COMMSCOPE®

# NVG558 4G-LTE Gateway

## User Manual, STANDARD Revision x.1

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# Revision history

| Revision | Date | Summary |
|---|---|---|
| x1 | October 2020 | First issue |

# Table of contents

Chapter 1

# Introduction

This document describes the installation, features, and configuration of the residential gateway. The Gateway is your connection to the Internet, and can provide services such as television, telephone, and wireless Internet.

You can:

- configure the gateway using the gateway user interface.
- view information about your connection, set up the gateway, and change connection settings.
- see the status of your gateway, and view logs, statistics, and metrics.

**Important:** Before configuring or administering the Gateway, you must first install and connect it. See the *Quick Start Guide* that came with your Gateway for details.

# About the NVG500-series Gateways

The NVG500-series Gateways provide high-speed Internet, flexible home networking, as well as a professional-grade firewall.

This document covers the model below. Models differ in the broadband interface provided.

- NVG558: LTE (fixed wireless access)

Chapter 2

# Set up the Gateway

Use this chapter to:

- Configure your computer's TCP/IP settings, if necessary
- Access the web-based management interface
- Access online help

## Configure Ethernet connections

If you connect your computer to the Gateway using an Ethernet connection, you may have to configure your computer’s TCP/IP settings. While you can configure your computer's Wi-Fi setting using the same instructions, you can usually connect using default settings.

### Requirements

Make sure you have the following before attempting to configure your Ethernet connection:

- Computer with Ethernet interface.
- Ethernet cable.
- IP address, subnet, gateway, and DNS information for installations not using DHCP.

### How to use this section

The following list shows the procedures for modifying the TCP/IP settings on the computer. The procedure is slightly different depending on the operating system that you are using. Please ensure you are using the correct steps for the operating system on your computer. Follow the links below for instructions to configure your Ethernet connection on your operating system.

- *Configure TCP/IP for Windows Vista* (page 8)
- *Configure TCP/IP for Windows 7, Windows 8, or Windows 10* (page 9)
- *Configure TCP/IP for macOS* (page 9)

### Configure TCP/IP for Windows Vista

1. Open the Vista Control Panel.
2. Double-click **Network and Sharing Center** to display the Network and Sharing Center Window.

3. Click **Manage network connections**. If prompted for a connection, choose **Local Area Connection**.
   The Network Connections window appears.
4. Double-click the **Local Area Connection** to open the Properties window:

   **Note:** If Windows requests permission to continue, click **Continue**.

5. Double-click **Internet Protocol Version 4 (TCP/IPv4)** to configure TCP/IPv4.

   **Note:** If your service provider requires TCP/IP version 6, double-click **Internet Protocol Version 6 (TCP/IPv6)** to configure TCP/IPv6.

   The TCP/IP properties window for the version you selected appears.
6. For either TCP/IPv4 or TCP/IPv6, select **Obtain an IP address automatically** and **Obtain DNS server address automatically**, unless instructed otherwise by your service provider.
7. Click **OK** to accept the new settings and close the Properties window.

## Configure TCP/IP for Windows 7, Windows 8, or Windows 10

1. Click the **Start** menu and type **network and sharing** into the Search box.
2. Select **Network and Sharing Center**when it appears.
3. Click **Change adapter settings** from the left-side menu.
4. Right-click on your local area connection icon and select **Properties** to open the Properties window.
5. Select **Internet Protocol Version 4 (TCP/IPv4)** and click **Properties** to configure TCP/IPv4.

   **Note:** If your service provider requires TCP/IP version 6, select **Internet Protocol Version 6 (TCP/IPv6)** and click **Properties** to configure TCP/IPv6.

   The TCP/IP properties window for the version you selected appears.
6. For either TCP/IPv4 or TCP/IPv6, select **Obtain an IP address automatically** and **Obtain DNS server address automatically**, unless instructed otherwise by your service provider.
7. Click **OK** to accept the new settings and close the Properties window. Then click **Close** to back out of the remaining setup screens.

## Configure TCP/IP for macOS

1. Open System Preferences, either by choosing **System Preferences** from the Apple menu or by clicking the System Preferences icon in the dock.
2. Click the **Network** icon.
3. Choose **Automatic** from the Location drop-down menu, and **Built-in Ethernet** from the Show menu.
4. Choose the TCP/IP tab, if necessary.

   If you are using **TCP/IPv4**, go to step 5.If your service provider requires **TCP/IPv6**, go to step 8.
5. Choose **Using DHCP** from the Configure IPv4 menu.

6. If necessary, click the **Renew DHCP Lease** button.
7. Close the System Properties application.

   TCP/IPv4 configuration is completed.
8. If you are using TCP/IPv6, click **Configure IPv6** near the bottom of the previous window.
9. Choose **Automatically** from the Configure IPv6 drop-down menu and click **OK**.
10. Close the System Properties application.

# Connect to Wi-Fi

The Gateway is compatible with nearly all Wi-Fi devices.

Before you start, locate the label on the base of the Gateway - the label provides information you need to connect to the Gateway, including network name (SSID) and passphrase. Alternatively, use your mobile device to scan the Wi-Fi QR code label on the side of the Gateway.

1. Find and select your Wi-Fi connection icon in the menu bar or system tray.

   The location and appearance of the icon are system-dependent.
2. Select the Wi-Fi network whose name matches the SSID name on your Gateway's label.

   It may take several seconds for your SSID to appear in the list.

   **Important:** In high-density dwellings, there may be a number of networks with very similar names. Make sure you choose the network whose name exactly matches the name on your Gateway's label.
3. When prompted, enter the password from your Gateway's label.
   After a few seconds, your device should indicate a successful connection.

If you cannot connect, check the following.

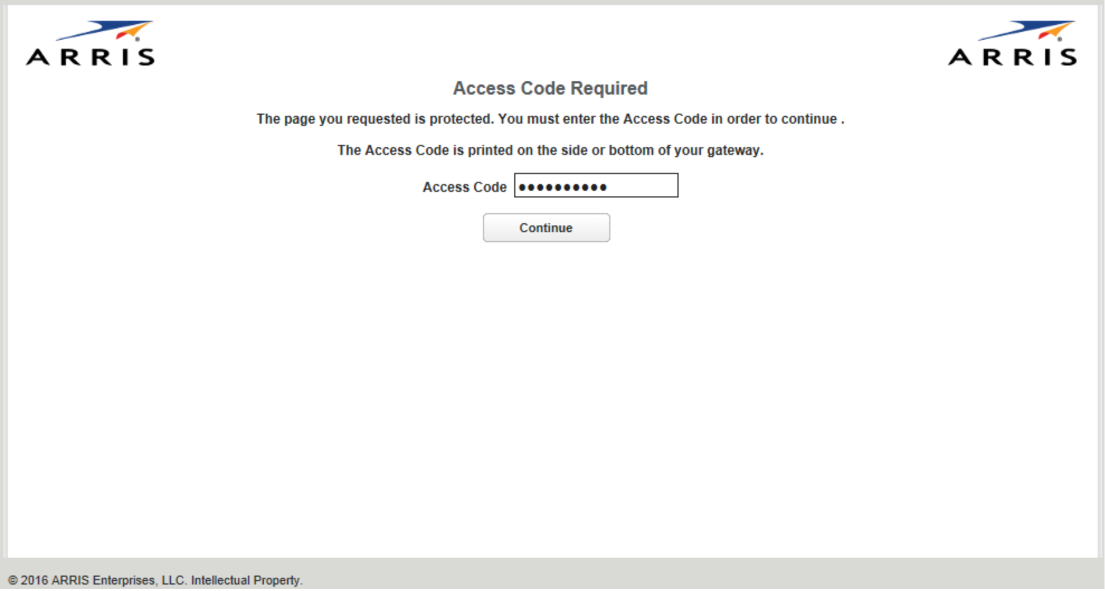
| If... | Then... |
|---|---|
| You cannot see the SSID | ■ Make sure the Gateway is powered up.<br>■ If the Wi-Fi light is not green (steady or flashing), go to the *Primary* (page 46) screen and enable Wi-Fi.<br>■ Proceed to *A wireless device is not locating the gateway* (page 85). |
| You can see the SSID but cannot connect | Proceed to *Cannot connect to the Gateway* (page 86). |

# Access the web management interface

Before you start, connect your device to the Gateway using either Ethernet or Wi-Fi.

1. Open a Web browser, such as Firefox or Chrome, from any computer connected to the Gateway.

2. Enter *http://myrouter* in the Location text box.
   You may be prompted to log in upon accessing certain links.



Access Code Required

The page you requested is protected. You must enter the Access Code in order to continue .

The Access Code is printed on the side or bottom of your gateway.

Access Code ••••••••••

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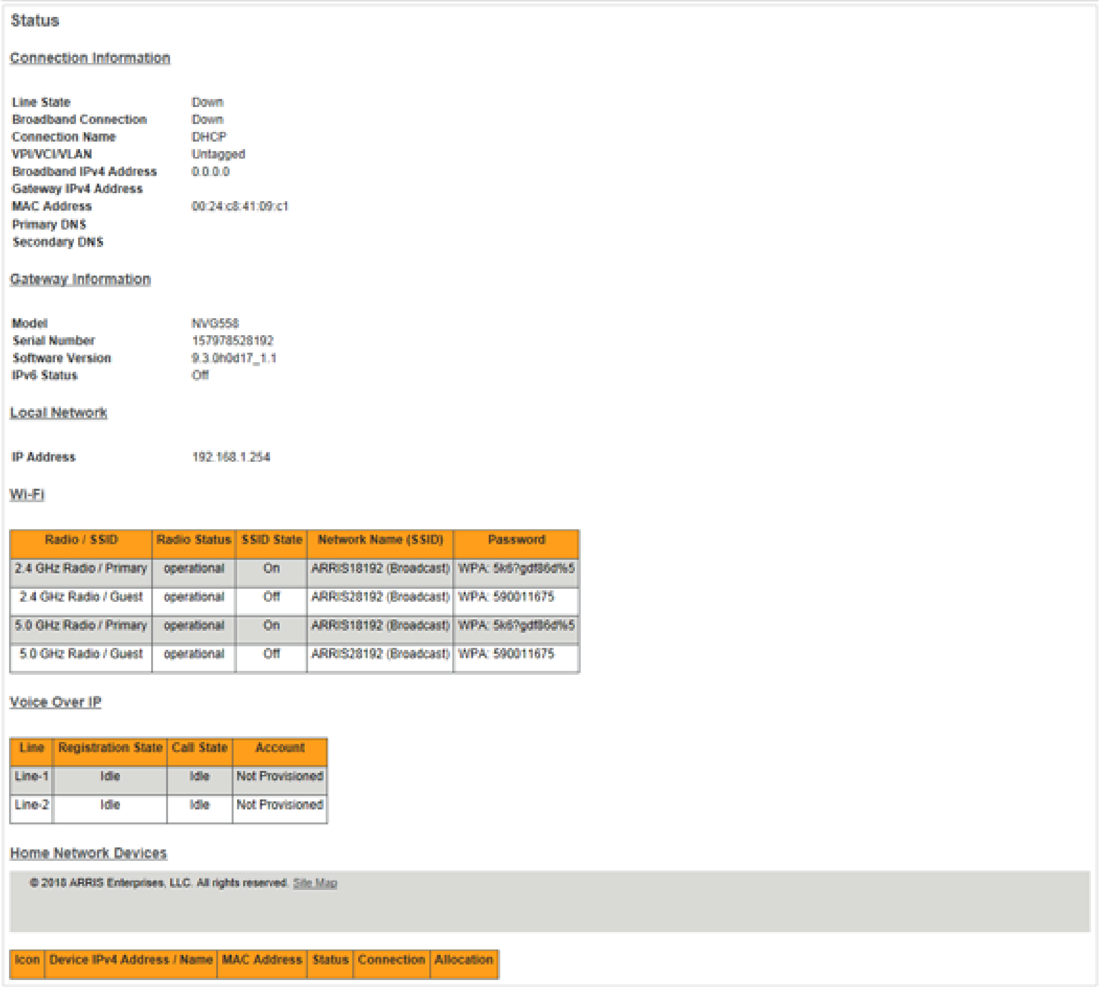
3. Enter the access code where prompted.
   The default access code is printed on a label on the bottom of the Gateway.

   The Main page opens and provides summary information of the system.



Status

Connection Information

| | |
|---|---|
| Line State | Down |
| Broadband Connection | Down |
| Connection Name | DHCP |
| VPI/VCI/VLAN | Untagged |
| Broadband IPv4 Address | 0.0.0.0 |
| Gateway IPv4 Address | |
| MAC Address | 00:24:c8:41:09:c1 |
| Primary DNS | |
| Secondary DNS | |

Gateway Information

| | |
|---|---|
| Model | NVG558 |
| Serial Number | 157978528192 |
| Software Version | 9.3.0h0d17_1.1 |
| IPv6 Status | Off |

Local Network

| | |
|---|---|
| IP Address | 192.168.1.254 |

Wi-Fi

| Radio / SSID | Radio Status | SSID State | Network Name (SSID) | Password |
|---|---|---|---|---|
| 2.4 GHz Radio / Primary | operational | On | ARRIS18192 (Broadcast) | WPA: 5k6?gdf86d%5 |
| 2.4 GHz Radio / Guest | operational | Off | ARRIS28192 (Broadcast) | WPA: 590011675 |
| 5.0 GHz Radio / Primary | operational | On | ARRIS18192 (Broadcast) | WPA: 5k6?gdf86d%5 |
| 5.0 GHz Radio / Guest | operational | Off | ARRIS28192 (Broadcast) | WPA: 590011675 |

Voice Over IP

| Line | Registration State | Call State | Account |
|---|---|---|---|
| Line-1 | Idle | Idle | Not Provisioned |
| Line-2 | Idle | Idle | Not Provisioned |

Home Network Devices

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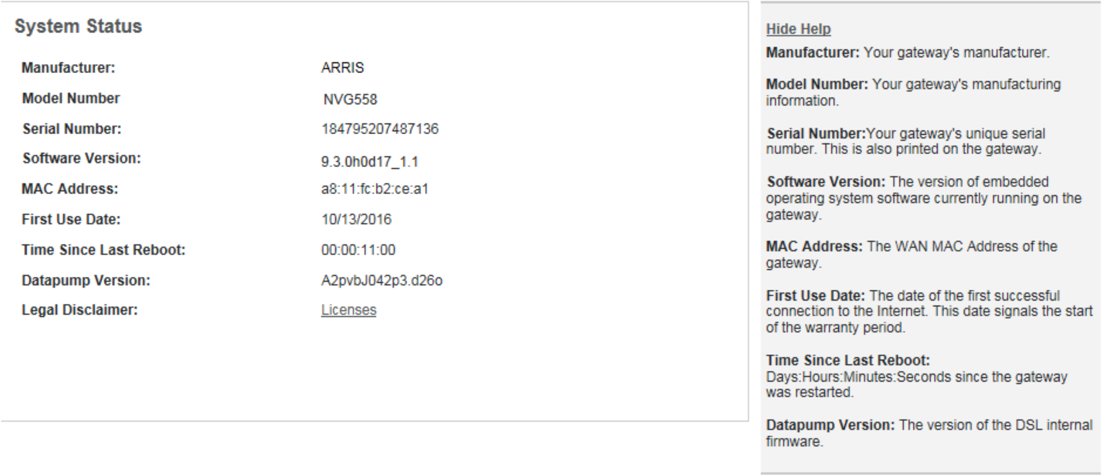
| Icon | Device IPv4 Address / Name | MAC Address | Status | Connection | Allocation |
|---|---|---|---|---|---|

4. Check to make sure the Broadband LED on your Gateway is lit GREEN to verify that the Ethernet WAN connection to the Internet is active.

# Access online help

Online help for the Gateway is available on the right side of every web page.

- Click **Show Help** to display the information:



System Status

| | |
|---|---|
| Manufacturer: | ARRIS |
| Model Number | NVG558 |
| Serial Number: | 184795207487136 |
| Software Version: | 9.3.0h0d17_1.1 |
| MAC Address: | a8:11:fc:b2:ce:a1 |
| First Use Date: | 10/13/2016 |
| Time Since Last Reboot: | 00:00:11:00 |
| Datapump Version: | A2pvbJ042p3.d26o |
| Legal Disclaimer: | Licenses |

Hide Help

**Manufacturer:** Your gateway's manufacturer.

**Model Number:** Your gateway's manufacturing information.

**Serial Number:**Your gateway's unique serial number. This is also printed on the gateway.

**Software Version:** The version of embedded operating system software currently running on the gateway.

**MAC Address:** The WAN MAC Address of the gateway.

**First Use Date:** The date of the first successful connection to the Internet. This date signals the start of the warranty period.

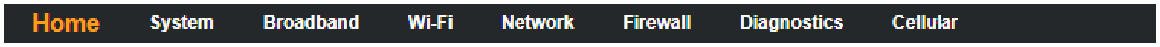
**Time Since Last Reboot:** Days:Hours:Minutes:Seconds since the gateway was restarted.

**Datapump Version:** The version of the DSL internal firmware.

- Click **Hide Help** to turn the information off (the default).

# Navigation with the tab bar

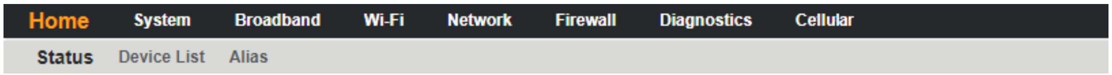
The tab bar is located at the top of every page and provides navigation for configuration, maintenance or monitoring.



Selecting a tab provides access to pages with a Links bar that allow managing or configuring several features of the Embedded Software. Each tab is described in its own section.

## Element navigation with the links bar

Select a tab bar element to open a links bar beneath the tab bar and the first of the links pages, usually the status of the element chosen. Use the links to navigate to the pages for configuration of features displayed on the page.



# How to

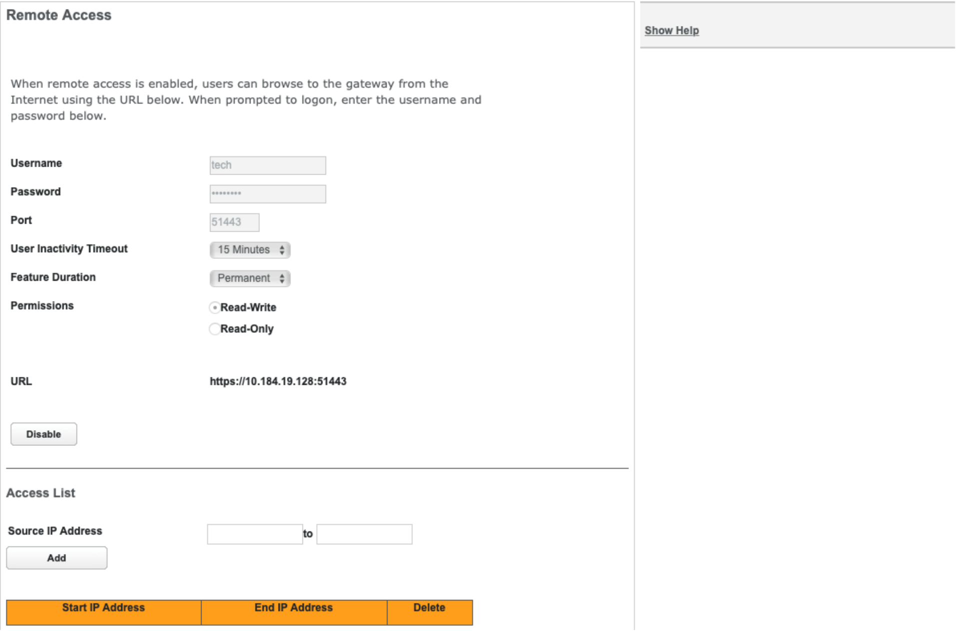
Use these procedures to perform common functions.

## Access the Gateway from somewhere else

You can use Remote Access to access the configuration pages as if you were on the home network.

▸ ***To enable remote access:***

1. Click the System tab, then **Remote Access**.
   The Remote Access screen displays.



Remote Access

When remote access is enabled, users can browse to the gateway from the Internet using the URL below. When prompted to logon, enter the username and password below.

| | |
|---|---|
| Username | tech |
| Password | •••••••• |
| Port | 51443 |
| User Inactivity Timeout | 15 Minutes |
| Feature Duration | Permanent |
| Permissions | ● Read-Write<br>○ Read-Only |
| URL | https://10.184.19.128:51443 |

Access List

Source IP Address ______ to ______

| Start IP Address | End IP Address | Delete |
|---|---|---|

2. Type a password in the **Password** field.

   The password must be at least 8 characters long, and include at least two of the following types of characters:

   - Alphabetic (letter) characters
   - Numeric (number) characters
   - Special characters (! @ \# $ % ^ & * and so on)

3. Set a custom port number for secure HTTP access to the Gateway remote access session in the **Port to Use** field.

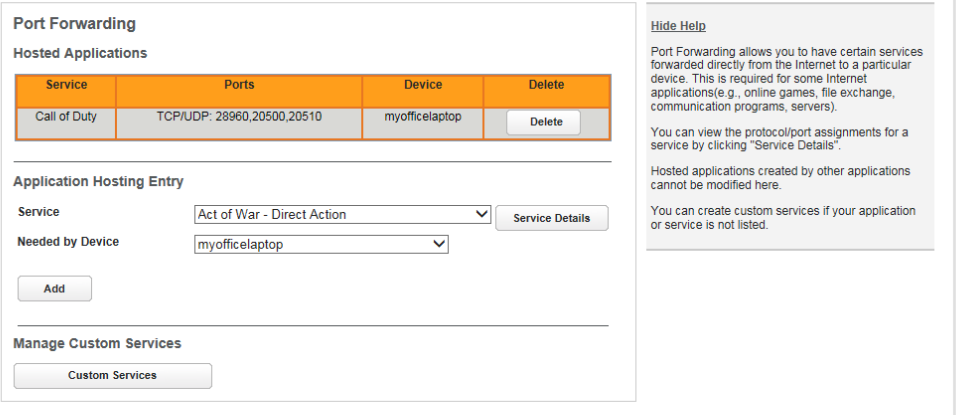
4. Optional: Set an inactivity timeout and duration to minimize the risk of unattended remote access.
5. Click the radio button that describes the type of remote access to allow:
   - **Read-Write**
   - **Read-Only**
6. Optional: Use the **Access List** fields to restrict which IP addresses can access the Gateway remotely.
   - One specific IP address: put the same IP address in both the **From** and **To** fields. Do this if you know what IP address the remote device has.
   - IP address range: put the low address in the **From** field, and the high address in the **To** field. Do this if you know what network the remote device uses, but not the exact IP address.
   - Any IP address: leave the **From** and **To** fields blank. Do this only if you cannot find the IP address or range, because this choice leaves your Gateway open to access from anywhere.
7. Click **Add entry to access list**, then repeat step 6 to add more IP addresses or ranges.
8. Click the **Enable** button.

   The Gateway updates the Remote Access page and displays:
   - The current remote access settings
   - Shows the URL that a remote access client must use to connect to the remote access session
   - Provides a button for ending the remote access session.
9. The remote access client will need to connect to the URL shown on the Remote Access page, and will need to log in with the user name shown and with the password configured when access was enabled.
10. To end (disable) an existing remote access configuration, click the **Disable** button at the bottom of the page.

# Allow an application to bypass the Firewall

Port Forwarding allows applications and games, that require access to the Internet, to bypass the Firewall. Choose from a pre-defined list, or create a custom service.

1. In the Firewall tab, click **Port Forwarding**.
   The Port Forwarding page displays:



Port Forwarding

Hosted Applications

| Service | Ports | Device | Delete |
|---|---|---|---|
| Call of Duty | TCP/UDP: 28960,20500,20510 | myofficelaptop | Delete |

Application Hosting Entry

Service: Act of War - Direct Action

Needed by Device: myofficelaptop

Manage Custom Services

Port Forwarding allows you to have certain services forwarded directly from the Internet to a particular device. This is required for some Internet applications(e.g., online games, file exchange, communication programs, servers).

You can view the protocol/port assignments for a service by clicking "Service Details".

Hosted applications created by other applications cannot be modified here.

You can create custom services if your application or service is not listed.

2. Click the **Service** drop-down, and choose your application from the list.

   If your application is not in the list, proceed to *Create a custom service* (page 19).
3. Choose the device using this application from the **Needed by Device** drop-down.
4. Click **Add**.

The Gateway adds the application to the Hosted Applications list at the top of the page. To remove an application, click the **Delete** button next to that application.

# Change the access code

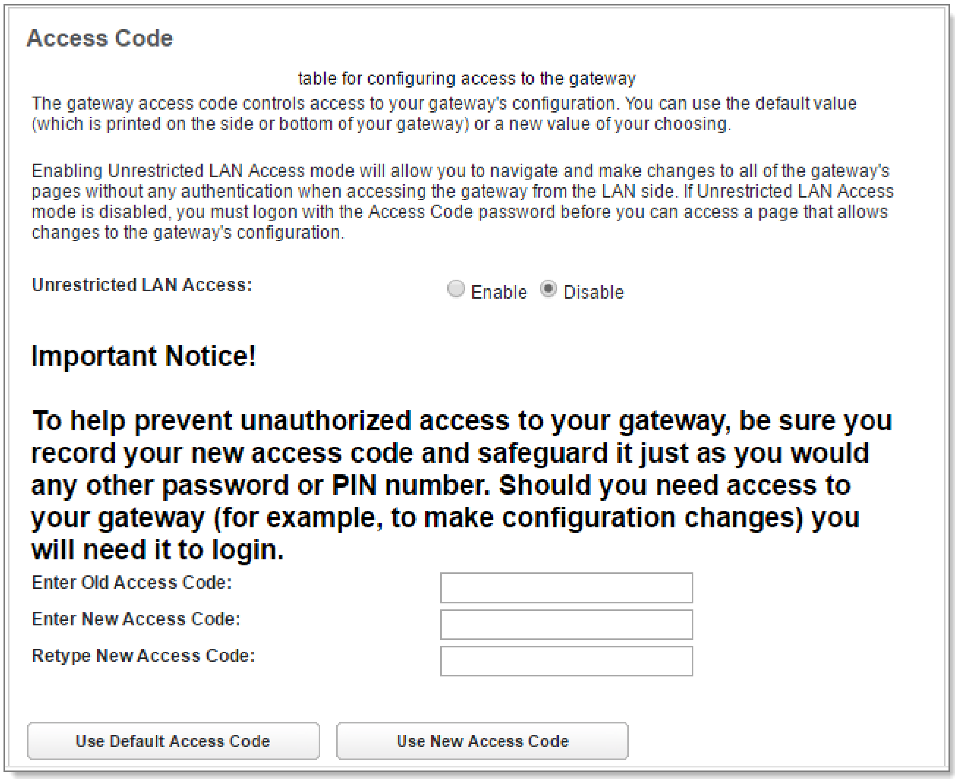
You can change the access code required to access the Gateway configuration.

The password must be between 8 and 20 characters long, and must include characters from at least two of these categories:

- Alphabetic (letter) characters
- Numeric (number) characters
- Special characters (! @ \# $ % ^ & * and so on)

▸ ***To make a change:***

1. In the System tab, click **Access Code**.
   The Access Code page displays.



Access Code

table for configuring access to the gateway

The gateway access code controls access to your gateway's configuration. You can use the default value (which is printed on the side or bottom of your gateway) or a new value of your choosing.

Enabling Unrestricted LAN Access mode will allow you to navigate and make changes to all of the gateway's pages without any authentication when accessing the gateway from the LAN side. If Unrestricted LAN Access mode is disabled, you must logon with the Access Code password before you can access a page that allows changes to the gateway's configuration.

Unrestricted LAN Access: ○ Enable ● Disable

**Important Notice!**

**To help prevent unauthorized access to your gateway, be sure you record your new access code and safeguard it just as you would any other password or PIN number. Should you need access to your gateway (for example, to make configuration changes) you will need it to login.**

Enter Old Access Code:

Enter New Access Code:

Retype New Access Code:

2. Make changes as needed:
   - To change the access code: enter the old access code, the new access code, and a confirmation of the new access code, and click the **Use New Access Code** button. The new access code takes effect immediately.
   - To return to the original default access code: click the **Use Default Access Code** button.
   - To return to the last saved Access Code configuration, click the **Cancel** button.

# Configure a default server

You can forward unexpected or unknown incoming IP traffic to a single default host on your LAN.

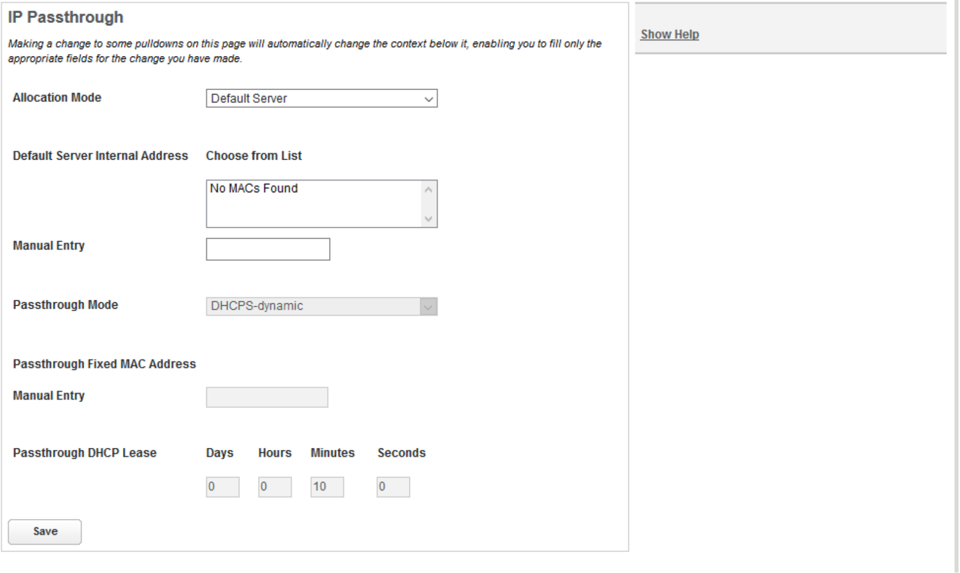
Enable the default server for certain situations:

- Where you cannot anticipate what port number or packet protocol an in-bound application might use. For example, some network games select arbitrary port numbers when a connection is opened. With NAT on in the gateway, these packets are normally discarded.
- For all unsolicited traffic to go to a specific LAN host.

▸ ***To configure a default server:***

1. Choose the Firewall **IP Passthrough** link.
   The IP Passthrough page displays.
2. Choose **Default Server** from the **Allocation Mode** pull-down menu.

The IP Passthrough page displays the Default Server fields:



IP Passthrough

*Making a change to some pulldowns on this page will automatically change the context below it, enabling you to fill only the appropriate fields for the change you have made.*

Allocation Mode: Default Server

Default Server Internal Address: Choose from List

No MACs Found

Manual Entry:

Passthrough Mode: DHCPS-dynamic

Passthrough Fixed MAC Address

Manual Entry:

Passthrough DHCP Lease: Days 0, Hours 0, Minutes 10, Seconds 0

3. Choose the device on the home network to receive traffic directed to the Gateway's public IP address.

   If the device is connected, find and click its address in the **Choose from List** field. If the device has not connected, type its hardware (MAC) address into the **Manual Entry** input field.

4. Click **Save**.

Changes take effect immediately.

# Configure IP Passthrough

The Gateway can pass all incoming traffic to a specific LAN-side client.

**Important:** Because both the Gateway and the passthrough host use the same IP address, the Gateway rejects new sessions that conflict with existing sessions. If two tunnels go to the same remote endpoint, such as a VPN access concentrator, the first one to start the IPSec traffic will be allowed; the second one, because it is indistinguishable from the WAN fails.

1. Click the Firewall **IP Passthrough** link.
2. Choose **Passthrough** from the **Allocation Mode** pull-down menu.
3. Choose how the Gateway assigns the public IP address to the passthrough client from the **Passthrough Mode** pull-down menu:

   - **DHCPS-dynamic:** Assign to the first client gateway to renew its DHCP lease, if the public IP address is available. No further configuration of the passthrough mode is required.
   - **DHCPS-fixed:** Choose the gateway. If the gateway has already connected, find and click the gateway address in the **Choose from List** field. If the gateway has not connected, you may type its hardware (MAC) address in the **Manual Entry** input field.

- **Manual:** Manually assign the public IP address and the service provider’s network mask and default gateway values to the client gateway on the network. No further configuration of the passthrough mode is required.

  **Manual** mode requires statically configuring your PC. With Manual mode, you configure the **TCP/IP Properties** of the LAN client PC you want to be the IP Passthrough client. You then manually enter the WAN IP address, gateway address, and so on that matches the WAN IP address information of your ARRIS gateway. This mode works the same as the DHCP modes; unsolicited WAN traffic will get passed to this client. The client is still able to access the Gateway and other LAN clients on the 192.168.254.x network, etc.

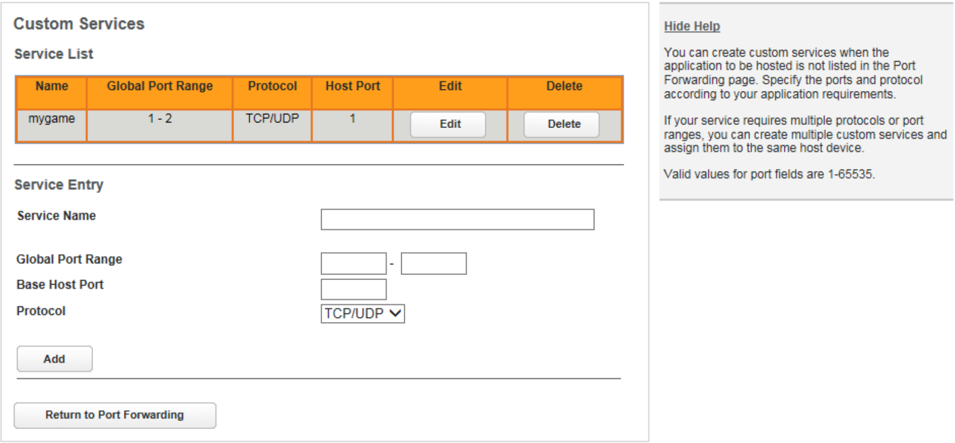
4. Enter an optional custom passthrough lease time in the **Passthrough DHCP Lease** fields.
5. Click **Save**, for changes to take effect upon restart.

# Create a custom service

If no pre-defined Port Forwarding service is available for your application, you can create a custom service.

Obtain the ports and protocol type needed for your application. This information should be in the application's help, or on a support page on the vendor's website.

1. From the Port Forwarding page, click **Custom Services**.
   The Custom Services page displays.



Custom Services

Service List

| Name | Global Port Range | Protocol | Host Port | Edit | Delete |
|---|---|---|---|---|---|
| mygame | 1 - 2 | TCP/UDP | 1 | Edit | Delete |

Service Entry

| | |
|---|---|
| Service Name | |
| Global Port Range | - |
| Base Host Port | |
| Protocol | TCP/UDP |

Add

Return to Port Forwarding

Hide Help

You can create custom services when the application to be hosted is not listed in the Port Forwarding page. Specify the ports and protocol according to your application requirements.

If your service requires multiple protocols or port ranges, you can create multiple custom services and assign them to the same host device.

Valid values for port fields are 1-65535.

2. Enter the name of your application in the **Service Name** field.
3. Enter the port range (low port number first) in the **Global Port Range** fields.
4. Enter the host port number in the **Base Host Port** field.
5. Select the protocol from the **Protocol** drop-down: TCP, UDP, or Both.
6. Click **Add**.
   The Gateway adds an entry to the Custom Services list with the entered data.
7. Verify the new custom service against the information supplied by the application vendor. Click **Edit**, if required, to make any changes.
8. Click **Return to Port Forwarding**.

You can now add your custom service using the Port Forwarding page.

# Pair a device with the Gateway using WPS

Many wireless devices support Wi-Fi Protected Setup (WPS) method of pairing with the Gateway. Entering a passphrase is not required.

► ***To pair a device using WPS:***

1. On the device, activate WPS. Some devices use a menu entry, others have a WPS button.
2. On the Gateway, press and hold the WPS button until the Wi-Fi light flashes amber.
3. Monitor the Gateway Wi-Fi light and any indicators on the device you are trying to pair.

   Pairing may take several minutes.

The Gateway and device automatically connect.

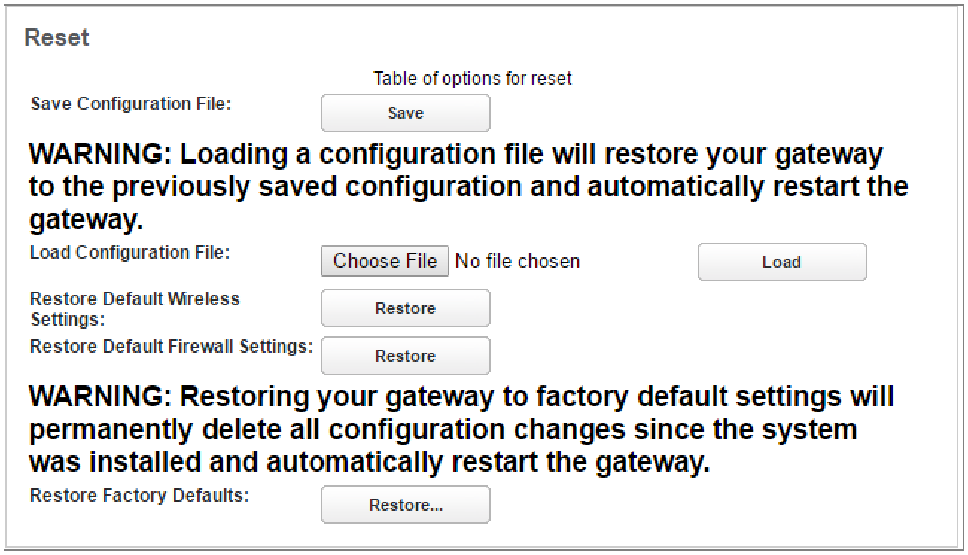
If the Gateway and device do not connect:

- If the Gateway Wi-Fi light flashes red for 30 seconds, this indicates a timeout or some other error. Retry the pairing procedure.
- Try swapping steps 1 and 2 (start WPS on the Gateway first).
- If you have selected the 5 GHz radio on the WPS page, and the device supports only 2.4 GHz, change the setting to use the 2.4 GHz radio for WPS pairing.

# Restore the Gateway default settings

You can reset some Gateway components, or the entire Gateway, to factory defaults.

1. Click the System tab, then choose the **Reset** link.
   The Reset page displays.



Reset

Table of options for reset

Save Configuration File: Save

**WARNING: Loading a configuration file will restore your gateway to the previously saved configuration and automatically restart the gateway.**

Load Configuration File: Choose File No file chosen Load

Restore Default Wireless Settings: Restore

Restore Default Firewall Settings: Restore

**WARNING: Restoring your gateway to factory default settings will permanently delete all configuration changes since the system was installed and automatically restart the gateway.**

Restore Factory Defaults: Restore...

2. Click one of the **Restore** buttons:
   - Click **Default Wireless Settings** to restore just the Wi-Fi settings.

- Click **Default Firewall Settings** to restore just the Firewall settings.
- Click **Factory Defaults** to restore the entire Gateway to factory default settings.

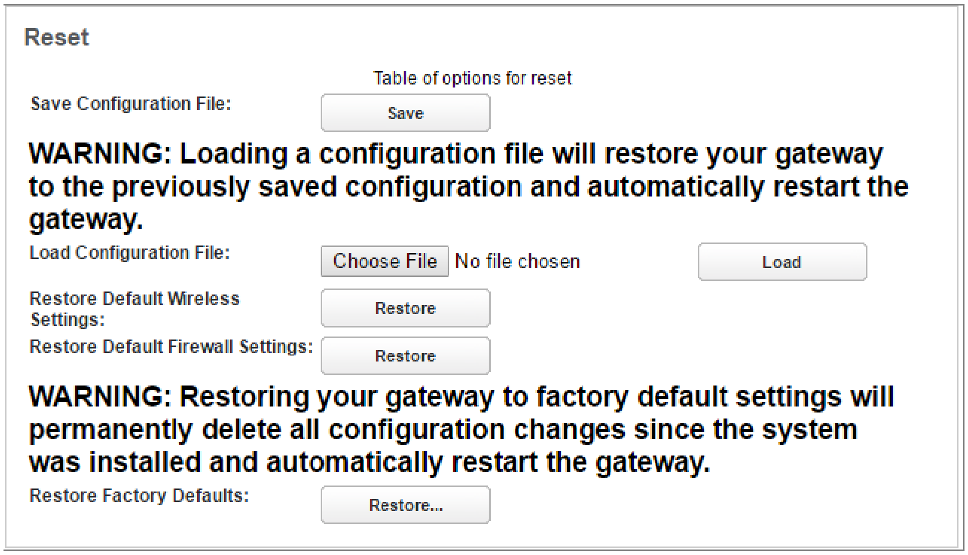
3. If you have a saved configuration, proceed to *Save or restore the configuration* (page 21) to reload it.

# Save or restore the configuration

When everything is working properly, or before experimenting with system settings, you should save the configuration. You can then reload it if necessary.

► ***To save the current configuration:***

1. Click the System tab, then choose the **Reset** link.
   The Reset page displays.



Reset

Table of options for reset

Save Configuration File:

WARNING: Loading a configuration file will restore your gateway to the previously saved configuration and automatically restart the gateway.

Load Configuration File: No file chosen

Restore Default Wireless Settings:

Restore Default Firewall Settings:

WARNING: Restoring your gateway to factory default settings will permanently delete all configuration changes since the system was installed and automatically restart the gateway.

Restore Factory Defaults:

2. Click **Save**.
   Your browser downloads the configuration file. Most computers automatically save to the Downloads folder.
3. Move the file to a folder where you can find it, if needed.

► ***To restore a saved configuration:***

4. Click **Choose File**.
   Your browser prompts you for the name and location of the saved configuration file.
5. Locate the saved configuration, and click **OK** in your browser.
   The Reset page displays the chosen configuration file name.
6. Click **Load** to load the configuration file.

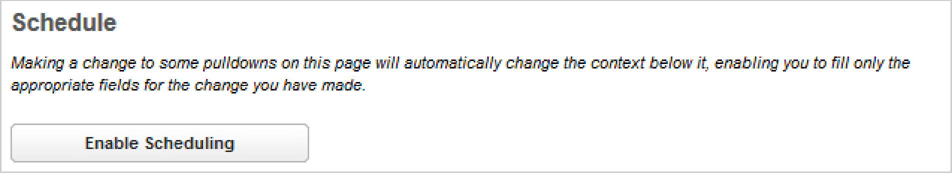
The Gateway loads the saved configuration, then restarts to apply the changes.

# Schedule downtime for a network

Use the Schedule page to disable a Wi-Fi network during certain times of day.

- ***To schedule the dates and times to disable a Wi-Fi network:***

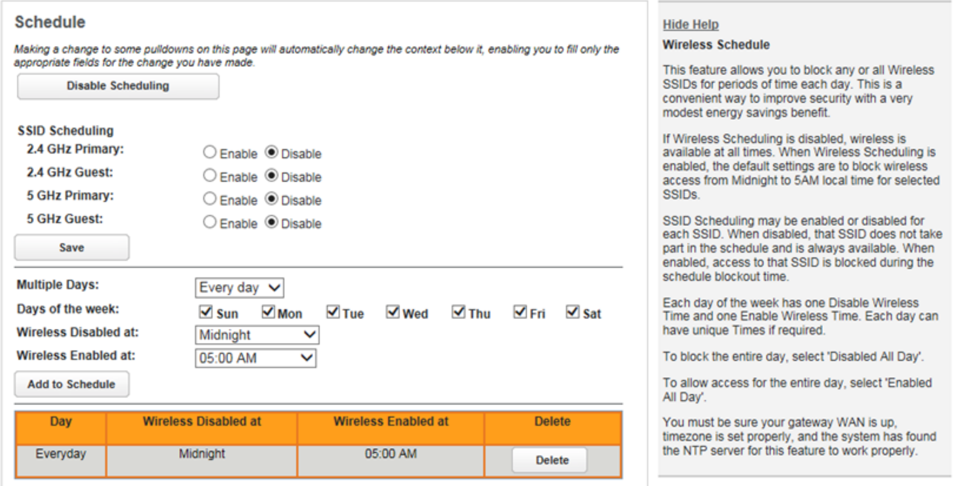
1. Click the Wi-Fi tab, then **Schedule**.
   The Schedule page displays:



Schedule

*Making a change to some pulldowns on this page will automatically change the context below it, enabling you to fill only the appropriate fields for the change you have made.*

2. Click **Enable Schedule**.
   The Schedule page displays more information as shown below. The button changes to **Disable Schedule**, and can now be used to return to the original display.



Schedule

*Making a change to some pulldowns on this page will automatically change the context below it, enabling you to fill only the appropriate fields for the change you have made.*

SSID Scheduling

2.4 GHz Primary: ○ Enable ● Disable

2.4 GHz Guest: ○ Enable ● Disable

5 GHz Primary: ○ Enable ● Disable

5 GHz Guest: ○ Enable ● Disable

Multiple Days: Every day

Days of the week: ☑ Sun ☑ Mon ☑ Tue ☑ Wed ☑ Thu ☑ Fri ☑ Sat

Wireless Disabled at: Midnight

Wireless Enabled at: 05:00 AM

| Day | Wireless Disabled at | Wireless Enabled at | Delete |
|---|---|---|---|
| Everyday | Midnight | 05:00 AM | Delete |

Wireless Schedule

This feature allows you to block any or all Wireless SSIDs for periods of time each day. This is a convenient way to improve security with a very modest energy savings benefit.

If Wireless Scheduling is disabled, wireless is available at all times. When Wireless Scheduling is enabled, the default settings are to block wireless access from Midnight to 5AM local time for selected SSIDs.

SSID Scheduling may be enabled or disabled for each SSID. When disabled, that SSID does not take part in the schedule and is always available. When enabled, access to that SSID is blocked during the schedule blockout time.

Each day of the week has one Disable Wireless Time and one Enable Wireless Time. Each day can have unique Times if required.

To block the entire day, select 'Disabled All Day'.

To allow access for the entire day, select 'Enabled All Day'.

You must be sure your gateway WAN is up, timezone is set properly, and the system has found the NTP server for this feature to work properly.

3. In SSID Scheduling, select **Enable** for Wi-Fi scheduling or **Disable** to forgo Wi-Fi scheduling for that SSID (wireless is available on that SSID at all times). You can enable some networks and disable others.
4. In the middle pane date/time resolution fields, select:
   - **Multiple Days**: Pre-selected configurations for the **Days of the week** checkboxes. Choose between **Every day**, **Weekdays**, and **Weekends**.
   - **Days of the week**: Set the checkboxes as desired. You can override the **Multiple Days** selections.
   - **Enable/Disable Times**: The range of times to disable the networks.
5. Click **Add to Schedule**.
   The schedule selections appear in tabular form in the bottom pane. Click **Delete** to remove the item from the schedule.
6. Repeat steps 4 and 5 to add more scheduled downtime. You can do this to, for example, schedule non-contiguous blocks of downtime.

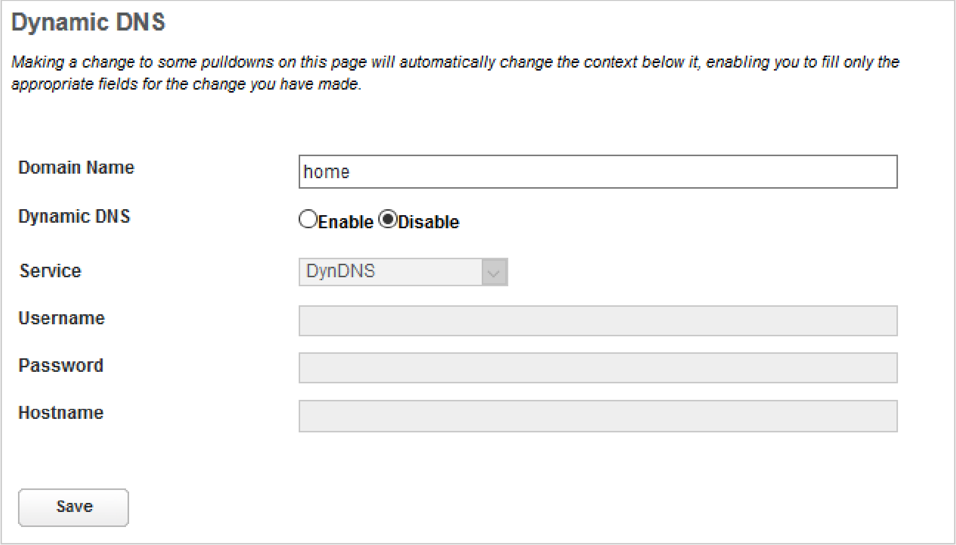
# Set up Dynamic DNS

If you own a domain name that you want to associate with your Gateway, you can use a Dynamic DNS service.

You need an account with one of the listed Dynamic DNS services

To configure Dynamic DNS:

1. Click the Broadband tab, then choose the **Dynamic DNS** link.
   The DynDNS page displays.



Dynamic DNS

*Making a change to some pulldowns on this page will automatically change the context below it, enabling you to fill only the appropriate fields for the change you have made.*

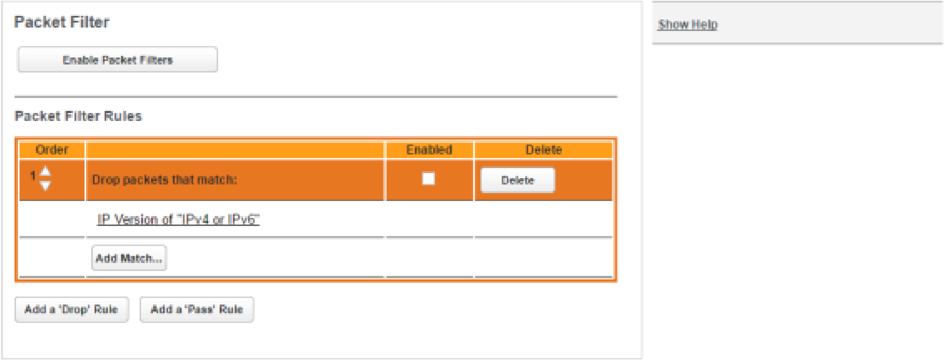
| | |
|---|---|
| Domain Name | home |
| Dynamic DNS | ○ Enable ● Disable |
| Service | DynDNS |
| Username | |
| Password | |
| Hostname | |

2. Choose **On** from the **Enable DynDNS** drop-down list box.
3. Choose your dynamic DNS provider from the **Provider** drop-down.
4. Enter the credentials for your account at your dynamic DNS provider.
5. Click **Save**.

# Work with packet filters

Follow these steps to work with packet filters.

1. Click the Firewall **Packet Filter** link.
   The Packet Filter page displays.



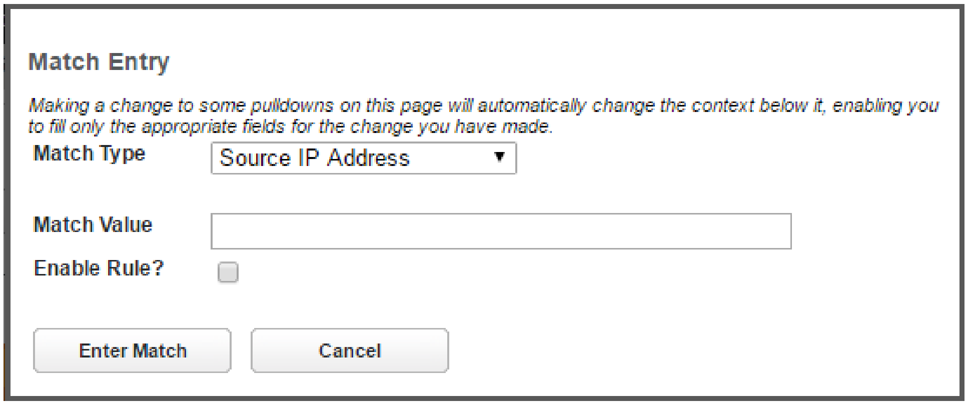
Packet Filter

Packet Filter Rules

| Order | | Enabled | Delete |
|---|---|---|---|
| 1 ▲▼ | Drop packets that match: | □ | Delete |
| | IP Version of "IPv4 or IPv6" | | |
| | Add Match... | | |

2. Click **Enable/Disable Packet Filters** to globally turn filters on or off.
3. Click **Add a ‘Drop’ Rule** or **Add a ‘Pass’ Rule** to select the type of packet filter rule.
   - A drop rule blocks matching packets.
   - A pass rule forwards matching packets.

4. Click **Add Match** to enter the source IP address or destination IP address this filter will match on.
   The Match Entry dialog displays.



Match Entry

*Making a change to some pulldowns on this page will automatically change the context below it, enabling you to fill only the appropriate fields for the change you have made.*

Match Type: Source IP Address ▼

Match Value:

Enable Rule? □

   As you create new matches, the list items change. There can only be one match from each match type for a given rule. Match types like Source Port, Destination Port, and TCP Flags are only available if other matches (for example, Protocol =TCP) have previously been created.

5. Select a protocol, if necessary, from the pull-down menu: **ICMP**, **TCP**, **UDP**, or **None** to specify any another IP transport protocol.

| **If you chose...** | **Enter...** |
|---|---|
| **by number** | **Protocol by number** |
| **by name** | **Protocol by name** |
| **ICMP** | **ICMP Type** as another match |
| **TCP** | TCP flags, source ports, and destination ports as other matches |
| **Source Port** | The port number to match |
| **Destination Port** | The port number to match |

6. Click **Enter Match** when finished configuring the filter.

The Gateway adds the filter to the Packet Filter list.

Chapter 4

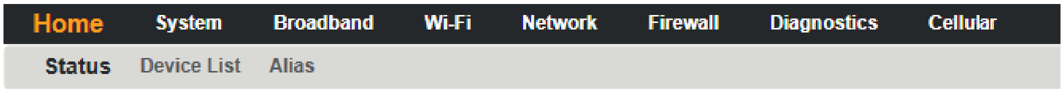
# Tab and link elements defined

The following sections provide detailed information about each of the tabs and links within the NVG500-series 9.3.0 build.

## Home tab

Links available on the Home tab provide an overview of the gateway configuration and access to pages which allow configuration of the most commonly needed settings.

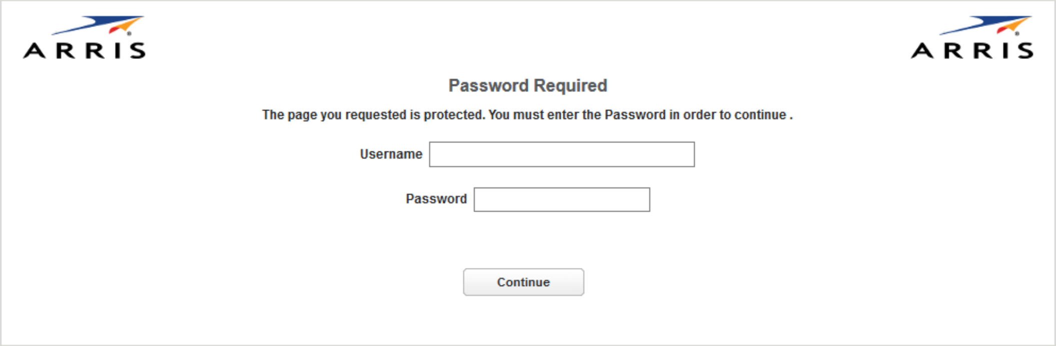
Select the Home tab to access the Home page and the Home links bar.



## Login

Allows you to access the Gateway configuration pages.

Browse to the Gateway (*http://myrouter*) and login when you are prompted. Some web pages are password protected. Protected pages require additional logins (Access Code) because configuration changes or changes to a Gateway's state are possible on protected pages. To go further, the Access Code must be typed in the Access Code text box. The Default Access code is printed on a label on the bottom of the Gateway.



Password Required

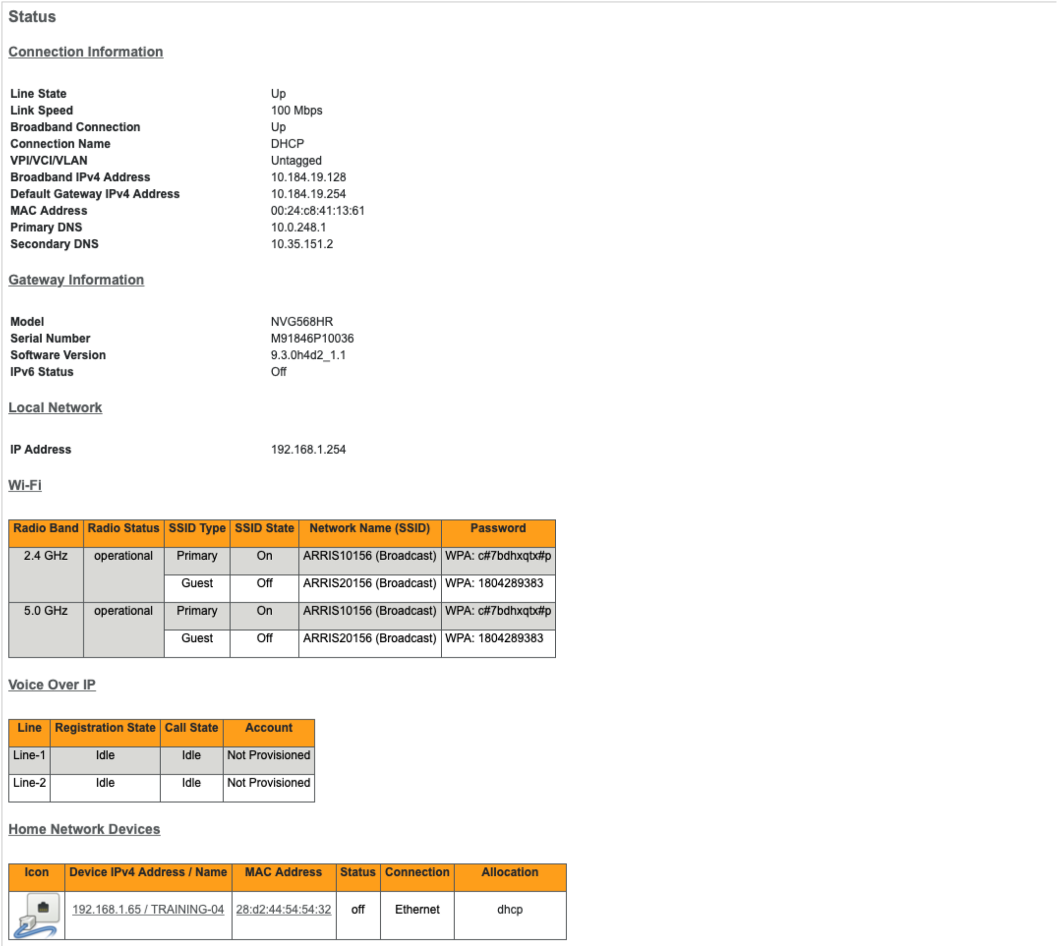
The page you requested is protected. You must enter the Password in order to continue .

Click **Continue** after typing the Default Access Code or the Access Code that was configured into the Gateway to access the password protected page.

## Home

Shows general network configuration and status.

Select the Home tab to open the **Status** page.



Status

Connection Information

| | |
|---|---|
| **Line State** | Up |
| **Link Speed** | 100 Mbps |
| **Broadband Connection** | Up |
| **Connection Name** | DHCP |
| **VPI/VCI/VLAN** | Untagged |
| **Broadband IPv4 Address** | 10.184.19.128 |
| **Default Gateway IPv4 Address** | 10.184.19.254 |
| **MAC Address** | 00:24:c8:41:13:61 |
| **Primary DNS** | 10.0.248.1 |
| **Secondary DNS** | 10.35.151.2 |

Gateway Information

| | |
|---|---|
| **Model** | NVG568HR |
| **Serial Number** | M91846P10036 |
| **Software Version** | 9.3.0h4d2_1.1 |
| **IPv6 Status** | Off |

Local Network

| | |
|---|---|
| **IP Address** | 192.168.1.254 |

Wi-Fi

| Radio Band | Radio Status | SSID Type | SSID State | Network Name (SSID) | Password |
|---|---|---|---|---|---|
| 2.4 GHz | operational | Primary | On | ARRIS10156 (Broadcast) | WPA: c#7bdhxqtx#p |
| | | Guest | Off | ARRIS20156 (Broadcast) | WPA: 1804289383 |
| 5.0 GHz | operational | Primary | On | ARRIS10156 (Broadcast) | WPA: c#7bdhxqtx#p |
| | | Guest | Off | ARRIS20156 (Broadcast) | WPA: 1804289383 |

Voice Over IP

| Line | Registration State | Call State | Account |
|---|---|---|---|
| Line-1 | Idle | Idle | Not Provisioned |
| Line-2 | Idle | Idle | Not Provisioned |

Home Network Devices

| Icon | Device IPv4 Address / Name | MAC Address | Status | Connection | Allocation |
|---|---|---|---|---|---|
| | 192.168.1.65 / TRAINING-04 | 28:d2:44:54:54:32 | off | Ethernet | dhcp |

## Connection Information

- **Line State:** The status of the physical layer, up or down.
- **Link Speed:** The data rate of the physical broadband connection.
- **Broadband Connection:** The current state, Up (active) or Down (not active), of the broadband connection path to the Internet.
- **Connection Name:** The type of connection; one of DHCP, Static, or PPPoE.
- **VPI/VCI/VLAN:** VPI, VCI or VLAN when applicable.
- **Broadband IPv4 Address:** The public IP address of your gateway, whether dynamically or statically assigned.
- **Default Gateway IPv4 Address:** Your ISP’s gateway router IP address.
- **MAC Address:** Your gateway’s unique hardware address identifier.
- **Primary DNS / Secondary DNS**

  The IP address of the primary or backup Domain Name Server.

## Gateway Information

- **Model:** The Gateway model number.
- **Serial Number:** The Gateway serial number.

- **Software Version:** The version number of the current embedded software in your Gateway.
- **IPv6 Status:** Shows if the Gateway is configured to support Internet Protocol Version 6 (IPv6) addressing in addition to IPv4.

### Local Network

- **IP Address:** Displays the IPv4 address of the gateway on the network.

### Wi-Fi

- **Radio Band:** One of 2.4 GHz or 5.0 GHz.
- **Radio Status:** Your wireless radio may be operational or disabled.
- **SSID Type:** Either Primary or Guest.
- **SSID State:** On or off.
- **Network Name (SSID):** The name or ID that is displayed to a client scan.
- **Password:** The password for a Wi-Fi device to connect to the internet through the Gateway.

### Home Network Devices

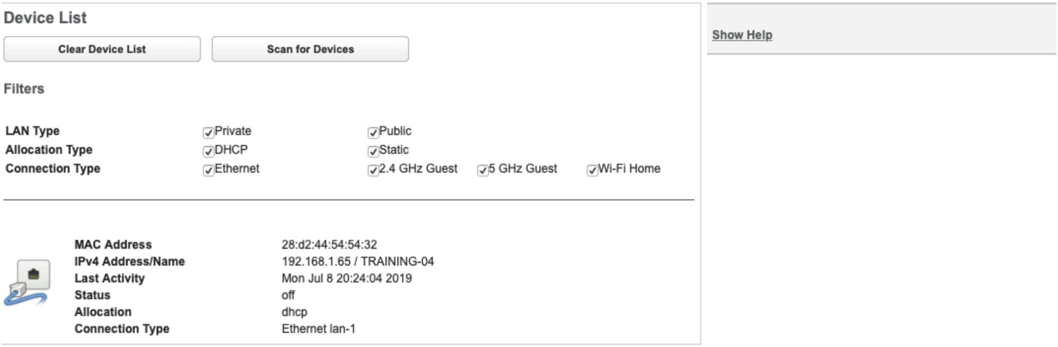
- **Icon:** A default icon is initially chosen by the system based on whether the client is wired or wireless. There is an option to change the icon and give the client a new name to help identify it when traversing the web pages.
- **IPv4 Address / Name :** Client IP address or network name.
- **MAC Address:** The device's unique hardware address.
- **Status:** Off or On.
- **Connection:** The type of network connection the client is using to access your gateway.
- **Allocation:** Type of IP address assignment, for example, static or DHCP.

Depending on the particular setup of the client, some fields in the Home Network Devices table may or may not be displayed. Click on any of the active fields to change the name and icon of the device.

## Device List

The Device List page provides access to information about devices connected to the Gateway.

Click **Device List** in the Home tab to open the Device List page.



Device List

Filters

| | | | | |
|---|---|---|---|---|
| LAN Type | ☑Private | ☑Public | | |
| Allocation Type | ☑DHCP | ☑Static | | |
| Connection Type | ☑Ethernet | ☑2.4 GHz Guest | ☑5 GHz Guest | ☑Wi-Fi Home |

| | |
|---|---|
| MAC Address | 28:d2:44:54:54:32 |
| IPv4 Address/Name | 192.168.1.65 / TRAINING-04 |
| Last Activity | Mon Jul 8 20:24:04 2019 |
| Status | off |
| Allocation | dhcp |
| Connection Type | Ethernet lan-1 |

Under the Filters, this page lists each connected home network device with its icon and the following information.

- **Filters:**

  If there are many connected devices, it may help to filter some out by unchecking the checkboxes in this section. Filters are:

  - LAN Type - Private and Public
  - Allocation Type - DHCP and Static
  - Connection Type - Ethernet wired and Wi-Fi
- **MAC Address:** The device's unique hardware address.
- **IPv4 Address / Name :** Client IP address or network name.
- **Last Activity:** Date and time of last traffic passed on this device.
- **Status:** Off or On.
- **Allocation:** Type of IP address assignment, for example, static or DHCP.
- **Connection Type:** Type of connection, for example, Ethernet or Wi-Fi.

For Wi-Fi client connections, the Device List page displays signal strength bars: ▂▄▆█. Hollow bars indicate lower signal strength. If all bars are hollow, the device has disconnected.

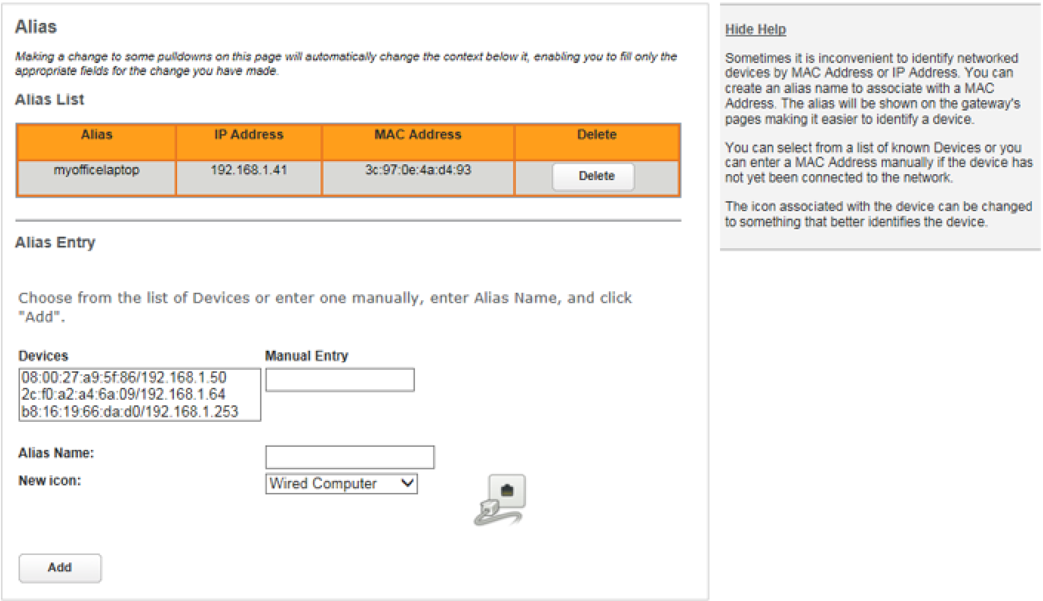
Click **Clear Device List** to reset the Home Devices summary.

Click **Scan for Devices** to seek out other devices that have been connected since the last scan. The Home Devices list is updated internally every 5 minutes. Use this button to force a manual update immediately.

# Alias

Changes the icon and the name associated with a LAN-side device, to make it easier to identify.

Click the **Alias** link in the Home tab to open the Alias page.



Alias

*Making a change to some pulldowns on this page will automatically change the context below it, enabling you to fill only the appropriate fields for the change you have made.*

Alias List

| Alias | IP Address | MAC Address | Delete |
|---|---|---|---|
| myofficelaptop | 192.168.1.41 | 3c:97:0e:4a:d4:93 | Delete |

Alias Entry

Choose from the list of Devices or enter one manually, enter Alias Name, and click "Add".

Devices

08:00:27:a9:5f:86/192.168.1.50
2c:f0:a2:a4:6a:09/192.168.1.64
b8:16:19:66:da:d0/192.168.1.253

Manual Entry

Alias Name:

New icon: Wired Computer

Add

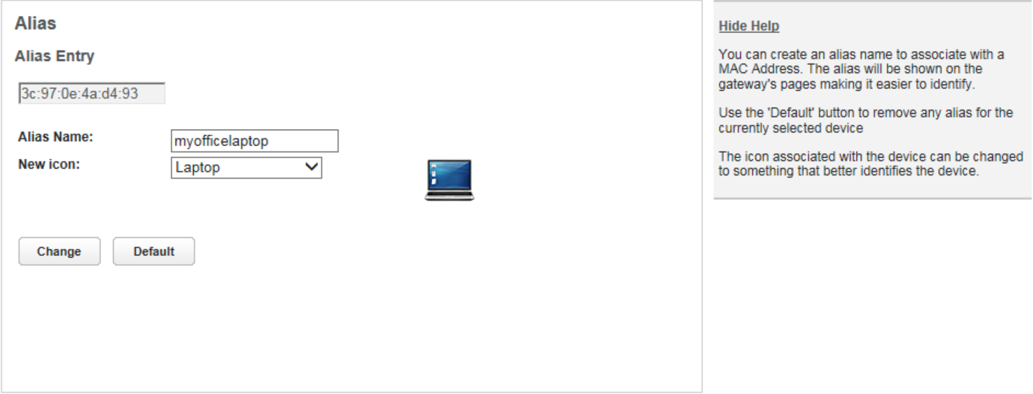
Hide Help

Sometimes it is inconvenient to identify networked devices by MAC Address or IP Address. You can create an alias name to associate with a MAC Address. The alias will be shown on the gateway's pages making it easier to identify a device.

You can select from a list of known Devices or you can enter a MAC Address manually if the device has not yet been connected to the network.

The icon associated with the device can be changed to something that better identifies the device.

The Alias page contains a list of all devices for which an alias name/icon has been chosen. You can display a device-specific version of this page by clicking a device in the Status or Device List pages.



Alias

Alias Entry

3c:97:0e:4a:d4:93

Alias Name: myofficelaptop

New icon: Laptop

Change

Default

Hide Help

You can create an alias name to associate with a MAC Address. The alias will be shown on the gateway's pages making it easier to identify.

Use the 'Default' button to remove any alias for the currently selected device

The icon associated with the device can be changed to something that better identifies the device.

## Alias Entry

- **Devices:** Lists connected (or previously connected) devices by MAC address.
- **Manual Entry:**If the device you want to add is not in the Devices list, enter its MAC address.

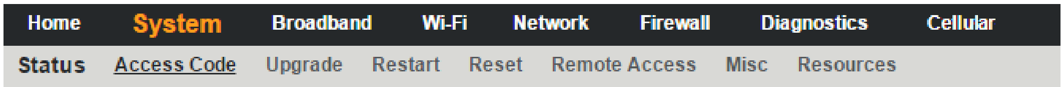
  **Note:** The MAC address is different for Ethernet and Wi-Fi interfaces. The operating system's network configuration can show you the correct MAC address for the device.
- **Alias Name:** Enter the name you want to use for this device.
- **New icon:** Choose the device type from the menu.

Click **Add** to add the alias to the list.

# System tab

Links under the System Tab allow viewing and managing the gateway in detail.

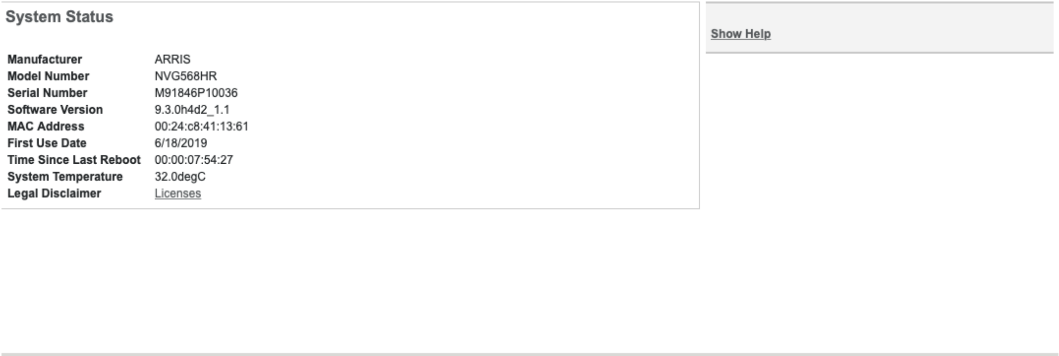
Select the **System** Tab to access the System page and the System links. Some System Tab functions mirror those found on the Home tab.



## System Status

Provides general information about the Gateway.

Click the System tab to access the System page links bar and the System Status page.



System Status

| | |
|---|---|
| Manufacturer | ARRIS |
| Model Number | NVG568HR |
| Serial Number | M91846P10036 |
| Software Version | 9.3.0h4d2_1.1 |
| MAC Address | 00:24:c8:41:13:61 |
| First Use Date | 6/18/2019 |
| Time Since Last Reboot | 00:00:07:54:27 |
| System Temperature | 32.0degC |
| Legal Disclaimer | Licenses |

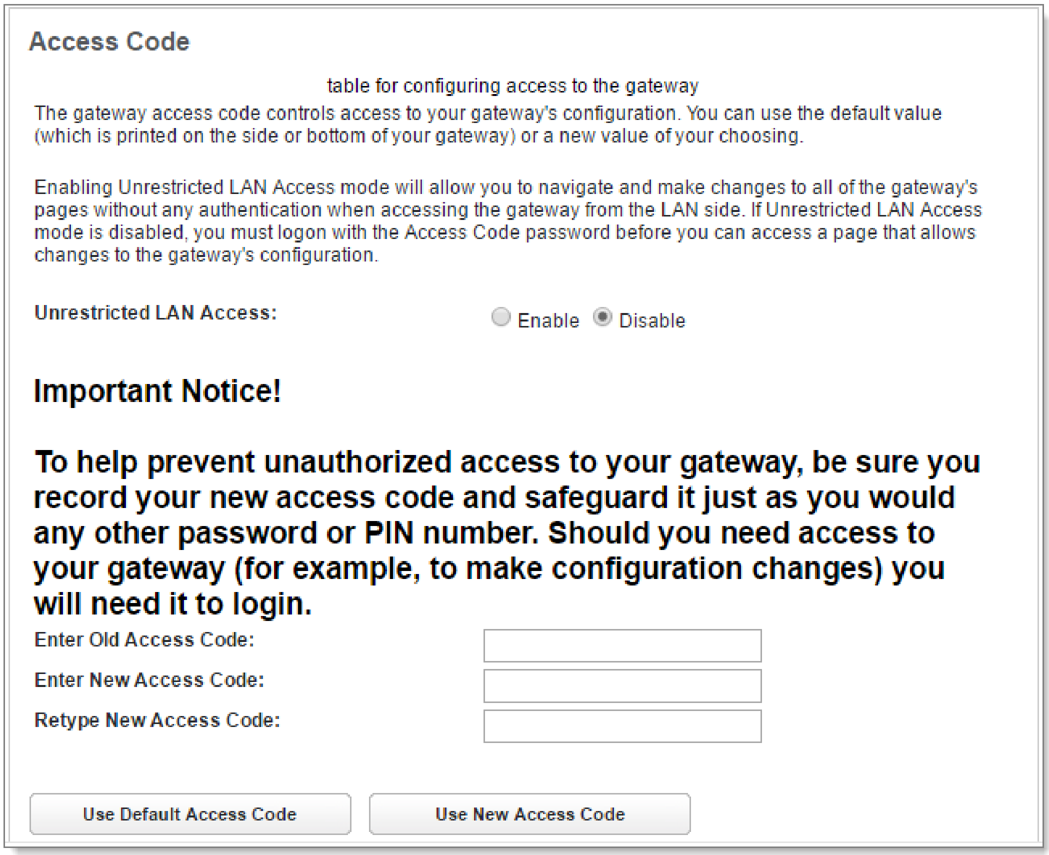
The System Status page displays the following information:

- **Manufacturer:** Manufacturer’s identifier.
- **Model Number:** Manufacturer’s model number.
- **Serial Number:** Unique serial number of your gateway.
- **Software Version:** Version number of the current embedded software in your gateway.
- **MAC Address:** Unique hardware address of this gateway.
- **First Use Date:** Date and time the gateway was first used.
- **Time Since Last Reboot:** Elapsed time since last reboot of the gateway in days:hours:minutes:seconds.
- **System Temperature:** The internal temperature, in degrees Celsius.
- **Legal Disclaimer:** Clicking the Licenses link displays a listing of software copyright attributions.

## Access Code

The Access Code page provides a way to change the password associated with the gateway configuration.

Access to the ARRIS Embedded Software Version 9.3.0 is controlled through the Admin account. The default Admin password for the gateway is the unique code printed on a label on the bottom of the gateway.



Access Code

table for configuring access to the gateway

The gateway access code controls access to your gateway's configuration. You can use the default value (which is printed on the side or bottom of your gateway) or a new value of your choosing.

Enabling Unrestricted LAN Access mode will allow you to navigate and make changes to all of the gateway's pages without any authentication when accessing the gateway from the LAN side. If Unrestricted LAN Access mode is disabled, you must logon with the Access Code password before you can access a page that allows changes to the gateway's configuration.

Unrestricted LAN Access: ○ Enable ● Disable

**Important Notice!**

**To help prevent unauthorized access to your gateway, be sure you record your new access code and safeguard it just as you would any other password or PIN number. Should you need access to your gateway (for example, to make configuration changes) you will need it to login.**

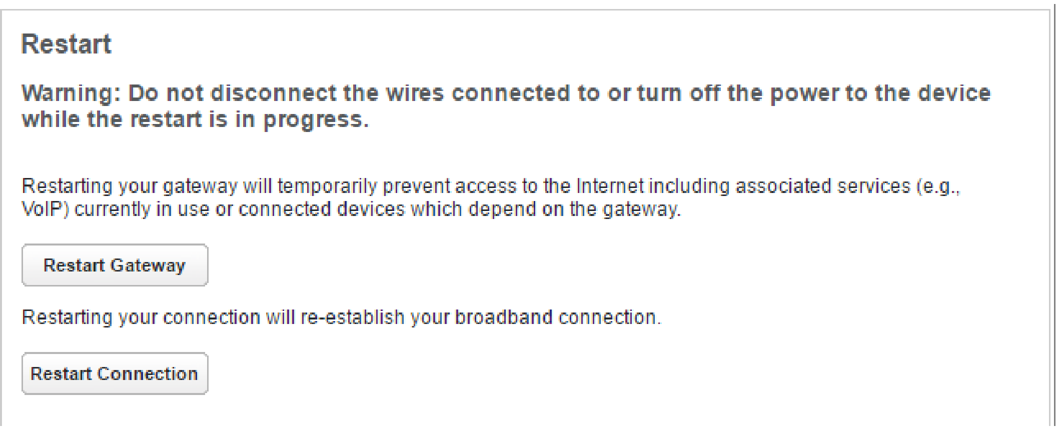
| | |
|---|---|
| Enter Old Access Code: | |
| Enter New Access Code: | |
| Retype New Access Code: | |

You can change the password to one between 8 and 20 characters long. The new password must include characters from at least two of these categories:

- Alphabetic (letter) characters
- Numeric (number) characters
- Special characters (! @ \# $ % ^ & * and so on)

# Restart

The Restart page provides a way to restart the gateway, or reset its connections.



Restart

**Warning: Do not disconnect the wires connected to or turn off the power to the device while the restart is in progress.**

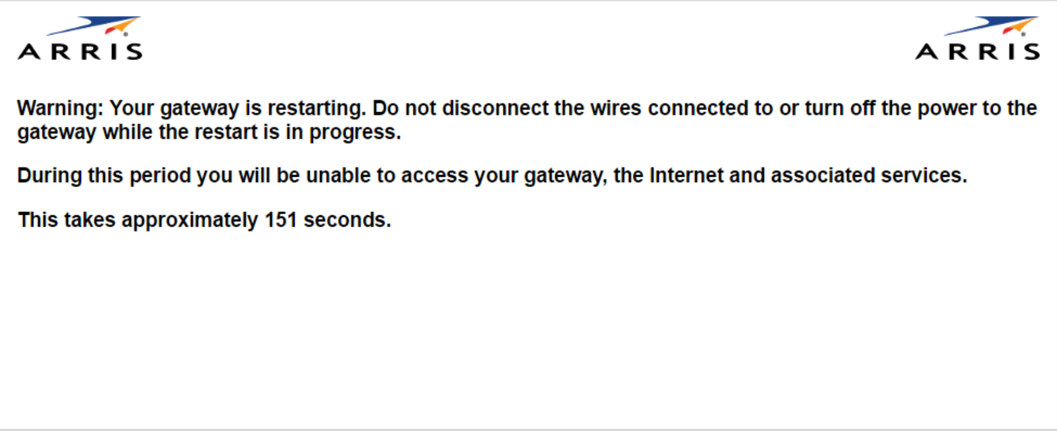
Restarting your gateway will temporarily prevent access to the Internet including associated services (e.g., VoIP) currently in use or connected devices which depend on the gateway.

Restarting your connection will re-establish your broadband connection.

In some cases, when you make configuration changes, you may be required to restart for the changes to take effect. If there is a problem with the service provider, restarting the connection may be required.

- Click the **Restart Gateway** button to:
  - Disconnect all users
  - Initialize all its interfaces
  - Reload the operating system software

  After clicking **Restart Gateway**, the following message appears.



**Warning: Your gateway is restarting. Do not disconnect the wires connected to or turn off the power to the gateway while the restart is in progress.**

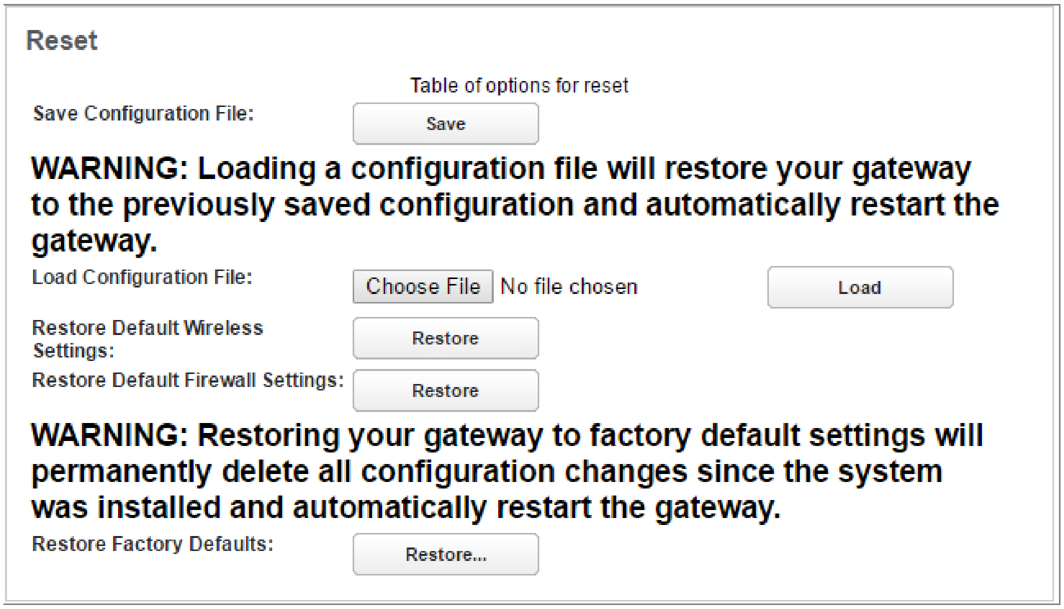
**During this period you will be unable to access your gateway, the Internet and associated services.**

**This takes approximately 151 seconds.**

- Click the **Restart Connection** button to reinitialize the link between the gateway and the service provider. Restarting the connection does not reload the operating system software.

## Reset

The Reset page provides access to three restore functions and a function to save a configuration file.



Reset

Table of options for reset

Save Configuration File:

**WARNING: Loading a configuration file will restore your gateway to the previously saved configuration and automatically restart the gateway.**

Load Configuration File: No file chosen

Restore Default Wireless Settings:

Restore Default Firewall Settings:

**WARNING: Restoring your gateway to factory default settings will permanently delete all configuration changes since the system was installed and automatically restart the gateway.**

Restore Factory Defaults:

- **Save Configuration File**

  Save the current configuration to a local PC, with the default name of config.dat, to use for restoring the settings at a later time.
- **Load Configuration File**

  Loading a configuration file saved from a previous software version may or may not restore properly. On loading a configuration file the Gateway always restarts; it cannot be cancelled.

  To load a configuration file, click **Choose File**, find the file and then click **Load**.
- **Restore Default Wireless Settings**

  Restores only the default wireless settings of the gateway. All other user-defined settings remain.
- **Restore Default Firewall Settings**

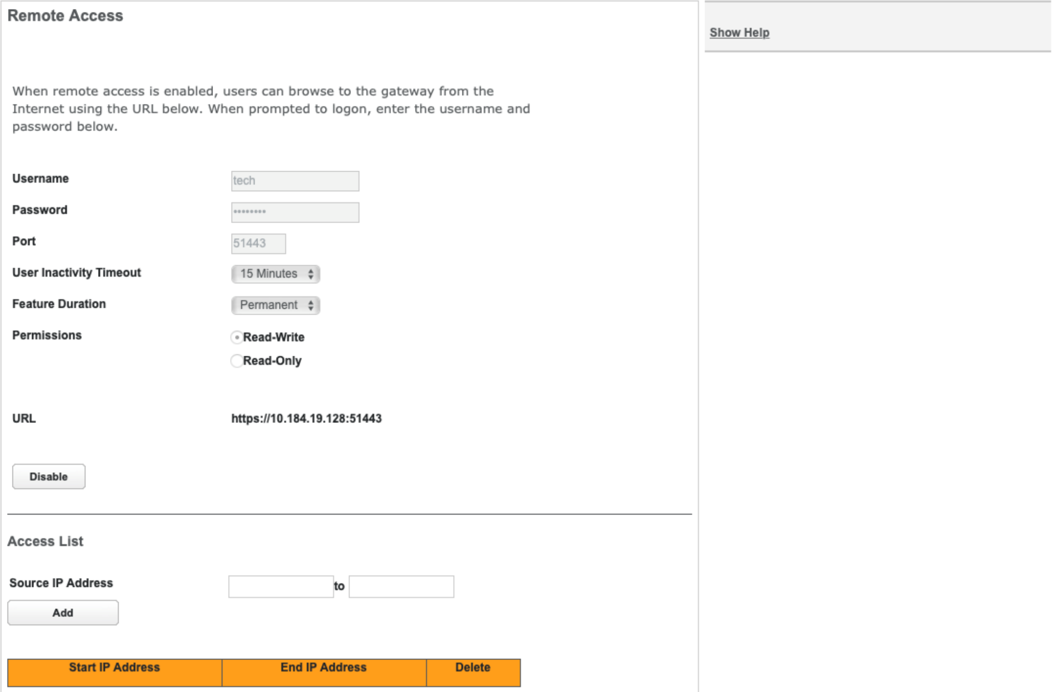
  Restores only the default firewall settings of the gateway. All other user-defined settings remain.
- **Restore Factory Defaults**

  All configuration changes you have made will be deleted and settings will be returned to factory defaults. In addition, a restart will occur, so all users connected to the gateway or to the Internet will be disconnected.

  **Note:** Exercise caution when performing a factory reset. A factory reset erases all previous configuration changes made to the gateway. To bring the gateway back to the previous configuration, begin with the Quick Start Guide associated with the gateway.

## Remote Access

The Remote Access page provides access to the Gateway from the WAN. Use remote access for advanced troubleshooting or remote configuration.



Remote Access

When remote access is enabled, users can browse to the gateway from the Internet using the URL below. When prompted to logon, enter the username and password below.

| | |
|---|---|
| Username | tech |
| Password | •••••••• |
| Port | 51443 |
| User Inactivity Timeout | 15 Minutes |
| Feature Duration | Permanent |
| Permissions | ● Read-Write<br>○ Read-Only |
| URL | https://10.184.19.128:51443 |

Access List

Source IP Address ______ to ______

| Start IP Address | End IP Address | Delete |
|---|---|---|

**Warning:** Enabling remote access allows anyone who knows or can determine the password, port ID, and URL (address) of the device to view any configuration settings or change the operation of the device.

If remote access is not currently enabled, the Remote Access page allows configuration and enabling.

- **Username:** The user ID required to log in remotely.
- **Password:** The password used for remote access.
- **Port:** The port number used for remote access. Use a port in the range 49152 to 65535.
- **User Inactivity Timeout:** The Gateway disconnects remote access after the specified time expires with no activity.
- **Feature Duration:** The amount of time the Gateway allows remote access.
- **Permissions:** Select **Read-Write** or **Read-Only**.
- **URL:** The URL required for remote access to the Gateway.
- **Enable:** Click to enable remote access. When enabled, the button changes to **Disable**.

## Access List

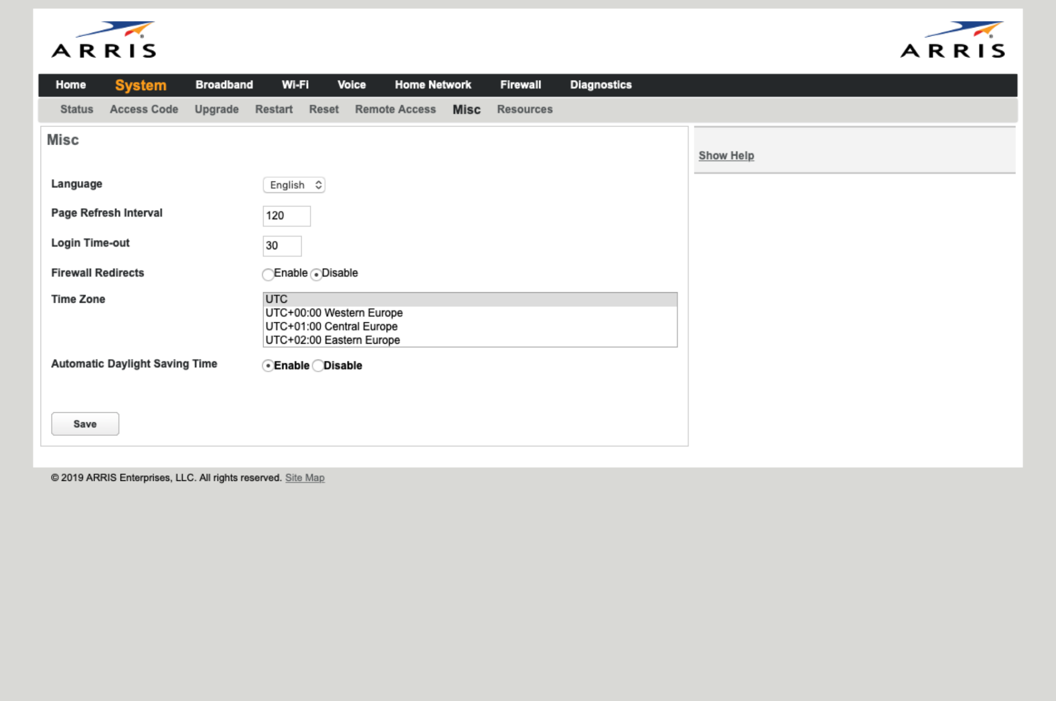
- **Source IP Address:** A range of IP addresses. If entered, the Gateway restricts access to devices within that address range. You can configure multiple ranges, if needed.

  To restrict to a single IP address, enter the same address in both boxes.
- **Add:** Click to add the configured range to the table.

The table shows configured address ranges. To delete a range, click the **Delete** button on that row.

# Misc

The Misc page provides capability to set the Page Refresh Interval, Login Time-out value, Local Time Zone, and Automatic Daylight Savings Time.



Misc

Language: English

Page Refresh Interval: 120

Login Time-out: 30

Firewall Redirects: ○ Enable ● Disable

Time Zone:
UTC
UTC+00:00 Western Europe
UTC+01:00 Central Europe
UTC+02:00 Eastern Europe

Automatic Daylight Saving Time: ● Enable ○ Disable

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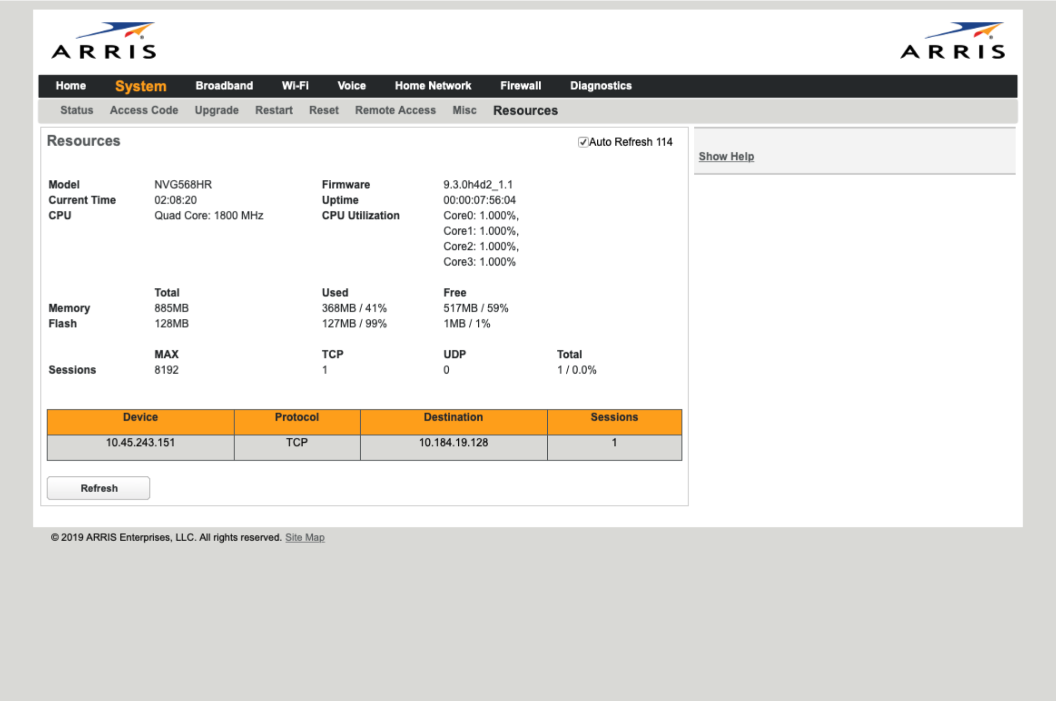
- **Language:** Select the language used to display help and field names.
- **Page Refresh Interval:** The automatic refresh interval, in seconds.
- **Login Time-out:** The inactivity time-out, in minutes, after which the user will be prompted to login to resume web page activity.
- **Firewall Redirects:** When enabled, the Gateway displays a special page when blocking access due to firewall restrictions (website or time of day).
- **Time Zone:** A selection list to choose from for the time zone in which the gateway resides.
- **Automatic Daylight Saving Time:** The gateway automatically adjusts for Daylight Saving Time. When configured in a local that does not observe Daylight Saving Time, disable this feature.

# Resources

The Resources page provides general Gateway information.



Resources

☑ Auto Refresh 114

| | | | | |
|---|---|---|---|---|
| Model | NVG568HR | Firmware | 9.3.0h4d2_1.1 | |
| Current Time | 02:08:20 | Uptime | 00:00:07:56:04 | |
| CPU | Quad Core: 1800 MHz | CPU Utilization | Core0: 1.000%,<br>Core1: 1.000%,<br>Core2: 1.000%,<br>Core3: 1.000% | |
| | Total | Used | Free | |
| Memory | 885MB | 368MB / 41% | 517MB / 59% | |
| Flash | 128MB | 127MB / 99% | 1MB / 1% | |
| | MAX | TCP | UDP | Total |
| Sessions | 8192 | 1 | 0 | 1 / 0.0% |

| Device | Protocol | Destination | Sessions |
|---|---|---|---|
| 10.45.243.151 | TCP | 10.184.19.128 | 1 |

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- **Auto Refresh:** Check this box to automatically refresh the page.
- **Model:** Gateway model number.
- **Firmware:** Current firmware version of the embedded operating system.
- **Current Time:** Local time if:
  - The WAN is up
  - The timezone is set
  - The NTP server has been found
- **Uptime:** Days, Hours, Minutes, Seconds since the gateway was restarted.
- **CPU:** Displays the CPU installed in the Gateway.
- **CPU Utilization:** CPU load for each core.
- **Memory:** Total memory in the Gateway, and how much is used/free.
- **Flash:** Total amount of Flash memory in the Gateway.
- **Sessions:** The number of connections (TCP and UDP) in use, by count and by percentage of the maximum number of sessions.

The table displays the number of sessions by connected device. Because the data is filtered, the session count may not agree with the number of lines shown in the session table.

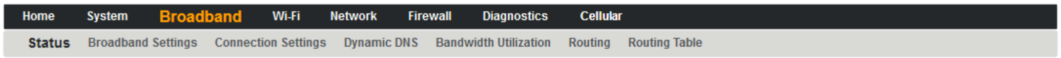
To update the Client Session table, click **Refresh**.

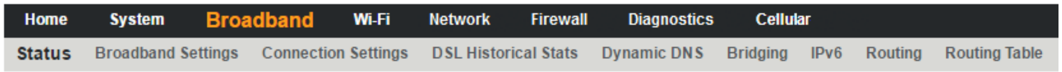
# Broadband tab

The Broadband links provide access to information pages about the broadband connection and to configure connection details.

Some links may differ from what is shown below, depending on model.

Select the Broadband tab to access the Broadband Links bar and the Broadband Status page.



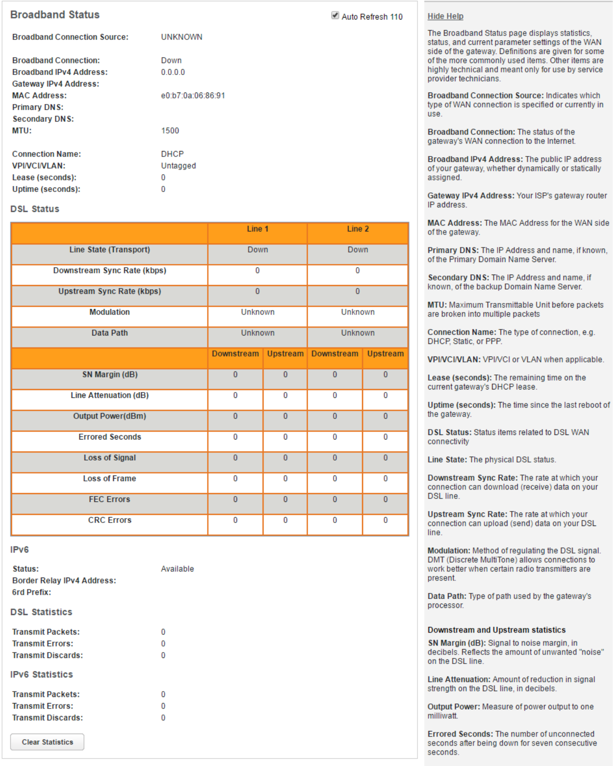


# Broadband Status

The Status page displays information about the Gateway WAN connection(s) to the Internet.

Select the Broadband tab to access the Broadband Links bar and the Broadband Status page.

**Note:** The content of this page may vary by both model and connection type. An NVG548 page is provided as an example.



Broadband Status

☑ Auto Refresh 110

|  |  |
|---|---|
| **Broadband Connection Source:** | UNKNOWN |
| **Broadband Connection:** | Down |
| **Broadband IPv4 Address:** | 0.0.0.0 |
| **Gateway IPv4 Address:** |  |
| **MAC Address:** | e0:b7:0a:06:86:91 |
| **Primary DNS:** |  |
| **Secondary DNS:** |  |
| **MTU:** | 1500 |
| **Connection Name:** | DHCP |
| **VPI/VCI/VLAN:** | Untagged |
| **Lease (seconds):** | 0 |
| **Uptime (seconds):** | 0 |

DSL Status

|  | Line 1 |  | Line 2 |  |
|---|---|---|---|---|
| Line State (Transport) | Down |  | Down |  |
| Downstream Sync Rate (kbps) | 0 |  | 0 |  |
| Upstream Sync Rate (kbps) | 0 |  | 0 |  |
| Modulation | Unknown |  | Unknown |  |
| Data Path | Unknown |  | Unknown |  |
|  | Downstream | Upstream | Downstream | Upstream |
| SN Margin (dB) | 0 | 0 | 0 | 0 |
| Line Attenuation (dB) | 0 | 0 | 0 | 0 |
| Output Power(dBm) | 0 | 0 | 0 | 0 |
| Errored Seconds | 0 | 0 | 0 | 0 |
| Loss of Signal | 0 | 0 | 0 | 0 |
| Loss of Frame | 0 | 0 | 0 | 0 |
| FEC Errors | 0 | 0 | 0 | 0 |
| CRC Errors | 0 | 0 | 0 | 0 |

IPv6

|  |  |
|---|---|
| **Status:** | Available |
| **Border Relay IPv4 Address:** |  |
| **6rd Prefix:** |  |

DSL Statistics

|  |  |
|---|---|
| **Transmit Packets:** | 0 |
| **Transmit Errors:** | 0 |
| **Transmit Discards:** | 0 |

IPv6 Statistics

|  |  |
|---|---|
| **Transmit Packets:** | 0 |
| **Transmit Errors:** | 0 |
| **Transmit Discards:** | 0 |

The Broadband Status page displays statistics, status, and current parameter settings of the WAN side of the gateway. Definitions are given for some of the more commonly used items. Other items are highly technical and meant only for use by service provider technicians.

**Broadband Connection Source:** Indicates which type of WAN connection is specified or currently in use.

**Broadband Connection:** The status of the gateway's WAN connection to the Internet.

**Broadband IPv4 Address:** The public IP address of your gateway, whether dynamically or statically assigned.

**Gateway IPv4 Address:** Your ISP's gateway router IP address.

**MAC Address:** The MAC Address for the WAN side of the gateway.

**Primary DNS:** The IP Address and name, if known, of the Primary Domain Name Server.

**Secondary DNS:** The IP Address and name, if known, of the backup Domain Name Server.

**MTU:** Maximum Transmittable Unit before packets are broken into multiple packets

**Connection Name:** The type of connection, e.g. DHCP, Static, or PPP.

**VPI/VCI/VLAN:** VPI/VCI or VLAN when applicable.

**Lease (seconds):** The remaining time on the current gateway's DHCP lease.

**Uptime (seconds):** The time since the last reboot of the gateway.

**DSL Status:** Status items related to DSL WAN connectivity

**Line State:** The physical DSL status.

**Downstream Sync Rate:** The rate at which your connection can download (receive) data on your DSL line.

**Upstream Sync Rate:** The rate at which your connection can upload (send) data on your DSL line.

**Modulation:** Method of regulating the DSL signal. DMT (Discrete MultiTone) allows connections to work better when certain radio transmitters are present.

**Data Path:** Type of path used by the gateway's processor.

**Downstream and Upstream statistics**

**SN Margin (dB):** Signal to noise margin, in decibels. Reflects the amount of unwanted "noise" on the DSL line.

**Line Attenuation:** Amount of reduction in signal strength on the DSL line, in decibels.

**Output Power:** Measure of power output to one milliwatt.

**Errored Seconds:** The number of unconnected seconds after being down for seven consecutive seconds.

- **Broadband Connection Source:** The communications technology providing the broadband uplink.
- **Broadband Connection:** May be Up (connected) or Down (disconnected).
- **Broadband IPv4 Address:** The public IP address of the gateway, whether dynamically or statically assigned.
- **Gateway IPv4 Address:** The ISP's gateway router IP address.
- **MAC Address:** The gateway’s unique hardware address identifier.
- **Primary DNS:** The IP address of the primary Domain Name System (DNS) server.
- **Secondary DNS:** The IP address of the backup DNS server, if available.
- **MTU:** Maximum transmittable unit before packets are broken into multiple packets.
- **Connection Name:** The type of connection, e.g. DHCP, Static, or PPP.

- **VPI/VCI/VLAN:** VPI, VCI or VLAN when applicable.
- **Lease (seconds):** The remaining time on the gateway's current DHCP lease.
- **Uptime (seconds):** The time in seconds from the last reboot of the gateway.

### IPv6

- **Status:** May be Enabled or Unavailable.
- **Global Unicast IPv6 Address:** The public IPv6 address of the gateway, whether dynamically or statically assigned.
- **Border Relay IPv4 Address:** The public IPv4 address of the gateway.
- **6rd Prefix:** (if present) The ISP's IPv6 prefix. IPv6 RD (Rapid Deployment) uses this technique to encapsulate IPv6 packets in IPv4.

### IPv6 Statistics

- **Transmit Packets:** IP packets transmitted.
- **Transmit Errors:** Errors on IP packets transmitted.
- **Transmit Discards:** Number of IPv6 packets dropped.

### Connection Statistics

The Gateway shows the connection statistics for the current connection (Ethernet, LTE, etc.).

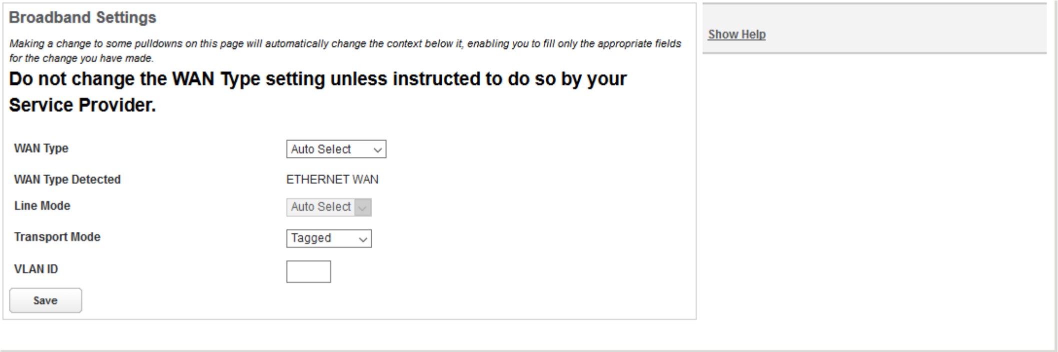
- **Line State (Transport):** Indicates if the line is Up or Down.
- **Current Speed:** (Ethernet only) The link speed.
- **Current Duplex:** (Ethernet only) The Ethernet duplex state: full or half.
- **Receive Packets:** IP packets received.
- **Transmit Packets:** IP packets transmitted.
- **Receive Bytes:** Number of bytes received on the port.
- **Transmit Bytes:** Number of bytes sent out of the port.
- **Receive Unicast:** Number of unicast packets received on the port.
- **Transmit Unicast:** Number of unicast packets sent out from the port.
- **Receive Multicast:** Number of multicast packets received on the port.
- **Transmit Multicast:** Number of multicast packets sent out from the port.
- **Receive Dropped:** Number of packets received on the port that were dropped.
- **Transmit Dropped:** Number of packets sent out of the port that were dropped.
- **Receive Errors:** Errors on IP packets received.
- **Transmit Errors:** Errors on IP packets transmitted.
- **Collisions:** Number of packets that had to be discarded as a result of collisions whereby two devices tried to transmit data on the network at the same time.

Click **Clear Statistics** to reset the counted values to zero.

# Broadband Settings

Displays the configured settings associated with the Gateway broadband interface.

Select the **Broadband Settings** link under the Broadband tab to view Broadband Settings.



Broadband Settings

*Making a change to some pulldowns on this page will automatically change the context below it, enabling you to fill only the appropriate fields for the change you have made.*

**Do not change the WAN Type setting unless instructed to do so by your Service Provider.**

|  |  |
|---|---|
| WAN Type | Auto Select |
| WAN Type Detected | ETHERNET WAN |
| Line Mode | Auto Select |
| Transport Mode | Tagged |
| VLAN ID |  |

- **WAN Type:**

  Often the system will automatically configure the WAN. If not, select the type of WAN you are connecting from the drop-down list.

- **Line Mode:**

  You may need to adjust the Line Mode for the WAN type that was selected.

  **Note:** The Line Mode selections shown depend on the WAN Type selected.

- **Transport Mode:**

  You may need to adjust the Transport Mode after the WAN Type and Line Mode have been selected.

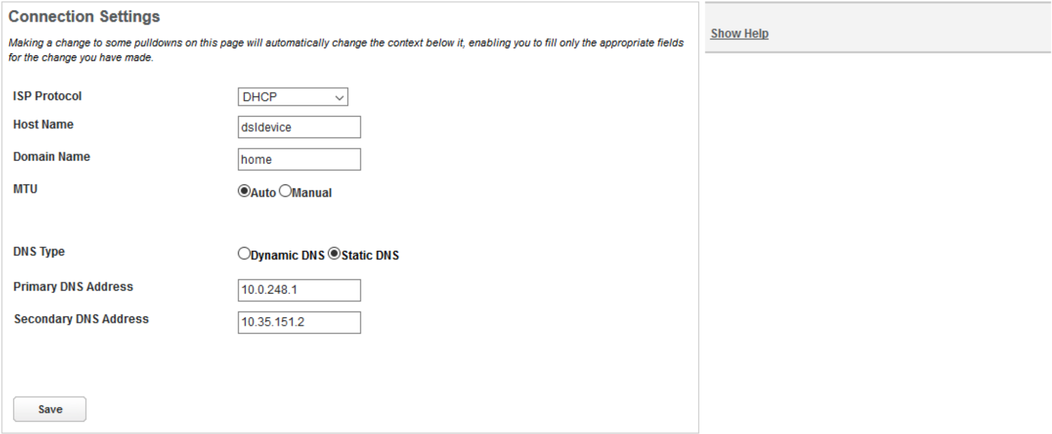
- **VLAN ID:** If the Line Mode or Transport Mode is tagged, enter the VLAN ID. Valid range: 0 to 4095.

# Connection Settings

Displays the configured settings associated with the Gateway broadband connection.

Select the **Connection Settings** link under the Broadband tab to view the Connection Settings.

**Note:** Some fields are displayed only for certain protocols.



Connection Settings

*Making a change to some pulldowns on this page will automatically change the context below it, enabling you to fill only the appropriate fields for the change you have made.*

| | |
|---|---|
| ISP Protocol | DHCP |
| Host Name | dsldevice |
| Domain Name | home |
| MTU | ● Auto ○ Manual |
| DNS Type | ○ Dynamic DNS ● Static DNS |
| Primary DNS Address | 10.0.248.1 |
| Secondary DNS Address | 10.35.151.2 |

- **ISP Protocol**

  In most cases, the system automatically determines the ISP Protocol. Otherwise, select the desired protocol. Options displayed on the screen vary depending on your previous selections.
- **Protocol Detected:** If ISP Protocol is **Auto Select**, the currently selected ISP protocol.
- **Host Name:** Free text entry for the host name.
- **Domain Name:** Free text entry for the domain name.
- **MTU:** Choose **Auto** or **Manual**.
- **MTU size:** If MTU is set to **Manual**, specifies the largest packet size of a frame. For PPPoE, the maximum is 1492; otherwise, 1500.
- **DNS Type:** Dynamic DNS or Static DNS. Select **Static DNS** to manually enter Primary and Secondary DNS Addresses.
- **Primary DNS Address:** IP address of the primary DNS server. The address used by the gateway to lookup addresses.
- **Secondary DNS Address:** Optional DNS Address if the primary server is unavailable.

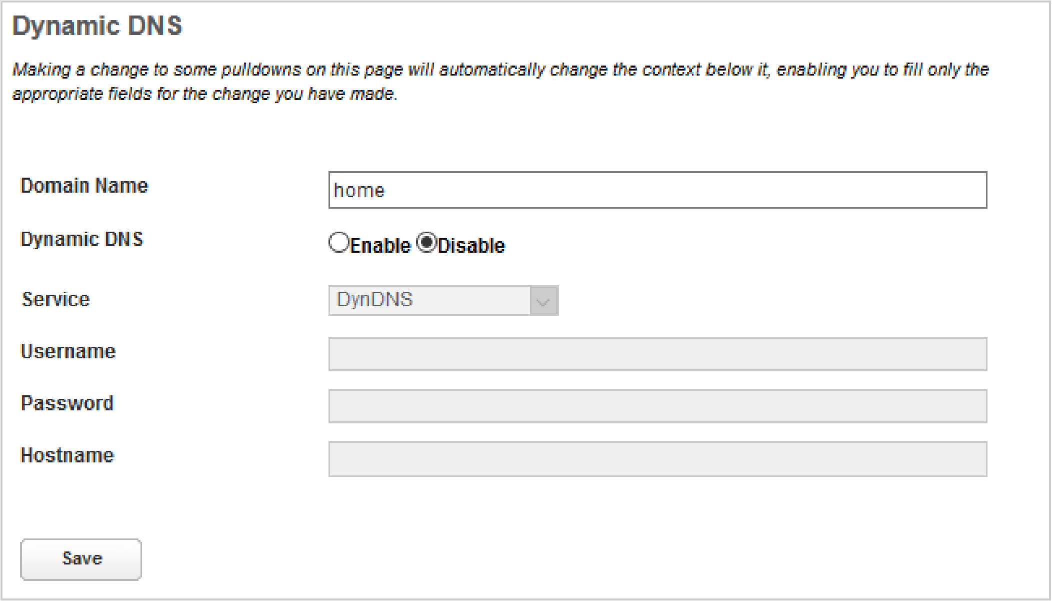
### Static IP-specific fields

These fields display only when ISP Protocol is **Static IP**.

- **Single Static IP:** The ISP-assigned fixed value for the IP address.
- **Subnet Mask:** The ISP-assigned fixed value for the subnet mask.
- **Gateway Address:** The ISP-assigned fixed value for the default gateway.

## Dynamic DNS

The Dynamic DNS page allows association of variable DHCP- or PPPoE-assigned IP addresses with a domain name you own (for example, www.examplehobbyist.com).



Dynamic DNS

*Making a change to some pulldowns on this page will automatically change the context below it, enabling you to fill only the appropriate fields for the change you have made.*

| | |
|---|---|
| Domain Name | home |
| Dynamic DNS | ○Enable ●Disable |
| Service | DynDNS |
| Username | |
| Password | |
| Hostname | |

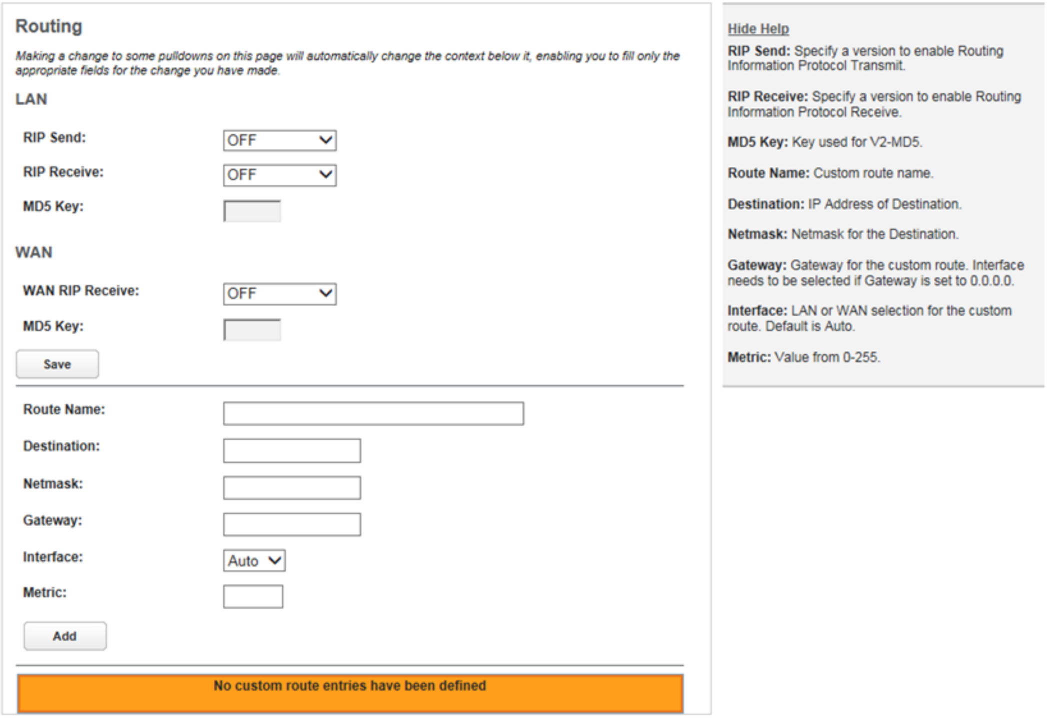
**Note:** You must have an account with one of the dynamic DNS service providers (DynDNS, ZoneEdit, etc.) listed in the Service drop-down list box.

- **Domain Name:** The name of your domain, such as `example.com`.
- **Dynamic DNS:** Select **Enable** to enable Dynamic DNS.
- **Service:** Select your Dynamic DNS provider from the drop-down menu.
- **Username:** Your Dynamic DNS provider account.
- **Password:** The password associated with the entered user name.
- **Hostname:** The name of your host. This may be the same as your domain name, or include a prefix such as `www.example.com`.

# Routing

The Routing page provides the capability to configure Routing Information Protocol (RIP) send and receive on LAN and WAN sites in the upper panel. The lower panel allows you to configure custom routes.

Select **Routing** from the Broadband tab to view the Routing page.



Routing

*Making a change to some pulldowns on this page will automatically change the context below it, enabling you to fill only the appropriate fields for the change you have made.*

LAN

RIP Send: OFF

RIP Receive: OFF

MD5 Key:

WAN

WAN RIP Receive: OFF

MD5 Key:

Route Name:

Destination:

Netmask:

Gateway:

Interface: Auto

Metric:

No custom route entries have been defined

**RIP Send:** Specify a version to enable Routing Information Protocol Transmit.

**RIP Receive:** Specify a version to enable Routing Information Protocol Receive.

**MD5 Key:** Key used for V2-MD5.

**Route Name:** Custom route name.

**Destination:** IP Address of Destination.

**Netmask:** Netmask for the Destination.

**Gateway:** Gateway for the custom route. Interface needs to be selected if Gateway is set to 0.0.0.0.

**Interface:** LAN or WAN selection for the custom route. Default is Auto.

**Metric:** Value from 0-255.

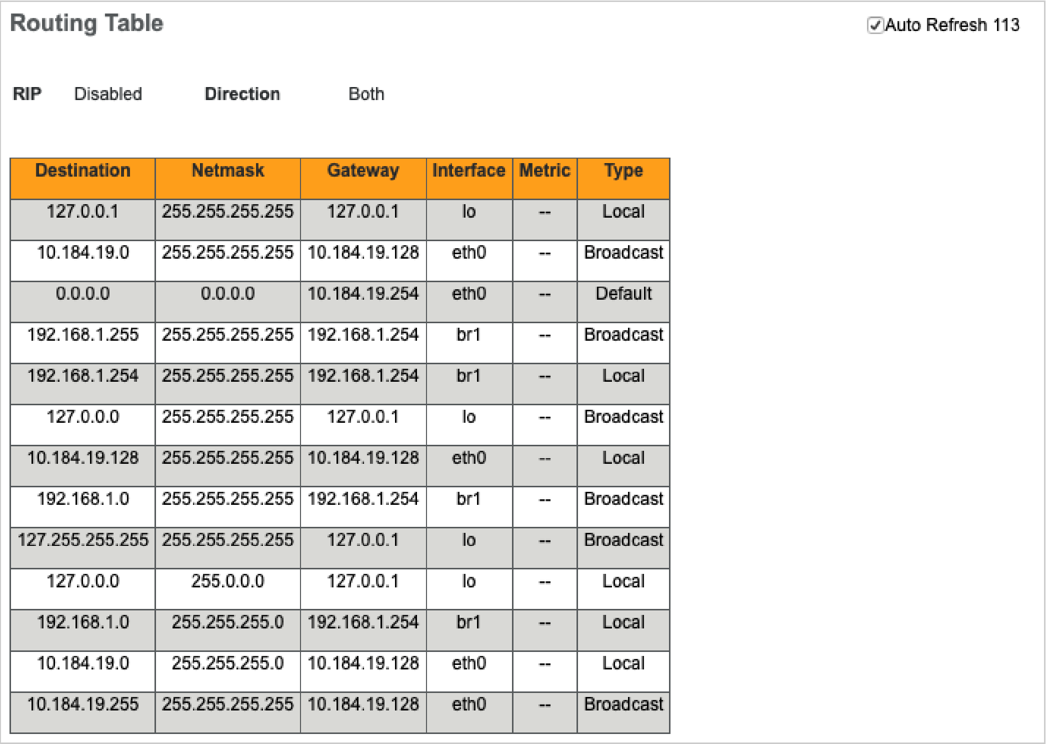
- **LAN RIP Send:** Select a version to enable Routing Information Protocol (RIP) Transmit.
- **LAN/WAN RIP Receive:** Select a version to enable RIP receive.
- **LAN/WAN MD5 Key:** Key used for V2-MD5.

### Custom routes

- **Route Name:** The custom route name.
- **Destination:** The final destination IP address of the packet.
- **Netmask:** Displays the Netmask information configured in the device.
- **Gateway:** The device through which packets pass to reach the destination.
- **Interface:** The outgoing network interface the device should use when forwarding the packet to the next hop or final destination.
- **Metric:** The metric to apply to this route. Most routes have a value of 1; use higher numbers for slower or more congested routes.

## Routing Table

The routing table of the Gateway.



Routing Table

☑Auto Refresh 113

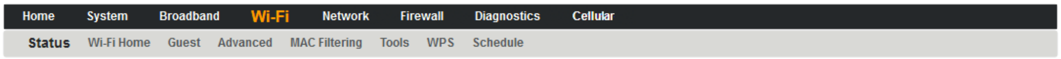
**RIP** Disabled **Direction** Both

| Destination | Netmask | Gateway | Interface | Metric | Type |
|---|---|---|---|---|---|
| 127.0.0.1 | 255.255.255.255 | 127.0.0.1 | lo | -- | Local |
| 10.184.19.0 | 255.255.255.255 | 10.184.19.128 | eth0 | -- | Broadcast |
| 0.0.0.0 | 0.0.0.0 | 10.184.19.254 | eth0 | -- | Default |
| 192.168.1.255 | 255.255.255.255 | 192.168.1.254 | br1 | -- | Broadcast |
| 192.168.1.254 | 255.255.255.255 | 192.168.1.254 | br1 | -- | Local |
| 127.0.0.0 | 255.255.255.255 | 127.0.0.1 | lo | -- | Broadcast |
| 10.184.19.128 | 255.255.255.255 | 10.184.19.128 | eth0 | -- | Local |
| 192.168.1.0 | 255.255.255.255 | 192.168.1.254 | br1 | -- | Broadcast |
| 127.255.255.255 | 255.255.255.255 | 127.0.0.1 | lo | -- | Broadcast |
| 127.0.0.0 | 255.0.0.0 | 127.0.0.1 | lo | -- | Local |
| 192.168.1.0 | 255.255.255.0 | 192.168.1.254 | br1 | -- | Local |
| 10.184.19.0 | 255.255.255.0 | 10.184.19.128 | eth0 | -- | Local |
| 10.184.19.255 | 255.255.255.255 | 10.184.19.128 | eth0 | -- | Broadcast |

# Wi-Fi tab

The Wi-Fi Status page provides access to configuration options and viewable information about the gateway Wireless network.

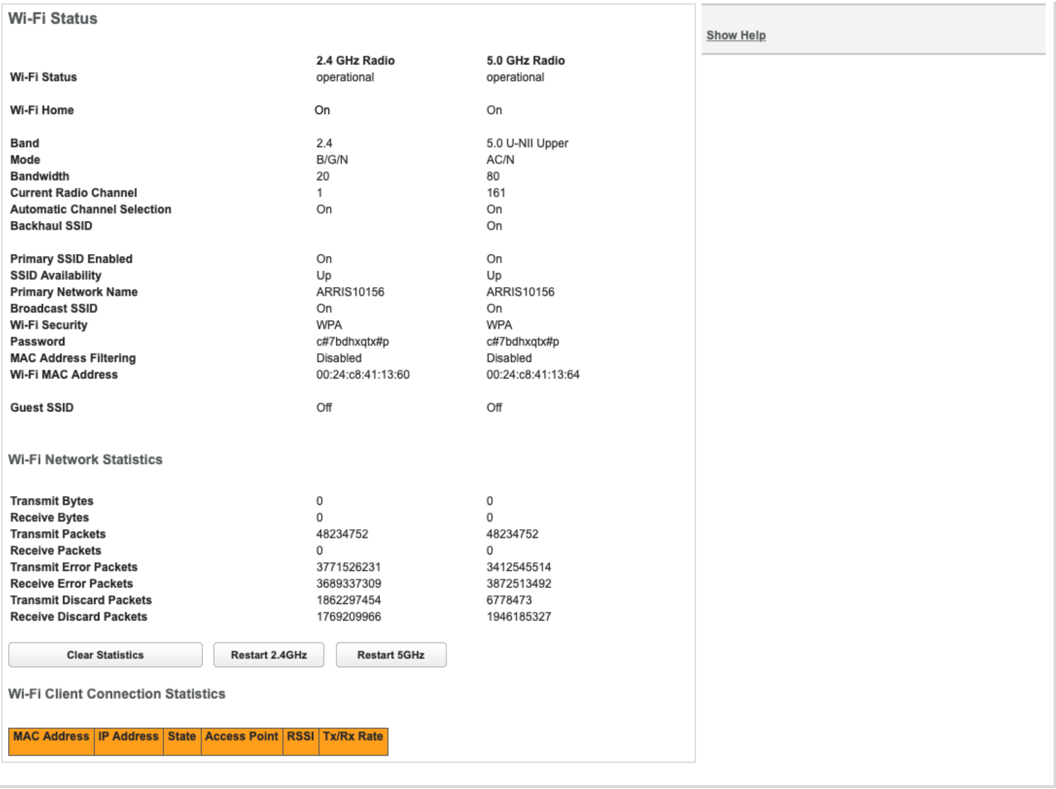
Select the Wireless tab to access the Wi-Fi Status page and links bar.



# Wi-Fi Status

The Wi-Fi Status page shows the current gateway Wi-Fi configuration details, and provides the means to restart either wireless radio.

Click the Wi-Fi tab to open the Wi-Fi Status page.



Wi-Fi Status

| | 2.4 GHz Radio | 5.0 GHz Radio |
|---|---|---|
| **Wi-Fi Status** | operational | operational |
| **Wi-Fi Home** | On | On |
| **Band** | 2.4 | 5.0 U-NII Upper |
| **Mode** | B/G/N | AC/N |
| **Bandwidth** | 20 | 80 |
| **Current Radio Channel** | 1 | 161 |
| **Automatic Channel Selection** | On | On |
| **Backhaul SSID** | | On |
| **Primary SSID Enabled** | On | On |
| **SSID Availability** | Up | Up |
| **Primary Network Name** | ARRIS10156 | ARRIS10156 |
| **Broadcast SSID** | On | On |
| **Wi-Fi Security** | WPA | WPA |
| **Password** | c#7bdhxqtx#p | c#7bdhxqtx#p |
| **MAC Address Filtering** | Disabled | Disabled |
| **Wi-Fi MAC Address** | 00:24:c8:41:13:60 | 00:24:c8:41:13:64 |
| **Guest SSID** | Off | Off |

Wi-Fi Network Statistics

| | | |
|---|---|---|
| **Transmit Bytes** | 0 | 0 |
| **Receive Bytes** | 0 | 0 |
| **Transmit Packets** | 48234752 | 48234752 |
| **Receive Packets** | 0 | 0 |
| **Transmit Error Packets** | 3771526231 | 3412545514 |
| **Receive Error Packets** | 3689337309 | 3872513492 |
| **Transmit Discard Packets** | 1862297454 | 6778473 |
| **Receive Discard Packets** | 1769209966 | 1946185327 |

Wi-Fi Client Connection Statistics

| MAC Address | IP Address | State | Access Point | RSSI | Tx/Rx Rate |
|---|---|---|---|---|---|

## Wi-Fi Status

- **Wi-Fi Status:** Status of each Wi-Fi radio: `operational` or `disabled`.
- **Wi-Fi Home:** Status of the Wi-Fi home network.
- **Band:** The frequency band of each Wi-Fi radio.
- **Mode:** The Wi-Fi mode of operation.
- **Bandwidth:** The width of each channel, in megahertz.
- **Current Radio Channel:** The radio channel that the Wi-Fi network is broadcasting on.
- **Automatic Channel Selection:** May be set to on or off.
- **Backhaul SSID:** If a HomeAssure-enabled wireless extender is in the home network, the Backhaul SSID carries traffic between the Gateway and the extender.

## Primary SSID

If **Wi-Fi Home** is On, these fields provide information about the SSID.

- **Primary SSID Enabled:** On if the home SSID is available on each radio.
- **SSID Availability:** Indicates whether the SSID can be accessed by a wireless client, taking into account if the radio is enabled and functional, if the SSID is enabled, if a Wireless Schedule is enabled, if a Wireless Schedule is enabled for the SSID, and if the schedule time is blocked/allowed.
- **Primary Network Name:** This name should appear when a Wi-Fi client searches for available networks.

- **Broadcast SSID:** When on, the gateway broadcasts its network name (SSID) to clients scanning for wireless networks. When off, to connect to your wireless LAN, clients must know the Network Name.
- **Wi-Fi Security:** The security mechanism between the gateway and its clients.
- **Password:** The Wi-Fi password, if security is WPA.
- **MAC Address Filtering:** On indicates that gateway is inspecting MAC addresses before connecting Wi-Fi clients.
- **Wi-Fi MAC Address:** The MAC address of the Wi-Fi subsystem of this gateway.

## Guest SSID

If the Guest SSID is enabled, these fields provide information about the SSID.

- **Guest SSID:** Indicates which radio provides guest network access.
- **SSID Availability:** Indicates whether the SSID can be accessed by a wireless client, taking into account if the radio is enabled and functional, if the SSID is enabled, if a Wireless Schedule is enabled, if a Wireless Schedule is enabled for the SSID, and if the schedule time is blocked/allowed.
- **Network Name:** The network name associated with the guest network.
- **Broadcast SSID:** When on, the gateway broadcasts its network name (SSID) to clients scanning for wireless networks. When off, to connect to your wireless LAN, clients must know the Network Name.
- **Wi-Fi Security:** The security mechanism between the gateway and its clients.
- **Password:** The Wi-Fi password, if security is WPA.
- **MAC Address Filtering:** On indicates that the gateway is inspecting MAC addresses before connecting Wi-Fi clients.
- **Wi-Fi MAC Address:** The MAC address of the Wi-Fi subsystem of this gateway.

## Wi-Fi Network Statistics

- **Transmit Bytes:** Number of bytes transmitted on the Wi-Fi network.
- **Receive Bytes:** Number of bytes received on the Wi-Fi network.
- **Transmit Packets:** Number of packets transmitted on the Wi-Fi network.
- **Receive Packets:** Number of packets received on the Wi-Fi network.
- **Transmit Error Packets:** Number of errors on packets transmitted on the Wi-Fi network.
- **Receive Error Packets:** Number of errors on packets received on the Wi-Fi network.
- **Transmit Discard Packets:** Number of packets transmitted on the Wi-Fi network that were dropped.
- **Receive Discard Packets:** Number of packets received on the Wi-Fi network that were dropped.

## Wi-Fi Client Connection Statistics

- **MAC Address:** The hardware address of each client.
- **IP Address:** The network address assigned to the client by this gateway.

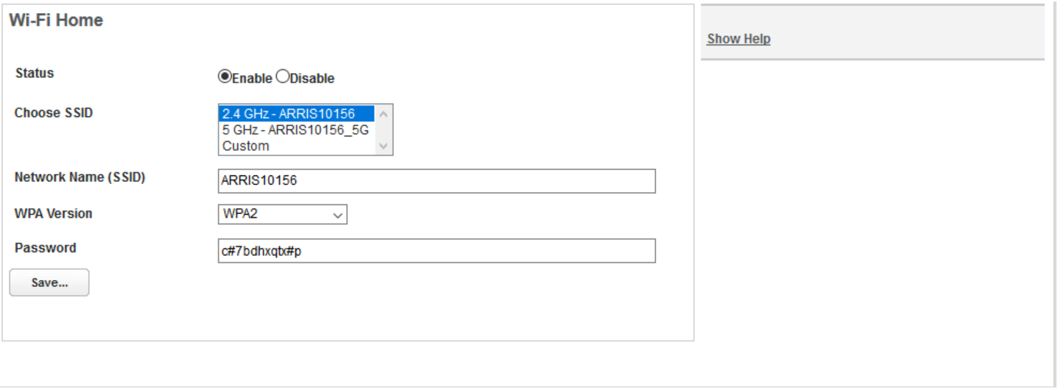
- **State:** Authentication state.
- **Access Point:** Access point, including the band of the Wi-Fi radio and the Network Name (SSID).
- **RSSI:** Received Signal Strength Indicator value in dBm and displayed in bars, while connected.
- **Tx/Rx Rate:** The speed in Mbps that packets travel between the gateway and the Wi-Fi client.

To restart either of the wireless radios, click the **Restart Wi-Fi Radio** button at the bottom of the appropriate column. All clients using the radio will be disconnected.

The statistics counters can be reset at any time by clicking the **Clear Statistics** button.

# Wi-Fi Home

The Wi-Fi Home screen allows you to enable and disable the ARRIS Wi-Fi Home Wi-Fi optimization application. This feature combines your 2.4GHz and 5GHz Wi-Fi networks into a single Wi-Fi network and promotes Wi-Fi devices to move between each band to ensure the best coverage and bandwidth is available. The ARRIS Wi-Fi Home Wi-Fi optimization application is enabled by default.



Wi-Fi Home

Status ● Enable ○ Disable

Choose SSID: 2.4 GHz - ARRIS10156 (selected) / 5 GHz - ARRIS10156_5G / Custom

Network Name (SSID): ARRIS10156

WPA Version: WPA2

Password: c#7bdhxqtx#p

- **Status:** Choose **Enable** to display the other fields.

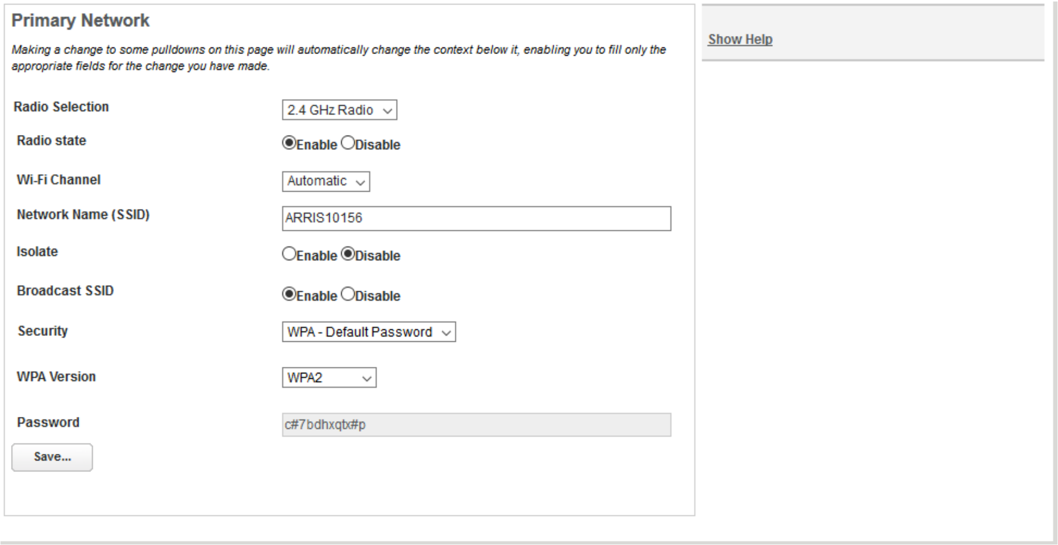
  **Note:** When Status is **Disable**, the Wi-Fi tab shows the Primary link for configuring basic SSID parameters.
- **Network Name (SSID):** Enter the SSID name to use. The Gateway applies the SSID to both radios.
- **WPA Version:** Select the WPA version. The Gateway applies the selected value to both radios.
- **Password:** Enter the password you want to use to access Wi-Fi. The Gateway applies the password to both radios.

After making changes, click **Save** for the changes to take effect.

# Primary

The Primary page configures basic Wi-Fi settings on either radio.

When Wi-Fi Home (band steering) is disabled, select the Primary link.



Primary Network

*Making a change to some pulldowns on this page will automatically change the context below it, enabling you to fill only the appropriate fields for the change you have made.*

|  |  |
|---|---|
| Radio Selection | 2.4 GHz Radio |
| Radio state | ● Enable ○ Disable |
| Wi-Fi Channel | Automatic |
| Network Name (SSID) | ARRIS10156 |
| Isolate | ○ Enable ● Disable |
| Broadcast SSID | ● Enable ○ Disable |
| Security | WPA - Default Password |
| WPA Version | WPA2 |
| Password | c#7bdhxqtx#p |

- **Radio Selection:** Choose either **2.4 GHz Radio** or **5.0 GHz Radio**.
- **Radio state**

  Indicates if the Wi-Fi radio is enabled or disabled.
- **Wi-Fi Channel**

  Choose **Automatic** to have the Gateway select the best operating channel for its environment. If a nearby wireless access point is transmitting on the same channel as the Gateway, the networks interfere with each other, reducing throughput on both. If you experience speed problems on your wireless LAN, test whether a particular choice of channel improves the data transfer.
- **Network Name (SSID)**

  The network ID used to identify this particular wireless LAN. The default SSID for the Gateway is Verizon-*xxxx* where *xxxx* is either 1 or 2 plus the last 4 digits of the serial number located on the side of the gateway.

  Depending on their operating system or client wireless card, users must either:

  - Select from a list of available wireless LANs that appear in a scanned list on their client.
  - Enter this name on their clients in order to join this wireless LAN.

  You can configure up to three SSIDs.
- **Isolate:** Set to **Enable** to force all connections between devices to go through the service provider's network, even if both devices are connected to the same wireless network.
- **Broadcast SSID**

  When on (the default), the Gateway broadcasts its Network Name (SSID) to clients scanning for wireless networks. To connect to your wireless LAN, they must first choose the Network Name.

  If disabled, this mode hides the wireless network from the scanning features of wireless client computers. Hiding the SSID prevents casual detection of the wireless network by unwanted neighbors and passers-by. The gateway WLAN will not appear when clients scan for access points. If enabled, you must remember to enter the SSID when adding clients to the wireless LAN.

**Note:** While disabling the Broadcast SSID may prevent casual discovery of the wireless network, enabling security is the only true method of securing the network.

- **Security**

  The type of wireless encryption security in use:

  - OFF-No Privacy
  - WPA-PSK
  - WPA-Default Password

  See *Wi-Fi security* (page 54).

- **WPA Version**

  This field allows you to select the WPA version (WPA, WPA2, or WPA3) required for client connections. Select **WPA2** for maximum interoperability.

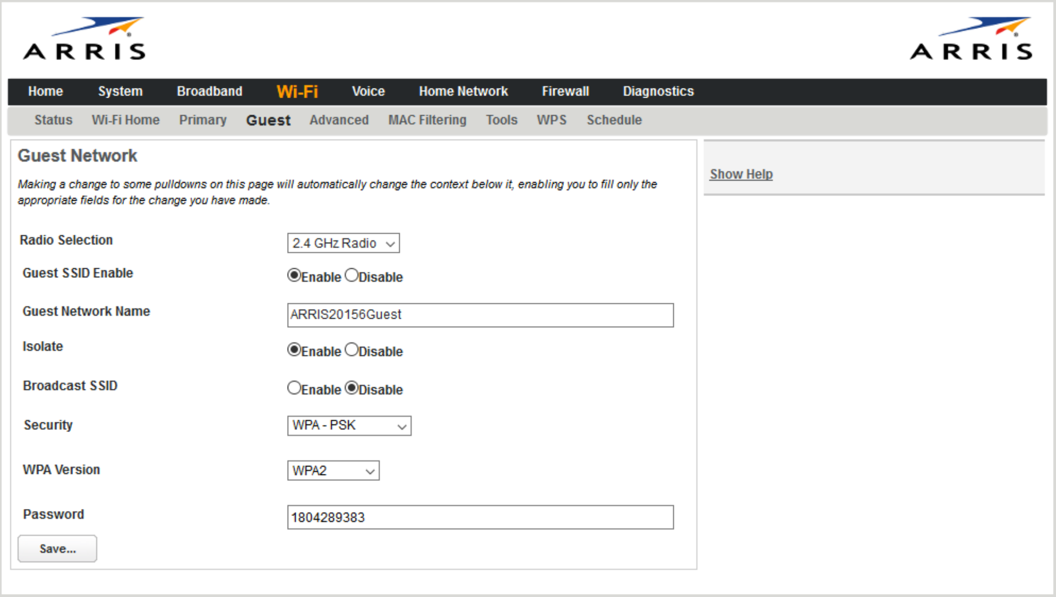
- **Password**

  The password must be at least eight characters when WPA is chosen.

After making changes, click **Save** for the changes to take effect.

## Guest

The Guest page configures settings for a guest network.



Guest Network

*Making a change to some pulldowns on this page will automatically change the context below it, enabling you to fill only the appropriate fields for the change you have made.*

| | |
|---|---|
| Radio Selection | 2.4 GHz Radio |
| Guest SSID Enable | ● Enable ○ Disable |
| Guest Network Name | ARRIS20156Guest |
| Isolate | ● Enable ○ Disable |
| Broadcast SSID | ○ Enable ● Disable |
| Security | WPA - PSK |
| WPA Version | WPA2 |
| Password | 1804289383 |

- **Radio Selection:** Choose either **2.4 GHz Radio** or **5.0 GHz Radio**.
- **Guest SSID Enable:** Select Enable to deploy a guest network.
- **Guest Network Name:** Enter the SSID you want to use for the guest network.
- **Isolate:** Set to **Enable** to force all connections between devices to go through the service provider's network, even if both devices are connected to the same wireless network.

- **Broadcast SSID**

  When on (the default), the Gateway broadcasts its Network Name (SSID) to clients scanning for wireless networks. To connect to your wireless LAN, they must first choose the Network Name.

  If disabled, this mode hides the wireless network from the scanning features of wireless client computers. Hiding the SSID prevents casual detection of the wireless network by unwanted neighbors and passers-by. The gateway WLAN will not appear when clients scan for access points. If enabled, you must remember to enter the SSID when adding clients to the wireless LAN.

  **Note:** While disabling the Broadcast SSID may prevent casual discovery of the wireless network, enabling security is the only true method of securing the network.

- **Security**

  The type of wireless encryption security in use:

  - OFF-No Privacy
  - WPA-PSK
  - WPA-Default Password

  See *Wi-Fi security* (page 54).

- **WPA Version**

  This field allows you to select the WPA version (WPA, WPA2, or WPA3) required for client connections. Select **WPA2** for maximum interoperability.

- **Password**

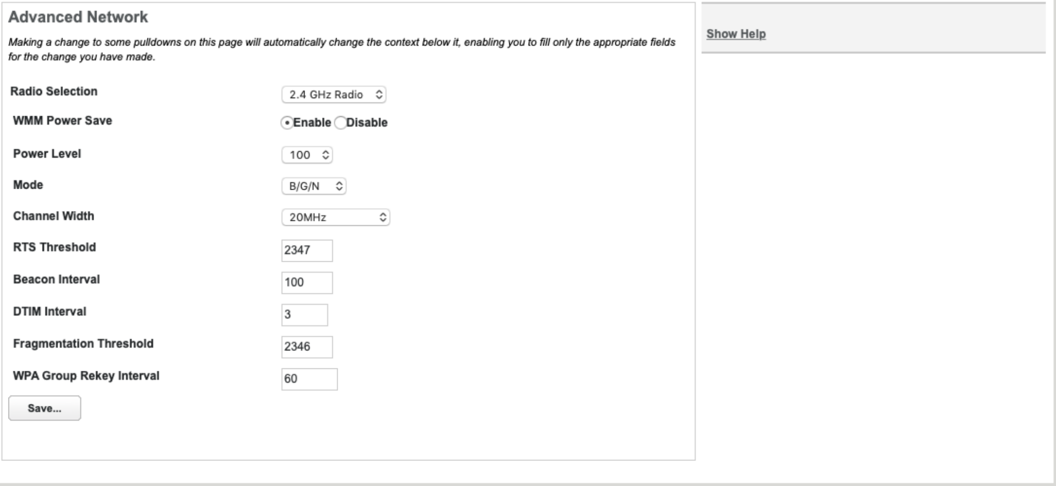
  The password must be at least eight characters when WPA is chosen.

After making changes, click **Save** for the changes to take effect.

# Advanced

The Advanced page configures advanced settings on the Wi-Fi network.

Select the **Advanced** link to access the Advanced page.



**Advanced Network**

*Making a change to some pulldowns on this page will automatically change the context below it, enabling you to fill only the appropriate fields for the change you have made.*

| | |
|---|---|
| Radio Selection | 2.4 GHz Radio |
| WMM Power Save | ● Enable ○ Disable |
| Power Level | 100 |
| Mode | B/G/N |
| Channel Width | 20MHz |
| RTS Threshold | 2347 |
| Beacon Interval | 100 |
| DTIM Interval | 3 |
| Fragmentation Threshold | 2346 |
| WPA Group Rekey Interval | 60 |

- **Radio Selection:** Choose either **2.4 GHz Radio** or **5.0 GHz Radio**.
- **WMM Power Save:** Enables WMM power save management. This can extend battery life for mobile devices by putting their radios into a low-power mode when not actively communicating.
- **Power Level:** Select the lowest power level (where 100% indicates maximum power) to cover your home or office. This is more important in high-density dwellings, to reduce interference with neighboring networks.
- **Mode:** The Wi-Fi mode of operation.
- **Channel Width**

  The default (20 MHz) is compatible with all devices. Set to 20/40 MHz if most devices support 40 MHz channels. Note that any 20 MHz-only device on the network forces all devices back to 20 MHz bandwidth.
- **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.
- **Beacon Interval:** Sets the time interval between beacon transmissions, in milliseconds. The Gateway uses these transmissions to synchronize the wireless network and its client devices. For best compatibility, use the default 100ms setting. Valid range: 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 Gateway sends a DTIM beacon, the client devices hear the beacon and then listen for the messages. For best compatibility, leave the DTIM Interval at the default 1ms setting. Valid range: 1 to 255 ms.
- **Fragmentation 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 lower data throughput, since large frames could be fragmented and/or collisions could occur. The default setting is 2346. Valid range: 256 to 2346 bytes.
- **WPA Group Rekey Interval**

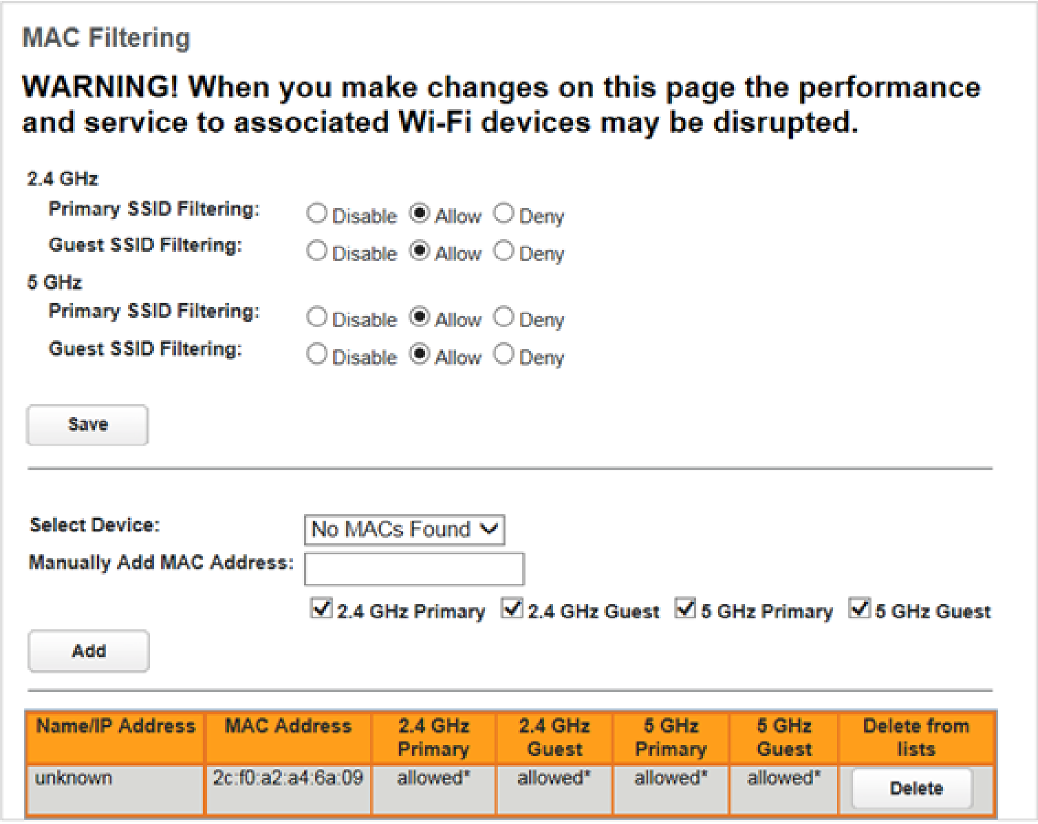
  The interval, in minutes, between exchanging new secret keys with each connected device. Secret keys are used to authenticate the devices to the protected network.

After making changes, click **Save** for the changes to take effect.

# MAC Filtering

Use MAC Filtering to restrict access to your network.

Select the **MAC filtering** link under the Wi-Fi tab to open the MAC Filtering page.



MAC Filtering

**WARNING! When you make changes on this page the performance and service to associated Wi-Fi devices may be disrupted.**

2.4 GHz

Primary SSID Filtering: ○ Disable ● Allow ○ Deny

Guest SSID Filtering: ○ Disable ● Allow ○ Deny

5 GHz

Primary SSID Filtering: ○ Disable ● Allow ○ Deny

Guest SSID Filtering: ○ Disable ● Allow ○ Deny

Select Device: No MACs Found

Manually Add MAC Address:

☑ 2.4 GHz Primary ☑ 2.4 GHz Guest ☑ 5 GHz Primary ☑ 5 GHz Guest

| Name/IP Address | MAC Address | 2.4 GHz Primary | 2.4 GHz Guest | 5 GHz Primary | 5 GHz Guest | Delete from lists |
|---|---|---|---|---|---|---|
| unknown | 2c:f0:a2:a4:6a:09 | allowed* | allowed* | allowed* | allowed* | Delete |

- **MAC Filtering:** Set each of the SSIDs as needed:
  - **Disable**: Turns off MAC filtering for this network.
  - **Allow**: Enables access only to the clients in the list (whitelisting). This provides high security, but requires you to add new devices to the list.
  - **Deny**: Denies access to the clients in the list (blacklisting).
- **Select Device**

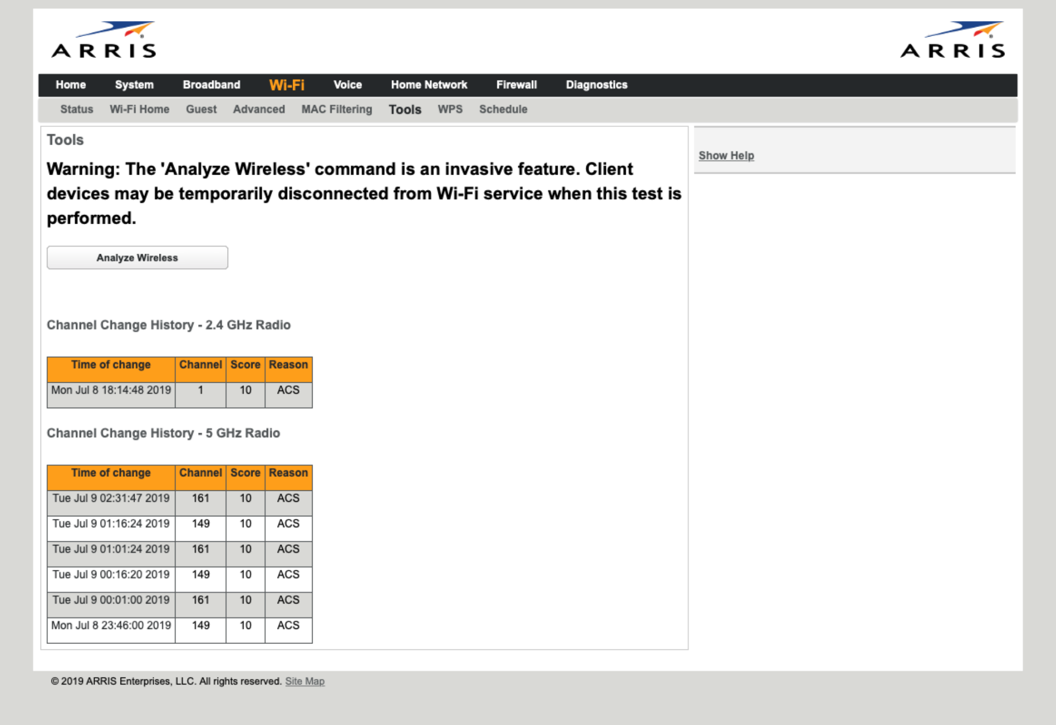
  Devices in this list are already connected to a network. Check the boxes corresponding to the networks you want to list this device in.
- **Manually Add MAC Address:** If you know the MAC address of a device you want to list, and it does not show up in the Select Device drop-down, enter it here. The format is `nn:nn:nn:nn:nn:nn`, where nn Is two hexadecimal digits (0-9, a-f). Check the boxes corresponding to the networks you want to list this device in.
- **Add:** Click this button to add the selected device to the list.

The table at the bottom of this page shows the listed devices, and their status (allowed or denied) on each network. Click the **Delete** button next to a device to remove it from the list.

After making changes, click **Save** for the changes to take effect.

# Tools

The Tools page scans the Wi-Fi bands and shows the activity on each channel.



Tools

**Warning: The 'Analyze Wireless' command is an invasive feature. Client devices may be temporarily disconnected from Wi-Fi service when this test is performed.**

Channel Change History - 2.4 GHz Radio

| Time of change | Channel | Score | Reason |
|---|---|---|---|
| Mon Jul 8 18:14:48 2019 | 1 | 10 | ACS |

Channel Change History - 5 GHz Radio

| Time of change | Channel | Score | Reason |
|---|---|---|---|
| Tue Jul 9 02:31:47 2019 | 161 | 10 | ACS |
| Tue Jul 9 01:16:24 2019 | 149 | 10 | ACS |
| Tue Jul 9 01:01:24 2019 | 161 | 10 | ACS |
| Tue Jul 9 00:16:20 2019 | 149 | 10 | ACS |
| Tue Jul 9 00:01:00 2019 | 161 | 10 | ACS |
| Mon Jul 8 23:46:00 2019 | 149 | 10 | ACS |

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When first entering the Wi-Fi Tools screen, it displays a channel change history for both radios.

To scan for channel quality and nearby access points, click **Analyze Wireless**. The scan covers a frequency range within the 2.4 GHz or 5.0 GHz band. Channel selection depends on government regulated radio frequencies that vary from region to region. Channel selection can have a significant impact on performance, depending on other wireless activity close to this gateway.

**Important:** This scan disconnects any wireless client devices while in progress.

After the analysis completes, the Gateway displays graphs, showing a score for each channel tested on each radio. The score accounts for noise, interference, and traffic from other access points. The Gateway also displays a table showing other detected access points. The following is an example.

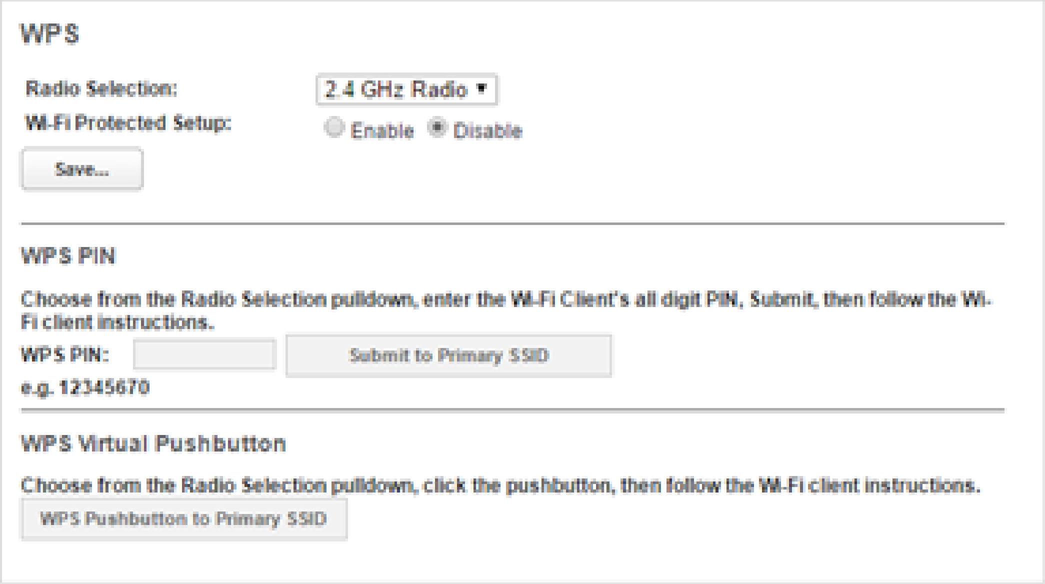
## Access Points

| Radio | Channel | Bandwidtl | RSSI | Network Name (SSID)/MAC | MAC |
|---|---|---|---|---|---|
| 2.4 GHz | 1 | 20 MHz | -72 dBm | AUR_EC0086 | 00:06:0D:5E:DD:F5 |
| 2.4 GHz | 1 | 20 MHz | -52 dBm | Motorola | 00:26:82:3A:92:D7 |
| 2.4 GHz | 3 | 20 MHz | -48 dBm | island-0B3B20 | D4:68:4D:4B:3B:23 |
| 5 GHz | 36 | 20 MHz | -64 dBm | DG6800S-F702E-5G | 78:96:84:DB:B2:3F |
| 5 GHz | 48 | 80 MHz | -34 dBm | *Hidden:20:F1:9E:C8:45:F3* | 20:F1:9E:C8:45:F3 |
| 5 GHz | 48 | 80 MHz | -34 dBm | bhARRIS0245 | 22:F1:9E:C9:43:D7 |

| Radio | Channel | Bandwidt | RSSI | Network Name (SSID)/MAC | MAC |
|---|---|---|---|---|---|
| 5 GHz | 48 | 40 MHz | -59 dBm | telenet-AEC6E | 5C:35:3B:4A:EC:74 |
| 5 GHz | 48 | 40 MHz | -56 dBm | telenet-AEE5F | 5C:35:3B:4A:EE:65 |

# WPS (Wi-Fi Protected Setup)

WPS is a simple way to add and securely configure new clients on the WLAN.



WPS

Radio Selection: 2.4 GHz Radio ▾

Wi-Fi Protected Setup: ○ Enable ● Disable

WPS PIN

Choose from the Radio Selection pulldown, enter the Wi-Fi Client's all digit PIN, Submit, then follow the Wi-Fi client instructions.

WPS PIN:

e.g. 12345670

WPS Virtual Pushbutton

Choose from the Radio Selection pulldown, click the pushbutton, then follow the Wi-Fi client instructions.

Wi-Fi Protected Setup (WPS) is not a security protocol. By default, Privacy is set to Wi-Fi Protected Access (WPA-PSK) with a 12-character security key. WPS allows you to securely share the exact security configuration with a new client that you are adding to the WLAN, without needing to look up and type this security key.

Clients can be added by implementing any of the WPS setups on this page. Not all wireless devices support WPS. Refer to their documentation.

- **Radio Selection:**

  Provides selection for either the 2.4 Ghz or the 5.0 Ghz frequencies.

  **Note:** The Gateway allows only one radio to have WPS enabled at a time. The device defaults to ON for the 5 GHz radio.

- **Wi-Fi Protected Setup:**

  May be either **Enable** or **Disable**. To activate WPS features below, select **Enable** and click **Apply**.

- **Generate PIN:**

  Click **Generate PIN**; a unique 8 digit PIN is generated.

- **WPS PIN:**

  To add a new client:

  - Choose the desired radio (2.4 GHz or 5 GHz) from the Radio Selection pull-down.

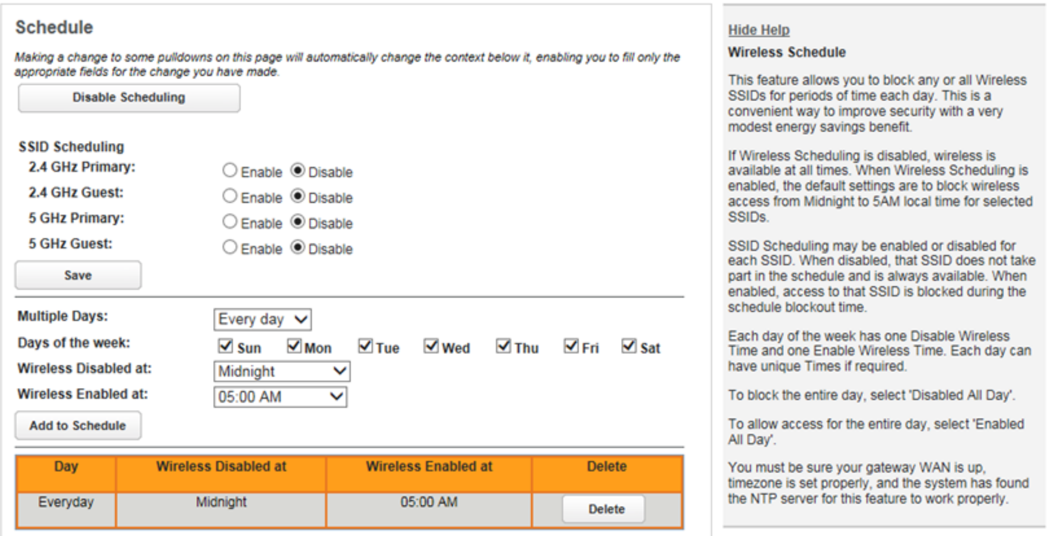
  - Enter the new client's PIN (a string of numbers) in the WPS PIN field.
  - Click **Submit to Primary SSID**.
  - Follow any instructions that came with the wireless client.
- **WPS Virtual Pushbutton:**

  To add a new client:

  - Choose the desired radio (2.4 GHz or 5 GHz) from the Radio Selection pull-down.
  - Click the **WPS Pushbutton to Primary SSID**.
  - Follow any instructions that came with the wireless client.

# Schedule

Use the Schedule page to make a Wi-Fi network unavailable at certain times of day.



**Schedule**

*Making a change to some pulldowns on this page will automatically change the context below it, enabling you to fill only the appropriate fields for the change you have made.*

**SSID Scheduling**

| | |
|---|---|
| 2.4 GHz Primary: | ○ Enable ● Disable |
| 2.4 GHz Guest: | ○ Enable ● Disable |
| 5 GHz Primary: | ○ Enable ● Disable |
| 5 GHz Guest: | ○ Enable ● Disable |

| | |
|---|---|
| Multiple Days: | Every day |
| Days of the week: | ☑ Sun ☑ Mon ☑ Tue ☑ Wed ☑ Thu ☑ Fri ☑ Sat |
| Wireless Disabled at: | Midnight |
| Wireless Enabled at: | 05:00 AM |

| Day | Wireless Disabled at | Wireless Enabled at | Delete |
|---|---|---|---|
| Everyday | Midnight | 05:00 AM | Delete |

**Wireless Schedule**

This feature allows you to block any or all Wireless SSIDs for periods of time each day. This is a convenient way to improve security with a very modest energy savings benefit.

If Wireless Scheduling is disabled, wireless is available at all times. When Wireless Scheduling is enabled, the default settings are to block wireless access from Midnight to 5AM local time for selected SSIDs.

SSID Scheduling may be enabled or disabled for each SSID. When disabled, that SSID does not take part in the schedule and is always available. When enabled, access to that SSID is blocked during the schedule blockout time.

Each day of the week has one Disable Wireless Time and one Enable Wireless Time. Each day can have unique Times if required.

To block the entire day, select 'Disabled All Day'.

To allow access for the entire day, select 'Enabled All Day'.

You must be sure your gateway WAN is up, timezone is set properly, and the system has found the NTP server for this feature to work properly.

By default, wireless access is blocked from midnight to 5 a.m. You must ensure your Gateway WAN is up, timezone is set properly, and the Gateway has found the NTP server for this feature to work.

# Wi-Fi security

By default, wireless security is set to WPA with a pre-defined WPA-Default key.

Other options are available from the Security drop-down menu that is included in each page under the Wi-Fi tab:

- WPA-PSK: Allows you to enter your own key, the most secure option for the wireless network. The key can be between eight and 63 characters, but for the best security it should be at least 20 characters. If you select WPA-PSK as the privacy setting, the WPA Version drop-down menu allows you to select the WPA version(s) that will be required for client connections. Choices are:
  - WPA-2, for maximum security
  - WPA/WPA-2 or WPA-2/WPA3, for maximum interoperability

All clients must support the version(s) selected in order to successfully connect.

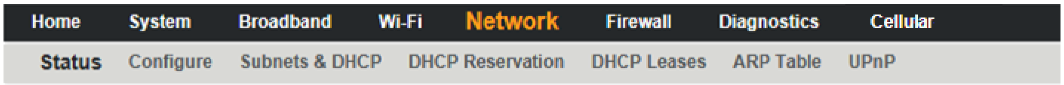
**Important:** Ensure that the Wi-Fi client adapter supports this option. Not all Wi-Fi clients support WPA-PSK.

- OFF-No Privacy: Disables privacy on the network, allowing any wireless users to connect to the wireless LAN. Select this option if you are using alternative security measures such as VPN tunnels, or if the network is for public use.

# Network tab

Links in the Network tab allow configuration of LAN-side services.

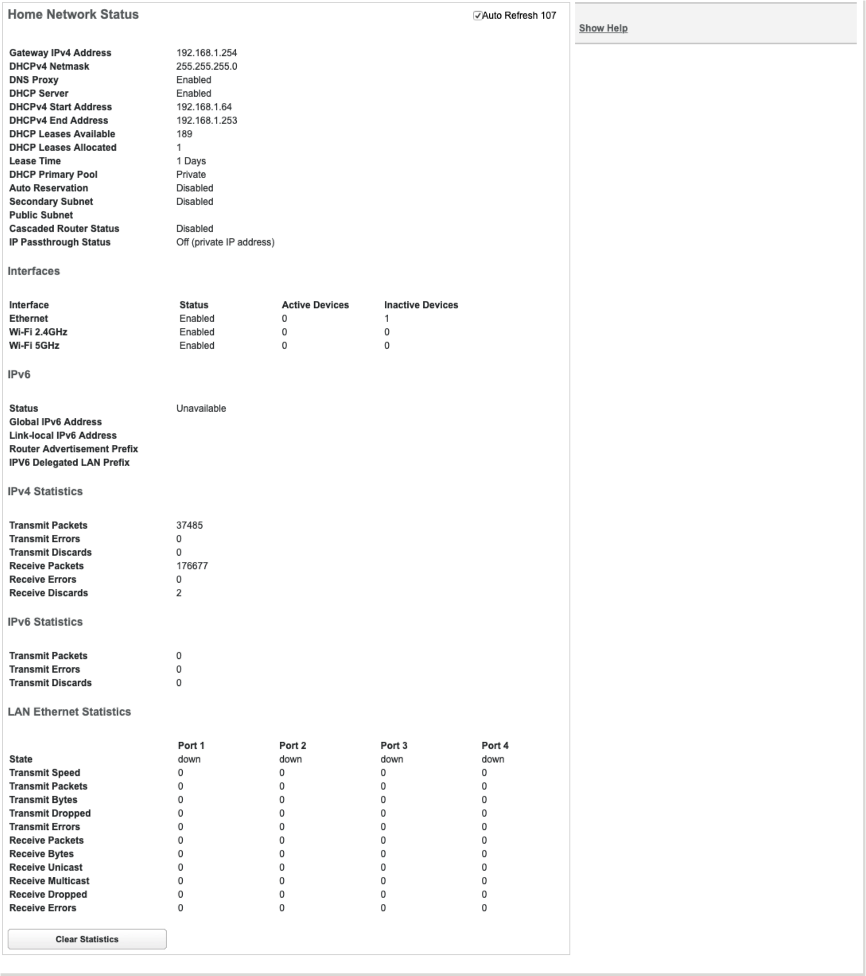
Select the **Network** tab to access the Network Status page and the links bar.



## Network Status

Displays status and statistics for LAN-side interfaces.

Select the Network tab to view the status of the Network elements.



Home Network Status

☑Auto Refresh 107

| | |
|---|---|
| Gateway IPv4 Address | 192.168.1.254 |
| DHCPv4 Netmask | 255.255.255.0 |
| DNS Proxy | Enabled |
| DHCP Server | Enabled |
| DHCPv4 Start Address | 192.168.1.64 |
| DHCPv4 End Address | 192.168.1.253 |
| DHCP Leases Available | 189 |
| DHCP Leases Allocated | 1 |
| Lease Time | 1 Days |
| DHCP Primary Pool | Private |
| Auto Reservation | Disabled |
| Secondary Subnet | Disabled |
| Public Subnet | |
| Cascaded Router Status | Disabled |
| IP Passthrough Status | Off (private IP address) |

Interfaces

| Interface | Status | Active Devices | Inactive Devices |
|---|---|---|---|
| Ethernet | Enabled | 0 | 1 |
| Wi-Fi 2.4GHz | Enabled | 0 | 0 |
| Wi-Fi 5GHz | Enabled | 0 | 0 |

IPv6

| | |
|---|---|
| Status | Unavailable |
| Global IPv6 Address | |
| Link-local IPv6 Address | |
| Router Advertisement Prefix | |
| IPV6 Delegated LAN Prefix | |

IPv4 Statistics

| | |
|---|---|
| Transmit Packets | 37485 |
| Transmit Errors | 0 |
| Transmit Discards | 0 |
| Receive Packets | 176677 |
| Receive Errors | 0 |
| Receive Discards | 2 |

IPv6 Statistics

| | |
|---|---|
| Transmit Packets | 0 |
| Transmit Errors | 0 |
| Transmit Discards | 0 |

LAN Ethernet Statistics

| | Port 1 | Port 2 | Port 3 | Port 4 |
|---|---|---|---|---|
| State | down | down | down | down |
| Transmit Speed | 0 | 0 | 0 | 0 |
| Transmit Packets | 0 | 0 | 0 | 0 |
| Transmit Bytes | 0 | 0 | 0 | 0 |
| Transmit Dropped | 0 | 0 | 0 | 0 |
| Transmit Errors | 0 | 0 | 0 | 0 |
| Receive Packets | 0 | 0 | 0 | 0 |
| Receive Bytes | 0 | 0 | 0 | 0 |
| Receive Unicast | 0 | 0 | 0 | 0 |
| Receive Multicast | 0 | 0 | 0 | 0 |
| Receive Dropped | 0 | 0 | 0 | 0 |
| Receive Errors | 0 | 0 | 0 | 0 |

- **Gateway IPv4 Address:** The Gateway's own IP address on the network.
- **DHCPv4 Netmask:** Gateway's own netmask on the network.
- **DNS Proxy:** The Gateway can provide DNS service for LAN clients.
- **DHCP Server:** If enabled, the Gateway is providing DHCP services to LAN clients.
- **DHCPv4 Start Address:** Starting IP address of the DHCP range served by the Gateway.
- **DHCPv4 End Address:** Ending IP address of the DHCP range served by the Gateway.
- **DHCP Leases Available:** Number of IP addresses of the DHCP range available to be served by the Gateway.
- **DHCP Leases Allocated:** Number of IP addresses of the DHCP range currently being served by the Gateway.
- **Lease Time:** The amount of time a LAN client keeps an IP address before needing to renew the lease.
- **DHCP Primary Pool:** Number of IP addresses of the DHCP range currently being served by the Gateway.
- **Auto Reservation:** Indicates if IP addresses become reserved as they are handed out by the DHCP server.
- **Secondary Subnet:** Shows Enabled if a Public Subnet or Cascaded Router is configured.

- **Public Subnet:** Whether a second subnet to distribute public addresses to DHCP clients has been configured on the Home Network Subnets & DHCP page.
- **Cascaded Router Status:** Whether a routing gateway behind this gateway has been specified on the Home Network Subnets & DHCP page.
- **IP Passthrough Status:** Whether an IP passthrough has been configured on the Firewall IP Passthrough page.

## Interfaces

| Interface | Status | Active Devices | Inactive Devices |
|---|---|---|---|
| Ethernet, Wi-Fi 2.4GHz, or Wi-Fi 5GHz. | State of the specified interface (Ethernet, Wi-Fi, etc.).<br>■ Enabled<br>■ Disabled | Number of local devices currently using the interface. | Number of local devices connected but not currently using the interface. |

## IPv6

- **Status:** May be Enabled or Unavailable
- **Global IPv6 Address:** The public IPv6 address of the gateway, whether dynamically or statically assigned.
- **Link-local IPv6 Address:** The private IPv6 address of the gateway, whether dynamically or statically assigned.
- **Router Advertisement Prefix:** The IPv6 prefix to include in router advertisements.
- **IPv6 Delegated LAN Prefix:** The IPv6 network address prefix that identifies the Gateway's network.

## IPv4 Statistics/IPv6 Statistics

- **Transmit Packets:** IP packets transmitted.
- **Transmit Errors:** Errors on IP packets transmitted.
- **Transmit Discards:** IP packets dropped.
- **Receive Packets:** IP packets received.
- **Receive Errors:** Errors on IP packets received.
- **Receive Discards:** IP packets dropped.

## LAN Ethernet Statistics

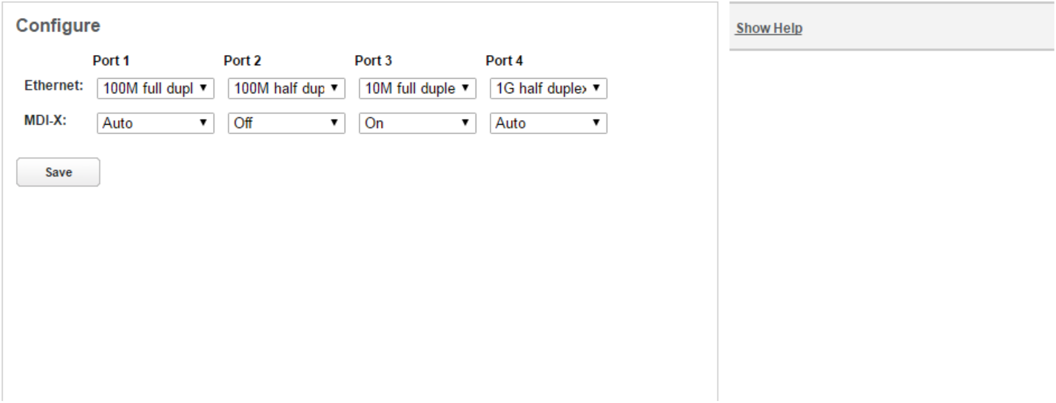
- **State:** May be Up or Down.
- **Transmit Speed:** Maximum speed of which the port is capable.
- **Transmit Packets:** Number of packets sent out from the port.
- **Transmit Bytes:** Number of bytes sent out from the port.
- **Transmit Dropped:** Number of packets sent out from the port that were dropped.
- **Transmit Errors:** Number of errors on packets sent out from the port.

- **Receive Packets:** Number of packets received on the port.
- **Receive Bytes:** Number of bytes received on the port.
- **Receive Unicast:** Number of unicast packets received on the port.
- **Receive Multicast:** Number of multicast packets received on the port.
- **Receive Dropped:** Number of packets received on the port that were dropped.
- **Receive Errors:** Number of errors on packets received on the port.

To clear the current LAN statistics information, click **Clear Statistics**.

# Configure (Ethernet LAN)

The Network **Configure** link provides access to Ethernet LAN configuration elements.



Configure

|  | Port 1 | Port 2 | Port 3 | Port 4 |
|---|---|---|---|---|
| Ethernet: | 100M full dupl ▾ | 100M half dup ▾ | 10M full duple ▾ | 1G half duple› ▾ |
| MDI-X: | Auto ▾ | Off ▾ | On ▾ | Auto ▾ |

For each Ethernet Port, 1 through 4, valid selections are:

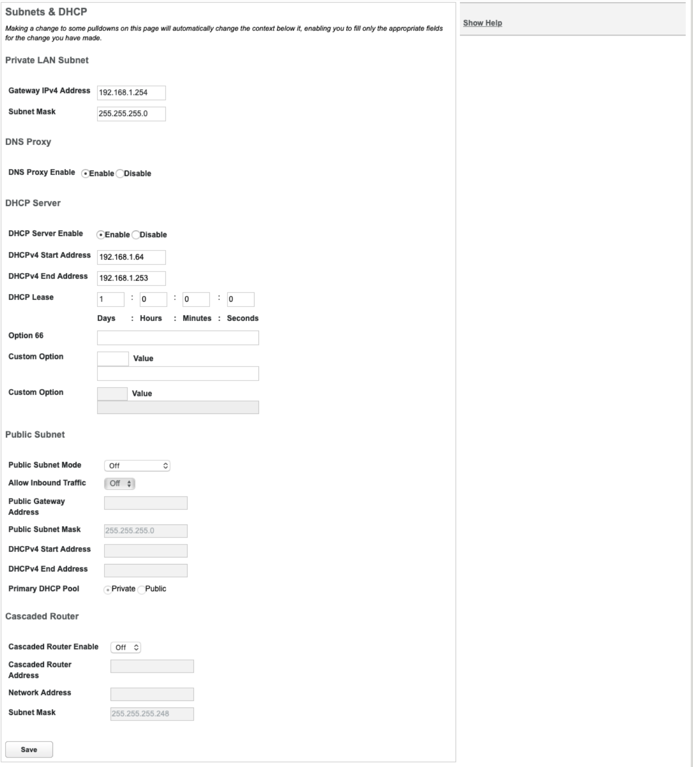
- Ethernet:
  - Auto (the default self-sensing rate)
  - 10M full- or half-duplex
  - 100M full- or half-duplex
  - or 1G full- or half-duplex
- MDI-X:
  - Auto (the default self-sensing crossover setting)
  - Off
  - On

After making changes, click **Save** for the changes to take effect.

# Subnets & DHCP

Configures Internet protocol details for the home network.

Click the Network **Subnets & DHCP** link, and apply configuration details in the active text boxes.



Subnets & DHCP

*Making a change to some pulldowns on this page will automatically change the context below it, enabling you to fill only the appropriate fields for the change you have made.*

Private LAN Subnet

Gateway IPv4 Address: 192.168.1.254
Subnet Mask: 255.255.255.0

DNS Proxy

DNS Proxy Enable: ● Enable ○ Disable

DHCP Server

DHCP Server Enable: ● Enable ○ Disable
DHCPv4 Start Address: 192.168.1.64
DHCPv4 End Address: 192.168.1.253
DHCP Lease: 1 : 0 : 0 : 0 (Days : Hours : Minutes : Seconds)
Option 66:
Custom Option: Value
Custom Option: Value

Public Subnet

Public Subnet Mode: Off
Allow Inbound Traffic: Off
Public Gateway Address:
Public Subnet Mask: 255.255.255.0
DHCPv4 Start Address:
DHCPv4 End Address:
Primary DHCP Pool: ● Private ○ Public

Cascaded Router

Cascaded Router Enable: Off
Cascaded Router Address:
Network Address:
Subnet Mask: 255.255.255.248

The server configuration determines the functionality of the DHCP settings. This functionality enables the Gateway to assign the LAN computer(s) a "private" IP address and other parameters that allow network communication. This feature simplifies network administration because the Gateway maintains a list of IP address assignments. Additional computers can be added to the LAN without the need to configure an IP address. This is the default mode.

Reference the subsections that follow for field definitions.

## Private LAN Subnet

- **Gateway IPv4 Address:** The IP address of the device as seen from the LAN.
- **Subnet Mask:** The subnet portion of the IP addresses on the private LAN subnet.

## DNS Proxy

- **DNS Proxy Enable:** When enabled, the gateway will be the DNS server to LAN clients.

## DHCP Server

The Start and End addresses must be in the same subnet as the Gateway IPv4 Address value.

- **DHCP Server Enable:** Specifies if the Gateway hands out leases to LAN-side clients.
- **DHCPv4 Start Address:** First IP address in the range being served to LAN clients by the Gateway DHCP server.
- **DHCPv4 End Address:** Last IP address in the range being served to LAN clients by the Gateway DHCP server.

- **DHCP Lease:** Specifies the default length for DHCP leases issued by the router. Enter lease time in dd:hh:mm:ss (days/hours/minutes/seconds) format.
- **Option 66:** The IP address or the hostname of a single TFTP server.
- **Custom Option:** Custom options may be added one at a time. The option may be 1-254.

### Public Subnet

- **Public Subnet Mode:** To enable a second subnet to distribute public addresses to DHCP clients, choose **Public Subnet** from the drop-down menu; IP addresses assigned to LAN clients will then be public addresses.
- **Public IPv4 Address:** The IP address of the gateway, as seen from the WAN.
- **Public Subnet Mask:** Public subnet mask.
- **DHCPv4 Start Address:** First IP address in the range being served from a DHCP public pool.
- **DHCPv4 End Address:** Last IP address in the range being served from a DHCP public pool.
- **Primary DHCP Pool:** Enable a public subnet to have two DHCP pools from which to provide IP addresses to clients. If you choose the Primary DHCP Pool to be public, the Public Pool is used until there are no more addresses available, then the Private Pool addresses are given. If you select Private, the Private Pool addresses are given out first.

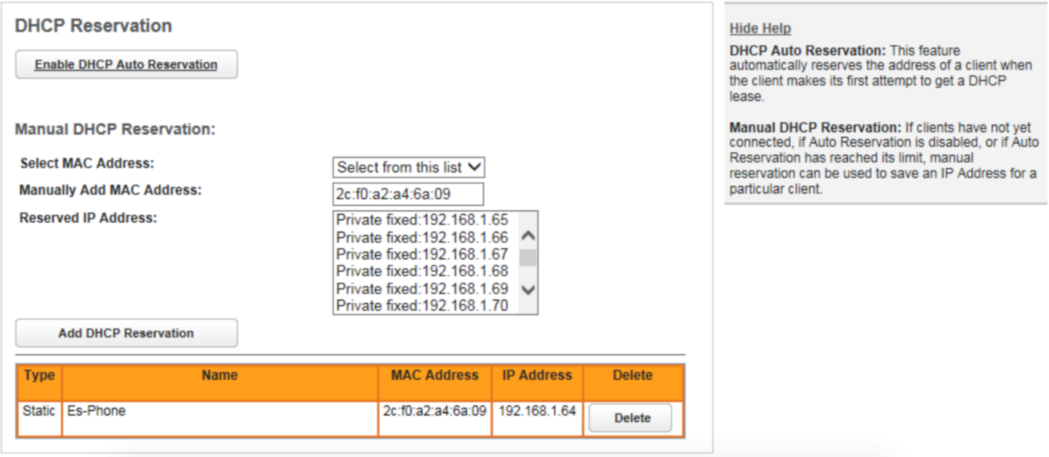
### Cascaded Router

- **Cascaded Router Enable:** Select **On** from the drop-down menu when there is another router behind this Gateway.
- **Cascaded Router Address:** After selecting **On** from the drop-down menu, enter the IP address of the router behind this gateway in the LAN private IP subnet range.
- **Network Address:** After selecting **On** from the drop-down menu, enter the Network Address that defines the range of IP addresses available to clients of the router behind this gateway.
- **Subnet Mask:** After selecting **On** from the drop-down menu, enter the Subnet Mask for the network address that defines the range of IP addresses available to clients of the router behind this gateway.

To apply configuration changes, click **Save**, and if prompted, restart the gateway.

## DHCP Reservation

Use DHCP Reservation to implement auto or manual DHCP lease reservation.



DHCP Reservation

Manual DHCP Reservation:

Select MAC Address: Select from this list

Manually Add MAC Address: 2c:f0:a2:a4:6a:09

Reserved IP Address:
Private fixed:192.168.1.65
Private fixed:192.168.1.66
Private fixed:192.168.1.67
Private fixed:192.168.1.68
Private fixed:192.168.1.69
Private fixed:192.168.1.70

| Type | Name | MAC Address | IP Address | Delete |
|---|---|---|---|---|
| Static | Es-Phone | 2c:f0:a2:a4:6a:09 | 192.168.1.64 | Delete |

Hide Help

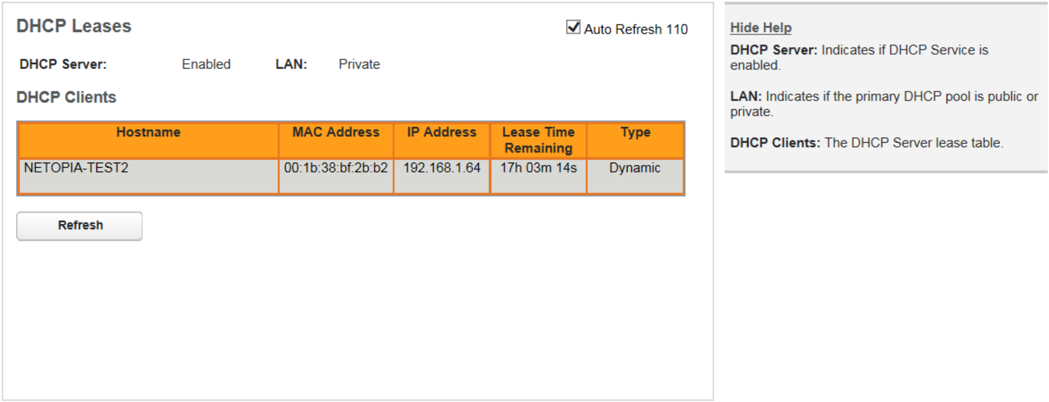
**DHCP Auto Reservation:** This feature automatically reserves the address of a client when the client makes its first attempt to get a DHCP lease.

**Manual DHCP Reservation:** If clients have not yet connected, if Auto Reservation is disabled, or if Auto Reservation has reached its limit, manual reservation can be used to save an IP Address for a particular client.

- **DHCP Auto Reservation:** Automatically reserves the address of a client when it makes its first attempt to get a DHCP lease.
- **Manual DHCP Reservation:** Manually saves an IP address of a particular client in the event the client is not yet connected, if Auto Reservation is disabled, or if Auto Reservation has reached its limit.

# DHCP Leases

Provides lease information for DHCP clients in tabular format.



DHCP Leases

☑ Auto Refresh 110

DHCP Server: Enabled LAN: Private

DHCP Clients

| Hostname | MAC Address | IP Address | Lease Time Remaining | Type |
|---|---|---|---|---|
| NETOPIA-TEST2 | 00:1b:38:bf:2b:b2 | 192.168.1.64 | 17h 03m 14s | Dynamic |

Hide Help

**DHCP Server:** Indicates if DHCP Service is enabled.

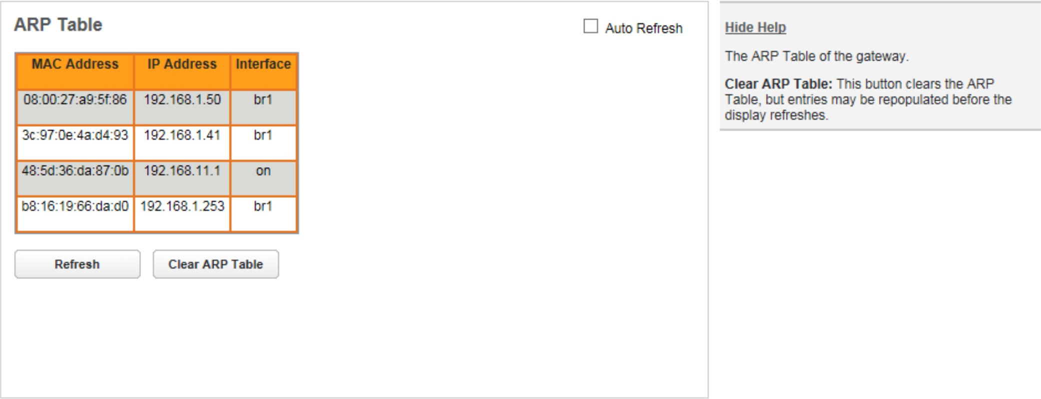
**LAN:** Indicates if the primary DHCP pool is public or private.

**DHCP Clients:** The DHCP Server lease table.

- **DHCP Server:** Indicates if the DHCP service is enabled.
- **LAN:** Indicates if the primary DHCP pool is public or private.
- **DHCP Clients:** Provides lease information for DHCP clients in tabular format.

# ARP Table

Provides access to the Gateway ARP table.



ARP Table

| MAC Address | IP Address | Interface |
|---|---|---|
| 08:00:27:a9:5f:86 | 192.168.1.50 | br1 |
| 3c:97:0e:4a:d4:93 | 192.168.1.41 | br1 |
| 48:5d:36:da:87:0b | 192.168.11.1 | on |
| b8:16:19:66:da:d0 | 192.168.1.253 | br1 |

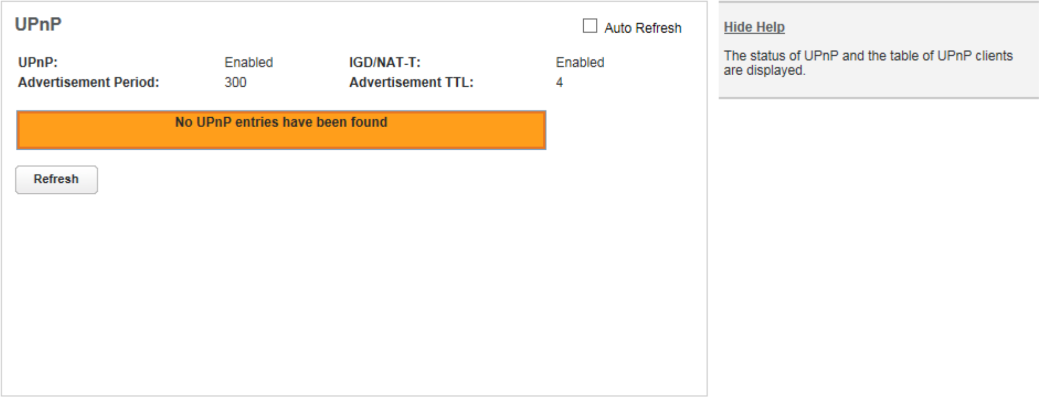
The ARP Table of the gateway.

**Clear ARP Table:** This button clears the ARP Table, but entries may be repopulated before the display refreshes.

- Click **Refresh** to refresh the information on the ARP table.
- Click **Clear ARP Table** to clear information from the ARP table. Note that entries may be repopulated before the display refreshes.

## UPnP

The UPnP screen provides the status of the UPnP and a table of UPnP clients on the gateway.



UPnP

**UPnP:** Enabled
**Advertisement Period:** 300
**IGD/NAT-T:** Enabled
**Advertisement TTL:** 4

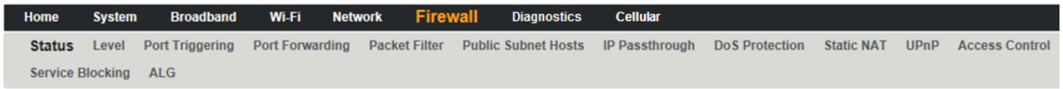
No UPnP entries have been found

The status of UPnP and the table of UPnP clients are displayed.

- **Advertisement Period:** The period, in seconds, the Gateway broadcasts UPnP information. A shorter advertisement period ensures control points have current device status, at the expense of additional network traffic.
- **Advertisement Time to Live (TTL):** The number of hops before the advertisement disappears. (A hop is the number of steps allowed to propagate for each UPnP advertisement.)
- **IGD/NAT-T:** Internet Gateway Device Protocol for Network Address Translation (NAT). Must always be enabled.

# Firewall tab

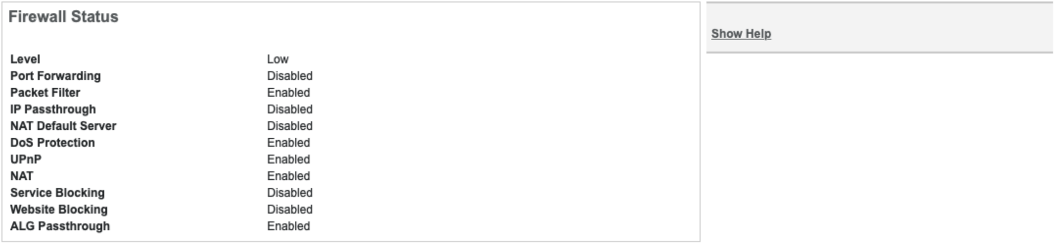
Links on the Firewall tab provide access to security configuration pages on the gateway.



# Firewall Status

Displays the current state of the system firewall elements. Those elements turned on are labeled **Enabled**

Select the Firewall tab to open the **Firewall Status** page.



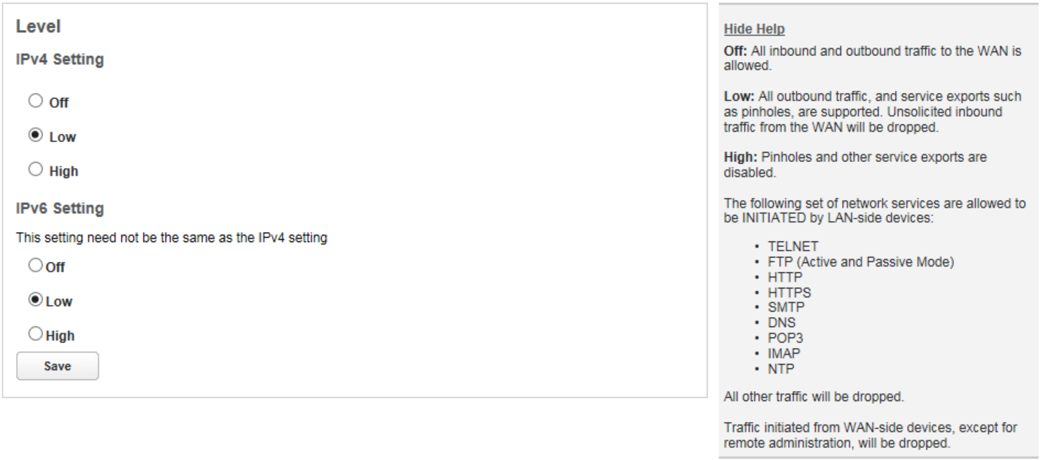
Firewall Status

| | |
|---|---|
| **Level** | Low |
| **Port Forwarding** | Disabled |
| **Packet Filter** | Enabled |
| **IP Passthrough** | Disabled |
| **NAT Default Server** | Disabled |
| **DoS Protection** | Enabled |
| **UPnP** | Enabled |
| **NAT** | Enabled |
| **Service Blocking** | Disabled |
| **Website Blocking** | Disabled |
| **ALG Passthrough** | Enabled |

# Level

Sets the level of firewall protection to Off, Low or High.

The Firewall **Level** link provides access to this page of the Firewall. If IPv6 is disabled, the lower section of the page is not shown.



Level

IPv4 Setting

○ Off

● Low

○ High

IPv6 Setting

This setting need not be the same as the IPv4 setting

○ Off

● Low

○ High

**Off:** All inbound and outbound traffic to the WAN is allowed.

**Low:** All outbound traffic, and service exports such as pinholes, are supported. Unsolicited inbound traffic from the WAN will be dropped.

**High:** Pinholes and other service exports are disabled.

The following set of network services are allowed to be INITIATED by LAN-side devices:

- TELNET
- FTP (Active and Passive Mode)
- HTTP
- HTTPS
- SMTP
- DNS
- POP3
- IMAP
- NTP

All other traffic will be dropped.

Traffic initiated from WAN-side devices, except for remote administration, will be dropped.

- **Off:** All inbound and outbound traffic to the WAN is allowed.
- **Low:** All outbound traffic and service exports such as pinholes, are supported. Unsolicited inbound traffic from the WAN will be dropped.
- **High:**

  Pinholes and other service exports are disabled.

  The following set of network services are allowed to be initiated by LAN-side devices:

  - TELNET
  - FTP
  - HTTP
  - HTTPS
  - SMTP
  - DNS

- POP3
- IMAP
- NTP

All other traffic will be dropped.

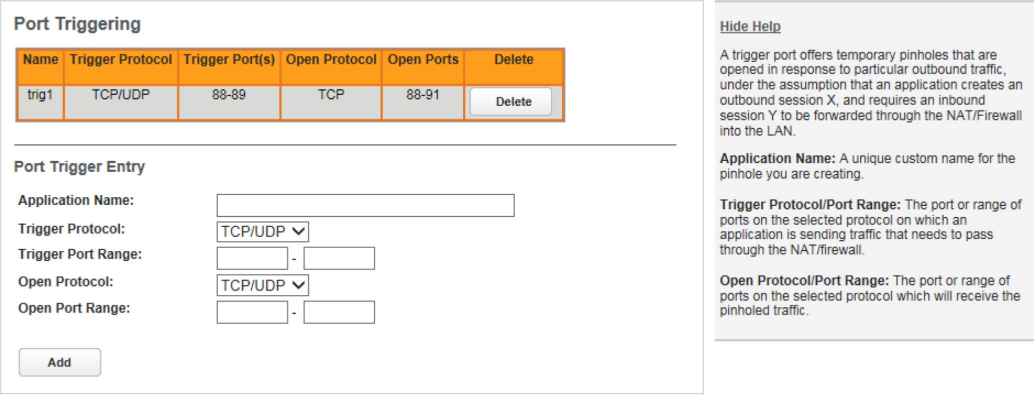
Traffic initiated from WAN-side devices, except for remote administration, will be dropped.

After making changes, click **Save** for the changes to take effect.

# Port Triggering

A trigger port offers temporary pinholes that are opened in response to particular outbound traffic, under the assumption that an application creates an outbound session X, and requires an inbound session Y to be forwarded through the NAT/Firewall into the LAN.

The **Port Triggering** link provides access to the Port Triggering page of the Firewall.



Port Triggering

| Name | Trigger Protocol | Trigger Port(s) | Open Protocol | Open Ports | Delete |
|---|---|---|---|---|---|
| trig1 | TCP/UDP | 88-89 | TCP | 88-91 | Delete |

Port Trigger Entry

| | |
|---|---|
| Application Name: | |
| Trigger Protocol: | TCP/UDP |
| Trigger Port Range: | - |
| Open Protocol: | TCP/UDP |
| Open Port Range: | - |

A trigger port offers temporary pinholes that are opened in response to particular outbound traffic, under the assumption that an application creates an outbound session X, and requires an inbound session Y to be forwarded through the NAT/Firewall into the LAN.

**Application Name:** A unique custom name for the pinhole you are creating.

**Trigger Protocol/Port Range:** The port or range of ports on the selected protocol on which an application is sending traffic that needs to pass through the NAT/firewall.

**Open Protocol/Port Range:** The port or range of ports on the selected protocol which will receive the pinholed traffic.

- **Application Name**

  The name of the triggering rule you are creating that is not provided in the Select Application drop-down list.

- **Trigger Protocol**

  Applicable protocols are: TCP/UDP, TCP, and UDP.

- **Trigger Port Range**

  Enter the lowest port number in the range in the left box and the highest number in the right box. (Apply the same port number in both boxes if not a range.)

- **Open Protocol**

  Applicable protocols are: TCP/UDP, TCP, and UDP.

- **Open Port Range**

  The port or range of port on the selected protocol which will receive the pin-holed traffic.

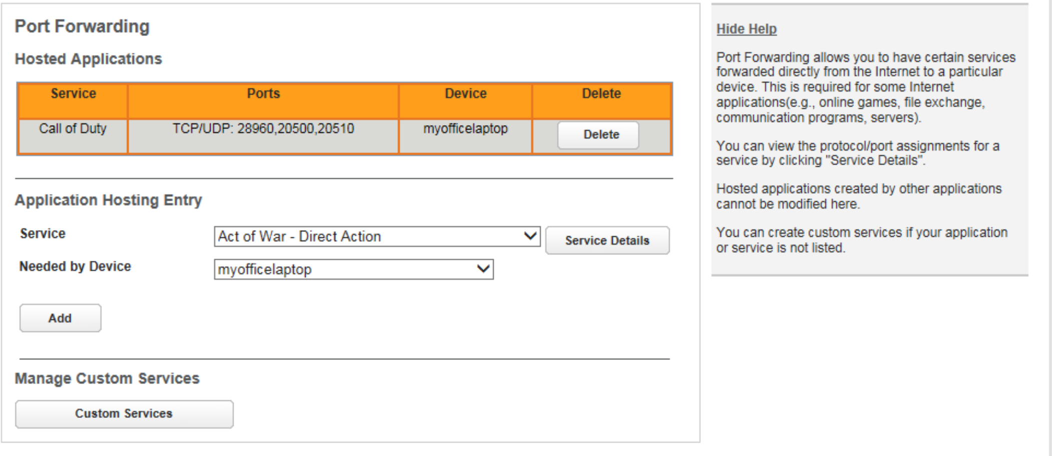
Click **Add** after making any changes to the Port Triggering configuration.

# Port Forwarding

Port Forwarding allows certain services to be forwarded directly from the Internet to a particular device. Some Internet applications, e.g. online games, file exchange, communications programs and servers, require port forwarding.

The Firewall **Port Forwarding** link provides access to the Port Forwarding page.

Hosted applications created by other applications cannot be modified on this page. You can create custom services if the application or service is not listed.



Port Forwarding

Hosted Applications

| Service | Ports | Device | Delete |
|---|---|---|---|
| Call of Duty | TCP/UDP: 28960,20500,20510 | myofficelaptop | Delete |

Application Hosting Entry

Service: Act of War - Direct Action — Service Details

Needed by Device: myofficelaptop

Add

Manage Custom Services

Custom Services

Hide Help

Port Forwarding allows you to have certain services forwarded directly from the Internet to a particular device. This is required for some Internet applications(e.g., online games, file exchange, communication programs, servers).

You can view the protocol/port assignments for a service by clicking "Service Details".

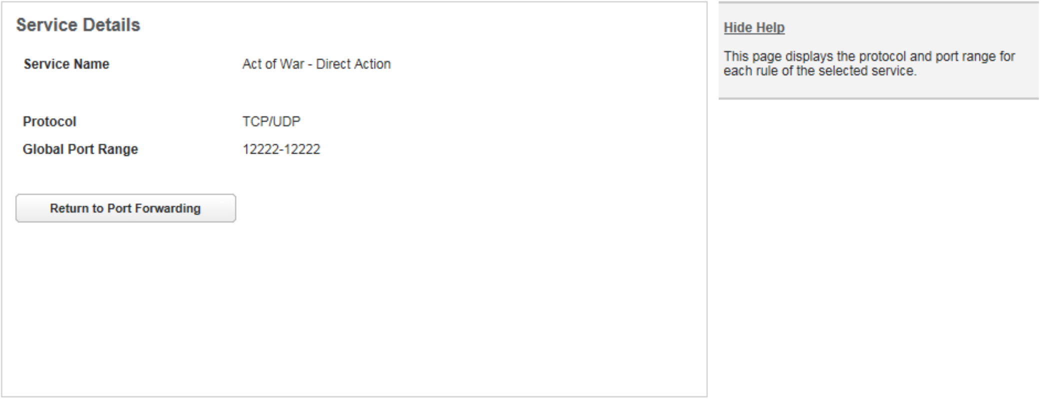
Hosted applications created by other applications cannot be modified here.

You can create custom services if your application or service is not listed.

Predefined games and software are available from the Service drop-down menu. See *List of supported games and software* (page 66). If you do not see the game or software in the list of pre-configured services, create a new custom service.

See *Device List* (page 27) for information on the device list accessed in Port Forwarding.

- To configure a custom service, click *Custom Services* (page 66).
- To view the protocols and port ranges used by a supported game or service, select the service name and click **Service Details**.
- To remove a software service or game from the Hosted Applications list, choose the software service or game and click **Delete**.



Service Details

| | |
|---|---|
| Service Name | Act of War - Direct Action |
| Protocol | TCP/UDP |
| Global Port Range | 12222-12222 |

Return to Port Forwarding

Hide Help

This page displays the protocol and port range for each rule of the selected service.

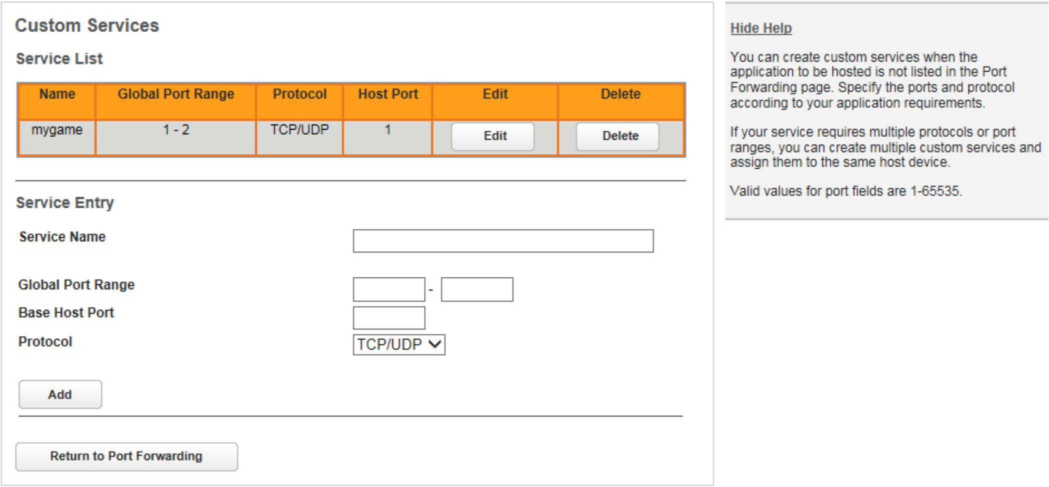
The Service Details include:

- **Service:** The name of the custom service or application.
- **Protocol:** Applicable protocols are: TCP/UDP, TCP, and UDP.

- **Global Port Range:** The range of ports this application uses. Both boxes should contain the same port number if not a range.

## Custom Services

Configures a custom port triggering service.



Custom Services

Service List

| Name | Global Port Range | Protocol | Host Port | Edit | Delete |
|---|---|---|---|---|---|
| mygame | 1 - 2 | TCP/UDP | 1 | Edit | Delete |

Service Entry

| | |
|---|---|
| Service Name | |
| Global Port Range | - |
| Base Host Port | |
| Protocol | TCP/UDP |

You can create custom services when the application to be hosted is not listed in the Port Forwarding page. Specify the ports and protocol according to your application requirements.

If your service requires multiple protocols or port ranges, you can create multiple custom services and assign them to the same host device.

Valid values for port fields are 1-65535.

- **Edit:**Click to edit an existing service. This populates the Service Entry fields with the current entry values.

  **Note:** A custom service must be inactive before it can be edited.

- **Delete:** Click to remove the service.

### Service Entry

- **Service Name:** A unique identifier for the custom service.
- **Global Port Range:** Range of ports on which incoming traffic will be received.
- **Base Host Port:** The port number at the start of the port range the Gateway should use when forwarding traffic of the specified type(s) to the internal IP address.
- **Protocol:** Protocol type of Internet traffic:
  - TCP
  - UDP
  - Both
- **Add:** Click to save the changes.

  Each time a custom service is added, the entry is added to the list of service names in the Service List. After defining a custom service, it becomes available in the **Service** menu on the Port Forwarding page as one of the selectable services.
- **Return to Port Forwarding:** Click to return to the Port Forwarding page.

## List of supported games and software

AIM Talk

Act of War - Direct Action

Age of Empires II

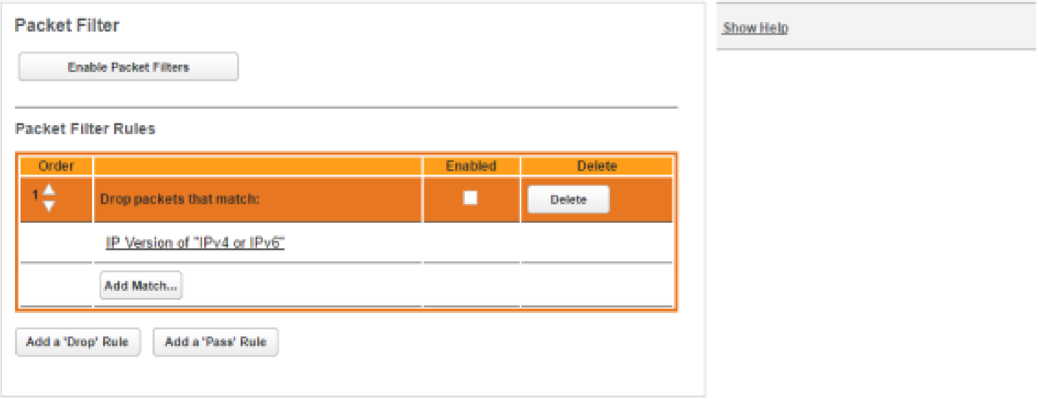
- Age of Empires, v.1.0
- Age of Empires: The Rise of Rome, v.1.0
- Age of Mythology
- Age of Wonders
- America's Army
- Apache
- Asheron's Call
- Azureus
- Baldur's Gate I and II
- Battlefield 1942
- Battlefield Communicator
- Battlefield Vietnam
- BitTornado
- BitTorrent
- Black and White
- Blazing Angels Online
- Brothers in Arms - Earned in Blood
- Brothers in Arms Online
- Buddy Phone
- CART Precision Racing, v 1.0
- Calista IP Phone
- Call of Duty
- Citrix Metaframe/ICA Client
- Close Combat III: The Russian Front, v 1.0
- Close Combat for Windows 1.0
- Close Combat: A Bridge Too Far, v 2.0
- Combat Flight Sim 2: WWII Pacific Thr, v 1.0
- Combat Flight Sim: WWII Europe Series, v 1.0
- Counter Strike
- DNS Server
- Dark Reign
- Delta Force (Client and Server)
- Delta Force 2
- Delta Force Black Hawk Down
- Diablo II Server
- Dialpad
- DirecTV STB 1
- DirecTV STB 2
- DirecTV STB 3
- Doom 3
- Dues Ex
- Dune 2000
- Empire Earth
- Empire Earth 2
- F-16, Mig 29
- F-22, Lightning 3
- FTP
- Far Cry
- Fighter Ace II
- GNUtella
- Grand Theft Auto 2 Multiplayer
- H.323 compliant (Netmeeting, CUSeeME)
- HTTP
- HTTPS
- Half Life
- Half Life 2 Steam
- Half Life 2 Steam Server
- Half Life Steam
- Half Life Steam Server
- Halo
- Hellbender for Windows, v 1.0
- Heretic II
- Hexen II
- Hotline Server
- ICQ 2001b
- ICQ Old
- IMAP Client
- IMAP Client v.3
- IPSec IKE
- Internet Phone
- Jedi Knight II: Jedi Outcast
- Kali
- KazaA
- Lime Wire
- Links LS 2000
- Lord of the Rings Online
- MSN Game Zone
- MSN Game Zone DX
- MSN Messenger
- Mech Warrior 3
- MechWarrior 4: Vengeance
- Medal of Honor Allied Assault
- Microsoft Flight Simulator 2000
- Microsoft Flight Simulator 98

| | | |
|---|---|---|
| Microsoft Golf 1998 Edition, v 1.0 | Microsoft Golf 1999 Edition | Microsoft Golf 2001 Edition |
| Midtown Madness, v 1.0 | Monster Truck Madness 2, v 2.0 | Monster Truck Madness, v 1.0 |
| Motocross Madness 2, v 2.0 | Motocross Madness, v 1.0 | NNTP |
| Need for Speed 3, Hot Pursuit | Need for Speed, Porsche | Net2Phone |
| Operation FlashPoint | Outlaws | POP-3 |
| PPTP | PlayStation Network | Quake 2 |
| Quake 3 | Quake 4 | Rainbow Six |
| RealAudio | Return to Castle Wolfenstein | Roger Wilco |
| Rogue Spear | SMTP | SNMP |
| SSH server | ShoutCast Server | SlingBox |
| Soldier of Fortune | StarCraft | StarLancer, v 1.0 |
| Starfleet Command | TFTP | TeamSpeak |
| Telnet | Tiberian Sun: Command and Conquer | Timbuktu |
| Total Annihilation | Ultima Online | Unreal Tournament Server |
| Urban Assault, v 1.0 | VNC, Virtual Network Computing | Warlords Battlecry |
| Warrock | Westwood Online, Command and Conquer | Win2000 Terminal Server |
| Wolfenstein Enemy Territory | World of Warcraft | X-Lite |
| XBox 360 Media Center | XBox Live 360 | Yahoo Messenger Chat |
| Yahoo Messenger Phone | ZNES | eDonkey |
| eMule | eMule Plus | iTunes |
| mIRC Auth-IdentD | mIRC Chat | mIRC DCC - IRC DCC |
| pcAnywhere (incoming) | | |

# Packet Filter

Packet filtering can improve network security by blocking unwanted traffic from passing through the Gateway.

Select the **Packet Filter** link under the Firewall tab.

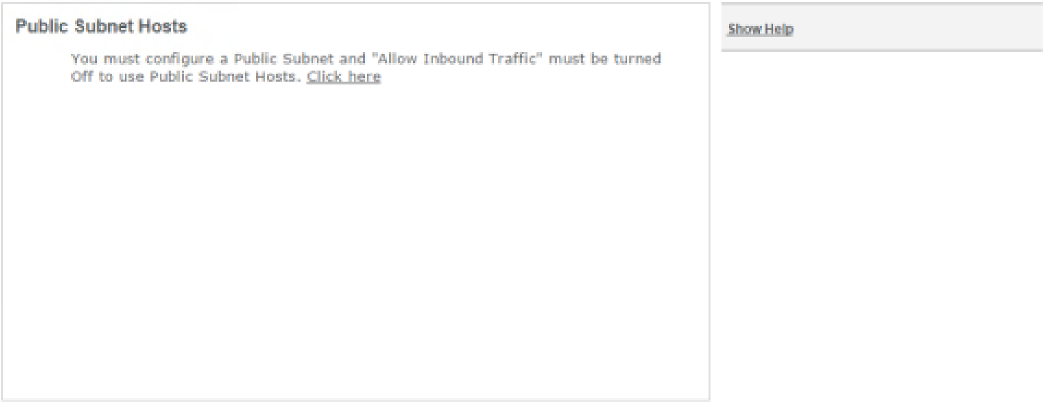


- **Enable Packet Filters:** Click to enable packet filtering. When enabled, this button becomes **Disable Packet Filters**.
- **Add Match:** Click to enter the source or destination IP address the filter matches. Before using this button, use one of the following two.
- **Add a 'Drop' Rule:** Click to add a rule that drops packets matching the filter.
- **Add a 'Pass' Rule:** Click to add a rule that forwards packets matching the filter.

# Public Subnet Hosts

Creates a subnet with a public IP address range on your LAN. Use only as instructed by your network provider.

Click the Firewall **Public Subnet Hosts** link.



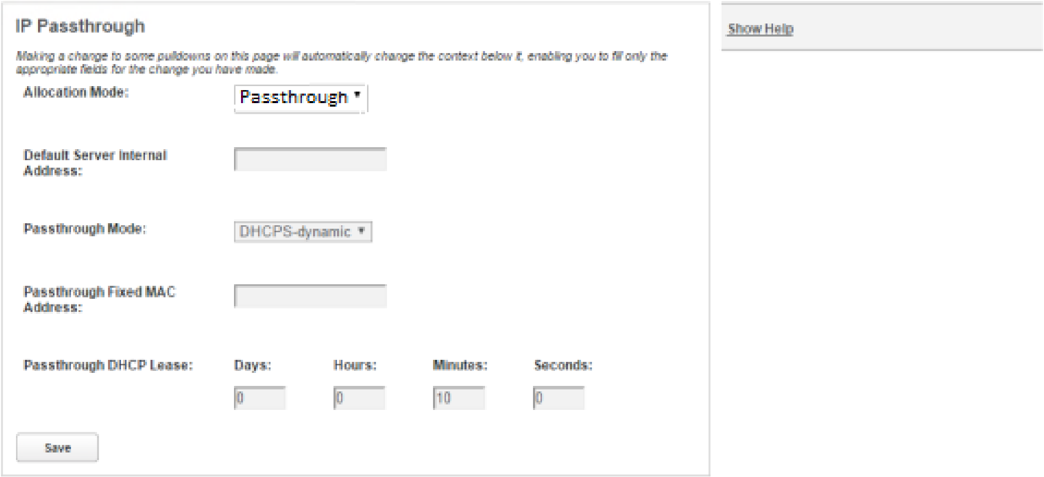
You must configure a Public Subnet and "Allow Inbound Traffic" must be turned Off to use Public Subnet Hosts. Click here

Click the link to proceed to the Home Network > *Subnets & DHCP* (page 58) page.

# IP Passthrough

Allows a single PC on the LAN to use the public IP address of the Gateway.

This page also provides port address translation (PAT) or (NAPT – Network Address and Port Translation) through the same public IP address for all other hosts on the private LAN subnet.



IP Passthrough

*Making a change to some pulldowns on this page will automatically change the context below it, enabling you to fill only the appropriate fields for the change you have made.*

Allocation Mode: Passthrough

Default Server Internal Address:

Passthrough Mode: DHCPS-dynamic

Passthrough Fixed MAC Address:

Passthrough DHCP Lease: Days: 0 Hours: 0 Minutes: 10 Seconds: 0

- **Allocation Mode:** The passthrough mode; one of:
  - **Off**: disables passthrough.
  - **Passthrough**: assigns the Gateway's public IP address to a single LAN-side client.
  - **Default Server**: forwards externally-initiated traffic to a specific LAN-side client. Use this if you have a publically-available server, or have a network application that uses arbitrary port numbers (for example, certain online games).

  The available fields in this page change, depending on the selected allocation mode.

Select **Passthrough** from the **Allocation Mode** pull-down menu, to assign and reuse the public WAN IP on a LAN computer. Use DHCP for addressing the designated passthrough PC. The acquired or configured WAN address is passed to DHCP, which will dynamically configure a single-servable-address subnet. This dynamic subnet configuration is based on the local and remote WAN address and subnet mask.

## IP Passthrough mode

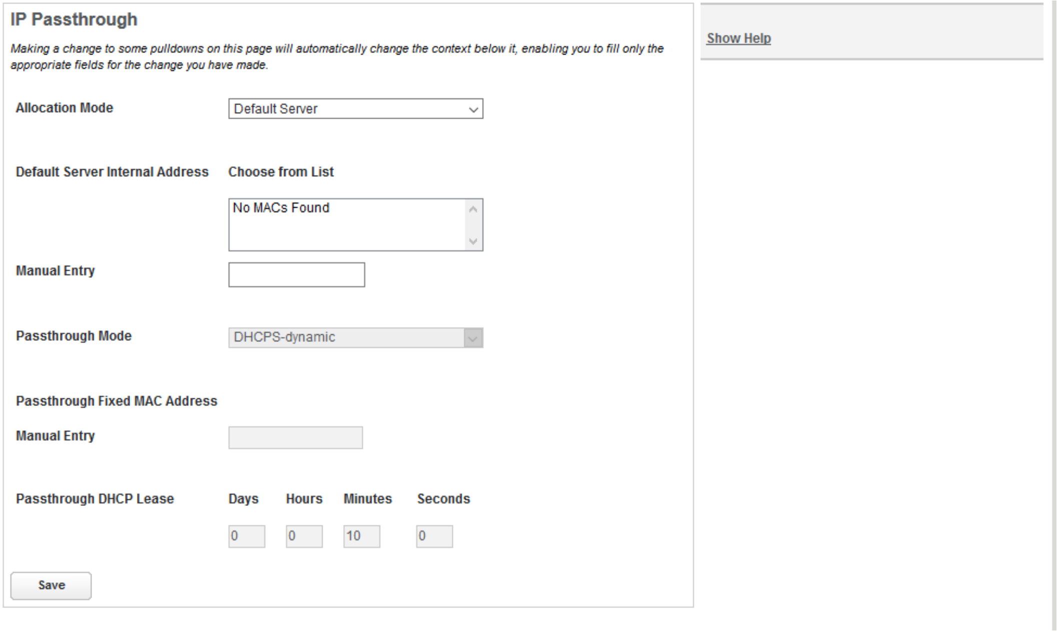
The following fields are available in IP Passthrough mode.

- **Passthrough Mode:** The method used to assign the WAN IP address to the selected LAN client:
  - **DHCPS-dynamic**: the Gateway assigns its WAN IP address to the first LAN client that requests a DHCP lease. It may be helpful, after the gateway has obtained a WAN IP address, to cycle the desired LAN client's interface or reboot it. On disabling this feature, you should reboot the LAN client.
  - **DHCPS-fixed**: the Gateway assigns its WAN IP address to a specific LAN client. It may be helpful, after the gateway has obtained a WAN IP address, to cycle the LAN client's interface or reboot it. On disabling this feature, you should reboot the LAN client.
  - **Manual**: a LAN client must be manually configured with the gateway's assigned WAN IP address and gateway information.
- **Passthrough Fixed MAC Address:** When Passthrough Mode is DHCPS-fixed, this is the MAC of the selected LAN client.

- **Passthrough DHCP Lease:** When Passthrough Mode is DHCPS, this is the duration of the lease that will be handed out by the gateway to the LAN client.

### Default Server mode

The following fields are available in Default Server mode. Other fields are greyed out, indicating that they do not apply.



IP Passthrough

*Making a change to some pulldowns on this page will automatically change the context below it, enabling you to fill only the appropriate fields for the change you have made.*

Allocation Mode: Default Server

Default Server Internal Address: Choose from List

No MACs Found

Manual Entry:

Passthrough Mode: DHCPS-dynamic

Passthrough Fixed MAC Address

Manual Entry:

| Passthrough DHCP Lease | Days | Hours | Minutes | Seconds |
|---|---|---|---|---|
| | 0 | 0 | 10 | 0 |

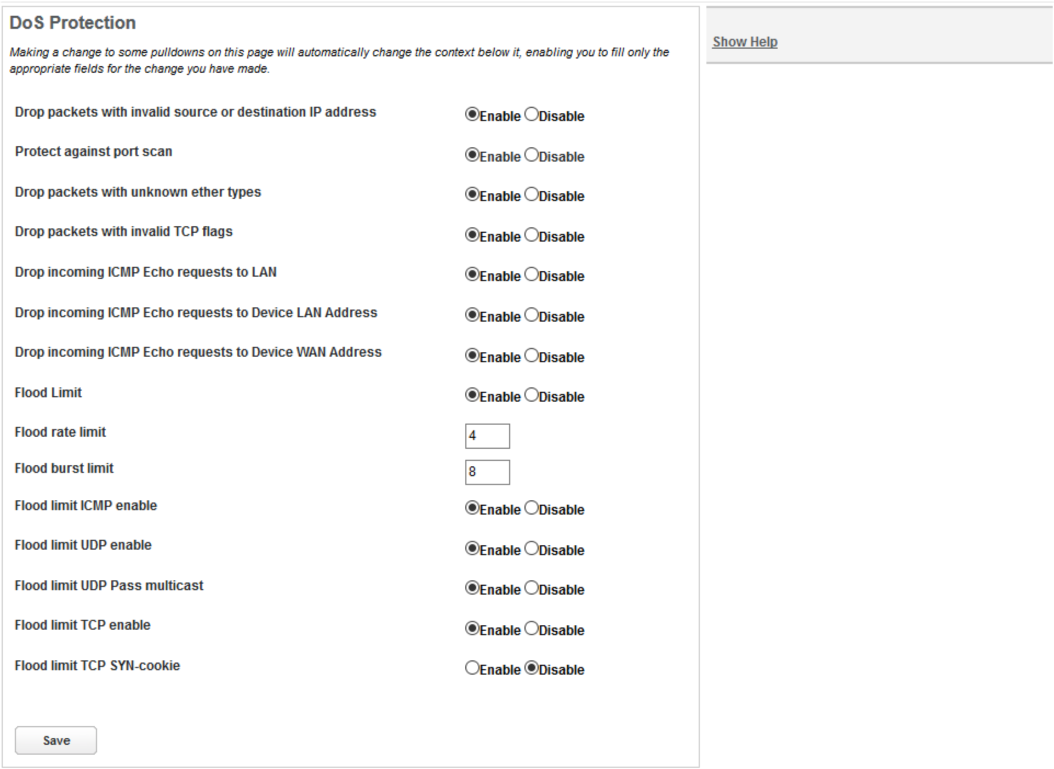
- **Default Server Internal Address:** The IP address of the LAN-side device to receive unexpected or unknown traffic.

  Choose the device from the list. If the device is not in the list (for example, it is currently offline), enter its MAC address in the **Manual Entry** field.

# DoS Protection

The Gateway includes default settings to block the most common types of DoS attacks. For special requirements or circumstances, a variety of additional blocking characteristics are offered.

Choose the Firewall **DoS Protection** link.



DoS Protection

*Making a change to some pulldowns on this page will automatically change the context below it, enabling you to fill only the appropriate fields for the change you have made.*

| | |
|---|---|
| Drop packets with invalid source or destination IP address | ● Enable ○ Disable |
| Protect against port scan | ● Enable ○ Disable |
| Drop packets with unknown ether types | ● Enable ○ Disable |
| Drop packets with invalid TCP flags | ● Enable ○ Disable |
| Drop incoming ICMP Echo requests to LAN | ● Enable ○ Disable |
| Drop incoming ICMP Echo requests to Device LAN Address | ● Enable ○ Disable |
| Drop incoming ICMP Echo requests to Device WAN Address | ● Enable ○ Disable |
| Flood Limit | ● Enable ○ Disable |
| Flood rate limit | 4 |
| Flood burst limit | 8 |
| Flood limit ICMP enable | ● Enable ○ Disable |
| Flood limit UDP enable | ● Enable ○ Disable |
| Flood limit UDP Pass multicast | ● Enable ○ Disable |
| Flood limit TCP enable | ● Enable ○ Disable |
| Flood limit TCP SYN-cookie | ○ Enable ● Disable |

In most cases, you should accept the default settings.

- **Drop packets with invalid source or destination IP address:** Drops packets with invalid source or destination IP address(es).
- **Protect against port scan:** Detects and drops port scans.
- **Drop packets with unknown ether types:** Drops packets with unknown ether types.
- **Drop packets with invalid TCP flags:** Drops packets with invalid TCP flag settings (NULL, FIN, Xmas, etc.).
- **Drop incoming ICMP Echo requests to LAN:** Drops all ICMP (Ping) echo requests from LAN-side devices.
- **Drop incoming ICMP Echo requests to device LAN Address:** Drops all echo requests coming from the Internet to LAN-side addresses of the Gateway.
- **Drop incoming ICMP Echo requests to device WAN Address:** Drops all echo requests coming from the Internet to WAN-side addresses of the Gateway, except anycast addresses.
- **Flood Limit:** Detects and drops packet flooding attacks.
- **Flood rate limit:** Specifies the number of packets per second before dropping the remainder.
- **Flood burst limit:** Specifies the number of packets in a single burst before dropping the remainder.
- **Flood limit ICMP enable:** Detects and drops ICMP traffic packet flooding attempts.
- **Flood limit UDP enable:** Detects and drops UDP traffic packet flooding attempts.
- **Flood limit UDP Pass multicast:** Excludes UDP multicast traffic. On by default.
- **Flood limit TCP enable:** Excludes TCP traffic. Off by default.

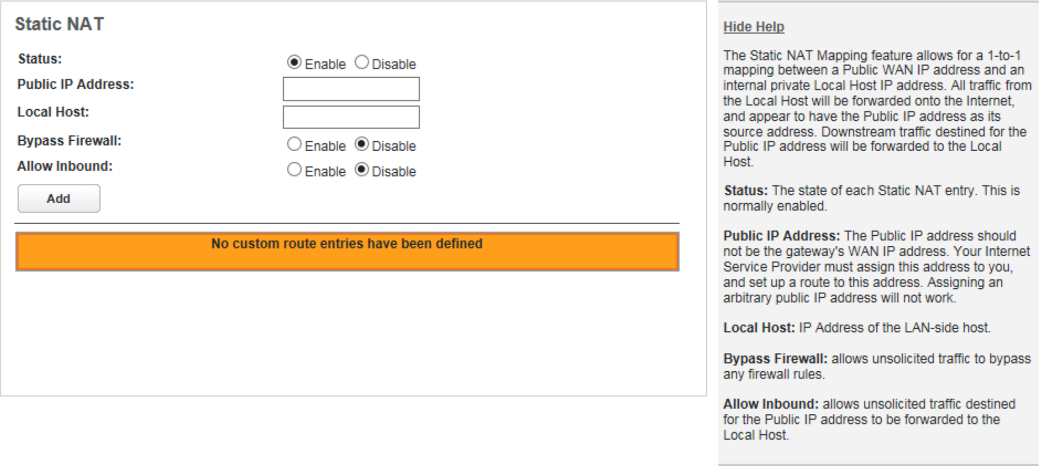
- **Flood limit TCP SYN-cookie:** Drops TCP SYN cookies flooding attempts.

After making changes, click **Save** for the changes to take effect.

# Static NAT

The Static NAT mapping feature allows for a 1–to–1 mapping between a public WAN IP address and an internal private Local Host IP address.

Click the Firewall **Static NAT** link.



Static NAT

Status: ● Enable ○ Disable
Public IP Address:
Local Host:
Bypass Firewall: ○ Enable ● Disable
Allow Inbound: ○ Enable ● Disable

No custom route entries have been defined

The Static NAT Mapping feature allows for a 1-to-1 mapping between a Public WAN IP address and an internal private Local Host IP address. All traffic from the Local Host will be forwarded onto the Internet, and appear to have the Public IP address as its source address. Downstream traffic destined for the Public IP address will be forwarded to the Local Host.

**Status:** The state of each Static NAT entry. This is normally enabled.

**Public IP Address:** The Public IP address should not be the gateway's WAN IP address. Your Internet Service Provider must assign this address to you, and set up a route to this address. Assigning an arbitrary public IP address will not work.

**Local Host:** IP Address of the LAN-side host.

**Bypass Firewall:** allows unsolicited traffic to bypass any firewall rules.

**Allow Inbound:** allows unsolicited traffic destined for the Public IP address to be forwarded to the Local Host.

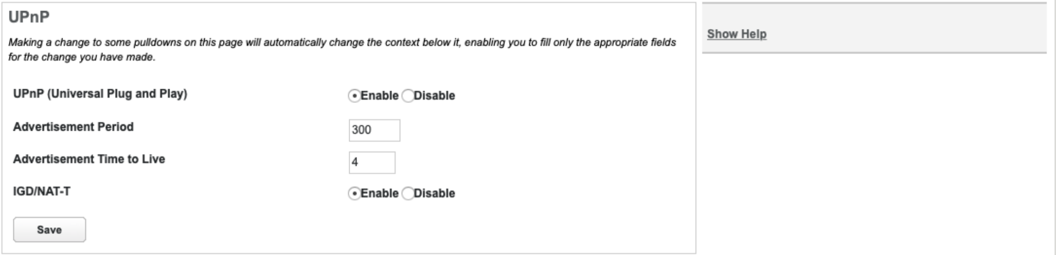
- **Status:** The state of each Static NAT entry (usually Enabled).
- **Public IP Address:**A public IP address, assigned by your service provider. This should not be the WAN IP address of the Gateway.

  **Note:** Assigning an arbitrary public IP address will not work.
- **Local Host:** IP address of the LAN-side host.
- **Bypass Firewall:** When enabled, unsolicited traffic bypasses any firewall rules.
- **Allow Inbound:** When enabled, the Gateway forwards unsolicited traffic destined for the public IP address to the local host.

After making changes, click **Save** for the changes to take effect.

# UPnP

Universal Plug and Play (UPnP) allows discovery UPnP-enabled devices in Microsoft environments. Leave these settings unchanged unless instructed by support or your service provider.



UPnP

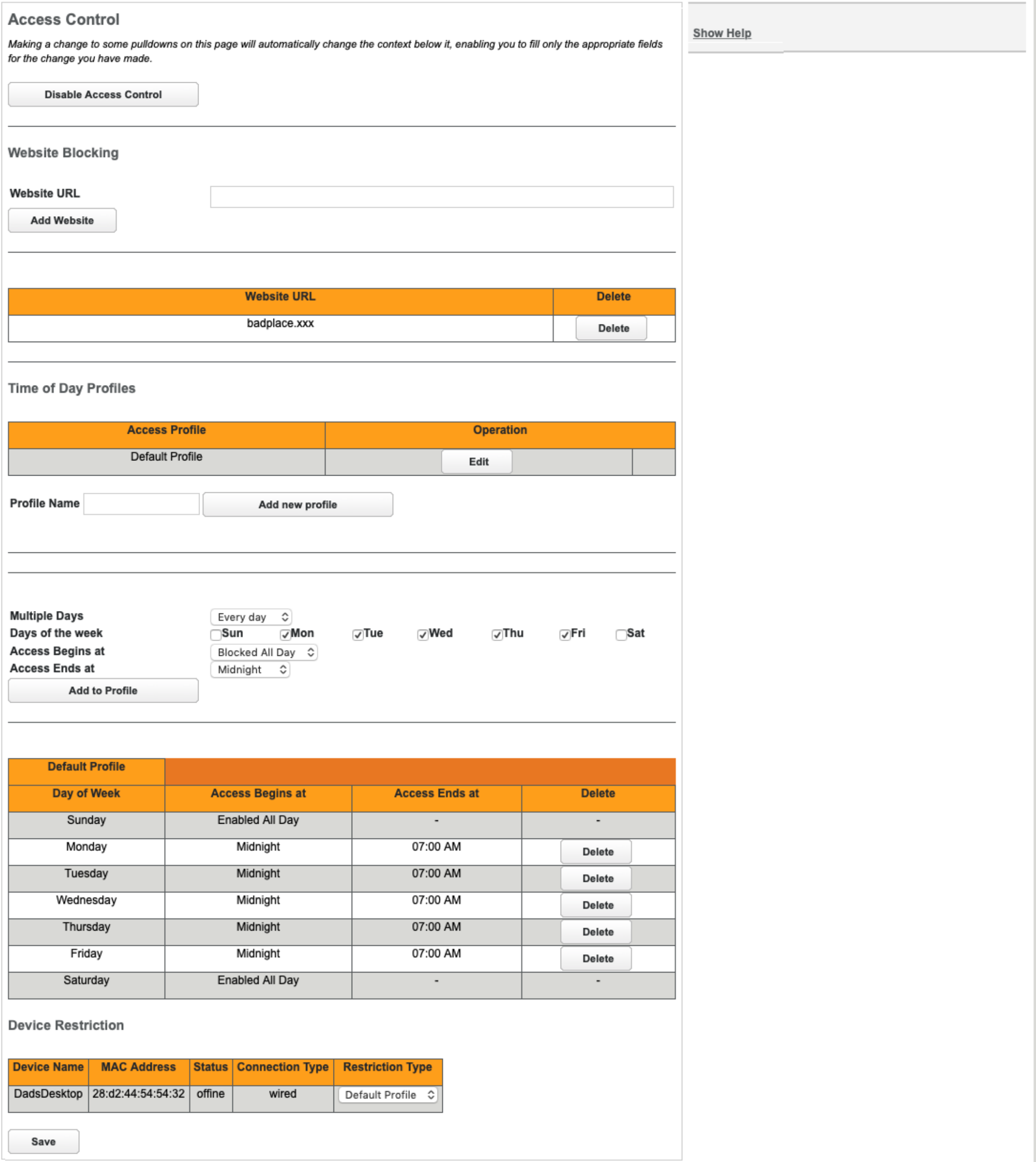
*Making a change to some pulldowns on this page will automatically change the context below it, enabling you to fill only the appropriate fields for the change you have made.*

UPnP (Universal Plug and Play) ● Enable ○ Disable
Advertisement Period 300
Advertisement Time to Live 4
IGD/NAT-T ● Enable ○ Disable

- **UPnP:** Choose **Enable** to enable UPnP.
- **Advertisement Period:** The period, in seconds, the Gateway broadcasts UPnP information. A shorter advertisement period ensures control points have current device status, at the expense of additional network traffic.
- **Advertisement Time to Live (TTL):** The number of hops before the advertisement disappears. (A hop is the number of steps allowed to propagate for each UPnP advertisement.)
- **IGD/NAT-T:** Internet Gateway Device Protocol for Network Address Translation (NAT). Must always be enabled.

# Access Control

Use the Access Control screen to block access to particular websites.



Access Control

*Making a change to some pulldowns on this page will automatically change the context below it, enabling you to fill only the appropriate fields for the change you have made.*

Website Blocking

Website URL

| Website URL | Delete |
|---|---|
| badplace.xxx | Delete |

Time of Day Profiles

| Access Profile | Operation |
|---|---|
| Default Profile | Edit |

Profile Name

Multiple Days: Every day
Days of the week: ☐ Sun ☑ Mon ☑ Tue ☑ Wed ☑ Thu ☑ Fri ☐ Sat
Access Begins at: Blocked All Day
Access Ends at: Midnight

| Default Profile | | | |
|---|---|---|---|
| Day of Week | Access Begins at | Access Ends at | Delete |
| Sunday | Enabled All Day | - | - |
| Monday | Midnight | 07:00 AM | Delete |
| Tuesday | Midnight | 07:00 AM | Delete |
| Wednesday | Midnight | 07:00 AM | Delete |
| Thursday | Midnight | 07:00 AM | Delete |
| Friday | Midnight | 07:00 AM | Delete |
| Saturday | Enabled All Day | - | - |

Device Restriction

| Device Name | MAC Address | Status | Connection Type | Restriction Type |
|---|---|---|---|---|
| DadsDesktop | 28:d2:44:54:54:32 | offline | wired | Default Profile |

### Website Blocking

- **Website URL:** Enter the URL of a website you want to block, then click **Add Website**.

  The table shows all listed websites. Click **Delete** next to any website to remove it from the list.

### Time of Day Profiles

You can create profiles, blocks of time when website blocking is active. Individual devices can be assigned to different profiles.

Each row in the table displays one profile. Use the **Edit** button to edit that profile.

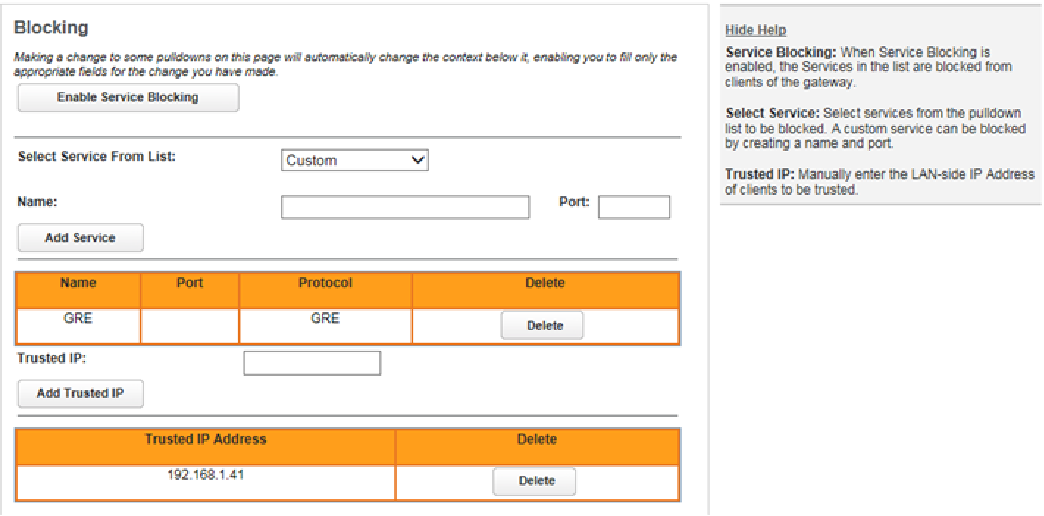
- **Profile Name:** Enter the name of a new profile and click **Add new profile**.
- **Multiple Days:** Choose **Every Day**, **Weekdays**, or **Weekends**.
- **Days of the week:** Check or uncheck days as needed to set up your profile.
- **Access Begins at:** Choose **Enabled All Day**, **Blocked All Day**, or a time of day.
- **Access Ends at:** Choose a time of day later than the beginning time.

  If you want to block access (for example) from 9 p.m. to 7 a.m., you need to create two blocks of time: 9 p.m. to midnight, and 12:01 a.m. to 7 a.m.

When finished, click **Add to Profile**.

## Blocking

Blocks selected services from Gateway clients.



Blocking

*Making a change to some pulldowns on this page will automatically change the context below it, enabling you to fill only the appropriate fields for the change you have made.*

Select Service From List: Custom

Name:

Port:

| Name | Port | Protocol | Delete |
|---|---|---|---|
| GRE | | GRE | Delete |

Trusted IP:

| Trusted IP Address | Delete |
|---|---|
| 192.168.1.41 | Delete |

Hide Help

**Service Blocking:** When Service Blocking is enabled, the Services in the list are blocked from clients of the gateway.

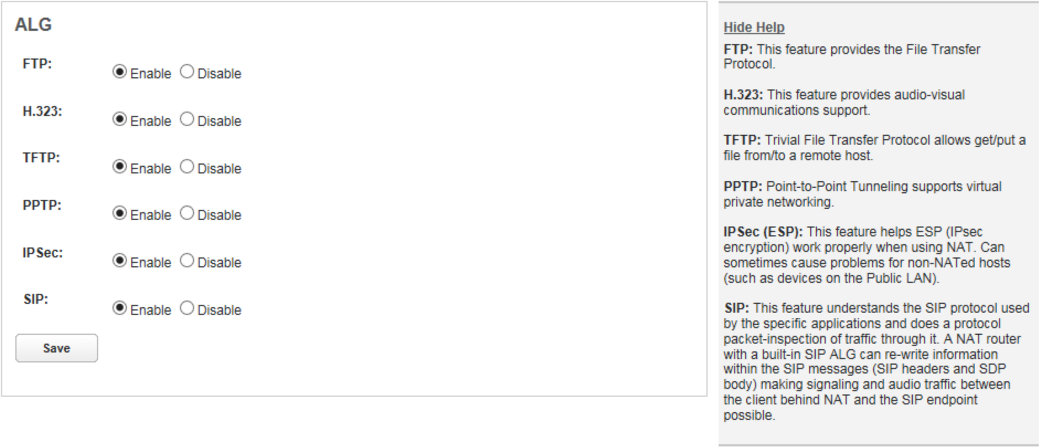
**Select Service:** Select services from the pulldown list to be blocked. A custom service can be blocked by creating a name and port.

**Trusted IP:** Manually enter the LAN-side IP Address of clients to be trusted.

- **Enable Service Blocking:** When enabled, the services in the list are blocked from LAN-side clients. The button name changes to **Disable Service Blocking**.
- **Select Service From List:** Select services from the pull-down list to be blocked. A custom service can be blocked by creating a name and port.
- **Trusted IP:** Manually enter the LAN-side IP address of clients to be trusted and not have services blocked.

# ALG

Application Level Gateway (ALG) supports address and port translation for certain protocols such as FTP, TFTP, SIP, etc.



ALG

FTP: ● Enable ○ Disable

H.323: ● Enable ○ Disable

TFTP: ● Enable ○ Disable

PPTP: ● Enable ○ Disable

IPSec: ● Enable ○ Disable

SIP: ● Enable ○ Disable

**FTP:** This feature provides the File Transfer Protocol.

**H.323:** This feature provides audio-visual communications support.

**TFTP:** Trivial File Transfer Protocol allows get/put a file from/to a remote host.

**PPTP:** Point-to-Point Tunneling supports virtual private networking.

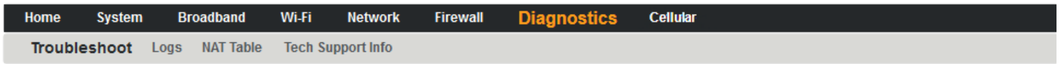
**IPSec (ESP):** This feature helps ESP (IPsec encryption) work properly when using NAT. Can sometimes cause problems for non-NATed hosts (such as devices on the Public LAN).

**SIP:** This feature understands the SIP protocol used by the specific applications and does a protocol packet-inspection of traffic through it. A NAT router with a built-in SIP ALG can re-write information within the SIP messages (SIP headers and SDP body) making signaling and audio traffic between the client behind NAT and the SIP endpoint possible.

- **FTP:** When enabled, provides support for File Transfer Protocol.
- **H.323:** When enabled, provides audio-visual communications support.
- **TFTP:** When Trivial File Transfer Protocol is enabled, it allows get/put of a file from/to a remote host.
- **PPTP:** When Point-to-Point Tunneling is enabled, it supports virtual private networking.
- **IPSec:** This feature helps ESP (IPsec encryption) work properly when using NAT. It can sometimes cause problems for non-NATed hosts (such as devices on the Public LAN).
- **SIP:** This feature understands the SIP protocol used by the specific applications and does a protocol packet-inspection of traffic through it. A NAT router with a built-in SIP ALG can re-write information within the SIP messages (SIP headers and SDP body) making signaling and audio traffic between the client behind NAT and the SIP endpoint possible.

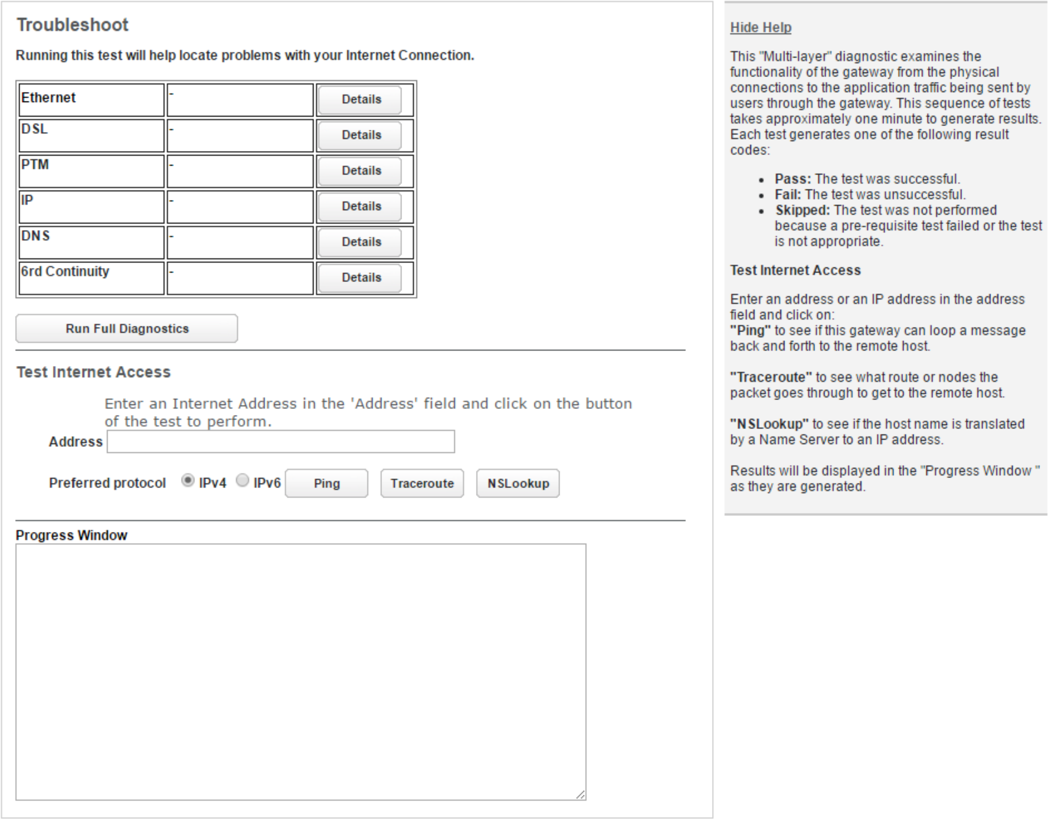
# Diagnostics tab

Links on the Diagnostics tab provide the ability to run diagnostics, test Internet access, and examine various information stored in logs.



# Troubleshoot

Use the features on the Troubleshoot page to examine the elements and functions on the Gateway.



Troubleshoot

Running this test will help locate problems with your Internet Connection.

| | | |
|---|---|---|
| Ethernet | - | Details |
| DSL | - | Details |
| PTM | - | Details |
| IP | - | Details |
| DNS | - | Details |
| 6rd Continuity | - | Details |

Test Internet Access

Enter an Internet Address in the 'Address' field and click on the button of the test to perform.

Address

Preferred protocol ● IPv4 ○ IPv6

Progress Window

This "Multi-layer" diagnostic examines the functionality of the gateway from the physical connections to the application traffic being sent by users through the gateway. This sequence of tests takes approximately one minute to generate results. Each test generates one of the following result codes:

- **Pass:** The test was successful.
- **Fail:** The test was unsuccessful.
- **Skipped:** The test was not performed because a pre-requisite test failed or the test is not appropriate.

Test Internet Access

Enter an address or an IP address in the address field and click on:
**"Ping"** to see if this gateway can loop a message back and forth to the remote host.

**"Traceroute"** to see what route or nodes the packet goes through to get to the remote host.

**"NSLookup"** to see if the host name is translated by a Name Server to an IP address.

Results will be displayed in the "Progress Window " as they are generated.

**Note:** Not all Gateway models have all the interfaces listed.

- **Run Full Diagnostics:** Click to run tests on each physical interface.

  Click the **Details** buttons for each interface to see detailed results of the tests. The troubleshooting details retrieved depend on the router configuration and network type.

  Each test generates one of the following result codes:

| | |
|---|---|
| `Pass` | The test was successful. |
| `Fail` | The test was unsuccessful. |
| `Skipped` | The test was skipped because a test on which it depended failed. |
| `Pending` | The test timed out without producing a result. Try running the test again. |
| `Warning` | The test was unsuccessful. The service provider equipment your Gateway connects to may not support this test. |

## Test Internet Access

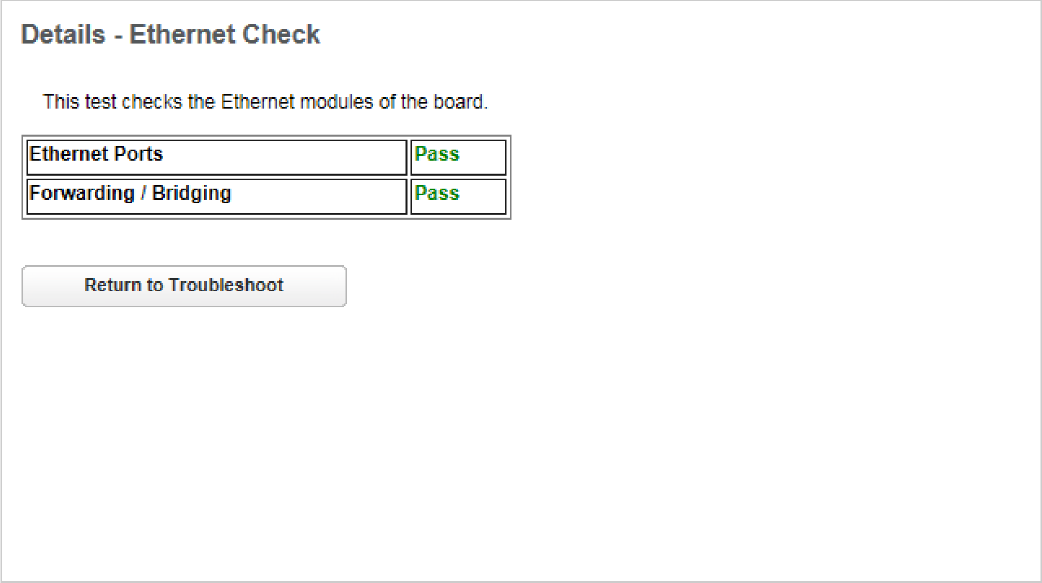
This test checks connectivity between the Gateway and an external IP address.

- **Address:** The IP address or name of an external host system.

- **Preferred Protocol:** Select IPv4 or IPv6 as appropriate.
- **Ping:** Sends ICMP (Ping) packets to the remote host.
- **Traceroute:** Lists the route that packets take to the remote host, showing response times for each hop.
- **NSlookup:** Performs a name server lookup on the remote host.
- **Progress Window:** Shows the results of a Ping, Traceroute, or NSlookup test.

**Example:**

This graphic is an example of the Troubleshooting details on the Ethernet Details page.



Details - Ethernet Check

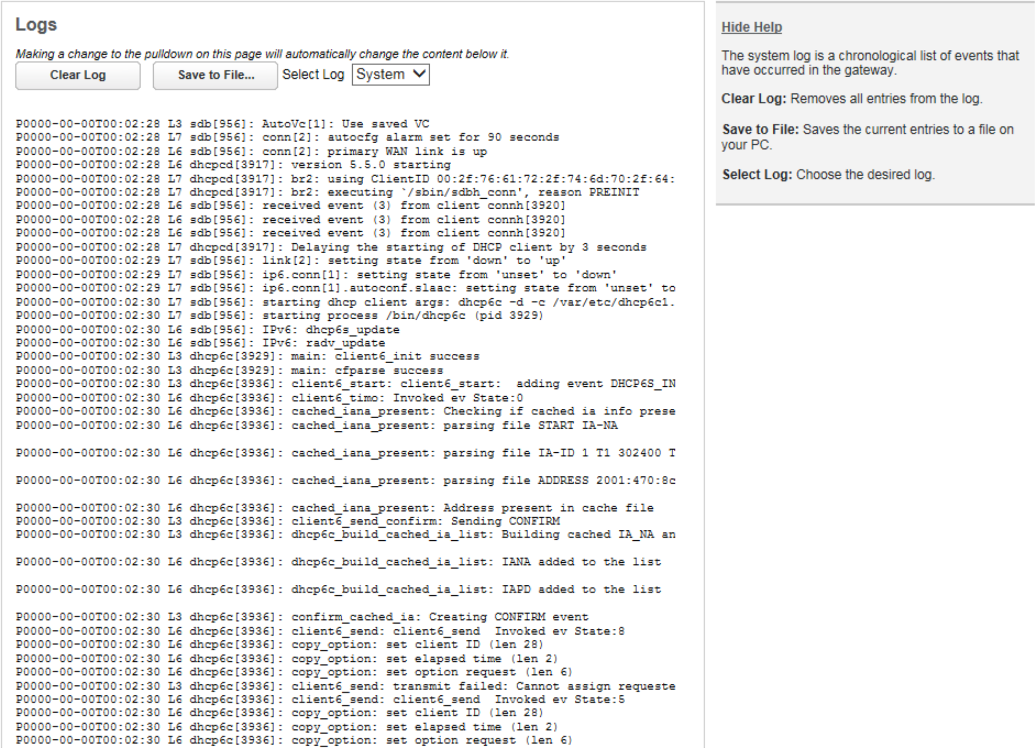
This test checks the Ethernet modules of the board.

| | |
|---|---|
| Ethernet Ports | Pass |
| Forwarding / Bridging | Pass |

# Logs

Displays saved information about the Gateway operational status.

Select the **Logs** link under the Diagnostics tab.



*Making a change to the pulldown on this page will automatically change the content below it.*

```
P0000-00-00T00:02:28 L3 sdb[956]: AutoVc[1]: Use saved VC
P0000-00-00T00:02:28 L7 sdb[956]: conn[2]: autocfg alarm set for 90 seconds
P0000-00-00T00:02:28 L6 sdb[956]: conn[2]: primary WAN link is up
P0000-00-00T00:02:28 L6 dhcpcd[3917]: version 5.5.0 starting
P0000-00-00T00:02:28 L7 dhcpcd[3917]: br2: using ClientID 00:2f:76:61:72:2f:74:6d:70:2f:64:
P0000-00-00T00:02:28 L7 dhcpcd[3917]: br2: executing `/sbin/sdbh_conn', reason PREINIT
P0000-00-00T00:02:28 L6 sdb[956]: received event (3) from client connh[3920]
P0000-00-00T00:02:28 L6 sdb[956]: received event (3) from client connh[3920]
P0000-00-00T00:02:28 L6 sdb[956]: received event (3) from client connh[3920]
P0000-00-00T00:02:28 L7 dhcpcd[3917]: Delaying the starting of DHCP client by 3 seconds
P0000-00-00T00:02:29 L7 sdb[956]: link[2]: setting state from 'down' to 'up'
P0000-00-00T00:02:29 L7 sdb[956]: ip6.conn[1]: setting state from 'unset' to 'down'
P0000-00-00T00:02:29 L7 sdb[956]: ip6.conn[1].autoconf.slaac: setting state from 'unset' to
P0000-00-00T00:02:30 L7 sdb[956]: starting dhcp client args: dhcp6c -d -c /var/etc/dhcp6c1.
P0000-00-00T00:02:30 L7 sdb[956]: starting process /bin/dhcp6c (pid 3929)
P0000-00-00T00:02:30 L6 sdb[956]: IPv6: dhcp6s_update
P0000-00-00T00:02:30 L6 sdb[956]: IPv6: radv_update
P0000-00-00T00:02:30 L3 dhcp6c[3929]: main: client6_init success
P0000-00-00T00:02:30 L3 dhcp6c[3929]: main: cfparse success
P0000-00-00T00:02:30 L3 dhcp6c[3936]: client6_start: client6_start:  adding event DHCP6S_IN
P0000-00-00T00:02:30 L6 dhcp6c[3936]: client6_timo: Invoked ev State:0
P0000-00-00T00:02:30 L6 dhcp6c[3936]: cached_iana_present: Checking if cached ia info prese
P0000-00-00T00:02:30 L6 dhcp6c[3936]: cached_iana_present: parsing file START IA-NA

P0000-00-00T00:02:30 L6 dhcp6c[3936]: cached_iana_present: parsing file IA-ID 1 T1 302400 T

P0000-00-00T00:02:30 L6 dhcp6c[3936]: cached_iana_present: parsing file ADDRESS 2001:470:8c

P0000-00-00T00:02:30 L6 dhcp6c[3936]: cached_iana_present: Address present in cache file
P0000-00-00T00:02:30 L3 dhcp6c[3936]: client6_send_confirm: Sending CONFIRM
P0000-00-00T00:02:30 L3 dhcp6c[3936]: dhcp6c_build_cached_ia_list: Building cached IA_NA an

P0000-00-00T00:02:30 L6 dhcp6c[3936]: dhcp6c_build_cached_ia_list: IANA added to the list

P0000-00-00T00:02:30 L6 dhcp6c[3936]: dhcp6c_build_cached_ia_list: IAPD added to the list

P0000-00-00T00:02:30 L3 dhcp6c[3936]: confirm_cached_ia: Creating CONFIRM event
P0000-00-00T00:02:30 L6 dhcp6c[3936]: client6_send: client6_send  Invoked ev State:8
P0000-00-00T00:02:30 L6 dhcp6c[3936]: copy_option: set client ID (len 28)
P0000-00-00T00:02:30 L6 dhcp6c[3936]: copy_option: set elapsed time (len 2)
P0000-00-00T00:02:30 L6 dhcp6c[3936]: copy_option: set option request (len 6)
P0000-00-00T00:02:30 L3 dhcp6c[3936]: client6_send: transmit failed: Cannot assign requeste
P0000-00-00T00:02:30 L6 dhcp6c[3936]: client6_send: client6_send  Invoked ev State:5
P0000-00-00T00:02:30 L6 dhcp6c[3936]: copy_option: set client ID (len 28)
P0000-00-00T00:02:30 L6 dhcp6c[3936]: copy_option: set elapsed time (len 2)
P0000-00-00T00:02:30 L6 dhcp6c[3936]: copy_option: set option request (len 6)
```

The system log is a chronological list of events that have occurred in the gateway.

**Clear Log:** Removes all entries from the log.

**Save to File:** Saves the current entries to a file on your PC.

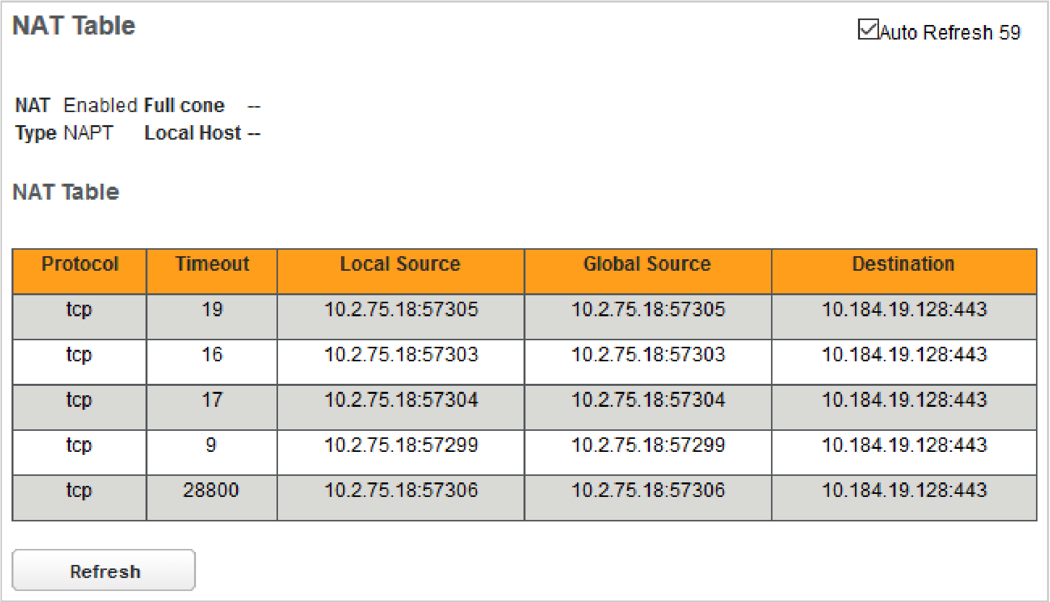
**Select Log:** Choose the desired log.

- **Select Log:** The logs you want to display: **System** and **Firewall**.
- **Display Level:** The lowest severity level you want to display. Lower levels such as **Notice** or **Info** provide a great deal of detailed information.
- **Clear Log:** Click to erase all log entries.
- **Save to File:**Click to download a copy of the logs to your computer as a text file.

**Note:** Some browsers, such as Internet Explorer for Windows, require specifying the Gateway device's LAN address as a ***Trusted Site*** in ***Internet Options: Security***. This is necessary to allow the download of the log text file to the PC.

# NAT Table

The NAT Table page displays the network address translation sessions that are NAT mappings used by the gateway.



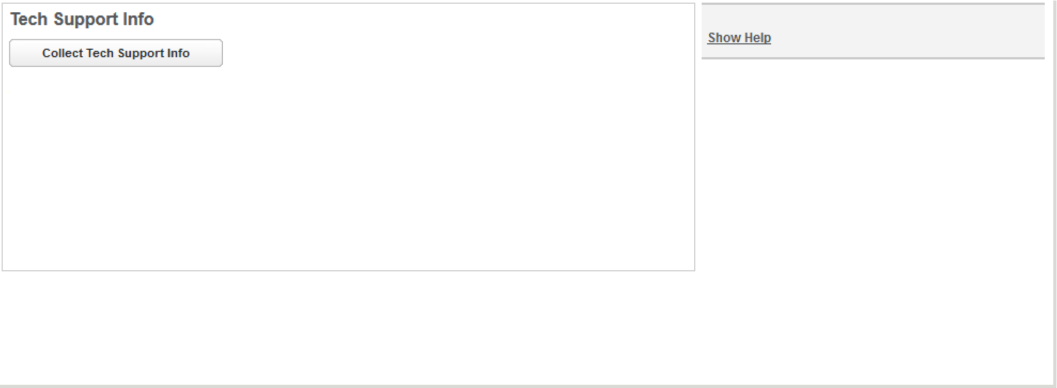
| | | | |
|---|---|---|---|
| NAT | Enabled | Full cone | -- |
| Type | NAPT | Local Host | -- |

NAT Table

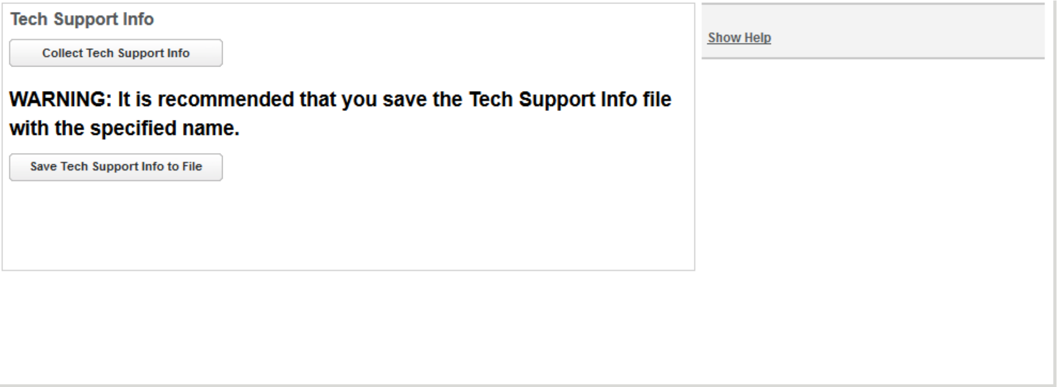
| Protocol | Timeout | Local Source | Global Source | Destination |
|---|---|---|---|---|
| tcp | 19 | 10.2.75.18:57305 | 10.2.75.18:57305 | 10.184.19.128:443 |
| tcp | 16 | 10.2.75.18:57303 | 10.2.75.18:57303 | 10.184.19.128:443 |
| tcp | 17 | 10.2.75.18:57304 | 10.2.75.18:57304 | 10.184.19.128:443 |
| tcp | 9 | 10.2.75.18:57299 | 10.2.75.18:57299 | 10.184.19.128:443 |
| tcp | 28800 | 10.2.75.18:57306 | 10.2.75.18:57306 | 10.184.19.128:443 |

# Tech Support Info

Collects system information that can be used by technical support to debug certain issues.



Click **Collect Tech Support Info** to begin gathering information. When the Gateway finished, the screen refreshes and displays another button:



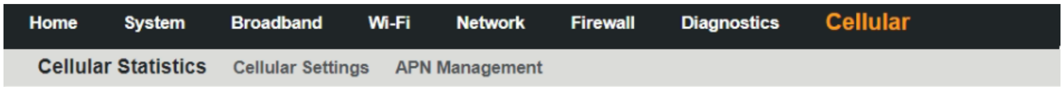
**WARNING: It is recommended that you save the Tech Support Info file with the specified name.**

Click **Save Tech Support Info to File** to download the information to your computer. Do not change the name unless instructed by technical support.

# Cellular tab

Links available on the Celluar tab provide access to configuration options and viewable information about the cellular network.

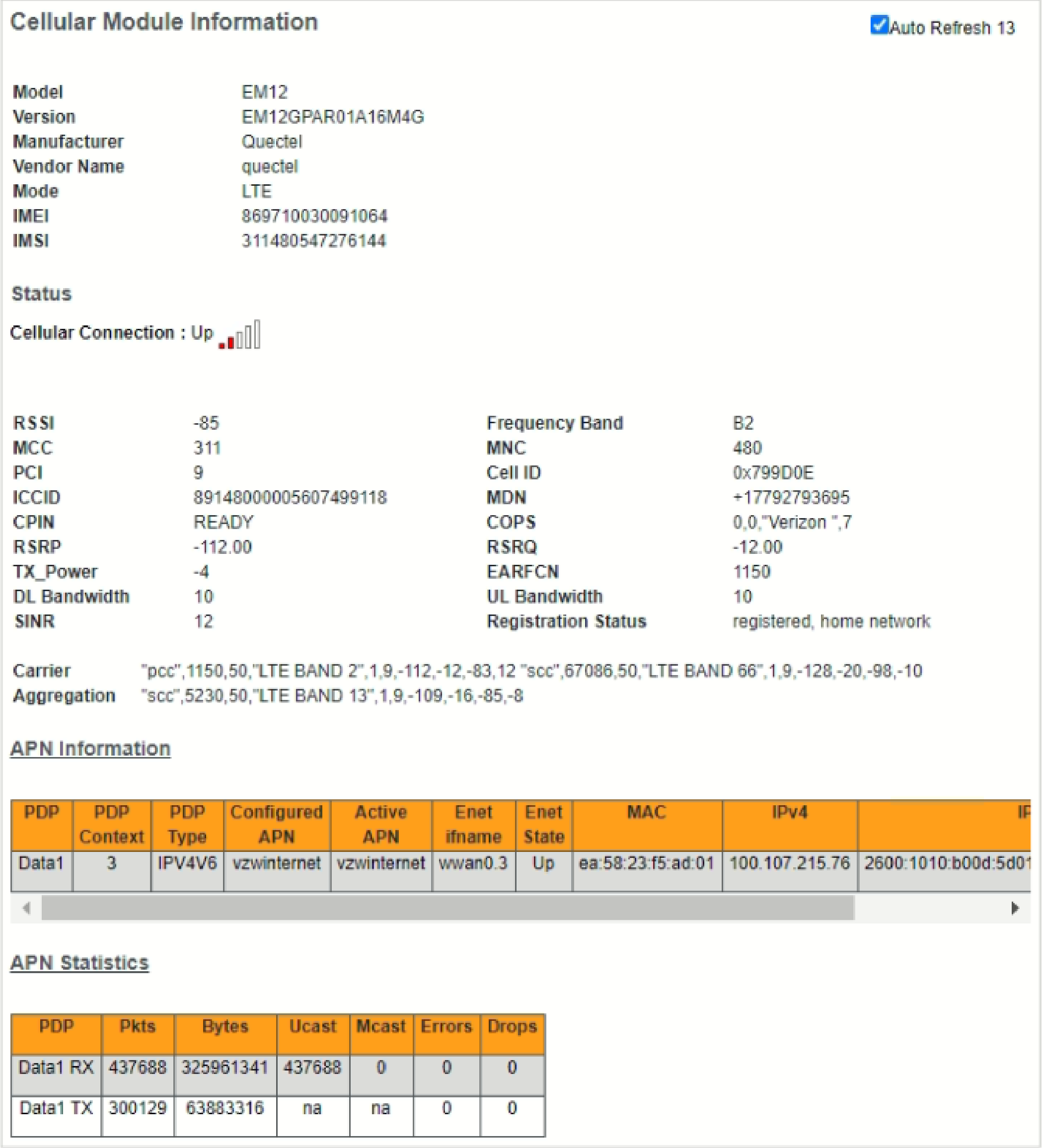
Select the Celluar tab to access Cellular links bar.



## Cellular Statistics

Displays the statistics, status, and current parameter settings of the Gateway cellular connection.

Select the **Cellular Statistics** link under the Cellular tab to view the Cellular Statistics.



### Cellular Module Information

☑ Auto Refresh 13

| | |
|---|---|
| Model | EM12 |
| Version | EM12GPAR01A16M4G |
| Manufacturer | Quectel |
| Vendor Name | quectel |
| Mode | LTE |
| IMEI | 869710030091064 |
| IMSI | 311480547276144 |

**Status**

Cellular Connection : Up

| | | | |
|---|---|---|---|
| RSSI | -85 | Frequency Band | B2 |
| MCC | 311 | MNC | 480 |
| PCI | 9 | Cell ID | 0x799D0E |
| ICCID | 89148000005607499118 | MDN | +17792793695 |
| CPIN | READY | COPS | 0,0,"Verizon ",7 |
| RSRP | -112.00 | RSRQ | -12.00 |
| TX_Power | -4 | EARFCN | 1150 |
| DL Bandwidth | 10 | UL Bandwidth | 10 |
| SINR | 12 | Registration Status | registered, home network |

Carrier Aggregation "pcc",1150,50,"LTE BAND 2",1,9,-112,-12,-83,12 "scc",67086,50,"LTE BAND 66",1,9,-128,-20,-98,-10 "scc",5230,50,"LTE BAND 13",1,9,-109,-16,-85,-8

**APN Information**

| PDP | PDP Context | PDP Type | Configured APN | Active APN | Enet ifname | Enet State | MAC | IPv4 | IP |
|---|---|---|---|---|---|---|---|---|---|
| Data1 | 3 | IPV4V6 | vzwinternet | vzwinternet | wwan0.3 | Up | ea:58:23:f5:ad:01 | 100.107.215.76 | 2600:1010:b00d:5d01 |

**APN Statistics**

| PDP | Pkts | Bytes | Ucast | Mcast | Errors | Drops |
|---|---|---|---|---|---|---|
| Data1 RX | 437688 | 325961341 | 437688 | 0 | 0 | 0 |
| Data1 TX | 300129 | 63883316 | na | na | 0 | 0 |

The Cellular Statistics page displays the following information:

### Module

- **Model:**

  Indicates the Cellular modem model number.
- **Version:** Indicates the version of the Cellular module.
- **Manufacturer:** Indicates the cellular modem manufacturer.
- **Vendor:** Indicates cellular module Vendor.
- **IMEI:** International Mobile Equipment Identity.
- **IMSI:** International Mobile Subscriber Identity.

### Status

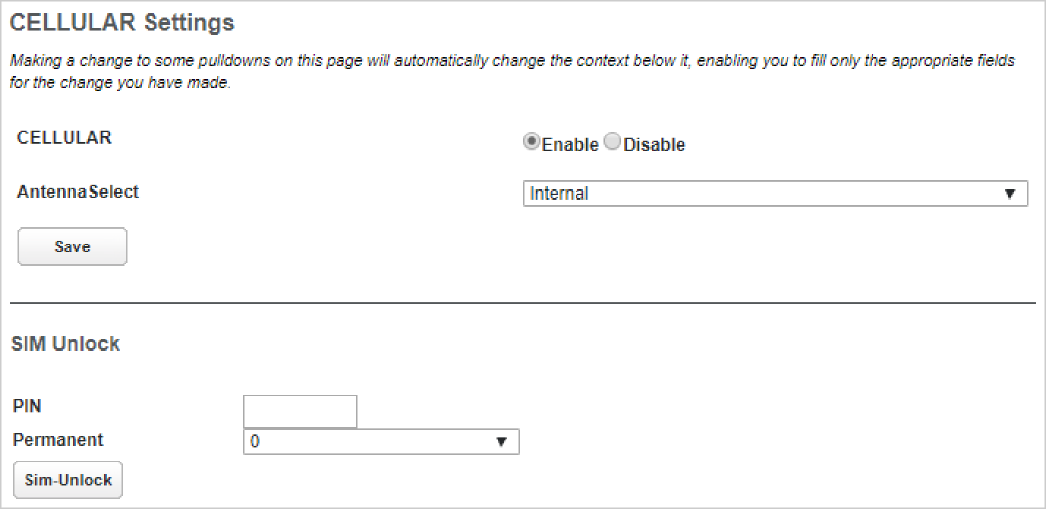
- **Cellular Connection:** TIndicates the current state of the cellular data connection, up or down.
- **RSSI:** Received Signal Strength Indication.
- **Frequency Band:** TIndicates the current frequency band of the cellular module.
- **MCC:** Mobile Country Code.
- **MNC:** Mobile Network code.
- **PCI:** Physical Cell ID.
- **Cell ID:** Indicates the Cell Identifier.
- **ICCID:**

  Integrated circuit card identifier - it is a unique number identifying the SIM card.
- **MDN:** Mobile Directory Number.
- **CPIN:** Indicates the SIM readiness. "READY" indicates that it's ready for operation.
- **COPS:** Current network operator.
- **RSRP:** Reference Signal Received Power.
- **RSRQ:** Reference Signal Received Quality.
- **TX_Powe:** Indicates the transmission power.
- **EARFCN :** Indicates the E-UTRA Absolute Radio Frequency Channel Number.
- **DL Bandwidth:** Indicates the Downlink Bandwidth.
- **UL Bandwidth:** Indicates the Uplink Bandwidth.
- **SINR:** Signal-to-Noise ratio in decibels.
- **Registration Status :** Indicates the Registration status.

## Cellular Settings

Displays the configured settings associated with the Gateway cellular connection.

Select the **Cellular Settings** link under the Cellular tab to view the Cellular Settings.



CELLULAR Settings

*Making a change to some pulldowns on this page will automatically change the context below it, enabling you to fill only the appropriate fields for the change you have made.*

| | |
|---|---|
| CELLULAR | ● Enable ○ Disable |
| AntennaSelect | Internal ▼ |

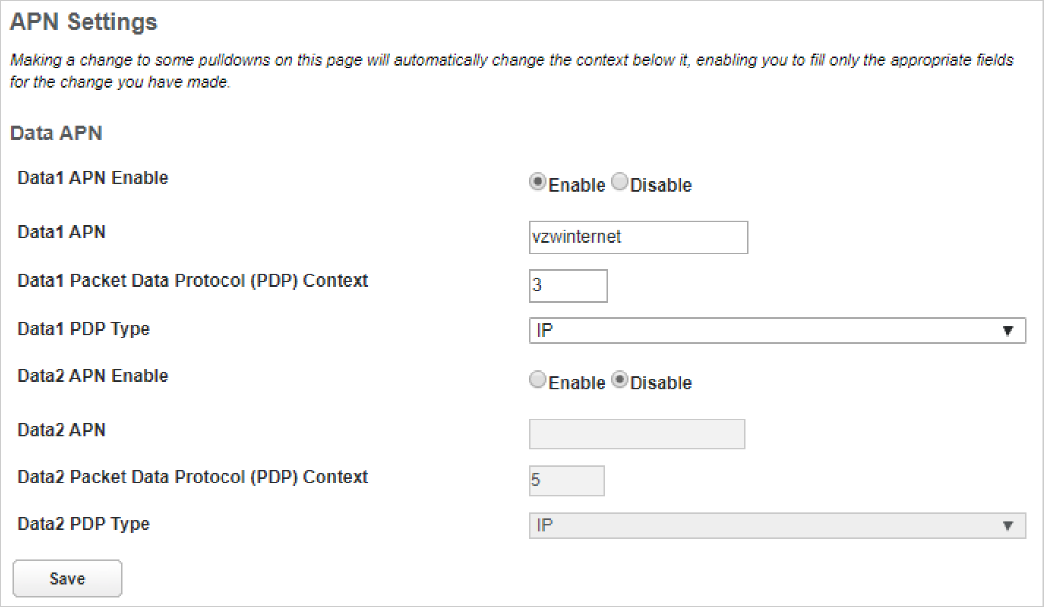
SIM Unlock

| | |
|---|---|
| PIN | |
| Permanent | 0 ▼ |

# APN Management

Use the APN Management screen to view and configure the Gateway's APN settings.

Select the **APN Management** link under the Cellular tab to view the APN Management screen.



APN Settings

*Making a change to some pulldowns on this page will automatically change the context below it, enabling you to fill only the appropriate fields for the change you have made.*

Data APN

| | |
|---|---|
| Data1 APN Enable | ● Enable ○ Disable |
| Data1 APN | vzwinternet |
| Data1 Packet Data Protocol (PDP) Context | 3 |
| Data1 PDP Type | IP ▼ |
| Data2 APN Enable | ○ Enable ● Disable |
| Data2 APN | |
| Data2 Packet Data Protocol (PDP) Context | 5 |
| Data2 PDP Type | IP ▼ |

**Note:** Users are unable to make changes to PDP Type.

Chapter 5

# Troubleshooting

This chapter provides information about resolving issues with the gateway connection using the broadband redirect messages, as well as general troubleshooting processes.

## Connection issues

Use the information in this section to identify and resolve common connection issues.

### No Wireless light

**Symptom:** The Wireless light, on the front panel, is off.

**Cause:** The Wi-Fi interface is disabled.

**Solution:**

1. On the **Settings** tab, click **LAN**, and then click **Wi-Fi**.
2. For **Wi-Fi Interface**, select **Enable**.
3. Click **Save**.

### The Internet is not accessible but the user interface of the gateway is accessible

**Symptom:** No devices can connect to remote hosts, but can connect to LAN servers and the Gateway interface.

**Cause:** Broadband settings are incorrect.

**Solution:**

1. On the **Settings** tab, click **Broadband**.
2. On the **Status** page, check the connectivity status of the broadband link.
3. Restart the Gateway (if needed) to refresh the broadband connection.

## LAN Issues

Use the information in this section to identify and resolve common local network issues.

# IP address conflict

**Symptom:** One or more devices on the LAN display "address conflict" messages.

**Cause:** A device's settings are misconfigured.

**Solution:**

1. Open the network settings on the device.
2. Check the IP address configuration.

| If the device should have a... | Then... |
|---|---|
| static IP address | Make sure the assigned address is outside the Gateway's DHCP pool (the range of addresses it assigns). |
| dynamic IP address | Make sure the device is configured to request an IP address using DHCP. |

3. If the device is using DHCP, force it to renew its lease.

   There is usually a button available in the device settings called **Renew Lease**, or something similar. Click this button to force the device to request a new IP address. If there is no obvious control, save the settings and restart the device.

**Cause:** Gateway DHCP settings are misconfigured, allowing it to assign addresses that should be static.

**Solution:**

1. On the **Settings** tab, click **LAN**, and then click **DHCP**.
2. Change the DHCP pool (IP address range) so that the static address is not part of the range.

# A wireless device is not locating the gateway

**Symptom:** The Gateway is on, but devices do not find the Gateway in the Wi-Fi settings.

**Note:** If Wi-Fi Home Wi-Fi optimization is enabled, it will need to be disabled before you make make any Wi-Fi configuration changes.

**Cause:** SSID broadcast is disabled.

**Solution:**

1. On the **Settings** tab, click **LAN**, and then click **Wi-Fi**.
2. For **SSID Broadcast**, select **Enable**.

**Cause:** Wi-Fi is disabled.

**Solution:**

1. On the **Settings** tab, click **LAN**, and then click **Wi-Fi**.
2. For **Wi-Fi Interface**, select **Enable**.
3. Click **Save**.

# Cannot connect to the Gateway

**Symptom:** Some or all devices are unable to connect to the Gateway over Wi-Fi.

**Note:** If Wi-Fi Home Wi-Fi optimization is enabled, it will need to be disabled before you make any Wi-Fi configuration changes.

**Cause:** Wi-Fi is disabled.

**Solution:**

1. On the **Settings** tab, click **LAN**, and then click **Wi-Fi**.
2. For **Wi-Fi Interface**, select **Enable**.
3. Click **Save**.

**Cause:** Wi-Fi is enabled, but devices are not using the correct authentication type.

**Solution:**

1. On the **Settings** tab, click **LAN**, and then click **Wi-Fi**.
2. Check the gateway’s configured authentication type and compare it to the wireless device’s configured authentication type to verify that the Gateway and the wireless device are using the same authentication type.

**Cause:** Older devices do not support WPA/WPA2 authentication.

**Solution:**

- If possible, connect older devices using Ethernet rather than Wi-Fi.
- Only if necessary, configure the Gateway to use WPA or no authentication.

  **Note:** This presents security risks. If downgrading security is the only solution, set it only when older devices need to connect.

# The wireless signal strength is weak

**Symptom:** Client devices display low signal power, and sometimes lose the Wi-Fi connection.

**Note:** If Wi-Fi Home Wi-Fi optimization is enabled, it will need to be disabled before you make any Wi-Fi configuration changes.

**Cause:** Wireless channel interference.

**Solution:**

1. Click the **Wi-Fi** tab, then either **Primary 2.4 GHz** or **Primary 5 GHz**.
2. Set the **Wi-Fi Channel** to Automatic.
3. Repeat steps 1 and 2 with the other radio, if needed.
4. Click **Save**.

**Cause:** The Gateway power is set too low.

**Solution:**

1. Click the **Wi-Fi** tab, then either **Advanced 2.4 GHz** or **Advanced 5 GHz**.

2. Change the **Power Level** value to the next highest setting.

   In high-density areas, set the power level to the lowest value that allows clients to reliably connect throughout your home. This reduces interference with other nearby networks.
3. Repeat steps 1 and 2 with the other radio, if needed.
4. Click **Save**.

**Cause:** Distance or solid objects reduce the signal.

**Solution:**

- Move the device nearer to the Gateway.

  Metal and concrete walls can significantly reduce the Wi-Fi signal. Drywall and wood can also affect signal strength.
- Move the Gateway to a location nearer to the center of your dwelling, if needed.
- Increase the Wi-Fi power level:
  a. Click the **Wi-Fi** tab, then either **Advanced 2.4 GHz** or **Advanced 5 GHz**.
  b. Change the **Power Level** value to the next highest setting.
  c. Click **Save**.

# Cannot set a custom Wi-Fi password

**Symptom:** Attempting to change the Wi-Fi password results in an error.

**Note:** If Wi-Fi Home Wi-Fi optimization is enabled, it will need to be disabled before you make any Wi-Fi configuration changes.

**Cause:** Using WPA/WPA2 security, the custom Wi-Fi password is not long enough.

**Solution:**

- Set a password at least 8 characters long.

  A length of 16 characters prevents many brute-force password guessing attacks.

  The German government recommends a minimum password length of 20 characters.

  Passwords may be up to 63 characters long.

**Cause:** Using WEP security, the password must be a fixed length.

**Solution:**

- Set a WEP password as follows:
  - For 64-bit WEP, the password must be exactly 5 characters long or 10 hex digits long.
  - For 128-bit WEP, the password must be exactly 13 characters long or 26 hex digits long.

**Cause:** Invalid characters in the passphrase.

**Solution:**

- For highest compatibility, use only characters in the ASCII character set.

Some devices may support extended character sets for WPA passphrases, but the standards require ASCII-only.

# Diagnostic issues

Use this section to identify and resolve common diagnostic issues.

## Ping/Traceroute/DNS query does not respond

**Symptom:** On the Diagnostics *Troubleshoot* (page 76) page, attempting to run a Ping, Traceroute, or NSlookup test fails.

**Cause:** The host name or address is incorrect.

**Solution:**

- Ensure that you entered the correct host name or destination IP address in the **Address** text box.
- If you entered a host name, try replacing it with a known IP address.

  **Tip:** Google's DNS server, 8.8.8.8, is configured to respond to Ping and Traceroute.

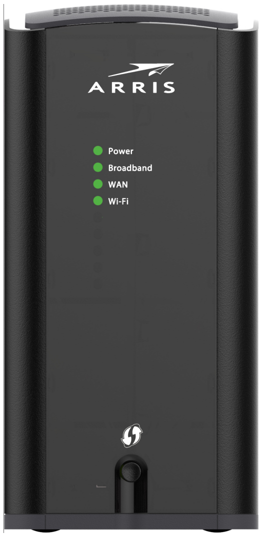
**Cause:** No connectivity to the Internet.

**Solution:**

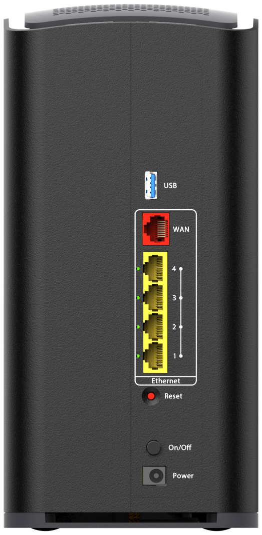
- Proceed to *The Internet is not accessible but the user interface of the gateway is accessible* (page 84).

# Status lights

Use the status lights on the front of the Gateway to determine its status.



**Front panel**



**Rear panel**

| Status light | Description |
|---|---|
| Power | *Green*. The power is on.<br>*Flashing green*. The Gateway is starting.<br>*Red*. The Gateway was unable to start.<br>*Red/green*. Standard reset in progress.<br>*Flashing red*. Factory reset in progress. |
| Broadband | *Blue*. The Gateway is connected to the provider network.<br>*Red*. No IP address, or authentication failed. |
| WAN | *Green* Cellular WAN connection is within the configured "RSSI good" range.<br>*Flashing green* (all). WAN sync in progress. |

| Status light | Description |
|---|---|
| | *Amber* WAN connection is within the configured "RSSI fair" range.<br>*Red* WAN Connection is within the configured "RSSI poor" range (consider repositioning the NVG558). |
| Wi-Fi | *Green*. Wi-Fi is enabled on either or both radios.<br>*Slow flashing amber*. WPS data or guest SSID pairing on configured radio (2.4 GHz or 5 GHz). Button was pressed for less than 3 seconds.<br>*Fast flashing amber*. Button was pressed for more than 3 seconds. This is an unsupported mode. Please wait until the LED stops flashing before proceeding.<br>*Red*. Wi-Fi network failure.<br>*Flashing red*. WPS timeout or conflict (session overlap). Returns to previous state after 30 seconds. |

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