User Guide

4G-AX56

Dual Band 4G LTE Router

IN SEARCH OF INCREDIBLE

E23437
Revised Edition v3
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1 Getting to know your wireless router

1.1 Welcome!

Thank you for purchasing an ASUS 4G-AX56 Wireless Router!

The powerful and stylish 4G-AX56 features 2.4GHz and 5GHz dual bands for an unmatched concurrent wireless HD streaming; SMB server, UPnP AV server, and FTP server for 24/7 file sharing; a capability to handle 300,000 sessions; and the ASUS Green Network Technology, which provides up to 70% power-saving solution.

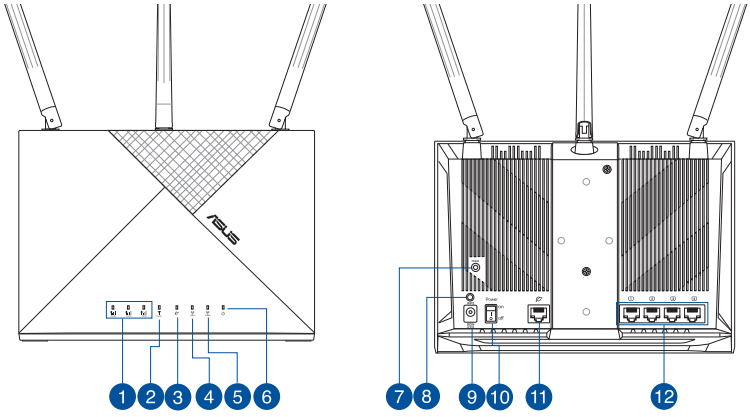
1.2 Package contents

- ☑ 4G-AX56 Wireless Router
- ☑ Network cable (RJ-45)
- ☑ 2 x 3G/4G antennas
- ☑ AC adapter
- ☑ Quick Start Guide
- ☑ 1 x WiFi antenna

NOTES:

- If any of the items is damaged or missing, contact your retailer or ASUS for technical inquiries and support, Refer to **Service and Support** at the back of this user manual.
- Keep the original packaging material in case you would need future warranty services such as repair or replacement.

1.3 Your wireless router



1	**3G/4G signal strength LED** 1 lit LED: Weak signal 2 lit LEDs: Normal signal 3 lit LEDs: Strong signal
2	**Mobile Broadband LED** White: 4G connection is established. Blue: 3G connection is established. Red: No mobile broadband connection. Off: No SIM card is detected.
3	**WAN (Internet) LED** Off: No data activity or no physical connection. On: Has physical connection to a wide area network (WAN).
4	**5GHz WiFi LED** Off: No 5GHz signal. On: 5GHz wireless is ready. Flashing: Transmitting or receiving data via wireless connection.
5	**2.4GHz WiFi LED** Off: No 2.4GHz signal. On: 2.4GHz wireless is ready. Flashing: Transmitting or receiving data via wireless connection.
6	**Power LED** Off: No power. On: Device is ready. Flashing slowly: Rescue mode Flashing quickly: WPS is processing.

7	**Reset button** This button resets or restores the system to its factory default settings.
8	**WPS button** Long press the button to launch the WPS Wizard.
9	**Power (DCIN) port** Insert the bundled AC adapter into this port and connect your router to a power source. **Nano SIM card slot** Install a Nano SIM card into this slot to establish a Mobile Broadband Internet connection.
10	**Power switch** Press this switch to power on or off the system.
11	**WAN (Internet) port** Connect a network cable into this port to establish WAN connection.
12	**LAN (1~4) ports** Connect network cables into these ports to establish LAN connection.

NOTES:

- Use only the adapter that came with your package. Using other adapters may damage the device.
- Ensure to insert the Nano SIM card into the card slot before powering on the router.

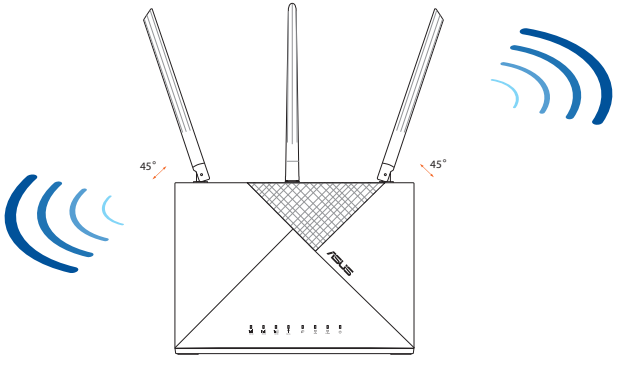
Ambient conditions:

DC Power adapter	DC Output: +12V with 2A current		
Operating Temperature	0~40°C	Storage Temperature	-40~70°C
Operating Humidity	10 ~ 95%	Storage Humidity	5 ~ 95%

1.4 Positioning your router

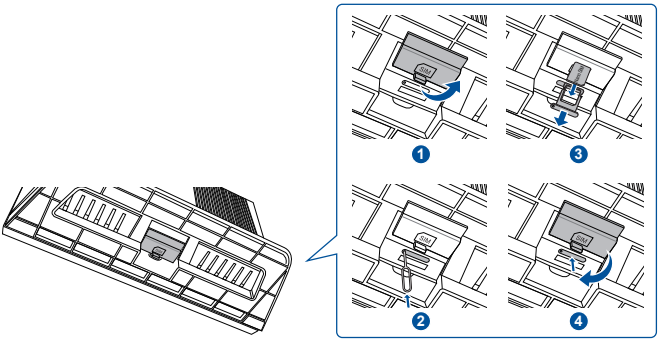
For optimal wireless transmission between the wireless router and connected wireless devices, ensure that you:

- Place the wireless router in a centralized area for a maximum wireless coverage for the network devices.
- Keep the wireless router within the view of sight of a window or clearance, and away from metal or solid obstructions and direct sunlight.
- Keep the wireless router away from conventional radio emission devices operating within the 2.4GHz spectrum. Devices such as Bluetooth, cordless phone, transformer, heavy duty motors, fluorescent lights, microwave oven, refrigerators, and other industrial equipments may interfere with the smooth transmission of 2.4GHz WiFi.
- Always update to the latest firmware. Visit the ASUS website at **http://www.asus.com** to get the latest firmware updates.
- Orient the antennas as shown in the drawing below.



1.5 Insert a Nano SIM card into 4G-AX56

1. Open the Nano SIM cover at the bottom of 4G-AX56 to reveal the Nano SIM slot.
2. Pop open the Nano SIM tray by dipping either a paper clip or a SIM eject tool into the hole beside the tray.
3. Place your Nano SIM card onto the tray.
4. Slide the tray back into the Nano SIM card slot, and close the cover.



2 Getting started

2.1 Router Setup

IMPORTANT!

- Use a wired connection when setting up your wireless router to avoid possible setup problems.
- Before setting up your ASUS wireless router, do the following:
  - If you are replacing an existing router, disconnect it from your network.
  - Disconnect the cables/wires from your existing modem setup. If your modem has a backup battery, remove it as well.
  - Reboot your cable modem and computer (recommended).

WARNING!

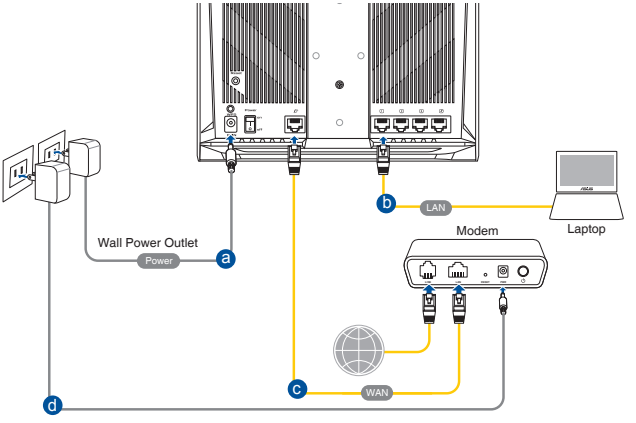
- The power supply cord(s) must be plugged into socket-outlet(s) that is /are provided with a suitable earth ground. Connect the equipment only to a nearby socket outlet that is easily accessible.
- If the Adapter is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.
- DO NOT use damaged power cords, accessories, or other peripherals.
- DO NOT mount this equipment higher than 2 meters.
- Use this product in environments with ambient temperatures between 0°C (32°F) and 40°C (104°F).

A. Wired connection

NOTE: You can use either a straight-through cable or a crossover cable for wired connection.

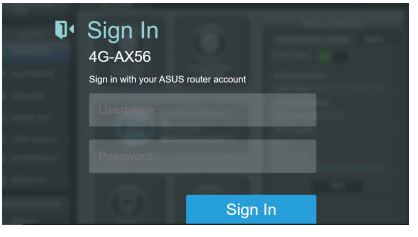
To set up your wireless router via wired connection:

1. Plug your router into a power outlet and power it on. Connect the network cable from your computer to a LAN port on your router.



2. The web GUI launches automatically when you open a web browser. If it does not auto-launch, enter http://www.asusrouter.com

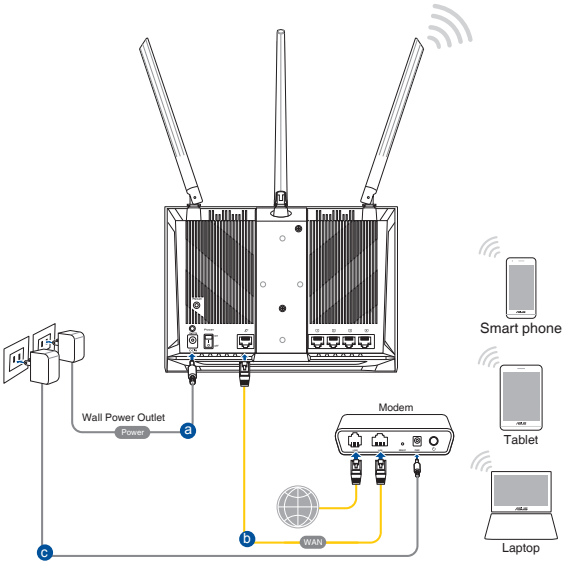
3. Set up a password for your router to prevent unauthorized access.



B. Wireless connection

To set up your wireless router via wireless connection:

1. Plug your router into a power outlet and power it on.



2. Connect to the network name (SSID) shown on the product label on the back side of the router. For better network security, change to a unique SSID and assign a password.

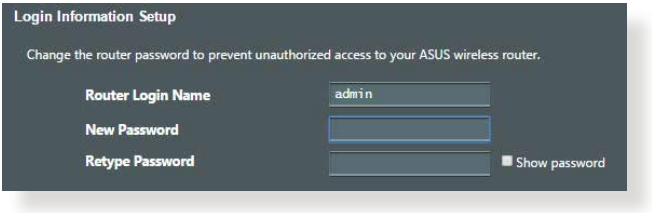
Wi-Fi Name (SSID):	ASUS_XX

* **XX** refers to the last two digits of 2.4GHz MAC address. You can find it on the label on the back of your router.

3. Once connected, the web GUI launches automatically when you open a web browser. If it does not auto-launch, enter http://www.asusrouter.com.
4. Set up a password for your router to prevent unauthorized access.

NOTES:

- For details on connecting to a wireless network, refer to the WLAN adapter's user manual.
- To set up the security settings for your network, refer to **3.1.1 Setting up the wireless security settings** of this user manual.



2.2 Quick Internet Setup (QIS) with Auto-detection

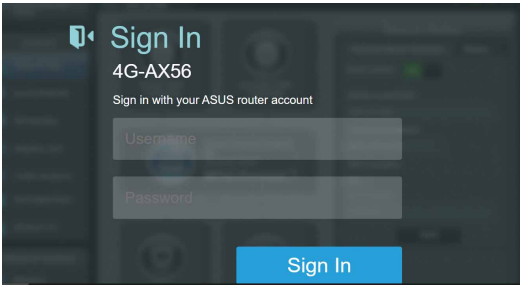
To set up your router using QIS (Quick Internet Setup):

1. Ensure that the following LEDs light up:
   - Power LED
   - WAN or Mobile Broadband LED
   - 2.4GHz WiFi LED
   - 5GHz WiFi LED
2. Launch your web browser such as Internet Explorer, Firefox, Google Chrome, or Safari.

NOTE: If QIS does not launch automatically, enter http://www.asusrouter.com in the address bar and refresh the browser again.

3. Log into the Web GUI. The QIS page launches automatically.

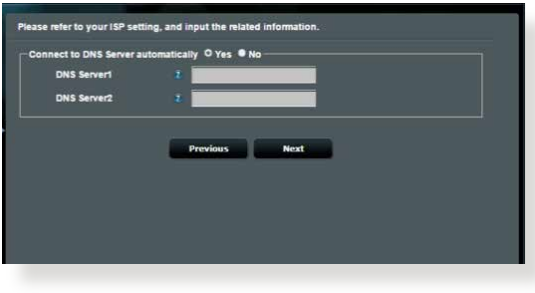
4. Assign your router login name and password and click **Next**. You need this login name and password to log into ASUS router to view or change the router settings. You can take note of your router login name and password for future use.



5. If the WAN port is connected, the wireless router's Quick Internet Setup (QIS) feature automatically detects if your ISP connection type is **Dynamic IP**, **PPPoE**, **PPTP**, **L2TP**, and **Static IP**. Please obtain the necessary information from your Internet Service Provider (ISP). If your connection type is Dynamic IP (DHCP), QIS wizard will automatically direct you to the next step.

for Automatic IP (DHCP)

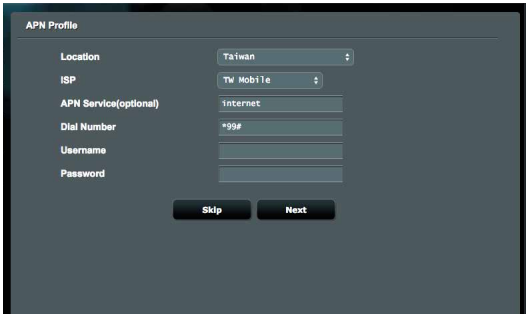
for PPPoE, PPTP, and L2TP



for Static IP

6. If a 3G/4G network is connected, the wireless router's Quick Internet Setup (QIS) feature automatically detects and applies the APN setting to connect to the wireless base station. If the QIS wizard failed to automatically apply the APN setting or the SIM card prompts for a PIN code, set up the APN setting manually.

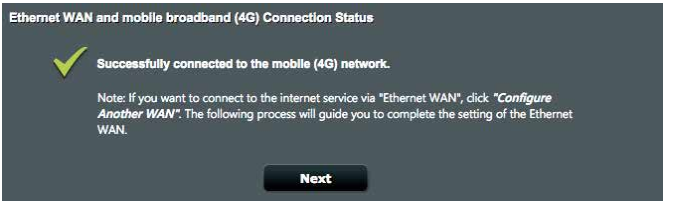
NOTE: The PIN code may vary from different providers.



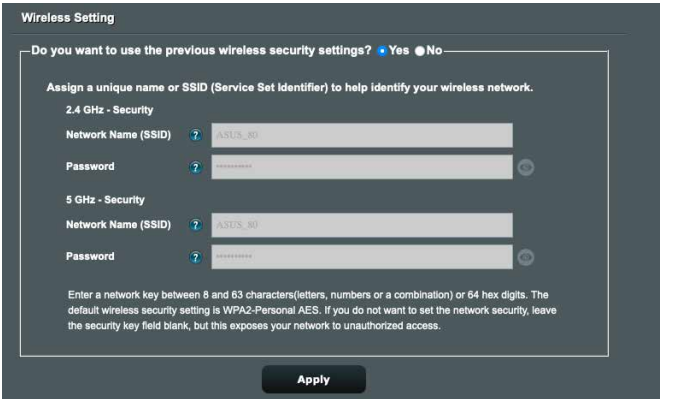
7. The dual WAN connection configuration result is displayed. Click **Next** to continue.

Mobile Broadband Connection is configured successfully

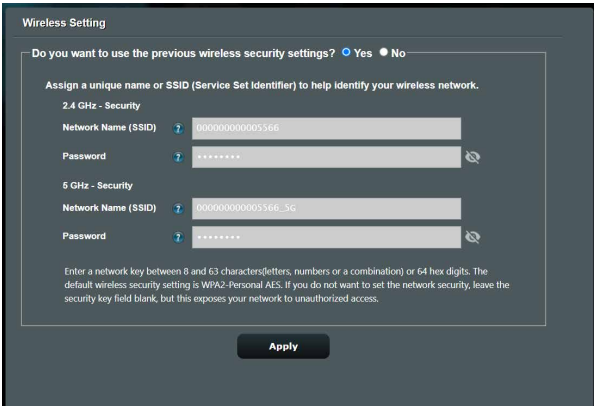
Ethernet WAN Connection is configured successfully



8. If both WAN are configured, go to next step to configure the wireless LAN settings.



9. Assign the network name (SSID) and security key for your 2.4GHz wireless connection. Click **Apply** when done.
10. Your Internet and wireless settings are displayed. Click **Next** to complete the QIS process.



11. The 3G/4G signal strength LED lights up and is steady after completing the 3G/4G network settings via QIS, indicating a successful Internet connection.

3 Configuring the General and Advanced Settings

3.1 Using the Network Map

Network Map allows you to check the Internet connection status, configure your network's security settings and manage your network clients.

3.1.1 Setting up the wireless security settings

To protect your wireless network from unauthorized access, you need to configure its security settings.

To set up the wireless security settings:

1. From the navigation panel, go to **General** > **Network Map**.
2. On the Network Map screen, click System status icon . You can configure the wireless security settings such as Network Name (SSID), Authentication Method, and encryption settings.

2.4GHz security settings

5GHz security settings

3. On the **Network Name (SSID)** field, key in a unique name for your wireless network.
4. From the **Authentication Method** dropdown list, select the authentication method for your wireless network.

   If you select WPA-Personal or WPA-2 Personal as the authentication method, key in the WPA-PSK key or security passkey.

IMPORTANT! The IEEE 802.11n/ac standard prohibits using Low Throughput with WEP or WPA-TKIP as the unicast cipher. If you use these encryption methods, your data rate will drop to IEEE 802.11g 54Mbps connection.

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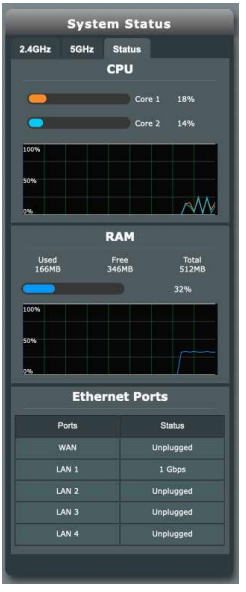
5 Click **Apply** when done.

3.1.2 System Status

To monitor the system resources:

1. From the navigation panel, go to **General** > **Network Map**.
2. On the Network Map screen, click the System status icon  . you can find the information about CPU and memory usage.



3.1.3 Managing your network clients

To manage your network clients:

1. From the navigation panel, go to **General** > **Network Map**.
2. On the **Network Map** screen, select the Client Status icon to display your network client's information.

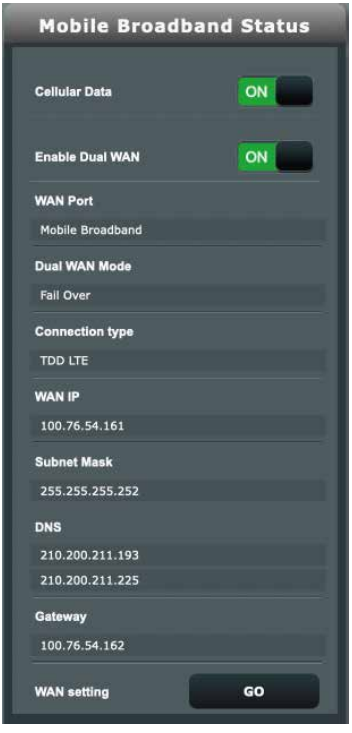
3. On Client status table, click the device icon to show the detailed profile of the device.

3.1.4 Monitoring the Internet Status

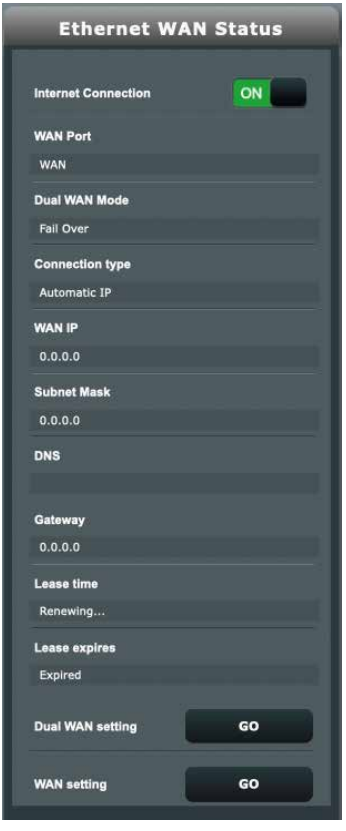
To monitor your Internet status:

1. From the navigation panel, go to **General** > **Network Map**.
2. On the **Network Map** screen, select the Internet icon to display your Internet configuration. You can also select Mobile Broadband icon to display Mobile Broadband configuration.
3. To terminate WAN interface from your network, click the switch button on **Cellular Data** and **Internet Connection**.

Mobile Broadband



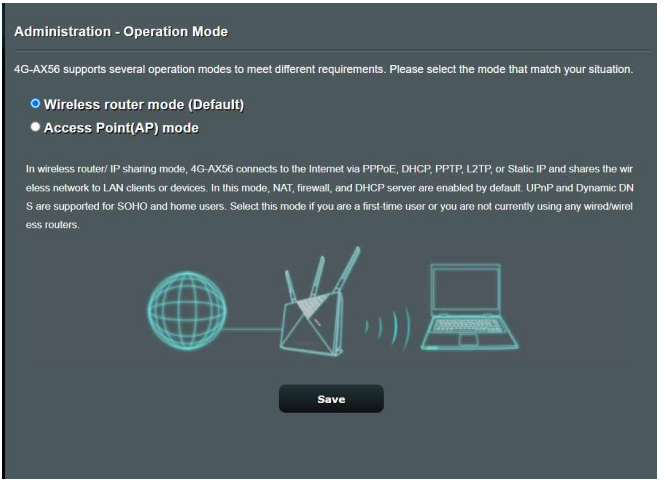
Ethernet WAN



3.2 Administration

3.2.1 Operation Mode

The Operation Mode page allows you to select the appropriate mode for your network.



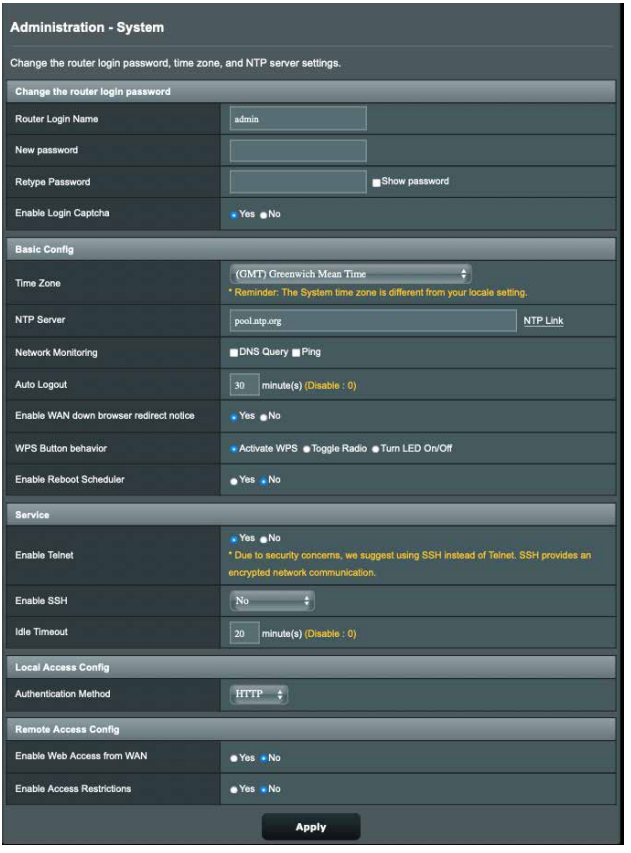
To set up the operating mode:

1. From the navigation panel, go to **Advanced Settings** > **Administration** > **Operation Mode**.
2. Select any of these operation modes:
   - **Wireless router mode (Default)**: In wireless router mode, the wireless router connects to the Internet and provides Internet access to available devices on its own local network.
   - **Access Point (AP) mode**: In this mode, the router creates a new wireless network on an existing network.
3. Click **Apply**.

NOTE: The router will reboot when you change the modes.

3.2.2 System

The **System** page allows you to configure your wireless router settings.

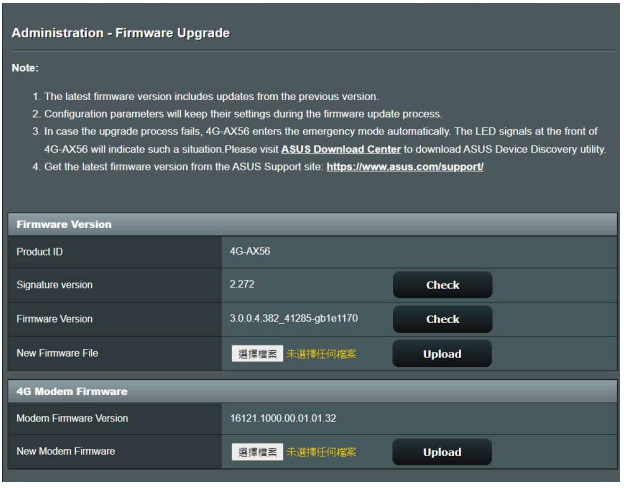


To set up the System settings:

1. From the navigation panel, go to **Advanced Settings** > **Administration** > **System**.
2. You can configure the following settings:
   - **Change the router login password**: You can change the password and login name for the wireless router by entering a new name and password.
   - **Time Zone**: Select the time zone for your network.
   - **NTP Server**: The wireless router can access a NTP (Network time Protocol) server in order to synchronize the time.
   - **Auto Logout**: System will auto log out the administration page after an idle period. To disable Auto logout, set the value in 0.
   - **Enable Telnet**: Click **Yes** to enable Telnet services on the network. Click **No** to disable Telnet.
   - **Authentication Method**: You can select HTTP, HTTPS, or both protocols to secure router access.
   - **Enable Web Access from WAN**: Select **Yes** to allow devices outside the network to access the wireless router GUI settings. Select **No** to prevent access.
   - **Enable Access Restrictions:** Select Yes to set a whitelist which allows administrator to limit and control access only to trusted IP address.
     a). **Allow only specified IP address**: Click Yes if you want to specify the IP addresses of devices that are allowed access to the wireless router GUI settings from WAN.
     b). **Specified IP Address**: Enter the WAN IP addresses of networking devices allowed to access the wireless router settings. This Client list allows you to add the maximum IP addresses of 4.
3. Click **Apply**.

3.2.3 Firmware Upgrade

NOTE: Download the latest firmware from the ASUS website at http://www.asus.com



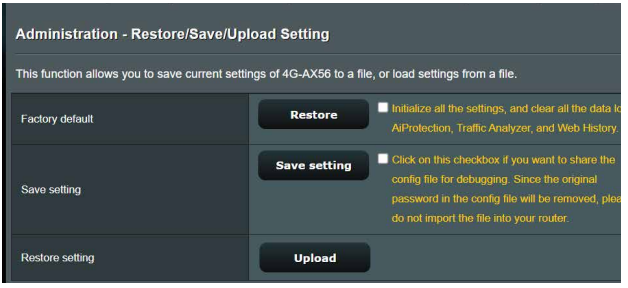
To upgrade the router or 4G modem firmware:

1. From the navigation panel, go to **Advanced Settings** > **Administration** > **Firmware Upgrade**.
2. In the **New Firmware File** or **New Modem Firmware** field, click **Browse** to locate the downloaded file.
3. Click **Upload**.

NOTES:

- When the upgrade process is complete, wait for some time for the system to reboot.
- If the upgrade process fails, the wireless router automatically enters rescue mode and the power LED indicator on the front panel starts flashing slowly. To recover or restore the system, refer to section **4.2 Firmware Restoration**.

3.2.4 Restore/Save/Upload Setting



To restore/save/upload wireless router settings:

1. From the navigation panel, go to **Advanced Settings** > **Administration** > **Restore/Save/Upload Setting**.
2. Select the tasks that you want to do:
   - To restore to the default factory settings, click **Restore**, and click **OK** in the confirmation message.
   - To save the current system settings, click **Save setting**, navigate to the folder where you intend to save the file and click **Save**.
   - To restore from a saved system settings file, click **Browse** to locate your file, then click **Upload**.

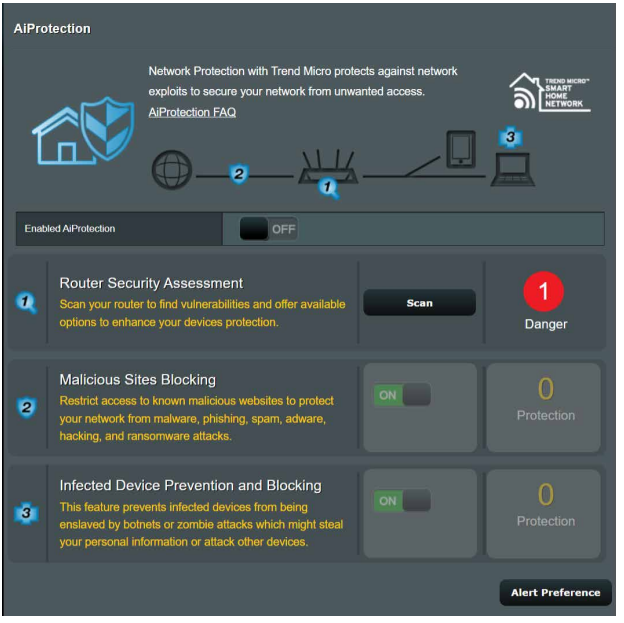
IMPORTANT! If issues occur, upload the latest firmware version and configure new settings. **Do not** restore the router to its default settings.

3.3 AiProtection

AiProtection provides real-time monitoring that detects malware, spyware, and unwanted access. It also filters unwanted websites and apps and allows you to schedule a time that a connected device is able to access the Internet.

3.3.1 Network Protection

Network Protection prevents network exploits and secures your network from unwanted access.

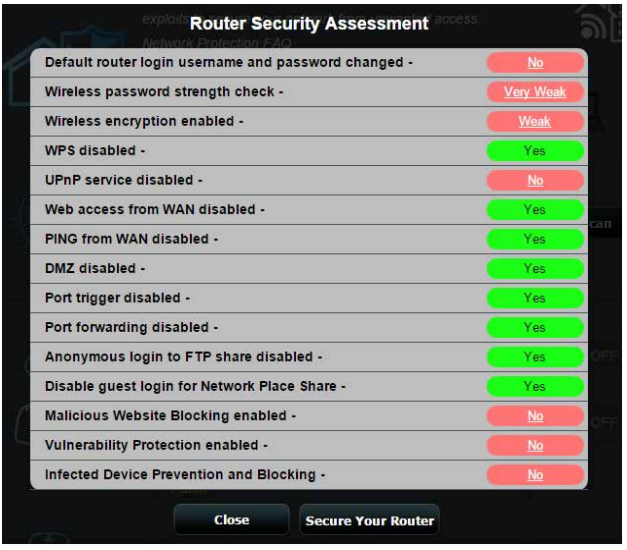


Configuring Network Protection

To configure Network Protection:

1. From the navigation panel, go to **General** > **AiProtection**.
2. From the **AiProtection** main page, click on **Network Protection**.
3. From the **Network Protection** tab, click **Scan**.

   When done scanning, the utility displays the results on the **Router Security Assessment** page.



IMPORTANT! Items marked as **Yes** on the **Router Security Assessment** page is considered to be at a **safe** status. Items marked as **No**, **Weak**, or **Very Weak** is highly recommended to be configured accordingly.

4. (Optional) From the **Router Security Assessment** page, manually configure the items marked as **No**, **Weak**, or **Very Weak**. To do this:

    a. Click an item.

NOTE: When you click an item, the utility forwards you to the item's setting page.

    b. From the item's security settings page, configure and make the necessary changes and click **Apply** when done.

    c. Go back to the **Router Security Assessment** page and click **Close** to exit the page.

5. To automatically configure the security settings, click **Secure Your Router.**

6. When a message prompt appears, click **OK**.

Malicious Sites Blocking

This feature restricts access to known malicious websites in the cloud database for an always-up-to-date protection.

NOTE: This function is automatically enabled if you run the **Router Weakness Scan**.

To enable Malicious Sites Blocking:

1. From the navigation panel, go to **General** > **AiProtection**.
2. From the **AiProtection** main page, click on **Network Protection**.
3. From the **Malicious Sites Blocking** pane, click **ON**.

Infected Device Prevention and Blocking

This feature prevents infected devices from communicating personal information or infected status to external parties.

NOTE: This function is automatically enabled if you run the **Router Weakness Scan**.

To enable Infected Device Prevention and Blocking:

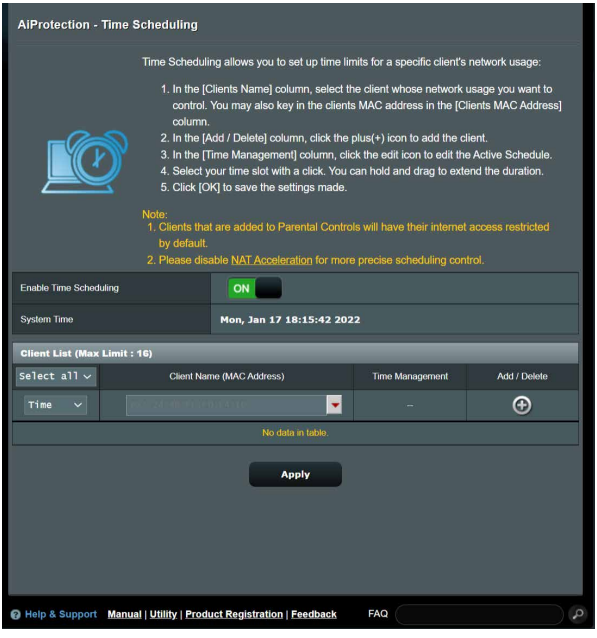
1. From the navigation panel, go to **General** > **AiProtection**.
2. From the **AiProtection** main page, click on **Network Protection**.
3. From the **Infected Device Prevention and Blocking** pane, click **ON**.

3.3.2 Setting up Parental Controls

Parental Control allows you to control the Internet access time or set the time limit for a client's network usage.

To go to the Parental Controls main page:

1. From the navigation panel, go to **General** > **AiProtection**.
2. From the **AiProtection** main page, click on the **Parental Controls**.



Time Scheduling

Time Scheduling allows you to set the time limit for a client's network usage.

NOTE: Ensure that your system time is synchronized with the NTP server.

To configure Time Scheduling:

1. From the navigation panel, go to **General** > **AiProtection** > **Parental Controls**.

2. From the **Enable Time Scheduling** pane, click **ON**.
3. From the **Client Name (MAC Address)** column, select or key in the client's name from the drop down list box.

NOTE: You may also key in the client's MAC address in the **Client Name (MAC Address)** column. Ensure that the client name does not contain special characters or spaces as these may cause the router to function abnormally.

4. Click ⊕ to add the client's profile.
5. Click **Apply** to save the settings.

3.4 Ethernet WAN Mobile Broadband Function Support List

The wireless router supports wired WAN and Mobile broadband WAN in failover and failback modes. The Mobile broadband WAN is used both as Internet access and WAN backup interface. LAN, WAN, VPN, and Firewall support different functions. See the comparison table below.

	Wired WAN	LAN as WAN	Mobile broadband
		LAN	
IPTV	V	N/A	N/A
Switch Control > NAT Acceleration (IPv4 Only)	V	N/A	N/A
Switch Control >Jumbo Frame	V	N/A	N/A
		WAN	
IPv6	V	V	V (1)
Port Trigger	V	V	V (2)
Virtual Server / Port Forwarding	V	V	V (2)
DMZ	V	V	V (2)
DDNS	V	V	V (2)
NAT Passthrough	V	V	V (2)
		Traffic Manager	
QoS	V	V	V
		Firewall	
General	V	V	V
URL Filter	V	V	V
Keyword Filter	V	V	V
Network Services Filter	V	V	V
IPv6 Firewall	V	V	N/A
		Administration	
System > Enable Web Access from WAN	V	V	V (2)

3.5 Firewall

The wireless router can serve as a hardware firewall for your network.

NOTE: The Firewall feature is enabled by default.

3.5.1 General

To set up basic Firewall settings:

1. From the navigation panel, go to **Advanced Settings** > **Firewall** > **General**.
2. On the **Enable Firewall** field, select **Yes.**
3. On the **Enable DoS protection**, select **Yes** to protect your network from DoS (Denial of Service) attacks though this may affect your router's performance.
4. You can also monitor packets exchanged between the LAN and WAN connection. On the Logged packets type, select **Dropped**, **Accepted**, or **Both**.
5. Click **Apply**.

3.5.2 URL Filter

You can specify keywords or web addresses to prevent access to specific URLs.

NOTE: The URL Filter is based on a DNS query. If a network client has already accessed a website such as http://www.abcxxx.com, then the website will not be blocked (a DNS cache in the system stores previously visited websites). To resolve this issue, clear the DNS cache before setting up the URL Filter.

To set up a URL filter:

1. From the navigation panel, go to **Advanced Settings** > **Firewall** > **URL Filter**.
2. On the **Enable URL Filter** field, select **Enabled**.
3. Enter a URL and click the  button.
4. Click **Apply**.

3.5.3 Keyword filter

Keyword filter blocks access to webpages containing specified keywords.

To set up a keyword filter:

1. From the navigation panel, go to **Advanced Settings** > **Firewall** > **Keyword Filter**.
2. On the **Enable Keyword Filter** field, select **Enabled**.
3. Enter a word or phrase and click the **Add** button.
4. Click **Apply**.

NOTES:

- The Keyword Filter is based on a DNS query. If a network client has already accessed a website such as http://www.abcxxx.com, then the website will not be blocked (a DNS cache in the system stores previously visited websites). To resolve this issue, clear the DNS cache before setting up the Keyword Filter.
- Web pages compressed using HTTP compression cannot be filtered. HTTPS pages also cannot be blocked using a keyword filter.

3.11.4 Network Services Filter

The Network Services Filter blocks LAN to WAN packet exchanges and restricts network clients from accessing specific web services such as Telnet or FTP.

To set up a Network Service filter:

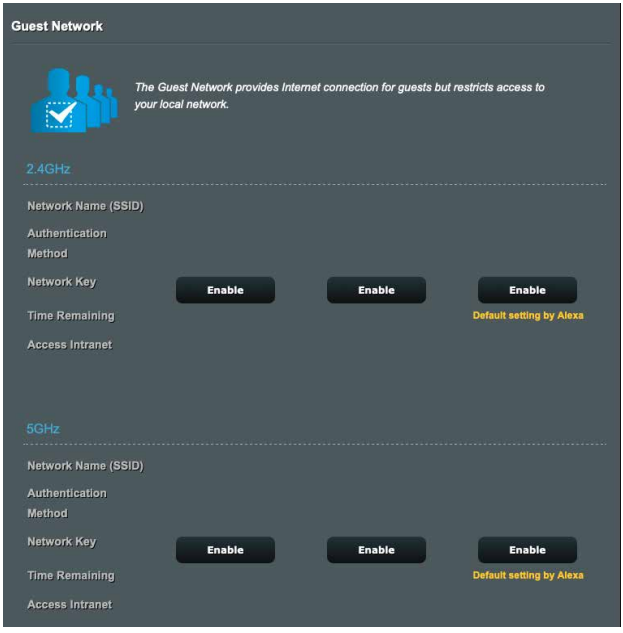
1. From the navigation panel, go to **Advanced Settings** > **Firewall** > **Network Service Filter**.
2. On the **Enable Network Services Filter** field, select **Yes**.
3. Select the Filter table type. **Black List** blocks the specified network services. **White List** limits access to only the specified network services.
4. Specify the day and time when the filters will be active.
5. To specify a Network Service to filter, enter the Source IP, Destination IP, Port Range, and Protocol. Click the  button.
6. Click **Apply**.

3.11.5 IPv6 Firewall

By default, your ASUS wireless router blocks all unsolicited incoming traffic. The IPv6 Firewall function allows incoming traffic coming from specified services to go through your network.

3.6 Guest Network

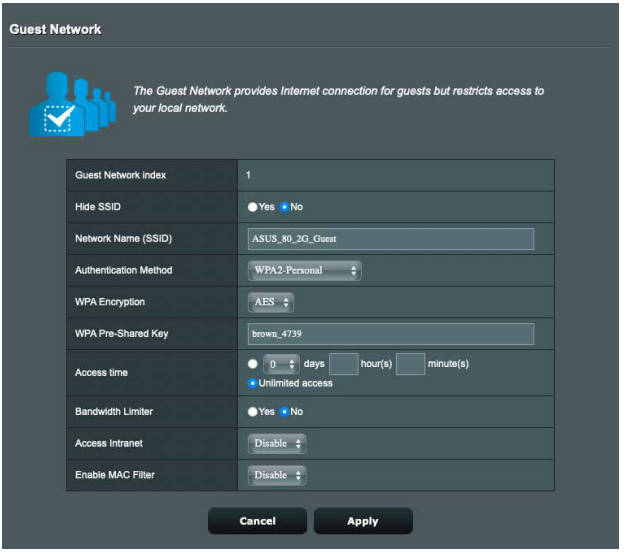
The **Guest Network** provides temporary visitors with Internet connectivity via access to separate SSIDs or networks without providing access to your private network.



To create a guest network:

1. From the navigation panel, go to **General** > **Guest Network**.
2. On the **Guest Network** screen, select 2.4GHz and 5GHz frequency band for the guest network that you want to create.
3. Click **Enable**.
4. Configure a guest's settings on pop-up screen
5. Assign a Network Name (SSID) for identify your guest network.
6. Select an Authentication Method.
7. If you select a WPA authentication method, select a WPA Encryption.
8. Specify the **Access time** or choose **Limitless**.

9. Select **Disable** or **Enable** on the **Access Intranet** item.
10. Select **Disable** or **Enable** on **Enable MAC Filter** item for your guest network.



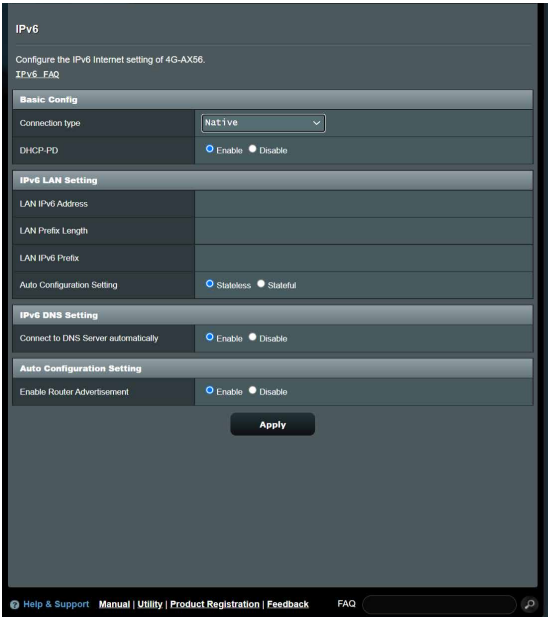
11. When done, click **Apply**.

NOTES:

- Visit https://www.asus.com/support/FAQ/1034977/ to see **How to set up Captive Portal**.
- Visit https://www.asus.com/support/FAQ/1034971/ to see **How to set up Free WiFi**.

3.7 IPv6

This wireless router supports IPv6 addressing, a system that supports more IP addresses. This standard is not yet widely available. Contact your ISP if your Internet service supports IPv6.



To set up IPv6:

1. From the navigation panel, go to **Advanced Settings** > **IPv6**.
2. Select your **Connection type**. The configuration options vary depending on your selected connection type.
3. Enter your IPv6 LAN and DNS settings.
4. Click **Apply**.

NOTE: Please refer to your ISP regarding specific IPv6 information for your Internet service.

3.8 LAN

3.8.1 LAN IP

The LAN IP screen allows you to modify the LAN IP settings of your wireless router.

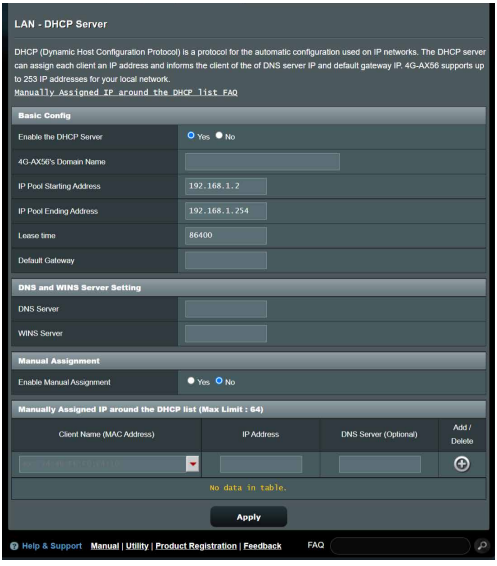
NOTE: Any changes to the LAN IP address will be reflected on your DHCP settings.

To modify the LAN IP settings:

1. From the navigation panel, go to **Advanced Settings** > **LAN** > **LAN IP**.
2. Modify the **IP Address** and **Subnet Mask**.
3. When done, click **Apply**.

3.8.2 DHCP Server

Your wireless router uses DHCP to assign IP addresses automatically on your network. You can specify the IP address range and lease time for the clients on your network.



To configure the DHCP server:

1. From the navigation panel, go to **Advanced Settings** > **LAN** > **DHCP Server**.
2. In the **Enable the DHCP Server** field, tick **Yes**.
3. In the **4G-AX56's Domain Name** text box, enter a domain name for the wireless router.
4. In the **IP Pool Starting Address** field, key in the starting IP address.
5. In the **IP Pool Ending Address** field, key in the ending IP address.
6. In the **Lease time** field, specify in seconds when an assigned IP address will expire. Once it reaches this time limit, the DHCP

server will then assign a new IP address.

NOTES:

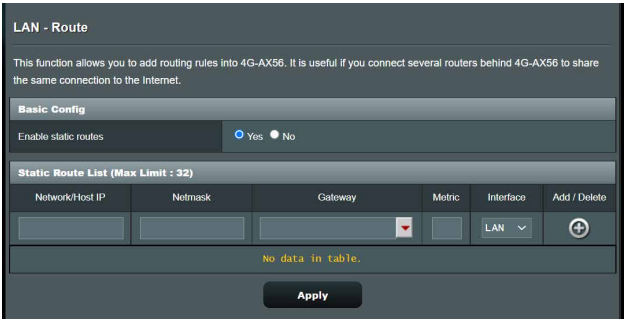
- We recommend that you use an IP address format of 192.168.1.xxx (where xxx can be any number between 2 and 254) when specifying an IP address range.
- An IP Pool Starting Address should not be greater than the IP Pool Ending Address.

7. In the **DNS and WINS Server Settings** section, key in your DNS Server and WINS Server IP address if needed.
8. Your wireless router can also manually assign IP addresses to devices on the network. On the **Enable Manual Assignment** field, choose **Yes** to assign an IP address to specific MAC addresses on the network. Up to 32 MAC Addresses can be added to the DHCP list for manual assignment.

3.8.3 Route

If your network makes use of more than one wireless router, you can configure a routing table to share the same Internet service.

NOTE: We recommend that you do not change the default route settings unless you have advanced knowledge of routing tables.

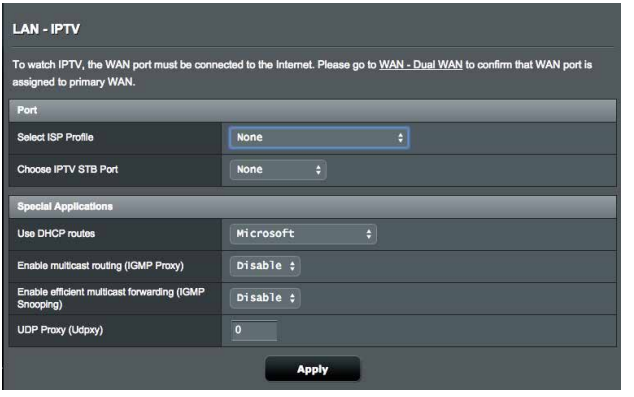


To configure the LAN Routing table:

1. From the navigation panel, go to **Advanced Settings** > **LAN** > **Route**.
2. On the **Enable static routes** field, choose **Yes**.
3. On the **Static Route List**, enter the network information of other access points or nodes. Click the **Add** or **Delete** button to add or remove a device on the list.
4. Click **Apply**.

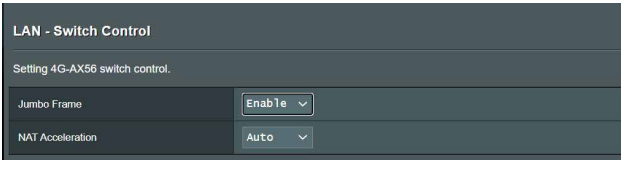
3.8.4 IPTV

The wireless router supports connection to IPTV services through an ISP or a LAN. The IPTV tab provides the configuration settings needed to set up IPTV, VoIP, multicasting, and UDP for your service. Contact your ISP for specific information regarding your service.



3.8.5 Switch Control

Switch Control tab enables you to configure NAT Acceleration and Jumbo frame to improve network performance. We recommend that you do not change the default route settings unless you have advanced knowledge.



3.9 SMS

Short Message Service (SMS) is a text messaging service that allows you to send or receive messages from or on your wireless router.

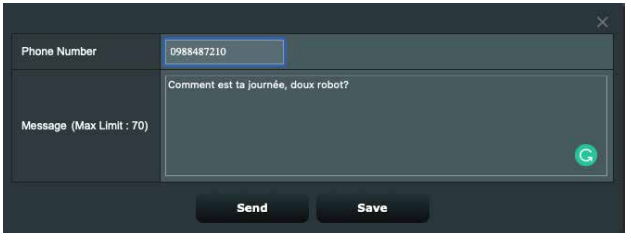
3.9.1 Sending Messages

This function allows you to send short messages from your wireless router.

To send a new SMS message:

1. Click the **New** button 

.
2. Enter the recipient's phone number.
3. Compose your message.
4. Click **Send** to send the message.



To save a draft message:

1. You can also save the draft message by clicking **Save**.
2. You will see the message listed in the table in **Draft**.
3. Click the edit icon to edit and send the message, or tick it and click to delete the draft message.

3.9.2 Inbox

Inbox allows you to view the received short messages saved in your device.
Click to view more information, or tick a message and click to delete it.

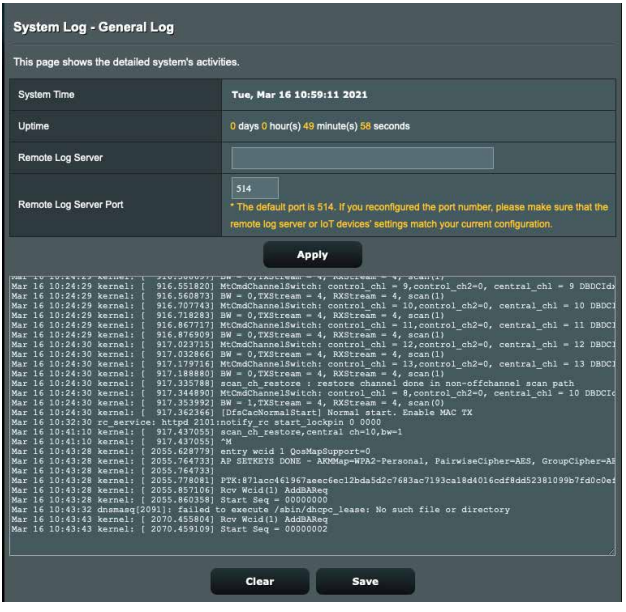
3.10 System Log

System Log contains your recorded network activities.

NOTE: System log resets when the router is rebooted or powered off.

To view your system log:

1. From the navigation panel, go to **Advanced Settings** > **System Log**.
2. You can view your network activities in any of these tabs:
   - General Log
   - Wireless Log
   - DHCP leases
   - IPv6
   - Routing Table
   - Port Forwarding
   - Connections



		Applications	
VPN Server	V	V	V (2)
FTP Server	V	V	V (2)

NOTES:

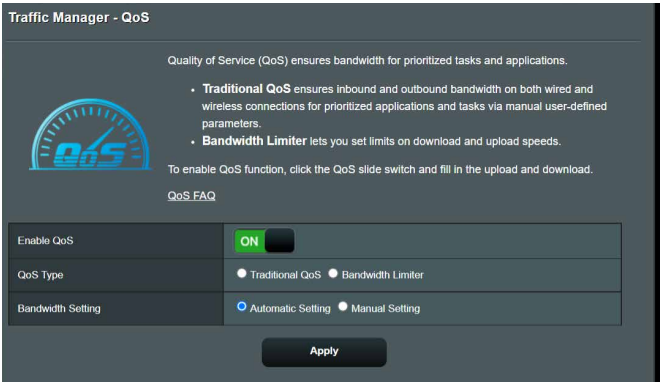
V (1): Mobile WAN has separated configuration on its configuration page

V (2): In most of using case, Internet service provide dispatch the mobile broadband a private IP, that will cause the WAN service failed to access from WAN side.

3.11 Traffic Manager

3.11.1 QoS

This feature ensures bandwidth for prioritized tasks and applications.



To enable the QoS function:

1. From the navigation panel, go to **General** > **Traffic Manager** > **QoS**.
2. From the **Enable QoS** pane, click **ON**.
3. Fill in the upload and download bandwidth fields.

NOTE: Get the bandwidth information from your ISP. You can also go to http://speedtest.net to check and get your bandwidth.

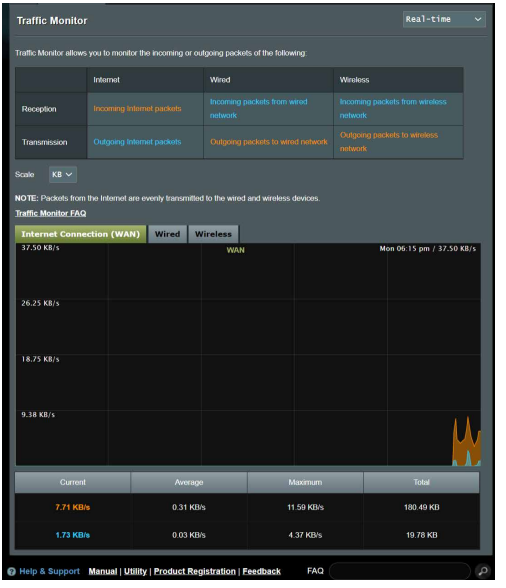
4. Select the QoS Type (Traditional QoS or Bandwidth Limiter) for your configuration.

NOTE: The definition of the QoS Type is displayed on the QoS tab for your reference.

5. Click **Apply**.

3.11.2 Traffic Monitor

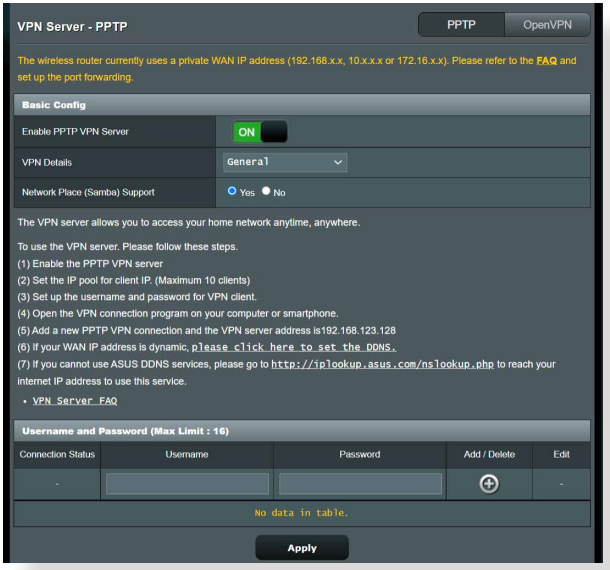
The traffic monitor feature allows you to access the bandwidth usage and speed of your Internet, wired, or wireless networks. It allows you to monitor network traffic in real-time or on a daily basis. It also offers an option to display the network traffic within the last 24 hours.



3.12 VPN Server

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

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



To set up access to a VPN server:

1. From the navigation panel, go to **Advanced Settings** > **VPN Server**.
2. On the **Enable PPTP VPN Server** field, select **ON** to enable PPTP VPN Server.
3. On the **VPN Details** dropdown list, select **Advanced Settings** if want to configure advanced VPN settings such as broadcast support, authentication, MPPE Encryption, and Client IP address range.
4. On the **Network Place (Samba) Support** field, select **Yes**.
5. Enter the user name and password for accessing the VPN server. Click the  button.
6. Click **Apply**.

3.13 WAN

3.13.1 Internet Connection

The Internet Connection screen allows you to configure the settings of various WAN connection types.

3.13.1.1 WAN

To configure the WAN connection settings:

1. From the navigation panel, go to **Advanced Settings** > **WAN** > **Internet Connection**.
2. Configure the following settings below. When done, click **Apply**.
   - **WAN Connection Type**: Choose your Internet Service Provider type. The choices are **Automatic IP**, **PPPoE**, **PPTP**, **L2TP** or **static IP**. Consult your ISP if the router is unable to obtain a valid IP address or if you are unsure the WAN connection type.
   - **Enable WAN**: Select **Yes** to allow the router Internet access. Select **No** to disable Internet access.
   - **Enable NAT**: NAT (Network Address Translation) is a system where one public IP (WAN IP) is used to provide Internet access to network clients with a private IP address in a LAN. The private IP address of each network client is saved in a NAT table and is used to route incoming data packets.
   - **Enable UPnP**: UPnP (Universal Plug and Play) allows several devices (such as routers, televisions, stereo systems, game consoles, and cellular phone), to be controlled via an IP-based network with or without a central control through a gateway. UPnP connects PCs of all form factors, providing a seamless network for remote configuration and data transfer. Using UPnP, a new network device is discovered automatically. Once connected to the network, devices can be remotely configured to support P2P applications, interactive gaming, video conferencing, and web or proxy servers. Unlike Port forwarding, which involves manually configuring port settings, UPnP automatically configures the router to accept incoming connections and direct requests to a specific PC on the local network.

- **Connect to DNS Server automatically**: Allows this router to get the DNS IP address from the ISP automatically. A DNS is a host on the Internet that translates Internet names to numeric IP addresses.
- **Authentication**: This item may be specified by some ISPs. Check with your ISP and fill them in if required.
- **Host Name**: This field allows you to provide a host name for your router. It is usually a special requirement from your ISP. If your ISP assigned a host name to your computer, enter the host name here.

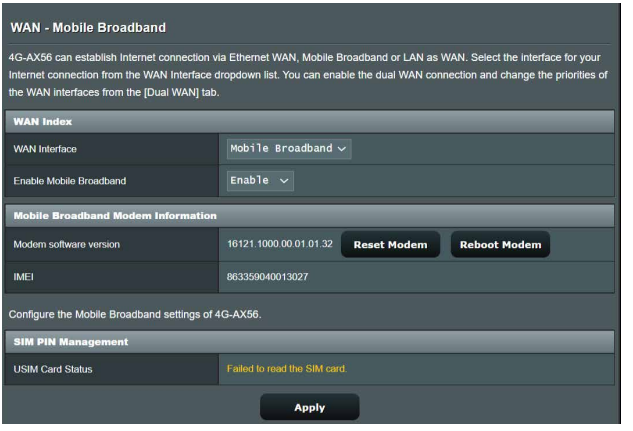
- **MAC Address**: MAC (Media Access Control) address is a unique identifier for your networking device. Some ISPs monitor the MAC address of networking devices that connect to their service and reject any unrecognized device that attempt to connect. To avoid connection issues due to an unregistered MAC address, you can:
  - Contact your ISP and update the MAC address associated with your ISP service.
  - Clone or change the MAC address of the ASUS wireless router to match the MAC address of the previous networking device recognized by the ISP.
- **DHCP query frequency**: Changes the DHCP Discovery interval settings to avoid overloading the DHCP server.

3.13.1.2 Mobile Broadband

4G-AX56 has build in 3G/4G modem that allows you to use a Mobile Broadband connection for Internet access.

To set up your Mobile broadband Internet access:

1. From the navigation panel, go to **Advanced Settings** > **WAN** > **Internet Connection**, select the **Mobile Broadband** in **WAN Interface** field.



2. In the **Enable Mobile Broadband** field, select **Enable**.
3. Check that you have properly inserted the SIM card, and configure the mobile settings of your router.
4. Internet Connection Configuration:
   1) On **Network Type** field, select your preferred network:
      - **Auto** (Default): Select **Auto** to allow the wireless router to automatically select the channel that has the available connection from 4G or 3G network.
      - **4G only**: Select this option to automatically connect the wireless router to a 4G network only.
      - **3G only**: Select this option to automatically connect the wireless router to a 3G network only.
   2) **PDP Type**: The wireless router support several PDP Types, PPP, IPv4, IPv6, IPv6 to IPv4.
   3) **LTE Band**: This field allows you to select the LTE band.

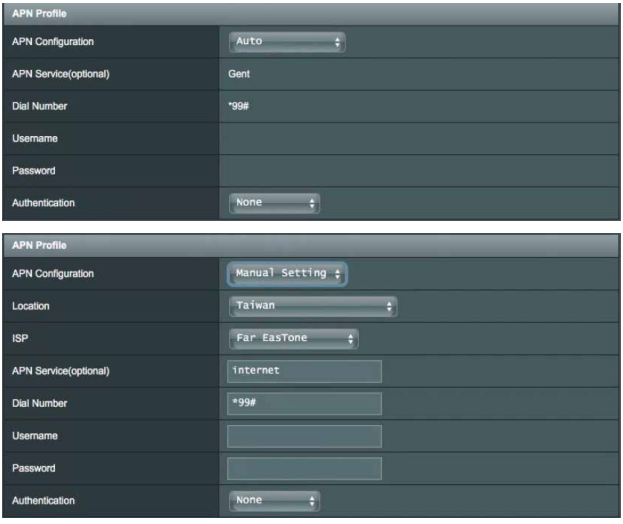
4) **Roaming** : When you travel to another country, you may use original SIM to access the local network if your ISP provider roaming service in the country. Enable this functions to allow you to access the local network.
   - Click **Scan** to show all the available mobile networks.
   - Select available mobile network and click **Apply** to connect to it.

NOTES:

- The LTE Router can detect your ISP based on the IMSI information of your SIM card. If the mobile network from your ISP is not found, connect to a roaming network of other ISPs.
- Using a roaming service will incur additional charges. Inquire from your mobile service provider before using the roaming service.

5. Data Usage Limitation
   - **Data Usage**: Show the data usage.
   - **Cycle Start Day**: Select the day you wish the data usage to begin to accumulate. The data usage will be reset at the end of each cycle.
   - **Data Usage Limit**: Set the monthly maximum volume of traffic (in GB) for Internet usage. When this limit is reached, an exclamation mark and pop-up alert message will show up when you login administration page, and Internet access is blocked.
   - **Data Usage Alert**: Set the maximum volume of Internet traffic at which an exclamation mark and pop-up alert message will show up when you login administration page. When your Internet usage reaches this limit, Internet access is not blocked until the Usage Limit is reached.
   - **Send SMS Notification**: Enable this function to send an SMS notification from your router to your mobile device

once the Data Usage limit for Internet usage is reached.



6. APN Configuration

1) **Auto** (Default): The system selects Auto APN setting by default.

2) **Manual**: If the automatic dial-up connection fails, select Manual to configure APN setting manually.

A. **Location**: Select your 3G/4G service provider's location from the dropdown list.

B. **ISP**: Select your Internet Service Provider (ISP) from the dropdown list.

C. **APN (Access Point Name) service (optional)**: Contact your 3G/4G service provider for detailed information.

D. **Dial number**: The 3G/4G provider's access number

E. **Username** / **Password**: Enter the username and password that your 3G/4G network provider has provided.

7. PIN Configuration

PIN code: Enter the 3G/4G provider's PIN code for connection on SIM PIN Management if the SIM card is required.

- The default PIN code may vary with different providers. If your ISP has disabled the PIN code verification by default, you can skip the setting.

- If your ISP has enabled PIN code verification by default, you will see the SIM lock status icon on the status icon area and are required to enter the PIN code.

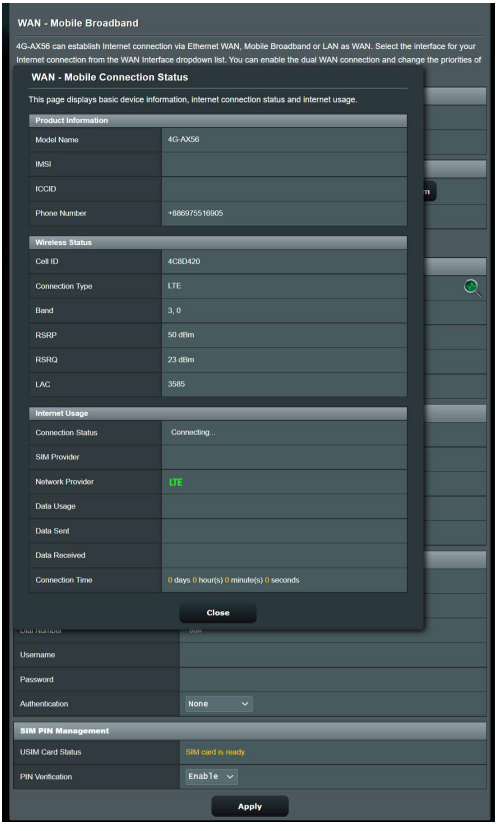
- You can manually enable the PIN code verification from your router's web GUI or your mobile phone. You are also required to enter the PIN code.

Mobile Connection Status

To find Mobile broadband Information:

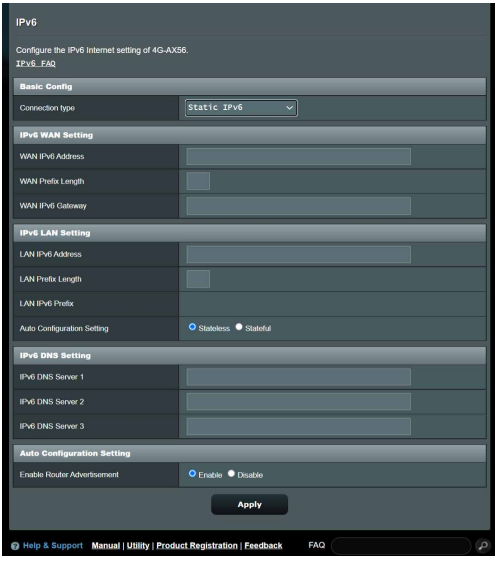
1. Click to find the detailed information.

2. The **Mobile Connection Status** screen displays the detailed Mobile Broadband connection status.



3.13.2 IPv6 (Internet Settings)

This wireless router supports IPv6 addressing, a system that supports more IP addresses. This standard is not yet widely available. Contact your ISP if your Internet service supports IPv6.



To set up IPv6:

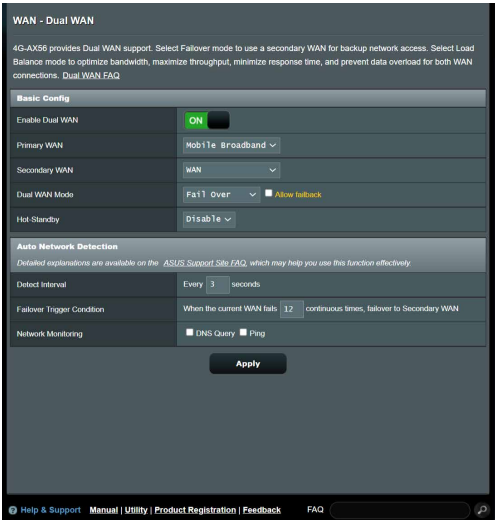
1. From the navigation panel, go to **Advanced Settings** > **IPv6**.
2. Select your **Connection type**. The configuration options vary depending on your selected connection type.
3. Enter your IPv6 LAN and DNS settings.
4. Click **Apply**.

NOTE: Please refer to your ISP regarding specific IPv6 information for your Internet service.

3.13.3 Dual WAN

Your ASUS wireless router provides dual WAN support. You can set the dual WAN feature to any of these two modes:

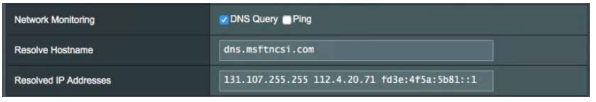
- **Fail Over:** Select this mode to use the secondary WAN as the backup network access.
- **Load Balance:** Select this mode to allow concurrent use of dual WAN connections for improved bandwidth and reliability.
- **Allow failback:** Tick the checkbox to allow Internet connection switch back to primary WAN automatically when primary WAN becomes available.



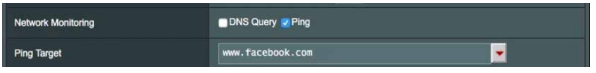
- **Detect Interval**: Set the time interval (in seconds) between two ping packets.
- **Failover Trigger Condition**: Set the continuous times when the system triggers the failover or failback action after reaching the ping test counter and getting no response from the target IP address.

- **Network Monitoring**

  1) **DNS Query**: Select this option if you want to periodically resolve target FQDN (Fully Qualified Domain Name).



  2) **Ping**: Select this option if you want to periodically ping test packet domain or IP address.

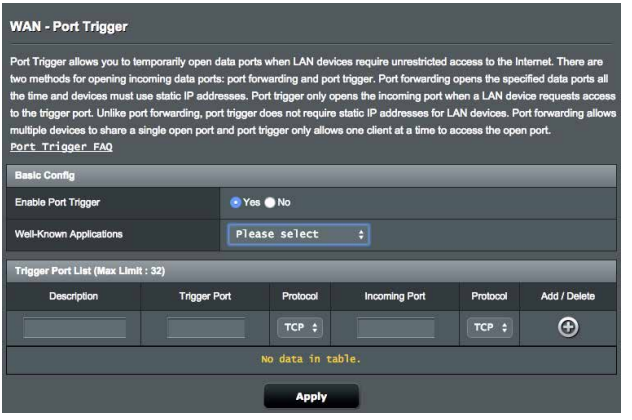


If internet connection issue occurs due to DHCP lease problem such as IP address being expired, you can enable DNS Query or Ping to alleviate the problem.

3.13.4 Port Trigger

Port range triggering opens a predetermined incoming port for a limited period of time whenever a client on the local area network makes an outgoing connection to a specified port. Port triggering is used in the following scenarios:

- More than one local client needs port forwarding for the same application at a different time.
- An application requires specific incoming ports that are different from the outgoing ports.



To set up Port Trigger:

1. From the navigation panel, go to **Advanced Settings** > **WAN** > **Port Trigger**.
2. On the **Enable Port Trigger** field, tick **Yes**.
3. On the **Well-Known Applications** field, select the popular games and web services to add to the Trigger Port List.
4. On the **Trigger Port List** table, key in the following information:
   - **Description**: Enter a short name or description for the service.

- **Trigger Port**: Specify a trigger port to open the incoming port.
- **Protocol**: Select the protocol, TCP, or UDP.
- **Incoming Port**: Specify an incoming port to receive inbound data from the Internet.
- **Protocol**: Select the protocol, TCP, or UDP.

5. Click the **Add** button to enter the port trigger information to the list. Click the **Delete** button to remove a port trigger entry from the list.
6. When done, click **Apply**.

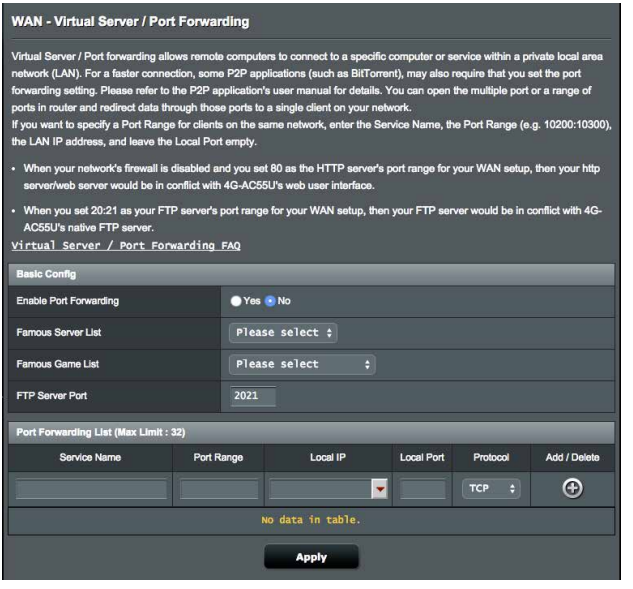
NOTES:

- When connecting to an IRC server, a client PC makes an outgoing connection using the trigger port range 66660-7000. The IRC server responds by verifying the username and creating a new connection to the client PC using an incoming port.
- If Port Trigger is disabled, the router drops the connection because it is unable to determine which PC is requesting for IRC access. When Port Trigger is enabled, the router assigns an incoming port to receive the inbound data. This incoming port closes once a specific time period has elapsed because the router is unsure when the application has been terminated.
- Port triggering only allows one client in the network to use a particular service and a specific incoming port at the same time.
- You cannot use the same application to trigger a port in more than one PC at the same time. The router will only forward the port back to the last computer to send the router a request/trigger.

3.13.5 Virtual Server/Port Forwarding

Port forwarding is a method to direct network traffic from the Internet to a specific port or a specific range of ports to a device or number of devices on your local network. Setting up Port Forwarding on your router allows PCs outside the network to access specific services provided by a PC in your network.

NOTE: When port forwarding is enabled, the ASUS router blocks unsolicited inbound traffic from the Internet and only allows replies from outbound requests from the LAN. The network client does not have access to the Internet directly, and vice versa.



To set up Port Forwarding:

1. From the navigation panel, go to **Advanced Settings** > **WAN** > **Virtual Server / Port Forwarding**.
2. On the **Enable Port Forwarding** field, tick **Yes**.

3. On the **Famous Server List** field, select the type of service you want to access.
4. On the **Famous Game List** field, select the popular game that you want to access. This item lists the port required for your selected popular online game to work properly.
5. On the **Port Forwarding List** table, key in the following information:
   - **Service Name**: Enter a service name.
   - **Port Range**: If you want to specify a Port Range for clients on the same network, enter the Service Name, the Port Range (e.g. 10200:10300), the LAN IP address, and leave the Local Port empty. Port range accepts various formats such as Port Range (300:350), individual ports (566,789) or Mix (1015:1024,3021).

NOTES:

- When your network's firewall is disabled and you set 80 as the HTTP server's port range for your WAN setup, then your http server/web server would be in conflict with the router's web user interface.
- 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.

- **Local IP**: Key in the client's LAN IP address.

NOTE: Use a static IP address for the local client to make port forwarding work properly. Refer to section **3.8 LAN** for information.

- **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.
- **Protocol**: Select the protocol. If you are unsure, select **BOTH**.

6. Click the **Add**  to enter the port trigger information to the list. Click the **Delete**  button to remove a port trigger entry from the list.

7. When done, click **Apply**.

To check if Port Forwarding has been configured successfully:

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

Differences between port trigger 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 router. Predetermined port ranges are configured to accept incoming connections for a limited period of time. Port triggering allows multiple computers to 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 trigger port.

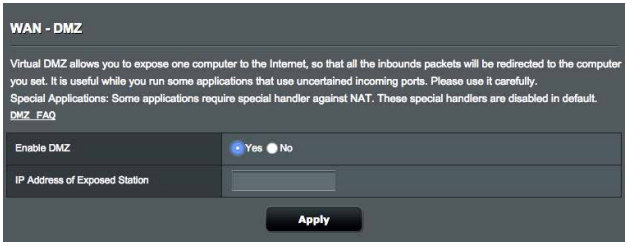
3.13.6 DMZ

Virtual DMZ exposes one client to the Internet, allowing this client to receive all inbound packets directed to your Local Area Network.

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. In a DMZ configuration, one network client receives all inbound packets.

Setting up DMZ on a network is useful when you need incoming ports open or you want to host a domain, web, or e-mail server.

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



To set up DMZ:

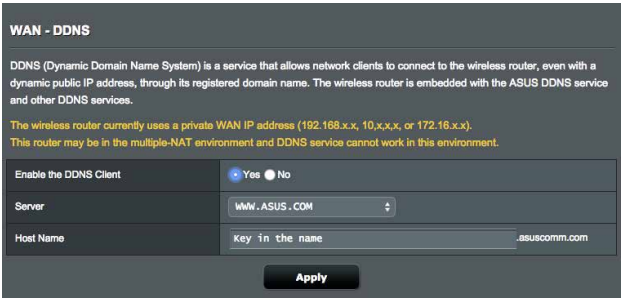
1. From the navigation panel, go to **Advanced Settings** > **WAN** > **DMZ**.
2. Configure the setting below. When done, click **Apply**.
   - **IP Address of Exposed Station:** Key in the client's LAN IP address that will provide the DMZ service and be exposed on the Internet. Ensure that the server client has a static IP address.

To remove DMZ:

1. Delete the client's LAN IP address from the **IP Address of Exposed Station** text box.
2. When done, click **Apply**.

3.13.7 DDNS

Setting up DDNS (Dynamic DNS) allows you to access the router from outside your network through the provided ASUS DDNS Service or another DDNS service.



To set up DDNS:

1. From the navigation panel, go to **Advanced Settings** > **WAN** > **DDNS**.
2. Configure the following settings below. When done, click **Apply**.
   - **Enable the DDNS Client**: Enable DDNS to access the ASUS router via the DNS name rather than WAN IP address.
   - **Server** and **Host Name**: Choose ASUS DDNS or other DDNS. If you want to use ASUS DDNS, fill in the Host Name in the format of xxx.asuscomm.com (xxx is your host name).
   - If you want to use a different DDNS service, click FREE TRIAL and register online first. Fill in the User Name or E-mail Address and Password or DDNS Key fields.
   - **Enable wildcard**: Enable wildcard if your DDNS service requires one.

NOTES:

DDNS service will not work under these conditions:

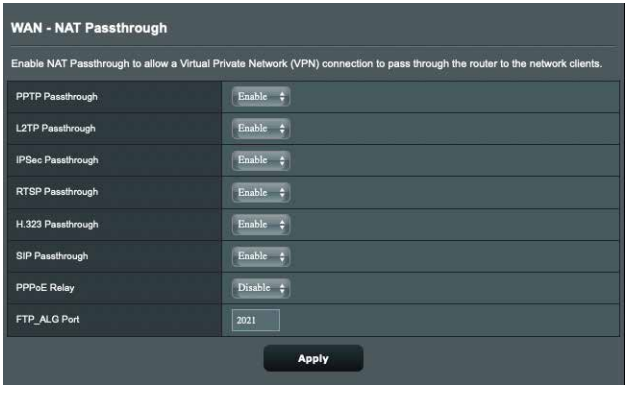
- When the wireless router is using a private WAN IP address (192.168.x.x, 10.x.x.x, or 172.16.x.x), as indicated by a yellow text.
- The router may be on a network that uses multiple NAT tables.

3.13.8 NAT Passthrough

NAT Passthrough allows a Virtual Private Network (VPN) connection to pass through the router to the network clients. PPTP Passthrough, L2TP Passthrough, IPsec Passthrough and RTSP Passthrough are enabled by default.

To enable / disable the NAT Passthrough settings:

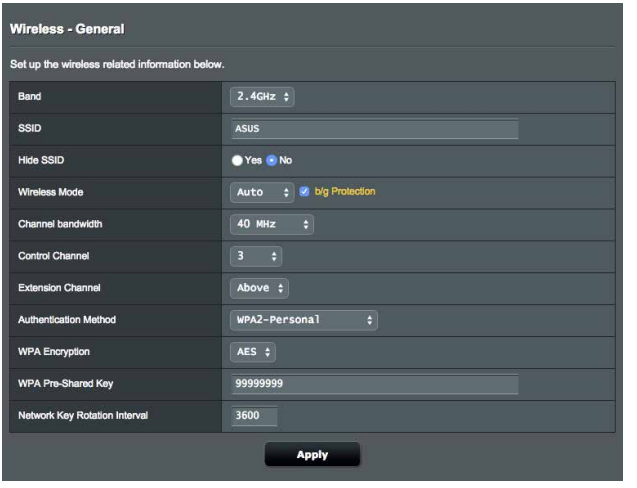
1. Go to the **Advanced Settings** > **WAN** > **NAT Passthrough**.
2. Select **Enable** or **Disable** for specific traffic pass through the NAT firewall.
3. When done, click **Apply**.



3.14 Wireless

3.14.1 General

The General tab allows you to configure the basic wireless settings.



To configure the basic wireless settings:

1. From the navigation panel, go to **Advanced Settings** > **Wireless** > **General**.
2. Configure wireless basic configuration for 2.4GHz or 5GHz frequency band.
3. In the **SSID** field, assign a unique name containing up to 32 characters for your SSID (Service Set Identifier) or network name to identify your wireless network. WiFi devices can identify and connect to the wireless network via your assigned SSID. The SSIDs on the information banner are updated once new SSIDs are saved to the settings.
4. In the **Hide SSID** field, select **Yes** to prevent wireless devices from detecting your SSID. When this function is enabled, you would need to enter the SSID manually on the wireless device to access the wireless network.

5. In the **Wireless Mode** field, select any of these wireless mode options to determine the types of wireless devices that can connect to your wireless router:
   - **Auto:** Select **Auto** to allow 802.11ac, 802.11n, 802.11g, 802.11b and 802.11a devices to connect to the wireless router.
   - **Legacy**: Select **Legacy** to allow 802.11b/g/n devices to connect to the wireless router. Hardware that supports 802.11n natively, however, will only run at a maximum speed of 54Mbps.
   - **b/g Protection**: Tick b/g Protection to allow wireless router protect 802.11n transmissions performance from legacy devices with 802.11g, 802.11b connection.
6. In the **Control Channel** field, select the operating channel for your wireless router. Select **Auto** to allow the wireless router to automatically select the channel that has the least amount of interference.
7. In the **Channel bandwidth** field, select any of these channel bandwidth to accommodate higher transmission speeds:
   - **20/40MHz** (default): Select this bandwidth to automatically select the best bandwidth for your wireless environment. In 5GHz band, the default bandwidth **20/40/80MHz** is selected.
   - **80MHz**: Select this bandwidth to maximize the wireless throughput of 5GHz radio.
   - **40MHz**: Select this bandwidth to maximize the wireless throughput of 2.4GHz radio.
   - **20MHz**: Select this bandwidth if you encounter some issues with your wireless connection.
8. If **20/40/80MHz**, **20/40MHz**, **40MHz** or **80MHz** is selected, you can define a upper or lower adjacent channel in the **Extension Channel** field to be accommodated
9. In the **Authentication Method** field, select any of these authentication methods:
   - **Open System**: This option provides no security.
   - **WPA2-Personal** / **WPA Auto-Personal**: This option provides strong security. You can use either WPA2-Personal (with AES) or WPA Auto-Personal (with AES or

TKIP + AES). If you select this option, you must enter the WPA Pre-Shared Key (network key).

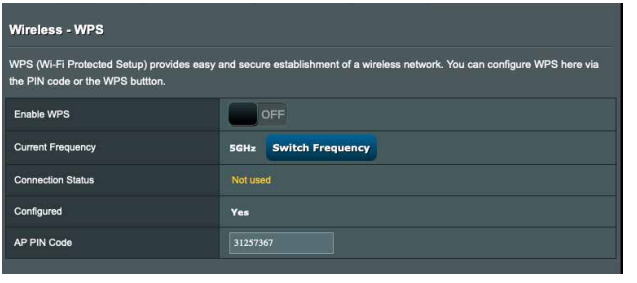
- **WPA2 Enterprise / WPA Auto-Enterprise**: This option provides very strong security. It is with integrated EAP server or an external RADIUS back-end authentication server.

11. When done, click **Apply**.

3.14.2 WPS

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

NOTE: Ensure that the devices support WPS.



To enable WPS on your wireless network:

1. From the navigation panel, go to **Advanced Settings** > **Wireless** > **WPS**.
2. In the **Enable WPS** field, move the slider to **ON**.
3. WPS uses 2.4GHz and 5GHz radio separately.
4. You can use any of the following WPS methods for wireless connection pairing:
   - **PBC (Push Button Configuration) Mode**:
     - Hardware PBC on the router: Press the physical WPS button on wireless router, and then press WPS button on wireless client in three (3) minutes.
     - Software PBC on the router: Tick <Push button> on **WPS Method** field, click **Start**, and then press the WPS button on the wireless client in three (3) minutes.
   - **PIN Code Mode**:
     - Pairing from the wireless client: Press the WPS button on the wireless router, and then perform WPS connection process in PIN code mode and enter the **AP PIN Code** on the client device.
     - Pairing from the wireless router: Press the WPS button on wireless client, and then perform the WPS connection process in PIN code mode and enter the **Client PIN Code** on the **WPS Method** > **Client PIN Code** filed. Check if the PIN code is correct and then click **Start** to pair with wireless client.

NOTES:

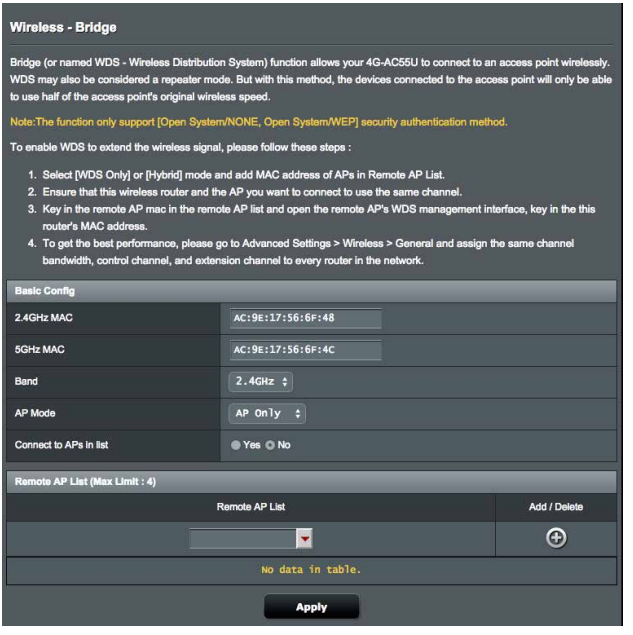
- WPS supports authentication using Open System and WPA2-Personal. WPS does not support a wireless network that uses a Shared Key, WPA-Personal, WPA-Enterprise, WPA2-Enterprise, and RADIUS encryption method.
- Check your wireless device or its user manual for the location of the WPS button.
- During the WPS process, the wireless router scans for any available WPS devices. If the wireless router does not find any WPS devices, it switches to idle mode.
- The router's power LED indicators quickly flash three minutes until the WPS setup is completed.

3.14.3 WDS

Bridge or WDS (Wireless Distribution System) allows your ASUS wireless router to connect to another wireless access point exclusively, preventing other wireless devices or stations to access your ASUS wireless router. It can also be considered as a wireless repeater where your ASUS wireless router communicates with another access point and other wireless devices.

To set up the wireless bridge:

1. From the navigation panel, go to **Advanced Settings** > **Wireless** > **WDS**.



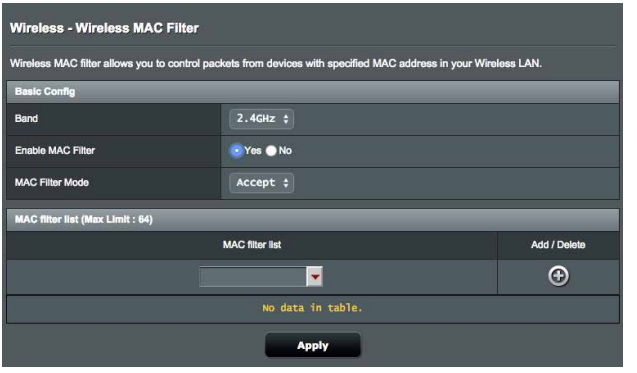
2. Select the band for the wireless bridge.
3. In the **AP Mode** field, select any of these options:
   - **AP Only**: Disables the WDS function.
   - **WDS Only**: Enables the WDS feature but prevents other wireless devices/stations from connecting to the router.
   - **HYBRID**: Enables the Wireless Bridge feature and allows other wireless devices/stations to connect to the router.
4. In the **Connect to APs in list** field, click **Yes** if you want to connect to an Access Point listed in the Remote AP List.
5. On the **Remote AP List**, key in a MAC address and click the **Add** button to enter the MAC address of other available Access Points
6. Click **Apply**.

NOTES:

- In Hybrid mode, wireless devices connected to the ASUS wireless router only receives half the connection speed of the Access Point.
- Any Access Point added to the list should be on the same Control Channel and the same fixed Channel bandwidth as the local ASUS wireless router. You can modify the Control Channel from **Advanced Settings** > **Wireless** > **General**.

3.14.4 Wireless MAC Filter

Wireless MAC filter provides control over packets transmitted to a specified MAC (Media Access Control) address on your wireless network.



To set up the Wireless MAC filter:

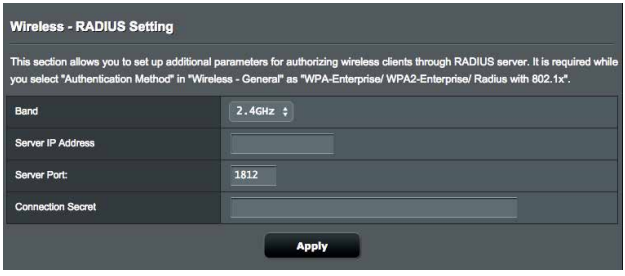
1. From the navigation panel, go to **Advanced Settings** > **Wireless** > **Wireless MAC Filter**.
2. Tick **Yes** in the **Enable MAC Filter** field.
3. In the **MAC Filter Mode** dropdown list, select either **Accept** or **Reject**.

- Select **Accept** to allow devices in the MAC filter list to access to the wireless network.
- Select **Reject** to prevent devices in the MAC filter list to access to the wireless network.

4. On the **MAC filter list**, click the **Add** button and key in the MAC address of the wireless device.
5. Click **Apply**.

3.14.5 RADIUS Setting

RADIUS (Remote Authentication Dial In User Service) Setting provides an extra layer of security when you choose WPA-Enterprise, WPA2-Enterprise, or Radius with 802.1x as your Authentication Mode.



To set up the wireless RADIUS settings:

1. Ensure that the wireless router's authentication mode is set to **WPA-Auto-Enterprise** or **WPA2-Enterprise**.

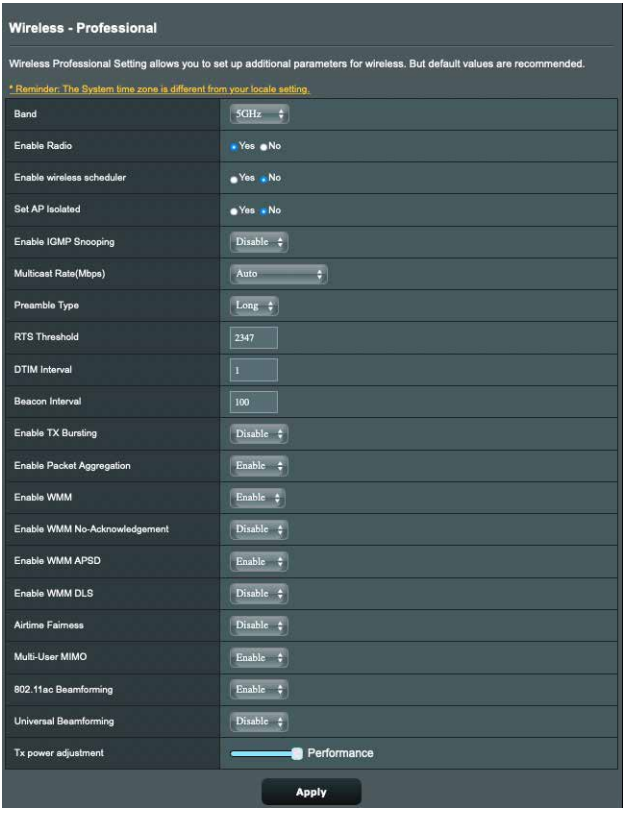
NOTE: Please refer to section **3.14.1 General** for configuring your wireless router's Authentication Mode.

2. From the navigation panel, go to **Advanced Settings** > **Wireless** > **RADIUS Setting**.
3. Select the frequency band.
4. In the **Server IP Address** field, key in your RADIUS server's IP address.
5. In the **Server Port** field, key in the server port.
6. In the **Connection Secret** field, assign the password to access your RADIUS server.
7. Click **Apply**.

3.14.6 Professional

The Professional screen provides advanced configuration options.

NOTE: We recommend that you use the default values on this page.



In the **Professional Setting** screen, you can configure the following:

- **Band**: Select the frequency band that the professional settings will be applied to.
- **Enable Radio**: Select **Yes** to enable wireless networking. Select **No** to disable wireless networking.
- **Enable wireless scheduler**: Select **Yes** to enable wireless networking by the following schedule rules. Select **No** to disable the schedule rules.

- **Date to Enable Radio (weekdays)**: You can specify which days of the week wireless networking is enabled.
- **Time of Day to Enable Radio**: You can specify a time range when wireless networking is enabled during the week.
- **Date to Enable Radio (weekend)**: You can specify which days of the weekend wireless networking is enabled.
- **Time of Day to Enable Radio**: You can specify a time range when wireless networking is enabled during the weekend.
- **Set AP isolated**: The Set AP isolated item prevents wireless devices on your network from communicating with each other. This feature is useful if you want to create a public wireless network that only allow guests to access the Internet. Select **Yes** to enable this feature or select **No** to disable.
- **Roaming Assistant**: When your wireless environment has provisioned a several APs (access point) or wireless repeaters to cover all wireless dead zones. When a client that connected on AP1 moves from one place with better signal to another with poor signal, but there is an another signal from AP2. To prevent the client stick on AP1, you can enable Roaming Assistant, and set a minimal RSSI value as threshold. When the connection quality lower than the threshold, AP1 disconnect the wireless client so that it can reevaluate the wireless environment to select a AP with the best signal quality, such as AP2.
- **Enable IGMP Snooping**: When IGMP snooping is enabled, multicast traffic is only forwarded to wireless clients that are members of a specific multicast group.
- **Multicast Rate (Mbps)**: Select the multicast transmission rate or click **Disable** to switch off simultaneous single transmission.
- **Preamble Type**: Preamble Type defines the length of time that the router spent for CRC (Cyclic Redundancy Check). CRC is a method of detecting errors during data transmission. Select **Short** for a busy wireless network with high network traffic. Select **Long** if your wireless network is composed of older or legacy wireless devices.

- **AMPDU RTS**: In 802.11n or 802.11ac using a method, A-MPDU, to aggregate short packet into a longer packet for the same MAC address. When a wireless device ready for transmission sends a RTS (Request to Send). After enabling AMPDU RTS, every AMPDU frame send with RTS process.
- **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.
- **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.
- **Beacon Interval**: Beacon Interval is the time between one DTIM and the next. The default value is 100 milliseconds. Lower the Beacon Interval value for an unstable wireless connection or for roaming devices.
- **Enable TX Bursting**: Enable TX Bursting improves transmission speed between the wireless router and 802.11g devices.
- **Enable WMM APSD**: WMM APSD (Automatic Power Save Delivery) is the enhancement to the legacy power saver mode. Enable WMM APSD, the wireless AP manages radio usage to help increase battery life for battery-powered wireless clients, such as smartphone and laptop. APSD automatically changes to use a longer beacon interval when the traffic does not require a short packet exchange interval.

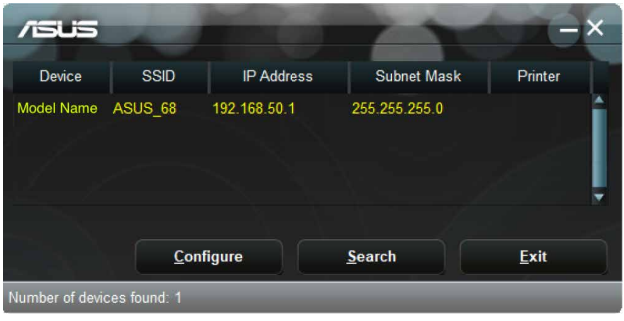
4 Utilities

NOTE: Download and install the wireless router's utilities from the ASUS website: https://www.asus.com/support/Download-Center/

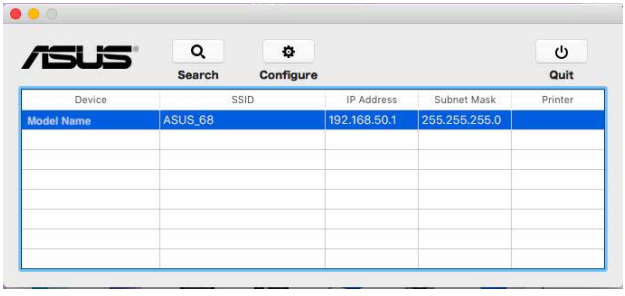
4.1 Device Discovery

Device Discovery is an ASUS WLAN utility that detects an ASUS wireless router device, and allows you to configure the wireless networking settings.

Windows:



Mac OS:

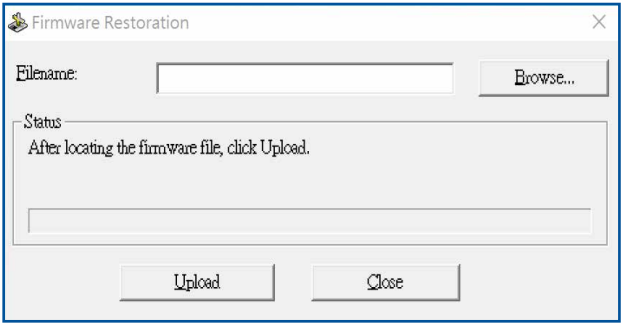


NOTE: When you set the router to Access Point mode, you need to use Device Discovery to get the router's IP address.

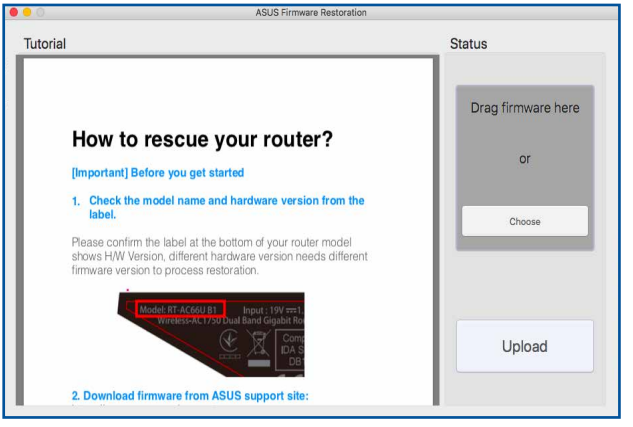
4.2 Firmware Restoration

Firmware Restoration is used on an ASUS Wireless Router that failed during its firmware upgrading process. It uploads the firmware that you specify. The process takes about three to four minutes.

Windows:



Mac OS:



IMPORTANT! Launch the rescue mode on the router before using the Firmware Restoration utility.

To launch the rescue mode and use the Firmware Restoration utility:

1. Unplug the wireless router from the power source.
2. Hold the Reset button at the rear panel and simultaneously replug the wireless router into the power source. Release the Reset button when the Power LED at the front panel flashes slowly, which indicates that the wireless router is in the rescue mode.
3. Set a static IP on your computer and use the following to set up your TCP/IP settings:

   IP address: 192.168.1.x

   Subnet mask: 255.255.255.0
4. From your computer's desktop, click **Start** > **All Programs** > **ASUS Utility** > **Wireless Router** > **Firmware Restoration**.
5. Specify a firmware file, then click **Upload**.

NOTE: This is not a firmware upgrade utility and cannot be used on a working ASUS Wireless Router. Normal firmware upgrades must be done through the web interface. Refer to **Chapter 3: Configuring the General and Advanced Settings** for more details.

---

5 Troubleshooting

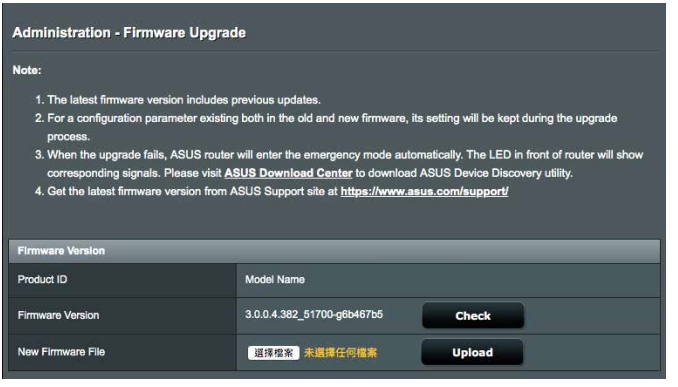
This chapter provides solutions for issues you may encounter with your router. If you encounter problems that are not mentioned in this chapter, visit the ASUS support site at: https://www.asus.com/support for more product information and contact details of ASUS Technical Support.

5.1 Basic Troubleshooting

If you are having problems with your router, try these basic steps in this section before looking for further solutions.

Upgrade Firmware to the latest version.

1. Launch the Web GUI. Go to **Advanced Settings** > **Administration** > **Firmware Upgrade**. Click **Check** to verify if the latest firmware is available.



2. If the latest firmware is available, visit the ASUS global website at http://www.asus.com/support to download the latest firmware.
3. From the **Firmware Upgrade** page, click **Browse** to locate the firmware file.
4. Click **Upload** to upgrade the firmware.

Restart your network in the following sequence:

1. Turn off the modem.
2. Unplug the modem.
3. Turn off the router and computers.
4. Plug in the modem.
5. Turn on the modem and then wait for 2 minutes.
6. Turn on the router and then wait for 2 minutes.
7. Turn on computers.

Check if your Ethernet cables are plugged properly.

- When the Ethernet cable connecting the router with the modem is plugged in properly, the WAN LED will be on.
- When the Ethernet cable connecting your powered-on computer with the router is plugged in properly, the corresponding LAN LED will be on.

Check if the wireless setting on your computer matches that of your router.

- When you connect your computer to the router wirelessly, ensure that the SSID (wireless network name), encryption method, and password are correct.

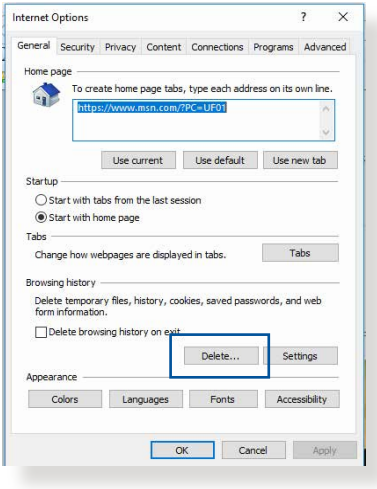
Check if your network settings are correct.

- Each client on the network should have a valid IP address. ASUS recommends that you use the wireless router's DHCP server to assign IP addresses to computers on your network.
- Some cable modem service providers require you to use the MAC address of the computer initially registered on the account. You can view the MAC address in the web GUI, **Network Map** > **Clients** page, and hover the mouse pointer over your device in **Client Status**.

5.2 Frequently Asked Questions (FAQs)

I cannot access the router GUI using a web browser

- If your computer is wired, check the Ethernet cable connection and LED status as described in the previous section.
- Ensure that you are using the correct login information. Ensure that the Caps Lock key is disabled when you enter the login information.
- Delete the cookies and files in your web browser. For Internet Explorer, follow these steps:
  1. Launch Internet Explorer, then click **Tools** > **Internet Options**.
  2. In the **General** tab, under **Browsing history**, click **Delete…**, select **Temporary Internet files and website files** and **Cookies and website data** then click **Delete**.



NOTES:

- The commands for deleting cookies and files vary with web browsers.
- Disable proxy server settings, cancel the dial-up connection, and set the TCP/IP settings to obtain IP addresses automatically. For more details, refer to Chapter 1 of this user manual.
- Ensure that you use CAT5e or CAT6 ethernet cables.

The client cannot establish a wireless connection with the router.

NOTE: If you are having issues connecting to 5GHz network, make sure that your wireless device supports 5GHz or features dual band capabilities.

- **Out of Range:**
  - Move the router closer to the wireless client.
  - Try to adjust antennas of the router to the best direction as described in section **1.4 Positioning your router**.
- **DHCP server has been disabled:**
  1. Launch the web GUI. Go to **General** > **Network Map**> **Clients** and search for the device that you want to connect to the router.
  2. If you cannot find the device in the **Network Map**, go to **Advanced Settings** > **LAN** > **DHCP Server**, **Basic Config** list, select **Yes** on the **Enable the DHCP Server**.
- SSID has been hidden. If your device can find SSIDs from other routers but cannot find your router's SSID, go to **Advanced Settings** > **Wireless** > **General**, select **No** on **Hide SSID**, and select **Auto** on **Control Channel**.
- If you are using a wireless LAN adapter, check if the wireless channel in use conforms to the channels available in your country/area. If not, adjust the channel, channel bandwidth, and wireless mode.
- If you still cannot connect to the router wirelessly, you can reset your router to factory default settings. In the router GUI,click **Administration** > **Restore/Save/Upload Setting** and click **Restore**.

Wired Internet is not accessible.

- Check if your router can connect to your ISP's WAN IP address. To do this, launch the web GUI and go to **General**> **Network Map**, and check the **Internet Status**.
- If your router cannot connect to your ISP's WAN IP address, try restarting your network as described in the section **Restart your network in following sequence** under **Basic Troubleshooting**.
- The device has been blocked via the Parental Control function. Go to **General** > **Parental Controls** and see if the device is in the list. If the device is listed under **Client Name**, remove the device using the **Delete** button or adjust the Time Management settings.
- If there is still no Internet access, try to reboot your computer and verify the network's IP address and gateway address.
- Check the status indicators on the ADSL modem and the wireless router. If the WAN LED on the wireless router is not ON, check if all cables are plugged properly.

Mobile broadband Internet is not accessible.

- Insert a SIM that with data plan subscription into the USIM card slot. The 3G/4G Mobile Broadband LED lights up, indicating that the SIM card is properly installed.
- The APN settings are not applied automatically. Obtain the APN service settings from your ISP, then follow the steps below tho manually configure the APN settings.
  - Go to **Advanced Settings** > **WAN** > **Internet Connection**.
  - In the **WAN Interface** field, select **Mobile Broadband**.
- If APN is configured correctly and Internet connection still fails, ensure that:
  - The frequency band is compatible with your ISP.
  - The wireless router is placed close to the window for a strong 3G/4G signal.

- Port trigger, port forwarding, DDNS or DMZ service cannot work. Most ISPs provide a private IP address for a mobile broadband device. Hence some services, such as AiCloud, are not accessible. Please contact your ISP for assistance.

You forgot the SSID (network name) or network password

- Setup a new SSID and encryption key via a wired connection (Ethernet cable). Launch the web GUI, go to **Network Map**, click the router icon, enter a new SSID and encryption key, and then click **Apply**.
- Reset your router to the default settings. Launch the web GUI, go to **Administration** > **Restore/Save/Upload Setting**, and click **Restore**.

How to restore the system to its default settings?

- Go to **Administration** > **Restore/Save/Upload Setting**, and click **Restore**.

  The following are the factory default settings:

  Router's LAN IP address: 192.168.50.1/ www.asusrouter.com

  WiFi Settings:

  SSID: ASUS_XX

NOTE: XX refers to the last two digits of 2.4GHz MAC address. You can find it on the label on the back of your router.

Firmware upgrade failed.

Launch the rescue mode and run the Firmware Restoration utility. Refer to section **4.2 Firmware Restoration** on how to use the Firmware Restoration utility.

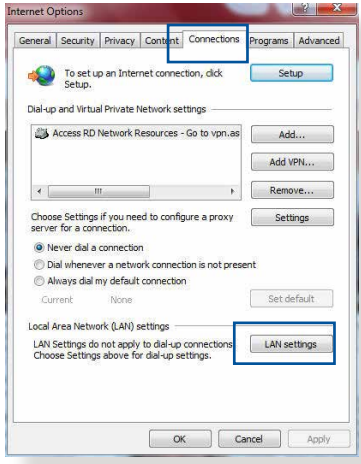
Cannot access Web GUI

Before configuring your wireless router, do the steps described in this section for your host computer and network clients.

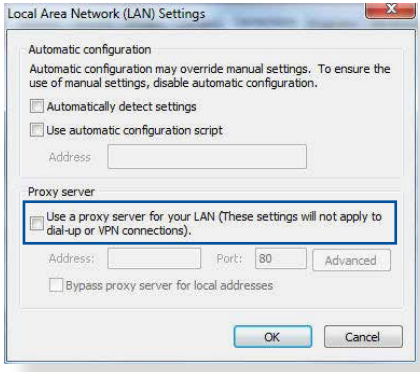
A. Disable the proxy server, if enabled.

Windows®

1. Click **Start > Internet Explorer** to launch the browser.
2. Click **Tools** > **Internet options** > **Connections** > **LAN settings**.

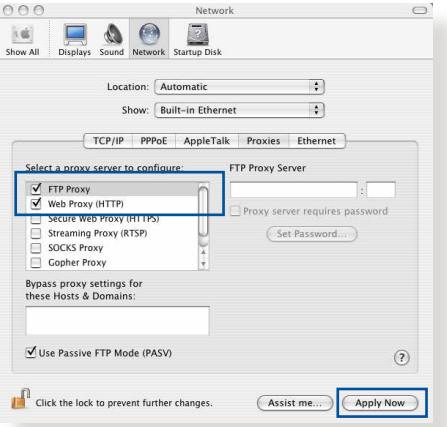


3. From the Local Area Network (LAN) Settings screen, untick **Use a proxy server for your LAN**.
4. Click **OK** when done.



MAC OS

1. From your Safari browser, click **Safari** > **Preferences** > **Advanced** > **Change Settings...**
2. From the Network screen, deselect **FTP Proxy** and **Web Proxy (HTTP)**.
3. Click **Apply Now** when done.

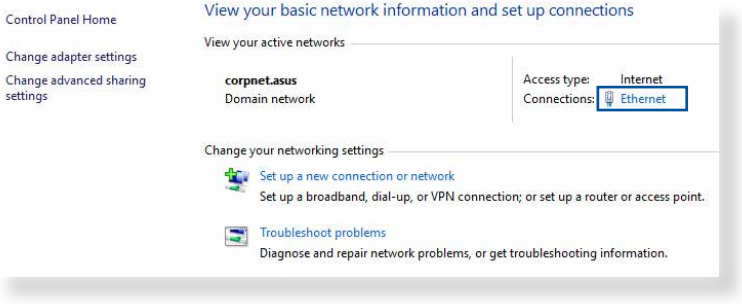


NOTE: Refer to your browser's help feature for details on disabling the proxy server.

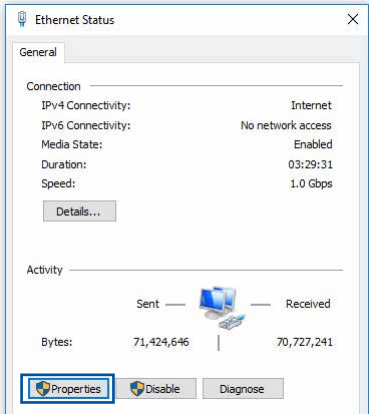
B. Set the TCP/IP settings to automatically obtain an IP address.

Windows®

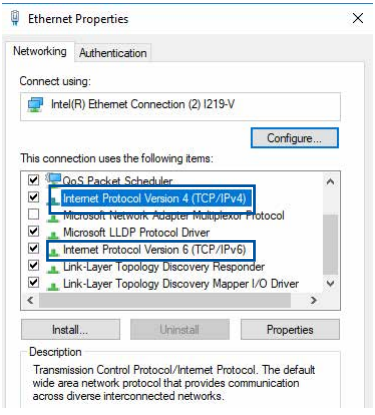
1. Click **Start** > **Control Panel** > **Network and Sharing Center,** then click the network connection to display its status window.



2. Click **Properties** to display the Ethernet Properties window.



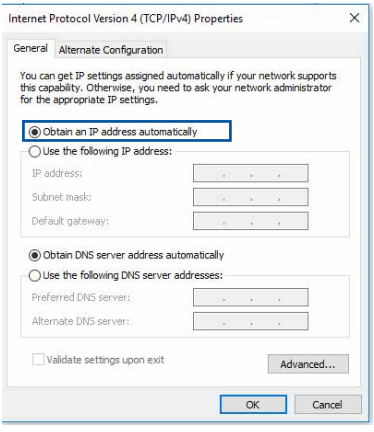
3. Select **Internet Protocol Version 4 (TCP/IPv4)** or **Internet Protocol Version 6 (TCP/IPv6)**, then click **Properties**.



4. To obtain the IPv4 IP settings automatically, tick **Obtain an IP address automatically**.

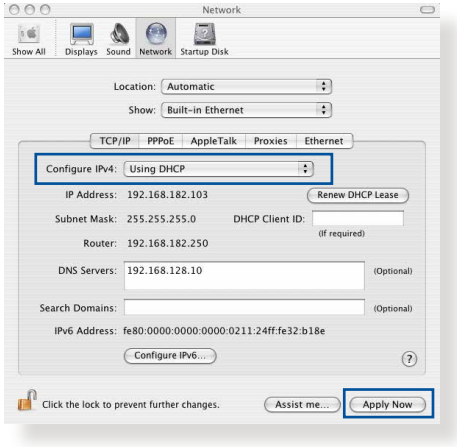
   To obtain the IPv6 IP settings automatically, tick **Obtain an IPv6 address automatically**.

5. Click **OK** when done.



MAC OS

1. Click the Apple icon located on the top left of your screen.
2. Click **System Preferences** > **Network** > **Configure...**
3. From the **TCP/IP** tab, select **Using DHCP** in the **Configure IPv4** dropdown list.
4. Click **Apply Now** when done.

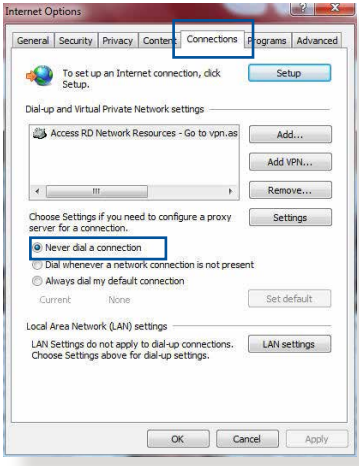


NOTE: Refer to your operating system's help and support feature for details on configuring your computer's TCP/IP settings.

C. Disable the dial-up connection, if enabled.

Windows®

1. Click **Start** > **Internet Explorer** to launch the browser.
2. Click **Tools** > **Internet options** > **Connections**.
3. Tick **Never dial a connection**.
4. Click **OK** when done.



NOTE: Refer to your browser's help feature for details on disabling the dial-up connection.

Appendices

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- If the Adapter is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.
- DO NOT use damaged power cords, accessories, or other peripherals.
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- Kindly use ASUS products in good reception conditions to minimize the radiation's level.
- Keep the device away from pregnant women and the lower abdomen of the teenager.
- DO NOT use this product if visible defects can be observed or it has been wet or damaged or modified. Seek servicing for assistance.

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- DO NOT place on uneven or unstable work surfaces.

- DO NOT place or drop objects on the top of the product. Avoid exposing the product to mechanical shock such as crushing, bending, puncturing or shredding.
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- Keep the product away from fire and heat sources.
- DO NOT expose to or use near liquids, rain, or moisture. DO NOT use the product during electrical storms.
- Connect the PoE output circuits of this product exclusively to PoE networks, without routing to external facilities.
- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- Only use accessories that have been approved by the device manufacturer to work with this model. The use of other types of accessories may invalidate the warranty or violate local regulations and laws, and may pose safety risks. Contact your local retailer for the availablity of authorized accessories.
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