

User Manual

BEC MX-600 **Multi-Service** **Modular Router**



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Support Contact Information

Contact Support: <http://bectechnologies.net/support/>.

Telephone: +1 972 422 0877

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CHAPTER 1: INTRODUCTION

Introduction to your Router

The BEC MX-600 is a high-performance, versatile, feature-rich platform for organizations that are eager to deploy a reliable, high-performing, secure, and scalable wireless network. Retail, SMB, Enterprise and other business can now accelerate deployments of applications such as business continuity, Point-of-Sales, SD-WAN services and much more.

The MX-600 supports immediate mobile network expansion via its modular interface and the MX-100 Series of LTE Industrial USB modems. The MX-100 Series are certified across all major carriers giving customers the ability to select the best carrier for their given location. Models supporting LTE Category 6, 12 and 18 with carrier aggregation, dual-SIM, multi-carrier auto selection and active GPS into an IP-50 hardened enclosure. The modular design allows for multiple deployment options, network diversity, and technology evolution!

GNSS Location Tracking

The MX-600 supports a GNSS receiver for GPS or GLONASS via the MX-100 Series of LTE Industrial USB modems. This enables highly accurate continuous location and precision timing for location-based services. The MX-600 is capable of forwarding GPS information to external IP addresses in standard NMEA GPS data format.

Mobile and Fixed Broadband Services Ready

MX-600 platform supports two (2) SIMs for carrier redundancy or seamless failover (with MX-100 Series of Industrial Modular Modems) between carrier networks and is equipped up to two (2) versatile Gigabit Ethernet LANs/WANs for wireline connection such as Fiber(FTTH), Cable or DSL with speeds up to 1000Mbps. Using BEC WAN Management in the Web GUI to manage and ensure uninterrupted Internet services by assigning failover to specific WAN interfaces, setting up WAN load balance to smoother traffic to ensure no drops on latency-sensitive application and data.

Maximized Wi-Fi Speed and Coverage

With the next wireless generation, 802.11ac, integrated in the BEC MX-600 Multi-Service Modular Router the router delivers fast Wi-Fi speeds of up to 1200Mbps. The MX-600 supports a link rate up to 400Mbps in 2.4GHz frequency range & 866Mbps in 5GHz range and is also backward

compatible with existing 802.11 a / b / g / n wireless equipment in the network. The Wireless Protected Access (WPA-PSK/WPA2-PSK) and Wireless Encryption Protocol (WEP) features enhance the level of transmission security and access control over Wireless LAN. MX-600 also supports the Wi-Fi Protected Setup (WPS) standard for easy and secure establishment of a wireless home network. If the user's network requires wider coverage, the built-in Wireless Distribution System (WDS) repeater function expands the wireless network without needing any external wires or cables.

Wi-Fi Hotspot with Captive Portal

MX-600 offers Wi-Fi hotspot to share the Internet connection via mobile (4G LTE) or a wired connection, an existing FTTH, cable, DSL network or modem, with any wireless-enabled devices which is completed separate from the private Wi-Fi network. The captive portal enables highly secure connectivity with multiple authentication options and extensive controls for access and bandwidth management. Customization options allow for operator logos, branding or advertisement placement.

IPv6 Supported

Internet Protocol version 6 (IPv6) is a version of the Internet Protocol that is designed to succeed IPv4. IPv6 has a vastly larger address space than IPv4. The router is already supporting IPv6, you can use it in IPv6 environment no need to change device. The dual-stack protocol implementation in an operating system is a fundamental IPv4-to-IPv6 transition technology. It implements IPv4 and IPv6 protocol stacks either independently or in a hybrid form. The hybrid form is commonly implemented in modern operating systems supporting IPv6.

Quick Start Wizard

Support a WEB GUI page to install this device quickly. With this wizard, simple steps will get you connected to the Internet immediately.

Firmware Upgradeable

Device can be upgraded to the latest firmware through the WEB based GUI.

Features & Specifications

- Compatible with MX-100 Series of LTE Industrial USB modems for immediate 4G LTE mobile network expansion (**Optional, required only for cellular connectivity**)
- Dual-WAN Gigabit Ethernet WAN interface and 4G LTE for network expandability and reliable connectivity
- High performance antenna for increased coverage, signal reception and efficiency
- Embedded GNSS engine for real-time asset tracking and location data-based applications (with MX-100 Series of LTE Industrial USB modems)
- Enterprise level routing functionality
- Gigabit Ethernet WAN (GbE WAN) for Cable/Fiber/xDSL high WAN throughput
- Gigabit Ethernet LAN
- IPv6 ready (IPv4/IPv6 dual stack)
- Multiple wireless SSIDs with wireless guest access and client isolation
- IEEE 802.11 b/g/n/a/ac compliant Wireless Access Point with Wi-Fi Protected Setup (WPS)
- Wi-Fi Protected Access (WPA-PSK/ WPA2-PSK) and Wired Equivalent Privacy (WEP)
- Wi-Fi Hotspot with captive portal
- Firewall Security with DoS Preventing and Packet Filtering
- Quality of Service Control for traffic prioritization management
- Universal Plug and Play (UPnP) Compliance
- Ease of Use with Quick Installation Wizard
- Global Navigation Satellite System (GNSS)
- Small form factor with multiple mounting options, easily installed by a single person

High-speed Mobile Wireless Communication (Optional)

- MX-100U (CAT 6), MX-100UE (CAT 12) or MX-100UG (CAT 18)
- High performance external antennas

Global Navigation Satellite System (GNSS) (Optional)

- Embedded GNSS receiver for GPS or GLONASS
- Active GPS external antenna (Sold Separately)

Network Protocols and Features

- IPv4, IPv6 or IPv4 / IPv6 Dual Stack

- NAT, static (v4/v6) routing and RIP-1 / 2
- DHCPv4 / v6
- Universal Plug and Play (UPnP) Compliant
- Dynamic Domain Name System (DDNS)
- Virtual Server and DMZ
- SNTP, DNS proxy
- IGMP snooping and IGMP proxy
- MLD snooping and MLD proxy

Firewall

- Built-in NAT Firewall
- Stateful Packet Inspection (SPI)
- DoS attack prevention including Land Attack, Ping of Death, etc.
- Access control
- IP&MAC filter, URL Content Filter
- Password protection for system management
- VPN pass-through

Quality of Service Control

- Traffic prioritization management based-on Protocol, Port Number and IP Address (IPv4/ IPv6)

Wireless LAN

- Wi-Fi: Two (2) Female RP-SMA Connectors
- Compliant with IEEE 802.11 a/b/g/n/ac standards
- 2.4GHz & 5GHz frequency range
- 20/40-MHz channel bandwidth
- Up to 400Mbps (2.4GHz) & 866Mbps (5GHz) wireless data rate
- 64/128 bits WEP supported for encryption
- Wireless security with WPA-PSK, WPA2-PSK, Mixed WPA/WAP2-PSK, (TKIP/AES), 802.1x/Radius
- Multiple SSID (4 SSIDs), BSSID
- Wireless Client Isolation
- Wi-Fi Hotspot with captive portal

- Radius or integrated account database
- Wall Garden support

Management

- Quick Installation wizard
- Web-based GUI for remote and local management (IPv4/IPv6)
- Firmware upgrades and configuration data upload and download via web-based GUI
- Supports DHCP server / client / relay
- Supports SNMP v1, v2, v3, MIB-I and MIB-II
- TR-069 supports remote management
- BECentral® Cloud Management
- Supports SNMP
- Syslog monitoring

Hardware Specifications

Physical interface

- Wi-Fi: Two (2) Female RP-SMA Connectors
- Modular Interface for MX-100 Series LTE Industrial USB modems
 - MX-100U and MX-100UE: Two (2) Female RP-SMA Connectors (2x2 MIMO)
 - MX-100UG: Four (4) Female RP-SMA Connectors (4x4 MIMO)
 - GPS: One (1) SMA Female Connector via MX-100 Series LTE Industrial USB modems
- WAN: 4G LTE, Gigabit Ethernet WAN and Wi-Fi as WAN
- Ethernet LAN: 2-port 10/100/1000Mbps auto-crossover (MDI/ MDI-X) switch
- SIM Card: Two (2) slots, size 2FF via MX-100 Series LTE Industrial USB modems
- Reset Button
- Power Jack
- LED Indicators

Physical Specifications

- Dimensions (W*H*D): 6 x 2.1 x 6.2 in (154 x 54 x 58 mm)

CHAPTER 2: PRODUCT OVERVIEW

Important Note for Using This Router



Warning

- ✓ Do not use the router in high humidity or high temperature.
- ✓ Do not use the same power source for the MX-600 on other equipment.
- ✓ Do not open or repair the case yourself. If the device becomes too hot, turn off the power immediately and have it repaired at a qualified service center.
- ✓ Avoid using this product and all accessories outdoors.



Attention







- ✓ Place the router on a stable surface.
- ✓ Only use the power adapter that comes with the package. Using a different voltage rating power adapter may damage the router.

Package Contents

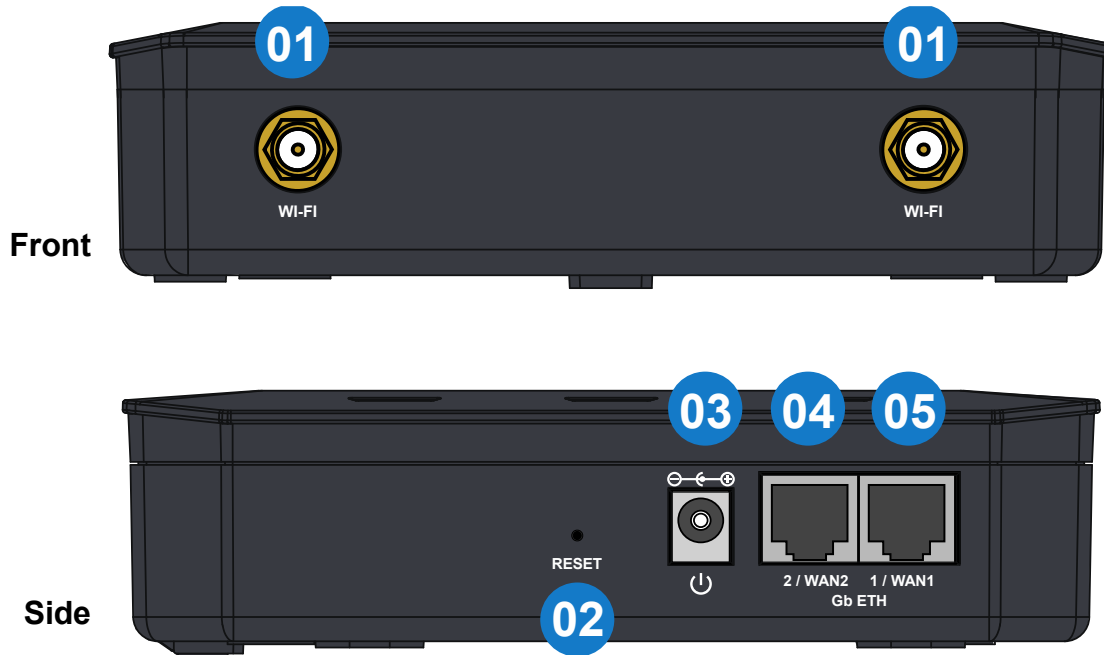
- ✓ BEC MX-600 M2M Router * 1
 - ✓ Quick Installation Guide * 1
 - ✓ RJ-45 Ethernet Cable * 1
 - ✓ Dual-band 2.4 GHz and 5 GHz Wi-Fi Antennas * 2
 - ✓ DC Power Adapter * 1
- (Optional Accessories)
- ✓ 4G Antennas
 - ✓ Active GPS Antenna

Panel LEDs



Status		Description
Power 	Green	System ready
	Red	Boot failure
Internet 	Green	Having obtained an IP address successfully
	Red	Obtaining IP failure
	Off	Router in bridged mode or WAN connection not present.
Signal 	Green	RSSI greater than -69 dBm. Strong signal.
	Green Flashing quickly	RSSI from -81 to -69 dBm.
	Orange Flashing quickly	RSSI from -99 to -81 dBm.
	Orange Flashing slowly	RSSI less than -99 dBm. Poor signal.
	Orange	No signal, but LTE module OK
	Off	No LTE module or LTE module fails
GPS 	Green	Active
Wi-Fi 	Green	Wireless connection established
Ethernet (1, 2) 	Green	Gigabit Ethernet
	Orange	10/100 Faster Ethernet

Panel Interfaces



INTERFACE		MEANING
1	Wi-Fi Antenna Connectors	Screw the supplied Wi-Fi antennas onto the antenna connectors on both sides
2	Reset	After the device is powered on, press it 6 seconds or above : to restore to factory default settings (this is used when you cannot login to the router, e.g. forgot your password)
3	Power Jack (DC IN)	Connect the supplied Power Adapter to this jack.
4	Gigabit Ethernet (2 / WAN2)	Ethernet LAN: Connected to a 10/100/1000Mbps Ethernet device Ethernet WAN: Software configurable in the GUI. Connect to a broadband device such as a cable modem, ADSL/VDSL modem or fiber modem.
5	Gigabit Ethernet (1 / WAN1)	Ethernet LAN: Connected to a 10/100/1000Mbps Ethernet device Ethernet WAN: Software configurable in the GUI. Connect to a broadband device such as a cable modem, ADSL/VDSL modem or fiber modem.

System Recovery Procedures

The purpose is to allow users to restore the MX-600 to its initial stage when the device is outage, upgraded to a wrong / broken firmware, cannot access to the GUI with wrong username and/or password, etc.

Step 1 – Configure your PC Network IP Address

Before performing the system recovery, assign this IP address and Netmask to your PC, **192.168.1.100** and **255.255.255.0** respectively.

Step 2 – Reset your MX-600 Device

- 2.1 Power off your MX-600
- 2.2 Power on the MX-600 while pushing the RESET button with a small pointed object (such as paper clip, needle, toothpick, etc.).
- 2.3 When the POWER LED turns RED, keep holding and pushing the RESET button until the INTERNET LED flashes in GREEN

Step 3 – Restore your MX-600 Device

With INTERNET light flashes green, MX-600 is in recovery mode and ready for a new Firmware.

- 3.1 Open a web browser and type the IP address, **192.168.1.1**, to access to the recovery page.
NOTE: In the recovery mode, MX-600 will not respond to any PING or other requests.
- 3.2 Browse to the new Firmware image file then click Upload to start the upgrade process.
- 3.3 INTERNET LED turns red means the Firmware upgrade is in process.
DO NOT power off or reboot the device, it would permanently damage your MX-600.
- 3.4 INTERNET LED turns green after the Firmware upgrade completed
- 3.5 Power cycle on & off to regain access to the MX-600.

Cabling

One of the most common causes of problems is bad cabling. Make sure that all connected devices are turned on. On the front panel of the product is a bank of LEDs. Verify that the LAN Link and LEDs are lit. If they are not, verify that you are using the proper cables.

CHAPTER 3: BASIC INSTALLATION

The router can be configured with your web browser. A web browser is included as a standard application in the following operating systems: Windows XP / Vista / 7 / 8/10, Linux, Mac OS, and etc. The product provides an easy and user-friendly interface for configuration.

PCs must have an Ethernet interface installed properly and be connected to the router either directly or through an external repeater hub, and have TCP/IP installed or configured to obtain an IP address through a DHCP server or a fixed IP address that must be in the same subnet as the router. The default IP address of the router is **192.168.1.254** and the subnet mask is **255.255.255.0** (i.e. any attached PC must be in the same subnet, and have an IP address in the range of 192.168.1.1 to 192.168.1.253). The best and easiest way is to configure the PC to get an IP address automatically from the router using DHCP. If you encounter any problems accessing the router's web interface it may also be advisable to **uninstall** any kind of software firewall on your PCs, as they can cause problems accessing the 192.168.1.254 IP address of the router. Users should make their own decisions on how to best protect their network.

Please follow the steps below for your PC's network environment installation. First of all, please check your PC's network components. The TCP/IP protocol stack and Ethernet network adapter must be installed. If not, please refer to your Windows-related or other operating system manuals.






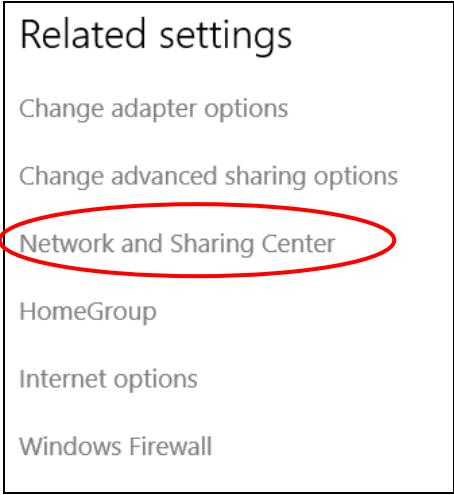
Attention

Any TCP/IP capable workstation can be used to communicate with or through the MX-600. To configure other types of workstations, please consult the manufacturer's documentation.

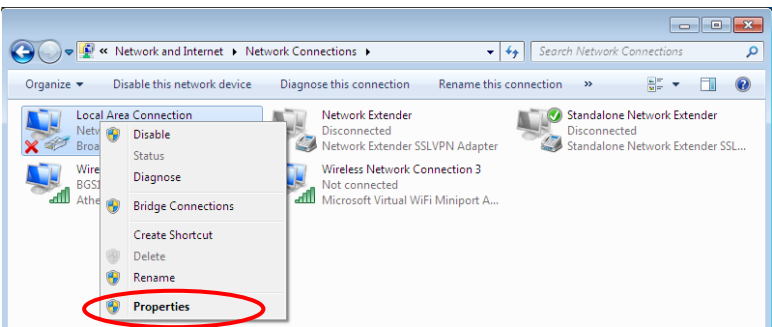
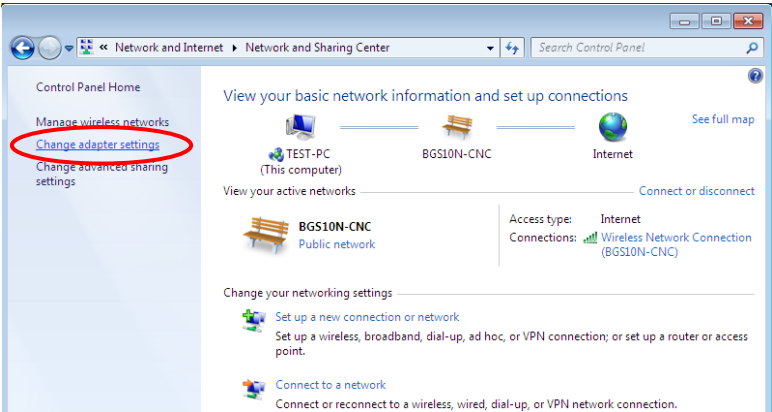
Network Configuration – IPv4

Configuring PC in Windows 10 (IPv4)

1. Click .
2. Click  Settings
3. Then click on **Network and Internet**.

4. Under **Related settings**, select **Network and Sharing Center**
5. When the **Network and Sharing Center** window pops up, select and click on **Change adapter settings** on the left window panel.

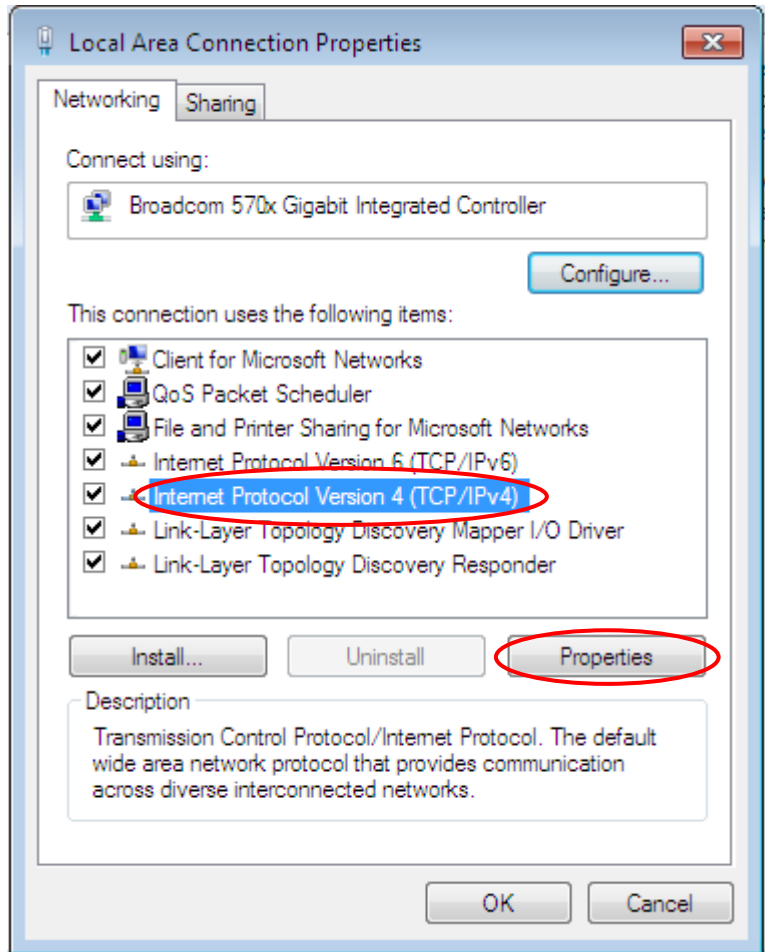


6. Select the **Local Area Connection**, and right click the icon to select **Properties**.

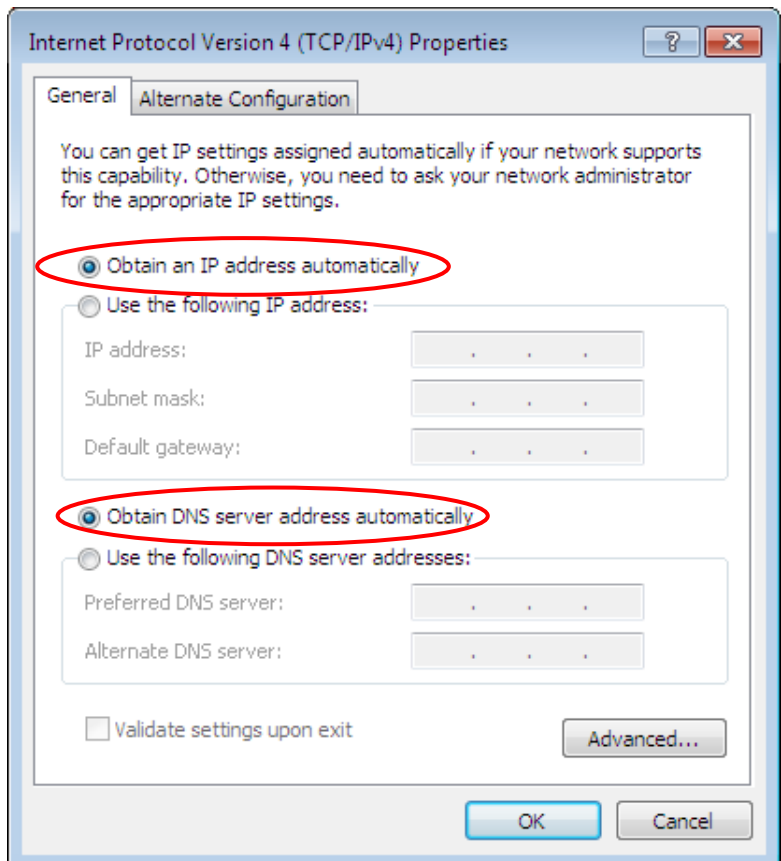


Network Configuration – Windows 10 (IPv4)

7. Select **Internet Protocol Version 4 (TCP/IPv4)** then click **Properties**.



8. In the **TCP/IPv4 properties** window, select the **Obtain an IP address automatically** and **Obtain DNS Server address automatically** radio buttons. Then click **OK** to exit the setting.



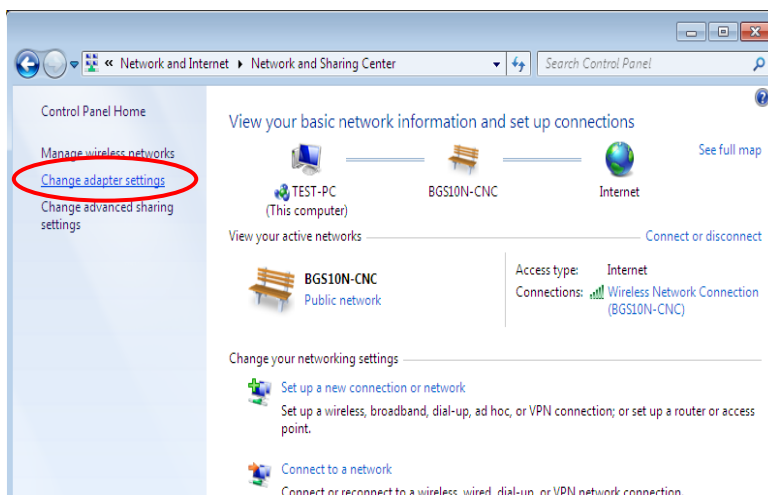
9. Click **OK** again in the **Local Area Connection Properties** window to apply the new configuration.

Configuring PC in Windows 7/8 (IPv4)

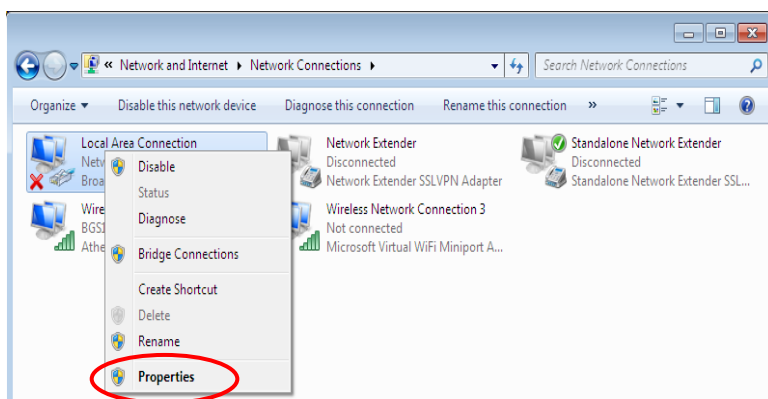
1. Go to **Start**. Click on **Control Panel**.
2. Then click on **Network and Internet**.



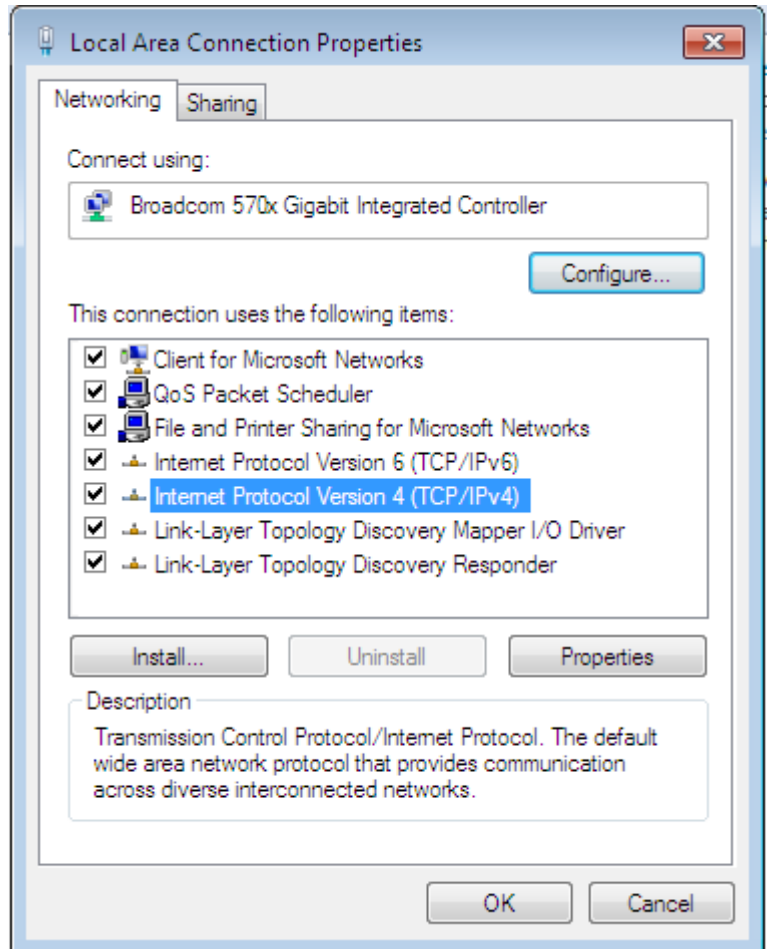
3. When the **Network and Sharing Center** window pops up, select and click on **Change adapter settings** on the left window panel.



4. Select the **Local Area Connection**, and right click the icon to select **Properties**.

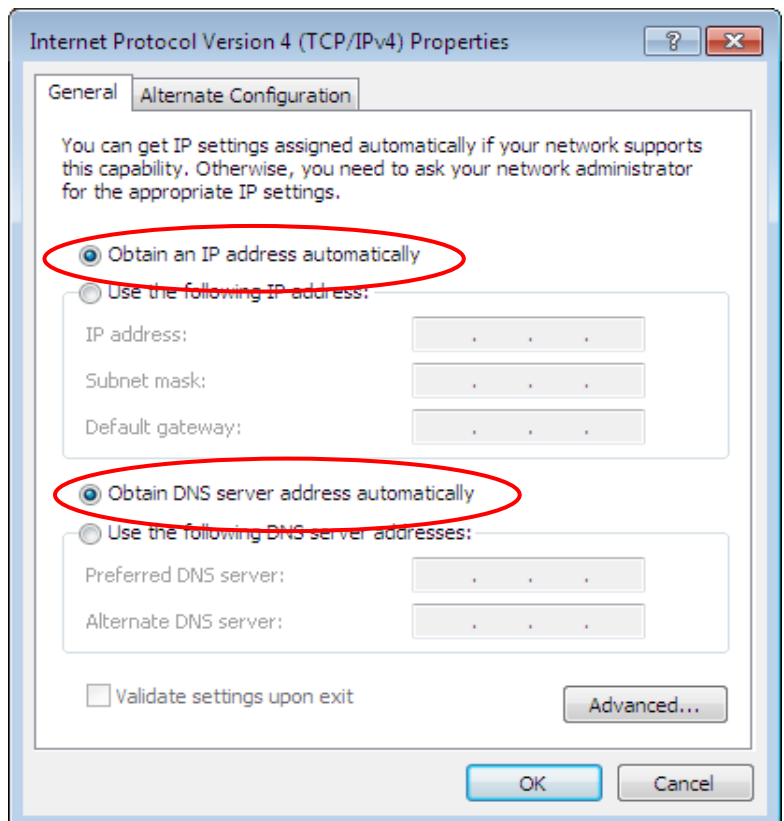


5. Select **Internet Protocol Version 4 (TCP/IPv4)** then click **Properties**.



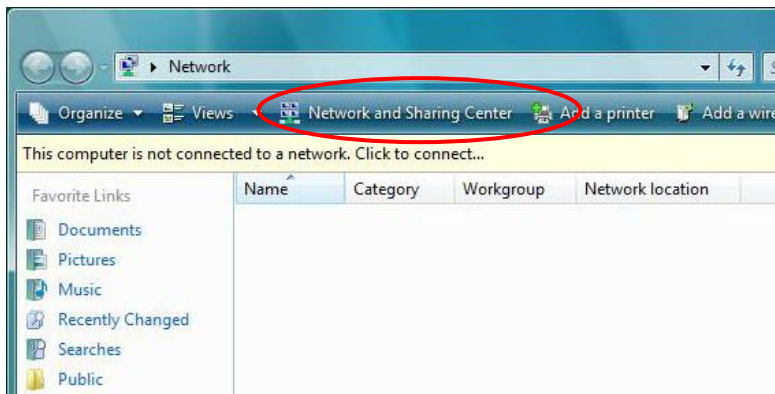
6. In the **TCP/IPv4 properties** window, select the **Obtain an IP address automatically** and **Obtain DNS Server address automatically** radio buttons. Then click **OK** to exit the setting.

7. Click **OK** again in the **Local Area Connection Properties** window to apply the new configuration.



Configuring PC in Windows Vista (IPv4)

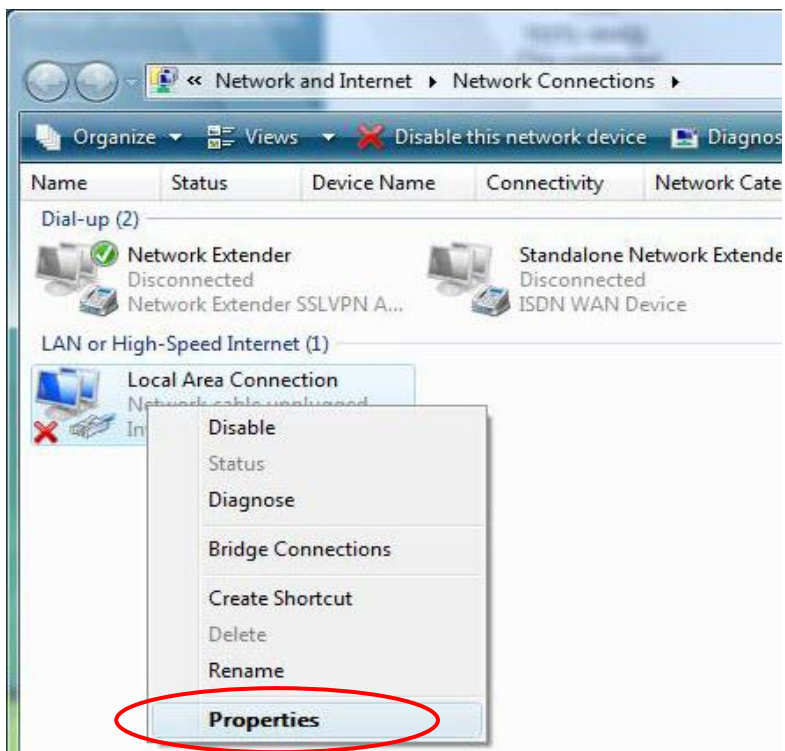
1. Go to **Start**. Click on **Network**.
2. Then click on **Network and Sharing Center** at the top bar.



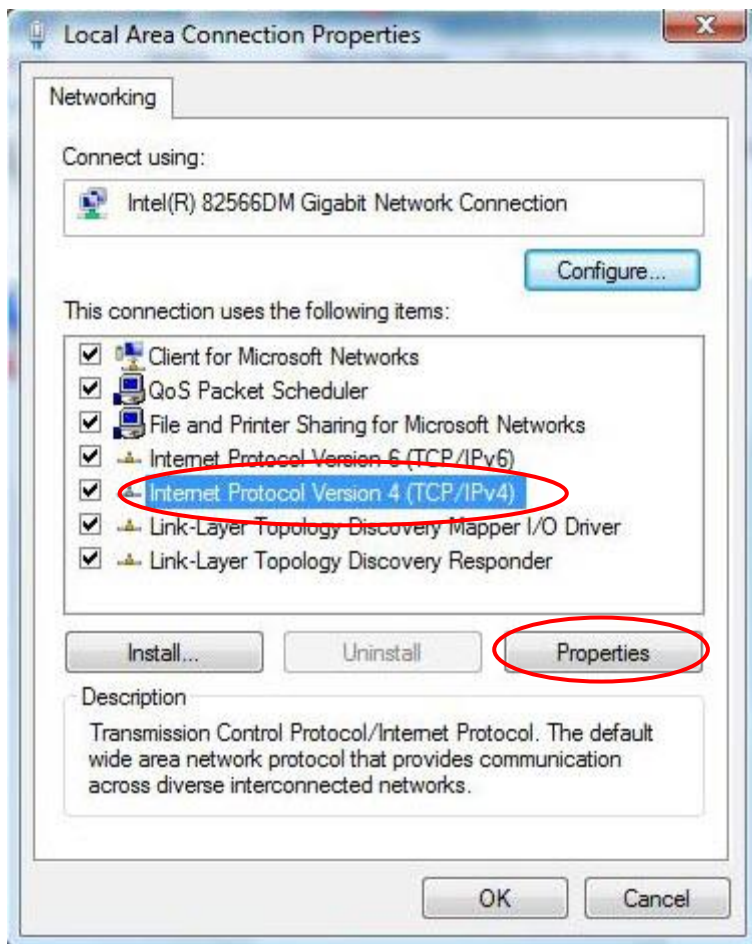
3. When the **Network and Sharing Center** window pops up, select and click on **Manage network connections** on the left window pane.



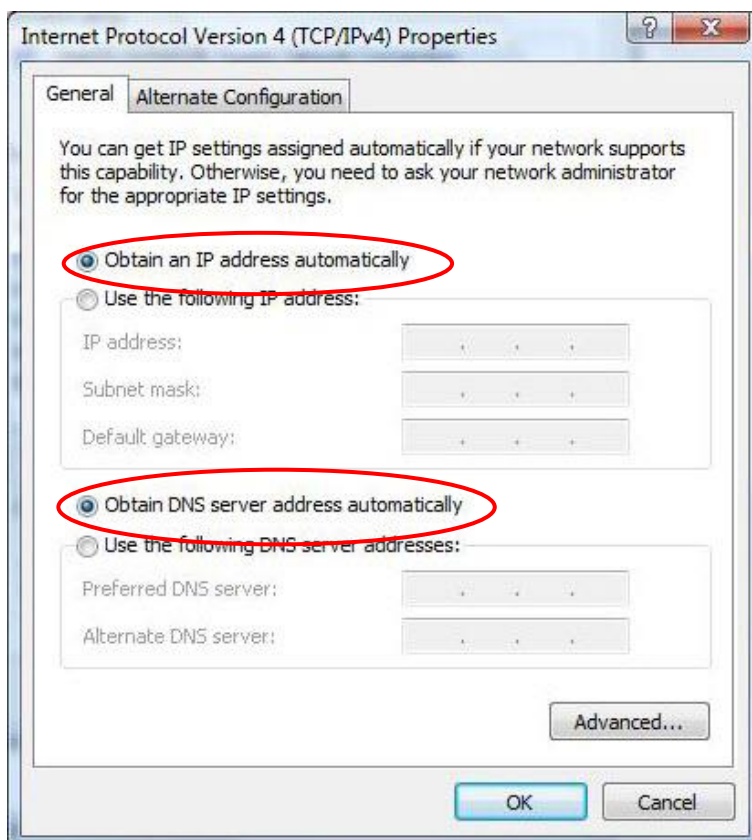
4. Select the **Local Area Connection**, and right click the icon to select **Properties**.



5. Select **Internet Protocol Version 4 (TCP/IPv4)** then click **Properties**.






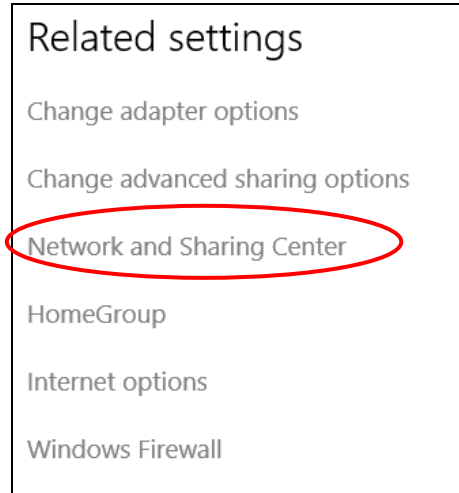
6. In the **TCP/IPv4 properties** window, select the **Obtain an IP address automatically** and **Obtain DNS Server address automatically** radio buttons. Then click **OK** to exit the setting.
7. Click **OK** again in the **Local Area Connection Properties** window to apply the new configuration.



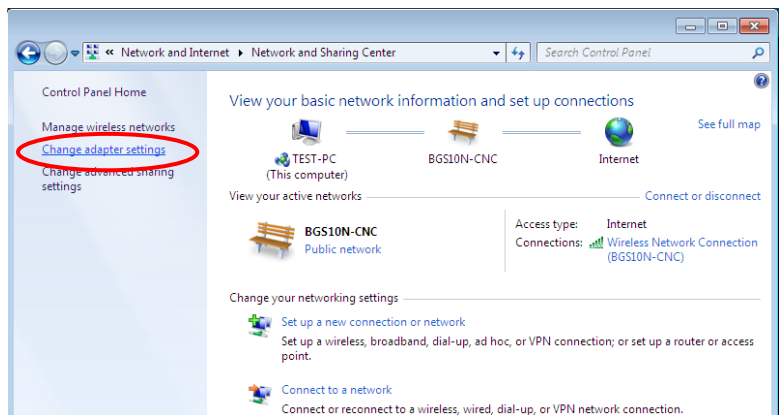
Network Configuration – IPv6

Configuring PC in Windows 10 (IPv6)

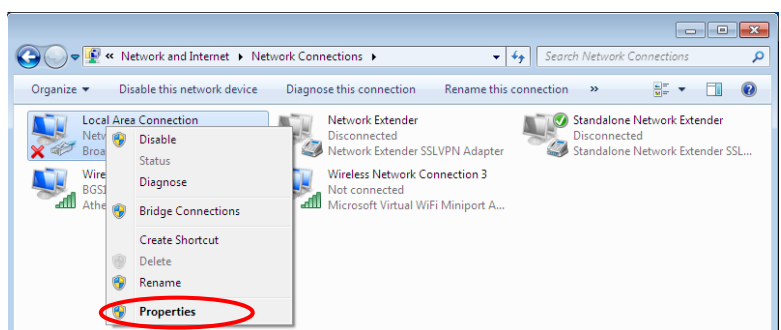
1. Click .
2. Click  Settings
3. Then click on **Network and Internet**.

4. Under **Related settings**, select **Network and Sharing Center**



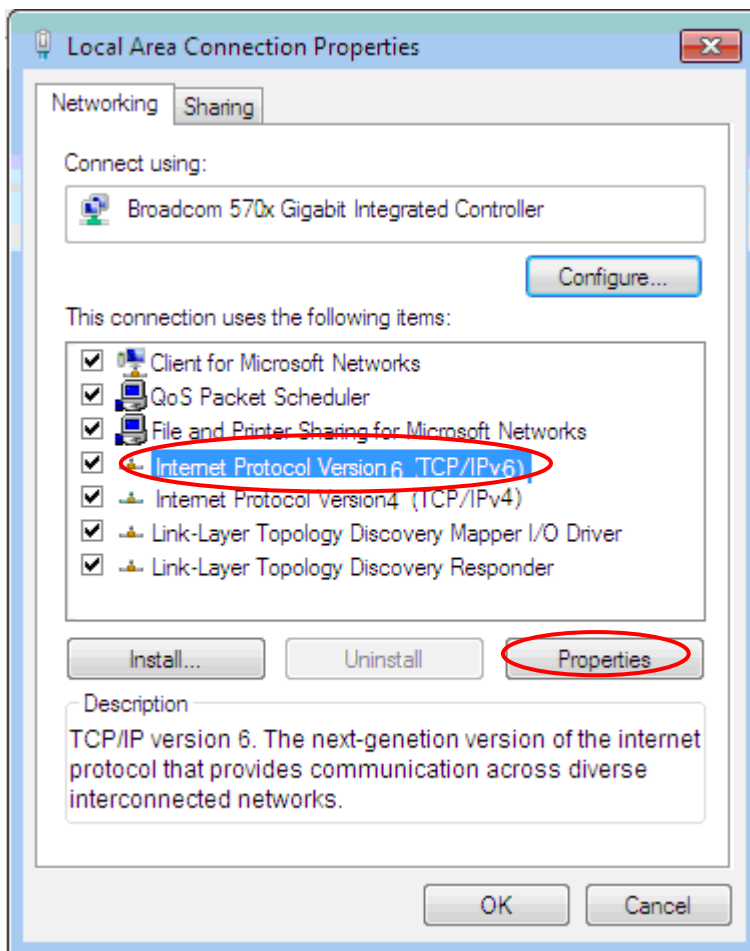
5. When the **Network and Sharing Center** window pops up, select and click on **Change adapter settings** on the left window panel.



6. Select the **Local Area Connection**, and right click the icon to select **Properties**.

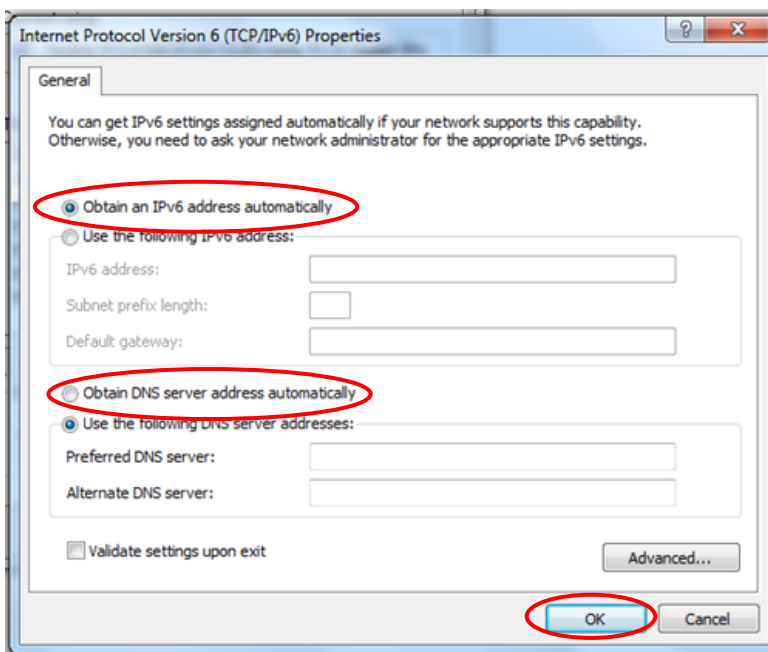


7. Select **Internet Protocol Version 6 (TCP/IPv6)** then click **Properties**.



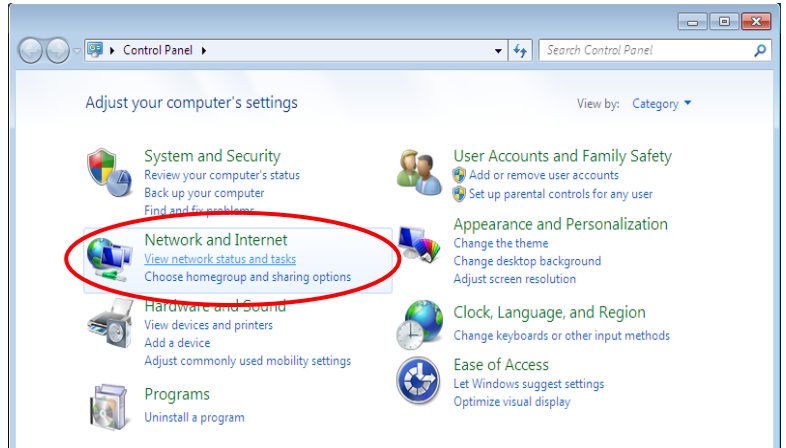
8. In the **TCP/IPv6 properties** window, select the **Obtain an IPv6 address automatically** and **Obtain DNS Server address automatically** radio buttons. Then click **OK** to exit the setting.

9. Click **OK** again in the **Local Area Connection Properties** window to apply the new configuration.



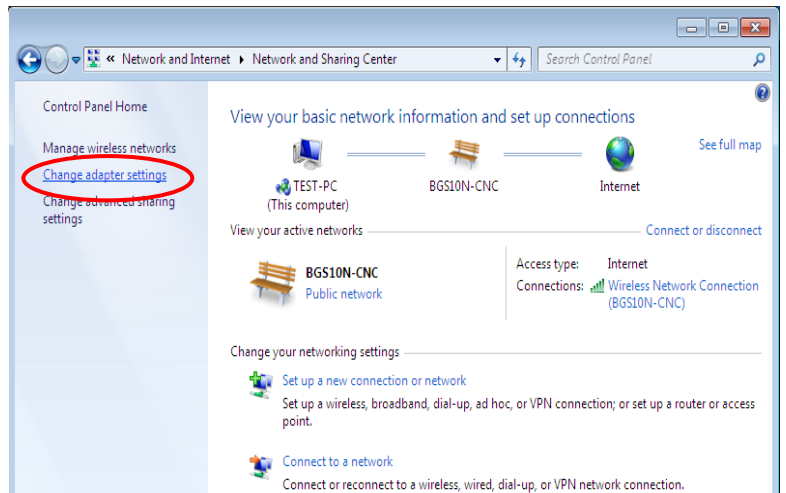
Configuring PC in Windows 7/8 (IPv6)

1. Go to **Start**. Click on **Control Panel**.

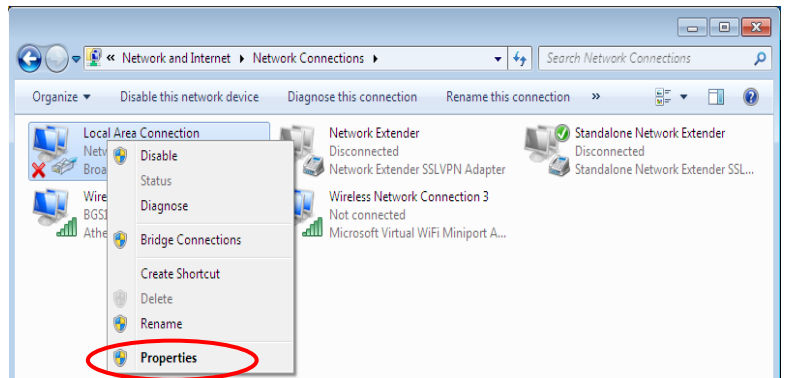


2. Then click on **Network and Internet**.

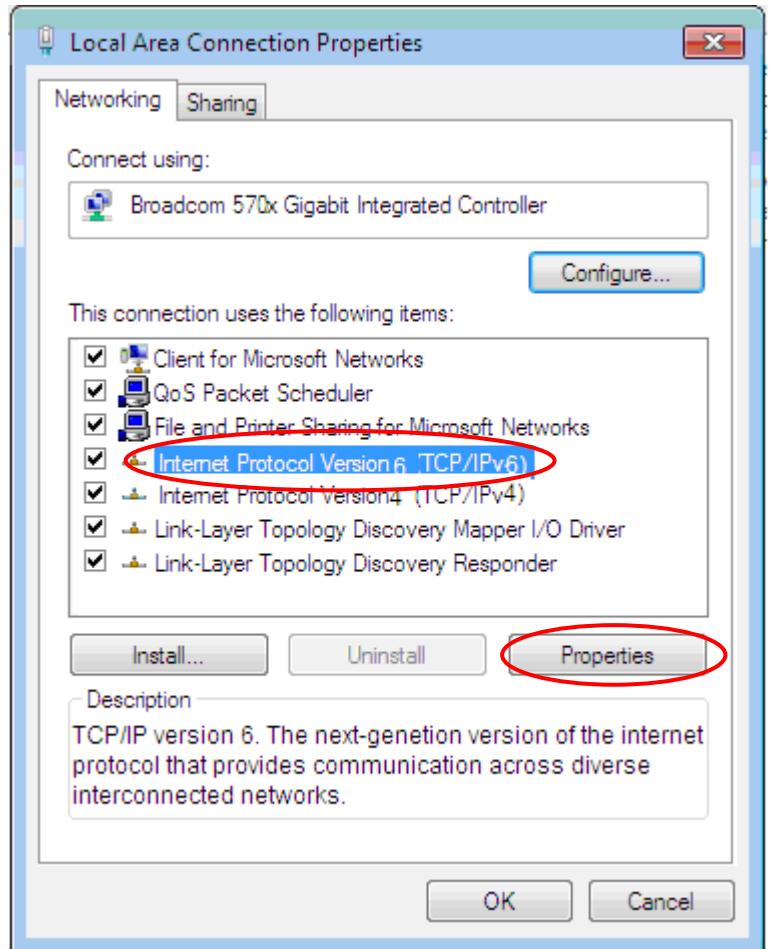
3. When the **Network and Sharing Center** window pops up, select and click on **Change adapter settings** on the left window panel.



4. Select the **Local Area Connection**, and right click the icon to select **Properties**.

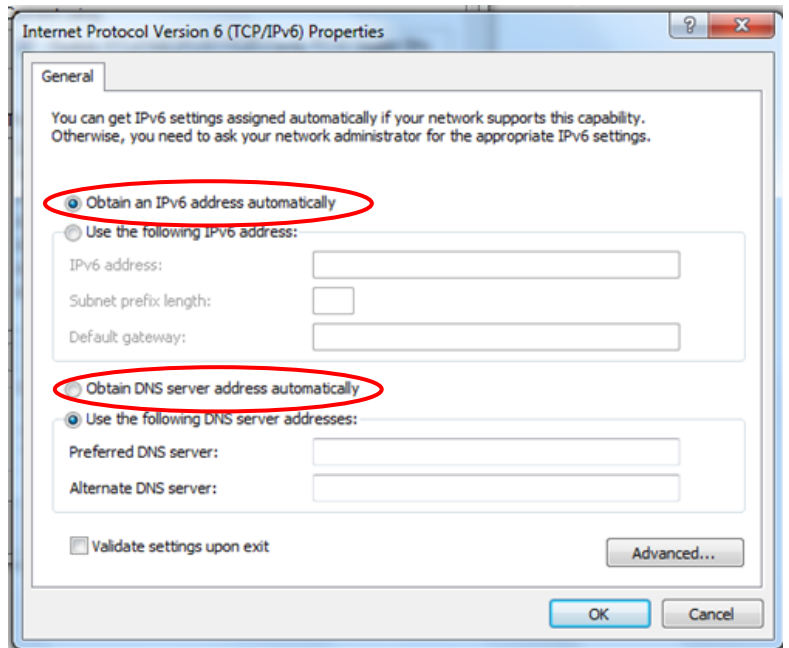


5. Select **Internet Protocol Version 6 (TCP/IPv6)** then click **Properties**.



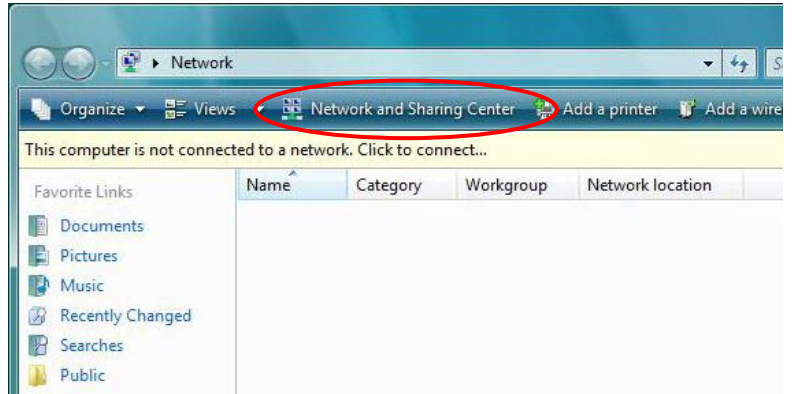
6. In the **TCP/IPv6 properties** window, select the **Obtain an IPv6 address automatically** and **Obtain DNS Server address automatically** radio buttons. Then click **OK** to exit the setting.

7. Click **OK** again in the **Local Area Connection Properties** window to apply the new configuration.



Configuring PC in Windows Vista (IPv6)

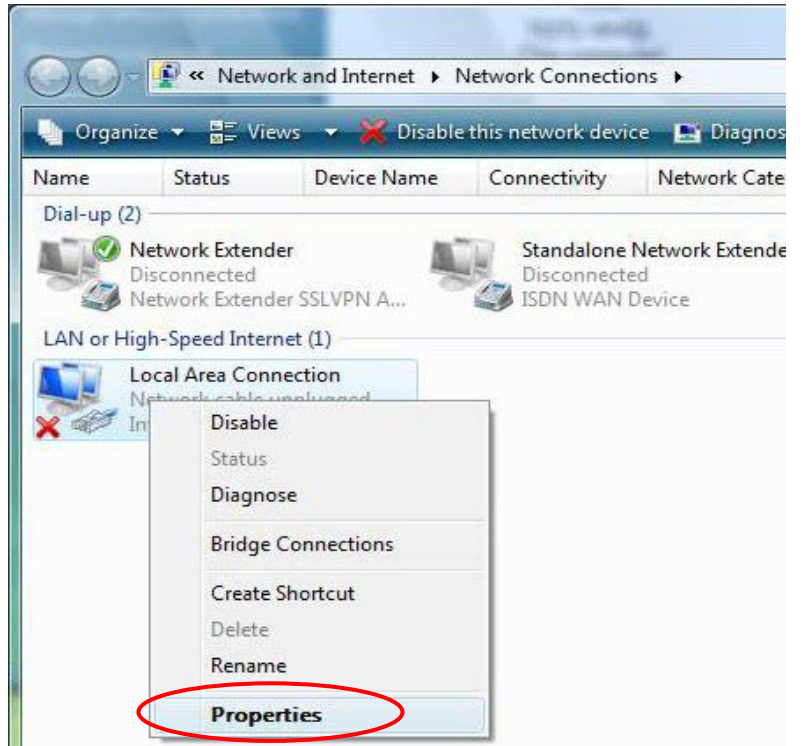
1. Go to **Start**. Click on **Network**.
2. Then click on **Network and Sharing Center** at the top bar.



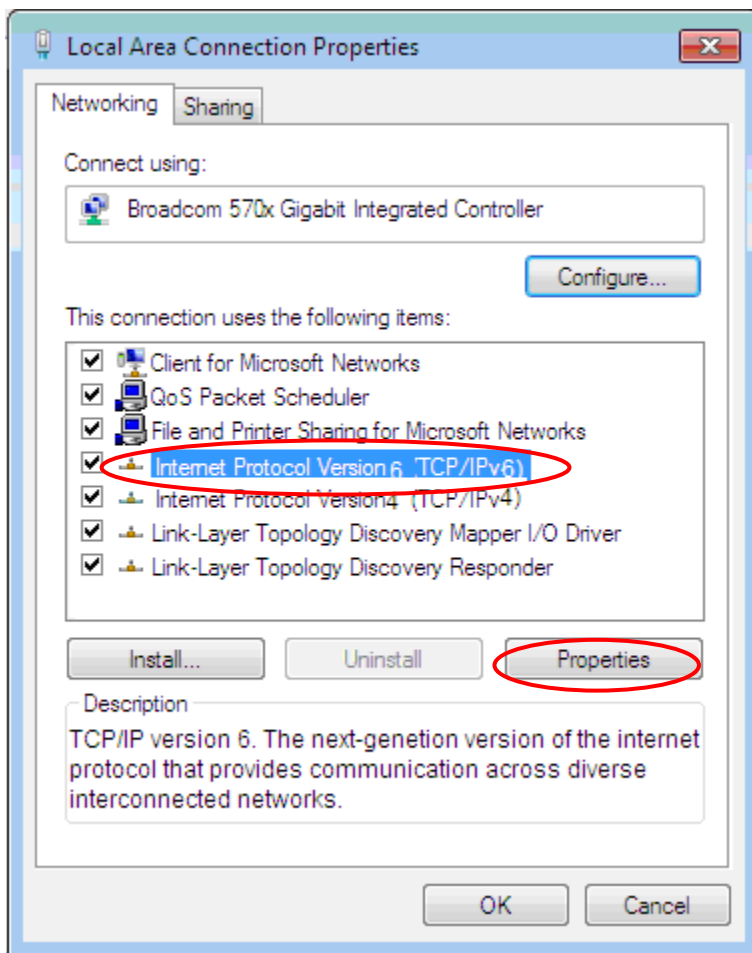
3. When the **Network and Sharing Center** window pops up, select and click on **Manage network connections** on the left window pane.



4. Select the **Local Area Connection**, and right click the icon to select **Properties**.

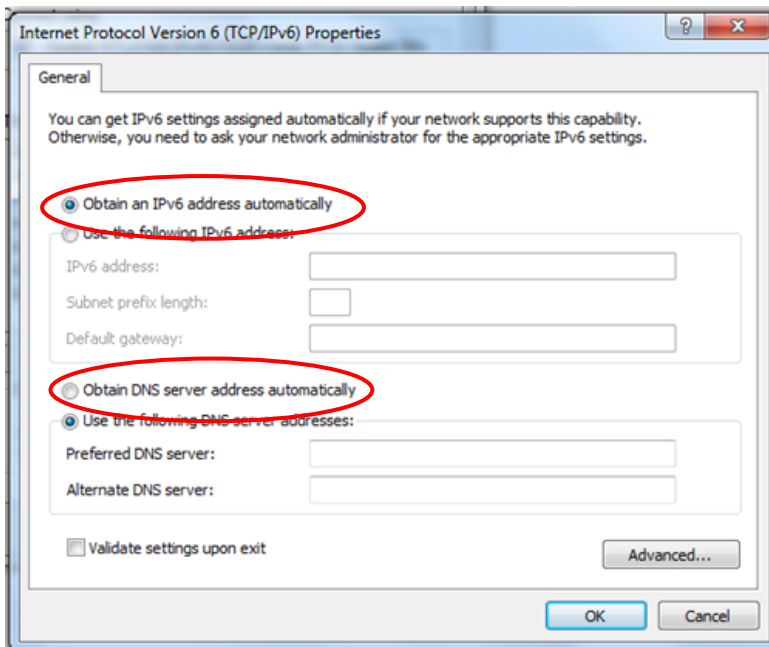


5. Select **Internet Protocol Version 6 (TCP/IPv6)** then click **Properties**.



6. In the **TCP/IPv6 properties** window, select the **Obtain an IP address automatically** and **Obtain DNS Server address automatically** radio buttons. Then click **OK** to exit the setting.

7. Click **OK** again in the **Local Area Connection Properties** window to apply the new configuration.



Default Settings

Before configuring the router, you need to know the following default settings.

Web Interface: (Username and Password)

Administrator

- Username: admin
- Password: admin or a unique 12-digit password can be found on the device label.

User

- Username: user
- Password: user



If you ever forget the username/password to login to the router, you may press the RESET button up to 6 seconds then release it to restore the factory default settings.

Caution: After pressing the RESET button for more than 6 seconds then release it, to be sure you power cycle the device again.

Device LAN IP Settings

- IP Address: 192.168.1.254
- Subnet Mask: 255.255.255.0

DHCP Server:

- DHCP server is enabled.
- Start IP Address: 192.168.1.100
- IP pool counts: 100

CHAPTER 4: DEVICE CONFIGURATION

Login to your Device

Open your web browser, enter the IP address of your router, which by default is **192.168.1.254**, and click **Go**, a user name and password window prompt appears.

Inset the management GUI username and password.

NOTE: This username / password may vary by different Internet Service Providers.



Congratulations! You have successfully logged on to your MX-600

Once you have logged on to your MX-600 via your web browser, you can begin to set it up according to your requirements. On the configuration homepage, the left navigation pane links you directly to the setup pages, which includes:

Section	Status	Quick Start (Wizard Setup)	Configuration
Sub-Items	Device Info		Interface Setup
	System Status		- Internet
	System Log		- LAN
	3G/4G-LTE Status		- Wireless
	GPS Status		- Wireless MAC Filter
	Hardware Monitor		Dual WAN
	Hotspot Status		- General Setting
	Statistics		- Outbound Load Balance
	DHCP Table		- Protocol Binding
	Disk Status		Hotspot
	ARP Table		- General Setting
	VRRP		- Built-in User Account
		- Authorized of Client	
		- Walled Garden	
		- Advertisement	
		- Session Log	
		- Customization	
		Advanced Setup	
		- Firewall	
		- Routing	
		- NAT	
		- VRRP	
		- Static DNS	
		- Time Schedule	
		- Mail Alert	
		Access Management	
		- Device Management	
		- SNMP	
		- Syslog	
		- Universal Plug & Play	
		- Dynamic DNS	
		- Access Control	
		- Packet Filter	
		- CWMP (TR-069)	
		- Parental Control	
		- SAMBA & FTP Server	
		- BECentral Management	
		Maintenance	
		- User Management	
		- Certificate Management	
		- Time Zone	
		- Firmware & Configuration	
		- System Restart	
		- Auto Reboot	
		- Diagnostic Tool	

Please see the relevant sections of this manual for detailed instructions on how to configure your **MX-600**.

Status

In this section, you can check the router working status, including **Device Info**, **System Status**, **System Log**, **3G/4G-LTE Status**, **GPS Status**, **Hardware Monitor**, **Hotspot Status**, **Statistics**, **DHCP Table**, **Disk Status**, **ARP Table** and **VRRP**.

Device Info

It provides brief status summary of the device.

Device Information		Physical Port Status	
Model Name	MX-1000	4G LTE -1	✓
Firmware Version		4G LTE -2	✓
MAC Address	00:04:ed:01:23:45	EWAN	✗
Date-Time	Wed May 20 21:42:32 UTC 2015	Ethernet	✓
System Up Time	19 mins	Wireless	✓

WAN				
Interface	Protocol	Connection	IP Address	Default Gateway
4G LTE -1	Dynamic IP	0d: 0h:17m:13s Connected	100.79.1.235/255.255.255.248	100.79.1.233

LAN		
IP Address	Subnet Mask/Prefix Length	DHCP Server
192.168.1.254	255.255.255.0	Enable / 192.168.1.100~192.168.1.199 Enable / Stateless

Wireless			
Mode	SSID	Channel	Security
802.11b+g+n	BEC345	6	Mixed WPA2/WPA-PSK

Device Information

Model Name: Name of the router for identification purpose.

Firmware Version: Software version currently loaded in the router

MAC Address: A unique number that identifies the router

Data Time: Setup correct time on the **MX-600** with your PC. Check on [Time Zone](#) section for more configuration information.

System Uptime: Display how long the **MX-600** has been powered on.

Physical Port Status

Physical Port Status : Display available connection interfaces supported in the MX-600.

WAN

Interface: List current available WAN connections.

Protocol: Display selected WAN connection protocol

Connection: The current connection status.

IP Address: WAN port IP address.

Default Gateway: The IP address of the default gateway.

LAN

IP Address: LAN port IPv4 address.

Subnet Mask/Prefix Length: Display LAN port IP subnet mask of IPv4 and/or Prefix length of IPv6.

DHCP Server: Display LAN DHCP status of IPv4 and IPv6.

- ▶ **Enable / 192.168.1.100~199:** DHCPv4 server status on or off / DHCP IP range
- ▶ **Enable / Stateless:** DHCPv6 server status on or off / DHCPv6 server Type

Wireless

Mode: Display selected Wireless mode.

SSID: Display the name of the Wireless AP(s) to use

Channel: Display radio frequency to be used for this wireless link

Security: Display security method to be used for this wireless link

System Log

In system log, you can check the operations status and any glitches to the router.

▼ System Log

```

Jan 1 00:00:31 syslogd started: BusyBox v1.00 (2015.12.28-02:11+0000)
Jan 1 00:00:33 pptpd[1492]: MGR: Manager process started
Jan 1 00:00:33 pptpd[1492]: MGR: Maximum of 100 connections available
Jan 1 00:00:39 PPOELOGIN: bind service port
Jan 1 00:00:39 PPOELOGIN: begin service loop
Jan 1 00:00:39 syslog: [Hardware monitor]: START
Jan 1 00:03:54 WEB: WEB user <admin> login
            
```

Refresh Backup

Refresh: Press this button to refresh the statistics.

Backup: Press to save the System log, log.cfg, to your PC.

System Status

System status displays the current router system (CPU and Memory) usage.

▼ System Status

CPU	
Usage	16%
Memory	
Total	61092 kB
Free	21304 kB
Cached	16072 kB

Refresh

CPU

Usage: Display the amount of CPU’s processing capacity is being used in percentage (%). Higher the % rate may result in slow Internet loading, experiencing video lags, etc. To reduce high CPU consumption by resetting the device, power off and on, an easiest way to regain the service.

Memory

Total / Free / Cached (in Kbyte): Display the memory consumptions in kilobytes (kB).

3G/4G-LTE Status

This page contains 3G/4G-LTE connection information.

3G/4G-LTE Status	
WAN	3G/4G-LTE ▼
Status	Up
SIM Status	SIM Card Not Found
Signal Strength	
Network Name	
Cell ID	
Card IMEI	359225054110101
Card IMSI	
Network Mode	
Network Band	
<input type="button" value="Refresh"/>	

Status: The current status of the 3G/4G-LTE connection.

SIM Status: Identify current status of the SIM, Activate or SIM Card Not Found.

Signal Strength: The signal strength bar and dBm value indicates the current 3G/4G-LTE signal strength. The front panel 3G/4G-LTE Signal Strength LED indicates the signal strength as well.

Signal Information: Shows important LTE signal parameters such as RSRP (Reference Signal Receiving Power), RSRQ (Reference Signal Receiving Quality), SINR (Signal to Interference plus Noise Ratio).

- ▶ RSRP (Reference Signal Receiving Power): is the average power of all resource elements which carry cell-specified reference signals over the entire bandwidth.
- ▶ RSRQ (Reference Signal Receiving Quality): measures the signal strength and is calculated based on both RSRP and RSSI.
- ▶ RSSI (Received Signal Strength Indicator): parameter which provides information about total received wide-band power (measure in all symbols) including all interference and thermal noise.
- ▶ SNR (Signal Noise Ratio): is also a measure of signal quality as well. It is widely used by the operators as it provides a clear relationship between RF conditions and throughput.

Note: Some LTE modules do not provide this information.

Network Name: The name of the LTE network the router is connecting to.

Cell ID: The ID of base station that the device is connected to.

Card IMEI: The unique identification number that is used to identify the 3G/4G-LTE module.

Card IMSI: The international mobile subscriber identity used to uniquely identify the 3G/4G-LTE module.

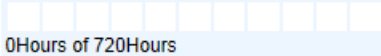
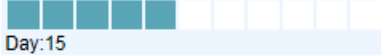
Network Mode: Display current network operating mode.

Network Band: Indicated the current radio frequency band used.

Refresh: Click to refresh the statistics.

Usage Allowance

To enable this feature, please go to **Configuration >> Interface Setup >> Internet >> click “Usage Allowance” >> enable “Save the statistics to ROM”**

Usage Allowance	
Amount used	 0Hours of 720Hours
Billing period	 Day:15
<input type="button" value="Clean"/> <input type="button" value="Save"/>	

Amount Used: Display the amount of mobile data used and remaining in current billing cycle.

Billing Cycle: Display the start date and number of days remaining in current billing cycle

Clean: Reset current saved mobile usage

Save: Click to save current mobile status to ROM

Refresh: Click to refresh the statistics.

GPS Status

In GPS status, you can check the UTC time, position of the router.



▼GPS Status

```
GPS 6 Satellites
UTC Time (hh:mm:ss): 03:31:22
Latitude: N2447.899658
Longitude: E12100.429688
Speed: 0 MPH, 0 km/h
```

Refresh

Hardware Monitor

In hardware monitor, you can check the voltage, current and temperature of system.



▼Hardware Monitor

```
Voltage:14.32V Current:0.35A
Temperature:41.75C / 107.15F
```

Refresh

Hotspot Status

The status table displays a list of connected Wi-Fi clients via the hotspot. .

HotSpot Status							
MAC Address	IP Address	Authenticated	User Name	Duration Time	Idle Time	Upload	Download
98:01:A7:5B:4D:1C	10.0.0.2	Authorized	hu-1	318/3600	167/180	0%/0	0%/0

Refresh

MAC Address: The MAC of the connected wireless device.

IP Address: The LAN IP address assigned to the wireless device.

Authentication: Identification of the wireless device is being authorized or not.

User Name: The authentication username used to login to the hotspot. Go to Built-in User Account for detailed login account list.

Duration Time (remaining time / available session time interval): Display remaining interval available before session expires/timeout.

Idle Time (current idle time / total idle timeout period): Display current idle time of the Wi-Fi device. If it reaches to total idle timeout period, the Internet connection will get disconnected immediately.

Upload / Download (used / available bandwidth in %): Display current used bandwidths, in upload and download, out of the maximum allow usage in %.

Statistics

❖ 3G/4G-LTE

Take 3G/4G-LTE as an example to describe the following connection transmission information.

▼ Statistics	
Traffic Statistics	
Interface	<input checked="" type="radio"/> 4G/LTE -1 <input type="radio"/> 4G/LTE -2 <input type="radio"/> EWAN(LAN4) <input type="radio"/> Ethernet <input type="radio"/> Wireless
Transmit Statistics	
Transmit Frames of Current Connection	0
Transmit Bytes of Current Connection	0
Transmit Total Frames	0
Transmit Total Bytes	0
Receive Statistics	
Receive Frames of Current Connection	0
Receive Bytes of Current Connection	0
Receive Total Frames	0
Receive Total Bytes	0
<input type="button" value="Refresh"/>	

Traffic Statistics

Interface: List all available network interfaces in the router. You are currently checking on the physical status of **3G/4G-LTE** interface.

Transmit Statistics

Transmit Frames of Current Connection: Display the total number of 3G/4G-LTE frames transmitted until the latest second for the current connection.

Transmit Bytes of Current Connection: Display the total bytes transmitted till the latest second for the current connection for the current connection.

Transmit Total Frames: Display the total number of frames transmitted till the latest second since system is up.

Transmit Total Bytes: Display the total number of bytes transmitted until the latest second since system is up.

Receive Statistics

Receive Frames of Current Connection: Display the number of frames received until the latest second for the current connection.

Receive Bytes of Current Connection: Display the total bytes received till the latest second for the current connection.

Receive Total Frames: Display the total number of frames received until the latest second since system is up.

Receive Total Bytes: Display the total frames received till the latest second since system is up.

Refresh: Click to refresh this page.

❖ EWAN (LAN Port #4)

▼ Statistics	
Traffic Statistics	
Interface	<input type="radio"/> 4G/LTE -1 <input type="radio"/> 4G/LTE -2 <input checked="" type="radio"/> EWAN(LAN4) <input type="radio"/> Ethernet <input type="radio"/> Wireless
Transmit Statistics	
Transmit Frames	0
Transmit Multicast Frames	0
Transmit Total Bytes	0
Transmit Collision	0
Transmit Error Frames	0
Receive Statistics	
Receive Frames	0
Receive Multicast Frame	0
Receive Total Bytes	0
Receive CRC Errors	0
Receive Under-size Frames	0
Refresh	

Traffic Statistics

Interface: List all available network interfaces in the router. You are currently checking on the physical status of the **EWAN** port.

Transmit Statistics

Transmit Frames: Display the total number of frames transmitted until the latest second.

Transmit Multicast Frames: Display the total number of multicast frames transmitted till the latest second.

Transmit Total Bytes: Display the total number of bytes transmitted until the latest second.

Transmit Collision: Numbers of collisions have occurred on this port.

Transmit Error Frames: Display the number of error packets on this port.

Receive Statistics

Receive Frames: Display the number of frames received until the latest second.

Receive Multicast Frames: Display the number of multicast frames received until the latest second.

Receive Total Bytes: Display the number of bytes received until the latest second.

Receive CRC Errors: Display the number of error packets on this port.

Receive Under-size Frames: Display the number of under-size frames received until the latest second.

Refresh: Click to refresh this page.

❖ Ethernet

▼ Statistics	
Traffic Statistics	
Interface	<input type="radio"/> 4G/LTE -1 <input type="radio"/> 4G/LTE -2 <input type="radio"/> EWAN(LAN4) <input checked="" type="radio"/> Ethernet <input type="radio"/> Wireless
Transmit Statistics	
Transmit Frames	6521
Transmit Multicast Frames	3899
Transmit Total Bytes	1834547
Transmit Collision	0
Transmit Error Frames	0
Receive Statistics	
Receive Frames	3575
Receive Multicast Frame	1350
Receive Total Bytes	1006843
Receive CRC Errors	0
Receive Under-size Frames	0
Refresh	

Traffic Statistics

Interface: List all available network interfaces in the router. You are currently checking on the physical status of the **Ethernet** port.

Transmit Statistics

Transmit Frames: Display the number of frames transmitted until the latest second.

Transmit Multicast Frames: Display the number of multicast frames transmitted until the latest second.

Transmit Total Bytes: Display the number of bytes transmitted until the latest second.

Transmit Collision: Numbers of collisions have occurred on this port.

Transmit Error Frames: Display the number of error packets on this port.

Receive Statistics

Receive Frames: Display the number of frames received until the latest second.

Receive Multicast Frames: Display the number of multicast frames received until the latest second.

Receive Total Bytes: Display the number of bytes received until the latest second.

Receive CRC Errors: Display the number of error packets on this port.

Receive Under-size Frames: Display the number of under-size frames received until the latest second.

Refresh: Click to refresh this page.

❖ Wireless

Statistics	
Traffic Statistics	
Interface	<input type="radio"/> 4G/LTE -1 <input type="radio"/> 4G/LTE -2 <input type="radio"/> EWAN(LAN4) <input type="radio"/> Ethernet <input checked="" type="radio"/> Wireless
Transmit Statistics	
Transmit Frames	16602
Transmit Error Frames	0
Transmit Drop Frames	0
Receive Statistics	
Receive Frames	99926
Receive Error Frames	46373
Receive Drop Frames	46373
Refresh	

Traffic Statistics

Interface: List all available network interfaces in the router. You are currently checking on the physical status of the **Wireless**.

Transmit Statistics

Transmit Frames: Display the number of frames transmitted until the latest second.

Transmit Error Frames: Display the number of error frames transmitted until the latest second.

Transmit Drop Frames: Display the number of drop frames transmitted until the latest second.

Receive Statistics

Receive Frames: Display the number of frames received until the latest second.

Receive Error Frames: Display the number of error frames received until the latest second.

Receive Drop Frames: Display the number of drop frames received until the latest second.

Refresh: Click to refresh this page.

DHCP Table

DHCP table displays the devices connected to the router with clear information.

▼DHCP Table				
Index	Host Name	IP Address	MAC Address	Expire Time
1	Billion-HC-ee	192.168.1.101	00:C0:9F:D1:E1:CA	0days 23:36:1

Index #: The numeric indicator for devices using dynamic IP addresses.

Host Name: Show the hostname of the PC.

IP Address: The IP allocated to the device.

MAC Address: The MAC of the connected device.

Expire Time: The total remaining interval since the IP assignment to the PC.

Disk Status

▼Disk Status		
Partition	Disk Space(KB)	Free Space(KB)
usb1_1	15718272	14033064
usb2_1	15734652	11170204

Partition: Display the USB storage partition.

Disk Space (KB): Display the total storage space of the NAS in Kbytes unit.

Free Space (KB): Display the available space in Kbytes unit.

ARP Table

This section displays the router’s ARP (Address Resolution Protocol) Table, which shows the mapping of Internet (IP) addresses to Ethernet (MAC) addresses. This is useful as a quick way of determining the MAC address of the network interface of your PCs to use with the router’s **Firewall - MAC Address Filter** function. See the Firewall section of this manual for more information on this feature.

▼ARP Table		
#	IP	MAC Address
1	192.168.1.11	00:00:00:00:00:00

Index #: The numeric indicator for the ARP table.

IP Address: It is IP Address of internal host that join this network.

MAC Address: The MAC address of internal host.

VRRP Status

▼ VRRP Status	
Current Status	N/A
Current Master	N/A

Current Status: Display current VRRP status, Master or Backup.

Current Master: Display the IP address of the Master.

Quick Start

This is a useful and easy utility to help you to setup the router quickly and to connect to your ISP (Internet Service Provider) with only a few steps. It will guide you step by step to setup password, time zone, wireless, and WAN settings of your device. The Quick Start Wizard is a helpful guide for the first-time users to the device.

Quick Start

The 'Quick Start' wizard will guide you to configure the device to connect to your ISP(Internet Service Provider).
Please follow the 'Quick Start' wizard step by step to configure the device. It will allow you to have Internet access within minutes.

For detailed instructions on configuring WAN settings, see refer to the **Interface Setup** section.

Quick Start

The Wizard will guide you through these five quick steps. Begin by clicking on NEXT.

Step 1. Set your new password

Step 2. Choose your time zone

Step 3. Set your wireless connection

Step 4. Set your internet connection

Step 5. Confirm the configuration and save it

Click **NEXT** to move on to Step 1.

Step 1 – Password

Set new password of the “admin” account to access for router management. The default is “admin”. Once changed, please use this new password next time when accessing to the router. Click **NEXT** to continue.

Quick Start - Password

You may change the admin account password by entering in a new password. Click NEXT to continue.

New Password

Confirm Password

Step 2 – Time Zone

Choose your time zone. Click **NEXT** to continue.

Quick Start - Time Zone

Select the appropriate time zone for your location and click NEXT to continue.

Time Zone

Step 3 – Wireless

Set up your wireless connection if you want to connect to the Internet wirelessly on your PCs. Click **NEXT** to continue.

Quick Start - Wireless

Configure your wireless network, authentication type and click NEXT to continue.

Access Point	<input checked="" type="radio"/> Activated <input type="radio"/> Deactivated
SSID	BEC345
Broadcast SSID	<input checked="" type="radio"/> Yes <input type="radio"/> No
Channel	UNITED STATES 06
Security Type	Mixed WPA2/WPA-PSK
WPA Algorithms	TKIP+AES
Pre-Shared Key	842CFFDE (8~63 characters or 64 Hex string)
Key Renewal Interval	600 seconds (10 ~ 4194303)

Back Next

Step 4 – ISP Connection Type

Set up your 3G/4G-LTE Internet connection.

4.1 Select an appropriate WAN connection protocol then click **NEXT** to continue.

Quick Start - ISP Connection Type

Select the WAN Interface and Internet Connection Type to connect to your ISP. Click NEXT to continue.

WAN Interface	4G LTE -1
---------------	-----------

Back Next

4.2(1) If selected **4G LTE-1** or **4G LTE-2**

Input all relevant 3G/4G-LTE parameters from your ISP.

Click **Next** to continue.

Quick Start - 3G/4G-LTE

Enter the 3G information provided to you by your ISP. Click NEXT to continue.

TEL No.	*99***1#
APN	internet
Username	
Password	
PIN	

Back Next

4.2(2) If selected **EWAN / PPPoE**, please enter PPPoE account information provided by your ISP.

Click **NEXT** to continue.

▼ Quick Start - PPPoE

Provide the PPPoE information. Click NEXT to continue.

Username

Password

Back Next

Step 5 – Quick Start Completed

The Setup Wizard has completed. Click on BACK to make changes or correct mistakes. Click **NEXT** to save the current settings and complete the Quick Start setups.

▼ Quick Start - Quick Start Completed

Quick Start Completed !!

The Setup Wizard has completed. Click on BACK to modify changes or mistakes. Click NEXT to exit the Setup Wizard.

Back Next

▼ Quick Start - Quick Start Completed !!

Quick Start Completed !!

Saved Changes.

Go back to the **Status > Device Info** to view the status.

Configuration

Click to access and configure the available features in the following: **Interface Setup**, **Dual WAN**, **Hotspot**, **Advanced Setup**, **Access Management**, and **Maintenance**.

These functions are described in the following sections.

Interface Setup

Here are the features under **Interface Setup: Internet**, **LAN**, **Wireless**, and **Wireless MAC Filter**

Internet

❖ 3G/4G-LTE

Internet	
WAN Interface	4G/LTE <input type="button" value="v"/>
Status	<input checked="" type="radio"/> Activated <input type="radio"/> Deactivated
Usage Allowance <input type="button" value="▶"/>	<input type="checkbox"/> Enable
IP Pass-Through Mode	<input type="checkbox"/> Enable
LTE Antenna Diversity <input type="button" value="▶"/>	Enabled
Network Mode	Automatic <input type="button" value="v"/>
PLMN Selection	Operator Numeric <input type="text"/> RAT <input type="text"/> <input type="button" value="Scan"/>
TEL No.	*99***1# <input type="text"/>
Dual APN	Single APN <input type="button" value="v"/>
APN	internet <input type="text"/>
PDN Type	<input checked="" type="radio"/> IPv4 <input type="radio"/> IPv4/IPv6 <input type="radio"/> IPv6
Authentication Protocol	Disable <input type="button" value="v"/>
Username	<input type="text"/>
Password	<input type="text"/>
PIN	<input type="text"/>
Connection	<input checked="" type="radio"/> Always On (Recommended)
Keep Alive	<input type="radio"/> Yes <input checked="" type="radio"/> No
Keep Alive IP	<input type="text"/>
Default Route	<input checked="" type="radio"/> Yes <input type="radio"/> No
NAT	Enable <input type="button" value="v"/>
MTU	1428 <input type="text"/> (0 means use default:1500)
<input type="button" value="Save"/>	

Status: Choose Activated to enable the 3G/4G-LTE connection.

IP Pass-Through Mode: When **enabled**, MX-600 is in bridge mode and will not obtain a WAN IP address, features such as routing capabilities, NAT, firewall, etc., will be disabled by default. However, the client router behind the MX-600 can get a WAN IP address instead.

When **disabled**, MX-600 is in router mode that it handles a WAN IP address and all routing-related

features become available.

LTE Mode (This feature is not supported in some LTE modules): Display current selected LTE frequency band. To change the band, please click “**LTE Band**” to access to the band selection page.

LTE Band

LTE Band: A list of available LTE bands to choose from.

The screenshot shows the 'LTE Mode' configuration section. Under 'Parameters', there is a dropdown menu for 'LTE Band' currently set to 'B12'. Below the dropdown is a blue informational message: "***Please save config and restart to activate the setting. Please make sure device had get WAN IP, then config this feature." At the bottom of the section are two buttons: 'Apply' and 'Save Config & Restart'.

LTE Antenna Diversity (This feature is not supported in some LTE modules): When **enabled**, the auxiliary antenna will be activated. With **disabled**, only the primary antenna is receiving and transmitting data.

To change it, please click “**LTE Antenna Diversity**” to access to the LTE antenna diversity selection page.

NOTE: When using Yagi antenna, please **DISABLE** the Antenna Diversity feature for utmost performance.

LTE Antenna Diversity

To enable or disable the LTE antenna diversity feature.

The screenshot shows the 'LTE Mode' configuration section. Under 'Parameters', there is a dropdown menu for 'LTE Antenna Diversity'. Below the dropdown is a blue informational message: "***Please save config and restart to activate the setting. Please make sure device had get WAN IP, then config this feature." At the bottom of the section are two buttons: 'Apply' and 'Save Config & Restart'.

PLMN (Public Land Mobile Network) Selection: Either manually enter the information or click **Scan** button to scanning all closest base stations in the area.

TEL No.: The dial string to make a GPRS / 3G/4G-LTE user internetworking call. It may provide by your mobile service provider.

Dual APN*: MX-600 can support up to two (2) APNs. Select **Single / Dual** or a **different LTE/3G APN**.

- ▶ **APN (3G):** If select **LTE/3G with different APN**, enter the APN here.

* **Feature is available with specific cellular module**

APN: An APN is similar to a URL on the WWW, it is what the unit makes a GPRS / UMTS call. The service provider is able to attach anything to an APN to create a data connection, requirements for APNs varies between different service providers. Most service providers have an internet portal which they use to connect to a DHCP Server, thus giving you access to the internet i.e. some 3G operators use the APN ‘internet’ for their portal. The default value is “internet”.

PDN Type: The IP type for PDN connections. Available types are **IPv4**, **IPv6**, and **IPv4v6**.

Username/Password: Enter the username and password provided by your service provider. The username and password are case sensitive.

PIN: PIN stands for Personal Identification Number. A PIN code is a numeric value used in certain systems as a password to gain access, and authenticate. In mobile phones a PIN code locks the SIM card until you enter the correct code. If you enter the PIN code incorrectly into the phone 3 times in a

row, then the SIM card will be blocked and you will require a PUK code from your network/service provider.

Connection: Default set to Always on to keep an always-on 3G/4G-LTE connection.

Keep Alive: Select **Yes** to keep the 3G/4G-LTE connection always on.

Keep Alive IP: Enter the IP address that the router can ping the IP to find whether the connection is on or not, if not, router will recover the connection.

Default Route: Select **Yes** to use this interface as default route interface.

NAT: Select this option to Disabled/Enable the NAT (Network Address Translation) function. Enable NAT to grant multiples devices in LAN to access to the Internet through a single WAN IP.

MTU: Enter the maximum packet that can be transmitted. Default MTU **0** means it is set to 1500 bytes.

❖ EWAN (LAN # 4)

Internet	
WAN Interface	EWAN(LAN4) ▾
Status	<input checked="" type="radio"/> Activated <input type="radio"/> Deactivated
IPv4/IPv6	
IP Version	<input type="radio"/> IPv4 <input checked="" type="radio"/> IPv4/IPv6 <input type="radio"/> IPv6
ISP Connection Type	
ISP	<input type="radio"/> Dynamic IP Address <input type="radio"/> Static IP Address <input checked="" type="radio"/> PPPoE
802.1q Options	
802.1q	<input type="radio"/> Activated <input checked="" type="radio"/> Deactivated
VLAN ID	0 (range: 0~4095)
PPPoE	
Username	<input type="text"/>
Password
Bridge Interface for PPPoE	<input type="radio"/> Activated <input checked="" type="radio"/> Deactivated
Connection Setting	
Connection	<input checked="" type="radio"/> Always On (Recommended) <input type="radio"/> Connect Manually
TCP MSS Option	TCP MSS <input type="text" value="0"/> bytes(0 means use default)
IP Options	
IP Common Options	
Default Route	<input checked="" type="radio"/> Yes <input type="radio"/> No
TCP MTU Option	TCP MTU <input type="text" value="0"/> bytes(0 means use default: 1492)
IPv4 Options	
Get IP Address	<input type="radio"/> Static <input checked="" type="radio"/> Dynamic
Static IP Address	<input type="text" value="0.0.0.0"/>
IP Subnet Mask	<input type="text" value="0.0.0.0"/>
Gateway	<input type="text" value="0.0.0.0"/>
NAT	Enable ▾
Dynamic Route	RIP1 ▾ Direction None ▾
IGMP Proxy	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
IPv6 Options	
IPv6 Address	<input type="text"/> / <input type="text"/>
Obtain IPv6 DNS	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Primary DNS	<input type="text"/>
Secondary DNS	<input type="text"/>
MLD Proxy	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
<input type="button" value="Save"/>	

Status: Select to enable or disable the service.

IPv4/IPv6

IP Version: Choose **IPv4**, **IPv4/IPv6**, or **IPv6** based on your environment. If you don't know which one to choose from, please choose IPv4/IPv6 instead.

ISP Connection Type:

ISP: Select the encapsulation type your ISP uses.

- ▶ **Dynamic IP:** Select this option if your ISP provides you an IP address automatically.

- ▶ **Static IP:** Select this option to set static IP information. You will need to enter in the Connection type, IP address, subnet mask, and gateway address, provided to you by your ISP. Each IP address entered in the fields must be in the appropriate IP form. IP address from by four IP octets separated by a dot (xx.xx.xx.xx). The Router will not accept the IP address if it is not in this format.
- ▶ **PPPoE:** Select this option if your ISP requires you to use a PPPoE connection.

802.1q Options

802.1q: When activated, please enter a VLAN ID.

VLAN ID: It is a parameter to specify the VLAN which the frame belongs. Enter the VLAN ID identification, tagged: 0-4095.

PPPoE (If selected PPPoE as WAN Connection Type; otherwise, skip this part)

Username: Enter the user name provided by your ISP.

Password: Enter the password provided by your ISP.

Bridge Interface for PPPoE: When “Activated”, the device will gain WAN IP from your ISP with the PPPoE account. But if your PC is connected to the router working as a DHCP client, in this mode, the device acts as a NAT router; while if you dial up with the account within your PC, the device will then work as a bridge forwarding the PPPoE information to the PPPoE server and send the response to your PC, thus your PC gets a WAN IP working in the internet.

Connection Setting

Connection:

- ▶ **Always On:** Click on **Always On** to establish a PPPoE session during start up and to automatically re-establish the PPPoE session when disconnected by the ISP.
- ▶ **Connect Manually:** Select Connect Manually when you don't want the connection up all the time.

TCP MSS Option: Enter the maximum size of the data that TCP can send in a segment. Maximum Segment Size (MSS).

IP Options – next page

IP Options

IP Options	
IP Common Options	
Default Route	<input checked="" type="radio"/> Yes <input type="radio"/> No
TCP MTU Option	TCP MTU <input type="text" value="0"/> bytes(0 means use default:1492)
IPv4 Options	
Get IP Address	<input type="radio"/> Static <input checked="" type="radio"/> Dynamic
Static IP Address	<input type="text" value="0.0.0.0"/>
IP Subnet Mask	<input type="text" value="0.0.0.0"/>
Gateway	<input type="text" value="0.0.0.0"/>
NAT	Enable ▾
Dynamic Route	RIP1 ▾ Direction None ▾
IGMP Proxy	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
IPv6 Options	
IPv6 Address	<input type="text"/> / <input type="text"/>
Obtain IPv6 DNS	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Primary DNS	<input type="text"/>
Secondary DNS	<input type="text"/>
MLD Proxy	<input type="radio"/> Enable <input checked="" type="radio"/> Disable

IP Common Options

Default Route: Select **Yes** to use this interface as default route interface.

TCP MTU Option: Enter the maximum packet that can be transmitted. Default MTU **0** means it is set to 1492 bytes.

IPv4 Options

Get IP Address: Choose Static or Dynamic

Static IP Address: If **Static** is selected in the above field, please enter the specific IP address you get from ISP and the following IP subnet mask and gateway address.

IP Subnet Mask: The default is 0.0.0.0. User can change it to other such as 255.255.255.0. Type the subnet mask assigned to you by your ISP (if given).

Gateway: Enter the specific gateway IP address you get from ISP.

NAT: Enable to allow MX-600 to assign private network IPs to all devices in the network for get Internet access.

Dynamic Route:

- ▶ **RIP Version:** (Routing Information protocol) Select this option to specify the RIP version, including RIP-1, RIP-2.
- ▶ **RIP Direction:** Select this option to specify the RIP direction.
 - **None** is for disabling the RIP function.
 - **Both** means the router will periodically send routing information and accept routing information then incorporate into routing table.
 - **IN only** means the router will only accept but will not send RIP packet.

- **OUT only** means the router will only send but will not accept RIP packet.

IGMP Proxy: IGMP (Internet Group Multicast Protocol) is a network-layer protocol used to establish membership in a Multicast group. Choose whether enable IGMP proxy.

IPv6 options (only when choose IPv4/IPv6 or just IPv6 in IP version field above):

IPv6 Address: Type the WAN IPv6 address from your ISP.

Obtain IPv6 DNS: Choose if you want to obtain DNS automatically.

Primary/Secondary: if you choose Disable in the Obtain IPv6 DNS field, please type the exactly primary and secondary DNS.

MLD Proxy: MLD (Multicast Listener Discovery Protocol) is to IPv6 just as IGMP to IPv4. It is a Multicast Management protocol for IPv6 multicast packets.

When router's Internet configuration is finished successfully, you can go to status to get the connection information.

Click **Save** to apply the settings.

❖ **Wireless Client**

Internet				
WAN Interface	WirelessClient ▾			
Status	<input checked="" type="radio"/> Activated <input type="radio"/> Deactivated			
ISP Connection Type				
ISP	<input checked="" type="radio"/> Dynamic IP Address <input type="radio"/> Static IP Address			
Dynamic IP Address				
IP Common Options				
Default Route	<input checked="" type="radio"/> Yes <input type="radio"/> No			
IPv4 Options				
NAT	Enable ▾			
Wireless Options				
SSID	BEC_N2G			
Channel	1 ▾			
Security Type	WPA2-PSK ▾			
Pre-Shared Key	0004EDBEC123 (8~63 characters or 64 Hex string) <input checked="" type="checkbox"/> Show Character			
<input type="button" value="Save"/> <input type="button" value="Scan"/>				
Site Survey				
CH	SSID	BSSID	Security	Signal(%)

Status: Select to enable or disable the service.

ISP Connection Type:

ISP: Select the encapsulation type your ISP uses.

- ▶ **Dynamic IP:** Select this option to get an assigned IP address automatically from a Wi-Fi AP unit.
- ▶ **Static IP:** Select to enter the access IP address manually.

IP Options

Default Route: Select **Yes** to use this interface as default route interface.

IPv4 Options

NAT: Enable to allow MX-600 to assign private network IPs to all devices in the network for get Internet access.

Wireless Options

Enter the basic information of the Wireless base station.

SSID / Channel / Pre-Shared Key: Enter the SSID, Wi-Fi channel, and Pre-shared key of the wireless station to provide the Internet access.

Scan: Click **Scan** button to search all available and active wireless stations (AP) around the area, and then choose the desired AP. The SSID and Channel will be filled automatically

Click **Save** to apply the settings.

LAN

A Local Area Network (LAN) is a shared communication system to which many computers are attached and is limited to the immediate area, usually the same building or floor of a building.

▼ LAN

IPv4 Parameters

IP Address: 192.168.1.254

IP Subnet Mask: 255.255.255.0

Alias IP Address: 0.0.0.0 (0.0.0.0 means to close the alias ip)

Alias IP Subnet Mask: 0.0.0.0

IGMP Snooping: Activated Deactivated

Dynamic Route: RIP1 Direction: None

DHCPv4 Server

DHCPv4 Server: Disabled Enabled Relay

Start IP: 192.168.1.100

IP Pool Count: 100

Lease Time: 86400 seconds (0 sets to default value of 259200)

Physical Ports: LAN1 LAN2 LAN3

DNS Relay: Automatically Manually

Primary DNS:

Secondary DNS:

Option 66:

Option 160:

Fixed Host

IP Address:

MAC Address:

IPv6 Parameters

Interface Address/Prefix Length: /

MLD Snooping: Activated Deactivated

DHCPv6 Server

DHCPv6 Server: Disable Enable

DHCPv6 Server Type: Stateless Stateful

Start Interface ID:

End Interface ID:

Lease Time: seconds (0 sets to default value of 4800)

Router Advertisements: Disable Enable

Save

Fixed Host List

Index	IP Address	MAC Address	Delete
-------	------------	-------------	--------

▼ LAN

IPv4 Parameters

IP Address: 192.168.1.254

IP Subnet Mask: 255.255.255.0

Alias IP Address: 0.0.0.0 (0.0.0.0 means to close the alias ip)

Alias IP Subnet Mask: 0.0.0.0

Snooping: Activated Deactivated

Dynamic Route: RIP1 Direction: None

DHCPv4 Server

DHCPv4 Server: Disabled Enabled Relay

Start IP: 192.168.1.100

IP Pool Count: 100

Lease Time: 86400 seconds (0 sets to default value of 259200)

Physical Ports: LAN1 LAN2 LAN3 LAN4 WLAN1

DNS Relay: Automatically Manually

Primary DNS:

Secondary DNS:

Fixed Host

IP Address:

MAC Address:

IPv6 Parameters

Interface Address/Prefix Length: /

DHCPv6 Server

DHCPv6 Server: Disable Enable

DHCPv6 Server Type: Stateless Stateful

Start Interface ID:

End Interface ID:

Lease Time: seconds (0 sets to default value of 4800)

Router Advertisements: Disable Enable

Fixed Host List

Index	IP	MAC	Drop
-------	----	-----	------

IPv4 Parameters

IP Address: Enter the IP address of Router in dotted decimal notation, for example, 192.168.1.254 (factory default).

IP Subnet Mask: The default is 255.255.255.0. User can change it to other such as 255.255.255.128.

Alias IP Address: This is for local networks virtual IP interface. Specify an IP address on this virtual interface.

Alias IP Subnet Mask: Specify a subnet mask on this virtual interface.

IGMP Snooping: Select **Activated** to enable IGMP Snooping function, Without IGMP snooping, multicast traffic is treated in the same manner as broadcast traffic - that is, it is forwarded to all ports. With IGMP snooping, multicast traffic of a group is only forwarded to ports that have members of that group.

Dynamic Route:

- ▶ **RIP Version:** (Routing Information protocol) Select this option to specify the RIP version, including RIP-1, RIP-2.
- ▶ **RIP Direction:** Select this option to specify the RIP direction.
 - **None** is for disabling the RIP function.
 - **Both** means the router will periodically send routing information and accept routing information then incorporate into routing table.
 - **IN only** means the router will only accept but will not send RIP packet.
 - **OUT only** means the router will only send but will not accept RIP packet.

DHCPv4 Server

DHCP (Dynamic Host Configuration Protocol) allows individual clients to obtain TCP/IP configuration at start-up from a server.

DHCPv4 Server	
DHCPv4 Server	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled <input type="radio"/> Relay
Start IP	<input type="text" value="192.168.1.100"/>
IP Pool Count	<input type="text" value="20"/>
Lease Time	<input type="text" value="86400"/> seconds (0 sets to default value of 259200)
Physical Ports	<input checked="" type="checkbox"/> LAN1 <input checked="" type="checkbox"/> LAN2 <input checked="" type="checkbox"/> LAN3 <input checked="" type="checkbox"/> WLAN1
DNS Relay	<input checked="" type="radio"/> Automatically <input type="radio"/> Manually
Primary DNS	<input type="text"/>
Secondary DNS	<input type="text"/>

DHCPv4 Server: If set to **Enabled**, your MX-600 can assign IP addresses, default gateway and DNS servers to the DHCP client.

- ▶ If set to **Disabled**, the DHCP server will be disabled.
- ▶ If set to **Relay**, the MX-600 acts as a surrogate DHCP server and relays DHCP requests and responses between the remote server and the clients. Enter the IP address of the actual, remote DHCP server in the Remote DHCP Server field in this case.
- ▶ When DHCP is used, the following items need to be set.

Start IP: This field specifies the first of the contiguous addresses in the IP address pool.

IP Pool Count: This field specifies the count of the IP address pool.

Lease Time: The current lease time of client.

Physical Ports: Select to determine if the DHCPv4 server is applicable to the specific port or ports. By default, all ports can obtain local IP from DHCPv4 server.

DNS Relay:

- ▶ Select **Automatic** detection or
- ▶ **Manually** specific Primary and Secondary DNS IP addresses

Primary / Secondary DNS Server: Enter the IP addresses of the DNS servers. The DNS servers are passed to the DHCP clients along with the IP address and the subnet mask.

Option 66: Set the IP or hostname of the TFTP server for devices, like IPTV Set Box, to get configuration settings from the TFTP server.

Option 160: Set the IP or hostname of the TFTP server for devices, like IPTV Set Box, to get configuration settings from the TFTP server. (The option 160 is an extended feature in DHCP option, similar to option 66, but using http or https protocols.)

Fixed Host

In this field, users can map the specific IP (must in the DHCP IP pool) for some specific MAC, and this information can be listed in the following table.

Fixed Host	
IP Address	<input type="text"/>
MAC Address	<input type="text"/>

IP Address: Enter the specific IP. For example: 192.168.1.110.

MAC Address: Enter the responding MAC. For example: 00:0A:F7:45:6D:ED

When added, you can see the ones listed as showed below:

Fixed Host Listing			
Index	IP	MAC	Drop
1	192.168.1.102	23:24:5B:4B:22:33	

IPv6 parameters

The IPv6 address composes of two parts, thus, the prefix and the interface ID.

IPv6 Parameters	
Interface Address/Prefix Length	<input type="text"/> / <input type="text"/>

Interface Address / Prefix Length: Enter a static LAN IPv6 address. If you are not sure what to do with this field, please leave it empty as if contains false information it could result in LAN devices not being able to access other IPv6 device. Router will take the same WAN’s prefix to LAN side if the field is empty.

MLD Snooping: Similar to IGMP Snooping, but applicable for IPv6.

DHCPv6 Server

DHCPv6 Server	
DHCPv6 Server	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
DHCPv6 Server Type	<input checked="" type="radio"/> Stateless <input type="radio"/> Stateful
Start Interface ID	<input type="text"/>
End Interface ID	<input type="text"/>
Lease Time	<input type="text"/> seconds(0 sets to default value of 4800)
Router Advertisements	<input type="radio"/> Disable <input checked="" type="radio"/> Enable

There are two methods to dynamically configure IPv6 address on hosts, **Stateless** and **Stateful**.

Stateless auto-configuration requires no manual configuration of hosts, minimal (if any) configuration of routers, and no additional servers. The stateless mechanism allows a host to generate

its own addresses using a combination of locally available information (MAC address) and information (prefix) advertised by routers. Routers advertise prefixes that identify the subnet(s) associated with a link, while hosts generate an "interface identifier" that uniquely identifies an interface on a subnet. An address is formed by combining the two. When using stateless configuration, you needn't configure anything on the client.

Stateful configuration, for example using DHCPv6 (which resembles its counterpart DHCP in IPv4.) In the stateful auto configuration model, hosts obtain interface addresses and/or configuration information and parameters from a DHCPv6 server. The Server maintains a database that keeps track of which addresses have been assigned to which hosts.

DHCPv6 Server: Check whether to enable DHCPv6 server.

DHCPv6 Server Type: Select Stateless or Stateful. When DHCPv6 is enabled, this parameter is available.

- ▶ **Stateless:** If selected, the PCs in LAN are configured through RA mode, thus, the PCs in LAN are configured through RA mode, to obtain the prefix message and generate an address using a combination of locally available information (MAC address) and information (prefix) advertised by routers, but they can obtain such information like DNS from DHCPv6 Server.
- ▶ **Stateful:** If selected, the PCs in LAN will be configured like in IPv4 mode, thus obtain addresses and DNS information from DHCPv6 server.

Start interface ID: enter the start interface ID. The IPv6 address composed of two parts, thus, the prefix and the interface ID. Interface is like the Host ID compared to IPv4.

End interface ID: enter the end interface ID.

Leased Time (hour): the leased time, similar to leased time in DHCPv4, is a time limit assigned to clients, when expires, the assigned ID will be recycled and reassigned.

Router Advertisement: Check to Enable or Disable the Issue Router Advertisement feature. This feature is to send Router Advertisement messages periodically which would multicast the IPv6 Prefix information (similar to v4 network number 192.168.1.0) to all LAN devices if the field is enabled. We suggest enabling this field.

Click **Save** to apply settings.

Wireless

This section introduces the wireless LAN and some basic configurations. Wireless LANs can be as complex as a number of computers with wireless LAN cards communicating through access points which bridge network traffic to the wired LAN.

NOTE: WLAN1 / 2 / 3 / 4 Interface refers to as SSID1 / 2 / 3 / 4 Wi-Fi networks.

Wireless	
Access Point Settings	
Access Point	<input checked="" type="radio"/> Activated <input type="radio"/> Deactivated
AP MAC Address	00:04:ED:01:23:45
Wireless Mode	802.11b+g+n
Channel	UNITED STATES 06 Current Channel : 6
Beacon Interval	100 (range: 20~1000)
RTS/CTS Threshold	2347 (range: 1500~2347)
Fragmentation Threshold	2346 (range: 256~2346, even numbers only)
DTIM Interval	1 (range: 1~255)
TX Power	100 (range:1~100)
IGMP Snooping	<input checked="" type="radio"/> Yes <input type="radio"/> No
11n Settings	
Channel Bandwidth	20 MHz
Guard Interval	Auto
MCS	Auto
SSID Settings	
Available SSID	1
SSID Index	<input checked="" type="radio"/> SSID1
SSID	BEC345
Broadcast SSID	<input checked="" type="radio"/> Yes <input type="radio"/> No
SSID Activated	Always
WPS Settings	
Use WPS	<input checked="" type="radio"/> Yes <input type="radio"/> No
WPS State	Configured
WPS Mode	<input type="radio"/> PIN code <input checked="" type="radio"/> PBC
Security Settings	
Security Type	Mixed WPA2/WPA-PSK
WPA Algorithms	TKIP+AES
Pre-Shared Key	842CFFDE (8~63 characters or 64 Hex string)
Key Renewal Interval	600 seconds (10 ~ 4194303)
WDS Settings	
AP MAC Address	00:04:ED:01:23:45
WDS Mode	<input type="radio"/> Activated <input checked="" type="radio"/> Deactivated
WDS Peer MAC #1	00:00:00:00:00:00
WDS Peer MAC #2	00:00:00:00:00:00
WDS Peer MAC #3	00:00:00:00:00:00
WDS Peer MAC #4	00:00:00:00:00:00
Save	

Access Point Settings

Access Point Settings	
Access Point	<input checked="" type="radio"/> Activated <input type="radio"/> Deactivated
AP MAC Address	00:04:ED:01:23:45
Wireless Mode	802.11b+g+n ▼
Channel	UNITED STATES ▼ 06 ▼ Current Channel : 6
Beacon Interval	100 (range: 20~1000)
RTS/CTS Threshold	2347 (range: 1500~2347)
Fragmentation Threshold	2346 (range: 256~2346, even numbers only)
DTIM Interval	1 (range: 1~255)
TX Power	100 (range:1~100)
IGMP Snooping	<input checked="" type="radio"/> Yes <input type="radio"/> No

Access Point: Default setting is set to **Activated**. If you want to close the wireless interface, select **Deactivated**.

AP MAC Address: The MAC address of wireless AP.

Wireless Mode: The default setting is **802.11b+g+n** (Mixed mode). If you do not know or have both 11g and 11b devices in your network, then keep the default in **mixed mode**. From the drop-down manual, you can select **802.11g** if you have only 11g card. If you have only 11b card, then select **802.11b** and if you only have 802.11n then select **802.11n**.

Channel: The range of radio frequencies used by IEEE 802.11b/g/n wireless devices is called a channel. There are Regulation Domains and Channel ID in this field. The Channel ID will be different based on Regulation Domains. Select a channel from the drop-down list box.

Beacon interval: The Beacon Interval value indicates the frequency interval of the beacon. Enter a value between 20 and 1000. A beacon is a packet broadcast by the Router to synchronize the wireless network.

RTS/CTS Threshold: The RTS (Request To Send) threshold (number of bytes) for enabling RTS/CTS handshake. Data with its frame size larger than this value will perform the RTS/CTS handshake. Enter a value between 1500 and 2347.

Fragmentation Threshold: The threshold (number of bytes) for the fragmentation boundary for directed messages. It is the maximum data fragment size that can be sent. Enter a value between 256 and 2346, even number only.

DTIM Interval: This value, between 1 and 255, indicates the interval of the Delivery Traffic Indication Message (DTIM).

TX Power: The transmission power of the antennas, ranging from 1-100, the higher the more powerful of the transmission performance.

IGMP Snooping: Enable or disable the IGMP Snooping function for wireless. Without IGMP snooping, multicast traffic is treated in the same manner as broadcast traffic - that is, it is forwarded to all ports. With IGMP snooping, multicast traffic of a group is only forwarded to ports that have members of that group.”

11n Settings	
Channel Bandwidth	20 MHz ▼
Guard Interval	Auto ▼
MCS	Auto ▼
SSID Settings	
Available SSID	1 ▼
SSID Index	<input checked="" type="radio"/> SSID1
SSID	BEC345
Broadcast SSID	<input checked="" type="radio"/> Yes <input type="radio"/> No
SSID Activated	Always ▼

11n Settings

Channel Bandwidth: Select **20 MHz**, **40 MHz**, or **20/40 MHz** for the channel bandwidth. The wider the Channel bandwidth the better the performance will be.

Extension Channel: This is for the 20/40MHz clients to use and is predefined to **Auto** by default.

Guard Interval: Select either **800nsec** or **Automatic** for the guard interval. The guard interval is here to ensure that data transmission do not interfere with each other. It also prevents propagation delays, echoing and reflections. The shorter the Guard Interval, the better the performance will be. We recommend users to select **Auto**.

MCS (Modulation and Coding Scheme): There are options **0~15** and **AUTO** to select from. **AUTO** is recommended.

SSID Settings

NOTE: SSID1 will reserve for Hotspot when it is enabled.

Available SSID: User can determine how many virtual SSIDs to be used. Default is 1, maximum is 4.

SSID Index: Select the number of SSIDs you want to use; up to 4 SSIDs are available in the list.

- ▶ **SSID1 / Hotspot SSID** known as **WLAN1** Interface
- ▶ **SSID2** known as **WLAN2** Interface
- ▶ **SSID3** known as **WLAN4** Interface
- ▶ **SSID4** known as **WLAN5** Interface

SSID: The SSID is the unique name of a wireless access point (AP) to be distinguished from another. For security propose, change the default **wlan-ap** to a unique ID name to the AP which is already built-in to the router's wireless interface. Make sure your wireless clients have exactly the SSID as the device, in order to get connected to your network.

Broadcast SSID: Select **Yes** to make the SSID visible so a station can obtain the SSID through passive scanning. Select **No** to hide the SSID in so a station cannot obtain the SSID through passive scanning.

SSID Activated: Select the time period during which the SSID is active. Default is in **Always** which means the SSID is active at all time without time control. See [Time Schedule](#) to set the timeslot to flexibly control when the SSID functions.

WPS Settings

WPS (Wi-Fi Protected Setup) feature is a standard protocol created by Wi-Fi Alliance. This feature greatly simplifies the steps needed to create a Wi-Fi network for a residential or an office setting. WPS supports 2 types of configuration methods which are commonly known among consumers: [PIN Method \(Personal Information Number\)](#) & [PBC Method \(Push Button Configuration\)](#).

WPS Settings	
Use WPS	<input checked="" type="radio"/> Yes <input type="radio"/> No
WPS State	Configured
WPS Mode	<input type="radio"/> PIN code <input checked="" type="radio"/> PBC

Use WPS: Enable this feature by choosing “Yes” radio button.

WPS State: Display whether the WPS is **configured** or **unconfigured**.

WPS Mode: Select the mode which to start WPS, choose between **PIN Code** and **PBC** (Push Button). Selecting **Pin Code** mode will require you to know the enrollee PIN code.

To future understand the two modes of configuration; please refer to the example of the **Wi-Fi Protected Setup**.

Security Settings

Security Type: You can disable or enable wireless security for protecting wireless network. The default type of wireless security is OPEN and to allow all wireless stations to communicate with the access points without any data encryption.

To prevent unauthorized wireless stations from accessing data transmitted over the network, the router offers secure data encryption, known as WEP and WPA.

There are five alternatives to select from: WEP 64-bit, WEP 128-bit, WPA-PSK, WPA2-PSK, and Mixed WPA/WPA2-PSK. If you require high security for transmissions, please select WPA-PSK, WPA2-PSK or WPA/WPA2-PSK.

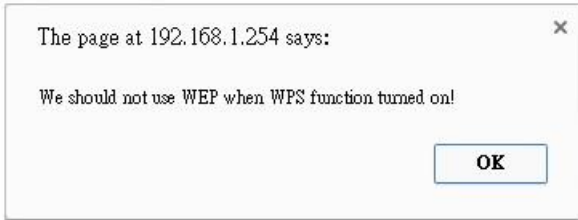
▶ WEP

Security Settings	
Security Type	WEP 64-bit
WEP Authentication Method	Both
WEP 64-bit	For each key, please enter either (1) 5 characters, or (2) 10 characters ranging from 0-9, a, b, c, d, e, f.
<input checked="" type="radio"/> Key#1	<input type="text"/>
<input type="radio"/> Key#2	<input type="text"/>
<input type="radio"/> Key#3	<input type="text"/>
<input type="radio"/> Key#4	<input type="text"/>

WEP Authentication Method: WEP authentication method, there are two methods of authentication used, Open System authentication (OPENWEB) and Share Key authentication (SHAREDWEB). We suggest you select OPENWEB.

Key 1 to Key 4: Enter the key to encrypt wireless data. To allow encrypted data transmission, the WEP Encryption Key values on all wireless stations must be the same as the router. There are four keys for your selection. The input format is in HEX style, 5 and 13 HEX codes are required for 64-bitWEP and 128-bitWEP respectively.

If chose **WEP 64-bit**, then enter any 5 ASCII characters or 10 hexadecimal characters ("0-9", "A-F").
If chose **WEP 128-bit**, then enter 13 ASCII characters or 26 hexadecimal characters ("0-9", "A-F").
You must configure all four keys, but only one key can be activated at any one time. The default key is key 1.



NOTE: WPS requires a higher level of security than WEP, 64bits or 128bits. Select WAP / WAP2 security when using WPS.

▶ **WPA-PSK / WPA2-PSK / Mixed WPA & WPA2**

Security Settings	
Security Type	Mixed WPA2/WPA-PSK ▼
WPA Algorithms	TKIP+AES ▼
Pre-Shared Key	<input type="text"/> (8~63 characters or 64 Hex string)
Key Renewal Interval	600 seconds (10 ~ 4194303)

WPA Algorithms: TKIP (Temporal Key Integrity Protocol) or AES (Advanced Encryption System) utilizes a stronger encryption method and incorporates Message Integrity Code (MIC) to provide protection against hackers.

Pre-Shared key: The key for network authentication. The input format should be 8-63 ASKII characters or 64 hexadecimal characters

Key Renewal Interval: The time interval for changing the security key automatically between wireless client and AP.

WDS Settings

WDS (Wireless distributed system) is a wireless access point mode that enables wireless link and communication with other access point. It is easy to be installed, just define the peer’s MAC of the connected AP.

WDS Mode: select Activated to enable WDS feature and Deactivated to disable this feature.

MAC Address: Enter the AP MAC addresses (in XX:XX:XX:XX:XX:XX format) of the peer connected AP.

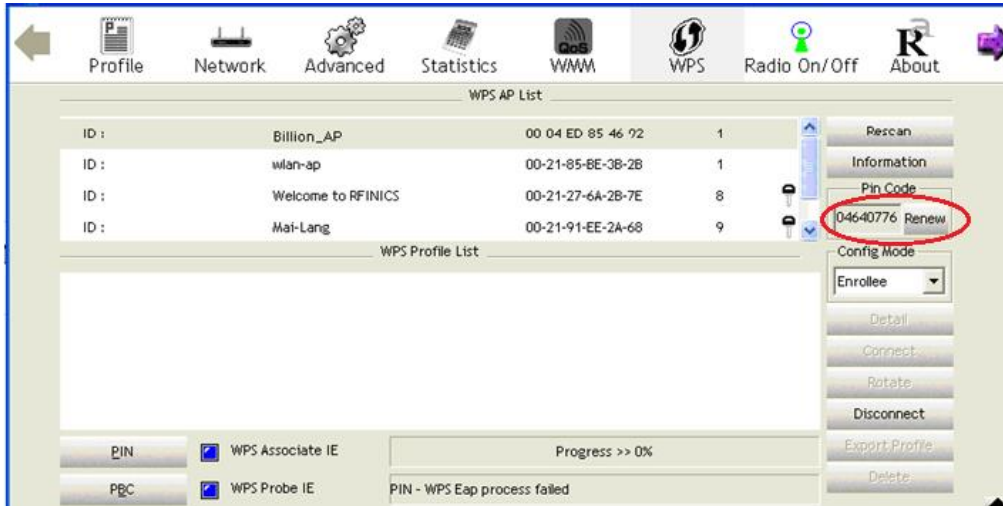
WDS Settings	
AP MAC Address	60:03:47:6C:48:00
WDS Mode	<input type="radio"/> Activated <input checked="" type="radio"/> Deactivated
WDS Peer MAC #1	<input type="text"/> 00:00:00:00:00:00
WDS Peer MAC #2	<input type="text"/> 00:00:00:00:00:00
WDS Peer MAC #3	<input type="text"/> 00:00:00:00:00:00
WDS Peer MAC #4	<input type="text"/> 00:00:00:00:00:00

Click **Save** to apply the settings.

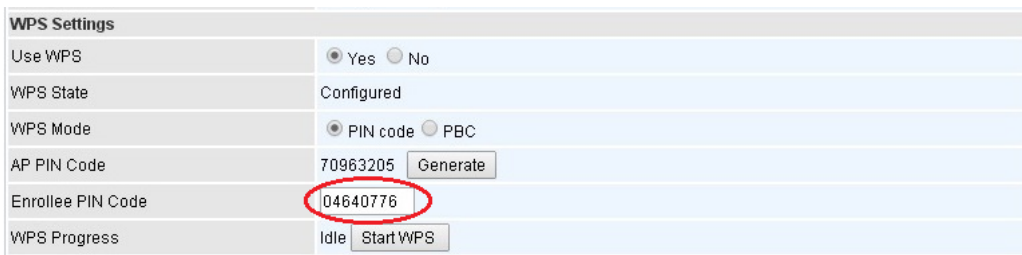
Example: WPS using PIN Method (Personal Information Number)

PIN Method – Configure MX-600 as a Registrar

1. Jot down the client's Pin (e.g. 04640776) from the WPS utility (e.g. Ralink Utility)

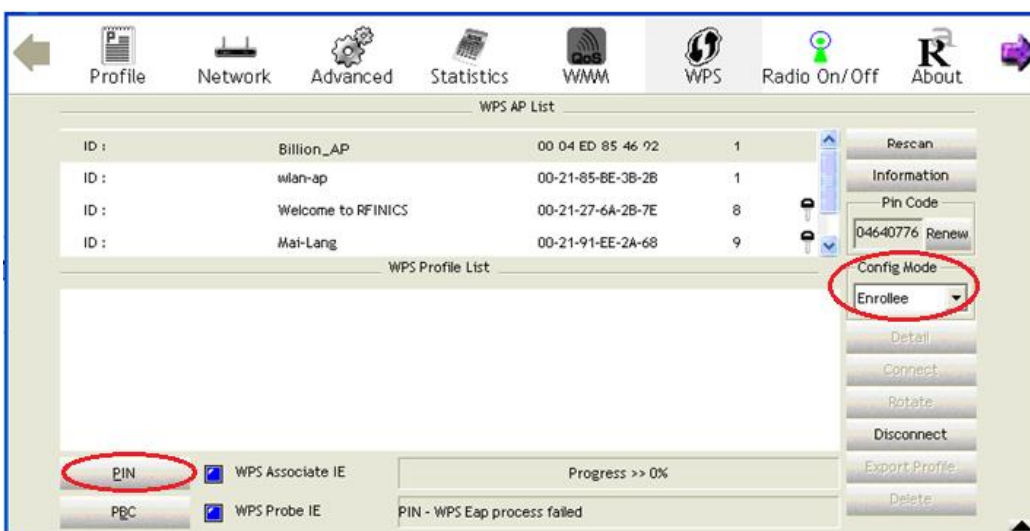


2. Enter the Enrollee (Client) PIN code and then press **Start WPS**.



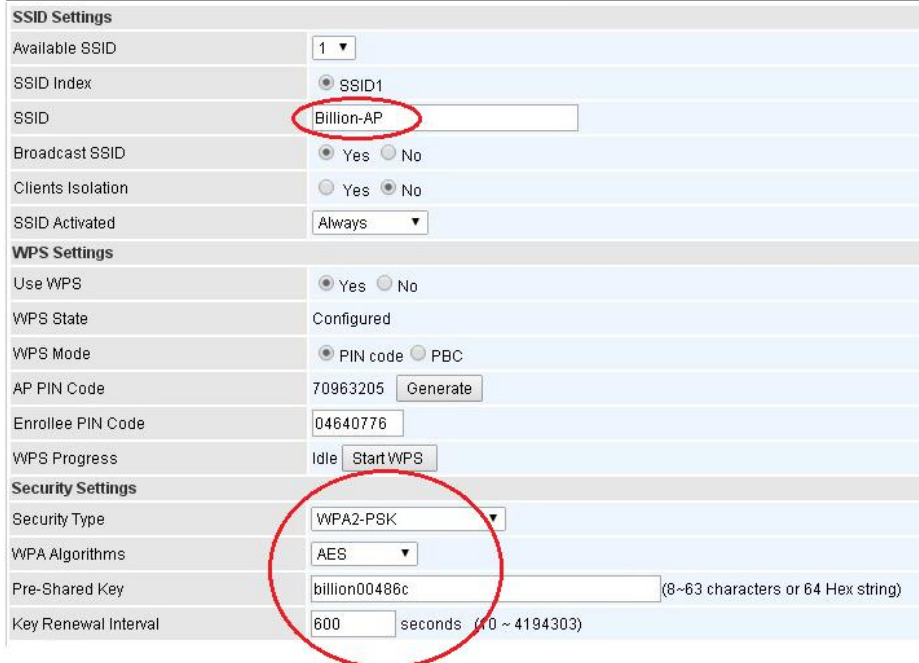
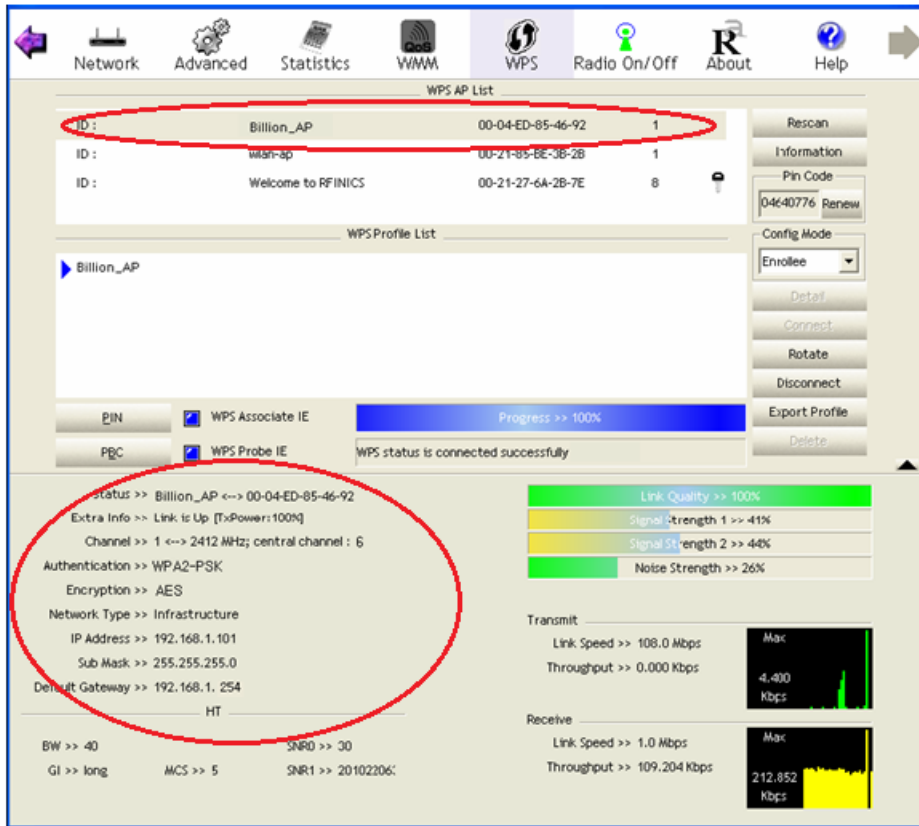
3. Go back to the wireless client's WPS utility (e.g. Ralink Utility).

Set the Config Mode as **Enrollee**, press the WPS button on the top bar, select the AP (e.g. Billion_AP) from the WPS AP List column. Then press the PIN button located on the middle left of the page to run the scan.



Interface Setup – Wireless (Example on WPS using PIN)

4. The client's SSID and security setting will now be configured to match the SSID and security setting of the registrar, the MX-600 router.



Interface Setup – Wireless (Example on WPS using PIN)

PIN Method – Configure MX-600 as an Enrollee

1. Jot down the AP PIN Code (e.g. 03454435) from the MX-600. Press **Start WPS**.

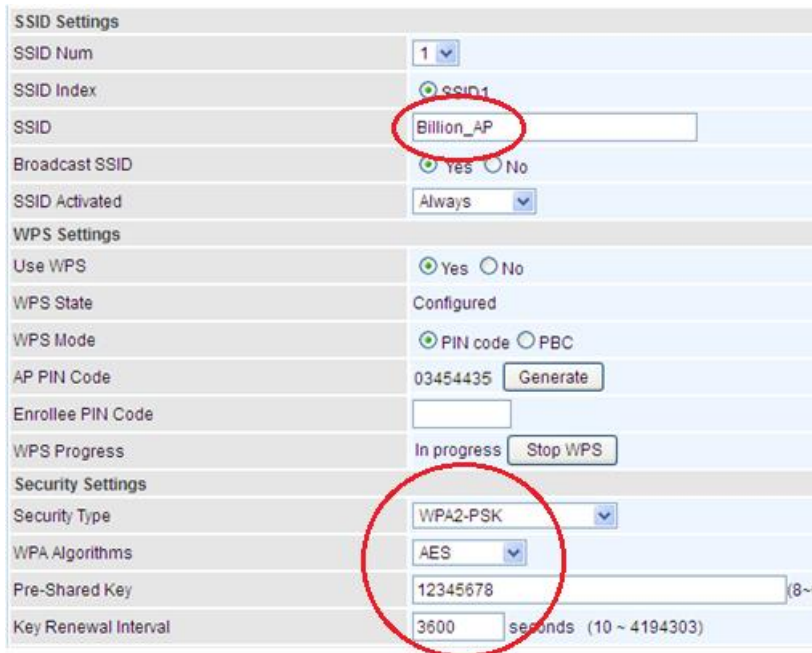
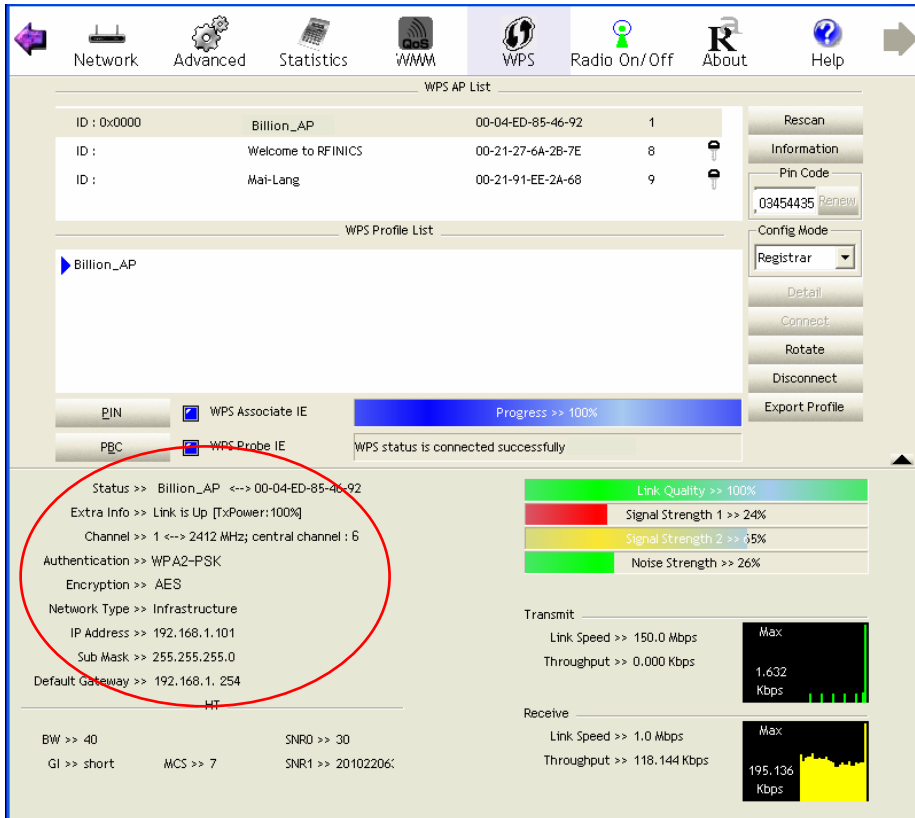
WPS Settings	
Use WPS	<input checked="" type="radio"/> Yes <input type="radio"/> No
WPS State	Configured
WPS Mode	<input checked="" type="radio"/> PIN code <input type="radio"/> PBC
AP PIN Code	<input type="text" value="03454435"/> <input type="button" value="Generate"/>
Enrollee PIN Code	<input type="text"/>
WPS Progress	In progress <input type="button" value="Stop WPS"/>

2. Launch the wireless client's WPS utility (e.g. Ralink Utility). Set the Config Mode as Registrar. Enter the PIN number in the PIN Code (e.g. 03454435) column then choose the correct AP (e.g. Billion_AP) from the WPS AP List before pressing the PIN button to run the scan.

The screenshot shows the Ralink Utility WPS interface. At the top, there are navigation tabs: Network, Advanced, Statistics, WMM, WPS, Radio On/Off, About, and Help. The main area is divided into several sections:

- WPS AP List:** A table listing available APs. The 'Billion_AP' entry is circled in red. The table has columns for ID, Name, MAC Address, and Signal Strength.
- WPS Profile List:** Shows the selected 'Billion_AP' profile.
- WPS Settings:** Includes a 'PIN' button (circled in red), checkboxes for 'WPS Associate IE' and 'WPS Probe IE', and a 'Progress' bar showing 100% completion.
- WPS AP List (Right Panel):** Contains buttons for 'Rescan', 'Information', 'Pin Code' (with '03454435' entered and 'Renew' button circled in red), 'Config Mode' (set to 'Registrar', circled in red), 'Detail', 'Connect', 'Rotate', 'Disconnect', and 'Export Profile'.
- Status and Performance:** Shows connection status for 'Billion_AP', link quality (100%), signal strength (24%), noise strength (26%), and throughput graphs for Transmit and Receive.

3. The router's (AP's) SSID and security setting will now be configured to match the SSID and security setting of the registrar (client).



Interface Setup – Wireless (Example on WPS using PBC)

Example: WPS using PBC Method (Push Button Configuration)

1. Click the **PBC** radio button and click **Save** to apply the settings

SSID Settings

SSID Num: 1

SSID Index: SSID1

SSID: Billion_AP

Broadcast SSID: Yes

SSID Activated: Always

WPS Settings

Use WPS: Yes

WPS State: Configured

WPS Mode: PBC

2. Launch the wireless client's WPS Utility (e.g. Ralink Utility). Set the Config Mode as **Enrollee**. Then press the **WPS button** and choose the correct AP (e.g. **Billion_AP**) from the WPS AP List section before pressing the **PBC** button to run the scan.

Profile Network Advanced Statistics WMM WPS Radio On/Off About

WPS AP List

ID :	Billion_AP	00 04 ED 85 46 92	1
ID :	wlan-ap	00-21-85-BE-3B-2B	1
ID :	Welcome to RFINICS	00-21-27-6A-2B-7E	8
ID :	Mai-Lang	00-21-91-EE-2A-68	9

WPS Profile List

Rescan Information Pin Code 04640776 Renew

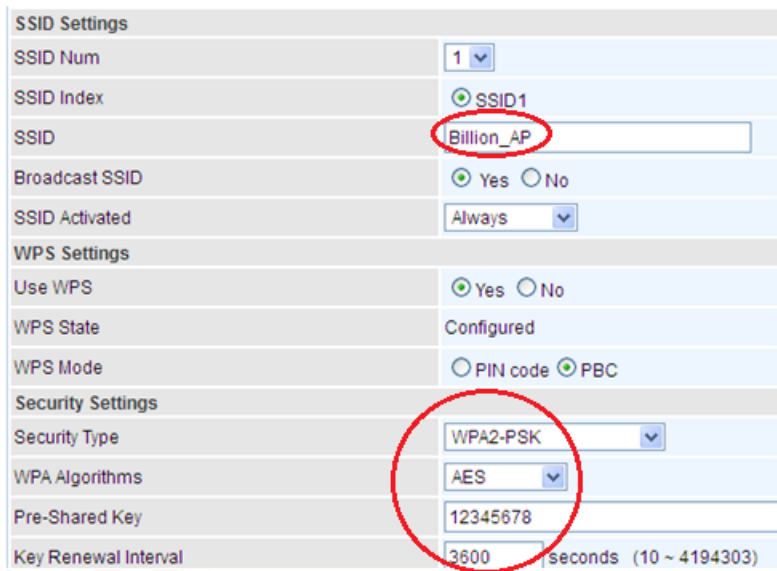
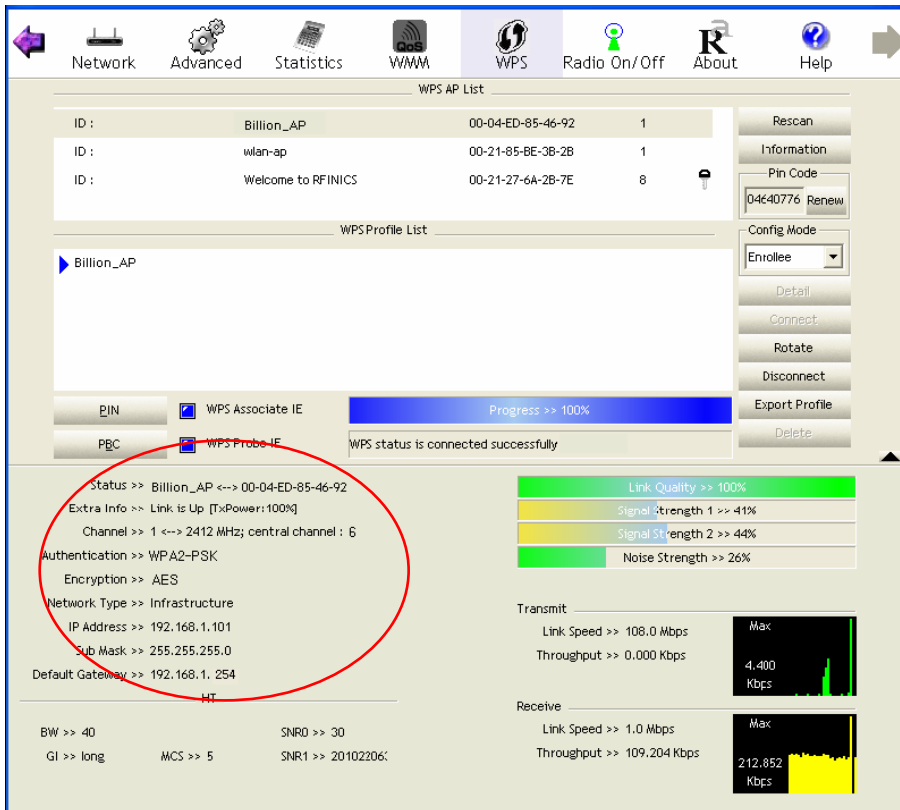
Config Mode: Enrollee

Detail Connect Rotate Disconnect Export Profile Delete

PIN WPS Associate IE WPS Probe IE Progress >> 0%

PBC PIN - WPS Eap process failed

3. When the PBC button is pushed, a wireless communication will be established between your router and the PC. The client's SSID and security setting will now be configured to match the SSID and security setting of the router.



Wireless MAC Filter

The MAC filter screen allows you to configure the router to give exclusive access to up to 8 devices (Allow Association) or exclude up to 8 devices from accessing the router (Deny Association). Every Ethernet device has a unique MAC (Media Access Control) address. The MAC address is assigned at the factory and consists of six pairs of hexadecimal characters, for example, 00:AA:BB:00:00:02.

You need to know the MAC address of the devices you wish to filter.

Wireless MAC Address Filter

SSID Index: SSID1

Active: Activated Deactivated

Action: Allow the follow Wireless LAN station(s) association.

MAC Address:

Save

Wireless MAC Address Filter Listing			
Index	MAC Address	Edit	Delete

SSID Index: Select the targeted SSID you want the MAC filter rules to apply to.

Active: Select **Activated** to enable MAC address filtering.

Action: Define the filter action for the list of MAC addresses in the MAC address filter table.

- ▶ Select **Deny** to block access to the AP, MAC addresses not listed will be allowed to access the router.
- ▶ Select **Allow** to permit access to the router, MAC addresses not listed will be denied access to the router.

MAC Address: Enter the MAC addresses (in XX:XX:XX:XX:XX:XX format) of the wireless station that are allowed or denied access to the specified in these address fields.

Click **Save** to apply the settings.

Dual WAN

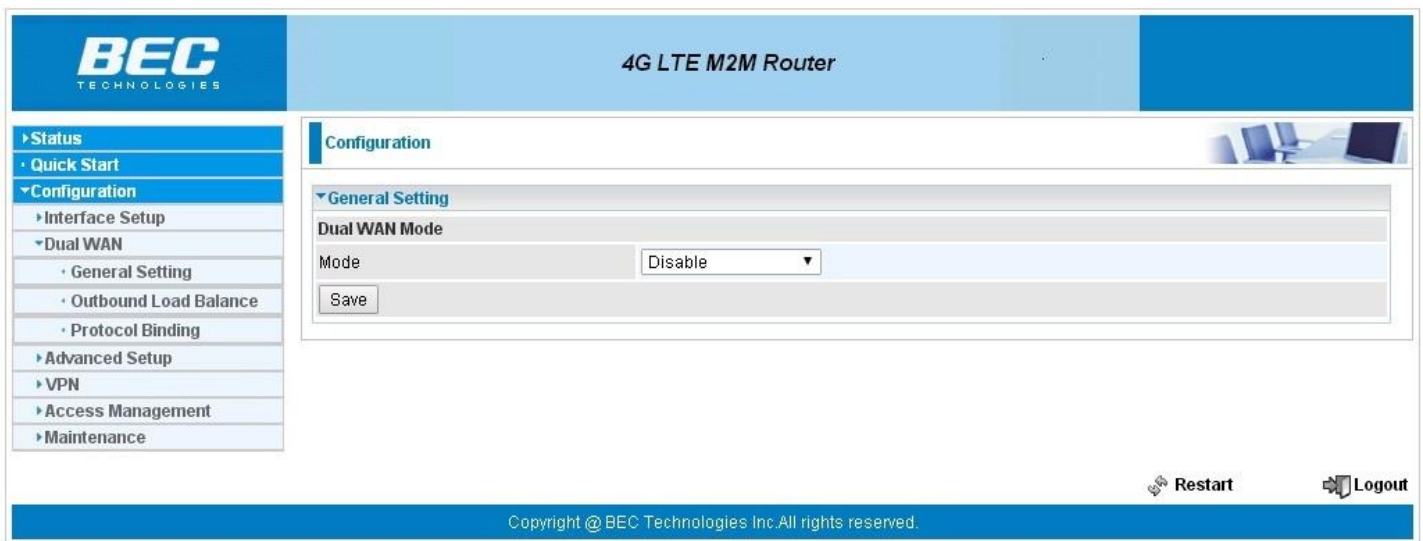
Dual WAN, is a feature to have two independent Internet connections connected concurrently, offers a reliable Internet connectivity and maximize bandwidth utilization for critical applications delivery.

General Setting

Mode: Select a mode. Available modes: **Disable**, **Failover & Failback**, **Failover Priority**, and **Load Balancing**

Mode (Disable): For MX-600U and MX-600X only. Primary SIM (SIM1) will get activated first.

Click **Save** to proceed



Dual WAN – General Setting (Failover & Failback)

❖ Failover & Failback

Auto failover/failback ensures always-online network connectivity. When primary WAN link (WAN1) fails, all traffic will switch over to the backup WAN (WAN2) seamlessly.

Again, when the primary link is restored, traffic will be handled over from WAN2 to WAN1.

General Setting	
Dual WAN Mode	
Mode	Failover & Failback
WAN Port Service Detection Policy	
WAN1	4G LTE -1
WAN2	EWAN(LAN4)
Keep Backup Interface Connected	Disable
Minimum RSRP/RSSI	-105 / -90 dbm(-111~ -5, 0:disable)
Connectivity Decision	Auto failover takes place after straight 3 consecutive failure in every 30 seconds.
Probe By Ping	<input checked="" type="checkbox"/> Enable
Ping Setting	<input type="radio"/> Gateway <input checked="" type="radio"/> Host 8.8.8.8
Probe By Signal Strength	<input checked="" type="checkbox"/> Enable
Minimum RSRP/RSSI	-105 / -90 dbm(-111~ -5, 0:disable)
Save	

WAN Port Service Detection Policy

WAN1 (Primary): Choose a desired WAN as the primary WAN Link from the list.

WAN2 (Backup): Choose a desired WAN as the backup WAN Link from the list.

Keep Backup Interface Connected: Select the following option whether to keep the backup WAN (WAN2) interface connected to the Internet.

- ▶ **Disable:** Inactivate this feature.
- ▶ **Always:** Keep the backup WAN (WAN2) interface always connected to the Internet
- ▶ **By Signal Strength:** Enable and initiate automatic backup WAN to connect to the Internet at all time until the RSRP / RSSI of primary WAN is greater than the Minimum RSRP / RSSI.
 - **Minimum RSRP / RSSI:** Set a minimum requirement for RSRP and RSSI for the primary WAN. Value range from -111 ~ -5. 0 means don't care/no need to check this value.

NOTE: Both the RSRP and RSSI cannot be 0 at the same time.

Connectivity Decision & Probe Cycle: Set a number of times and time in seconds to determine when to switch to the backup link (WAN2) when primary link (WAN1) fails and vice versa.

Example, *Auto failover takes place after straight 3 consecutive failures in every 30 seconds* meaning all traffic will hand over to backup link (WAN2) after primary link fails to response in total of 90 seconds, 30 seconds for 3 consecutive failures.

NOTE: Failover and Failback follow the same **Connectivity Decision & Probe Cycle** rule to failover from WAN1 to WAN2 or fallback from WAN2 to WAN1.

Failover/Failback Rule Decisions:

1. **Probe by Ping:** Enable Ping to the gateway or an IP address
 - ▶ **Gateway:** Internal system will wait for responses to the pings from the gateway of the WAN.
 - ▶ **Host:** Internal system will wait for responses to the pings from a fixed IP address.
2. **Probe by Signal Strength:** Enable to measure the LTE signal strength

Dual WAN – General Setting (Failover & Failback)

- ▶ **Minimum RSRP / RSSI:** Set a minimum requirement for RSRP and RSSI for initiating automatic WAN failback or failover procedures.

Click **Save** to apply the settings.

❖ Failover & Priority

General Setting	
Dual WAN Mode	
Mode	Failover & Priority ▾
WAN Port Service Detection Policy	
WAN1	4G LTE -1 ▾
WAN2	4G LTE -2 ▾
Connectivity Decision	Auto failover takes place after straight <input type="text" value="3"/> consecutive failure in every <input type="text" value="30"/> seconds.
Priority By	Signal Strength ▾
<input type="button" value="Save"/>	

WAN Port Service Detection Policy

WAN1 (Primary): Choose a desired WAN as the primary WAN Link from the list.

WAN2 (Backup): Choose a desired WAN as the backup WAN Link from the list.

Connectivity Decision & Probe Cycle: Set a number of times and time in seconds to determine when to switch to the backup link (WAN2) when primary link (WAN1) fails and vice versa.

Example, *Auto failover takes place after straight 3 consecutive failures in every 30 seconds* meaning all traffic will hand over to backup link (WAN2) after primary link fails to response in total of 90 seconds, 30 seconds for 3 consecutive failures.

NOTE: Failover and Failback follow the same **Connectivity Decision & Probe Cycle** rule to failover from WAN1 to WAN2 or fallback from WAN2 to WAN1.

Priority by Signal Strength: Use LTE signal strength measurement to initiating automatic WAN failback or failover procedures.

Click **Save** to apply the settings

❖ Load Balance

General Setting	
Dual WAN Mode	
Mode	Load Balance
WAN Port Service Detection Policy	
WAN1	4G LTE -1
WAN2	4G LTE -2
Service Detection	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Connectivity Decision	Auto failover takes place after straight 3 consecutive failure in every 30 seconds.
Probe WAN1	<input type="radio"/> Gateway <input checked="" type="radio"/> Host 8.8.8.8
Probe WAN2	<input type="radio"/> Gateway <input checked="" type="radio"/> Host 8.8.4.4
Save	

WAN Port Service Detection Policy

WAN1 (Primary): Choose a desired WAN as the primary WAN Link from the list.

WAN2 (Backup): Choose a desired WAN as the backup WAN Link from the list.

Service Detection: Enable to detect WAN connectivity automatically.

Connectivity Decision & Probe Cycle: Set a number of times and time in seconds to determine when to turn-off the Load Balancing service.

Example, *Disable Load Balance after straight 3 consecutive failures in every 30 seconds* meaning all traffic will hand over to backup link (WAN2) after primary link fails to response in total of 90 seconds, 30 seconds for 3 consecutive failures.

Deactivate Load Balance Decision:

Probe Ping on WAN 1 / WAN2: Enable Ping to the gateway or an IP address

- ▶ **Gateway:** Internal system will wait for responses to the pings from the gateway of the WAN.
- ▶ **Host:** Internal system will wait for responses to the pings from a fixed IP address.

Click **Save** to apply the settings

Outbound Load Balance

The connections are distributed over WAN1 and WAN2 so that it can utilize bandwidth of both WAN ports. With Outbound load balance, traffic may be routed to a faster link when one of the WAN links is slower or congested so that user gains better throughput and less delay.

In **General Setting**, select **Load Balance** mode prior to configure this feature.

The screenshot shows the configuration page for Outbound Load Balance. It has a title bar 'Outbound Load Balance' and a sub-header 'Outbound Load Balance'. There are two main sections: 'Based on Session Mechanism' and 'Based on IP Hash Mechanism'. Under 'Based on Session Mechanism', there are three radio buttons: 'Balance by Session (Round Robin)' (which is selected), 'Balance by Session weight' (with two input fields), and 'Balance by weight' (with two input fields). Under 'Based on IP Hash Mechanism', there are two radio buttons: 'Balance by weight' (with two input fields) and another option that is not fully visible. At the bottom left, there is a 'Save' button.

User can distribute outbound traffic based on **Session Mechanism** or **IP Hash Mechanism**.

Base on Session Mechanism:

Balance by Session (Round Robin): Automatically assign requests/traffics to each WAN interface based on real-time WAN traffic-handling capacity.

OR

Balance by Session weight: Manually Balance session traffic based on a weight ratio.

Example: Session weight by 3:1 meaning forward 3 requests to WAN1 and 1 request to WAN2.

Base on IP Hash Mechanism:

Balance by weight: Use an IP hash to balance traffic based on a ratio. It is to guarantee requests from the same IP address get forward to the same WAN interface.

Click **Save** to apply the settings

Protocol Binding

Protocol Binding lets you direct specific traffic to go out from a specific WAN port. Policies determine how specific types of internet traffic are routed, for example, traffic from a particular IP address(es) granted access to only one WAN port rather than using both of the WAN ports as with load balancing.

▼ Protocol Binding

Rule Index	1 ▼	
Active	<input checked="" type="radio"/> Yes <input type="radio"/> No	
Bind Interface	WAN1 ▼	(Current WAN1 Mode: 4G LTE -1 , Current WAN2 Mode: 4G LTE -2)
Source IP Address	0.0.0.0	(0.0.0.0 means Don't care)
Subnet Mask	0.0.0.0	
Port Number	0	(0 means Don't care)
Destination IP Address	0.0.0.0	(0.0.0.0 means Don't care)
Subnet Mask	0.0.0.0	
Port Number	0	(0 means Don't care)
DSCP	0	(Value Range:0~64, 64 means Don't care)
Protocol	TCP ▼	

Save Delete

Protocol Binding List

Index	Active	Interface	Source IP Address/Mask	Destination IP Address/Mask	Source Port	Destination Port	DSCP	Protocol
1	Yes	WAN1	192.168.1.100/ 255.255.255.0	0.0.0.0/ 0.0.0.0	8080	0	0	TCP

Rule Index: The numeric rule indicator. The maximum entry is up to 16.

Active: Click YES to activate the rule

Bind Interface: The dedicated WAN interface that guarantees to handle this traffic request.

Source IP Address: Enter the source IP address featuring the traffic origin.

Subnet Mask: Enter the subnet of the source network.

Port Number: Enter the port number which defines the application.

Destination IP Address: Enter the destination IP address featuring the traffic destination.

Subnet Mask: Enter the subnet of the designation network.

Port Number: Enter the port number which defines the application.

DSCP: The DSCP value. Value Range from 0~64; 64 means Don't care

Protocol: Select a protocol, TCP, UDP, ICMP, to use for this traffic.

Click **Save** to apply the settings

Example:

All traffics from IP 192.168.1.100/255.255.255.0 with port 8080 will go through WAN1 interface.

The only time it would go through WAN2 interface is when WAN1 has no Internet connection.

Protocol Binding List								
#	Active	Interface	Source IP Address/Mask	Destination IP Address/Mask	Source Port	Destination Port	DSCP	Protocol
1	Yes	WAN1	192.168.1.100/ 255.255.255.0	0.0.0.0/ 0.0.0.0	8080	0	0	TCP

Hotspot

The Wi-Fi hotspot offers Internet access for mobile devices like smart phones, laptops, or smart pad to connect wirelessly in public locations such as in coffee shops, train station, airport, hotel, and much more. A captive portal with a login page will prompt on the mobile devices and require all Wi-Fi clients to accept the term of use before accessing to the Internet.

NOTE 1: Hotspot uses wireless network name, SSID1, to provide public Wi-Fi Internet access.

NOTE 2: To broadcast and see the hotspot ssid (SSID1), your MX-600 router must be connected to the Internet first.

NOTE 3: It is ideal to change the Wi-Fi Hotspot (SSID) security type to **OPEN** (no encryption). Go to [Wireless >> Security Settings](#)

General Setting

General Setting	
Hotspot	<input type="radio"/> Activated <input checked="" type="radio"/> Deactivated
Interface	<input checked="" type="checkbox"/> WLAN1
IP Address	<input type="text" value="10.0.0.1"/>
IP Subnet Mask	<input type="text" value="255.255.255.0"/>
Login Mode	Authentication
Redirection On Successful Authentication To	<input type="text"/> (empty string: user intended to visit)
Authentication	
Authentication Method	<input checked="" type="radio"/> RADIUS <input type="radio"/> Built-in User Account
Primary RADIUS Server	<input type="text"/>
Secondary RADIUS Server	<input type="text"/>
Shared Secret Key	<input type="text"/>
Session Settings	
Session Timeout	<input type="text" value="3600"/> seconds (0~86400,0:disable)
Idle Timeout	<input type="text" value="180"/> seconds (0~3600,0:disable)
Upload Bandwidth	<input type="text" value="0"/> Kbps (0~5120,0:not limited)
Download Bandwidth	<input type="text" value="0"/> Kbps (0~5120,0:not limited)
Captive Portal	
UAM Server	<input checked="" type="radio"/> Build-in <input type="radio"/> External
Login URL	<input type="text"/>
Shared Secret	<input type="text"/>
NAS ID	<input type="text"/>
Location Name	<input type="text"/>
<input type="button" value="Save"/>	

Hotspot: Activate to enable the Wi-Fi hotspot feature.

Interface: The dedicated interface, WLAN1 (SSID1 network name) handles the Wi-Fi hotspot traffic

IP Address: The IP address for the Wi-Fi hotspot network.

Subnet Mask: Enter the subnet of the network.

Login Mode: Two (2) types of login modes to join the network.

- ▶ **Authentication:** Username and Password (credential) is required to join the hotspot network. Go down to the Authentication section below and select a method.
- ▶ **Agreement:** No Username and Password is required. Automatically login to the hotspot network after accept and agree to the terms (“Terms”) of use.

Redirect URL after Successful Login: Enter the URL (**http://** is not required). After Wi-Fi client is successful login to the network, the page will get redirected to this URL.

OR leave it blank to stay in current page.

NOTE: This new URL will be added to the Walled Garden automatically.

Authentication

Authentication	
Authentication Method	<input type="radio"/> RADIUS <input checked="" type="radio"/> Built-in User Account
Primary RADIUS Server	<input type="text"/>
Secondary RADIUS Server	<input type="text"/>
Shared Secret Key	<input type="text"/>

Authentication Methods: Two (2) network authentication methods, local built-in user account or a remote, external RADIUS server. If the credential matches, the Wi-Fi client is granted access to the network.

- ▶ **RADIUS (an external authentication server)**
 - ▶ **Primary RADIUS Server:** The main IP address of the server.
 - ▶ **Secondary RADIUS Server:** The backup IP address of the server, if any.
 - ▶ **Shared Secret Key:** Enter the shared Secret given by the server
- ▶ **Built-in User Account (local database handled by the MX-600)**

Go to the [Built-in User Account](#) to setup account usernames and passwords for the hotspot.

Session Settings

Session Settings	
Session Timeout	<input type="text" value="3600"/> seconds (0~86400,0:disable)
Idle Timeout	<input type="text" value="180"/> seconds (0~3600,0:disable)
Upload Bandwidth	<input type="text" value="0"/> Kbps (0~5120,0:not limited)
Download Bandwidth	<input type="text" value="0"/> Kbps (0~5120,0:not limited)

Session Timeout (in seconds): The time period of a Wi-Fi client is allowed to access to the Internet. After this timeout period, a new authentication is required.

Idle Timeout (in seconds): The allowed inactivity time of a Wi-Fi client. After this timeout period, a new authentication is required.

Upload / Download Bandwidth (in Kbps): The maximum upload and download link speed, value range from 0 ~ 5120Kbps; 0 means no speed limitation.

Captive Portal

Captive Portal	
UAM Server	<input checked="" type="radio"/> Build-in <input type="radio"/> External
Login URL	<input type="text"/>
Shared Secret	<input type="text"/>
NAS ID	<input type="text"/>
Location Name	<input type="text"/>

UAM Server: Choose between **Build-in** and **External**. Fill in the blanks to use External UAM server. Information can be obtained from the UAM server.

Login URL: Enter the login URL offered by the UAM server.

Shared Secret: Set the shared secret password offered.

NAS ID: An assigned string for identification.

Location Name: An assigned string for identification.

Click **Save** to save settings

Built-in User Account

It is a local database on the router with pre-defined user accounts authorized by the MX-600 to grant and provide Wi-Fi hotspot access for Wi-Fi capable devices/users.

16, maximum, accounts are allowed.

▼ Built-in User Account

Rule Index	<input type="text" value="0"/>
Active	<input checked="" type="radio"/> Yes <input type="radio"/> No
User Name	<input type="text" value="hu-1"/>
Password	<input type="password" value="...."/>

Built-in User Account List		
Index	Active	Username
0	Yes	hu-1

Rule Index: The numeric rule indicator. The maximum entry is up to 16.

Active: Select **Yes** to enable the rule of the account.

Username / Password: Create a user name and password for this user account.

Save: Click the **Save** button to apply the settings

Delete: Use the **Rule Index** to select an unwanted rule then click **Delete** button to remove it from the Account list.

Click **Save** to save settings

Authorized of Client

Add and predefine a trusted wireless MAC address of a Wi-Fi capable device for an immediate hotspot/Internet access. Hotspot/Internet access requires no authentication.

16, maximum, accounts are allowed.

Authorized of Client	
Authorized of Client	<input type="radio"/> Activated <input checked="" type="radio"/> Deactivated
Rule Index	0 ▼
Active	<input type="radio"/> Yes <input checked="" type="radio"/> No
MAC Address	<input type="text"/>
<input type="button" value="Save"/> <input type="button" value="Delete"/>	
Authorized of Client List	
Index	Active
MAC Address	

Authorized of Client: Select **Activated** to enable this feature.

Rule Index: The numeric rule indicator. The maximum entry is up to 16.

Active: Select **Yes** to enable the rule of the client.

MAC Address: Enter the wireless MAC address of the Wi-Fi device.

Save: Click the **Save** button to apply the settings

Delete: Use the **Rule Index** to select an unwanted rule then click **Delete** button to remove it from the Client list.

Walled Garden

Add and predefine websites (domain names) or web IP address to allow Wi-Fi devices / clients to access to. Web site access requires no authentication.

16, maximum, websites / domains are allowed.

Walled Garden

Rule Index:

Active: Yes No

Allow Type:

Host / Domain:

Note *:
 Host/Network : www.example.com or www.example.com ; 10.11.12.0/24
 Domain : www.example.com or .example.com

Walled Garden List

Index	Active	Allow Type	Host / Domain
0	Yes	HOST	www.bectechnologies.net

Rule Index: The numeric rule indicator. The maximum entry is up to 16.

Active: Select **Yes** to enable the rule of the walled garden.

Allow Type: Either a **Host/Network** or **Domain**.

Host / Domain name: Enter a valid domain, network, or website for unauthorized clients to access to.

Save: Click the **Save** button to apply the settings

Delete: Use the **Rule Index** to select an unwanted rule then click **Delete** button to remove it from the Walled Garden list.

Advertisement

Add pop-ups ads and redirects to MX-600 Wi-Fi Hotspot, and only a random ad will be displayed per a login.

16, maximum, ads are allowed.

Advertisement		
Advertisement	<input type="radio"/> Activated <input checked="" type="radio"/> Deactivated	
Mode	Frame ▾	
Rule Index	0 ▾	
Active	<input type="radio"/> Yes <input checked="" type="radio"/> No	
URL	<input type="text"/>	
<input type="button" value="Save"/> <input type="button" value="Delete"/>		
Advertisement List		
Index	Active	URL

Advertisement: Select **Activated** to enable this feature.

Mode: Two (2) web advertising methods are available.

- ▶ **Frame:** Redirect to a random ad site, a full-page ad, before reaching to the login page. This full-page ad will get redirect to the login page after 5-10 seconds.
- ▶ **Popup:** A random pop-up ad display in a separate window after the login page.

Rule Index: The numeric rule indicator. The maximum entry is up to 16.

Active: Select **Yes** to enable the rule.

URL: Enter a valid

Save: Click the **Save** button to apply the settings

Delete: Use the **Rule Index** to select an unwanted rule then click **Delete** button to remove it from the Walled Garden list.

Session Log

Record all hotspot access information and e-mail the statistics report of the hotspot clients in a specific duration.

Session Log	
Session Log	<input checked="" type="radio"/> Activated <input type="radio"/> Deactivated
Log Session data every	<input type="text" value="1"/> minutes (1~60)
Mail Session Log file every	<input type="text" value="5"/> minutes (5~1440)
<input type="button" value="Save"/>	

Session Log: Select **Activated** to enable this feature.

Log Session Data in every (minute): Input session log time duration, (min) 1 to (max) 60 minutes.

Mail Session Log File in every (minute): MX-600 will send all access information, such as access IP addresses, NAT tables, etc., to the administrator's mail box in the specific time/minute.

NOTE: Please set up a dedicated or administrator e-mail account to receive Hotspot access information in the **Mail Alert**.

Customization

Allow modification to some of the captive portal settings.

Customization	
Customization	<input type="radio"/> Activated <input checked="" type="radio"/> Deactivated
Title	<input type="text" value="HotSpot"/>
Login Subtitle	<input type="text" value="Welcome to my HotSpot!"/>
Login Successfully Message	<input type="text" value="Success"/>
Footnote	<input type="text" value="This service is provided for free and used at your own risk."/>
Show Logo	<input type="radio"/> Activated <input checked="" type="radio"/> Deactivated
Terms and Conditions	
Terms Part1	<input type="text" value="Terms Part1"/>
Terms Part2	<input type="text" value="Terms Part2"/>
Terms Part3	<input type="text" value="Terms Part3"/>
Terms and Conditions TextBox can not accept newline.	
<input type="button" value="Save"/>	

Customization: Select **Activated** to enable this feature.

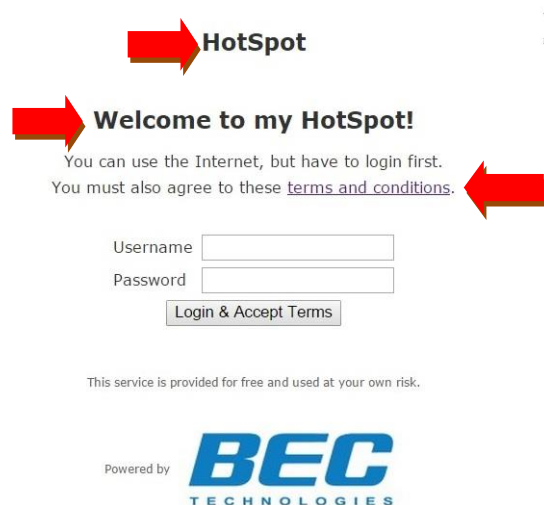
Title: The Banner message. Default is “Hotspot”

Login Subtitle: Default is “Welcome to my Hotspot”

Term Part 1 / 2 / 3: Create your own Terms and Conditions. To use default, same terms, please skip this part.

NOTE: No newline is accepted in each text box.

Login Successfully Message: MX-600 will send all access information, such as access IP addresses, NAT tables, etc., to the administrator’s mail box in the specific time/minute.



Login Successfully Message: A greeting message after successful login to the Wi-Fi hotspot. Default is “Success!”

Footnote: Additional information, if needed.

Default is “This service is provided for free and used at your own risk.”

Show Logo: Select **Activated** to display company Logo on the portal.



Advanced Setup

Advanced Setup provides advanced features including **Firewall**, **Routing**, **Dynamic Routing**, **NAT**, **VRRP**, **Static DNS**, **Time Schedule** and **Mail Alert** for advanced users.

Firewall

Your router includes a firewall for helping to prevent attacks from hackers. In addition to this, when using NAT (Network Address Translation) the router acts as a “natural” Internet firewall, since all PCs on your LAN use private IP addresses that cannot be directly accessed from the Internet.

Firewall: To automatically detect and block Denial of Service (DoS) attacks, such as Ping of Death, SYN Flood, Port Scan and Land Attack.

- ▶ **Enabled:** Activate your firewall function.
- ▶ **Disabled:** Deactivate the firewall function.

SPI: If you enabled SPI, all traffics initiated from WAN would be blocked, including DMZ, Virtual Server, and ACL WAN side.

- ▶ **Enabled:** Activate your SPI function.
- ▶ **Disabled:** Deactivate the SPI function.

Click **Save** to apply the settings

Routing

This is static route feature. You are equipped with the capability to control the routing of all the traffic across your network. With each routing rule created, user can specifically assign the destination where the traffic will be routed to.

▼ Routing Table							
Index	Destination IP Address	Subnet Mask	Gateway IP Address	Metric	Interface	Edit	Drop
0	100.87.150.196	255.255.255.252	0.0.0.0	0	ppp12		
1	100.72.1.208	255.255.255.248	0.0.0.0	0	ppp11		
2	192.168.1.0	255.255.255.0	0.0.0.0	0	br0		
3	127.0.0.0	255.255.0.0	0.0.0.0	0	lo		
4	239.0.0.0	255.0.0.0	0.0.0.0	0	br0		
5	0.0.0.0	0.0.0.0	100.72.1.209	0	ppp11		

Add Route

Index #: The numeric route indicator.

Destination IP Address: IP address of the destination network

Subnet Mask: The subnet mask of destination network.

Gateway IP Address: IP address of the gateway or existing interface that this route uses.

Metric: It represents the cost of transmission for routing purposes. The number need not be precise, but it must be between 1 and 15.

Interface: Media/channel selected to append the route.

Edit: Edit the route; this icon is not shown for system default route.

Drop: Drop the route; this icon is not shown for system default route.

Add Route

▼ Static Route	
Destination IP Address	<input type="text" value="0.0.0.0"/>
Destination Subnet Mask	<input type="text" value="0.0.0.0"/>
Gateway IP Address / Interface	<input type="radio"/> <input type="text" value="0.0.0.0"/> <input checked="" type="radio"/> <input type="text" value="4G LTE -1"/>
Metric	<input type="text" value="1"/>
<input type="button" value="Save"/> <input type="button" value="Back"/>	

Destination IP Address: This is the destination subnet IP address.

Destination Subnet Mask: The subnet mask of destination network.

Gateway IP Address or Interface: This is the gateway IP address or existing interface to which packets are to be forwarded.

Metric: It represents the cost of transmission for routing purposes. The number need not be precise, but it must be between 1 and 15.

Click **Save** to add this route

NAT

The NAT (Network Address Translation) feature transforms a private IP into a public IP, allowing multiple users to access the internet through a single IP account, sharing the single IP address. NAT break the originally envisioned model of IP end-to-end connectivity across the internet so NAT can cause problems where IPSec/ PPTP encryption is applied or some application layer protocols such as SIP phones are located behind a NAT. And NAT makes it difficult for systems behind a NAT to accept incoming communications.

▼ NAT	
NAT Status	Enable
ALG	
VPN Passthrough	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled
SIP ALG	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled
DMZ / Virtual Server	
Interface	EWAN(LAN4) ▼
DMZ	▶ Edit
Virtual Server	▶ Edit

NAT Status: Enabled. (Disabled if WAN connection is in **BRIDGE** mode)

VPN Passthrough: VPN pass-through is a feature of routers which allows VPN client on a private network to establish outbound VPNs unhindered.

SIP ALG: Enable the SIP ALG when SIP phone needs ALG to pass through the NAT. Disable the SIP ALG when SIP phone includes NAT-Traversal algorithm.

Interface: Select a WAN interface connection to allow external access to your internal network.

Service Index: Associated to EWAN interface marking each EWAN service (0-7), to select which EWAN service the DMZ and Virtual server are applied to.

Click **DMZ** [▶ Edit](#) or **Virtual Server** [▶ Edit](#) to move on to set the DMZ or Virtual Server parameters, which are represented in the following scenario.

DMZ

NOTE: This feature disables automatically if WAN connection is in BRIDGE mode or NAT is being turned OFF.

The DMZ Host is a local computer exposed to the Internet. When setting a particular internal IP address as the DMZ Host, all incoming packets will be checked by the Firewall and NAT algorithms then passed to the DMZ host, when a packet received does not use a port number used by any other Virtual Server entries.

DMZ

DMZ for: Single IPs Account/ EWAN(LAN1)

DMZ: Enabled Disabled

DMZ Host IP Address:

Except Ports

Port:

Protocol:

Description:

DMZ Export Ports Listing					
Index	Description	Protocol	Port	Edit	Delete
1	N/A	N/A	N/A		
2	N/A	N/A	N/A		
3	N/A	N/A	N/A		
4	N/A	N/A	N/A		
5	N/A	N/A	N/A		
6	N/A	N/A	N/A		

DMZ for (via a WAN Interface): Allows outside network to connect in and communicate with internal LAN devices via a specific WAN interface.

DMZ:

- ▶ **Enabled:** Activate the DMZ function.
- ▶ **Disabled:** Deactivate the DMZ function.

DMZ Host IP Address: Give a static IP address to the DMZ Host when **Enabled** radio button is checked. Be aware that this IP will be exposed to the WAN/Internet.

Click **Save** to apply settings

Except Ports

Except Ports: Bypass UDP or/and TCP ports, in the list, being forwarded to the DMZ host.

Port: Enter port to be monitored.

Protocol: Enter the protocol to be monitored.

Description: Enter a description to this rule.

Example: Skip port 80 (UDP/TCP) in the list. All Incoming request to access to port 80 (Web GUI) will be forwarded to the embedded HTTP server of MX-600 instead of the DMZ host.

Click **Add** to add an entry to the Except Listing.

Virtual Server

NOTE: This feature disables automatically if WAN connection is in BRIDGE mode or NAT is being turned OFF.

Virtual Server is also known as Port Forwarding that allows MX-600 to direct all incoming traffic to the servers on the LAN.

Configure a virtual rule in MX-600 for remote users accessing services such as Web or FTP services via the public (WAN) IP address that can be automatically redirected to local servers in the LAN network. Depending on the requested service (TCP/UDP port number), the device redirects the external service request to the appropriate server within the LAN network.

Virtual Server

Virtual Server for	4G/LTE
Protocol	TCP
Start Port Number	21
End Port Number	21
Local IP Address	192.168.1.110
Start Port Number (Local)	21
End Port Number(Local)	21

Save Back

Virtual Server Listing								
Rule	Protocol	Start Port	End port	Local IP Address	Start Port Local	End Port Local	Edit	Drop
0	TCP	21	21	192.168.1.110	21	21		
1	N/A	N/A	N/A	N/A	N/A	N/A		
2	N/A	N/A	N/A	N/A	N/A	N/A		
3	N/A	N/A	N/A	N/A	N/A	N/A		
4	N/A	N/A	N/A	N/A	N/A	N/A		
5	N/A	N/A	N/A	N/A	N/A	N/A		
6	N/A	N/A	N/A	N/A	N/A	N/A		
7	N/A	N/A	N/A	N/A	N/A	N/A		
8	N/A	N/A	N/A	N/A	N/A	N/A		
9	N/A	N/A	N/A	N/A	N/A	N/A		
10	N/A	N/A	N/A	N/A	N/A	N/A		

Virtual Server for: Indicate the related WAN interface to allow outside network to connect in and communicate with internal LAN devices.

Protocol: Choose the application protocol.

Start / End Port Number: Enter a port or port range you want to forward.

(Example: Start / End: 1000 or Start: 1000, End: 2000).

The starting port must be greater than zero (0). The end port must be greater than or equal to the start port.

Local IP Address: Enter your server IP address in this field.

Start / End Port Number (Local): Enter the start / end port number of the local application (service).

Examples of well-known and registered port numbers are shown below. For further information, please see IANA's website at <http://www.iana.org/assignments/port-numbers>

Well-known and Registered Ports

Port Number	Protocol	Description
21	TCP	FTP Control
22	TCP & UDP	SSH Remote Login Protocol
23	TCP	Telnet
25	TCP	SMTP (Simple Mail Transfer Protocol)
53	TCP & UDP	DNS (Domain Name Server)
69	UDP	TFTP (Trivial File Transfer Protocol)
80	TCP	World Wide Web HTTP
110	TCP	POP3 (Post Office Protocol Version 3)
443	TCP & UDP	HTTPS
1503	TCP	T.120
1720	TCP	H.323
7070	UDP	RealAudio



Attention

Using port forwarding does have security implications, as outside users will be able to connect to PCs on your network. For this reason you are advised to use specific Virtual Server entries just for the ports your application requires, instead of using DMZ. As doing so will result in all connections from the WAN attempt to access to your public IP of the DMZ PC specified.

If you have disabled the NAT option in the WAN-ISP section, the Virtual Server function will hence be invalid.

If the DHCP server option is enabled, you have to be very careful in assigning the IP addresses of the virtual servers in order to avoid conflicts. The easiest way of configuring Virtual Servers is to manually assign static IP address to each virtual server PC, with an address that does not fall into the range of IP addresses that are to be issued by the DHCP server. You can configure the virtual server IP address manually, but it must still be in the same subnet as the router.

Example: How to setup Port Forwarding for port 21 (FTP server)

If you have a FTP server in your LAN network and want others to access it through WAN.

Step 1: Assign a static IP to your local computer that is hosting the FTP server.

Step 2: Login to the Gateway and go to **Configuration / Advanced Setup / NAT / Virtual Server**.

FTP server uses TCP protocol with port 21.

Enter "21" to Start and End Port Number. The MX-600 will accept port 21 requests from WAN side.

Enter the static IP assigned to the local PC that is hosting the FTP server. Ex: 192.168.1.102

Enter "21" to Local Start and End Port number. The MX-600 will forward port 21 request from WAN to the specific LAN PC (Example: 192.168.1.102) in the network.

Step 3: Click **Save** to save settings.

Virtual Server

Virtual Server for	4G LTE -1
Protocol	TCP
Start Port Number	21
End Port Number	21
Local IP Address	192.168.1.110
Start Port Number (Local)	21
End Port Number(Local)	21

Save Back

Virtual Server Listing

Index	Protocol	Start Port	End port	Local IP Address	Start Port Local	End Port Local	Edit	Delete
0	TCP	21	21	192.168.1.110	21	21		
1	N/A	N/A	N/A	N/A	N/A	N/A		
2	N/A	N/A	N/A	N/A	N/A	N/A		
3	N/A	N/A	N/A	N/A	N/A	N/A		
4	N/A	N/A	N/A	N/A	N/A	N/A		
5	N/A	N/A	N/A	N/A	N/A	N/A		
6	N/A	N/A	N/A	N/A	N/A	N/A		
7	N/A	N/A	N/A	N/A	N/A	N/A		
8	N/A	N/A	N/A	N/A	N/A	N/A		
9	N/A	N/A	N/A	N/A	N/A	N/A		

Static DNS

The Domain Name System (DNS) is a hierarchical naming system built on a distributed database for computers, services, or any resource connected to the Internet or a private network associates various information with domain names assigned to each of the participating entities. Most importantly, it translates domain names meaningful to humans into the numerical identifiers associated with networking equipment for the purpose of locating and addressing these devices worldwide.

An often-used analogy to explain the Domain Name System is that it serves as the phone book for the Internet by translating human-friendly computer hostnames into IP addresses. For example, the domain name `www.example.com` can be translated into the addresses `192.0.32.10` (IPv4).

Static DNS

IP Address

Domain Name

Static DNS Listing

Index	IP Address	Domain Name	Edit	Delete

IP Address: The IP address you are going to give a specific domain name.

Domain Name: The friendly domain name for the IP address.

Click **Save** to apply your settings.

Time Schedule

The Time Schedule supports up to **16** timeslots which helps you to manage your Internet connection. In each time profile, you may schedule specific day(s) i.e. Monday through Sunday to restrict or allowing the usage of the Internet by users or applications.

This Time Schedule correlates closely with router’s time, since router does not have a real time clock on board; it uses the Simple Network Time Protocol (SNTP) to get the current time from an SNTP server from the Internet.

Time Schedule							
Rule Index	0 ▼						
Rule Name	TimeSlot1						
	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	Sun.
Day of Week	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Start Time	00:00	00:00	00:00	00:00	00:00	00:00	00:00
End Time	00:00	00:00	00:00	00:00	00:00	00:00	00:00
Save							

Time Index: The rule indicator (0-15) for identifying each timeslot.

Name: User-defined identification for each time period.

Day of Week: Mon. to Sun. Specify the time interval for each timeslot from “Day of Week”.

Start Time: The starting point of the interval for the timeslot, anytime in 00:00 – 24:00.

End Time: The ending point of the interval for the timeslot, anytime in 00:00 – 24:00.

Click **Save** to apply your settings.

Example, you can add a timeslot named “TimeSlot1” which features a period from 9:00 of Monday to 18:00 of Tuesday.

Time Schedule							
Rule Index	0 ▼						
Rule Name	TimeSlot1						
	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	Sun.
Day of Week	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Start Time	09:00	00:00	00:00	00:00	00:00	00:00	00:00
End Time	24:00	18:00	00:00	00:00	00:00	00:00	00:00
Save							

Another TimeSlot2 spanning from 09:00 to 18:00 of Wednesday

Time Schedule							
Rule Index	1 ▼						
Rule Name	TimeSlot2						
	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	Sun.
Day of Week	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Start Time	00:00	00:00	09:00	00:00	00:00	00:00	00:00
End Time	00:00	00:00	18:00	00:00	00:00	00:00	00:00
Save							

Mail Alert

Mail alert is designed to keep system administrator or other relevant personnel alerted of any unexpected events that might have occurred to the network computers or server for monitoring efficiency. With this alert system, appropriate solutions may be tackled to fix problems that may have arisen so that the server can be properly maintained.

Mail Alert	
Server Information	
SMTP Server	<input type="text"/>
Username	<input type="text"/>
Password
Sender's E-mail	<input type="text"/> (Must be XXX@yyy.zzz)
SSL/TLS	<input type="checkbox"/> Enable
Port	<input type="text" value="25"/> (1~65535)
<input type="button" value="Account Test"/>	
WAN IP Change Alert	
Recipient's E-mail	<input type="text"/> (Must be XXX@yyy.zzz)
3G/4G LTE Usage Allowance	
Recipient's E-mail	<input type="text"/> (Must be XXX@yyy.zzz)
Hotspot Session Log	
Recipient's E-mail	<input type="text"/> (Must be XXX@yyy.zzz)
<input type="button" value="Apply"/>	

SMTP Server: Enter the SMTP server that you would like to use for sending emails.

Username: Enter the username of your email account to be used by the SMTP server.

Password: Enter the password of your email account.

Sender's Email: Enter your email address.

SSL/TLS: Check to whether to enable SSL encryption feature.

Port: the port, default is 25.

Account Test: Click the button to test the connectivity and feasibility to your sender's e-mail.

Recipient's Email (WAN IP Change Alert): Enter a valid e-mail address to receive an alert message when WAN IP change has been detected.

Recipient's Email (3G/4G-LTE Usage Allowance): Enter a valid e-mail address to receive an alert message when the 3G over Usage Allowance occurs.

Hotspot Session Log: Enter a valid e-mail address to receive hotspot access information.

Click **Apply** to save settings

Access Management

Features including **Device Management, SNMP, Syslog, Universal Plug & Play, Dynamic DNS, Access Control, Packet Filter, CWMP (TR-069), Parental Control, SAMBA & FTP Server, and BECentral Management.**

Device Management

Device Management

Device Host Name

Host Name

Embedded Web Server

HTTP Port (The default HTTP port number is 80.)

HTTPS Port (The default HTTPS port number is 443.)

HTTPS Server Certificate Index

Device Host Name

Host Name: Enter the host name of the router. Default is **home.gateway**

Embedded Web Server

HTTP Port: It is the embedded web server (Web GUI) accessing port, default is **80**. It can be changed other port other than port 80, e.g. port 8080.

HTTPS Port: Similar to HTTP which is an unencrypted communication using port 80. HTTPS is encrypted by SSL using port 443 instead.

HTTPS Server Certificate Index: *HTTPS* known as HTTP-over-SSL tunnel protocol. Select a certificate to identify the system web server. When accessing to the web server (Web GUI), the browser will issue a warning page.

To import certificates, go to **Maintenance >> Certificate Management** to upload files. Otherwise, select **Default** certificate and CA.

Click **Save** to apply settings.

SNMP

Simple Network Management Protocol (SNMP) is a protocol used for exchanging management information between network devices. The MX-600 serves as a SNMP agent that allows a manager station to manage and monitor the router through the network.

SNMP	
SNMP	<input type="radio"/> Activated <input checked="" type="radio"/> Deactivated
Get Community	<input type="text"/>
Set Community	<input type="text"/>
Trap Manager IP	<input type="text" value="0.0.0.0"/>
System Name	<input type="text"/>
System Location	<input type="text"/>
System Contact	<input type="text"/>
SNMPv3	
SNMPv3	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
Username	<input type="text"/>
Access Permissions	Read Only ▾
Authentication Protocol	MD5 ▾
Authentication Key	<input type="text"/> (8~31 characters)
Privacy Protocol	DES ▾
Privacy Key	<input type="text"/> (8~31 characters)
<input type="button" value="Save"/>	

SNMP: Activate to enable SNMP.

Get Community: Type the Get Community, which is the password for the incoming Get-and-GetNext requests from the management station.

Set Community: Type the Set Community, which is the password for incoming Set requests from the management station.

Trap Manager IP: Enter the IP of the server receiving the trap message (when some exception occurs) sent by this SNMP agent.

System Name / Location / Contact: String descriptions of the SNMP agent.

SNMPv3

SNMPv3: Enable to activate the SNMPv3.

User Name: Enter the name allowed to access the SNMP agent.

Access Permissions: Set the access permissions for the user; RO--read only and RW--read and writer.

Authentication Protocol: Select the authentication protocol, MD5 and SHA. SNMP agent can communicate with the manager station through authentication and encryption to secure the message exchange. Set the authentication and encryption information here and below.

Authentication Key: Set the authentication key, 8-31 characters.

Privacy Protocol: Select the privacy mode, DES and AES.

Privacy Key: Set the privacy key, 8-31 characters.

Click **Save** to apply settings.

Syslog

Use the Syslog to collect system event information to a remote log server.

▼ Syslog	
Remote System Log	<input type="radio"/> Activated <input checked="" type="radio"/> Deactivated
Server IP Address	<input type="text" value="0.0.0.0"/>
Server UDP Port	<input type="text" value="514"/>
<input type="button" value="Save"/>	

Remote System Log: Select **Activated** to enable this feature

Server IP Address: Assign the remote log server IP address.

Server UDP Port: Assign the remote log server port, 514 is commonly used.

Click **Save** to apply settings.

Universal Plug & Play

UPnP offers peer-to-peer network connectivity for PCs and other network devices, along with control and data transfer between devices. UPnP offers many advantages for users running NAT routers through UPnP NAT Traversal, and on supported systems makes tasks such as port forwarding much easier by letting the application control the required settings, removing the need for the user to control advanced configuration of their device.

Both the user's Operating System and the relevant application must support UPnP in addition to the router.

Universal Plug & Play	
UPnP	<input checked="" type="radio"/> Activated <input type="radio"/> Deactivated
Auto-configured	<input type="radio"/> Activated <input checked="" type="radio"/> Deactivated (by UPnP-enabled Application)
Save	

UPnP: Select this checkbox to activate UPnP. Be aware that anyone could use an UPnP application to open the web configuration's login screen without entering the MX-600's IP address

Auto-configured: Select this check box to allow UPnP-enabled applications to automatically configure the MX-600 so that they can communicate through the MX-600, for example by using NAT traversal, UPnP applications automatically reserve a NAT forwarding port in order to communicate with another UPnP enabled device; this eliminates the need to manually configure port forwarding for the UPnP enabled application.

Click **Save** to apply the settings.

Dynamic DNS (DDNS)

The Dynamic DNS function allows you to alias a dynamic IP address to a static hostname, allowing users whose ISP does not assign them a static IP address to use a domain name. This is especially useful for hosting servers via your internet connection, so that anyone wishing to connect to you may use your domain name, rather than having to use your dynamic IP address, which changes from time to time. This dynamic IP address is the WAN IP address of the router, which is assigned to you by your ISP.

Here users can register different WAN interfaces with different DNS Providers.

If you do not have a DDNS account, please choose a DDNS Service Provider from the list then go to their website to create an account first.

Dynamic DNS	
Dynamic DNS	<input type="radio"/> Activated <input checked="" type="radio"/> Deactivated
Service Provider	www.dyndns.org (dynamic) ▼
My Host Name	<input type="text"/>
Username	<input type="text"/>
Password	<input type="text"/>
Wildcard support	<input type="radio"/> Yes <input checked="" type="radio"/> No
Period	25 Day(s) ▼
<input type="button" value="Save"/>	

Dynamic DNS: Select this check box to activate Dynamic DNS.

Service Provider: Select from drop-down menu for the appropriate service provider, for example: www.dyndns.org.

My Host Name: Type the domain name assigned to your MX-600 by your Dynamic DNS provider.

Username / Password: Enter the user name and password of the account you created with this service provider.

Wildcard support: Select this check box to enable DYNDNS Wildcard.

Period: Set the time period on how often the MX-600 will update the DDNS server with your current external IP address.

Click **Save** to apply the settings.

Example: How to register a DDNS account

If you do not have an account with Dynamic DNS, please go to www.dyndns.org to register an account first.

User **test1** register a Dynamic Domain Names in DDNS provider <http://www.dyndns.org/>.

DDNS: www.hometest.com using username/password test/test

Dynamic DNS	
Dynamic DNS	<input checked="" type="radio"/> Activated <input type="radio"/> Deactivated
Service Provider	<input type="text" value="www.dyndns.org (dynamic)"/>
My Host Name	<input type="text" value="myhome.dyndns.org"/>
Username	<input type="text" value="myhome-123"/>
Password	<input type="password" value="*****"/>
Wildcard support	<input type="radio"/> Yes <input checked="" type="radio"/> No
Period	<input type="text" value="25"/> <input type="text" value="Day(s)"/>
<input type="button" value="Save"/>	

Access Control

Access Control Listing allows you to determine which services/protocols can access the MX-600 interface from which computers. It is a management tool aimed to allow IPs (set in secure IP address) to access specified embedded applications (Web, FTP, etc., user can set) through some specified interface (LAN, WAN or both). User can have an elaborate understanding in the examples below.

The maximum number of entry is **16**.

Access Control

Access Control Activated Deactivated

Access Control Editing

Rule Index:

Active: Yes No

Secure IP Address: ~ (0.0.0.0 ~ 0.0.0.0 means all IPs)

Application:

Interface:

Access Control Listing

Index	Active	Secure IP Address	Application	Interface
0	Yes	0.0.0.0-0.0.0.0	ALL	LAN
1	Yes	0.0.0.0-0.0.0.0	Ping	WAN

Access Control: Select whether to make Access Control function available.

Rule Index: The numeric rule indicator. The maximum entry is up to 16, ranging from 0 to 15.

Active: **Yes** to activate the rule.

Secure IP Address: The default 0.0.0.0 allows any client to use this service to manage the MX-600. Type an IP address range to restrict access to the client(s) without a matching IP address.

Application: Choose a service that you want to all access to all the secure IP clients. The drop-down menu lists all the common used applications.

Interface: Select the access interface. Choices are **LAN**, **WAN** and **Both**.

Click **Save** to apply the settings.

By default, the “Access Control” has **two default rules**.

Default Rule 1: (Index 1), a rule to allow only clients from LAN to have access to all embedded applications (Web, FTP, etc). Under this situation, clients from WAN cannot access the router even from Ping.

Access Control

Access Control Activated Deactivated

Access Control Editing

Rule Index: 1

Active: Yes No

Secure IP Address: 0.0.0.0 ~ 0.0.0.0 (0.0.0.0 ~ 0.0.0.0 means all IPs)

Application: ALL

Interface: LAN

Save Delete

Access Control Listing

Index	Active	Secure IP Address	Application	Interface
1	Yes	0.0.0.0-0.0.0.0	ALL	LAN
2	Yes	0.0.0.0-0.0.0.0	Ping	WAN

Default Rule 2: (Index 2), an ACL rule to open Ping to WAN side.

Access Control

Access Control Activated Deactivated

Access Control Editing

Rule Index: 2

Active: Yes No

Secure IP Address: 0.0.0.0 ~ 0.0.0.0 (0.0.0.0 ~ 0.0.0.0 means all IPs)

Application: Ping

Interface: WAN

Save Delete

Access Control Listing

Index	Active	Secure IP Address	Application	Interface
1	Yes	0.0.0.0-0.0.0.0	ALL	LAN
2	Yes	0.0.0.0-0.0.0.0	Ping	WAN

Packet Filter

You can filter the packages by MAC address, IP address, Protocol, Port number and Application or URL.

❖ Filter Type - IP & MAC Filter

Packet Filter

Filter Type: IP & MAC Filter ▼

IP & MAC Filter Editing

Action: Black List ▼

Rule Index: 1 ▼

Individual Active: Yes No

Interface: 4G/LTE ▼

Direction: Both ▼

Type: IPv4 ▼

Source IP Address: (0.0.0.0 means Don't care)

Source Subnet Mask:

Source Port Number: (0 means Don't care)

Destination IP Address: (0.0.0.0 means Don't care)

Destination Subnet Mask:

Destination Port Number: (0 means Don't care)

DSCP: (Value Range:0~64, 64 means Don't care)

Protocol: Any ▼

Time Schedule: Always ▼

IP & MAC Filter List

Index	Active	Interface	Direction	Source IP(IPv6) Address/Mask(Prefix)	Destination IP(IPv6) Address/Mask(Prefix)	Source MAC Address	Source Port	Destination Port	DSCP	Protocol
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IP & MAC Filter Editing

Rule Index: The numeric rule indicator.

Individual Active: **Yes** to enable the rule.

Action: This is how to deal with the packets matching the rule. Allow please select White List or Black selecting Black List.

Interface: Select to determine which interface the rule will be applied to.

Direction: Select to determine whether the rule applies to outgoing packets, incoming packets or packets of both directions.

Type: Choose type of field you want to specify to monitor. Select "IPv4" for IPv4 address, port number and protocol. Select "IPv6" for IPv6 address, port number and protocol. Select "MAC" for MAC address.

► **IPv4**

Source IP Address	<input type="text" value="0.0.0.0"/>	(0.0.0.0 means Don't care)
Source Subnet Mask	<input type="text" value="0.0.0.0"/>	
Source Port Number	<input type="text" value="0"/>	(0 means Don't care)
Destination IP Address	<input type="text" value="0.0.0.0"/>	(0.0.0.0 means Don't care)
Destination Subnet Mask	<input type="text" value="0.0.0.0"/>	
Destination Port Number	<input type="text" value="0"/>	(0 means Don't care)
DSCP	<input type="text" value="0"/>	(Value Range:0~64, 64 means Don't care)
Protocol	<input type="text" value="TCP"/>	▼

Source IP Address: The source IP address of packets to be monitored. 0.0.0.0 means “Don’t care”.

Source Subnet Mask: Enter the subnet mask of the source network.

Source Port Number: The source port number of packets to be monitored. 0 means “Don’t care”.

Destination IP Address: The destination IP address of packets to be monitored. 0.0.0.0 means “Don’t care”.

Destination Subnet Mask: Enter the subnet mask of the destination network.

Destination Port Number: This is the Port that defines the application. (E.g. HTTP is port 80.)

DSCP: DSCP: Differentiated Services Code Point, it is recommended that this option be configured by an advanced user or keep 0. (0 means Don’t care.)

Protocol: Specify the packet type (TCP, UDP, ICMP, and ICMPv6) that the rule applies to.

► **IPv6**

Source IPv6 Address	<input type="text" value="0:0:0:0:0:0:0:0"/>	(0:0:0:0:0:0:0:0 means Don't care)
Source IPv6 Prefix	<input type="text" value="32"/>	
Source Port Number	<input type="text" value="0"/>	(0 means Don't care)
Destination IPv6 Address	<input type="text" value="0:0:0:0:0:0:0:0"/>	(0:0:0:0:0:0:0:0 means Don't care)
Destination IPv6 Prefix	<input type="text" value="32"/>	
Destination Port Number	<input type="text" value="0"/>	(0 means Don't care)
DSCP	<input type="text" value="0"/>	(Value Range:0~64, 64 means Don't care)
Protocol	<input type="text" value="TCP"/>	▼

Source IP (IPv6) Address/ Prefix: The source IP address or range of packets to be monitored.

Source Port Number: The source port number of packets to be monitored.

Destination IP (IPv6) Address/ Prefix: The destination subnet IP address.

Destination Port Number: This is the Port or Port Ranges that defines the application.

DSCP: show the set DSCP.

Protocol: It is the packet protocol type used by the application. Select either **TCP** or **UDP** or

ICMP or ICMPv6

▶ **MAC**

Type	MAC ▼
Source MAC Address	<input type="text"/>

Source MAC Address: show the MAC address of the rule applied.

Click **Save** to apply settings.

❖ Filter Type- URL Filter

Packet Filter	
Filter Type	URL Filter
URL Filter Editing	
URL Filter	<input type="radio"/> Activated <input checked="" type="radio"/> Deactivated
URL Filter Rule Index	1
Individual Active	<input type="radio"/> Yes <input checked="" type="radio"/> No
URL (Host)	<input type="text"/>
<input type="button" value="Save"/> <input type="button" value="Delete"/>	
URL Filter Listing	
Index	Active
	URL

URL Filter: Select **Activated** to enable URL Filter.

URL Filter Rule Index: The numeric rule indicator.

Individual Active: To give control to the specific URL access individually, for example, you want to prohibit access to www.yahoo.com, please first press Activated in “URL Filter” field, and also Yes in “Individual Active” field; if some time you want to allow access to this URL, you simply select No in individual active field. In a word, the command serves as a switch to the access of some specific URL with the filter on.

URL (Host): Specified URL which is prohibited from accessing.

Click **Save** to apply settings.

❖ Filter Type- URL Filter

▼ Packet Filter	
Packet Filter	
Filter Type	URL Filter ▼
URL Filter Editing	
URL Filter	<input type="radio"/> Activated <input checked="" type="radio"/> Deactivated
URL Filter Rule Index	1 ▼
Individual Active	<input type="radio"/> Yes <input checked="" type="radio"/> No
URL (Host)	<input type="text"/>
<input type="button" value="Save"/> <input type="button" value="Delete"/>	
URL Filter Listing	
Index	Active
URL	

URL Filter: Select **Activated** to enable URL Filter.

URL Filter Rule Index: The numeric rule indicator.

Individual Active: To give control to the specific URL access individually, for example, you want to prohibit access to www.yahoo.com, please first press Activated in “URL Filter” field, and also Yes in “Individual Active” field; if some time you want to allow access to this URL, you simply select No in individual active field. In a word, the command serves as a switch to the access of some specific URL with the filter on.

URL (Host): Specified URL which is prohibited from accessing.

Click **Save** to apply the settings.

CWMP (TR-069)

CWMP, short for CPE WAN Management Protocol, also called TR069 is a Broadband Forum technical specification entitled CPE WAN Management Protocol (CWMP). It defines an application layer protocol for remote management of end-user devices. It defines an application layer protocol for remote management of end-user devices.

As a bidirectional SOAP/HTTP based protocol it can provides the communication between customer premises equipment (CPE) and Auto Configuration Server (ACS). It includes both a safe configuration and the control of other CPE management functions within an integrated framework. In the course of the booming broadband market, the number of different internet access possibilities grew as well (e.g. modems, routers, gateways, set-top box, VoIP-phones).At the same time the configuration of this equipment became more complicated –too complicated for end-users. For this reason, TR-069 was developed. It provides the possibility of auto configuration of the access types. Using TR-069 the terminals can get in contact with the Auto Configuration Servers (ACS) and establish the configuration automatically and let ACS configure CPE automatically.

CWMP (TR-069)	
CWMP	<input type="radio"/> Activated <input checked="" type="radio"/> Deactivated
ACS Login Information	
URL	<input type="text" value="http://cpe.bectechnologies.com/comserver/node1/tr069"/>
Username	<input type="text" value="testcpe"/>
Password	<input type="text" value="ac5entry"/>
Connection Request Information	
Path	<input type="text"/>
Username	<input type="text" value="conexant"/>
Password	<input type="text" value="welcome"/>
Periodic Inform Config	
Periodic Inform	<input checked="" type="radio"/> Activated <input type="radio"/> Deactivated
Interval	<input type="text" value="870"/>
Bind Wan Interface	
Interface	<input type="text" value="Auto"/>
NATT Config	
NATT Server	<input type="text"/>
NATT Period	<input type="text"/>
<input type="button" value="Save"/>	

CWMP: Select activated to enable CWMP.

ACS Login Information

URL: Enter the ACS server login URL.

User Name: Specify the ACS User Name for ACS authentication to the connection from CPE.

Password: Enter the ACS server login password.

Connection Request Information

Path: Local path in HTTP URL for an ACS to make a Connection Request notification to the CPE.

Username: Username used to authenticate an ACS making a Connection Request to the CPE.

Password: Password used to authenticate an ACS making a Connection Request to the CPE.

Periodic Inform Config

Periodic Inform: Select Activated to authorize the router to send an Inform message to the ACS automatically.

Interval(s): Specify the inform interval time (sec) which CPE used to periodically send inform message to automatically connect to ACS. When the inform interval time arrives, the CPE will send inform message to automatically connect to ACS.

Bind WAN Interface

Interface: Specify any available or a single WAN interface to handle TR-069 requests.

NATT Config - This is a proprietary feature provided by BEC. May leave them in blank, no configuration is required.

NATT Server: By BEC administrator only.

NATT Period: By BEC administrator only.

Click **Save** to apply settings.

Parental Control

This feature provides Web content filtering offering safer and more reliable web surfing for users especially for parents to protect network security and control the contents for children at home.

Parental Control	
Provider	www.opendns.com
Parental Control	<input type="radio"/> Activated <input checked="" type="radio"/> Deactivated
Host Name	<input type="text"/>
Username	<input type="text"/>
Password	<input type="password"/>
<p>**Parental Control provides Web content filtering while surfing the web safer and more reliable. Please get an account and configure at the selected Provider in advance.</p>	
<input type="button" value="Save"/>	

To activate this feature, please log on to www.opendns.com to get an OpenDNS account first.

Parent Control Provider: Hosted by www.opendns.com

Parent Control: Enable the feature by clicking the **Activated**

Host Name: It is the domain name of your OpenDNS. If you don't have one, please leave it blank.

Username / Password: Put down your OpenDNS account username and password

Click **Save** to apply the settings.

SAMBA & FTP Server

Samba and FTP are served as network sharing.

SAMBA & FTP Server	
SAMBA	
SAMBA Server	<input checked="" type="radio"/> Activated <input type="radio"/> Deactivated
Work Group	<input type="text" value="MyGroup"/>
Net BIOS Name	<input type="text" value="SambaSvr"/>
FTP	
FTP Server	<input checked="" type="radio"/> Activated <input type="radio"/> Deactivated
FTP Server Port	<input type="text" value="21"/>
<input type="button" value="Save"/>	

SAMBA:

SAMBA Server: Activated to enable SAMBA sharing.

Work Group: The same mechanism like in Microsoft work group, please set the Work Group name.

NetBIOS Name: The sharing NetBIOS name.

FTP:

FTP Server: Activated to enable FTP sharing.

FTP Server Port: Set the working port. Well-known one is 21. User can change it.

SAMBA/FTP Login Account: See [User Management](#) for more information.

- ▶ **Default user:** admin/admin, it is the administrative user and a super user; it has the full authority of SAMBA /FTP access and operation permission of objects in SAMBA and FTP server.
- ▶ **New user:** users can create new user(s) to grant it (them) access and permission to the SAMBA & FTP server.

Example: How to setup Samba

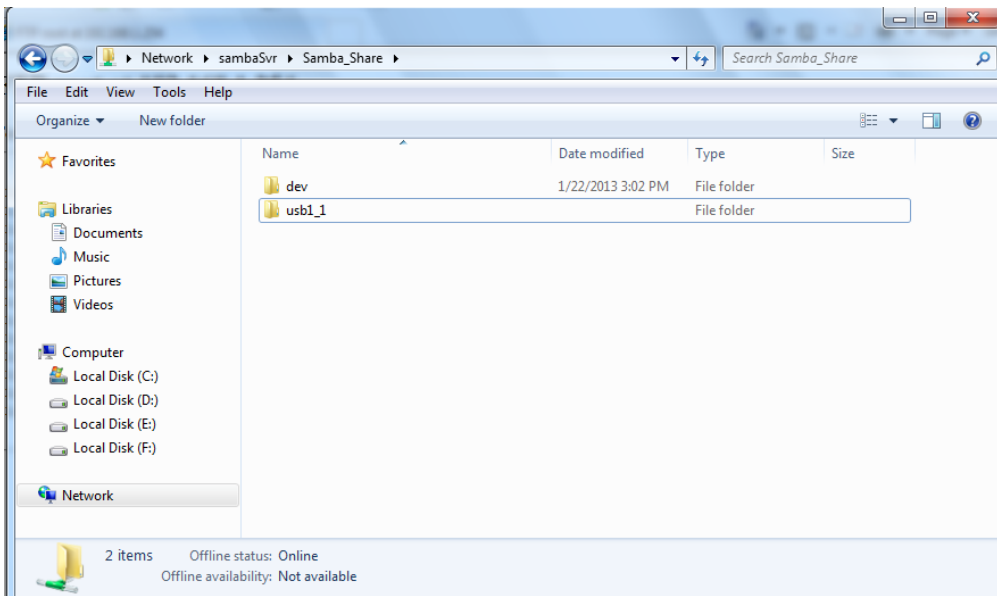
1. Go directly to Start > Run (enter [\\192.168.1.254](#) (from LAN side), [\\SambaSvr](#) , but if you enter [\\SambaSvr](#), please be sure your working PC is in the same workgroup as set in the samba server set above.)



2. Enter the Username and password.



3. Users can browse and access USB storage.

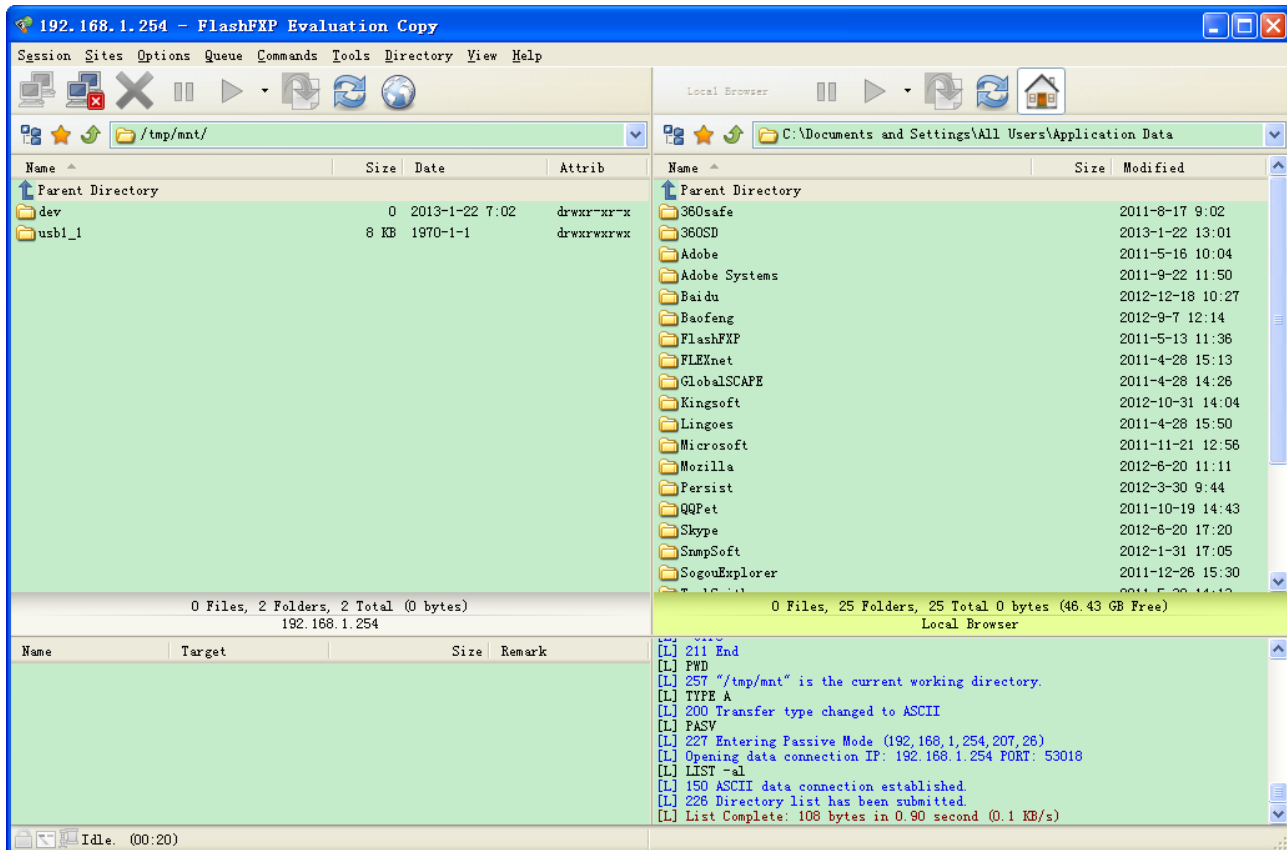


Example: How to setup FTP :

1. Access via FTP tools

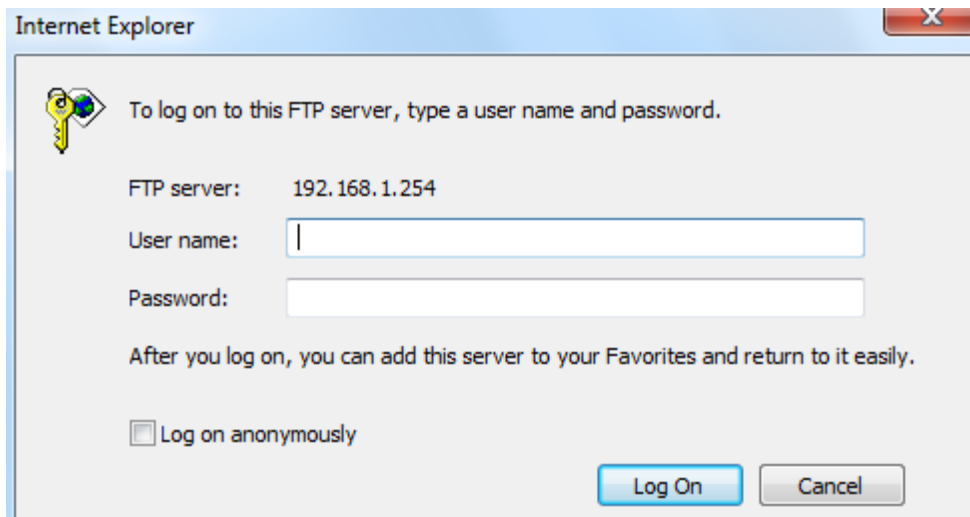
Take popular FTP tool of FlashFXP for example:

- 1) Open FlashFXP
- 2) Create ftp sites (LAN IP / WAN IP, 192.168.1.254, and set the account, port).
- 3) Connect to the ftp site.



2. Web FTP access

- 1) Enter <ftp://192.168.1.254> at the address bar of the web page.
- 2) Enter the account's username and password.



BECentral Management

BECentral is a cloud based device management platform that provides operators with a comprehensive suite of services to manage devices in real-time.

▼ BECentral Management	
BECentral Management	<input type="radio"/> Activated <input checked="" type="radio"/> Deactivated
BECentral Management URL	<input type="text" value="becentral.becloud.io"/>
BECentral Management Port	<input type="text" value="48883"/>
Organization ID	<input type="text" value="DEFAULT"/>
Device Report Interval	<input type="text" value="480"/>
Interface	<input type="text" value="ALL ▼"/>
<input type="button" value="Save"/>	

BECentral Management: Activate to enable the feature.

BECentral Management URL: Access path to the BECentral.

BECentral Management Port: Port listened by the BECentral.

Organization ID: Customer ID

Device Report Interval: Enter the interval time in seconds to send inform message periodically to the BECentral.

Interface: Specify any available or a single WAN interface to handle BECentral requests.

Maintenance

Maintenance equipment the users with the ability of maintaining the device as well as examining the connectivity of the WAN connections, including **User Management, Certificate Management, Time Zone, Firmware & Configuration, System Restart, Auto Reboot, Diagnostic Tool.**

User Management

User Management provides the Administrator with the ability to grant access control and manage GUI login credentials for each user.

There are two access management levels, Administrator and User.

The default root account, Administrator (admin), has full access to all the features listed and ability to create other accounts with features to allow other users to access to. The User account is with limited access (specified by advanced users with admin account) to the GUI.

Total of **8** accounts can be created to grant access to manage the MX-600 via the web page.

❖ Administrator Account

admin/admin is the root/default account username and password.

NOTE: This username / password may vary by different Internet Service Providers.

The screenshot shows the 'User Management' configuration page. It includes sections for 'User Account', 'FTP Authority Setup', and 'SAMBA Authority Setup'. The 'User Account' section has fields for Index (1), Username (admin), New Password, and Confirm Password. The 'FTP Authority Setup' and 'SAMBA Authority Setup' sections have radio buttons for 'Enable' and 'Disable', and 'Permission' options of 'Read/Write' and 'Read'. A message at the bottom says '**Please restart the Storage server after config changed**'. Below the configuration fields are 'Save' and 'Delete' buttons. At the bottom is a 'User Account Listing' table.

Index	User Name	FTP Access	FTP Permission	SAMBA Access	SAMBA Permission
1	admin	Enable	Read/Write	Enable	Read/Write
2	user	Disable	Read	Disable	Read

User Setup

Index: The numeric account indicator. The maximum entry is up to 8 accounts.

User Name: Create account(s) user name for GUI management.

New Password: Enter a new password for this user account.

Confirmed Password: Re-enter the new password again; you must enter the password exactly the same as in the previous field

FTP Authority Setup

FTP Access: Enable to grant the user access to the FTP server.

Permission: Set the operation permission for the user, Read/Write or Read.

SAMBA Authority

SAMBA Access: Enable to grant the user access to the SAMBA server.

Permission: Set the operation permission for the user, Read/Write or Read.

Web GUI Permission

Login using the Administrator account, you will have the full accessibility to manage & control your gateway device and can also create user accounts for others to control some of the open configuration settings.

❖ User Account

user/user is the default user account username and password

NOTE: This username / password may vary by different Internet Service Providers.

▼ User Management

User Account

Index:

Username:

New Password:

Confirm Password:

FTP Authority Setup

FTP Access: Enable Disable

Permission: Read/Write Read

SAMBA Authority Setup

SAMBA Access: Enable Disable

Permission: Read/Write Read

Web GUI Permission

Guest Account: Enable Disable

Interface Setup: Enable Disable

Advanced Setup: Enable Disable

Access Management: Enable Disable

Maintenance: Enable Disable

Please restart the Storage server after config changed

User Account Listing

Index	User Name	FTP Access	FTP Permission	SAMBA Access	SAMBA Permission
1	admin	Enable	Read/Write	Enable	Read/Write
2	user	Disable	Read	Disable	Read

User Account Setup

Index #: The numeric account indicator. The maximum entry is up to 8.

User Name: Users can create account(s) to give it (them) access to SAMBA and FTP.

New Password: Password for the user account.

Confirm Password: Re-enter the password.

FTP Authority Setup

FTP Access: Enable to grant the user access to the FTP server.

Permission: Set the operation permission for the user, Read/Write or Read.

SAMA Authority Setup

SAMBA Access: Enable to grant the user access to the SAMBA server.

Permission: Set the operation permission for the user, Read/Write or Read.

Web GUI Permission

Guest Account: Enable to create this new guest account.

Interface Setup / Advanced Setup / Access Management Setup / Maintenances: Enable to grant this user access to these features.

When someone accesses to the MX-600 using this “user” account, he/she can only manage and configure the features that is pre-selected in **Web GUI Permission** for this account.

Click **Save** to apply the settings.

Time Zone

With default, MX-600 does not contain the correct local time and date.

There are several options to setup, maintain, and configure current local time/date on the MX-600. If you plan to use **Time Schedule** feature, it is extremely important you set up the Time Zone correctly.

Time Zone	
Current Date/Time	N/A (Can't find NTP server)
Time Synchronization	
Synchronize time with	<input checked="" type="radio"/> NTP Server <input type="radio"/> PC's Clock <input type="radio"/> Manually
Time Zone	(GMT) Greenwich Mean Time : Dublin, Edinburgh, Lisbon, London ▼
Daylight Saving	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled
NTP Server Address	0.0.0.0 (0.0.0.0: Default Value)
<input type="button" value="Save"/>	

Synchronize time with: Select the methods to synchronize the time.

- ▶ **NTP Server automatically:** To synchronize time with the SNTP servers to get the current time from an SNTP server outside your network then choose your local time zone. After a successful connection to the Internet, MX-600 will retrieve the correct local time from the SNTP server this is specified.
- ▶ **PC's Clock:** To synchronize time with the PC's clock.
- ▶ **Manually:** Enter the Date and Time manually.
 - ◆ **Date:** Month / Date / Year. Month – 1 ~ 12 (January ~ December).
 - ◆ **Time:** Hour: Minute: Second

Time Zone: Choose the time zone of your location. This will set the time difference between your time zone and Greenwich Mean Time (GMT).

Daylight Saving: Select this option if you use daylight savings time.

NTP Server Address: Enter the IP address of your time server. Check with your ISP/network administrator if you are unsure of this information.

Firmware & Configuration

Firmware is the software that controls the hardware and provides all functionalities which are available in the GUI. This software may be improved and/or modified; your MX-600 provides an easy way to update the code to take advantage of the changes.

To upgrade the firmware of the MX-600, you should download or copy the firmware to your local environment first. Click “**Choose File**” to specify the path of the firmware file. Then, click “**Upgrade**” to start upgrading process. After completing the firmware upgrade, the MX-600 will automatically restart and run the new firmware.

Upgrade: Choose Firmware or Configuration you want to update.

System Restart with:

- ▶ **Current Settings:** Restart the device with the current settings automatically when finishing upgrading.
- ▶ **Factory Default Settings:** Restart the device with factory default settings automatically when finishing upgrading.

File: Type in the location of the file you want to upload in this field or click **Browse** to find it.

Choose File: Click “**Choose File**” to find the configuration file or firmware file you want to upload. Remember that you must extract / decompress / unzip the .zip files before you can upload them.

Backup Configuration: Click **Backup** button to back up the current running configuration file and save it to your computer in the event that you need this configuration file to be restored back to your MX-600 device when making false configurations and want to restore to the original settings.

Upgrade: Click “**Upgrade**” to begin the upload process. This process may take up to two minutes.



DO NOT turn off or power cycle the device while firmware upgrading is still in process.

Improper operation could damage your MX-600.

System Restart

Click **System Restart** with option **Current Settings** to reboot your router.



The screenshot shows a web interface for the 'System Restart' section. At the top left, there is a dropdown menu labeled 'System Restart'. Below it, the text 'System Restart with' is followed by two radio button options: 'Current Settings' (which is selected) and 'Factory Default Settings'. At the bottom left of the form, there is a 'Restart' button.

If you wish to restart the router using the factory default settings (for example, after a firmware upgrade or if you have saved an incorrect configuration), select **Factory Default Settings** to restore to factory default settings.

You may also restore your router to factory settings by holding the small Reset pinhole button on the back of your router in about more than 6s seconds whilst the router is turned on.

Auto Reboot

Schedule an automatic reboot for your MX-600 to ensure proper operation and best performance. This reboot will only reboot with current configuration settings and not overwrite any existing settings.

The screenshot shows the 'Auto Reboot' configuration page. It has a title bar with a dropdown arrow and the text 'Auto Reboot'. Below the title bar, there are two rows under the heading 'Schedule'. Each row contains an 'Enable' checkbox (unchecked), followed by checkboxes for days of the week (Mon., Tues., Wed., Thur., Fri., Sat., Sun.), and a 'Time' field with two input boxes for hours and minutes, both set to '00'. At the bottom left of the form is a 'Save' button.

Click **Save** to apply the settings

Example: Schedule MX-600 to reboot at 10:00pm (22:00) every weekday (Monday thru Friday) and reboot at 9:00am on Saturday and Sunday.

The screenshot shows the 'Auto Reboot' configuration page with the following settings:

- Row 1: Enable, Mon., Tues., Wed., Thur., Fri., Sat., Sun., Time: 22 : 00
- Row 2: Enable, Mon., Tues., Wed., Thur., Fri., Sat., Sun., Time: 09 : 00

 A 'Save' button is located at the bottom left of the form.

Diagnostics Tool

The Diagnostic Test page shows the test results for the connectivity of the physical layer and protocol layer for both LAN and WAN sides.

3G/4G-LTE / 3G/4G-LTE USB / EWAN / WirelessClient

Diagnostic Tool	
WAN Interface	EWAN(LAN1) ▼
Testing Ethernet LAN Connection	N/A
Ping Primary DNS (N/A)	N/A
Ping www.google.com	N/A
Ping other IP Address or Domain <input type="radio"/> Yes <input checked="" type="radio"/> No	N/A
<input type="button" value="Start"/>	
Trace Route <input type="radio"/> Yes <input checked="" type="radio"/> No	
<input type="button" value="Start Trace Route"/>	

Ping other IP Address: Click **Yes** if you wish to ping other IP address rather than google.com

Click **START** to begin to diagnose the connection.

Diagnostic Tool	
WAN Interface	4G/LTE ▼
Testing Ethernet LAN Connection	N/A
Ping Primary DNS (N/A)	N/A
Ping www.google.com	N/A
Ping other IP Address <input type="radio"/> Yes <input checked="" type="radio"/> No	N/A
<input type="button" value="Start"/>	

Trace Route is to display how many hops (also view the exact hops) the packet of data has to take to get to the destination.

Click **Yes**, enter the IP address or domain then **Start Trace Route**.

Trace Route <input checked="" type="radio"/> Yes <input type="radio"/> No	
IP Address or Domain	<input type="text"/>
Max TTL Value	16 [2-30]
<input type="button" value="Start Trace Route"/>	

IP Address or Domain: Set the destination host (IP, domain name) to be traced.

Max TTL value: Set the max Time to live (TTL) value.

Shown as we “trace” www.billion.com below.

```

Trace www.billion.com

tracert to www.billion.com (125.227.205.188), 16 hops max, 60 byte packets
 1  172.16.1.254 (172.16.1.254)  0.472 ms  0.488 ms  0.643 ms
 2  122.96.153.233 (122.96.153.233)  7.354 ms  7.517 ms  7.704 ms
 3  221.6.12.69 (221.6.12.69)  7.921 ms  8.108 ms  8.256 ms
 4  221.6.1.253 (221.6.1.253)  8.392 ms  8.544 ms  *
 5  219.158.99.245 (219.158.99.245)  36.110 ms  36.839 ms  37.001 ms
 6  * * *
 7  * * 219.158.103.26 (219.158.103.26)  40.731 ms
 8  211.72.233.194 (211.72.233.194)  65.969 ms  66.040 ms  66.019 ms
 9  220.128.6.126 (220.128.6.126)  61.726 ms  61.831 ms  61.960 ms
10  220.128.11.170 (220.128.11.170)  61.543 ms  61.583 ms  65.127 ms
11  220.128.17.85 (220.128.17.85)  63.436 ms  62.133 ms  65.862 ms
12  220.128.17.229 (220.128.17.229)  64.695 ms  64.849 ms  65.063 ms
13  168.95.229.145 (168.95.229.145)  61.915 ms  60.715 ms  60.825 ms
14  * * *
15  * * *
16  * * *
    
```

LAN

Diagnostic Tool	
WAN Interface	LAN ▼
Testing Ethernet LAN Connection	PASS
Ping other IP Address or Domain <input checked="" type="radio"/> Yes <input type="radio"/> No	Skipped
IP Address or Domain	N/A
<input type="button" value="Start"/>	

Ping other IP Address: Click **Yes** to ping any desired IP address or a domain.

Click **START** to begin to diagnose the connection.

Chapter 5: Troubleshooting

If your MX-600 is not functioning properly, you can refer to this chapter for simple troubleshooting before contacting your service provider support. This can save you time and effort but if symptoms persist, consult your service provider.

Problems with the Router

Problem	Suggested Action
None of the LEDs is on when you turn on the router	Check the connection between the router and the adapter. If the problem persists, most likely it is due to the malfunction of your hardware. Please contact your service provider or BEC for technical support.
You have forgotten your login username or password	Try the default username "admin" and password "admin". If this fails, you can restore your router to its factory settings by pressing the reset button on the device rear side.

Problem with LAN Interface




Problem	Suggested Action
Cannot PING any PC on LAN	Check the Ethernet LEDs on the front panel. The LED should be on for the port that has a PC connected. If it does not lit, check to see if the cable between your router and the PC is properly connected. Make sure you have first uninstalled your firewall program before troubleshooting.
	Verify that the IP address and the subnet mask are consistent for both the router and the workstations.

Recovery Procedures

Problem	Suggested Action
<ul style="list-style-type: none"> - The front LEDs display incorrectly - Still cannot access to the router management interface after pressing the RESET button. - Software / Firmware upgrade failure 	<p>Before starting recovery process, please configure the IP address of the PC as 192.168.1.100 and proceed with the following step-by-step guide.</p> <ol style="list-style-type: none"> 1. Power the router off. 2. Press reset button and power on the router, once the Power lights Red, keeping press reset button over 6 seconds. 3. Internet LED flashes Green, router entering recovery procedure and router's IP will reset to Emergency IP address (Say 192.168.1.1). 4. Open browser and access http://192.168.1.1 to upload the firmware. 5. Internet LED lit Red, and router starts to write firmware into flash. Please DO NOT power off the router at this step. 6. Internet LED lit Green when successfully upgrade firmware. 7. Power cycle off/on the MX-600

APPENDIX: PRODUCT SUPPORT & CONTACT

If you come across any problems, please contact the dealer from where you have purchased the product or BEC @:

		
<p>Submit A Ticket</p>	<p>Send An Email</p>	<p>Contact By Phone</p>
<p>https://helpdesk.becentral.io/</p> <p>Create an account and submit support requests in our Help Desk Portal. We will respond to your ticket during our normal working hours.</p>	<p>teamsupport@bectechnologies.net</p> <p>Please include a description of the issue, product model, firmware version, application involved, and any relevant error messages.</p>	<p>+1-972-422-0877 Option 2</p> <p>Our Support Team is available by phone Monday through Friday 9am to 5pm CST</p>

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Windows 11/10/8/7 are registered Trademarks of Microsoft Corporation

Federal Communication Commission Interference Statement

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

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

FCC Caution:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference

(2) This device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. . This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

Co-location statement

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

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