User Guide

802.11ac Wave 2 Router

Model Number RAC2V1K

Spectrum

Table of Contents

1 Hardware Setup

1.1 Getting To Know Your WiFi Router

This product is designed for the In-Home and Business WiFi service for Spectrum customers. With a custom industrial design, this WiFi Router can be placed in a central location to deliver superior WiFi network coverage.

WiFi Router provides:

1. High performance:
   - Dual-Core ARM up to 1.7G/1GB DDR RAM.
   - Dual-Band wireless up to AC2350 (2.4G 150M * 4 + 5G 433M * 4).
   - Gigabyte 1 x WAN/ 4x LAN Ethernet ports.
2. High security: Firewall/VPN supported.
3. Easy to setup: Friendly wizard, visual setup & maintenance (Basic Mode), complete functions (Advanced Mode).
4. USB-based services: File/media/printer sharing.
   The WiFi Router is an ideal choice for residential and SMB (Small Business) users who can enjoy a variety of wireless applications and services.

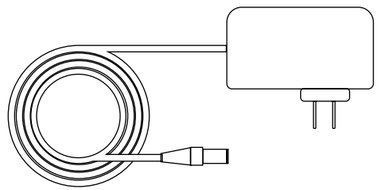
This chapter contains the following contents:

- Unpack Your WiFi Router
- Hardware Features
- Position Your WiFi Router

1.2 Unpack WiFi Router’s box

Open the box and remove the WiFi Router, power adapter, Quick Start Guide, WiFi Network Name and Password Sticker and Ethernet cable.

WiFi Router



Power Adapter

Figure 1. Check the package contents

The box contains the following items:

- WiFi Router.
- AC power adapter.
- Quick Start Guide.
- WiFi Network Name and Password Sticker.
- Ethernet cable
  If any items are missing or damaged, please contact your Charter Communications. Please keep original packing materials in case you need to return the product for repairing.

1.3 Hardware Features

Before setup please take a moment to become familiar with the Front Panel and Rear Panel of your WiFi Router. Pay particular attention to the LED on the front panel. You should know the surface structure of your WiFi Router only.

1.3.1 Front Panel

The WiFi Router front and back panels feature the status LED and buttons as shown in the following figure

Figure 2. WiFi Router front view

Front panel LED status

- Off: Device off.
- Blue Flashing (0.4 second intervals): Booting up.
- Blue Pulsing 1 second intervals: Connecting to Internet.
- Blue solid: Connected to Internet.
- Red Flashing: Connectivity issues (no Internet connection).
- Red and Blue alternate Pulsing: Updating firmware (or any scenario where device must not be restarted).
- Red solid: Critical issues (hardware or otherwise).
- LED on front of device will dim to low (65%) when there is no settings activity or connectivity issues for 120 hours.
- If any settings are changed or connectivity issues occur LEDs will return to normal (100%) brightness.

1.3.2 Rear Panel

There are Ethernet and USB connections and buttons shown in the following figure.

Figure 3. WiFi Router rear panel

- Factory Reset (pinhole): Press the pinhole and hold over 5 seconds, the WiFi Router will reset to factory.
- WPS Button: Push the button more than 1 second to activate WPS. Reference 2.3.2 WPS Setup.
- Ethernet (LAN) Port: Connect Ethernet cables for LAN (local area network) connections, e.g. network switch, hub, personal computer or Internet devices.
- Internet (WAN) Port: Connect Ethernet cable for WAN (Wide Area Network) connection to modem. This connects the Ethernet and other access lines e.g. modem.
- USB (3.0) Port: Connect a USB Printer, U-Disk or USB drive. For printer and folder sharing, reference 2.3.6 Services.
- Power: Use the bundled AC adapter to connect your WiFi Router to a power source.

1.4 Position Your WiFi Router

The WiFi Router lets you access your network from virtually anywhere within the operating range of your wireless network. However, the wireless communicating distance varies significantly due to placement of the WiFi Router. For example, the thickness and number of walls the wireless signal passes through can limit the range. For best results, WiFi Router is likely to be place like this:

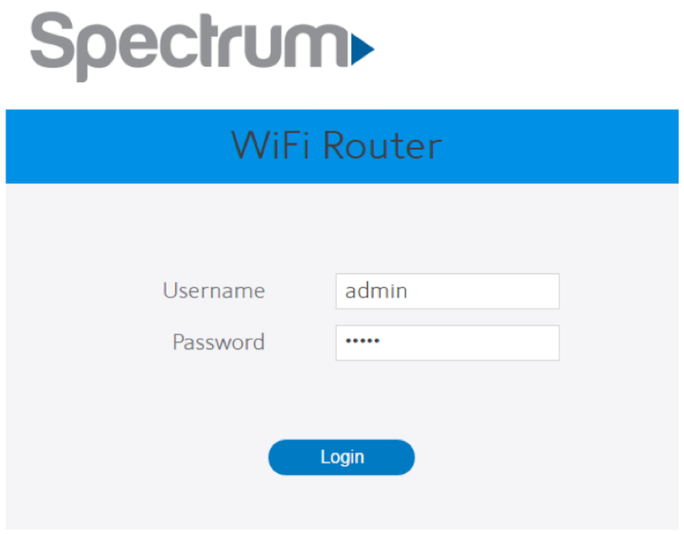
- Near the center of the area where your computers and other devices operate, and preferably within line of sight to your wireless devices.
- So it is accessible to an AC power outlet and near Ethernet cables for wired computers.
- In an elevated location such as a shelf, keeping the number of walls and ceilings between the WiFi Router and your other devices to a minimum.
- Away from electrical devices that are potential sources of interference. Equipment that might cause interference includes ceiling fans, home security systems, microwaves, computers, the base of a cordless phone, or a 2.4 GHz cordless phone.
- Away from any large metal surfaces, such as a solid metal door or aluminum studs. Large expanses of other materials such as glass, insulated walls, fish tanks, mirrors, brick and concrete can also affect your wireless signal.

2 Sign-In Your WiFi Router Web GUI

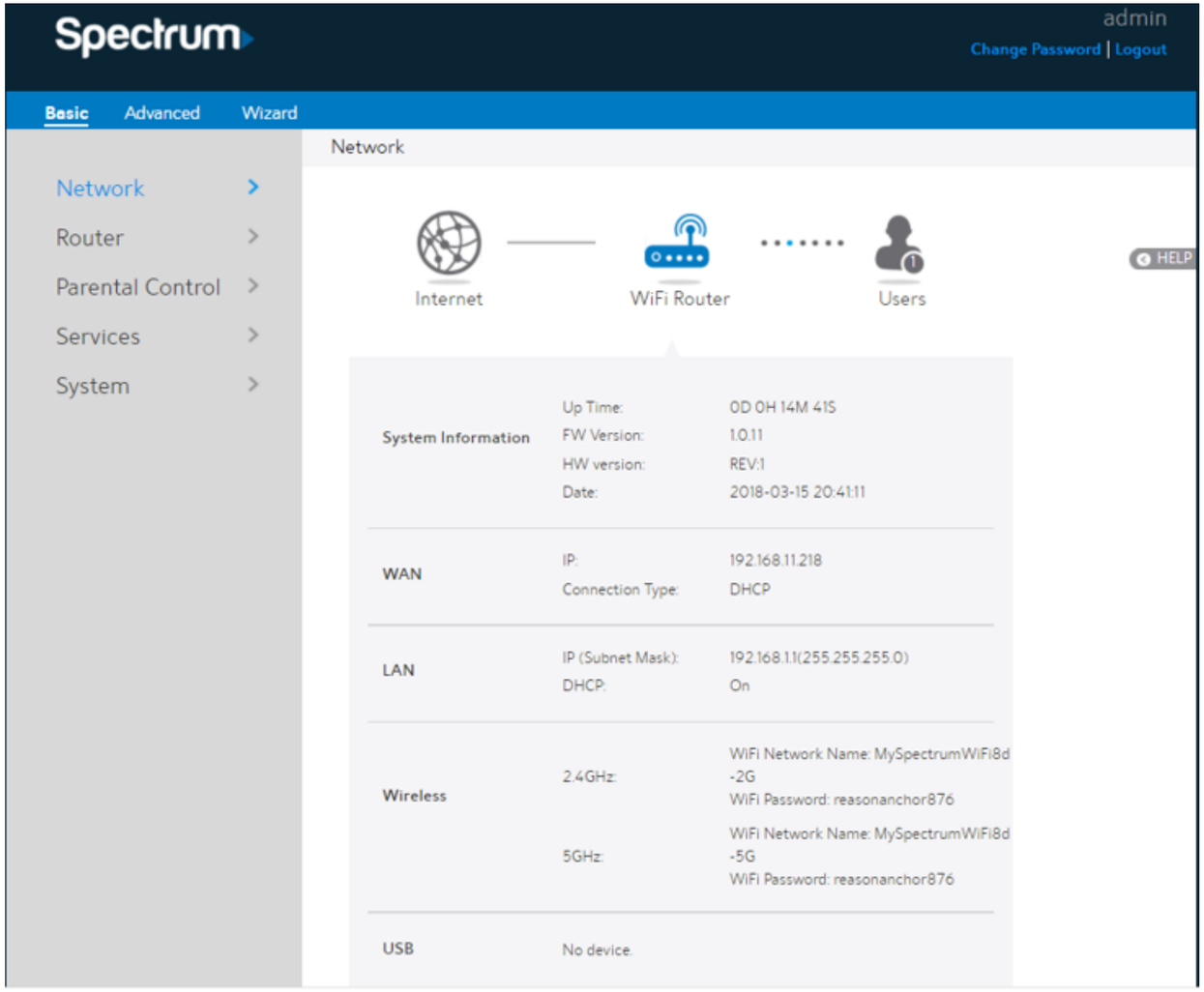
The WiFi Router contains an intuitive graphical user interface (GUI) based on web, which lets administrator easily configure its features through a web browser.

2.1 Sign-In

1. Open a web browser, then key in the WiFi Router's default IP address: http://192.168.1.1, and click Enter key in the keyboard;;
2. On the sign in webpage, type in its Username and password: admin (admin), then click Login button.

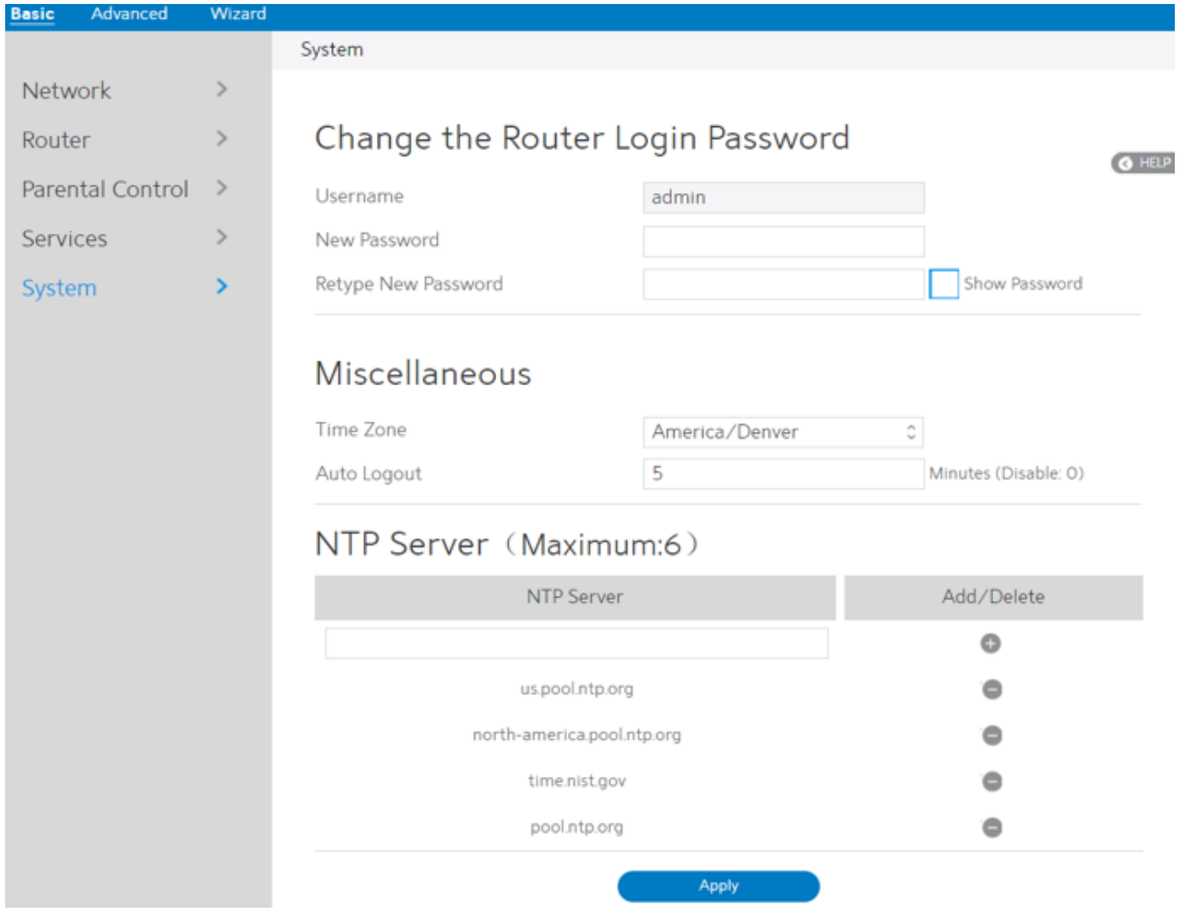


After the administrator has logged into the WiFi Router, some basic information about it will be displayed in the browser.



On the right top side, there are two command buttons: Change Password and Logout. Please click the Logout button when administrator intends to leave the Web GUI.

When the Change Password button has been clicked, the browser will navigate to the corresponding webpage.



On this page, user should just type in new password in New Password and Retype New Password, then click Apply button. Web GUI user sign in password will be changed.

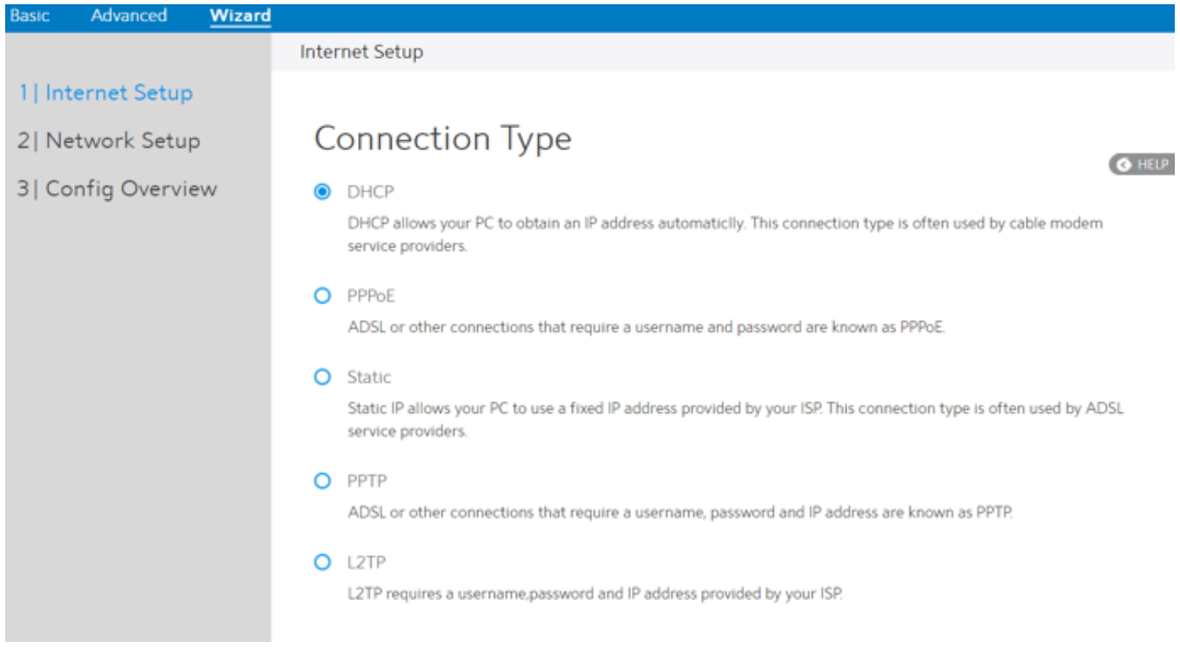
2.2 Wizard Setup

The wizard can navigate the administrator to configure basic settings for the WiFi Router, which makes the set up of the WiFi Router much easier.

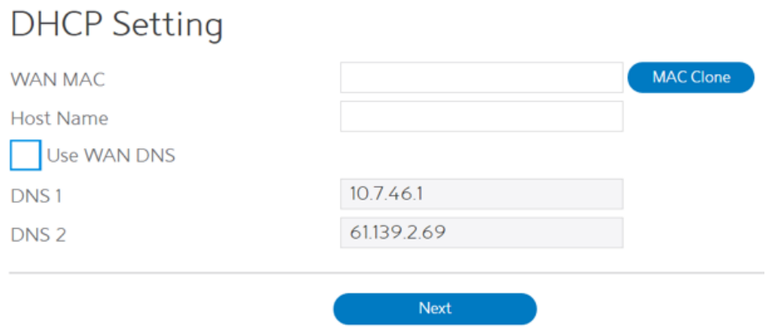
Internet Setup

After the administrator has clicked the Wizard button, the Internet Setup page will be displayed.

Connection Type:
There are 5 kinds of connection types: DHCP, PPPoE, Static, PPTP and L2TP.



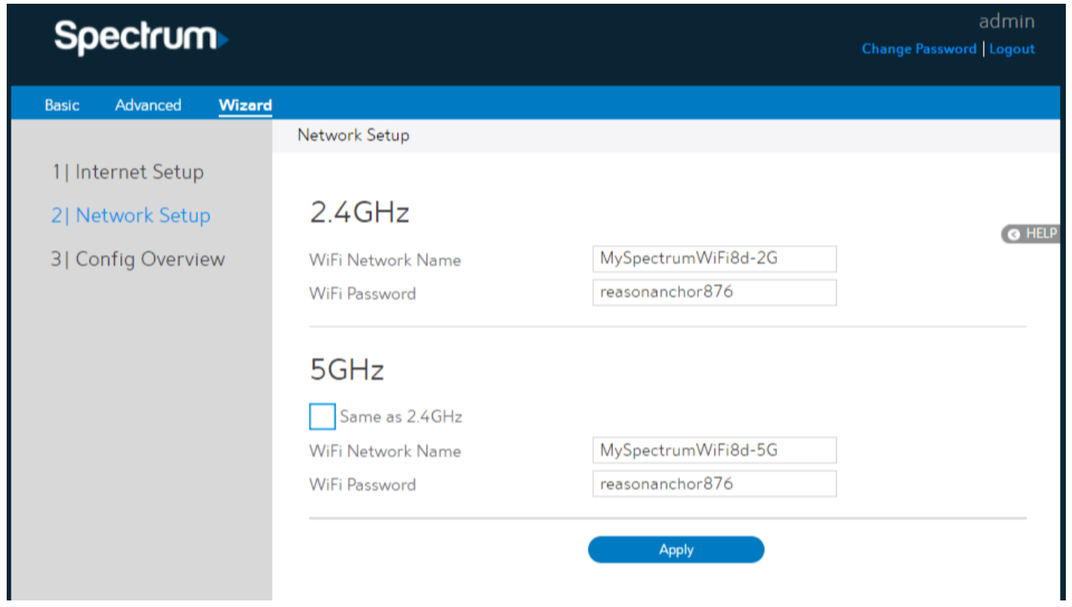
1. DHCP: Enable WiFi Router to obtain IP addresses automatically. This setting is the default for Spectrum services. More types of settings, refer to 2.3.4 WAN Setup.



- WAN MAC: MAC address of WAN port.
- Host Name: This field allows lets administrator provide a name for WiFi Router.
- DNS 1 & DNS 2: Either of them indicates the IP address of a DNS Server.
- Click Next.

Network Setup

After you have clicked Next icon in Internet Setup page, you can come here or you will refer to the below picture.

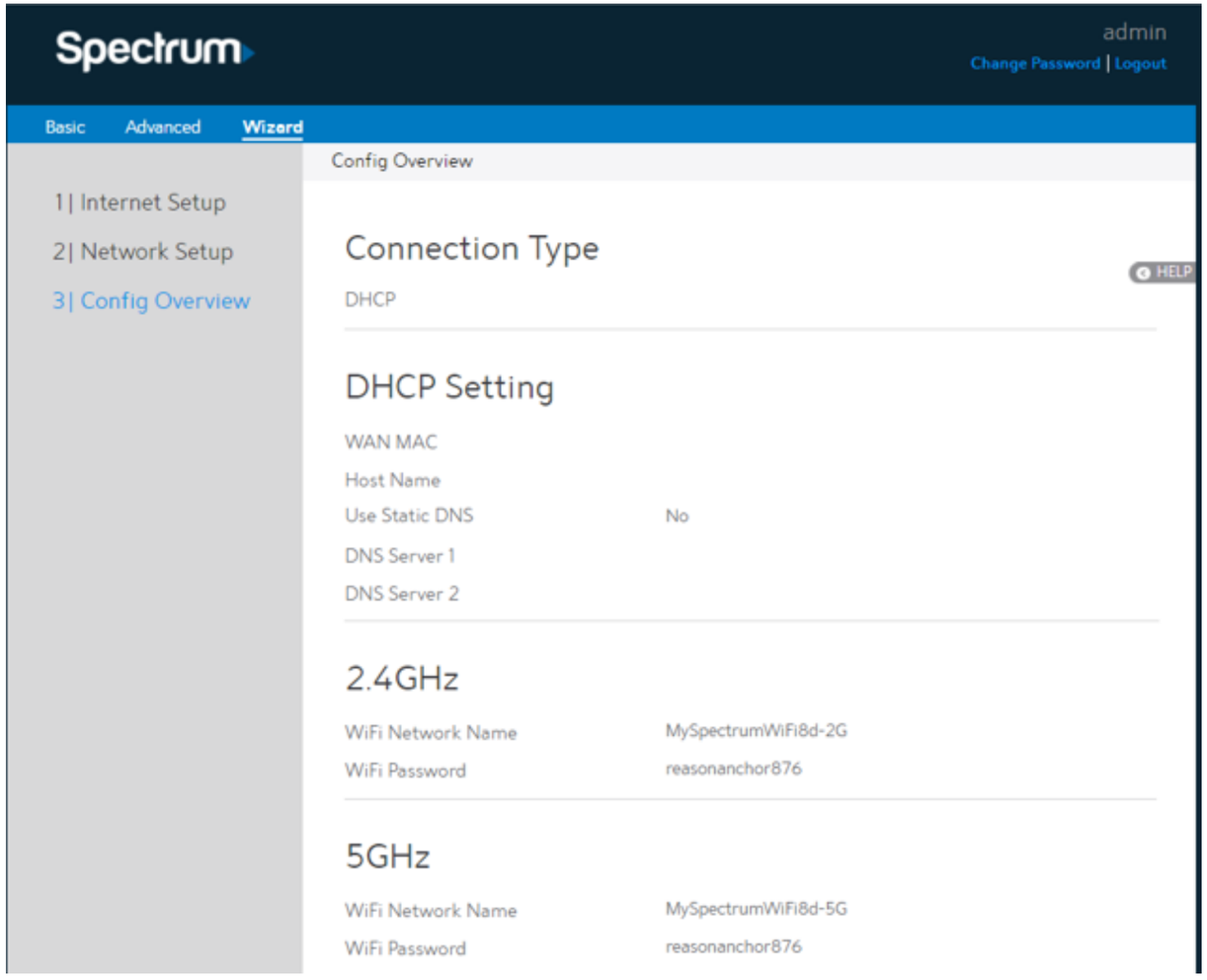


1. WiFi Network Name: Name for a wireless network, that's to say it's used to identify the wireless network. WiFi devices automatically detect all networks within its communication range. These are defaulted from the printed WiFi network name on the back of the WiFi Router. You can change them here, but they would no longer match the sticker on your WiFi Router.

2. WiFi Password: A password used by WiFi Router to authenticate wireless connections. These are defaulted from the printed WiFi password on the back of the WiFi Router. You can change it here, but they would no longer match the sticker on your router.
3. When done, click Apply.

Config Overview

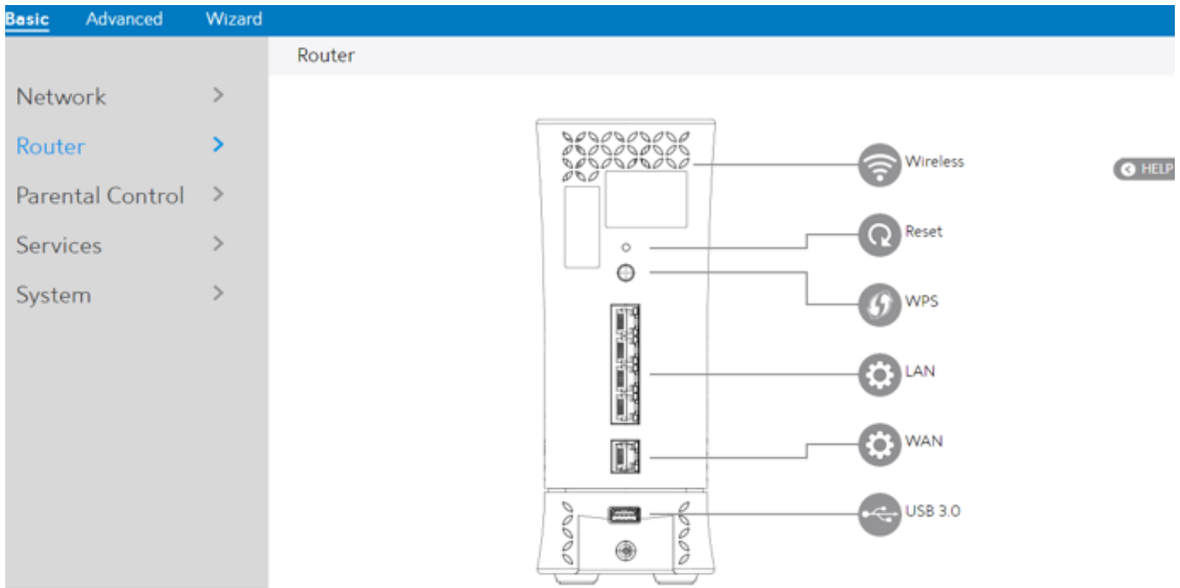
After click the Apply icon, administrator comes to Config Overview page, which displays a summary of configuration information. If the settings are all correct, administrator should click Apply icon.



2.3 Basic Setup

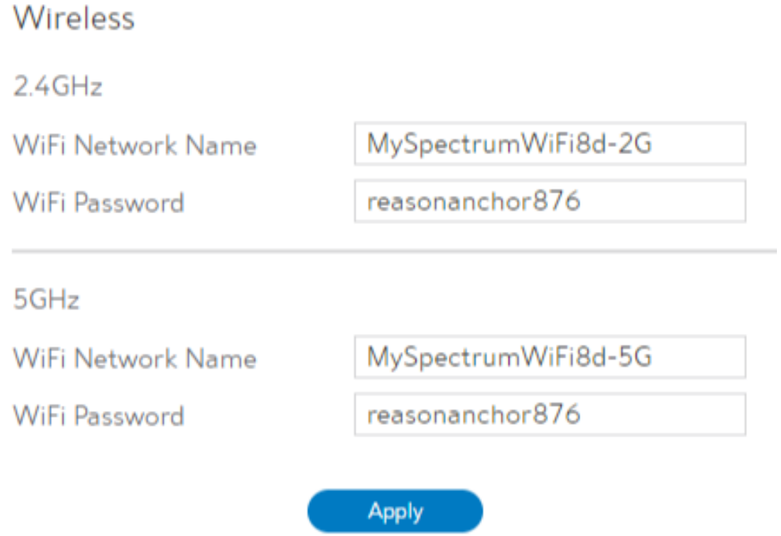
2.3.1 Router

From the navigation panel, go to Basic > Router.



NOTE: Click Reset Icon in the Web GUI is used to restart the WiFi Router. The WiFi Router hardware Factory Reset (pinhole) was pressed and hold over 5 seconds, it will reset to factory.

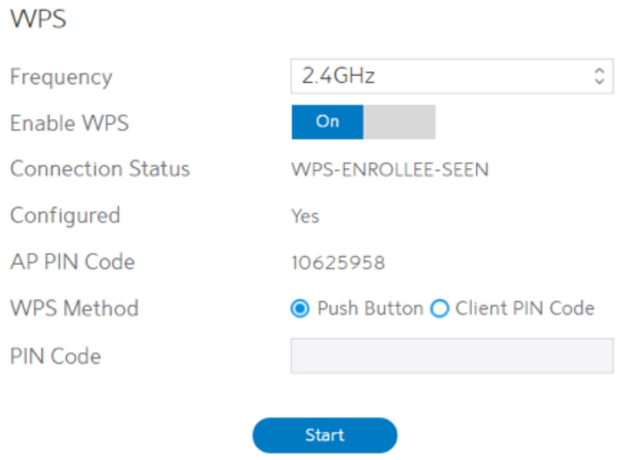
Wireless: This module is implemented to configure some basic settings for WiFi Router's wireless connection.



1. WiFi Network Name: A unique name that identifies the wireless network. Wireless device can automatically detect all networks within its communication range. The maximum length of a network name (SSID) is 32 characters.
2. WiFi Password: A string used for connection authentication. Its length ranges from 8 to 63 characters (letters, numbers or a combination) or from 8 to 64 hex digits.
3. Click Apply.

2.3.2 WPS Setup

WPS (WiFi Protected Setup) is a wireless security standard that lets the device easily connect a WiFi network. You can trigger the WPS function via the PIN code or WPS button.



Steps to enable WPS (WiFi Protected Setup):

1. From the navigation panel, go to Basic > Router.
2. Frequency: Selecting operating band (2.4 GHz or 5 GHz) for WPS function. Each one is enabled separately.
3. Enable WPS: Selecting [On] to run WPS, which simplifies the process of connecting any device to the WiFi network.

NOTE: Authentication method supported by WPS is: WPA2-Personal. Not supported methods are: Shared Key, WPA-Enterprise, WPA2-Enterprise and RADIUS.

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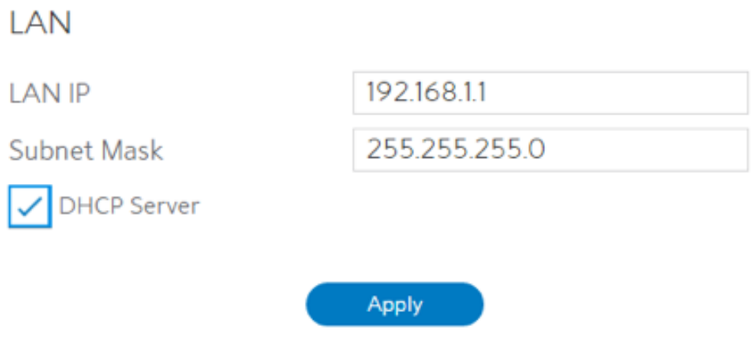
8. PIN Code: The WPS PIN code which clients use to connect with the WiFi Router.
9. In the WPS Method field, select Push Button or Client PIN code. If you select Push Button, go to step 10. If you select Client PIN code, go to step 11.
10. Using with WPS button please following these steps:
    a) Click Start or press the WPS button located on at the rear of the WiFi Router.
    b) Press the WPS button on your wireless device. This is normally identified by the WPS logo.
11. To set up WPS using the Client's PIN code, follow these steps:
    a) Locate the WPS PIN code in wireless device's in Web GUI.
    b) Key in the Client PIN code on the text box.
12. Click Start.

2.3.3 LAN Setup

This module makes it easier for administrator to modify the default LAN IP Address.



Steps to modify LAN IP settings:

1. From the navigation panel, go to Basic > Router.
2. LAN IP: The LAN IP address of the WiFi Router. Its default value is 192.168.1.1. In IP-based networks, packets are sent to the network devices' specific IP addresses.
3. Subnet Mask: Subnet mask of WiFi Router. Its default value is 255.255.255.0
4. DHCP Server: DHCP (Dynamic Host Configuration Protocol) is mostly used to allocate IP address for LAN-side devices. And a DHCP server can inform LAN-side devices of DNS server's address, default gateway IP and etc. This WiFi Router can allocate 253 IP addresses at most.

NOTE: It's recommended for administrator to select DHCP Server for LAN IP setting. If not, administrator has to assign IP address to LAN-side device manually.

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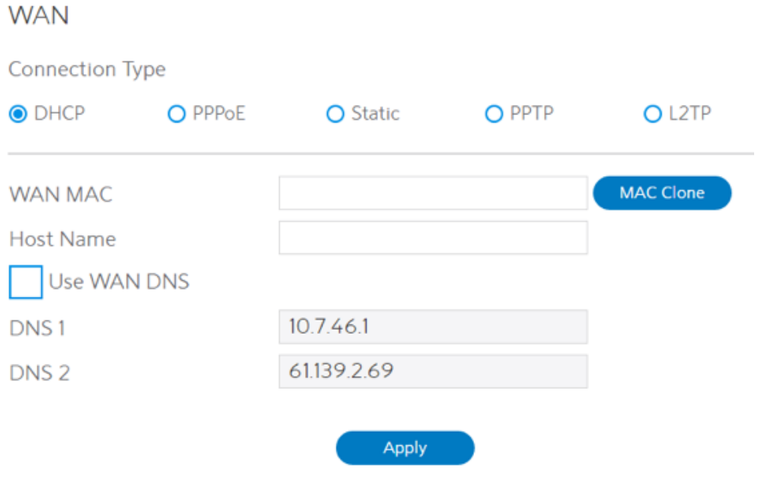
5. Click Apply.

2.3.4 WAN Setup

Click WAN button to configure the WAN connection settings:

1. Connection Type: Choose the Internet Service type. There are five options are DHCP, PPPoE, Static, PPTP and L2TP. Consult your ISP if you are unsure what kind of WAN connection types to select.

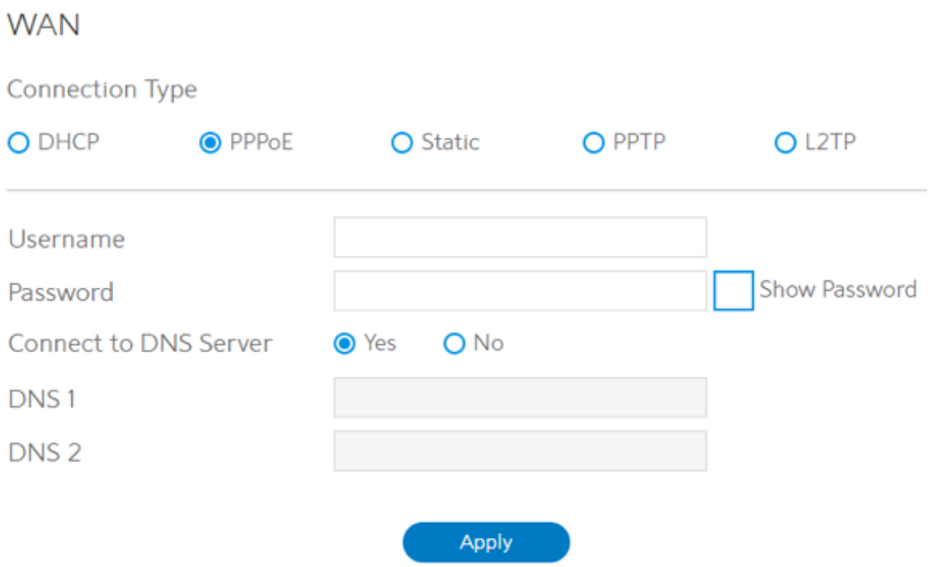


2. If you select DHCP, below show the steps to set

- WAN MAC: MAC (Media Access Control) address is a unique identifier that identifies your computer or device in the network. ISPs monitor the MAC addresses of devices that connect to their services, and would disallow Internet connection for new MAC addresses.

  To fix this issue, you can do either of the following:
  - Contact your ISP and request to update the MAC address associated with your ISP subscription.
  - Clone or change the MAC address of the new device to match the MAC address of the original device.
- Host Name: This field lets you provide a host name for WiFi Router. Usually it's provided by ISP.
- DNS 1 & DNS 2: Either of them indicates IP address of a DNS server.
- Click Apply.

3. If you select PPPoE, below show the steps to set



- Username: This field is only available when you set the WAN Connection Type as PPPoE, PPTP or L2TP.
- Password: This field is only available when you set WAN Connection Type as PPPoE, PPTP or L2TP.
- DNS1 & DNS2: Either of them indicates IP address of a DNS server that WiFi Router will contact.
- Click Apply.

NOTE: All of the parameters mentioned above are provided. If you need assistance, please contact Charter customer service.

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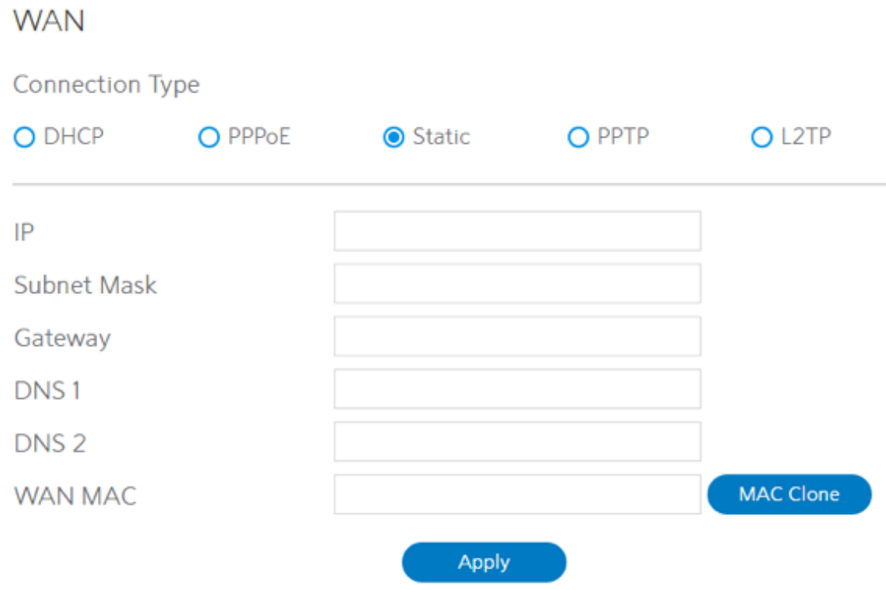
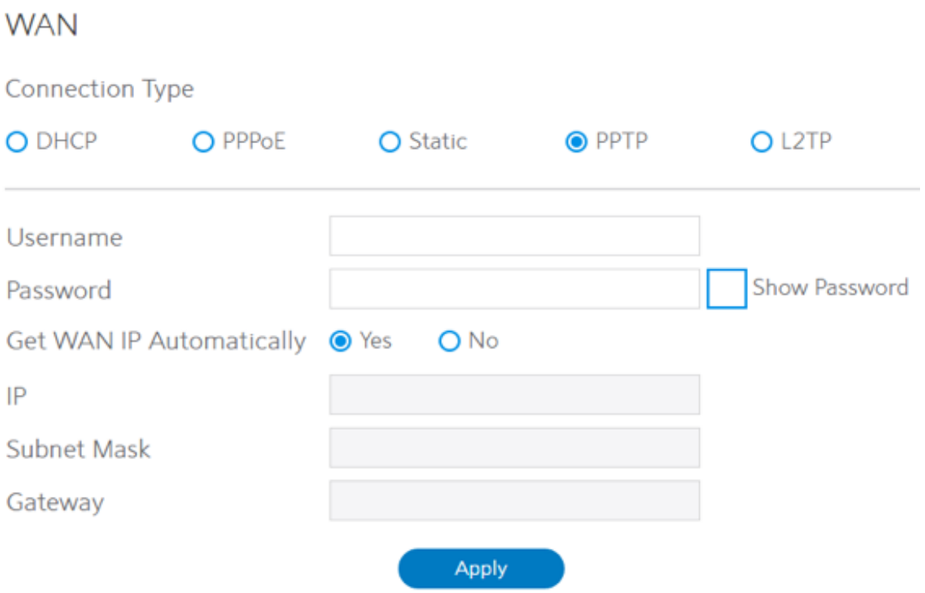
4. If you select Static, below show the steps to set



- IP: If WAN connection requires a static IP address, key in the IP address in this field.
- Subnet Mask: If WAN connection requires a static IP address, key in the subnet mask in this field.
- Gateway: If WAN connection requires a static IP address, key in the gateway IP address in this field.
- DNS 1 & DNS 2: Either of them indicates IP address of a DNS server.
- WAN MAC: MAC (Media Access Control) address is a unique identifier that identifies your computer or device in the network. ISPs monitor the MAC addresses of devices that connect to their services, and would disallow Internet connection for new MAC addresses.

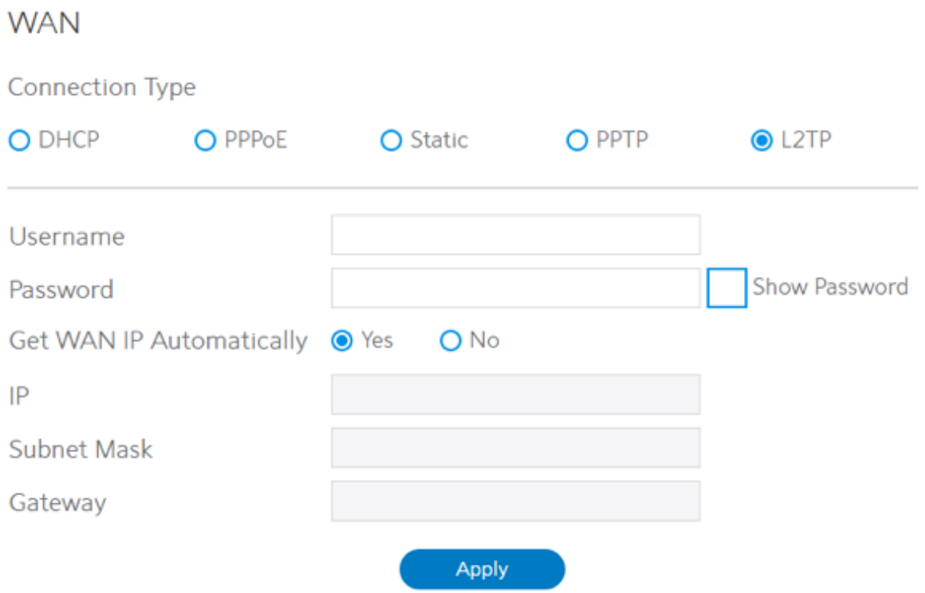
  To fix this issue, you can do either of the following:
  - Contact your ISP and request to update the MAC address associated with your ISP subscription.
  - Clone or change the MAC address of the new device to match the MAC address of the original device.
- Click Apply.

5. If you select PPTP, below show the steps to set



- Username: This field is only available when you set the WAN Connection Type as PPPoE, PPTP or L2TP.
- Password: This field is only available when you set WAN Connection Type as PPPoE, PPTP or L2TP.
- Get WAN IP Automatically: Select Yes to get WAN IP automatically and No to enter IP manually below.
- IP: If WAN connection requires a static IP address, key in the IP address in this field.
- Subnet Mask: If WAN connection requires a static IP address, key in the subnet mask in this field.
- Gateway: If WAN connection requires a static IP address, key in the gateway IP address in this field.
- Click Apply.

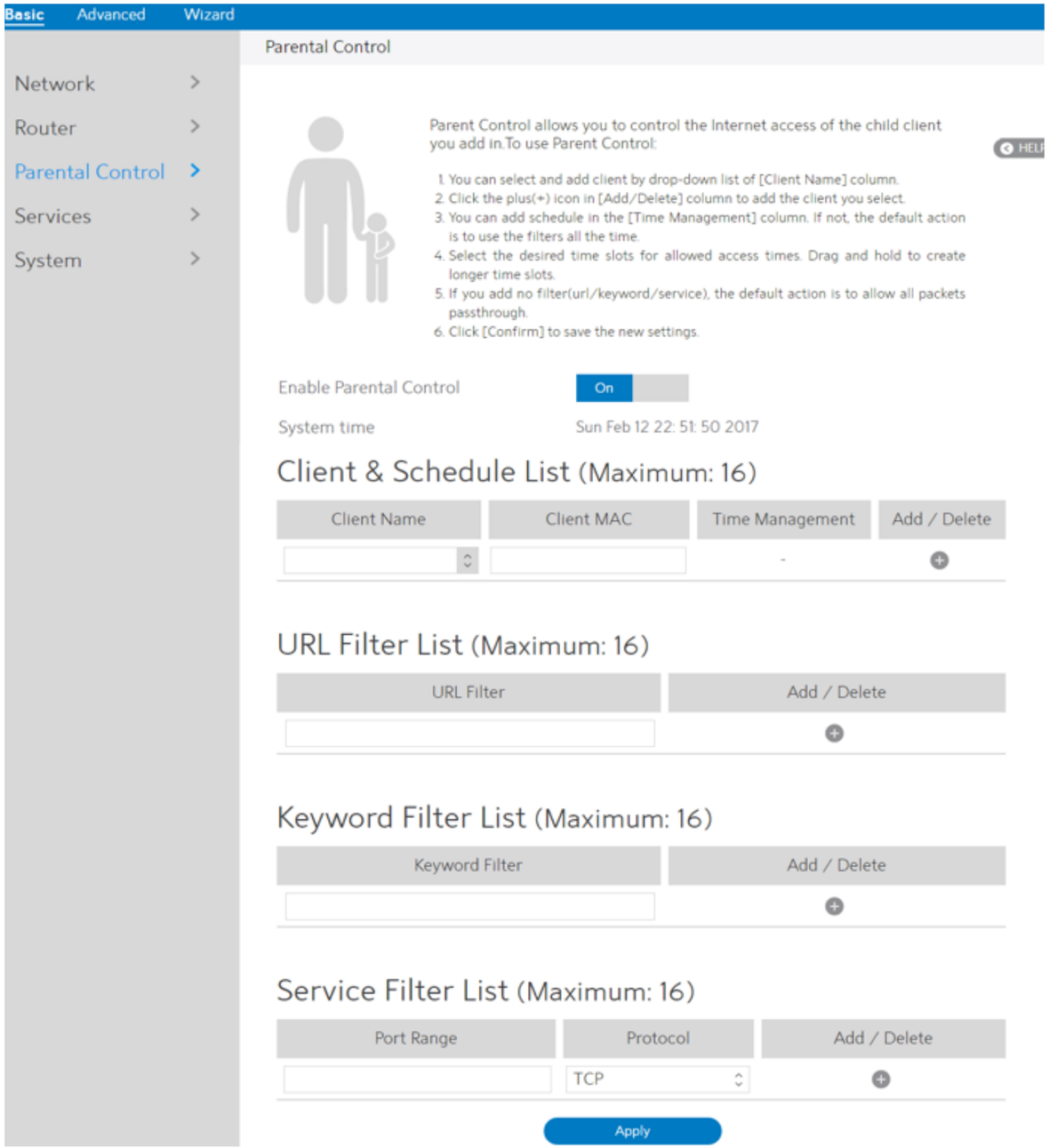
6. If you select L2TP, below show the steps to set



Please refer to PPTP above for relevant settings descriptions and enter the required information.

2.3.5 Parental Control

Parental Control lets administrator control the Internet access of the client.



Steps to set parental control function:

1. From the navigation panel, go to Basic > Parental Control.
2. Enable Parental Control: Select On to enable parental control, Select Off to disable parental control.
3. Client & Schedule List:
   - •Client Name: Select client from the list. The name in the list stands for the client that is communicating with the WiFi Router.
   - •Client MAC: MAC address of the selected client.

NOTE: Client Name just makes it easier for technician to distinguish LAN-side devices. The Client MAC in fact specify the device with the Client Name.

   - •Time Management: Click , then setup the client's schedule timetable to allow or deny client's access to Internet.
   - •Add/Delete: Click or to add/delete the profile.

4. URL Filter List
   - •URL Filter List: WiFi Router prevents LAN-side device from accessing the URL in list.
   - •URL Filter: WEB URLs which contain the URLs defined by user. For example, the filter "abc" can filter both "www.abc.com"
   - •Add/Delete: Click or to add/delete the profile.

5. Keyword Filter List
   - •Keyword Filter List: WiFi Router prevents LAN-side device from accessing to webpages contain the keyword in list.
   - •Keyword Filter: WEB URLs which contain the keywords defined by user. For example, the filter "abc" can filter both "www.abc.com"
   - •Add/Delete: Click or to add/delete the profile.

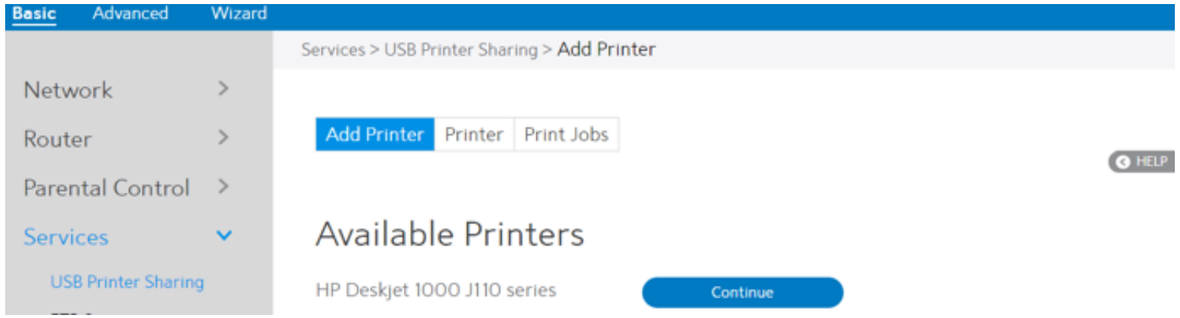
6. Service Filter List
   - •Service Filter List: WiFi Router prevents LAN-side device from communicating with remote device with user defined Port Range and Protocol.
   - •Port Range: Defines the range of port in LAN side. The Port Range can be a single port like "xxxx", or a port range like "xxxx:xxxx".
   - •Protocol: Select the type of protocol that the Service Filter will use.
   - •Add/Delete: Click or to add/delete the profile.

7. Click Apply.

2.3.6 Services

2.3.6.1 USB Printer Sharing

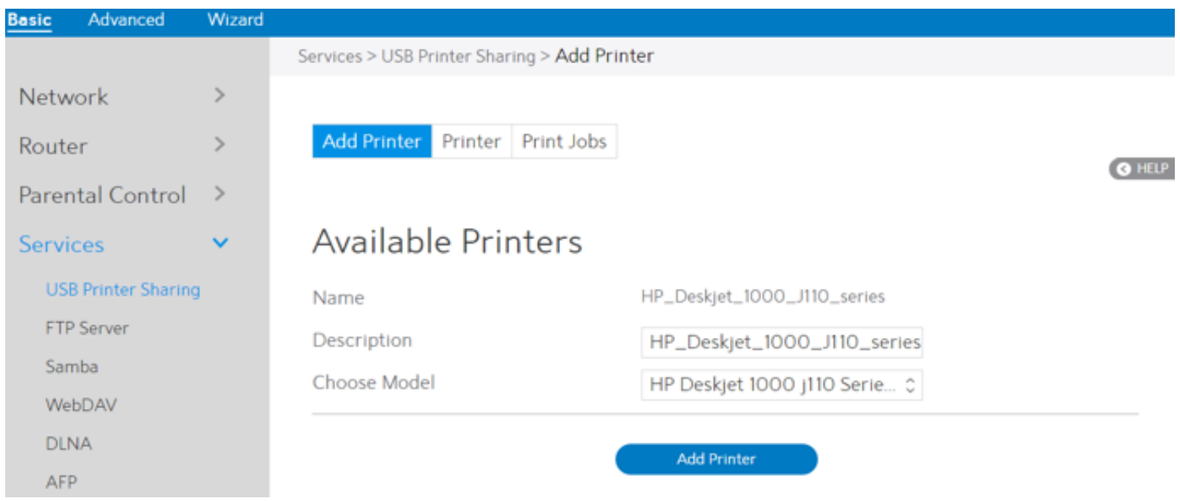
USB Printer sharing lets administrator plug a USB printer to WiFi Router's USB port and set up the printer server.



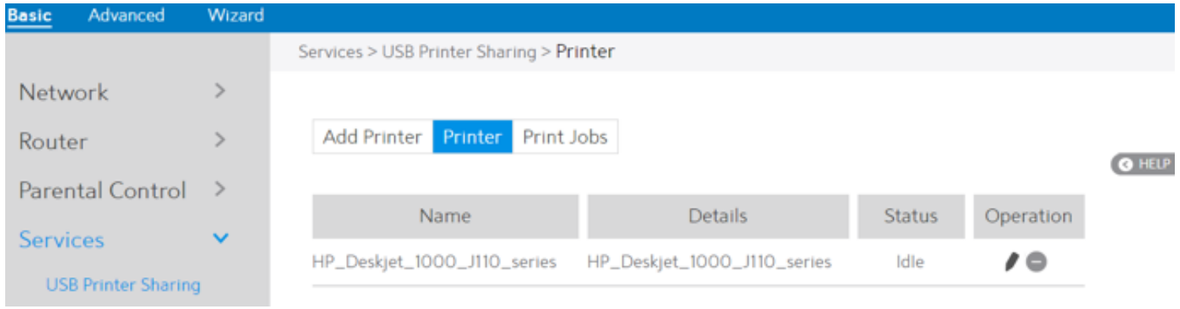
Steps to set up USB Printer sharing:

1. From the navigation panel, go to Basic > Service > USB Printer sharing.
2. Plug in the USB interface of the printer to the WiFi Router. Confirm your printer has been detected and click Continue.
3. Select one of the following modes to install the printer driver, and click Add printer.

- Auto select: Automatically searches for the appropriate printer driver and installs. If there is no corresponding printer driver, the system displays add a printer error; please select the correct printer driver manually.
- Select printer driver: Manually select the corresponding Printer brand and model.
- Choose PPD File: If the above methods are unable to correctly install the printer driver, then you can upload a PPD File. Select your PPD file and click the upload button.

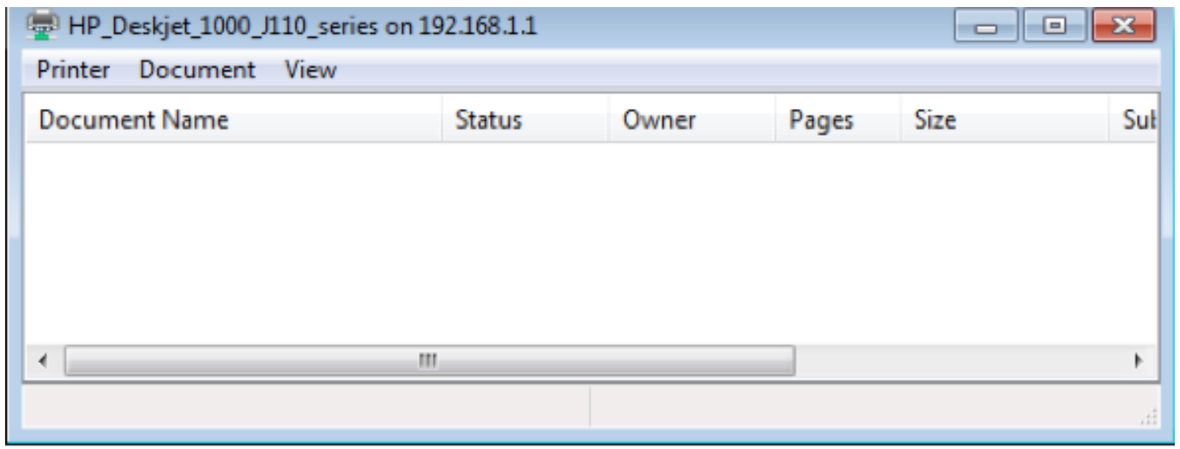


4. Printer tab displays whether your printer is operating correctly with the print server, as below.

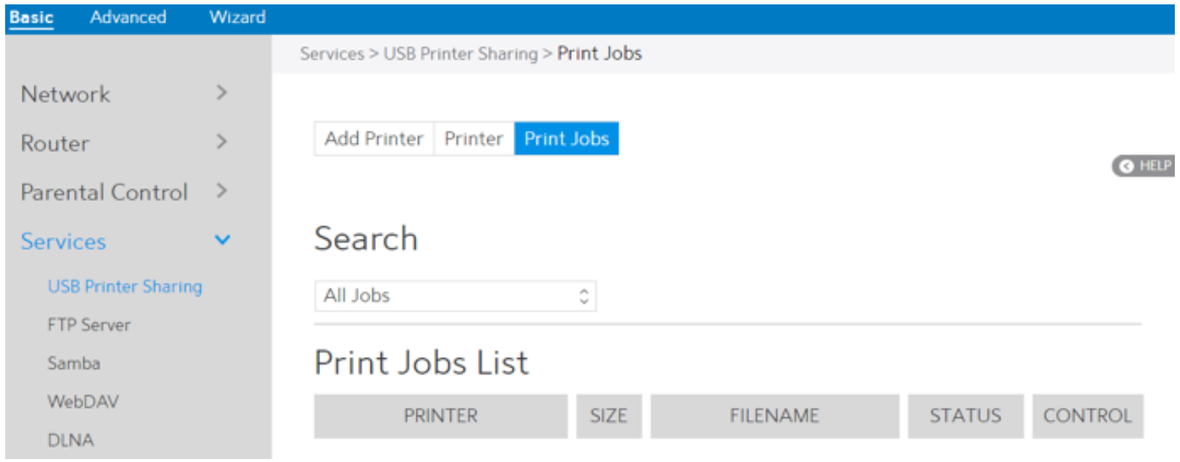


5. To check whether your printer is working correctly or not, input the LAN address (192.168.1.1) for the printer in Windows Finder.

6. Double-click the printer icon and if you see the status interface as shown below, the installation was successful. If an error message prompts that the driver cannot be found, then return to Add Printer settings and select the correct driver.



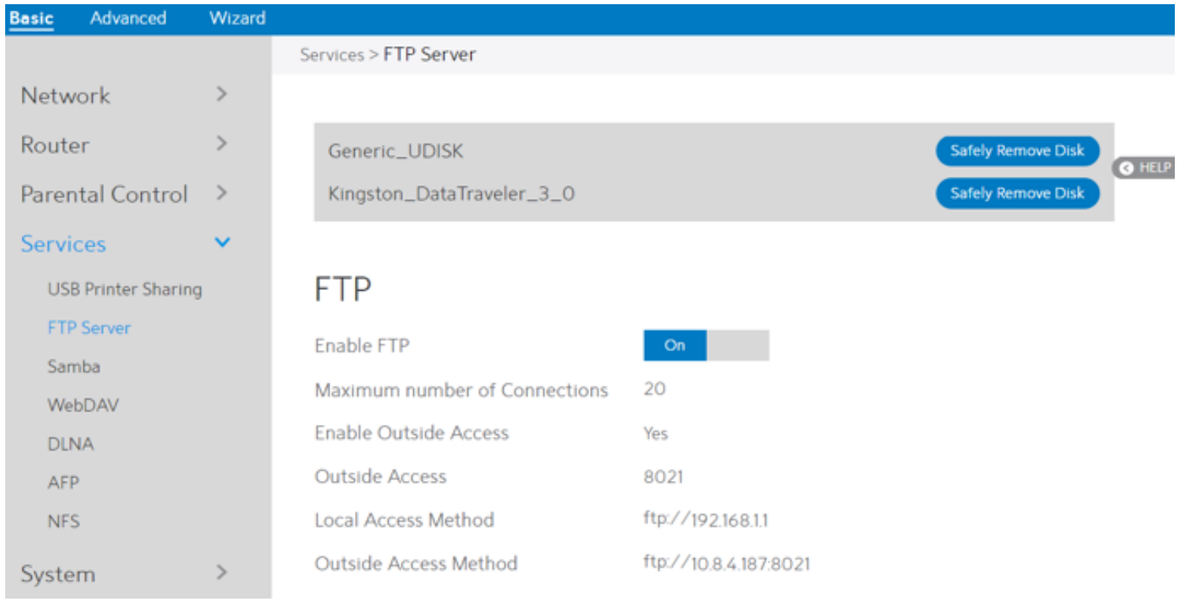
7. You can view print status information in the Print Jobs tab.



- Active: All active jobs, including processing and pending jobs.
- Processing: The job currently processing/communicating print data.
- All Jobs: All print jobs.

2.3.6.2 FTP

FTP Server enables an FTP server to share files from USB disk to other devices via your local area network or via the Internet. This page shows information about the FTP Server and enable or disable it. If you want to set more configurations, please go to Advanced > Servers > FTP.

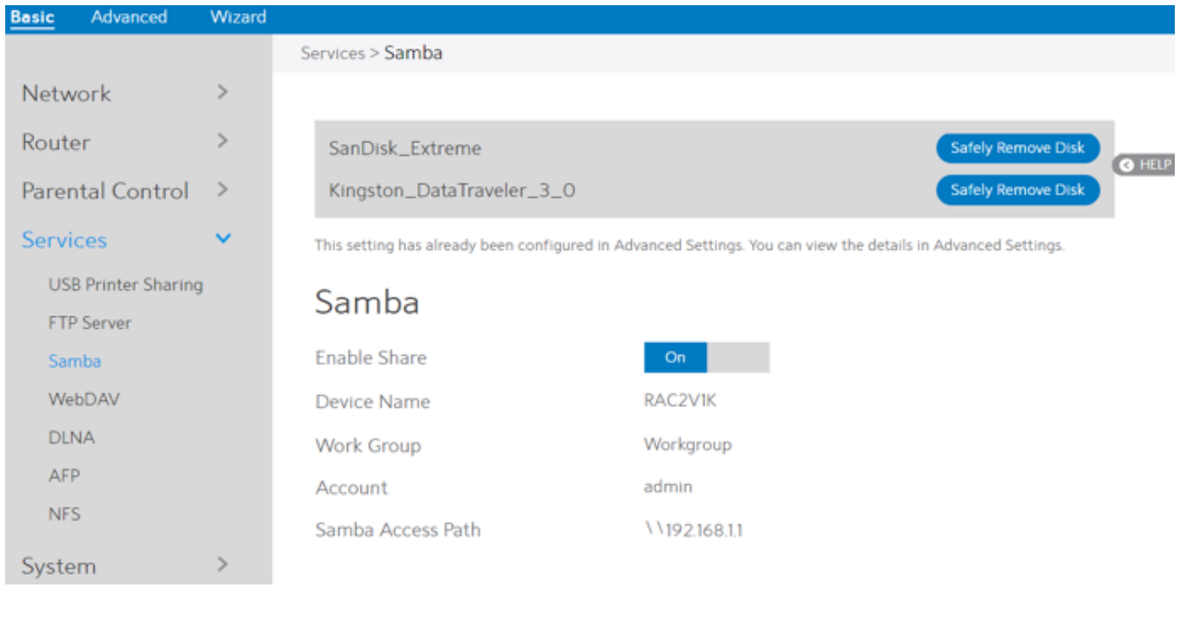


Display information on FTP Server:

1. From the navigation panel, go to go to Basic > Services > FTP.
2. Connect an external USB hard disk drive or USB flash drive to your WiFi Router, and your device will be displayed here.
3. Enable FTP: Click On/Off to enable/disable Internet access to FTP service.
4. Maximum number of Connections: The maximum number of concurrent connections for the Network Neighborhood or FTP Server.
5. Enable Outside Access: Select On/Off to enable/disable access to FTP server by wide area network.
6. Outside Access: The numbers of external service ports (default value: 8021).
7. Safely Remove Disk: Click to safely remove USB devices. When the USB disk is ejected successfully, the USB status shows 'No device '.

2.3.6.3 Samba

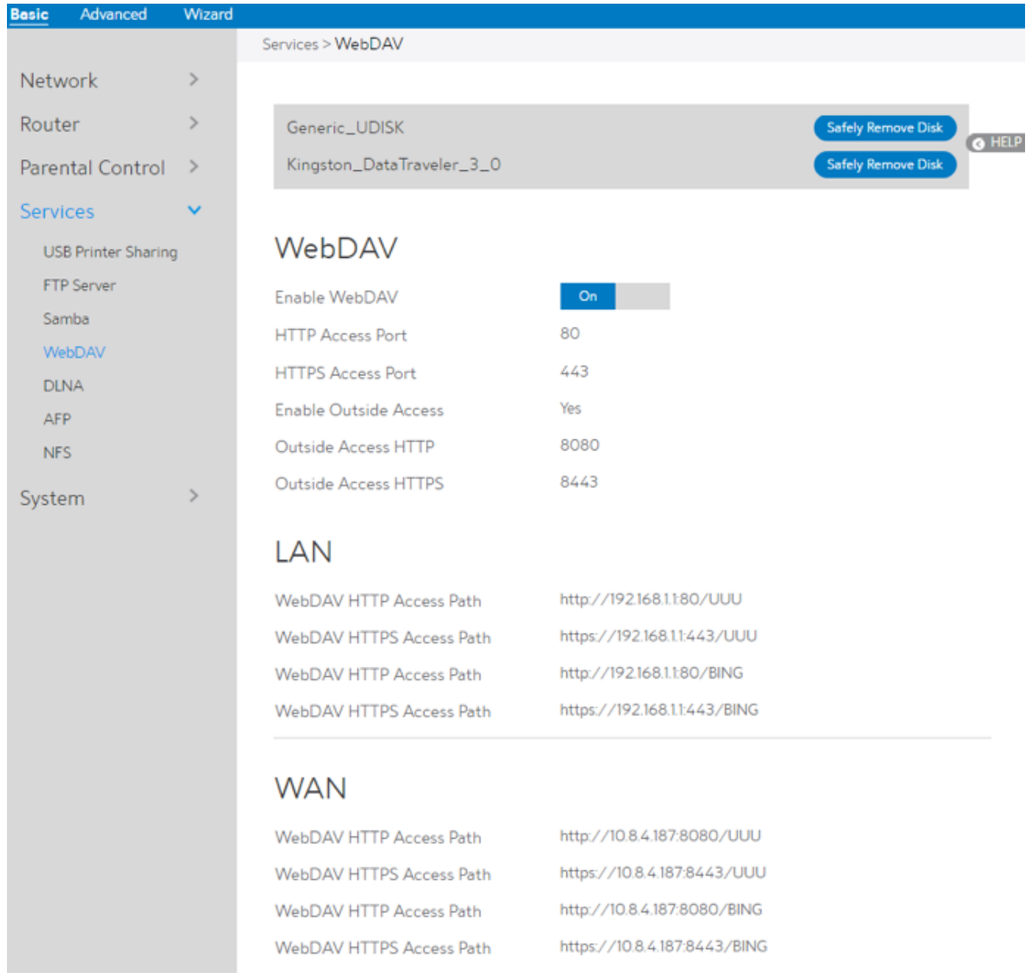
Samba Share lets you set up the accounts and permissions for the Samba service. This page shows information about the Samba Server and enable or disable it. If you want to set more configurations, please go to Advanced > Servers > Samba.



- From the navigation panel, go to Basic > Services > Samba.
- Connect an external USB hard disk drive or USB flash drive to your WiFi Router, and your device will be displayed here.
- Enable Share: Click the On/Off to enable/disable Internet access to Samba service.
- Device Name: Enter a name for your device and you can use this name in your web browser's URL field to quickly access the device as a Network Place service.
- Work Group: Group name of the WiFi Router in Network Neighborhood.
- Safely Remove Disk: Click to safely remove the disk. When the USB disk is ejected successfully, the USB status shows 'No device '.

2.3.6.4 WebDAV

The client can write operations in WebDAV directory with appropriate permissions. This page shows information about the WebDAV Server and enable or disable it. If you want to set more configurations, please go to Advanced > Servers > WebDAV.

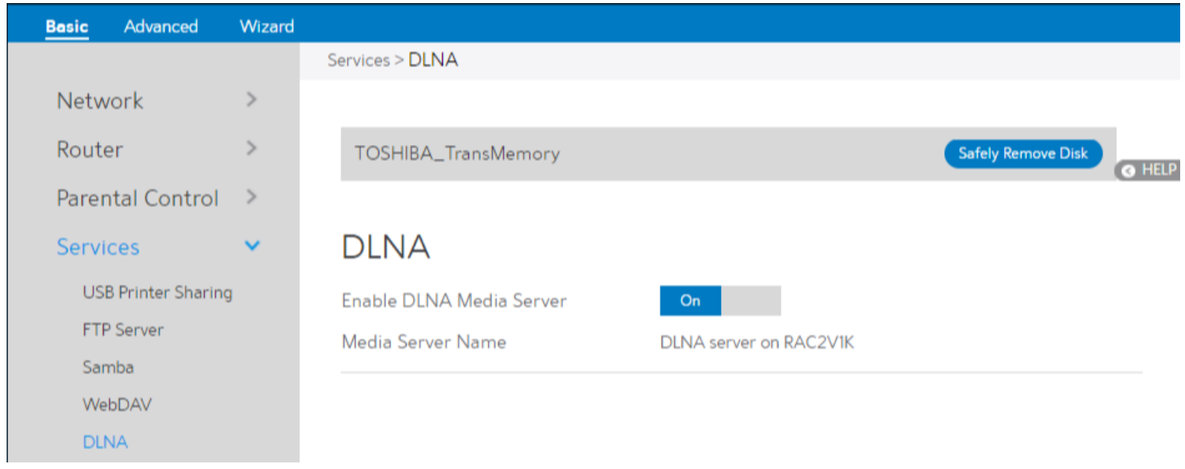


1. From the navigation panel, go to Basic > Services > WebDAV.
2. Connect an external USB hard disk drive or USB flash drive to your WiFi Router, and your device will be displayed here.
3. HTTP Access Port: The port to access the WebDAV server for HTTP protocol in the local area network (default value: 80).
4. HTTPS Access Port: The port to access the WebDAV server for HTTPS protocol in the local area network (default value: 443).
5. Enable Outside Access: Select On/Off to enable/disable access to WebDAV server by wide area network.

6. Outside Access HTTP: The port number of external service ports via HTTP (default value: 8080).
7. Outside Access HTTPS: The port number of external service ports via HTTPS (default value: 8443).
8. Safely Remove Disk: Click to safely remove the disk. When the USB disk is ejected successfully, the USB status shows 'No device '.

2.3.6.5 DLNA

DLNA (Digital Living Network Alliance) lets you share audio, image and video. Your WiFi Router lets DLNA-supported devices access multimedia files from the USB disk connected to your WiFi Router. This page shows information about the DLNA Server and enable or disable it. If you want to set more configurations, please go to Advanced > Servers > DLNA.

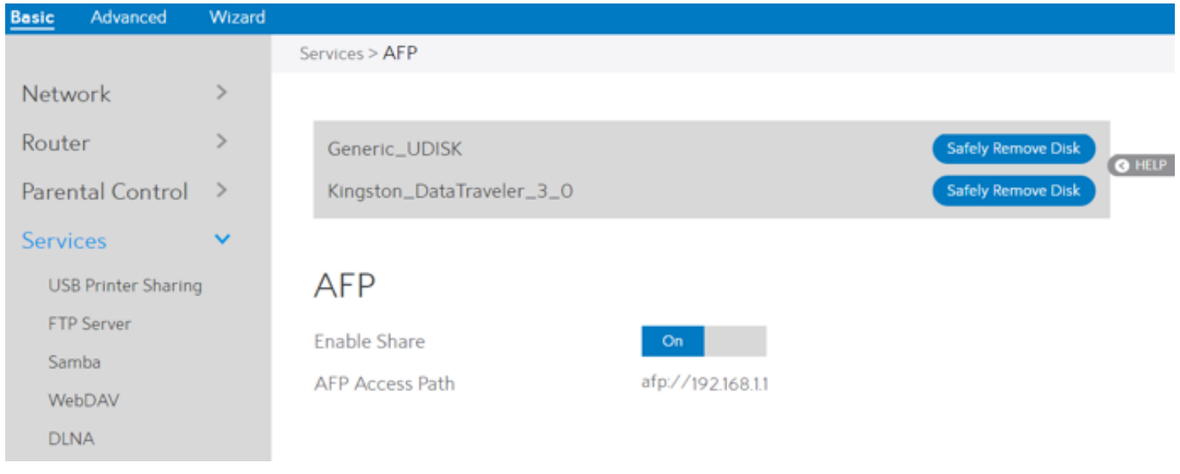


Steps to set DLNA:

1. From the navigation panel, go to Basic > Services > DLNA.
2. Connect an external USB hard disk drive or USB flash drive to your WiFi Router, and your device will be displayed here.
3. Enable DLNA Media Server: Switch DLNA media server on or off.
4. Media Server Name: The DLNA server's name, which will be displayed by the media player such as VLC or Windows Media Player.
5. Safely Remove Disk: Click to safely remove the disk. When the USB disk is ejected successfully, the USB status shows 'No device '.

2.3.6.6 AFP

An AFP server is a kind of network file sharing server based on AFP protocol implementation, mainly used for file sharing between Linux and MAC systems. This page shows information about the AFP server and enable or disable it. If you want to set more configurations, please go to Advanced > Servers > AFP.

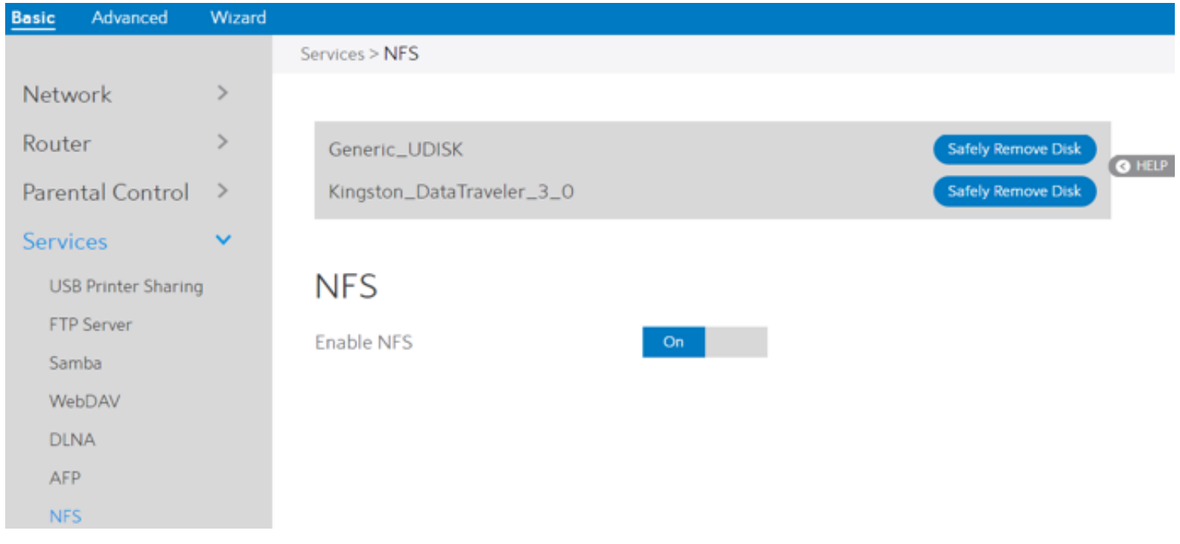


Steps to set AFP:

1. From the navigation panel, go to Basic > Services > AFP.
2. Connect an external USB hard disk drive or USB flash drive to your WiFi Router, and your device will be displayed here.
3. Enable Share: Click On/Off to enable/disable AFP service.
4. Safely Remove Disk: Click to safely remove the disk. When the USB disk is ejected successfully, the USB status shows 'No device '.

2.3.6.7 NFS

Network File System Server is used to share the USB disk with clients via network. Clients can mount the remote disk to a local directory for a faster speed than using a Samba server. This page shows information about the NFS Server and enable or disable it. If you want to set more configurations, please go to Advanced > Servers > NFS.

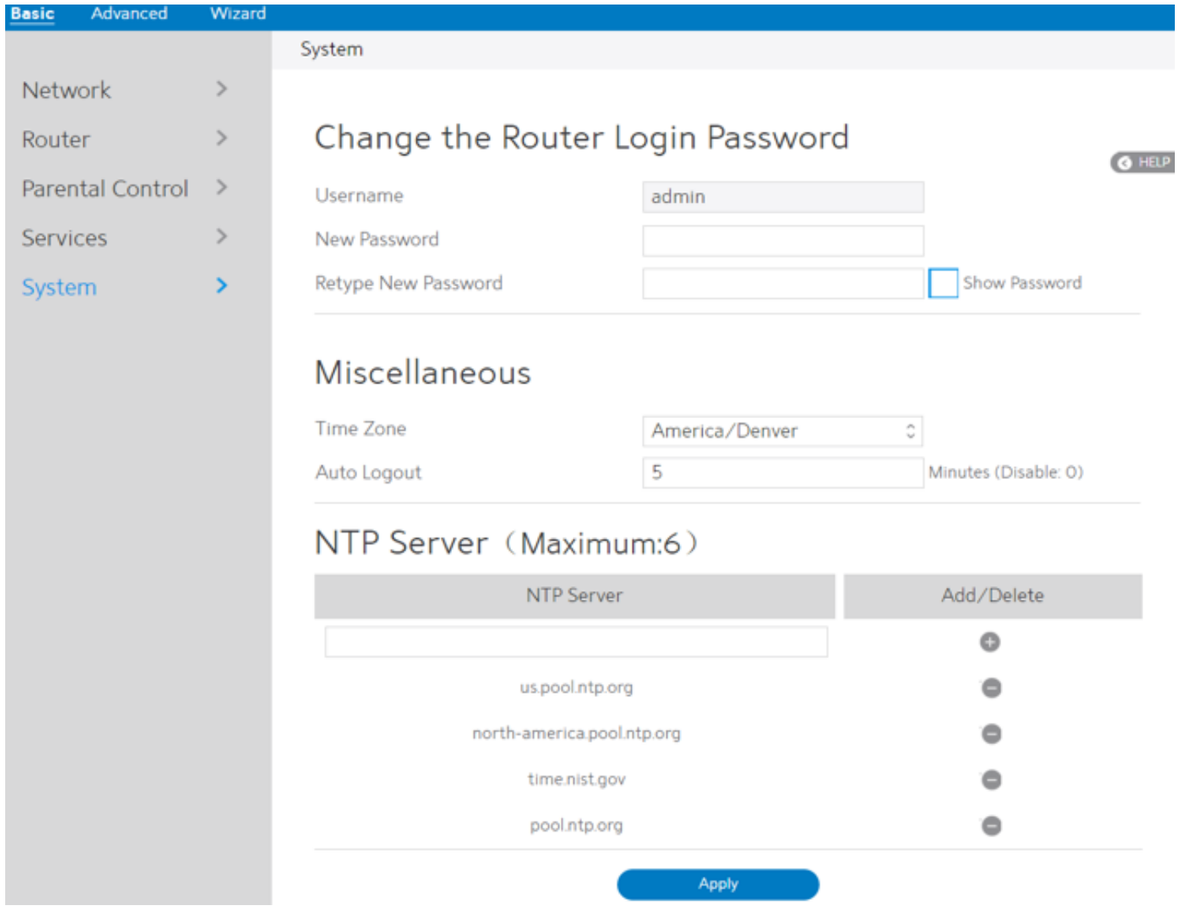


Steps to set NFS:

1. From the navigation panel, go to Basic > Services > NFS.
2. Connect an external USB hard disk drive or USB flash drive to the WiFi Router, then device's name will be displayed here.
3. Enable NFS: Enable or disable NFS service. When disabled, users can't access the USB storage via the NFS service.
4. Safely Remove Disk: Click to safely remove the disk. When the USB disk is ejected successfully, the USB status shows 'No device '.

2.3.7 System

This module lets sign in user do some settings, such as changing your own sign in password, selecting time-zone and adding NTP server. If you changed the password, the user password to sign in SSH will be changed.



Steps to set the System settings:

1. From the navigation panel, go to Basic > System.
2. Username: Name used to sign in WiFi Router.
3. New Password: New sign in password for WiFi Router.
4. Retype New Password: Retype new sign in password for WiFi Router.
5. Time Zone: The time zone used by default.
6. Auto Logout: Auto sign out after a specified period of time.
7. NTP Server: DNS of a NTP (Network Time Protocol) server.
8. Click Apply.

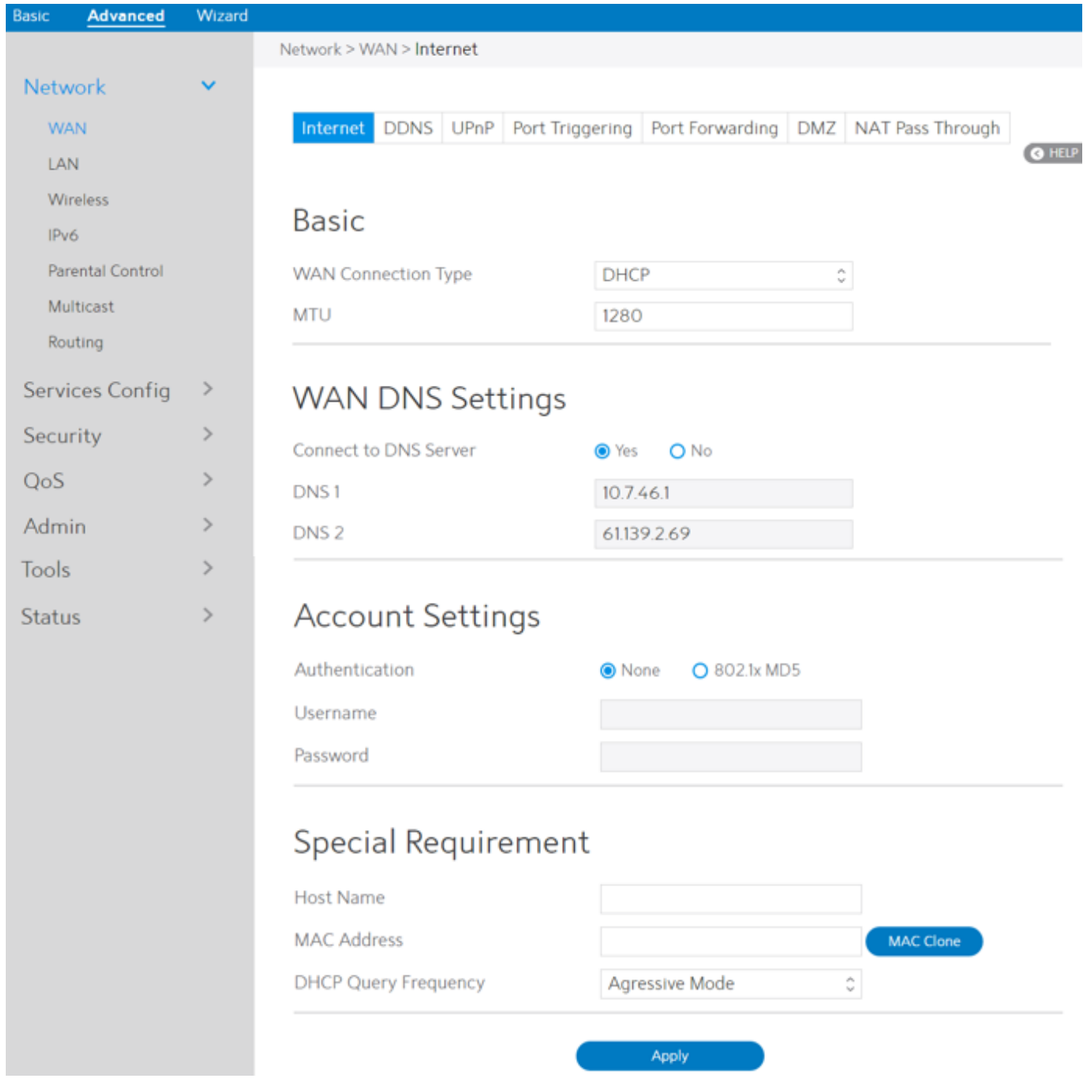
2.4 Advanced Setup

2.4.1 Network

2.4.1.1 WAN Settings

2.4.1.1.1 Internet Settings

WiFi Router supports several WAN connection types. Select the type from the WAN Connection Type dropdown menu.



Steps to configure WAN connection settings:

1. From the navigation panel, go to Advanced > Network > WAN > Internet.
2. WAN Connection Type: Choose the Internet Service Provider type. There are 5 options: DHCP, PPPoE, Static, PPTP and L2TP. If you are unsure which type to select, please consult your ISP.
3. MTU: Maximum Transmission Unit value, which defines the maximum length of a packet.
4. Connect to DNS Server: Lets WiFi Router get IP address from the DNS Server automatically. DNS Server is a host on the Internet that translates Internet names to numeric IP addresses.
5. Get WAN IP Automatically: Select Yes to get WAN IP automatically and No to enter IP manually below.
6. IP Address: If your WAN connection requires a static IP address, key in the IP address in this field.
7. Subnet Mask: If your WAN connection requires a static IP address, key in the subnet mask in this field.
8. Default Gateway: If your WAN connection requires a static IP address, type in the gateway IP address in this field.
9. DNS 1 & DNS 2: Either of them indicates an IP address of a DNS server.
10. Authentication: Use 802.1x MD5 authentication or not (IEEE 802.1x is an IEEE Standard for port-based Network Access Control).
11. Username: Username for 802.1x MD5 authentication.
12. Password: Password for 802.1x MD5 authentication.
13. PPTP Options: PPTP Encryption method. Select Auto for automatic Microsoft Point-to-Point Encryption (MPPE) and select No Encryption to disable MPPE. Select MPPE 40 for 40-bit MPPE with PPTP Server and select MPPE 128 for 128-bit MPPE with PPTP Server.
14. Access Concentrator Name: Specifies the Access Concentrator to connect to. If unset, pppd uses the first discovered one.
15. Additional Pppd Options: Additional command line arguments to pass to the pppd daemon.
16. Host Name: This field lets you provide a host name for your WiFi Router. It is usually provided by ISP.
17. MAC Address: MAC address identifies a device in the network. ISPs monitor the MAC addresses of devices that connect to their services, and would disallow Internet connection for new MAC addresses.

    To fix this issue, you can do either of the following:

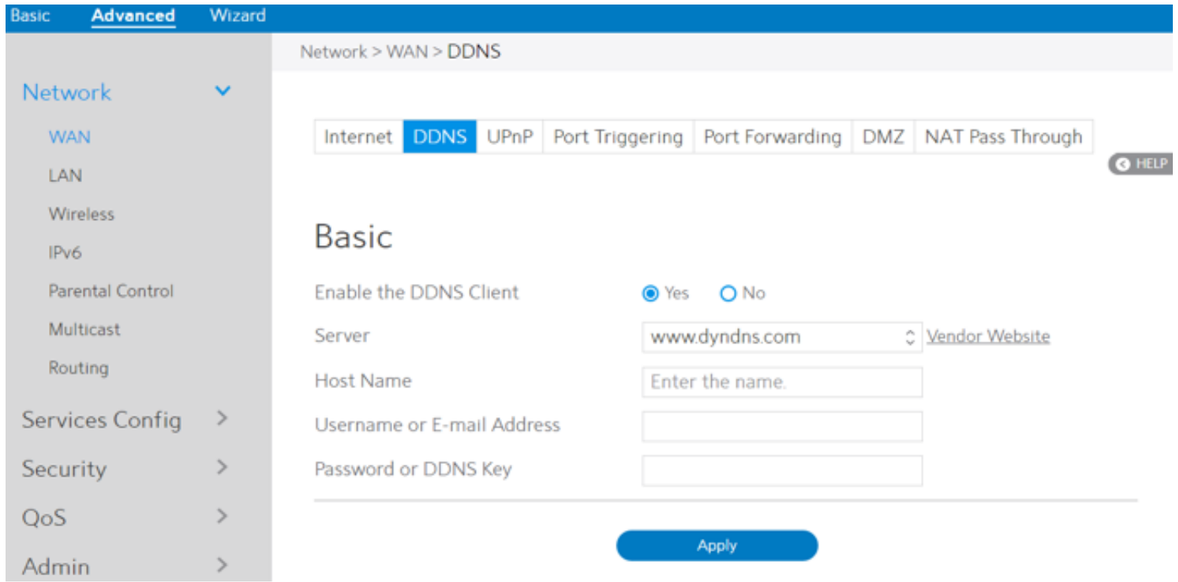
    • Contact your ISP and request to update the MAC address associated with your ISP subscription.

    • Clone or change the MAC address of the new device to match the MAC address of the original device.

18. DHCP Query Frequency: Some ISP blocks MAC addresses if the device makes DHCP queries too often. To prevent this, change the DHCP Query Frequency. In the default Aggressive mode, if your WiFi Router does not get a response from the ISP, it sends another query after 20 seconds and makes three more attempts. In Normal mode, if your WiFi Router does not get a response from the ISP, it makes a second query after 120 seconds and makes two more attempts.
19. Enable Default Route: Whether to create a default route over the tunnel.
20. VPN Server: IP address or DNS for VPN server.
21. Click Apply.

2.4.1.1.2 DDNS

DDNS(Dynamic DNS)makes administrator can get access to WiFi Router even though it's working within a local network.



Steps to set up DDNS:

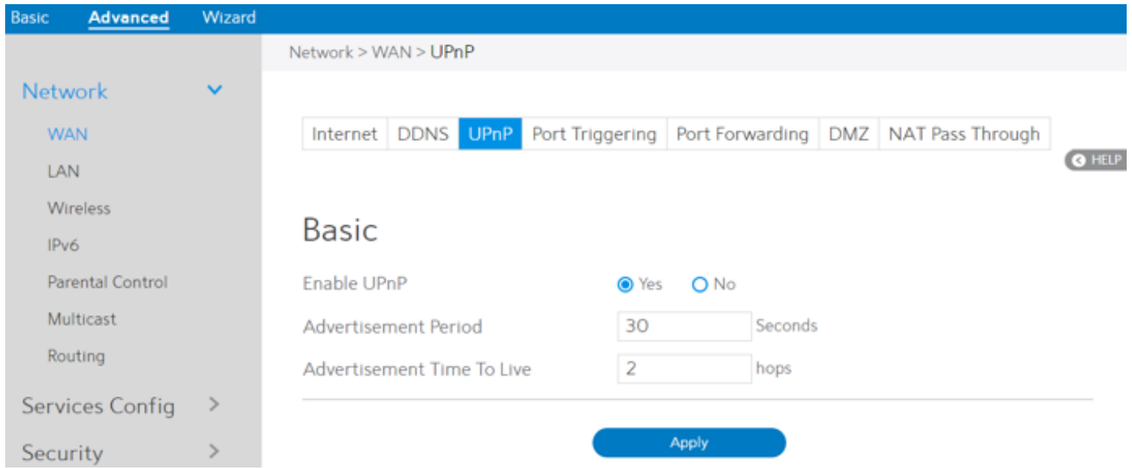
1. From the navigation panel, go to Advanced > Network > WAN > DDNS.
2. Enable the DDNS Client: Yes means enable DDNS function, No means disable DDNS function.
3. Server: Select supported DDNS service provider's URL from the list.
4. Host Name: URL that has been registered in the specified Vendor.
5. Username or E-mail Address: User name or email address which has been registered in the specified vendor.
6. Password or DDNS Key: Password which has been registered in the specified vendor.
7. Click Apply.

NOTES: DDNS service will not work properly under these conditions:

- When the WiFi Router is using a private WAN IP address (192.168.x.x, 10.x.x.x, or 172.16.x.x), as indicated by yellow text.
- The WiFi Router works on a network who uses multiple NAT tables.

2.4.1.1.3 UPnP

UPnP (Universal Plug and Play) let devices (such as routers, televisions, stereo systems) be controlled via an IP-based network with or without a central control unit. Under the help of UPnP, one device can be discovered once it has connected to network, then device can be remotely configured to support P2P applications, interactive gaming, video conferencing, and web or proxy servers. Unlike Port forwarding, UPnP automatically configures the WiFi Router to accept incoming connections and direct requests to a specific PC on the local network.

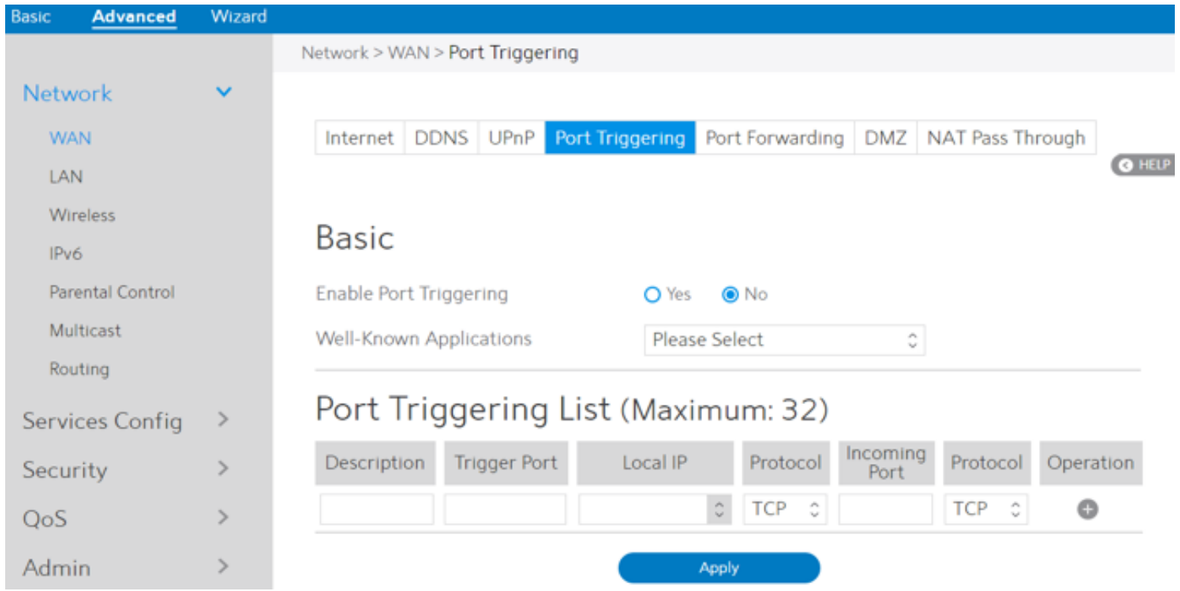


Steps to set up UPnP:

1. From the navigation panel, go to Advanced > Network > WAN > UPnP.
2. Enable UPnP: Yes means enable UPnP and No means disable it.
3. Advertisement Period: WiFi Router will broadcast its UPnP information to all devices every advertisement-period seconds.
4. Advertisement Time To Live: Number of hops that an advertisement will be transmitted.
5. Click Apply.

2.4.1.1.4 Port Triggering

Port triggering mechanism forwards the packets from the Incoming Port to the local client when the local client makes an outgoing connection through a predetermined port/port range (Triggering Port).



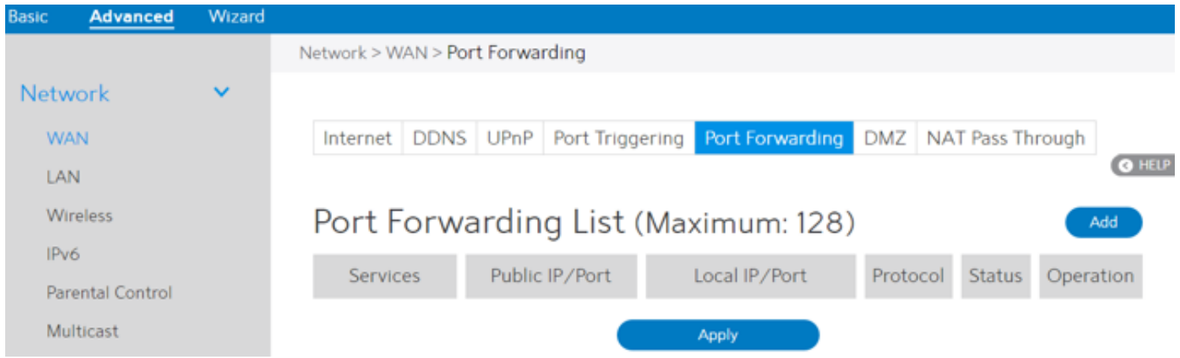
Steps to set up Port Triggering:

1. From the navigation panel, go to Advanced > Network > WAN > Port Triggering.
2. Enable Port Triggering: Check to enable or disable Port Triggering.
3. Well-Known Applications: Select popular games and web services to add to the Port Triggering List.
4. Description: A brief description for application.
5. Triggering Port: When there is incoming data from LAN-side application to this port, the Port Triggering mechanism will be activated.
6. Local IP: Local host's IP address.
7. Protocol: Select the type of protocol that the application will use.
8. Incoming Port: Defines the range of port. After Port triggering mechanism has been activated, the data from port within this range will be forwarded to the corresponding port of the application which has activated Port triggering mechanism.
9. Operation: Add, Edit or Delete operation for this item.
10. Click Apply.

NOTE:Triggering Port element in the list is regarded as a triggering, that's to say when data comes to this port, the Port Triggering mechanism will be activated.

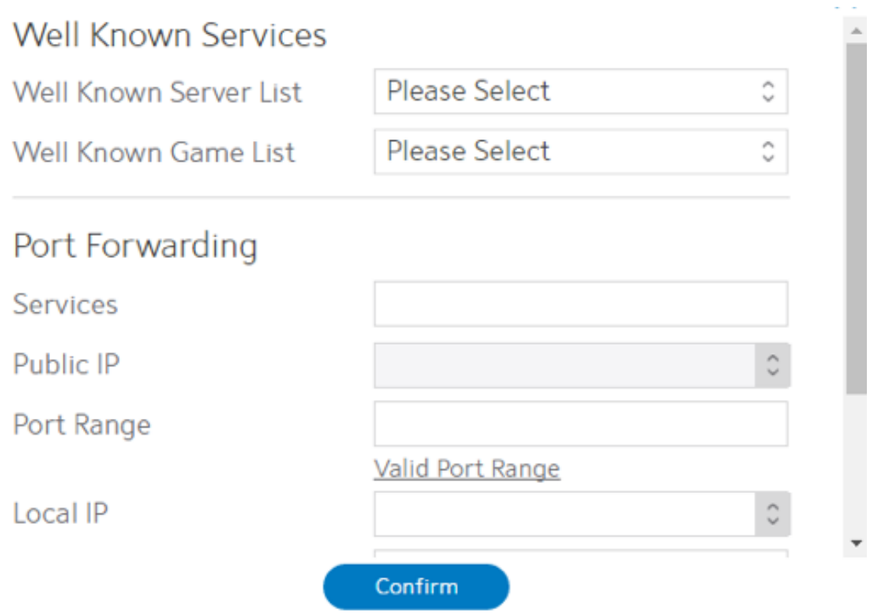
2.4.1.1.5 Port Forwarding

Port forwarding lets remote computers access a specific service within a LAN-side network. It can redirect a network request from one address/ports (Public IP/Port) to another (Local IP/Port).



Steps to set up Port Forwarding:

1. From the navigation panel, go to Advanced> Network> WAN>Port Forwarding.
2. Click the Add button to add the port forwarding rules.



3. Well Known Server List: Select a pre-defined Server list from the drop-down menu and the Port Forwarding List will be auto-filled.
4. Well Known Game List: Select a game from the Server list and the Port Forwarding List will be auto-filled.
5. Services: A short description about this service.
6. Public IP: IP address of WAN Port.
7. Port Range: Defines the range of port in WAN side.

NOTE: A network makes use of ports in order to exchange data, with each port assigned a port number and a specific task. For example, port 80 is used for HTTP. A specific port can only be used by one application or service at a time. Hence, two PCs attempting to access data through the same port at the same time would fail. For example, you cannot set up Port Forwarding for port 100 for two PCs at the same time.

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8. Local IP: The client's LAN IP address.
9. Local Port: Enter a specific port to receive forwarded packets. Leave this field blank if you want the incoming packets to be redirected to the specified port range.
10. Protocol: The required protocol. Refer to the documentation for the service that you are hosting.
11. Status: The status of this rule, on or off.
12. Operation: Edit or Delete operation for this rule.
13. Click Apply

Steps to check whether Port Forwarding module has been activated successfully:

- Ensure that your server or application is set up and running.
- You will need a client outside your LAN which has Internet access (referred to as "Internet client"). This client should not be connected to the WiFi Router.
- On the Internet client, use the WiFi Router's WAN IP to access the server. If port forwarding has been successful, you should be able to access available/specified files or applications.

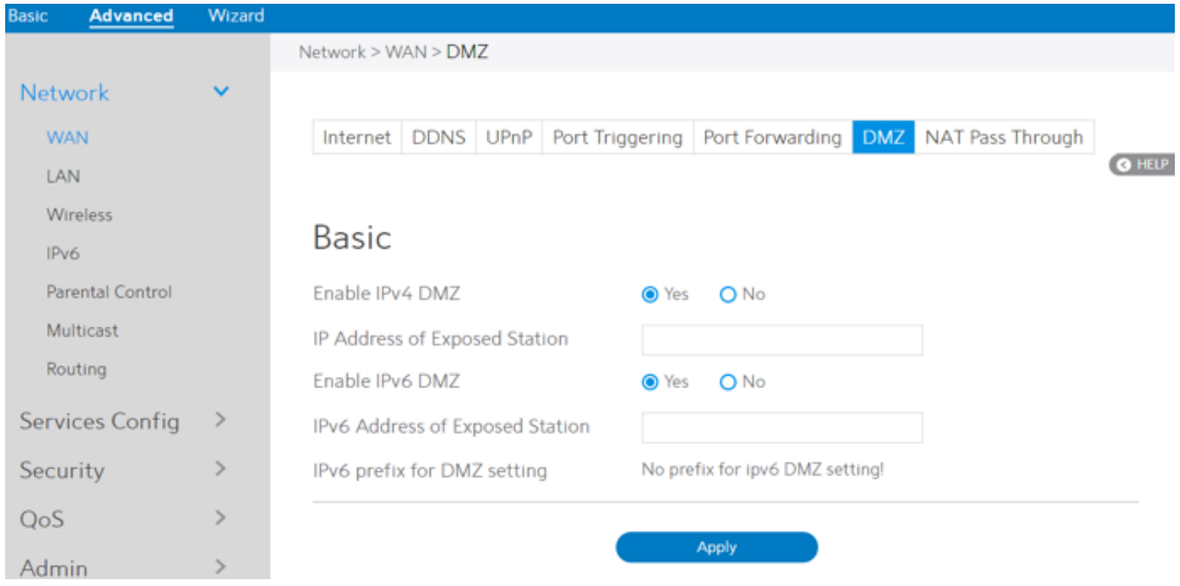
Differences between port triggering and port forwarding:

- Port triggering will work even without setting up a specific LAN IP address. Unlike port forwarding, which requires a static LAN IP address, port triggering allows dynamic port forwarding using the WiFi Router. Predetermined port ranges are configured to accept incoming connections for a limited period of time. Port triggering lets multiple computers run applications that would normally require manually forwarding the same ports to each PC on the network.
- Port triggering is more secure than port forwarding since the incoming ports are not open all the time. They are opened only when an application is making an outgoing connection through the triggering port.

2.4.1.1.6 DMZ

Virtual DMZ module exposes one client to the Internet, allowing this client to receive all inbound packets directed to a Local Area Network. For IPv4, inbound traffic from the Internet is usually discarded and routed to a specific client only if port forwarding or a port trigger has been configured on the network. For IPv6, inbound traffic from the Internet is usually discarded and routed to a specific client address or a prefix only the ipv6 firewall have the rules to let them in. In a DMZ configuration, one network client receives all inbound packets.

CAUTION: Opening all of the client's ports to Internet makes the network vulnerable to outside attacks. Please be aware of the security risks involved in using DMZ.



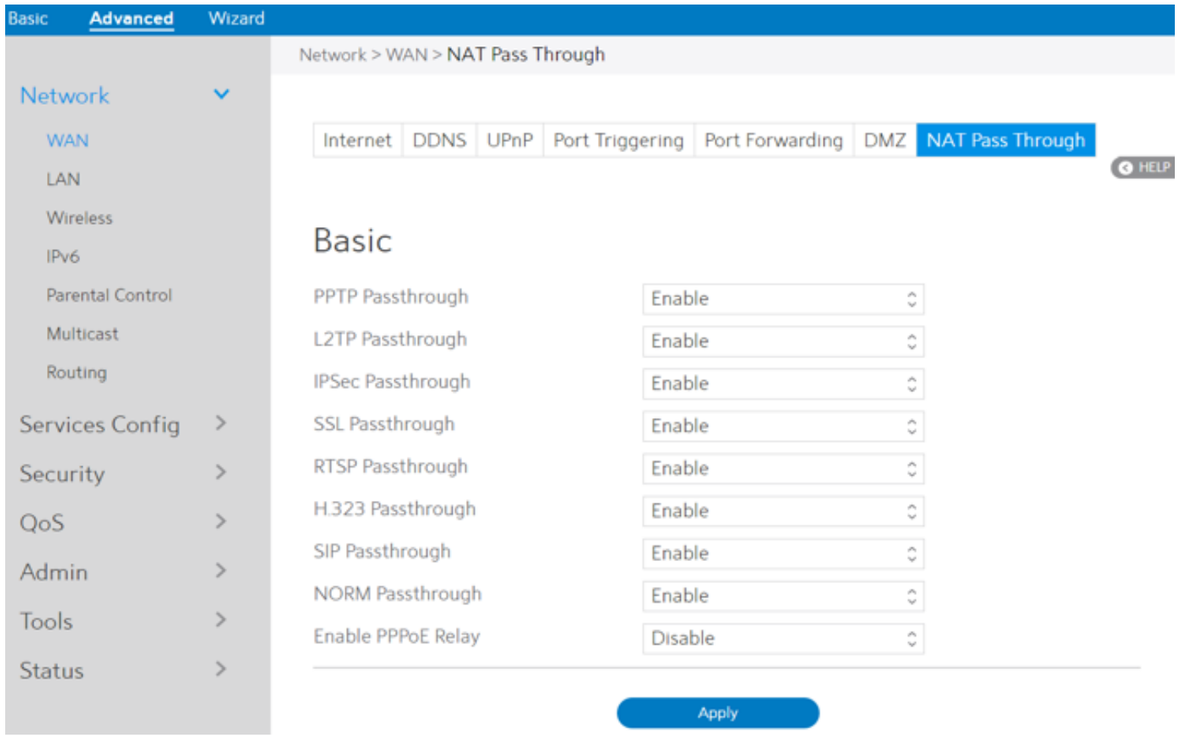
Steps to set up DMZ:

1. From the navigation panel, go to Advanced > Network > WAN > DMZ.
2. Enable IPv4 DMZ: Check to enable or disable DMZ.
3. IP Address of Exposed Station: LAN IP address of a client who can provide DMZ service. This makes the device with this IP address expose to Internet. Make sure that the server client has a static IP address.
4. Enable IPv6 DMZ: Check to enable or disable IPv6 DMZ.
5. IPv6 Address of Exposed Station: The client's LAN IPv6 address that will provide the DMZ service and be exposed on the Internet.

6. IPv6 prefix for DMZ setting: The IPv6 DMZ address must be in the range of IPv6 prefix. Show it for user to set valid DMZ address.
7. Click Apply.

2.4.1.1.7 NAT Pass Through

NAT Pass Through lets a Virtual Private Network (VPN) connection pass through the WiFi Router to the network server.



Steps to set up NAT Pass Through:

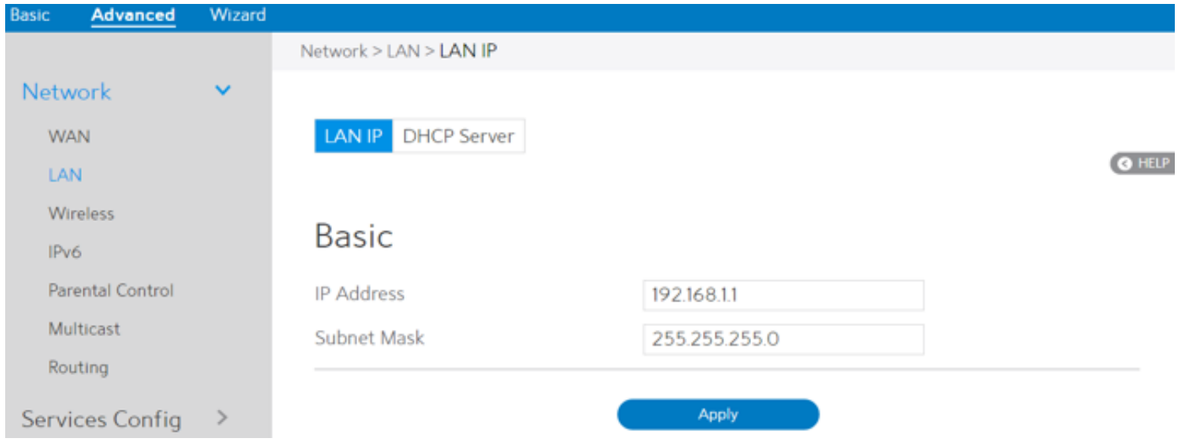
1. To configure NAT Pass Through settings, go to Advanced > Network > WAN > NAT Pass Through.
2. PPTP Passthrough: Enable or disable. Point-to-Point Tunneling Protocol (PPTP) is a method for implementing virtual private networks.
3. L2TP Passthrough: Enable or disable. In computer networking, Layer 2 Tunneling Protocol (L2TP) is a tunneling protocol used to support virtual private networks (VPNs) or as part of the delivery of services by ISPs. It does not provide any encryption or confidentiality by itself.
4. IPSec Passthrough: Enable or disable. Internet Protocol Security (IPsec) is a protocol suite for securing Internet Protocol (IP) communications by authenticating and encrypting each IP packet of a communication session.
5. SSL Passthrough: Secure Sockets Layer(SSL) is cryptographic protocols that provide communications security over a computer network.
6. RTSP Passthrough: Enable or disable. The Real Time Streaming Protocol (RTSP) is a network control protocol designed for use in entertainment and communications systems to control streaming media servers.

7. H.323 Passthrough: Enable or disable. H.323 is a recommendation from the ITU Telecommunication Standardization Sector (ITU-T) that defines the protocols to provide audio-visual communication sessions on any packet network.
8. SIP Passthrough: Enable or disable. The Session Initiation Protocol (SIP) is a communications protocol for signaling and controlling multimedia communication sessions. The most common applications of SIP are in Internet telephony for voice and video calls, as well as instant messaging all over Internet Protocol (IP) networks.
9. NORM Passthrough: Enable or disable. NACK-Oriented Reliable Multicast (NORM) Transport Protocol, which is able to provide end-to-end reliable transport of bulk data objects or streams over generic IP multicast routing and forwarding services.
10. Enable PPPoE Relay: PPPoE relay lets devices in LAN establish an individual PPPoE connection that passes through NAT.
11. When done, click Apply.

2.4.1.2 LAN Settings

2.4.1.2.1 LAN

The LAN IP module lets administrator modify LAN-side IP address of the router.



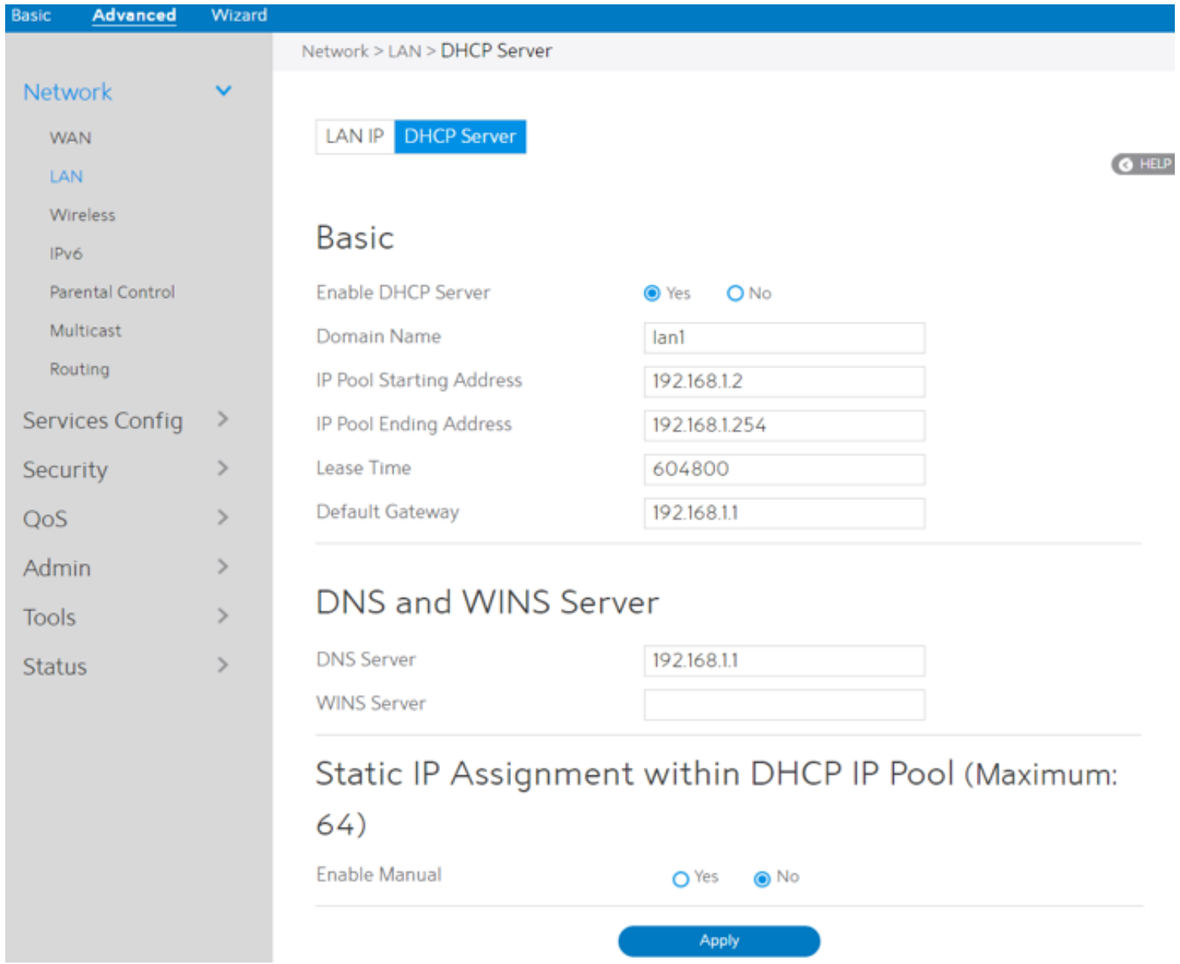
Steps to modify the LAN IP settings:

1. From the navigation panel, go to Advanced > Network > LAN > LAN IP.
2. IP Address: The LAN IP address of WiFi Router. The default value is 192.168.1.1. In IP-based networks, data packets are sent to the network devices' specific IP addresses.
3. Subnet Mask: The LAN subnet mask of WiFi Router. Its default value is 255.255.255.0
4. Click Apply.

NOTE: Any change to the LAN IP module will affect router's DHCP settings.

2.4.1.2.2 DHCP Server

DHCP server can assign each client an IP address and informs the client of DNS server's IP, default gateway's IP and etc. This WiFi Router can allocate up to 253 IP addresses for LAN-side devices.



Steps to configure the DHCP server:

1. From the navigation panel, go to Advanced > Network > LAN > DHCP Server.
2. Enable DHCP Server: Enable DHCP server function which lets WiFi Router act as a DHCP server to automatically assign IP addresses to network clients. If this function is disabled, administrator has to manually set LAN devices.
3. Domain Name: Domain Name for clients who request IP Address from DHCP Server. This field only contains alphanumeric characters and dash symbols.
4. IP Pool Starting Address: Starting address that can be allocated to LAN-side devices.
5. IP Pool Ending Address: Ending address that can be allocated to LAN-side devices.
6. Lease Time: Defines the time that LAN-side devices can use the assigned IP address. When the lease time expires, the network client will either send renew or rebind message to a DHCP server.
7. Default Gateway: IP address of the gateway for LAN.
8. DNS Server: IP address of a DNS server. DNS Server is used to resolve a DNS into a numerical IP Address. By default, the WiFi Router will act as a DNS server.
9. WINS Server: Windows Internet Naming Service manages interactions of each PC with the Internet. If you use a WINS server, enter the IP Address of server here.
10. Enable Manual: Assign fixed IP address for clients.
11. MAC: MAC address of LAN-side device.
12. IP: IP address within DHCP IP Pool for LAN-side device.
13. Add/Delete: Add/Delete static IP.
14. Click Apply.

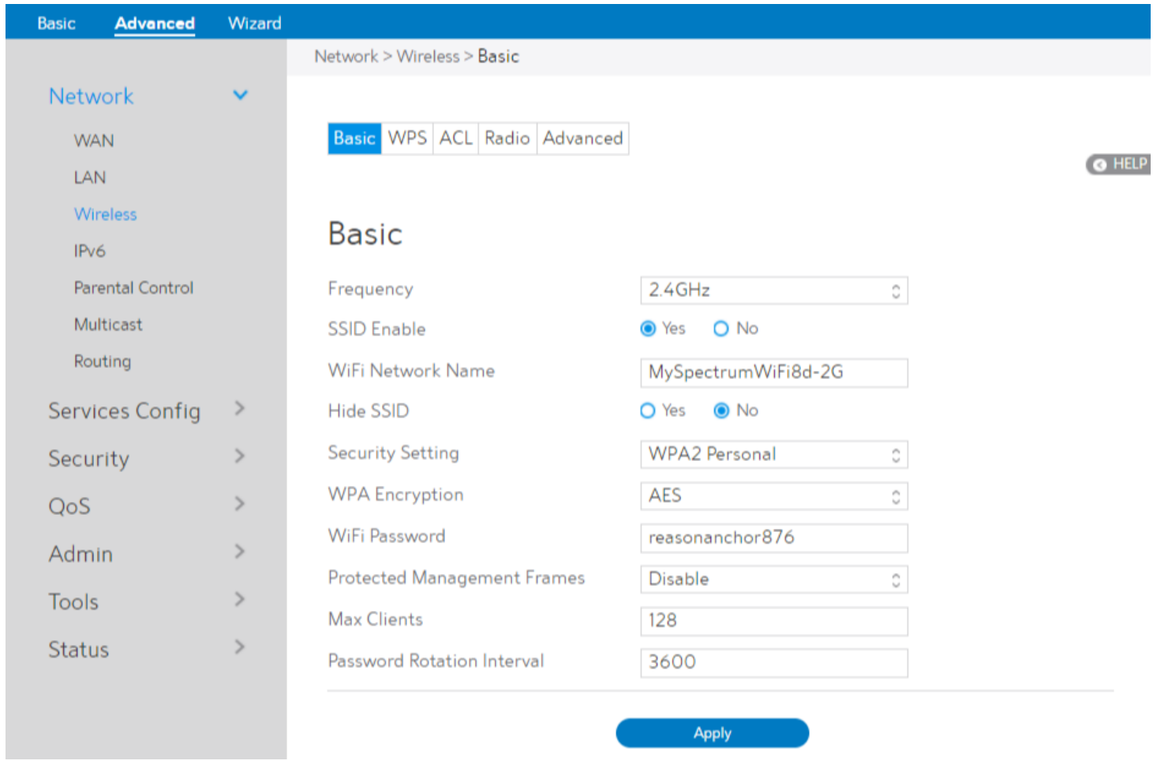
NOTES:

- We recommend that administrator use an IP address format of 192.168.1.xxx (where xxx can be any number between 2 and 254) when specifying an IP address range.
- An IP Pool Starting Address should not be greater than the IP Pool Ending Address.

2.4.1.3 Wireless Settings

2.4.1.3.1 Basic

Basic settings allow you to set up the basic wireless settings.

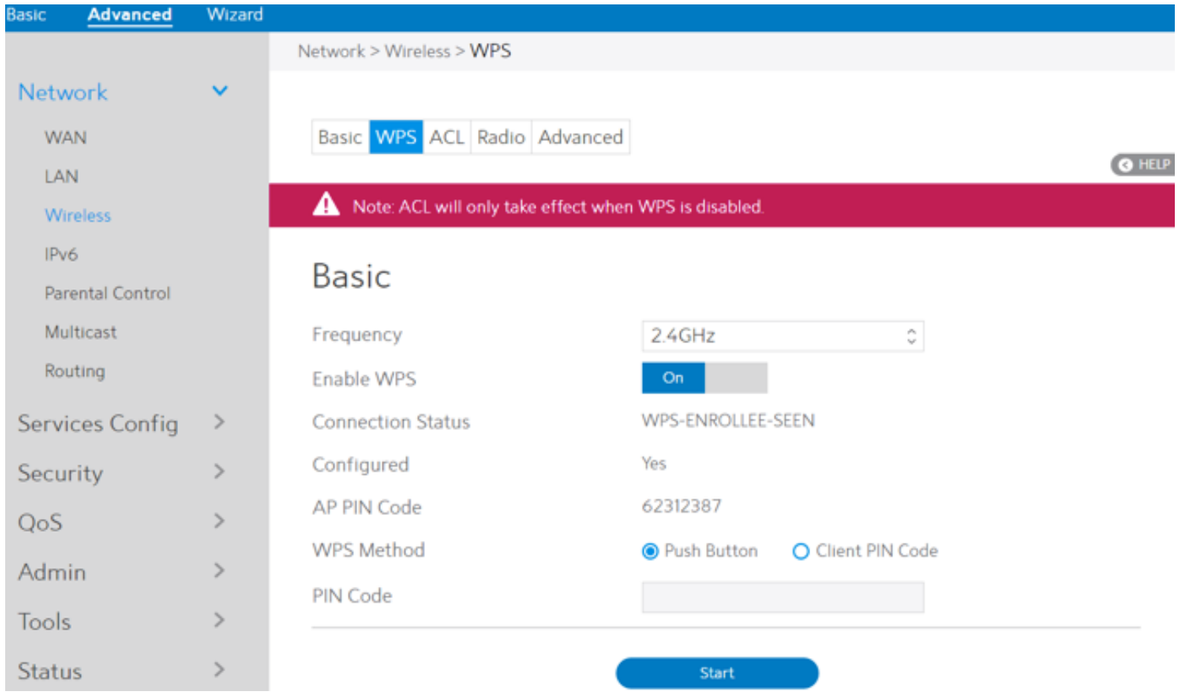


Steps to set up the basic wireless settings:

1. From the navigation panel, go to Advanced > Network > Wireless > Basic.
2. Frequency: Select the frequency band to configure.
3. SSID Enable: Switch the SSID on/off (enable/disable).
4. WiFi Network Name: A name whose length is less than 32 characters is used to identify a wireless network. WiFi devices automatically detect all networks within its communication range.
5. Hide SSID: If [Yes] is selected, network name (SSID) does not show in site surveys by wireless mobile clients and they can only connect to WiFi Router by manually enteringnetwork name (SSID).
6. Security Setting: This field enables authentication methods for wireless clients.
7. WPA Encryption: Enable WPA Encryption to encrypt data.
8. WiFi Password: Requires a password of 8-63 characters (letters, numbers or a combination) or 8 - 64 hex digits to start the encryption process.
9. Protected Management Frames: Protected Management Frames is a feature to protect some types of management frames like deauthorization, disassociation and action frames.
10. Max Clients: The maximum number of clients allowed.
11. Password Rotation Interval: This field specifies the interval (in seconds) after which a WPA group password is changed. Enter [0] (zero) to indicate that a periodic key-change is not required.
12. Click Apply. Please input the value between 600 to 86400 (seconds).

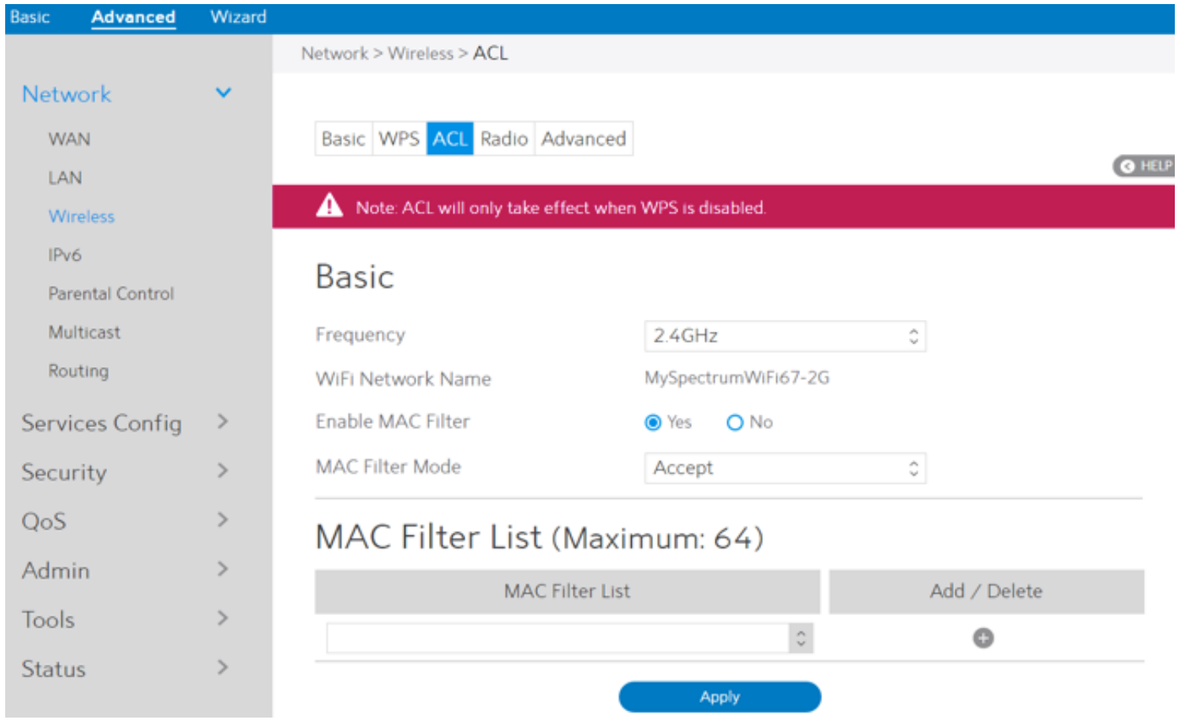
2.4.1.3.2 WPS

WPS (WiFi Protected Setup) is a wireless security standard that lets you easily connect devices to a wireless network. You can trigger the WPS function via the PIN code or WPS button. Reference 2.3.2 WPS Setup



2.4.1.3.3 ACL

ACL can be used to allow or disallow one device to associate to the AP/ Router.

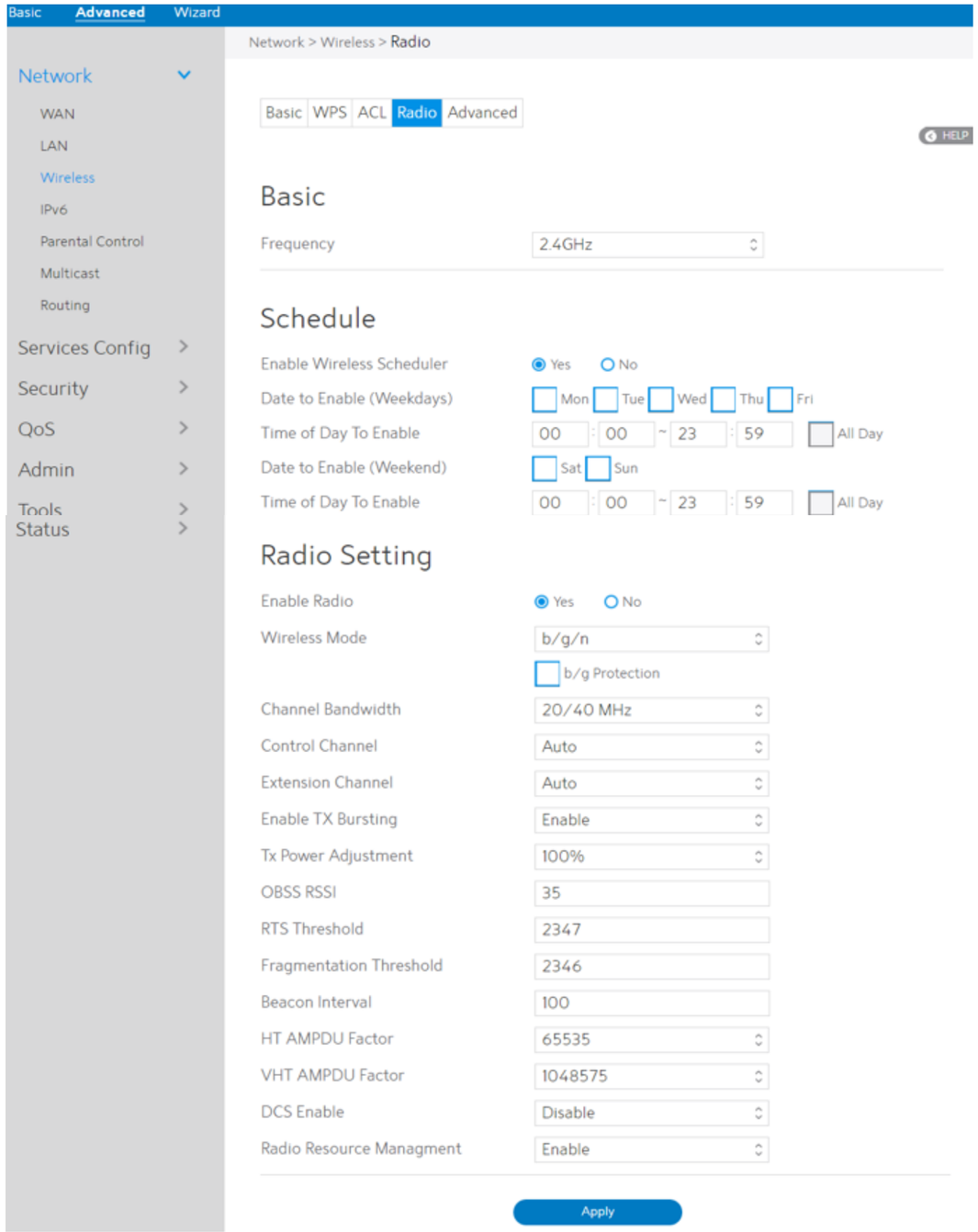


Steps to set up the ACL:

1. From the navigation panel, go to Advanced > Network > Wireless > ACL.
2. Frequency: In the frequency field, select the frequency band that you want to use for the ACL settings.
3. WiFi Network Name: A name whose length is less than 32 characters is used to identify a wireless network.
4. Enable MAC Filter: Enable MAC filter or disable.
5. MAC Filter Mode: Select Accept to allow devices in the MAC filter list to associate to the AP/ Router, select Reject to prevent devices in the MAC filter list from associating to the AP /Router.
6. MAC Filter List: Enter the MAC address of the wireless device. MAC filtering lets users either limit specific MAC addresses from associating with the AP/ Router, or specifically indicates which MAC addresses can associate with the AP/Router.
7. When done, click Apply.

2.4.1.3.4 Radio

Administrator can set some advanced feature for radio of the WiFi Router.



Steps to set Radio:

1. From the navigation panel, go to Advanced > Network > Wireless > Radio.
2. Frequency: Selecting the frequency band that the WiFi Router is running.
3. Enable Wireless Scheduler: Switch wireless schedule on or not.
4. Date to Enable (Weekdays): Select weekdays to enable Wi-Fi.
5. Time of Day To Enable: Set weekday time to enable Wi-Fi.
6. Date to Enable (Weekend): Select weekend days to enable Wi-Fi.
7. Time of Day To Enable: Set weekend time to enable WiFi.
8. Enable Radio: Select [Yes] to enable wireless radio (wireless network). Select [No] to disable wireless radio (wireless network).
9. Wireless Mode: Select a Wireless Mode of your 802.11n interface.
10. Channel Bandwidth: Sets manual channel bandwidth.
11. Control Channel: The radio channel for wireless connection operation.
12. Extension Channel: Extension (Secondary) channel is above/below the control (Primary) channel.
13. Enable TX Bursting: TX Bursting improves transmission speed between WiFi Router and 802.11g devices.
14. Tx Power Adjustment: Set the capability for transmission power. The maximum value is 100%. You can save power and increase security if you don't require full wireless range.

NOTE: Increasing the Transmission Power adjustment values may affect the stability of the wireless network.

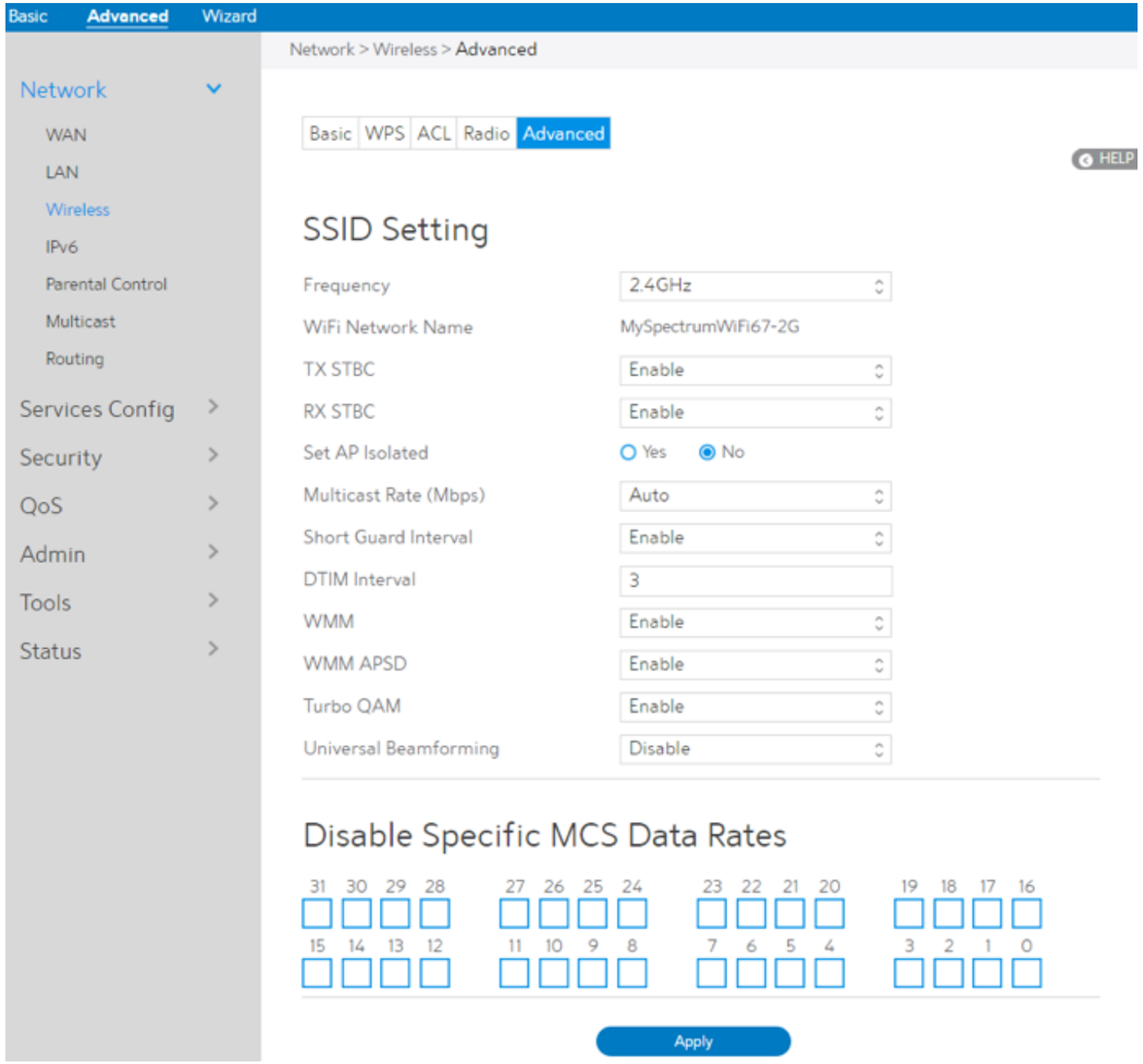
---

15. OBSS RSSI: Configure OBSS RSSI threshold. If OBSS RSSI is greater than configured value, then only move to 20 Mhz.
16. RTS Threshold: Select a lower value for RTS (Request to Send) Threshold to improve wireless communication in a busy or noisy wireless network with high network traffic and numerous wireless devices.
17. Fragmentation Threshold: Set the fragmentation threshold, which is the maximum fragment size.
18. Beacon Interval: Beacon Interval means the period of time between one beacon and the next one. The default value is 100 (the unit is millisecond, or 1/1000 second). Lower the Beacon Interval to improve transmission performance in unstable environment or for roaming clients, but it will be power consuming.
19. HT AMPDU Factor: Enables or disables Tx AMPDU aggregation for the entire interface. Receiving aggregate frames will still be performed, but no aggregate frames will be transmitted if this is disabled.

20. VHT AMPDU Factor: Set VHT capability field, Maximum A-MPDU length exponent.Value range is 0 to 7. Maximum A-MPDU length exponent indicates the maximum length of A-MPDU that the station can receive.
21. DCS Enable: Enable or disable DCS function which is a feature to detect and avoid CW interference.
22. Radio Resource Management: Enables or disables 802.11k
23. When done, click Apply.

2.4.1.3.5 Advanced

The Professional module provides advanced configuration options.



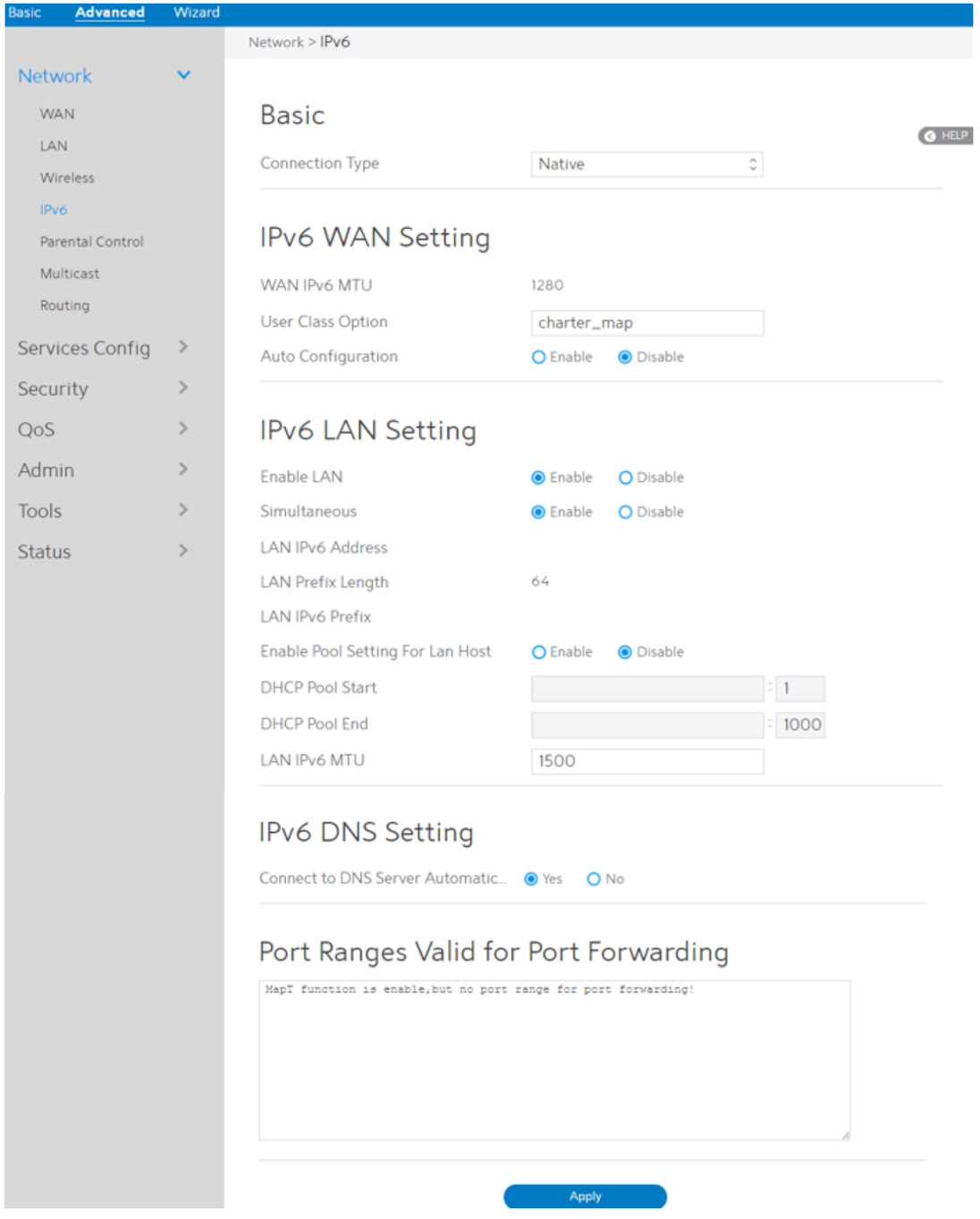
NOTE: We recommend that administrators use the default settings.

In this module, administrator can configure the followings:

1. From the navigation panel, go to Advanced > Network > Wireless > advanced.
2. Frequency: Select the frequency band to configure professional settings.
3. WiFi Network Name: A name whose length is less than 32 characters is used to identify a wireless network.
4. TX STBC: Enables or disables the Space Time Coding Block (STBC) feature, as described in 802.11n specification, in transmitting (TX) direction.
5. RX STBC: Enables or disables the Space Time Coding Block (STBC)feature, as described in 802.11n specification, in receiving(RX) direction.
6. Set AP Isolated: Prevent wireless devices from communicating with each other via WiFi Router. This feature is useful if many guests frequently join or leave your network. Select [Yes] to enable this feature or select [No] to disable.
7. Multicast Rate (Mbps): Setting transmission rate for multicast.
8. Short Guard Interval: Defines the length of time that the WiFi Router spends for CRC (Cyclic Redundancy Check). CRC is a method of detecting errors during data transmission. Select Enable for a busy wireless network with high network traffic.
9. DTIM Interval: DTIM (Delivery Traffic Indication Message) Interval or Data Beacon Rate is the time interval before a signal is sent to a wireless device in sleep mode indicating that a data packet is awaiting delivery. The default value is three milliseconds.
10. WMM: Enables or disables WMM capabilities in the driver. The WMM capabilities perform special processing for multimedia stream data including voice and video data.
11. WMM APSD: Enable WMM APSD (WiFi Multimedia Automatic Power Save Delivery) to improve power management between wireless devices. Select Disable to switch off WMM APSD.
12. Turbo QAM: 256-QAM (MCS 8/9) support. Wireless Mode must be set to auto.
13. Universal Beamforming: For legacy wireless network adapters which do not support beamforming, the WiFi Router estimates the channel and determines the steering direction to improve the downlink speed. (Also known as Implicit Beamforming.)
14. Disable Specific MCS Data Rates: Disabling specific MCS data rates per SSID.
15. Click Apply.

2.4.1.4 IPv6

The module is used to set some basic functions related to IPv6. For IPv6 service is not yet widely available, contact your ISP to make sure whether IPv6 service is provided.



Steps to set up IPv6:

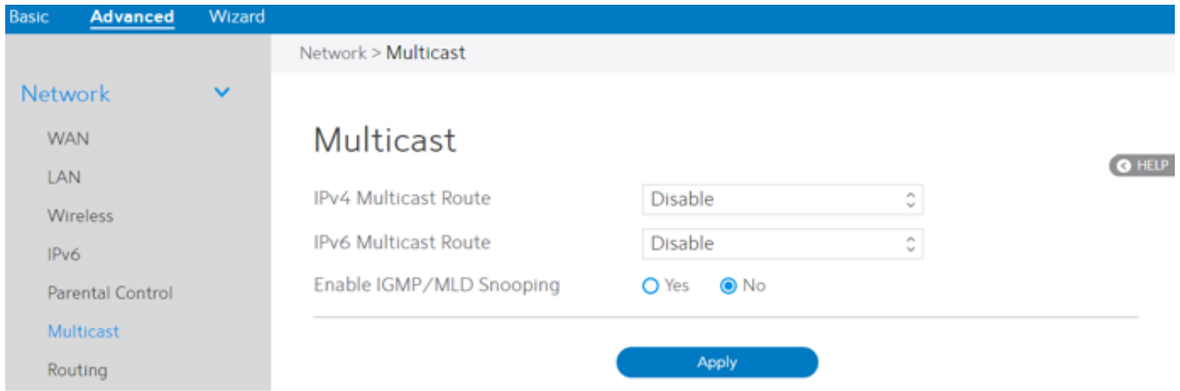
1. From the navigation panel, go to Advanced > Network > IPv6.
2. Connection Type: Select IPv6 connection type to configure Disable, Native and Static IPv6.
3. WAN IPv6 Address: Set the WAN interface's ipv6 address.
4. WAN Prefix Length: Set the WAN interface's ipv6 prefix length.
5. WAN IPv6 Gateway: Set the WAN interface's ipv6 gateway
6. WAN IPv6 MTU: Set the WAN interface's IPv6 MTU (Maximum Transmission Unit).
7. User Class Option: The user class option (15) of ORO that DHCPv6 clients send to the DHCPv6 server by solicit message.
8. Auto Configuration:
   The WAN interface's address assign type (SLAAC). Enable: WAN interface can get ipv6 address by SLAAC. Disable: WAN interface gets the ipv6 address only by stateful.
9. Enable LAN: Enable/Disable WiFi Router allocating IPv6 addresses for LAN-side devices.
10. Simultaneous: The mode which hosts connected to the LAN interface can get IPv6 addresses. When enabled, hosts get IPv6 address by simultaneous Stateless and Stateful (requires address between DHCP pool start and end values). When disabled, hosts do not get IPv6 addresses simultaneously, and a mode must be selected instead (SLAAC + RDNSS, SLAAC+Stateless DHCPv6, Stateful DHCPv6).
11. LAN IPv6 Address: Set LAN interface's IPv6 address.
12. LAN Prefix Length: Set LAN interface's IPv6 prefix length.
13. LAN IPv6 Prefix: Set LAN interface's prefix.
14. Enable Pool Setting For Lan Host: Enable to set DHCP pool start and end values for client IPv6 address assign range, it's disable by default.
15. DHCP Pool Start: DHCPv6 address setting address pool start.
16. DHCP Pool End: DHCPv6 address setting address pool end.
17. PD-Valid Lifetime: Prefix delegation for valid lifetime.
18. PD-Preferred Lifetime: Prefix delegation for preferred lifetime.
19. LAN IPv6 MTU: Set MTU for LAN-side devices.
20. Connect to DNS Server Automatically: Choose to get the DNS from manually from uplink.
21. IPv6 DNS Server 1: IPv6 address for DNS server.
22. IPv6 DNS Server 2: IPv6 address for DNS server.
23. IPv6 DNS Server 3: IPv6 address for DNS server.
24. Port Ranges Valid for Port Forwarding: The "port ranges" are set by Map-T mode, and the port setting for port forwarding must be in these ranges.
25. Click Apply.

2.4.1.5 Parental Control

Refer to 2.3.5 Parental Control for relevant setting descriptions.

2.4.1.6 Multicast

Enable multicast. The sender and receiver achieve a point to multipoint connection.

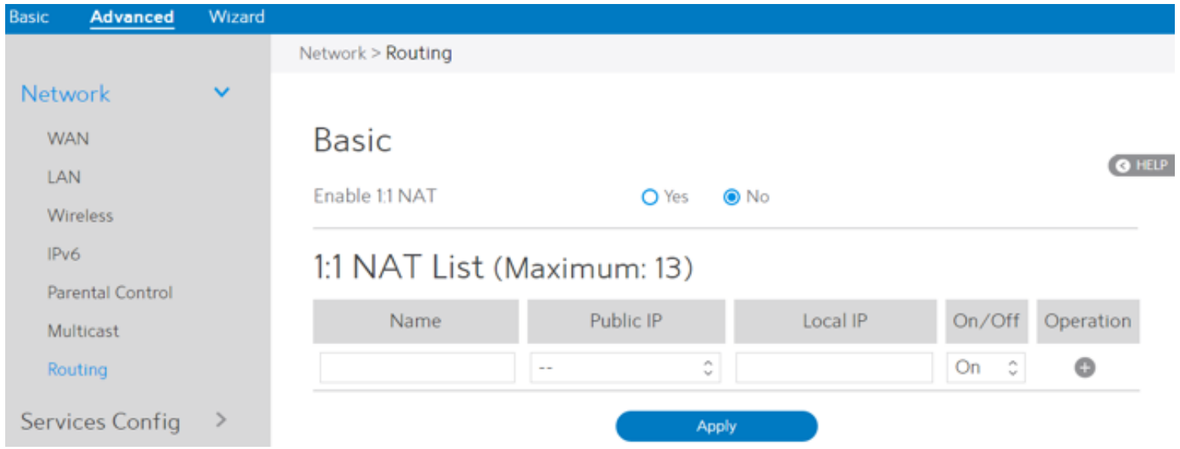


Steps to set up Multicast:

1. From the navigation panel, go to Advanced > Network > Multicast.
2. IPv4 Multicast Route: Select an IPv4 Multicast Route.
   * IGMP Proxy: IGMP Proxy enables hosts in a unidirectional link routing (UDLR) environment that are not directly connected to a downstream WiFi Router to join a multicast group sourced from an upstream network.
   * PIM: PIM-Source-specific multicast (SSM) is used in IPv4/IPv6 and is a method of delivering multicast packets in which the only packets that are delivered to a receiver are those originating from a specific source address requested by the receiver. By limiting the source, SSM reduces demands on the network and improves security.
3. IPv6 Multicast Route: Select an IPv6 Multicast Route.
   * MLD Proxy: The MLD proxy is used in IPv6 environments. This feature enables a device
     to learn proxy group membership information, and forward multicast packets based upon that information. If a device is acting as RP for route proxy entries, MLD membership reports for these entries can be generated on user specified proxy interface.
4. Enable IGMP/MLD Snooping: Check [Yes] to enable snooping and Check [No] to disable snooping. IGMP/MLD snooping is the process of listening to Internet Group Management Protocol (IGMP) / Multicast Listener Discovery (MLD) network traffic. The feature lets a network switch listen in on the IGMP/MLD conversation between hosts and WiFi Routers.
5. When done, click Apply.

2.4.1.7 Routing

This module can be used to build a static NAT table between WAN IP address and LAN IP address.



Steps to set up Routing:

1. From the navigation panel, go to Advanced > Network > Routing.
2. Enable 1:1 NAT: Check [Yes] to enable this function, check [No] to disable this function.
3. Name: A brief description for application.
4. Public IP: IP address from Charter supplied public IP subnets.
5. Local IP: Key in the client's LAN IP address, not limited to the subnet for the directly connected LAN interface
6. Click On/Off to enable/disable the rule.
7. Click ⊕ to add this item to the 1:1 NAT List.
8. Click Apply.

NOTE: This module only works only when WAN port is in static mode!

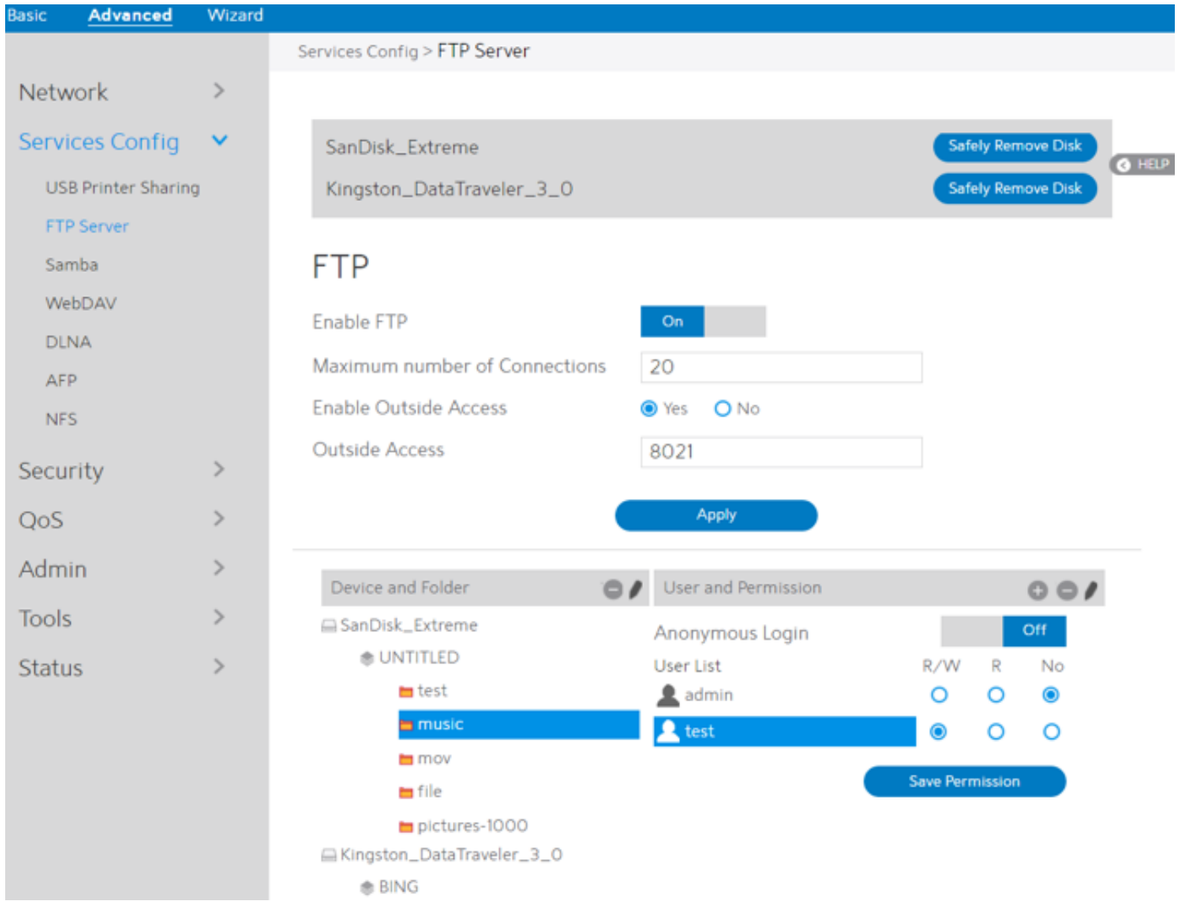
2.4.2 Services Config

2.4.2.1 USB Printer sharing

Refer to 2.3.6.1 USB Printer sharing for relevant setting descriptions.

2.4.2.2 FTP

FTP Server enables an FTP server to share files from USB disk to other devices via your local area network or via the Internet.



To set up FTP Server:

1. From the navigation panel, go to Advanced > Services > FTP .
2. Connect an external USB hard disk drive or USB flash drive to the WiFi Router, and your device will be displayed here.

3. Click On/Off to enable/disable Internet access to FTP service.

To create a new account:
1. Add new account.
2. In the Account and Password fields, key in the name and password of your network client. Retype the password to confirm. Click Add to add the account to the list.

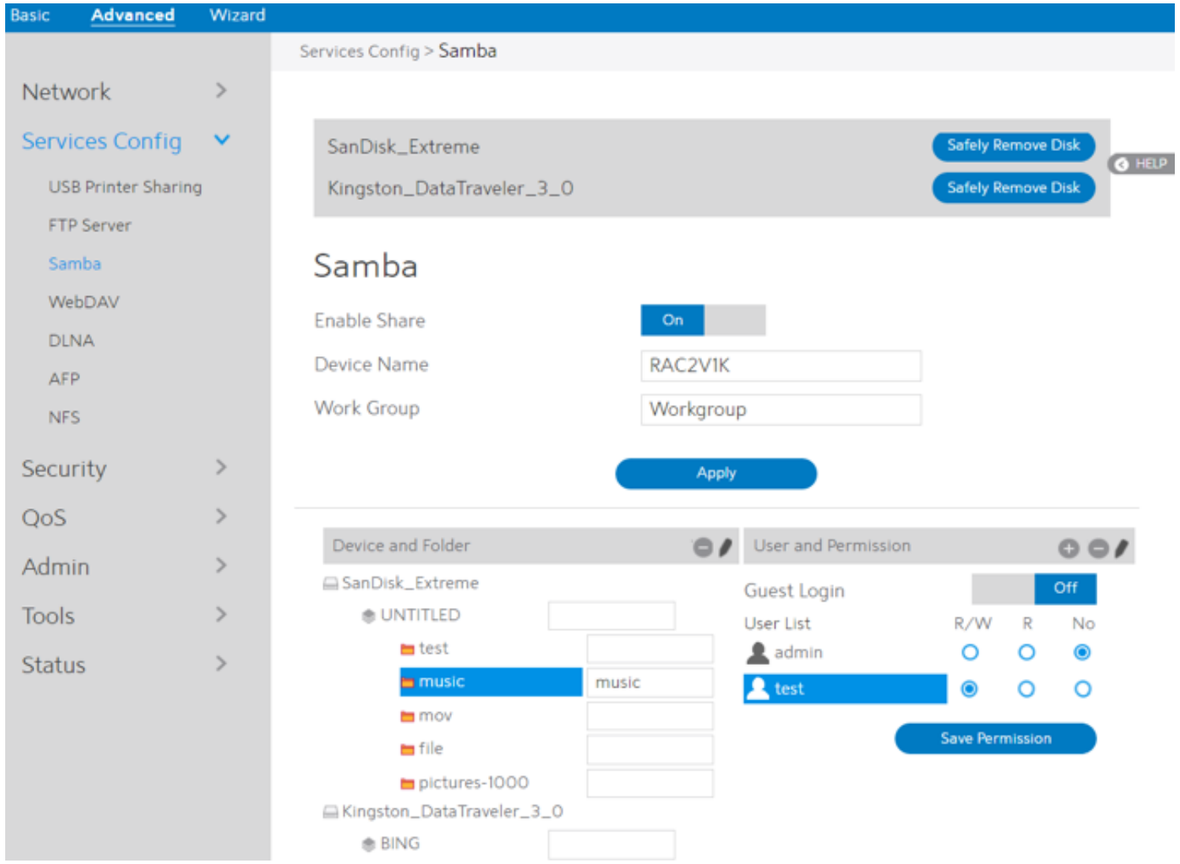
To add a folder:
1. Add new folder.
2. Enter a folder name. The folder that you created will be added to the folder list.

To set up permissions on the folder for FTP server:
1. From the list of folders, choose one of the shared folders and select the type of access permission that you want to assign for specific users:
   - R/W: Select this option to assign read/write access.
   - R: Select this option to assign read-only access.
   - No: Select this option if you do not want to share a specific file folder.
2. Click Save Permission to apply the changes.

Refer to the following descriptions:
- Maximum number of Connections: The maximum number of concurrent connections for the Network Neighborhood or FTP Server.
- Enable Outside Access: Select On/Off to enable/disable to access FTP server by wide area network.
- Outside Access: The numbers of external service ports (default value: 8021).
- Anonymous Login: Enable/disable anonymous access to the FTP server.
- Safely Remove Disk: Click to safely remove disk. When the USB disk is ejected successfully, the USB status shows “No device”.
- Click Save Permission.

2.4.2.3 Samba

Samba Share lets you set up the accounts and permissions for the Samba service.



To set up Samba:

1. From the navigation panel, go to Advanced > Services > Samba.
2. Connect an external USB hard disk drive or USB flash drive to the WiFi Router, and your device will be displayed here.
3. Click On/Off to enable/disable Internet access to Samba service.

To create a new account:

1. Add new account.
2. In the Account and Password fields, key in the name and password of your network client. Retype the password to confirm. Click Add to add the account to the list.

To add a folder:

1. Add new folder.
2. Enter a folder name. The folder that you created will be added to the folder list.

To set up permissions on the folder for Samba server:

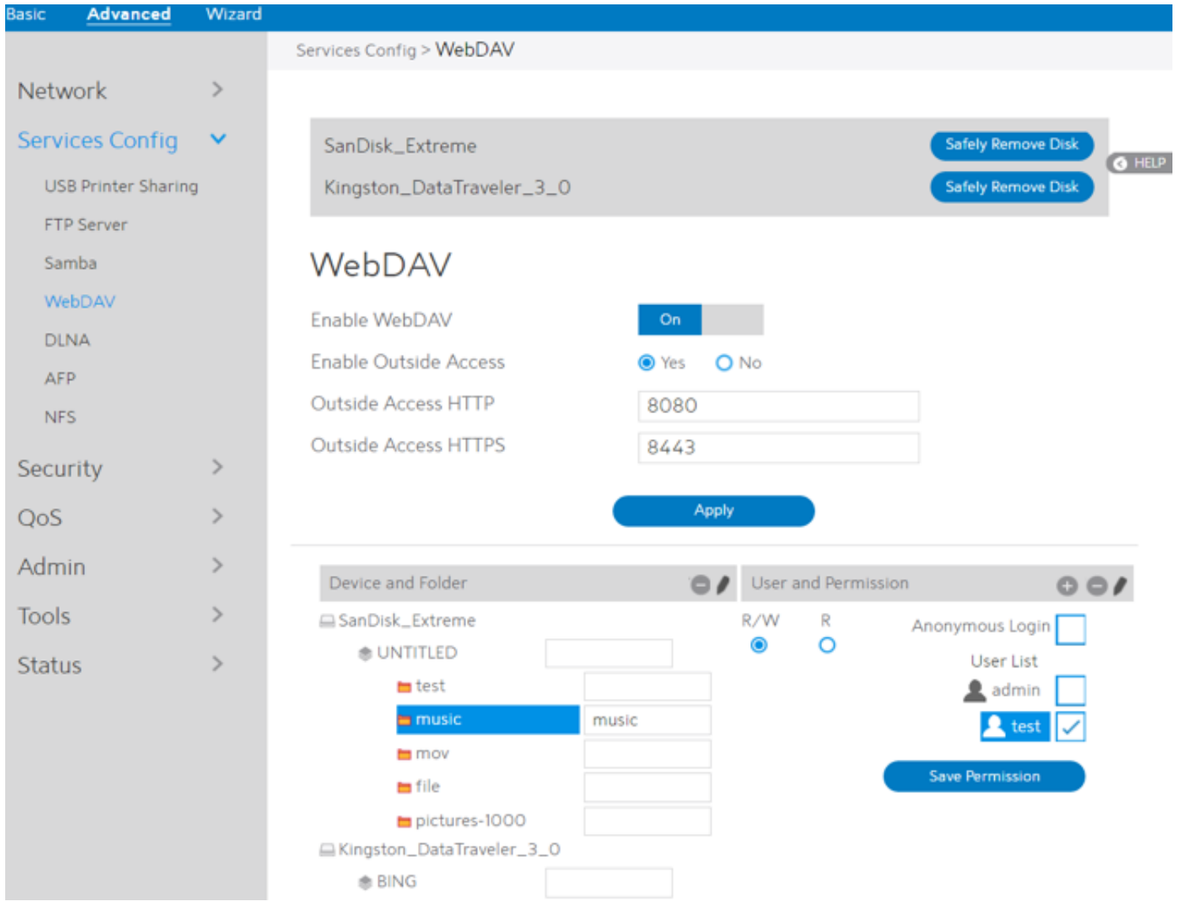
1. From the list of folders, choose one of the shared folders and add the share name, and choose the type of access permission that you want to assign for specific users:
   - R/W: Select this option to assign read/write access.
   - R: Select this option to assign read-only access.
   - No: Select this option if you do not want to share a specific file folder.
2. Click Save Permission to apply the changes

Refer to the following descriptions:

- Device Name: Enter a name for your device and you can use this name in your web browser's URL field to quickly access the device as a Network Place service.
- Work Group: Group name of the cascade in Network Neighborhood.
- Note: The standard input characters include letters (A-Z, a-z), digits (0-9). The hyphen (-) and under line (_) characters may also be used, but the hyphen (-) can't be as the first character.
- Guest Login: By enabling [Guest Login], any user in your local network can access your network place (Samba) without authentication.
- Safely Remove Disk: Click to safely remove the disk. When the USB disk is ejected successfully, the USB status shows 'No device '.
- Click Save Permission.

2.4.2.4 WebDAV

The client can write operation in WebDAV directory with appropriate permissions.



To set up WebDAV:

1. From the navigation panel, go to Advanced > Services > WebDAV.
2. Connect an external USB hard disk drive or USB flash drive to your WiFi Router, and your device will be displayed here.
3. Click On/Off to enable/disable Internet access via WebDAV.

To create a new account:

1. Add new account.
2. In the Account and Password fields, key in the name and password of your network client. Retype the password to confirm. Click Add to add the account to the list.

To add a folder:

1. Add new folder.
2. Enter a folder name. The folder that you created will be added to the folder list.

To set up permissions on the folder for WebDAV server:

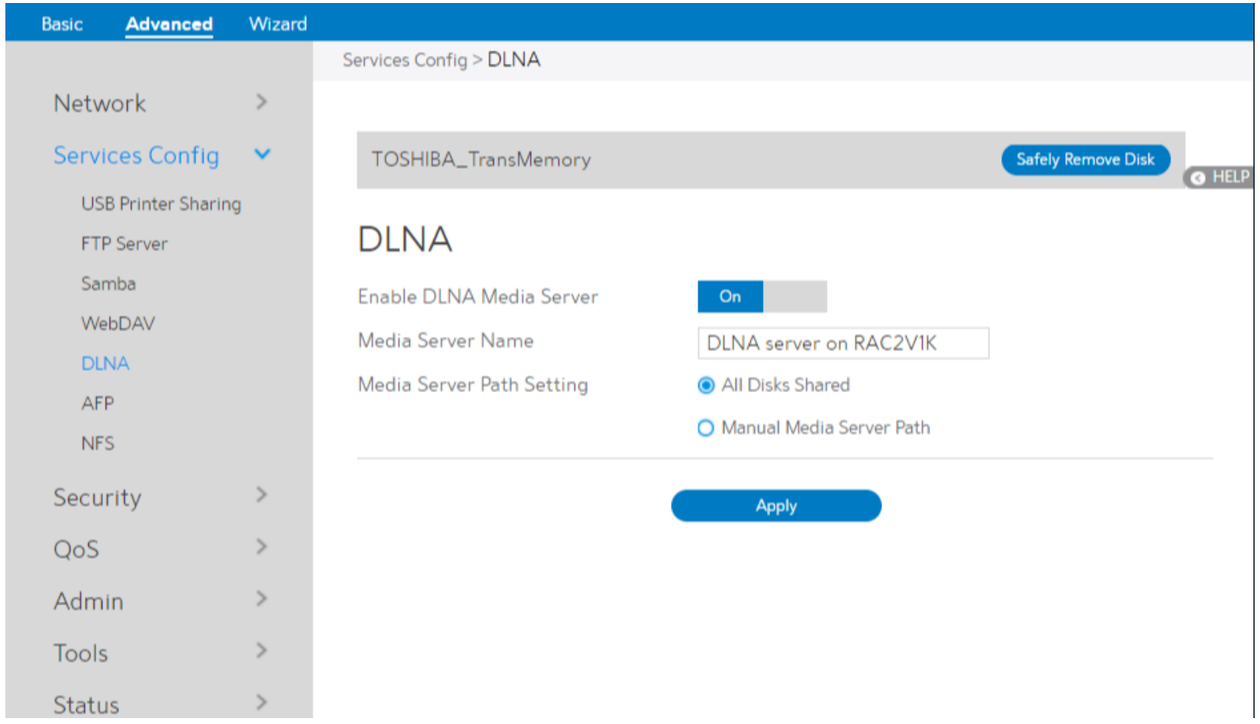
1. From the list of folders, choose one of the shared folders and add the share name, then choose the type of access permission that you want to assign for specific users:
   - R/W: Select this option to assign read/write access.
   - R: Select this option to assign read-only access.
2. Click Save Permission to apply the changes.

Refer to the following for the descriptions of the fields:

- Enable Outside Access: Select On/Off to enable/ disable access to WebDAV server by WAN (wide area network).
- Outside Access: The port number of external service ports via HTTP (default value: 8080).
- Outside Access HTTPS: The port number of external service ports via HTTPS (default value: 8443).
- Safely Remove Disk: Click to safely remove the disk. When the USB disk is ejected successfully, the USB status shows 'No device '.
- Click Save Permission.

2.4.2.5 DLNA

DLNA (Digital Living Network Alliance) lets you share audio, image and video. Your WiFi Router lets DLNA-supported devices access multimedia files from the USB disk connected to your WiFi Router.



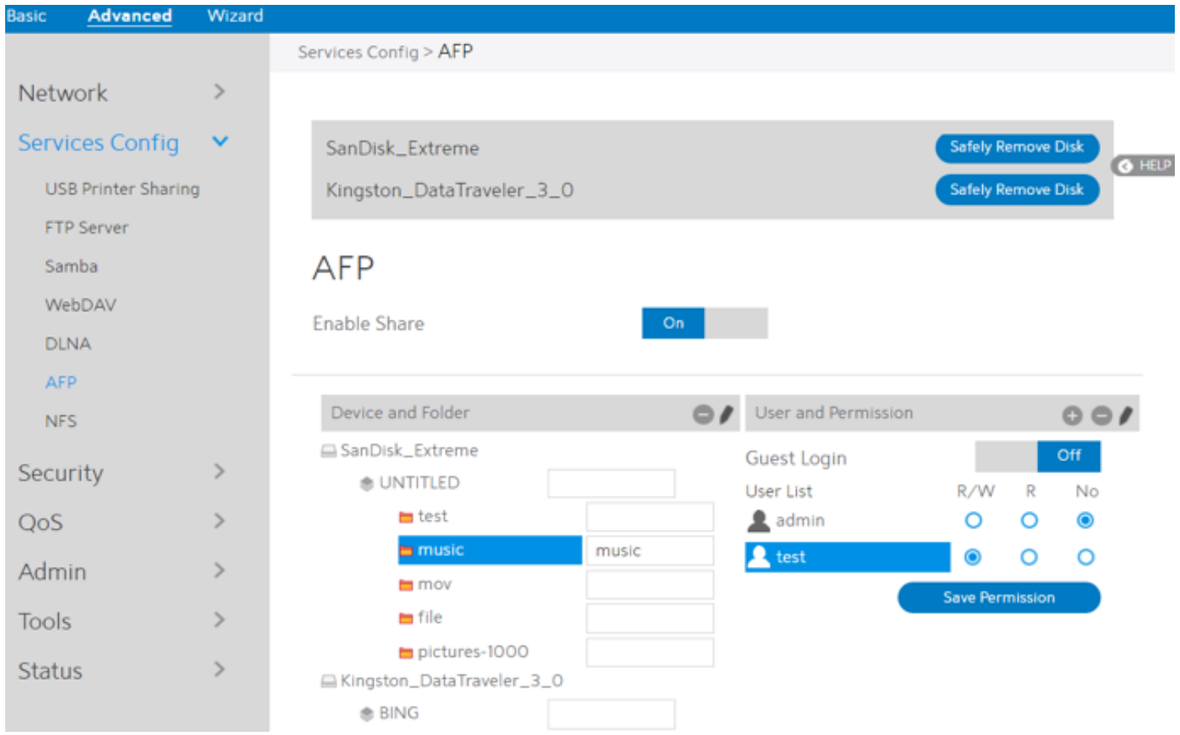
To set up DLNA:

1. From the navigation panel, go to Advanced > Services > DLNA.
2. Enable DLNA Media Server: Switch DLNA media on or off.
3. Media Server Name: The DLNA server's name, which will be displayed by the media player, such as VLC or windows media player.
4. Media Server Path Setting: The methods of setting the folders' path which will be shared. There are two methods to be chose, "All Disks Shared" means share all of the mounted disks' all media; "Manual Media Server Path" means set the folders to be shared manually, When Manual is selected you must enter additional information in " Manual Media Server Path".
5. Manual Media Server Path: Set the folders to be shared and the media type that will be shared by the DLNA server.
6. Media Server Directory: The folders that will be shared by the DLNA.

7. Shared Content Type: The media type that will be shared by the DLNA server: audio, image, video.
8. Safely Remove Disk: Click to safely remove the disk. When the USB disk is ejected successfully, the USB status shows 'No device '.
9. Click Apply.

2.4.2.6 AFP

An AFP server is a kind of network file sharing server based on AFP protocol implementation, mainly used for file sharing between Linux and MAC systems.



To set up AFP:

1. From the navigation panel, go to Advanced > Services > AFP.
2. Connect an external USB hard disk drive or USB flash drive to your WiFi Router, and your device will be displayed here.
3. Click the On/Off to enable/disable Internet access via AFP.

To create a new account:

1. Add new account.
2. In the Account and Password fields, key in the name and password of your network client. Retype the password to confirm. Click Add to add the account to the list.

To add a folder:

1. Add new folder.
2. Enter a folder name. The folder that you created will be added to the folder list.

To set up permissions on the folder for AFP server:

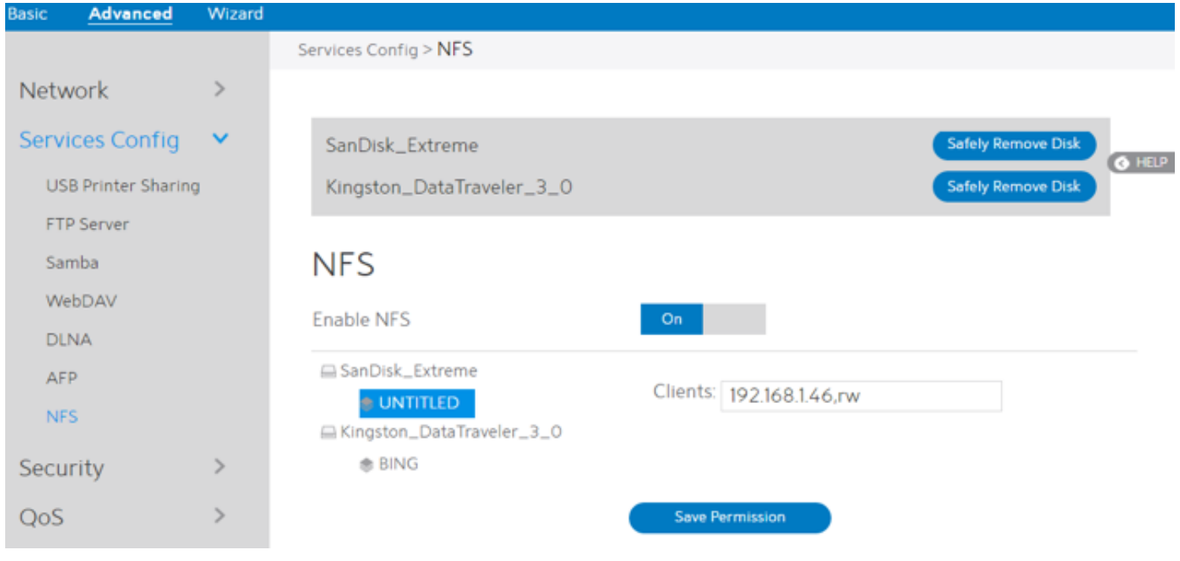
1. From the list of folders, choose one of the shared folder and add the share name, and choose the type of access permission that you want to assign for specific users:
   - RW: Select this option to assign read/write access.
   - R: Select this option to assign read-only access.
   - No: Select this option if you do not want to share a specific file folder.
2. Click Save Permission to apply the changes.

Refer to the following for the descriptions of the fields:

- Guest Login: By enabling [Guest Login], any user in your local network can access your network place (AFP) without authentication.
- Safely Remove Disk: Click to safely remove the disk. When the USB disk is ejected successfully, the USB status shows 'No device '.
- Click Save Permission.

2.4.2.7 NFS

Network File System Server is used to share the USB disk with clients via network. Clients can mount the remote disk to a local directory for a faster speed than using a Samba server.



To setup NFS:

1. From the navigation panel, go to Advanced > Services > NFS.
2. Connect an external USB hard disk drive or USB flash drive to your WiFi Router, and your device will be displayed here.
3. Enable NFS: Enable or disable NFS service. When disabled, users can't access the USB storage via the NFS service.
4. Clients: "Clients" are users who can access the shared partition specified. You can input the proper information into the input field to allow the clients to access the specified shared partition. The proper permission format is "IP address, Read and write permission" and if you want to set more than one clients and with different permission, you can input the information separated by ";". For read and write permissions, "ro" means "read only" permission and the "rw" means " read and write" permission. The IP address can be replaced by "*" and means all IPs. For example,

   1) Let the clients with the IP address 192.168.1.2 access the partition with "read and write" permission.
   2) Let two clients access the shared partition. The client with IP address 192.168.1.2 has "read only" permission, and the client with IP address 192.168.1.3 has "read and write" permission. > 192.168.1.2,ro;192.168.1.3,rw

3) Let clients access the destination shared partition with the "read only" permission. > *,ro

5. Safely Remove Disk: Click to safely remove the disk. When the USB disk is ejected successfully, the USB status shows 'No device '.

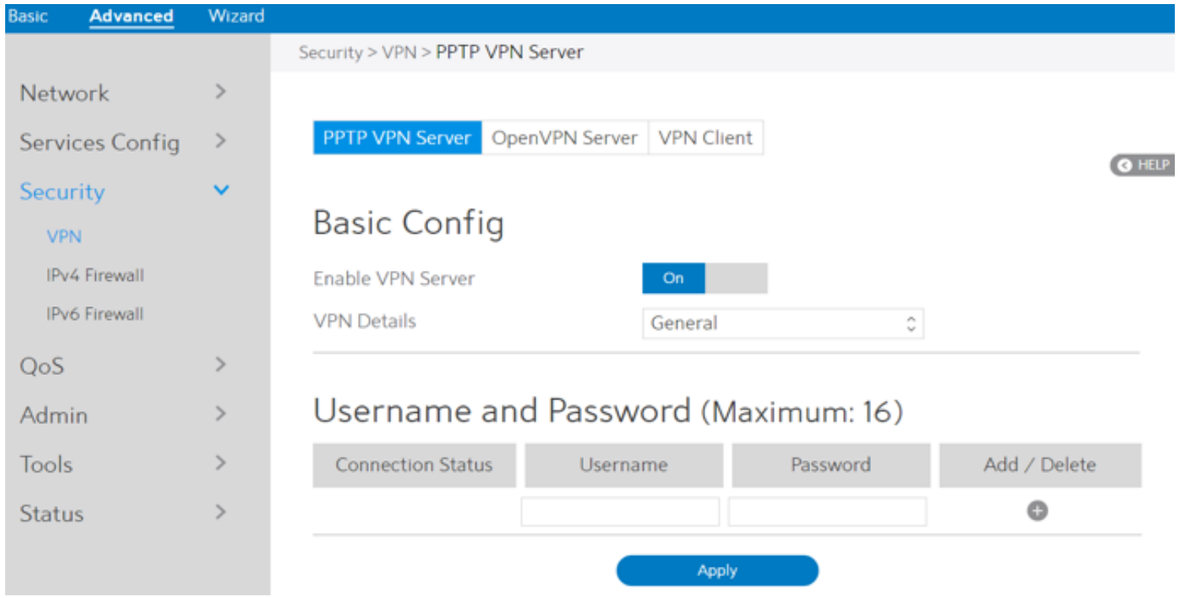
2.4.3 Security

2.4.3.1 VPN

VPN (Virtual Private Network) provides a secure communication to a remote computer or remote network using a public network such as the Internet.

2.4.3.1.1 PPTP VPN Server

The VPN server lets administrator get access to home network anytime, anywhere.

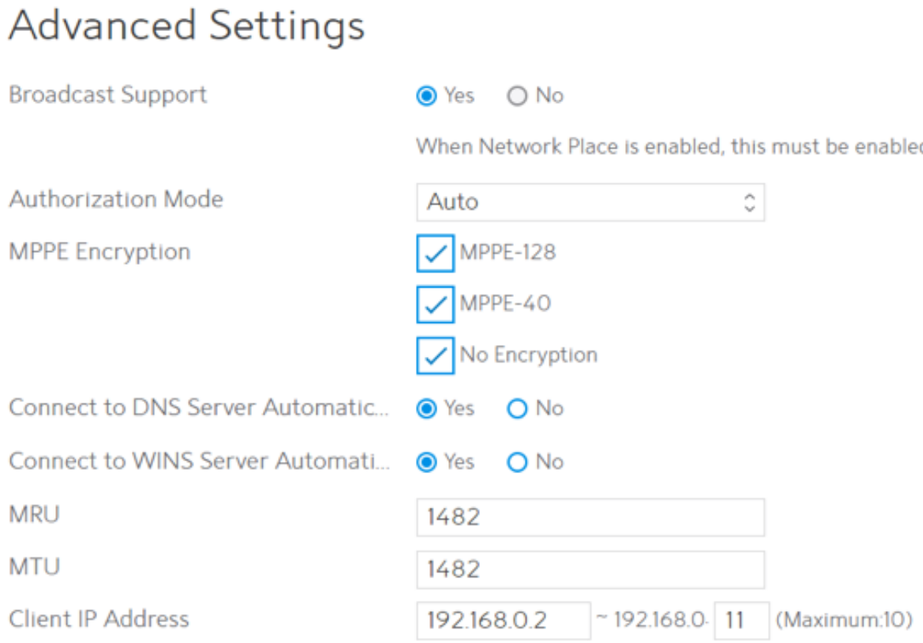


NOTE: Before setting up a VPN connection, you need the IP address or domain name of the VPN server you are trying to access.

Steps to set up access to PPTP VPN server:

1. From the navigation panel, go to Advanced > Security > VPN > PPTP VPN Server.
   - Enable VPN Server: Enable or disable PPTP VPN Server.
   - VPN Details: The details of PPTP VPN Server. Select General or Advanced settings.
   - Username and Password: The user information of PPTP VPN Server. Input the user name and password for the VPN server and click the ⊕ button.

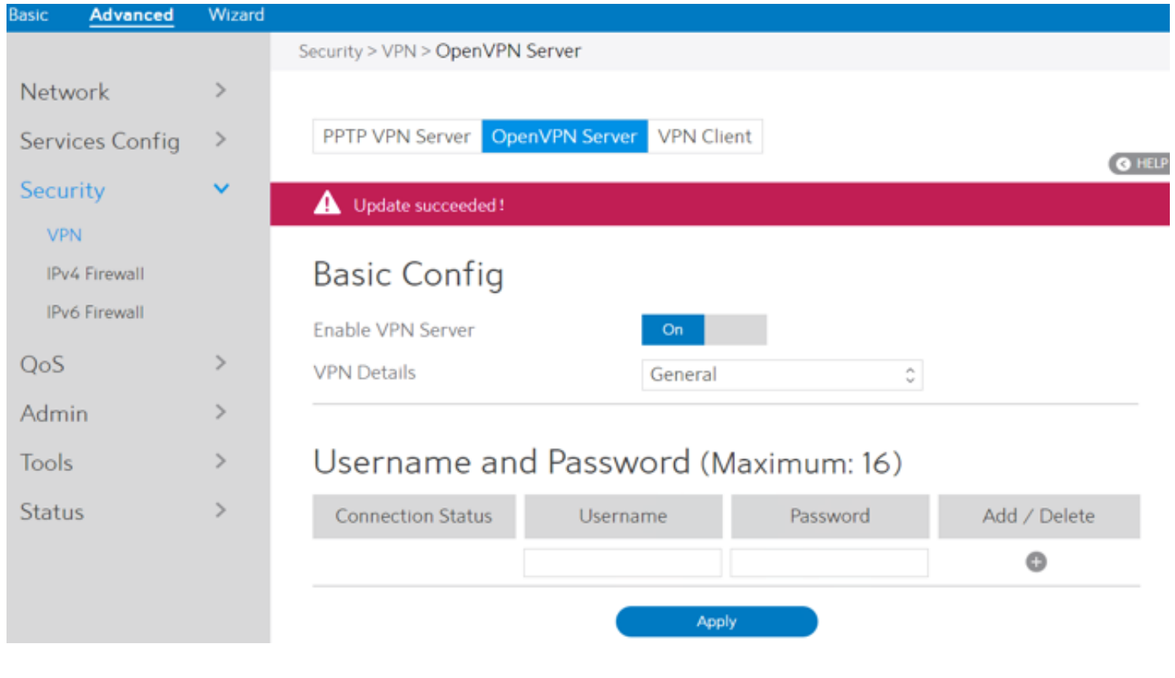
2. Advanced VPN server settings, as below.



- Broadcast Support: Turns on broadcast relay to clients from the WiFi Router.
- Authorization Mode: Select Authorization Mode.
- MPPE Encryption: Select MPPE Encryption type.
- Connect to DNS Server Automatically: DNS of PPTP clients.
- Connect to WINS Server Automatically: WINS of PPTP clients.
- MRU/MTU: The Maximum Receive Unit (MRU) or Maximum Transmission Unit (MTU) sizes are sent to the client as part of the PPTP parameters to use during the PPTP session. We recommend that you do not change MTU or MRU values sure the change from the known problem with your PPTP sessions correctly. Incorrect MTU or MRU values cause traffic through the PPTP VPN to fail.
- Client IP Address: The IP address range of PPTP clients.
- Click Apply.

2.4.3.1.2 OpenVPN Server

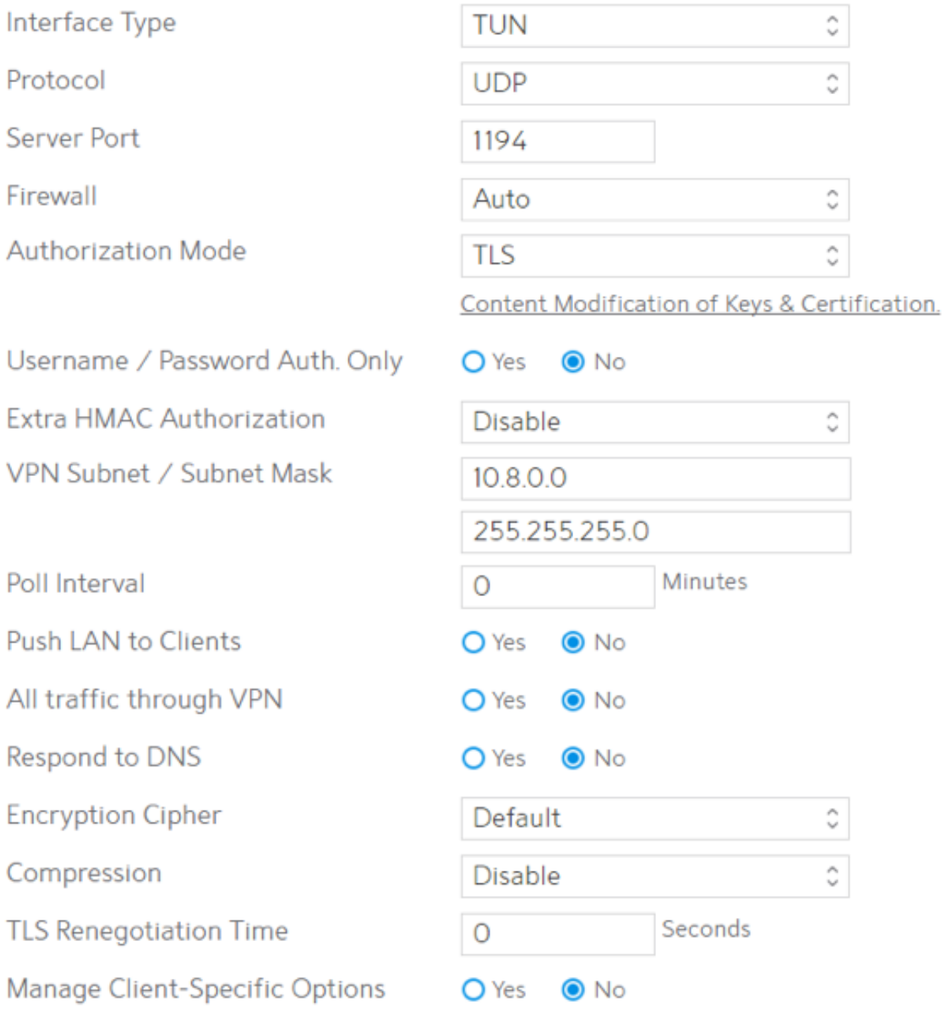
The VPN server lets administrator get access to home network anytime, anywhere.



Steps to set OpenVPN Server:

1. From the navigation panel, go to Advanced > Security > VPN > OpenVPN Server.
   - Enable VPN Server: Enable or disable OpenVPN server function.
   - VPN Details: Enter the details of your VPN server. Select General or Advanced settings.
   - Username and Password: The user information of OpenVPN server. Input the user name and password for the VPN server and click the button.
2. Advanced VPN server settings:

Advanced Settings

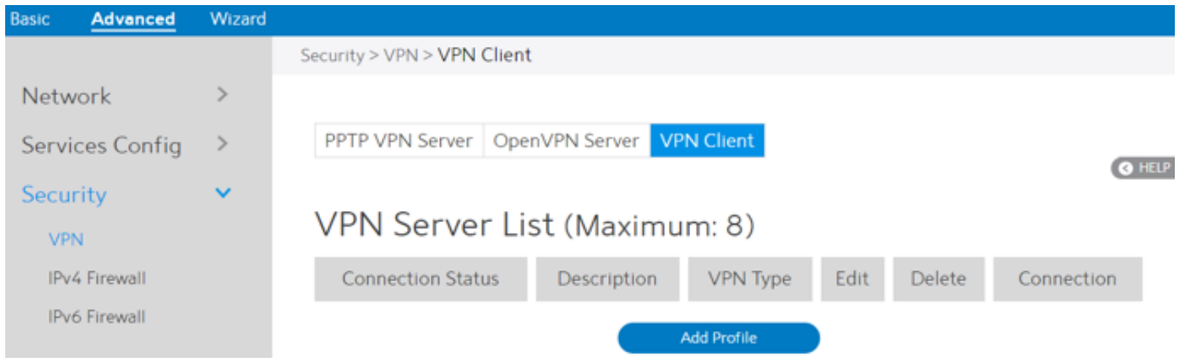


- Interface Type: "TUN" will create a routed IP tunnel, "TAP" will create an Ethernet tunnel.
- Protocol: TCP or UDP server.
- Server Port: The TCP/UDP port which OpenVPN server will listen on.
- Firewall: Firewall configuration for VPN server. Auto will create complete firewall configurations, External only will create basic firewall configurations and Custom will not create any firewall configurations.
- Authorization Mode: Select Authorization Mode.

- Username / Password Auth. Only: Yes requires only username and password for authentication, No also requires authentication certificate.
- Extra HMAC Authorization: If enabled, a tls_auth key will be used on the server. Every client must also have the key.
- VPN Subnet / Subnet Mask: VPN subnet and subnet mask settings.
- Poll Interval: The interval time for crontab of VPN server starting.
- Push LAN to Clients: Push routes to the client to allow it to reach other private subnets behind the server.
- All traffic through VPN: If enabled, this directive will configure all clients to redirect their default network gateway through the VPN, causing all IP traffic such as web browsing and DNS lookups to go through the VPN.
- Respond to DNS: Push DNS to clients.
- Encryption Cipher: Select a cryptographic method. This configure item must be copied to the client configure file as well.
- Compression: Enable compression on the VPN link. If this function is enable here, in the client configure administrator also should enable it.
- TLS Renegotiation Time: After a period of time, authentication is required again.
- Manage Client-Specific Options: To assign specific IP addresses to specific clients or if a connecting client has a private subnet behind it that should also have VPN access, enable this option.
- Click Apply.

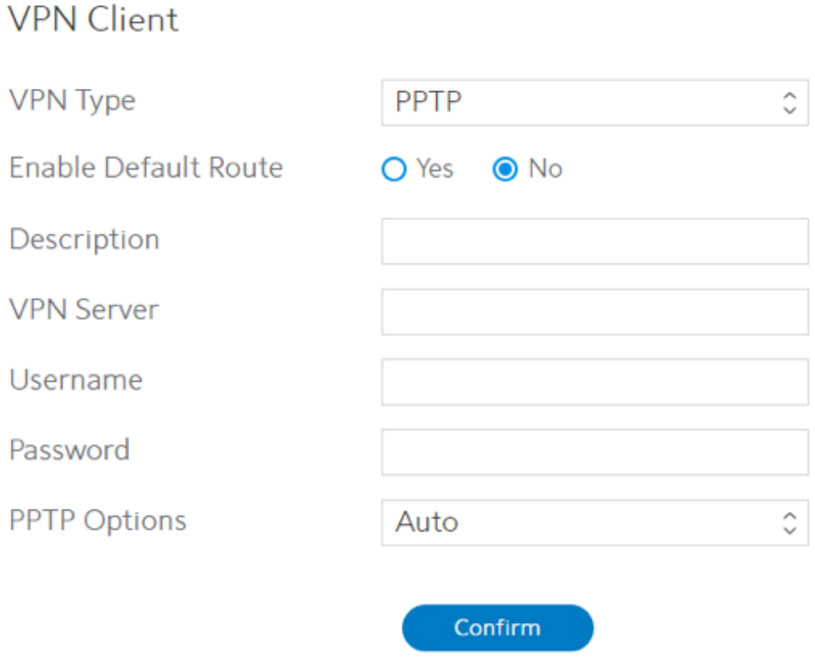
2.4.3.1.3 VPN Client

View the VPN server list and add profiles. There are three types of VPN servers: PPTP, L2TP and Open VPN.



Steps to setup a VPN Client:

1. From the navigation panel, go to Advanced > Security > VPN > VPN Client.
2. VPN Sever list is displayed. Click Add Profile to set up VPN Client.



3. VPN Server List: Current VPN Services which have been configured.
4. VPN Type: Type of VPN Server access such as PPTP, L2TP and OpenVPN.

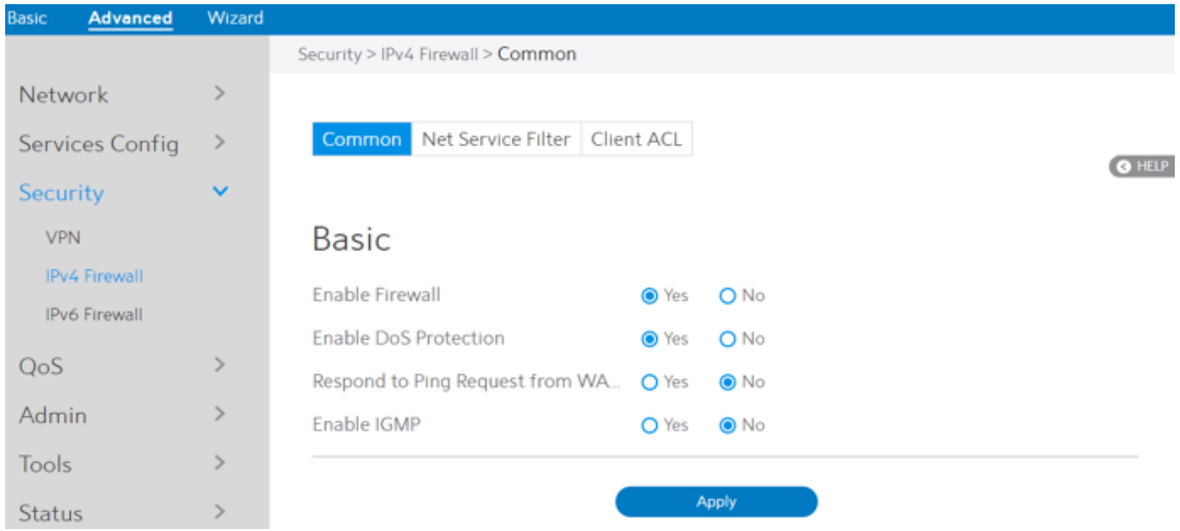
5. Enable Default Route: Check [Yes] to use default route acquiring from VPN Server. Check [No] to use general default route.
6. Description: Enter a description for reference.
7. VPN Server: VPN Server IP address or URL.
8. Username: VPN authentication username.
9. Password: VPN authentication password.
10. PPTP Options: PPTP Encryption method. Select Auto for automatic Microsoft Point-to-Point Encryption (MPPE) and select No Encryption to disable MPPE. Select MPPE 40 for 40-bit MPPE with PPTP Server and select MPPE 128 for 128-bit MPPE with PPTP Server.
11. When done, click Confirm.

2.4.3.2 IPv4 Firewall

Enable the firewall to protect local area network against attacks from outside. Firewall filters the incoming and outgoing packets based on rules.

NOTE: Firewall is enable by default.

2.4.3.2.1 Common

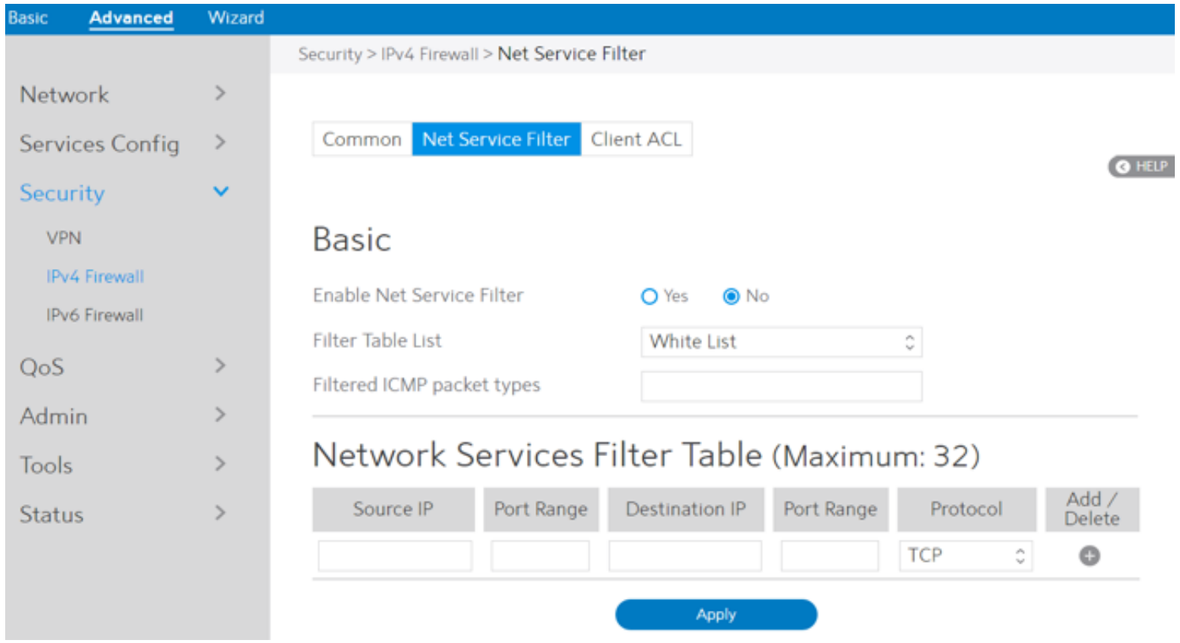


Steps to set up basic Firewall settings:

1. From the navigation panel, go to Advanced > Security > IPv4 Firewall > Common.
2. Enable Firewall: Disabling the firewall will deactivate all related functions.
3. Enable DoS Protection: A "denial-of-service" attack is an explicit attempt to deny legitimate users from using a service or computer resource. Enabling this feature can protect the WiFi Router from DoS attack but it would increase the WiFi Router's workload.
4. Respond to Ping Request from WAN: This feature lets WiFi Router make a response to ping request from WAN.
5. Enable IGMP: Check [Yes] to allow IGMP packages to be transferred to the WiFi Router. Check No to deny IGMP packages.
6. Click Apply.

2.4.3.2.2 Net Service Filter

Net Service Filter can work in either White List or Black List mode. When running in White List mode, it only lets certain packets get through the WiFi Router. While in Black List mode, it only blocks certain packets passthrough.



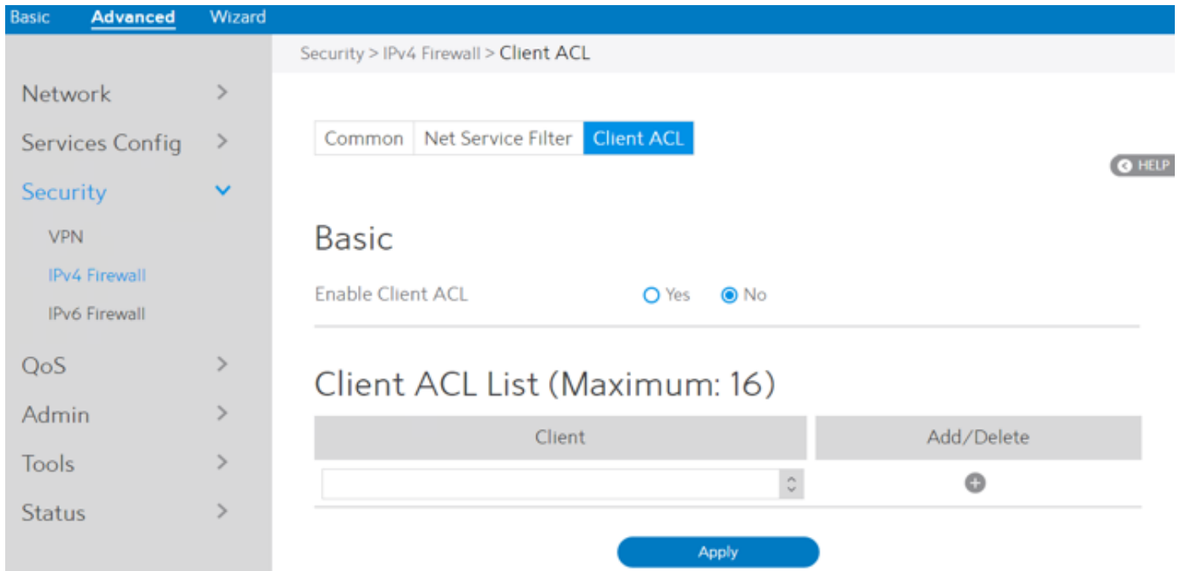
Steps to set Net Service Filter:

1. From the navigation panel, go to Advanced> Security> IPv4 Firewall> Net Service Filter.
2. Enable Net Service Filter: Enable or disable this module.
3. Filter Table List: There are two kinds of filter list: White List, Black List. White List can make WiFi Router serve the specified service defined in the list, Black List make WiFi Router deny serving the specified service.
4. Filtered ICMP packet types: This field defines a list of LAN to WAN ICMP packets type that will be filtered. For example, if you would like to filter Echo (type 8) and Echo Reply (type 0) ICMP packets, you need to enter a string with numbers separated by blank, such as [0 8].
5. Source IP: For source or destination IP address, you can:
   (a) enter a specific IP address such as "192.168.122.1";
   (b) enter IP addresses within one subnet or within the same IP pool such as "192.168.123.*" or "192.168.*.*";
   (c) enter all IP addresses as "*.*.*.*".

6. Port Range:
   For source or destination port range, you can either:
   a) enter a specific port, such as "95";
   b) enter ports within a range such as "103:315", ">100", or "<65535".
7. Destination IP: For source or destination IP address, you can:
   a) enter a specific IP address such as "192.168.122.1";
   b) enter IP addresses within one subnet or within the same IP pool such as "192.168.123.*" or "192.168.*.*"
   c) enter all IP addresses as "*.*.*.*".
8. Port Range:
   For source or destination port range, you can either:
   a) enter a specific port, such as "95";
   b) enter ports within a range, such as "103:315", ">100", or "<65535".
9. Protocol: The protocol of service used to transport the packages. (UDP, TCP)
10. Add/Delete: Click ⊕ or ⊖ to add/delete the profile.
11. When done, click Apply.

2.4.3.2.3 Client ACL

Client ACL can forbid the client from accessing to the WiFi Router. The client in the Client ACL List can't visit the resource of WiFi Router and the internet.

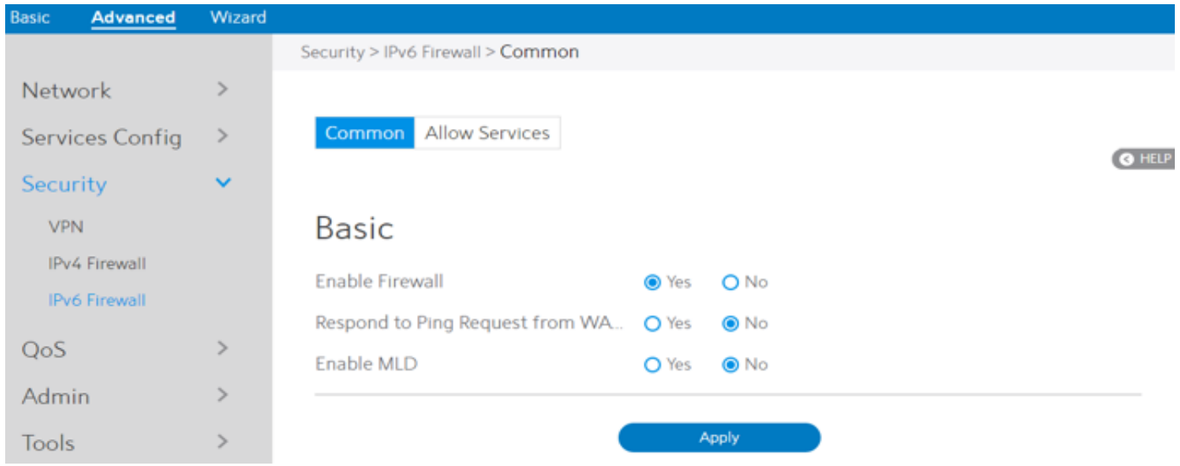


Steps to set up Client ACL:

1. From the navigation panel, go to Advanced> Security> IPv4 Firewall> Client ACL.
2. Enable Client ACL: Enable or disable Client ACL function.
3. Client: MAC address of LAN-side devices.
4. Add/Delete: Click ⊕ or ⊖ to add/delete the profile.
5. When done, click Apply.

2.4.3.3 IPv6 Firewall

2.4.3.3.1 Common

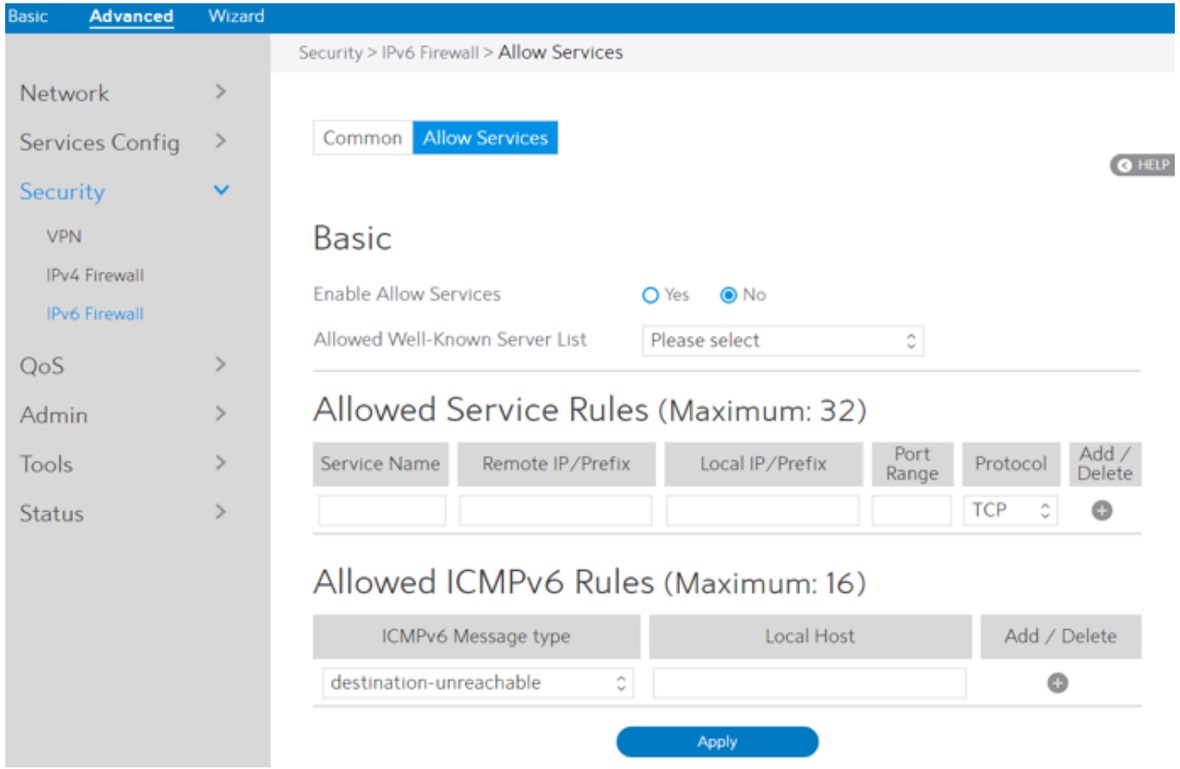


Steps to set up common IPv6 Firewall:

1. From the navigation panel, go to Advanced > Security >IPv6 Firewall > Common.
2. Enable Firewall: Enable or disable the IPv6 firewall. When disabled, all IPv6 packages can input WiFi Router, output WiFi Router and forward without any limitation.
3. Respond to Ping Request from WAN: This feature lets WiFi Router make a response to ping request from WAN.
4. Enable MLD: Check [Yes] to allow MLD packages to be transferred to the WiFi Router.
   Check [No] to deny MLD packages.
5. Click Apply.

2.4.3.3.1 Allow Services

Allow Services allows various types of service rules including protocol like TCP/UDP and ICMPv6 Message Type. It will allow certain packets and drop the other IPv6 packets from WAN-side to LAN-side.



Steps to set up IPv6 Firewall:

1. From the navigation panel, go to Advanced > Security > IPv6 Firewall > Allow Services.
2. Enable Allow Services: Enable or disable the IPv6 Allow Services feature. When Allow Services is enabled, the Allowed Service Rules will be allowed.
3. Allowed Well-Known Server List: List of well-known servers to be allowed. For example: ftp, samba.
4. Service Name: The name of the service which will add IPv6 firewall rule.
5. Remote IP/Prefix: IPv6 address or Prefix of a remote server.
6. Local IP/Prefix: IPv6 address or Prefix of a LAN-side client.
7. Port Range: Port range accepts various formats such as Port Range (300:350), individual ports (566,789) or Mix (1015:1024, 3021).

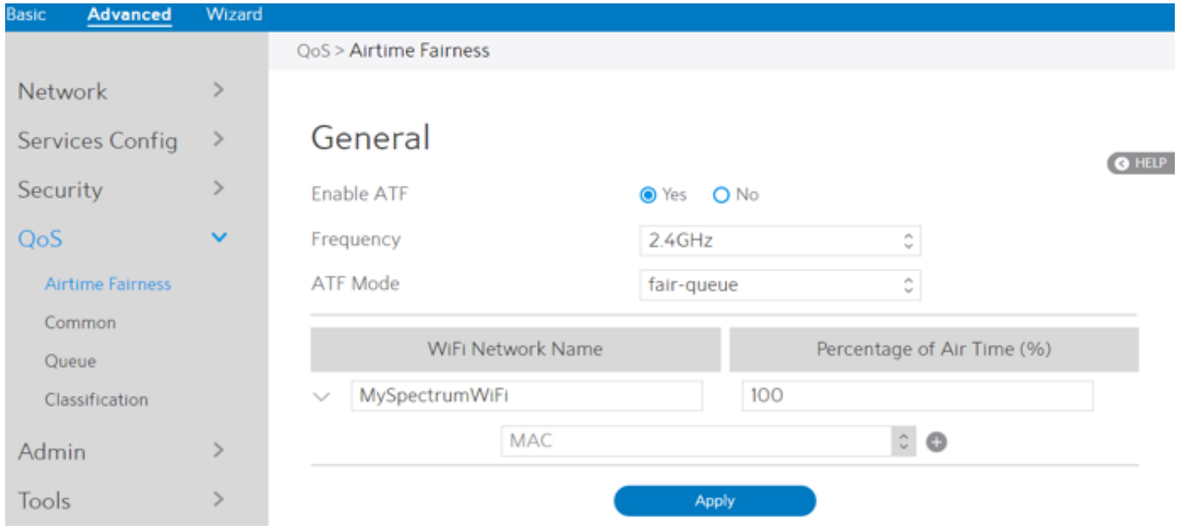
8. Protocol: The protocol the service uses to transport the packages e.g. (UDP, TCP).
9. ICMPv6 Message Type: Make WiFi Router process the defined types of ICMPv6 packet from specified host.
10. Local Host: IPv6 address of the host.
11. Add/Delete: Click ⊕ or ⊖ to add/delete the profile.
12. When done, click Apply.

2.4.4 QoS

QoS(Quality of Service, QoS) module provides different services according to the priority of applications, users, or data flows. In a word, it can guarantee a certain level of performance to a data flow.

2.4.4.1 Airtime Fairness

The ATF(Airtime Fairness, ATF) module supports mixing rates of WiFi devices to achieve better performance in busy/intense environments.



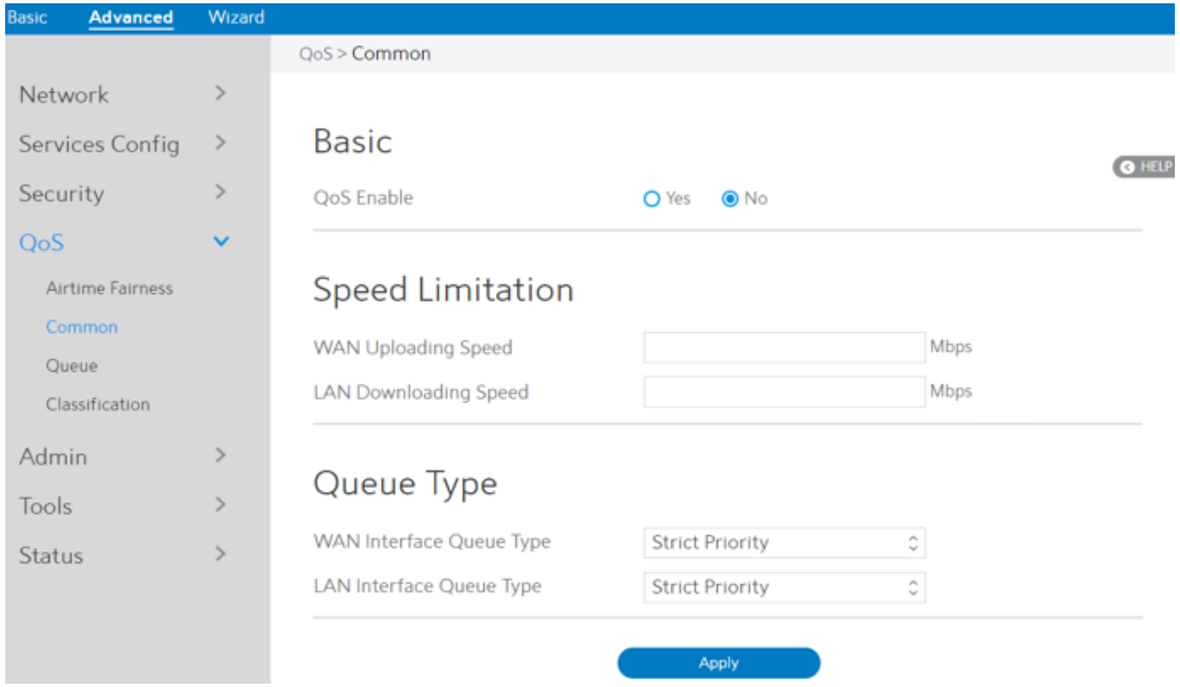
Steps to set ATF:

1. From the navigation panel, go to Advanced > QoS > Airtime Fairness.
2. Enable ATF: Enable or disable. ATF require primarily focuses on scheduling fairness for transmission of traffic from Access Point (AP), and efficient WiFi bandwidth utilization.
3. Frequency: In the frequency field, select the frequency band that you want to use for the ATF settings.
4. ATF Mode:
   Airtime Fairness implements 2 scheduling algorithms:
   strict-queue and fair-queue algorithm, which are mutually exclusive. Strict-queue algorithm follows strict airtime allocation as configured by the user and does not try and utilize any unused bandwidth. Fair-queue algorithm guarantees the configured airtime in congested environments and it also utilizes any unused bandwidth.
5. WiFi Network Name: Set the network name (SSID) which will be controlled by ATF.

6. Percentage of Air Time: Set the percentage of SSID which will be used for ATF control.
7. MAC: Select client by MAC address and set the percentage which will be used for ATF control.
8. Click Apply.

2.4.4.2 Common

Set up queue and down queue type, decided in the queue page we can operate the type of queue, and set uplink and downlink limit, limit our uplink and downlink transmission rate.



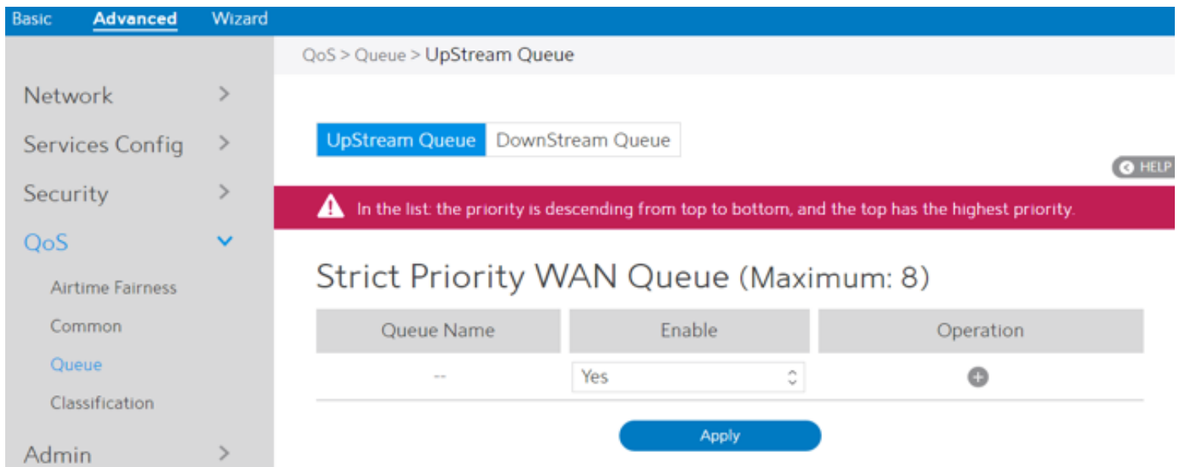
Steps to set it:

1. From the navigation panel, go to Advanced > QoS > Common.
2. QoS Enable: Set the switch of CPE QoS function through Web page.
3. WAN Uploading Speed: The speed of the uplink data limit.
4. LAN Downloading Speed: The downstream limit of the subnet LAN.
5. WAN Interface Queue Type: Upstream Qos queue type, should to be set (Strict Priority / Weighted Round Robin / Weighted Fair Queuing).
6. LAN Interface Queue Type: Downstream Qos queue type should to be set (Strict Priority / Weighted Round Robin / Weighted Fair Queuing), For Subnet LAN.
7. Click Apply.

2.4.4.3 Queue

Create an upstream queue and a downstream queue to classify traffic of different types into the upstream or downstream queue. Up queue and down queue type based on common page selection. In the queue page on the queue. Add, delete, modify.

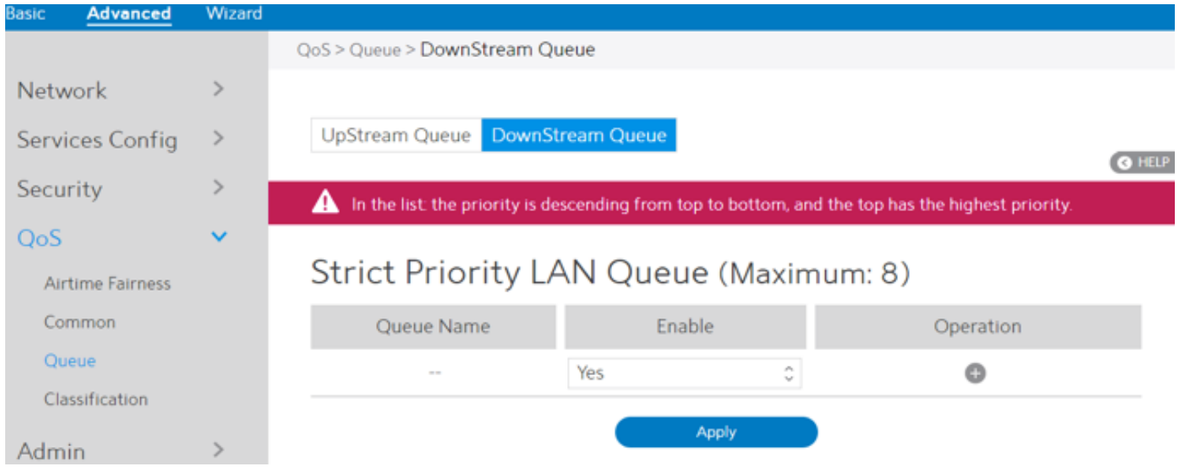
2.4.4.3.1 UpStream Queue



Steps to set queue:

1. From the navigation panel, go to Advanced > QoS > Queue > UpStream Queue.
2. Enable: Enables or disables this queue.
3. Weight: Weight of this queue in case of Weighted Round Robin or Weighted Fair Queuing, but only used for queues of equal precedence.
4. Operation: Add, Edit or Delete operation for this item.
5. Click Apply.

2.4.4.3.2 DownStream Queue

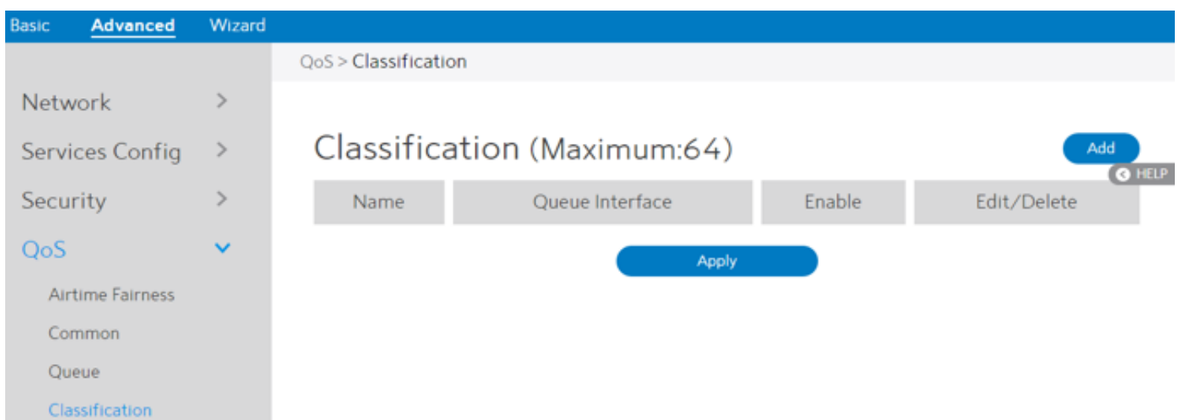


Steps to set queue:

1. From the navigation panel, go to Advanced > QoS > Queue > DownStream Queue.
2. Enable: Enables or disables this queue.
3. Weight: Weight of this queue in case of Weighted Round Robin or Weighted Fair Queuing, but only used for queues of equal precedence.
4. Operation: Add, Edit or Delete operation for this item.
5. Click Apply.

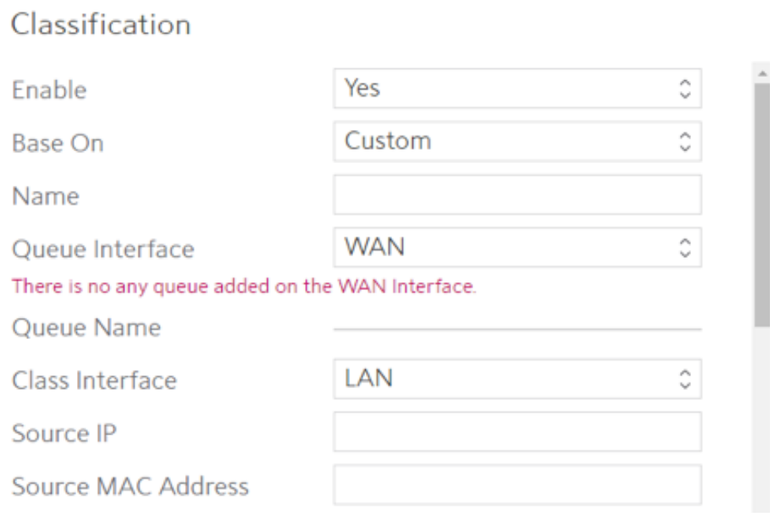
2.4.4.4 Classification

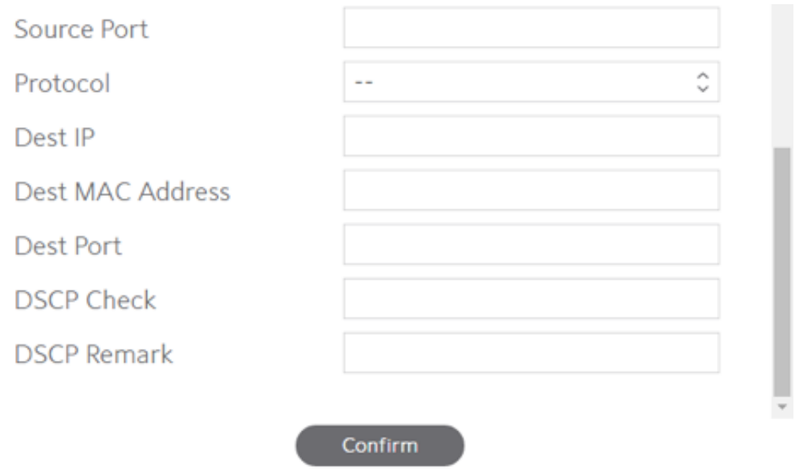
According to the characteristics of the data flow, traffic is classified and then queued to the specified upstream or downstream queues.
Classification Display page:
Display classification table (Simple information).



Steps to set up Classification:

1. From the navigation panel, go to Advanced > QoS > Classification.
2. Classification is displayed. Click Add to set up.
3. Name: Classification name.
4. Queue Interface: The queue that represents the current entry selection.
5. Enable: Display the entry's status.
6. Edit/Delete: Modify or delete this entry.



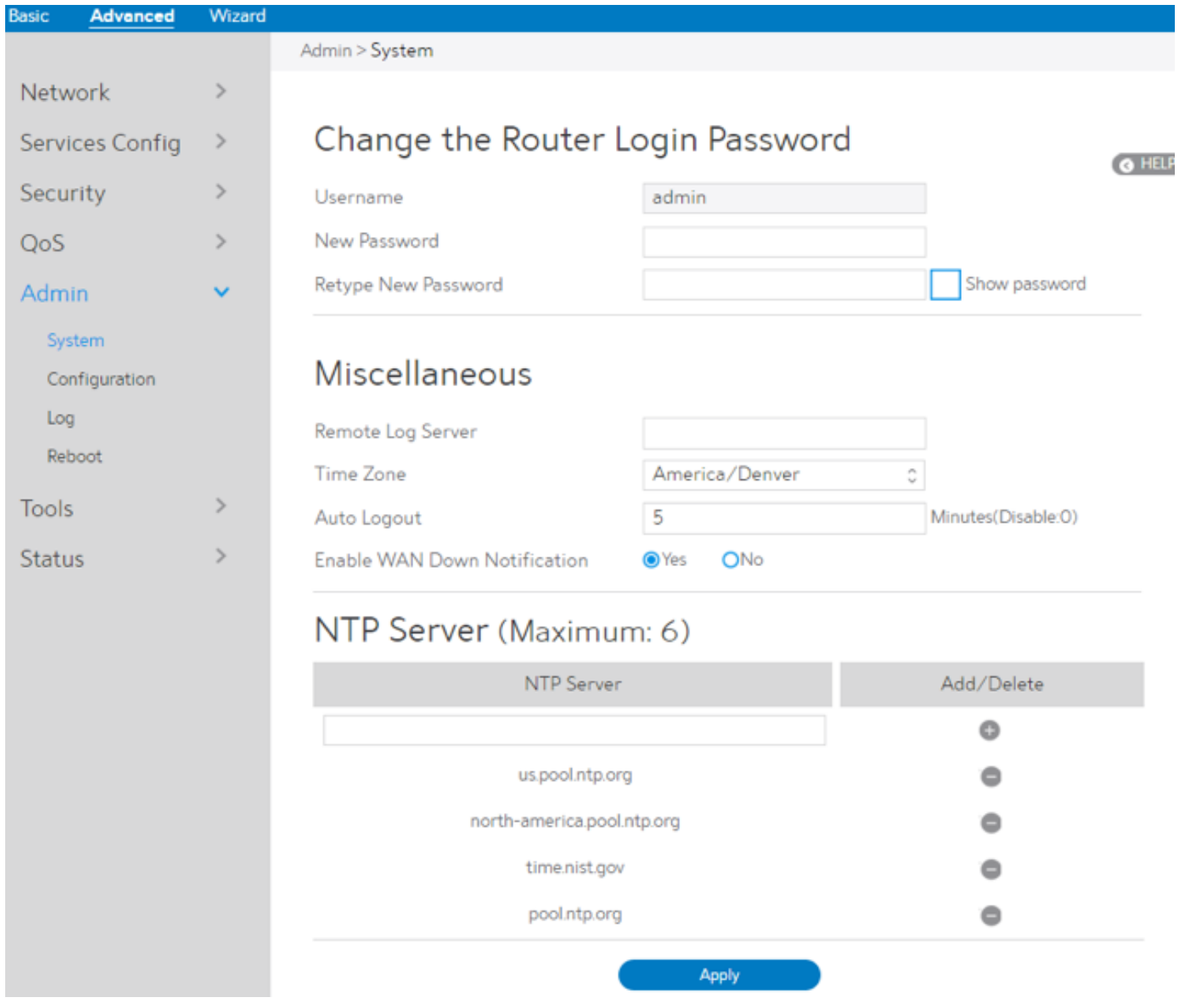


7. Enable: Disable or enable this classification function.
8. Base On: It is a fast classification, (can be based on Client, Custom, Server, SSID, APP).
9. Name: Define this classification alias name.
10. Queue Interface: Select the existing queue (upstream or downstream).
11. Queue Name: Only display. Indicates the index number of the queue type selected by the user.
12. Class Interface: This specifies the ingress interface associated with the entry.
13. Source IP: Source IP address. An empty string indicates this criterion is not used for classification.
14. Source MAC Address: Source MAC Address. An empty string indicates this criterion is not used for classification.
15. Source Port: Source port number
16. Protocol: Protocol
17. Dest IP: Destination IP address, an empty string indicates this criterion is not used for classification.
18. Dest MAC Address: Destination MAC Address. An empty string indicates this criterion is not used for classification
19. Dest Port: Destination port number.
20. DSCP Check: DSCP number (0~63), base on it filter.
21. DSCP Remark: Remark new DSCP number.
22. When done, click Apply.

2.4.5 Admin

2.4.5.1 System

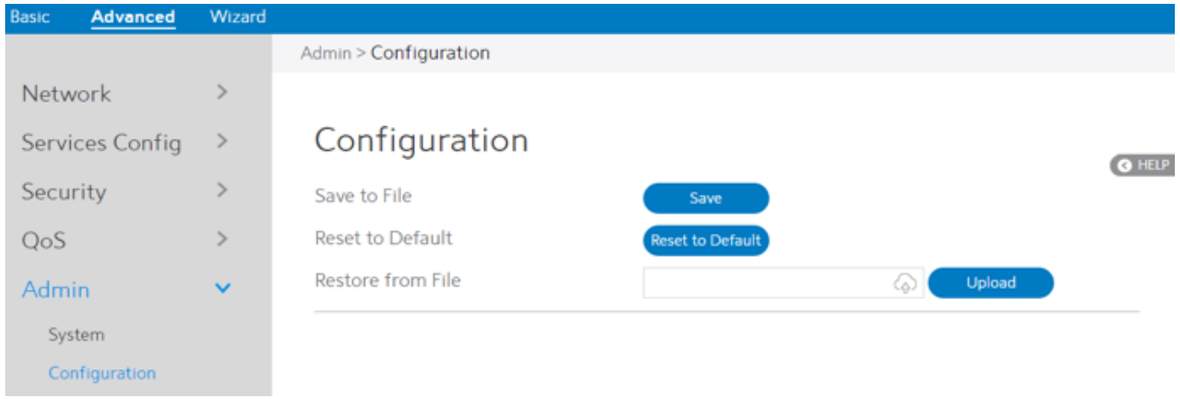
The System page lets you configure your WiFi Router settings.The Web GUI sign in password is the same as SSH sign in password.



Steps to set System:

1. From the navigation panel, go to Advanced > Admin > System.
2. Username: WiFi Router's sign in name.
3. New Password: New password.
4. Retype New Password: Retype new password.
5. Remote Log Server: IP address of a syslog server to which log messages will be sent in addition to the local destination.
6. Time Zone: Default time-zone is America/Denver.
7. Auto Logout: Auto sign out after a specified time.
8. Enable WAN Down Notification: When there is no Internet access, redirect to local notification.
9. NTP Server: WiFi Router can access a NTP (Network Time Protocol) server in order to synchronize the time automatically.
10. Click Apply.

2.4.5.2 Configuration

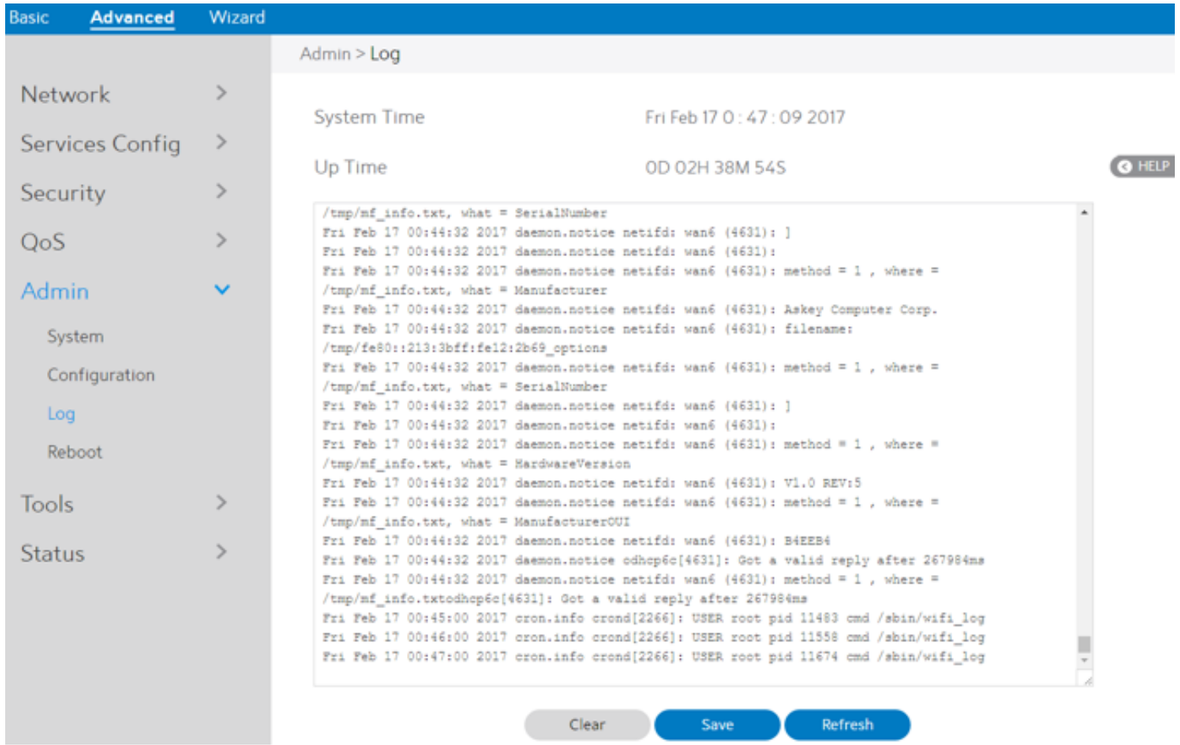


Steps to Save to File, Reset to Default and Restore from File WiFi Router's configuration:

1. From the navigation panel, go to Advanced > Admin > Configuration.
2. Click Save, and then the browser will automatically download WiFi Router's setting files.
3. Click Reset to Default, this will this resets all settings to factory default settings.
4. Click to select setting file, the click Upload button, this will make the WiFi Router to be set.

2.4.5.3 Log

System Log contains logs on network activities in the WiFi Router.

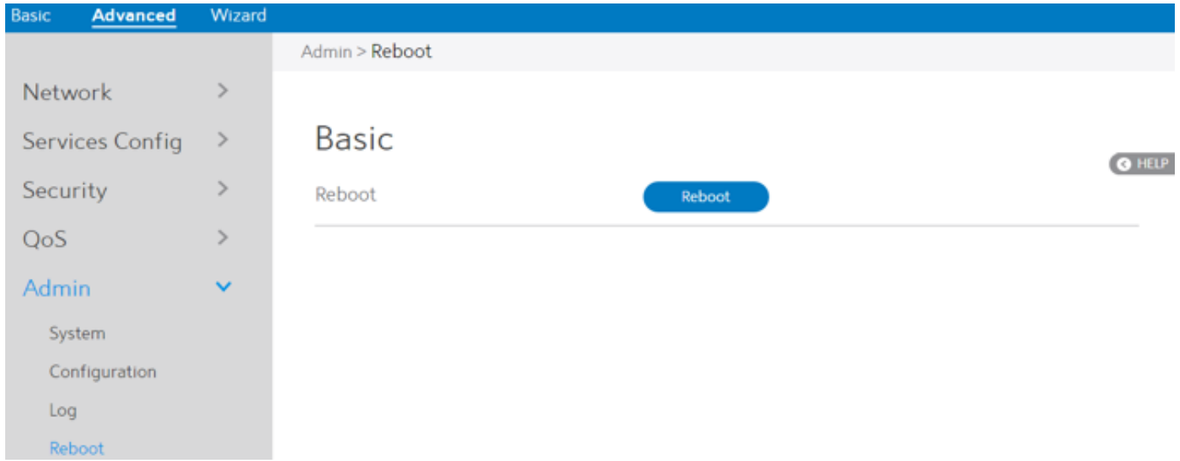


Steps to set System log:

1. From the navigation panel, go to Advanced > Admin > Log.
2. Clear: Clear contents in log file.
3. Save: Download log file from WiFi Router.
4. Refresh: Refresh the log window to show the latest log.

2.4.5.4 Reboot

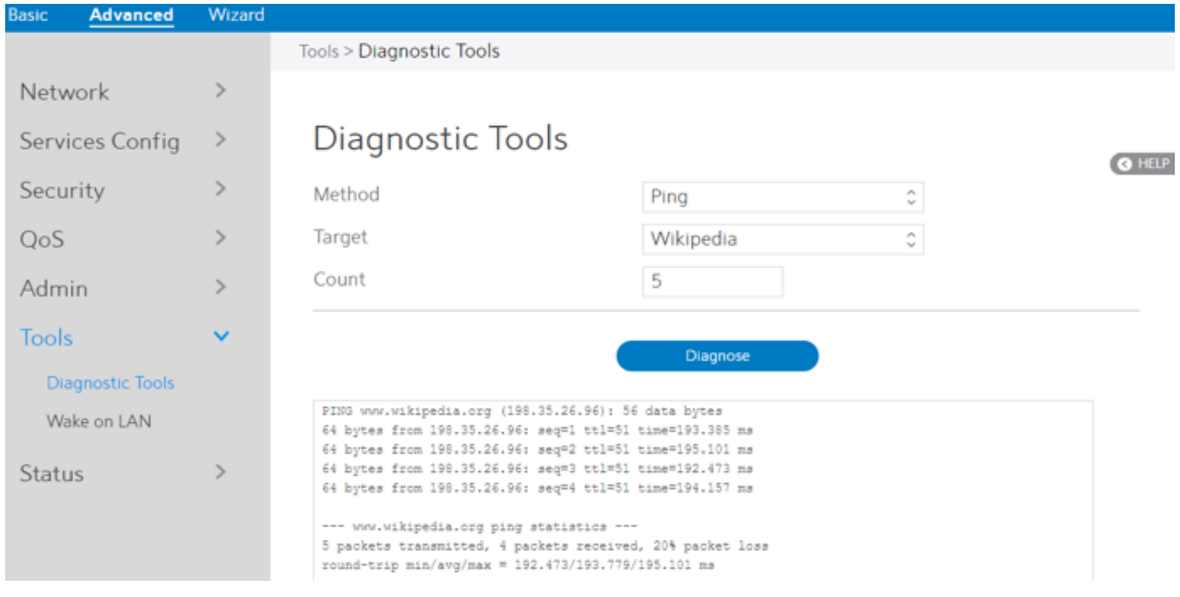
Click the Reboot button, the WiFi Router will restart.



2.4.6 Tools

2.4.6.1 Diagnostic Tools

Various diagnostic tools are available such as ping, ping6, traceroute and nslookup.

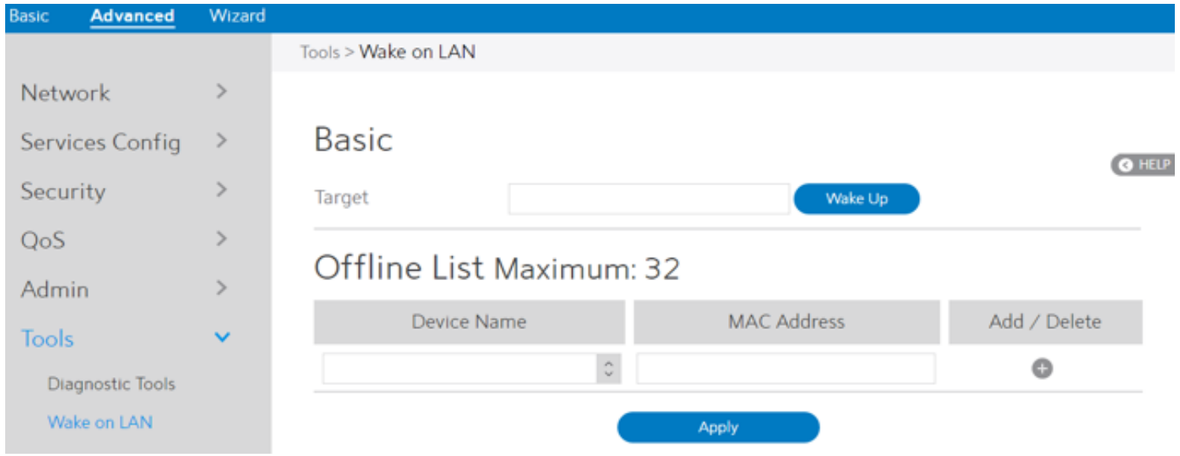


Steps to use Diagnostic Tools:

1. From the navigation panel, go to Advanced> Tools> Diagnostic Tools
2. Method: Choose a specified method to test network.
3. Target: Choose target for the test.
4. Count: Number of times to test.
5. Click Diagnose.

2.4.6.2 Wake on LAN

Wake on LAN is a power management function. It lets network admins wake up LAN side devices from standby or hibernation mode. This function requires motherboard support on LAN-side devices.



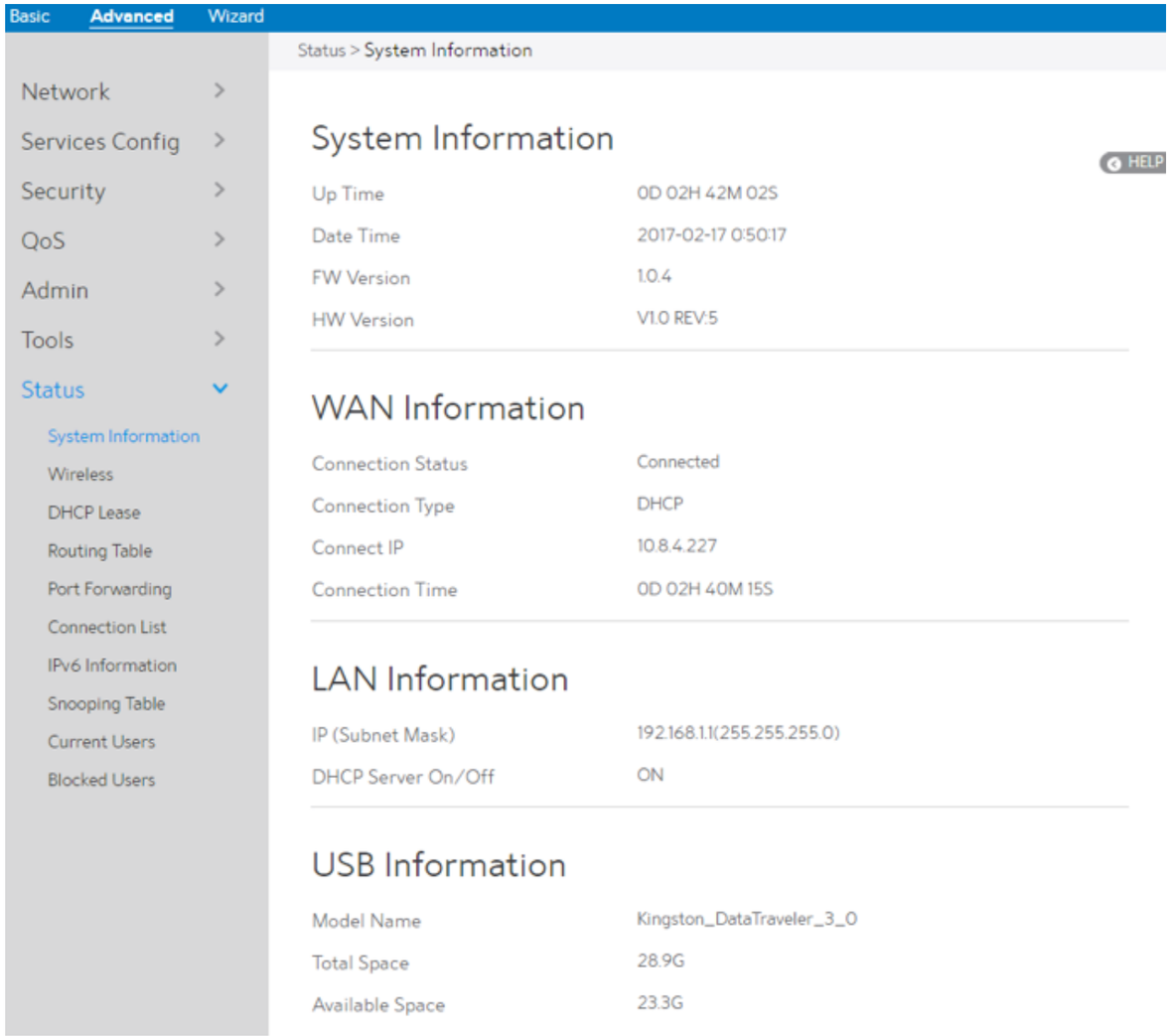
Steps to set Wake on LAN:

1. From the navigation panel, go to Advanced> Tools> Wake on LAN.
2. Target: Enter the MAC address of the device to be woken up, or select the device name from the list.
3. Device Name: Name of device.
4. MAC Address: The format for the MAC address is six groups of two hexadecimal digits, separated by colons (:), in transmission order (e.g. 12:34:56:aa:bc:ef).
5. When done, click Apply.

2.4.7 Status

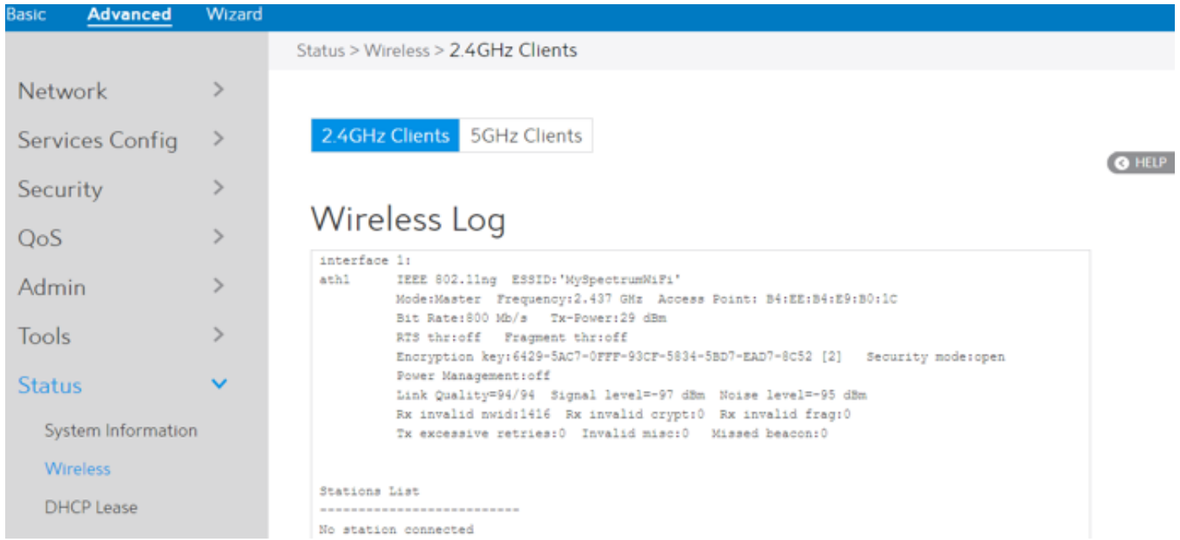
2.4.7.1 System Information

System Information displays basic System, WAN, LAN and USB information.
From the navigation panel, go to Advanced > Status > System Information.



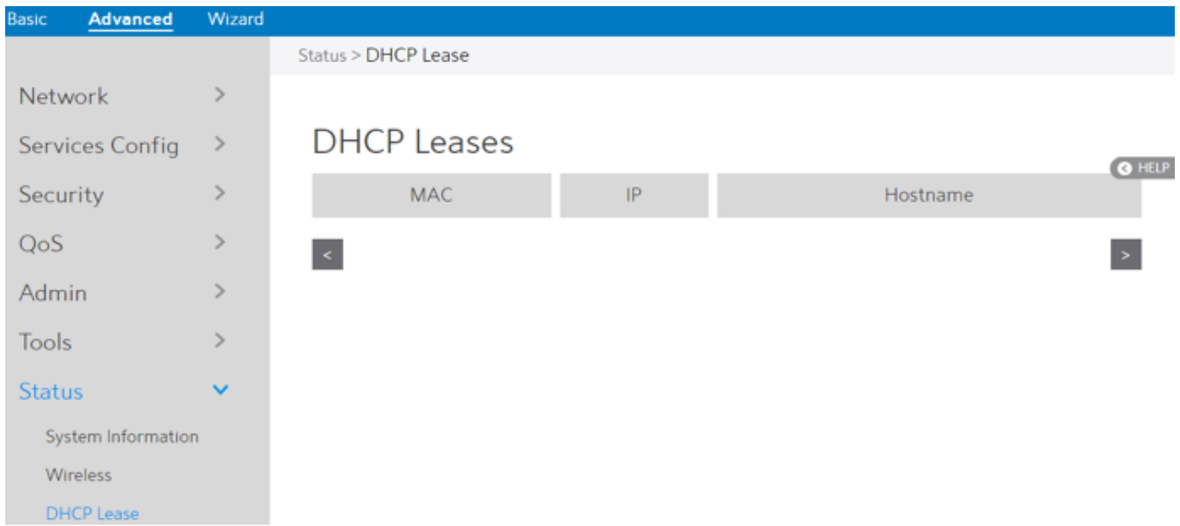
2.4.7.2 Wireless

Wireless shows status information for wireless clients.
From the navigation panel, go to Advanced > Status >Wireless.



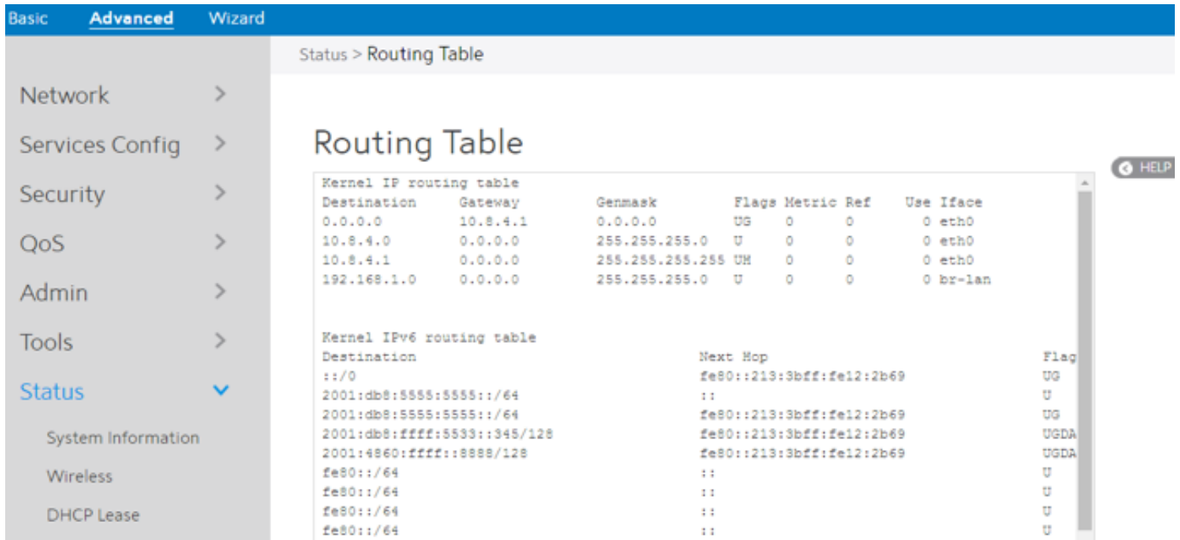
2.4.7.3 DHCP Lease

Show DHCP Lease status information, including MAC, IP and Hostname information.
From the navigation panel, go to Advanced > Status > DHCP Lease.



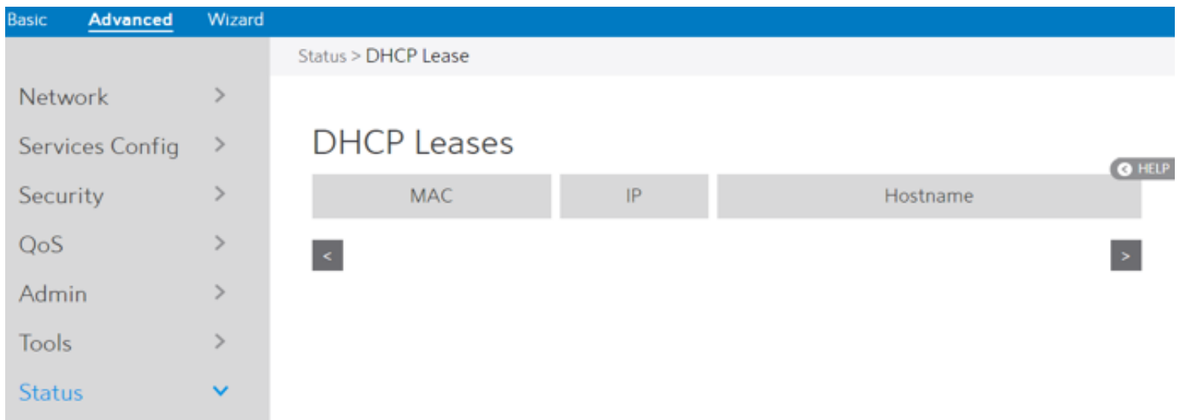
2.4.7.4 Routing Table

Show IPv4 and IPv6 routing table and status information.
From the navigation panel, go to Advanced > Status > Routing Table.



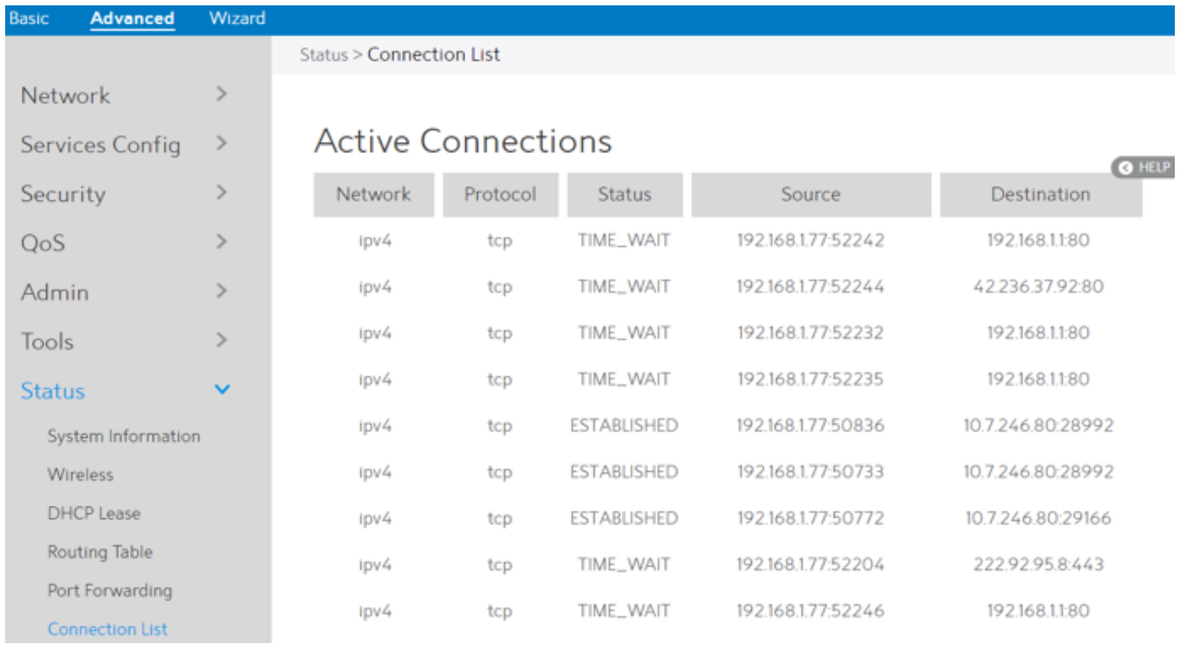
2.4.7.5 Port Forwarding

This module is used to show the WiFi Router's port forwarding rules information, which contains both Port Forwarding module's rules and UPnP module's rules.
From the navigation panel, go to Advanced > Status > Port Forwarding.



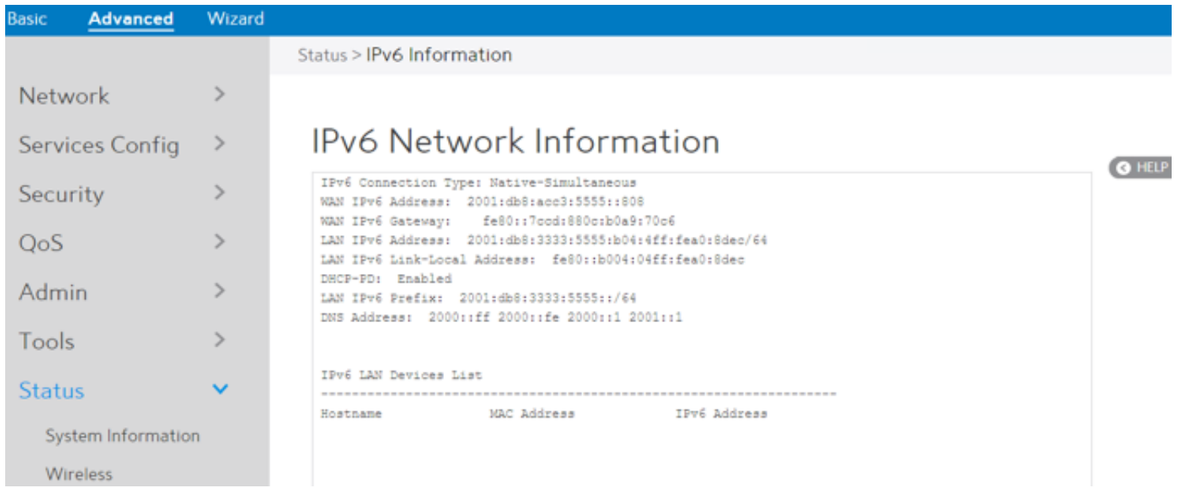
2.4.7.6 Connection List

Show active connections status information.
From the navigation panel, go to Advanced > Status > Connection List.



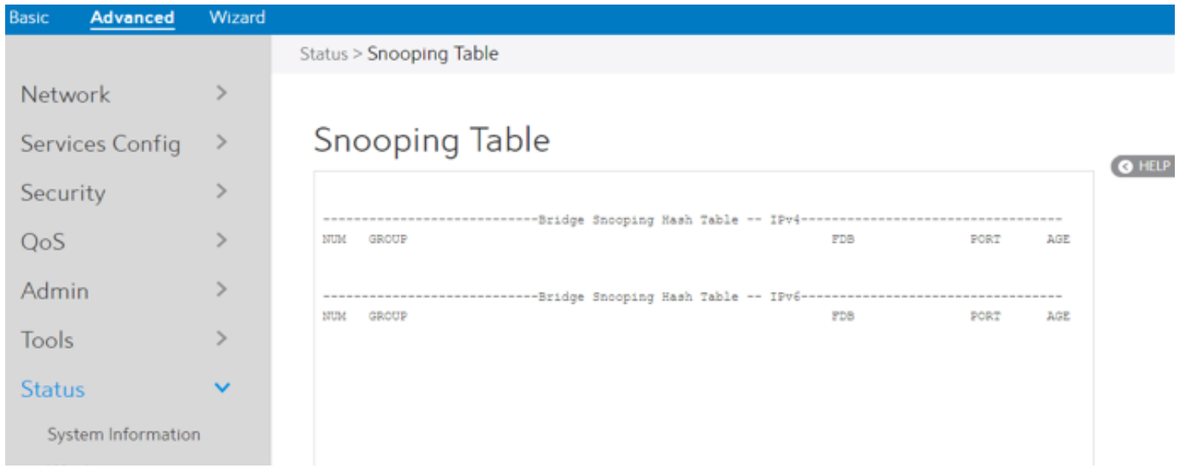
2.4.7.7 IPv6 Information

Display details on WAN and LAN IPv6 information.
From the navigation panel, go to Advanced > Status > IPv6 Information.



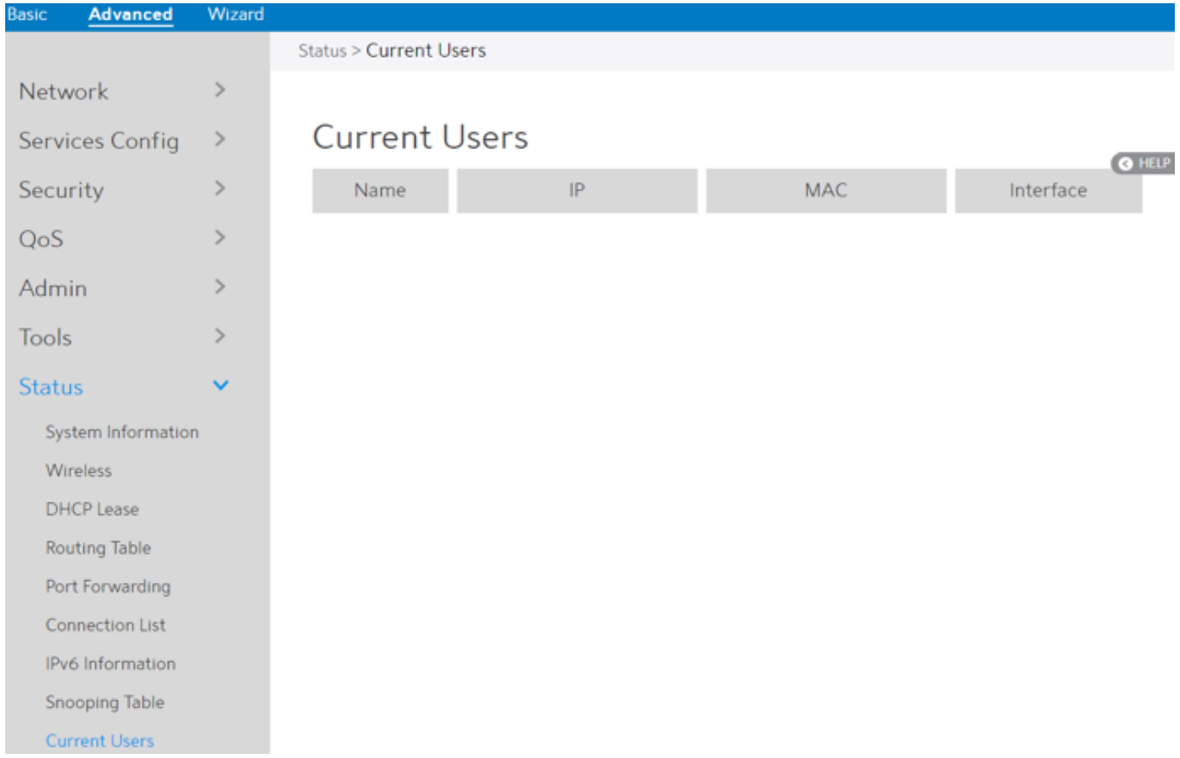
2.4.7.8 Snooping Table

Displays snooping table for client joins/leaves for both wired and wireless client streams.
From the navigation panel, go to Advanced > Status > Snooping Table.



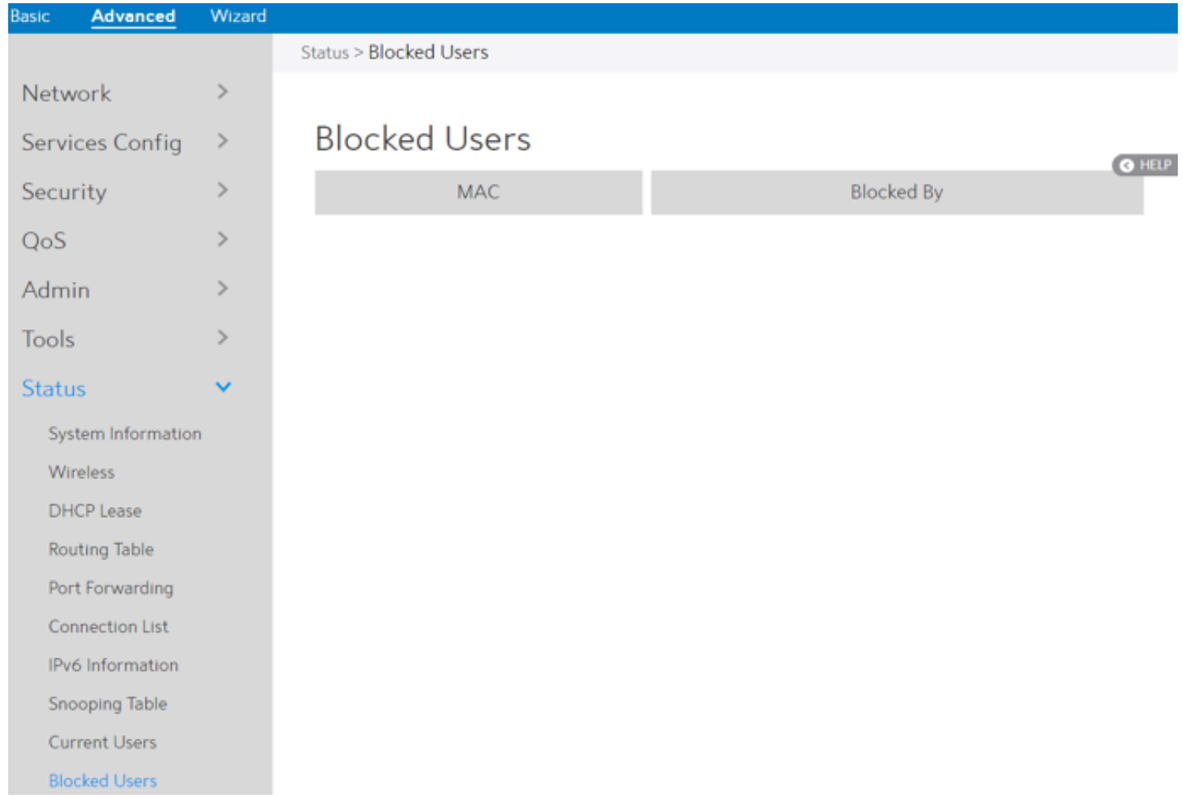
2.4.7.9 Current Users

Display current users who are permitted to get access to Internet through the router.
From the navigation panel, go to Advanced > Status > Current Users.



2.4.7.10 Blocked Users

Display blocked users who are not permitted to get access to Internet through the router.
From the navigation panel, go to Advanced > Status > Blocked Users.



3 FCC Statement

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

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

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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

For product available in the USA/Canada market, only channel 1~11 can be operated. Selection of other channels is not possible.

This device is restricted for indoor use.

IMPORTANT NOTE:
FCC Radiation Exposure Statement:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 21 cm between the radiator & your body.