

# User Manual

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## BEC EG-210N

### GigaConnect<sup>®</sup> Smart Gateway



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# CHAPTER 1: INTRODUCTION

## Introduction to your BEC Device

The BEC EG-210N Mini X-Range Wi-Fi Gateway/Router is designed with ethernet-to-the-building networking by integrating dual WAN connectivity, routing, switching, wireless, security and cloud management in a cost-optimized form factor. The EG-210N offers flexible dual-WAN failover by seamlessly connecting to another Internet Service Provider to avert internet downtime. The long-range 11n wireless technology with high-gain antennas support faster data transfer and entertainment streaming and lag-free online gaming. The flexible firewall policies and QoS bandwidth control help to filter and monitor all inbound/outbound activities to enhance network security and connection.

EG-210N is adapted to service delivery to business or residential, offering a suite of advanced software and management tools enabling high availability, reliable and security for critical operations and continuity while simplifying the management of the network.

### Deliver Uninterrupted Internet Service

The EG-210N is a classic broadband bonding gateway with dual WAN interfaces for redundancy or seamless failover between wireless network and the wireline, an interchangeable Gigabit Ethernet LAN/WAN, to ensure continuous Internet connectivity. The load balancing and traffic prioritization mechanisms can be enabled to enhance failover performance and maximize bandwidth utilization for critical applications delivery. In the event of a connectivity failure of the primary WAN interface, traffic will automatically redirect to the secondary WAN interface and seamless fallback when the primary interface connection is restored.

### Seamless Wi-Fi Coverage

The EG-210N integrates an 802.11n access point supporting data rates of up to 300Mbps. Security functionality includes: WEP 64/128 bit, WPA, WPA2 (PSK, TKIP and AES, 802.1X, SSID broadcast disable and wireless MAC address filtering and MSSID with Client Isolation to enhance the level of transmission security and access control over the Wireless LAN. The router also supports the Wi-Fi Protected Setup (WPS) standard, allowing users to establish a secure wireless network by simply pushing a button. If the network requires wider coverage, the built-in Wireless Distribution System (WDS) repeater function allows users to expand the wireless network without the need for any external wires or cables.

### 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.

### **24/7 Cloud Management and Network Visibility**

Remote monitoring, management and control of devices in real-time is essential for IoT networking devices, M2M and critical applications. The BECentral®, BEC's Cloud Based Remote Management, is a comprehensive device management platform designed to minimize deployment, lower support expenses and maximize the operational efficiency and profitability of the operator.



## Features & Specifications

- Ethernet IP and/or Wireless Client broadband connectivity
- Versatile Gigabit LAN & Ethernet WAN (GbE WAN) for Cable/Fiber/xDSL high WAN throughput
- 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
- Small form factor with multiple mounting options, easily installed by a single person

### Availability and Resilience

- Dual-WAN Interfaces
- Auto failover and failback
- High performance external antennas

### Network Protocols and Features

- IPv4, IPv6, IPv4 / IPv6 dual stack
- IP Tunnel IPv6 in IPv4 (6RD)
- IP Tunnel IPv4 in IPv6 (DS-Lite)
- NAT, static routing and RIP-1/2
- Universal Plug and Play (UPnP) compliant
- Dynamic Domain Name System (DDNS)
- Virtual server and DMZ
- SNTP, DNS relay
- IGMP proxy and IGMP snooping
- MLD proxy and MLD snooping
  - Supports port-based Virtual LAN (VLAN)

### 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

### Secured Wi-Fi Access Point

- Compliant with IEEE 802.11 b/g/n standards
- 2.4GHz frequency range up to 300Mbps data rate
- 64/128 bits WEP supported for encryption
- Wireless security with WPA-PSK, WPA2-PSK, Mixed WPA/WAP2-PSK, (TKIP/AES)
- Multiple SSID (4 SSIDs), BSSID with Client Isolation
- Wireless MAC Filtering
- Wi-Fi Hotspot with captive portal (Guest / Event Wi-Fi)
- Dynamic, Wi-Fi client rate-limiting

### Quality of Service Control

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

### 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
- TR-069 supports remote management
- BECentral® Cloud Management

# Hardware Specifications

## Physical interface

- Wi-Fi: Two (2) external RP-SMA antenna connectors
- Power On/Off Button
- Power Jack
- Reset Button
- Ethernet LAN: 2-port 10/100/1000Mbps, auto-crossover (MDI/ MDI-X) switch
  - 1 x Versatile Port (LAN2 / WAN)
- LED Indicators: Power / Ethernet 1-2 / Wi-Fi / Internet

## Physical Specifications

- Dimensions (W\*H\*D): 5.19" x 1.38" x 3.71" (132mm x 35mm x 94mm)

# CHAPTER 2: PRODUCT OVERVIEW

## Important Note for Using This Device



### Warning

- ✓ Do not use the router in high humidity or high temperature.
- ✓ Do not use the same power source for the EG-210N 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 adaptor may damage the router.




## Package Contents

- ✓ BEC EG-210, the Smart Gateway \* 1
- ✓ Quick Installation Guide \* 1
- ✓ RJ-45 Ethernet cable \* 1
- ✓ Wi-Fi Antenna \* 2
- ✓ DC Power Adapter, 12V 1.2A \* 1

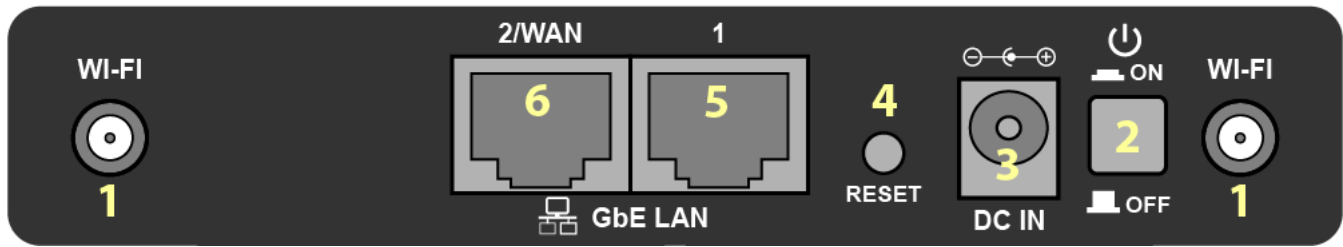
# Device Description

## Front Panel LEDs



LED	STATUS	DESCRIPTION
<b>Power</b> 	Green	System is up and ready
	Red	Boot failure
<b>Ethernet Port LAN 1 - 2</b>	Green	Transmission speed is at Gigabit speed (1000Mbps)
	Orange	Transmission speed is at 10/100Mbps
	Blinking	Data being transmitted/received
<b>Wireless</b> 	Green	Wireless connection established
	Green blinking	Data being transmitted / received
	Orange	WPS configuration is in progress
<b>Internet</b> 	Green	IP address has received; traffic is passing thru the device.
	Red	IP address request has failed.
	Off	EG-210N is either in bridged mode or WAN connection not ready.

## Rear Panel Connectors



INTERFACE		MEANING
1	Wi-Fi Antenna Connectors	Screw the supplied Wi-Fi antennas onto the antenna connectors on both sides
2	Power Button	Power ON/OFF switch
3	Power Jack (DC IN)	Plug in the supplied Power Adapter to this jack
4	RESET	After the device is powered on, press it <b>6 seconds or above</b> : to restore to factory default settings (this is used when you cannot login to the router, e.g. forgot your password)
5	Gigabit Ethernet (LAN 1)	Connected to a 10/100/1000Mbps Ethernet device
6	Gigabit Ethernet (LAN 2 / WAN)	<b>Ethernet LAN:</b> Connected to a 10/100/1000Mbps Ethernet device <b>Ethernet WAN:</b> 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 EG-210N 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 EG-210N Device

- 2.1 Power off your EG-210N
- 2.2 Power on the EG-210N 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 EG-210N Device

With INTERNET light flashes green, EG-210N 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, EG-210N 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 EG-210N.
- 3.4 INTERNET LED turns green after the Firmware upgrade completed
- 3.5 Power cycle on & off to regain access to the EG-210N.

## 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 Vista / 7 / 8, Linux, Mac OS, 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. Check your PC's network components first. 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 EG-210N. To configure other types of workstations, please consult the manufacturer's documentation.

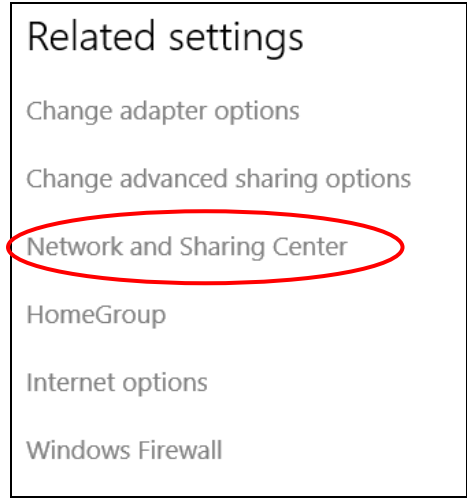
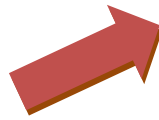


## Network Configuration – IPv4

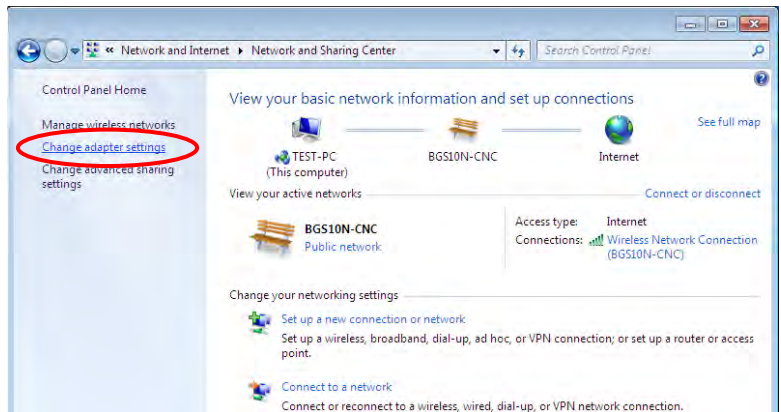
### Configuring PC in Windows 10 (IPv4)

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

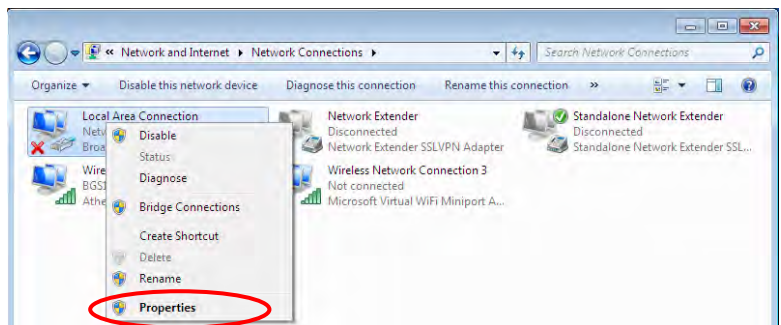

4. Under **Related settings**, select **Network and Sharing Center**



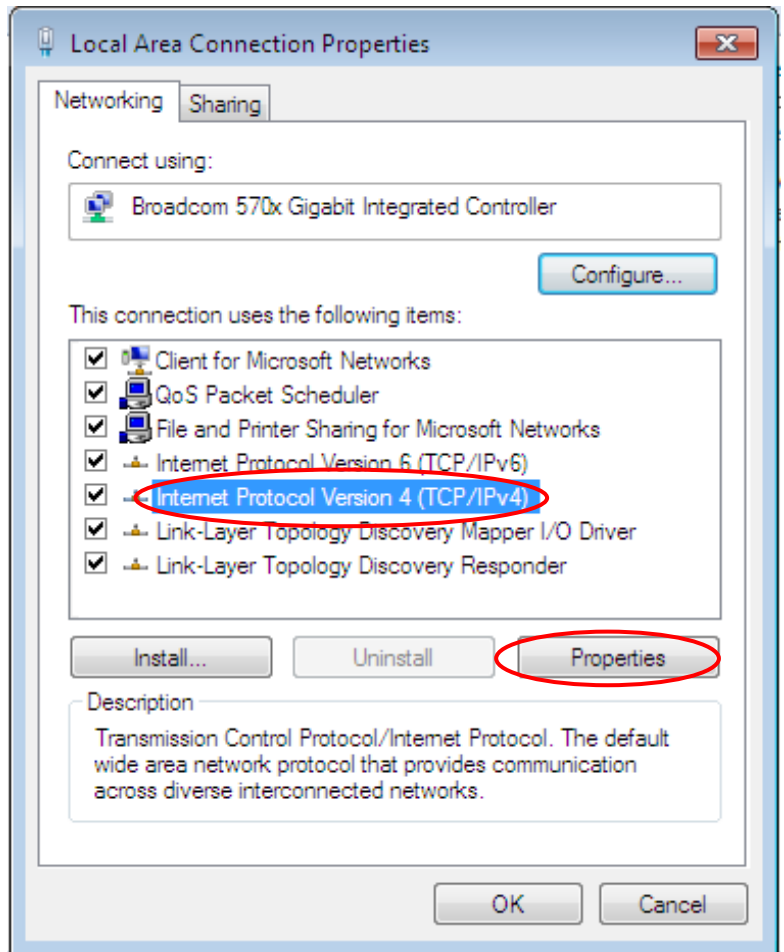
5. When the **Network and Sharing Center** window pops up, select and click on **Change adapter settings** on the left window panel.



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

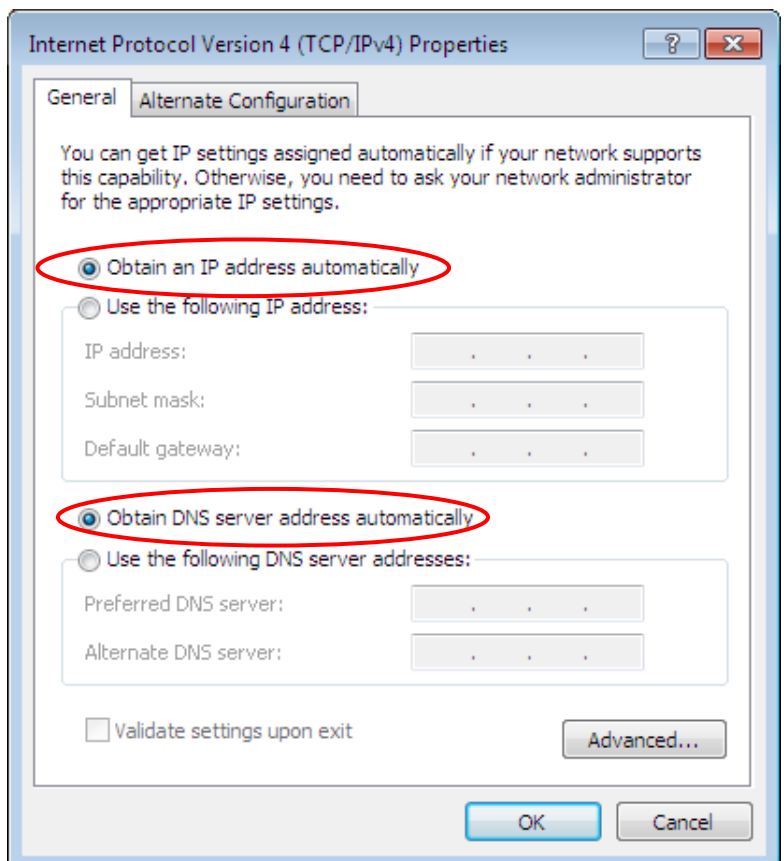


7. Select **Internet Protocol Version 4 (TCP/IPv4)** then click **Properties**.



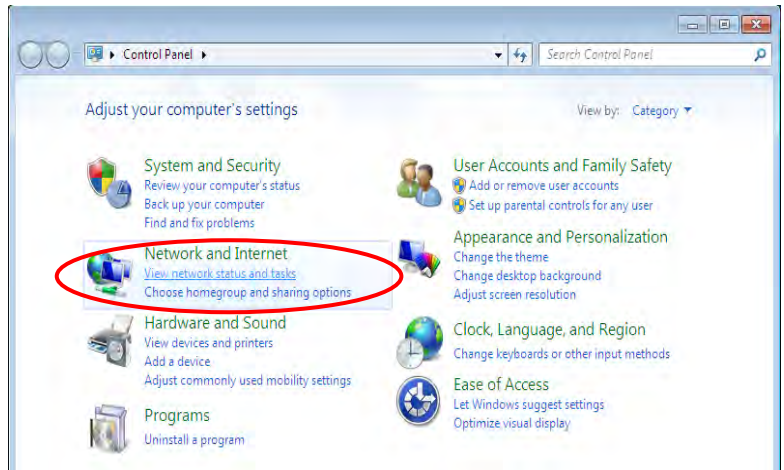
8. In the **TCP/IPv4 properties** window, select the **Obtain an IP address automatically** and **Obtain DNS Server address automatically** radio buttons. Then click **OK** to exit the setting.

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

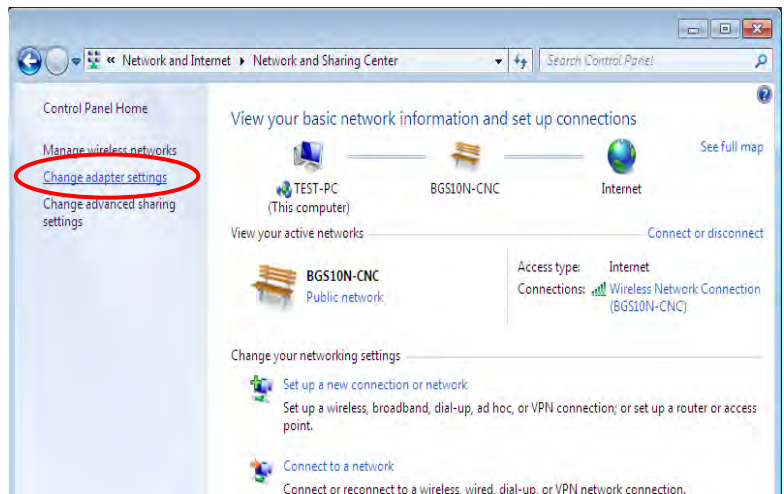


## Configuring PC in Windows 7/8 (IPv4)

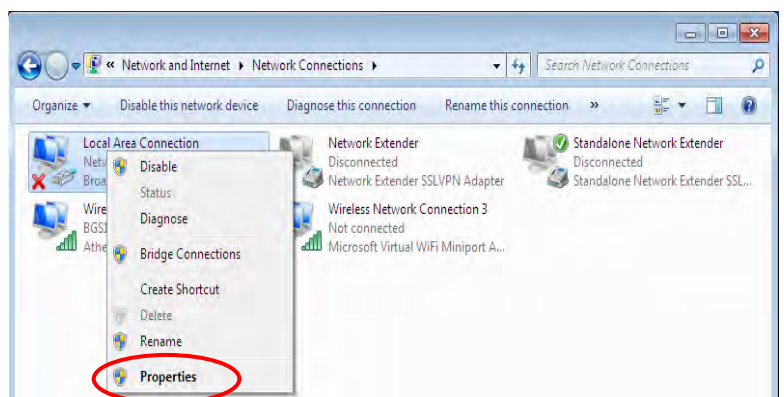
1. Go to **Start**. Click on **Control Panel**.
2. Then click on **Network and Internet**.



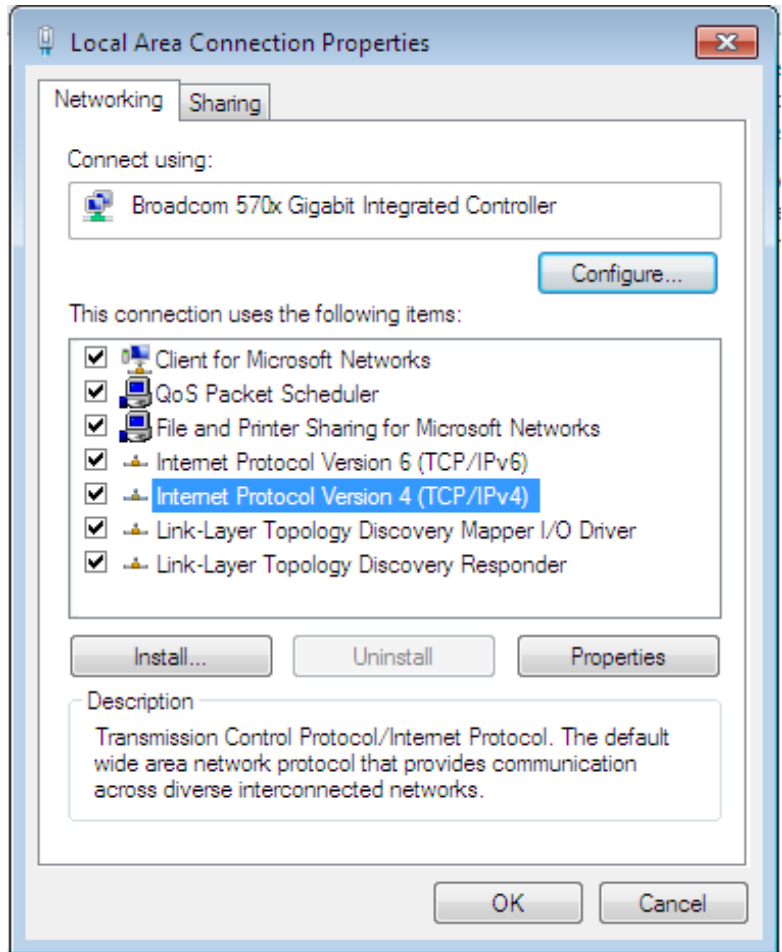
3. When the **Network and Sharing Center** window pops up, select and click on **Change adapter settings** on the left window panel.



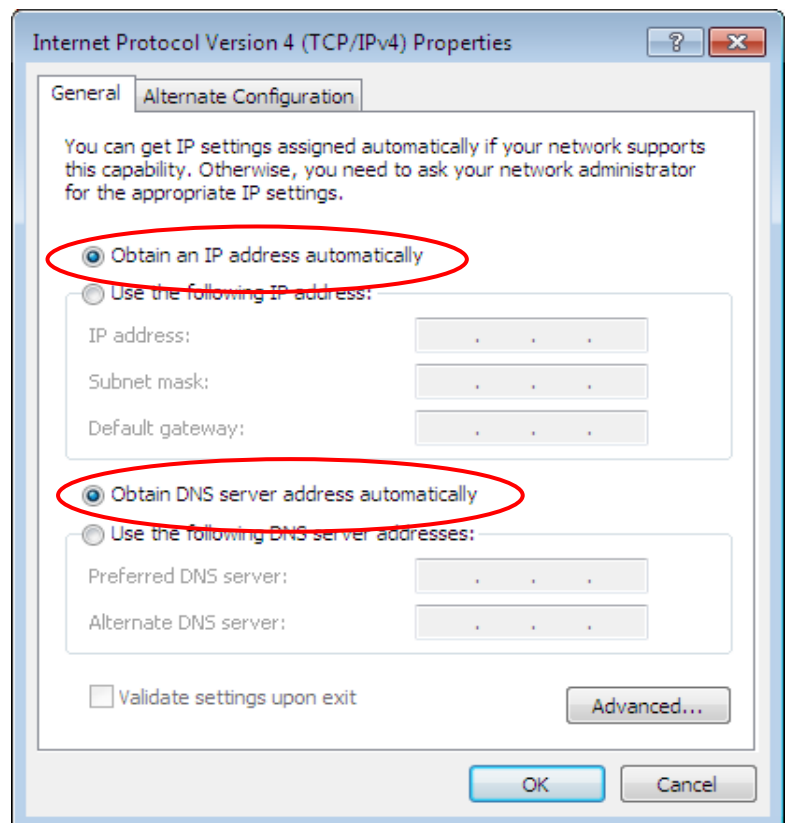
4. Select the **Local Area Connection**, and right click the icon to select **Properties**.



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

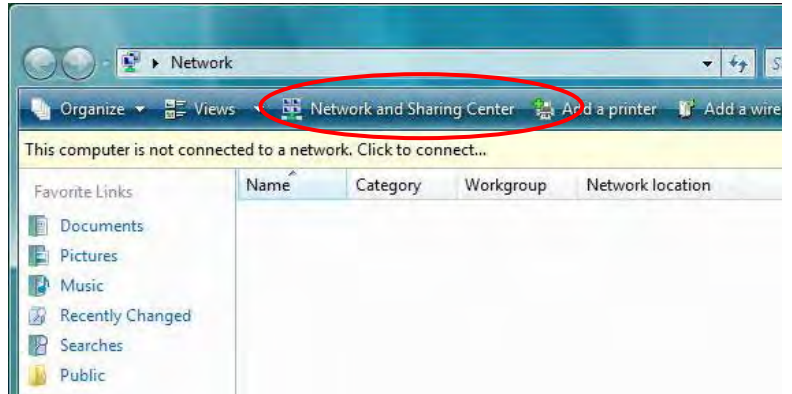


6. In the **TCP/IPv4 properties** window, select the **Obtain an IP address automatically** and **Obtain DNS Server address automatically** radio buttons. Then click **OK** to exit the setting.
7. Click **OK** again in the **Local Area Connection Properties** window to apply the new configuration.



## Configuring PC in Windows Vista (IPv4)

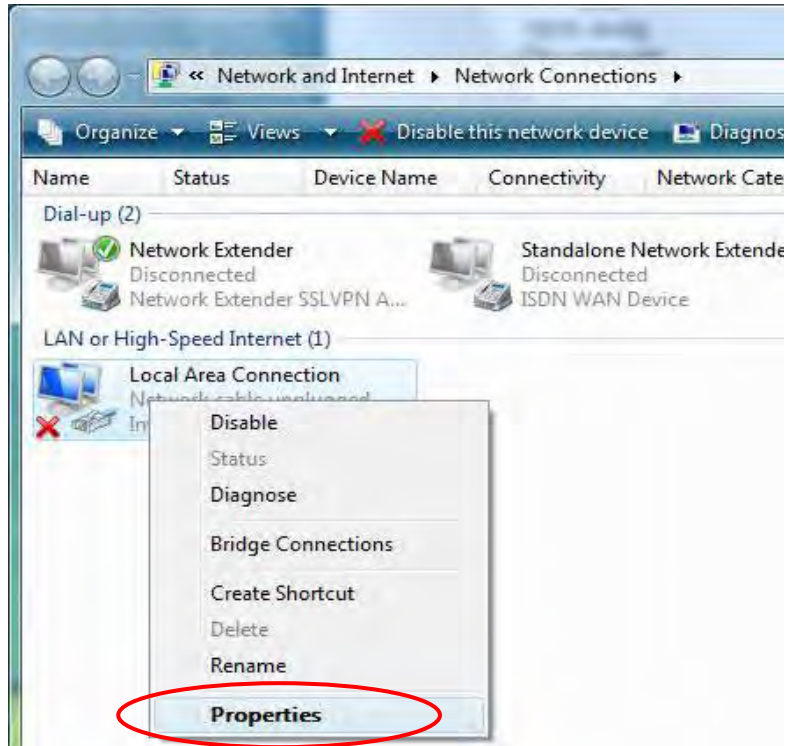
1. Go to **Start**. Click on **Network**.
2. Then click on **Network and Sharing Center** at the top bar.



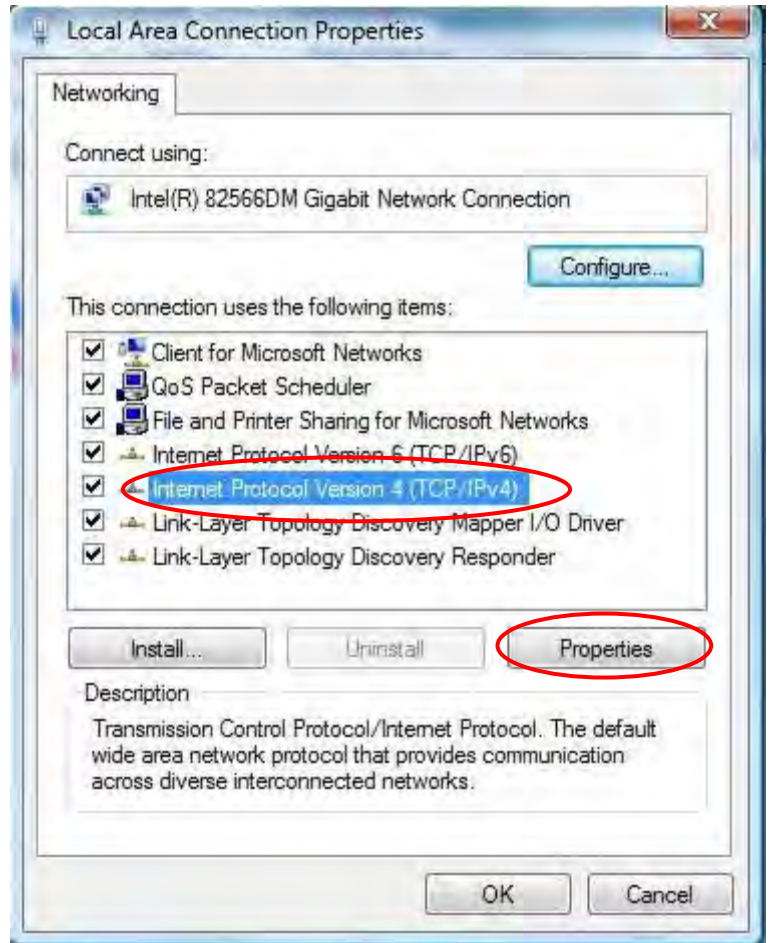
3. When the **Network and Sharing Center** window pops up, select and click on **Manage network connections** on the left windowpane.



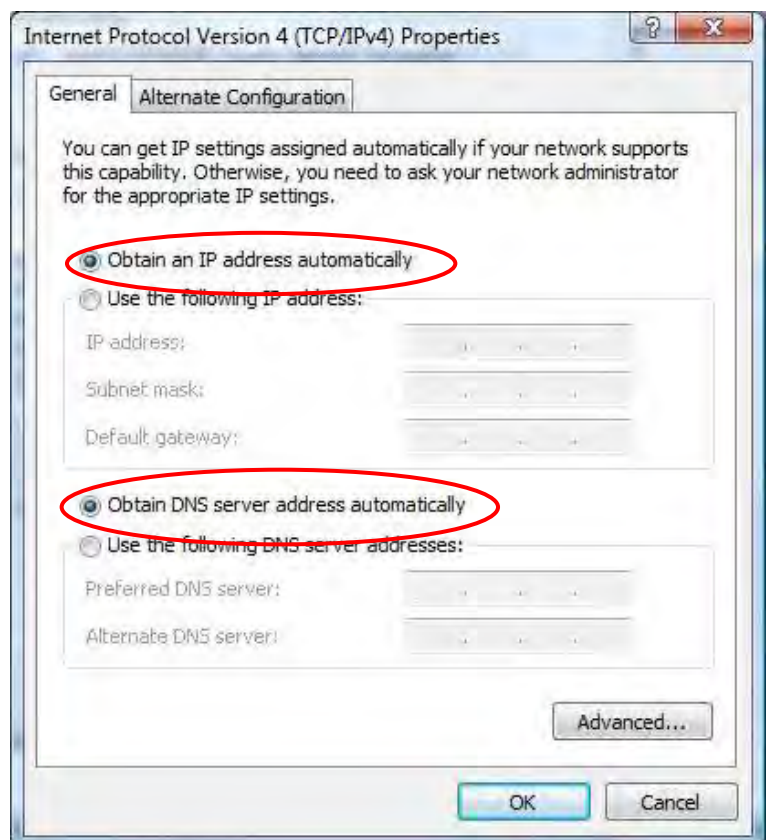
4. Select the **Local Area Connection**, and right click the icon to select **Properties**.



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






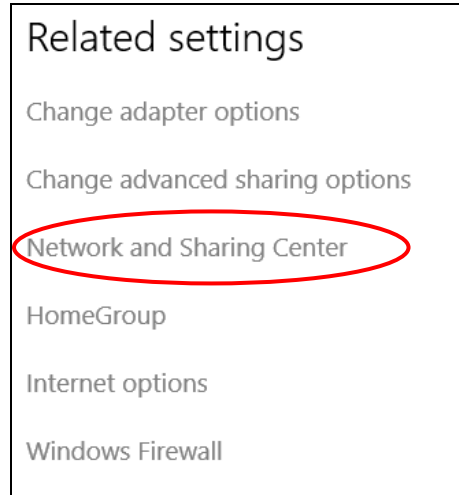
6. In the **TCP/IPv4 properties** window, select the **Obtain an IP address automatically** and **Obtain DNS Server address automatically** radio buttons. Then click **OK** to exit the setting.
7. Click **OK** again in the **Local Area Connection Properties** window to apply the new configuration.



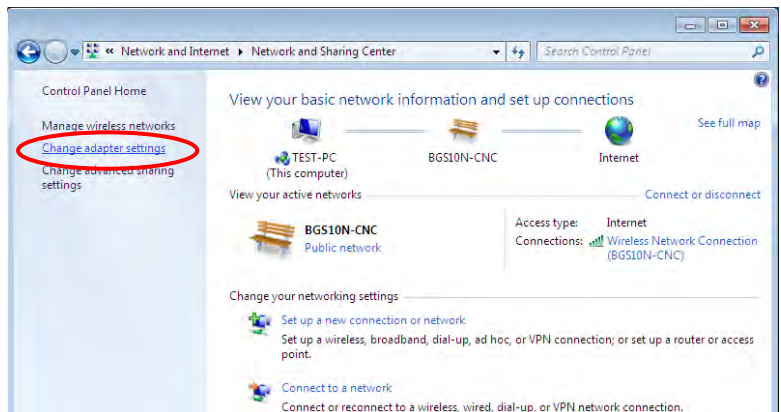
# Network Configuration – IPv6

## Configuring PC in Windows 10 (IPv6)

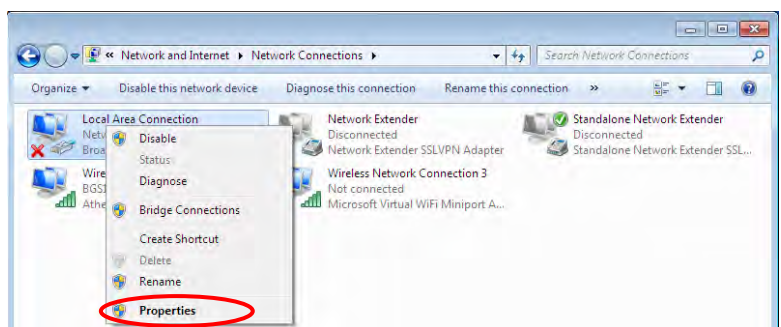
1. Click .
2. Click  Settings
3. Then click on **Network and Internet**.  

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



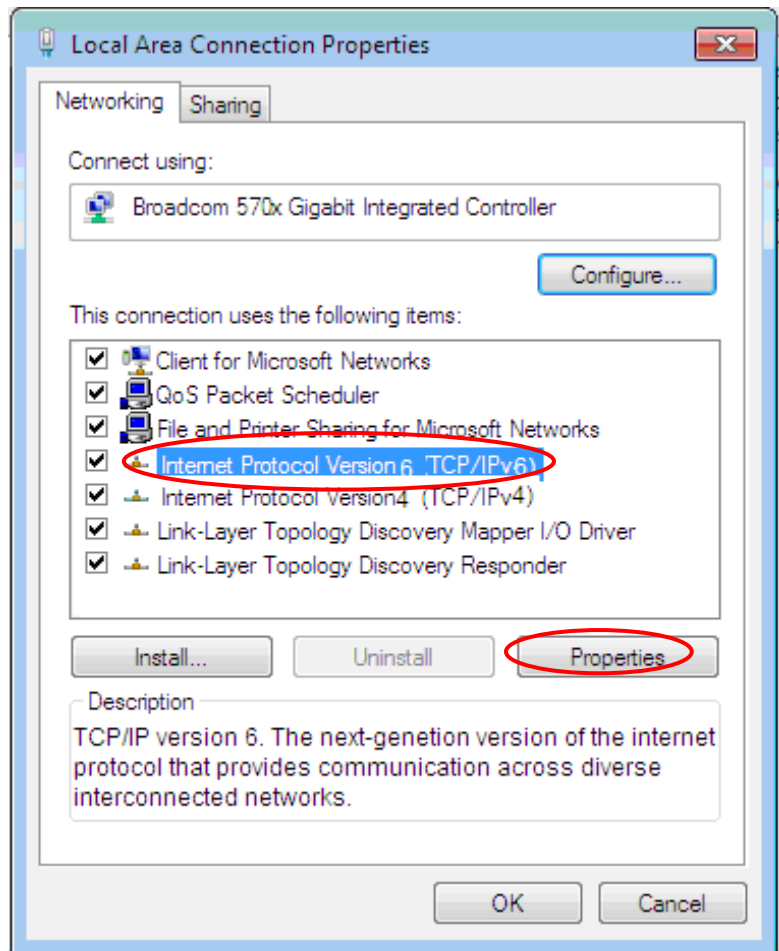
5. When the **Network and Sharing Center** window pops up, select and click on **Change adapter settings** on the left window panel.



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

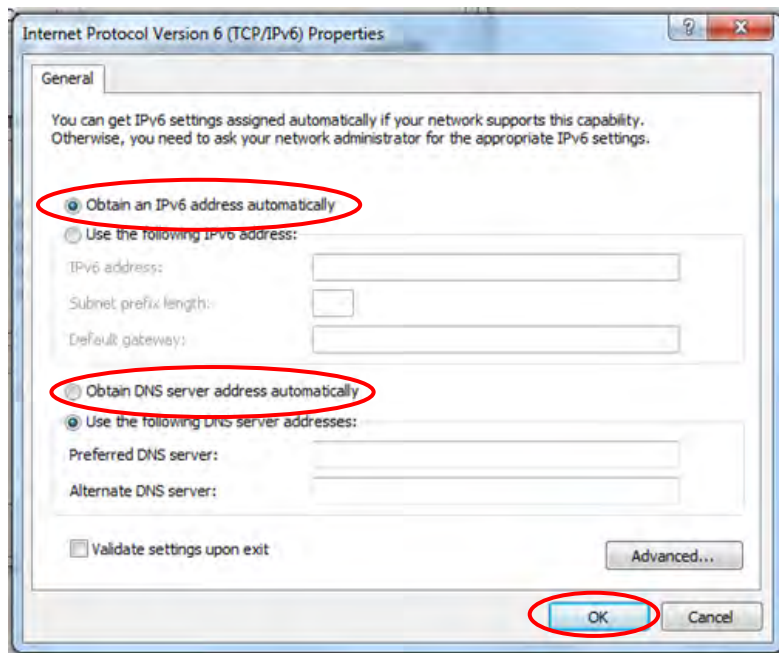


7. Select **Internet Protocol Version 6 (TCP/IPv6)** then click **Properties**.



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.

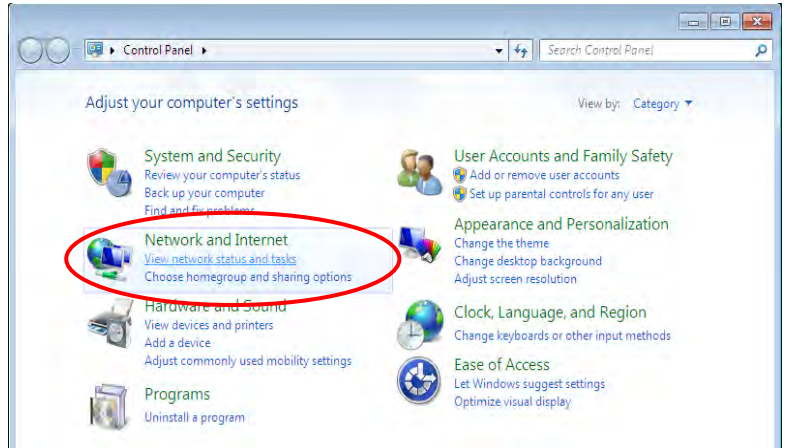
9. Click **OK** again in the **Local Area Connection Properties** window to apply the new configuration.



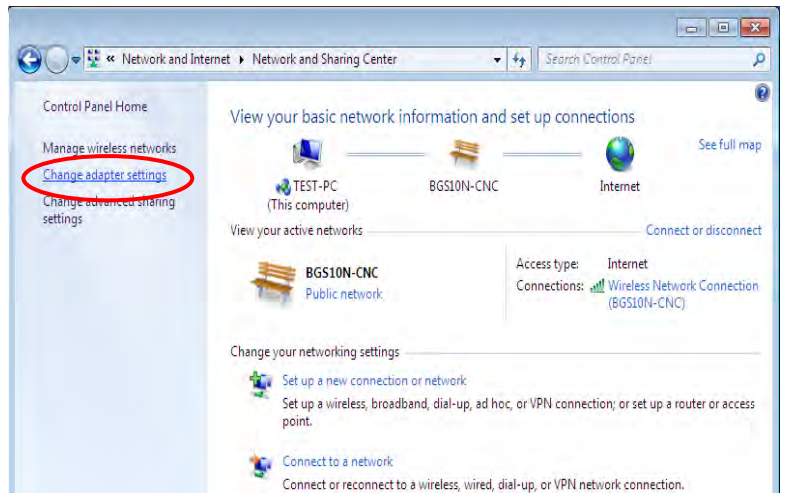


## Configuring PC in Windows 7/8 (IPv6)

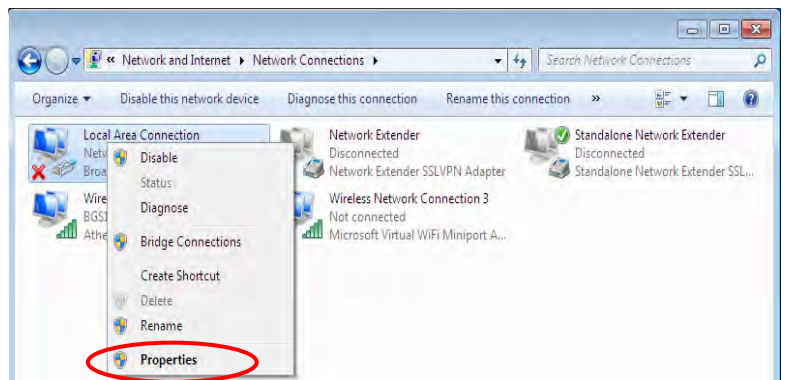
1. Go to **Start**. Click on **Control Panel**.
2. Then click on **Network and Internet**.



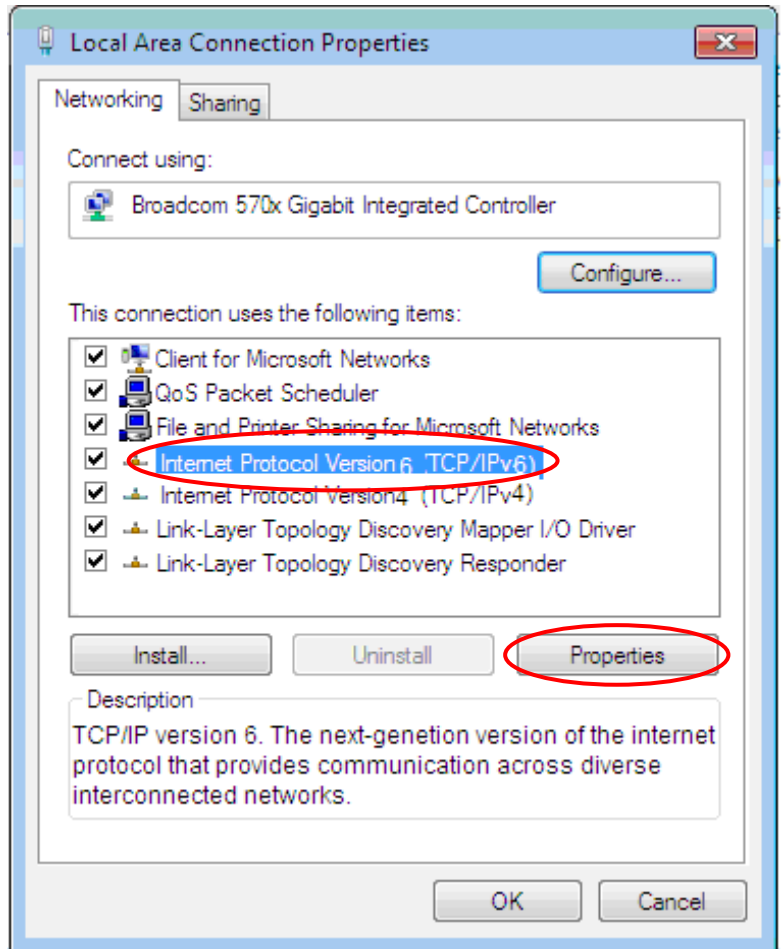
3. When the **Network and Sharing Center** window pops up, select and click on **Change adapter settings** on the left window panel.



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

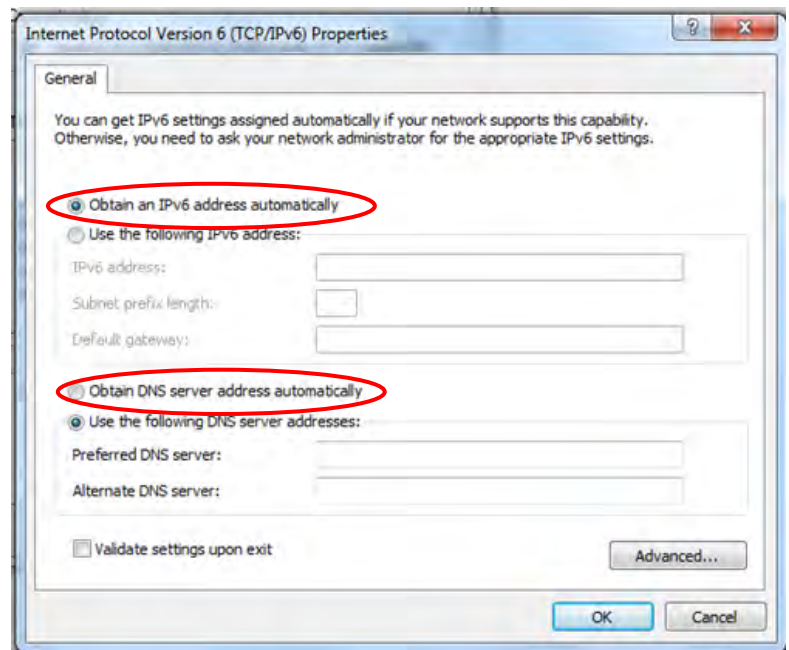


5. Select **Internet Protocol Version 6 (TCP/IPv6)** then click **Properties**.



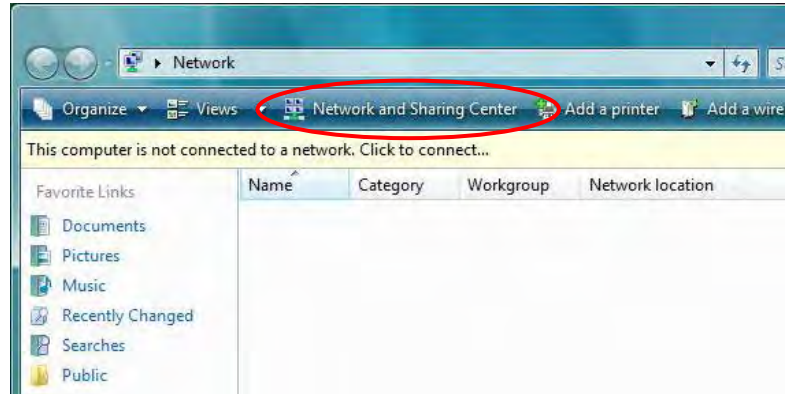
6. In the **TCP/IPv6 properties** window, select the **Obtain an IPv6 address automatically** and **Obtain DNS Server address automatically** radio buttons. Then click **OK** to exit the setting.

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



## Configuring PC in Windows Vista (IPv6)

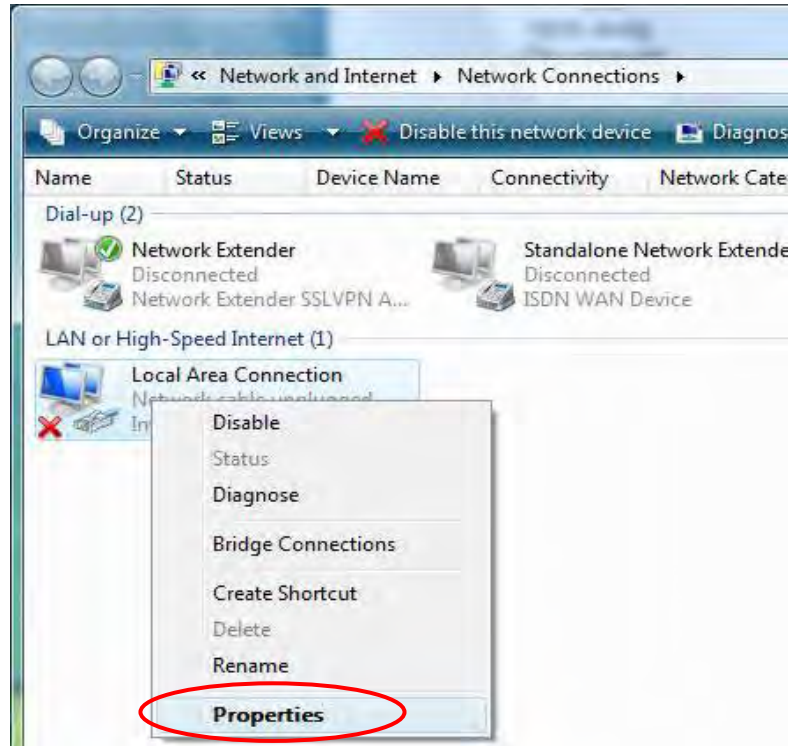
1. Go to **Start**. Click on **Network**.
2. Then click on **Network and Sharing Center** at the top bar.



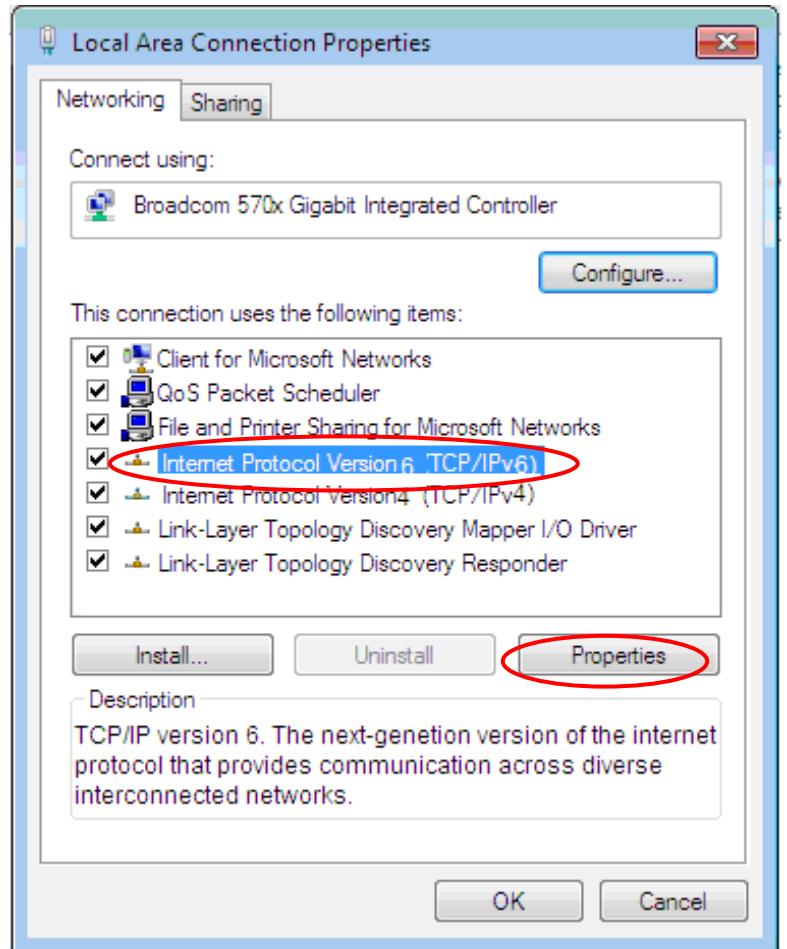
3. When the **Network and Sharing Center** window pops up, select and click on **Manage network connections** on the left windowpane.



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

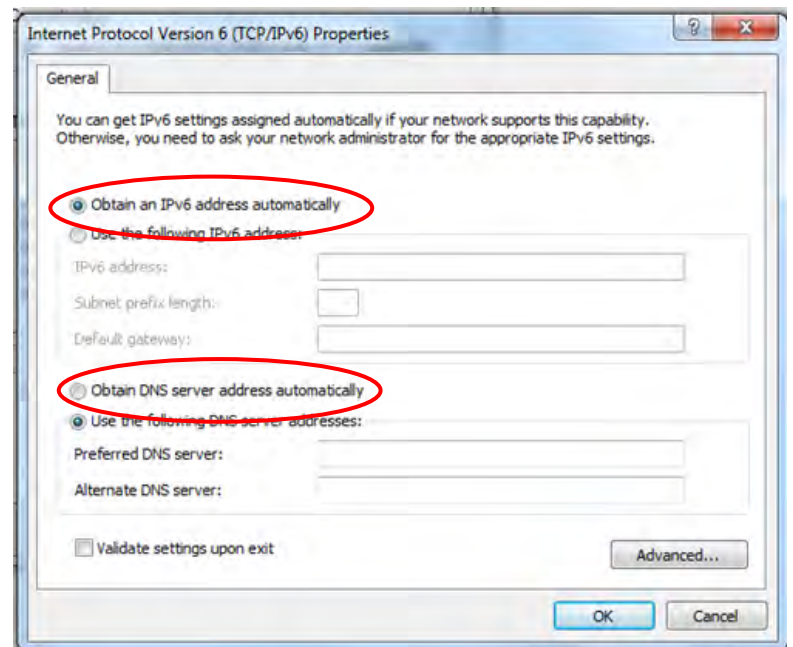


5. Select **Internet Protocol Version 6 (TCP/IPv6)** then click **Properties**.



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.



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

## Information from Your ISP

Before configuring this device, you have to check with your ISP (Internet Service Provider) what kind of service is offered, Dynamic IP address, Static IP address, PPPoE or Bridge Mode.

Gather the information as illustrated in the following table and keep it for reference.

<b>PPPoE</b>	Username, Password, Service Name, and Domain Name System (DNS) IP address (it can be automatically assigned by your ISP when you connect or be set manually).
<b>Dynamic IP Address</b>	DHCP Client (it can be automatically assigned by your ISP when you connect or be set manually).
<b>Static IP Address</b>	IP address, Subnet mask, Gateway address, and Domain Name System (DNS) IP address (it is fixed IP address).
<b>Bridge Mode</b>	Pure Bridge

# 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 username and password window prompt appears.

Default username is **admin** and password is **admin** or a unique 12-digit can be found on the **device label** for **Administrator** account.

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

Authentication required

http://192.168.1.254  
Your connection to this site is not private

Username

Password

**Congratulations! You have successfully logged on to your EG-210N**

Once you have logged on to your EG-210N 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
<b>Sub-Items</b>	Device Info		<b>Interface Setup</b> <ul style="list-style-type: none"> <li>- Internet</li> <li>- LAN</li> <li>- Wireless</li> <li>- Wireless MAC Filter</li> <li>- Loopback</li> </ul>
	System Status		
	System Log		<b>Dual WAN</b> <ul style="list-style-type: none"> <li>- General Setting</li> <li>- Outbound Load Balance</li> <li>- Protocol Binding</li> </ul>
	Wireless Status		<b>Hotspot</b> <ul style="list-style-type: none"> <li>- General Setting</li> <li>- Built-in User Account</li> <li>- Authorized of Client</li> <li>- Walled Garden</li> <li>- Advertisement</li> <li>- Hotspot Status Log</li> <li>- Customized</li> </ul>
	Hotspot Status		
	Statistics		<b>Advanced Setup</b> <ul style="list-style-type: none"> <li>- Firewall</li> <li>- Routing</li> <li>- Dynamic Routing</li> <li>- NAT</li> <li>- VRRP</li> <li>- Static DNS</li> <li>- QoS</li> <li>- Time Schedule</li> <li>- Mail Alert</li> </ul>
	DHCP Table		
	IPSec Status		<b>VPN</b> <ul style="list-style-type: none"> <li>- IPSec</li> <li>- PPTP Server &amp; Client</li> <li>- L2TP</li> <li>- GRE</li> <li>- OpenVPN Server &amp; Client</li> </ul>
	PPTP Status		
	L2TP Status		
	GRE Status		<b>Access Management</b> <ul style="list-style-type: none"> <li>- Device Management</li> <li>- SNMP</li> <li>- Syslog</li> <li>- Universal Plug &amp; Play</li> <li>- Dynamic DNS</li> <li>- Access Control</li> <li>- Packet Filter</li> <li>- CWMP (TR-069)</li> <li>- Parental Control</li> <li>- BECentral Management</li> </ul>
	OpenVPN Status		
	ARP Table		<b>Maintenance</b> <ul style="list-style-type: none"> <li>- User Management</li> <li>- Certificate Management</li> <li>- Time Zone</li> <li>- Firmware &amp; Configuration</li> <li>- System Restart</li> <li>- Auto Reboot</li> <li>- Diagnostic Tool</li> </ul>
	VRRP Status		

Please see the relevant sections of this manual for detailed instructions on how to configure your **EG-210N** device.



# Status

## Device Info

It provides brief status summary of the device.

Device Information		Physical Port Status	
Model Name	EG-210N	EWAN(LAN2)	✗
Firmware Version	1.04.1.346	WirelessClient	✗
MAC Address	00:04:ed:01:23:45	Ethernet	✓
Date-Time	Mon Apr 10 00:45:26 2017	Wireless	✓
System Up Time	46 mins		

WAN				
Interface	Protocol	Connection	IP Address	Default Gateway
EWAN(LAN2)	PPPoE	Not Connected	/	

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 **EG-210N** with your PC. Check on [Time Zone](#) section for more configuration information.

**System Uptime:** Display how long the **EG-210N** has been powered on.

### Physical Port Status

**Physical Port Status :** Display available connection interfaces, WAN (Ethernet WAN and Wireless WAN) and LAN (Ethernet and Wireless LAN) are supported in the EG-210N.

### 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 Status

Display device CPU and memory usage information

System Status	
<b>CPU</b>	
Usage	1%
<b>Memory</b>	
Total	60520 kB
Free	32196 kB
Cached	9948 kB
<input type="button" value="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).

Click **Refresh** button to update the status.

## System Log

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

System Log	
<pre>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 &lt;admin&gt; login</pre>	
<input type="button" value="Refresh"/> <input type="button" value="Backup"/>	

**Refresh:** Press this button to refresh the statistics.

**Backup:** Press to save the System log, log.cfg, to your computer / notebook.

## Wireless Status

Wireless Status						
MAC	SSID	RSSI	Connected Time	Host Name	IP Address	Expire Time
d4:6a:6a:64:e3:09	cchu	-69/-64	00:00:36	DESKTOP-PPUSER	192.168.1.100	0 days 23:59:23

Refresh

**MAC:** The MAC of the connected wireless device.

**SSID:** Display the total bytes transmitted till the latest second for the current connection for the current connection.

**RSSI:** Display the signal strength between the wireless client and the AP (Access Point)

**Connected Time:** Display the total amount of time the wireless client has connected with the wireless AP

**Host Name:** Display the hostname of the Wi-Fi client.

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

**Expire Time:** Display remaining time before connection expires or timeout.

Click **Refresh** button to update the status.

## Hotspot Status

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

Action	MAC Address	IP Address	Authenticated	User Name	Duration Time	Idle Time	Upload Bandwidth	Download Bandwidth	Download Data Usage	Upload Data Usage	Total Data Usage
Drop	98:01:A7:5B:4D:1C	10.0.0.3	Not	-	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Drop	38:89:2C:17:4E:FE	10.0.0.2	Authorized	-	22/3600	2/180	0%/0	0%/0	0/0	0/0	0/0

Refresh

**Action:** Click **Drop** to discount the user connection to the Wi-Fi network.

**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.

**Username:** 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 %.

**Total Data Usage:** Display total data usage of the Wi-Fi user.

## Statistics

### ❖ Ethernet WAN (LAN2)

Statistics			
Traffic Statistics			
Interface	<input checked="" type="radio"/> EWAN(LAN2) <input type="radio"/> Ethernet <input type="radio"/> Wireless		
Transmit Statistics		Receive Statistics	
Transmit Frames	5	Receive Frames	162
Transmit Multicast Frames	4	Receive Multicast Frame	156
Transmit Total Bytes	704	Receive Total Bytes	41144
Transmit Collision	0	Receive CRC Errors	0
Transmit Error Frames	0	Receive Under-size Frames	0
Traffic Speed			
Transmit Speed	0.00KBps	Receive Speed	0.00KBps
Refresh		Auto Refresh <span>None ▼</span>	

#### Traffic Statistics

**Interface:** List all available network interfaces in the router. You are currently checking on the physical status of the **ETH WAN (Ethernet #2)** 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.

#### Traffic Speed

**Transmit Speed:** Display the data rate can be transferred to the server, the Broadband Internet Service Provider.

**Receive Speed:** Display the data rate receives from the Broadband Internet Service Provider.

**Refresh:** Click to manually refresh the data.

**Auto Refresh:** Select a time interval to refresh the data automatically or none to disable the feature.

❖ Ethernet

Statistics			
Traffic Statistics			
Interface	<input type="radio"/> EWAN(LAN2) <input checked="" type="radio"/> Ethernet <input type="radio"/> Wireless		
Transmit Statistics		Receive Statistics	
Transmit Frames	1968	Receive Frames	969
Transmit Multicast Frames	1373	Receive Multicast Frame	443
Transmit Total Bytes	396958	Receive Total Bytes	182122
Transmit Collision	0	Receive CRC Errors	0
Transmit Error Frames	0	Receive Under-size Frames	0
Traffic Speed			
Transmit Speed	0.49KBps	Receive Speed	0.17KBps
Refresh		Auto Refresh <input type="text" value="None"/>	

**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.

**Traffic Speed**

**Transmit Speed:** Display the data rate can be transferred to the server, the LAN network.

**Receive Speed:** Display the data rate receives from the LAN network.

**Refresh:** Click to manually refresh the data.

**Auto Refresh:** Select a time interval to refresh the data automatically or none to disable the feature.

❖ Wireless

Statistics			
Traffic Statistics			
Interface	<input type="radio"/> EWAN(LAN2) <input type="radio"/> Ethernet <input checked="" type="radio"/> Wireless		
Transmit Statistics		Receive Statistics	
Transmit Frames	0	Receive Frames	303
Transmit Error Frames	0	Receive Error Frames	3063
Transmit Drop Frames	0	Receive Drop Frames	3063
Traffic Speed			
Transmit Speed	0.00KBps	Receive Speed	0.00KBps
Refresh		Auto Refresh	None ▼

**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.

**Traffic Speed**

**Transmit Speed:** Display the data rate can be transferred to the server, the Wireless AP.

**Receive Speed:** Display the data rate receives from the Wireless AP.

**Refresh:** Click to manually refresh the data.

**Auto Refresh:** Select a time interval to refresh the data automatically or none to disable the feature.

## DHCP Table

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

▼ DHCP Table				
Index	Host Name	IP	MAC Address	Expire Time
1	DESKTOP-PPUSERT	192.168.1.100	08:00:0A:28:1E:09	0days 22:29:22

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

**Host Name:** Display 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.

## IPSec Status

▼ IPSec Status								
Index	Action	Connection Name	Active	Connection State	Statistics	Remote Gateway	Remote Network	Local Network
0	Connect Drop	H-to-B	Yes	Phase1 Established Phase2 Established	191408/43308	69.121.1.30	192.168.0.0/24	192.168.1.0/24
Refresh								

**Index #:** The numeric IPSec VPN tunnel/ rule.

**Action:** Display Connect or Drop the connection.

**Connection Name:** The profile name of the VPN connection/tunnel.

**Active:** Display Yes or No to indicate the profile is enabled or disabled.

**Connection State:** Display statuses of IPSec phase 1 and phase 2 connections.

**Statistics:** Display upstream/downstream traffic per session in KB. The value clears when session disconnects.

**Remote Gateway:** Display remote gateway IP address.

**Remote Network:** Display remote local IP address and Netmask.

**Local Network:** Display local IP address and Netmask.

**Refresh:** Click to refresh the page.



## PPTP Status

### ❖ PPTP Server

▼ PPTP Status						
PPTP Server						
Index	Connection Name	Active	Connection State	Connection Type	Assigned IP Address	Remote Network
1	HS-LL	Yes	Yes	Lan to Lan	192.168.1.2	192.168.0.0 / 255.255.255.0
PPTP Client						
Index	Connection Name	Active	Connection State	Connection Type	Server IP Address	Remote Network
<input type="button" value="Refresh"/>						

**Index #:** The numeric PPTP VPN tunnel/ rule.

**Connection Name:** The profile name of the VPN connection/tunnel.

**Active:** Display Yes or No to indicate the profile is enabled or disabled.

**Connection State:** Display the VPN connection status.

**Connection Type:** Display if VPN connection is for single PC use (Remote Access) or multi-user use (LAN to LAN).

**Assigned IP Address:** Display the IP address assigned to the client by the PPTP Server.

**Remote Network:** Display the remote network and subnet mask in LAN to LAN PPTP connection.

**Refresh:** Click to refresh the page.

### ❖ PPTP Client

▼ PPTP Status						
PPTP Server						
Index	Connection Name	Active	Connection State	Connection Type	Assigned IP Address	Remote Network
PPTP Client						
Index	Connection Name	Active	Connection State	Connection Type	Server IP Address	Remote Network
1	BC-LL	Yes	Yes	Lan to Lan	69.121.1.33	192.168.1.0 / 255.255.255.0
<input type="button" value="Refresh"/>						

**Index #:** The numeric PPTP VPN tunnel/ rule.

**Connection Name:** The profile name of the VPN connection/tunnel.

**Active:** Display Yes or No to indicate the profile is enabled or disabled.

**Connection State:** Display Yes/No to indicate the VPN connection status.

**Connection Type:** Display if VPN connection is for single PC use (Remote Access) or multi-user use (LAN to LAN).

**Server IP Address:** Display the WAN IP address of remote PPTP Server.

**Remote Network:** Display the remote network address and subnet mask in LAN to LAN PPTP connection.

**Refresh:** Click to refresh the page.

## L2TP Status

L2TP Status						
Index	Connection Name	Active	Connection State	Connection Mode	Connection Type	Tunnel Remote IP Address
1	H8-LL	Yes	Connected	Dial in	Lan to Lan	192.168.1.200

Refresh

**Index #:** The numeric L2TP VPN tunnel/rule indicator.

**Connection Name:** The profile name of the VPN connection/tunnel.

**Active:** Display Yes or No to indicate the profile is enabled or disabled.

**Connection State:** Display Yes/No to indicate the VPN connection status.

**Connection Mode:** Display if L2TP mode is a dial-in or dial-out.

**Connection Type:** Display if VPN connection is for single PC use (Remote Access) or multi-user use (LAN to LAN).

**Tunnel Remote IP Address:** Display the remote tunnel IP address.

**Refresh:** Click to refresh the page.

## GRE Status

GRE Status					
Index	Connection Name	Active	Connection State	Remote Gateway IP	Remote Network
1	GRE-0	Yes	Connected	69.121.1.30	192.168.0.0/255.255.255.0

**Index #:** The numerical GRE tunnel/rule indication.

**Connection Name:** The profile name of the VPN connection/tunnel.

**Active:** Display Yes or No to indicate the profile is enabled or disabled.

**Connection State:** Display Yes/No to indicate the VPN connection status.

**Remote Gateway IP:** Display the remote gateway IP address.

**Remote Network:** Display the remote local network IP address / Netmask.

## OpenVPN Status

### ❖ OpenVPN Server

OpenVPN Status					
OpenVPN Server					
Index	Connection Name	Active	Service Port	Tunnel Network	Status
1	OpenVPN1	Yes	1194 /udp	192.168.100.0 /255.255.255.0	Ready
OpenVPN Client					
Index	Connection Name	Active	Remote Server	Status	Detail Info
Refresh					

**Index #:** The numeric OpenVPN tunnel/ rule.

**Connection Name:** The profile name of the VPN connection/tunnel.

**Active:** Display Yes or No to indicate the profile is enabled or disabled.

**Service Port:** Display the port/protocol (1194/udp) used for OpenVPN connection.

**Tunnel Network:** Display the virtual tunnel IP address and Netmask of the OpenVPN server.

**Status:** Display the status of the profile/rule

**Refresh:** Click to refresh the page.

### ❖ OpenVPN Client

OpenVPN Status					
OpenVPN Server					
Index	Connection Name	Active	Service Port	Tunnel Network	Status
OpenVPN Client					
Index	Connection Name	Active	Remote Server	Status	Detail Info
1	OpenVPN1	Yes	69.121.10.5:1194 /udp	Connected	Assigned IP: 192.168.100.2 Route: 192.168.100.0/255.255.255.0 192.168.5.0/255.255.255.0
Refresh					

**Index #:** The numeric OpenVPN tunnel/ rule.

**Connection Name:** The profile name of the VPN connection/tunnel.

**Active:** Display Yes or No to indicate the profile is enabled or disabled.

**Remote Server:** Display the remote server public IP address and used port/protocol for this connection.

**Status:** Display the status of the profile/rule

**Detailed Info:** Display detailed IP assignment and routing information of this VPN connection.

**Refresh:** Click to refresh the page.

## ARP Table

ARP (Address Resolution Protocol) table displays a mapping IP address with a PC's MAC address.

▼ ARP Table		
#	IP	MAC Address
1	192.168.1.11	f0:de:f1:31:68:77

**#:** The numeric table list indicator.

**IP Address:** It is the internal/local IP address to access to the network.

**MAC Address:** The MAC address of a device, e.g. PC, notebook, printer, etc., that is corresponded with the IP address.

## 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, 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.

Run Wizard

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

▼ Quick Start

Step 1. The Wizard will guide you through these five quick steps. Begin by clicking on NEXT.

Step 2. Set your new password .

Step 3. Choose your time zone.

Step 4. Set your wireless connection.

Step 5. Set your internet connection.

Step 6. Confirm the configuration and save it.

Next

Click **NEXT** to move on to Step 2.

### Step 2 – 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

Back Next

### Step 3 – 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

Back Next

### Step 4 – 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	<input type="text" value="cchu"/>	
Broadcast SSID	<input checked="" type="radio"/> Yes <input type="radio"/> No	
Channel	<input type="text" value="UNITED STATES"/>	<input type="text" value="06"/>
Security Type	<input type="text" value="Mixed WPA2/WPA-PSK"/>	
WPA Algorithms	<input type="text" value="TKIP+AES"/>	
Pre-Shared Key	<input type="text" value="1234567890"/>	(8~63 characters or 64 Hex string)
Key Renewal Interval	<input type="text" value="600"/>	seconds (10 ~ 4194303)

### Step 5 – ISP Connection Type

Set up your Internet connection.

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

If selected **EWAN (LAN2) / Static IP** or **PPPoE**, enter the static IP address or PPPoE account information provided by your ISP.

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	<input type="text" value="EWAN(LAN2)"/>
ISP	<input type="radio"/> Dynamic IP Address ( Select the WAN Interface and Internet Connection Type to connect to your ISP. Click <b>NEXT</b> to continue. ) <input type="radio"/> Static IP Address ( Choose this option to set static IP information provided to you by your ISP.) <input checked="" type="radio"/> PPPoE ( Choose this option if your ISP uses PPPoE..)

### Step 6 – 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.



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

## Device Configuration

### Interface Setup

Here are the features in **Interface Setup**: [Internet](#), [LAN](#), [Wireless](#), [Wireless MAC Filter](#) and [Loopback](#)

#### Internet

##### ❖ EWAN (LAN 2)

The screenshot shows the 'Internet' configuration page. The 'WAN Interface' is set to 'EWAN(LAN2)'. The 'Status' is 'Activated'. Under 'IPv4/IPv6', 'IP Version' is set to 'IPv4'. Under 'ISP Connection Type', 'ISP' is set to 'Dynamic IP Address'. The 'Dynamic IP Address' section is expanded. Under 'IP Common Options', 'Default Route' is set to 'No'. The 'TCP MTU Option' is set to '0 bytes(0:default)'.

**Status:** Select to enable/activate or disable/deactivated the service.

##### IPv4/IPv6

**IP Version:** Choose **IPv4**, **IPv4/IPv6**, **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.

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

**Username:** Enter the username 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 (If selected PPPoE)

#### 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 Common Options

<b>IP Common Options</b>	
Default Route	<input type="radio"/> Yes <input checked="" type="radio"/> No
TCP MTU Option	TCP MTU <input type="text" value="0"/> bytes(0:default)
<b>IPv4 Options</b>	
NAT	Enable ▼
Client ID	<input type="text"/>
Vendor ID	<input type="text"/>
Dynamic Route	RIP1 ▼ Direction None ▼
IGMP Proxy	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
<b>IPv6 Options</b>	
IPv6 Message Fetch Type	Dynamic Mode
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"/>	

### 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 (Dynamic IP Address)

**NAT:** Enable to allow EG-210N to assign private network IPs to all devices in the network for get Internet access.

**Client ID:** It is known as DHCP Option 61. Enter the client identifier from your ISP.

**Vendor ID:** It is known as DHCP Option 60. Enter the vendor identifier from your ISP.

### 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.

### IPv4 Options (Static IP Address)

**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.

**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.

**NAT:** Enable to allow EG-210N 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.

### IPv4 Options (PPPoE)

**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 EG-210N 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 settings.

❖ **Wireless WAN (Wireless Client)**

The screenshot shows the configuration interface for the Wireless WAN (Wireless Client). It is organized into several sections:

- WAN Interface:** A dropdown menu set to 'WirelessClient'.
- Status:** Radio buttons for 'Activated' (selected) and 'Deactivated'.
- ISP Connection Type:** A section header.
- ISP:** Radio buttons for 'Dynamic IP Address' (selected) and 'Static IP Address'.
- Dynamic IP Address:** A section header.
- IP Common Options:** A section header.
- Default Route:** Radio buttons for 'Yes' (selected) and 'No'.
- IPv4 Options:** A section header.
- NAT:** A dropdown menu set to 'Enable'.
- Wireless Options:** A section header.
- SSID:** An empty text input field.
- Channel:** A dropdown menu set to 'Auto'.
- Security Type:** A dropdown menu set to 'OPEN'.

At the bottom of the form, there are two buttons: 'Save' and 'Scan'.

**Status:** Select to enable/activate or disable/deactivated the service.

**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.

**IP Common Options**

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

**IPv4 Options (Dynamic IP Address)**

**NAT:** Enable to allow EG-210N to assign private network IPs to all devices in the network for get Internet access.

**IPv4 Options (Static IP Address)**

**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.

**Primary/Secondary DNS:** Manually enter the primary and secondary DNS.

**NAT:** Enable to allow EG-210N to assign private network IPs to all devices in the network for get Internet access.

### **Wireless Options**

**SSID:** Enter the unique ID name of a Wireless AP with Internet accessibility.

**Channel:** Enter the wireless channel used in the Wireless AP.

**Security Type:** Enter the wireless security mode and password from the Wireless AP.

There are five alternatives to select from: Open (no security protected), WEP 64-bit, WEP 128-bit, WPA-PSK and WPA2-PSK. If you require high security for transmissions, please select WPA-PSK, WPA2-PSK.

▶ **Security Type – Open System**

No security protected.

▶ **Security Type – WEP (64-bit or 128-bit)**

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"/>

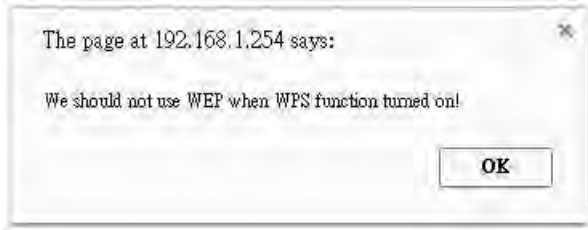
**WEP Authentication Method:** WEP authentication method, there are two methods of authentication used, Open System authentication (OPENWEB) and Share Key authentication (SHAREDWEB). We suggest you select OPENWEB.

**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 you chose **WEP 64-bit**, then enter any 5 ASCII characters or 10 hexadecimal characters ("0-9", "A-F").

If you 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: When you enable WPS function, this WEP function will be invalid. And if you select one of WEP-64Bits/ WEP-128Bits, the following prompt box will appear to notice you.**

▶ **Security Type - WPA-PSK / WPA2-PSK**

Security Type	WPA2-PSK ▼
Pre-Shared Key	<input type="password" value="....."/> (8~63 characters or 64 Hex string) <input type="checkbox"/> Show Character

**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 ASCII characters or 64 hexadecimal characters

**Site Survey**

**Site Survey:** Click and pick an available Wireless-AP device near the EG-210N.

Site Survey					
	CH	SSID	BSSID	Security	Signal(%)
▶	1	NETGEAR11_EXT	b0:39:56:ba:2c:21	WPA2PSK	-74

- ▶ **CH (Channel):** Channel ID used.
- ▶ **SSID:** The name of the wireless AP.
- ▶ **BSSID:** The MAC address of the wireless AP.
- ▶ **Security:** The security mode in the wireless AP.
- ▶ **Signal (%):** Signal strength of the wireless AP. Signal increases means the wireless AP is closer to your BEC device and may cause interferences.

Click **Save** to apply 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

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)

DNS Relay:  Automatically  Manually

Primary DNS:

Secondary DNS:

Option 66:

Option 160:

**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 the IGMP snooping, multicast traffic is treated in the same manner as broadcast traffic to be 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:** Select the RIP version from RIP1 or RIP2.

## 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="100"/>
Lease Time	<input type="text" value="86400"/> seconds (0 sets to default value of 259200)
DNS Relay	<input checked="" type="radio"/> Automatically <input type="radio"/> Manually
Primary DNS	<input type="text"/>
Secondary DNS	<input type="text"/>
Option 66	<input type="text"/>
Option 160	<input type="text"/>

**DHCPv4 Server:** If set to **Enabled**, your EG-210N 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 EG-210N 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.

### 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 Address	MAC Address	Delete
1	192.168.1.110	00:04:ED:01:01:10	

### IPv6 Parameters

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

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.

### 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 (seconds):** 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.

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

### Access Point Settings

Wireless Site Survey

**Access Point Settings**

Access Point  Activated  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  Yes  No

**Site Survey:** Click to view all other available Wireless-AP devices around the EG-210N.

CH	SSID	BSSID	Security	Signal (%)
1	Meriton Guest WiFi	1c:b9:c4:94:97:b8	NONE	42
11	Meriton Guest WiFi	1c:b9:c4:93:b5:28	NONE	0

Refresh Back

- ▶ **CH (Channel):** Channel ID used.
- ▶ **SSID:** The name of the wireless AP.
- ▶ **BSSID:** The MAC address of the wireless AP.
- ▶ **Security:** The security mode in the wireless AP.
- ▶ **Signal (%):** Signal strength of the wireless AP. Signal increases means the wireless AP is closer to your EG-210N and may cause interferences.

**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

11n Settings	
Channel Bandwidth	20/40 MHz ▼
Extension Channel	Auto ▼
Guard Interval	Auto ▼
MCS	Auto ▼

**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 (20/40 MHz only):** Select either **Auto** or **Above the control channel**.

**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

SSID Settings	
Available SSID	4 ▼
SSID Index	<input checked="" type="radio"/> SSID1 <input type="radio"/> SSID2 <input type="radio"/> SSID3 <input type="radio"/> SSID4
SSID	cchu
Broadcast SSID	<input checked="" type="radio"/> Yes <input type="radio"/> No
Clients Isolation	<input type="radio"/> Yes <input checked="" type="radio"/> No

**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 SSID** known as **wlan-ap1** Interface
- ▶ **SSID2** known as **wlan-ap2**Interface
- ▶ **SSID3** known as **wlan-ap3** Interface
- ▶ **SSID4** known as **wlan-ap4** 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 SSID 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 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.

**Client Isolation:** Enable by clicking **Yes** to prevent wireless clients communicating with other wireless clients.

### WPS Settings

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

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).

**Use WPS:** Enable this feature by choosing the "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 multiple security mode to select from: Open (no security), 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	842CFFDE
<input type="radio"/> Key #2	
<input type="radio"/> Key #3	
<input type="radio"/> Key #4	

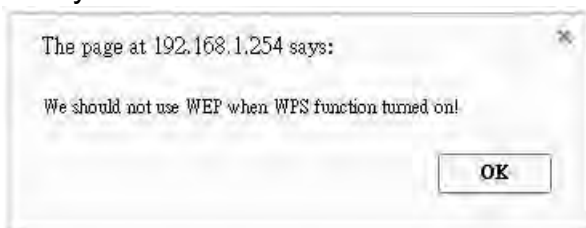
**WEP Authentication Method:** WEP authentication method, there are two methods of authentication used, Open System authentication (OPENWEB) and Share Key authentication (SHAREDWEB). We suggest you select OPENWEB.

**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	842CFFDE (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 ASCII 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	00:04:ED:01:23:45
WDS Mode	<input type="radio"/> Activated <input checked="" type="radio"/> Deactivated
WDS Peer MAC #1	<input type="text" value="00:00:00:00:00:00"/>
WDS Peer MAC #2	<input type="text" value="00:00:00:00:00:00"/>
WDS Peer MAC #3	<input type="text" value="00:00:00:00:00:00"/>
WDS Peer MAC #4	<input type="text" value="00:00:00:00:00:00"/>
<input type="button" value="Save"/>	

Click **Save** to apply the settings.

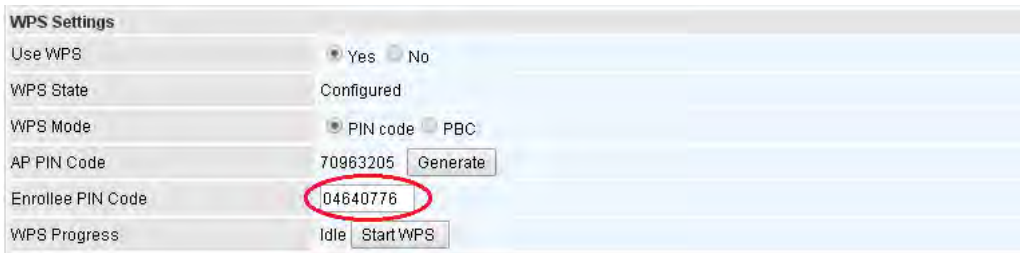
Example: WPS using PIN Method (Personal Information Number)

**PIN Method – Configure EG-210N 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).

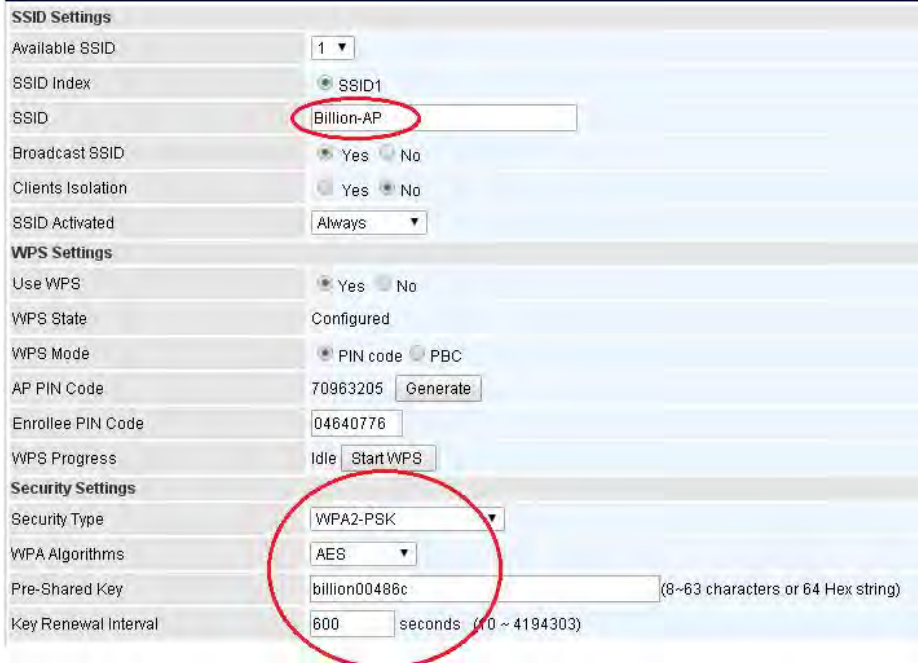
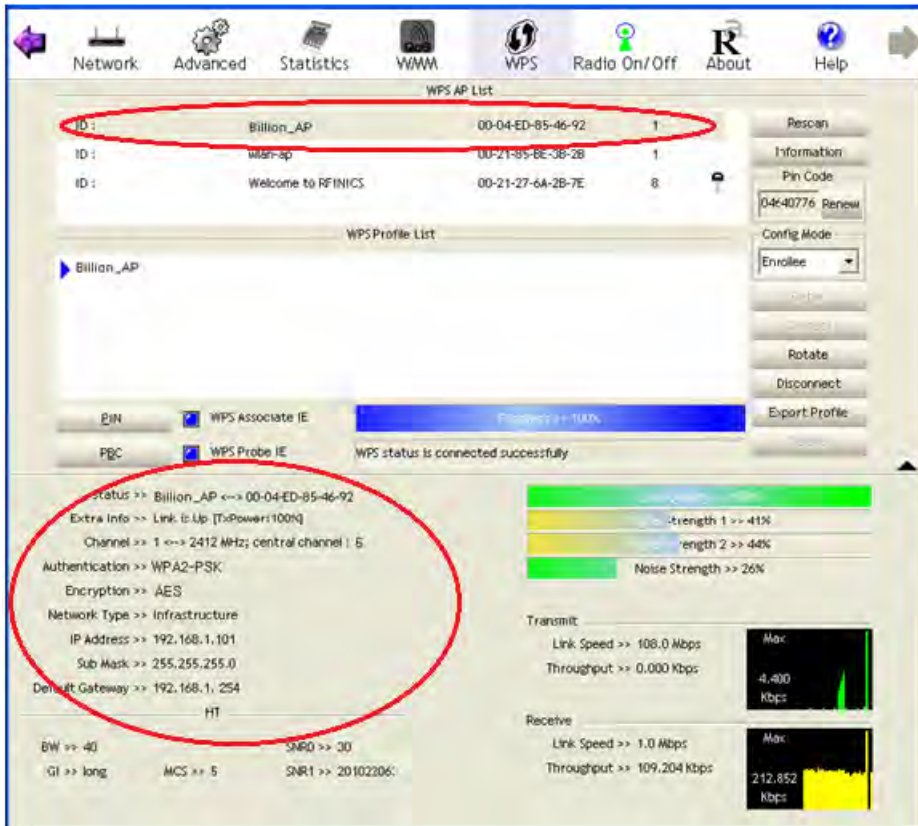
Set the Config Mode as **Enrollee**, press the WPS button on the top bar, select the AP (e.g. Billion\_AP) from the WPS AP List column. Then press the PIN button located on the middle left of the page to run the scan.





## Interface Setup – Wireless (Example on WPS using PIN)

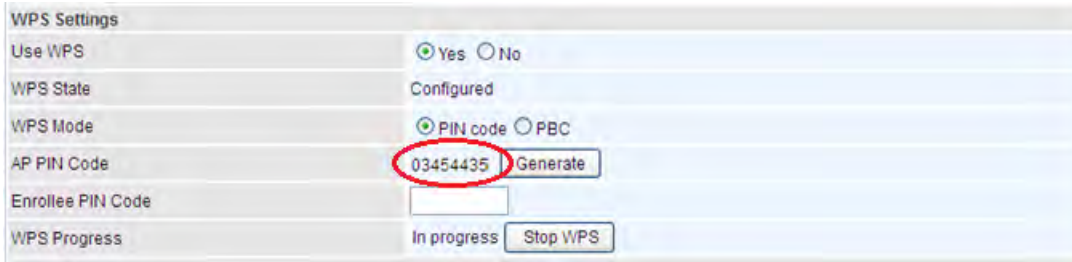
4. The client's SSID and security setting will now be configured to match the SSID and security setting of the registrar, the EG-210N router.



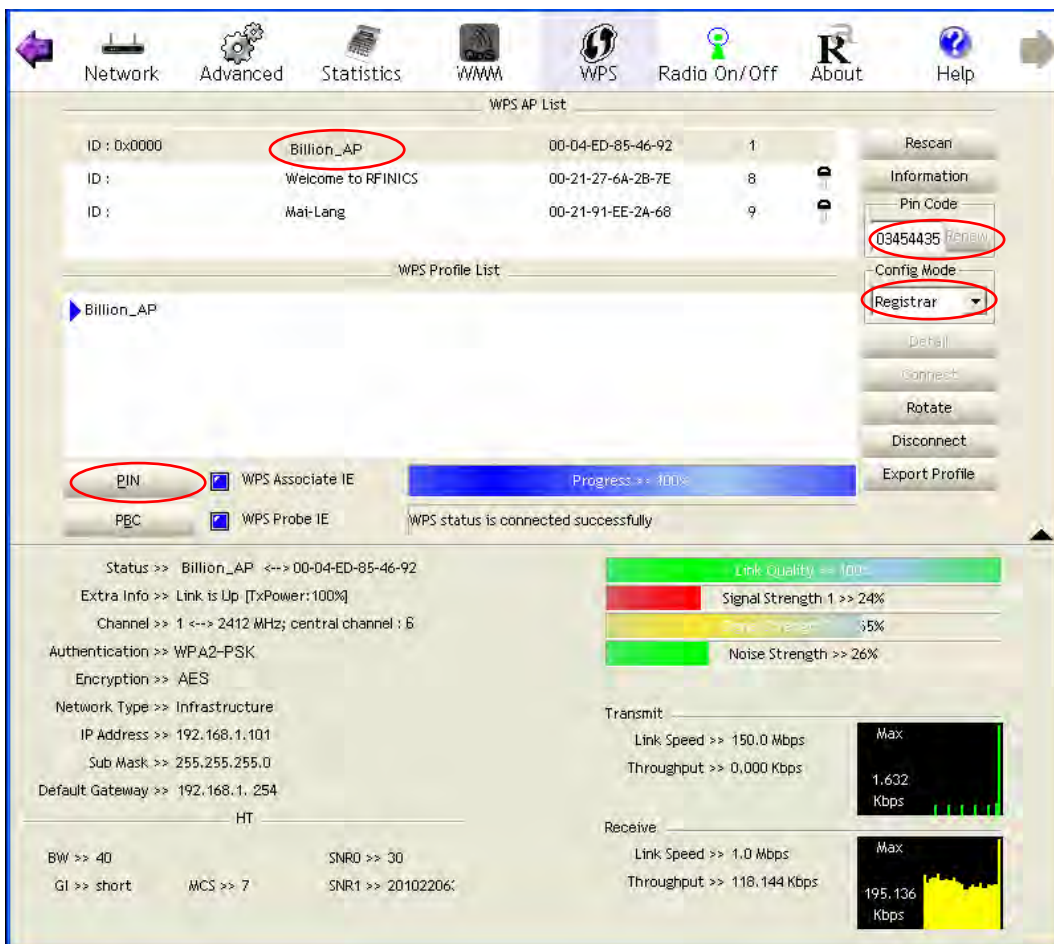
## Interface Setup – Wireless (Example on WPS using PIN)

### PIN Method – Configure EG-210N as an Enrollee

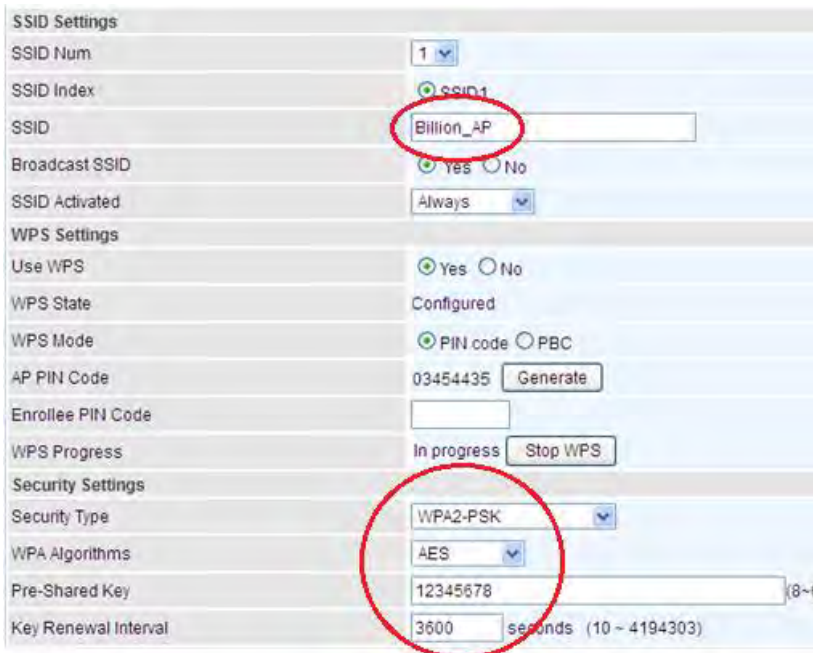
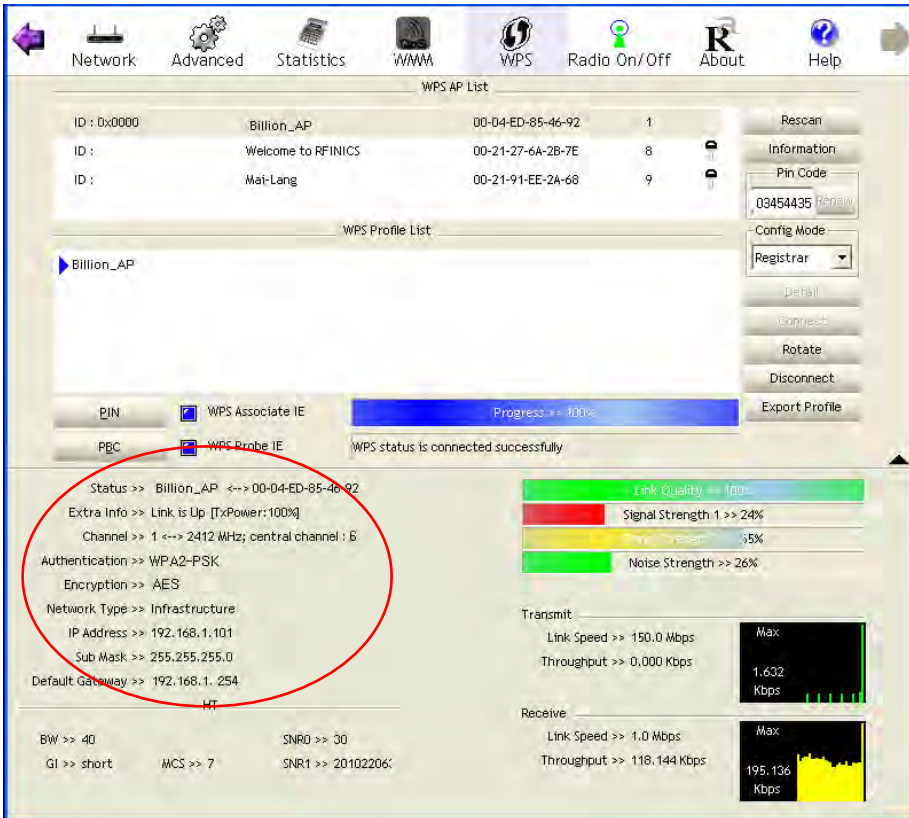
1. Jot down the AP PIN Code (e.g. 03454435) from the EG-210N. Press **Start WPS**.



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.



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 Method)

### Example: WPS using PBC Method (Push Button Configuration)

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

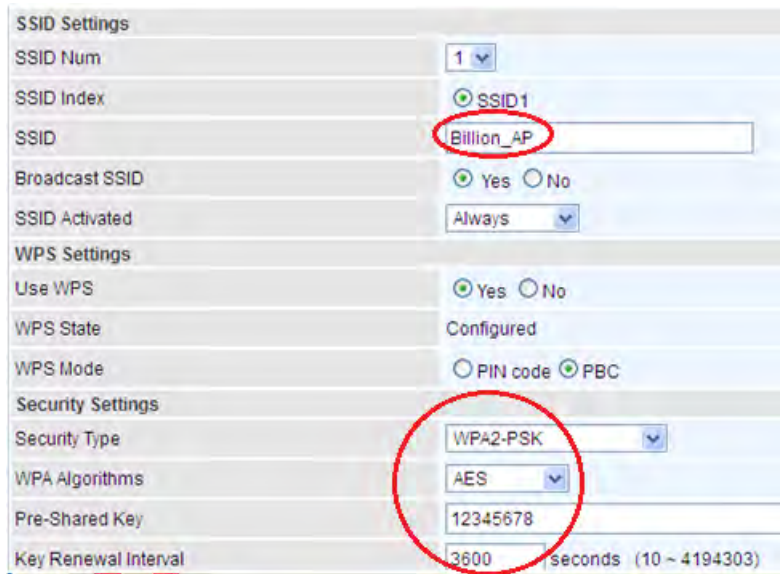
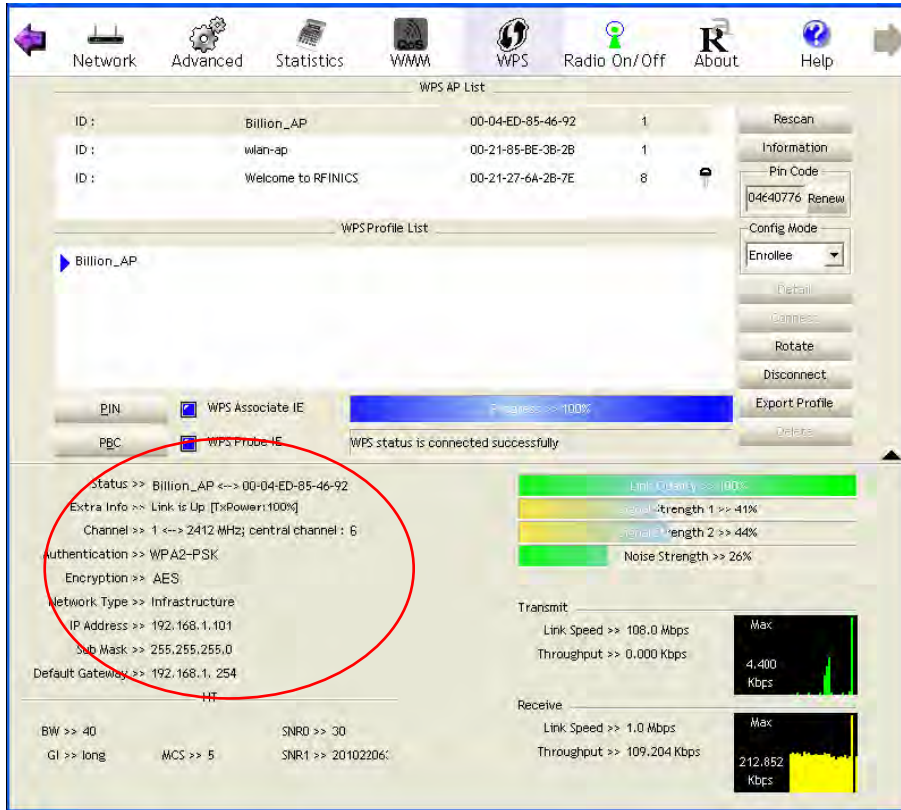


2. Launch the wireless client's WPS Utility (e.g. Ralink Utility). Set the Config Mode as **Enrollee**. Then press the **WPS button** and choose the correct AP (e.g. **Billion\_AP**) from the WPS AP List section before pressing the **PBC** button to run the scan.



## Interface Setup – Wireless (Example on WPS using PBC Method)

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	<input checked="" type="radio"/> SSID1 <input type="radio"/> SSID2 <input type="radio"/> SSID3 <input type="radio"/> SSID4
Active	<input type="radio"/> Activated <input checked="" type="radio"/> Deactivated
Action	Allow ▾ the follow Wireless LAN station(s) association.
MAC Address	<input style="width: 100%;" type="text"/>

**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.

## Loopback

Loopback interface is a widely known virtual interface, not the physical interface, on router and is highly robust and always up. The loopback interface has its own IP and subnet mask, often used for router management as Telnet management IP and involved in BGP as BGP Update-Source and OSPF as Router ID.

▼ Loopback	
Loopback interface	<input type="radio"/> Activated <input checked="" type="radio"/> Deactivated
IP Address	<input type="text" value="127.0.0.1"/>
IP Subnet Mask	<input type="text" value="255.0.0.0"/>
<input type="button" value="Save"/>	

**IP Address:** Enter a dedicated IP address for the loopback interface.

**IP Subnet Mask:** Enter the subnet mask for the loopback interface.

Click **Save** to apply 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.

Here are the features in **Dual WAN**: [General Setting](#), [Outbound Load Balance](#) and [Protocol Binding](#).

### General Setting



The screenshot shows a configuration panel for 'Dual WAN Mode'. At the top, there is a blue header with a downward arrow and the text 'General Setting'. Below this, the section is titled 'Dual WAN Mode'. Underneath, there is a label 'Mode' followed by a dropdown menu currently set to 'Disable'. At the bottom left of the panel is a 'Save' button.

**Mode:** Select a mode then click **Save** to proceed.



## Dual WAN – General Setting (Failover &amp; Failback)

## ❖ Failover &amp; 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	
<b>Dual WAN Mode</b>	
Mode	Failover & Failback ▼
<b>WAN Port Service Detection Policy</b>	
WAN1	EWAN(LAN2) ▼
WAN2	WirelessClient ▼ <input type="checkbox"/> Smart Wi-Fi Controller <input type="checkbox"/> BEC345 <input type="checkbox"/> wlan-ap2 <input type="checkbox"/> wlan-ap3 <input type="checkbox"/> wlan-ap4
Keep Backup Interface Connected	Disable ▼
Connectivity Decision	Auto failover takes place after straight <input type="text" value="3"/> consecutive failure in every <input type="text" value="30"/> seconds.
Probe By Ping	<input checked="" type="checkbox"/> Enable
Ping Setting	<input type="radio"/> Gateway
	<input checked="" type="radio"/> Host <input type="text" value="8.8.8.8"/>
	Timeout <input type="text" value="3"/> seconds
<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.

**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

**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/Fallback 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.

Click **Save** to apply settings.

## ❖ Load Balance

Load balance aggregates the bandwidth of the two WAN links to optimize traffic distribution.

When primary link, WAN1, goes down, all traffic will be redirected to the backup, WAN2, to ensure service continuity.

General Setting	
<b>Dual WAN Mode</b>	
Mode	Load Balance ▼
<b>WAN Port Service Detection Policy</b>	
WAN1	EWAN(LAN2) ▼
WAN2	WirelessClient ▼
Service Detection	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Connectivity Decision	Auto failover takes place after straight <input type="text" value="3"/> consecutive failure in every <input type="text" value="30"/> seconds.
Probe WAN1	<input type="radio"/> Gateway <input checked="" type="radio"/> Host <input type="text" value="8.8.8.8"/>
Probe WAN2	<input type="radio"/> Gateway <input checked="" type="radio"/> Host <input type="text" value="8.8.4.4"/>
<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.

**Service Detection:** Enable to detect WAN connectivity automatically.

**Connectivity Decision:** 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.

**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 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.

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 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 specific IP address is 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:  Yes  No

Bind Interface: WAN1 ▼ (Current WAN1 Mode: EWAN(LAN2) , Current WAN2 Mode: WirelessClient )

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

Protocol: Any ▼

Save Delete

**Protocol Binding List**

Index	Active	Interface	Source IP Address/Mask	Destination IP Address/Mask	Source Port	Destination Port	DSCP	Protocol
-------	--------	-----------	------------------------	-----------------------------	-------------	------------------	------	----------

**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 local network, known as source, IP address of the origin of a traffic/packet. 0.0.0.0 means any IP address in the network.

**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 / remote WAN IP address where the traffic/packet is going to. Enter 0.0.0.0 if no need to route to a specific IP address

**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 any value/unspecified

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

Click **Save** to apply settings

### Example:

All traffics from IP 192.168.10.1/255.255.255.0 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

Index	Active	Interface	Source IP Address/Mask	Destination IP Address/Mask	Source Port	Destination Port	DSCP	Protocol
1	Yes	WAN1	192.168.10.1/ 255.255.255.0	0.0.0.0/ 0.0.0.0	8080	0	64	ANY

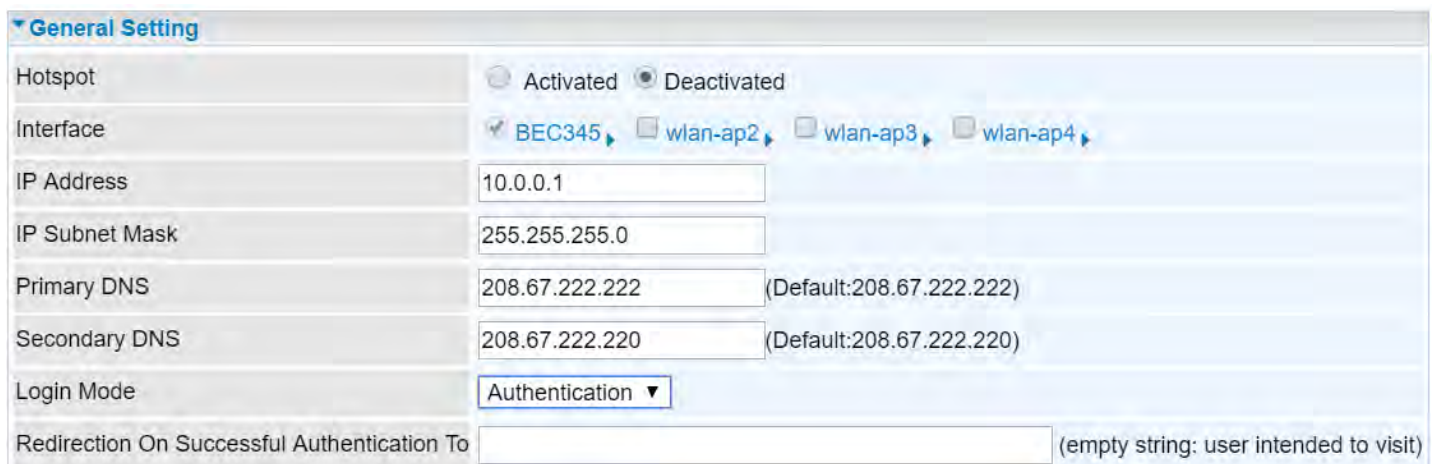
## Hotspot

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:** To broadcast and see the hotspot ssid (SSID1), your BEC router must be connected to the Internet first.

**NOTE 2:** It is ideal to change the Wi-Fi Hotspot (SSID) security type to **OPEN** (no encryption).

## General Setting



Hotspot	<input type="radio"/> Activated <input checked="" type="radio"/> Deactivated
Interface	<input checked="" type="checkbox"/> BEC345 <input type="checkbox"/> wlan-ap2 <input type="checkbox"/> wlan-ap3 <input type="checkbox"/> wlan-ap4
IP Address	<input type="text" value="10.0.0.1"/>
IP Subnet Mask	<input type="text" value="255.255.255.0"/>
Primary DNS	<input type="text" value="208.67.222.222"/> (Default:208.67.222.222)
Secondary DNS	<input type="text" value="208.67.222.220"/> (Default:208.67.222.220)
Login Mode	<input type="text" value="Authentication"/>
Redirection On Successful Authentication To	<input type="text"/> (empty string: user intended to visit)

### General Setting

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

**Interface:** Select Wi-Fi interface(s), example: BEC345 (SSID 1) to handles the hotspot traffic.

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

**IP Subnet Mask:** Enter the subnet of the network.

**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.

**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 accepting and agree to the terms (“Terms”) of use.

**Redirect URL after Successful Login:** Enter a redirect URL (**http://** is not required). After Wi-Fi client is successful login to the network, the page will get redirected to the specific URL. Leave it blank if no redirection is necessary.

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

## Authentication

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" value="123456789"/>
Authentication Protocol	<input type="text" value="CHAP"/>

**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 BEC device)**

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

**Authentication Protocol:** Manually specify CHAP (Challenge Handshake Authentication Protocol), PAP (Password Authentication Protocol) or MSCHAPv2. When using PAP, the password is sent unencrypted, while CHAP encrypts the password before sending, and also allows for challenges at different periods to ensure that an intruder has not replaced the client.

## Session Settings

Session Settings	
Session Timeout	<input type="text" value="3600"/> seconds (0~86400,0:disable)
Idle Timeout	<input type="text" value="180"/> seconds (0~86400,0: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)
Maximum Download Data Usage	<input type="text" value="0"/> MBytes (0~5120,0:not limited)
Maximum Upload Data Usage	<input type="text" value="0"/> MBytes (0~5120,0:not limited)
Maximum Total Data Usage	<input type="text" value="0"/> MBytes (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.

**Maximum Upload / Download Data Usage (in MBytes):** Pre-configure a maximum upload and download data allowed for each session. value range from 0 ~ 5120MB; **0** means no speed limitation.

**Maximum Total Data Usage (in MBytes):** Pre-configure total data usage allowed for each session. value range from 0 ~ 5120MB; **0** means no speed limitation.

### Captive Portal

Captive Portal	
UAM Server	<input checked="" type="radio"/> Build-in <input type="radio"/> External <input type="radio"/> Socifi
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"/>	

**UAM Server:** Select a server you wish to use, **Build-in**, **External** or **Socifi**. Fill in the blanks to use External 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 apply the settings



## Built-in User Account

It is a local database on the router with pre-defined user accounts authorized by the BEC device 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	1 ▼
Active	<input type="radio"/> Yes <input checked="" type="radio"/> No
User Name	<input style="width: 90%;" type="text"/>
Password	<input style="width: 90%;" type="password"/>

---

**Built-in User Account List**

Index	Active	Username
-------	--------	----------

**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 username 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.

## 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  Activated  Deactivated

Rule Index  ▼

Active  Yes  No

MAC Address

**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
1	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 BEC Wi-Fi Hotspot, and only a random ad will be displayed per a login.

**16**, maximum, ads are allowed.

**Advertisement**

Advertisement  Activated  Deactivated

Mode

Rule Index

Active  Yes  No

URL

**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.
- ▶ **Popups:** 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.

## Hotspot Status Log

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

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

**Hotspot Status Log:** Select **Activated** to enable this feature.

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

**Mail Session Log File in every (minute):** BEC device will send all access information, such as access IP addresses, NAT tables, etc., to the administrator's mailbox 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	HotSpot
Login Subtitle	Welcome to my HotSpot!
Login Successfully Message	Success
Footnote	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	Terms Part1
Terms Part2	Terms Part2
Terms Part3	Terms Part3
Terms and Conditions TextBox can not accept newline.	
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:** BEC device will send all access information, such as access IP addresses, NAT tables, etc., to the administrator’s mailbox 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. (To change logo, please contact with BEC technical support for more information)



## Advanced Setup

Advanced configuration features provide advanced features, including [Firewall](#), [Routing](#), [Dynamic Routing](#), [NAT](#), [VRRP](#), [Static DNS](#), [QoS](#), [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	
Firewall	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled
SPI	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled
(WARNING: If You enabled SPI, all traffics initiated from WAN would be blocked, including DMZ, Virtual Server, and ACL WAN side.)	
Save	

**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 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
1	192.168.1.0	255.255.255.0	0.0.0.0	0	br0		
2	127.0.0.0	255.255.0.0	0.0.0.0	0	loopback		
3	239.0.0.0	255.0.0.0	0.0.0.0	0	br0		

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"/>
Metric	<input type="text" value="1"/>

Save 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

## Dynamic Routing

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.

### ❖ Open Shortest Path First (OSPF)

**OSPF**

OSPF  Enable

Rule Index

Interface

Area ID

**OSPF Listing**

Index	Interface	Area ID
-------	-----------	---------

**OSPF:** Enable to activate OSPF routing.

**Rule Index:** The numeric route indicator. The maximum entry is up to 10, ranging from 1 to 10.

**Interface:** Set the interface which runs the OSPF process (involved in OSPF routing). It can be WAN interfaces or established GRE tunnels.

**Area ID:** The OSPF area identifier. It is a decimal number in the range of 0-4294967295. Enter the area ID in which the interface belongs to. The area with area-id="0" is the backbone area.

If the router has networks in more than one area, then an area with area-id="0" (the backbone) must always be present. All other areas are connected to it. The backbone is responsible for distributing routing information between non-backbone areas. The backbone must be contiguous, i.e. there must be no disconnected segments. However, area border routers do not need to be physically connected to the backbone - connection to it may be simulated using a virtual link.

Click **Save** to add this rule.

❖ **Border Gateway Protocol (BGP)**

A standardized exterior gateway protocol (an uniquely TCP based inter-Autonomous System routing protocol) designed to allow setting up an inter-domain dynamic routing system that automatically updates routing tables of devices running BGP in case of network topology changes.

The screenshot shows a configuration page for BGP. At the top, there is a 'BGP' section with a dropdown arrow. Below it are several rows of configuration options, each with a label and a control element (checkbox or text input):

- BGP**:  Enable
- As Number**:
- Rule Index**: 1 ▼
- Neighbor IP**:
- Neighbor As Number**:
- Allowas-in**:  Enable
- Next-Hop-Self**:  Enable
- Soft-reconfiguration inbound**:  Enable
- EBGP-multihop**:  Enable

At the bottom of the configuration section, there are 'Save' and 'Delete' buttons. Below this is a 'BGP Listing' section with a table header:

Index	Neighbor IP	Neighbor As Number	Allowas-in
-------	-------------	--------------------	------------

**BGP:** Enable to activate BGP routing.

**AS Number:** Designate the AS number of local router. The AS number is used to identify the IBGP or EBGP your neighbor is running. The same AS number means the IBGP, and the different means EBGP.

**Rule Index:** The numeric route indicator. The maximum entry is up to 10, ranging from 0 to 9.

**Neighbor IP:** Enter the neighbor IP address.

**Neighbor AS Number:** Enter the neighbor AS number.

**Allowas-in:** Enable to allow inter-communication between devices in the same AS. If the local and neighbor AS number are the same, thus, an inter-AS communication, please enable the allowas-in. Otherwise, the router only support EBGP routing between different domains.

**Next-Hop-Self:** Enable to use the router’s own loopback address as the next-hop address.

**Soft-reconfiguration inbound:** Enable to save, pre-stored, a new inbound policy to the BGP table without interrupting the network when applying this new policy.

**EBGP (External BGP)-multihop:** Enable to build up peer connection/information with external neighbors.

Click **Save** to add this rule.

## 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 checked="" type="radio"/> Enabled <input type="radio"/> Disabled
DMZ / Virtual Server	
Interface	4G/LTE ▼
DMZ	<a href="#">▶ Edit</a>
Virtual Server	<a href="#">▶ Edit</a>

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

### ALG

**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.

### DMZ / Virtual Server

**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 which has all UDP and TCP ports exposed to the Internet. When setting an internal IP address as the DMZ Host, all incoming packets will be forwarded to this local host device. Packet filter or virtual server entries will take priority over forwarding internet packets to the DMZ host.

**DMZ**

DMZ for: Single IPs Account/ EWAN

DMZ:  Enabled  Disabled

DMZ Host IP Address: 0.0.0.0

Save Back

**Except Ports**

Port:

Protocol: TCP

Description:  Add

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 EG-210N 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 EG-210N to direct incoming traffic to a specific device in the network.

Configure a virtual rule in EG-210N 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: EWAN(LAN2)

Protocol: TCP

Start Port Number:

End Port Number:

Local IP Address:

Start Port Number (Local):

End Port Number(Local):

Save Back

Virtual Server Listing								
Rule	Protocol	Start Port	End port	Local IP Address	Start Port Local	End Port Local	Edit	Drop
0	N/A	N/A	N/A	N/A	N/A	N/A		
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		

**Virtual Server for:** Indicate the related WAN interface to allow outside network to communicate with the internal LAN device.

**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 the server IP address in the network to receive the traffic/packets.

**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 an 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 EG-210N will accept port 21 requests from WAN side.

Enter the static IP assigned to the local PC that is hosting the FTP server. Ex: 192.168.1.111

Enter "21" to Local Start and End Port number. The EG-210N will forward port 21 request from WAN to the specific LAN PC (Example: 192.168.1.111) in the network.

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

Virtual Server

Virtual Server for	EWAN(LAN2)
Protocol	TCP
Start Port Number	21
End Port Number	21
Local IP Address	192.168.1.111
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	192.168.1.111	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		



## VRRP

VRRP is designed to eliminate the single point of failure inherent in the static default routed environment. VRRP specifies an election protocol that dynamically assigns responsibility for a virtual router to one of the VRRP routers in a LAN. The VRRP router controlling the IP address associated with a virtual router is called the Master, and forwards packets sent to these IP addresses. The election process provides dynamic fail-over in the forwarding responsibility should the Master become unavailable. Any of the virtual router's IP addresses in a LAN can then be used as the default first hop router by end-hosts. The advantage gained from using VRRP is a higher availability default path without requiring configuration of dynamic routing or router discovery protocols on every end-host.

VRRP	
VRRP	<input type="radio"/> Activated <input checked="" type="radio"/> Deactivated
VRID	<input type="text" value="1"/> (1~255)
Priority	<input type="text" value="100"/> (1~254)
Preempt Mode	<input checked="" type="radio"/> Activated <input type="radio"/> Deactivated
VRIP	<input type="text" value="192.168.1.253"/>
Advertisement Period	<input type="text" value="1"/> (1~2147483647)
<input type="button" value="Save"/>	

v

**VRRP:** Click to activate the feature.

**VRID:** Virtual Router Identifier, range from 1-255 (decimal). A master or backup router running the VRRP protocol may participate in one VRID instance.

**Priority:** Specifies the sending VRRP router's priority for the virtual router. Higher values equal higher priority. The priority value for the VRRP router that owns the IP address associated with the virtual router **MUST** be 255. VRRP routers backing up a virtual router **MUST** use priority values between 1 and 254. The default priority value for VRRP routers backing up a virtual router is 100. The priority value zero (0) has special meaning indicating that the current Master has stopped participating in VRRP. This is used to trigger Backup routers to quickly transition to Master without having to wait for the current Master to timeout.

**Preempt Mode:** When preempt mode is activated, a backup router always takes over the responsibility of the master router. When deactivated, the lower priority backup is left in the master state.

**VRIP:** An IP address which is associated with the virtual router.

**Advertisement period:** Indicates the time interval in seconds between advertisements. Default in 1 second.

Click **Save** to apply settings.

## 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 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 settings.

## QoS

QoS helps you control the upload traffic of each application from LAN (Ethernet and/or Wireless) to WAN (Internet).

It facilitates you the features to control the quality of throughput for each application. This is useful when there on certain types of data you want give higher priority to, such as voice data packets given higher priority than web data packets.

**Quality of Service**

SW QoS \*1  Activated  Deactivated

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**Bandwidth Limitation**

LAN to WAN Bandwidth 100 Mbps

WAN to LAN EWAN(LAN2) Bandwidth 100 Mbps

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**SW QoS Rule**

Rule Index

Application

Direction  WAN Interface

QoS Type  Priority

Bandwidth Type  Share Bandwidth  Bandwidth per Souce MAC Address

Bandwidth  Mbps DSCP Marking

Protocol

Internal IP Address  ~  \*2 Internal Port  ~  \*3

External IP Address  ~  \*2 External Port  ~  \*3

Note \*1 : The hardware acceleration of packet processing will be disable if active SW QoS.

Note \*2 : 0.0.0.0 ~ 0.0.0.0 means all IPs

Note \*3 : 0 ~ 0 means all Ports

**SW QoS:** Select **Activate** to enable the QoS

### Bandwidth Limitation

**LAN to WAN (Bandwidth):** Display current upstream traffic bandwidth, traffic from local network to the outside.

Example: If you have an FTP server inside the local network, and you want to have a limited control by the QoS policy and so you need to add a policy with LAN to WAN direction setting.

**WAN to LAN (Bandwidth):** Control traffic from WAN to LAN (Downstream).

## Bandwidth Limitation on WAN

▼ **Bandwidth Limitation**

LAN to WAN	Bandwidth	<input type="text" value="100"/>	Mbps
WAN to LAN	EWAN(LAN2)	Bandwidth	<input type="text" value="100"/> Mbps

Click **Specific Bandwidth Limitation** to change the traffic bandwidth of the downstream and upstream rates.

Click **Save** to apply settings.

## Bandwidth Limitation on LAN Host

Manually apply a bandwidth restriction for a specific LAN ethernet device, up to 32 devices are allowed.

▼ **LAN Host Bandwidth**

Rule Index	<input type="text" value="1"/>		
MAC Address	<input type="text"/>		
Upload	<input type="text" value="100"/> Mbps	Download	<input type="text" value="100"/> Mbps

**LAN Host Bandwidth Listing**

Index	MAC Address	Upload Bandwidth	Download Bandwidth

**Rule Index:** Index marking for each rule up to maximum of 32.

**MAC Address:** Enter the LAN MAC address of an ethernet device you wish to limit the bandwidth consumption. Enter the MAC addresses in XX:XX:XX:XX:XX:XX format.

Example:

▼ **LAN Host Bandwidth**

Rule Index	<input type="text" value="1"/>		
MAC Address	<input type="text" value="00:10:60:D0:F8:77"/>		
Upload	<input type="text" value="100"/> Mbps	Download	<input type="text" value="100"/> Mbps

**LAN Host Bandwidth Listing**

Index	MAC Address	Upload Bandwidth	Download Bandwidth
1	00:10:60:D0:F8:77	100.0	100.0

**Upload Speed / Download (Mbps):** Specific the allowed bandwidth for the ethernet device.

Click **Save** to apply settings.

**To Remove a Policy:** Simply select the Index then hit the **Delete** button to remove from the list.

## SW QoS Rule

Setup a priority given to each policy/application. Specify the priority for the use of bandwidth. You can specify which application can have higher priority to acquire the bandwidth.

**Rule Index:** Index marking for each rule up to maximum of 16.

**Application:** Assign a name that identifies the new QoS application rule. Select from the list box for quick setup.

**Direction:** Specific the direction mode, upload or download, for this QoS application

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

**QoS Type** Choose *Limited* (Maximum) or *Guaranteed* (Minimum) to specify the data rate is allowed for this policy.

- ▶ **Limited(Maximum) – Priority** is automatic set to High.
- ▶ **Guaranteed (Minimum) – Priority** can be selected from High, Normal or Low.

**Bandwidth Type:** It is available when select **LAN to WAN** as direction mode.

- ▶ **Share Bandwidth** – The application from the specific ethernet device will share the available LAN to WAN bandwidth (upload) with other devices in the network.
- ▶ **Bandwidth per Source MAC Address** – Please setup bandwidth limitation for this specific LAN device in **Bandwidth Limitation on LAN Host** first. The application from the specific ethernet device will use the bandwidth assigned in the LAN host.

**Bandwidth (Mbps):** Specify the bandwidth consumption for this application.

**DSCP Marking:** Differentiated Services Code Point (DSCP), it is the first 6 bits in the ToS byte. DSCP Marking allows users to classify the traffic of the application to be executed according to the DSCP value.

**Protocol:** Select a protocol from the drop-down list.

**DSCP Marking:** Differentiated Services Code Point (DSCP), it is the first 6 bits in the ToS byte. DSCP Marking allows users to classify the traffic of the application to be executed according to the DSCP value.

**Internal IP Address:** The IP address values for Local LAN devices you want to give control.

- ▶ **Internal Port:** The Port number on the LAN side, it is used to identify an application.

**External IP Address:** The IP address on remote / WAN side.

- ▶ **External Port:** The Port number on the remote / WAN side.

Click **Save** to apply settings.

**To Remove a Policy:** Simply select the Index then hit the **Delete** button to remove from the list.

## 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	1 ▼						
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 style="width: 95%;" type="text"/>
Username	<input style="width: 95%;" type="text"/>
Password	<input style="width: 95%;" type="password" value="....."/>
Sender's E-mail	<input style="width: 95%;" type="text"/> (Must be XXX@yyy.zzz)
SSL/TLS	<input type="checkbox"/> Enable
Port	<input style="width: 50%;" type="text" value="25"/> (1~65535)

**WAN IP Change Alert**

Recipient's E-mail	<input style="width: 95%;" type="text"/> (Must be XXX@yyy.zzz)
--------------------	--

**Hotspot Status Log**

Recipient's E-mail	<input style="width: 95%;" type="text"/> (Must be XXX@yyy.zzz)
--------------------	--

### Server Information

**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.

### WAN IP Change Alert

**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 (Hotspot Status Log):** Enter a valid e-mail address to receive hotspot status log email.

Click **Apply** button to save settings.

## VPN

A **Virtual Private Network (VPN)** is a private network that interconnects remote (and often geographically separate) networks through primarily public communication infrastructures such as the Internet. VPNs provide security through tunneling protocols and security procedures such as encryption. For example, a VPN could be used to securely connect the branch offices of an organization to a Headquarter office network through the public Internet.

BEC EG-210N supports **IPSec**, **PPTP**, **L2TP**, **GRE** and **OpenVPN Server / Client** VPN features.

## IPSec

**Internet Protocol Security (IPSec)** is a protocol suite for securing Internet Protocol (IP) communications by authenticating and encrypting each IP packet of a communication session. IPSec also includes protocols for establishing mutual authentication between agents at the beginning of the session and negotiation of cryptographic keys to be used during the session.

IPSec is an end-to-end security scheme operating in the Internet Layer of the Internet Protocol Suite. It can be used in protecting data flows between a pair of security gateways (*network-to-network*), or between a security gateway and a host (*network-to-host*).

A total of 8 IPSec tunnels can be added.

▼ IPSec

IPSec Listing

Index	Connection Name	Active	Interface	Remote Gateway IP	Remote Network	Edit	Delete
<input type="button" value="Add New Connection"/>							

Click **Add New Connection** to create a new IPSec profile.



## IPSec Connection Setting

The screenshot shows the 'IPSec' configuration page with the following fields and options:

- Connection Name:** Text input field.
- Active:** Radio buttons for 'Yes' (selected) and 'No'.
- Interface:** Dropdown menu set to 'Auto'.
- Remote Gateway IP:** Text input field with a note '(0.0.0.0 means any)'.
- Local Access Range:** Dropdown menu set to 'Subnet'.
  - Local IP Address:** Text input field (0.0.0.0).
  - IP Subnetmask:** Text input field (0.0.0.0).
  - Extra Local IP Address:** Text input field (0.0.0.0).
  - IP Subnetmask:** Text input field (0.0.0.0).
- Remote Access Range:** Dropdown menu set to 'Subnet'.
  - Remote IP Address:** Text input field (0.0.0.0).
  - IP Subnetmask:** Text input field (0.0.0.0).
- IKE Mode:** Dropdown menu set to 'Main'.
- Local ID Type:** Dropdown menu set to 'Default (Local WAN IP)'.
  - IDContent:** Text input field with an asterisk (\*).
- Remote ID Type:** Dropdown menu set to 'Default (Remote Gateway IP)'.
  - IDContent:** Text input field with an asterisk (\*).
- Pre-Shared Key:** Radio buttons for 'Text' (selected) and 'Hexadecimal'.
  - Text input field:** Empty.
- IKE Proposal:**
  - Encryption Algorithm:** Dropdown menu set to 'DES'.
  - Authentication Algorithm:** Dropdown menu set to 'MD5'.
  - Diffie-Hellman Group:** Dropdown menu set to 'MODP1024(DH2)'.
- IPSec Proposal:**
  - Encryption Algorithm:** Dropdown menu set to 'DES'.
  - Authentication Algorithm:** Dropdown menu set to 'MD5'.
  - Perfect Forward Secrecy:** Dropdown menu set to 'None'.
- SA Lifetime:**
  - Phase 1 (IKE):** Text input field (480) min(s).
  - Phase 2 (IPSec):** Text input field (60) min(s).
- Keepalive:** Dropdown menu set to 'None'.
  - PING to the IP(0.0.0.0:NEVER):** Text input field (0.0.0.0).
  - Interval:** Text input field (10) seconds.
- Disconnection Time after No Traffic:** Text input field (180) seconds (180 at least).
- Reconnection Time:** Text input field (3) min(s) (3 at least).

Notes at the bottom:

- Note \*: FQDN with @ as first character means don't resolve domain name.
- Note \*\*: (0-3600, 0 means NEVER)

Buttons: Save, Back

**Connection Name:** Enter a name or description for this connection/profile.

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

**Interface:** Select a WAN interface to establish a tunnel with the remote VPN device. **Auto** allows system to automatically initiate a connection via current connected WAN interface.

**Remote Gateway IP:** The WAN IP address of the remote VPN device. Enter **0.0.0.0** for unknown remote WAN IP address – only the peer can initiate the tunnel connection.

**Local Access Range:** Set the IP address or subnet of the local network.

- ▶ **Single IP:** The IP address of the local host, for establishing an IPSec connection between a security gateway and a host (*network-to-host*).
- ▶ **Subnet:** The subnet of the local network, for establishing an IPSec tunnel between a pair of security gateways (*network-to-network*)

**Remote Access Range:** Set the IP address or subnet of the remote network.

- ▶ **Single IP:** The IP address of the local host, for establishing an IPSec connection between a security gateway and a host (network-to-host). If the remote peer is a host, select Single Address.
- ▶ **Subnet:** The subnet of the local network, for establishing an IPSec tunnel between a pair of security gateways (network-to-network), if the remote peer is a network, select Subnet.

### IPsec Phase 1(IKE)

IKE Mode	Main ▼		
Local ID Type	Default (Local WAN IP) ▼	IDContent	<input type="text"/> *
Remote ID Type	Default (Remote Gateway IP) ▼	IDContent	<input type="text"/> *
Pre-Shared Key	<input checked="" type="radio"/> Text <input type="radio"/> Hexadecimal		
	<input type="text"/>		
IKE Proposal	Encryption Algorithm	DES ▼	Authentication Algorithm MD5 ▼
	Diffie-Hellman Group	MODP1024(DH2) ▼	

**IKE Mode:** IKE, Internet Key Exchange, is the mechanism to negotiate and exchange parameters and keys between IPsec peers to establish security associations (SA). Select Main or Aggressive mode.

**Local ID Type / Remote ID Type:** When the mode of IKE is aggressive, Local and Remote peers can be identified by other IDs.

**IDContent:** Enter IDContent the name you want to identify when the Local and Remote Type are Domain Name; Enter IDContent IP address you want to identify when the Local and Remote Type are IP addresses (IPv4 and IPv6 supported).

**Pre-Shared Key:** This is for the Internet Key Exchange (IKE) protocol, a string from 4 to 128 characters. Both sides should use the same key. IKE is used to establish a shared security policy and authenticated keys for services (such as IPsec) that require a key. Before any IPsec traffic can be passed, each router must be able to verify the identity of its peer. This can be done by manually entering the pre-shared key into both sides (router or hosts).

**IKE Proposal & Encryption Algorithm:** Select the encryption algorithm from the drop-down menu. There are several options: DES and AES (128, 192 and 256). 3DES and AES are more powerful but increase latency.

- ▶ **DES:** Stands for Data Encryption Standard, it uses 56 bits as an encryption method.
- ▶ **3DES:** Stands for Triple Data Encryption Standard, it uses 168 (56\*3) bits as an encryption method.
- ▶ **AES:** Stands for Advanced Encryption Standards, you can use 128, 192 or 256 bits as encryption method.

**Authentication Algorithm:** Authentication establishes the integrity of the datagram and ensures it is not tampered with in transmission. There are 3 options: Message Digest 5 (MD5) and Secure Hash Algorithm (SHA1, SHA256). SHA1 is more resistant to brute-force attacks than MD5. However, it is slower.

- ▶ **MD5:** A one-way hashing algorithm that produces a 128-bit hash.
- ▶ **SHA1:** A one-way hashing algorithm that produces a 160-bit hash.

**Diffie-Hellman Group:** It is a public-key cryptography protocol that allows two parties to establish a shared secret over an unsecured communication channel (i.e. over the Internet). MODP stands for Modular Exponentiation Groups.

### IPsec Phase 2(IPsec)

IPsec Proposal	<input checked="" type="radio"/> ESP <input type="radio"/> AH		
	Encryption Algorithm	DES ▼	Authentication Algorithm MD5 ▼
	Perfect Forward Secrecy	None ▼	

**IPsec Proposal:** Select the IPsec security method. There are two methods of verifying the

authentication information, AH (Authentication Header) and ESP (Encapsulating Security Payload). Use ESP for greater security so that data will be encrypted, and the data origin be authenticated but using AH data origin will only be authenticated but not encrypted.

**Encryption Algorithm:** Select the encryption algorithm from the drop-down menu. There are several options: DES and AES (128, 192 and 256). 3DES and AES are more powerful but increase latency.

- ▶ **DES:** Stands for Data Encryption Standard, it uses 56 bits as an encryption method.
- ▶ **3DES:** Stands for Triple Data Encryption Standard, it uses 168 (56\*3) bits as an encryption method.
- ▶ **AES:** Stands for Advanced Encryption Standards, you can use 128, 192 or 256 bits as encryption method.

**Authentication Algorithm:** Authentication establishes the integrity of the datagram and ensures it is not tampered with in transmission. There are 3 options: Message Digest 5 (MD5) and Secure Hash Algorithm (SHA1, SHA256). SHA1 is more resistant to brute-force attacks than MD5. However, it is slower.

- ▶ **MD5:** A one-way hashing algorithm that produces a 128-bit hash.
- ▶ **SHA1:** A one-way hashing algorithm that produces a 160-bit hash.

**Perfect Forward Secrecy:** It is a public-key cryptography protocol that allows two parties to establish a shared secret over an unsecured communication channel (i.e. over the Internet). MODP stands for Modular Exponentiation Groups.

### IPsec SA Lifetime

Phase 1 (IKE)SA Lifetime	480	min(s)	Phase 2 (IPsec)	60	min(s)
--------------------------	-----	--------	-----------------	----	--------

**SA Lifetime:** Specify the number of minutes that a Security Association (SA) will stay active before new encryption and authentication key will be exchanged. There are two kinds of SAs, IKE and IPsec. IKE negotiates and establishes SA on behalf of IPsec, and IKE SA is used by IKE.

- ▶ **Phase 1 (IKE):** To issue an initial connection request for a new VPN tunnel. The range can be from 5 to 15,000 minutes, and the default is 480 minutes.
- ▶ **Phase 2 (IPsec):** To negotiate and establish secure authentication. The range can be from 5 to 15,000 minutes, and the default is 60 minutes. A short SA time increases security by forcing the two parties to update the keys. However, every time the VPN tunnel re-negotiates, access through the tunnel will be temporarily disconnected.

### IPsec Connection Keep Alive

Keepalive	None	PING to the IP(0.0.0.0:NEVER)	0.0.0.0	Interval	10	seconds **
Disconnection Time after No Traffic	180	seconds (180 at least)				
Reconnection Time	3	min(s) (3 at least)				

#### Keep Alive:

- ▶ **None:** Disable. The system will not detect remote IPsec peer is still alive or lost. The remote peer will get disconnected after the interval, in seconds, is up.
- ▶ **PING:** This mode will detect the remote IPsec peer has lost or not by pinging specify IP address.
- ▶ **DPD:** Dead peer detection (DPD) is a keeping alive mechanism that enables the router to be detected lively when the connection between the router and a remote IPsec peer has lost.

Please be noted, it must be enabled on the both sites.

**PING to the IP:** It is able to IP Ping the remote PC with the specified IP address and alert when the connection fails. Once alter message is received, Router will drop this tunnel connection. Reestablish of this connection is required. Default setting is 0.0.0.0 which disables the function

**Interval:** This sets the time interval between Pings to the IP function to monitor the connection status. Default interval setting is 10 seconds. Time interval can be set from 0 to 3600 second, 0 second disables the function.

Ping to the IP	Interval (sec)	Ping to the IP Action
0.0.0.0	0	No
0.0.0.0	2000	No
xxx.xxx.xxx.xxx (A valid IP Address)	0	No
xxx.xxx.xxx.xxx(A valid IP Address)	2000	Yes, activate it in every 2000 second.

**Disconnection Time after No Traffic:** It is the NO Response time clock. When no traffic stage time is beyond the Disconnection time set, Router will automatically halt the tunnel connection and re-establish it base on the Reconnection Time set. 180 seconds is minimum time interval for this function.

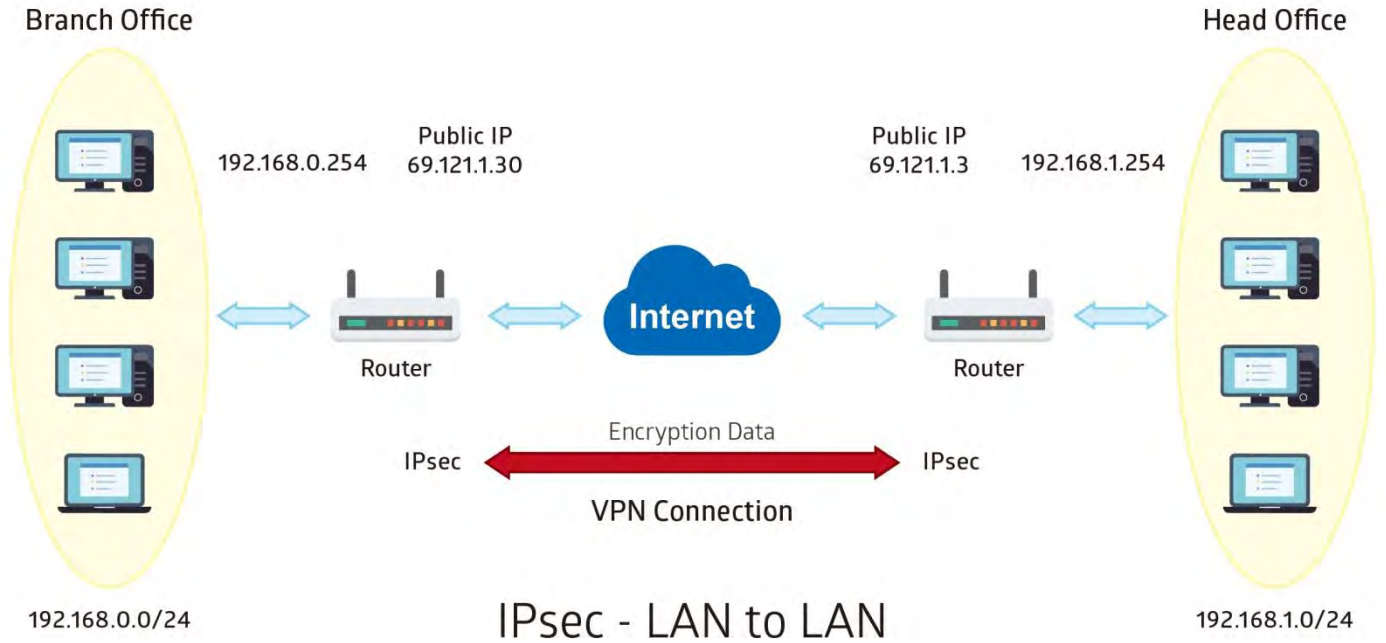
**Reconnection Time:** It is the reconnecting time interval after NO TRAFFIC is initiated. 3 minutes is minimum time interval for this function.

Click **Save** to apply settings.

### Examples: IPsec – Network (LAN) to Network (LAN)

Two of the BEC EG-210N devices want to setup a secure IPsec VPN tunnel

**NOTE:** The IPsec Settings shall be consistent between the two routers.



Headquarter office Side:

Configuration Settings		Description
Connection Name	H-to-B	Assigned name to this tunnel/profile
Remote Secure Gateway	69.121.1.30	IP address of the Branch office gateway
Access Network		
Local Access Range	Subnet	Headquarter office network
Local Network IP Address	192.168.1.0	
Local Network Netmask	255.255.255.0	
Remote Access Range	Subnet	Branch office network
Remote Network IP Address	192.168.0.0	
Remote Network Netmask	255.255.255.0	
IPSec Proposal		
IKE Mode	Main	Security Plan
Pre-Shared Key	1234567890	
Phase 1 Encryption	AES-128	
Phase 1 Authentication	SHA1	
Phase 1 Diffie-Hellman Group	MODP 1024(group2)	
Phase 2 Proposal	ESP	
Phase 2 Authentication	SHA1	
Phase 2 Encryption	3DES	
Prefer Forward Security	MODP 1024(group2)	

IPSec

Connection Name:

Active:  Yes  No

Interface:

Remote Gateway IP:  (0.0.0.0 means any)

Local Access Range:  Local IP Address:  IP Subnetmask:

Remote Access Range:  Remote IP Address:  IP Subnetmask:

IKE Mode:  Pre-Shared Key:

Local ID Type:  IDContent:

Remote ID Type:  IDContent:

Encryption Algorithm:  Authentication Algorithm:  Diffie-Hellman Group:

IPSec Proposal:  ESP  AH

Authentication Algorithm:  Encryption Algorithm:

Perfect Forward Secrecy:

Phase 1 (IKE)SA Lifetime:  min(s) Phase 2 (IPSec):  min(s)

Keepalive:  PING to the IP(0.0.0.0:NEVER):  Interval:  seconds \*\*

Disconnection Time after No Traffic:  seconds (180 at least)

Reconnection Time:  min(s) (3 at least)

Note \*: FQDN with @ as first character means don't resolve domain name.

Note \*\*: (0-3600, 0 means NEVER)

Branch Office Side:

Configuration Settings		Description
Connection Name	B-to-H	Assigned name to this tunnel/profile
Remote Secure Gateway	69.121.1.3	IP address of the Branch office gateway
Access Network		
Local Access Range	Subnet	Headquarter office network
Local Network IP Address	192.168.0.0	
Local Network Netmask	255.255.255.0	
Remote Access Range	Subnet	Branch office network
Remote Network IP Address	192.168.1.0	
Remote Network Netmask	255.255.255.0	
IPSec Proposal		
IKE Mode	Main	Security Plan
Pre-Shared Key	1234567890	
Phase 1 Encryption	AES-128	
Phase 1 Authentication	SHA1	
Phase 1 Diffie-Hellman Group	MODP 1024(group2)	
Phase 2 Proposal	ESP	
Phase 2 Authentication	SHA1	
Phase 2 Encryption	3DES	
Prefer Forward Security	MODP 1024(group2)	

▼ IPsec

Connection Name:

Active:  Yes  No

Interface:

Remote Gateway IP:  (0.0.0.0 means any)

Local Access Range:  Local IP Address:  IP Subnetmask:

Remote Access Range:  Remote IP Address:  IP Subnetmask:

IKE Mode:  Pre-Shared Key:

Local ID Type:  IDContent:

Remote ID Type:  IDContent:

Encryption Algorithm:  Authentication Algorithm:  Diffie-Hellman Group:

IPsec Proposal:  ESP  AH

Authentication Algorithm:  Encryption Algorithm:

Perfect Forward Secrecy:

Phase 1 (IKE)SA Lifetime:  min(s) Phase 2 (IPsec):  min(s)

Keepalive:  PING to the IP(0.0.0.0:NEVER):  Interval:  seconds \*\*

Disconnection Time after No Traffic:  seconds (180 at least)

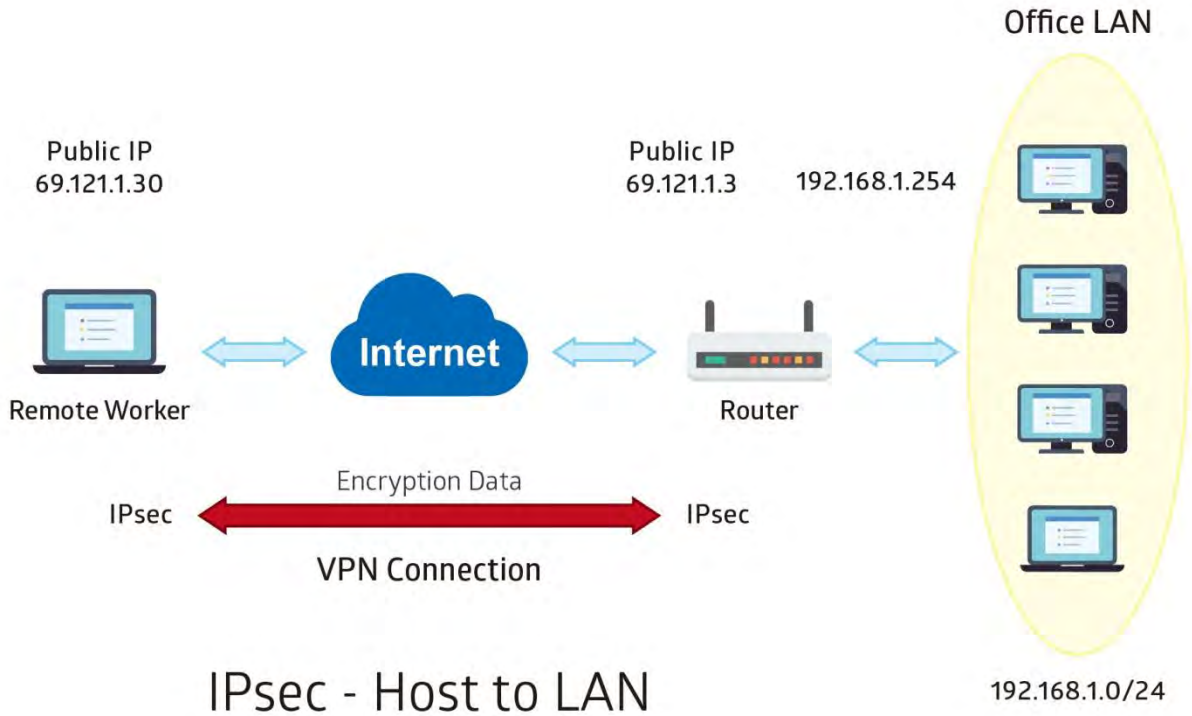
Reconnection Time:  min(s) (3 at least)

Note \*: FQDN with @ as first character means don't resolve domain name.

Note \*\*: (0-3600, 0 means NEVER)

**Examples: IPsec – Remote Employee to BEC EG-210N Connection**

Router servers as VPN server, and host should install the IPsec client to connect to Headquarter office through IPsec VPN.





### Headquarter office Side:

Configuration Settings		Description
Connection Name	H-to-H	Assigned name to this tunnel/profile
Remote Secure Gateway	69.121.1.30	IP address of the Branch office gateway
Access Network		
Local Access Range	Subnet	Headquarter office LAN network information
Local Network IP Address	192.168.1.0	
Local Network Netmask	255.255.255.0	
Remote Access Range	Signal IP	Remote worker IP address
Remote Network IP Address	69.121.1.30	
Remote Network Netmask	255.255.255.255	
IPSec Proposal		
IKE Mode	Main	Security Plan
Pre-Shared Key	1234567890	
Phase 1 Encryption	AES-128	
Phase 1 Authentication	SHA1	
Phase 1 Diffie-Hellman Group	MODP 1024(group2)	
Phase 2 Proposal	ESP	
Phase 2 Authentication	SHA1	
Phase 2 Encryption	3DES	
Prefer Forward Security	MODP 1024(group2)	

**IPSec**

Connection Name:

Active:  Yes  No

Interface:

Remote Gateway IP:  (0.0.0.0 means any)

Local Access Range:  Local IP Address:  IP Subnetmask:

Remote Access Range:  Remote IP Address:  IP Subnetmask:

IKE Mode:  Pre-Shared Key:

Local ID Type:  IDContent:

Remote ID Type:  IDContent:

Encryption Algorithm:  Authentication Algorithm:  Diffie-Hellman Group:

IPSec Proposal:  ESP  AH

Authentication Algorithm:  Encryption Algorithm:

Perfect Forward Secrecy:

Phase 1 (IKE)SA Lifetime:  min(s) Phase 2 (IPSec):  min(s)

Keepalive:  PING to the IP(0.0.0.0:NEVER):  Interval:  seconds \*\*

Disconnection Time after No Traffic:  seconds (180 at least)

Reconnection Time:  min(s) (3 at least)

Note \*: FQDN with @ as first character means don't resolve domain name.

Note \*\*: (0-3600, 0 means NEVER)

## PPTP Server

The **Point-to-Point Tunneling Protocol** (PPTP) is a Layer2 tunneling protocol for implementing virtual private networks through IP network.

In the Microsoft implementation, the tunneled PPP traffic can be authenticated with PAP, CHAP, and Microsoft CHAP V1/V2 . The PPP payload is encrypted using Microsoft Point-to-Point Encryption (MPPE) when using MSCHAPv1/v2.

**NOTE:** 4 sessions for Client and 4 sessions for Server respectively.

**PPTP Server**

PPTP Server  Activated  Deactivated

Authentication Type

Encryption Key Length

Encryption Mode

CCP  Yes  No

MS-DNS

Rule Index

Connection Name

Active  Yes  No

Username

Password

Connection Type

Private IP Address assigned to Dial-in User

Remote Network IP Address

Remote Network Netmask

**PPTP Server Listing**

Index	Connection Name	Active	Username	Connection Type	Assigned IP Address
-------	-----------------	--------	----------	-----------------	---------------------

**PPTP Server:** Select **Activate / Deactivate** to enable or disable the PPTP Server.

**Authentication Type:** Pick an authentication type from the drop-down list. When using PAP, the password is sent unencrypted, whilst CHAP encrypts the password before sending, and also allows for challenges at different periods to ensure that an intruder has not replaced the client. When passed the authentication with MS-CHAPv2, the MPPE encryption is supported.

**Encryption Key Length: Auto,** data encryption and key length, with 40-bit or 128-bit, is automatically negotiated when establish a connection. 128-bit keys provide strong stronger encryption than 40-bit keys.

**Encryption Mode:** The encryption key will be changed every 256 packets with Stateful mode. With Stateless mode, the key will be changed in each packet.

**CCP (Compression Control Protocol):** Enable to compress data to save bandwidth and increase data transfer speed.

**MS-DNS:** Assign a DNS server or use router default IP address to be the MS-DNS server IP address.

**Rule Index:** The numeric rule indicator for PPTP server. The maximum entry is up to 4.

**Connection Name:** Enter a description for this connection/profile.

**Active:** **Yes** to activate the account. PPTP server is waiting for the client to connect to this account.

**Username / Password:** Enter the username / password for this profile.

**Connection Type:** Select Remote Access for single user, Select LAN to LAN for remote gateway.

**Private IP Address Assigned to Dial-in User:** Specify the private IP address to be assigned to dial-in clients, and the IP should be in the same subnet as local LAN, but not occupied.

**Remote Network IP Address:** Enter the subnet IP of the remote LAN network.

**Remote Network Netmask:** Enter the Netmask of the remote LAN network.

Click **Save** to apply settings.

## PPTP Client

Establish a PPTP tunnel over Internet to connect with a PPTP server.

A total of 4 PPTP Client sessions can be created.

**PPTP Client**

Rule Index: 1 ▼

Connection Name:

Active:  Yes  No

Authentication Type: Chap/Pap ▼

Encryption Key Length: Auto ▼

Encryption Mode: Allow Stateless or Statefull ▼

CCP:  Yes  No

Username:

Password:

Connection Type: Remote Access ▼

Server IP Address:

Remote Network IP Address:

Remote Network Netmask:

Active as Default Route:  Enable

**PPTP Client Listing**

Index	Connection Name	Active	Username	Connection Type	Server IP Address
-------	-----------------	--------	----------	-----------------	-------------------

**Rule Index:** The numeric rule indicator for PPTP client. The maximum entry is up to 4.

**Connection Name:** Enter a description for this connection/profile.

**Active:** **Yes** to activate the account. PPTP server is waiting for the client to connect to this account.

**Authentication Type:** Pick an authentication type from the drop-down list. When using PAP, the password is sent unencrypted, whilst CHAP encrypts the password before sending, and also allows for challenges at different periods to ensure that an intruder has not replaced the client. When passed the authentication with MS-CHAPv2, the MPPE encryption is supported.

**Encryption Key Length:** **Auto**, data encryption and key length, with 40-bit or 128-bit, is automatically negotiated when establish a connection. 128-bit keys provide strong stronger encryption than 40-bit keys.

**Encryption Mode:** The encryption key will be changed every 256 packets with Stateful mode. With Stateless mode, the key will be changed in each packet.

**CCP (Compression Control Protocol):** Enable to compress data to save bandwidth and increase data transfer speed.

**Username / Password:** Enter the username / password provided by the PPTP server/host.

**Connection Type:** Select Remote Access for single user, Select LAN to LAN for remote gateway.

**Server IP Address:** Enter the WAN IP address of the PPTP server.

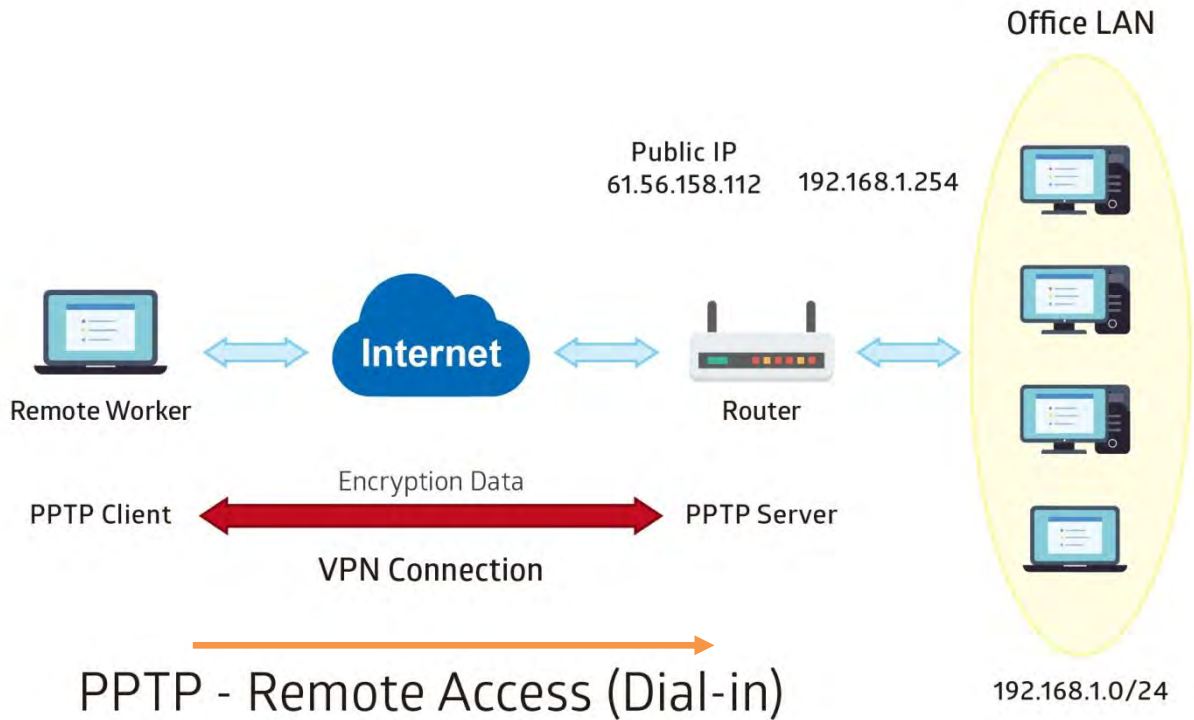
**Remote Network IP Address:** Enter the subnet IP of the server/host LAN network.

**Remote Network Netmask:** Enter the Netmask of the server/host LAN network.

**Active as Default Route:** Enabled to let the tunnel to be the default route for traffic, under this circumstance, all packets will be forwarded to this tunnel and routed to the next hop.

Click **Save** to apply settings.

Example: PPTP – Remote Employee Dial-in to BEC EG-210N



The input IP address 192.168.1.2 will be assigned to the remote worker. Please make sure this IP is not used in the Office LAN.

Configuration Settings		Description
Connection Name	HS-RA	Assigned name to this tunnel/profile
Authentication Type	MS-CHAPv2	Authentication type
Username	test	Credential created from the device to a PPTP client to dial-in to the network.
Password	test	
Connection Type	Remote Access	Remote access for a dial-in
Assigned IP	192.168.1.2	Local IP assigned to the dial-in client

**PPTP Server**

PPTP Server  Activated  Deactivated

Authentication Type: MS-CHAPv2

Encryption Key Length: Auto

Encryption Mode: Allow Stateless and Statefull

CCP:  Yes  No

MS-DNS: 192.168.1.254

Rule Index: 1

Connection Name: HS-RA

Active:  Yes  No

Username: test

Password: ••••

Connection Type: Remote Access

Private IP Address assigned to Dial-in User: 192.168.1.2

Remote Network IP Address:

Remote Network Netmask:

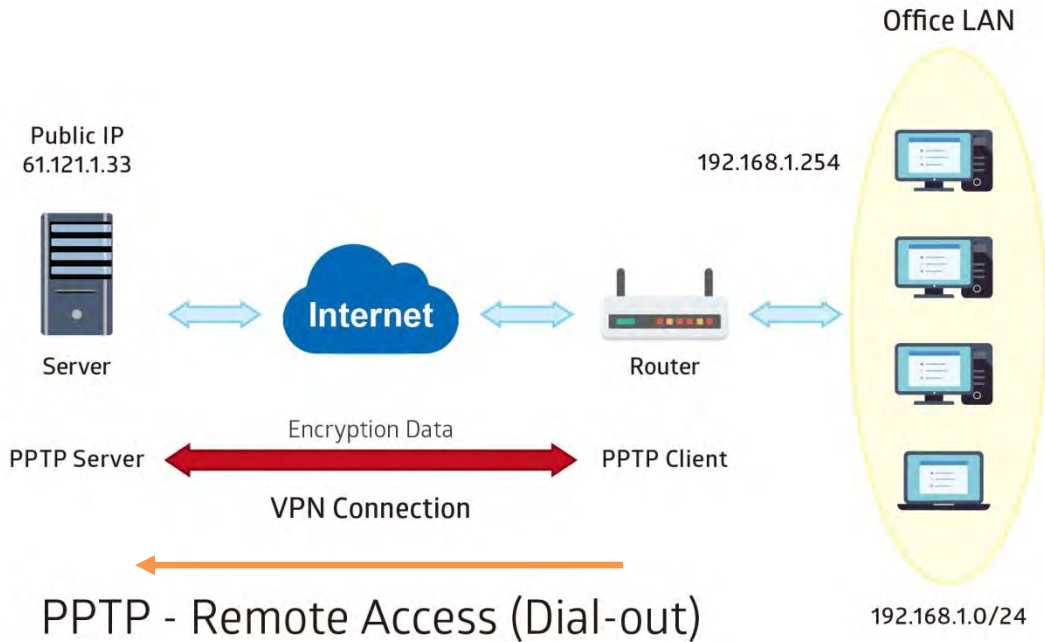
Save Delete

**PPTP Server Listing**

Index	Connection Name	Active	Username	Connection Type	Assigned IP Address
1	HS-RA	Yes	test	Remote Access	192.168.1.2

**Example: PPTP – Remote Employee Dial-out to BEC EG-210N**

A company’s office establishes a PPTP VPN connection with a file server located at a separate location. The router is installed in the office, connected to a couple of PCs and Servers.



PPTP Server WAN IP address is 61.121.1.33 of the Headquarter office.

Configuration Settings		Description
Connection Name	HS-RA	Assigned name to this tunnel/profile
Authentication Type	MS-CHAPv2	Authentication type
Username	test	Credential assigned from the PPTP server for PPP client to dial-in to its network.
Password	test	
Connection Type	Remote Access	Remote access for a dial-in
Server IP	61.121.1.33	VPN server WAN IP address

**PPTP Client**

Rule Index: 1

Connection Name: HS-RA

Active:  Yes  No

Authentication Type: MS-CHAPv2

Encryption Key Length: Auto

Encryption Mode: Allow Stateless or Statefull

CCP:  Yes  No

Username: test

Password: •••••

Connection Type: Remote Access

Server IP Address: 69.121.1.33

Remote Network IP Address: 192.168.1.0

Remote Network Netmask: 255.255.255.0

Active as Default Route:  Enable

Save Delete

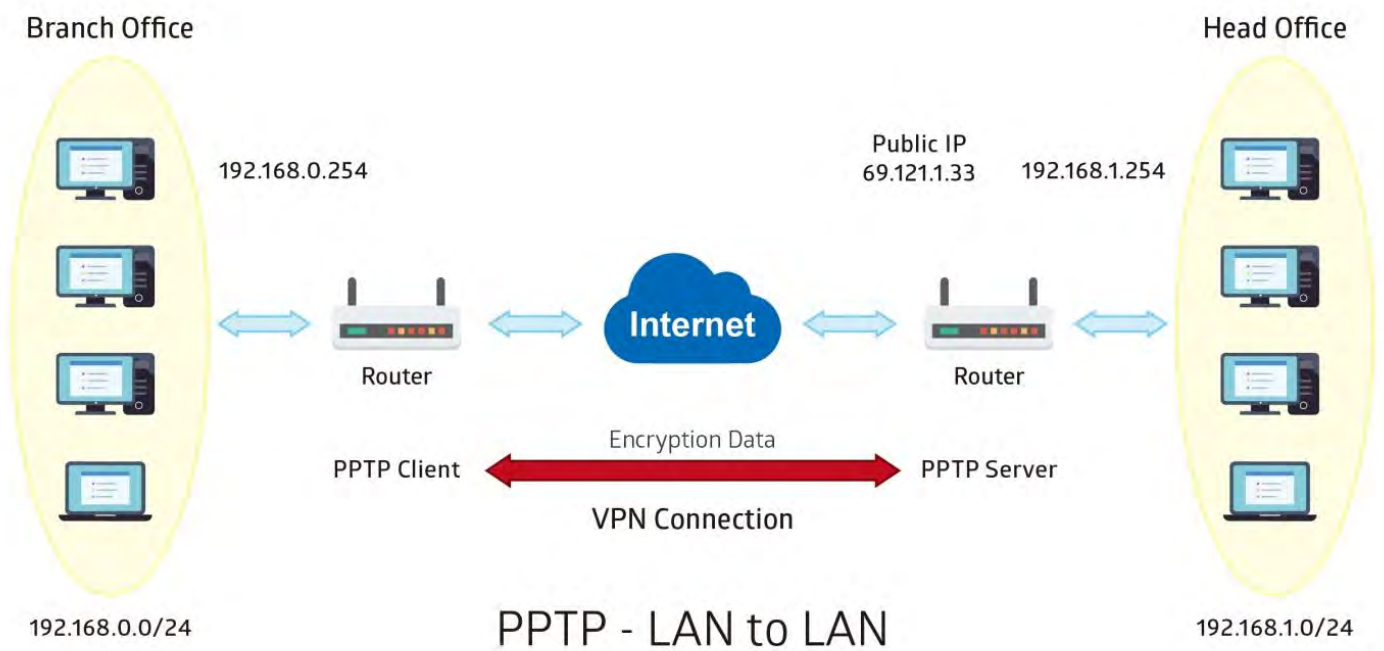
**PPTP Client Listing**

Index	Connection Name	Active	Username	Connection Type	Server IP Address
1	HS-RA	Yes	test	Remote Access	69.121.1.33

### Example: PPTP – Network (LAN) to Network (LAN) Connection

The branch office establishes a PPTP VPN tunnel with Headquarter office to connect two private networks over the Internet. The routers are installed in the Headquarter office and branch offices accordingly.

**NOTE:** Both office LAN networks must be in **different subnets** with the LAN-LAN application.





**Configuring PPTP Server in the Headquarter office**

The IP address 192.168.1.2 will be assigned to the router located in the branch office. Please make sure this IP is not used in the Headquarter office LAN.

Configuration Settings		Description
Connection Name	HS-LL	Assigned name to this tunnel/profile
Authentication Type	MS-CHAPv2	Authentication type
Username	test	Credential created for a PPTP client to dial-in to its local network.
Password	test	
Connection Type	LAN to LAN	LAN to LAN connection
Assigned IP	192.168.1.2	Local IP assigned to the dial-in client
Remote Network IP	129.168.0.0	Remote, Branch office, LAN network IP address and Netmask
Remote Network Netmask	255.255.255.0	

▼ PPTP Server

PPTP Server  Activated  Deactivated

Authentication Type

Encryption Key Length

Encryption Mode

CCP  Yes  No

MS-DNS

Rule Index

Connection Name

Active  Yes  No

Username

Password

Connection Type

Private IP Address assigned to Dial-in User

Remote Network IP Address

Remote Network Netmask

PPTP Server Listing

Index	Connection Name	Active	Username	Connection Type	Assigned IP Address
1	HS-LL	Yes	test	Lan to Lan	192.168.1.2

**Configuring PPTP Client in the Branch office**

The IP address 69.1.121.33 is the Public IP address of the router located in Headquarter office.

Configuration Settings		Description
Connection Name	BC-LL	Assigned name to this tunnel/profile
Authentication Type	MS-CHAPv2	Authentication type
Username	test	Credential assigned from the Headquarter Server to dial-in.
Password	test	
Connection Type	LAN to LAN	LAN to LAN connection
Server IP	69.121.1.33	Headquarter Serve WAN IP address
Remote Network IP	129.168.1.0	Remote, Headquarter office, LAN network IP address and Netmask
Remote Network Netmask	255.255.255.0	

**▼ PPTP Client**

Rule Index: 1

Connection Name: BC-LL

Active:  Yes  No

Authentication Type: MS-CHAPv2

Encryption Key Length: Auto

Encryption Mode: Allow Stateless or Statefull

CCP:  Yes  No

Username: test

Password: ●●●●

Connection Type: LAN to LAN

Server IP Address: 69.121.1.33

Remote Network IP Address: 192.168.1.0

Remote Network Netmask: 255.255.255.0

Active as Default Route:  Enable

Save Delete

**PPTP Client Listing**

Index	Connection Name	Active	Username	Connection Type	Server IP Address
1	BC-LL	Yes	test	Lan to Lan	69.121.1.33

## L2TP

**L2TP, Layer 2 Tunneling Protocol** is a tunneling protocol used to support virtual private networks (VPNs). It does not provide any encryption or confidentiality by itself; it relies on an encryption protocol that it passes within the tunnel to provide.

**NOTE:** 4 sessions for dial-in connections and 4 sessions for dial-out connections

**L2TP**

Rule Index	<input type="text" value="1"/>
Connection Name	<input type="text"/>
Active	<input checked="" type="radio"/> Yes <input type="radio"/> No
Connection Mode	<input type="text" value="Dial out"/>
Server IP Address	<input type="text"/>
Authentication Type	<input type="text" value="Chap/Pap"/>
Username	<input type="text"/>
Password	<input type="password" value="....."/>
Connection Type	<input type="text" value="Remote Access"/>
Tunnel Authentication	<input type="checkbox"/> Enable
Secret Password	<input type="text"/>
Local Host Name	<input type="text"/>
Remote Host Name	<input type="text"/>
Active as Default Route	<input type="checkbox"/> Enable
IPSec	<input type="checkbox"/> Enable

**L2TP Listing**

Index	Connection Name	Active	Connection Mode	Connection Type

**Rule Index:** The numeric rule indicator for L2TP. The maximum entry is up to 8 (4 dial-in and 4 dial-out profiles).

**Connection Name:** Enter a description for this connection/profile.

**Active:** To enable or disable this profile.

### Connection Mode (Dial in)

Connection Mode	<input type="text" value="Dial in"/>
Authentication Type	<input type="text" value="Chap/Pap"/>
Username	<input type="text"/>
Password	<input type="password" value="....."/>
Private IP Address assigned to Dial-in User	<input type="text"/>

**Connection Mode:** Select Dial In to operate as a L2TP server.

**Authentication Type:** Default in Chap/Pap (CHAP, Challenge Handshake Authentication Protocol. PAP, Password Authentication Protocol). If you want the router to determine the authentication type to use, or else manually specify PAP if you know which type the server is using (when acting as a client), or else the authentication type you want clients connecting to you to use (when acting as a server).

**Username / Password (Server/Host):** Enter the username / password for this profile.

**Private IP Address Assigned to Dial-in User:** The private IP to be assigned to dial-in user by L2TP server. The IP should be in the same subnet as local LAN and should not be occupied.

### Connection Mode (Dial out)

Connection Mode	Dial out ▼
Server IP Address	<input type="text"/>
Authentication Type	Chap/Pap ▼
Username	<input type="text"/>
Password	.....

**Connection Mode:** Choose Dial Out if you want your router to operate as a client (connecting to a remote L2TP Server, e.g., your office server).

**Server IP Address:** Enter the IP address of your VPN Server.

**Authentication Type:** Default is Chap/Pap (CHAP, Challenge Handshake Authentication Protocol. PAP, Password Authentication Protocol). If you want the router to determine the authentication type to use, or else manually specify PAP if you know which type the server is using (when acting as a client), or else the authentication type you want clients connecting to you to use (when acting as a server).

**Username / Password (Client):** Enter the username / password provide by the Server/Host.

### Connection Type

- ▶ **Remote Access:** From a single user.
- ▶ **LAN to LAN:** Enter the peer network information, such as network address and Netmask.

### Tunnel Authentication and Active

Tunnel Authentication	<input type="checkbox"/> Enable
Secret Password	<input type="text"/>
Local Host Name	<input type="text"/>
Remote Host Name	<input type="text"/>
Active as Default Route	<input type="checkbox"/> Enable
IPSec	<input type="checkbox"/> Enable

**Tunnel Authentication:** This enables router to authenticate both the L2TP remote and L2TP host. This is only valid when L2TP remote supports this feature.

**Secret Password:** The secure password length should be 16 characters which may include numbers

and characters.

**Local Host Name:** Enter hostname of Local VPN device that is connected / established a VPN tunnel.

**Remote Host Name:** Enter hostname of remote VPN device. It is a tunnel identifier from the Remote VPN device matches with the Remote hostname provided. If remote hostname matches, tunnel will be connected; otherwise, it will be dropped.

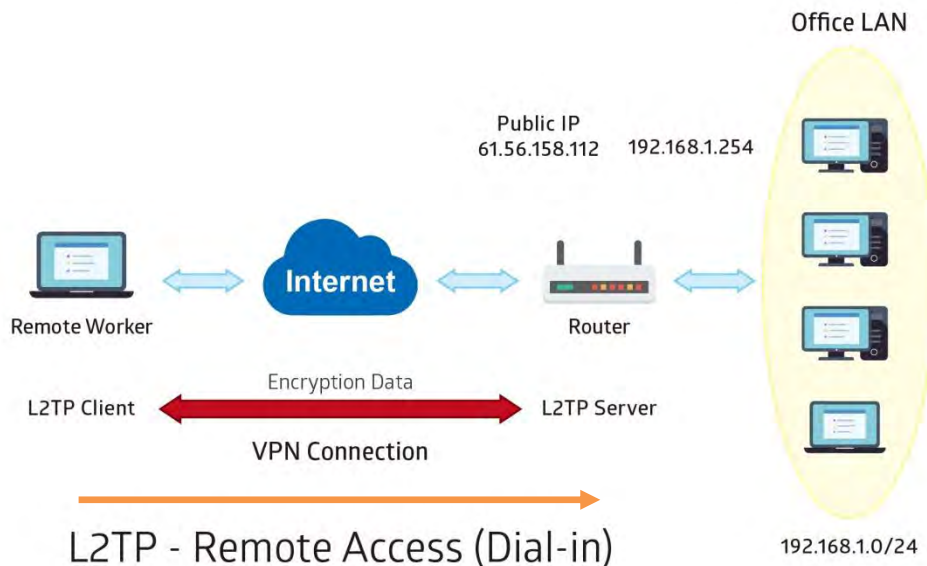
**Active as Default Route:** Enabled to let the tunnel to be the default route for traffic, under this circumstance, all packets will be forwarded to this tunnel and routed to the next hop.

**IPSec:** Click the checkbox to establish a L2TP tunnel inside of the IPSec tunnel.

Click **Save** to apply settings.

### Example: L2TP VPN – Remote Employee Dial-in to BEC EG-210N

A remote worker establishes a L2TP VPN connection with the Headquarter office using Microsoft's VPN Adapter. The router is installed in the Headquarter office, connected to a couple of PCs and Servers.



The input IP address 192.168.1.200 will be assigned to the remote worker. Please make sure this IP is not used in the Office LAN.

Configuration Settings		Description
Connection Name	HS-RA	Assigned name to this tunnel/profile
Connection Mode	Dial in	Operate as L2TP server
Authentication Type	Chap/Pap	Authentication type
Username	test	Credential from the device for remote client to dial-in to the network.
Password	test	
Assigned IP	192.168.1.200	An IP assigned to the dial in client
Connection Type	Remote Access	Remote access for dial in

**L2TP**

Rule Index: 1

Connection Name: HS-RA

Active:  Yes  No

Connection Mode: Dial In

Authentication Type: Chap/Pap

Username: test

Password: \*\*\*\*

Private IP Address assigned to Dial-in User: 192.168.1.200

Connection Type: Remote Access

Tunnel Authentication:  Enable

Secret Password:

Local Host Name:

Remote Host Name:

Active as Default Route:  Enable

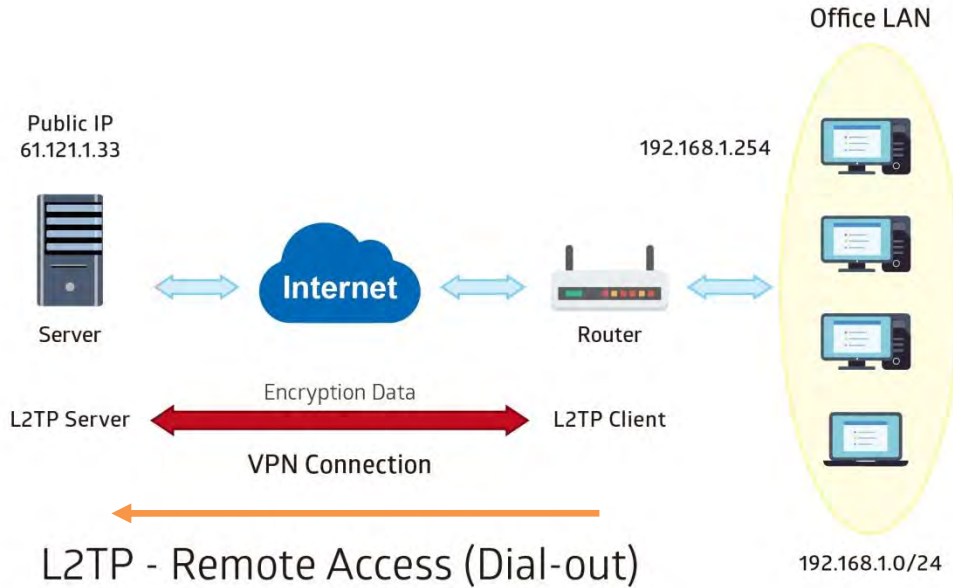
Save Delete

**L2TP Listing**

Index	Connection Name	Active	Connection Mode	Connection Type
1	HS-RA	Yes	Dial In	Remote Access

**Example: L2TP VPN – BEC EG-210N Dial-out to a Server**

A company’s office establishes a L2TP VPN connection with a file server located at a separate location. The router is installed in the office, connected to a couple of PCs and Servers.



Item		Description
Connection Name	HC-RA	Assigned name to this tunnel/profile
Connection Mode	Dial out	Operate as L2TP client
Server IP	69.121.1.33	VPN server WAN IP address
Authentication Type	Chap/Pap	Authentication type
Username	test	Credential from the VPN Server for remote clients to dial-in to the network.
Password	test	
Connection Type	Remote Access	Remote access for dial out

**L2TP**

Rule Index: 1

Connection Name: HC-RA

Active:  Yes  No

Connection Mode: Dial out

Server IP Address: 69.121.1.33

Authentication Type: Chap/Pap

Username: test

Password: \*\*\*\*

Connection Type: Remote Access

Tunnel Authentication:  Enable

Secret Password:

Local Host Name:

Remote Host Name:

Active as Default Route:  Enable

Save Delete

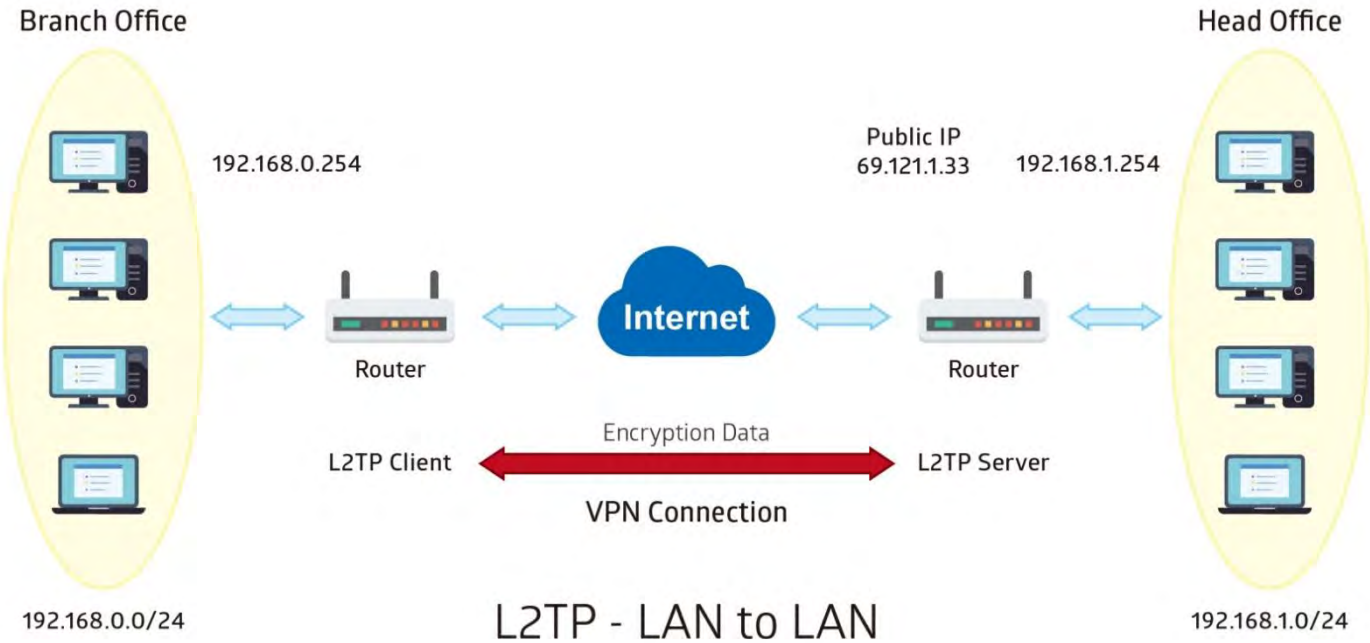
**L2TP Listing**

Index	Connection Name	Active	Connection Mode	Connection Type
1	HC-RA	Yes	Dial out	Remote Access

**Example: L2TP VPN – Network (LAN) to Network (LAN) Connection**

The branch office establishes a L2TP VPN tunnel with Headquarter office to connect two private networks over the Internet. The routers are installed in the Headquarter office and branch office accordingly.

**NOTE:** Both office LAN networks must be in different subnets with the LAN-LAN application.





**Configuring L2TP VPN Dial-in in the Headquarter office**

The IP address 192.168.1.200 will be assigned to the router located in the branch office.

Item		Description
Connection Name	HS-LL	Assigned name to this tunnel/profile
Connection Mode	Dial in	Operate as L2TP server
Authentication Type	Chap/Pap	Authentication type
Username	Test	Credential for a PPTP client to dial-in to the network.
Password	Test	
Assigned IP	192.168.1.200	An IP assigned to the dial in client
Connection Type	LAN to LAN	LAN to LAN for dial in
Remote Network IP	129.168.0.0	Remote, Branch office, LAN network IP address and Netmask
Remote Network Netmask	255.255.255.0	

**L2TP**

Rule Index: 1

Connection Name: HS-LL

Active:  Yes  No

Connection Mode: Dial in

Authentication Type: Chap/Pap

Username: test

Password: \*\*\*\*

Private IP Address assigned to Dial-in User: 192.168.1.200

Connection Type: Lan to Lan

Remote Network IP Address: 192.168.0.0

Remote Network Netmask: 255.255.255.0

Tunnel Authentication:  Enable

Secret Password:

Local Host Name:

Remote Host Name:

Active as Default Route:  Enable

Save Delete

**L2TP Listing**

Index	Connection Name	Active	Connection Mode	Connection Type
1	HS-LL	Yes	Dial in	Lan to Lan

**Configuring L2TP VPN Dial-out in the Branch office**

The IP address 69.1.121.33 is the Public IP address of the router located in Headquarter office.

Item		Description
Connection Name	BC-LL	Assigned name to this tunnel/profile
Connection Mode	Dial out	Operate as L2TP client
Server IP	69.121.1.33	Dialed server IP
Authentication Type	Chap/Pap	Authentication type
Username	test	Credential from the PPTP server to dial-in to the network
Password	test	
Connection Type	LAN to LAN	LAN to LAN for dial out
Remote Network IP	129.168.1.0	Remote, Headquarter office, LAN network IP address and Netmask
Remote Network Netmask	255.255.255.0	

**L2TP**

Rule Index: 1

Connection Name: BC-LL

Active:  Yes  No

Connection Mode: Dial out

Server IP Address: 69.121.1.33

Authentication Type: Chap/Pap

Username: test

Password: \*\*\*\*

Connection Type: Lan to Lan

Remote Network IP Address: 192.168.1.0

Remote Network Netmask: 255.255.255.0

Tunnel Authentication:  Enable

Secret Password:

Local Host Name:

Remote Host Name:

Active as Default Route:  Enable

Save Delete

**L2TP Listing**

Index	Connection Name	Active	Connection Mode	Connection Type
1	BC-LL	Yes	Dial out	Lan to Lan

## GRE Tunnel

**Generic Routing Encapsulation (GRE)** is a tunneling protocol that can encapsulate a wide variety of network layer protocol packets inside virtual point-to-point links over an IP network.

**NOTE:** Up to 8 GRE tunnels supported.

GRE					
Rule Index	1				
Connection Name					
Active	<input type="radio"/> Yes <input checked="" type="radio"/> No				
Interface	EWAN(LAN1)				
Remote Gateway IP	0.0.0.0				
Tunnel Local IP Address (Virtual Interface)	0.0.0.0				
Tunnel Network Netmask (Virtual Interface)	0.0.0.0				
Tunnel Remote IP Address (Virtual Interface)	0.0.0.0				
Remote Network IP Address	0.0.0.0				
Remote Network Netmask	0.0.0.0				
Enable Keepalive	<input type="checkbox"/>				
Keepalive Retry Times	3				
Keepalive Interval	5 Second(s)				
MTU	1460				
Active as Default Route	<input type="radio"/> Yes <input checked="" type="radio"/> No				
IPSec	<input type="checkbox"/> Enable				
<input type="button" value="Save"/> <input type="button" value="Delete"/>					
GRE Listing					
Index	Connection Name	Active	Interface	Remote Gateway IP	Remote Network

**Rule Index:** The numeric rule indicator for GRE. The maximum entry is up to 8.

**Connection Name:** Enter a description for this connection/profile.

**Active:** **Yes** to activate this GRE profile.

**Interface:** Select a WAN interface to establish a tunnel with the remote VPN device.

**Remote Gateway:** Enter the remote GRE WAN IP address.

**Tunnel Local IP Address & Remote IP address (Virtual Interface):** Enter a virtual IP address for the local and peer network.

**Tunnel Network Netmask (Virtual Interface):** Enter the Netmask for this virtual interface.

**NOTE:** The virtual Local and Remote IP addresses must in **same subnet** and **cannot be existed or used** in both networks.

**Remote Network IP Address Netmask:** Enter remote LAN network IP address.

**Remote Network Netmask:** Enter remote LAN network Netmask.

**Enable Keep-alive:** Check the box to enable the keep-alive. The system will detect remote peer is still alive or lost. If no responses from the remote peer after certain times, **#-of-retry-time x interval**, the connection will get dropped.

**Keep-alive Retry Times:** Set the keep-alive retry times, default is 3.

**Keep-alive Interval:** Set the keep-alive Interval, unit in seconds. Default is 5 seconds.

Example: Keepalive retry time (3) x keepalive interval (5) = 15 seconds. If no responses for 15 seconds, GRE connection will get aborted.

**MTU:** Maximum Transmission Unit in byte. The size of the largest datagram (excluding media-specific headers) an IP attempts to send through the interface.

**Active as Default Route:** Select if to set the GRE tunnel as the default route.

**IPSec:** Click the checkbox to establish a GRE tunnel inside of the IPSec tunnel.

IPSec	<input checked="" type="checkbox"/> Enable
IKE Mode	Main ▼
IKE(IPSec) Local ID	Default (Local WAN IP) ▼ <input type="text"/>
IKE(IPSec) Remote ID	Default (Remote Gateway IP) ▼ <input type="text"/>
IKE(IPSec) Pre-Shared Key	<input type="text"/>

**IKE Mode:** IKE, Internet Key Exchange, is the mechanism to negotiate and exchange parameters and keys between IPSec peers to establish security associations (SA). Select Main or Aggressive mode.

**IKE (IPSec) Local ID Type** and **Remote ID Type:** When the mode of IKE is aggressive, Local and Remote peers can be identified by other IDs.

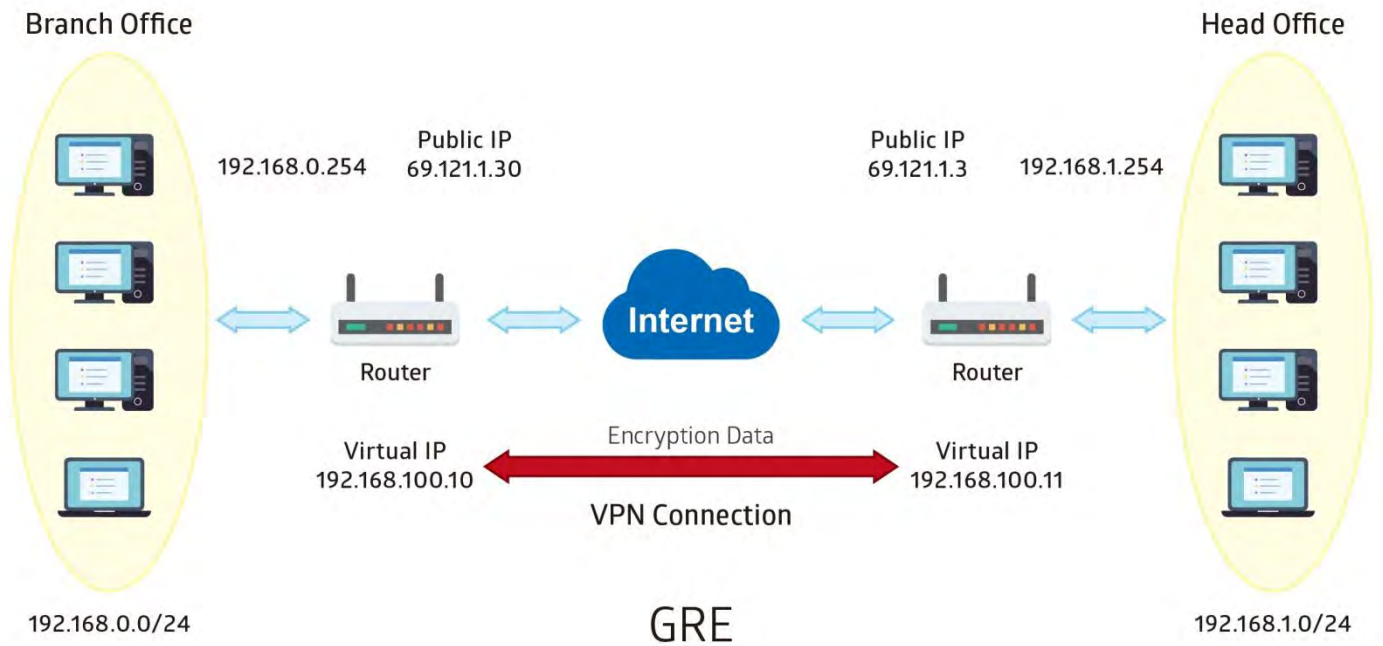
**IKE (IPSec) Pre-Shared Key:** This is for the Internet Key Exchange (IKE) protocol, a string from 4 to 128 characters. Both sides should use the same key. IKE is used to establish a shared security policy and authenticated keys for services (such as IPSec) that require a key. Before any IPSec traffic can be passed, each router must be able to verify the identity of its peer. This can be done by manually entering the pre-shared key into both sides (router or hosts).

Click **Save** to apply settings.

### Example: GRE VPN – Network (LAN) to Network (LAN) Connection

The branch office establishes a GRE VPN tunnel with Headquarter office to connect two private networks over the Internet. The routers are installed in the Headquarter office and branch office accordingly.

**NOTE:** Both office LAN networks must be in different subnets with the GRE VPN connection.



### Configuring GRE connection in the Headquarter office

The IP address 69.1.121.30 is the Public IP address of the router located in branch office.

Item		Description
Connection Name	HS-LL	Assigned name to this tunnel/profile
Remote Gateway IP	69.121.1.30	WAN IP address of Branch office
Tunnel Local IP Address (Virtual Interface)	192.168.100.11	Local and remote virtual interface IP address must be in same Netmask.
Tunnel Remote IP Address (Virtual Interface)	192.168.100.10	
Tunnel Network Netmask (Virtual Interface)	255.255.255.0	Network Netmask of this virtual interface.
Remote Network IP/ Netmask	192.168.0.0/ 255.255.255.0	The remote, branch office, LAN network IP and Netmask.

▼ GRE

Rule Index: 1 ▼

Connection Name: HS-LL

Active:  Yes  No

Interface: 4G/LTE ▼

Remote Gateway IP: 69.121.1.30

Tunnel Local IP Address (Virtual Interface): 192.168.100.11

Tunnel Network Netmask (Virtual Interface): 255.255.255.0

Tunnel Remote IP Address (Virtual Interface): 192.168.100.10

Remote Network IP Address: 192.168.0.0

Remote Network Netmask: 255.255.255.0

Enable Keepalive:

Keepalive Retry Times: 3

Keepalive Interval: 5 Second(s)

MTU: 1460

Active as Default Route:  Yes  No

IPSec:  Enable

Save Delete

GRE Listing

Index	Connection Name	Active	Interface	Remote Gateway IP	Remote Network
1	HS-LL	Yes	4G LTE	69.121.1.30	192.168.0.0/255.255.255.0

### Configuring GRE connection in the Branch office

The IP address 69.1.121.3 is the Public IP address of the router located in Headquarter office.

Item		Description
Connection Name	BC-LL	Assigned name to this tunnel/profile
Remote Gateway IP	69.121.1.3	WAN IP address of Headquarter office
Tunnel Local IP Address (Virtual Interface)	192.168.100.10	Local and remote virtual interface IP address must be in same Netmask.
Tunnel Remote IP Address (Virtual Interface)	192.168.100.11	
Tunnel Network Netmask (Virtual Interface)	255.255.255.0	Network Netmask of this virtual interface.
Remote Network IP/ Netmask	192.168.1.0/ 255.255.255.0	The remote, Headquarter office, LAN network IP and Netmask.

▼ GRE

Rule Index	1 ▼
Connection Name	BC-LL
Active	<input checked="" type="radio"/> Yes <input type="radio"/> No
Interface	4G/LTE ▼
Remote Gateway IP	69.121.1.3
Tunnel Local IP Address (Virtual Interface)	192.168.100.10
Tunnel Network Netmask (Virtual Interface)	255.255.255.0
Tunnel Remote IP Address (Virtual Interface)	192.168.100.11
Remote Network IP Address	192.168.1.0
Remote Network Netmask	255.255.255.0
Enable Keepalive	<input type="checkbox"/>
Keepalive Retry Times	3
Keepalive Interval	5 Second(s)
MTU	1460
Active as Default Route	<input type="radio"/> Yes <input checked="" type="radio"/> No
IPSec	<input type="checkbox"/> Enable

Save Delete

GRE Listing

Index	Connection Name	Active	Interface	Remote Gateway IP	Remote Network
1	BC-LL	Yes	4G LTE	69.121.1.3	192.168.1.0/255.255.255.0

## OpenVPN

OpenVPN is an open source software application that implements virtual private network (VPN) techniques for creating secure point-to-point or site-to-site connections in routed or bridged configurations and remote access facilities. It uses a custom security protocol that utilizes SSL/TLS for key exchange. OpenVPN can run over User Datagram Protocol (UDP) or Transmission Control Protocol (TCP) transports, multiplexing created SSL tunnels on a single TCP/UDP port. It is capable of traversing network address translation (NAT) and firewalls.

OpenVPN allows peers to authenticate each other using a pre-shared secret key, certificates, or username/password. Pre-shared secret key is the easiest, with certificate based being the most robust and feature-rich. It uses the OpenSSL encryption library extensively, allowing OpenVPN to use all the ciphers available in the OpenSSL package, as well as the SSLv3/TLSv1 protocol, and contains many security and control features.

It has integrated with OpenVPN package, allowing users to run OpenVPN in server or client mode from their network routers.

## OpenVPN Server

**NOTE:** Up to 1 profile.

OpenVPN Server	
Rule Index	1 ▼
Connection Name	<input type="text"/>
Active	<input type="radio"/> Yes <input checked="" type="radio"/> No
Device Type	TUN (IP over OpenVPN) ▼
Local Service Port	1194
<b>Tunnel Network (Virtual interface)</b>	
IP Address	<input type="text"/> Netmask: 255.255.255.0
<b>Local Access Range</b>	
IP Address	<input type="text"/> Netmask: 255.255.255.0
Protocol	UDP ▼
Local Certificate Index	Default ▼
Trusted CA Index	Default ▼
<b>Cryptographic Suite</b>	
Cipher	Default ▼ Hash: Default ▼
Compression	Adaptive ▼
Keepalive	<input checked="" type="checkbox"/> Enable Interval: 10 second(s) Timeout: 120 second(s)
<input type="button" value="Save"/> <input type="button" value="Delete"/>	

**Rule Index:** The numeric rule indicator for OpenVPN.

**Connection Name:** Enter a description for this connection/profile.

**Active:** Yes to activate this profile.

**Device Type:**



- ▶ **TUN (IP Over OpenVPN):** Layer 3 networking level which routes packets on the VPN (Routing).

Device Type	TUN (IP over OpenVPN) ▼
Local Service Port	1194

- ◆ **Local Service Port:** Port 1194 is the default assigned port for OpenVPN.

- ▶ **TAP (Ethernet Over OpenVPN):** Works in layer 2 to pass Ethernet frame over the VPN tunnel.

Device Type	TAP (Ethernet over OpenVPN) ▼
Bridge	<input type="radio"/> Yes <input checked="" type="radio"/> No
Local Service Port	1194

- ◆ **Bridge:** Yes if used in bridge.
- ◆ **Local Service Port:** Port 1194 is the default assigned port for OpenVPN.

### Tunnel Network (Virtual Interface)

**IP Address / Netmask:** Enter a virtual IP address and Netmask for this tunnel.

**NOTE:** The virtual IP addresses **cannot be existed or used** in both networks.

### Local Access Range

**IP Address / Netmask:** Enter local LAN network IP address and Netmask.

**Protocol:** OpenVPN can run over either UDP or TCP transports. Select the protocol.

**Local Certificate / Trusted CA Index:** OpenVPN mutually authenticate the server and client based on certificates and CA. Select a certificate and CA.

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

### Cryptographic Suite

**Cipher:** OpenVPN uses all the ciphers available in the OpenSSL package to encrypt both the data and channels. Select an encryption method.

**Hash:** To establish the integrity of the datagram and ensures it is not tampered with in transmission. There are options: Message Digest 5 (MD5) and Secure Hash Algorithm (SHA1, SHA256). SHA1 is more resistant to brute-force attacks than MD5. However, it is slower.

**Compression:** Choose **adaptive** to use the LZO compression library to compress the data stream.

**Keepalive:** Check the box to enable the keep-alive. The system will automatic send ping packet to remote peer to keep the tunnel active.

**Interval:** Set the keep-alive Interval, unit in seconds. Default is **10** seconds. Valid interval range is from **0 to 3600** seconds.

**Timeout:** Re-establish tunnel if no responses from peer network after timeout period expires. Default is 120 seconds.

Click **Save** to apply settings.

## OpenVPN Client

OpenVPN client must match the VPN information / settings with the OpenVPN Server.

**NOTE:** Up to 4 tunnels supported.

**Rule Index:** The numeric rule indicator for OpenVPN. Maximum up to 4 profile/tunnels

**Connection Name:** Enter a description for this connection/profile.

**Active:** **Yes** to activate this profile.

**Device Type:**

- ▶ **TUN (IP Over OpenVPN):** Works only in Layer 3 networking level which routes packets on the VPN.

- ▶ **Server IP Address or Domain Name:** Enter OpenVPN Server's WAN IP address or Domain name.
- ▶ **Service Port:** Port 1194 is the official assigned port number for OpenVPN.
- ▶ **Active as Default Route:** Choose **Yes** to let the OpenVPN tunnel/connection be the default route for traffic, under this circumstance, all outgoing packets will be forwarded to this tunnel and routed to the next hop.

- ▶ **TAP (Ethernet Over OpenVPN):** Works in layer 2 to pass Ethernet frame over the VPN

tunnel.

Device Type	TAP (Ethernet over OpenVPN) ▼	
Bridge	<input type="radio"/> Yes <input checked="" type="radio"/> No	
Server IP Address or Domain Name	<input type="text"/>	Port Number <input type="text" value="1194"/>
Active as Default Route	<input type="radio"/> Yes <input checked="" type="radio"/> No	

- ▶ **Bridge: Yes** if used in bridge.
- ▶ **Server IP Address or Domain Name:** Enter OpenVPN Server's WAN IP address or Domain name.
- ▶ **Service Port:** Port 1194 is the official assigned port number for OpenVPN.
- ▶ **Active as Default Route:** Choose **Yes** to let the OpenVPN tunnel/connection be the default route for traffic, under this circumstance, all outgoing packets will be forwarded to this tunnel and routed to the next hop.

### Remote Subnet

**IP Address / Netmask:** Enter the LAN network IP address and Netmask of the OpenVPN Server.

**Protocol:** OpenVPN can run over either UDP or TCP transports. Select the protocol.

**Local Certificate / Trusted CA Index:** OpenVPN mutually authenticate the server and client based on certificates and CA. Select a certificate and CA.

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

### Cryptographic Suite

**Cipher:** OpenVPN uses all the ciphers available in the OpenSSL package to encrypt both the data and channels. Select an encryption method.

**Hash:** To establish the integrity of the datagram and ensures it is not tampered with in transmission. There are options: Message Digest 5 (MD5) and Secure Hash Algorithm (SHA1, SHA256). SHA1 is more resistant to brute-force attacks than MD5. However, it is slower.

**Compression:** Choose **adaptive** to use the LZO compression library to compress the data stream.

**Keepalive:** Check the box to enable the keep-alive. The system will automatic send ping packet to remote peer to keep the tunnel active.

**Interval:** Set the keep-alive Interval, unit in seconds. Default is **10** seconds. Valid interval range is from **0 to 3600** seconds.

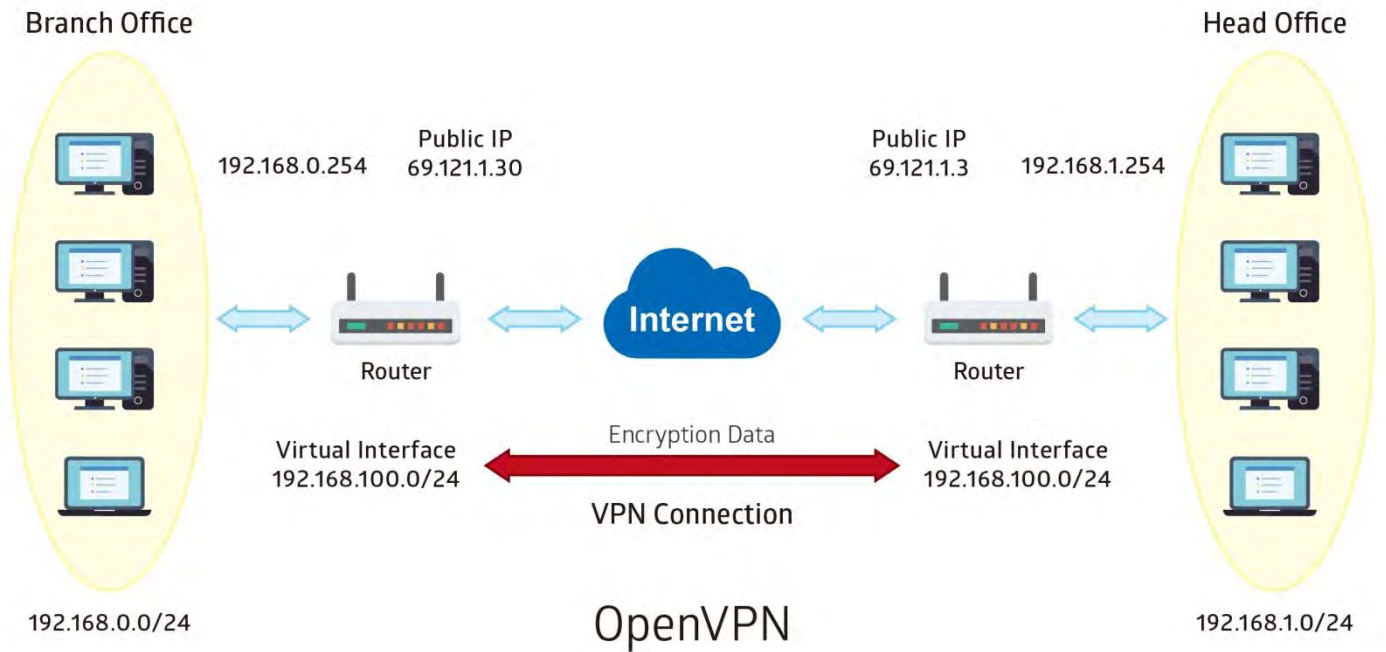
**Timeout:** Re-establish tunnel if no responses from peer network after timeout period expires. Default is 120 seconds.

Click **Save** to apply settings.

### Example: OpenVPN – Network (LAN) to Network (LAN) Connection

The Branch office establishes a tunnel with Headquarter office to connect two private networks over the OpenVPN.

**NOTE:** Both office LAN networks must be in different subnets with the GRE VPN connection.



### Configuring OpenVPN server in Headquarter office

The IP address 69.1.121.30 is the WAN IP address of the router located in the Branch office.

The OpenVPN tunnel network virtual interface is set to 192.168.100.0/24.

Item		Description
Connection Name	HS-LL	Assigned name to this tunnel/profile
Tunnel Network (Virtual Interface)	192.168.100.0/ 255.255.255.0	IP address & Netmask of the virtual tunnel.
Local Access Range	192.168.0.0/ 255.255.255.0	OpenVPN Server's local LAN network.

▼ OpenVPN Server

Rule Index: 1 ▼

Connection Name: HS-LL

Active:  Yes  No

Local Service Port: 1194

**Tunnel Network (Virtual interface)**

IP Address: 192.168.100.0 Netmask: 255.255.255.0

**Local Access Range**

IP Address: 192.168.0.0 Netmask: 255.255.255.0

Protocol: UDP ▼

Local Certificate Index: ServerLCA1 ▼

Trusted CA Index: ServerTCA1 ▼

**Cryptographic Suite**

Cipher: Default ▼ Hash: Default ▼

Compression: Adaptive ▼

Keepalive:  Enable Interval: 10 second(s) Timeout: 120 second(s)

Save Delete

### Configuring OpenVPN client in Branch office

The IP address 69.1.121.3 is the WAN IP address of the router located in Headquarter office.

Item		Description
Connection Name	BC-LL	Assigned name to this tunnel/profile
Server IP Address	69.121.1.3	The WAN IP address of OpenVPN server.
Remote Subnet	192.168.0.0/ 255.255.255.0	Local LAN IP & Netmask of the Branch office

**OpenVPN Client**

Rule Index: 1 ▼

Connection Name: BC-LL

Active:  Yes  No

Server IP Address or Domain Name: 69.121.1.3 Port Number: 1194

Active as Default Route:  Yes  No

**Remote Subnet**

IP Address: 192.168.0.0 Netmask: 255.255.255.0

Protocol: UDP ▼

Local Certificate Index: ClientLCA1 ▼

Trusted CA Index: ClientTCA1 ▼

**Cryptographic Suite**

Cipher: Default ▼ Hash: Default ▼

Compression: Adaptive ▼

Keepalive:  Enable Interval: 10 second(s) Timeout: 120 second(s)

Save Delete

## Access Management

Here are the features in **Access Management**: [Device Management](#), [SNMP](#), [Syslog](#), [Universal Plug & Play](#), [Dynamic DNS](#), [Access Control](#), [Packet Filter](#), [CWMP \(TR-069\)](#), [Parental Control](#) and [BECentral Management](#).

### Device Management

Device Management	
<b>Device Host Name</b>	
Host Name	<input type="text" value="home.gateway"/>
<input type="button" value="Save"/>	
<b>Embedded Web Server</b>	
HTTP Port	<input type="text" value="80"/> (The default HTTP port number is 80.)
HTTPS Port	<input type="text" value="443"/> (The default HTTPS port number is 443.)
HTTPS Server Certificate Index	<input type="text" value="Default"/> ▼
<input type="button" value="Save"/>	

#### 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 EG-210N 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"/>
Interface	<input type="text" value="ALL"/>
SNMPv3	
SNMPv3	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
Username	<input type="text"/>
Access Permissions	<input type="text" value="Read Only"/>
Authentication Protocol	<input type="text" value="MD5"/>
Authentication Key	<input type="text"/> (8~31 characters)
Privacy Protocol	<input type="text" value="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.

**Interface:** Select the access interface. Choices are **LAN** or **ALL** (Both LAN and WAN).

### SNMPv3

**SNMPv3:** Enable to activate the SNMPv3.

**Username:** 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.

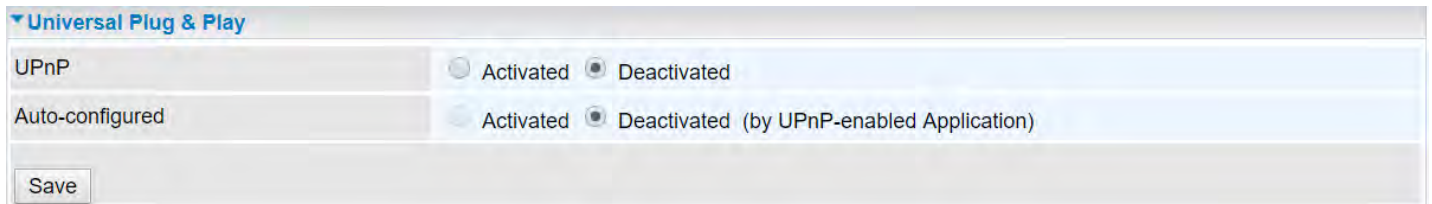
**Server UDP Port:** Assign the remote log server port, 514 is commonly used.

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  Activated  Deactivated

Auto-configured  Activated  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 EG-210N's IP address

**Auto-configured:** Select this check box to allow UPnP-enabled applications to automatically configure the EG-210N so that they can communicate through the EG-210N, 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 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="password"/>
Wildcard support	<input type="radio"/> Yes <input checked="" type="radio"/> No
Period	25 <input type="text"/> 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 EG-210N by your Dynamic DNS provider.

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

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

**Period:** Setup a time on how often the EG-210N will update the DDNS server with your current external IP address.

Click **Save** to apply settings.

### Example: How to register a DDNS account

If you do not have an account with Dynamic DNS, please go to [www.dyndns.org](http://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](http://www.hometest.com) using username/password test/test



The screenshot shows a configuration window titled "Dynamic DNS". It contains the following fields and options:

- Dynamic DNS:** Radio buttons for "Activated" (selected) and "Deactivated".
- Service Provider:** A dropdown menu showing "www.dyndns.org (dynamic)".
- My Host Name:** A text input field containing "myhome.dyndns.org".
- Username:** A text input field containing "myhome-123".
- Password:** A text input field with masked characters "\*\*\*\*\*".
- Wildcard support:** Radio buttons for "Yes" and "No" (selected).
- Period:** A text input field containing "25" and a dropdown menu showing "Day(s)".

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

## Access Control

Access Control Listing allows you to determine which services/protocols can access the EG-210N interface from which computers. It is a management tool aimed to allow IPs (set in secure IP address) to access specified embedded applications (Web, 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 entries 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
1	Yes	0.0.0.0-0.0.0.0	ALL	LAN
2	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.

**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 EG-210N. 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 commonly used applications.

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

Click **Save** to apply 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: 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

## 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**

**Packet Filter**

Filter Type	IP & MAC Filter ▼									
<b>IP &amp; MAC Filter Editing</b>										
Action	Black List ▼									
Rule Index	1 ▼									
Individual Active	<input type="radio"/> Yes <input checked="" type="radio"/> No									
Interface	4G/LTE ▼									
Direction	Both ▼									
Type	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="64"/> (Value Range:0~64, 64 means Don't care)									
Protocol	Any ▼									
Time Schedule	Always ▼									
<input type="button" value="Save"/> <input type="button" value="Delete"/>										
<b>IP &amp; MAC Filter List</b>										
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

### 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 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.

**Time Schedule:** Select a TimeSlot to activate the rule. Go to [Time Schedule](#) to configure a time control first.

Click **Save** to apply settings.

❖ Filter Type- URL Filter

▼ Packet Filter	
Packet Filter	
Filter Type	URL Filter ▼
URL Filter Editing	
URL Filter Rule Index	1 ▼
Individual Active	<input type="radio"/> Yes <input checked="" type="radio"/> No
URL (Host)	<input type="text"/>
Time Schedule	Always ▼
<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](http://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.

**Time Schedule:** Select a TimeSlot to activate the rule. Go to [Time Schedule](#) to configure a time control first.

Click **Save** to apply 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
<b>ACS Login Information</b>	
URL	<input type="text" value="http://cpe.bectechnologies.com/comserver/node1/tr069"/>
Username	<input type="text" value="testcpe"/>
Password	<input type="text" value="ac5entry"/>
<b>Connection Request Information</b>	
Path	<input type="text"/>
Username	<input type="text" value="conexant"/>
Password	<input type="text" value="welcome"/>
<b>Periodic Inform Config</b>	
Periodic Inform	<input checked="" type="radio"/> Activated <input type="radio"/> Deactivated
Interval	<input type="text" value="870"/>
<b>Bind Wan Interface</b>	
Interface	<input type="text" value="Auto"/>
<b>NATT Config</b>	
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.

**Username:** Specify the ACS Username 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="text"/>
<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](http://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 settings.

## 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"/>
Tag ID	<input type="text"/>
Device Report Interval	<input type="text" value="480"/>
Interface	<input type="text" value="ALL"/> ▼

**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 (By BE C administrator only)

**Tag ID:** By BEC administrator only.

**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.

Click **Save** to apply settings.

## Maintenance

Here are the features in **Maintenance**: [User Management](#), [Certificate Management](#), [Time Zone](#), [Firmware & Configuration](#), [System Restart](#), [Auto Reboot](#) and [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 EG-210N 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.**

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.

The screenshot shows a web interface for user management. At the top, there is a dropdown menu labeled 'User Management'. Below it is a form titled 'User Account' with the following fields: 'Index' (a dropdown menu set to '1'), 'Username' (a text box containing 'admin'), 'New Password' (a password field with six dots), and 'Confirm Password' (another password field with six dots). Below the form are 'Save' and 'Delete' buttons. Underneath the form is a section titled 'User Account Listing' which contains a table with two columns: 'Index' and 'User Name'. The table has one row with the value '1' in the 'Index' column and 'admin' in the 'User Name' column.

Index	User Name
1	admin

### User Setup

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

**Username:** Create account(s) username 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



❖ Other Accounts

**User Account Setup**

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

**Username:** Create account(s) username for GUI management.

**New Password:** Password for the user account.

**Confirm Password:** Re-enter the password.

**Web GUI Permission**

**Guest Account:** Enable to create this new guest account.





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

When someone accesses to the EG-210N 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 settings.


## Certificate Management

This feature is used for OpenVPN and HTTPS Server authentication of the device using certificate. If the imported certificate doesn't match the authorized certificate with the Server, then no access is allowed.

Local Certificate Listing			
Index	Certificate Name	Edit	Delete
1			
2			

Trusted CA Listing			
Index	Certificate Name	Edit	Delete
1			
2			

**Edit:** Click  (Edit) to import a certificate.

**Delete:** Click  (Delete) to remove the certificate from the list.

### Local Certificate Listing

▼ Local Certificate

Index	1 ▼
Certificate Name	<input type="text"/>
	<input type="checkbox"/> PKCS12
Certificate File	<input type="button" value="Choose File"/> No file chosen <input type="button" value="Upload"/> (Please upload Certificate File. )
Private Key File	<input type="button" value="Choose File"/> No file chosen <input type="button" value="Upload"/> (Please upload Private Key File. )
Password	<input type="password" value="....."/>

After clicked "Upload", please wait for 5 seconds and then click "Apply".

**Index #:** The numeric account indicator. The maximum entry is up to 2.

**Certificate Name:** Description of the certificate.

**PKCS12:** Every certificate is accompanied by a private key. Upload both files if PKCS is disabled. Enable PKCS12 to put Certificate & Private Key in the same file, like \*.p12, \*.pfx.

**Certificate File:** Browse to locate the target certificate file on PC before uploading it.

**Private Key File:** Browse to locate the target file on PC before uploading it. If PKCS enabled, please ignore this setting.

**Password:** Enter the password if any, which is used to protect the private key. Otherwise, leave it empty.

Click **Apply** to save settings.

**Trusted CA Listing**

▼ Trusted CA	
Index	1 ▼
CA Name	<input type="text"/>
CA Certificate File	<input type="button" value="Choose File"/> No file chosen <input type="button" value="Upload"/> (Please upload CA Certificate File. )
After clicked "Upload", please wait for 5 seconds and then click "Apply".	
<input type="button" value="Apply"/> <input type="button" value="Back"/>	

**Index #:** The numeric account indicator. The maximum entry is up to 2.

**CA Name:** Description of the CA.

**CA Certificate File:** Browse to locate the target certificate file on PC before uploading it.

Click **Apply** to save settings.

## Time Zone

With default, EG-210N does not contain the correct local time and date.

There are several options to setup, maintain, and configure current local time/date on the EG-210N. 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)
<b>Time Synchronization</b>	
Synchronize time with	<input checked="" type="radio"/> NTP Server <input type="radio"/> PC's Clock <input type="radio"/> Manually
Time Zone	(UTC-06:00) Central Time (US & Canada), Maxico City, Saskatchewan ▾
Daylight Saving	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled
NTP Server Address	<input type="text" value="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, EG-210N 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:** Select this to enter the SNMP server IP address 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.

Click **Save** to apply settings.

## 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 EG-210N provides an effortless way to update the code to take advantage of the changes.

To upgrade the firmware of the EG-210N, 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 EG-210N will automatically restart and run the new firmware.

Firmware & Configuraiton	
Upgrade	<input checked="" type="radio"/> Firmware <input type="radio"/> Configuration
System Restart with	<input checked="" type="radio"/> Current Settings <input type="radio"/> Factory Default Settings
File	<input type="button" value="Choose File"/> No file chosen
Backup Configuration	<input type="button" value="Backup"/>
Status	
It might take several minutes, don't power off it during upgrading. Device will restart after the upgrade.	
<input type="button" value="Upgrade"/>	

**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 if you need this configuration file to be restored back to your EG-210N 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.

Firmware Upgrade	
File upload succeeded, starting flash erasing and programming!!	
Progress	<div style="width: 15%; height: 10px; background-color: #0070C0;"></div>
Percent	15 %

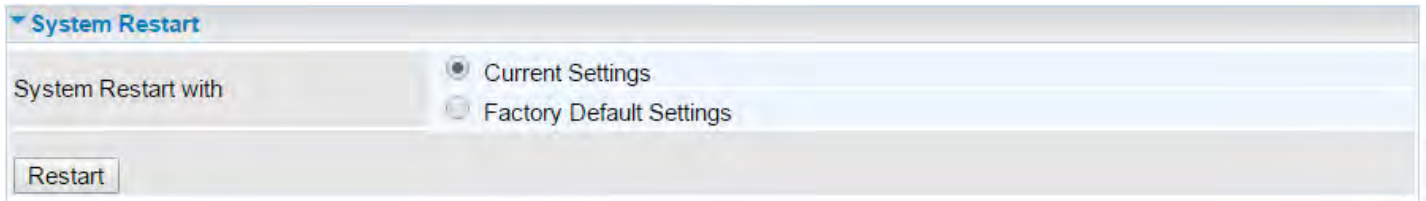


DO NOT turn off or power cycle the device while firmware upgrading is still in process.

Improper operation could damage your EG-210N.

## System Restart

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



The screenshot shows a web interface for system restart. At the top, there is a tab labeled "System Restart". Below the tab, the text "System Restart with" is followed by two radio button options: "Current Settings" (which is selected) and "Factory Default Settings". At the bottom 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 EG-210N to ensure proper operation and best performance. This reboot will only reboot with current configuration settings and not overwrite any existing settings.

▼ Auto Reboot										
Schedule	1.	<input type="checkbox"/> Enable	<input type="checkbox"/> Mon.	<input type="checkbox"/> Tues.	<input type="checkbox"/> Wed.	<input type="checkbox"/> Thur.	<input type="checkbox"/> Fri.	<input type="checkbox"/> Sat.	<input type="checkbox"/> Sun.	Time 00 : 00
	2.	<input type="checkbox"/> Enable	<input type="checkbox"/> Mon.	<input type="checkbox"/> Tues.	<input type="checkbox"/> Wed.	<input type="checkbox"/> Thur.	<input type="checkbox"/> Fri.	<input type="checkbox"/> Sat.	<input type="checkbox"/> Sun.	Time 00 : 00
Save										

Click **Save** to apply settings

**Example:** Schedule EG-210N to reboot at 10:00pm (22:00) every weekday (Monday thru Friday) and reboot at 9:00am on Saturday and Sunday.

▼ Auto Reboot										
Schedule	1.	<input checked="" type="checkbox"/> Enable	<input checked="" type="checkbox"/> Mon.	<input checked="" type="checkbox"/> Tues.	<input checked="" type="checkbox"/> Wed.	<input checked="" type="checkbox"/> Thur.	<input checked="" type="checkbox"/> Fri.	<input type="checkbox"/> Sat.	<input type="checkbox"/> Sun.	Time 22 : 00
	2.	<input checked="" type="checkbox"/> Enable	<input type="checkbox"/> Mon.	<input type="checkbox"/> Tues.	<input type="checkbox"/> Wed.	<input type="checkbox"/> Thur.	<input type="checkbox"/> Fri.	<input type="checkbox"/> Sat.	<input type="checkbox"/> Sun.	Time 09 : 00
Save										

## 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.

### EWAN (LAN2) / Wireless WAN

Diagnostic Tool	
WAN Interface	EWAN(LAN2) ▼
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
Start	
Speed Test ▶	Upload N/A Download N/A
Trace Route	<input type="radio"/> Yes <input checked="" type="radio"/> No
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	EWAN(LAN2) ▼
Testing Ethernet LAN Connection	PASS
Ping Primary DNS ( N/A )	Skipped
Ping www.google.com	Skipped
Ping other IP Address or Domain <input type="radio"/> Yes <input checked="" type="radio"/> No	Skipped
Start	

**Speed Time:** Measure the current uplink and downlink speed rate.

- ▶ Take less than a minute to run the test.

Speed Test	
Testing	<div style="width: 10%; height: 10px; background-color: #0070C0;"></div>

- ▶ Result in Uplink / Downlink

Speed Test	
Result	NA NA
Back	

Click **Back** to go back to the Diagnostic Tool



**Trace Route** is to display how many hops (also view the exact hops) required 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	<input type="text" 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](http://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	N/A
Ping other IP Address or Domain <input type="radio"/> Yes <input checked="" type="radio"/> No	N/A
<input type="button" value="Start"/>	
Speed Test	Upload NA Download NA

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

**Speed Time:** Measure the current uplink and downlink speed rate.

- ▶ Take less than a minute to run the test.

Speed Test	
Testing	<div style="width: 10%; height: 10px; background-color: #0070C0;"></div>

- ▶ Result in Uplink / Downlink

▼ Speed Test

Result	NA	NA
<input type="button" value="Back"/>		

Click **Back** to go back to the Diagnostic Tool

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

# Chapter 5: Troubleshooting

If your EG-210N 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 light, 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
<ol style="list-style-type: none"> <li>1. The front LEDs display incorrectly upgrade</li> <li>2. Still cannot access to the router management interface after pressing the RESET button.</li> <li>3. Software / Firmware upgrade failure</li> </ol>	<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"> <li>1. Power the router off.</li> <li>2. Press reset button and power on the router, once the Power Lights Red, keeping press reset button over 6 seconds.</li> <li>3. Internet LED flashes Green, router entering recovery procedure and router's IP will reset to Emergency IP address (Say 192.168.1.1).</li> <li>4. Open browser and access <a href="http://192.168.1.1">http://192.168.1.1</a> to upload the firmware.</li> <li>5. Internet LED lit Red, and router starts to write firmware into flash. Please DO NOT power off the router at this step.</li> <li>6. Internet LED lit Green when successfully upgrade firmware.</li> <li>7. Power cycle off/on the EG-210N</li> </ol>

# APPENDIX: PRODUCT SUPPORT & CONTACT

If you come across any problems, please contact the dealer from where you have purchased the product.

Contact BEC @ <http://www.bectechnologies.net>

MAC OS is a registered Trademark of Apple Computer, Inc.

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

## FCC 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.