User Guide

4G-N12

Wireless-N300 LTE Modem Router

/ISUS ®

IN SEARCH OF INCREDIBLE
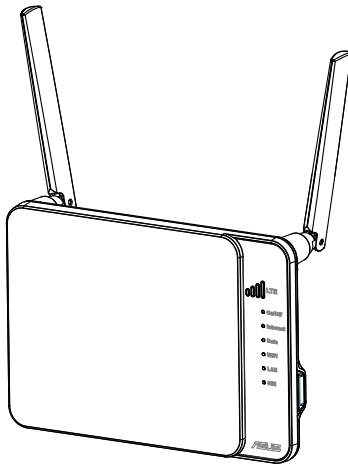
E9553

First Edition

November 2014

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1 Getting to know your wireless router

1.1 Welcome!

Thank you for buying an ASUS 4G-N12 Wireless LTE Router!

ASUS 4G-N12 Wireless LTE Router features a 4G network module, letting you insert a SIM/USIM card to access and share your 4G LTE or 3G network connection via a secure wireless network or any of the four Ethernet ports. It offers a download speed of 100 Mbps and upload speed of 50 Mbps for fast Internet access, seamless media streaming, or easy data transfer.

1.2 Package contents

☑ 4G-N12 Wireless Router   ☑ Network cable (RJ-45)

☑ Power adapter   ☑ Quick Start Guide

NOTES:

- If any of the items are damaged or missing, contact ASUS for technical inquiries and support, Refer to the ASUS Support Hotline list at the back of this user guide.

- Keep the original packaging material in case you would need future warranty services such as repair or replacement.

1.3   Your wireless router

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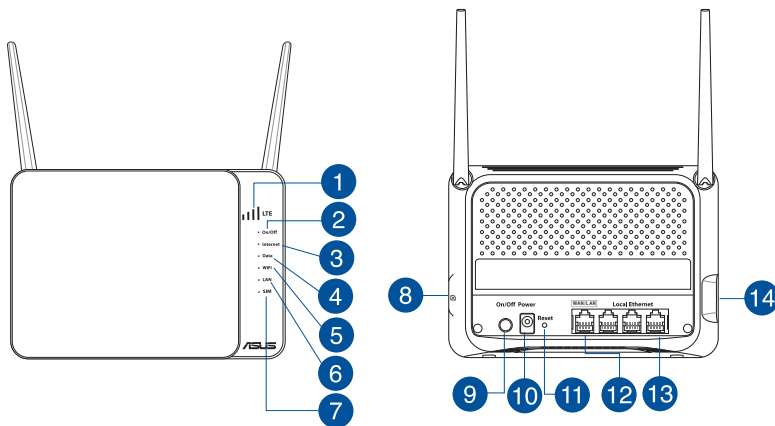
1 **LTE signal strength LED 1~4**
   1 lit LED: Very weak signal;
   2 lit LEDs: Weak signal;
   3 lit LEDs: Normal signal;
   4 lit LEDs: Strong signal.

---

2 **Power LED**
   Off: No power.
   On: Device is ready.

---

3 **Internet LED**
   Off: No LTE connection.
   Flashing: Establishing a LTE/Ethernet WAN connection.
   On: Has a proper LTE/Ethernet WAN connection.

---

4 **Data LED (LTE/Ethernet WAN Traffic)**
   Off: No data activity.
   On: Data connection is ready.

---

5 **Wi-Fi LED**
   Off: No 2.4GHz signal.
   On: Wireless system is ready.

---

6 **LAN LED**
   Off: No power or no physical connection.
   On: Ethernet connection is established.

7	**USIM Card LED**	
	Off: No USIM card is installed.	
	On: A USIM card is installed properly.	

8	**USIM card slot**
	Install a USIM card into this slot to establish a WAN LTE connection.

9	**Power button**
	Press this button to power on or off the stystem.

On   Off

10	**Power (DC-IN) port**
	Insert the bundled AC adapter into this port and connect your router to a power source.

11	**Reset button**
	Press this button for 5 seconds or longer to reset or restore the system to its factory default settings.

12	**WAN/LAN port**
	Using an Ethernet cable, connect your modem to the WAN/LAN port of your wireless router.

13	**LAN ports**
	Connect network cables into these ports to establish LAN connection.

14	**WPS button**
	This button launches the WPS Wizard.

NOTES:

• Use only the adapter that came with your package. Using other adapters may damage the device.

• Ensure to insert the SIM card into the card slot before powering on the router.

• **Specifications:**

DC Power adapter	DC Output: +12V with max 1A current;		
Operating Temperature	0~40ºC	Storage	0~70ºC
Operating Humidity	50~90%	Storage	20~90%

1.4   Positioning your router

For the best wireless signal transmission between the wireless router and the devices connected to it, ensure that you:

*   Place the Wireless LTE Router near a window to receive the best LTE signal quality for maximum upstream performance with an LTE base station.

*   Keep the device away from metal obstructions and away from direct sunlight.

*   Do not place the Wireless LTE Router in a dusty or wet environment.

*   Keep the device away from 802.11g or 20MHz-only Wi-Fi devices, 2.4GHz computer peripherals, Bluetooth devices, cordless phones, transformers, heavy-duty motors, fluorescent lights, microwave ovens, refrigerators, and other industrial equipment to prevent signal interference or loss.

*   Always update to the latest firmware. Visit the ASUS website at **http://www.asus.com** to get the latest firmware updates.

*   To ensure the best wireless signal, orient the two antennas as shown in the drawing below.
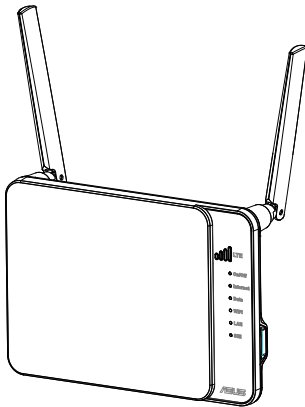
1.5   Setup requirements

To set up your wireless network, you need to meet the following requirements:

- A mini SIM/USIM card with WCDMA and LTE subscription
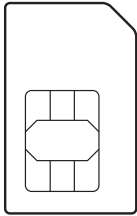
Mini SIM card   **Micro SIM card**   **Nano SIM card**
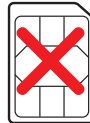
NOTE: A standard SIM/USIM card is a standard mini SIM card.

IMPORTANT! Ensure that your SIM/USIM card is subscribed to WCDMA and LTE services. Contact your mobile service provider about these services.

CAUTION!   Use only a standard SIM/USIM card on your router. Using a different form of SIM card, such a micro or nano SIM card, may damage your router.

- An ADSL/cable modem with Internet subscription
- A computer with Ethernet RJ-45 (LAN) port (10Base-T/100Base-TX) or a Wi-Fi-enabled device with a 2.4 GHz 802.11 b/g/n wireless interface
- Web browser such as Internet Explorer, Firefox, Safari, or Google Chrome

NOTES:

•   If your computer does not have built-in wireless capabilities, you may install an IEEE 802.11 b/g/n WLAN adapter to your computer to connect to the network.

•   Do not plug a phone jack into an RJ-45 port. This may damage the Wireless LTE Router.

•   The Ethernet RJ-45 cables that will be used to connect the network devices should not exceed 100 meters.

1.6   Router Setup

WARNING!

•   Avoid installing your Wireless LTE Router during an electrical storm. There may be a remote risk of electrical shock caused by lightning.

•   Do not try to disassemble or reassemble this device. Tampering with your Wireless LTE Router might void its warranty.

•   When mounting or cleaning the device, ensure to unplug the power cord from your Wireless LTE Router.

•   Keep your hands dry when handling your Wireless LTE Router to avoid any possible electrical shock.
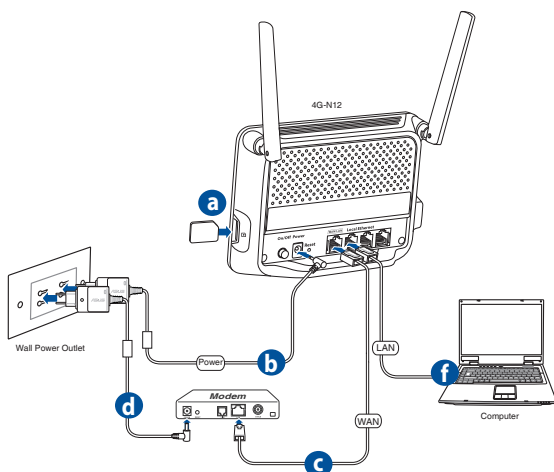
a. Insert the SIM/USIM card into the USIM card slot.

b. Insert the AC adapter of your router to the DC-IN port and plug it to a power outlet.

c. Using a network cable, connect your modem to the WAN/LAN port of your wireless router.

d. Insert the AC adapter of your modem to the DC-IN port and plug it to a power outlet.

e. Turn on your router.

f. Using the bundled network cable, connect your computer to the LAN port of your router.

g. To manually connect to a wireless network:

   1. Enable the Wi-Fi function on your wireless client for it to automatically scan for wireless networks.

   2. Select the wireless network named "ASUS", which is the default wireless network name (SSID) of ASUS wireless routers.

   3. When prompted, key in the default password of the router, which can be found on the sticker at the back.

2 Getting started

2.1 Logging into the Web GUI

Your ASUS Wireless Router comes with an intuitive web graphical user interface (GUI) that allows you to easily configure its various features through a web browser such as Internet Explorer, Firefox, Safari, or Google Chrome.

NOTE: The features may vary with different firmware versions.

To log into the web GUI:

1. On your web browser, manually key in the wireless router's default IP address: **192.168.1.1** or enter http://router.asus.com.

2. On the login page, key in the default user name (**admin**) and password (**admin**).

3. You can now use the Web GUI to configure various settings of your ASUS Wireless Router.

Top command buttons

QIS

Information banner

Navigation panel

right column

middle column

NOTES:

- The default login password is **admin**. You can manually set up a new password that contains 3 to 16 case-sensitive alphanumeric characters.

- If the WAN connection is not ready, you will be directed to the Quick Internet Setup (QIS) page automatically.

2.2 Quick Internet Setup (QIS) with Auto-detection

The Quick Internet Setup (QIS) function guides you in quickly setting up your Internet connection.

NOTE: When setting the Internet connection for the first time, press the Reset button on your wireless router to reset it to its factory default settings.

To use QIS with auto-detection:

1. Log into the Web GUI. The QIS page launches automatically.
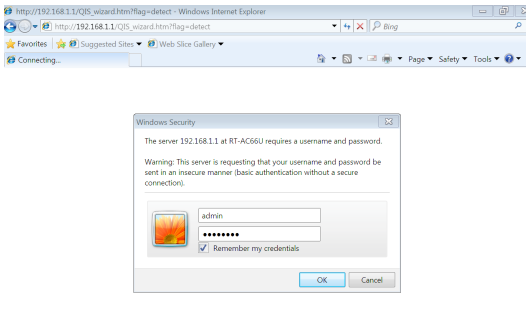
2. On the welcome page, click **Go** to continue.
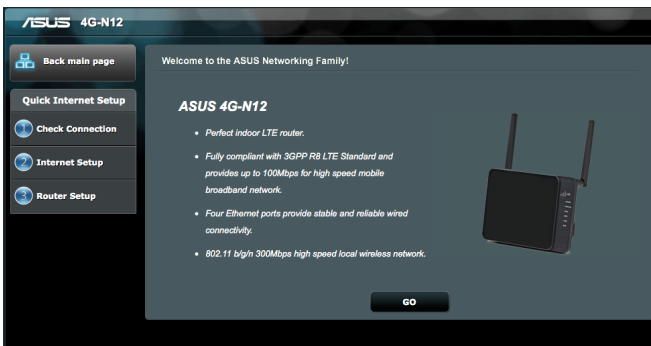
3. Change the password for the wireless router. When done, click **Next**.

NOTE: We recommend that you assign a unique administrator password to protect your network from malicious attacks.

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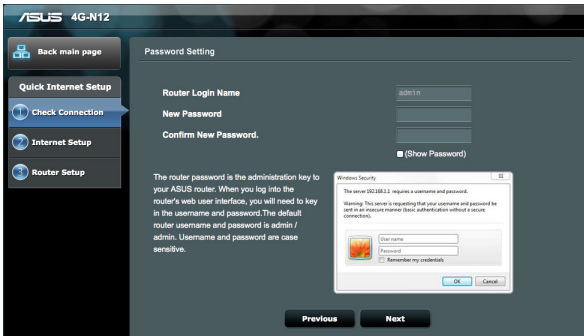
4. The wireless router automatically detects and applies the APN settings. When done, click **WLAN Setting** to configure the wireless LAN settings.
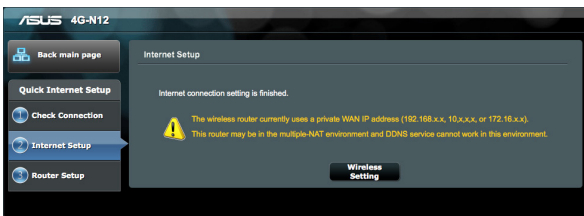
5. Assign a unique network name (SSID) and a network security key. When done, click **Apply**.
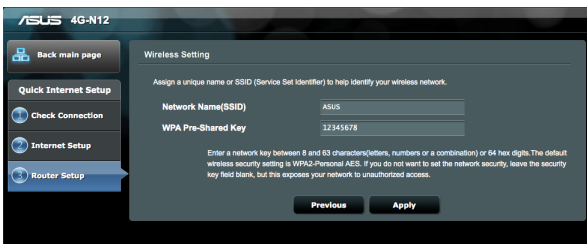
6. Your Internet and wireless settings are displayed. Click **Next** to continue.

7. If the wizard failed to apply the APN settings or the PIN code of the SIM card is required, you need to manually complete the mobile broadband connection. Key in the necessary APN settings and the PIN code of your SIM card. When done, click **Connect**.

NOTE: The auto-detection of your ISP connection takes place when you configure the wireless router for the first time or when your wireless router is reset to its default settings.

3 Configuring the General 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.
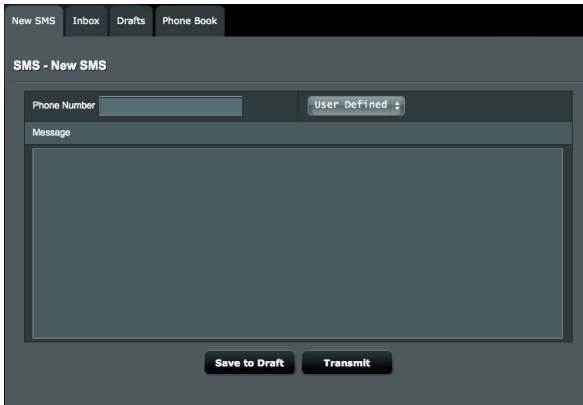
3.2 SMS

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

3.2.1 New SMS

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

To send a new SMS message:
1. Enter the recipient's phone number.
2. Compose your message.
3. Click **Transmit** to send the message.

To save a SMS draft:
1. Enter the recipient's phone number.
2. Compose your message.
3. Click **Save to Draft** to save the message draft.

3.2.2 Inbox

Inbox allows you to view the received short messages saved in your device.

Click **Read** to read a message, or click **Delete** to delete a message.
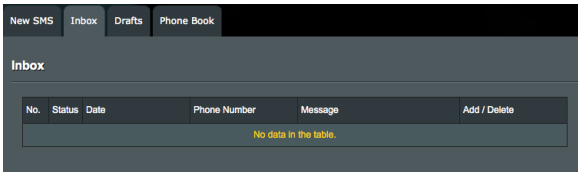
3.2.3 Drafts

All the message drafts are saved in the Wireless LTE Router and displayed here.

Click **Transmit** to send a message, or click **Delete** to delete a message.
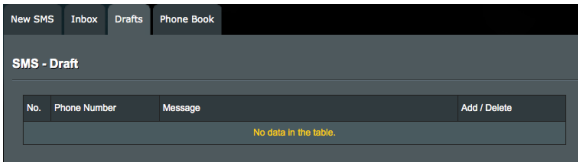
3.2.4 Phone Book

Phone Book allows you to save your frequent contacts' phone numbers.

To add a phone number, enter the name and phone number, and click ⊕ .
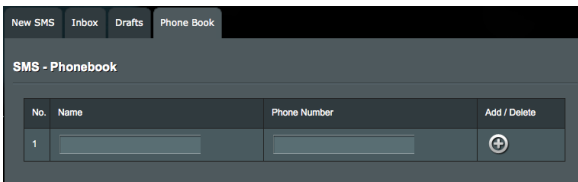
4   Configuring the Advanced Settings

4.1   Wireless

The Wireless LTE Router operates as a wireless access point, allowing wireless device to connect to the Internet. The GUI allows you to configure the radio channel, Service Set Identifier (SSID), security and WPS settings.

4.1.1 General

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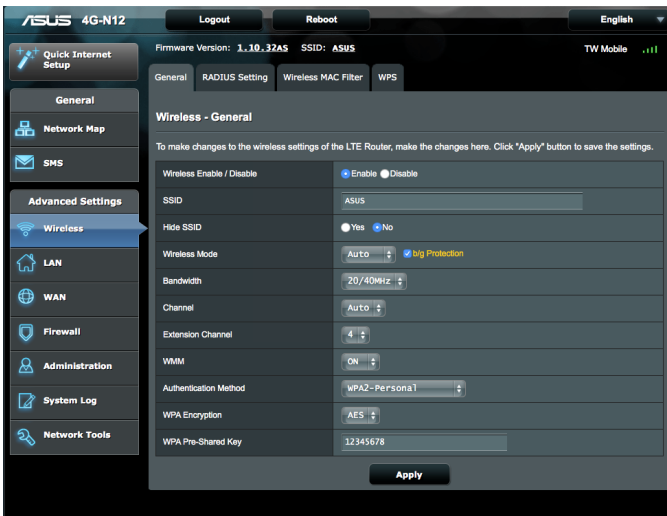
To configure the basic wireless settings:

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

2. **Wireless Enable / Disable**: Select **Enable** to use your router as a wireless access point.

3. Assign a unique name containing up to 32 characters for your SSID (Service Set Identifier) or network name to identify your wireless network. Wi-Fi 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. 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, and 802.11b 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.

   • **N only**: Select **N only** to maximize wireless N performance. This setting prevents 802.11g and 802.11b devices from connecting to the wireless router.

   • **b/g Protection**: In most situations, the best performance is achieved with the wireless protected mode turned off. If you are using the router in an environment with heavy 802.11b, 802.11g traffic or serious interference, enable this function to ensure the best performance of your 802.11n throughput.

6. Select any of these channel bandwidth to accommodate higher transmission speeds:

   20/40MHz: Select this bandwidth to maximize the wireless throughput.

   20MHz (default): Select this bandwidth if you encounter some issues with your wireless connection.

7. Select the operating channel for your wireless router. Select **Auto** to allow the wireless router to automatically select the channel that has the minimum interference.

8. **Extension Channel**: The extension channel that you can assign is based on the following:

   • When Bandwidth is set to 20MHz, the extension channel is disabled.

   • When Wireless Channel (main channel) is set to 1, select channel 5 as the extension channel.

   • When the Wireless Channel is set to channel 9, select channel 5 or 13 as the extension channel.

9. **WMM**: Enables or disables the use of QoS. The QoS (Quality of Service) function allows you to differentiate WMM (Wi-Fi Multimedia) traffic and provide it with high-priority forwarding service.

10. Select any of these authentication methods:

   • **Open System**: This option provides no security.

   • **WPA/WPA2 Personal/WPA Auto-Personal**: This option provides strong security. You can use either WPA (with TKIP) or WPA2 (with AES). If you select this option, you must use TKIP + AES encryption and enter the WPA passphrase (network key).

   • **WPA/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**.

NOTE: Your wireless router supports the maximum transmission rate of 54Mbps when the Wireless Mode is set to Auto and the encryption method is WEP or TKIP.

4.1.2 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.

General	RADIUS Setting	Wireless MAC Filter	WPS

Wireless - RADIUS Setting

This section allows you to set up additional parameters for authorizing wireless clients through RADIUS server. It is required while you select "Authentication Method" in "Wireless - General" as "WPA-Enterprise/ WPA2-Enterprise/ Radius with 802.1x".

Server IP Address	0.0.0.0	
Server Port	1812	
Connection Secret		
Network Key Rotation Interval	2000	(seconds)

Apply

To configure the wireless RADIUS settings:

1. From the navigation panel, go to **Advanced Settings** > **Wireless** > **RADIUS Setting** tab.

2. **Server IP Address**: Enter the RADIUS server's IP Address in this field.

3. **Server Port**: Enter the RADIUS server's port number in this field.

4. **Connection Secret**: Enter the password to access your RADIUS server.

5. **Network Key Rotation Interval**: Define the renewal period that the RADIUS server sends a new encryption keys out to all clients.

6. When done, click **Apply**.

4.1.3 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** tab.

2. In the **Enable MAC Filter** field, select **Yes** to enable Wireless MAC filter.

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 the wireless network.

    • Select **Reject** to prevent devices in the MAC filter list to access the wireless network.

4. On **the MAC filter list**, click ⊕ and key in the MAC address of the wireless device.

5. Click **Apply**.

4.1.4 WPS (Wi-Fi Protected Setup)

WPS (Wi-Fi Protected Setup) allows you easy create a secure wireless network via the PIN code or Push Button Control (PBC) feature.

Scroll down to display other items:

To create a secure network using WPS:

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

2. In the **Enable WPS** field, select **Enabled**, then click **Apply**.

3. Set up WPS via the PIN code or PBC (Push Button Control) method. Refer to the succeeding steps for more details.

To set up WPS via the PIN code method:

1. Power on your client device that supports WPS PIN (Personal Information Number) code method.

2. Enter the PIN code of the client device and click **Enroll**.

NOTE: The PIN code can be found either at the bottom of the packaging case or on the user interface of the client device.

3. Start the WPS PIN process on the client device.

NOTE: For details, refer to the user manual of the client device.

4. If you want to change the wireless router PIN code, click **Generate PIN** or **Restore PIN** to create or restore the PIN.

To set up WPS via the PBC method:

1. Power on your client device that supports WPS.

2. On your wireless router WPS screen, click **Start PBC**. You can also press the WPS button on the left side of your wireless router.

3. Press the WPS button on the client device.

4.2 LAN

4.2.1 LAN Settings

The LAN settings screen allows you to configure the local network IP address of the LTE Router and modify the DHCP server settings.
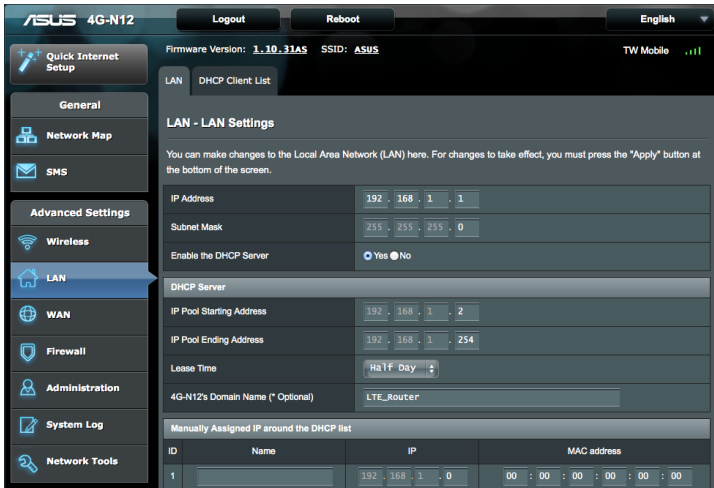
To modify the LAN settings:

1. From the navigation panel, go to **Advanced Settings** > **LAN** > **LAN** tab.

2. Enter the IP address and subnet mask of the wireless router.

3. In the **Enable the DHCP Server** field, select **Yes** or **No**. By default, the DHCP Server function is enabled.

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.

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 Addressn should not be greater than the IP Pool Ending Address.
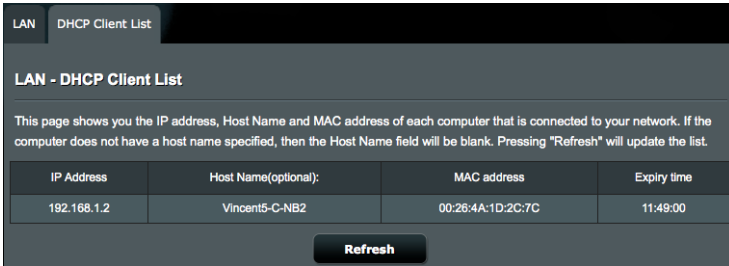
6. In the **Lease Time** dropdown list, select the schedule when an IP address will expire. Once it reaches this specified schedule, the DHCP server will then assign a new IP address.

Static DHCP is a useful function, which allows you to bind specific client device with static IP address on your LAN. The IP address on DHCP server will be reserved for unique MAC address of a DHCP client device based on the settings below.

ID	Name	IP	MAC address
		Manually Assigned IP around the DHCP list	
1		192 . 168 . 1 . 0	00 : 00 : 00 : 00 : 00 : 00
2		192 . 168 . 1 . 0	00 : 00 : 00 : 00 : 00 : 00
3		192 . 168 . 1 . 0	00 : 00 : 00 : 00 : 00 : 00
4		192 . 168 . 1 . 0	00 : 00 : 00 : 00 : 00 : 00
5		192 . 168 . 1 . 0	00 : 00 : 00 : 00 : 00 : 00
6		192 . 168 . 1 . 0	00 : 00 : 00 : 00 : 00 : 00
7		192 . 168 . 1 . 0	00 : 00 : 00 : 00 : 00 : 00
8		192 . 168 . 1 . 0	00 : 00 : 00 : 00 : 00 : 00
9		192 . 168 . 1 . 0	00 : 00 : 00 : 00 : 00 : 00
10		192 . 168 . 1 . 0	00 : 00 : 00 : 00 : 00 : 00

4.2.2 DHCP Client List

The DHCP Client List screen displays the DHCP client information. Click **Refresh** to update the connected client list.

LAN	DHCP Client List

LAN - DHCP Client List

This page shows you the IP address, Host Name and MAC address of each computer that is connected to your network. If the computer does not have a host name specified, then the Host Name field will be blank. Pressing "Refresh" will update the list.

IP Address	Host Name(optional):	MAC address	Expiry time
192.168.1.2	Vincent5-C-NB2	00:26:4A:1D:2C:7C	11:49:00

Refresh

4.3   WAN

The LTE Router is implemented with an LTE (Long Term Evolution) module. LTE network offers wide channel bandwidth from 5MHz to 20 MHz, and fast mobile data rates of up to 50 Mbps uplink and 100 Mbps downlink.
The supported bands show as below:

- LTE Band: FDD B3/7/20
  - LTE Cat. 3: DL: 100Mbps, UL: 50Mbps
- UMTS: B1/8
  - HSPA +: DL: 42Mbps, UL: 5.76Mbps

4.3.1 Internet Connection

To configure the Internet Connection settings:
1. From the navigation panel, go to **Advanced Settings** > **WAN** > **Internet Connection** tab.
2. In the **WAN Type** field, select **LTE/UMTS** or **WAN**.

- **WAN Type - LTE/UMTS**

a. Set up the following:
- **PIN Code**: Enter the 3G/4G provider's PIN code.
- **Connection Type**: This field allows you to define your connection policies. We recommend you select **Auto-Triggered by traffic** if you are not using all-you-can-eat data service.
- **Location**: Select your 3G/4G service provider's location from the dropdown list.
- **APN services (optional)**: Enter the APN (Access Point Name) service information here. Contact your 3G/4G service provider for the detailed information.
- **Dial Number**: Enter the 3G/4G provider's access number for connection.

- **Username / Password**: Enter the username and password provided by the 3G/4G network carrier.
- **Dial on demand (with idle timeout timer)**: Enter the time (in minutes) when the router goes into the sleep mode when there is no activity in the network.
- **MTU**: Sets the MTU (Maximum Transmission Unit).

b. Click **Apply** to connect to the 3G/4G network. The connection status will be displayed on **Mobile Connection Status** screen.

NOTE: The PIN code may vary with different providers.

- **WAN Type - WAN**

a. Configure the following settings below. When done, click **Apply**.

- **WAN Connection Type**: Choose your Internet Service Provider type. The choices are **Automatic IP**, **PPPoE** or **fixed 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.

- **Connect to DNS Server**: 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.

4.3.2 Mobile Connection Status

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

| Internet Connection | Mobile Connection Status | Mobile Connection Scan | UPnP | Virtual Server / Port Forwarding | DMZ | DDNS |

WAN - Mobile Connection Status

Mobile Broadband-LTE Status

Strength	.ıll
Status	Avaliable (Voice & Data)
ISP	TW Mobile(46697) LTE
Connection time	20 min. 37 sec.
Total downstream transmitting traffic	1.27 MBytes.
Total upstream transmitting traffic	1.2 MBytes.
Current downstream transmitting rate	6.36 Kbps.
Current upstream transmitting rate	6.73 Kbps.

Version Info

version	20130328_1KGQCI_4036_M0.11
IMEI	352056050004999
IMSI	466977100295254

Data Usage

Data traffice limit	○ Enable ◉ Disable

Your operator's data usage accounting may differ.

Apply

Scroll down to display other items:

Data Usage	
Data traffice limit	● Enable ○ Disable
Data usage cycle	Oct 1 - Oct 31
Data usage limit	0 (MB)
Data Usage	About 1 MB is used, as measured by the wireless router.
Your operator's data usage accounting may differ.	

To configure the Data Usage settings:

1. From the navigation panel, go to **Advanced Settings** > **WAN** >
    Mobile Connection Status tab.

2. **Data traffic limit**: Select **Enable** to allow setting a limit for your
    Internet traffic usage.

3. **Data usage limit**: Set a monthly upper limit for the Internet
    usage. When your data usage reaches the limit, the Internet
    access will be blocked

4. Click **Apply**.

4.3.3 Mobile Connection Scan

Internet Connection	Mobile Connection Status	Mobile Connection Scan	UPnP	Virtual Server / Port Forwarding	DMZ	DDNS

WAN - Internet Connection

Preferred network type	⦿ Auto ○ 2G Only ○ 3G Only ○ 4G Only

Select	ISP	Status	Operator Service
	SIM is not detected.		

Scan

Apply

To select your preferred mobile broadband connection:

1. On the **Preferred network type** field, select a UMTS frequency band.

2. Click **Scan** to show all the available mobile networks.

3. Select a 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.

4.3.4 UPnP

UPnP (Universal Plug and Play) allows several devices (such as routers, televisions, stereo systems, game consoles, and cellular phones), 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.
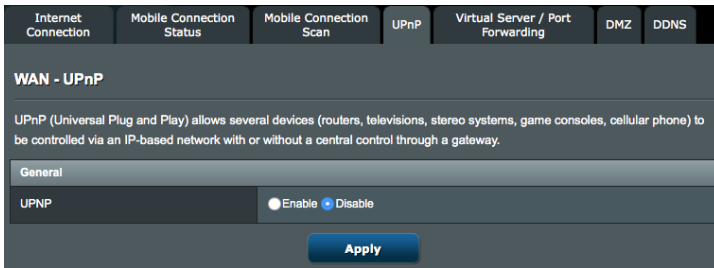
4.3.5 Virtual Server / Port Forwarding

Virtual Server 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.

If you configure the LTE Router as a virtual server, remote users accessing services such as web or FTP at your local site via public IP addresses can be automatically redirected to local servers configured with private IP addresses. In other words, depending on the requested service (TCP/UDP port number), the LTE Router redirects the external service request to the appropriate server (located at another internal IP address).
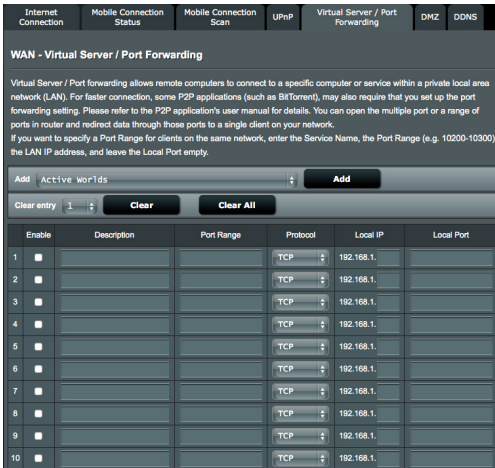
For example, if you set Type/Public Port to TCP/80 (Http or web) and the Private IP/Port to 192.168.2.2:80, then all HTTP requests from outside users will be transferred to 192.168.2.2 on port 80. Therefore, by just entering the IP address provided by the ISP, Internet users can access the service they need at the local address to which you redirect them.

NOTE: The more common TCP service ports include: HTTP: 80, FTP: 21, Telnet: 23, and POP3: 110. A list of ports is maintained at http://www.iana.org/assignments/port-numbers.

4.3.6 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** tab.

2. Configure the setting below. When done, click **Apply**.

    *   **Enable DMZ:** Key in the last digit of 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. Tick **Enable**.

To remove DMZ:

1. Untick **Enable**, and click **Apply**.

4.3.7 DDNS

Setting up DDNS (Dynamic Domain Name System) allows you to access the router outside your network through the provided DDNS service. The DDNS service, which maps a domain name to a static or dynamic IP address, is powered by DynDNS.org.

With a DDNS connection, you can host a website, an email server, an FTP site, and other Internet apps in your local area network even when using dynamic IP addresses for the domain names.
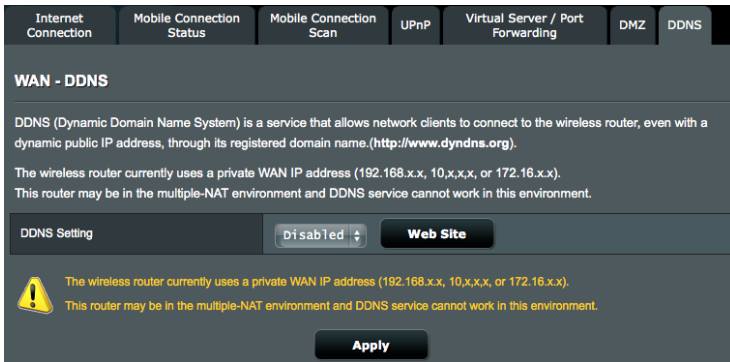
To set up DDNS:

1. Select **DDNS Setting** from the dropdown list and click **Web Site** to go to the DynDNS.org web site.

2. Complete the registration on the DDNS web site.

3. Enter the username, password and domain name of your DDNS settings.

4. Click **Update Dynamic DNS** to update your IP address configuration.

5. When done, click **Apply**.

4.4 Firewall

4.4.1 General

The wireless router can serve as a hardware firewall for your network. Set up the firewall to protect your network from malicious attacks such as Denial of Service (DoS) attacks. DoS attacks disable a device or network to deny users access to network resources.
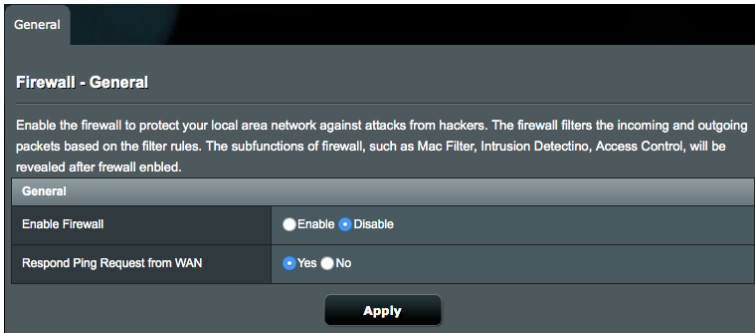
To set up basic Firewall settings:

1. From the navigation panel, go to **Advanced Settings** > **Firewall** > **General** tab.

2. On the **Enable Firewall** field, select **Enable**.

3. On the **Respond Ping Request from WAN** field, select **Yes** to block hackers from pinging devices in your network from the Internet.

4. Click **Apply**.

4.4.2 MAC Filter

When MAC Filter is enabled, only those MAC addresses in the list are allowed or denied access to your network.

| General | MAC Filter | Intrusion Detection | Access Control | URL Blocking Sites | Schedule Rule |

Firewall - MAC Filter

Firewall MAC filter allows you to control packets from devices with specified MAC address in your LAN.

Basic Configuration

| Enable MAC Filter | ○ Enable ◉ Disable |

MAC filter list

No.	Block	MAC address	
	☐	[ ] : [ ] : [ ] : [ ] : [ ]	⊕
No data in the table.			

Apply

To set up a MAC filter:

1. From the navigation panel, go to **Advanced Settings** > **Firewall** > **MAC Filter** tab.

2. On the **Enable MAC Filter** field, select **Enable**.

3. Enter an MAC address and click the ⊕ button.

4. Click **Apply**.

4.4.3 Intrusion Detection

Intrusion Detection blocks and prevents malicious attacks or intrusions from harming your network and the devices connected to it. Your wireless router prevents Dos attachs such as IP Spoofing, Ping of Death, IP with Zero Length, Smurf Attack, UDP port loopback, Snork Attack, TCP null scan, and TCP SYN floodng.
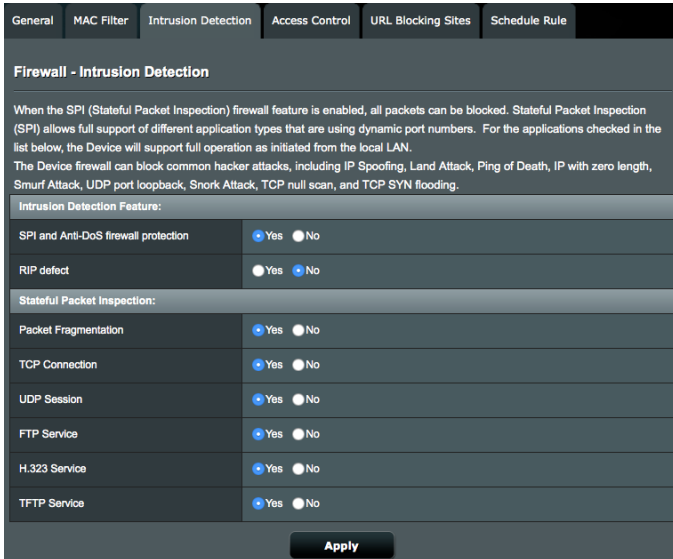
Intrusion Detection Feature

SPI and Anti-DoS firewall protection: When this item is enabled, all the incoming packets from the WAN services are blocked except for those types selected in the Stateful Packet Inspection (SPI) section.

RIP defect: When this item is enabled, the router will not block RIP request packets from the WAN services, preventing the overflow of input queues due to packet accumulation.

Stateful Packet Inspection

Select **Yes** to allow the specific type of traffic to pass through the firewall or **No** to block the type of traffic.

4.4.4 Access Control

Access Control allows you to specify the clients or services that are allowed or blocked to the WAN port service. The access control rules are executed with the specified schedules.

To set up a network service filter:

1. From the navigation panel, go to **Advanced Settings** > **Firewall** > **Access Control** tab.

2. On the **Enable Filtering Function** field, select **Enable**.

3. Click the ⊕ button to launch the Add New Rule screen.

4. Enter a description of the clients.

5. Enter the clients' IP range to block the specified clients.

6. Define a scheduling rule. You can select Always Blocking or specify the day and time when the filters will be active.

7. To specify a network service to filter, select a network service and check **Blocking** on **Client PC Service** to block the pre-defined network service.

8. On the **User-defined services** field, select a protocol type and enter the clients' IP ranges to manually define the clients that will be blocked.

9. Click **Apply**.

4.4.5 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** tab.

2. Enter a URL keyword.

3. Click **Apply**.

4.4.6 Schedule Rule

Each access control rule can be activated at a pre-defined scheduled time.

You can define the schedule rule in the **Schedule Rule** page, and apply the rule in the **Access Control** page.

General	MAC Filter	Intrusion Detection	Access Control	URL Blocking Sites	Schedule Rule

Firewall - Schedule Rule

This page defines schedule rule names and activates the schedule for use in the "Access Control" page.

Schedule Rule Table (up to 10 rules)		
Rule Name	**Rule Comment**	**Add / Delete**
	No Valid Schedule Rule !!!	
		⊕
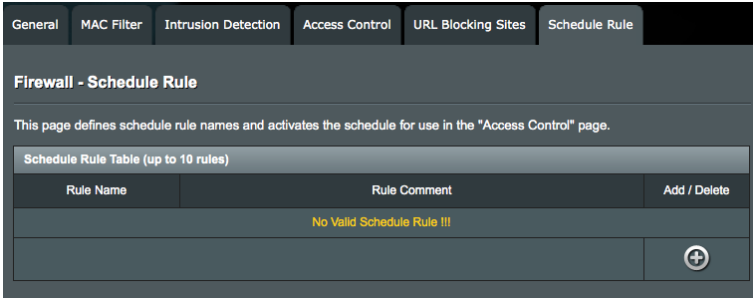
4.5 Administration

4.5.1 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** tab.

2. You can configure the following settings:

   - **Administrator Password**: You can change the password and login name for the wireless router by entering a new name and password.

     - **Login Timeout**: Most Web administrators set this property to 10 minutes. It should not be set higher than 20 minutes (except in special cases) because every open session is holding onto memory.

   - **Time and Time Zone**: Select the time and time zone for your network.

     - **Time Zone**: Adjust time zone according to the location of the router.

     - **Daylight Saving Time (DST)**: If your region adopts daylight saving time (DST), enable this option.

     - **NTP Server**: The wireless router can access a NTP (Network time Protocol) server in order to synchronize the time.

   - **Web Access from WAN:**

     - **Enable Web Access from**: Select **Enable** to allow devices outside the network to access the wireless router GUI settings. Select **Disable** to prevent access.

     - **Permitted IP Address**:

       - **Any IP address can remotely manage the wireless router.**

       - **Only allow specific IP**: Enter the WAN IP addresses of networking devices allowed to access the wireless router settings from WAN.

- **Port of Web Access from WAN**: Specify the port number of the web server allowed to access the wireless router settings.

3. Click **Apply**.

4.5.2 Firmware Upgrade

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

To upgrade the firmware:
1. From the navigation panel, go to **Advanced Settings** > **Administration** > **Firmware Upgrade** tab.

2. In the **New Firmware File** field, click **Browse** to locate the downloaded file.

3. Click **Upload**.

NOTE: When the upgrade process is complete, wait for some time for the system to reboot.

4.5.3 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** tab.

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**, 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**.

If issues occur, upload the latest firmware version and configure new settings. Do not restore the router to its default settings.
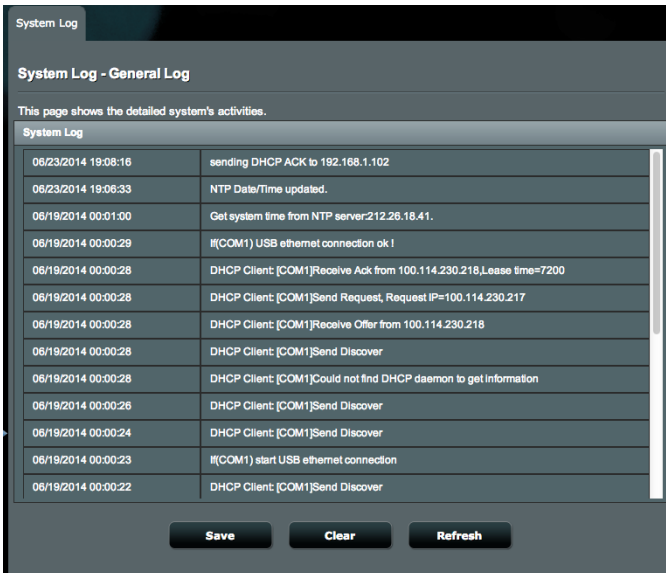
4.6   System Log

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 this page:

3. (Optional) Click **Save** to export the system logs.

4.7   Network Tools

4.7.1 Ping

A ping test determines the latency (communication delay) between ASUS router and another server (such as www.google. com) on a network by sending multiple ICMP packets and listening for the replies. Enter a host name or IP address to perform a Ping. The test results display the shortest, the average and the maximum round-trip times and packet loss rate between hosts.

Ping	Traceroute	WAN Capture	
Network Tools - Ping			
Send ICMP ECHO_REQUEST packets to network host.			
Destination IP			Ping
Scan Results	Destination Address	is empty	
	Test Result	Stopped	
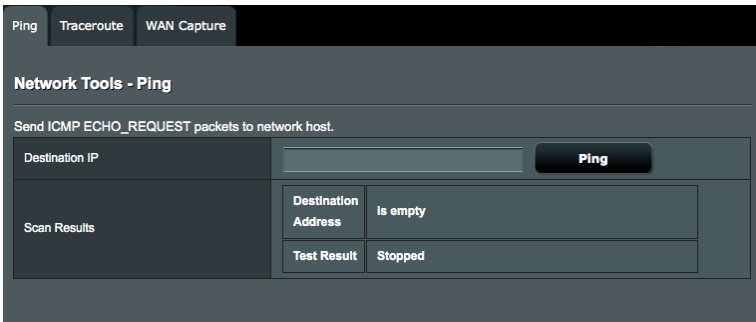
4.7.2 Traceroute

The Traceroute test (also known as trace route or tracert) will trace the route that test packets take from one server destination to another. The test results provide a list of hosts or IP addresses showing the route taken by the test packets starting from the selected monitoring location to the destination Domain or IP (such as www.google.com) . Common uses of the Traceroute test are network troubleshooting and to help identify routing problems or firewalls that may be blocking access to a web site.

Ping	Traceroute	WAN Capture	
Network Tools - Traceroute			
Trace route to host			
Destination IP			**Trace route**
Scan Results	Destination Address	is empty	
	Test Result	Stopped	

4.7.3 WAN Capture

The WAN Capture allows you to capture all packets that pass through the Mobile Broadband Network.
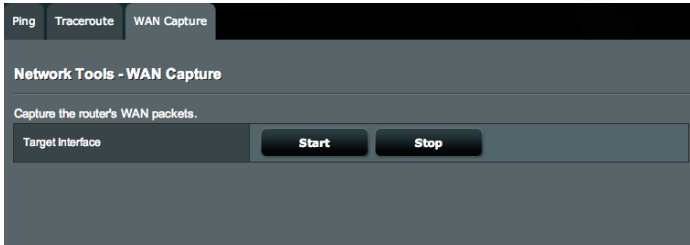
To capture your router's WAN packets:

1. To start capturing the packets, click **Start**. The browser starts to download the pktDump.cap file to your computer.

2. To stop capturing the packets, click **Stop**. The browser terminates capturing the packets and completes downloading the pktDump.cap file.

NOTE: An external application like Wireshark is required to view the captured packets in the file.

5   Frequently Asked Questions (FAQs)

Cannot access the router GUI using a web browser.

- **Hardware Configuration:**
  - If your computer is wired, check the Ethernet cable connection and LED status.

- **Failed to log in:**
  - Ensure that you are using the correct login information. The default factory login name and password is "admin/admin". Ensure that the Caps Lock key is disabled when you enter the login information.

- **DNS Cache result to wrong DNS:**
  - Delete the cookies and files in your web browser.

- **Previous connection settings:**
  - Disable the proxy server, if enabled.
  - Set the TCP/IP settings to automatically obtain an IP address.
  - Disable the dial-up connection from browser, if enabled.

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.

The client cannot establish a wireless connection with the router.

- **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:**
  - Launch the web GUI. Go to **General** > **Network Map** > **Clients** and search for the device that you want to connect to the router.
  - If you cannot find the device in the Network Map, go to **Advanced Settings** > **LAN**, select **Yes** on the Enable the DHCP Server.

- **Cannot find the SSID:**
  - If you are using a wireless LAN adapter, check if the wireless channel in use conforms to the channels available in your country/area. You can adjust the channel, channel bandwidth, and wireless mode available in your country/area.

- 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**.

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 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 wireless router. If the Internet LED on the wireless router is not ON, check if all cables are plugged properly.

Forgot the SSID (network name) or network password:

- Set up 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 click **Apply**.
- Reset your router to the default settings. Launch the web GUI, go to **Administration** > **Restore/Save/Upload Setting**, and click **Restore**. The default login account and password are both "admin".

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:

User Name:	admin
Password:	admin
Enable DHCP:	Yes
IP address:	192.168.1.1
Domain Name:	(Blank)
Subnet Mask:	255.255.255.0
DNS Server 1:	192.168.1.1
DNS Server 2:	(Blank)
SSID (2.4GHz):	ASUS

Appendices

Notices

ASUS Recycling/Takeback Services

ASUS recycling and takeback programs come from our commitment to the highest standards for protecting our environment. We believe in providing solutions for you to be able to responsibly recycle our products, batteries, other components, as well as the packaging materials. Please go to http://csr.asus. com/english/Takeback.htm for the detailed recycling information in different regions.

REACH

Complying with the REACH (Registration, Evaluation, Authorisation, and Restriction of Chemicals) regulatory framework, we published the chemical substances in our products at ASUS REACH website at

http://csr.asus.com/english/index.aspx

Declaration of Conformity for R&TTE directive 1999/5/EC

Essential requirements – Article 3

Protection requirements for health and safety – Article 3.1a

Testing for electric safety according to EN 60950-1 has been conducted. These are considered relevant and sufficient.

Protection requirements for electromagnetic compatibility – Article 3.1b

Testing for electromagnetic compatibility according to EN 301 489-1 and EN 301 489-17 has been conducted. These are considered relevant and sufficient.

Effective use of the radio spectrum – Article 3.2

Testing for radio test suites according to EN 300 328 & EN 301 893 have been conducted. These are considered relevant and sufficient.

CE Mark Warning

This is a Class B product, in a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

This equipment may be operated in AT, BE, CY, CZ, DK, EE, FI, FR, DE, GR, HU, IE, IT, LU, MT, NL, PL, PT, SK, SL, ES, SE, GB, IS, LI, NO, CH, BG, RO, RT.

Canada, Industry Canada (IC) Notices

This Class B digital apparatus complies with Canadian ICES-003 and RSS-210.

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Radio Frequency (RF) Exposure Information

The radiated output power of the ASUS Wireless Device is below the Industry Canada (IC) radio frequency exposure limits. The ASUS Wireless Device should be used in such a manner such that the potential for human contact during normal operation is minimized.

This device has been evaluated for and shown compliant with the IC Specific Absorption Rate ("SAR") limits when installed in specific host products operated in portable exposure conditions (antennas are less than 20 centimeters of a person's body).

This device has been certified for use in Canada. Status of the listing in the Industry Canada's REL (Radio Equipment List) can be found at the following web address: http://www.ic.gc.ca/app/sitt/reltel/srch/nwRdSrch.do?lang=eng

Additional Canadian information on RF exposure also can be found at the following web: http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08792.html

Canada, avis d'Industry Canada (IC)

Cet appareil numérique de classe B est conforme aux normes canadiennes ICES-003 et RSS-210.

Son fonctionnement est soumis aux deux conditions suivantes:
(1) cet appareil ne doit pas causer d'interférence et (2) cet appareil
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peuvent a ecter son fonctionnement.

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Online support   support.asus.com

Networks Global Hotline Information

Region	Country	Hotline Number	Service Hours
Europe	Cyprus	800-92491	09:00-13:00 ; 14:00-18:00 Mon-Fri
	France	0033-170949400	09:00-18:00 Mon-Fri
	Germany	0049-1805010920 0049-1805010923 (component support) 0049-2102959911 (Fax)	09:00-18:00 Mon-Fri 10:00-17:00 Mon-Fri
	Hungary	0036-15054561	09:00-17:30 Mon-Fri
	Italy	199-400089	09:00-13:00 ; 14:00-18:00 Mon-Fri
	Greece	00800-44142044	09:00-13:00 ; 14:00-18:00 Mon-Fri
	Austria	0043-820240513	09:00-18:00 Mon-Fri
	Netherlands/ Luxembourg	0031-591570290	09:00-17:00 Mon-Fri
	Belgium	0032-78150231	09:00-17:00 Mon-Fri
	Norway	0047-2316-2682	09:00-18:00 Mon-Fri
	Sweden	0046-858769407	09:00-18:00 Mon-Fri
	Finland	00358-969379690	10:00-19:00 Mon-Fri
	Denmark	0045-38322943	09:00-18:00 Mon-Fri
	Poland	0048-225718040	08:30-17:30 Mon-Fri
	Spain	0034-902889688	09:00-18:00 Mon-Fri
	Portugal	00351-707500310	09:00-18:00 Mon-Fri
	Slovak Republic	00421-232162621	08:00-17:00 Mon-Fri
	Czech Republic	00420-596766888	08:00-17:00 Mon-Fri
	Switzerland-German	0041-848111010	09:00-18:00 Mon-Fri
	Switzerland-French	0041-848111014	09:00-18:00 Mon-Fri
	Switzerland-Italian	0041-848111012	09:00-18:00 Mon-Fri
	United Kingdom	0044-8448008340	09:00-17:00 Mon-Fri
	Ireland	0035-31890719918	09:00-17:00 Mon-Fri
	Russia and CIS	008-800-100-ASUS	09:00-18:00 Mon-Fri
	Ukraine	0038-0445457727	09:00-18:00 Mon-Fri

Networks Global Hotline Information

Region	Country	Hotline Numbers	Service Hours
Asia-Pacific	Australia	1300-278788	09:00-18:00 Mon-Fri
	New Zealand	0800-278788	09:00-18:00 Mon-Fri
	Japan	0800-1232787	09:00-18:00 Mon-Fri
			09:00-17:00 Sat-Sun
		0081-473905630 (Non-Toll Free)	09:00-18:00 Mon-Fri
			09:00-17:00 Sat-Sun
	Korea	0082-215666868	09:30-17:00 Mon-Fri
	Thailand	0066-24011717	09:00-18:00 Mon-Fri
		1800-8525201	
	Singapore	0065-64157917	11:00-19:00 Mon-Fri
		0065-67203835 (Repair Status Only)	11:00-19:00 Mon-Fri
			11:00-13:00 Sat
	Malaysia	0060-320535077	10:00-19:00 Mon-Fri
	Philippine	1800-18550163	09:00-18:00 Mon-Fri
	India India(WL/NW)	1800-2090365	09:00-18:00 Mon-Sat
			09:00-21:00 Mon-Sun
	Indonesia	0062-2129495000	09:30-17:00 Mon-Fri
		500128 (Local Only)	9:30 – 12:00 Sat
	Vietnam	1900-555581	08:00-12:00 13:30-17:30 Mon-Sat
	Hong Kong	00852-35824770	10:00-19:00 Mon-Sat
Americas	USA Canada	1-812-282-2787	8:30-12:00 EST Mon-Fri
			9:00-18:00 EST Sat-Sun
	Mexico	001-8008367847	08:00-20:00 CST Mon-Fri
			08:00-15:00 CST Sat

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Region	Country	Hotline Numbers	Service Hours
Middle East + Africa	Egypt	800-2787349	09:00-18:00 Sun-Thu
	Saudi Arabia	800-1212787	09:00-18:00 Sat-Wed
	UAE	00971-42958941	09:00-18:00 Sun-Thu
	Turkey	0090-2165243000	09:00-18:00 Mon-Fri
	South Africa	0861-278772	08:00-17:00 Mon-Fri
	Israel	*6557/00972-39142800	08:00-17:00 Sun-Thu
		*9770/00972-35598555	08:30-17:30 Sun-Thu
Balkan Countries	Romania	0040-213301786	09:00-18:30 Mon-Fri
	Bosnia Herzegovina	00387-33773163	09:00-17:00 Mon-Fri
	Bulgaria	00359-70014411	09:30-18:30 Mon-Fri
		00359-29889170	09:30-18:00 Mon-Fri
	Croatia	00385-16401111	09:00-17:00 Mon-Fri
	Montenegro	00382-20608251	09:00-17:00 Mon-Fri
	Serbia	00381-112070677	09:00-17:00 Mon-Fri
	Slovenia	00368-59045400	08:00-16:00 Mon-Fri
		00368-59045401	
	Estonia	00372-6671796	09:00-18:00 Mon-Fri
	Latvia	00371-67408838	09:00-18:00 Mon-Fri
	Lithuania-Kaunas	00370-37329000	09:00-18:00 Mon-Fri
	Lithuania-Vilnius	00370-522101160	09:00-18:00 Mon-Fri

NOTE: For more information, visit the ASUS support site at:
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