Wireless concurrent dual band Gigabit Router 300N

Revision History

Version	Date	Notes
1.0	2011/08/04	First Release

1. Introduction

1.1. Package Contents

- The LG-Ericsson WBR-5050 Dual Band Concurrent Wireless 802.11n Broadband Router
- AC Power Adapter
- RJ-45 Ethernet LAN Cable
- CD-ROM with User Manual
- Quick Installation Guide

If any of these items are incorrect, missing, or damaged, contact your reseller or distributor. Keep the original package contents in case you need to return the product for repair or replacement.

1.2. System Requirements

- RJ-45 Ethernet Based Internet (ADSL or Cable Modem)
- Computer with Wireless Network function
- Windows, Mac OS or Linux based operating systems
- Internet Explorer, Firefox or Safari Web-Browser Software

1.3. Introduction

The LG-Ericsson WBR-5050 Wireless 802.11n Dual Band Broadband Router is the ideal solution for providing high speed 802.11N to the home or home office. The WBR-5050 connects PCs, wireless printers, gaming consoles, and other Wi-Fi devices at transfer speed up to 300Mbps per frequency band. The WBR-5050 supports simultaneous dual band operation to provide the maximum throughput for file transfers, HD video streaming, and online gaming. With the 2.4GHz frequency band becoming more and more crowded in today's wireless space, the ability to operate in the 5GHz band helps avoid interference and optimize wireless performance for bandwidth intensive multimedia applications. MIMO (Multiple-In, Multiple-Out) antenna technology provides enhanced wireless coverage so you can enjoy wireless connectivity anywhere in your home.

With WPA/WPA2 encryption and SPI firewall, the WBR-5050 Router helps keep the network protected. The Router also supports Wi-Fi Protected Setup (WPS) for simple and secure wireless connection. In addition, the WBR-5050 supports up to four SSIDs per frequency band to provide separate access and security restrictions for home and guest users.

Combining multiple connections with high speed and flexibility security, the LG-Ericsson WBR-5050 provides the maximum reliability and security to your home and home office.

1.4. LED Overview (need modify to 2.4G and 5G's)

LED Lights	Icon	Description
WPS		
Power	⏻	Off – The router is not powered on. Solid Blue – The router is powered on. Blinking Blue – Reset is in process.
Wireless LAN	2.4G	Off – The wireless radio is off. Solid Blue - The wireless radio is activated and is available. Blinking Blue – The wireless radio transmitting or receiving data.
Internet	i	Off – The router is not connected to the Internet (DSL/Cable modem). Solid Blue – The router is connected to the Internet. Blinking Blue - WPS handshake is initialized.
LAN **(Ports 1-4)**	1, 2, 3, 4	Off – No link is detected on the port. Solid Blue – The LAN port has detected a link with an attached network device. Blinking Blue – The LAN port is transmitting or receiving data.

1.5. Before you Begin

The operating distance or range of your wireless connection can vary significantly depending on the placement of the Router. For best performance:

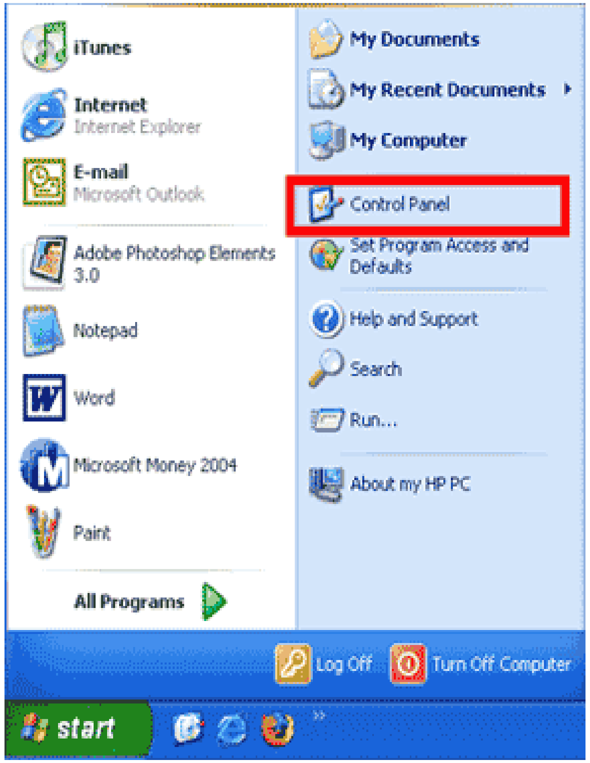
- Place the Router near the center of the area where your computers and other network devices will operate.
- Keep the number of walls and ceilings between the Router and the wireless devices to a minimum.
- Keep the Router away from electrical devices which are potential sources of interference, such as microwaves, cordless phones, etc.
- Avoid placing the Router on or near metal objects (such as a solid metal door, file cabinets, metal furniture) and reflective surfaces (such as glass or mirrors)
- Avoid placing the Router in enclosed spaces such as a closet, cabinet or wardrobe.
- Minimize obstructions between the Router and the wireless devices. Any obstruction, even non-metallic objects, can weaken the wireless signal.

If your wireless signal is weak, try placing the Router in several locations and test the signal strength to determine the best position.

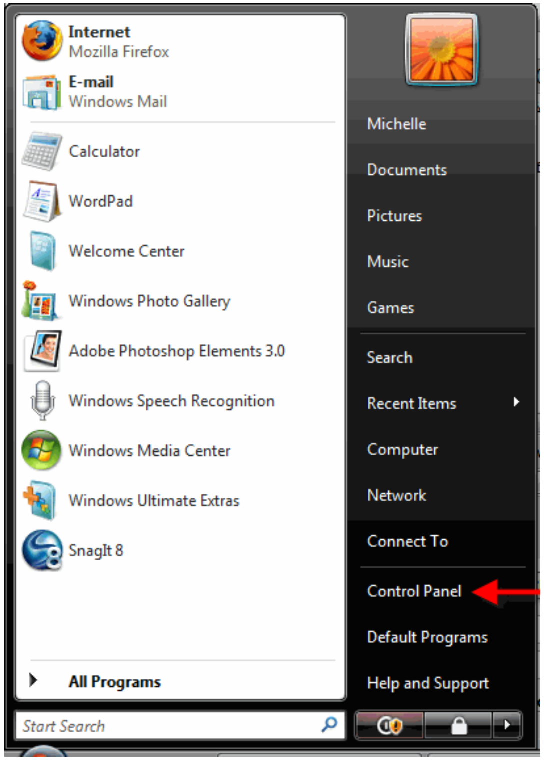
2. Configure PC/Laptop Network Interface

2.1. Windows XP/Vista

- Click Start button and open Control Panel.

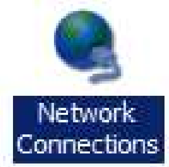


Windows XP

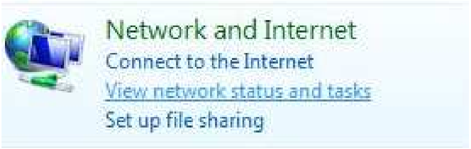


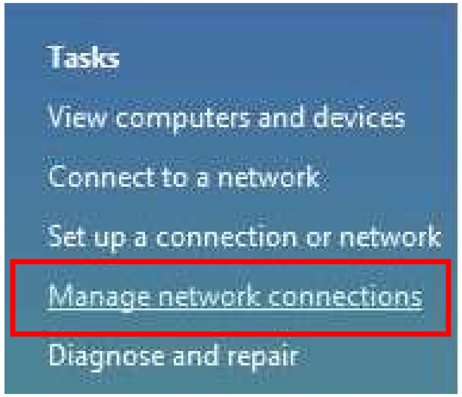
Windows Vista

- Windows XP, click [**Network Connection**]

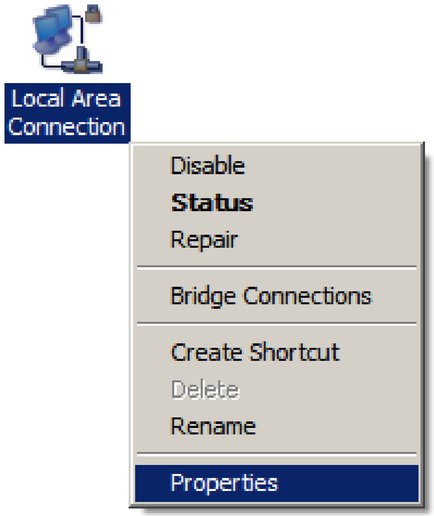


- Windows Vista, click [**View Network Status and Tasks**] then [**Manage Network Connections**]



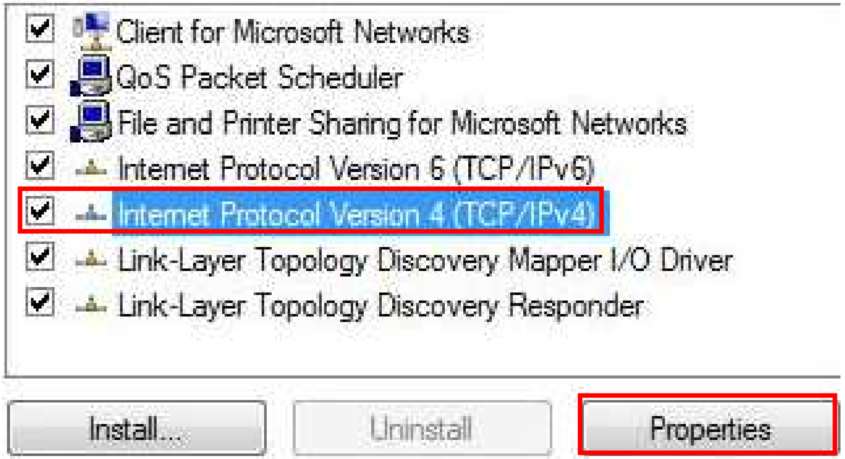

Tasks
View computers and devices
Connect to a network
Set up a connection or network
Manage network connections
Diagnose and repair

- Right click on [**Local Area Connection**] and select [**Properties**].



- Make sure the boxes “**Client for Microsoft Networks**”, **“File and Printer Sharing**”, and “**Internet Protocol (TCP/IP)**” are checked. If not, please install them.

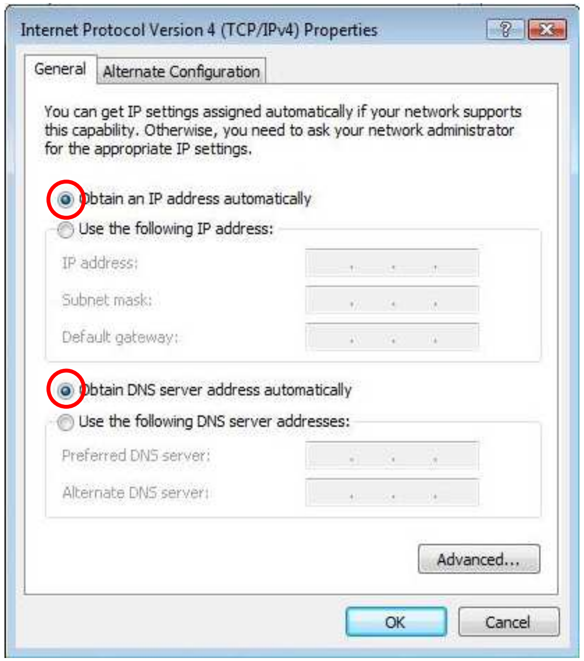
- Select “**Internet Protocol (TCP/IP)**” and click [**Properties**]



☑ Client for Microsoft Networks
☑ QoS Packet Scheduler
☑ File and Printer Sharing for Microsoft Networks
☑ Internet Protocol Version 6 (TCP/IPv6)
☑ Internet Protocol Version 4 (TCP/IPv4)
☑ Link-Layer Topology Discovery Mapper I/O Driver
☑ Link-Layer Topology Discovery Responder

- Select **Obtain an IP Address automatically** and **Obtain DNS** server **address automatically**

- Click **OK** to complete



Internet Protocol Version 4 (TCP/IPv4) Properties

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

● Obtain an IP address automatically
○ Use the following IP address:

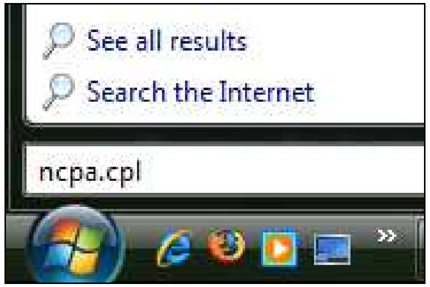
IP address: . . .
Subnet mask: . . .
Default gateway: . . .

● Obtain DNS server address automatically
○ Use the following DNS server addresses:

Preferred DNS server: . . .
Alternate DNS server: . . .

2.2. Windows 7

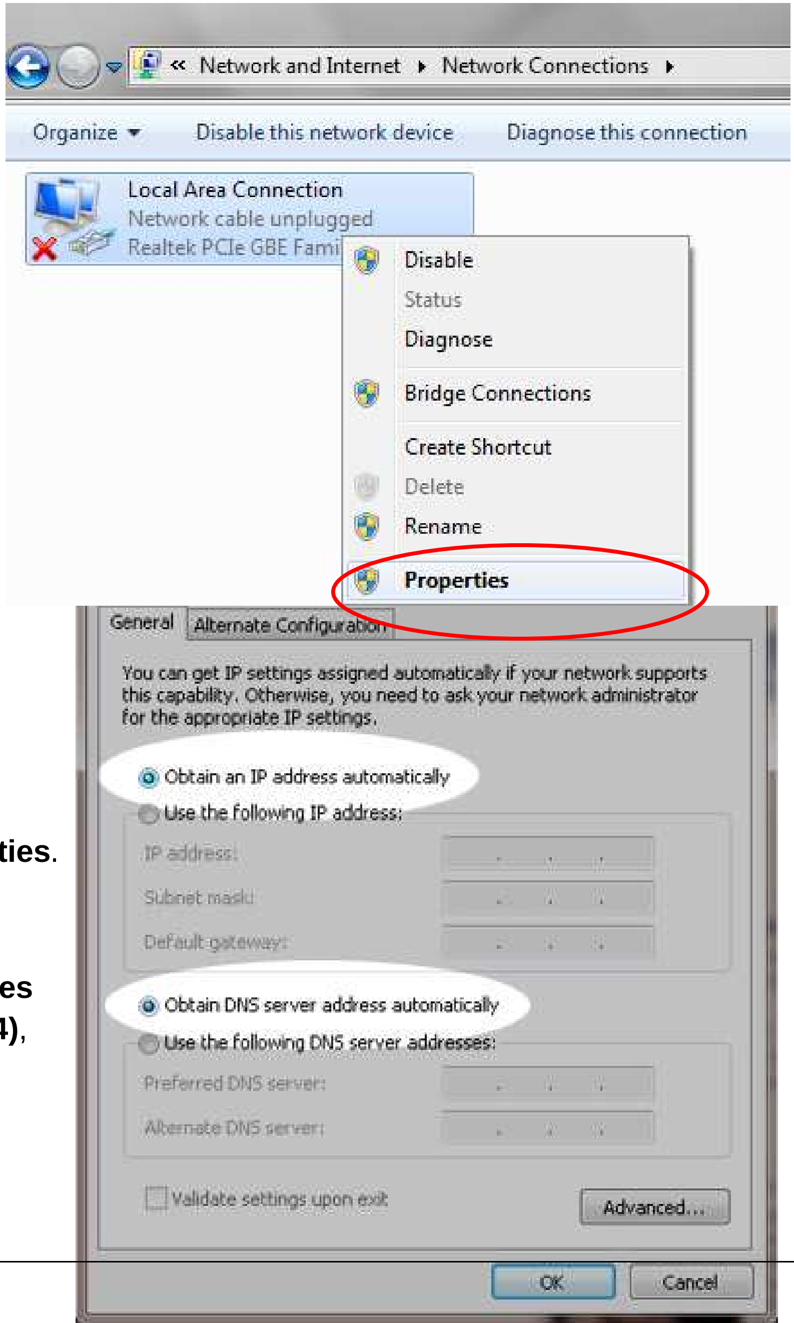
- In the **Start** menu search box, type: **ncpa.cpl**



- The Network Connections List appears.

- Right-click the **Local Area Connection** icon and click **Properties**.

- In the Networking tab of the **Local Area Connection Properties** dialog box, click either **Internet Protocol Version 4 (TCP/IPv4)**, and then click **Properties**.



You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

● Obtain an IP address automatically

○ Use the following IP address:

IP address: . . .

Subnet mask: . . .

Default gateway: . . .

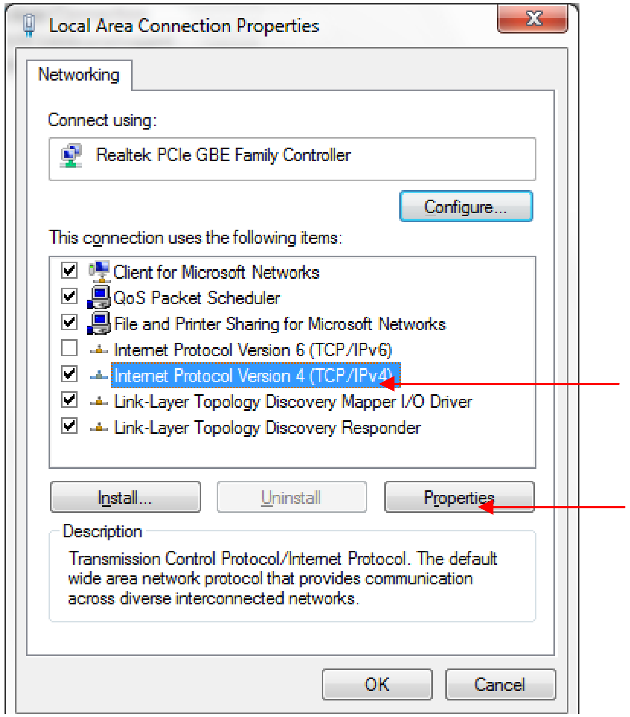
● Obtain DNS server address automatically

○ Use the following DNS server addresses:

Preferred DNS server: . . .

Alternate DNS server: . . .

□ Validate settings upon exit



Local Area Connection Properties

Networking

Connect using:

Realtek PCIe GBE Family Controller

This connection uses the following items:

- ☑ Client for Microsoft Networks
- ☑ QoS Packet Scheduler
- ☑ File and Printer Sharing for Microsoft Networks
- □ Internet Protocol Version 6 (TCP/IPv6)
- ☑ Internet Protocol Version 4 (TCP/IPv4)
- ☑ Link-Layer Topology Discovery Mapper I/O Driver
- ☑ Link-Layer Topology Discovery Responder

Description

Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.

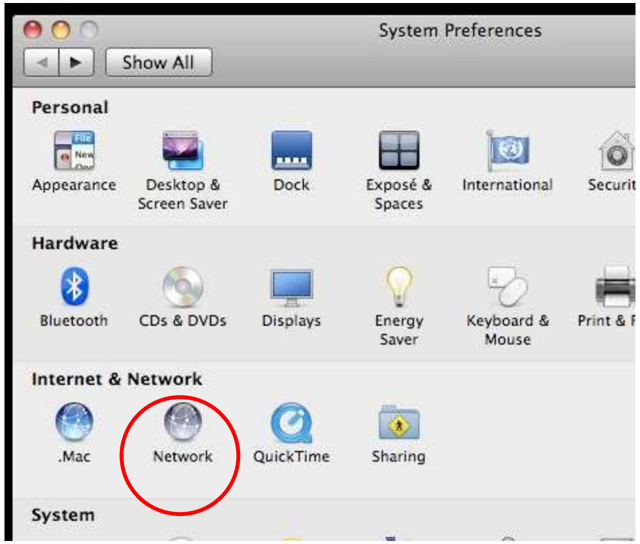
Internet Protocol Version 4 (TCP/IPv4)

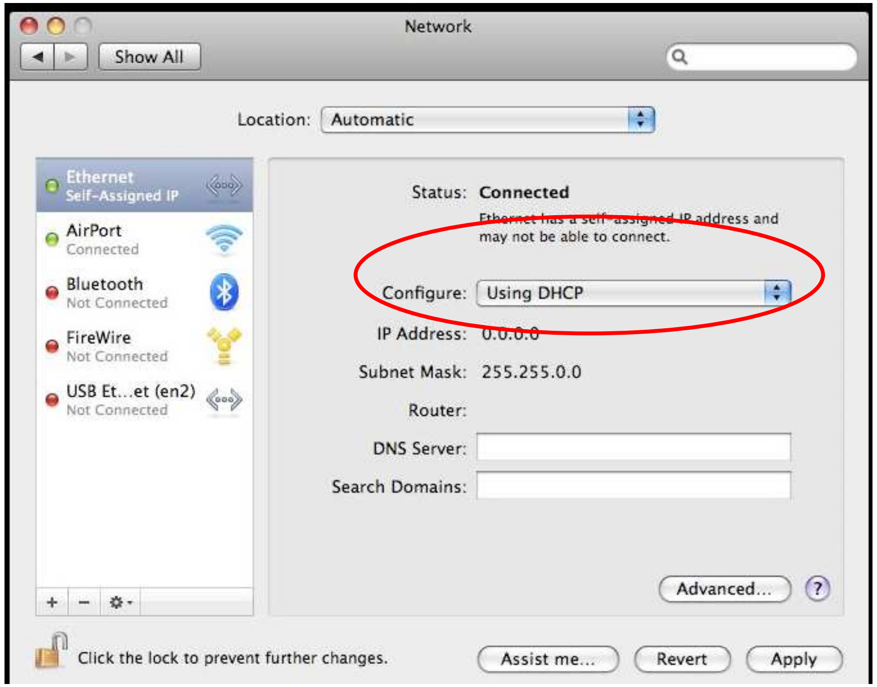
Properties Button

- Select **Obtain an IP Address automatically** and **Obtain DNS server address automatically**.
- Click **OK** to complete.

2.3. Apple Mac OS X

- Go to **System Preferences** > **Network**.





Location: Automatic

Status: Connected

Ethernet has a self-assigned IP address and may not be able to connect.

Configure: Using DHCP

IP Address: 0.0.0.0

Subnet Mask: 255.255.0.0

Router:

DNS Server:

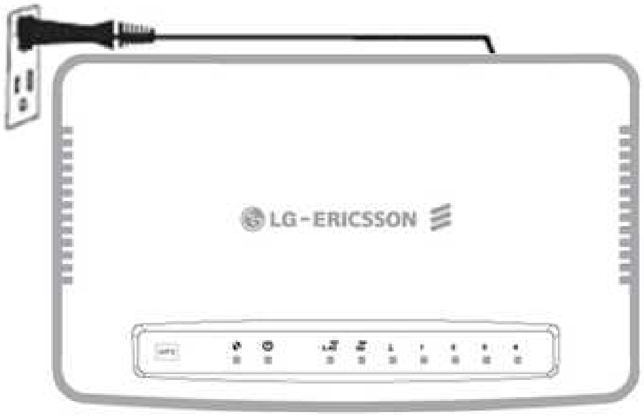
Search Domains:

- Under Network setting, select **Using DHCP**.
- Click **Apply** when done.

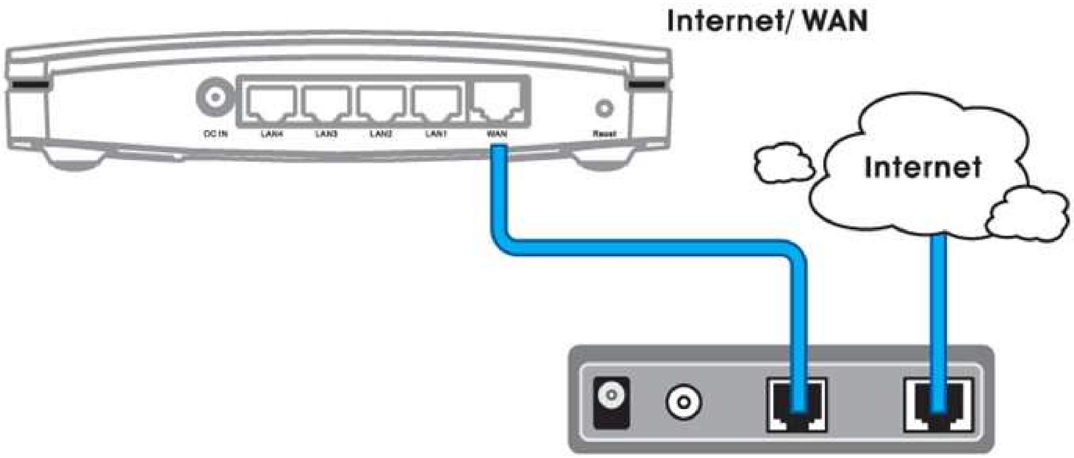
3. Setup your Router

Follow the instructions below to setup your Router.

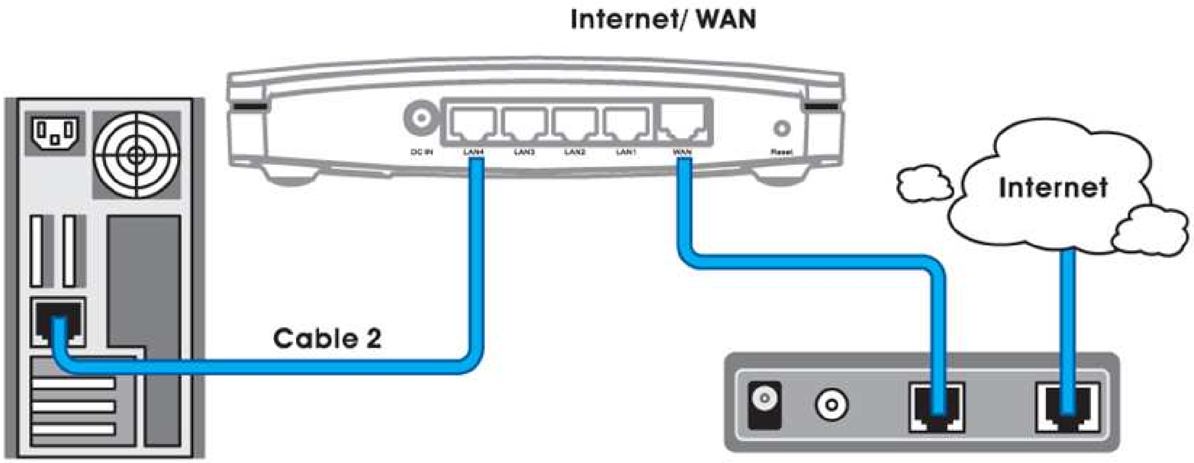
Or, you may follow the instructions on the LG-Ericsson Installation Wizard for basic setup: Insert the Installation CD into the CD-ROM drive on your desktop or laptop. The CD will automatically start. The LG-Ericsson Installation Wizard will pop up. Click on **Quick Setup** follow the onscreen instructions for hardware installation.



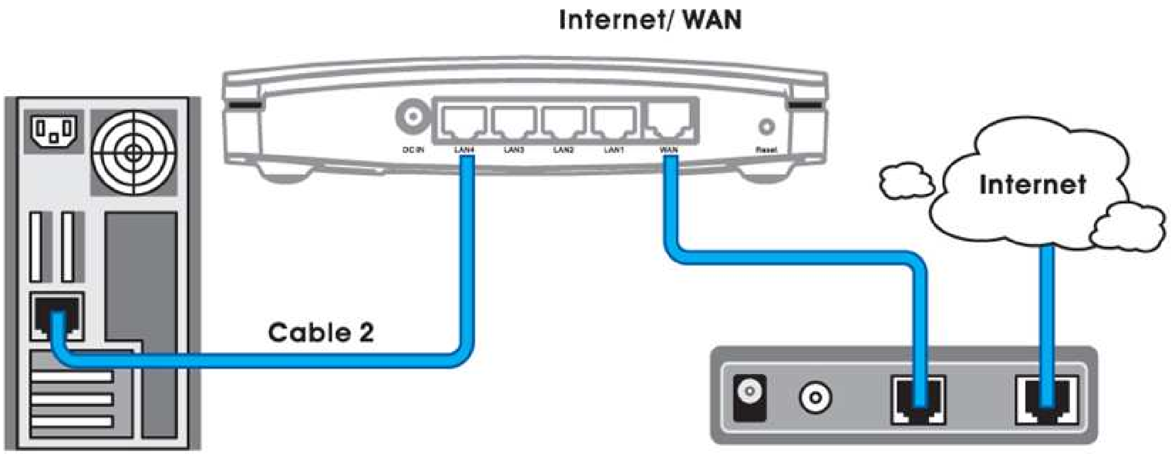
1. Plug in the adapter
2. Please wait until Wireless LED is on



3. Connect modem and router with an Ethernet cable as shown above



4. Please configure your network interface to DHCP (obtain an IP address automatically)
5. Connect PC/Laptop and the router with an Ethernet cable as shown above (Cable 2)

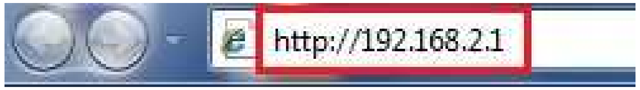


6. Please check your Ethernet cable setting again and make sure it is the same as shown above
7. When confirmed, please click [Next] to enter Wizard setup

4. Manually enter Setup Wizard

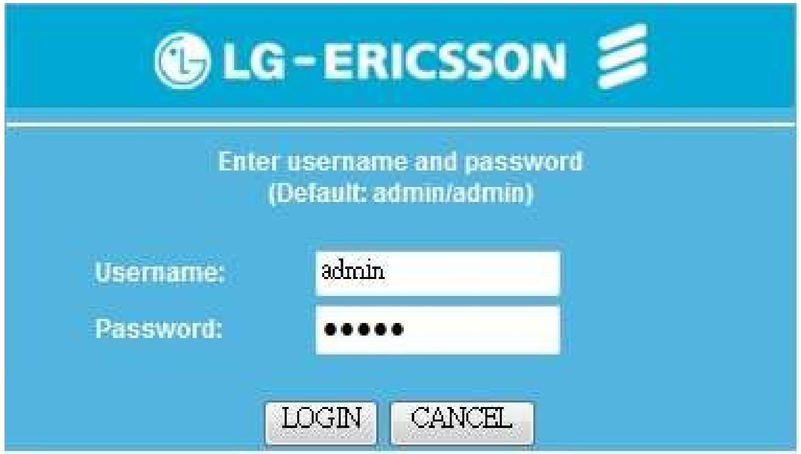
1. Open a web browser (Internet Explorer/Firefox/Safari) and enter the address http://192.168.2.1

   Note: If you have changed the default LAN IP Address of the WIRELESS ROUTER, make sure that you enter the correct IP Address.



http://192.168.2.1

2. The default username and password are **admin** and **admin**. Once you have entered the correct username and password, click the **LOGIN** button to open the Web-based main menu.

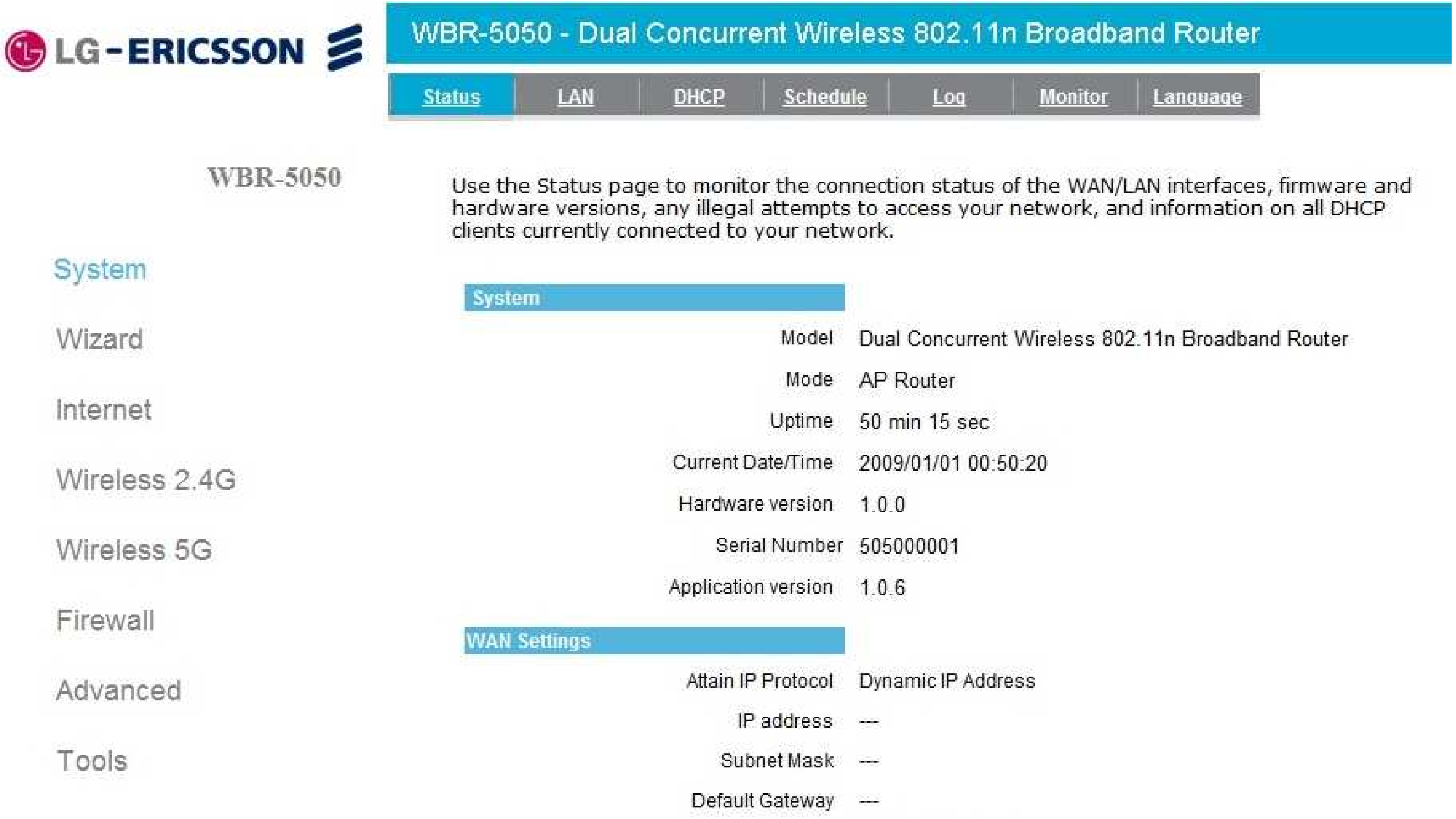


Enter username and password
(Default: admin/admin)

Username: admin

Password: ●●●●●

3. You will see the following webpage if login successful.

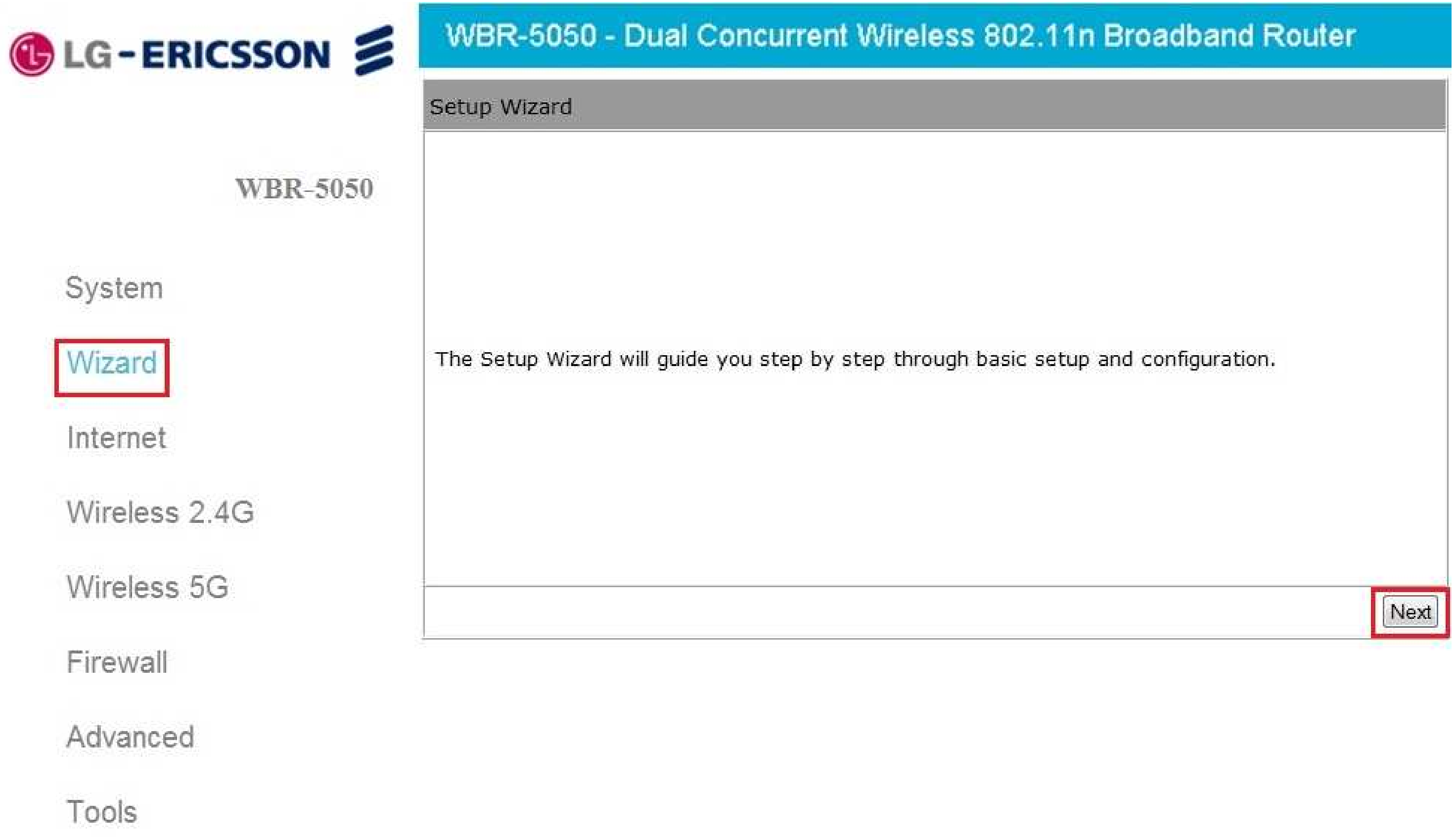


Use the Status page to monitor the connection status of the WAN/LAN interfaces, firmware and hardware versions, any illegal attempts to access your network, and information on all DHCP clients currently connected to your network.

System	
Model	Dual Concurrent Wireless 802.11n Broadband Router
Mode	AP Router
Uptime	50 min 15 sec
Current Date/Time	2009/01/01 00:50:20
Hardware version	1.0.0
Serial Number	505000001
Application version	1.0.6

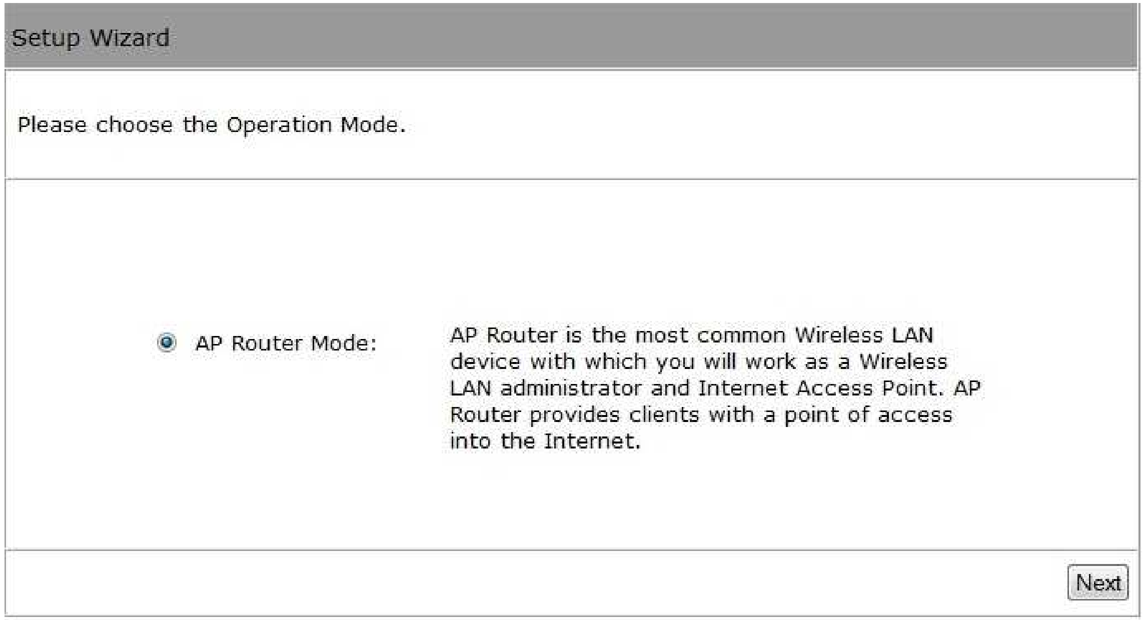
WAN Settings	
Attain IP Protocol	Dynamic IP Address
IP address	---
Subnet Mask	---
Default Gateway	---

4. Click **Wizard** on the left menu to open the Setup Wizard. Click **Next** to begin the Wizard.



The Setup Wizard will guide you step by step through basic setup and configuration.

5. Select the Operation Mode.
   Make sure you have the proper cables connected as described in the Setup your Router section.



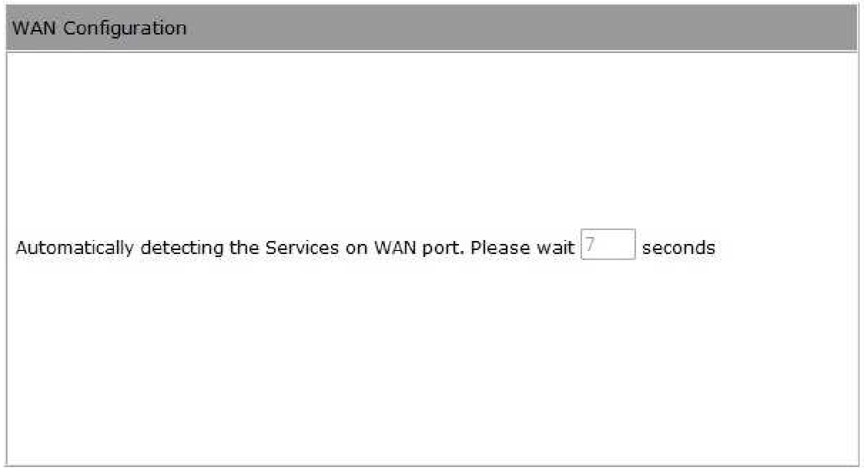
Setup Wizard

Please choose the Operation Mode.

● AP Router Mode: AP Router is the most common Wireless LAN device with which you will work as a Wireless LAN administrator and Internet Access Point. AP Router provides clients with a point of access into the Internet.

AP Router Mode

a) The Router will now automatically search for the correct WAN (Internet) settings.



WAN Configuration

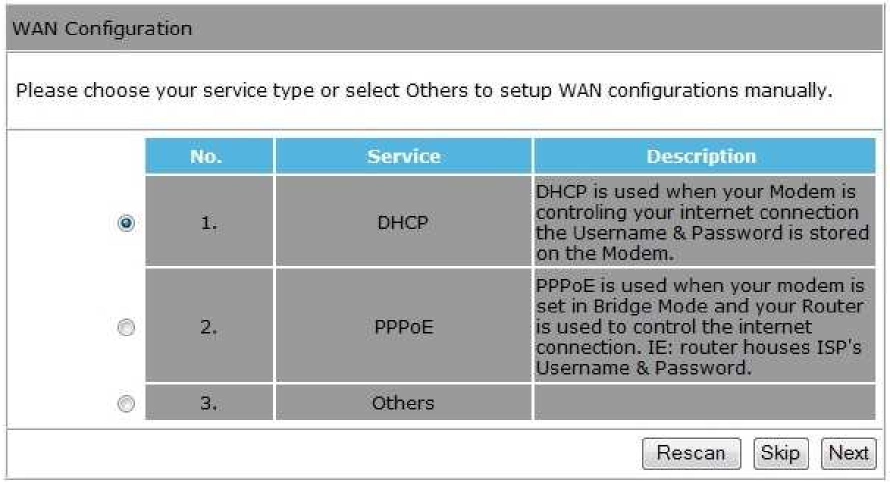
Automatically detecting the Services on WAN port. Please wait 7 seconds

b) The most appropriate WAN type will be determined and selected automatically. If the detected type is incorrect, select **Others** to set up the WAN settings manually.

Note:

DHCP is for Cable connections.

PPPoE is for DSL connections.



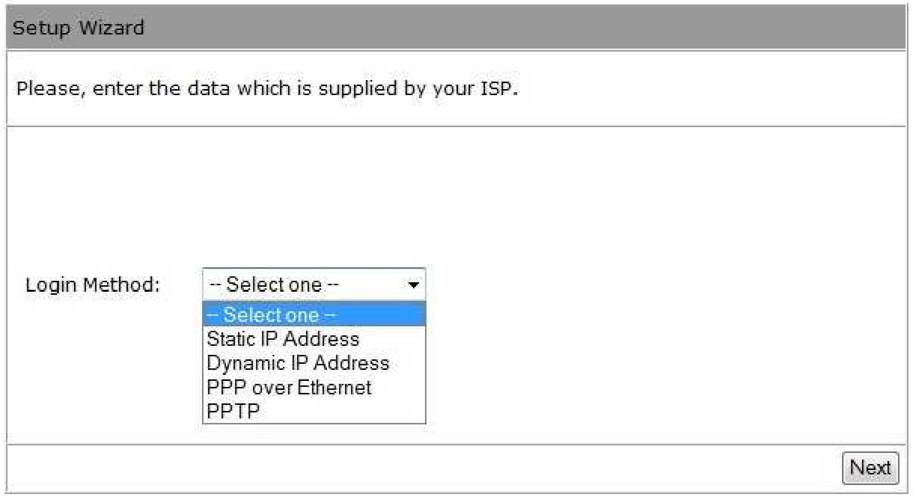
WAN Configuration

Please choose your service type or select Others to setup WAN configurations manually.

	No.	Service	Description
●	1.	DHCP	DHCP is used when your Modem is controling your internet connection the Username & Password is stored on the Modem.
○	2.	PPPoE	PPPoE is used when your modem is set in Bridge Mode and your Router is used to control the internet connection. IE: router houses ISP's Username & Password.
○	3.	Others	

c) There are many WAN service types available. Obtain the correct settings from your Internet Service Provider (ISP).

Note:
Choose **Dynamic IP Address** (DHCP) if you have a Cable connection.
Choose **PPP over Ethernet** (PPPoE) if you have a DSL connection.



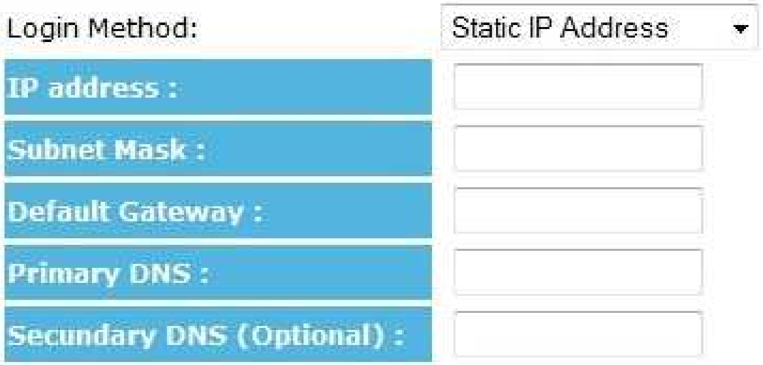
Setup Wizard

Please, enter the data which is supplied by your ISP.

Login Method: -- Select one --

Static IP Address

Select this option if your Internet Service Provider (ISP) has assigned you a permanent, fixed (static) IP address. Enter the IP address assigned by your ISP, subnet mask, default gateway IP address, and the IP address of your ISP’s primary DNS server. If a secondary DNS server address is available, also enter the address here.



Login Method: Static IP Address

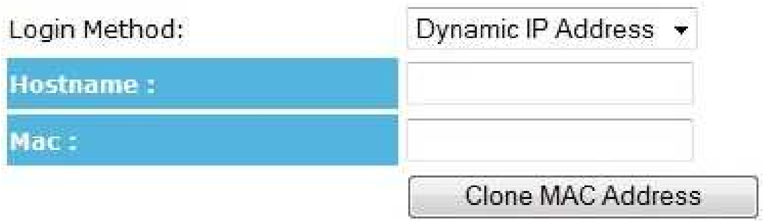
Dynamic IP Address (DHCP)

Select this option if your ISP assigns an IP address dynamically by DHCP (i.e. Cable connections).

Typically, you can leave the Hostname and MAC address fields empty.

However, some ISPs register the Ethernet MAC address of the network interface card in your computer when your account is first opened. They will only accept traffic from the MAC address of that computer.

If your ISP has registered the MAC address of your computer's Ethernet LAN card, connect only the computer with the authorized MAC address and click the **Clone MAC Address** button. This function allows your router to clone the authorized MAC address of the registered computer. The correct MAC address will be used to initiate the connection to the ISP.



Login Method: Dynamic IP Address

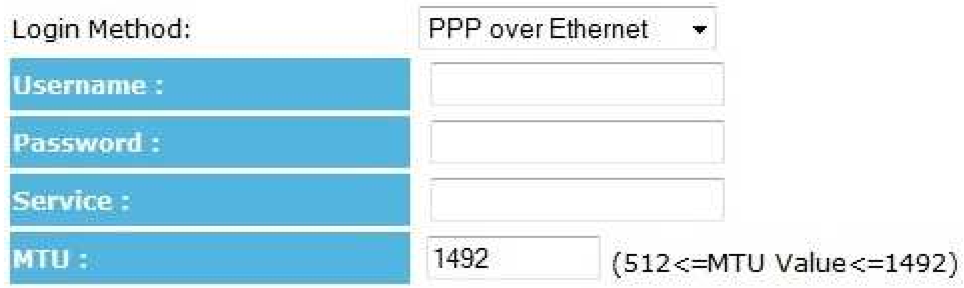
Hostname :

Mac :

Dynamic IP Address	
Hostname	This is optional. Only required if specified by ISP
MAC	The MAC address that is used to connect to the ISP.

PPP over Ethernet (PPPoE)
This protocol is used by most DSL services worldwide. Select this option if you have a DSL connection.

Enter the username and password provided by your ISP.



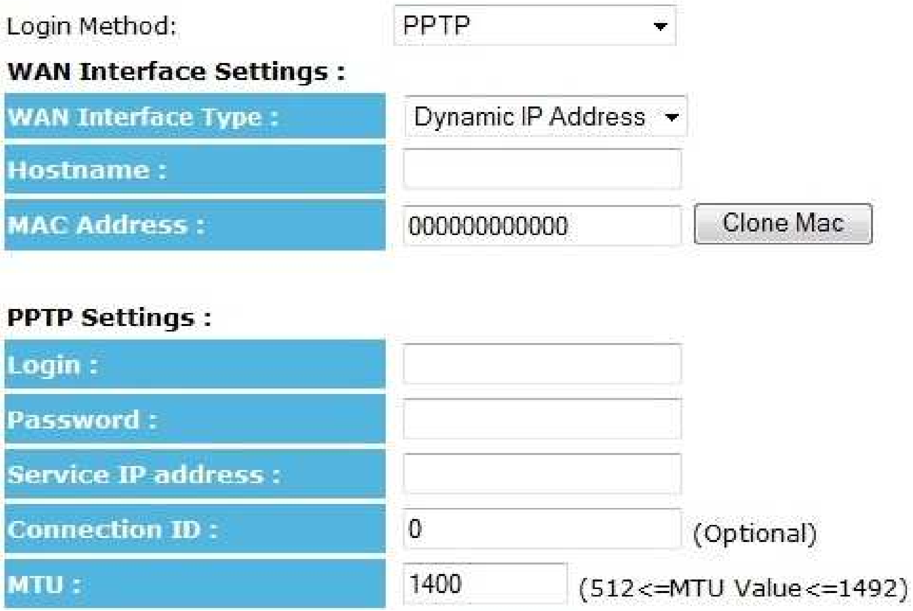
Login Method: PPP over Ethernet

Username :	
Password :	
Service :	
MTU :	1492 (512<=MTU Value<=1492)

PPP over Ethernet	
Username	Username assigned to you by the ISP
Password	Password for this username.
Service	You can assign a name for this service. (Optional)
MTU	The maximum size of packets. Do not change unless mentioned by the ISP.

Point-to-Point Tunneling Protocol (PPTP)

PPTP is used by a few ISPs. It is used primarily in Austrian DSL services.



Login Method: PPTP

WAN Interface Settings :

WAN Interface Type :	Dynamic IP Address
Hostname :	
MAC Address :	000000000000

PPTP Settings :

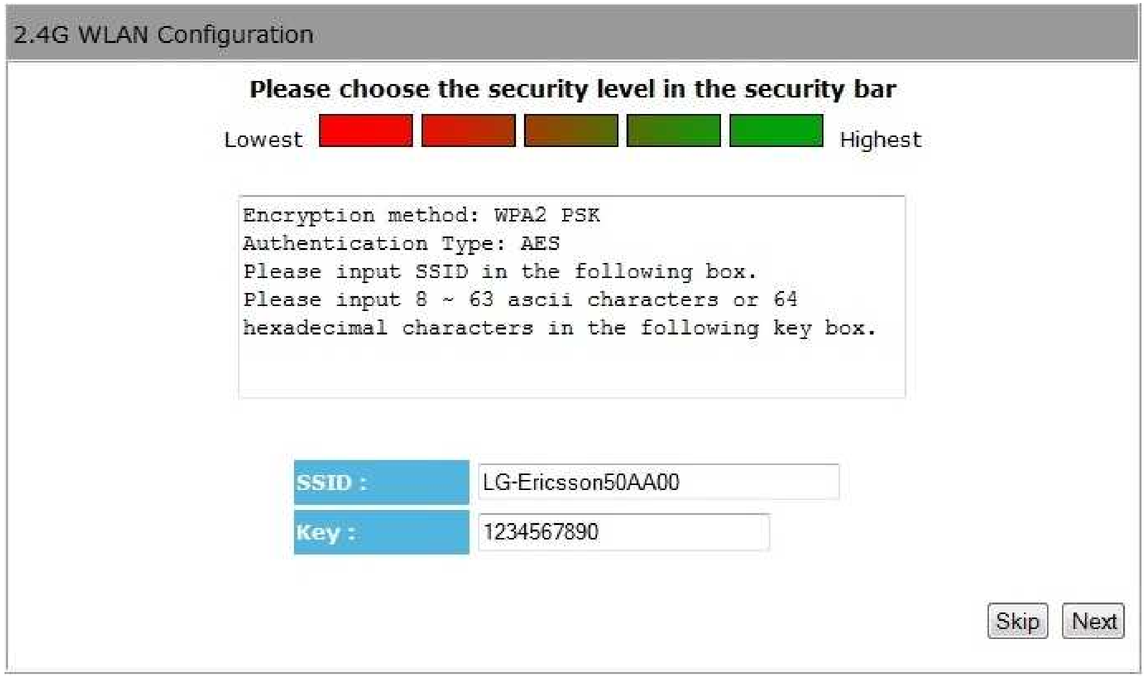
Login :	
Password :	
Service IP address :	
Connection ID :	0 (Optional)
MTU :	1400 (512<=MTU Value<=1492)

PPTP	
WAN Interface Type	Select whether the ISP is set to Static IP or Dynamic IP addresses.
Hostname	This is optional. Only required if specified by ISP
MAC	The MAC Address that is used to connect to the ISP.

PPTP Settings	
Login	Username assigned to you by the ISP
Password	Password for this username.
Service IP Address	The IP Address of the PPTP server.
Connection ID	This is optional. Only required if specified by ISP
MTU	The maximum size of packets. Do not change unless mentioned by the ISP.

d) Setup the level of wireless security to be used.
LG-Ericsson recommends the **Highest** level of security to be used (**WPA2 PSK** as the Encryption method and **AES** as the Authentication type)

Note: 802.11n wireless speeds may not be achievable if the security is setup as the Lowest and Low levels.



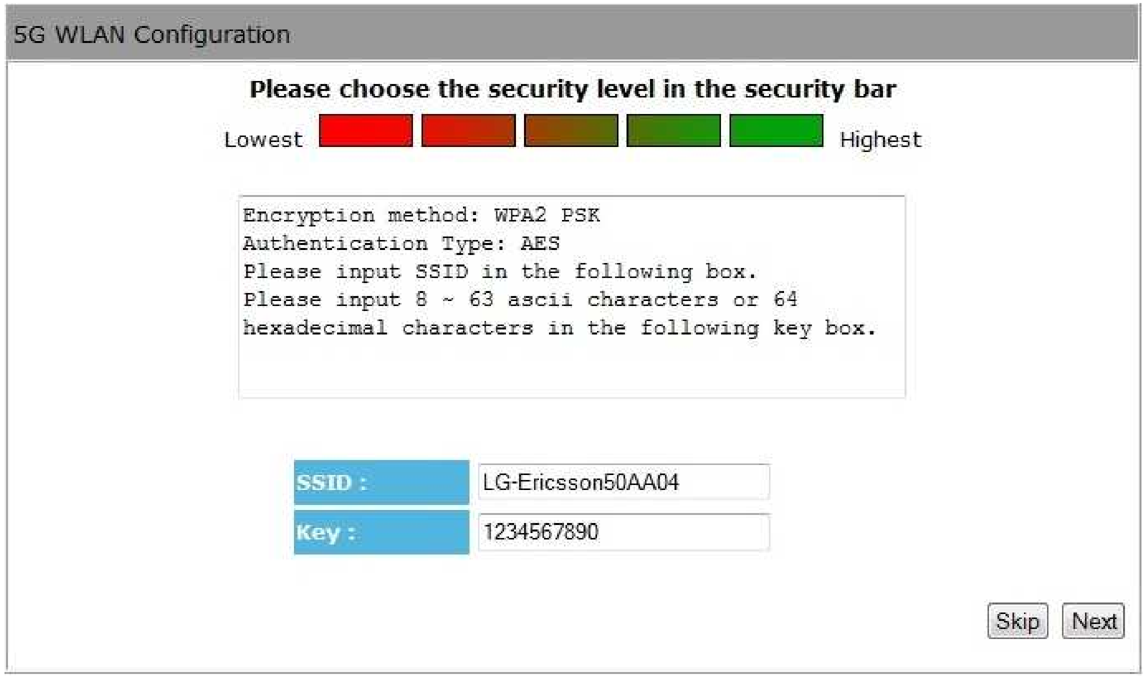
2.4G WLAN Configuration

Please choose the security level in the security bar

```
Encryption method: WPA2 PSK
Authentication Type: AES
Please input SSID in the following box.
Please input 8 ~ 63 ascii characters or 64
hexadecimal characters in the following key box.
```

SSID : LG-Ericsson50AA00

Key : 1234567890



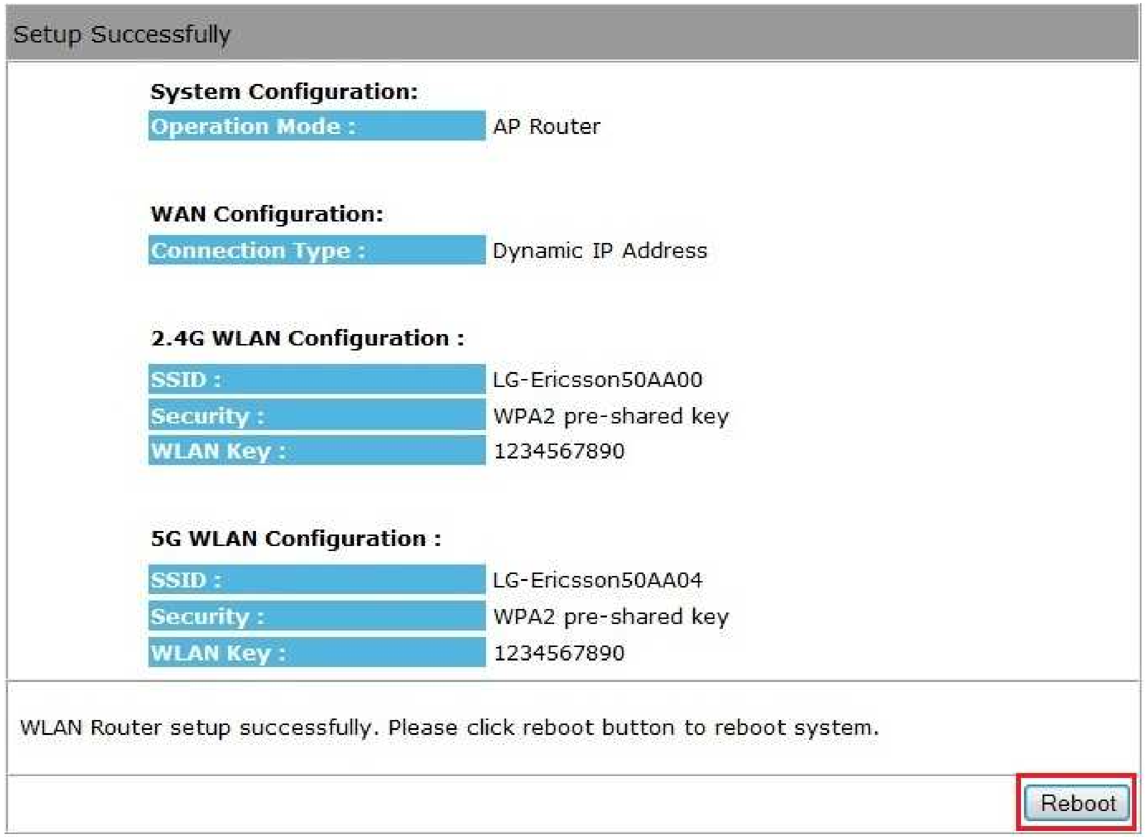
```
Encryption method: WPA2 PSK
Authentication Type: AES
Please input SSID in the following box.
Please input 8 ~ 63 ascii characters or 64
hexadecimal characters in the following key box.
```

SSID : LG-Ericsson50AA04

Key : 1234567890

SSID	Enter the name of your wireless network.
Key	Enter the security key for your wireless network.

e) Make sure the settings are correct. Click **Reboot** to apply the settings.



Setup Successfully

System Configuration:

Operation Mode :	AP Router

WAN Configuration:

Connection Type :	Dynamic IP Address

2.4G WLAN Configuration :

SSID :	LG-Ericsson50AA00
Security :	WPA2 pre-shared key
WLAN Key :	1234567890

5G WLAN Configuration :

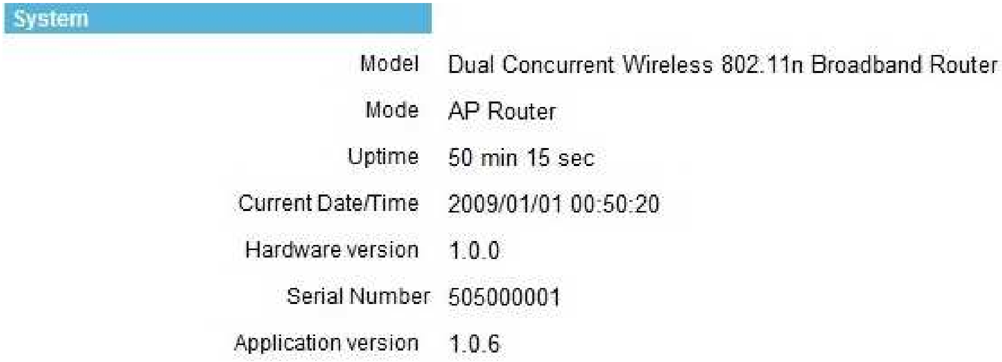
SSID :	LG-Ericsson50AA04
Security :	WPA2 pre-shared key
WLAN Key :	1234567890

WLAN Router setup successfully. Please click reboot button to reboot system.

5. System

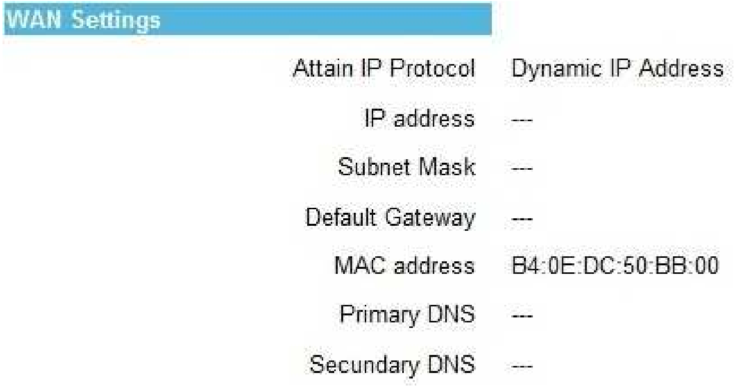
5.1. Status

This page allows you to monitor the status of the Router.



System	
Model	Dual Concurrent Wireless 802.11n Broadband Router
Mode	AP Router
Uptime	50 min 15 sec
Current Date/Time	2009/01/01 00:50:20
Hardware version	1.0.0
Serial Number	505000001
Application version	1.0.6

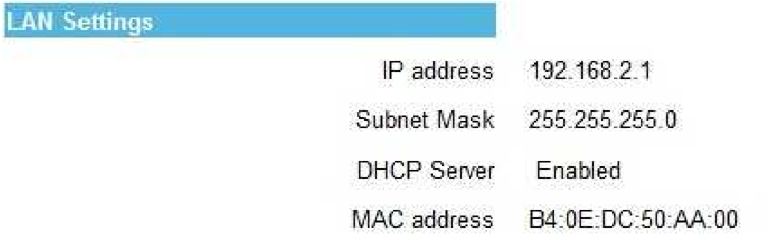
System	
Model	Description of the Router.
Mode	Operation mode of the Router.
Uptime	The duration of time that the Router has been operating.
Current Date/Time	The system time of the Router. If this is incorrect, you can set the correct time in the Tools / Time page.
Hardware version and Serial Number	Hardware information of the Router.
Application version	Firmware version of the Router.



WAN Settings

Attain IP Protocol	Dynamic IP Address
IP address	---
Subnet Mask	---
Default Gateway	---
MAC address	B4:0E:DC:50:BB:00
Primary DNS	---
Secundary DNS	---

WAN Settings	
Attain IP Protocol	Method used to connect to the Internet. This is your WAN connection type.
IP address	The WAN IP address of the Router.
Subnet Mask	The WAN subnet mask of the Router.
Default Gateway	The default gateway of the Router.
MAC address	The WAN MAC address of the Router.
Primary and Secondary DNS	The IP addresses of the Primary and Secondary DNS servers assigned to the WAN connection.



LAN Settings

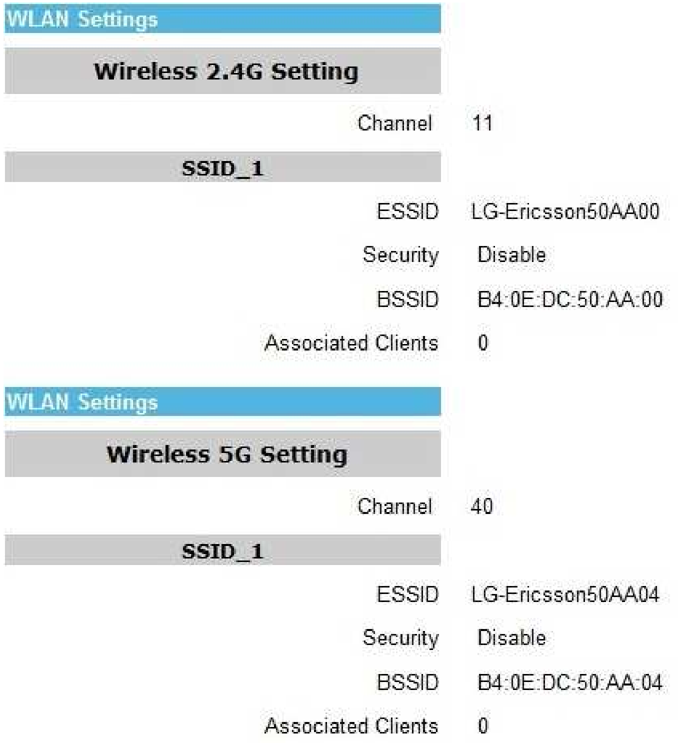
IP address 192.168.2.1

Subnet Mask 255.255.255.0

DHCP Server Enabled

MAC address B4:0E:DC:50:AA:00

LAN Settings	
IP address:	The LAN IP Address of the Router.
Subnet Mask	The LAN Subnet Mask of the Router.
DHCP Server	Whether the DHCP server is Enabled or Disabled.
MAC address	The LAN MAC address of the Router.



WLAN Settings

Wireless 2.4G Setting

Channel	11

SSID_1

ESSID	LG-Ericsson50AA00
Security	Disable
BSSID	B4:0E:DC:50:AA:00
Associated Clients	0

WLAN Settings

Wireless 5G Setting

Channel	40

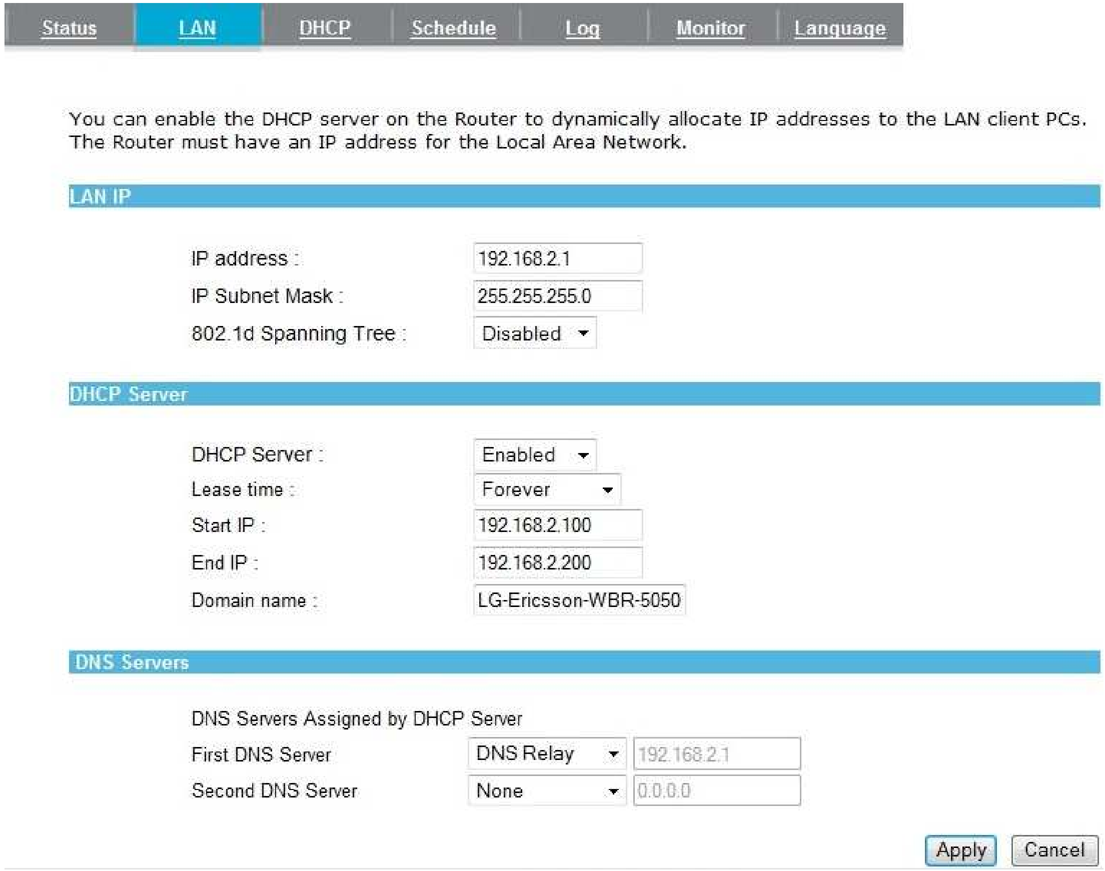
SSID_1

ESSID	LG-Ericsson50AA04
Security	Disable
BSSID	B4:0E:DC:50:AA:04
Associated Clients	0

WLAN Settings	
Channel	The wireless channel currently in use.
ESSID	The SSID (Network Name) of the wireless network. (The WBR-5050 supports up to 4 SSIDs for each radio)
Security	The type of wireless encryption enabled.
BSSID	The MAC address of this SSID.
Associated Clients:	The number of wireless clients connected to this SSID.

5.2. LAN (Local Area Network)

This page allows you to modify the LAN settings of the Router.



You can enable the DHCP server on the Router to dynamically allocate IP addresses to the LAN client PCs. The Router must have an IP address for the Local Area Network.

LAN IP

IP address :	192.168.2.1
IP Subnet Mask :	255.255.255.0
802.1d Spanning Tree :	Disabled

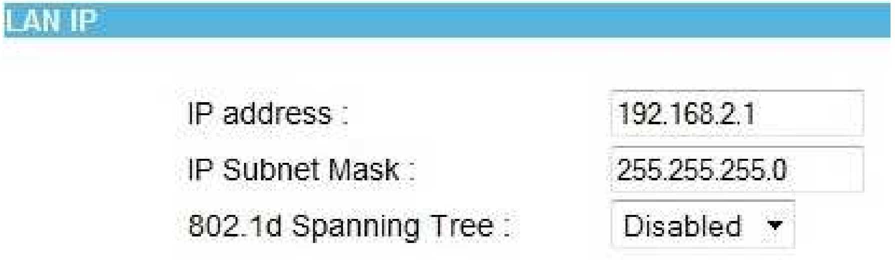
DHCP Server

DHCP Server :	Enabled
Lease time :	Forever
Start IP :	192.168.2.100
End IP :	192.168.2.200
Domain name :	LG-Ericsson-WBR-5050

DNS Servers

DNS Servers Assigned by DHCP Server

First DNS Server	DNS Relay	192.168.2.1
Second DNS Server	None	0.0.0.0



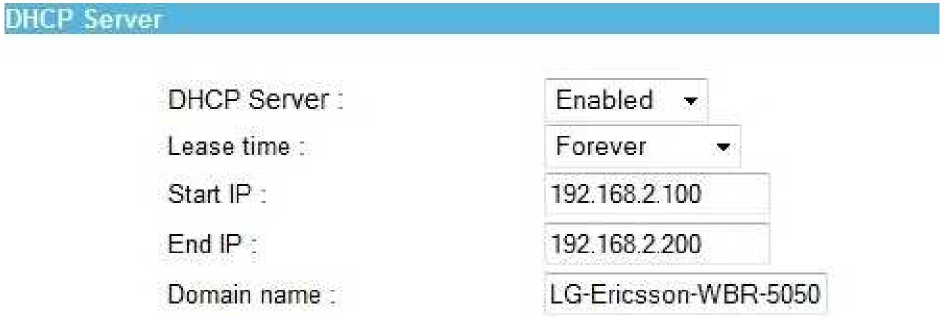
LAN IP

IP address : 192.168.2.1

IP Subnet Mask : 255.255.255.0

802.1d Spanning Tree : Disabled

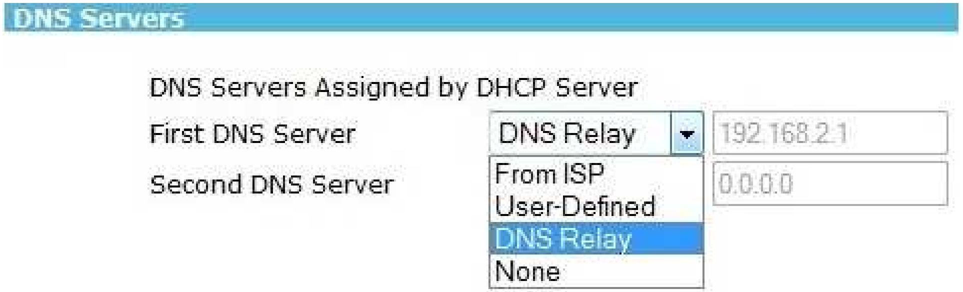
LAN IP	
IP address	The LAN IP Address of the Router.
IP Subnet Mask	The LAN Subnet Mask of the Router.
802.1d Spanning Tree	When Enabled, the Spanning Tree Protocol (STP) will prevent network loops in your LAN network. Default: Disabled.



DHCP Server

DHCP Server :	Enabled
Lease time :	Forever
Start IP :	192.168.2.100
End IP :	192.168.2.200
Domain name :	LG-Ericsson-WBR-5050

DHCP Server	
DHCP Server	The DHCP Server automatically allocates IP addresses to your LAN devices. Default: Enabled.
Lease Time	The amount of time that a computer may have an IP address before it is required to renew the lease. Default: Forever.
Start / End IP	The range of IP addresses that the DHCP server will allocate to LAN devices.
Domain name	The domain name for this LAN network.



DNS Servers

DNS Servers Assigned by DHCP Server

First DNS Server: DNS Relay — 192.168.2.1

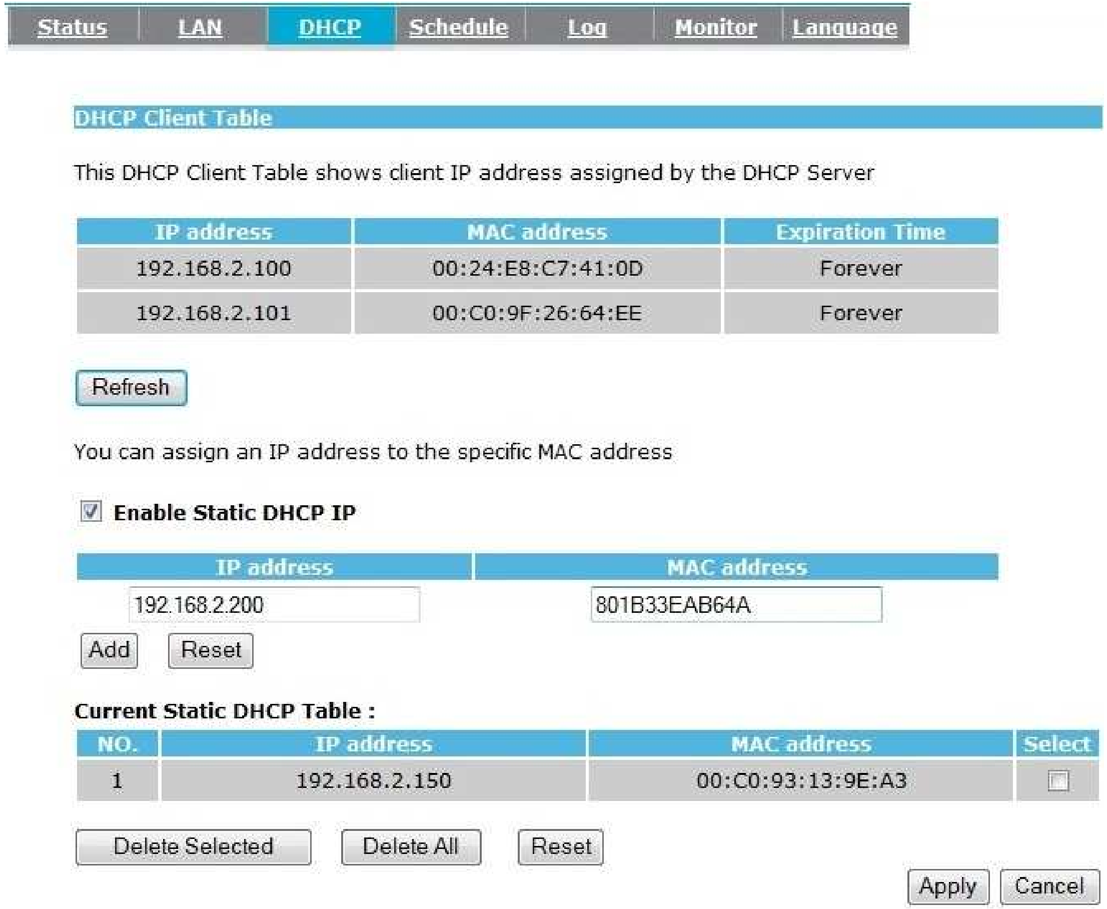
Second DNS Server: 0.0.0.0

Two DNS servers can be assigned for use by your LAN devices.
There are four modes available.

DNS Servers	
From ISP	The DNS server IP address is assigned by your ISP.
User-Defined	The DNS server IP address is configured manually.
DNS Relay	When DNS Relay is enabled, the Router plays the role of a DNS server. DNS requests sent to the Router are forwarded to the ISP's DNS server. This provides a constant DNS address that LAN computers can use, even when the Router obtains a different DNS server address from the ISP upon re-establishing the WAN connection. Do not select this option if you implement a LAN-side DNS server as a virtual server.

5.3. DHCP

This page shows the status of the DHCP server and also allows you to control how the IP addresses are allocated.



DHCP Client Table

This DHCP Client Table shows client IP address assigned by the DHCP Server

IP address	MAC address	Expiration Time
192.168.2.100	00:24:E8:C7:41:0D	Forever
192.168.2.101	00:C0:9F:26:64:EE	Forever

You can assign an IP address to the specific MAC address

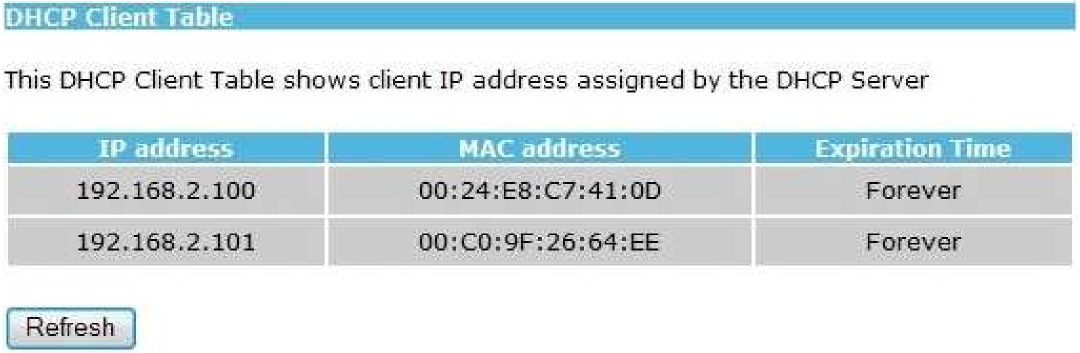
☑ **Enable Static DHCP IP**

IP address	MAC address
192.168.2.200	801B33EAB64A

Current Static DHCP Table :

NO.	IP address	MAC address	Select
1	192.168.2.150	00:C0:93:13:9E:A3	□

The DHCP Client Table displays a list of clients that have been allocated IP addresses from the Router’s DHCP Server.

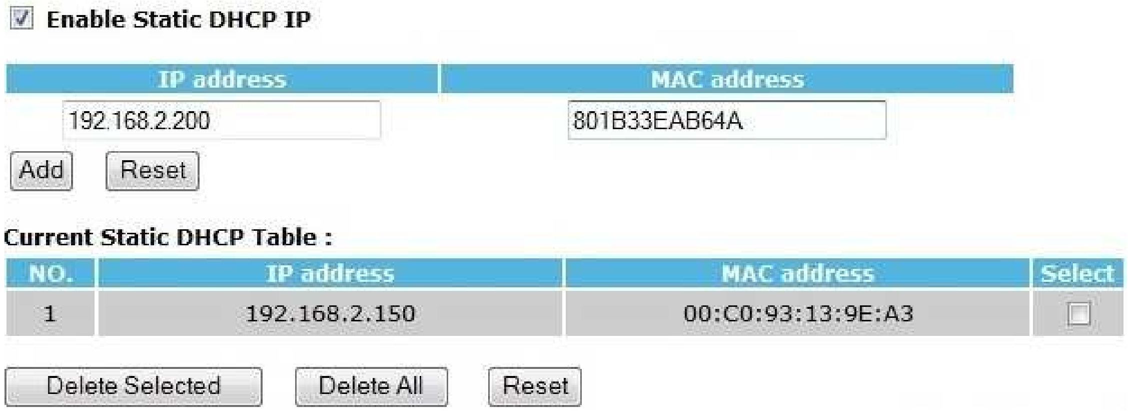


DHCP Client Table

This DHCP Client Table shows client IP address assigned by the DHCP Server

IP address	MAC address	Expiration Time
192.168.2.100	00:24:E8:C7:41:0D	Forever
192.168.2.101	00:C0:9F:26:64:EE	Forever

DHCP Client Table	
IP address	The LAN IP address of the client computer.
MAC address	The LAN MAC address of the client computer.
Expiration Time	The time that the allocated IP address will expire.
Refresh	Click this button to update the DHCP Client Table.



☑ Enable Static DHCP IP

IP address	MAC address
192.168.2.200	801B33EAB64A

Current Static DHCP Table :

NO.	IP address	MAC address	Select
1	192.168.2.150	00:C0:93:13:9E:A3	□

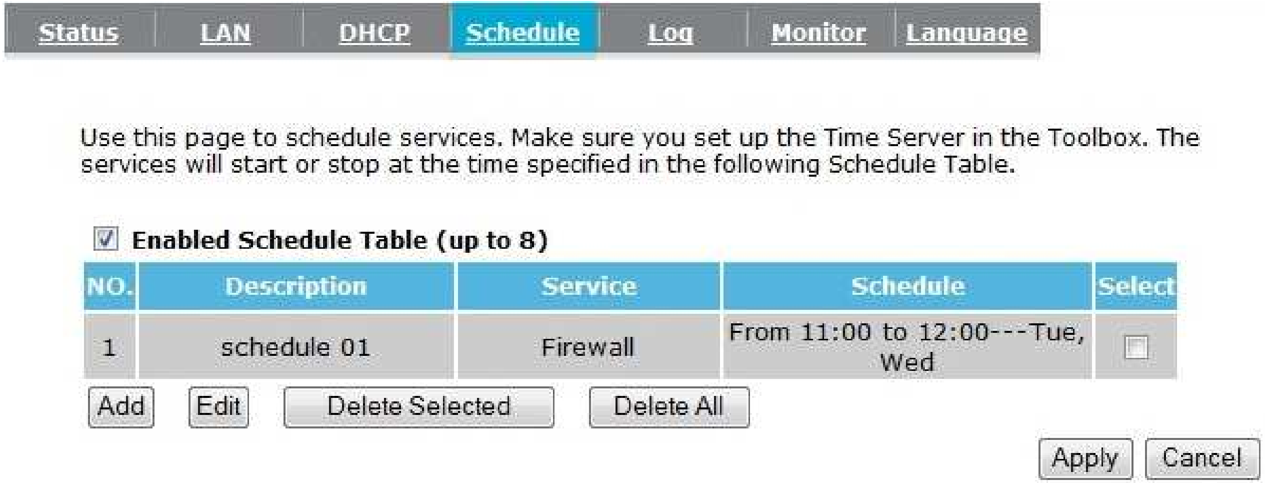
You can also manually specify the IP address that will be allocated to a LAN client by associating the IP address with its MAC address.

Enter the IP address you would like to manually assign to a specific MAC address and click **Add** to add the condition to the Static DHCP Table.

5.4. Schedule

This page allows you to schedule times that the Firewall and Power Saving features will be activated / deactivated.

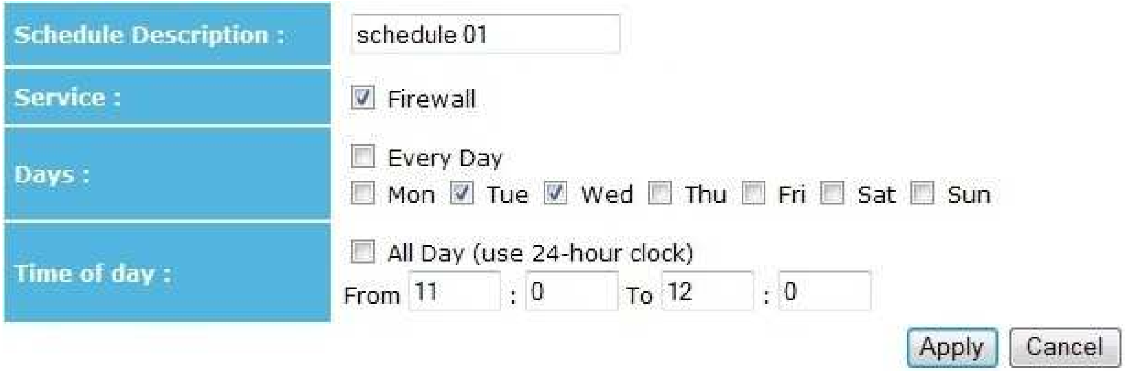
Click **Add** to create a Schedule entry.



Use this page to schedule services. Make sure you set up the Time Server in the Toolbox. The services will start or stop at the time specified in the following Schedule Table.

☑ **Enabled Schedule Table (up to 8)**

NO.	Description	Service	Schedule	Select
1	schedule 01	Firewall	From 11:00 to 12:00---Tue, Wed	□

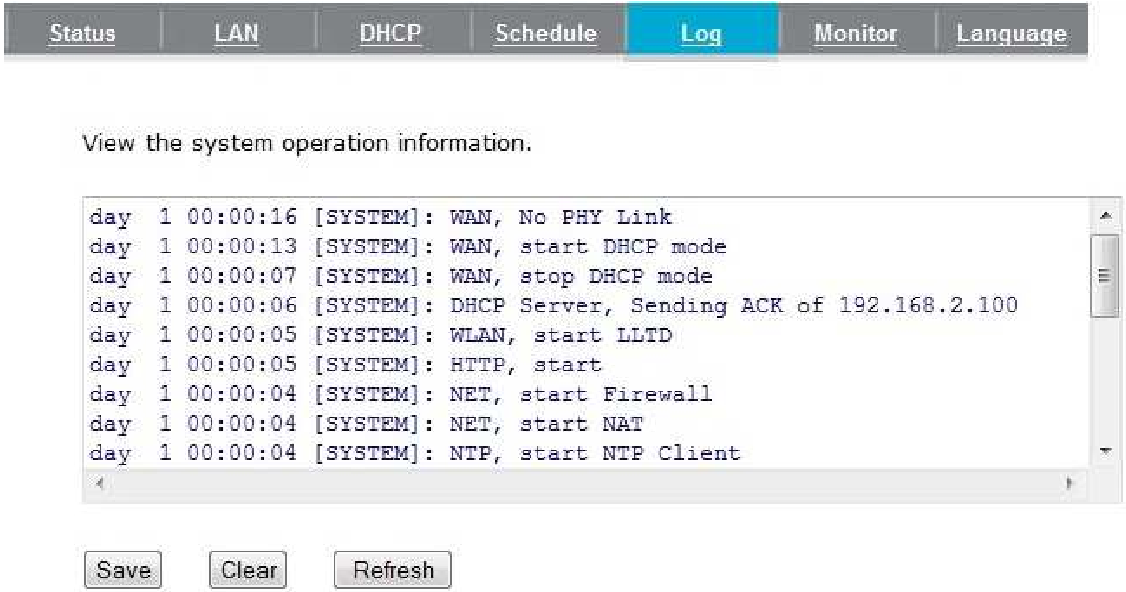


Schedule Description :	schedule 01
Service :	☑ Firewall
Days :	□ Every Day □ Mon ☑ Tue ☑ Wed □ Thu □ Fri □ Sat □ Sun
Time of day :	□ All Day (use 24-hour clock) From 11 : 0 To 12 : 0

Schedule	
Schedule Description	Assign a name to the schedule.
Service	Type of service
Days	Define the Days to activate or deactivate the scheduled service.
Time of day	Define the Time of day to activate or deactivate the scheduled service. Note: Use 24-hour clock format.

5.5. Log

This page displays the system log of the Router. When powered down or rebooted, the log will be cleared.



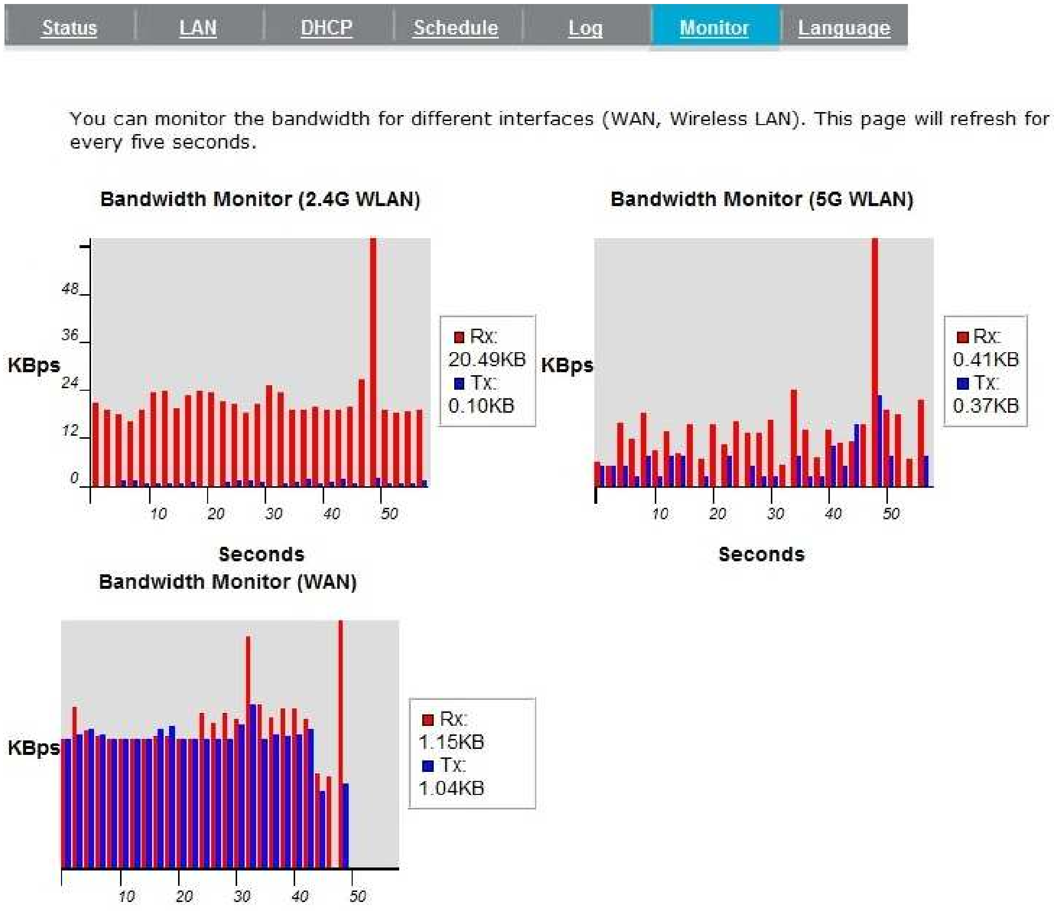
View the system operation information.

```
day  1 00:00:16 [SYSTEM]: WAN, No PHY Link
day  1 00:00:13 [SYSTEM]: WAN, start DHCP mode
day  1 00:00:07 [SYSTEM]: WAN, stop DHCP mode
day  1 00:00:06 [SYSTEM]: DHCP Server, Sending ACK of 192.168.2.100
day  1 00:00:05 [SYSTEM]: WLAN, start LLTD
day  1 00:00:05 [SYSTEM]: HTTP, start
day  1 00:00:04 [SYSTEM]: NET, start Firewall
day  1 00:00:04 [SYSTEM]: NET, start NAT
day  1 00:00:04 [SYSTEM]: NTP, start NTP Client
```

Log	
Save	Save the log to a file.
Clear	Clears the log.
Refresh	Updates the log.

5.6. Monitor

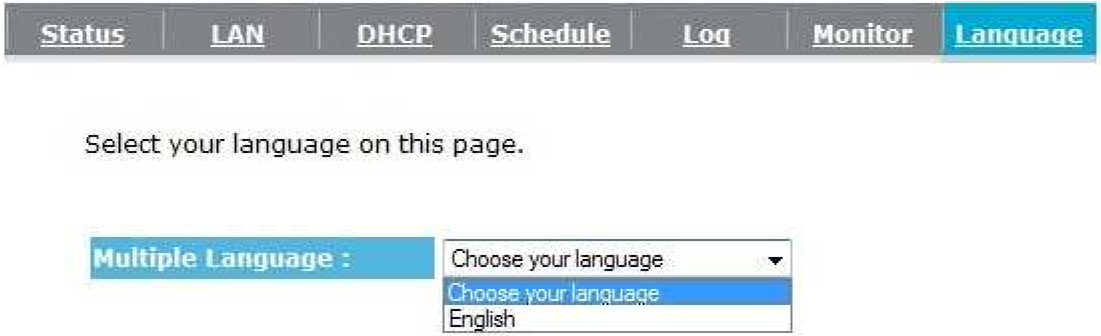
This page displays histograms of the WAN and Wireless LAN traffic.
The information is automatically updated every five seconds.



You can monitor the bandwidth for different interfaces (WAN, Wireless LAN). This page will refresh for every five seconds.

5.7. Language

This page allows you to change the Language of the User Interface.



Select your language on this page.

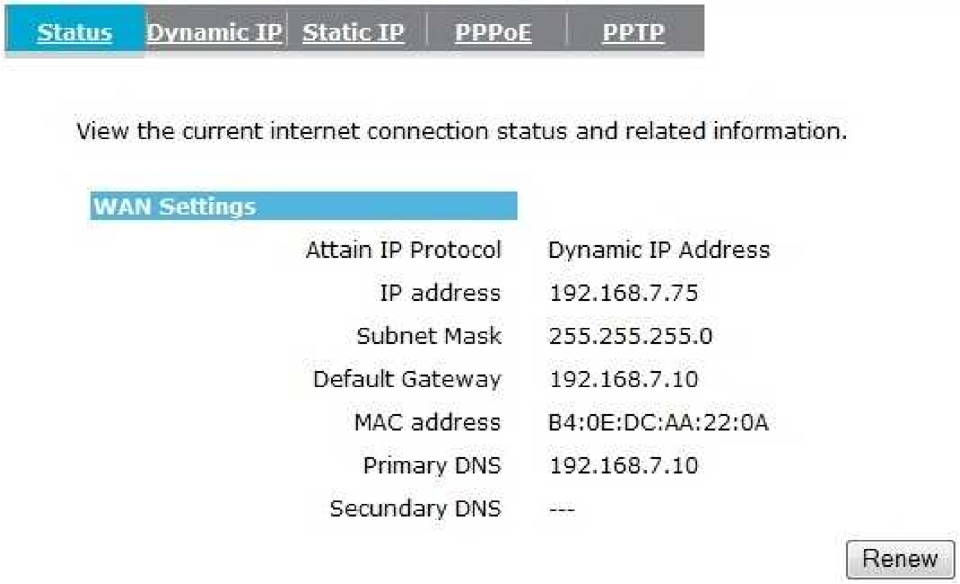
Multiple Language : Choose your language

6. Internet

The Internet section on the left menu allows you to manually configure the WAN connection type and related settings.

6.1. Status

This page shows the current status of the Router’s WAN connection.



View the current internet connection status and related information.

WAN Settings

Attain IP Protocol	Dynamic IP Address
IP address	192.168.7.75
Subnet Mask	255.255.255.0
Default Gateway	192.168.7.10
MAC address	B4:0E:DC:AA:22:0A
Primary DNS	192.168.7.10
Secundary DNS	---

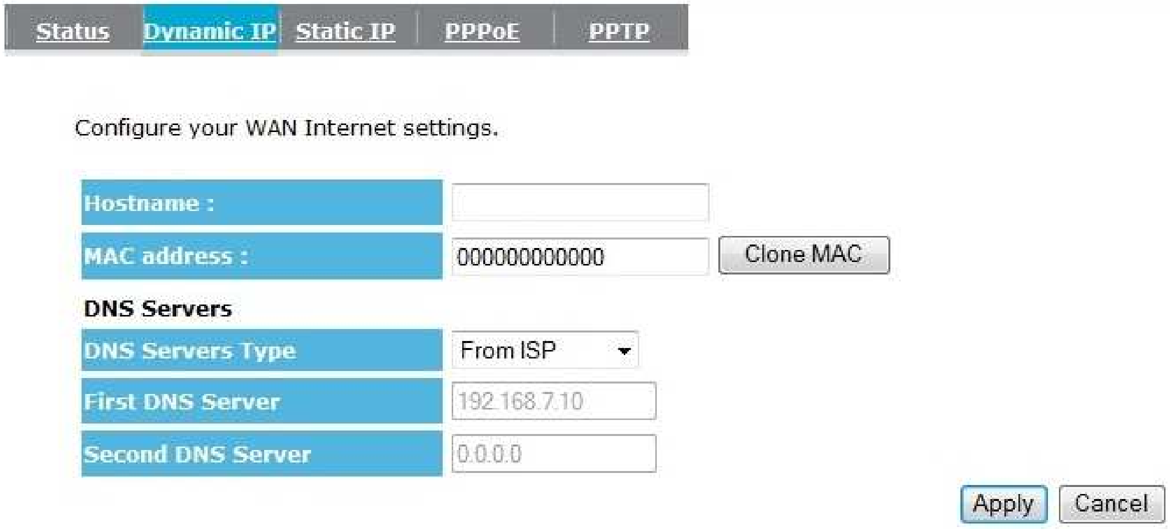
6.2. Dynamic IP Address (DHCP)

Select this option if your ISP assigns an IP address dynamically by DHCP (i.e. Cable connections).

Typically, you can leave the Hostname and MAC address fields empty.

However, some ISPs register the Ethernet MAC address of the network interface card in your computer when your account is first opened. They will only accept traffic from the MAC address of that computer.

If your ISP has registered the MAC address of your computer’s Ethernet LAN card, connect only the computer with the authorized MAC address and click the **Clone MAC Address** button. This function allows your router to clone the authorized MAC address of the registered computer. The correct MAC address will be used to initiate the connection to the ISP.



Configure your WAN Internet settings.

Hostname :	
MAC address :	000000000000

DNS Servers

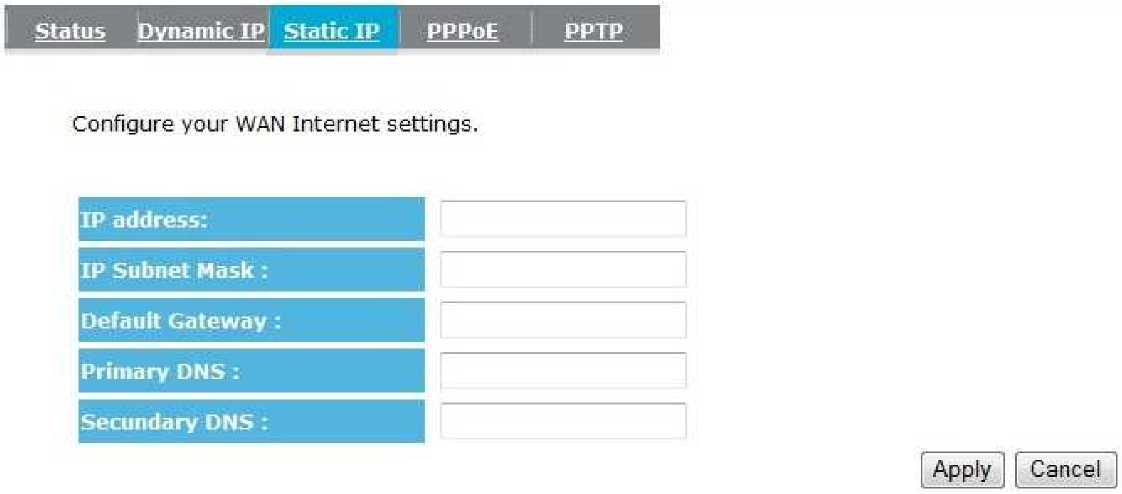
DNS Servers Type	From ISP
First DNS Server	192.168.7.10
Second DNS Server	0.0.0.0

Dynamic IP Address	
Hostname	This is optional. Only required if specified by ISP

MAC address	The MAC Address that is used to connect to the ISP.
DNS Servers	
Two DNS servers can be assigned for use by your LAN devices. There are two modes available:	
From ISP	The DNS server’s IP address is assigned by your ISP.
User-Defined	Set the DNS server’s IP address manually.

6.3. Static IP Address

Select this option if your Internet Service Provider (ISP) has assigned you a permanent, fixed (static) IP address. Enter the IP address assigned by your ISP, subnet mask, default gateway IP address, and the IP address of your ISP's primary DNS server. If a secondary DNS server address is available, also enter it here.



Configure your WAN Internet settings.

IP address:

IP Subnet Mask :

Default Gateway :

Primary DNS :

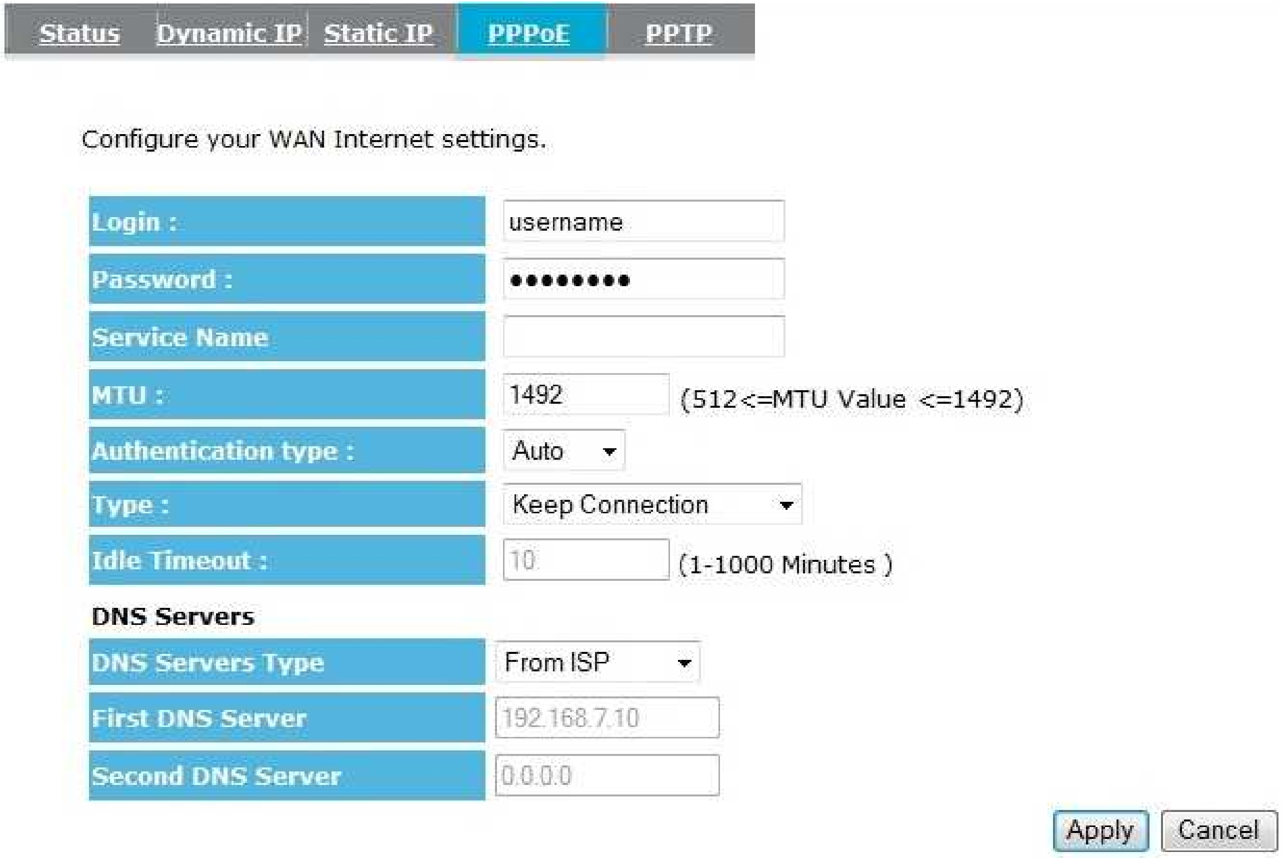
Secundary DNS :

Static IP Address	
IP address	Enter the IP address assigned by your ISP.
IP Subnet Mask	Enter the subnet mask of the IP address.
Default Gateway	Enter the IP address of the default gateway.
Primary DNS	Enter the IP address of the Primary DNS server.
Secondary DNS	Enter the IP address of the Secondary DNS server (Optional).

6.4. PPP over Ethernet (PPPoE)

This protocol is used by most DSL services worldwide. Select this option if you have a DSL connection.

Enter the username and password provided by your ISP.



Configure your WAN Internet settings.

Login :	username
Password :	●●●●●●●●●
Service Name	
MTU :	1492 (512<=MTU Value <=1492)
Authentication type :	Auto
Type :	Keep Connection
Idle Timeout :	10 (1-1000 Minutes)

DNS Servers

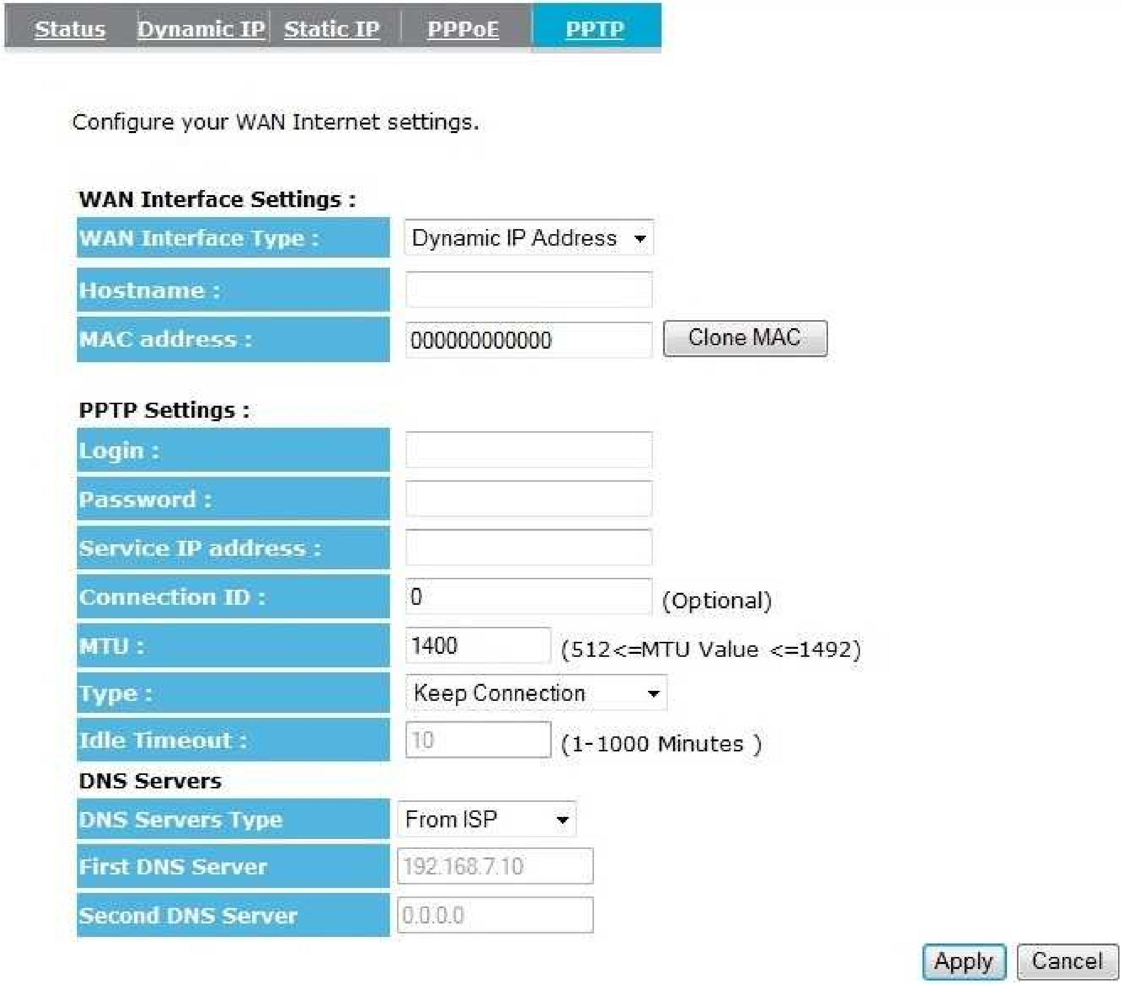
DNS Servers Type	From ISP
First DNS Server	192.168.7.10
Second DNS Server	0.0.0.0

PPP over Ethernet (PPPoE)

Username	Username assigned to you by the ISP
Password	Password for this username.
Service	You can assign a name for this service. (Optional)
MTU	The maximum size of packets. Do not change unless mentioned by the ISP.
Authentication type	Select whether the ISP uses PAP or CHAP methods for authentication. Select **Auto** if you are not sure.
Type	You can choose the method that the router maintains connection with the ISP. **Keep Connection:** The device will maintain a constant connection with the ISP. **Automatic Connection:** The device will only initiate connection to the ISP when there is an Internet connection request made from a LAN device. **Manual Connection:** The user will need to manually connect to the ISP by clicking the **Connect** button.
Idle Timeout	If the connection type is **Automatic Connection**, the Router will automatically disconnect from the ISP when there has been no Internet traffic. Note: Specify the Idle time in minutes.

6.5. Point-to-Point Tunneling Protocol (PPTP)

PPTP is used by very few ISPs. It is used primarily in Austrian DSL services.



Configure your WAN Internet settings.

WAN Interface Settings :

WAN Interface Type :	Dynamic IP Address ▾
Hostname :	
MAC address :	000000000000 Clone MAC

PPTP Settings :

Login :	
Password :	
Service IP address :	
Connection ID :	0 (Optional)
MTU :	1400 (512<=MTU Value <=1492)
Type :	Keep Connection ▾
Idle Timeout :	10 (1-1000 Minutes)

DNS Servers

DNS Servers Type	From ISP ▾
First DNS Server	192.168.7.10
Second DNS Server	0.0.0.0

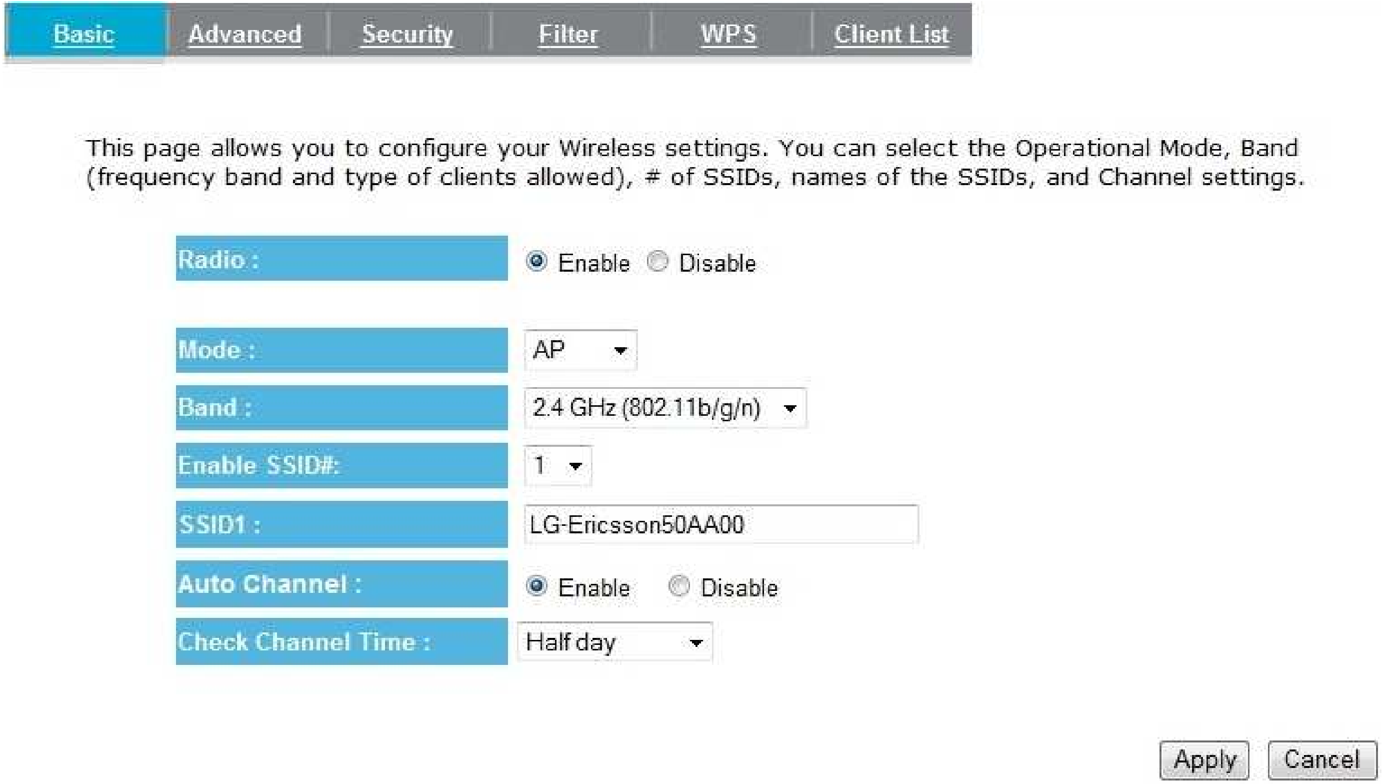
Point-to-Point Tunneling Protocol (PPTP)	
WAN Interface Type	Select whether the ISP is set to Static IP or will allocate Dynamic IP addresses.
Hostname	This is optional. Only required if specified by ISP
MAC address	The MAC Address that is used to connect to the ISP.
Login	Username assigned to you by the ISP
Password	Password for this username.
Service IP Address	The IP Address of the PPTP server.
Connection ID	This is optional. Only required if specified by ISP
MTU	The maximum size of packets. Do not change unless mentioned by the ISP.
Type	You can choose the method that the router maintains connection with the ISP. **Keep Connection:** The device will maintain a constant connection with the ISP. **Automatic Connection:** The device will only initiate connection to the ISP when there is an Internet connection request made from a LAN device. **Manual Connection:** The user will need to manually connect to the ISP by clicking the **Connect** button.
Idle Timeout	If the connection type is **Automatic Connection**, the Router will automatically disconnect from the ISP when there has been no Internet traffic. Note: Specify the Idle time in minutes.

7. Wireless 2.4G

The Wireless section allows you to configure the wireless 2.4G settings.

7.1. Basic

The Basic page displays the current wireless settings of the Router.



This page allows you to configure your Wireless settings. You can select the Operational Mode, Band (frequency band and type of clients allowed), # of SSIDs, names of the SSIDs, and Channel settings.

Radio :	● Enable ○ Disable
Mode :	AP
Band :	2.4 GHz (802.11b/g/n)
Enable SSID#:	1
SSID1 :	LG-Ericsson50AA00
Auto Channel :	● Enable ○ Disable
Check Channel Time :	Half day

Basic	
Radio	Enable or Disable wireless.
Mode	Select from Access Point (AP) or Wireless Distribution System (WDS) modes. (Default: AP)
Band	Select the types of wireless clients that the device will accept. Example: **2.4 GHz (b/g/n):** All 802.11b/g/n clients will be allowed. **2.4 GHz (b/g)**: Only 802.11b/g clients will be allowed. **2.4 GHz (n)**: Only 802.11n clients will be allowed.
Enable SSID#	Select the number of SSIDs (Wireless Networks) you would like to enable. You can create up to 4 separate wireless networks by enabling 4 SSIDs.
SSID#	Enter the name of your wireless network. You can use up to 32 characters. Example: “Life Is Good”, “Guest Network”, etc.
Auto Channel	When Enabled, the Router will scan the wireless signals around your area and select the channel with the least interference. When Disabled, you will need to configure the Channel settings on the Router.
Channel	Manually select which channel the wireless signal will use.
Check Channel Time	When Auto Channel is Enabled, you can specify the frequency the Router will scan the wireless signals around your area.

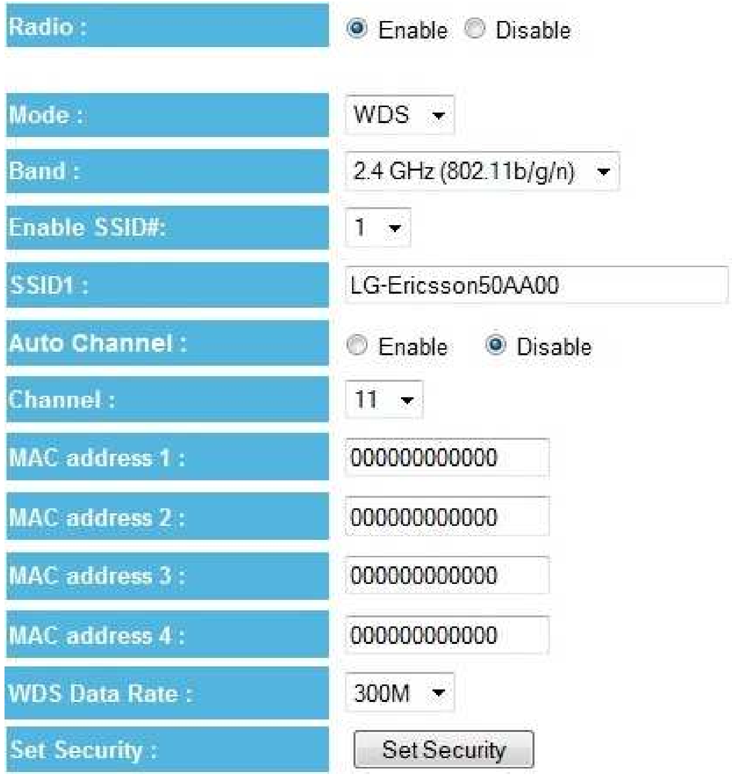
Wireless Distribution System (WDS)

When WDS is enabled, the Router functions as a wireless repeater and is able to wireless communicate with other APs via WDS links. WDS allows you to connect Access Points wirelessly and extend a wired infrastructure to locations where cabling is impossible or difficult to implement.

To create a WDS network, enter the MAC addresses of the Access Points that you want included in the WDS links. There can be a maximum of four access points.

Important:

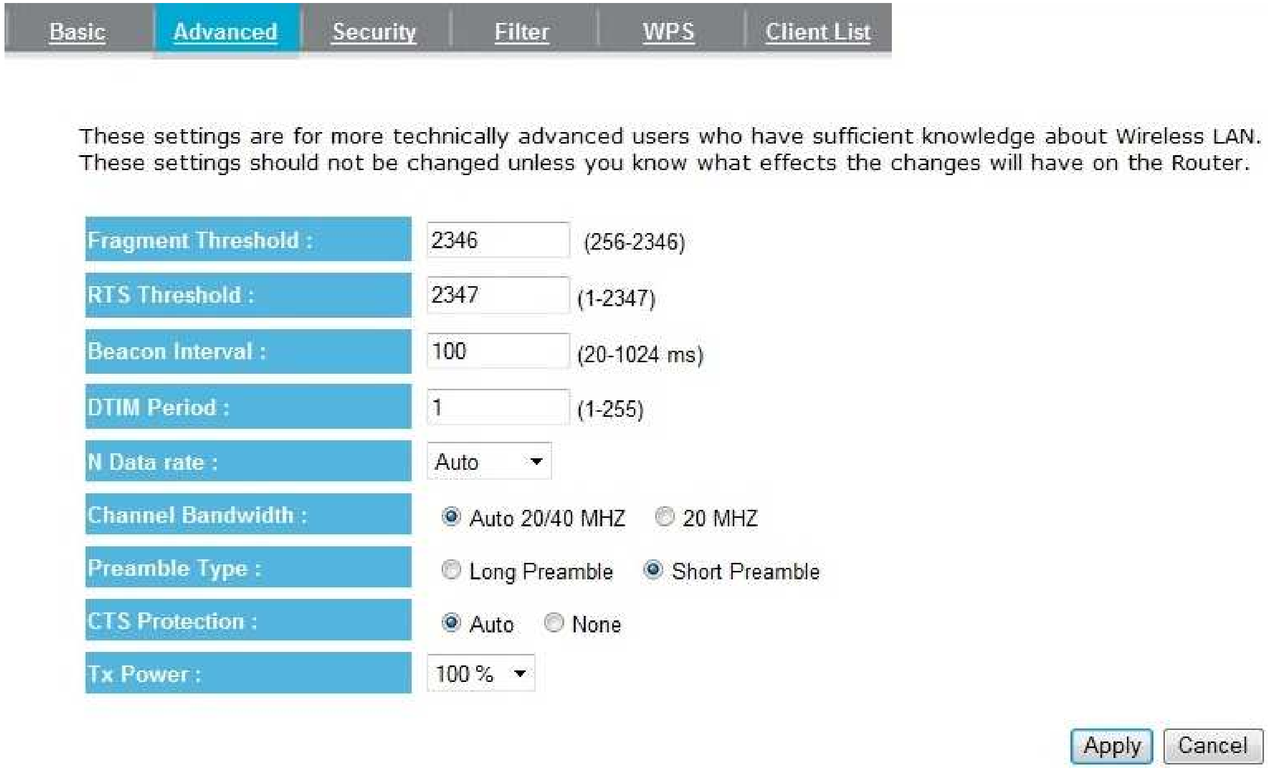
- A WDS link is bidirectional; so this AP must know the MAC Address of the other AP, and the other AP must also have a WDS link back to this AP. **Make sure the APs are configured with the same Channel and Security settings**.
- Compatibility between different brands and models is not guaranteed. It is recommended that the WDS network be created using products from the same manufacturer for maximum compatibility.



Radio :	● Enable ○ Disable
Mode :	WDS
Band :	2.4 GHz (802.11b/g/n)
Enable SSID#:	1
SSID1 :	LG-Ericsson50AA00
Auto Channel :	○ Enable ● Disable
Channel :	11
MAC address 1 :	000000000000
MAC address 2 :	000000000000
MAC address 3 :	000000000000
MAC address 4 :	000000000000
WDS Data Rate :	300M
Set Security :	Set Security

7.2. Advanced

This page allows you to configure advanced wireless settings. It is recommended that default settings are used unless you have experience with these advanced functions.



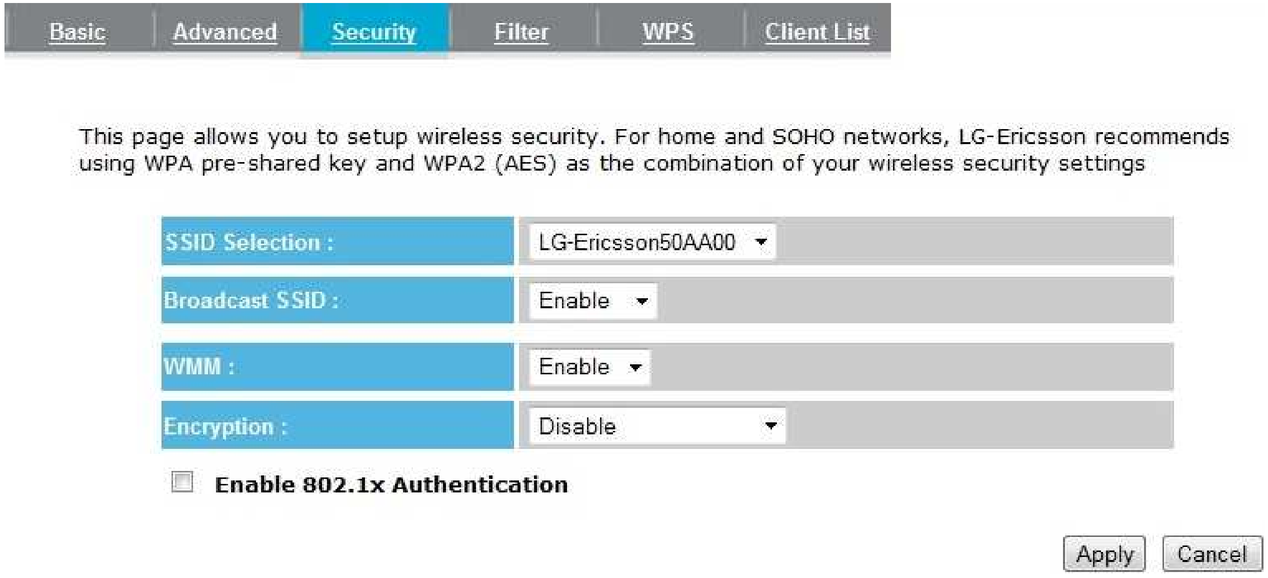
These settings are for more technically advanced users who have sufficient knowledge about Wireless LAN. These settings should not be changed unless you know what effects the changes will have on the Router.

Fragment Threshold :	2346 (256-2346)
RTS Threshold :	2347 (1-2347)
Beacon Interval :	100 (20-1024 ms)
DTIM Period :	1 (1-255)
N Data rate :	Auto
Channel Bandwidth :	● Auto 20/40 MHZ ○ 20 MHZ
Preamble Type :	○ Long Preamble ● Short Preamble
CTS Protection :	● Auto ○ None
Tx Power :	100 %

Fragment Threshold	Specifies the size of the packet per fragment. Selecting a smaller number can reduce the chance of packet collision. However, when the value is set too low, increased overhead will likely result in poor performance.
RTS Threshold	When the packet size is smaller than the RTS Threshold, the packet will be sent without RTS/CTS handshake which may result in incorrect transmission.
Beacon Interval	The time interval that the device broadcasts a beacon. This beacon is used to synchronize all wireless clients on the network.
DTIM Period	A Delivery Traffic Indication Message informs all wireless clients that the access point will be sending Multicast data.
N Data Rate	You can limit the transfer rates between the device and wireless clients. Each Modulation Coding Scheme (MCS) refers to a specific transfer speed.
Channel Bandwidth	Set whether each channel uses 20 or 40Mhz. To achieve maximum 802.11n speeds, 40Mhz channels must be used.
Preamble Type	A preamble is a message that helps access points synchronize with the client. **Long Preamble** is standard-based so it increases compatibility. **Short Preamble** is not standard-based so it decreases compatibility; however it also increases performance. Auto as default.
CTS Protection	When Enabled, the performance is slightly lower however the chances of packet collision is greatly reduced.
Tx Power	Set the power output of the wireless signal.

7.3. Security

This page allows you to configure the wireless security settings. Select the SSID to which you want to apply the security settings, and select your preferred security type from the Encryption drop-down list. We recommend choosing **WPA-PSK** as the Encryption type and **WPA2 (AES)** as the WPA type for your home network. Enter a passphrase (security key) for your wireless network and click **Apply**.



This page allows you to setup wireless security. For home and SOHO networks, LG-Ericsson recommends using WPA pre-shared key and WPA2 (AES) as the combination of your wireless security settings

SSID Selection : LG-Ericsson50AA00

Broadcast SSID : Enable

WMM : Enable

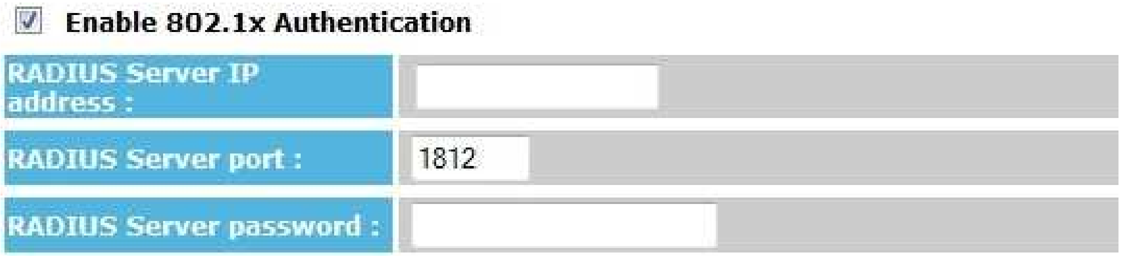
Encryption : Disable

□ Enable 802.1x Authentication

Security	
SSID Selection	Select the SSID to apply the security settings.
Broadcast SSID	If Disabled, the Router will not broadcast the SSID. The SSID will be invisible to wireless clients.
WMM	Wi-Fi Multi-Media is a Quality of Service (QoS) protocol which prioritizes traffic in the order according to voice, video, best effort, and background.

	Note: In certain situations, WMM needs to be enabled to achieve 11n transfer speeds.
Encryption	The encryption method to be applied. You can choose from WEP, WPA pre-shared key or WPA RADIUS. • **Disabled** - no data encryption is used. LG-Ericsson strongly recommends that you set up wireless security. • **WEP** - data is encrypted using the WEP standard. • **WPA-PSK** - data is encrypted using the WPA-PSK standard. This is a later standard than WEP and provides much better security than WEP. If all your Wireless stations support WPA-PSK, you should use WPA-PSK rather than WEP. • **WPA2-PSK** - This is a further development of WPA-PSK and offers even greater security, using the AES (Advanced Encryption Standard) method of encryption. • **WPA-RADIUS** - This version of WPA requires a Radius Server on your LAN to provide the client authentication according to the 802.1x standard. Data transmissions are encrypted using the WPA standard. If this option is selected: • This Access Point must have a "client login" on the Radius Server. • Each user must have a "user login" on the Radius Server. • Each user's wireless client must support 802.1x and provide the login data when required. • All data transmission is encrypted using the WPA standard. Keys are automatically generated, so no key input is required.

IEEE 802.1x is an authentication protocol. Every user must use a valid account to login to this Access Point before accessing the wireless LAN. The authentication is processed by a RADIUS server. This mode only authenticates users by IEEE 802.1x, but it does not encrypt the data during communication.

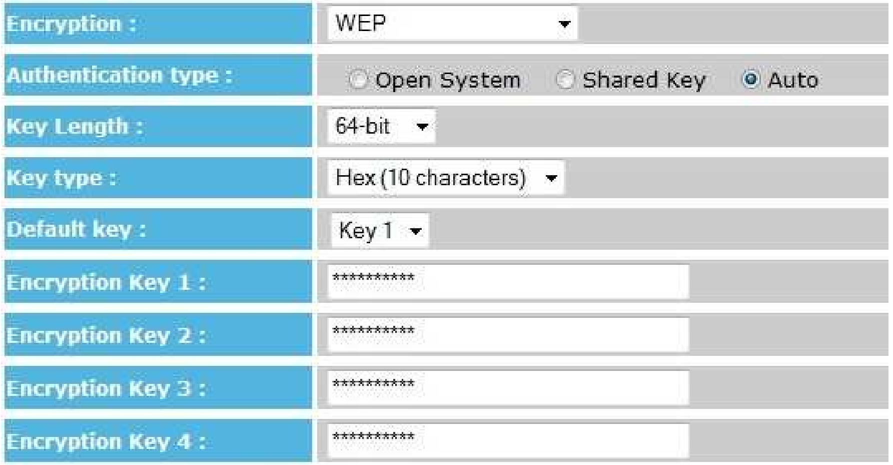


☑ Enable 802.1x Authentication

RADIUS Server IP address :	
RADIUS Server port :	1812
RADIUS Server password :	

802.1x Authentication	
RADIUS Server IP Address	The IP Address of the RADIUS Server.
RADIUS Server port	The port number of the RADIUS Server.
RADIUS Server password	The RADIUS Server’s password.

WEP Encryption:

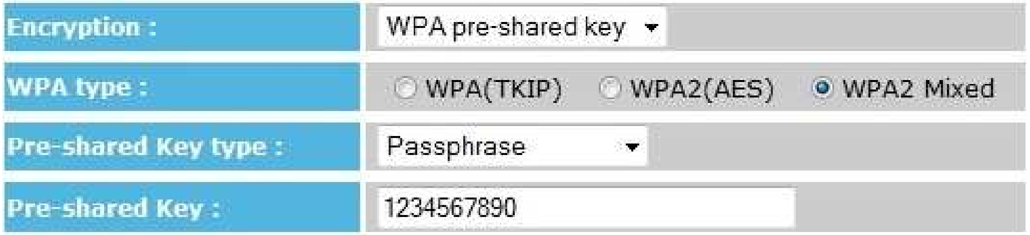


Encryption :	WEP
Authentication type :	○ Open System ○ Shared Key ● Auto
Key Length :	64-bit
Key type :	Hex (10 characters)
Default key :	Key 1
Encryption Key 1 :	**********
Encryption Key 2 :	**********
Encryption Key 3 :	**********
Encryption Key 4 :	**********

WEP Encryption	
Authentication Type	Please ensure that your wireless clients use the same authentication type.
Key type	ASCII: Regular text (recommended) HEX: For advanced users (uses 0~9 and A~F)
Key Length	Select the desired option, and ensure the wireless clients use the same setting. • **64-bit** - data is encrypted, using the default key, before being transmitted. You must enter at least the default key. For 64-bit Encryption, the key size is 10 characters in HEX (0~9 and A~F). • **128-bit** - data is encrypted, using the default key, before being transmitted. You must enter at least the default key. For 128-bit Encryption, the key size is 26 characters in HEX (0~9 and A~F).
Default Key	Select the key you wish to be the default. Transmitted data is ALWAYS encrypted using the Default Key; the other Keys are for decryption only. You must enter a **Key Value** for the **Default Key**.
Encryption Key #	Enter the key value or values you wish to use. Only the Key selected as Default

	is required. The others are optional.

WPA Pre-Shared Key Encryption:



Encryption : WPA pre-shared key

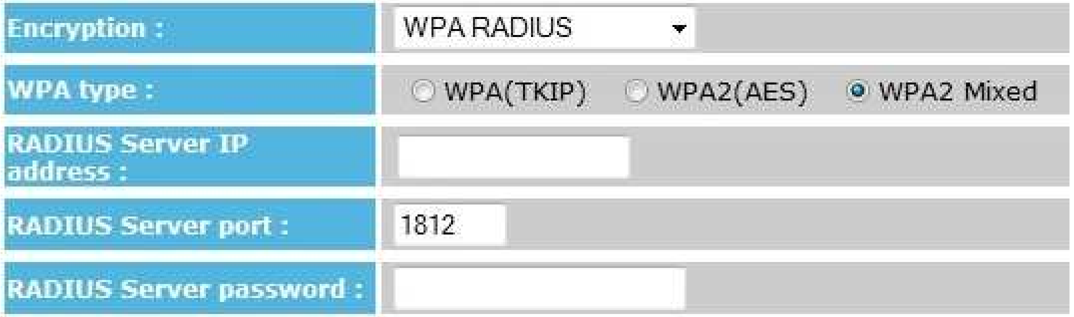
WPA type : ○ WPA(TKIP) ○ WPA2(AES) ● WPA2 Mixed

Pre-shared Key type : Passphrase

Pre-shared Key : 1234567890

WPA Pre-Shared Key Encryption	
Authentication Type	Please ensure that your wireless clients use the same authentication type.
WPA type	Select the preferred WPA encryption type. The recommended WPA type is **WPA2 (AES)**. Make sure your wireless clients use the same settings.
Pre-shared Key Type	Select whether you would like to enter the Key in Passphrase or HEX format. Default: **Passphrase** (you can use any character from 0~9 and A~Z, with a length from **8 to 63** characters)
Pre-shared Key:	This is the key or password to the wireless network. Wireless clients must use the same key to connect. Note: If using the Passphrase format, the key must be from **8 to 63** characters in length.

WPA RADIUS Encryption:

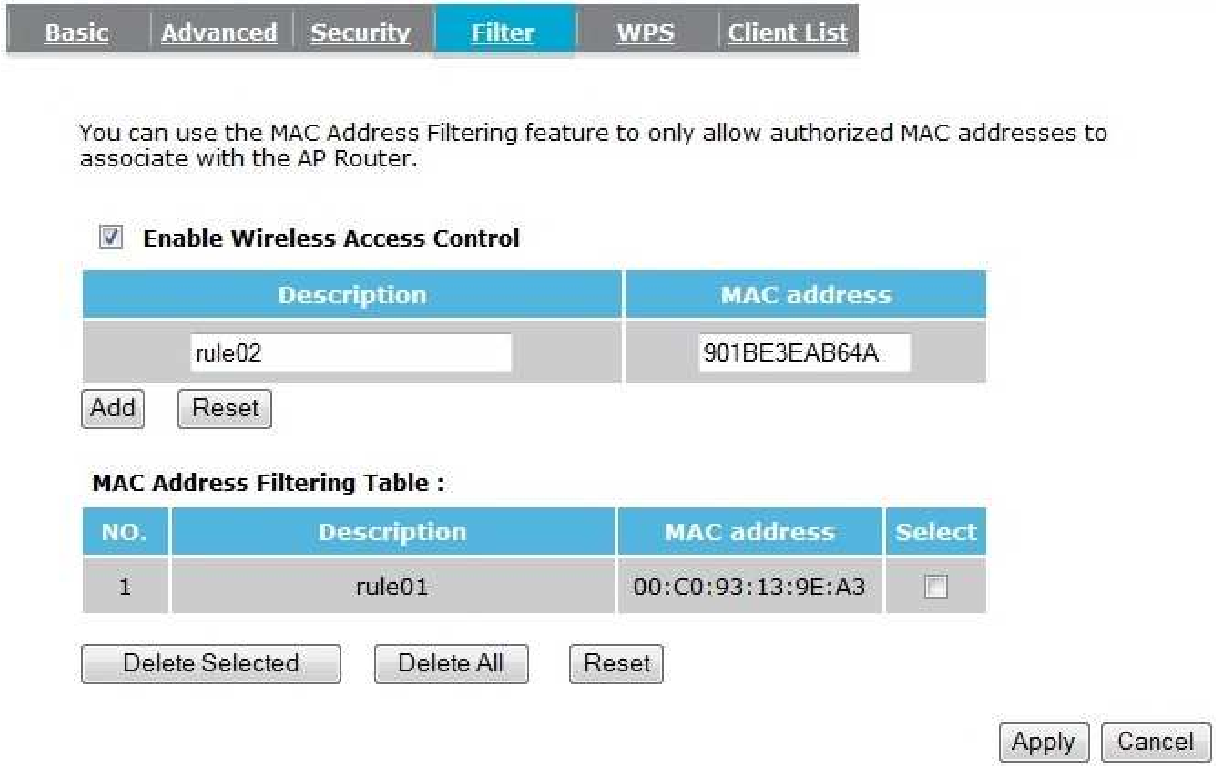


Encryption :	WPA RADIUS
WPA type :	○ WPA(TKIP) ○ WPA2(AES) ● WPA2 Mixed
RADIUS Server IP address :	
RADIUS Server port :	1812
RADIUS Server password :	

WPA RADIUS Encryption	
WPA type	Select the preferred WPA encryption type. Make sure your wireless clients use the same settings.
RADIUS Server IP address	Enter the IP address of the RADIUS Server.
RADIUS Server Port	Enter the port number used for connecting to the RADIUS server.
RADIUS Server password	Enter the password required to connect to the RADIUS server.

7.4. Filter

This page allows you to create filters to control which wireless clients can connect to the Router. When Wireless Access Control is enabled, only wireless clients with the MAC addresses entered into the Filtering Table are allowed to connect.



You can use the MAC Address Filtering feature to only allow authorized MAC addresses to associate with the AP Router.

☑ Enable Wireless Access Control

Description	MAC address
rule02	901BE3EAB64A

MAC Address Filtering Table :

NO.	Description	MAC address	Select
1	rule01	00:C0:93:13:9E:A3	□

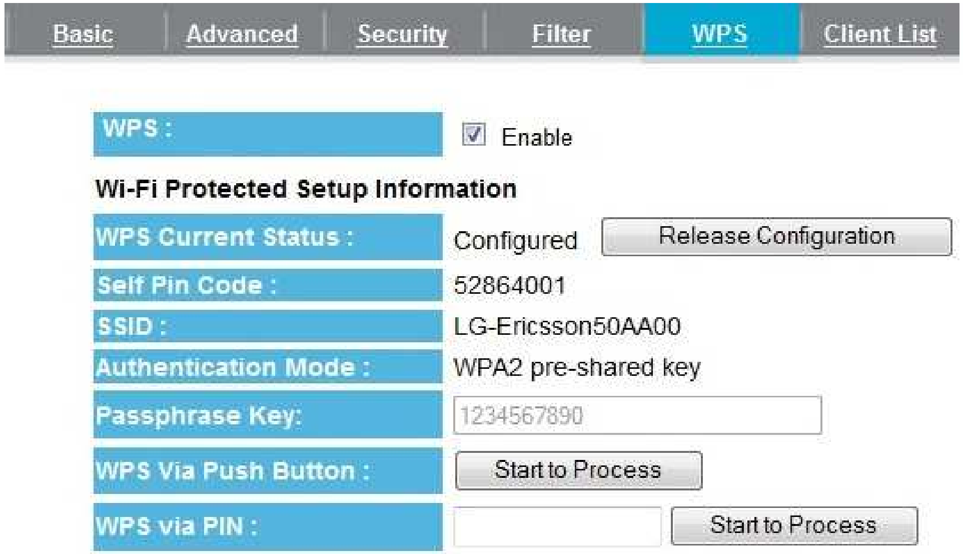
Wireless Filter	
Enable Wireless	Check the box to enable Wireless Access Control.

Access Control	When Enabled, only wireless clients on the Filtering Table will be allowed.
Description	Enter a name or description for this entry.
MAC address	Enter the MAC address of the wireless client allowed.
Add	Click this button to add the entry.
Reset	Click this button to reset the MAC address and Description fields.
MAC Address Filtering Table	
Only clients listed in this table will be allowed to connect to the wireless network.	
Delete Selected	Delete the selected entries.
Delete All	Delete all entries.
Reset	Un-check all selected entries.

7.5. Wi-Fi Protected Setup (WPS)

The WPS feature is based on the Wi-Fi Alliance WPS standard. The goal is to simplify the set up of security-enabled wireless networks in the home and small office environments.

The WPS function simplifies the steps required to connect to a secured wireless network. Two WPS methods are supported: **WPA via Push Button (PBC)** and **WPS via PIN (PIN)**.



WPS : ☑ Enable

Wi-Fi Protected Setup Information

WPS Current Status : Configured

Self Pin Code : 52864001

SSID : LG-Ericsson50AA00

Authentication Mode : WPA2 pre-shared key

Passphrase Key: 1234567890

WPS Via Push Button :

WPS via PIN :

Wi-Fi Protected Setup (WPS)	
WPS	Check the box to enable the WPS feature.
WPS Button	Check to Enable the WPS push button.

Wi-Fi Protected Setup Information	
WPS Current Status	Shows whether the WPS function is **Configured** or **Unconfigured**. Configured means that WPS has been used to authorize connection between the device and wireless clients.
SSID	The SSID (name of the wireless network) used when connecting using WPS.
Authentication Mode	The encryption method used by the WPS process.
Passphrase Key	This is the passphrase key that is randomly generated during the WPS process. It is required if wireless clients that do not support WPS attempt to connect to the wireless network.
WPS Via Push Button	Click this button to initialize the WPS feature using the push button method.
WPS Via PIN	Enter the PIN code from wireless adapter and then click [**Start to Process**] button to initialize the WPS feature.

There are two methods to initialize the WPS feature: **WPS via Push Button (PBC)** and **WPS via Pin (PIN)**.

1. **Push Button Method (PBC – Push Button Connect)**

   Press the WPS button on your wireless adapter and press the WPS button on the top panel of the Router to establish the connection.

– Or –

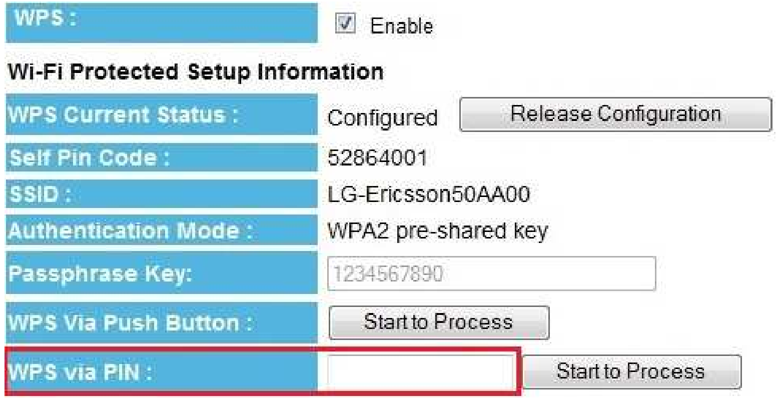
a. Log into the browser utility of the Router (see “Manually enter Setup Wizard” in section 4).

b. Click the **Wireless** tab on the left menu, and then click the **WPS** tab on the top menu.

c. Next to “WPS Via Push Button”, click **Start to Process** to establish the connection.

2. **Pin Code Method (PIN)**

Enter the PIN code of wireless adapter in WPS Via PIN field and then click [**Start to Process**] button to initialize the WPS process. Note that this process may be different for each brand/model. Refer to the user manual of your wireless client adapter for more information.



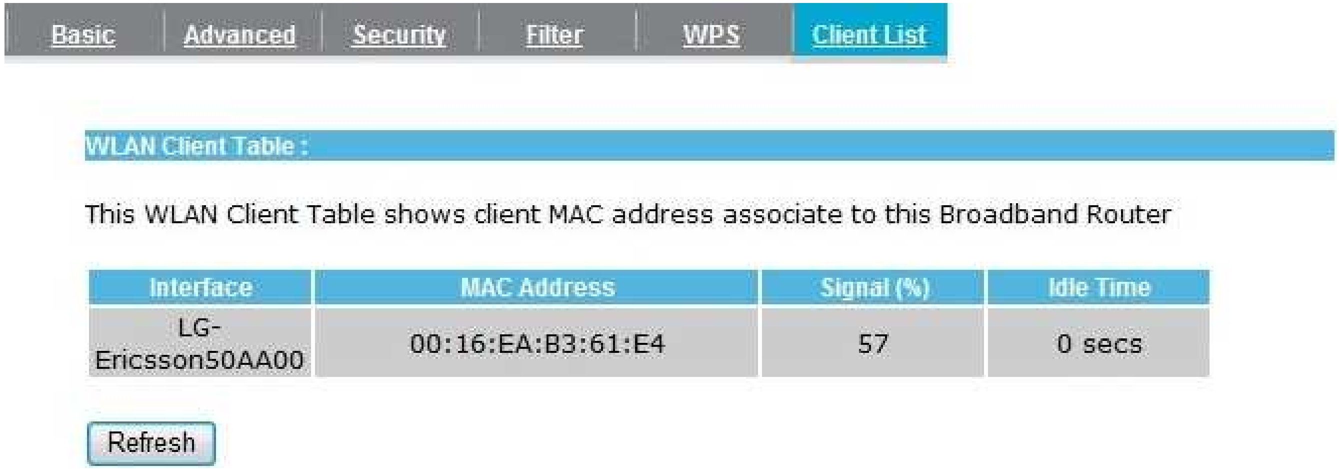
WPS : ☑ Enable

Wi-Fi Protected Setup Information

WPS Current Status :	Configured [Release Configuration]
Self Pin Code :	52864001
SSID :	LG-Ericsson50AA00
Authentication Mode :	WPA2 pre-shared key
Passphrase Key:	1234567890
WPS Via Push Button :	[Start to Process]
WPS via PIN :	[Start to Process]

7.6. Client List

This page shows the wireless clients that are connected to the Router.



WLAN Client Table :

This WLAN Client Table shows client MAC address associate to this Broadband Router

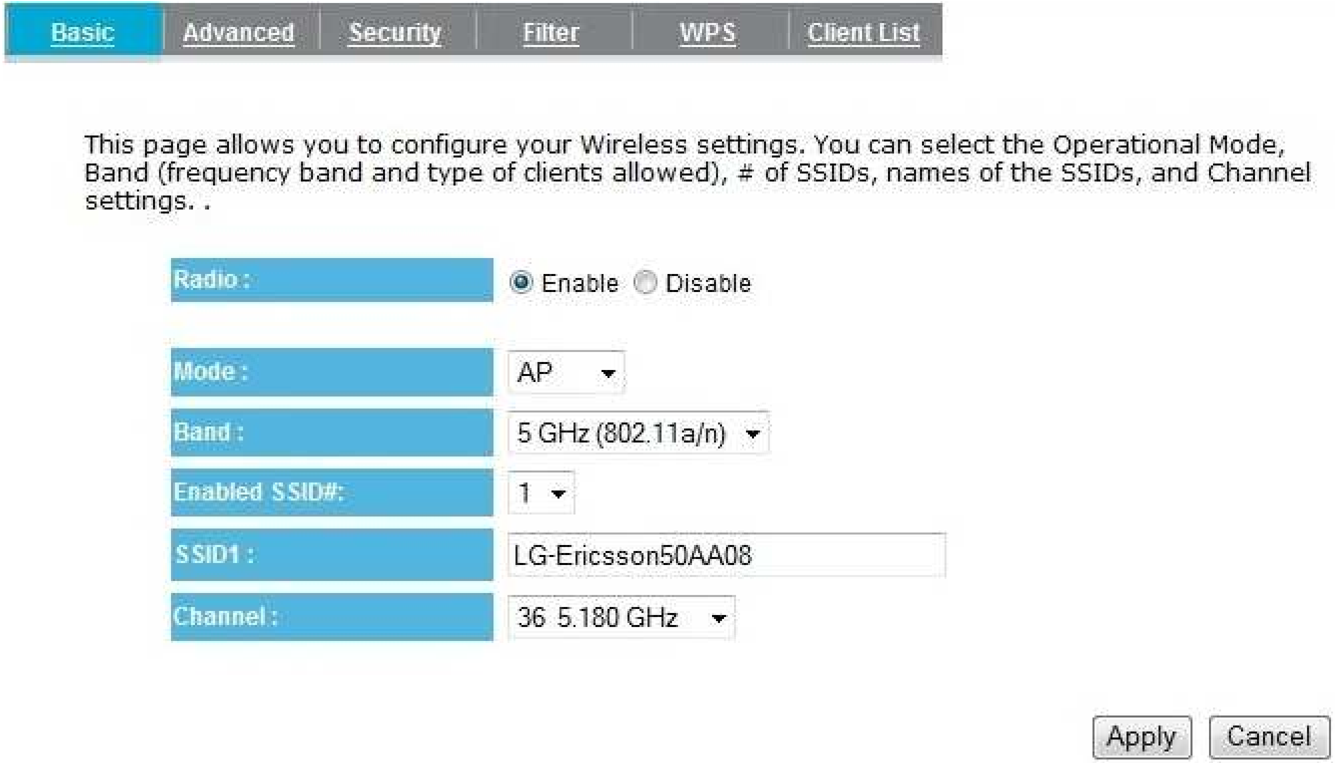
Interface	MAC Address	Signal (%)	Idle Time
LG-Ericsson50AA00	00:16:EA:B3:61:E4	57	0 secs

8. Wireless 5G

The Wireless section allows you to configure the wireless 5G settings.

8.1. Basic

The Basic page displays the current wireless settings of the Router. For WDS setting, please refer to **section 7.1**.



This page allows you to configure your Wireless settings. You can select the Operational Mode, Band (frequency band and type of clients allowed), # of SSIDs, names of the SSIDs, and Channel settings. .

Radio : ● Enable ○ Disable

Mode : AP

Band : 5 GHz (802.11a/n)

Enabled SSID#: 1

SSID1 : LG-Ericsson50AA08

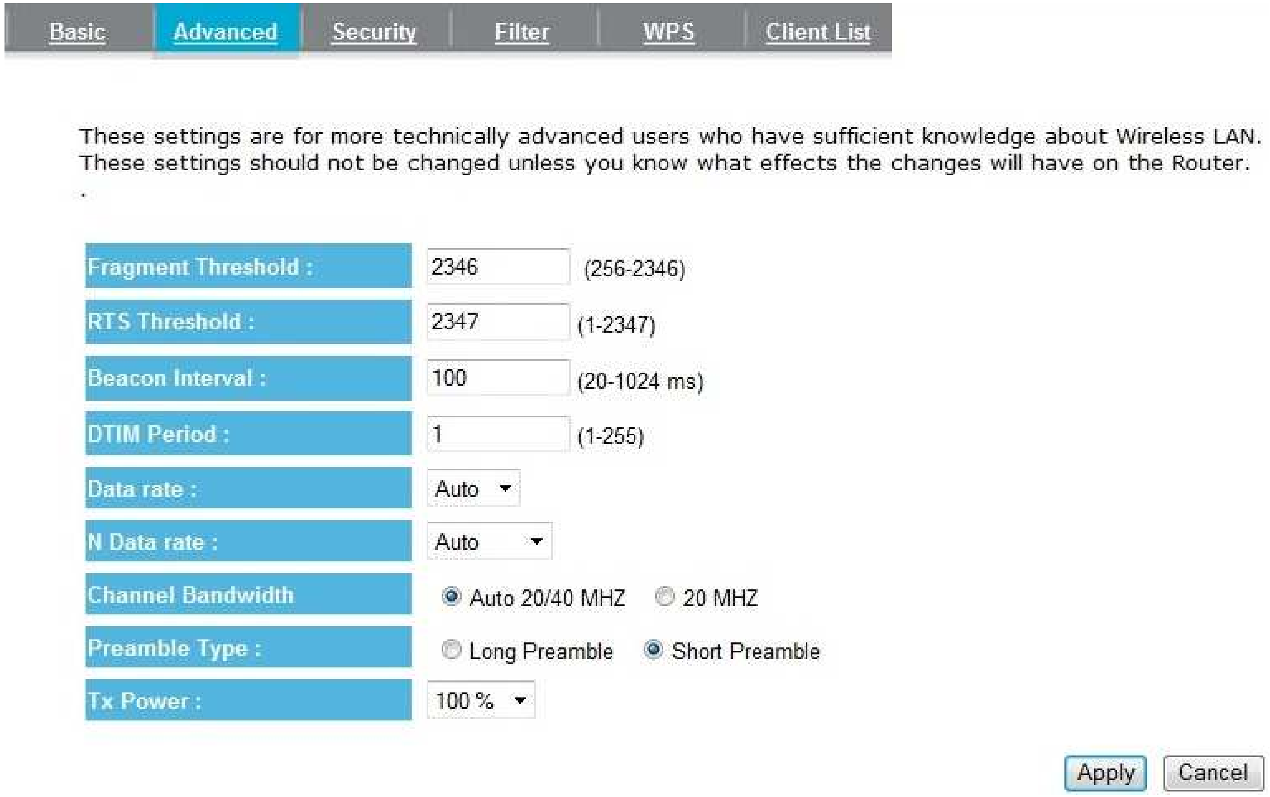
Channel : 36 5.180 GHz

Basic

Radio	Enable or Disable wireless.
Mode	Select from Access Point (AP) or Wireless Distribution System (WDS) modes. (Default: AP)
Band	Select the types of wireless clients that the device will accept. Example: **5 GHz (a/n):** All 802.11a/n clients will be allowed. **5 GHz (a)**: Only 802.11a clients will be allowed. **5 GHz (n)**: Only 802.11n clients will be allowed.
Enable SSID#	Select the number of SSIDs (Wireless Networks) you would like to enable. You can create up to 4 separate wireless networks by enabling 4 SSIDs.
SSID#	Enter the name of your wireless network. You can use up to 32 characters. Example: “Life Is Good”, “Guest Network”, etc.
Channel	Manually select which channel the wireless signal will use.

8.2. Advanced

This page allows you to configure advanced wireless settings. It is recommended that default settings are used unless you have experience with these advanced functions.



These settings are for more technically advanced users who have sufficient knowledge about Wireless LAN. These settings should not be changed unless you know what effects the changes will have on the Router.

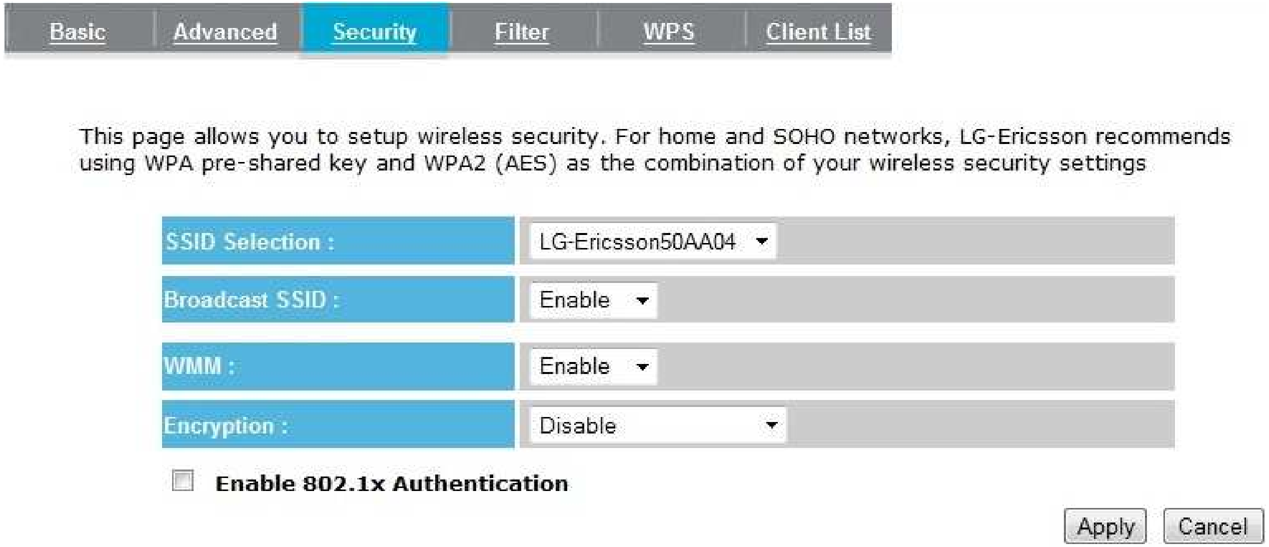
.

Fragment Threshold :	2346	(256-2346)
RTS Threshold :	2347	(1-2347)
Beacon Interval :	100	(20-1024 ms)
DTIM Period :	1	(1-255)
Data rate :	Auto	
N Data rate :	Auto	
Channel Bandwidth	● Auto 20/40 MHZ	○ 20 MHZ
Preamble Type :	○ Long Preamble	● Short Preamble
Tx Power :	100 %	

Advanced	
Fragment Threshold	Specifies the size of the packet per fragment. Selecting a smaller number can reduce the chance of packet collision. However, when the value is set too low, increased overhead will likely result in poor performance.
RTS Threshold	When the packet size is smaller than the RTS Threshold, the packet will be sent without RTS/CTS handshake which may result in incorrect transmission.
Beacon Interval	The time interval that the device broadcasts a beacon. This beacon is used to synchronize all wireless clients on the network.
DTIM Period	A Delivery Traffic Indication Message informs all wireless clients that the access point will be sending Multicast data.
N Data Rate	You can limit the transfer rates between the device and wireless clients. Each Modulation Coding Scheme (MCS) refers to a specific transfer speed.
Channel Bandwidth	Set whether each channel uses 20 or 40Mhz. To achieve maximum 802.11n speeds, 40Mhz channels must be used.
Preamble Type	A preamble is a message that helps access points synchronize with the client. **Long Preamble** is standard-based so it increases compatibility. **Short Preamble** is not standard-based so it decreases compatibility; however it also increases performance. Auto as default.
Tx Power	Set the power output of the wireless signal.

8.3. Security

This page allows you to configure the wireless security settings. For more detail settings, please refer to **section 7.3**.



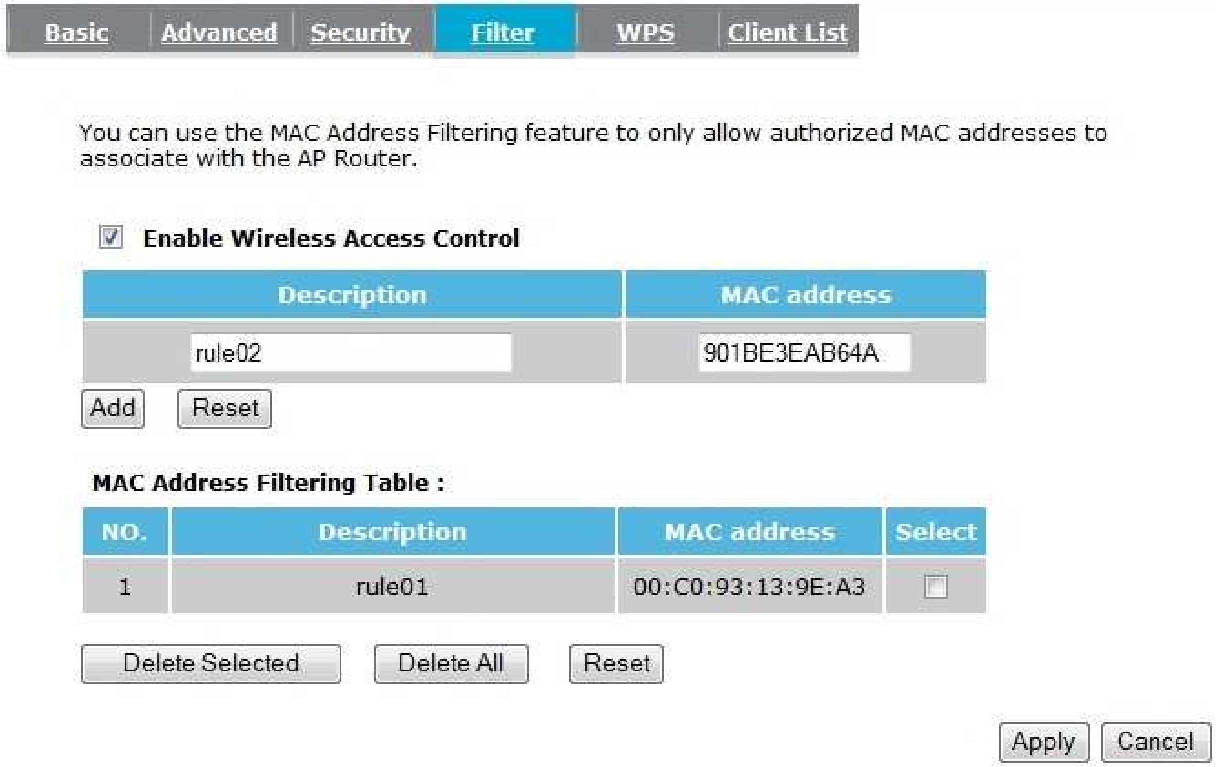
This page allows you to setup wireless security. For home and SOHO networks, LG-Ericsson recommends using WPA pre-shared key and WPA2 (AES) as the combination of your wireless security settings

SSID Selection :	LG-Ericsson50AA04
Broadcast SSID :	Enable
WMM :	Enable
Encryption :	Disable

□ **Enable 802.1x Authentication**

8.4. Filter

This page allows you to create filters to control which wireless clients can connect to the Router. When Wireless Access Control is enabled, only wireless clients with the MAC addresses entered into the Filtering Table are allowed to connect.



You can use the MAC Address Filtering feature to only allow authorized MAC addresses to associate with the AP Router.

☑ Enable Wireless Access Control

Description	MAC address
rule02	901BE3EAB64A

MAC Address Filtering Table :

NO.	Description	MAC address	Select
1	rule01	00:C0:93:13:9E:A3	□

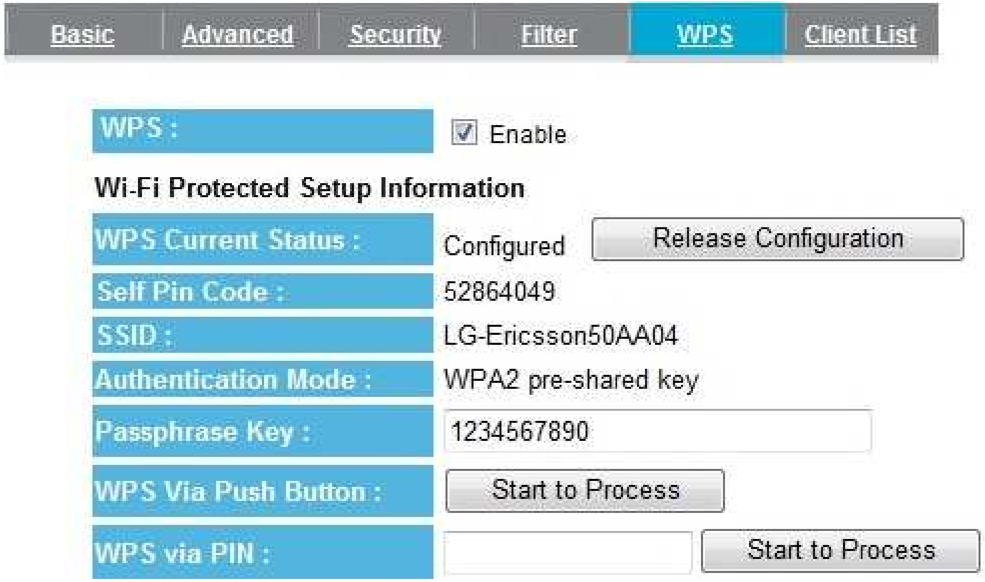
Wireless Filter	
Enable Wireless	Check the box to enable Wireless Access Control.

Access Control	When Enabled, only wireless clients on the Filtering Table will be allowed.
Description	Enter a name or description for this entry.
MAC address	Enter the MAC address of the wireless client allowed.
Add	Click this button to add the entry.
Reset	Click this button to reset the MAC address and Description fields.
MAC Address Filtering Table	
Only clients listed in this table will be allowed to connect to the wireless network.	
Delete Selected	Delete the selected entries.
Delete All	Delete all entries.
Reset	Un-check all selected entries.

8.5. Wi-Fi Protected Setup (WPS)

The WPS feature is based on the Wi-Fi Alliance WPS standard. The goal is to simplify the set up of security-enabled wireless networks in the home and small office environments.

The WPS function simplifies the steps required to connect to a secured wireless network. Two WPS methods are supported: **WPA via Push Button (PBC)** and **WPS via PIN (PIN)**. For more detail, please refer to **section 7.5**.



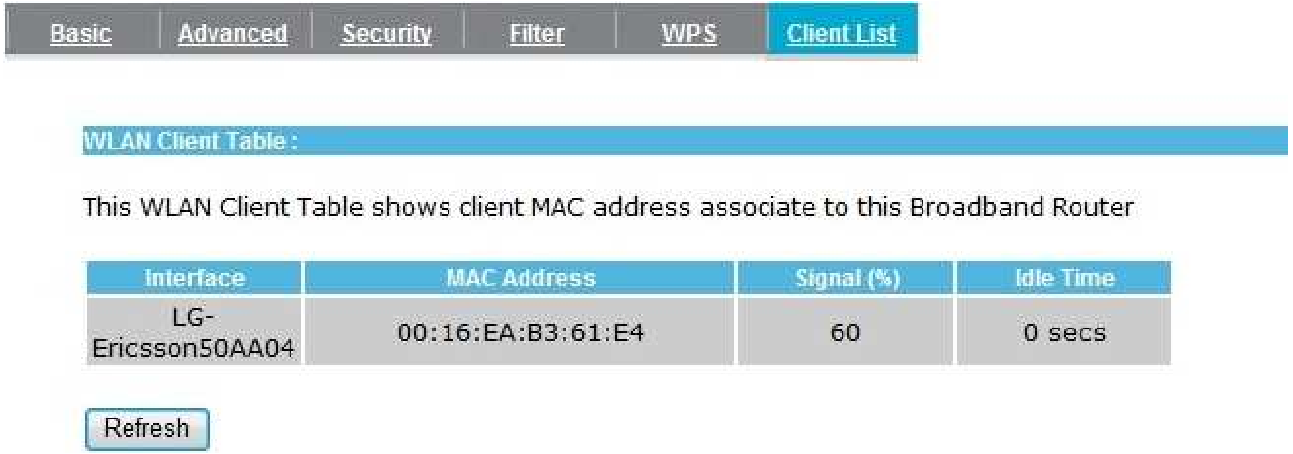
WPS : ☑ Enable

Wi-Fi Protected Setup Information

WPS Current Status :	Configured [Release Configuration]
Self Pin Code :	52864049
SSID :	LG-Ericsson50AA04
Authentication Mode :	WPA2 pre-shared key
Passphrase Key :	1234567890
WPS Via Push Button :	[Start to Process]
WPS via PIN :	[Start to Process]

8.6. Client List

This page shows the wireless clients that are connected to the Router.



WLAN Client Table :

This WLAN Client Table shows client MAC address associate to this Broadband Router

Interface	MAC Address	Signal (%)	Idle Time
LG-Ericsson50AA04	00:16:EA:B3:61:E4	60	0 secs

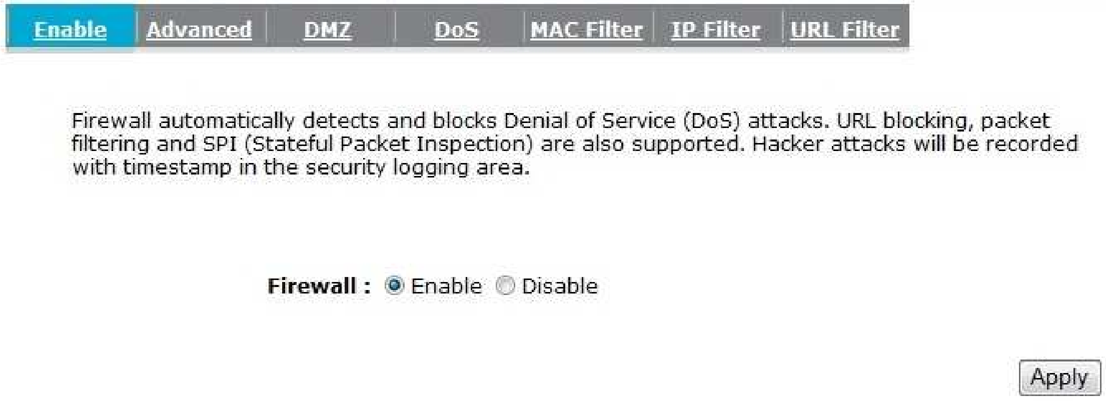
9. Firewall

The Firewall section allows you to configure Firewall and Access Control settings.

9.1. Enable

This page allows you to Enable / Disable the Firewall features.

When Enabled, Denial of Service (DoS) and SPI (Stateful Packet Inspection) features are also be enabled.

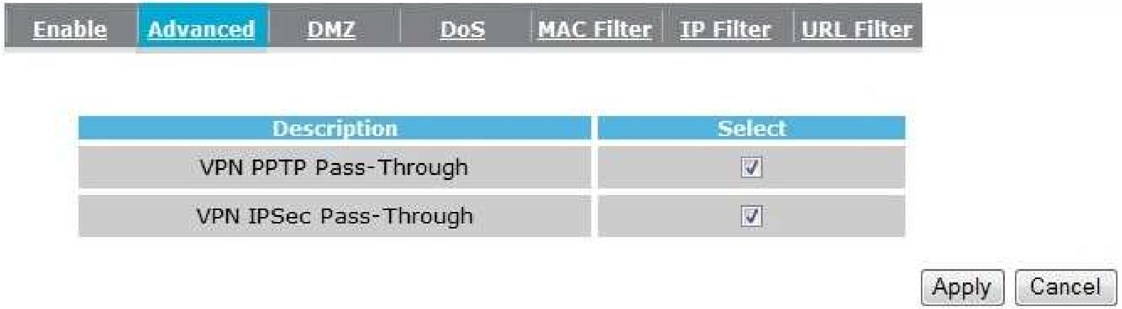


Firewall automatically detects and blocks Denial of Service (DoS) attacks. URL blocking, packet filtering and SPI (Stateful Packet Inspection) are also supported. Hacker attacks will be recorded with timestamp in the security logging area.

Firewall : ● Enable ○ Disable

9.2. Advanced

You can choose whether to allow VPN (Virtual Private Network) packets to pass through the Firewall.



Description	Select
VPN PPTP Pass-Through	☑
VPN IPSec Pass-Through	☑

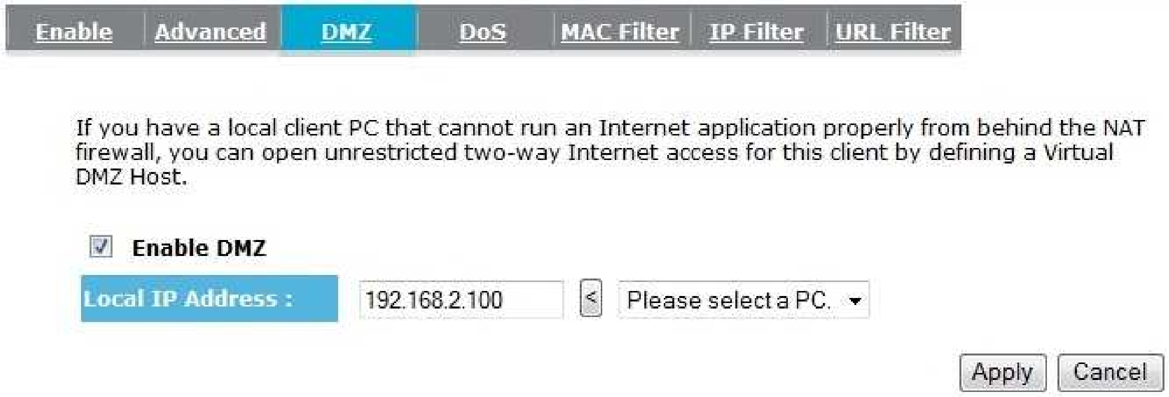
9.3. DMZ (Demilitarized Zone)

If you are operating a web server, a mail server, or a web camera, you may want to expose that device to the Internet so anybody can access it. When the DMZ function is enabled, the DMZ computer is exposed to all users on the Internet. It can be accessed by both users on the Internet as well as users in the Local Network.

This feature is normally not used as it presents significant security risks to the device that you designate for the DMZ. The DMZ device is not protected by the built-in firewalls, Internet filters, or router web filters, and is open to attacks from hackers. The “DMZ PC” will receive all unknown connections and data.

If the DMZ feature is enabled, enter the IP address of the PC to be used as the “DMZ PC”. You should first configure this device with a static IP address.

Note: For security reasons, you should only enable the DMZ feature when required.



If you have a local client PC that cannot run an Internet application properly from behind the NAT firewall, you can open unrestricted two-way Internet access for this client by defining a Virtual DMZ Host.

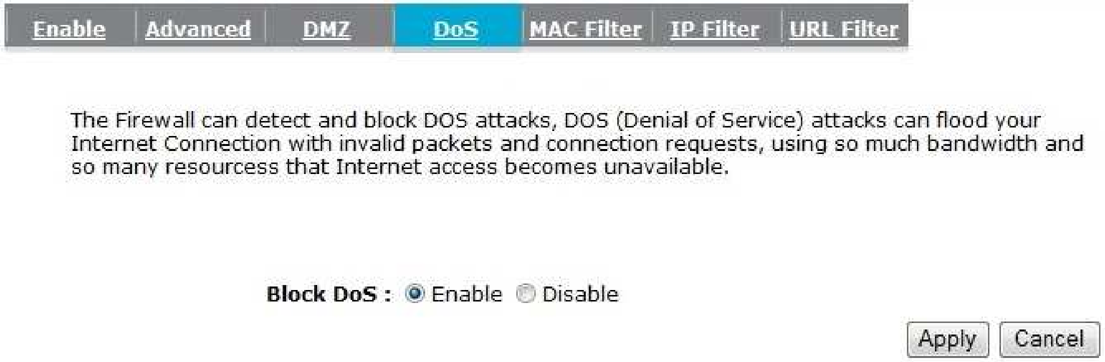
☑ Enable DMZ

Local IP Address : 192.168.2.100 < Please select a PC.

9.4. Denial of Service (DoS)

Denial of Service (DoS) is a type of Internet attack that sends a high amount of data to you with the intent to overload your Internet connection.

Enable the DoS firewall feature to automatically detect and block these DoS attacks.

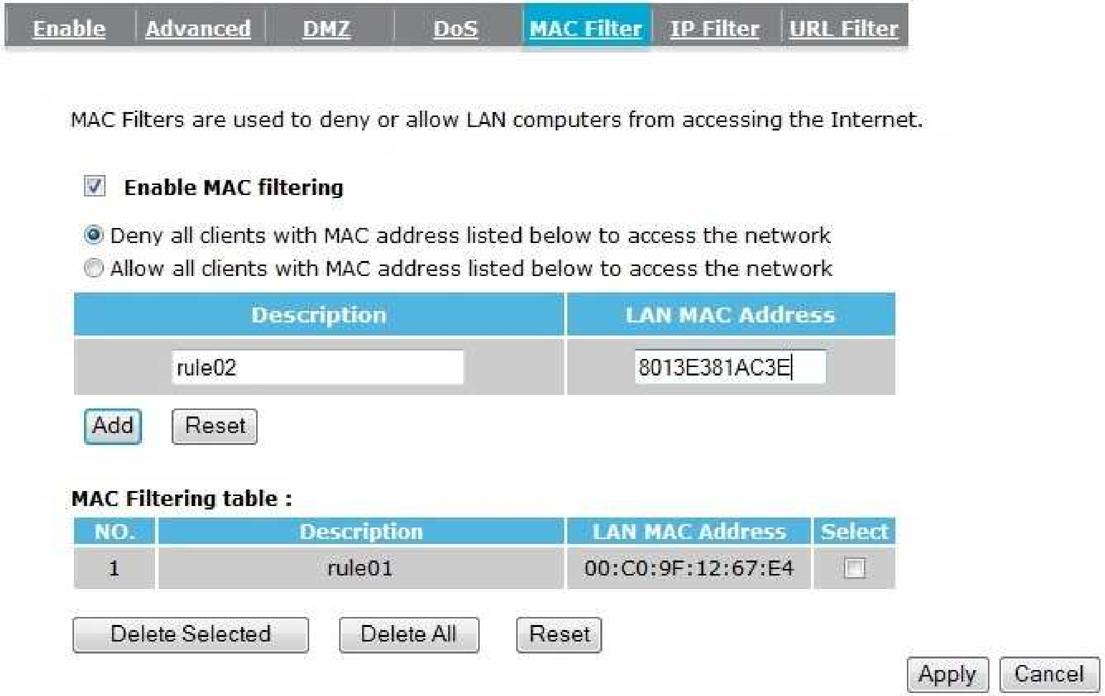


The Firewall can detect and block DOS attacks, DOS (Denial of Service) attacks can flood your Internet Connection with invalid packets and connection requests, using so much bandwidth and so many resourcess that Internet access becomes unavailable.

Block DoS : ● Enable ○ Disable

9.5. MAC Filter

You can choose whether to Deny or Allow only those devices listed in the MAC Filtering table to access the Internet.



MAC Filters are used to deny or allow LAN computers from accessing the Internet.

☑ Enable MAC filtering

● Deny all clients with MAC address listed below to access the network
○ Allow all clients with MAC address listed below to access the network

Description	LAN MAC Address
rule02	8013E381AC3E

MAC Filtering table :

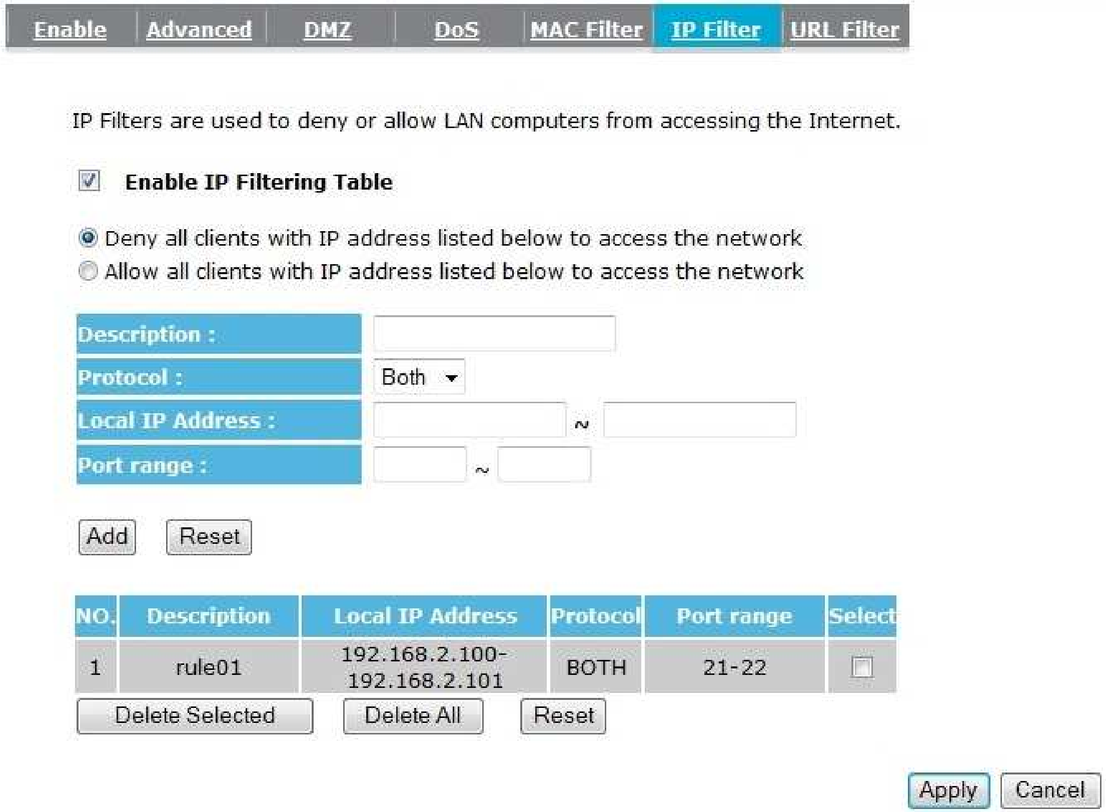
NO.	Description	LAN MAC Address	Select
1	rule01	00:C0:9F:12:67:E4	□

MAC Filter	
Enable MAC filtering	Check this box to enable the MAC filtering feature.
Deny all clients with MAC addresses listed below to access the network	When selected, the computers listed in the MAC Filtering table will be **Denied** to access the Internet.
Allow all clients with MAC addresses listed below to access the network	When selected, only the computers listed in the MAC Filtering table will be **Allowed** to access the Internet.

9.6. IP Filter

You can choose whether to Deny or Allow only devices with those IP Addresses listed on the IP Filtering Table from accessing certain ports.

This can be used to control which Internet applications the computers can access.
Note - You will need to have knowledge of what Internet port numbers each application uses.



IP Filters are used to deny or allow LAN computers from accessing the Internet.

☑ **Enable IP Filtering Table**

● Deny all clients with IP address listed below to access the network
○ Allow all clients with IP address listed below to access the network

Description :	
Protocol :	Both
Local IP Address :	~
Port range :	~

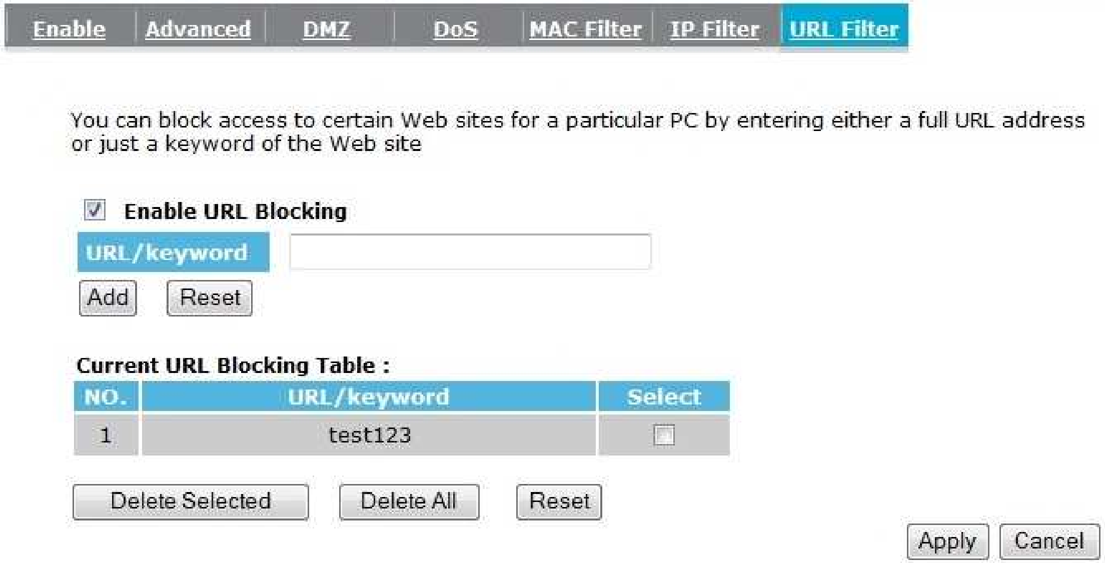
NO.	Description	Local IP Address	Protocol	Port range	Select
1	rule01	192.168.2.100- 192.168.2.101	BOTH	21-22	□

IP Filter	
Enable IP filtering	Check this box to enable the IP filtering feature.
Deny all clients with IP addresses listed below to access the network	When selected, the computers with IP addresses specified on the table will be **Denied** access to the indicated Internet port range.
Allow all clients with IP addresses listed below to access the network	When selected, the computers with IP addresses specified on the table will be **Allowed** access only to the indicated Internet port range.

9.7. URL Filter

You can deny access to certain websites by blocking keywords in the URL web address.

For example, “test123” has been added to the URL Blocking Table. Any web address that includes “test123” will be blocked.



You can block access to certain Web sites for a particular PC by entering either a full URL address or just a keyword of the Web site

☑ Enable URL Blocking

URL/keyword

Current URL Blocking Table :

NO.	URL/keyword	Select
1	test123	□

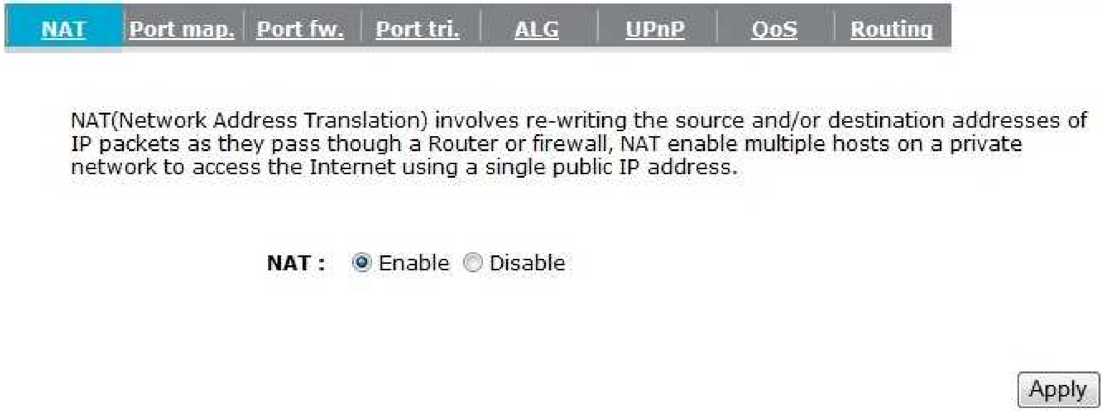
10. Advanced

The Advanced section allows you to configure the **Advanced** settings of the Router.

10.1. Network Address Translation (NAT)

This page allows you to Enable / Disable the Network Address Translation (NAT) feature. The NAT feature is required to share one Internet account with multiple LAN users.

It also is required for certain Firewall features to work properly.



NAT(Network Address Translation) involves re-writing the source and/or destination addresses of IP packets as they pass though a Router or firewall, NAT enable multiple hosts on a private network to access the Internet using a single public IP address.

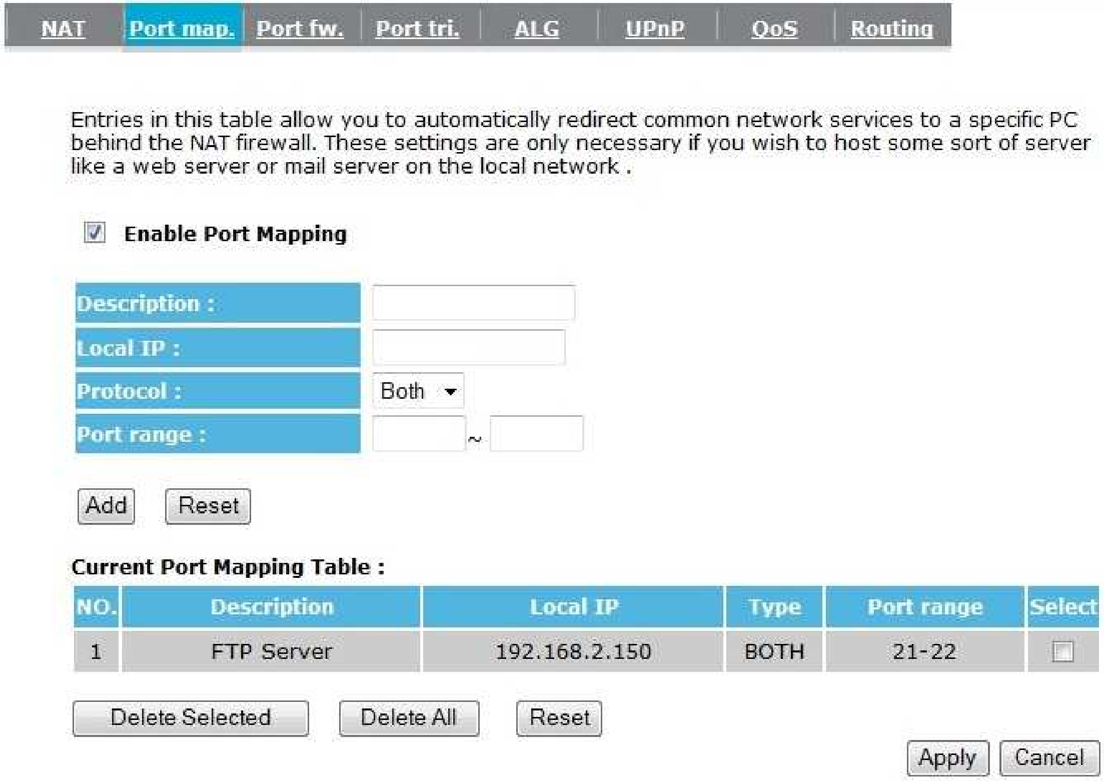
NAT : ● Enable ○ Disable

10.2. Port Mapping

Port Mapping allows you to redirect a particular range of ports to a computer on your LAN network. This helps you host servers behind the NAT and Firewall.

In the example below, there is a FTP Server that requires ports 21 to 22.

When there is a connection from the Internet on those ports, it will be redirected to the FTP Server at IP address 192.168.2.150.



Entries in this table allow you to automatically redirect common network services to a specific PC behind the NAT firewall. These settings are only necessary if you wish to host some sort of server like a web server or mail server on the local network .

☑ Enable Port Mapping

Description :	
Local IP :	
Protocol :	Both
Port range :	~

Current Port Mapping Table :

NO.	Description	Local IP	Type	Port range	Select
1	FTP Server	192.168.2.150	BOTH	21-22	□

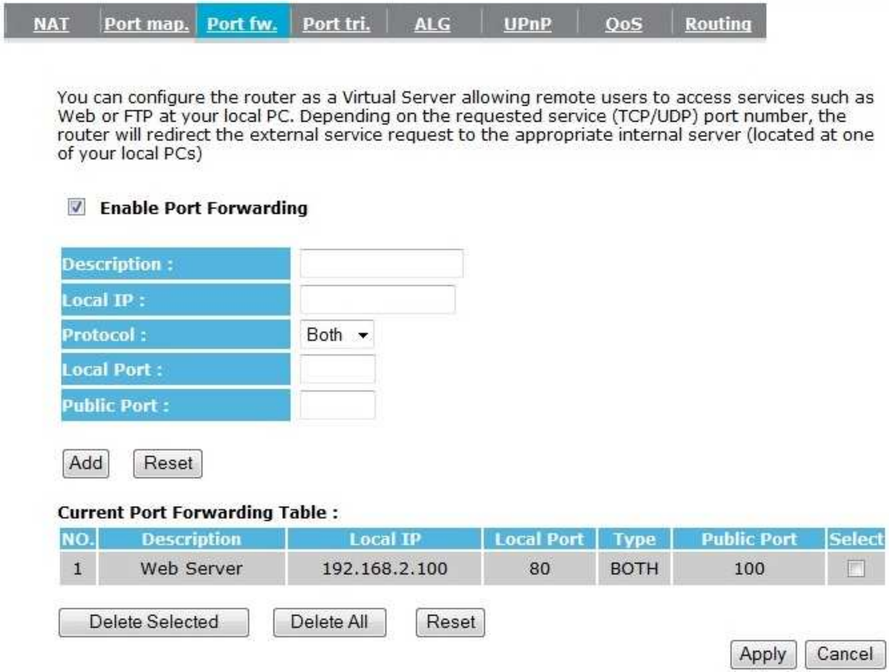
Port Mapping	
Enable Port Mapping	Check this box to enable the Port Mapping feature.
Description	Enter a name or description for this entry.
Local IP	The local IP address of the computer the server is hosted on.
Protocol	Select to apply the feature to TCP, UDP or Both types of packet transmissions.
Port range	The range of ports that this feature will be applied to.

10.3. Port Forwarding

Port Forwarding allows you to redirect a particular public port to a computer on your LAN network. This helps you host servers behind the NAT and Firewall.

In the example below, there is a Web Server running on port 80 on the LAN.
For security reasons, the Administrator would like to provide this server to Internet connection on port 100.

Therefore when there is a connection from the Internet on port 100, it will be forwarded to the computer with the IP address 192.168.2.100 and changed to port 80.



You can configure the router as a Virtual Server allowing remote users to access services such as Web or FTP at your local PC. Depending on the requested service (TCP/UDP) port number, the router will redirect the external service request to the appropriate internal server (located at one of your local PCs)

☑ Enable Port Forwarding

Description :	
Local IP :	
Protocol :	Both
Local Port :	
Public Port :	

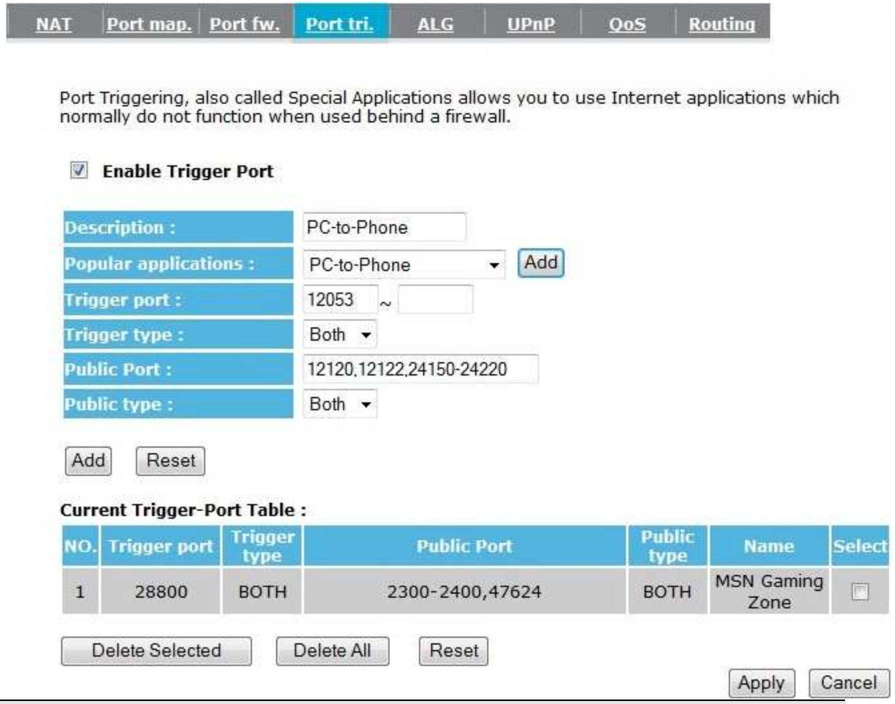
Current Port Forwarding Table :

NO.	Description	Local IP	Local Port	Type	Public Port	Select
1	Web Server	192.168.2.100	80	BOTH	100	□

Port Forwarding	
Enable Port Forwarding	Check this box to enable the Port Forwarding feature.
Description	Enter a name or description for this entry.
Local IP	The local IP address of the computer the server is hosted on.
Protocol	Select to apply the feature to TCP, UDP or Both types of packet transmissions.
Local Port	The port that the server is running on the local computer.
Public Port	When a connection from the Internet is on this port, it will be forwarded to the indicated local IP address.

10.4. Port Trigger

If you use Internet applications which use non-standard connections or port numbers, you may find that they do not function correctly because they are blocked by the Wireless Router's firewall. Port Trigger will be required for these applications to work.



Port Triggering, also called Special Applications allows you to use Internet applications which normally do not function when used behind a firewall.

☑ **Enable Trigger Port**

Description :	PC-to-Phone
Popular applications :	PC-to-Phone ▾ [Add]
Trigger port :	12053 ~
Trigger type :	Both ▾
Public Port :	12120,12122,24150-24220
Public type :	Both ▾

[Add] [Reset]

Current Trigger-Port Table :

NO.	Trigger port	Trigger type	Public Port	Public type	Name	Select
1	28800	BOTH	2300-2400,47624	BOTH	MSN Gaming Zone	□

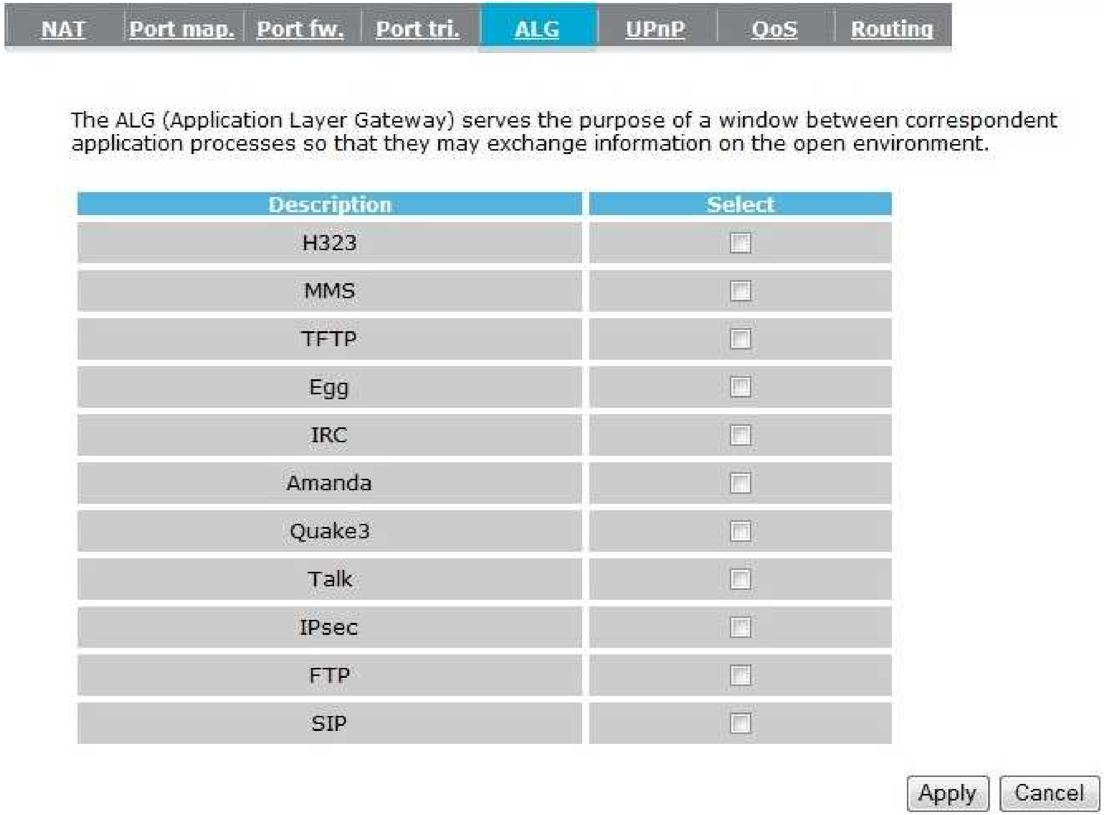
[Delete Selected] [Delete All] [Reset]

[Apply] [Cancel]

Port Trigger	
Enable Port Forwarding	Check this box to enable the Port Trigger feature.
Popular applications	This is a list of some common applications with preset settings. Select the application and click **Add** to automatically enter the settings.
Trigger port	This is the outgoing (outbound) port numbers for this application.
Trigger type	Select whether the application uses TCP, UDP or Both types of protocols for outbound transmissions.
Public Port	These are the inbound (incoming) ports for this application.
Public type	Select whether the application uses TCP, UDP or Both types of protocols for inbound transmissions.

10.5. Application Layer Gateway (ALG)

Certain applications may require the use of the ALG feature to function correctly. If you use any of the applications listed on the table below, select the feature and click Apply.

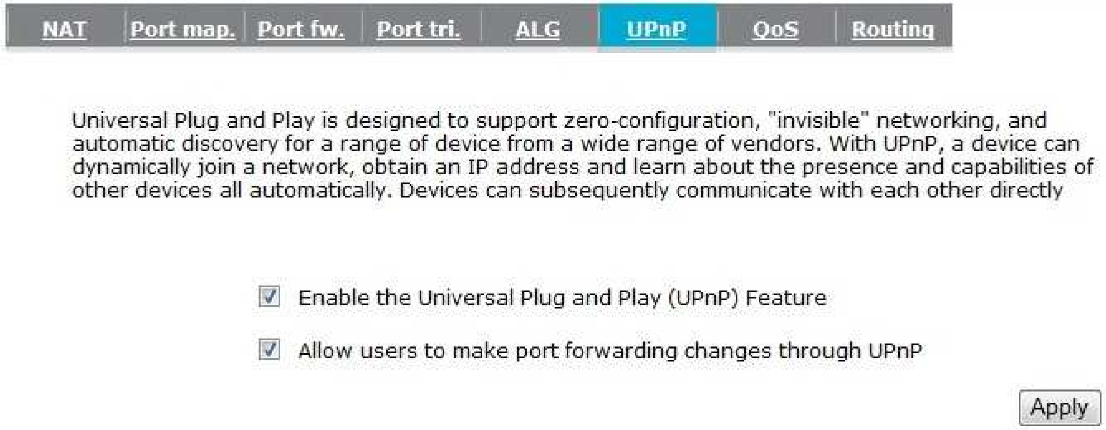


The ALG (Application Layer Gateway) serves the purpose of a window between correspondent application processes so that they may exchange information on the open environment.

Description	Select
H323	□
MMS	□
TFTP	□
Egg	□
IRC	□
Amanda	□
Quake3	□
Talk	□
IPsec	□
FTP	□
SIP	□

10.6. Universal Plug and Play (UPnP)

The UPnP function allows automatic discovery and configuration of UPnP enabled devices on your network. It also provides automatic port forwarding for supported applications to seamlessly bypass the Firewall.



Universal Plug and Play is designed to support zero-configuration, "invisible" networking, and automatic discovery for a range of device from a wide range of vendors. With UPnP, a device can dynamically join a network, obtain an IP address and learn about the presence and capabilities of other devices all automatically. Devices can subsequently communicate with each other directly

☑ Enable the Universal Plug and Play (UPnP) Feature

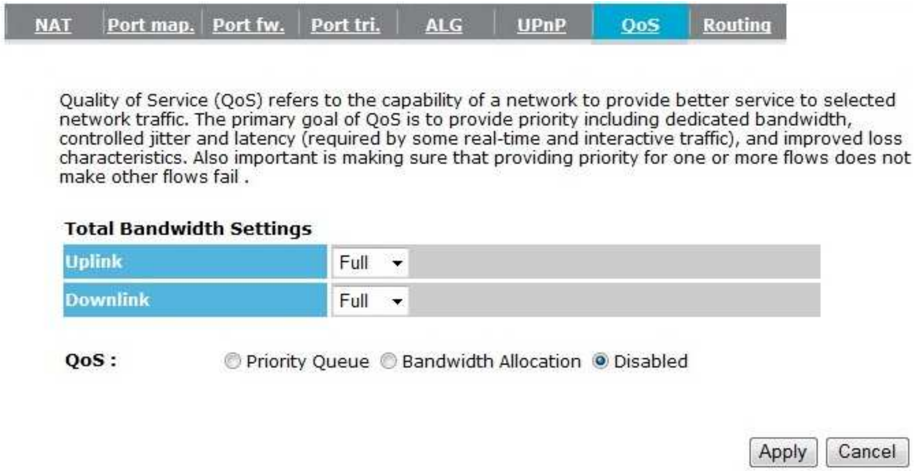
☑ Allow users to make port forwarding changes through UPnP

Universal Plug and Play (UPnP)	
Enable the UPnP Feature	Check this box to enable the UPnP feature to allow supported devices to be visible on the network.
Allow users to make port forwarding changes through UPnP	Check this box to allow applications to automatically set their port forwarding rules to bypass the firewall without any user set up.

10.7. Quality of Service (QoS)

QoS allows you to control the priority that the data is transmitted over the Internet, or to reserve a specific amount of Internet bandwidth. This is to ensure that applications get enough Internet bandwidth for a good user experience.

In order for this feature to function properly, the user should first set the Uplink and Downlink bandwidth provided by your Internet Service Provider.



Quality of Service (QoS) refers to the capability of a network to provide better service to selected network traffic. The primary goal of QoS is to provide priority including dedicated bandwidth, controlled jitter and latency (required by some real-time and interactive traffic), and improved loss characteristics. Also important is making sure that providing priority for one or more flows does not make other flows fail .

Total Bandwidth Settings

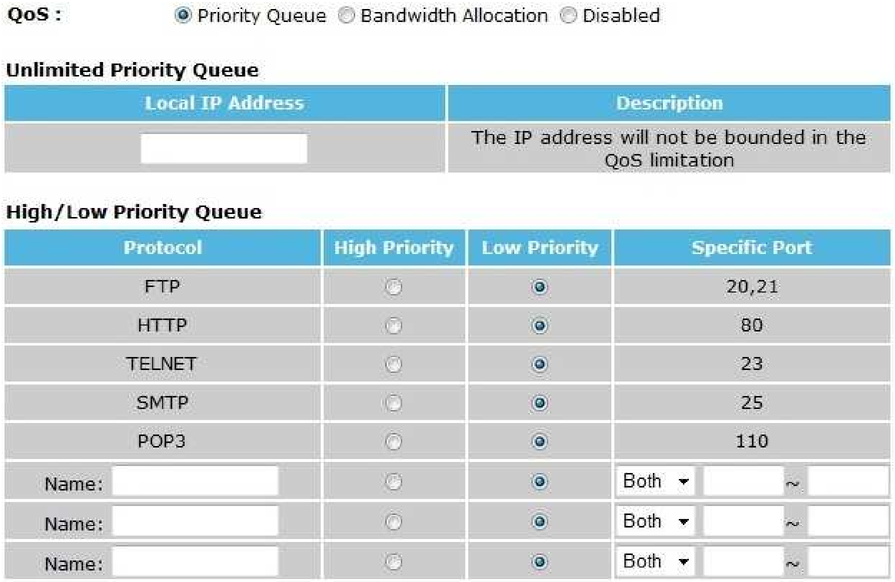
Uplink	Full
Downlink	Full

QoS : ○ Priority Queue ○ Bandwidth Allocation ● Disabled

Total Bandwidth Settings	
Uplink	Set the Uplink bandwidth provided by your Internet Service Provider.
Downlink	Set the Downlink bandwidth provided by your Internet Service Provider.
Priority Queue	Sets the QoS method to Priority Queue.
Bandwidth Allocation	Sets the QoS method to Bandwidth Allocation.
Disabled	Disables the QoS feature.

Priority Queue Method

Bandwidth priority is set to either High or Low. The data transmissions in the High Priority queues will be processed first.



QoS : ● Priority Queue ○ Bandwidth Allocation ○ Disabled

Unlimited Priority Queue

Local IP Address	Description
	The IP address will not be bounded in the QoS limitation

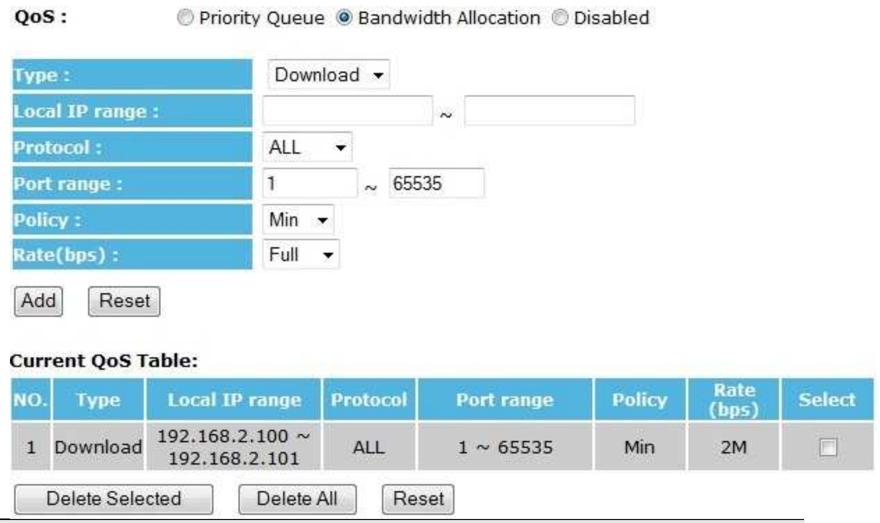
High/Low Priority Queue

Protocol	High Priority	Low Priority	Specific Port
FTP	○	●	20,21
HTTP	○	●	80
TELNET	○	●	23
SMTP	○	●	25
POP3	○	●	110
Name:	○	●	Both ~
Name:	○	●	Both ~
Name:	○	●	Both ~

Unlimited Priority Queue	
Local IP Address	The computer with this IP Address will not be bound by the QoS rules.
High / Low Priority Queue	
Protocol	The type of network protocol.
High / Low Priority	Sets the protocol to High or Low priority.
Specific Port	Each protocol uses a specific port range. Please specify the ports used by this protocol.

Bandwidth Allocation Method

You can set the **maximum** amount of bandwidth a certain protocol will use at one time. Or you can set a **minimum** amount of bandwidth that will be guaranteed to a certain protocol.



QoS : ○ Priority Queue ● Bandwidth Allocation ○ Disabled

Type :	Download
Local IP range :	~
Protocol :	ALL
Port range :	1 ~ 65535
Policy :	Min
Rate(bps) :	Full

Current QoS Table:

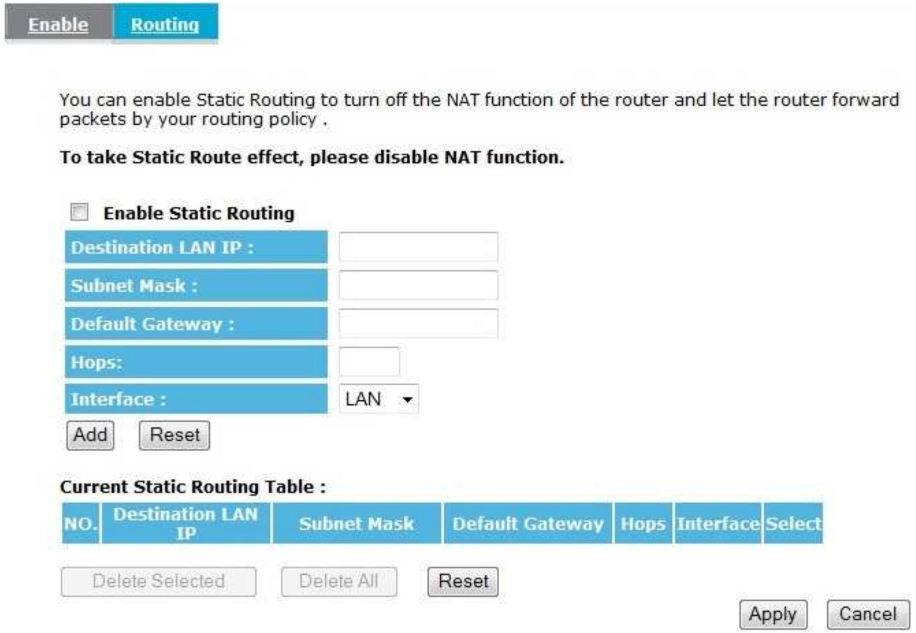
NO.	Type	Local IP range	Protocol	Port range	Policy	Rate (bps)	Select
1	Download	192.168.2.100 ~ 192.168.2.101	ALL	1 ~ 65535	Min	2M	□

Bandwidth Allocation	
Type	Set whether the QoS rules apply to transmission that are Download, Upload or Both directions.
Local IP range	Enter the IP address range of the computers that you would like the QoS rules to apply to.
Protocol	Select from this list of protocols to automatically set the related port numbers.
Port range	Each protocol uses a specific port range. Specify the ports used by this protocol.
Policy	Choose whether this rule is to set a limit on the **Maximum** amount of bandwidth allocated to the specified protocol, or to set the guaranteed **Minimum** amount of bandwidth for the protocol.

10.8. Routing

If your wireless router is connected to a network with different subnets, this feature will allow the different subnets to communicate with each other.

Note: The NAT function needs to be disabled for the Routing feature to be enabled.



You can enable Static Routing to turn off the NAT function of the router and let the router forward packets by your routing policy .

To take Static Route effect, please disable NAT function.

☐ **Enable Static Routing**

Destination LAN IP :	
Subnet Mask :	
Default Gateway :	
Hops:	
Interface :	LAN

Current Static Routing Table :

NO.	Destination LAN IP	Subnet Mask	Default Gateway	Hops	Interface	Select

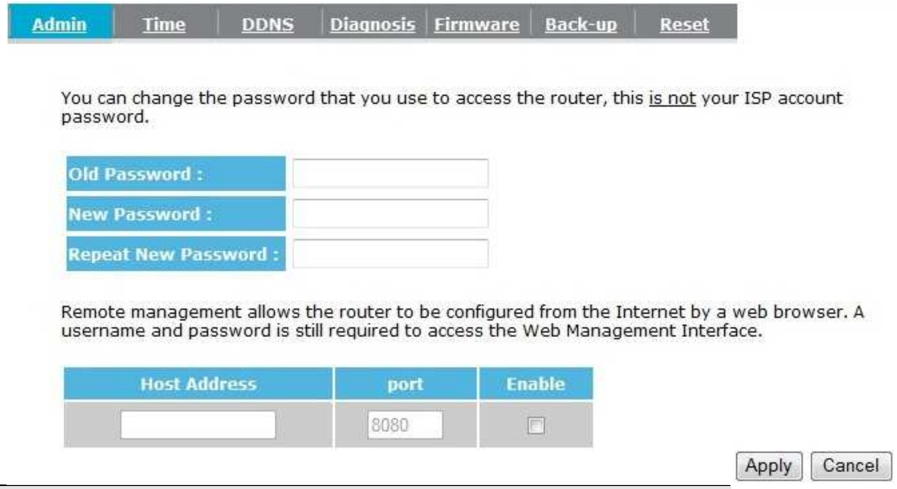
Static Routing	
Enable Static Routing	Check this box to enable the Static Router feature.
Destination LAN IP	Enter the IP address of the destination LAN.
Subnet Mask	Enter the Subnet Mask of the destination LAN IP address
Default Gateway	Enter the IP address of the Default Gateway for this destination IP and Subnet.
Hops	Specify the maximum number of Hops in the static routing rule.
Interface	Select whether the routing applies to LAN or WAN interfaces.

11. Tools

This section allows you to configure the Router’s system settings.

11.1. Admin

This page allows you to change the Router’s password and to configure remote management.



You can change the password that you use to access the router, this is not your ISP account password.

Old Password :	
New Password :	
Repeat New Password :	

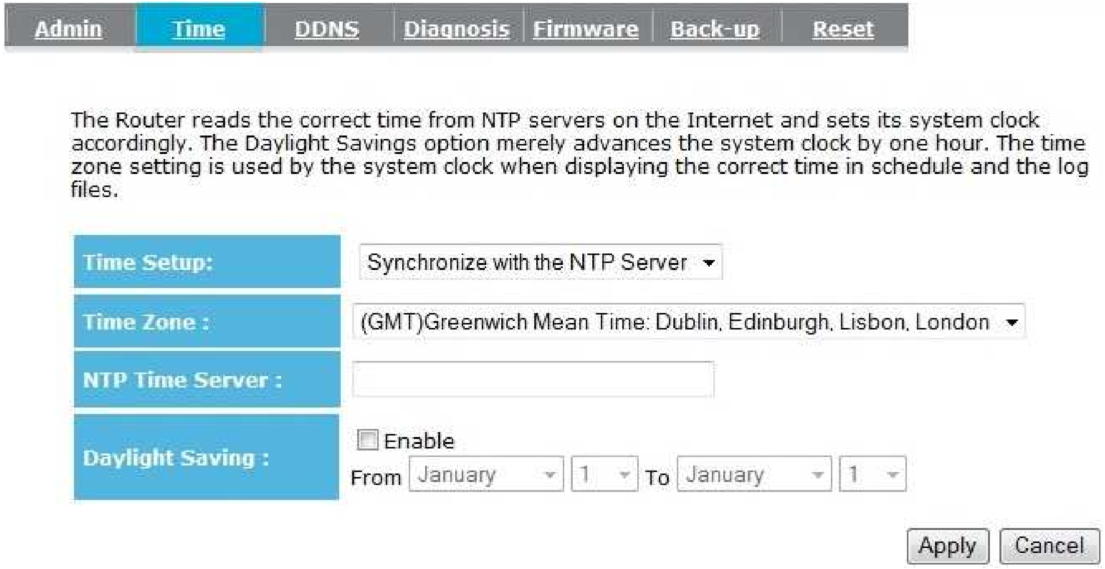
Remote management allows the router to be configured from the Internet by a web browser. A username and password is still required to access the Web Management Interface.

Host Address	port	Enable
	8080	□

Change Password	
Old Password	Enter the current password.
New Password	Enter your new password.
Repeat New Password	Enter your new password again for verification.
Remote Management	
Host Address	You can only perform remote management from the specified IP address. Leave blank to allow any host to perform remote management.
Port	Enter the port number you want to accept remote management connections.
Enable	Tick to Enable the remote management feature.

11.2. Time

This page allows you to configure the system time.



The Router reads the correct time from NTP servers on the Internet and sets its system clock accordingly. The Daylight Savings option merely advances the system clock by one hour. The time zone setting is used by the system clock when displaying the correct time in schedule and the log files.

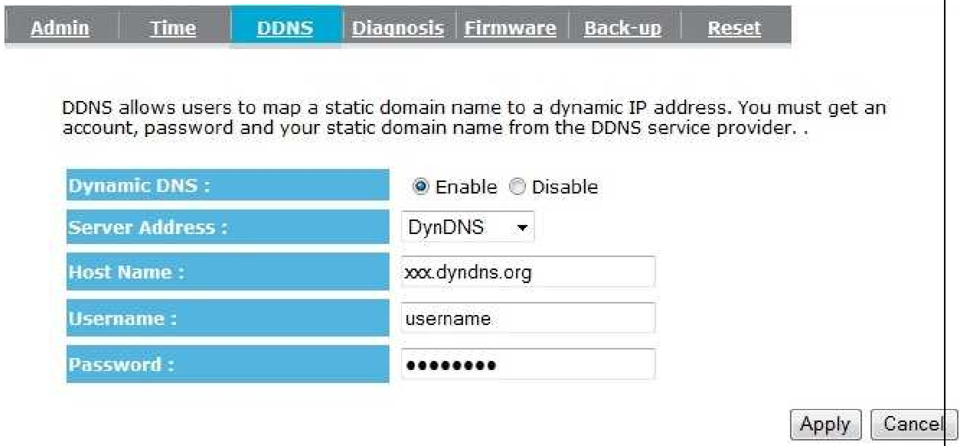
Time Setup:	Synchronize with the NTP Server
Time Zone :	(GMT)Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London
NTP Time Server :	
Daylight Saving :	□ Enable From January 1 To January 1

Time	
Time Setup	Select the method you want to set the time.
Time Zone	Select the time zone for your current location.
NTP Time Server	Enter the address of the Network Time Protocol (NTP) Server to automatically synchronize with a server on the Internet.
Daylight Savings	Check whether daylight savings applies to your area.

11.3. Dynamic DNS (DDNS)

This free service is very useful when combined with the *Virtual Server (Port Forwarding)* feature. It allows Internet users to connect to your Virtual Servers using a URL, rather than an IP Address.

This also solves the problem of having a dynamic IP address. With a dynamic IP address, your IP address may change whenever you connect, which makes it difficult to connect to you.



DDNS allows users to map a static domain name to a dynamic IP address. You must get an account, password and your static domain name from the DDNS service provider. .

Dynamic DNS :	● Enable ○ Disable
Server Address :	DynDNS
Host Name :	xxx.dyndns.org
Username :	username
Password :	●●●●●●●●●

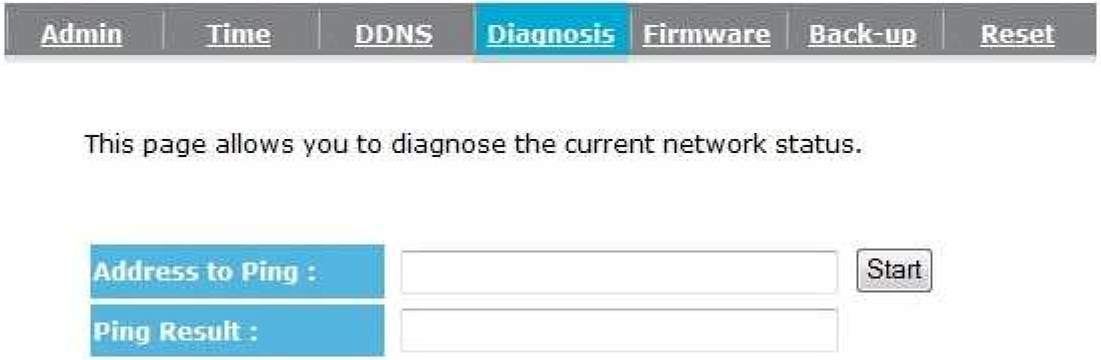
DDNS Services work as follows:

1. You must register for the service at one of the listed DDNS Service providers.
2. After registration, follow the Service provider's procedure to obtain your desired Domain name.
3. Enter your DDNS data on the device’s DDNS screen, and enable the DDNS feature.
4. The Wireless Router will automatically ensure that your current IP Address is recorded at the DDNS service provider's Domain Name Server.
5. From the Internet, users will be able to connect to your Virtual Servers (or DMZ PC) using your Domain name, as shown on this screen.

Dynamic DNS	
Dynamic DNS	Tick this box to Enable the DDNS feature.
Server Address	Select the list of Dynamic DNS homes you would like to use from this list.
Username / Password	Enter the Username and Password of your DDNS account.

11.4. Diagnosis

This page allows you to determine if the Router has an active Internet connection.



This page allows you to diagnose the current network status.

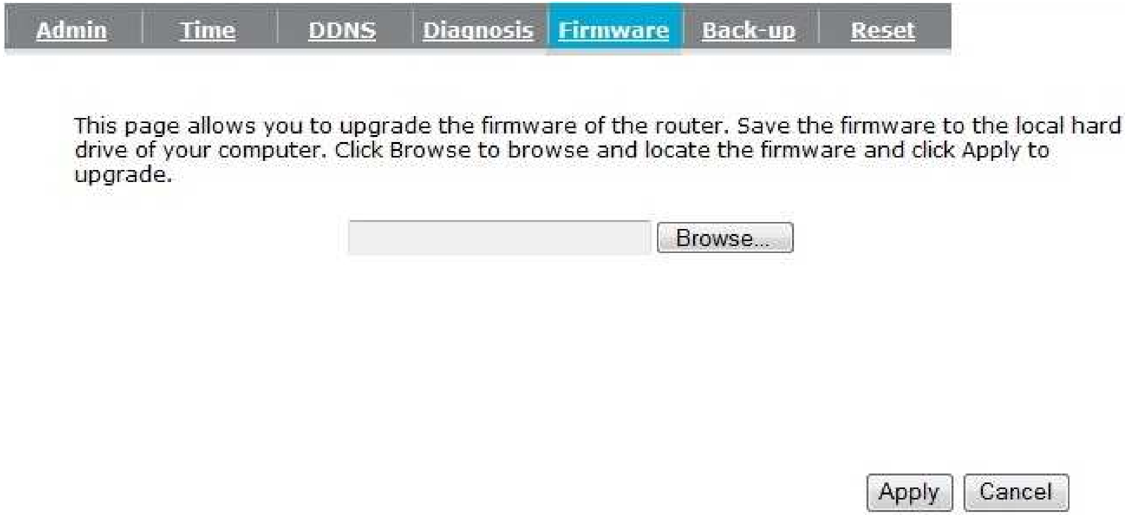
Address to Ping :

Ping Result :

Diagnosis	
Address to Ping	Enter the IP address you would like to see if a successful connection can be made.
Ping Result	The results of the Ping test.

11.5. Firmware

The firmware (software) used by the Router can be upgraded using your Web Browser.



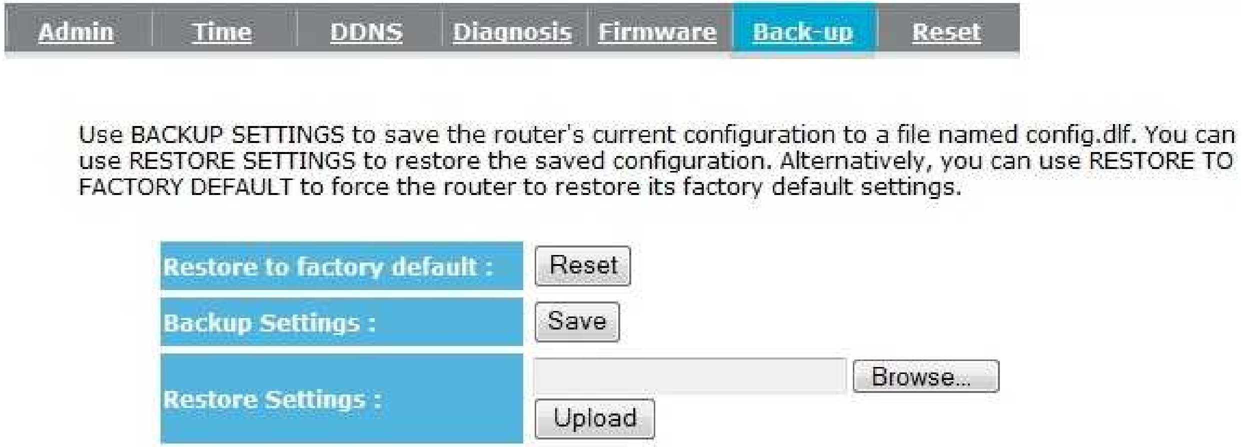
This page allows you to upgrade the firmware of the router. Save the firmware to the local hard drive of your computer. Click Browse to browse and locate the firmware and click Apply to upgrade.

To perform the Firmware Upgrade:

1. Click the **Browse** button and navigate to the location of the firmware file.
2. Select the firmware file. Its name will appear in the *Upgrade File* field.
3. Click the **Apply** button to start the firmware upgrade.

Note: The Wireless Router is unavailable during the upgrade process and must restart when the upgrade is completed. Any connections to or through the Wireless Router will be lost during the upgrade.

11.6. Back-up

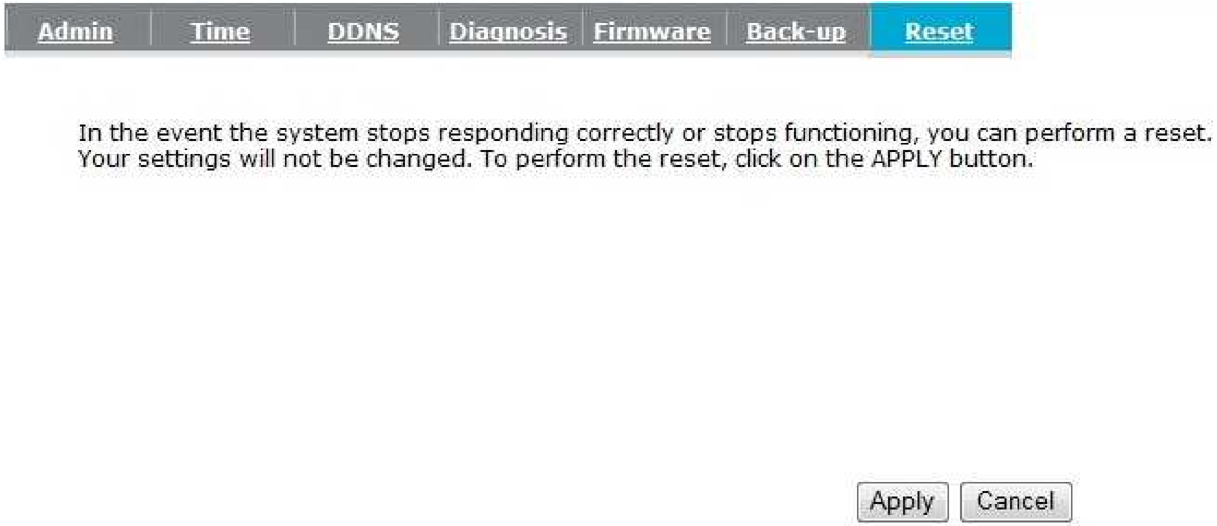


Use BACKUP SETTINGS to save the router's current configuration to a file named config.dlf. You can use RESTORE SETTINGS to restore the saved configuration. Alternatively, you can use RESTORE TO FACTORY DEFAULT to force the router to restore its factory default settings.

Back-up	
Restore to factory default	Restores the Router to its factory default settings.
Backup Settings	Saves the Router’s current configuration settings to a file.
Restore Settings	Restores a previously saved configuration file. Click **Browse** to select the file. Then click **Upload** to load the settings.

11.7. Reset

This page allows you to reset (restart) the Router. The current configuration settings will not be lost.



In the event the system stops responding correctly or stops functioning, you can perform a reset. Your settings will not be changed. To perform the reset, click on the APPLY button.

Appendix A – FCC Interference Statement

Federal Communication Commission Interference Statement

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

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

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

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

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

We declare that the product is limited in CH1~CH11 by specified firmware controlled in the USA.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Appendix B – IC Interference Statement

Industry Canada statement:

This device complies with RSS-210 of the Industry Canada Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:

Radiation Exposure Statement:

This equipment complies with IC 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.

This device has been designed to operate with an antenna having a maximum gain of 2 dBi. Antenna having a higher gain is strictly prohibited per regulations of Industry Canada. The required antenna impedance is 50 ohms.