

# User Manual

---

## **BEC 6900** 4G/LTE Outdoor Router

# TABLE OF CONTENTS

<b>CHAPTER 1: INTRODUCTION .....</b>	<b>1</b>
<b>INTRODUCTION TO YOUR ROUTER .....</b>	<b>1</b>
<b>FEATURES &amp; SPECIFICATIONS .....</b>	<b>3</b>
<b>HARDWARE SPECIFICATIONS .....</b>	<b>4</b>
<b>APPLICATION DIAGRAM .....</b>	<b>5</b>
<b>CHAPTER 2: PRODUCT OVERVIEW .....</b>	<b>6</b>
<b>IMPORTANT NOTE FOR USING THIS ROUTER .....</b>	<b>6</b>
<b>PACKAGE CONTENTS .....</b>	<b>6</b>
<b>DEVICE DESCRIPTION .....</b>	<b>7</b>
<b>MOUNTING KIT INSTALLATION .....</b>	<b>8</b>
<b>ROUTER INSTALLATION INSTRUCTIONS .....</b>	<b>12</b>
<b>CHAPTER 3: BASIC INSTALLATION .....</b>	<b>15</b>
<b>NETWORK CONFIGURATION – IPv4 .....</b>	<b>16</b>
Configuring PC in Windows 7 (IPv4) .....	16
Configuring PC in Windows Vista (IPv4) .....	18
Configuring PC in Windows XP (IPv4) .....	20
Configuring PC in Windows 2000 (IPv4) .....	21
Configuring PC in Windows 98/ME .....	22
Configuring PC in Windows NT4.0 .....	23
<b>NETWORK CONFIGURATION – IPv6 .....</b>	<b>24</b>
Configuring PC in Windows 7 (IPv6) .....	24
Configuring PC in Windows Vista (IPv6) .....	26
Configuring PC in Windows XP (IPv6) .....	28
<b>DEFAULT SETTINGS .....</b>	<b>29</b>
<b>CHAPTER 4: DEVICE CONFIGURATION .....</b>	<b>30</b>

<b>LOGIN TO YOUR DEVICE .....</b>	<b>30</b>
<b>STATUS.....</b>	<b>32</b>
Device Info .....	33
System Log .....	34
3G/4G-LTE Status.....	35
Statistics .....	36
DHCP Table.....	38
<b>QUICK START .....</b>	<b>39</b>
<b>CONFIGURATION.....</b>	<b>41</b>
Interface Setup.....	41
<i>Internet</i> .....	42
<i>LAN</i> .....	44
Advanced Setup .....	48
<i>Firewall</i> .....	48
<i>Routing</i> .....	49
<i>NAT</i> .....	50
<i>Static DNS</i> .....	55
<i>Time Schedule</i> .....	56
<i>Remote System Log</i> .....	57
Access Management .....	58
<i>Device Management</i> .....	58
<i>SNMP</i> .....	59
<i>Universal Plug &amp; Play</i> .....	60
<i>Dynamic DNS</i> .....	61
<i>Access Control</i> .....	63
<i>Packet Filter</i> .....	65
<i>CWMP (TR-069)</i> .....	68
<i>Parental Control</i> .....	70
Maintenance .....	71
<i>User Management</i> .....	71
<i>Time Zone</i> .....	72
<i>Firmware &amp; Configuration</i> .....	73
<i>System Restart</i> .....	75
<i>Diagnostics Tool</i> .....	76

## **CHAPTER 5: TROUBLESHOOTING .....77**

Problems with the Router .....	77
Problem with LAN Interface .....	77
Recovery Procedures.....	78



# CHAPTER 1: INTRODUCTION

## Introduction to your Router

Congratulations on your purchase of the **RIDGEWAVE 6900 (Outdoor 4G/LTE Router)**.

This unit is a light-weight, an industrial-grade outdoor fixed wireless router with an IP67 rated enclosure to withstand extreme weather conditions and harsh rugged deployments. With integrated IEEE802.3at power over Ethernet (PoE) support, the RidgeWave 6900 provides an easy installation from eliminating the need for a separate power and data cable.

In addition to outdoor, it can be installed in environments such as: manufacturing plants, industrial automation, stadiums, convention halls, stadium facilities, school campuses or virtually any venue requiring a robust wireless solution. The RidgeWave 6900 integrates a high performance device with an embedded LTE module and advanced IP networking features enabling support of multiple high bandwidth applications at peaks speeds up to 100 (150) Mbps downlink and 50Mbps uplink.

### Lightweight, Compact and unobtrusive Design

With multiple mounting options and a lightweighted, it is easily to install the RidgeWave 6900 by single person. The RidgeWave 6900 also has a built-in passive Gigabit Power of Ethernet (GPoE) so both data and power can be sent from the unit.

### Designed for Challenging / Rugged Deployments

The RidgeWave 6900 is designed for the toughest industrial environments. With IP67 hardened enclosure with industrial-grade components, the RidgeWave 6900 can be installed in manufacturing plants, industrial automation, stadiums, convention halls, stadium facilities, school campuses, etc.

### 4G/LTE Mobility

With 4G/LTE-based Internet connection (4G/LTE embedded module, requires an additional SIM card), you can access to the Internet through 4G/LTE whether you are seated at your desk or taking a cross-country trip.

### 4G/LTE Management Center

**RidgeWave 6900 (4G/LTE Outdoor Router)** Mobile Management Center visually displays its current 4G/LTE signal status also calculates the total amount of hours or data traffic used per month, allowing you to manage your 4G/LTE monthly subscriptions.

### IPv6 Supported

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

### Quick Start Wizard

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

### Firmware Upgradeable

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

## Features & Specifications

- Outdoor 4G for high speed mobile connectivity
- 4G embedded with a built-in SIM card slot
- High-speed 4G connection up to downlink 100(150)Mbps and uplink 50Mbps data rate
- 4G Management Center for connection monitoring
- Firewall security with DoS prevention and SPI
- Quality of Service control
- Syslog monitoring
- Ease of Use with Quick Installation Wizard
- Ideal for homes, businesses, rural areas and the underserved

### Operational Mode

- Bridge or Routed mode

### Network Protocols and Features

- IPv4, IPv6 or IPv4 / IPv6 Dual Stack
- NAT, static (v4/v6) routing and RIP-1 / 2
- DHCPv4 / v6
- Universal Plug and Play (UPnP) Compliant
- Dynamic Domain Name System (DDNS)
- Virtual Server and DMZ
- SNTP, DNS proxy
- IGMP snooping and IGMP proxy
- MLD snooping and MLD proxy

### Firewall

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

## Quality of Service Control

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

## Management

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

## Hardware Specifications

### Physical interface

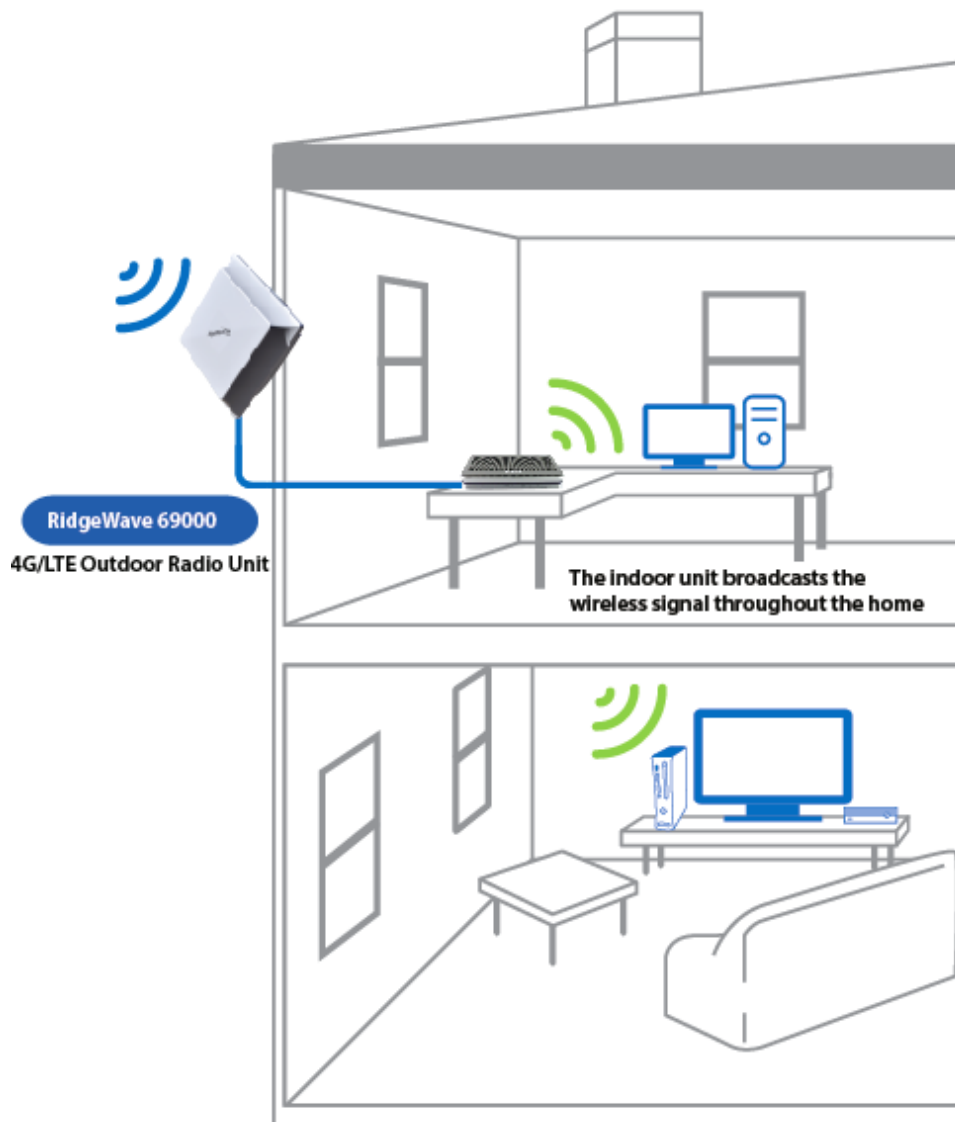
- 10/100/1000 Gigabit Ethernet LAN with IEEE802.3at compliant Gigabit PoE PD
- SIM slot : (for the SIM card from Telco / ISP)
- LED Indicators: Power, LAN(PoE), LTE, and Internet

### Physical Specifications

- Dimensions (W\*H\*D): 8.5" x 7.5" x 3"(257mm x 227mm x 91mm)
- Weight: 1.81kgs (4lbs)
- IP-67 Grade Enclosure



## Application Diagram



# CHAPTER 2: PRODUCT OVERVIEW

## Important Note for Using This Router



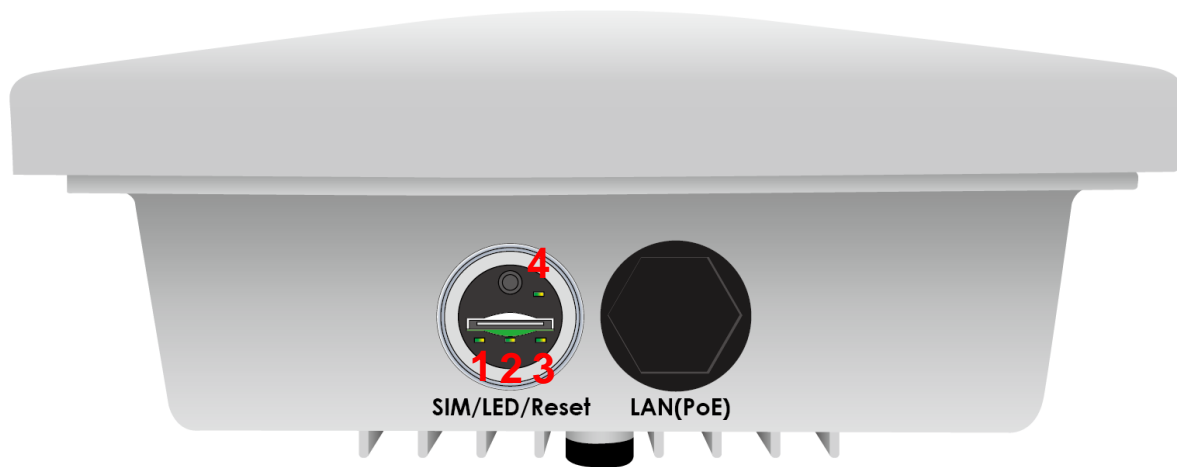
### Attention

- ✓ Do not remove, open or repair the case yourself. Contact with your Internet Service Provider or have it repaired at a qualified service center.
- ✓ Use the supplied PoE (Power-over-Ethernet) injector for indoor only or with any 802.3at capable PoE injectors to connect with the RidgeWave 6900
- ✓ It is mandatory to earth ground the RidgeWave 6900. Improper grounding not only could damage the unit but also all equipments connected to it.

## Package Contents

- ✓ The RidgeWave 6900 4G/LTE Outdoor Router
- ✓ M25 Cable Gland
- ✓ Quick Start Guide
- ✓ 25ft Outdoor LAN cable
- ✓ Gigabit Power-over-Ethernet (PoE) Injector
- ✓ Grounding Wire
- ✓ Mounting Kit

## Device Description



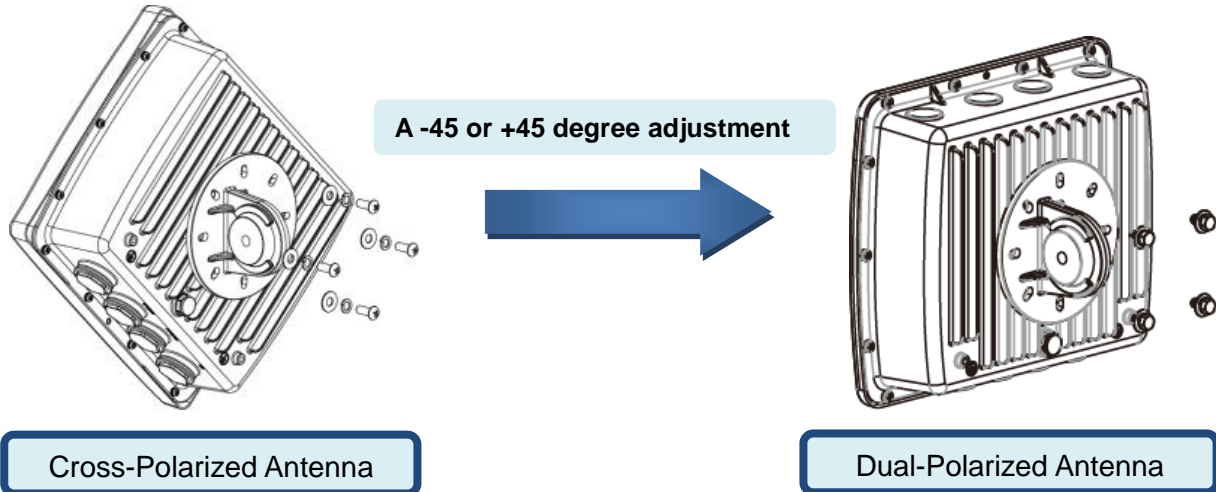
CONNECTORS	DESCRIPTION
<b>SIM / LED / Reset</b>	Insert the SIM card into the SIM slot. Press the reset button to reset device or restore to factory default settings
<b>Gigabit LAN(PoE)</b>	Connect it with the supplied PoE injector, 802.1at compliant, using an Ethernet cable.

LED	STATUS	DESCRIPTION
<b>1. Power</b>	Orange	System is either in initial startup phase or has boot failure
	Green	System is up and ready
	Off	No input power
<b>2. LAN(PoE)</b>	Orange	Transmission speed is at 10/100Mbps
	Green	Transmission speed is at Gigabit speed (1000Mbps)
	Blinking	Data being transmitted/received
	Off	No device is being connected
<b>3. Internet</b>	Orange	IP request failed or System is in initial booting phase
	Green	IP connected and traffic is passing thru the device
<b>4. 3G/4G-LTE (Received Signal Strength Indicator)</b>	Green	RSSI greater than -69 dBm. Excellent signal condition
	Green Flashing quickly	RSSI from -81 to -69 dBm. Good signal condition
	Orange Flashing quickly	RSSI from -99 to -81 dBm. Fair signal condition
	Orange Flashing slowly	RSSI less than -99 dBm. Poor signal condition
	Orange	No signal. 4G_LTE module is still in connected mode
	Off	No LTE module or LTE module fails

## Mounting Kit Installation

### 1. Attach the Articulation Pole to the Enclosure

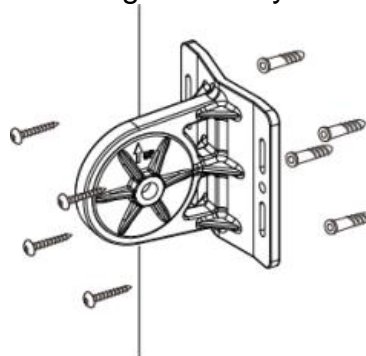
Attach the articulation pole to the back of the RidgeWave 6900 using M6\*16 screws and washers.



### 2. Wall or Pole Mounting

#### 2.1 Mounting on Wall

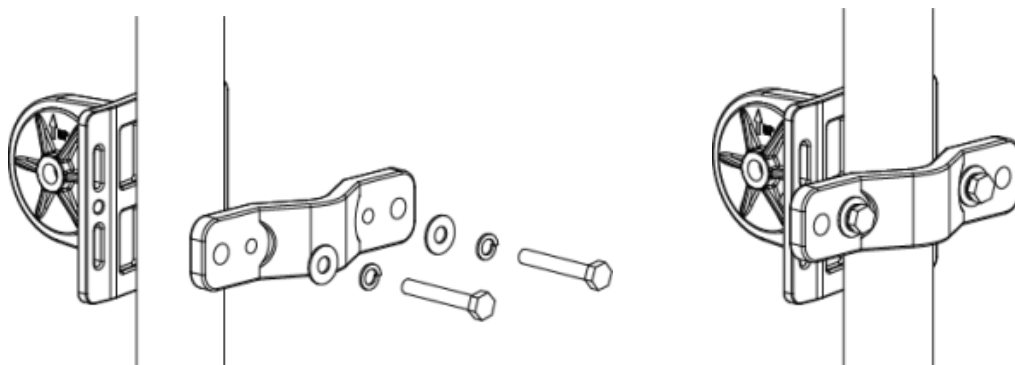
Fix the T-formed Bracket to the wall using wood/ drywall screws.



#### 2.2 Mounting on a Pole

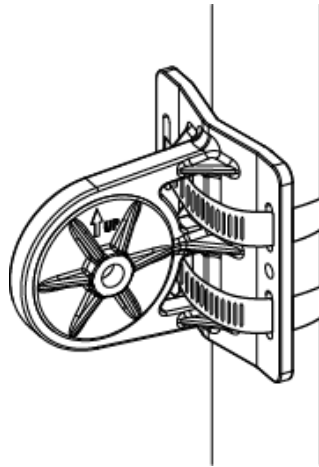
##### 2.2.1a Mounting for pole smaller than 1.5" (38mm)

Attach the T-formed Bracket and the W-bar to the pole then use M6x60 bolts, spring washer and washer to fix the mounting kit onto the pole.



### 2.2.1b Mounting for pole larger than 1.5" (38mm)

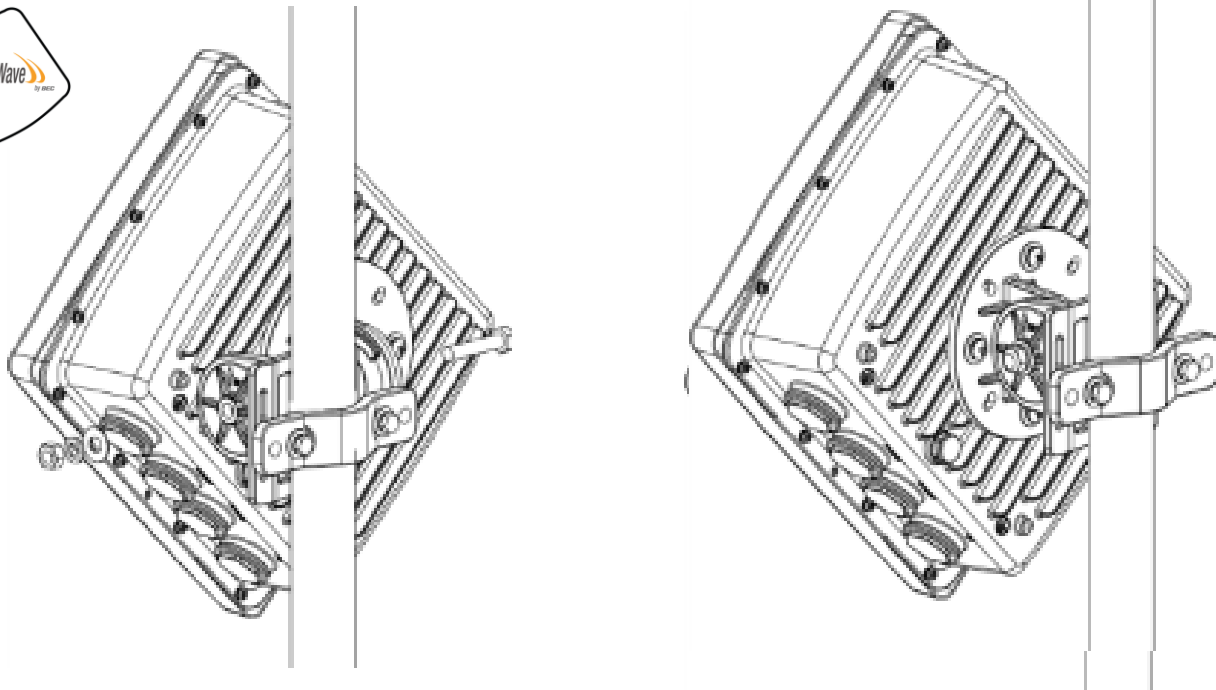
Fix the T-formed Bracket to the pole by using the stainless hose clamp.



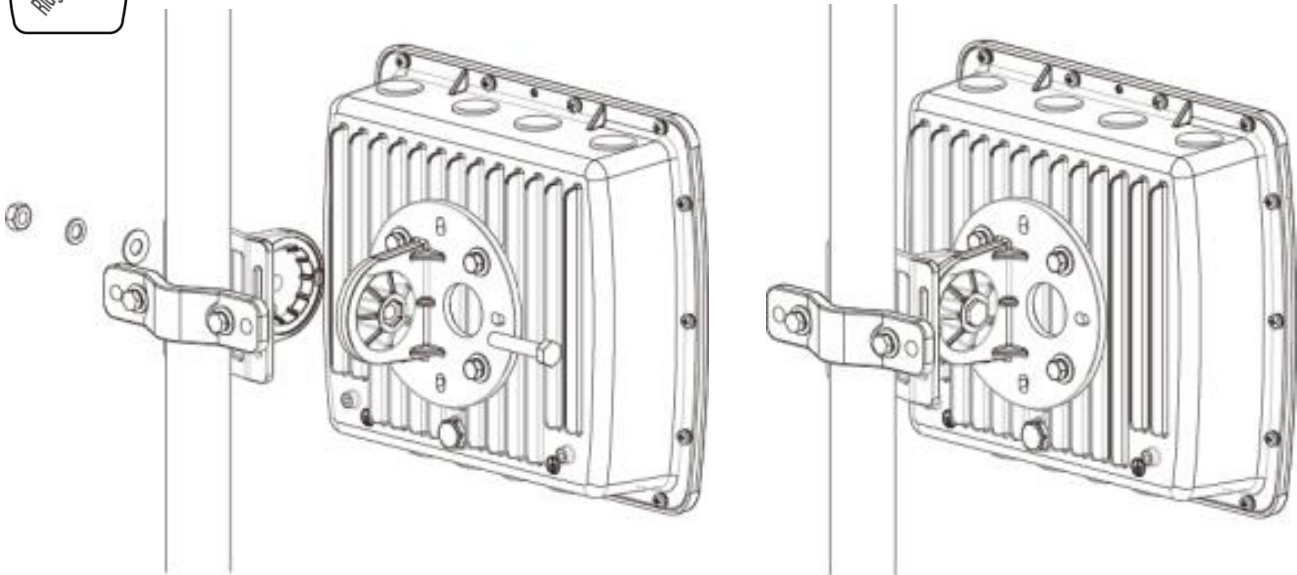
### 3. Mounting the RidgeWave 6900 to the T-formed Bracket

Attach the articulation pole (the RidgeWave 6900 enclosure) to the T-formed bracket by using M8x40 bolts, nut, spring washer and washer.

**Cross-Polarized Antenna** – The original of the source position, the nominal position, is seeing **the RidgeWave logo** when facing toward the RidgeWave 6900 ,



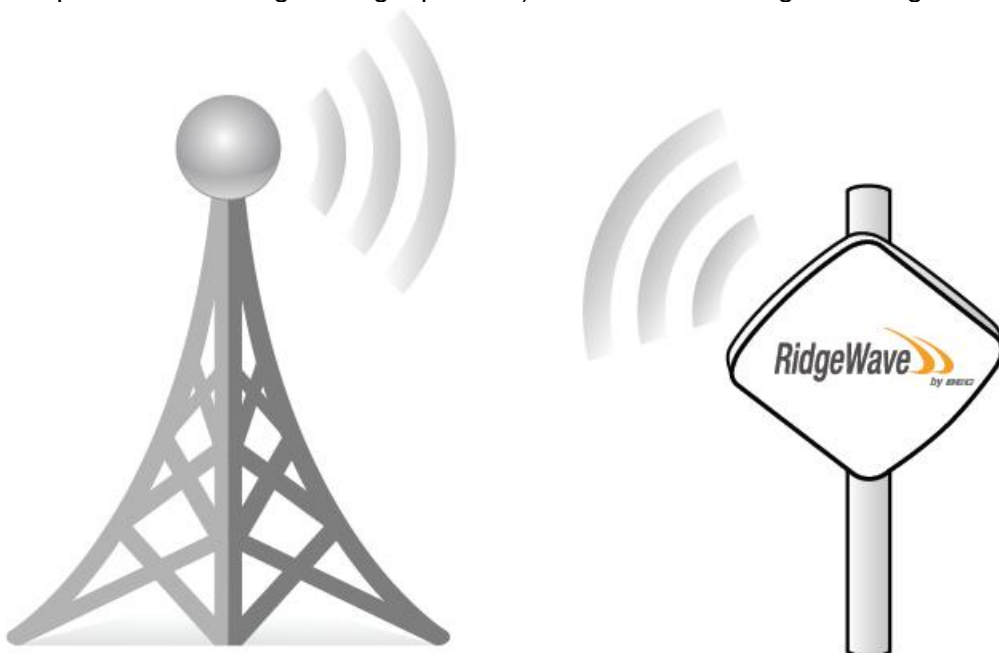
**Dual-Polarized Antenna** – From the nominal position, adjusting and rotating the RidgeWave 6900 in -45 or +45, anticlockwise or clockwise, degree angle.



#### 4. Position Adjustment

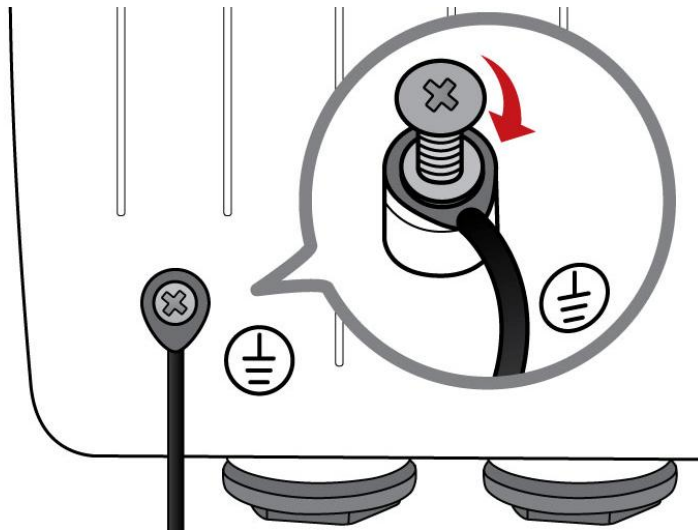
Find the location and best angle for getting the strongest signal from the base station. The RidgeWave 6900 must be directed towards the nearest base station.

Adjusting the router position to get a better reception and/or fine-tuning the router orientation (in horizontal/vertical position or 45 degree angle position) to have the best signal strength



## 5. Grounding the CPE to Complete the Installation

Attach the grounding wire to the CPE and tighten the screw



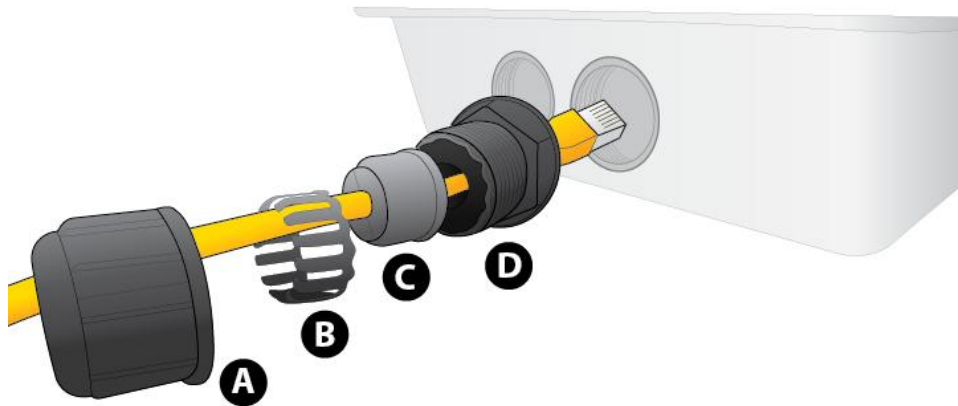
## Router Installation Instructions

### 1. Power on your RidgeWave 6900

Step 1: Assemble M25 cable gland



Step 2: Unscrew the LAN (PoE) port and insert the supplied outdoor Ethernet cable (RJ-45) through material A-D, and then connect the RJ-45 Ethernet cable into the LAN (PoE) port.



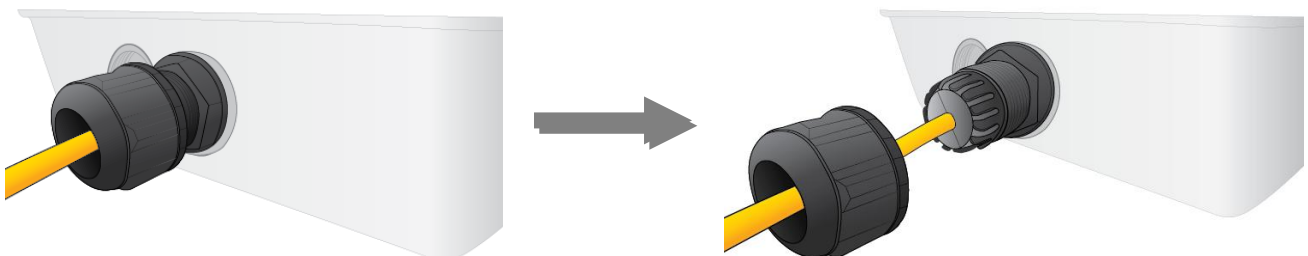
Step 3:

3.1: Insert (C) at the back end of (D)

3.2: clip (B) on (C)

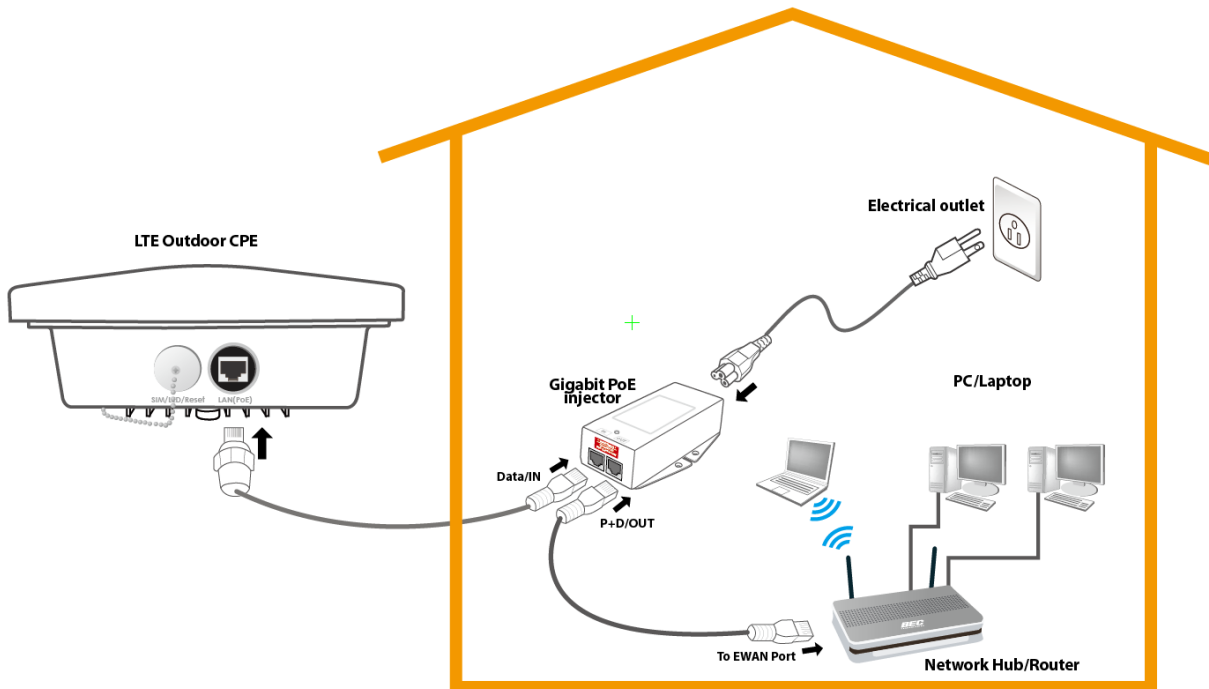
3.3: keep (B) close to (D)

3.4: then tighten (A).



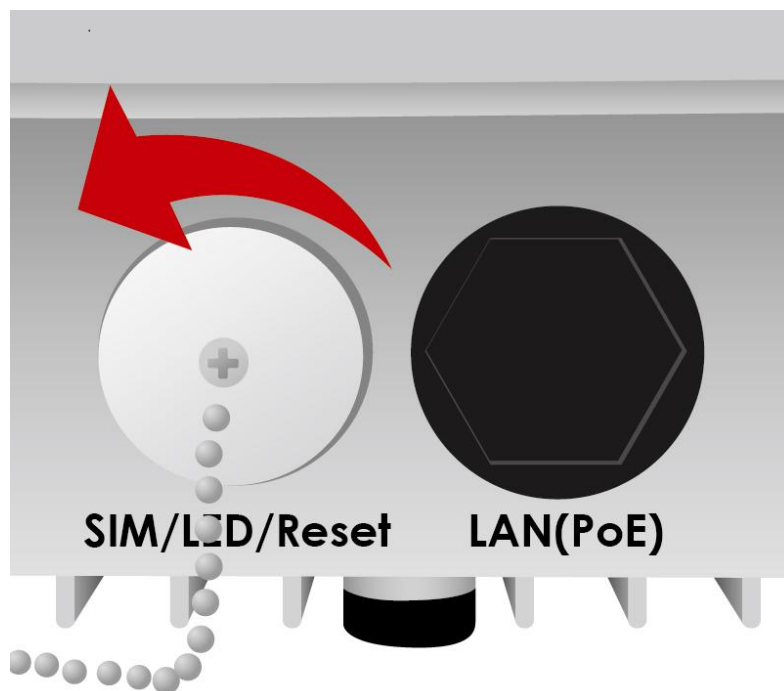
Step 4: Insert the other end of outdoor Ethernet cable (RJ-45) to the supplied Gigabit PoE injector, IEEE 802.1at compliant, **Power+Data (P+D)/OUT** port. Connect another Ethernet cable (RJ-45) directly to the **Data/IN** port and the other end of cable to a switch or broadband router. Plug the PoE power cable to an electrical outlet to power on your RidgeWave 6900.





## 2. Set up your 4G/LTE Internet Connection

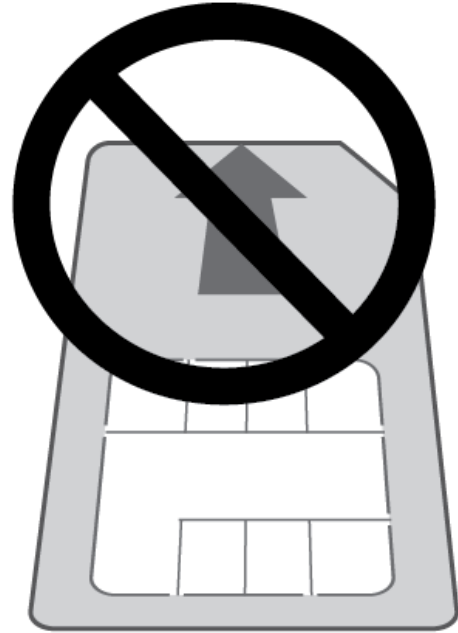
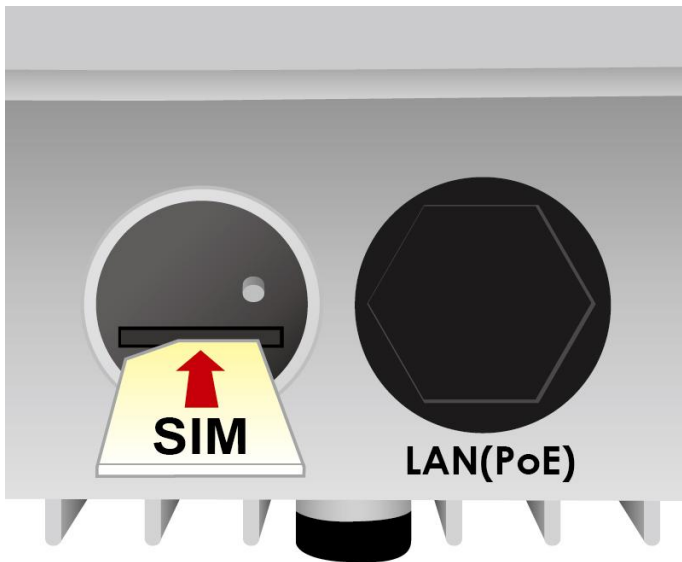
Step 1: Unscrew the cap of SIM card slot.



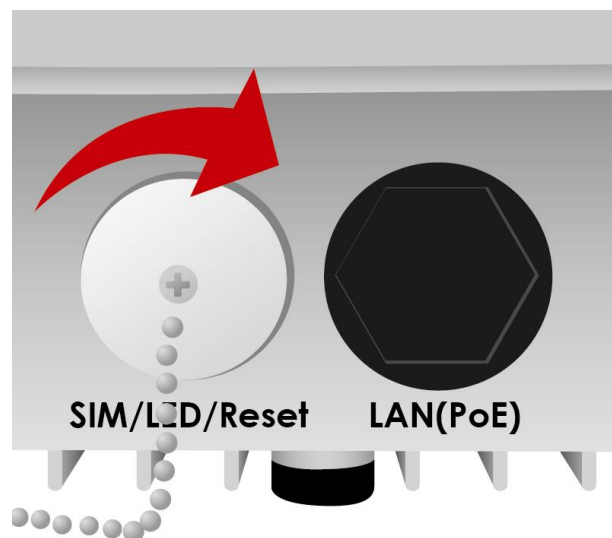
Step 2: Slide the SIM card with the mental contacts (gold plate) facing down to the SIM slot then push it all the way in until you hear the clicking sound.



It is recommended to use an industrial-grade SIM card.



Step 3: Screw the cap back tightly.



Please power off your RidgeWave 6900 before inserting or removing the SIM card.

# CHAPTER 3: BASIC INSTALLATION

The router can be configured with your web browser. A web browser is included as a standard application in the following operating systems: Windows 98 / NT / 2000 / XP / ME / 7 / Vista, Linux, Mac OS, etc. The product provides an easy and user-friendly interface for configuration.

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

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

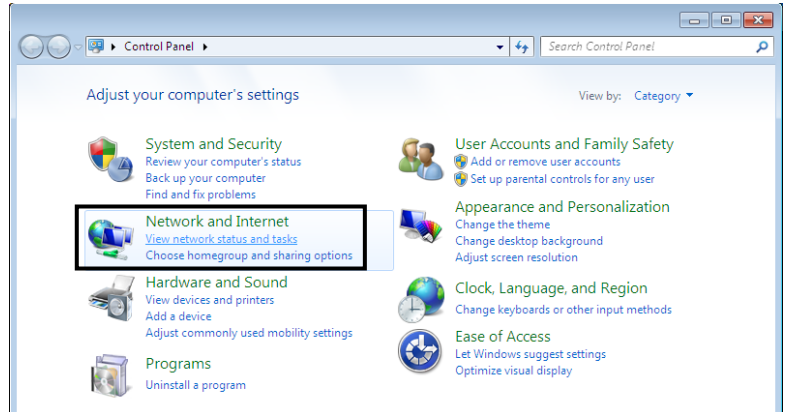


Any TCP/IP capable workstation can be used to communicate with or through the **RidgeWave 6900**. To configure other types of workstations, please consult the manufacturer's documentation.

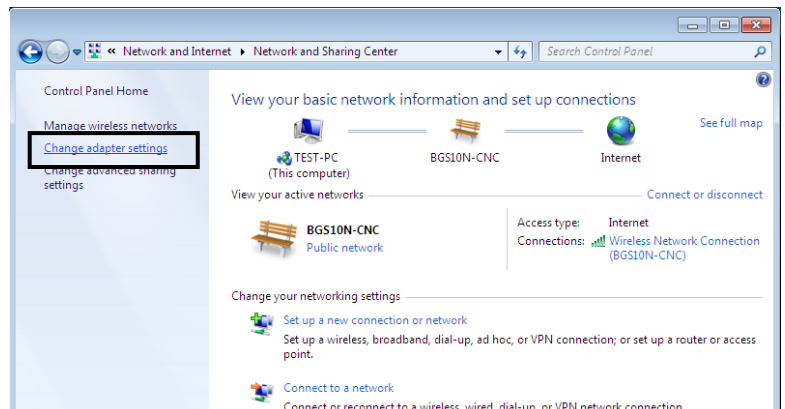
# Network Configuration – IPv4

## Configuring PC in Windows 7 (IPv4)

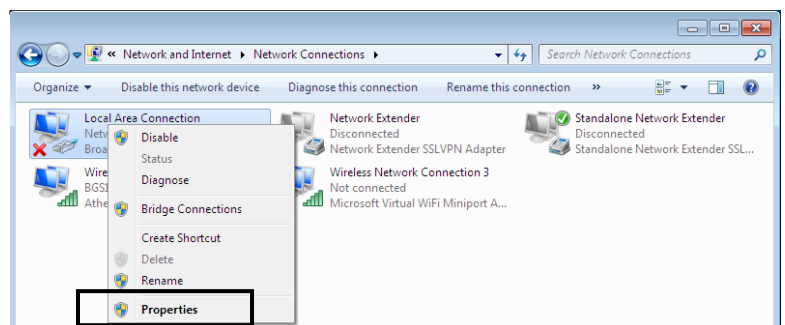
1. Go to **Start**. Click on **Control Panel**.
2. Then click on **Network and Internet**.



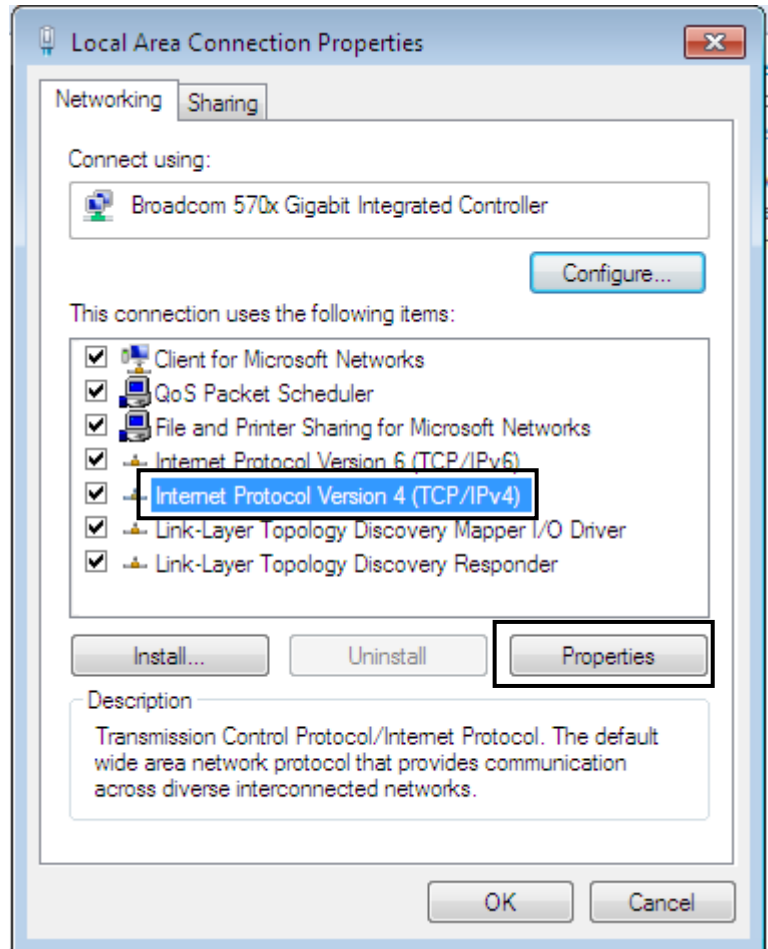
3. When the **Network and Sharing Center** window pops up, select and click on **Change adapter settings** on the left window panel.



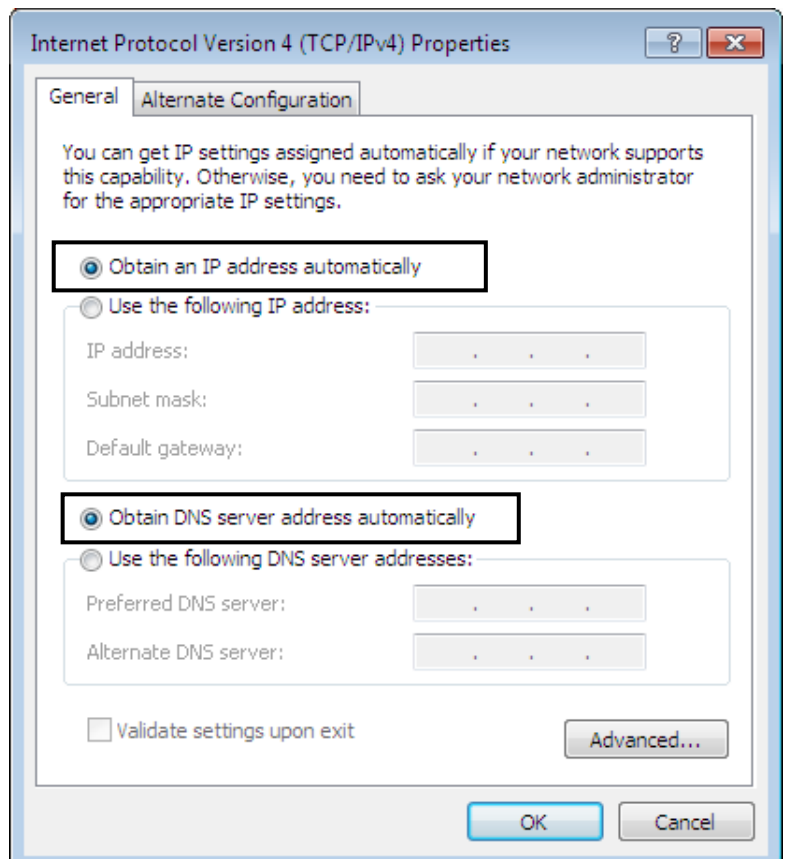
4. Select the **Local Area Connection**, and right click the icon to select **Properties**.



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

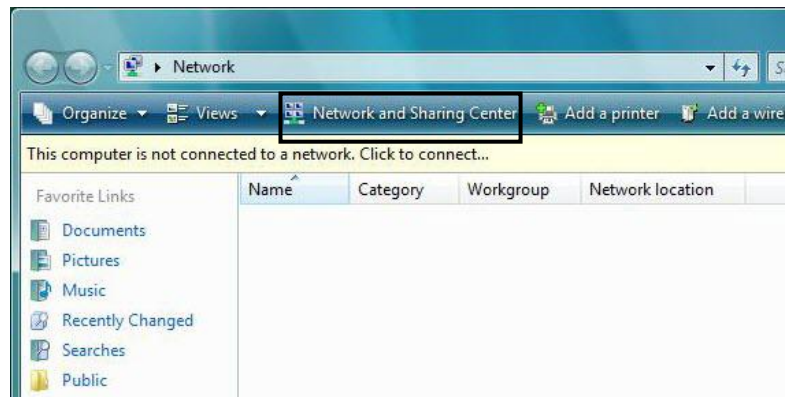


6. In the **TCP/IPv4 properties** window, select the **Obtain an IP address automatically** and **Obtain DNS Server address automatically** radio buttons. Then click **OK** to exit the setting.
7. Click **OK** again in the **Local Area Connection Properties** window to apply the new configuration.



## Configuring PC in Windows Vista (IPv4)

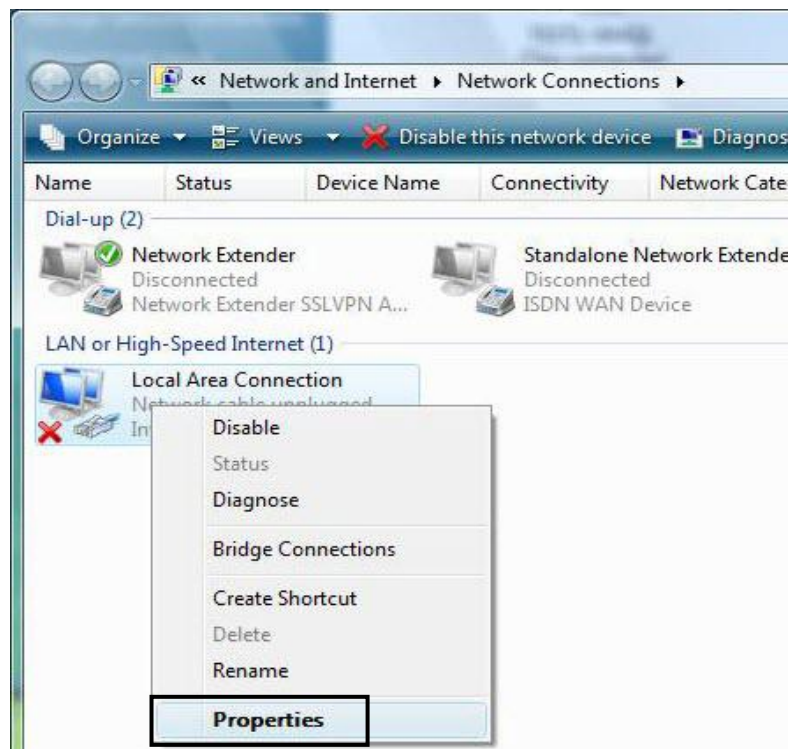
1. Go to **Start**. Click on **Network**.
2. Then click on **Network and Sharing Center** at the top bar.



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

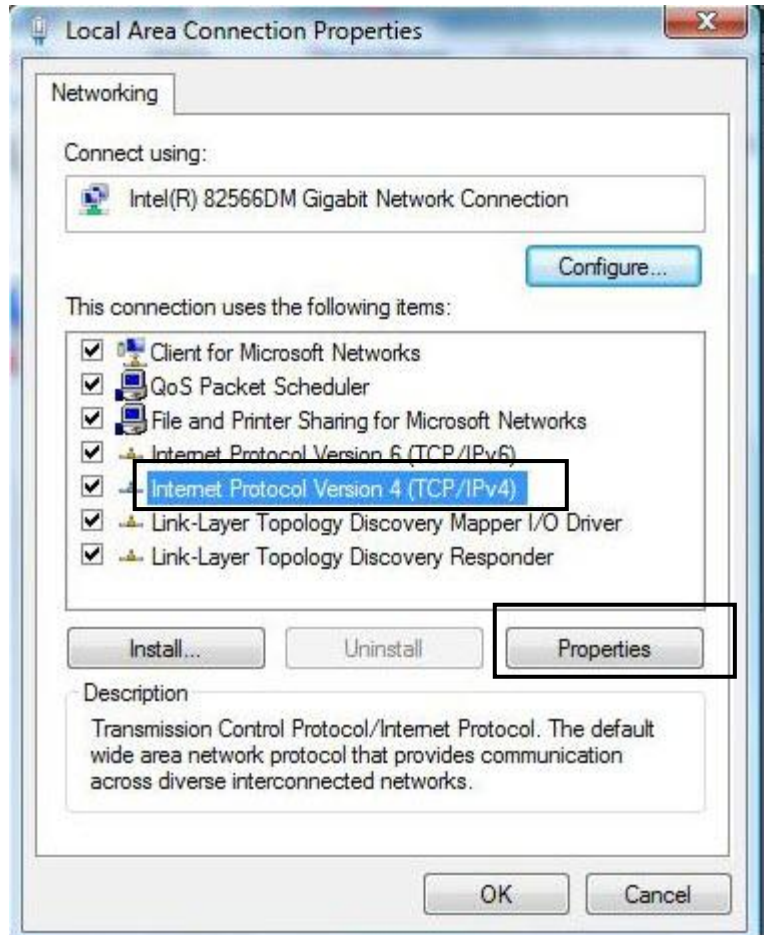


4. Select the **Local Area Connection**, and right click the icon to select **Properties**.



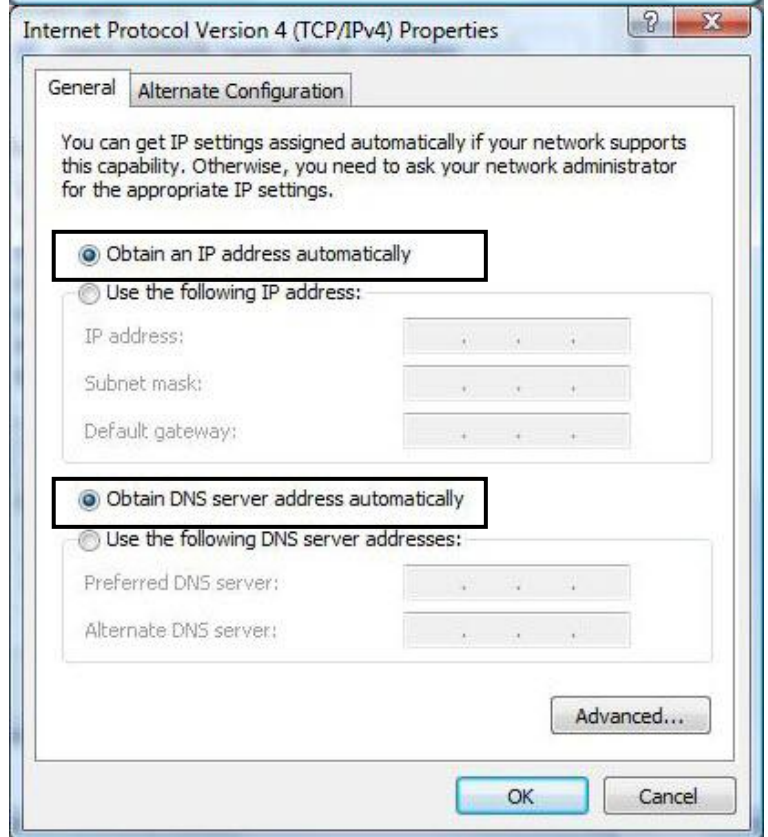


5. Select **Internet Protocol Version 4 (TCP/IPv4)** then click **Properties**.



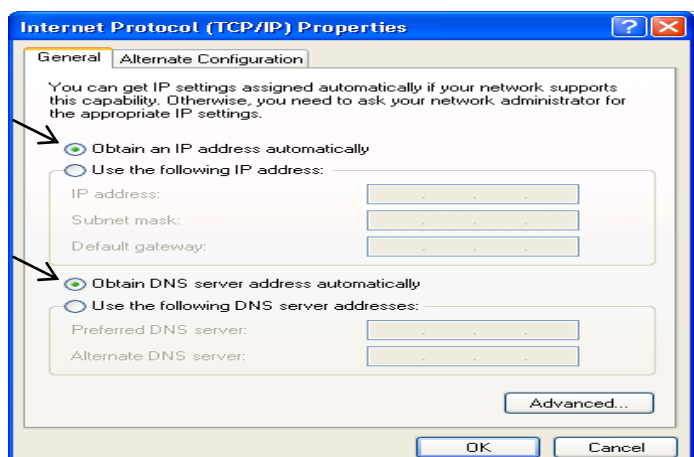
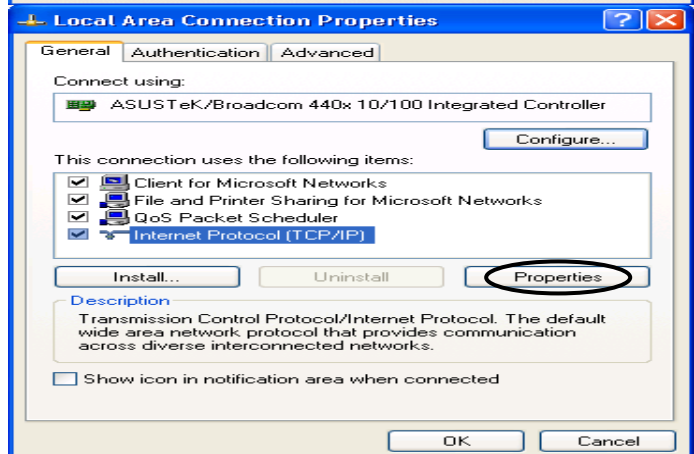
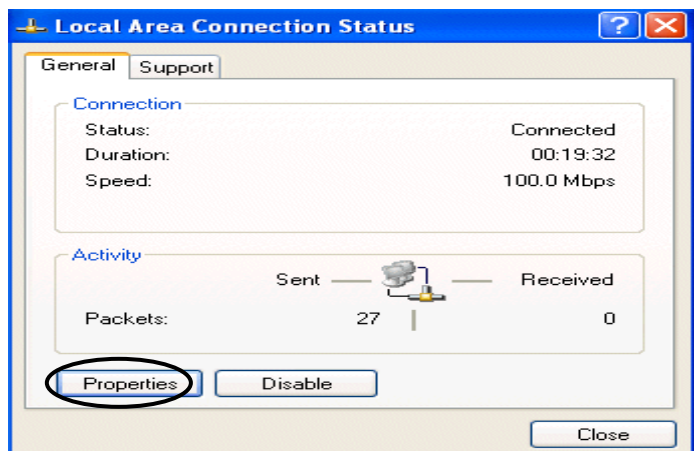
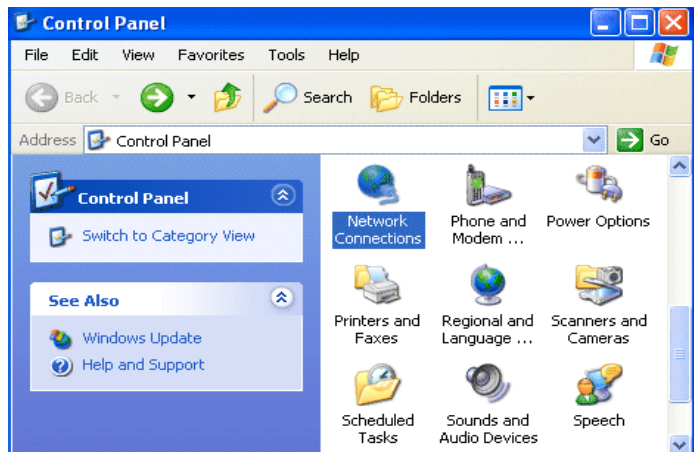
6. In the **TCP/IPv4 properties** window, select the **Obtain an IP address automatically** and **Obtain DNS Server address automatically** radio buttons. Then click **OK** to exit the setting.

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



## Configuring PC in Windows XP (IPv4)

1. Go to **Start**. Click on **Control Panel**.
2. Then click on **Network and Internet**.
3. In the **Local Area Connection Status** window, click **Properties**.
4. Select **Internet Protocol (TCP/IP)** and click **Properties**.
5. Select the **Obtain an IP address automatically** and the **Obtain DNS server address automatically** radio buttons.
6. Click **OK** to finish the configuration.





## Configuring PC in Windows 2000 (IPv4)

1. Go to **Start / Settings / Control Panel**. In the Control Panel, double-click on **Network and Dial-up Connections**.

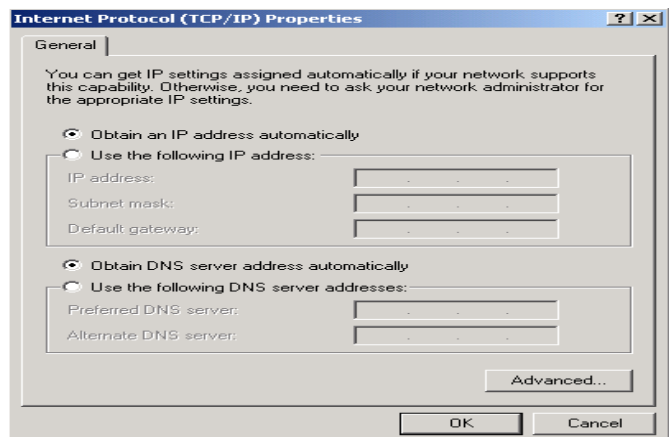
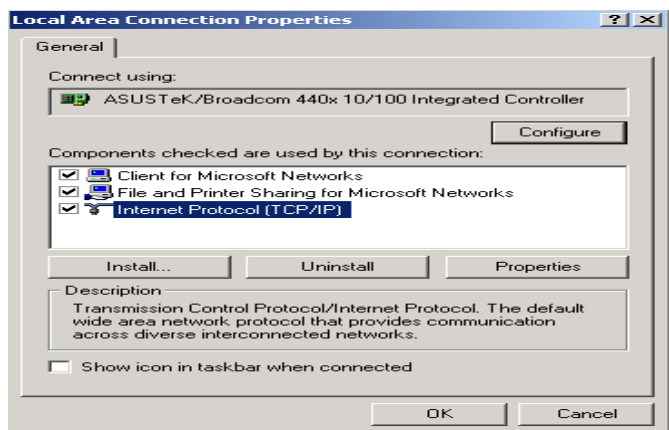
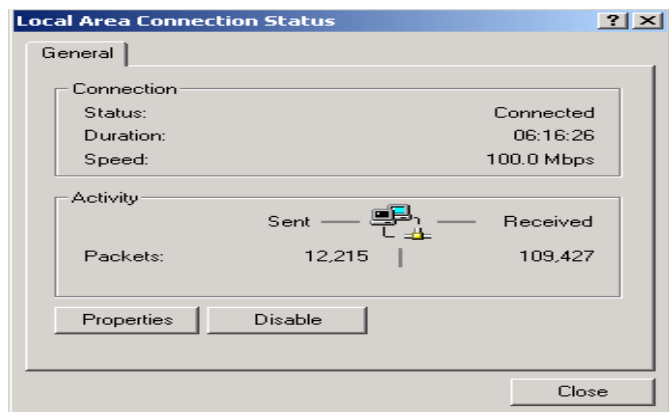
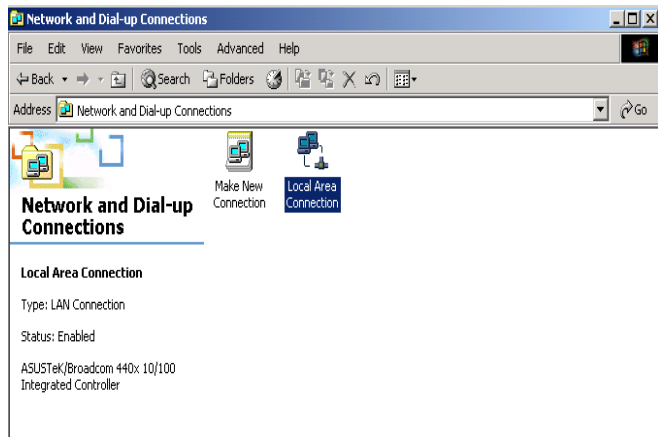
2. Double-click **Local Area Connection**.

3. In the **Local Area Connection Status** window click **Properties**.

4. Select **Internet Protocol (TCP/IP)** and click **Properties**.

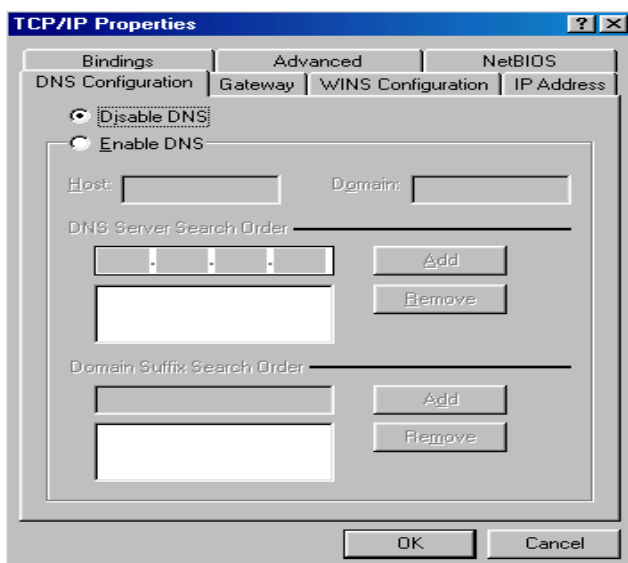
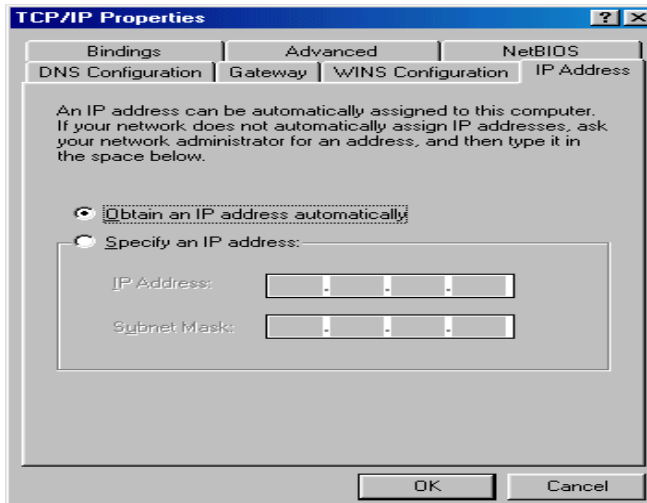
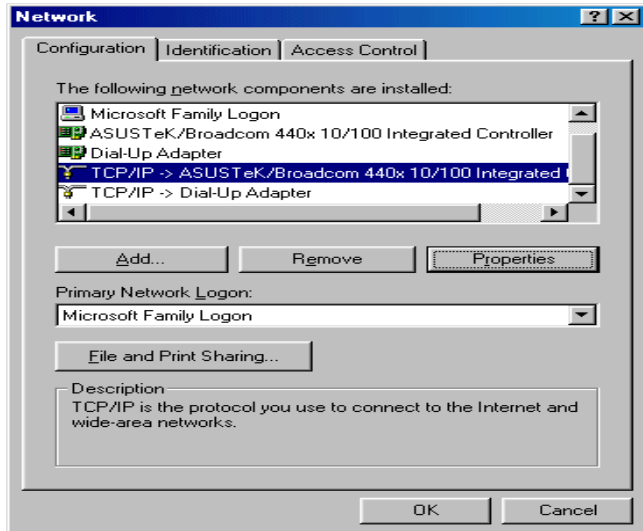
5. Select the **Obtain an IP address automatically** and the **Obtain DNS server address automatically** radio buttons.

6. Click **OK** to finish the configuration.



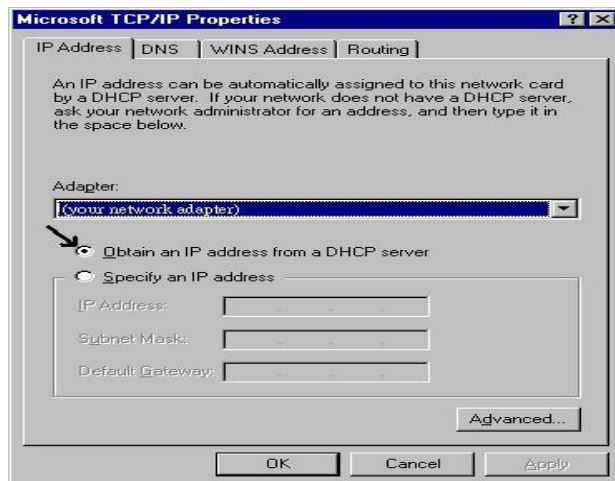
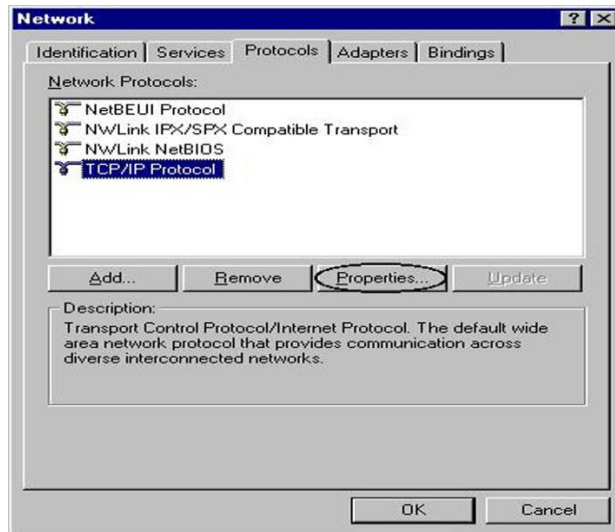
## Configuring PC in Windows 98/ME

1. Go to **Start / Settings / Control Panel**. In the Control Panel, double-click on **Network** and choose the **Configuration** tab.
2. Select **TCP/IP ->NE2000 Compatible**, or the name of your Network Interface Card (NIC) in your PC.
3. Select the **Obtain an IP address automatically** radio button.
4. Then select the **DNS Configuration** tab.
5. Select the **Disable DNS** radio button and click **OK** to finish the configuration.



## Configuring PC in Windows NT4.0

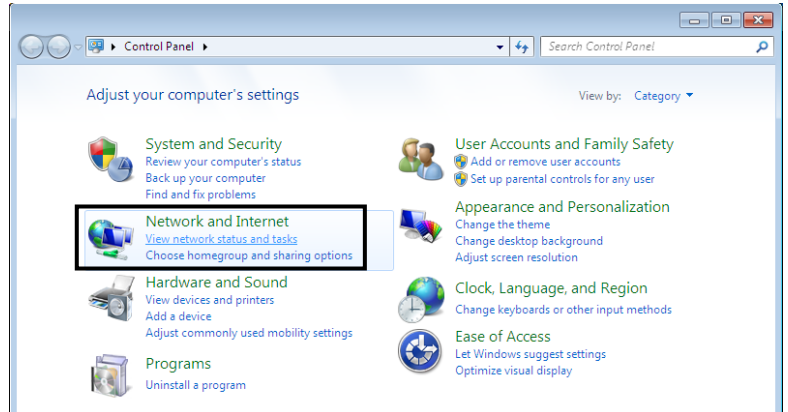
1. Go to **Start / Settings / Control Panel**. In the Control Panel, double-click on **Network** and choose the **Protocols** tab.
2. Select **TCP/IP Protocol** and click **Properties**.
3. Select the **Obtain an IP address from a DHCP server** radio button and click **OK**.



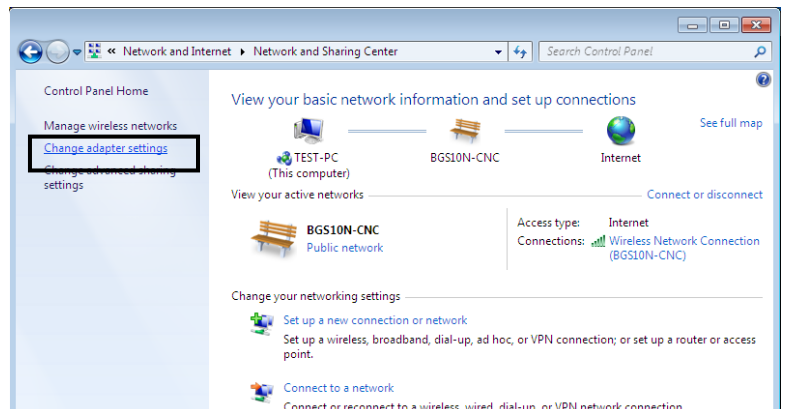
# Network Configuration – IPv6

## Configuring PC in Windows 7 (IPv6)

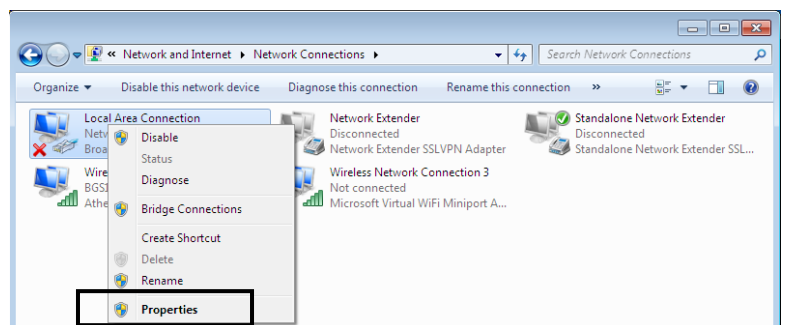
1. Go to **Start**. Click on **Control Panel**.
2. Then click on **Network and Internet**.



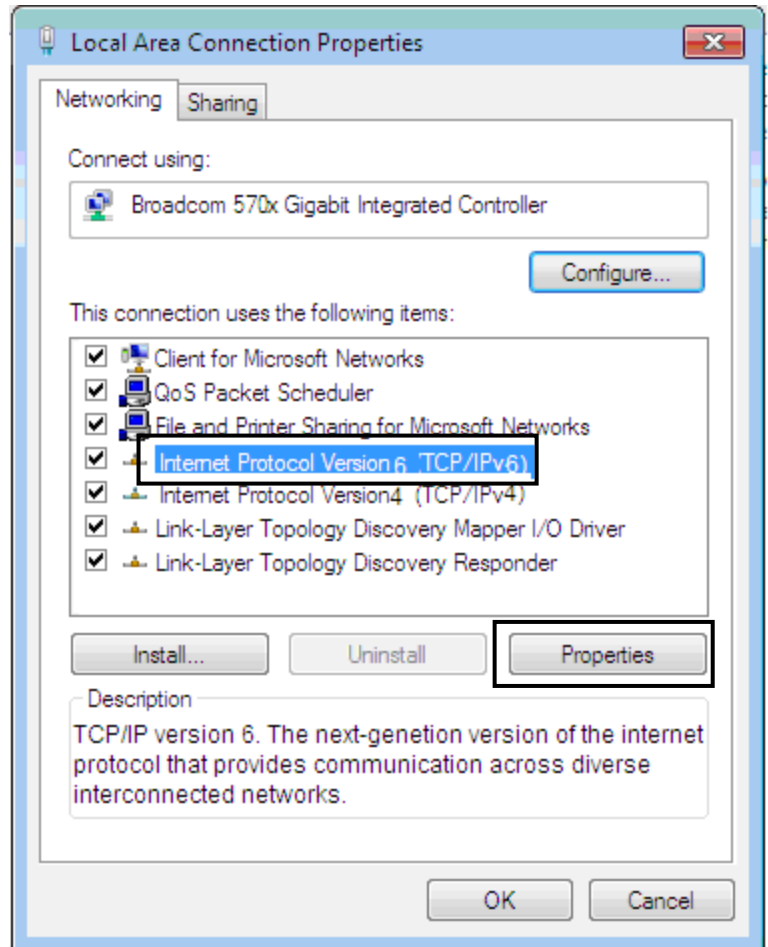
3. When the **Network and Sharing Center** window pops up, select and click on **Change adapter settings** on the left window panel.



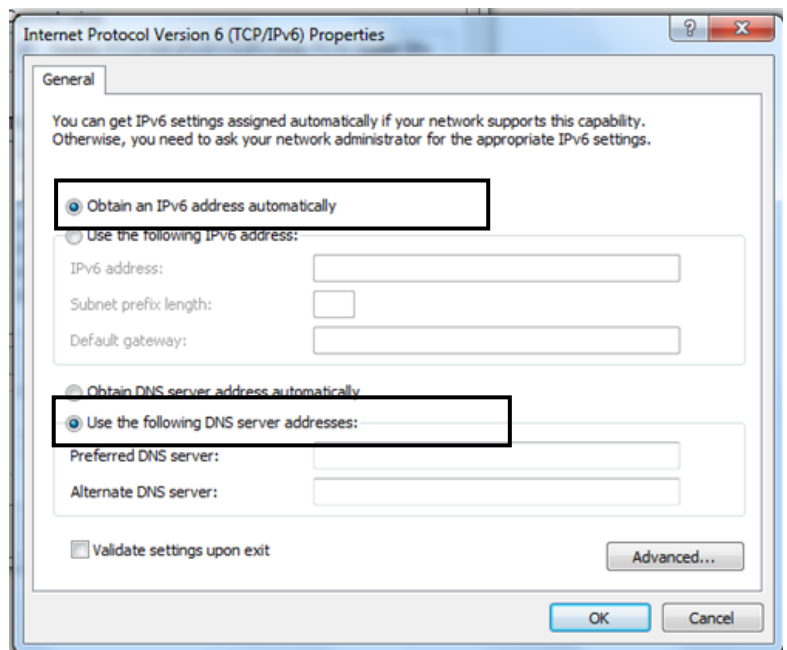
4. Select the **Local Area Connection**, and right click the icon to select **Properties**.



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

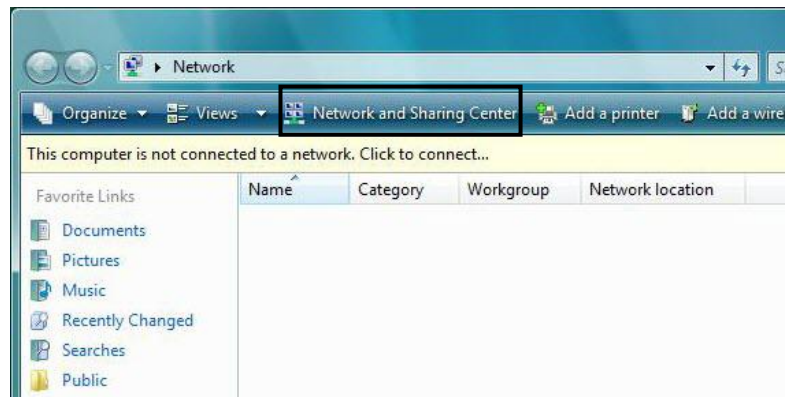


6. In the **TCP/IPv6 properties** window, select the **Obtain an IPv6 address automatically** and **Obtain DNS Server address automatically** radio buttons. Then click **OK** to exit the setting.
7. Click **OK** again in the **Local Area Connection Properties** window to apply the new configuration.



## Configuring PC in Windows Vista (IPv6)

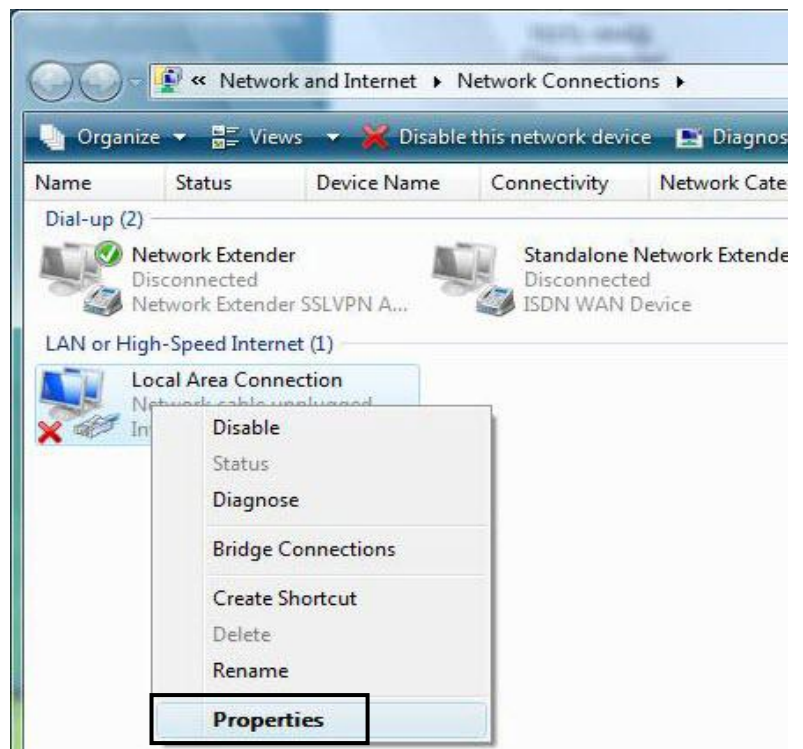
1. Go to **Start**. Click on **Network**.
2. Then click on **Network and Sharing Center** at the top bar.



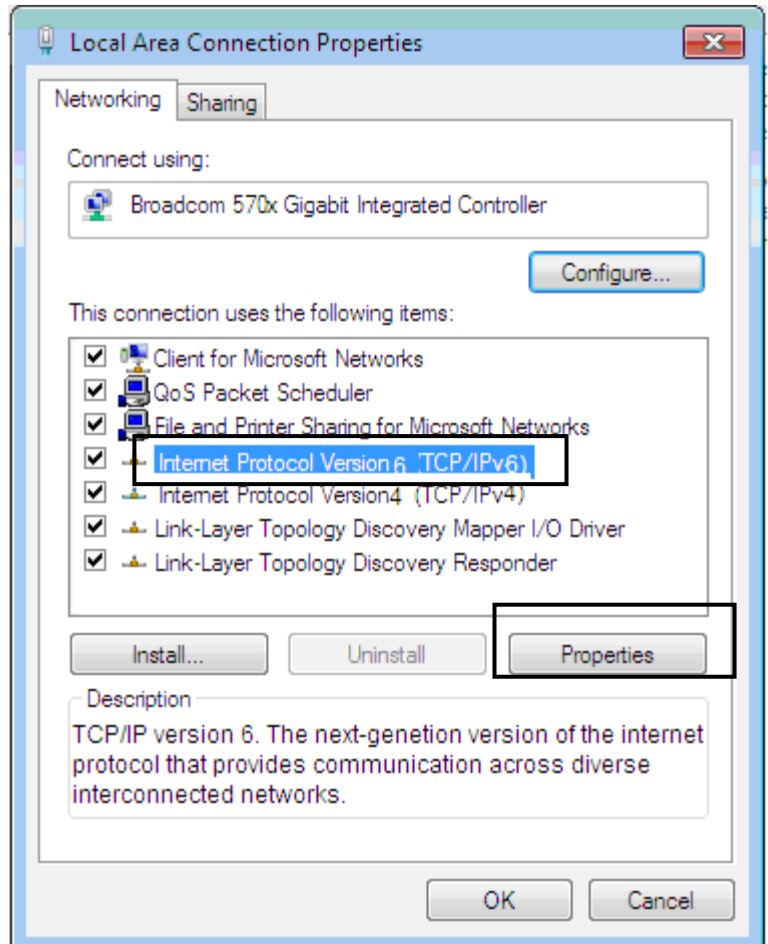
3. When the **Network and Sharing Center** window pops up, select and click on **Manage network connections** on the left window pane.



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

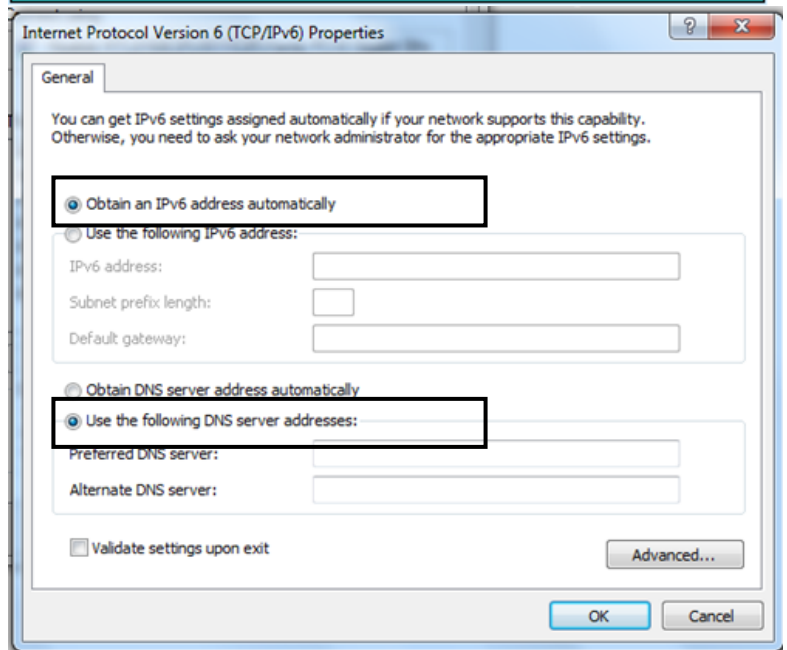


5. Select **Internet Protocol Version 6 (TCP/IPv6)** then click **Properties**.



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

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

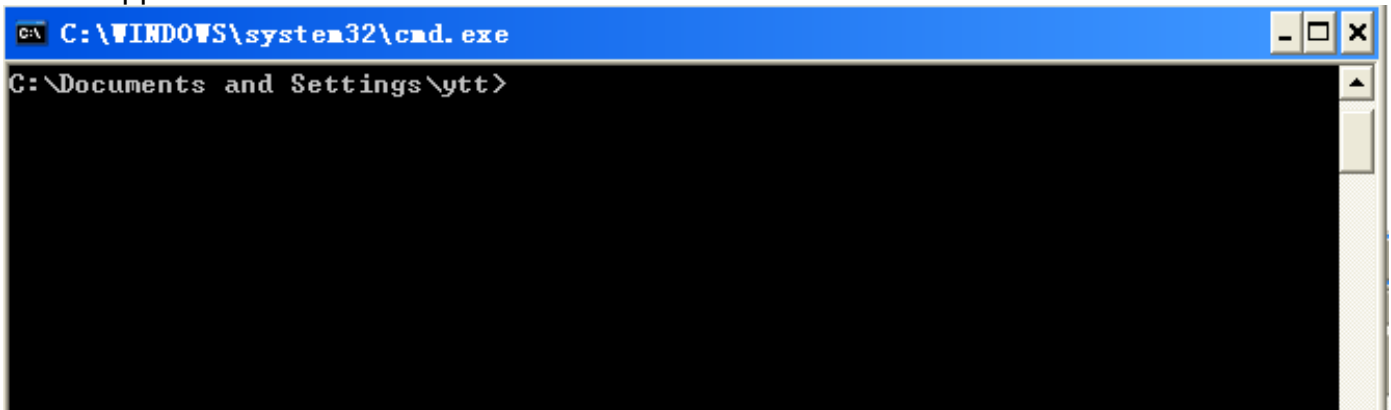


## Configuring PC in Windows XP (IPv6)

IPv6 is supported by Windows XP, but you need to install it first.

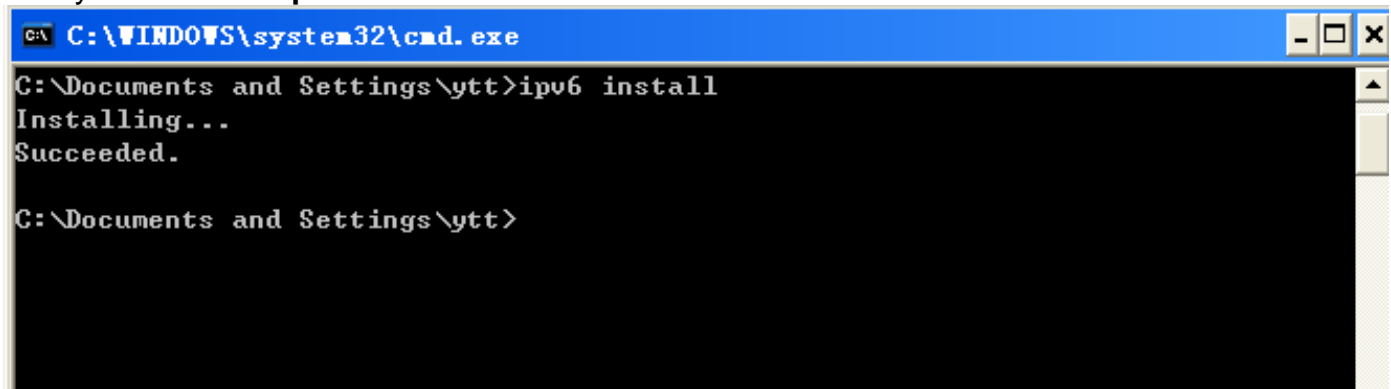
Please follow the steps to install IPv6:

1. On the Desktop, Click **Start > Run**, type **cmd**, then press **Enter** key in the keyboard, the following screen appears.



```
C:\WINDOWS\system32\cmd.exe
C:\Documents and Settings\ytt>
```

2. Key in command **ipv6 install**



```
C:\WINDOWS\system32\cmd.exe
C:\Documents and Settings\ytt>ipv6 install
Installing...
Succeeded.
C:\Documents and Settings\ytt>
```

Installation of IPv6 is now completed. Please test it to see if it works or not. .



## Default Settings

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

### Web Interface: (Username and Password)

- ✓ Username: admin
- ✓ Password: admin

The default username and password are “**admin**” and “**admin**” respectively.



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

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

### Device LAN IP Settings

- ✓ IP Address: 192.168.1.254
- ✓ Subnet Mask: 255.255.255.0

### DHCP Server:

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

# CHAPTER 4: DEVICE CONFIGURATION

## Login to your Device

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

The default username and password is **“admin”** and **“admin”** respectively for the **Administrator**.

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



**Congratulations! You have successfully logged on to your RidgeWave 6900**


Once you have logged on to your RidgeWave 6900 via your web browser, you can begin to set it up according to your requirements. On the configuration homepage, the left navigation pane links you directly to the setup pages, which includes:

Section	Status	Quick Start (Wizard Setup)	Configuration	Language
Sub-Items	Device Info		<b>Interface Setup</b> <ul style="list-style-type: none"> <li>- Internet</li> <li>- LAN</li> </ul>	
	System Log		<b>Advanced Setup</b> <ul style="list-style-type: none"> <li>- Firewall</li> <li>- Routing</li> <li>- NAT</li> <li>- Static DNS</li> <li>- Time Schedule</li> <li>- Remote System Log</li> </ul>	
	3G/4G-LTE Status		<b>Access Management</b> <ul style="list-style-type: none"> <li>- Device Management</li> <li>- SNMP</li> <li>- Universal Plug &amp; Play (UPnP)</li> <li>- Dynamic DNS</li> <li>- Access Control</li> <li>- Packet Filter</li> <li>- CWMP (TR-069)</li> <li>- Parental Control</li> </ul>	
	Statistics		<b>Maintenance</b> <ul style="list-style-type: none"> <li>- User Management</li> <li>- Time Zone</li> <li>- Firmware &amp; Configuration</li> <li>- System Restart</li> <li>- Diagnostic Tool</li> </ul>	
	DHCP Table			

Please see the relevant sections of this manual for detailed instructions on how to configure your **RidgeWave 6900** router.

# Status

In this section, you can check the router working status, including **Device Info**, **System Log**, **3G/4G-LTE Status**, **Statistics**, and **DHCP Table**



Status

Device Info

System Log

3G/4G-LTE Status

Statistics

DHCP Table

Quick Start

Configuration

Language

LTE Router

Status

Device Information

Model Name

BEC 6900RUL

Firmware Version

1.00.rc2.dh11

MAC Address

00:04:ed:68:00:02

Date-Time

Thu Jan 1 03:01:30 UTC 1970

System Up Time

3 hours 1 min

Physical Port Status

3G/4G-LTE

✗

Ethernet

✓

WAN

Interface	Protocol	Connection	IP Address	Default Gateway
3G/4G-LTE	Dynamic IP	Not Connected	/	

LAN

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

Restart

Logout

Copyright @ BEC Technologies Inc.All rights reserved.

## Device Info

It contains basic information of the device.

Status

▼ Device Information

Model Name	BEC 6900RUL
Firmware Version ▶	1.00.rc2.dh11
MAC Address	00:04:ed:68:00:02
Date-Time ▶	Thu Jan 1 03:01:30 UTC 1970
System Up Time	3 hours 1 min

▼ Physical Port Status

3G/4G-LTE	✗
Ethernet	✓

▼ WAN

Interface	Protocol	Connection	IP Address	Default Gateway
3G/4G-LTE ▼	Dynamic IP	Not Connected	/	

▼ LAN

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

### Device Information

**Model Name:** Name of the router for identification purpose.

**Firmware Version:** Software version currently loaded in the router

**MAC Address:** A unique number that identifies the router

**Data-Time:** Setup corret time on the **RidgeWave 6900** with your PC. Check on [Time Zone](#) section for more configuration information.

**System UpTime:** Display how long the **RidgeWave 6900** has been powered on.

### Physical Port Status

**Physical Port Status :** Display available connection interfaces, WAN (3G/4G-LTE) and LAN, that are supported in the RidgeWave 6900.

### WAN

**Interface:** List current available WAN connections.

**Protocol:** Display selected WAN connection protocol

**Connection:** The current connection status.

**IP Address:** WAN port IP address.

**Default Gateway:** The IP address of the default gateway.

### LAN

**IP Address:** LAN port IPv4 address.

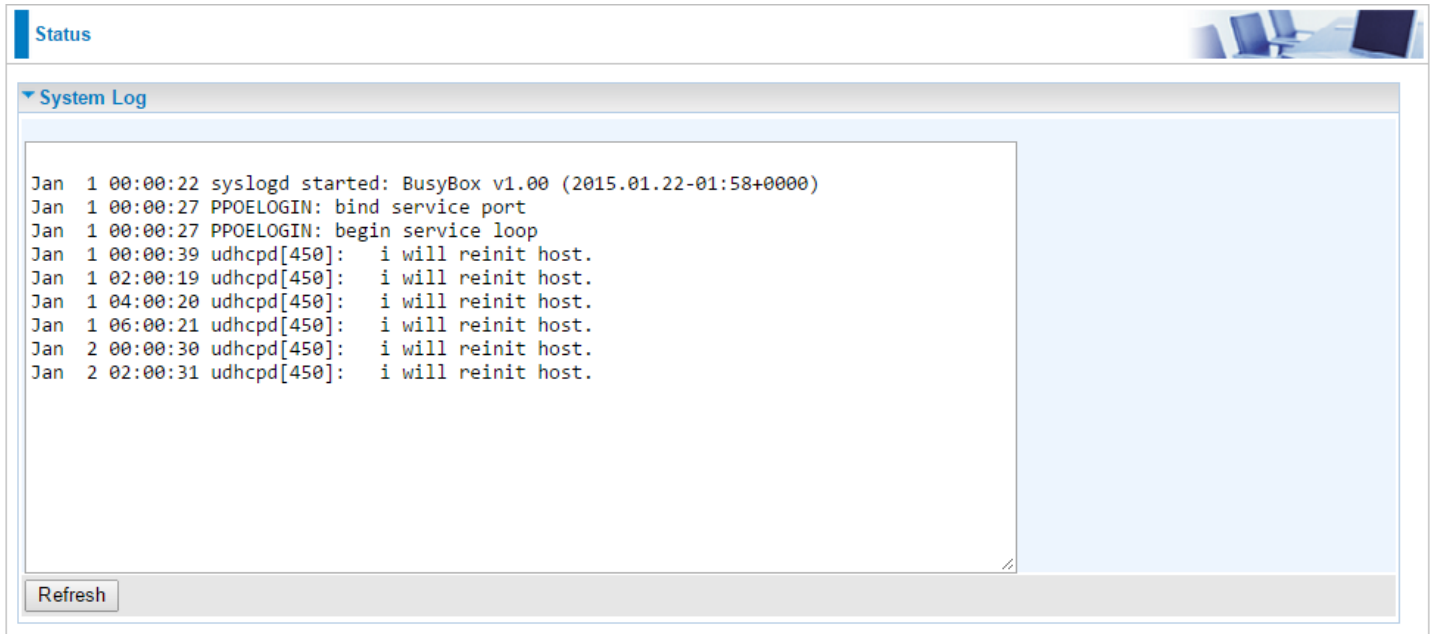
**Subnet Mask/Prefix Length:** Display LAN port IP subnet mask of IPv4 and/or Prefix length of IPv6.

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

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

## System Log

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



The screenshot shows a web interface for the 'Status' page. The 'System Log' section is expanded, displaying a list of log entries. The log entries are as follows:

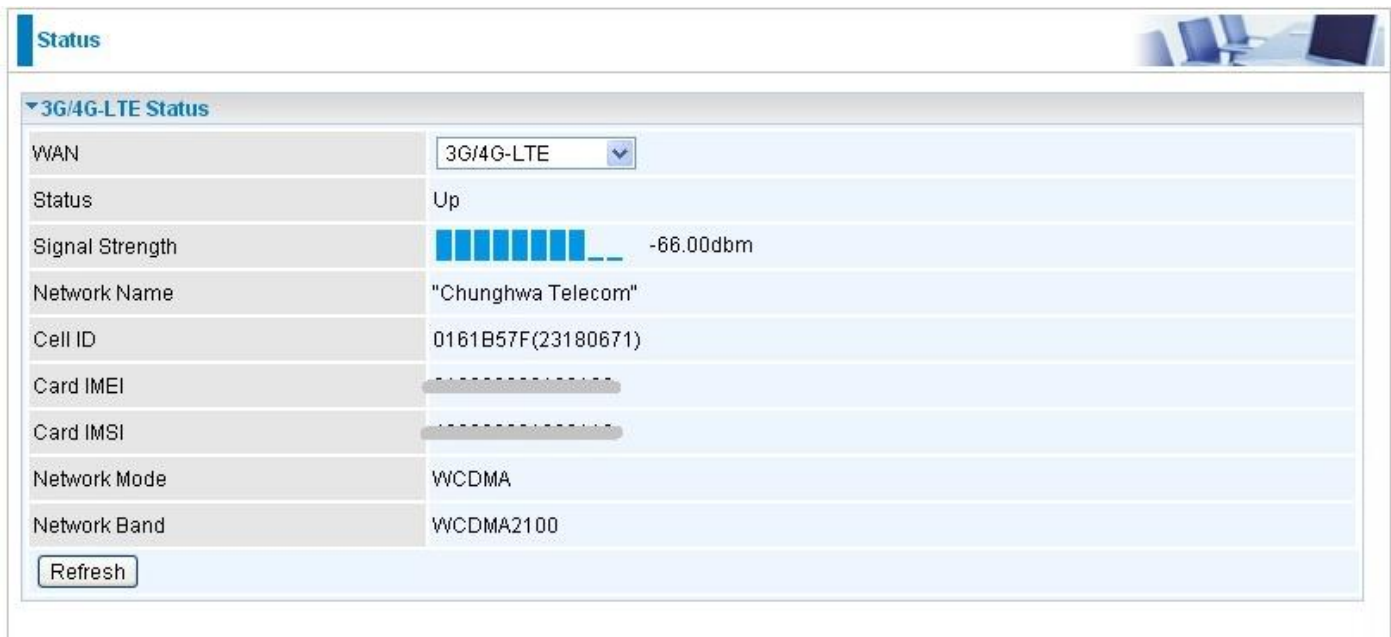
```
Jan 1 00:00:22 syslogd started: BusyBox v1.00 (2015.01.22-01:58+0000)
Jan 1 00:00:27 PPOELOGIN: bind service port
Jan 1 00:00:27 PPOELOGIN: begin service loop
Jan 1 00:00:39 udhcpd[450]: i will reinit host.
Jan 1 02:00:19 udhcpd[450]: i will reinit host.
Jan 1 04:00:20 udhcpd[450]: i will reinit host.
Jan 1 06:00:21 udhcpd[450]: i will reinit host.
Jan 2 00:00:30 udhcpd[450]: i will reinit host.
Jan 2 02:00:31 udhcpd[450]: i will reinit host.
```

At the bottom left of the log area, there is a 'Refresh' button.

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

## 3G/4G-LTE Status

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



The screenshot shows a web interface for 'Status' with a '3G/4G-LTE Status' section. It displays various connection parameters in a table-like format. A 'Refresh' button is located at the bottom of the section.

3G/4G-LTE Status	
WAN	3G/4G-LTE
Status	Up
Signal Strength	<div><div></div></div> -66.00dbm
Network Name	"Chunghwa Telecom"
Cell ID	0161B57F(23180671)
Card IMEI	-----
Card IMSI	-----
Network Mode	WCDMA
Network Band	WCDMA2100

Refresh

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

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

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

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

**NOTE:** Some LTE modules do not provide this information.

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

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

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

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

**Network Mode:** Show the using network mode.

**Network Band:** Show the using network band.

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

# Statistics

## ❖ 3G/4G-LTE

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

Status

Statistics

Traffic Statistics

Interface

☒ 3G/4G-LTE
 ☐ Ethernet

Transmit Statistics

Transmit Frames of Current Connection

0

Transmit Bytes of Current Connection

0

Transmit Total Frames

0

Transmit Total Bytes

0

Receive Statistics

Receive Frames of Current Connection

0

Receive Bytes of Current Connection

0

Receive Total Frames

0

Receive Total Bytes

0

Refresh

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

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

**Transmit Bytes of Current Connection:** This field shows the total bytes transmitted till the latest second for the current connection for the current connection.

**Transmit Total Frames:** The field displays the total number of frames transmitted till the latest second since system is up.

**Transmit Total Bytes:** This field displays the total number of bytes transmitted until the latest second since system is up.

**Receive Frames of Current Connection:** This field displays the number of frames received until the latest second for the current connection.

**Receive Bytes of Current Connection:** This field shows the total bytes received till the latest second for the current connection.

**Receive Total Frames:** This field displays the total number of frames received until the latest second since system is up.

**Receive Total Bytes:** This field displays the total frames received till the latest second since system is up.



## ❖ Ethernet

Status

Statistics

Traffic Statistics

Interface

3G/4G-LTE

Ethernet

Transmit Statistics

Transmit Frames

886

Transmit Multicast Frames

232

Transmit Total Bytes

486510

Transmit Collision

0

Transmit Error Frames

0

Receive Statistics

Receive Frames

623

Receive Multicast Frame

140

Receive Total Bytes

117004

Receive CRC Errors

0

Receive Under-size Frames

0

Refresh

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

**Transmit Frames:** This field displays the number of frames transmitted until the latest second.

**Transmit Multicast Frames:** This field displays the number of multicast frames transmitted until the latest second.

**Transmit Total Bytes:** This field displays the number of bytes transmitted until the latest second.

**Transmit Collision:** This is the number of collisions on this port.

**Transmit Error Frames:** This field displays the number of error packets on this port.

**Receive Frames:** This field displays the number of frames received until the latest second.

**Receive Multicast Frames:** This field displays the number of multicast frames received until the latest second.

**Receive Total Bytes:** This field displays the number of bytes received until the latest second.

**Receive CRC Errors:** This field displays the number of error packets on this port.

**Receive Under-size Frames:** This field displays the number of under-size frames received until the latest second.

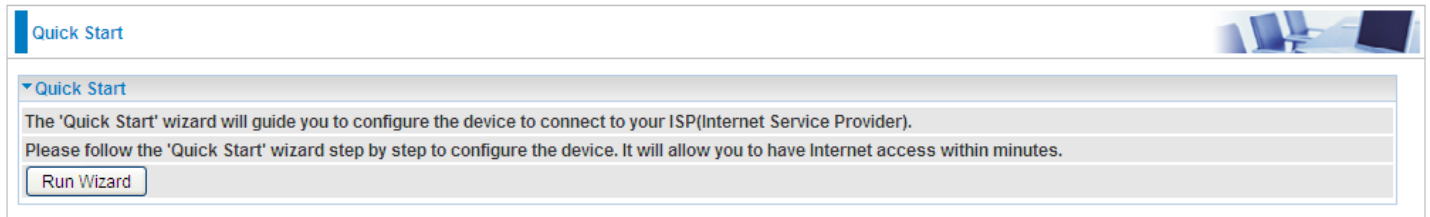
**Refresh:** Press this button to refresh the statistics.

RidgeWave 6900 User Manual



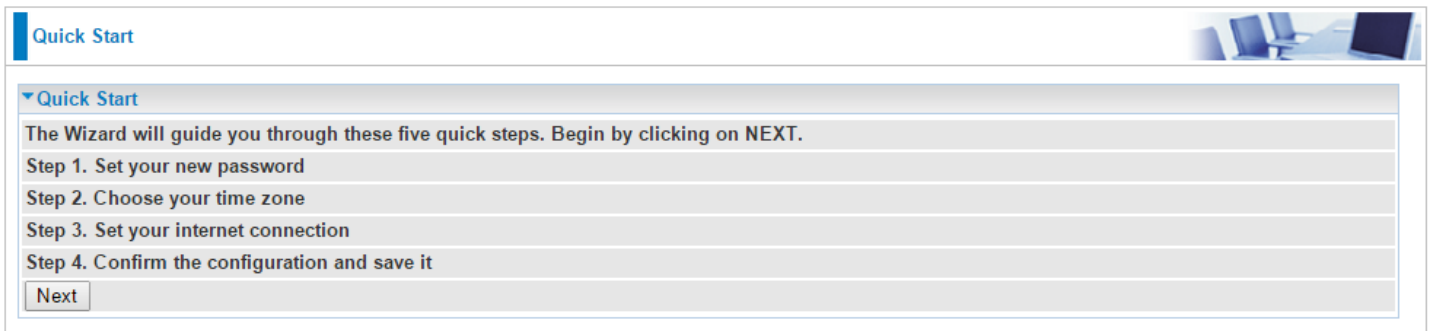
## Quick Start

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



The screenshot shows the 'Quick Start' wizard interface. At the top, there is a header 'Quick Start' with a small icon of a desk and chair. Below the header, there is a section titled 'Quick Start' with a downward arrow. The main content area contains two paragraphs: 'The 'Quick Start' wizard will guide you to configure the device to connect to your ISP(Internet Service Provider).' and 'Please follow the 'Quick Start' wizard step by step to configure the device. It will allow you to have Internet access within minutes.' At the bottom of this section is a button labeled 'Run Wizard'.

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

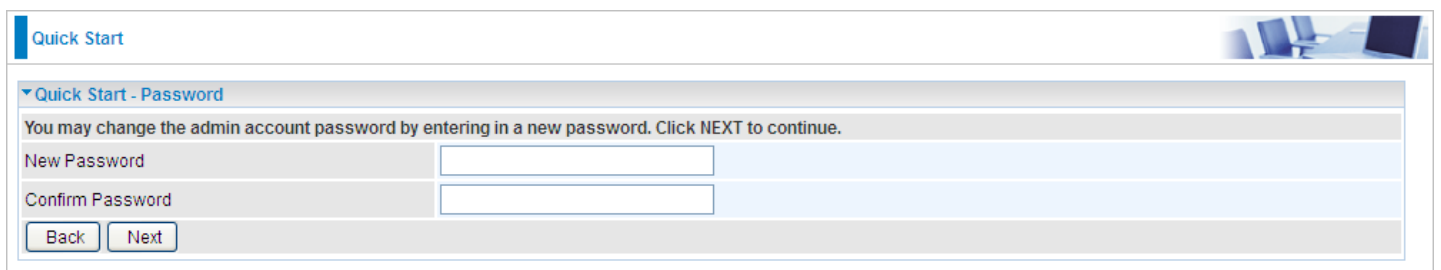


The screenshot shows the 'Quick Start' wizard interface at Step 1. The header 'Quick Start' is at the top. Below it, the section 'Quick Start' has a downward arrow. The main content area contains the text: 'The Wizard will guide you through these five quick steps. Begin by clicking on NEXT.' followed by a list of steps: 'Step 1. Set your new password', 'Step 2. Choose your time zone', 'Step 3. Set your internet connection', and 'Step 4. Confirm the configuration and save it'. At the bottom of this section is a button labeled 'Next'.

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

### Step 1 – Password

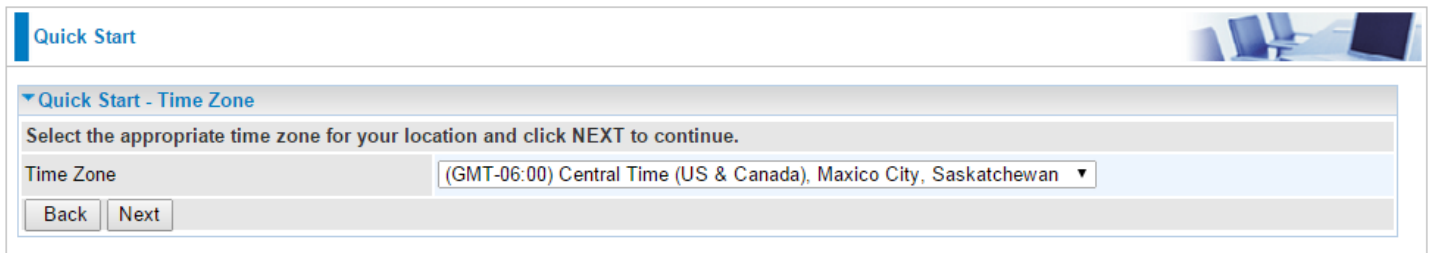
Set new password of the “admin” account to access for router management. The default is “admin”. Once changed, please use this new password next time when accessing to the router. Click **NEXT** to continue.



The screenshot shows the 'Quick Start' wizard interface at Step 1 - Password. The header 'Quick Start' is at the top. Below it, the section 'Quick Start - Password' has a downward arrow. The main content area contains the text: 'You may change the admin account password by entering in a new password. Click NEXT to continue.' Below this text are two input fields: 'New Password' and 'Confirm Password'. At the bottom of this section are two buttons: 'Back' and 'Next'.

### Step 2 – Time Zone

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



Quick Start

▼ Quick Start - Time Zone

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

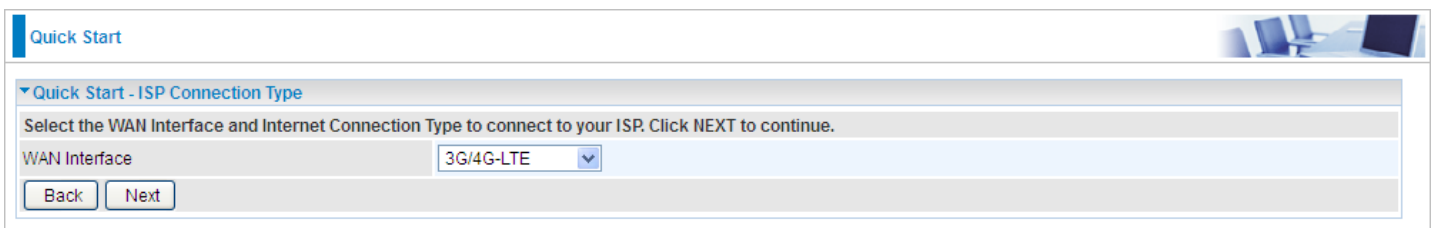
Time Zone (GMT-06:00) Central Time (US & Canada), Mexico City, Saskatchewan ▼

Back Next

### Step 3 – ISP Connection Type

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

3.1 Click **NEXT** to continue.



Quick Start

▼ Quick Start - ISP Connection Type

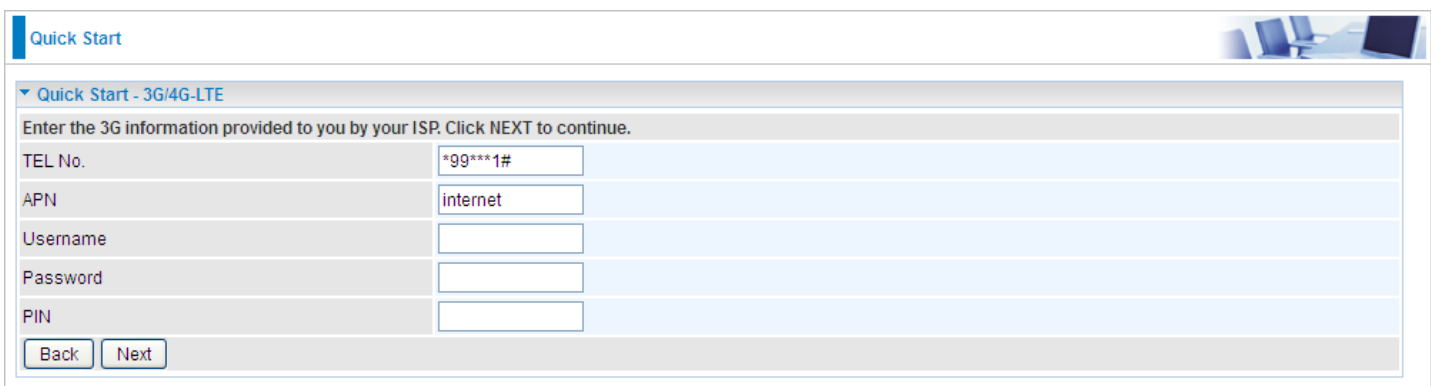
Select the WAN Interface and Internet Connection Type to connect to your ISP. Click NEXT to continue.

WAN Interface 3G/4G-LTE ▼

Back Next

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

3.3 Click **Next** to save changes.



Quick Start

▼ Quick Start - 3G/4G-LTE

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

TEL No. \*99\*\*\*1#

APN internet

Username

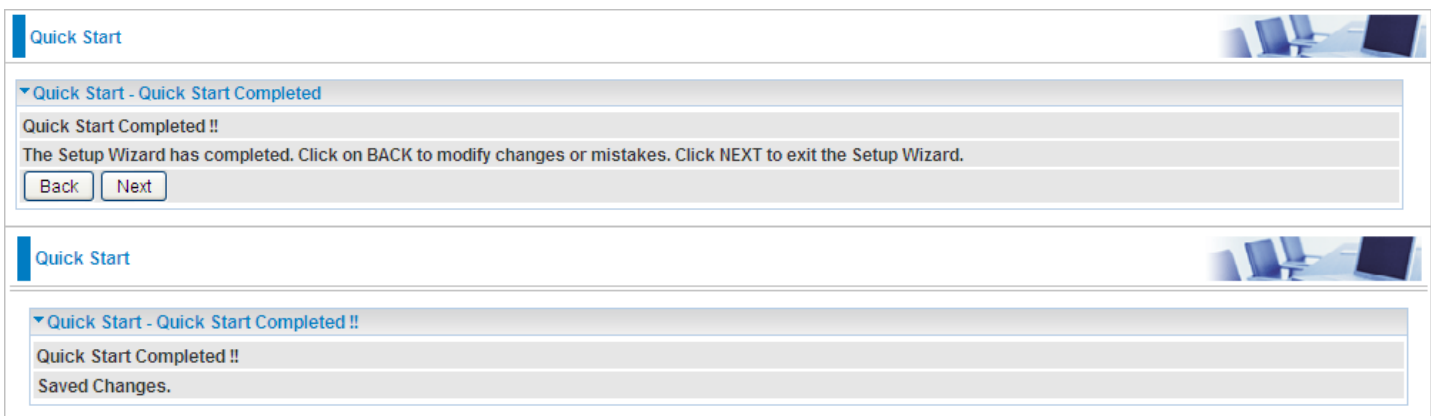
Password

PIN

Back Next

### Step 4 – Quick Start Completed

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



Quick Start

▼ Quick Start - Quick Start Completed

Quick Start Completed !!

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

Back Next

Quick Start

▼ Quick Start - Quick Start Completed !!

Quick Start Completed !!

Saved Changes.

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

## Configuration

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

These functions are described in the following sections.

### Interface Setup

Here are the features under **Interface Setup: Internet** and **LAN**.

The screenshot displays the BEC Technologies LTE Router configuration web interface. The top header shows the BEC Technologies logo and the device name 'LTE Router'. A left sidebar contains a navigation menu with options: Status, Quick Start, Configuration (selected), Interface Setup (expanded), Internet (selected), LAN, Advanced Setup, Access Management, Maintenance, and Language. The main content area is titled 'Configuration' and shows the 'Internet' settings. The settings include: WAN Interface (3G/4G-LTE), Status (Activated), Network Mode (Automatic), TEL No. (\*99\*\*\*1#), Dual APN (Single APN), APN (internet), Username, Password, PIN, Connection (Always On (Recommended)), Keep Alive (Yes), Default Route (Yes), and NAT (Enable). At the bottom right, there are 'Restart' and 'Logout' buttons. The footer contains the copyright notice: 'Copyright @ BEC Technologies Inc. All rights reserved.'

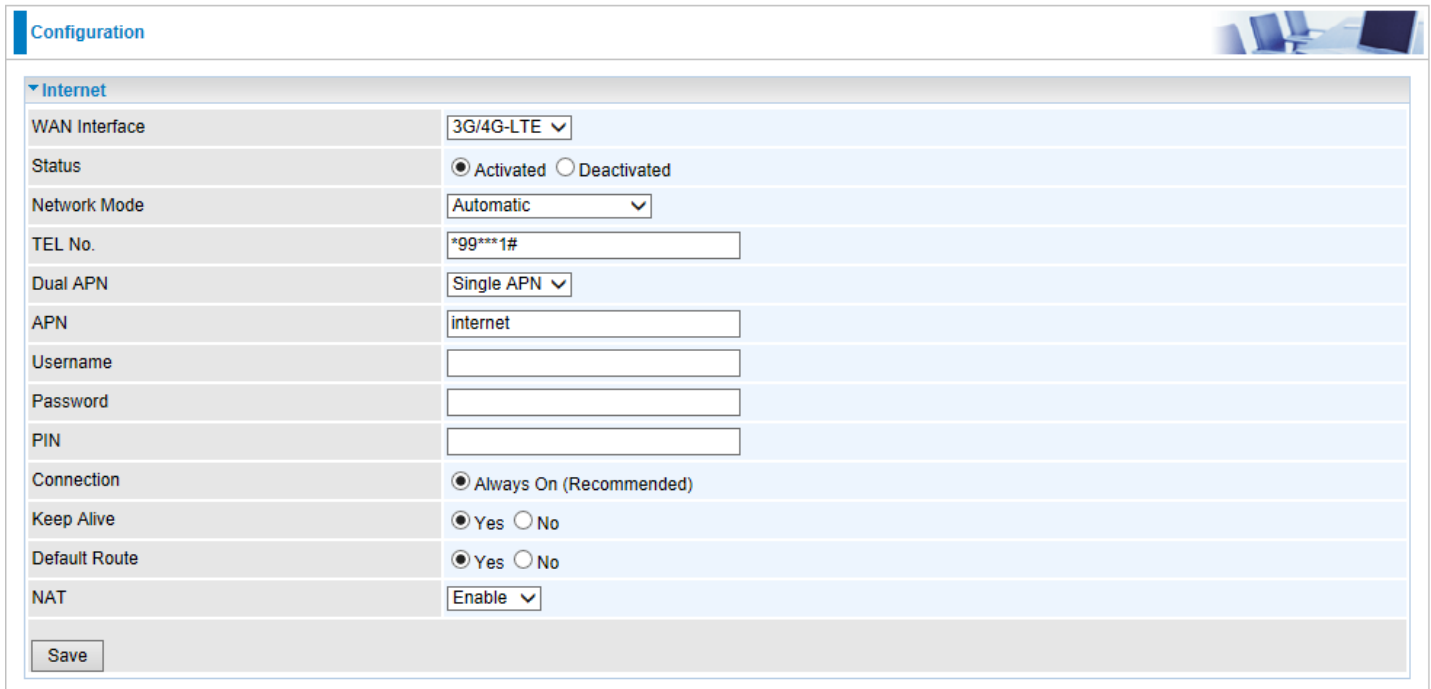
Configuration	
▼ Internet	
WAN Interface	3G/4G-LTE ▼
Status	<input checked="" type="radio"/> Activated <input type="radio"/> Deactivated
Network Mode	Automatic ▼
TEL No.	*99***1#
Dual APN	Single APN ▼
APN	internet
Username	
Password	
PIN	
Connection	<input checked="" type="radio"/> Always On (Recommended)
Keep Alive	<input checked="" type="radio"/> Yes <input type="radio"/> No
Default Route	<input checked="" type="radio"/> Yes <input type="radio"/> No
NAT	Enable ▼

Restart Logout

Copyright @ BEC Technologies Inc. All rights reserved.

## Internet

### ❖ 3G/4G-LTE



Configuration

▼ Internet

WAN Interface	3G/4G-LTE ▼
Status	<input checked="" type="radio"/> Activated <input type="radio"/> Deactivated
Network Mode	Automatic ▼
TEL No.	*99***1#
Dual APN	Single APN ▼
APN	internet
Username	
Password	
PIN	
Connection	<input checked="" type="radio"/> Always On (Recommended)
Keep Alive	<input checked="" type="radio"/> Yes <input type="radio"/> No
Default Route	<input checked="" type="radio"/> Yes <input type="radio"/> No
NAT	Enable ▼

Save

**WAN Interface:** List all available WAN interfaces.

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

**Network Mode:** There are 8 options of service standards: “Automatic”, “UMTS 3G only”, “GSM 2G Only”, “UMTS 3G Preferred”, “GSM 2G Preferred”, “GSM and UMTS Only”, “LTE Only”, “GSM, UMTS, LTE”. If you are not sure which mode to use, you may select **Automatic** to auto detect the best mode for you.

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

**Dual APN:** RidgeWave 6900 can support up to two (2) APNs. Select Single or Dual.

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

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

**PIN:** PIN stands for Personal Identification Number. A PIN code is a numeric value used in certain systems as a password to gain access, and authenticate. In mobile phones a PIN code locks the SIM card until you enter the correct code. If you enter the PIN code incorrectly into the phone 3 times in a row, then the SIM card will be blocked and you will require a PUK code from your network/service provider.

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

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

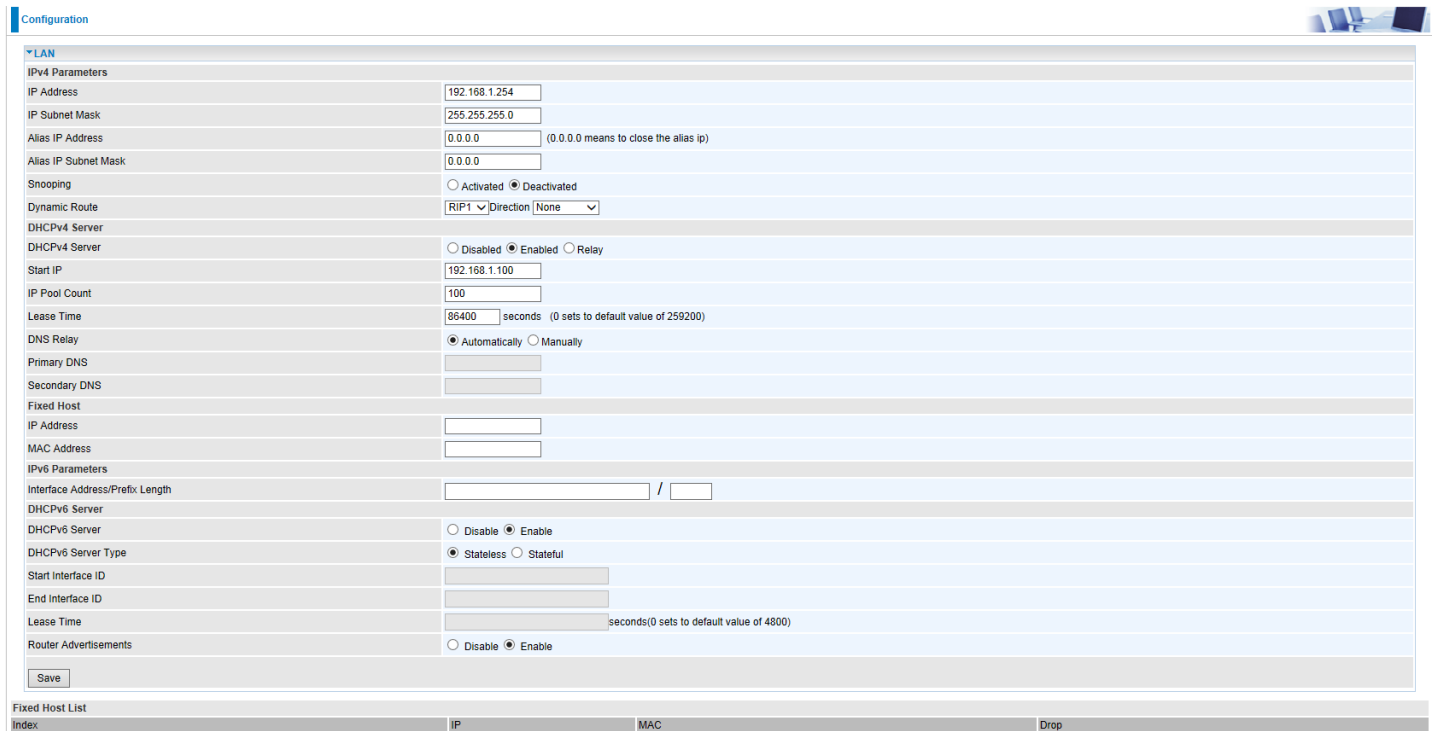
**Default Route:** Select **Yes** to use this interface as default route interface.

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

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

## LAN

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



The screenshot shows a web-based configuration interface for a LAN. The 'Configuration' tab is active. Under the 'LAN' section, there are several expandable categories: IPv4 Parameters, DHCPv4 Server, and IPv6 Parameters. The IPv4 Parameters section is expanded, showing fields for IP Address (192.168.1.254), IP Subnet Mask (255.255.255.0), Alias IP Address (0.0.0.0), and Alias IP Subnet Mask (0.0.0.0). There are also radio buttons for Snooping (Activated/Deactivated) and Dynamic Route (RIP1/Direction/None). The DHCPv4 Server section is also expanded, showing fields for Start IP (192.168.1.100), IP Pool Count (100), Lease Time (86400 seconds), DNS Relay (Automatically/Manually), Primary DNS, Secondary DNS, Fixed Host IP Address, and MAC Address. The IPv6 Parameters section is partially expanded, showing fields for Interface Address/Prefix Length, DHCPv6 Server (Disable/Enable), DHCPv6 Server Type (Stateless/Stateful), Start Interface ID, End Interface ID, Lease Time, and Router Advertisements. A 'Save' button is at the bottom left. Below the configuration fields is a 'Fixed Host List' table with columns for Index, IP, MAC, and Drop.

### IPv4 Parameters

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

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

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

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

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

**Dynamic Route:** Select the RIP version from RIP1 or RIP2.

### DHCPv4 Server

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



DHCPv4 Server	
DHCPv4 Server	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled <input type="radio"/> Relay
Start IP	<input type="text" value="192.168.1.100"/>
IP Pool Count	<input type="text" value="100"/>
Lease Time	<input type="text" value="86400"/> seconds (0 sets to default value of 259200)
DNS Relay	<input checked="" type="radio"/> Automatically <input type="radio"/> Manually
Primary DNS	<input type="text"/>
Secondary DNS	<input type="text"/>

**DHCPv4 Server:** If set to **Enabled**, your RidgeWave 6900 can assign IP addresses, default gateway and DNS servers to the DHCP client.

- ▶ If set to **Disabled**, the DHCP server will be disabled.
- ▶ If set to **Relay**, the RIDGEWAVE RidgeWave 6900 acts as a surrogate DHCP server and relays DHCP requests and responses between the remote server and the clients. Enter the IP address of the actual, remote DHCP server in the Remote DHCP Server field in this case.
- ▶ When DHCP is used, the following items need to be set.

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

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

**Lease Time:** The current lease time of client.

**DNS Relay** Select **Automatically** obtained or **Manually** set. if select **Manually**, please specific DNS IP addresses information.

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

### Fixed Host


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

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

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

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

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

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

### IPv6 parameters

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

IPv6 Parameters	
Interface Address/Prefix Length	<input type="text"/> / <input type="text"/>
MLD Snooping	<input type="radio"/> Activated <input checked="" type="radio"/> Deactivated
DHCPv6 Server	
DHCPv6 Server	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
DHCPv6 Server Type	<input checked="" type="radio"/> Stateless <input type="radio"/> Stateful
Start Interface ID	<input type="text"/>
End Interface ID	<input type="text"/>
Lease Time	<input type="text"/> seconds(0 sets to default value of 4800)
Router Advertisements	<input type="radio"/> Disable <input checked="" type="radio"/> Enable

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

### DHCPv6 Server

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

**Stateless auto-configuration** requires no manual configuration of hosts, minimal (if any) configuration of routers, and no additional servers. The stateless mechanism allows a host to generate its own addresses using a combination of locally available information (MAC address) and information (prefix) advertised by routers. Routers advertise prefixes that identify the subnet(s) associated with a link, while hosts generate an "interface identifier" that uniquely identifies an interface on a subnet. An address is formed by combining the two. When using stateless configuration, you needn't configure anything on the client.

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

**DHCPv6 Server:** Check whether to enable DHCPv6 server.

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

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

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

**End interface ID:** enter the end interface ID.

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

**Router Advertisement:** Check to Enable or Disable the Issue Router Advertisement feature. This feature is to send Router Advertisement messages periodically which would multicast the IPv6 Prefix

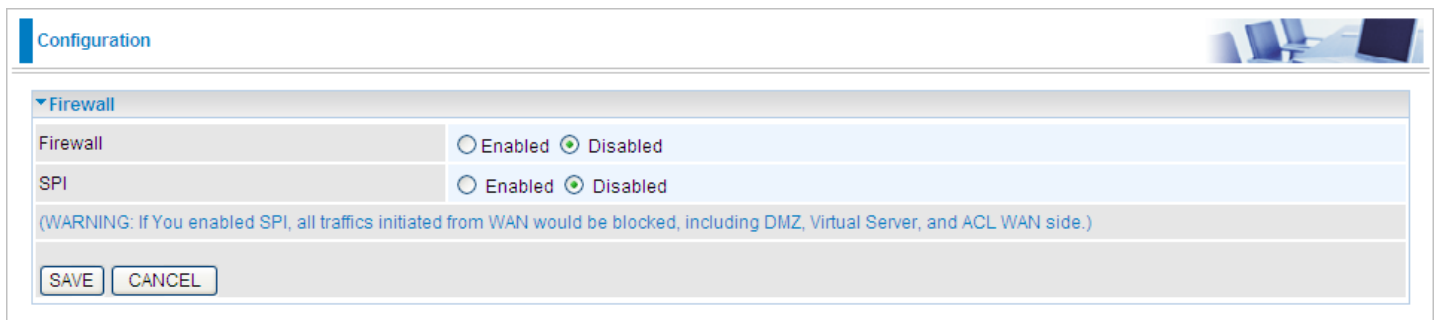
information (similar to v4 network number 192.168.1.0) to all LAN devices if the field is enabled. We suggest enabling this field.

## Advanced Setup

Advanced Setup provides advanced features including **Firewall**, **Routing**, **NAT**, **Static DNS**, **Time Schedule**, and **Remote System Log** for advanced users.

### Firewall

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



Configuration

▼ Firewall

Firewall	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled
SPI	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled

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

SAVE CANCEL

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

- ▶ **Enabled:** It activates your firewall function.
- ▶ **Disabled:** It disables the firewall function.

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

- ▶ **Enabled:** It activates your SPI function.
- ▶ **Disabled:** It disables the SPI function.

## Routing

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

Configuration							
▼ Routing Table							
#	Destination IP Address	Subnet Mask	Gateway IP Address	Metric	Interface	Edit	Drop
0	192.168.1.0	255.255.255.0	0.0.0.0	0	br0		
1	172.16.1.0	255.255.255.0	0.0.0.0	0	nas10_0		
2	127.0.0.0	255.255.0.0	0.0.0.0	0	lo		
3	239.0.0.0	255.0.0.0	0.0.0.0	0	br0		
4	239.0.0.0	255.0.0.0	0.0.0.0	0	eth0		
5	0.0.0.0	0.0.0.0	172.16.1.254	0	nas10_0		
Add Route							

**#:** Item number

**Destination IP Address:** IP address of the destination network

**Subnet Mask:** The subnet mask of destination network.

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

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

**Interface:** Media/channel selected to append the route.

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

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

## Add Route

Configuration	
▼ Static Route	
Destination IP Address	<input type="text" value="0.0.0.0"/>
Destination Subnet Mask	<input type="text" value="0.0.0.0"/>
Gateway IP Address / Interface	<input type="radio"/> <input type="text" value="0.0.0.0"/> <input checked="" type="radio"/> <input type="text" value="EWMAN_0"/>
Metric	<input type="text" value="1"/>
<input type="button" value="Save"/> <input type="button" value="Back"/>	

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

**Destination Subnet Mask:** The subnet mask of destination network.

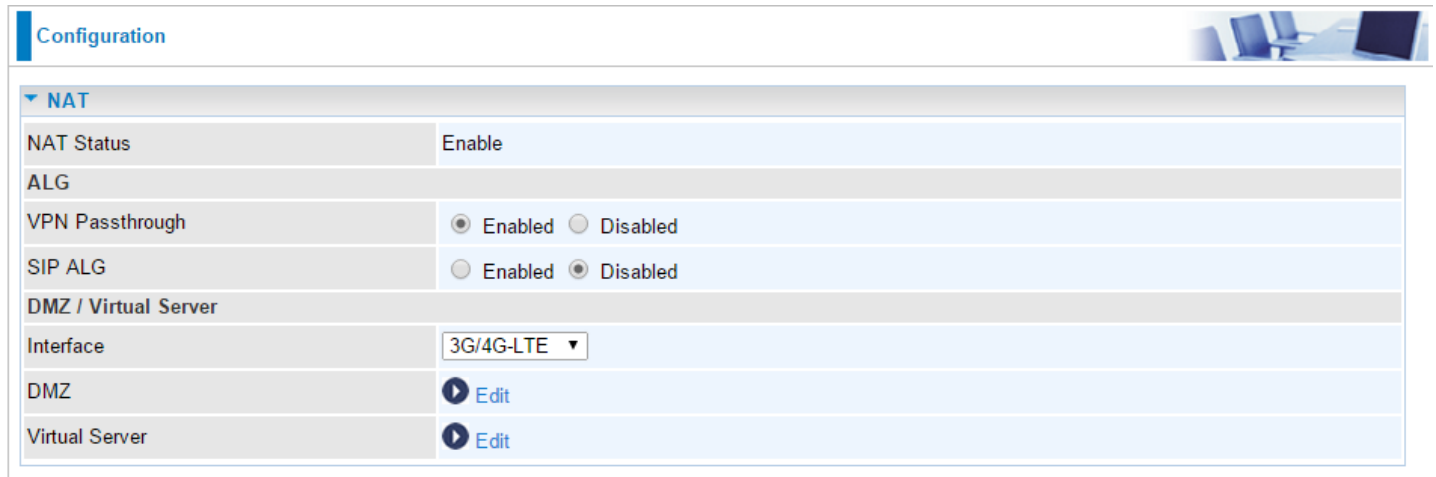
**Gateway IP Address/Interface:** This is the gateway IP address or existing interface to which packets are to be forwarded.

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

## NAT

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

In this session, there are “VPN Passthrough”, “SIP ALG”, “DMZ” and “Virtual Server” provided to solve these nasty problems.



Configuration	
▼ NAT	
NAT Status	Enable
ALG	
VPN Passthrough	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled
SIP ALG	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled
DMZ / Virtual Server	
Interface	3G/4G-LTE ▼
DMZ	<a href="#">Edit</a>
Virtual Server	<a href="#">Edit</a>

**NAT Status:** Enabled. It depends on ISP Connection Type in Internet settings.

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

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

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

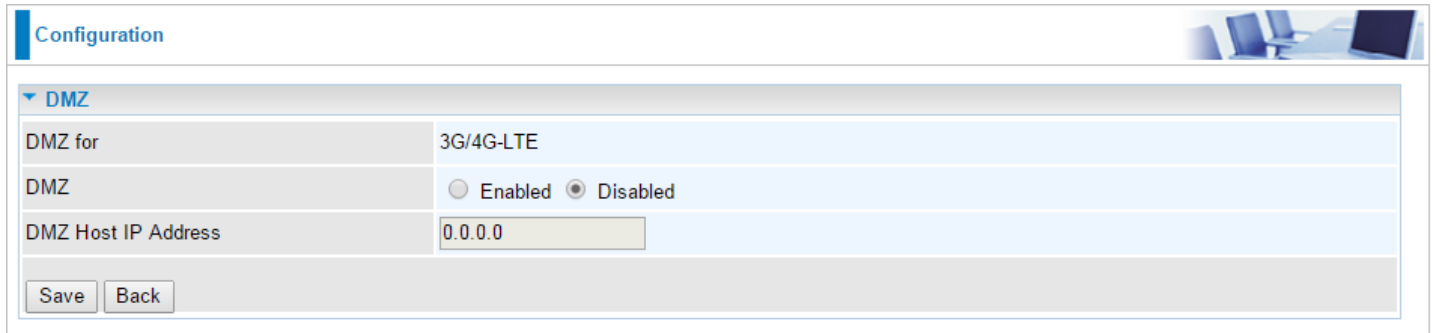
**Service Index:** Associated to EWAN interface marking each EWAN service (0-7), to select which EWAN service the DMZ and Virtual server are applied to.

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

**DMZ**

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

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



Configuration	
DMZ	
DMZ for	3G/4G-LTE
DMZ	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled
DMZ Host IP Address	0.0.0.0
<input type="button" value="Save"/> <input type="button" value="Back"/>	

**DMZ for (3G/4G-LTE WAN Interface):** Allows outside network to connect in and communicate with internal LAN devices.

**DMZ:**

- ▶ **Enabled:** It activates your DMZ function.
- ▶ **Disabled:** It disables the DMZ function.

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

Select the **Save** button to apply your changes.

**Virtual Server**

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

In TCP/IP networks, a port is a 16-bit number used to identify which application program (usually a server) incoming connections should be delivered to. Some ports have numbers that are pre-assigned to them by the IANA (the Internet Assigned Numbers Authority), and these are referred to as “well-known ports”. Servers follow the well-known port assignments so clients can locate them.

If you wish to run a server on your network that can be accessed from the WAN (i.e. from other machines on the Internet that are outside your local network), or any application that can accept incoming connections (e.g. Peer-to-peer/P2P software such as instant messaging applications and P2P file-sharing applications) and are using NAT (Network Address Translation), then you will usually need to configure your router to forward these incoming connection attempts using specific ports to the PC on your network running the application. You will also need to use port forwarding if you want to host an online game server.

The reason for this is that when using NAT, your publicly accessible IP address will be used by and point to your router, which then needs to deliver all traffic to the private IP addresses used by your PCs. Please see the **WAN** configuration section of this manual for more information on NAT.

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

Configuration

Virtual Server

Virtual Server for

3G/4G-LTE

Protocol

TCP

Start Port Number

End Port Number

Local IP Address

Start Port Number (Local)

End Port Number(Local)

Save

Back

Virtual Server Listing

Rule	Protocol	Start Port	End port	Local IP Address	Start Port Local	End Port Local	Edit	Drop
0	N/A	N/A	N/A	N/A	N/A	N/A		
1	N/A	N/A	N/A	N/A	N/A	N/A		
2	N/A	N/A	N/A	N/A	N/A	N/A		
3	N/A	N/A	N/A	N/A	N/A	N/A		
4	N/A	N/A	N/A	N/A	N/A	N/A		
5	N/A	N/A	N/A	N/A	N/A	N/A		
6	N/A	N/A	N/A	N/A	N/A	N/A		
7	N/A	N/A	N/A	N/A	N/A	N/A		
8	N/A	N/A	N/A	N/A	N/A	N/A		
9	N/A	N/A	N/A	N/A	N/A	N/A		

**Virtual Server for:** 3G/4G-LTE WAN interface allows outside network to connect in and communicate with internal LAN devices.

**Protocol:** Choose the application protocol.

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

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

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



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

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

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

#### Well-known and Registered Ports

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



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



#### Attention

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

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

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

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

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

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

FTP server uses TCP protocol with port 21.

Enter "21" to Start and End Port Number. The RidgeWave 6900 will accept port 21 requests from WAN side.

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

Enter "21" to Local Start and End Port number. The RidgeWave 6900 will forward port 21 request from WAN to the specific LAN PC (ex:192.168.1.102) in the network.

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

Configuration

Virtual Server

Virtual Server for

Multiple IPs Account/ EWAN

Protocol

TCP

Start Port Number

21

End Port Number

21

Local IP Address

192.168.1.102

Start Port Number (Local)

21

End Port Number(Local)

21

Save

Back

Virtual Server Listing

Rule	Protocol	Start Port	End port	Local IP Address	Start Port Local	End Port Local	Edit	Drop
0	TCP	21	21	192.168.1.102	21	21		
1	N/A	N/A	N/A	N/A	N/A	N/A		
2	N/A	N/A	N/A	N/A	N/A	N/A		
3	N/A	N/A	N/A	N/A	N/A	N/A		
4	N/A	N/A	N/A	N/A	N/A	N/A		
5	N/A	N/A	N/A	N/A	N/A	N/A		
6	N/A	N/A	N/A	N/A	N/A	N/A		
7	N/A	N/A	N/A	N/A	N/A	N/A		
8	N/A	N/A	N/A	N/A	N/A	N/A		
9	N/A	N/A	N/A	N/A	N/A	N/A		

## Static DNS

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

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

Static DNS is a concept relative to Dynamic DNS, in static DNS system, the IP mapped is static without change.

Configuration

Static DNS

IP Address

Domain Name

Save

Static DNS Listing

Index	IP Address	Domain Name	Edit	Delete
-------	------------	-------------	------	--------

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

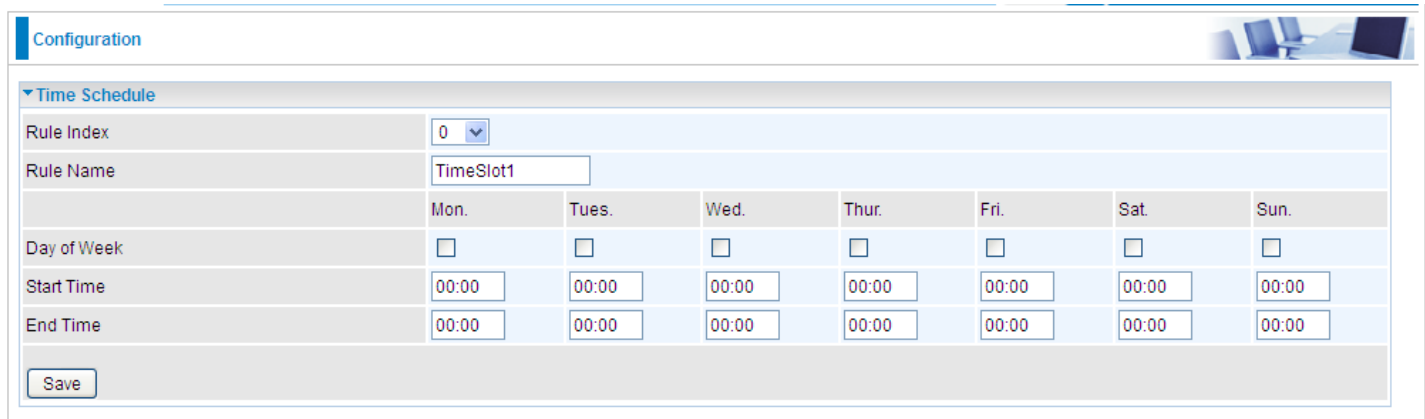
**Domain Name:** The friendly domain name for the IP address.

Press **Save** button to apply your settings.

## Time Schedule

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

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



Configuration

Time Schedule

Rule Index: 0

Rule Name: TimeSlot1

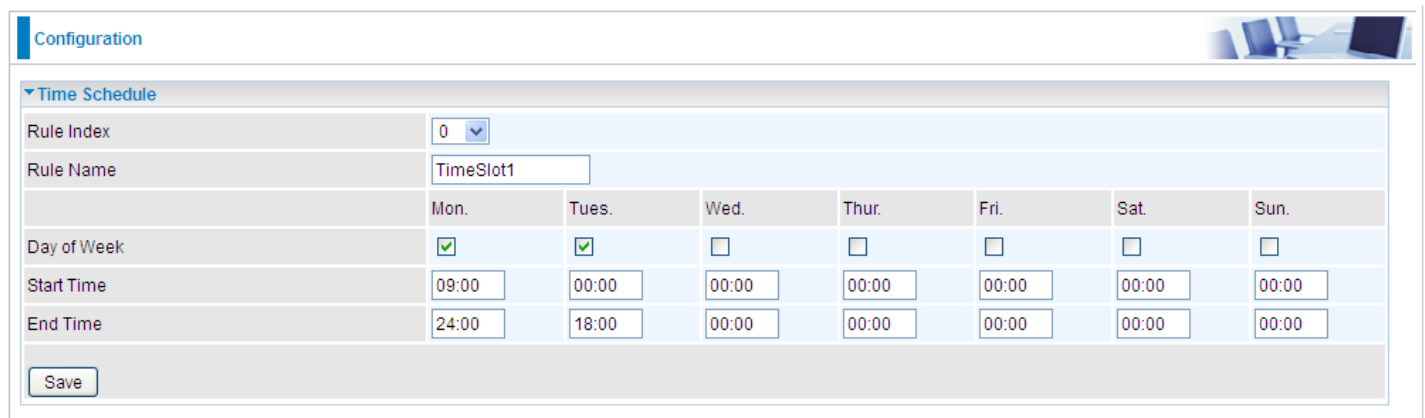
	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	Sun.
Day of Week	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Start Time	00:00	00:00	00:00	00:00	00:00	00:00	00:00
End Time	00:00	00:00	00:00	00:00	00:00	00:00	00:00

Save

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

**Name:** User-defined identification for each time period.

**Day of Week:** Mon. to Sun. Specify the time interval for each timeslot from "Day of Week". For example, user can add a timeslot named "TimeSlot1" which features a period from 9:00 of Monday to 18:00 of Tuesday.



Configuration

Time Schedule

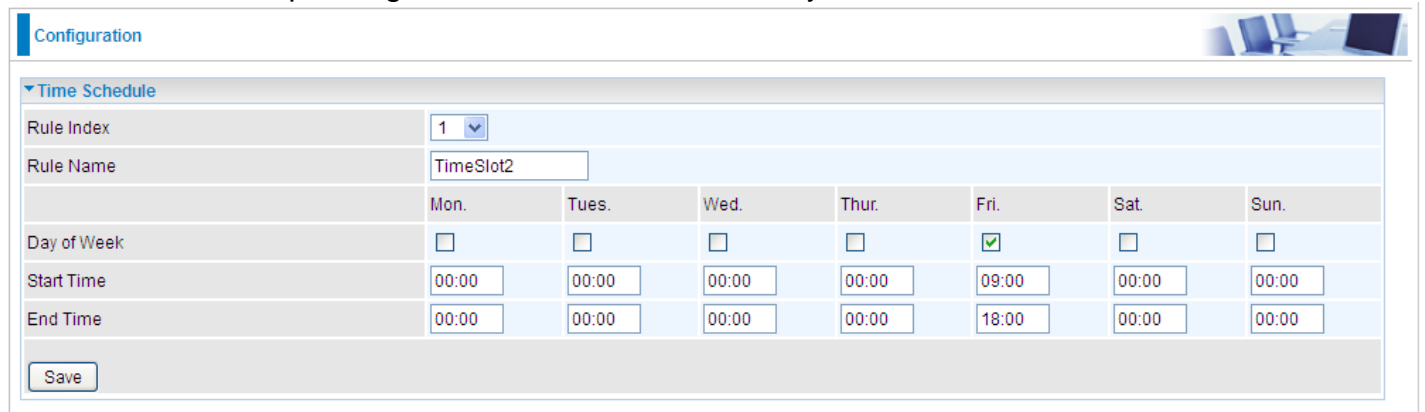
Rule Index: 0

Rule Name: TimeSlot1

	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	Sun.
Day of Week	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Start Time	09:00	00:00	00:00	00:00	00:00	00:00	00:00
End Time	24:00	18:00	00:00	00:00	00:00	00:00	00:00

Save

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



Configuration

Time Schedule

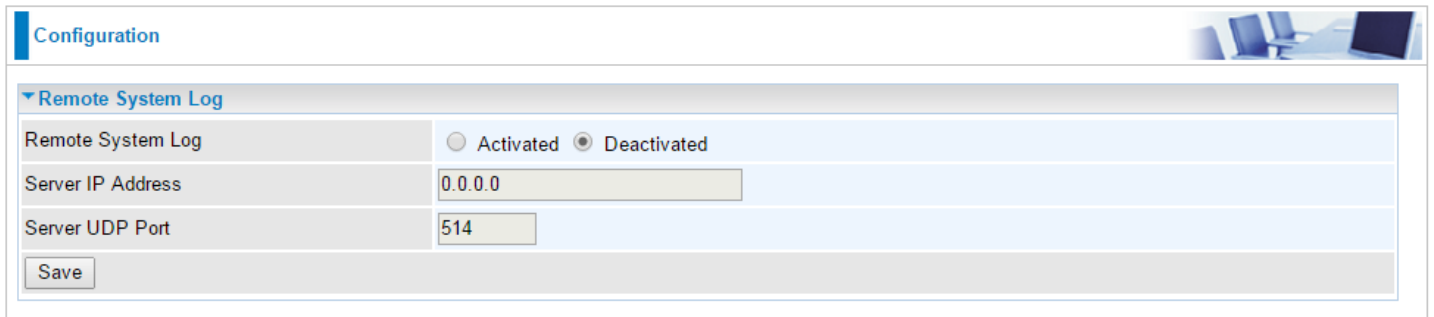
Rule Index: 1

Rule Name: TimeSlot2

	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	Sun.
Day of Week	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Start Time	00:00	00:00	00:00	00:00	09:00	00:00	00:00
End Time	00:00	00:00	00:00	00:00	18:00	00:00	00:00

Save

## Remote System Log



The screenshot shows a web-based configuration interface. At the top, there is a 'Configuration' tab. Below it, the 'Remote System Log' section is expanded, showing three fields: 'Remote System Log' with radio buttons for 'Activated' and 'Deactivated' (the latter is selected), 'Server IP Address' with a text box containing '0.0.0.0', and 'Server UDP Port' with a text box containing '514'. A 'Save' button is located at the bottom of the section.

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

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

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

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

Press **Save** button to apply your settings

## Access Management

Access Management provides advanced users / administrators to grant accessibilities to authorized users or service systems. Features including **Device Management**, **SNMP**, **Universal Plug & Play**, **Dynamic DNS**, **Access Control**, **Packet Filter**, **CWMP(TR-069)**, and **Parental Control**.

## Device Management

Device management offers users a way to change the embedded web server accessing port, default 80. User can change the http port to 8080 or something else here.

Configuration

Device Management

Embedded Web Server

HTTP Port

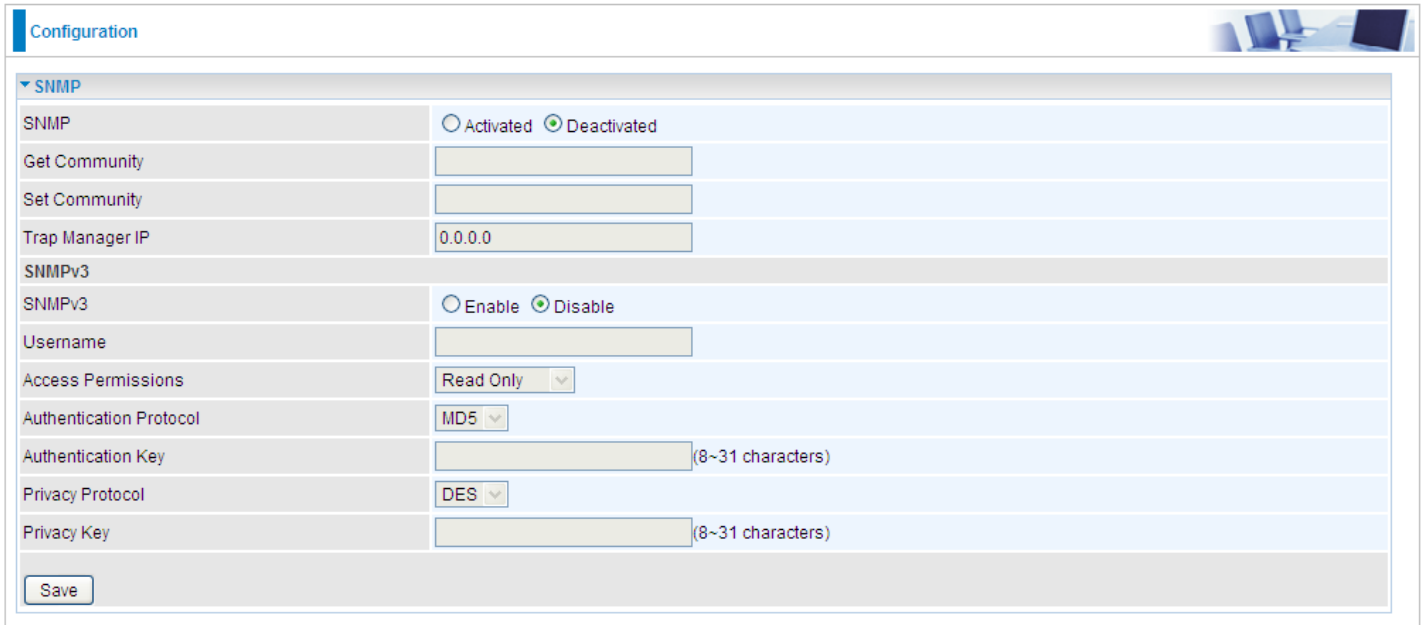
80

(The HTTP portnumber is 80.)

Save

## SNMP

Simple Network Management Protocol (SNMP) is a protocol used for exchanging management information between network devices. SNMP is a member of the TCP/IP protocol suite. The RidgeWave 6900 serves as a SNMP agent that allows a manager station to manage and monitor the router through the network.



The image shows a web-based configuration interface for SNMP. It has a 'Configuration' tab at the top left. The main section is titled 'SNMP' and contains several fields and options. The 'SNMP' section has radio buttons for 'Activated' and 'Deactivated', with 'Deactivated' selected. Below this are text boxes for 'Get Community', 'Set Community', and 'Trap Manager IP' (which contains '0.0.0.0'). The 'SNMPv3' section has radio buttons for 'Enable' and 'Disable', with 'Disable' selected. Below this are text boxes for 'Username', 'Access Permissions' (a dropdown menu showing 'Read Only'), 'Authentication Protocol' (a dropdown menu showing 'MD5'), 'Authentication Key' (with a note '(8~31 characters)'), 'Privacy Protocol' (a dropdown menu showing 'DES'), and 'Privacy Key' (with a note '(8~31 characters)'). At the bottom left of the form is a 'Save' button.

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

**SNMP:** Select to enable SNMP feature.

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

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

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

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

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

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

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

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

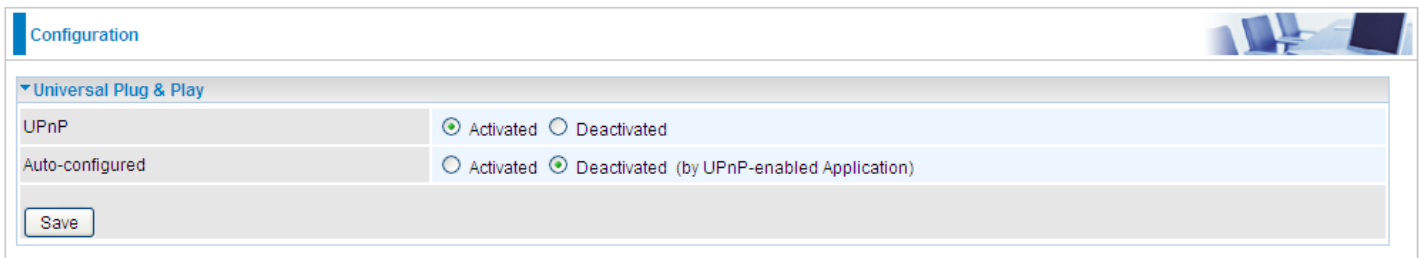
**Privacy Protocol:** Select the privacy mode, DES and AES.

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

## Universal Plug & Play

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

Both the user's Operating System and the relevant application must support UPnP in addition to the router. Windows XP and Windows ME natively support UPnP (when the component is installed), and Windows 98 users may install the Internet Connection Sharing client from Windows XP in order to support UPnP. Windows 2000 does not support UPnP.

The screenshot shows a web-based configuration interface for a device. At the top, there is a 'Configuration' tab. Below it, a section titled 'Universal Plug & Play' is expanded. This section contains two rows of configuration options. The first row is for 'UPnP', with a radio button selected for 'Activated' and 'Deactivated' as an option. The second row is for 'Auto-configured', with a radio button selected for 'Deactivated (by UPnP-enabled Application)' and 'Activated' as an option. At the bottom of this section is a 'Save' button.

**UPnP:** Select this checkbox to activate UPnP. Be aware that anyone could use a UPnP application to open the web configuration's login screen without entering the RidgeWave 6900's IP address

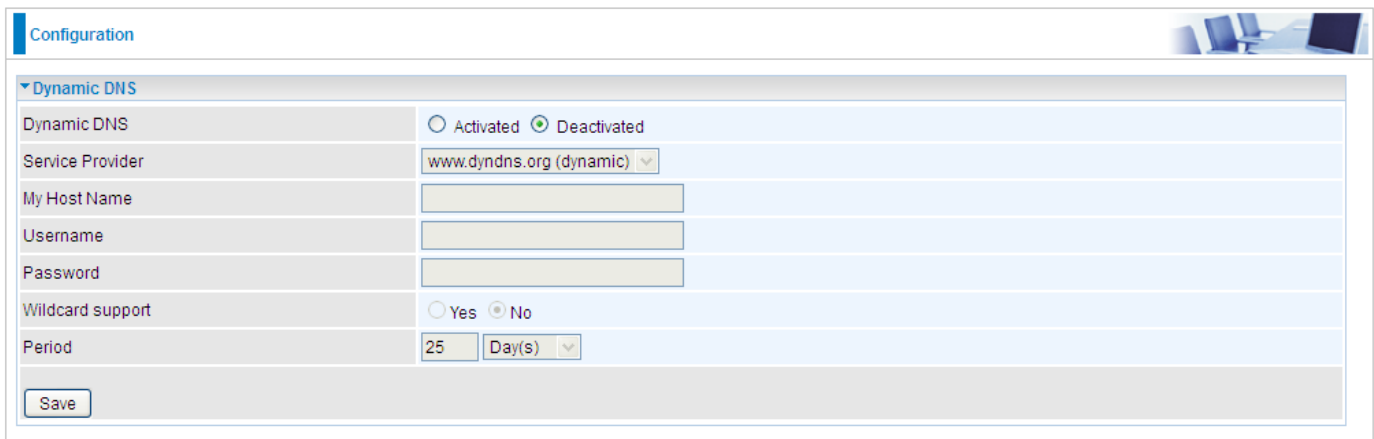
**Auto-configured:** Select this check box to allow UPnP-enabled applications to automatically configure the RidgeWave 6900 so that they can communicate through the RidgeWave 6900, for example by using NAT traversal, UPnP applications automatically reserve a NAT forwarding port in order to communicate with another UPnP enabled device; this eliminates the need to manually configure port forwarding for the UPnP enabled application.



## Dynamic DNS

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

Here users can register different WAN interfaces with different DNS(es). But note that first users have to go to the Dynamic DNS registration service provider to register an account.



The screenshot shows a web interface for configuring Dynamic DNS. At the top, there is a 'Configuration' tab. Below it, a section titled 'Dynamic DNS' contains several fields: 'Dynamic DNS' with radio buttons for 'Activated' and 'Deactivated' (the latter is selected); 'Service Provider' with a dropdown menu showing 'www.dyndns.org (dynamic)'; 'My Host Name' with a text input field; 'Username' with a text input field; 'Password' with a text input field; 'Wildcard support' with radio buttons for 'Yes' and 'No' (the latter is selected); and 'Period' with a text input field showing '25' and a dropdown menu for 'Day(s)'. A 'Save' button is located at the bottom left of the configuration area.

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

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

**My Host Name:** Type the domain name assigned to your RidgeWave 6900 by your Dynamic DNS provider.

**Username:** Type your user name.

**Password:** Type the password.

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

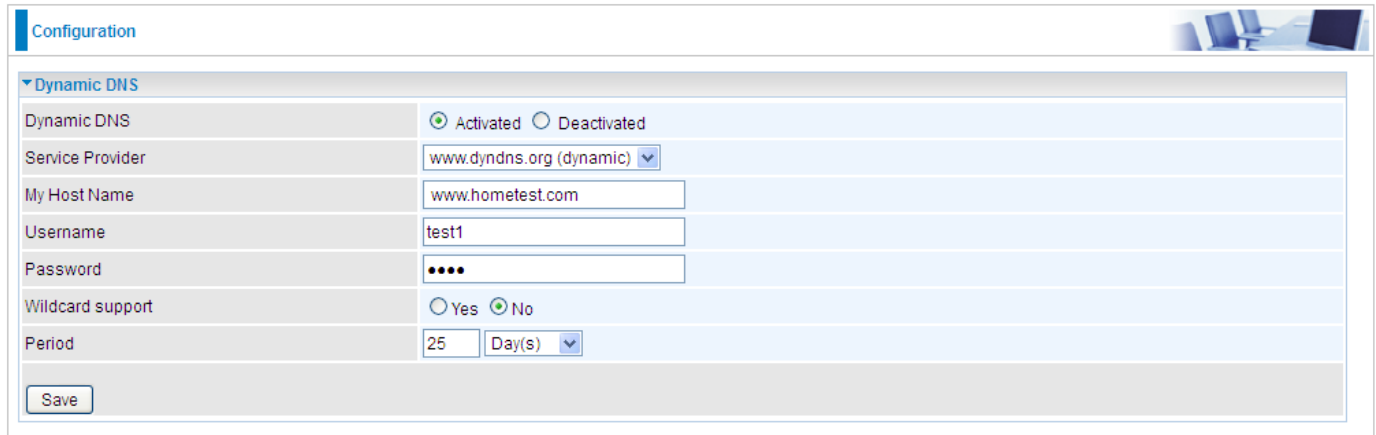
**Period:** Set the time period between updates, for the Router to exchange information with the DDNS server. In addition to updating periodically as per your settings, the router will perform an update when your dynamic IP address changes.

## Example: How to register a DDNS account

**Note** first users have to go to the Dynamic DNS registration service provider to register an account.

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

DDNS: [www.hometest.com](http://www.hometest.com) using username/password test/test

The image shows a web-based configuration interface for Dynamic DNS. At the top, there is a 'Configuration' tab. Below it, a section titled 'Dynamic DNS' is expanded. This section contains several fields: 'Dynamic DNS' with radio buttons for 'Activated' (selected) and 'Deactivated'; 'Service Provider' with a dropdown menu showing 'www.dyndns.org (dynamic)'; 'My Host Name' with a text box containing 'www.hometest.com'; 'Username' with a text box containing 'test1'; 'Password' with a masked text box showing four dots; 'Wildcard support' with radio buttons for 'Yes' and 'No' (selected); and 'Period' with a text box containing '25' and a dropdown menu for 'Day(s)'. A 'Save' button is located at the bottom left of the configuration area.

Dynamic DNS	
Dynamic DNS	<input checked="" type="radio"/> Activated <input type="radio"/> Deactivated
Service Provider	www.dyndns.org (dynamic) ▼
My Host Name	www.hometest.com
Username	test1
Password	••••
Wildcard support	<input type="radio"/> Yes <input checked="" type="radio"/> No
Period	25 Day(s) ▼
<input type="button" value="Save"/>	

Access Control

Access Control Listing allows you to determine which services/protocols can access the RidgeWave 6900 interface from which computers. It is a management tool aimed to allow IPs (set in secure IP address) to access specified embedded applications (Web, etc, user can set) through some specified interface (LAN, WAN or both). User can have an elaborate understanding in the examples below.

The maximum number of entries is 16.

Configuration

Access Control

Access Control

Activated

Deactivated

Access Control Editing

Rule Index

1

Active

Yes

No

Secure IP Address

0.0.0.0

~

0.0.0.0

(0.0.0.0 ~ 0.0.0.0 means all IPs)

Application

ALL

Interface

LAN

Save

Delete

Access Control Listing

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

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

**Rule Index:** This is item number

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

**Secure IP Address:** The default 0.0.0.0 allows any client to use this service to manage the RidgeWave 6900. Type an IP address range to restrict access to the client(s) without a matching IP address.

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

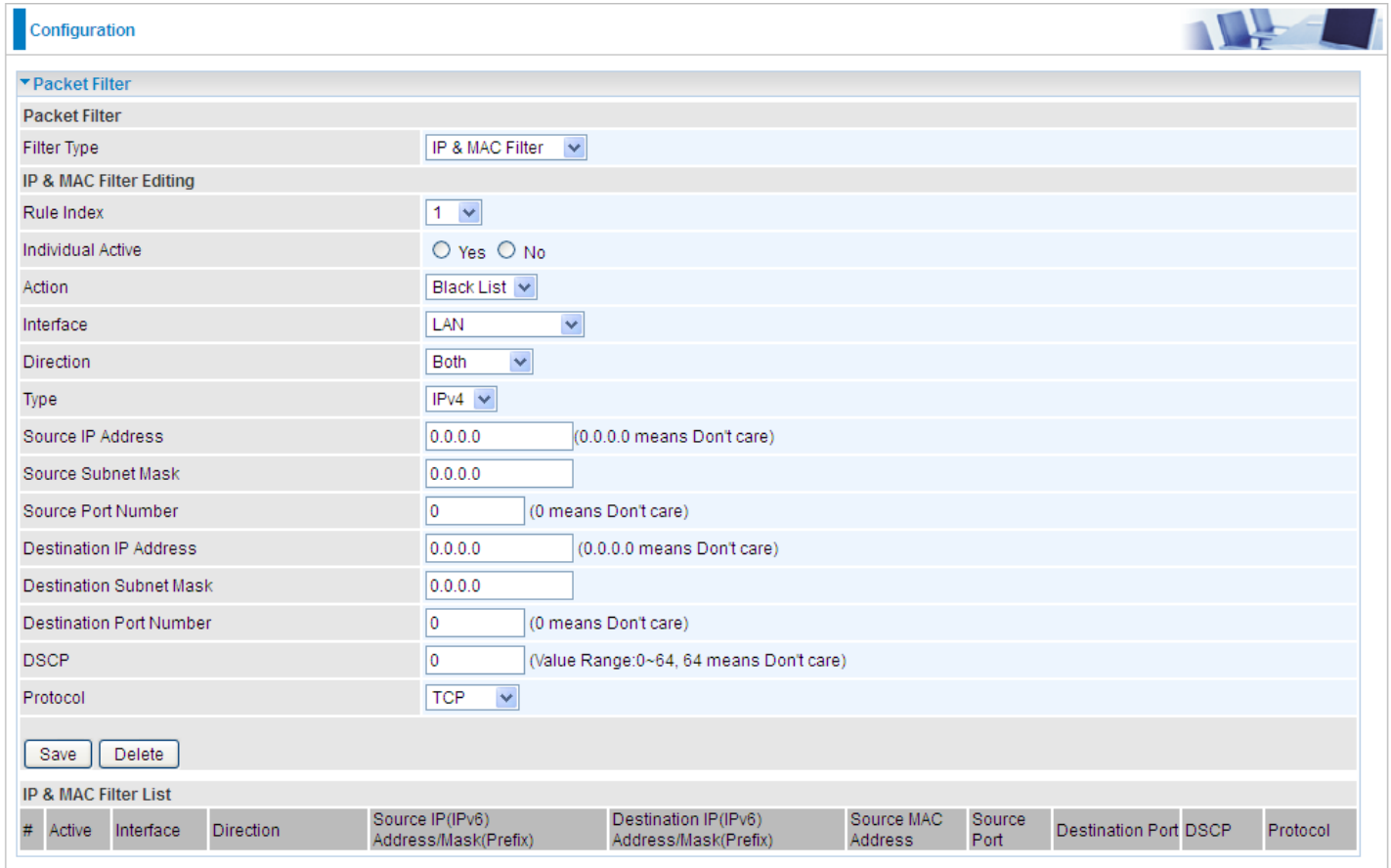
**Interface:** Select the access interface. Choices are LAN, WAN and Both.



## Packet Filter

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

### ❖ Packet Filter - IP & MAC Filter



The screenshot shows the 'Configuration' tab for the 'Packet Filter' section. The 'IP & MAC Filter Editing' form is displayed with the following settings:

- Filter Type:** IP & MAC Filter
- Rule Index:** 1
- Individual Active:** Yes (selected)
- Action:** Black List
- Interface:** LAN
- Direction:** Both
- Type:** IPv4
- Source IP Address:** 0.0.0.0 (0.0.0.0 means Don't care)
- Source Subnet Mask:** 0.0.0.0
- Source Port Number:** 0 (0 means Don't care)
- Destination IP Address:** 0.0.0.0 (0.0.0.0 means Don't care)
- Destination Subnet Mask:** 0.0.0.0
- Destination Port Number:** 0 (0 means Don't care)
- DSCP:** 0 (Value Range: 0~64, 64 means Don't care)
- Protocol:** TCP

Below the form are 'Save' and 'Delete' buttons. At the bottom, there is a table titled 'IP & MAC Filter List' with the following columns: #, Active, Interface, Direction, Source IP(IPv6) Address/Mask(Prefix), Destination IP(IPv6) Address/Mask(Prefix), Source MAC Address, Source Port, Destination Port, DSCP, and Protocol.

### Packet Filter

**Filter Type:** There are three types “IP & MAC Filter”, “Application Filter”, and “URL Filter” that user can select for this filter rule. Here we set **IP & MAC Filter**.

### IP & MAC Filter Editing

**Rule Index:** This is item number

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

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

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

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

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

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

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

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

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

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

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

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

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

### IP/MAC Filter Listing

**#:** Item number.

**Active:** Whether the connection is currently active.

**Interface:** show the interface the rule applied to.

**Direction:** show the direction the rule applied to.

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

**Destination IP (IPv6) Address/Mask (Prefix):** This is the destination subnet IP address.

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

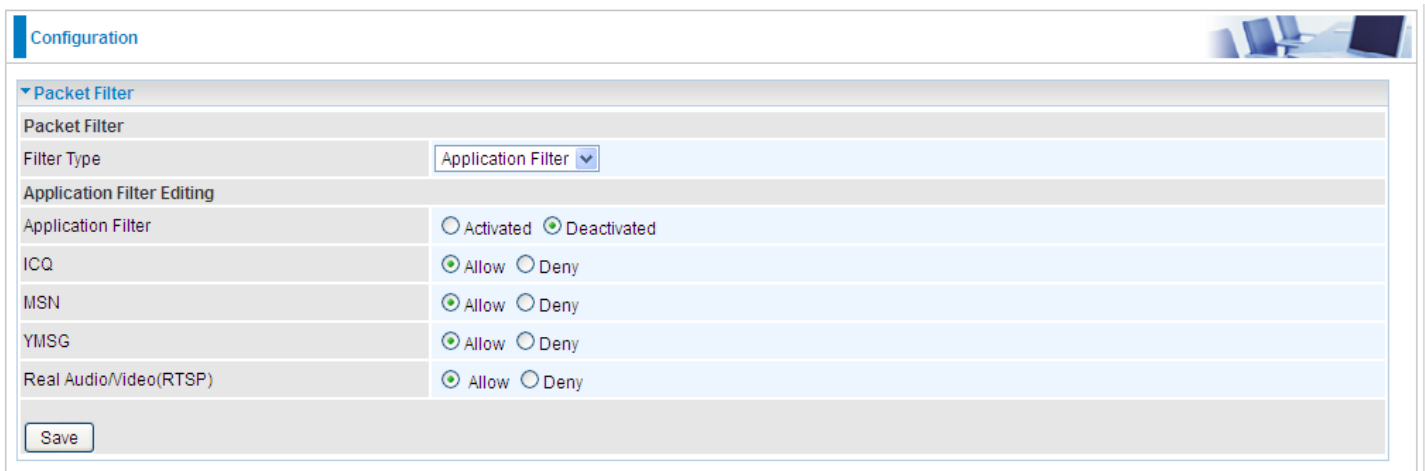
**Source Port:** The source port number of packets to be monitored.

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

**DSCP:** show the set DSCP.

**Protocol:** It is the packet protocol type used by the application. Select either **TCP** or **UDP** or **ICMP** or **ICMPv6**

## ❖ Packet Filter - Application Filter



Configuration

▼ Packet Filter

Packet Filter

Filter Type: Application Filter

Application Filter Editing

Application Filter: ☐ Activated ☒ Deactivated

ICQ: ☒ Allow ☐ Deny

MSN: ☒ Allow ☐ Deny

YMSG: ☒ Allow ☐ Deny

Real Audio/Video(RTSP): ☒ Allow ☐ Deny

Save

**Application Filter:** Select this option to Activated/Deactivated the Application filter.

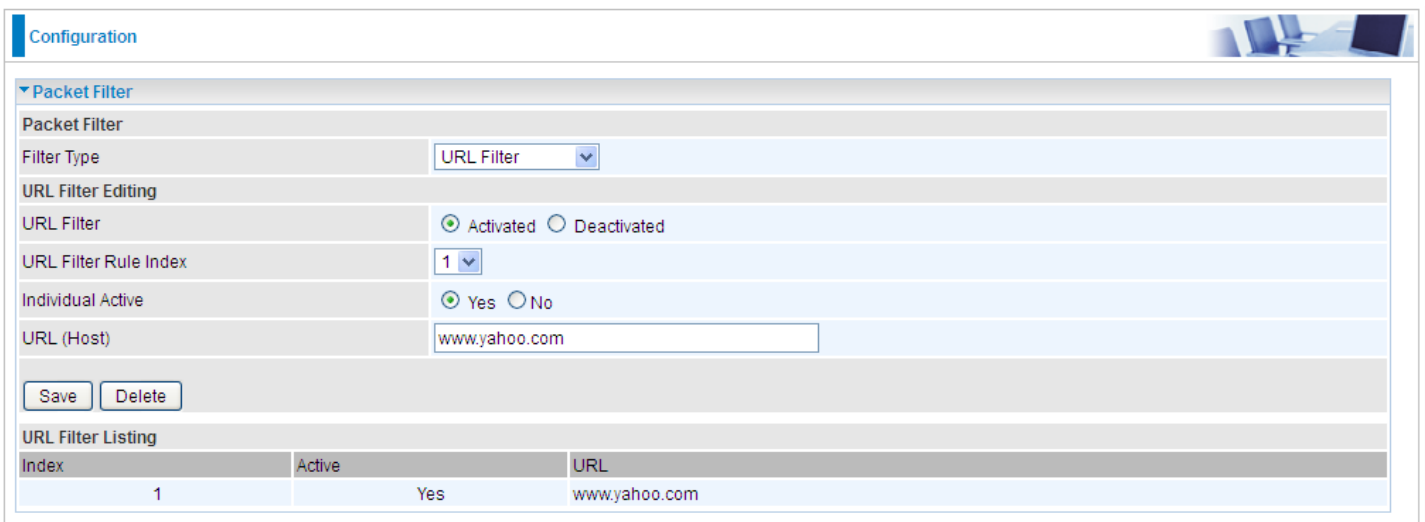
**ICQ:** Select this option to Allow/Deny ICQ.

**MSN:** Select this option to Allow/Deny MSN.

**YMSG:** Select this option to Allow/Deny Yahoo messenger.

**Real Audio/Video (RTSP):** Select this option to Allow/Deny Real Audio/Video (RTSP).

## ❖ Packet Filter - URL Filter



Configuration

▼ Packet Filter

Packet Filter

Filter Type: URL Filter

URL Filter Editing

URL Filter: ☒ Activated ☐ Deactivated

URL Filter Rule Index: 1

Individual Active: ☒ Yes ☐ No

URL (Host): www.yahoo.com

Save Delete

URL Filter Listing

Index	Active	URL
1	Yes	www.yahoo.com

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

**URL Filter Rule Index:** This is item number.

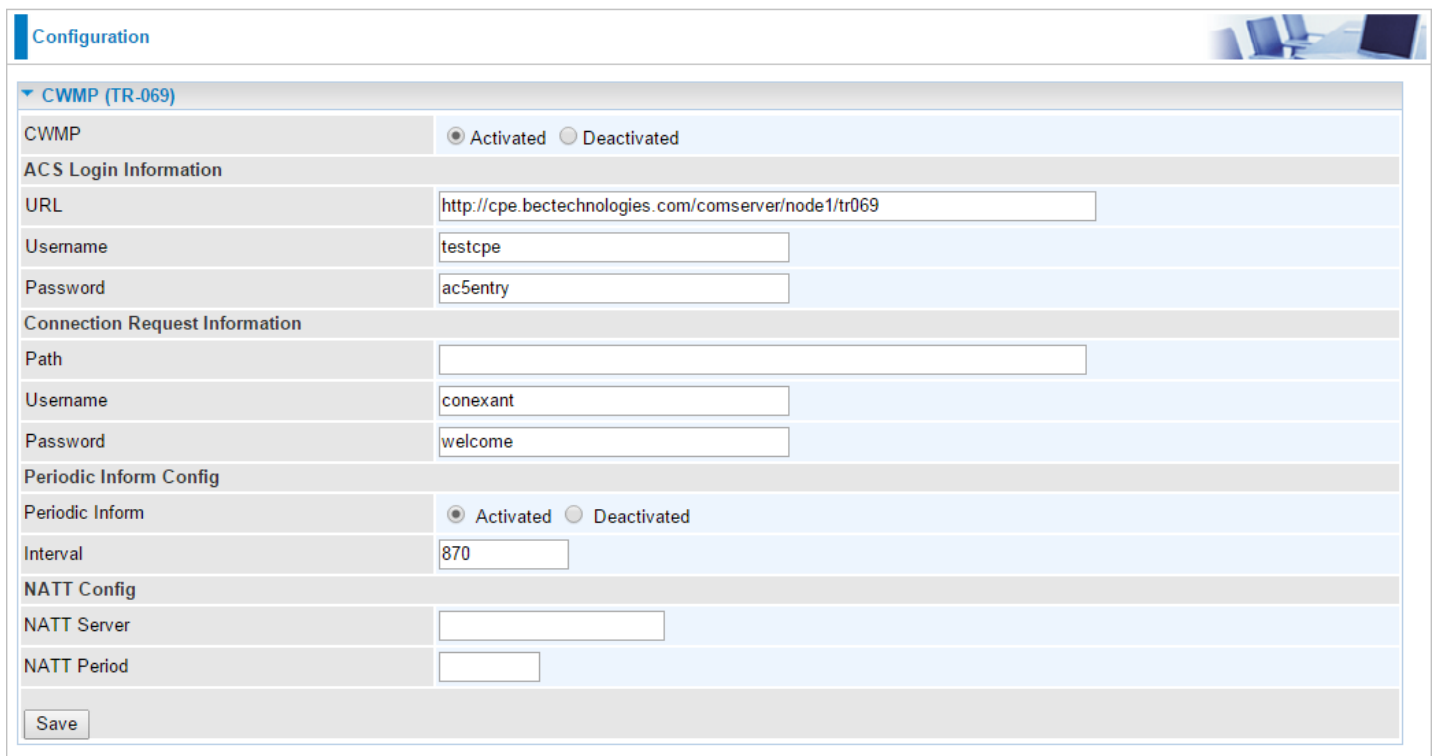
**Individual Active:** To give control to the specific URL access individually, for example, you want to prohibit access to [www.yahoo.com](http://www.yahoo.com), please first press Activated in “URL Filter” field, and also Yes in “Individual Active” field; if some time you want to allow access to this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

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

## CWMP (TR-069)

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

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



Configuration

**CWMP (TR-069)**

CWMP ☒ Activated ☐ Deactivated

**ACS Login Information**

URL

Username

Password

**Connection Request Information**

Path

Username

Password

**Periodic Inform Config**

Periodic Inform ☒ Activated ☐ Deactivated

Interval

**NATT Config**

NATT Server

NATT Period

Save

**CWMP:** Select activated to enable CWMP.

### ACS Login Information

**URL:** Enter the ACS server login URL.

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

**Password:** Enter the ACS server login password.

### Connection Request Information

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

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

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



**Periodic Inform Config**

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

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


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

**NATT Server:** By BEC administrator only.

**NATT Period:** By BEC administrator only.

## Parental Control

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



Configuration

▼ Parental Control

Provider	www.opendns.com
Parental Control	<input type="radio"/> Activated <input checked="" type="radio"/> Deactivated
Host Name	<input type="text"/>
Username	<input type="text"/>
Password	<input type="text"/>

\*\*Parental Control provides Web content filtering while surfing the web safer and more reliable.  
Please get an account and configure at the selected Provider in advance.

Save

To activate this feature, please log on to [www.opendns.com](http://www.opendns.com) to get an OpenDNS account first.

**Parent Control Provider:** Hosted by [www.opendns.com](http://www.opendns.com)

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

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

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

## Maintenance

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

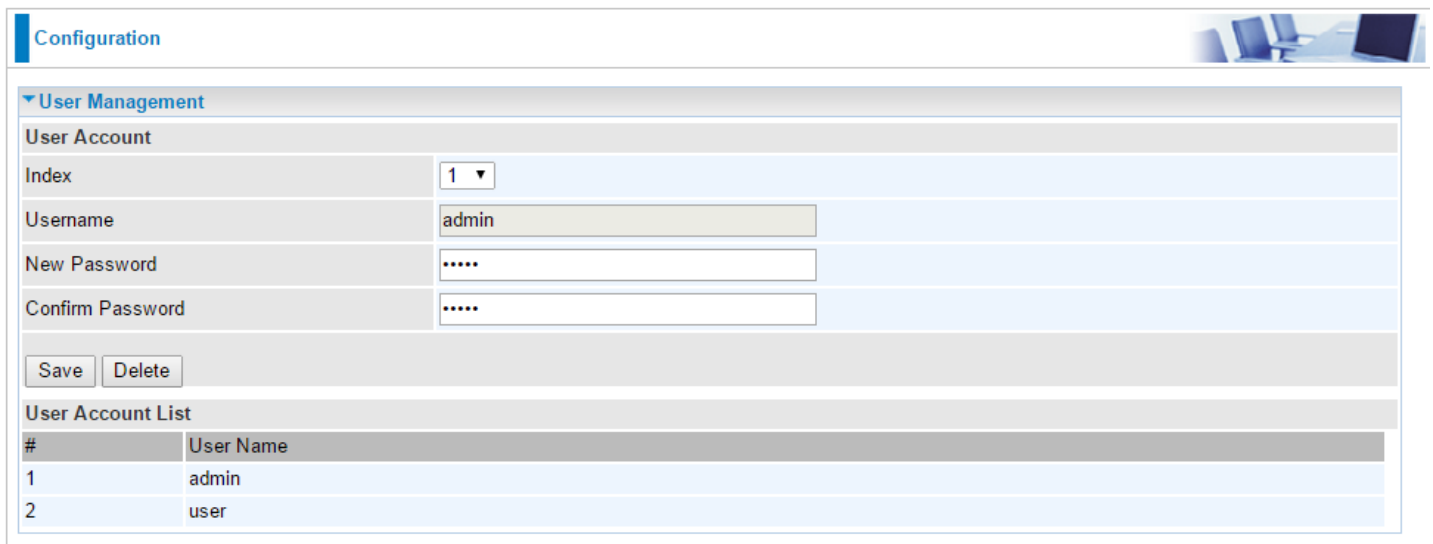
## User Management

User Management controls the Router Web GUI permission to the specific account.

In factory setting, the default accounts are **admin/admin** and **user/user**. The default root account admin has been authorized to web access of router. The **user/user** is equipment with limited access (specified by advanced users with admin account) to router web GUI. Total of **8** accounts can be created to grant access to manage the RidgeWave 6900 via the web page.

### ❖ Admin / Admin

**admin/admin** is the root account provided by our router.



User Account List	
#	User Name
1	admin
2	user

### User Setup

**Index:** User account index, total is 8.

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

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

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

## Time Zone

With default, **RidgeWave 6900** does not contain the correct local time and date.

There are several options to setup, maintain, configure current local time/date on the **RidgeWave 6900**. If you plan to use **Time Schedule** feature, it is extremely important you set up the TimeZone correctly.



The screenshot shows the 'Configuration' page for the RidgeWave 6900. The 'Time Zone' section is expanded, showing the following settings:

- Current Date/Time:** Tue Aug 27 05:46:54 2013
- Time Synchronization:**
  - Synchronize time with:** ☒ NTP Server, ☐ PC's Clock, ☐ Manually
  - Time Zone:** (GMT) Greenwich Mean Time : Dublin, Edinburgh, Lisbon, London (dropdown menu)
  - Daylight Saving:** ☐ Enabled, ☒ Disabled
  - NTP Server Address:** 0.0.0.0 (0.0.0.0: Default Value)
- Save** button

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

- ▶ **NTP Server automatically:** To synchronize time with the SNTP servers to get the current time from an SNTP server outside your network then choose your local time zone. After a successful connection to the Internet, **RidgeWave 6900** will retrieve the correct local time from the SNTP server this is specified.
- ▶ **PC's Clock:** To synchronize time with the PC's clock.
- ▶ **Manually:** Select this to enter the SNTP server IP address manually.

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

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

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

## Firmware & Configuration

Firmware is the software that controls the hardware and provides all functionalities which are available in the GUI. This software may be improved and/or modified; your RidgeWave 6900 provides an easy way to update the code to take advantage of the changes. .

To upgrade the firmware of the RidgeWave 6900, you should download or copy the firmware to your local environment first. Press the “**Browse...**” button to specify the path of the firmware file. Then, click “**Upgrade**” to start upgrading. When the procedure is completed, the RidgeWave 6900 will reset automatically to make the new firmware work.



The screenshot shows the 'Configuration' page with a sub-section titled 'Firmware & Configuration'. It contains several options: 'Upgrade' with radio buttons for 'Firmware' (selected) and 'Configuration'; 'System Restart with' with radio buttons for 'Current Settings' (selected) and 'Factory Default Settings'; a 'File' field with a 'Browse...' button; a 'Backup Configuration' button; and a 'Status' field. A warning message states: 'It might take several minutes, don't power off it during upgrading. Device will restart after the upgrade.' Below this is an 'Upgrade' button.

**Upgrade:** Choose Firmware or Configuration you want to update.

**System Restart with:**

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

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

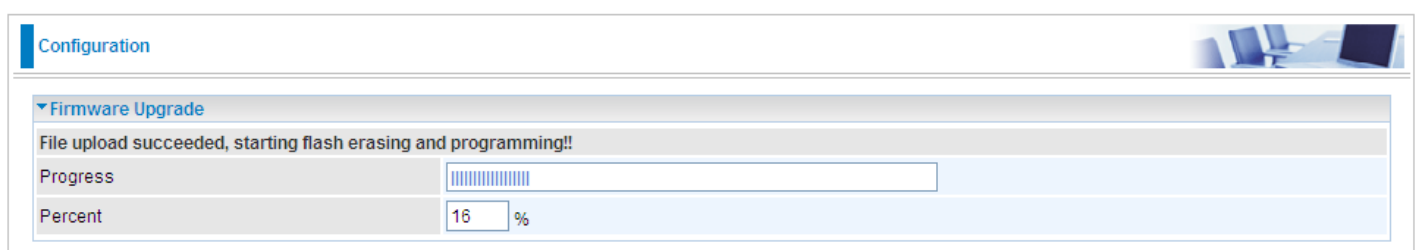
**Browse:** Click **Browse...** to find the configuration file or firmware file you want to upload. Remember that you must extract / decompress / unzip the .zip files before you can upload them.

**Backup Configuration:** Click **Backup** button to back up the current running configuration file and save it to your computer in the event that you need this configuration file to be restored back to your RidgeWave 6900 device when making false configurations and want to restore to the original settings.



The screenshot shows a file dialog box asking: 'Do you want to open or save romfile.cfg (35.8 KB) from 192.168.1.254?'. It has buttons for 'Open', 'Save', 'Cancel', and a close button (X).

**UPGRADE:** Click **UPGRADE** to begin the upload process. This process may take up to two minutes.



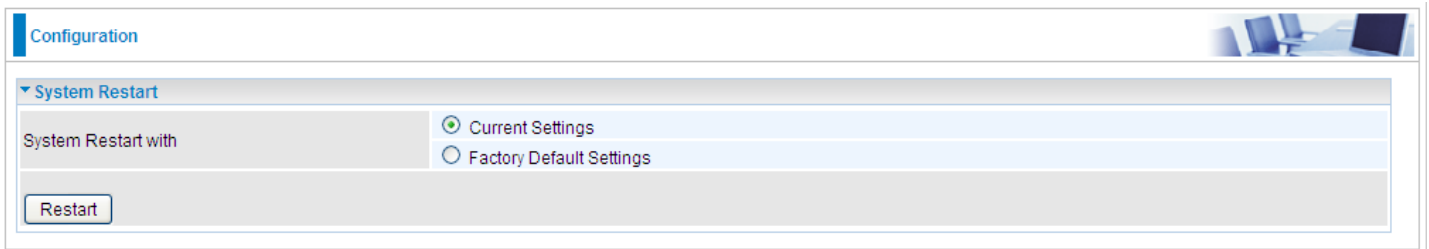
The screenshot shows the 'Configuration' page with a sub-section titled 'Firmware Upgrade'. It displays a message: 'File upload succeeded, starting flash erasing and programming!!'. Below this is a 'Progress' bar and a 'Percent' field showing '16 %'.



DO NOT turn off / power off the device or interrupt the firmware upgrading while it is still in process. Improper operation could damage your RidgeWave 6900.

## System Restart

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



The screenshot shows a web interface for router configuration. At the top, there is a 'Configuration' tab. Below it, a 'System Restart' section is expanded, showing two radio button options: 'Current Settings' (which is selected) and 'Factory Default Settings'. A 'Restart' button is located at the bottom of this section. The interface has a light blue header and a white main area.

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

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

Diagnostics Tool

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

3G/4G-LTE

Configuration

Diagnostic Tool

WAN Interface	3G/4G-LTE
Testing Ethernet LAN Connection	N/A
Ping Primary DNS ( 221.6.4.66 )	N/A
Ping www.google.com	N/A
Ping other IP Address <input type="radio"/> Yes <input checked="" type="radio"/> No	N/A

Start

Click START to begin to diagnose the connection.

Configuration

Diagnostic Tool

WAN Interface	3G/4G-LTE
Testing Ethernet LAN Connection	PASS
Ping Primary DNS ( 221.6.4.66 )	PASS
Ping www.google.com	PASS
Ping other IP Address <input type="radio"/> Yes <input checked="" type="radio"/> No	Skipped

Start



# Chapter 5: Troubleshooting

If your **RIDGEWAVE RidgeWave 6900** is not functioning properly, you can refer to this chapter for simple troubleshooting before contacting your service provider support. This can save you time and effort but if symptoms persist, consult your service provider.

## Problems with the Router

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

## Problem with LAN Interface

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

## Recovery Procedures

Problem	Suggested Action
<ul style="list-style-type: none"><li>- The front LEDs display incorrectly</li><li>- Still cannot access to the router management interface after pressing the RESET button.</li><li>- Software / Firmware upgrade failure</li></ul>	<ol style="list-style-type: none"><li>1. Power on the router, once the Power LED lit red, please press this reset button using the end of paper clip or other small pointed object immediately.</li><li>2. The router's emergency-reflash web interface will then be accessible via <a href="http://192.168.1.1">http://192.168.1.1</a> where you can upload a firmware image to restore the router to a functional state, Please note that the router will only respond with its web interface at this address (192.168.1.1), and will not respond to ping request from your PC or other telnet operations.</li></ol>

# APPENDIX: PRODUCT SUPPORT & CONTACT

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

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

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

Windows 7/98, Windows NT, Windows 2000, Windows ME, Windows XP, and Windows Vista are registered Trademarks of Microsoft Corporation.

### **Federal Communication Commission Interference Statement**

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

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

### **FCC Caution:**

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

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

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. . This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

### **Co-location statement**

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

### **FCC Radiation Exposure Statement**

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