2.4 GHz, if you manually select a channel, it's best to choose channel 1, 6, or 11, since these channels do not overlap. If another unit is operating in the area, choose a channel that is farthest away from the channel that unit uses. For example, if one is using channel 11, set yours to channel 1. For 5 GHz choose a channel that is farthest away from the channel used by any other unit operating in the area. If you experience interference or poor performance on a particular channel, try a different channel.

Wireless Network Name (SSID) – Enter a user friendly name to identify the wireless network. This name is also referred to as the Service Set Identifier (SSID). The name can be up to 32 characters long.

Wireless Mode – Sets the wireless mode. 2.4 GHz Options are: B/G mixed, B only, G only, and G/N mixed. 5 GHz Options are: A only, A/N mixed, and A/N/AC mixed. Select the proper mode to support all of the wireless devices that will connect to the Wireless Router. (802.11b supports bandwidth up to 11 Mb/s. 802.11g supports bandwidth up to 54 Mb/s. 802.11n supports bandwidth up to 300 Mb/s. 802.11ac support bandwitdh up to 1.3Gb/s.)

Channel Bandwidth – Sets the 802.11n Channel Bandwidth. Options are 20 MHz, 40MHz, 20/40 MHz, or 80MHz (5 GHz only). The default setting is 20/40 MHz.

Broadcast Network Name (SSID) – Click this checkbox to allow the SSID to be broadcast by the Wireless Router. If enabled, the SSID could be obtained allowing unauthorized access to the network. If you would like others not to see the access point, uncheck the checkbox to hide the SSID.

AP Isolation – Click this checkbox to enable AP isolation. When enabled each of the wireless clients will be in its own virtual network and will not be able to communicate with one another. This may be useful if you have many guests using the network.

Enable WMM – Click this checkbox to enable Wi-Fi Multimedia (WMM) functionality. Enabling WMM can help control latency and jitter when transmitting multimedia content over a wireless connection. Disabling WMM will reduce wireless performance in 802.11n mode.

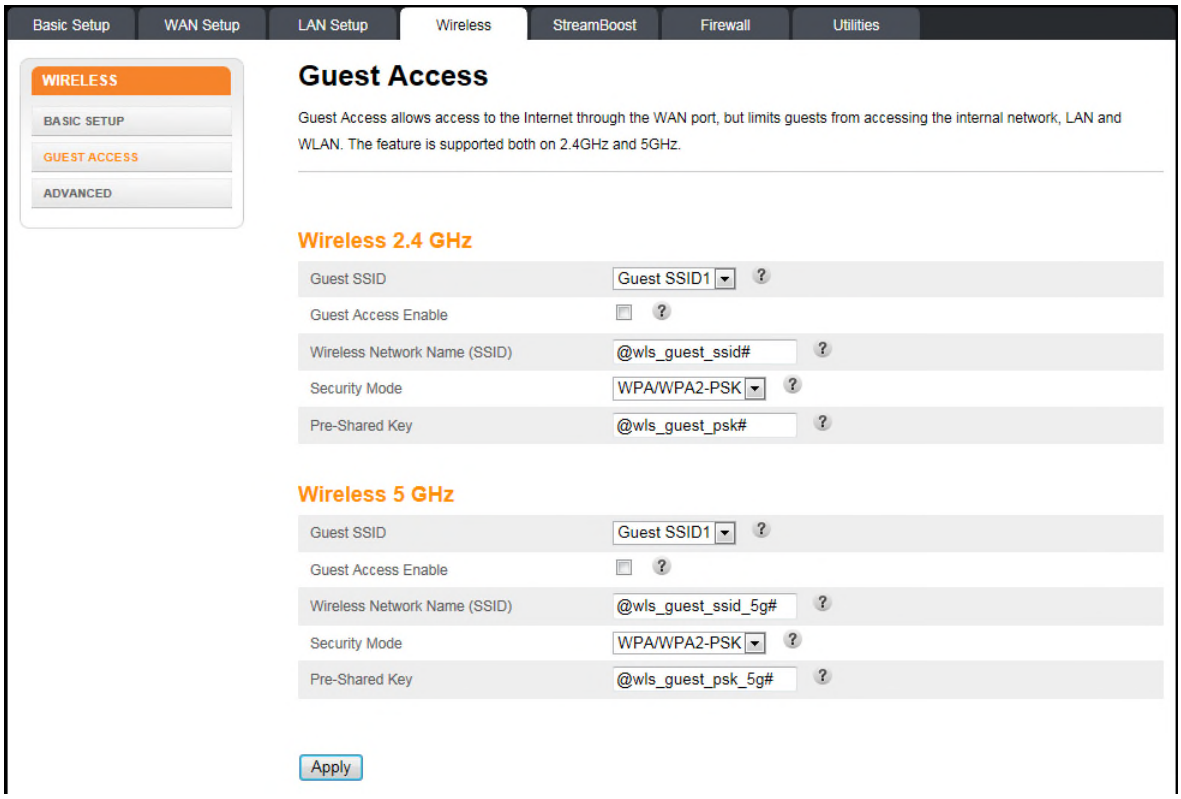
This quality of service mechanism uses four access categories, which in order of priority are: voice, video, best effort, and background. This ensures that applications with low tolerance for latency and jitter are treated with higher priority than less-sensitive data applications. WMM sets different wait times for the four categories in order to provide priority network access for applications that are less tolerant of packet delays.

Security Mode – Sets the security mode for the Wireless Router. Can be set to WPA/WPA2-PSK (Wi-Fi Protected Access/ Wi-Fi Protected Access 2 – Pre-Shared Key) (most compatible); WPA2-PSK (Wi-Fi Protected Access 2 – Pre-Shared Key)

(recommended); WPA2-Enterprise; or WPA/WPA2-Enterprise. 802.11n performance is only available in WPA2.

Pre-Shared Key - Sets the WPA Pre-Shared Key. This text string is used to generate a unique set of encryption keys for the network. Enter a text string in this field. The key can be either ASCII (text) or Hex (hexadecimal). An ASCII text key can be from 8 to 63 characters long. Valid characters are numbers "0" through "9" and letters "a" through "z", and printable special characters (such as $, !, ?, &, #, @, and others). A hexadecimal key must be 64 characters long. Valid characters are numbers "0" through "9" and letters "a" through "f".

Guest Access



Guest access allows access to the Internet through the WAN port, but it limits guests from accessing the internal network, LAN, and WLAN. The feature is supported both on 2.4 GHz and 5 GHz.

Wireless 2.4 GHz/Wireless 5 GHz:

Guest SSID – Enter the SSID that you would like to assign to the guest access network. You can configure up to three guest networks.

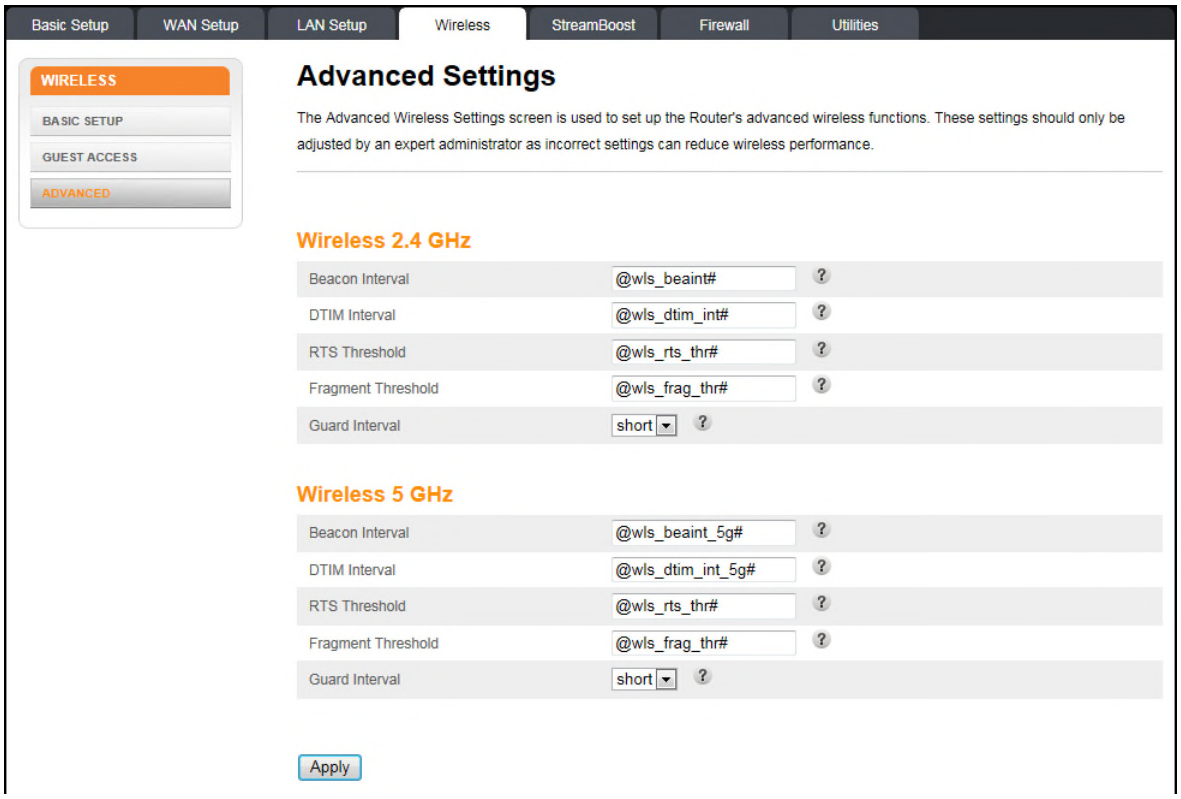
Guest Access Enable – Click this checkbox to enable guest access for the system.

Wireless Network Name (SSID) – Enter a user friendly name to identify the guest wireless network. This name is also referred to as the Service Set Identifier (SSID). The name can be up to 32 characters long.

Security mode – Sets the security mode for the Wireless Router. Available options are WPA/WPA2-PSK or Open.

Pre-Shared Key – Sets the WPA Pre-Shared Key. This text string is used to generate a unique set of encryption keys for the network. Enter a text string in this field. The key can be either ASCII (text) or Hex (Hexadecimal). An ASCII text key can be from 8 to 63 characters long. Valid characters are numbers '0' through '9' and letters 'a' through 'z' as well as most other characters. A hexadecimal key must be 64 characters long. Valid characters are numbers '0' through '9' and letters 'a' through 'f'.

Advanced



The Advanced Settings page is used to set up the Wireless Router's advanced wireless functions. These settings should only be adjusted by an expert administrator since incorrect settings can reduce wireless performance. For changes to take effect, you must click **Apply**.

Wireless 2.4 GHz/Wireless 5 GHz:

Beacon Interval – Sets the time interval between beacon transmissions in milliseconds. The Wireless Router uses these transmissions to synchronize the wireless network and its client devices. For compliance with most client devices, the Beacon Interval should remain set at the default of 100ms. The allowable setting range is from 20 to 1024ms.

DTIM Interval – Sets the DTIM (Delivery Traffic Indication Message) Interval. The DTIM Interval informs the wireless client devices of the next available window for listening to broadcast and multicast messages. When the Wireless Router sends a DTIM beacon, the client devices hear the beacon and then listen for the messages. For compliance with most client devices, the DTIM Interval should be left at 1 ms. The allowable setting range is from 1 to 255 ms.

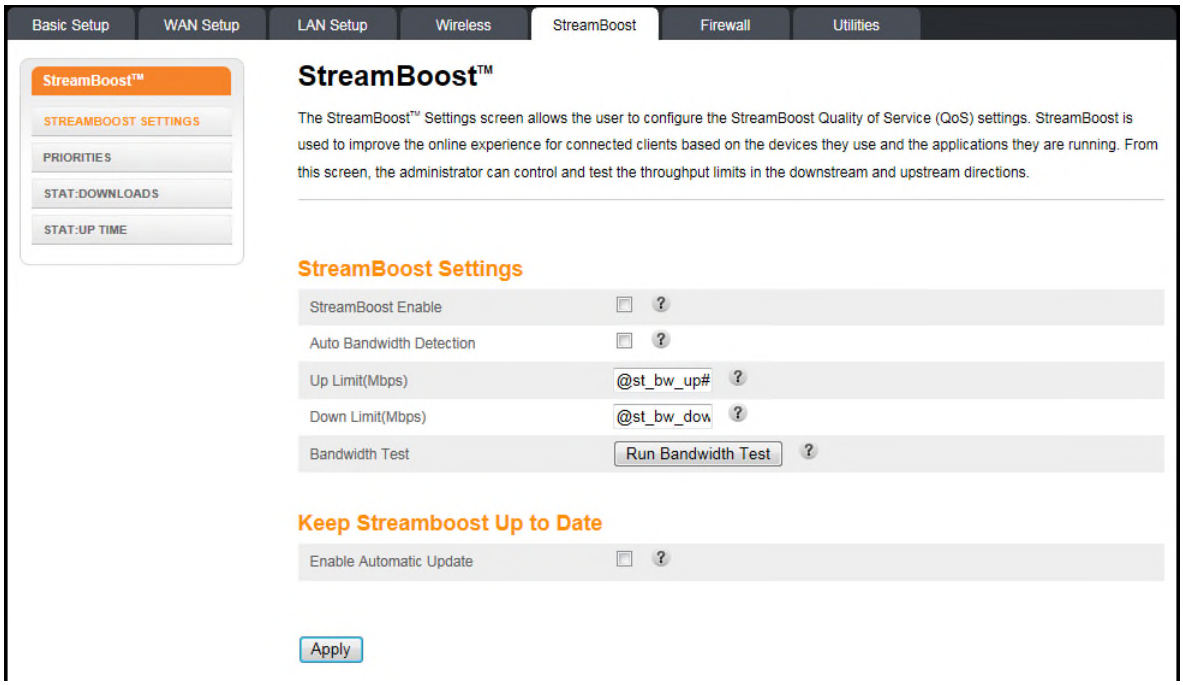
RTS Threshold – Sets the packet size limit. When the threshold is passed, the ready to send/clear to send (RTS/CTS) function is invoked. The default setting is 2347 bytes. The allowable setting range is from 1 to 2347 bytes.

Fragment Threshold – Sets the fragmentation threshold. This threshold should be set to equal the maximum Ethernet frame size allowable on the link including overhead. Setting a lower threshold can damage data throughput since large frames could be fragmented and/or collisions could occur. The default setting is 2346. The allowable setting range is from 256 to 2346 bytes.

Guard Interval – The spacing between transmission of symbols in nanoseconds. Can be set to short or long. Select short to provide higher throughput in networks where the coverage distance is small (indoors). Select long to provide higher throughput in networks where the coverage distance is large (outdoors).

StreamBoost

StreamBoost Settings



The StreamBoost Settings screen lets users configure the StreamBoost Quality of Service (QoS) settings. StreamBoost is used to improve the online experience for connected clients based on the devices they use and the applications they are running. From this screen, the administrator can control and test the throughput limits in the downstream and upstream directions.

StreamBoost Settings:

StreamBoost Enable – Click this checkbox to enable StreamBoost technology.

Auto Bandwidth Detection – Click this checkbox to enable Auto Bandwidth Detection.

Up Limit (Mbps) – Enter the amount of bandwidth (in megabits per second) that you want to reserve for upstream (outgoing) traffic.

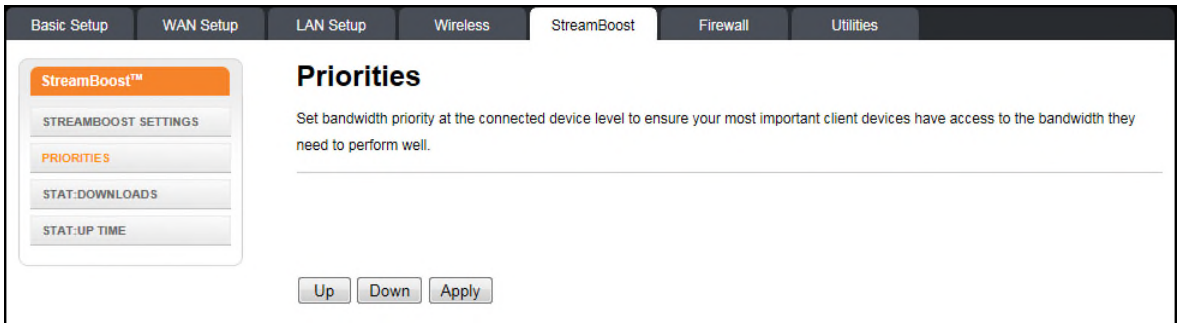
Down limit (Mbps) – Enter the amount of bandwidth (in megabits per second) that you want to reserve for downstream (incomng) traffic.

Bandwidth Test – Click this button to run the bandwidth test.

Keep StreamBoost Up to Date:

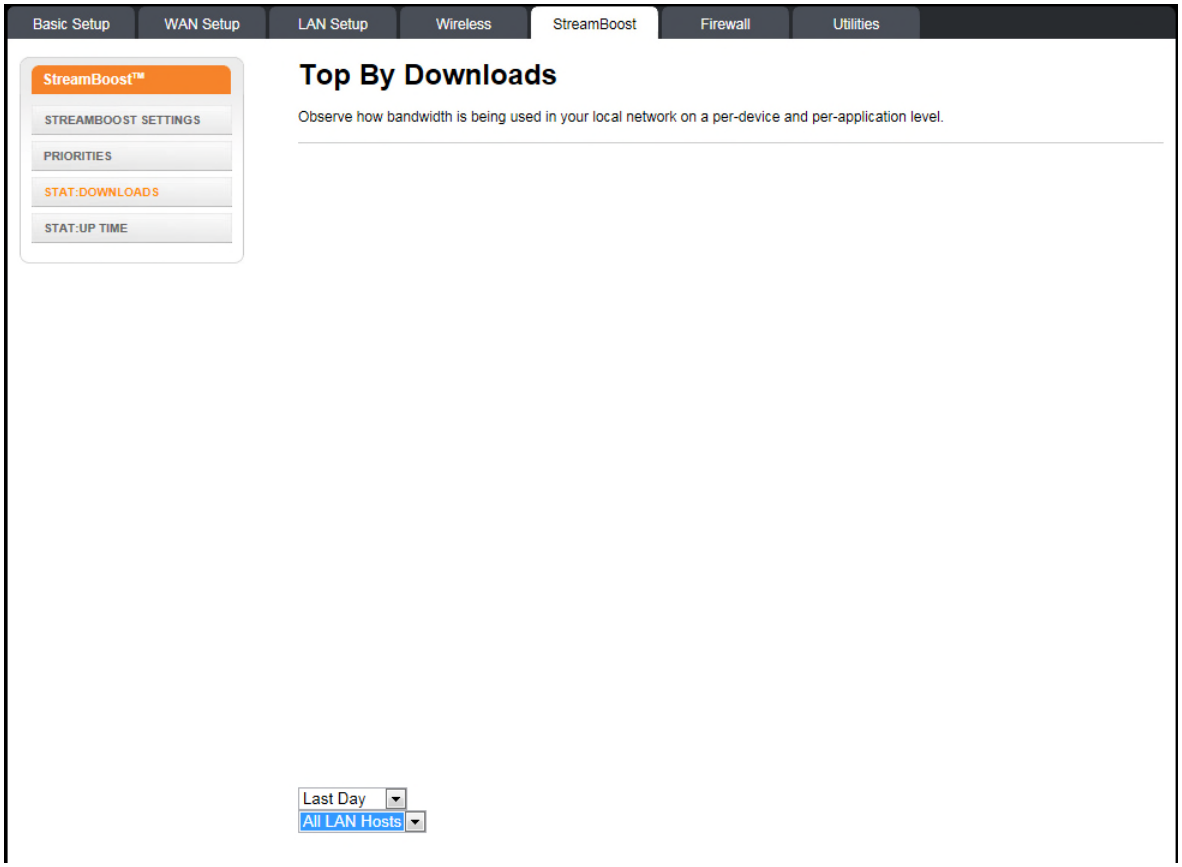
Enable Automatic Update – Click this checkbox to enable automatic StreamBoost updates during the initial 2-year manufacturer service term. The service term will begin on the date of manufacture and run for three years or until April 1st, 2017, whichever comes first. (After the 2-year period, the manufacturer may make further updates available via firmware updates.) StreamBoost updates may improve the Wireless Router's Internet traffic management capabilities through better traffic identification and bandwidth management techniques. In exchange, the Wireless Router will provide anonymous, performance-related information to the StreamBoost server for improved future StreamBoost service.

Priorities



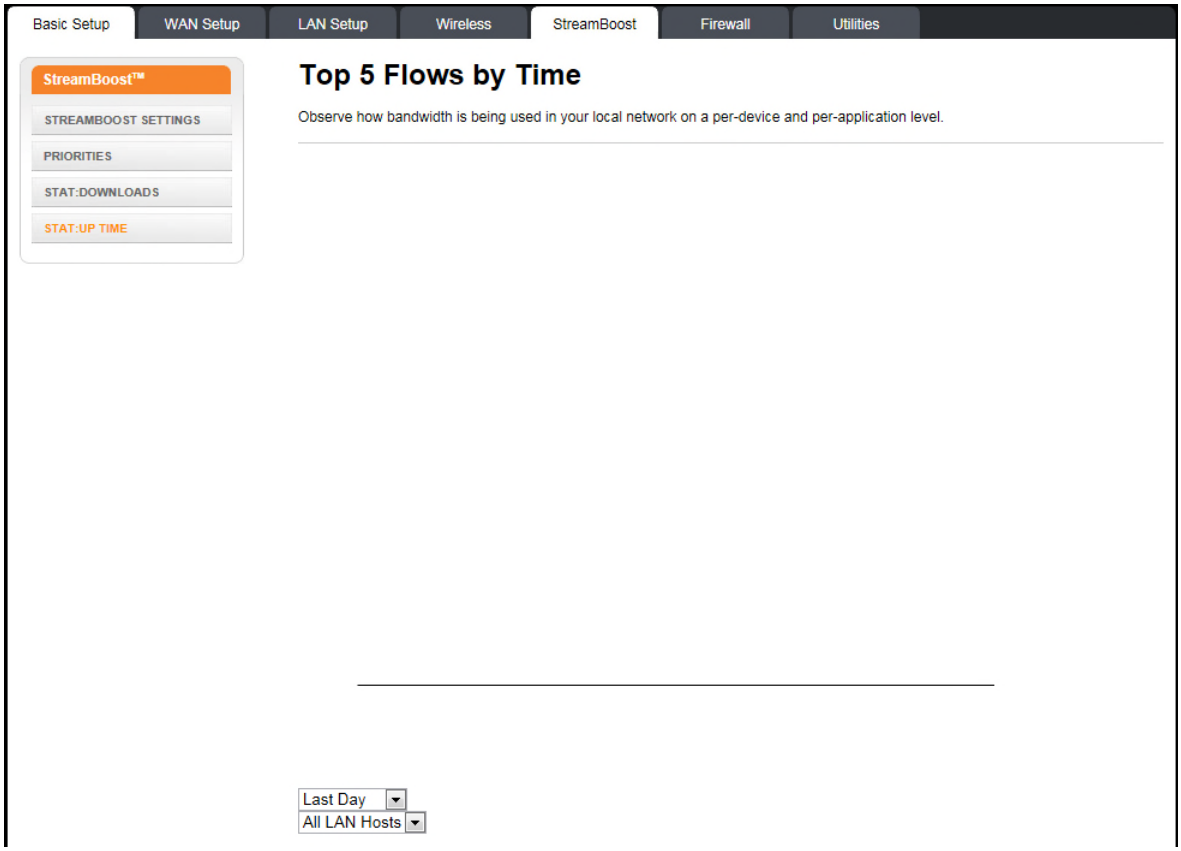
The Priorities screen lets you set bandwidth priority at the connected device level to ensure that the most important client devices have access to the bandwidth they need to perform well. Use the **Up** and **Down** buttons to change the priority of a device in the list. Click **Apply** to save your settings.

STAT: Downloads



The Top By Downloads screen shows how bandwidth is being used in the local network on a per-device and per-application level.

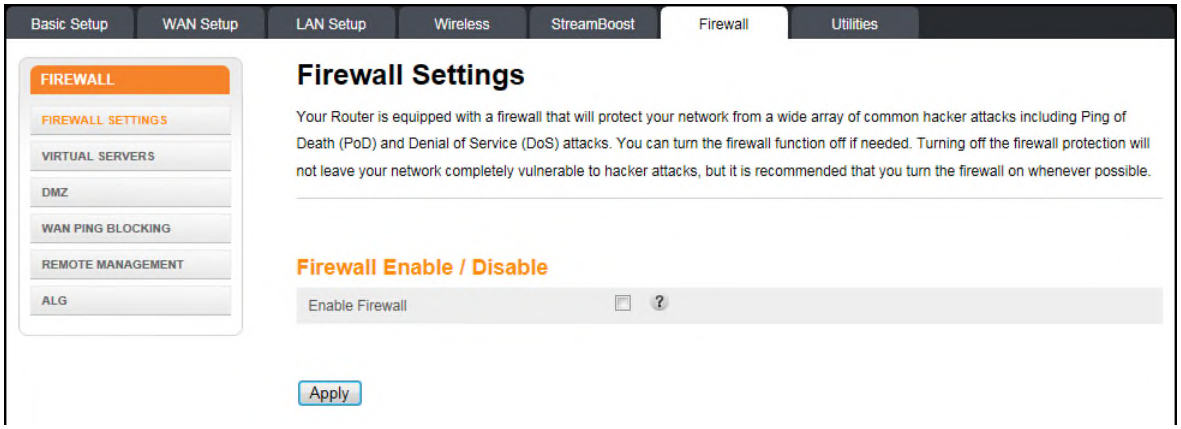
STAT: Up Time



The Top 5 Flows by Time screen shows how bandwidth is being used in the local network on a per-device and per-application level.

Firewall

Firewall Settings



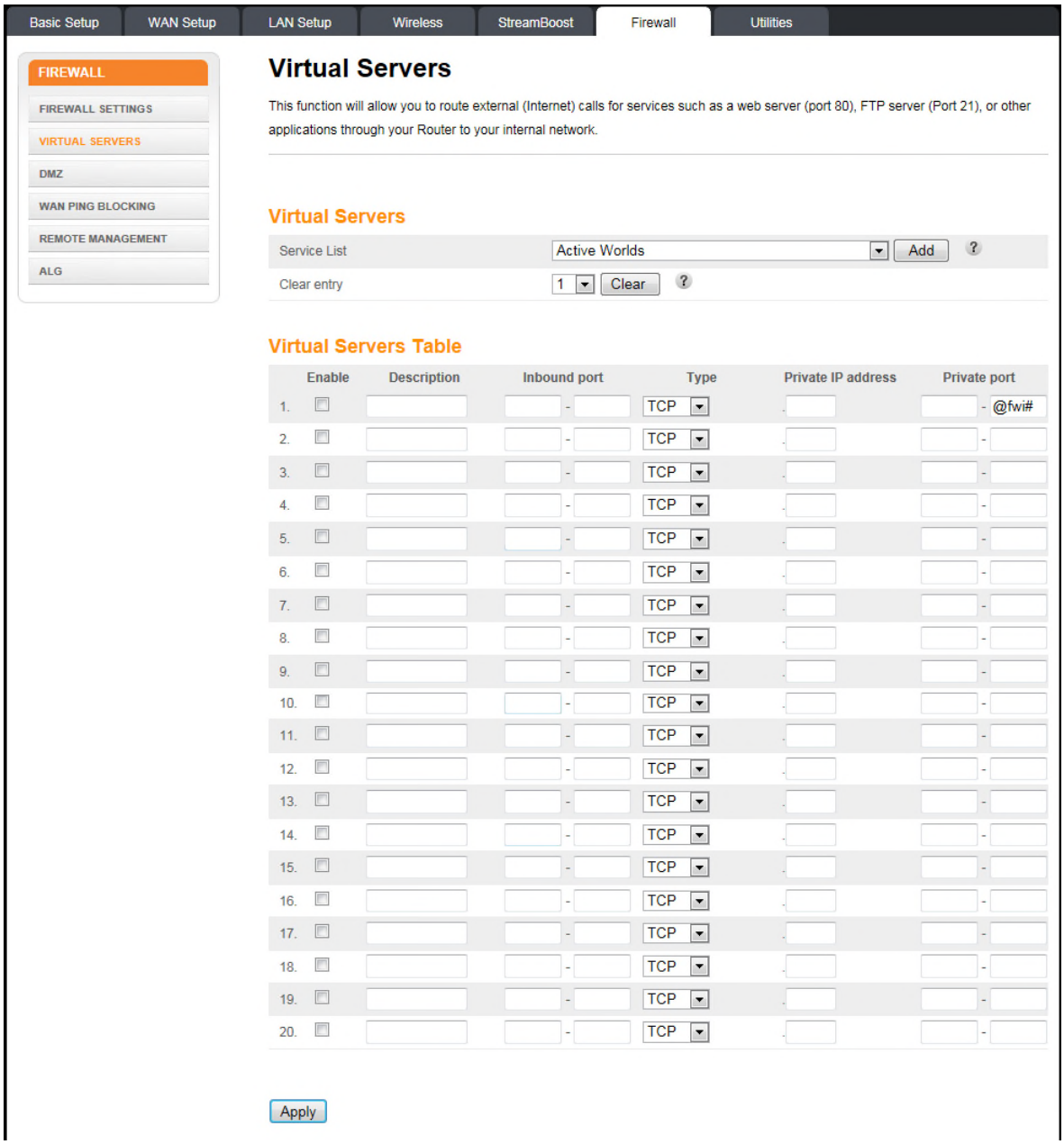
The Wireless Router is equipped with a firewall that will protect the network from a wide array of common hacker attacks, including Ping of Death (PoD) and Denial of Service (DoS) attacks. You can disable the firewall function if needed. Turning off the firewall protection will not leave the network completely vulnerable to hacker attacks, but it is

recommended that you enable the firewall whenever possible. For changes to take effect, you must click **Apply**.

Firewall Enable/Disable:

Enable Firewall – Click this checkbox to enable the firewall on the system.

Virtual Servers



The port forwarding function forwards inbound traffic from the Internet to a specified single device on the network. Examples include allowing access to a web server on the network, peer-to-peer file sharing, some gaming and videoconferencing applications, and others. This function allows you to route external (Internet) calls for services such as a web server (port 80), FTP server (Port 21), or other applications through the Wireless Router to the internal network.

Click **Add** to add a virtual server. Select a virtual server from the list and click **Delete** to delete a virtual server.

Virtual Servers:

Service List – Select the kind of service you would like to set up, and click **Add**.

Clear Entry – To clear an entry from the Virtual Servers Table, select the entry that you want to clear and click **Clear**.

Virtual Servers Table:

Description – Enter a name for the virtual server.

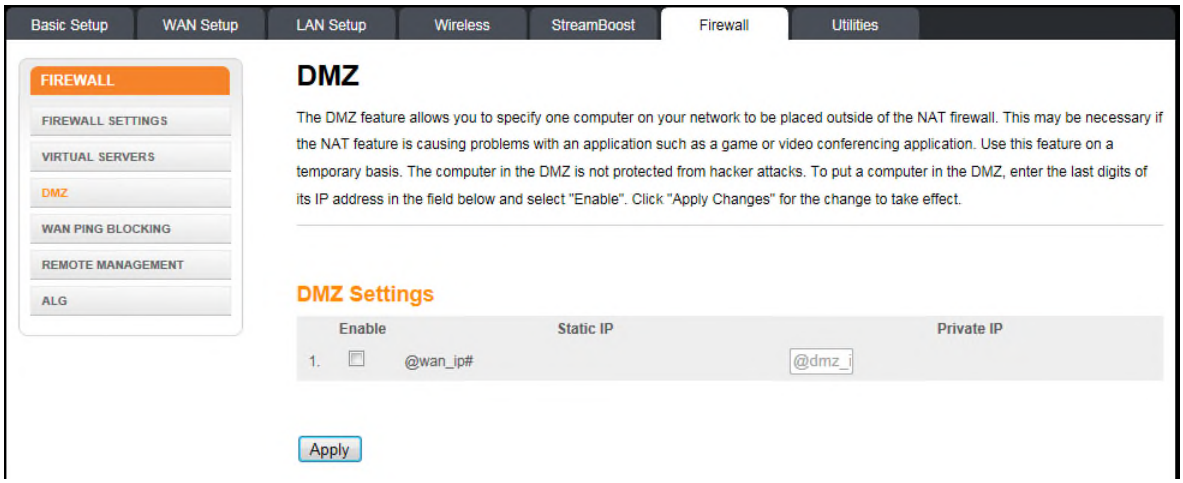
Inbound Port – Enter the inbound port range for the virtual server. It should be the same range as the local port.

Type – Sets the format for the port. Options are TCP, UDP, or BOTH.

Private IP Address – Enter the IP address of the machine on the LAN that you want the connections to go to.

Private Port – Enter the private port range for the virtual server. It should be the same range as the inbound port.

DMZ



The DMZ feature allows you to specify one computer on the network to be placed outside of the NAT firewall. This may be necessary if the NAT feature is causing problems with an application such as a game or video conferencing application.

Use this feature only on a temporary basis. The computer in the DMZ is not protected from hacker attacks.

To put a computer in the DMZ, click the **Enable DMZ** checkbox, enter its IP address, and click **Apply**.

IP Address Of Virtual DMZ Host:

Enable DMZ – Click this checkbox to enable DMZ on the network.

Static IP – Displays the Static IP address.

Private IP – Enter the IP address of the computer to be placed in the DMZ. Be sure that the address is not in the range of addresses delivered by the DHCP server if enabled. After

placing the computer in the DMZ, all ports on the computer are open to the Internet and not protected.

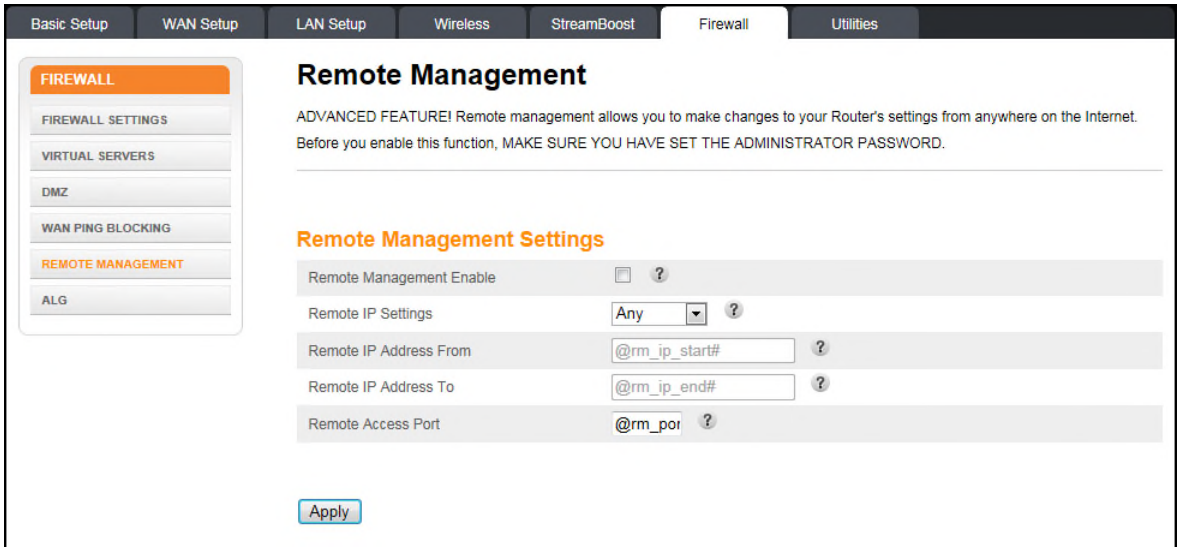
WAN Ping Blocking

You can configure the Wireless Router not to respond to an ICMP Ping (ping to the WAN port). This offers a heightened level of security.

Block ICMP Ping:

Block ICMP Ping Enable – Click this checkbox to enable WAN Ping Blocking.

Remote Management



Remote management lets you make changes to the Wireless Router's settings from anywhere on the Internet. Before you enable this function, make sure you have set the administrator password.

Remote Management Settings:

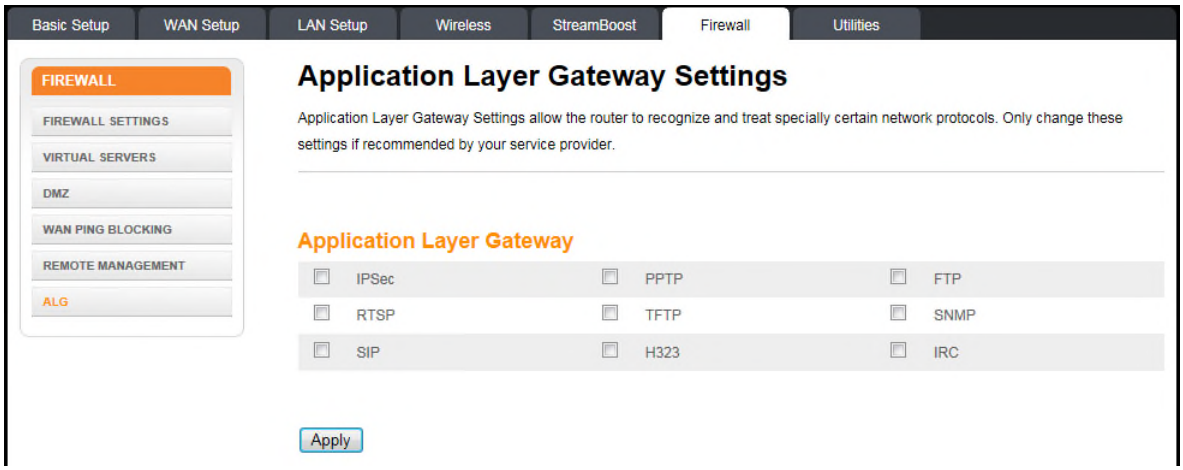
Remote Management Enable – Click this checkbox to enable the Remote Management feature.

Remote IP Settings – Select Any to allow management connections from any IP address, or select IP Range to specify a range of IP addresses that can connect.

Remote IP Address From/To – Use these fields to enter the IP addresses that can connect to make changes to the settings. You must set **Remote IP Settings** to IP Range to activate these fields.

Remote Access Port – Enter the port that you would like to use for remote access.

ALG



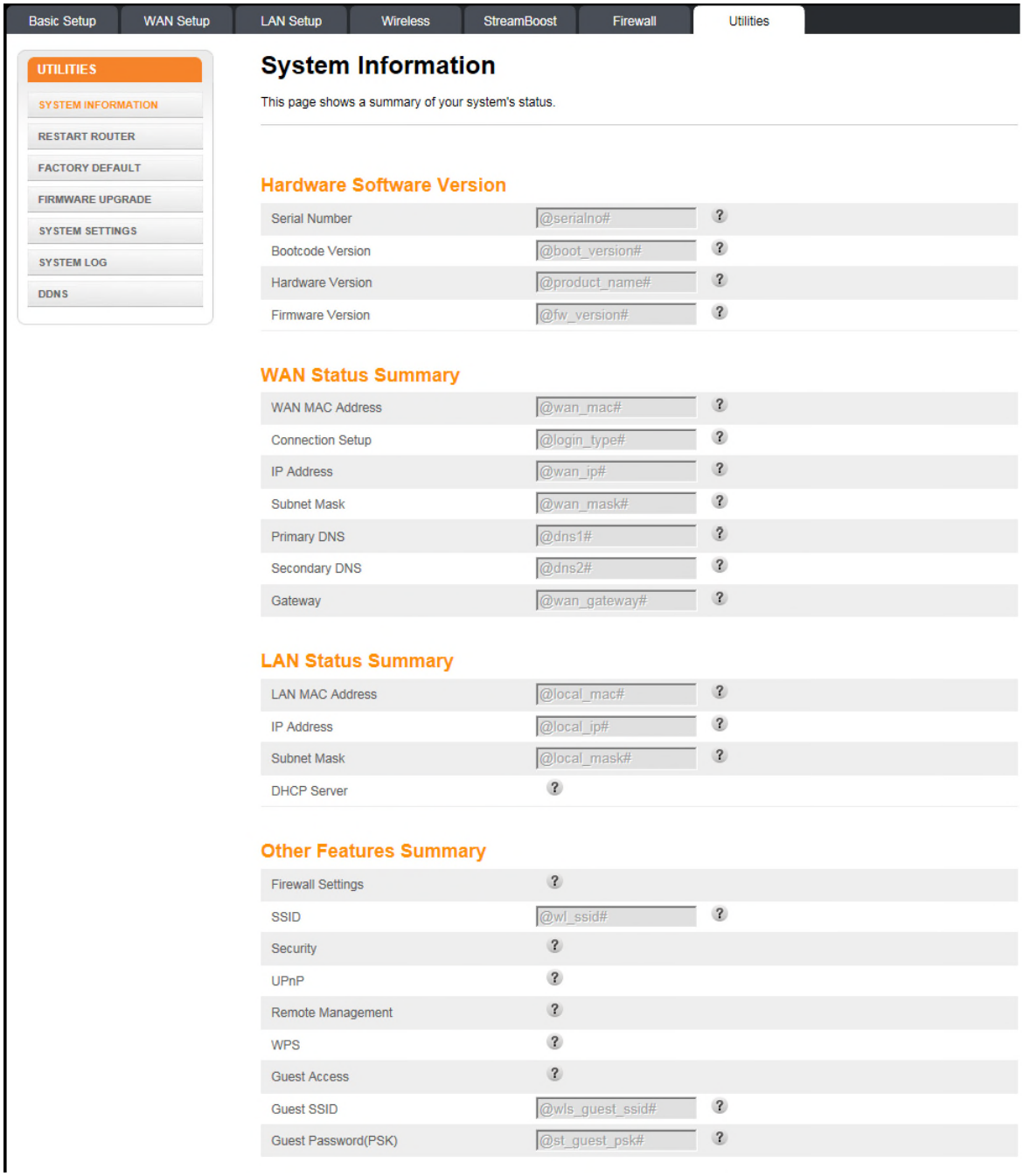
Application layer gateway settings allow the Wireless Router to recognize and treat certain network protocols specially.

Application Layer Gateway:

Click the checkbox for each network protocol for which you want special handling.

Utilities

System Information



This page shows a summary of the system's status.

Hardware Software Version:

Serial Number – This field displays the product serial number.

Bootcode Version – This field displays the bootcode version.

Hardware Version – This field displays the hardware version.

Firmware Version – This field displays the firmware version.

WAN Status Summary:

WAN MAC Address – This field displays the WAN MAC address.

Connection Setup – This field displays the connection type: Dynamic or Static

IP Address – This field displays the WAN IP address.

Subnet Mask – This field displays the WAN subnet mask.

Primary DNS – This field displays the Primary DNS IP address.

Secondary DNS – This field displays the Secondary DNS IP address.

Gateway – This field displays the gateway IP address.

LAN Status Summary:

MAC Address – This field displays the LAN MAC Address.

IP Address – This field displays the IP Address of the LAN.

Subnet Mask – This field displays the subnet mask of the LAN.

DHCP Server – This field displays the status of the DHCP Server: Enabled or Disabled.

Other Features Summary:

Firewall Settings - This field displays the status of the firewall settings: Enabled or Disabled.

SSID – This field displays the status of the SSID Broadcast function: Enabled or Disabled.

Security – This field displays the status of the Security feature: Enabled or Disabled.

UPNP – This field displays the status of the UPnP feature: Enabled or Disabled.

Remote Management – This field displays the status of the Remote Management feature: Enabled or Disabled.

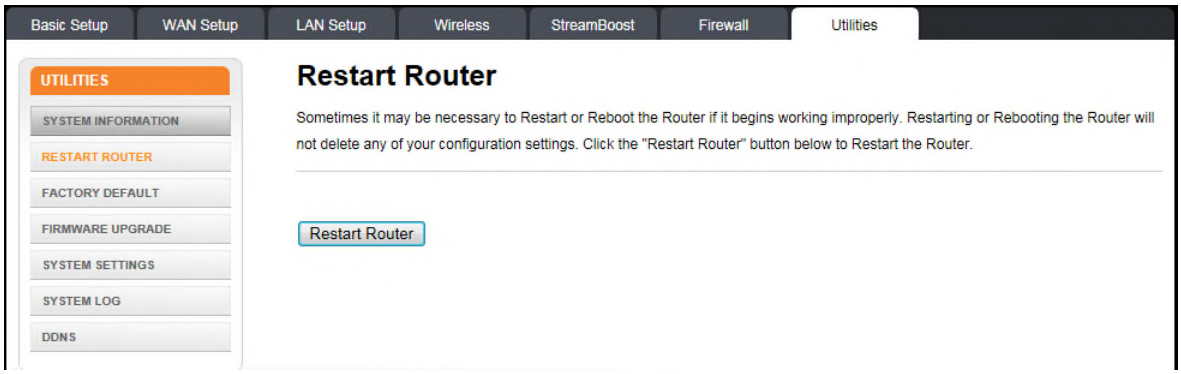
WPS – This field displays the status of the WPS function: Enabled or Disabled.

Guest Access – This field displays the status of the Guest Access function: Enabled or Disabled.

Guest SSID – This field displays the name of the guest network that you set up.

Guest Password (PSK) – This field displays the password for the guest network.

Restart Router

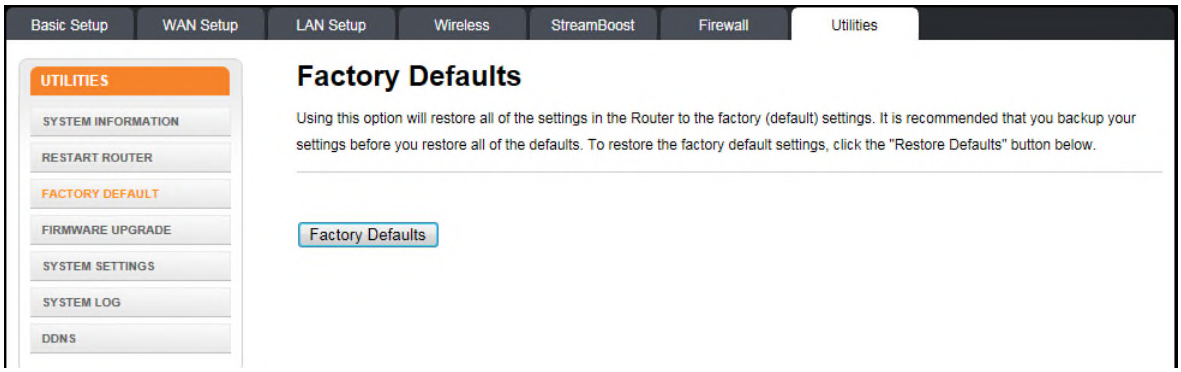


It may be necessary to restart (reboot) the Wireless Router if it begins working improperly. Restarting the Wireless Router will not delete any of the configuration settings.

To restart the Wireless Router, click **Restart**.

Note: A dialog box prompts you to confirm that you want to restart the Wireless Router. Click **OK** to restart now or click **Cancel** to restart later.

Factory Default

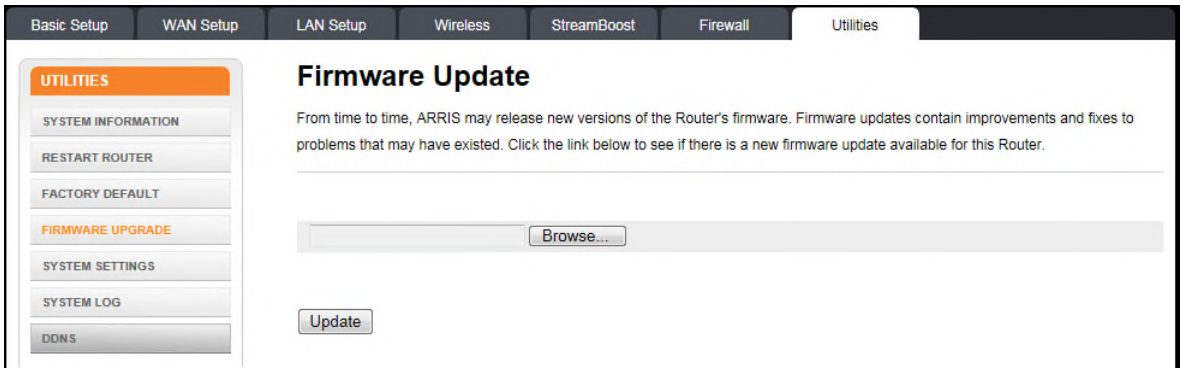


This screen lets you restore all of the Wireless Router's configuration settings to the factory default setting.

Click **Factory Defaults** to restore the factory default configuration settings.

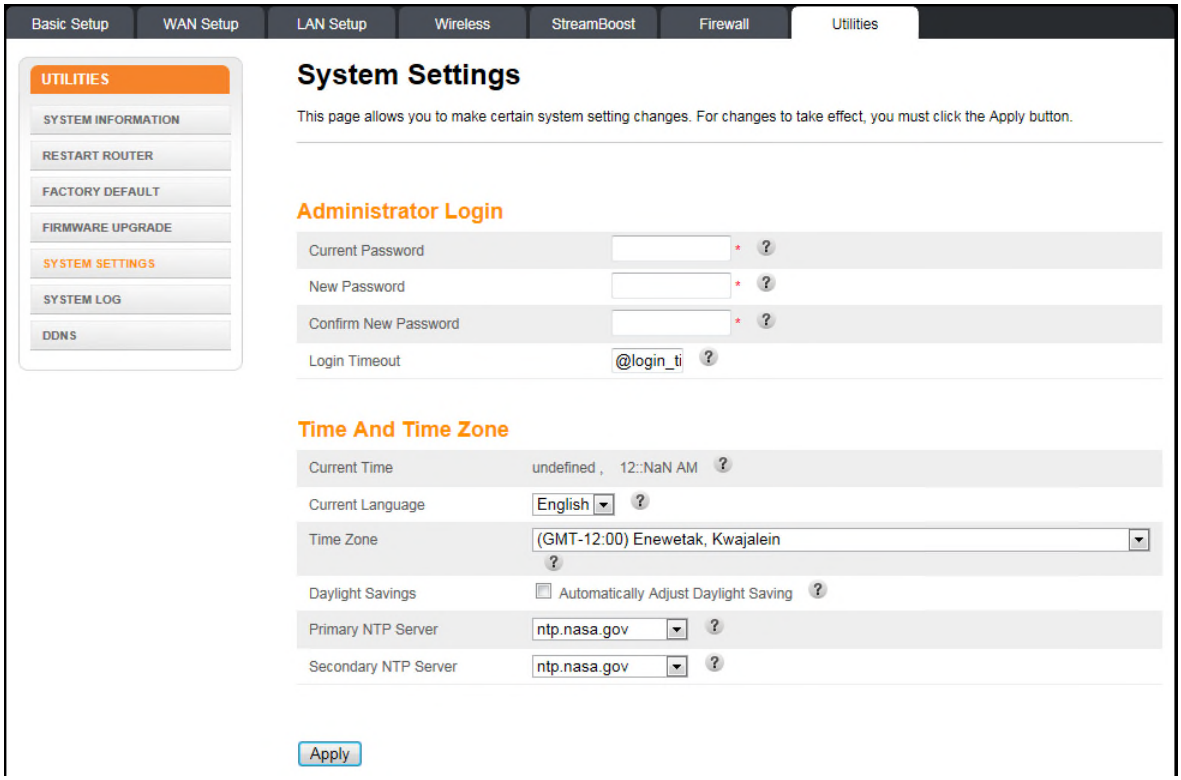
Note: A dialog box prompts you to confirm that you want to restore the factory default settings. Click **OK** to restore now or click **Cancel** to restore later.

Firmware Upgrade



From time to time, ARRIS may release new versions of firmware for the Wireless Router to provide improvements and fixes to problems that may have existed. Use the **Browse** button to locate the new firmware file on a local device, and click **Update** to start the update procedure.

System Settings



This page allows you to make certain system settings. For changes to take effect, you must click **Apply**.

Administrator Login:

Current Password – Enter the old password to change the administrator password.

New Password/Confirm New Password – Enter the new password in both fields to change the administrator password.

Login Timeout – Enter the number of seconds that these web pages can remain idle before the user is logged out.

Time And Time Zone:

Current Time – Displays the current time.

Current Language – Select the language you want to use.

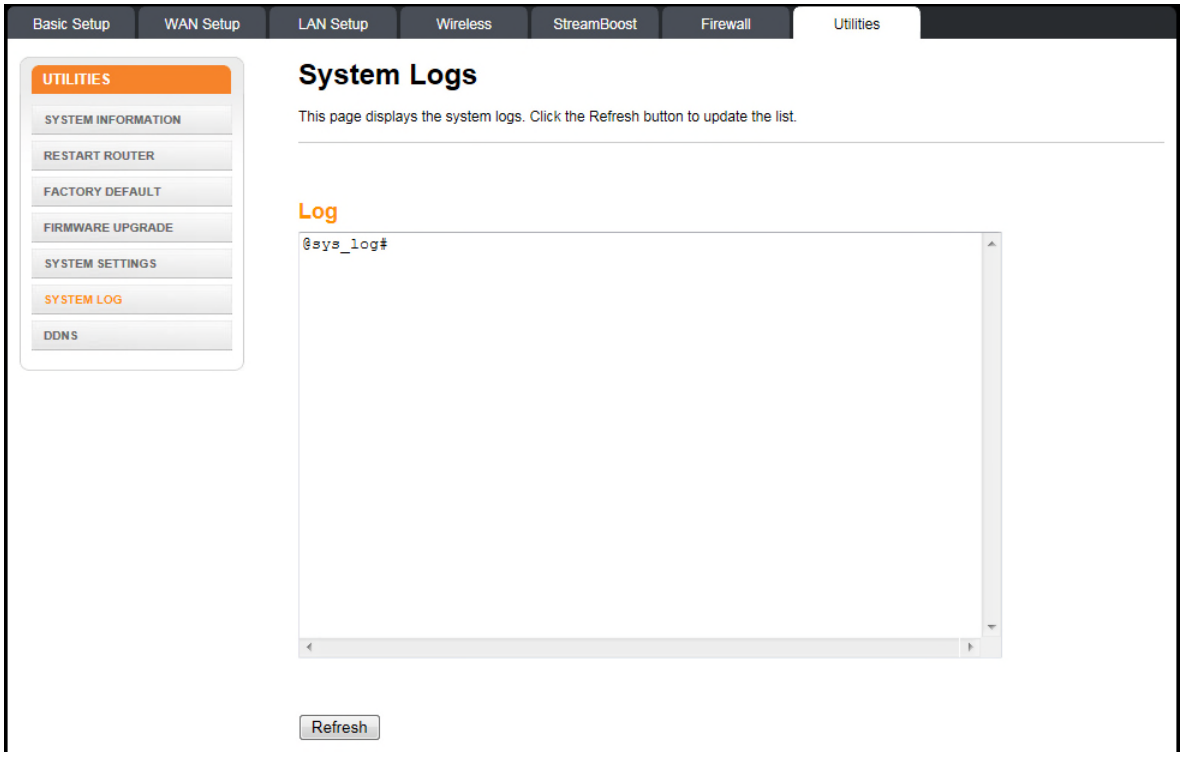
Time Zone – Select the time zone.

Daylight Savings – Click this checkbox to automatically update the system clock for Daylight Saving Time.

Primary NTP Server – The host name or IP address of the primary NTP server.

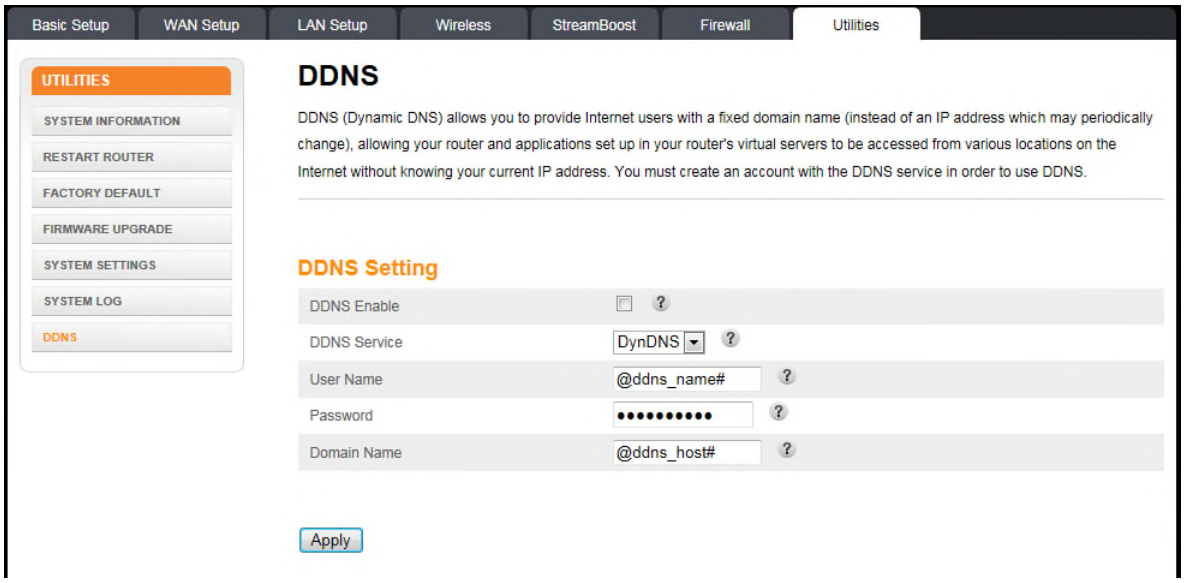
Secondary NTP Server – The host name or IP address of the secondary NTP server.

System Log



This page displays the system logs. Click **Refresh** to update the list. Click **Clear Log** to clear the list.

DDNS



DDNS (Dynamic DNS) allows you to provide Internet users with a fixed domain name (instead of an IP address which may periodically change). This allows various locations on the Internet to access the Wireless Router and the applications that are set up in the gateway's virtual servers without knowing your current IP address. For changes to take effect, you must click **Apply**.

Note: You must first create an account with a DDNS provider in order to use DDNS. The DDNS provider maps the chosen domain name to your IP address.

DDNS Setting:

DDNS Enable – Click this checkbox to enable DDNS on the system.

DDNS Service – Sets the DDNS provider that the account uses. The options are DynDNS and TZO.

User Name – Enter the user name for the DDNS account.

Password – Enter the password for the DDNS account. (Provided by your DDNS provider.)

Domain Name – Enter the domain name you selected to use with the DDNS account.

Troubleshooting

The Wireless Router is plugged in, but the Power light is Off

Check all power connections. Is the power cord plugged in firmly at both ends?

If you plugged the power cord into a power strip, make sure the strip is switched on.

Avoid using an outlet controlled by a wall switch, if possible.

Finally, check the fuse or circuit breaker panel.

I'm not getting on the Internet (all connections)

It may take several minutes to establish a connection the first time you power up the Wireless Router, especially when many people are online. Always leave the Wireless Router plugged into AC power and connected to the modem.

Check the front panel lights:

- The **Power** and WAN lights should be on.
- If the **Power** light blinks for more than 30 minutes, call your service provider for assistance.

Check the cable connections. Connectors should be tight. Cables should not be pinched, kinked, or bent sharply—any of these can cause a break or short in the cable (you may have to replace the cable).

Proceed to the Ethernet or wireless solutions if necessary.

I'm not getting on the Internet (Ethernet)

If you are using a switch, is the switch turned on?

Are you using the right type of Ethernet cable? Use an RJ45 Cat5e cable for direct connection to a computer; use a cross-over cable for connection to a switch.

Press the **Reset** button on the back of the Wireless Router.

A misconfiguration could lock out all access to the Wireless Router. If you think this has happened, see Resetting the Wireless Router to Factory Defaults.

I'm not getting on the Internet (Wireless)

Check the indicator lights, see Using the Wireless Router — the Wi-Fi light should be on.

Does the connection utility discover your wireless LAN? If you turned off “Broadcast SSID” you need to manually enter the name of the wireless LAN in the connection utility.

Change the security mode to “disabled”. Enable one of the other security modes as soon as you find the problem.

A misconfiguration could lock out all access to the Wireless Router. If you think this has happened, see Resetting the Wireless Router to Factory Defaults.

My wireless Internet connection stops working sometimes

This is usually caused by interference. Two common sources are 2.4GHz “remote” telephones and microwave ovens. If you cannot remove the interfering product, try using a different channel.

I can get on the Internet, but everything is slow

If the Web site you are visiting is very popular, that site may be having trouble servicing all the requests. If other sites download quickly, wait for a few minutes and try again. Usage during peak hours may also affect the connection speed.

Other communications on the LAN, or interference with wireless connections, may slow down the connection.

ARRIS Contacts

ARRIS offers broadband service providers a complete, integrated, application-oriented IP suite of back-office automation tools for network content, subscriber, and workforce management as well as advanced advertising and on demand services.

Before You Call ARRIS Support

When working with Technical Support, you can help us to expedite your call by following these guidelines:

- Please be prepared to give your Technical Support Contract ID number whenever you contact ARRIS Technical Support. If you do not know your Technical Support Contract ID number or have questions about a support contract, please contact ARRIS Technical Services at services.orders@arrisi.com or (678) 473-8302.
- Be prepared to provide your name, company name, site location, serial number of the system you are calling about (if applicable), system and software version numbers, and as much detail about the problem as possible.
- Review available documentation, including release notes, product and installation manuals, and online help for information about your problem.
- Do not reboot or restart equipment or software processes prior to consulting with ARRIS Technical Support—vital data that could assist in resolving the problem can be lost when these actions are performed.
- All personnel who call Technical Support should have a high level of familiarity with the ARRIS system, including knowing the system passwords. We strongly recommend that you have personnel trained through ARRIS Educational Services programs.

ARRIS Technical Support supports ARRIS-supplied products only. Issues related to other hardware, software, or non-ARRIS networks must be addressed by your organization or the appropriate third-party vendor.

By Telephone

North America Region	
Legacy ARRIS	+1 888 221 9797 (North America)
	+1 678 473 5656 (Worldwide)
Legacy Motorola Home	+ 1 888 944 4357 (North America)
	+1 215 323 2345 (Worldwide)

Latin America Region:		
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Aruba:	Legacy Motorola Home	215 323 2346
Bolivia:	Legacy Motorola Home	800 100 694
Brazil:	Legacy Motorola Home	0 800 891 5314
	Legacy ARRIS	+55 11 2737 7629
Chile:	Legacy Motorola Home	1230 020 5564
	Legacy ARRIS	+56 2 678 4500
Colombia:	Legacy Motorola Home	1 8005 1 80947
	Legacy ARRIS	+57 1 381 9103
Costa Rica:	Legacy Motorola Home	215 323 2346
Ecuador:	Legacy Motorola Home	215 323 2346
El Salvador:	Legacy Motorola Home	800 6625
Honduras:	Legacy Motorola Home	800 0123, then 866 842 0264
Mexico:	Legacy Motorola Home	001 866 391 2349
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Peru:	Legacy Motorola Home	0 800 5 3651
Puerto Rico:	Legacy Motorola Home	866 862 2627
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Venezuela:	Legacy Motorola Home	0 800 100 9161

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Germany:	Legacy Motorola Home	0 800 18 73019
Hungary:	Legacy Motorola Home	06 800 18164
Ireland:	Legacy Motorola Home	1 800 55 9871
Israel Golden Lines:	Legacy Motorola Home	1 809 25 2071
Israel Bezeq:	Legacy Motorola Home	1 809 42 9181
Israel Barak:	Legacy Motorola Home	1 809 31 5435
Italy:	Legacy Motorola Home	800 788 304

Luxembourg:	Legacy Motorola Home	0 800 2 5310
Netherlands - Holland:	Legacy Motorola Home	0 800 022 0176
Norway:	Legacy Motorola Home	800 15 670
Poland:	Legacy Motorola Home	00 800 111 3671
Portugal:	Legacy Motorola Home	800 81 3461
Spain:	Legacy Motorola Home	900 99 1771
Sweden:	Legacy Motorola Home	020 79 0241
Switzerland:	Legacy Motorola Home	0 800 561 872
United Kingdom:	Legacy Motorola Home	0 800 404 8439

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	Legacy Motorola Home	+1 847 725 4011 (Worldwide)

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	Legacy Motorola Home	+1 847 725 4011 (Worldwide)

China Region:		
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	Legacy Motorola Home	+1 847 725 4011 (Worldwide)

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	Legacy Motorola Home	61 3 81997220 or 1800 242664 (Australia only)

By Email

North America:		
Headend and Network Equipment:		
RF Optics:	Ruckus, Optics, Amps, Nodes, Transmitters, CHP, Passives, OptiMax, CoreWave, CoreView	RFOptics-support@arrisi.com
CMTS Products:	C3, C4, ICO, ASA, CxM, CMTS1000, CMTS1500, E6000	techsupport.na@arrisi.com
CMTS Product:	BSR, SRM4, HSIM4, TX32, RX48, SRM10G	tac.helpdesk@arrisi.com
Moxi and WHS Products:	Moxi, MCR, Portal, WHS, WHS5225, MediaPlayer, Whole Home Solution, Gateway	techsupport.na@arrisi.com
D5 and DVS Products:	D5, Application Manager, VIPr, Hemi, Encore, Quartet, Prelude, EGT or DVS	techsupport.na@arrisi.com
DVS Products:	CAS, DACs, CASMR, APEX3000, NC2000, DreamGallery, Secure Media, VideoFlow, AVP100, STBs, AS-RAC, QT Plus, CherryPicker, Encoder, Astria	tac.helpdesk@arrisi.com
EMP Products:	AdEdge, APS, BEQ6XXX, BME50, BMR1200, CVEx, MSP2XXX, RMS, SBSS, SVA, VMS	emp-support@arrisi.com
Digital Ad Insertion:	Ad Insertion, Skyvision, Spots, ACM, n5, XMS	ai-support@arrisi.com
Video on Demand:	Video OnDemand, VOD, nABLE, CMM, n5, XMS, Transit	vod-support@arrisi.com
VOD Products:	B1 Video Server, M3 Video Server, cDVR Video Solution	tac.helpdesk@arrisi.com
WorkAssure:	WorkAssure, I&R, SageQuest, Wireless Matrix, Tech Director, Tech Calendar, SSM Alarms	workassure-support@arrisi.com
Assurance Products:	ServAssure, OpsLogic, Powersense, SALIVE, EventAssure, HouseCheck, Data Warehouse, Starnodes	assurance-support@arrisi.com
GPON Product:	GPON, POL, Carrier Ethernet	tac.helpdesk@arrisi.com
Satellite and Modular Systems:	DSR, Uplink, IPTV, Encoder	tac.helpdesk@arrisi.com
Korea:	Legacy ARRIS Products	techsupport.korea@arrisi.com
Korea:	Legacy Motorola Home	tac.helpdesk@arrisi.com
Australia / New Zealand:	Legacy ARRIS Products	techsupport.asia@arrisi.com

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Customer Premise Equipment:		
Touchstone Products:	TGxxx, TMxxx, Touchstone, TTM, Packet Ace, Cornerstone, HDT, Incognito, CableModem, eMTA, Telephone Gateway	techsupport.na@arrisi.com
CableModem:	Cable Modem, MTA	tac.helpdesk@arrisi.com

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Latin America:	Legacy ARRIS Products	techsupport.cala@arrisi.com
Latin America:	Legacy Motorola Home	tac.helpdesk@arrisi.com
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Europe:	Legacy Motorola Home	tac.helpdesk@arrisi.com
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Asia:	Legacy Motorola Home	tac.helpdesk@arrisi.com
Japan:	Legacy ARRIS Products	techsupport.japan@arrisi.com
Japan:	Legacy Motorola Home	tac.helpdesk@arrisi.com

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The Ask ARRIS Customer Portal enables you to:

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- Manage technical support cases for your products, support level, and site location
- Access technical documentation and webcasts

To use the portal, you will need to register for the site using your support contract ID and email address. To access the customer portal:

http://www.arris.com/support

Global Knowledge Services and Training

For more information about Global Knowledge Services and the programs we offer, e-mail us at:

training@arris.com

TR3300-AC 802.11ac Wireless Router User Guide

Corporate Headquarters
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