

Wireless Broadband Router

User's Manual

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Chapter 1. Introduction

1.1 Welcome

Congratulations on purchasing this Wireless Broadband Router. This Wireless Broadband Router is a cost-effective IP Sharing Router that enables multiple users to share the Internet through an ADSL or cable modem. Simply configure your Internet connection settings in the Wireless Broadband Router and plug your PC to the LAN port and you're ready to share files and access the Internet. As your network grows, you can connect another hub or switch to the router's LAN ports, allowing you to easily expand your network. The Wireless Broadband Router is embedded with a IEEE 802.11n/g/b access point that allows you to build up a wireless LAN. With the support of new emerged 802.11n standard, the access point provides data transfer of up to 300Mbps, up to 5 times faster than 802.11g, it is backwards compatible with existing 802.11g and 802.11b infrastructure while migrating to the new screaming fast 802.11n. The Wireless Broadband Router provides a total solution for the Small and Medium-sized Business (SMB) and the Small Office/Home Office (SOHO) markets, giving you an instant network today, and the flexibility to handle tomorrow's expansion and speed.

1.2 About This Guide

This User Manual contains information on how to install and configure your Wireless Broadband Router to get your network started accessing the Internet. It will guide you through the correct configuration steps to get your device up and running.

Note and **Caution** in this manual are highlighted with graphics as below to indicate important information.



Contains related information that corresponds to a topic.

Note



Represents essential steps, actions, or messages that should not be ignored.

Caution

1.3 Copyright Statement

No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, whether electronic, mechanical, photocopying, recording, or otherwise without the prior writing of the publisher.

1.4 Overview of The Wireless Broadband Router

The following sections describe the physical characteristics of your router.

1.4.1 Back Panel

Figure - 1 back panel below shows the Wireless Broadband Router back panel:

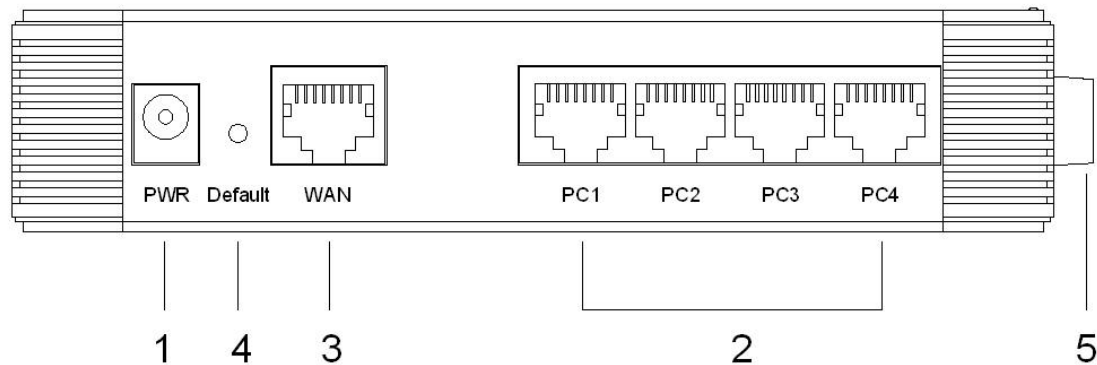


Figure - 1 back panel

1 Power: The power socket is where you plug in the power adapter. Please use the power adapter provided with this wireless broadband router.

2 LAN Ports 1-4: These 4 ports is used to connect the router to your PCs using Ethernet cables. Any of these four ports can also serve as an uplink port to other network devices, such as another router or switch, which allows you to extend your network.

3 WAN: Connect your modem to your router using this port with your supplied Ethernet cable. This is the only port you can use for this procedure. This enables your router to access the Internet. The port supports 10/100 Mbps as well as straight-through and crossover Ethernet cables.

4 Default button: Default your router or resets the router to the default login settings.

5 Antenna: The antenna used for wireless connections. You are able to rotate the antenna to gain the best signal reception.



If the router experiences trouble connecting to the Internet, briefly press and release the **Default** button to default the router. To default the router to the factory defaults, press and hold the **Default** button for more than five seconds. This clears the router's user settings, including User ID, Password, IP Address, and Subnet mask. (**Warning:** your original configurations will be replaced with the factory default settings)

1.4.2 LED Description

The following illustration shows the Wireless Broadband Router front panel:

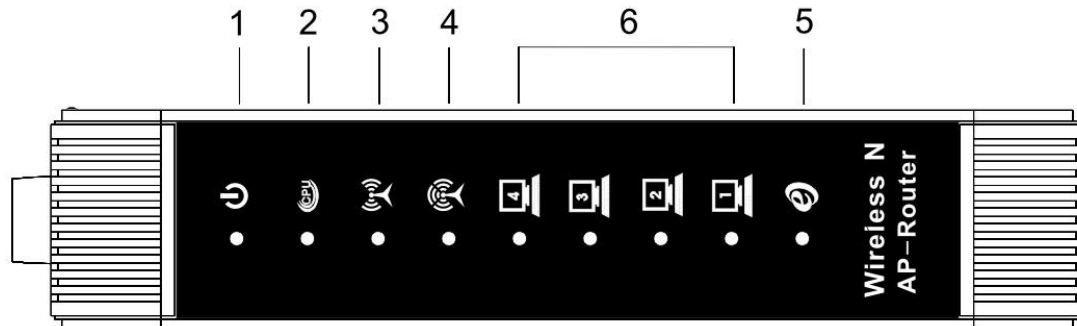


Figure - 2 front panel

Number	LED	Light Status	Description
1	PWR	ON	This indicator lights green when the Wireless Router is receiving power; otherwise, it is off.
2	CPU	ON	The LED will be dark for a few seconds when the system is started. After that, the LED will stay green to show the Wireless Router is working normally. If the LED stays blink/dark that means the system failed, you need to contact your agent or try to reboot the system.
3	WLAN RX	Flashing	Wireless LAN has Activity (ACT) data being sent.
4	WLAN TX	Flashing	Wireless LAN has Activity (ACT) data being Received
5	WAN	ON	WAN is connected
		Off	No WAN connection
		Flashing	WAN port has Activity (ACT), data being sent
6	LAN(1-4)	ON	WAN is connected
		Off	No WAN connection
		Flashing	WAN port has Activity (ACT), data being sent

Chapter 2. Designing Wireless Network

2.1 System Requirements

- Broadband Internet Access Service(DSL/Cable/Ethernet)
- 10/100Base-T Ethernet card and TCP/IP protocol installed for each PC
- Internet Explorer 5.0 or higher for Web configuration
- 802.11n , 802.11g or 802.11b compliant wireless adapters (for wireless connection)

2.2 Hardware connection

Figure - 3 Local Area Network below shows a typical setup for a Local Area Network (LAN).

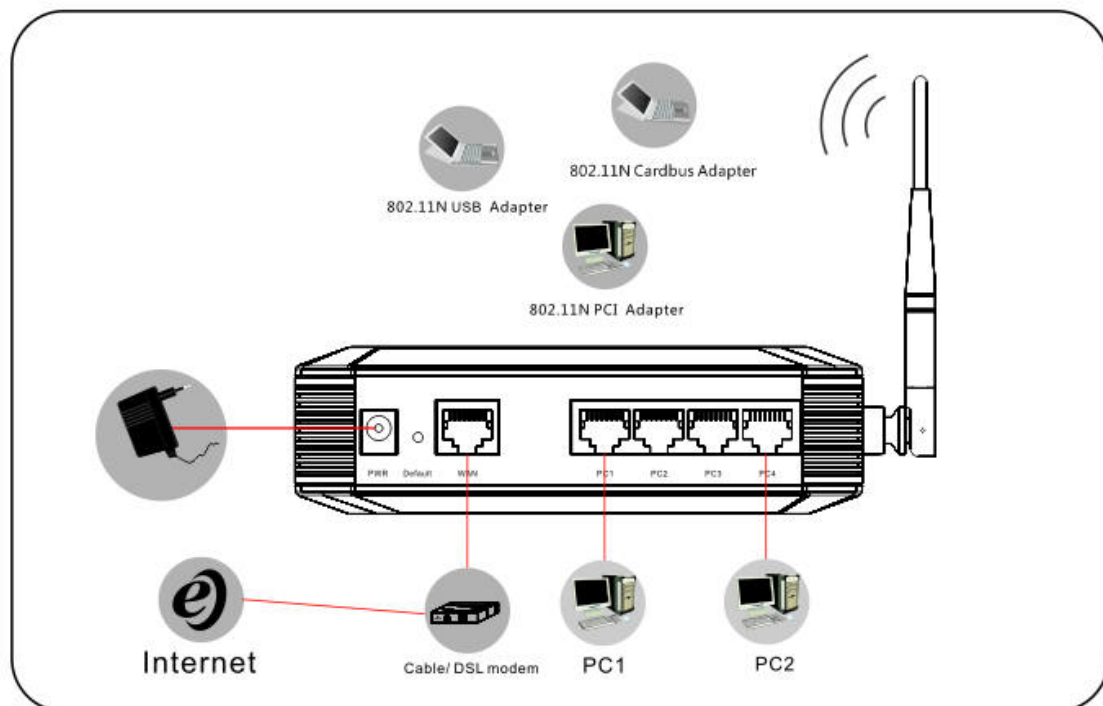


Figure - 3 Local Area Network

- Begin by finding a good place to set up your wireless broadband. You should: Keep the access point as central in your work area as possible. Signal strength and speed fall off with distance.
- Higher is often better. For instance, set it up on the top shelf of a bookcase rather than the bottom one, if possible.

Prior to connecting the hardware, make sure to power off your ethernet device, Cable/ADSL modem and Wireless Broadband Router. Then follow the steps below to connect the related

devices.

Step 1 Connecting your computer to the LAN port.

Attach one end of the Ethernet cable with RJ-45 connector to your hub, switch or a computer's Ethernet port, and the other end to one of the LAN ports of your Wireless Broadband Router.

Step 2 Connecting Cable/ADSL Modem to the WAN port.

Connect the Ethernet cable attaching to your Cable/ADSL modem to the **WAN** port of your Wireless Broadband Router.

Step 3 Connecting the power adapter.

Connect the single DC output connector of the power adapter to the power jack on the side of the Wireless Broadband Router. Then plug the Power Adapter into an AC outlet,

Step 4 Power on the following devices in this order:

Cable/ADSL modem, Router, and PCs

2.3 Configuring Local PC to Access the Wireless Router

You can manage the Wireless Broadband Router through the Web browser-based configuration utility. To configure the device via Web browser, at least one properly configured computer must be connected to the device via Ethernet or wireless network. The Wireless Broadband Router is configured with the **default IP address of 192.168.1.1** and **subnet mask of 255.255.255.0** and its **DHCP server is enabled** by default. Before setting up the Router, make sure your PCs are configured to obtain an IP (or TCP/IP) address automatically from the Router by the steps below.

2.3.1 Setting up TCP/IP

2.3.1.1 Windows 98/Me

1. Go to **Start → Settings → Control Panel**.
2. Find and double-click the Network icon. The Network dialog box appears.
3. Click the Configuration label and ensure that you have network card.
4. Select TCP/IP. If TCP/IP appears more than once, please select the item that has an arrow "→" pointing to the network card installed on your computer. **DO NOT** choose the instance of TCP/IP with the words "Dial Up Adapter" beside it.
5. Click Properties. The TCP/IP Properties dialog box appears.
6. Ensure the Obtain IP Address Automatically is checked.
7. From the WINS Configuration dialog box, Ensure that Disable WINS Resolution is checked.
8. From the Gateway dialog box, remove all entries from the Installed gateways by selecting them and clicking Remove.
9. From the DNS Configuration dialog box, remove all entries from the DNS Server Search Order box by selecting them and clicking Remove. Remove all entries from the Domain Suffix

Search Order box by selecting them and clicking Remove. Click Disable DNS.

10. Click OK, back to Network Configuration dialog box

11. Click OK, if prompted to restart, click YES.

2.3.1.2 Windows 2000

Please follow the steps below to setup your computer:

1. Go to Start → Settings → Control Panel



Figure - 4

2. Double click the icon Network and Dial-up Connections

3. Highlight the icon Local Area Connection, right click your mouse, click Properties

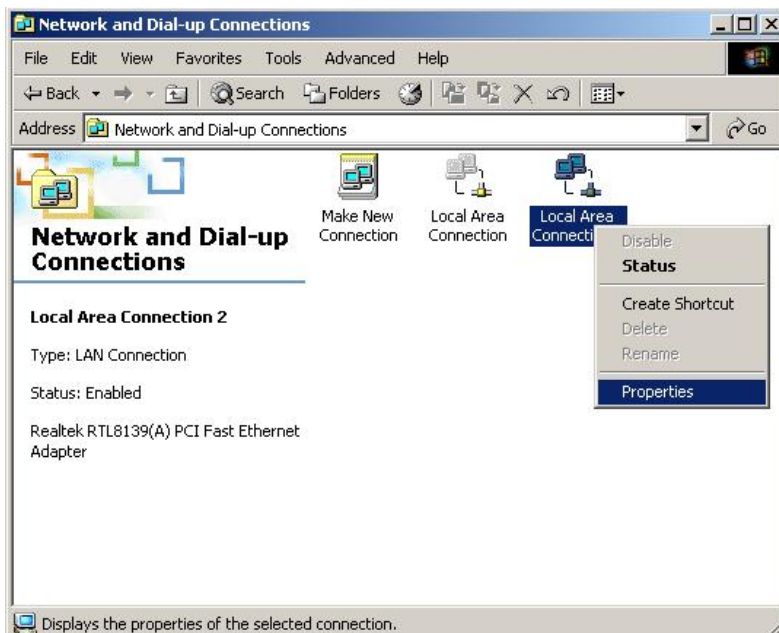


Figure - 5

4. Highlight Internet Protocol (TCP/IP), and then press Properties button

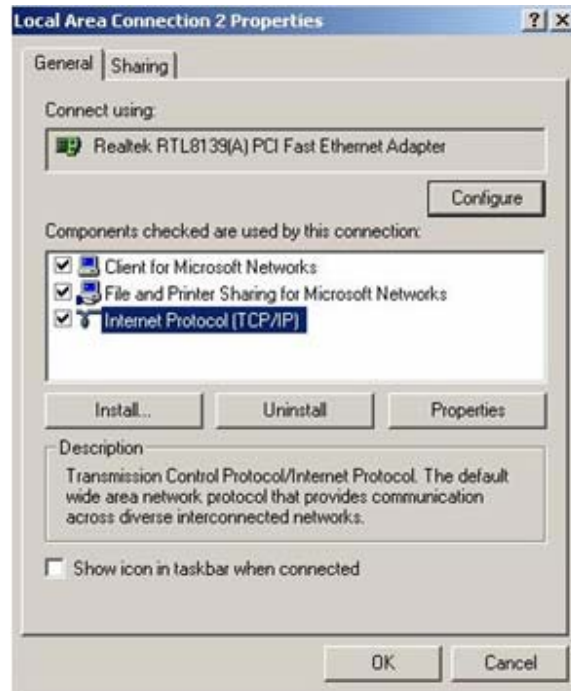


Figure - 6

5. Choose Obtain an IP address automatically and Obtain DNS server address automatically, and then press OK to close the Internet Protocol (TCP/IP) Properties window

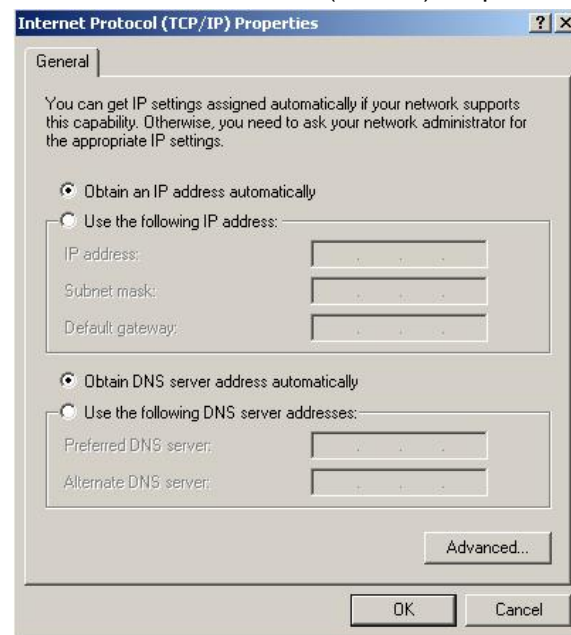


Figure - 7

6. Press OK to close the Local Area Connection Properties window



Figure - 8

2.3.1.3 Windows XP

Please follow the steps below to setup your computer:

1. Go to Start → Settings → Control Panel
2. Click Network and Internet Connections

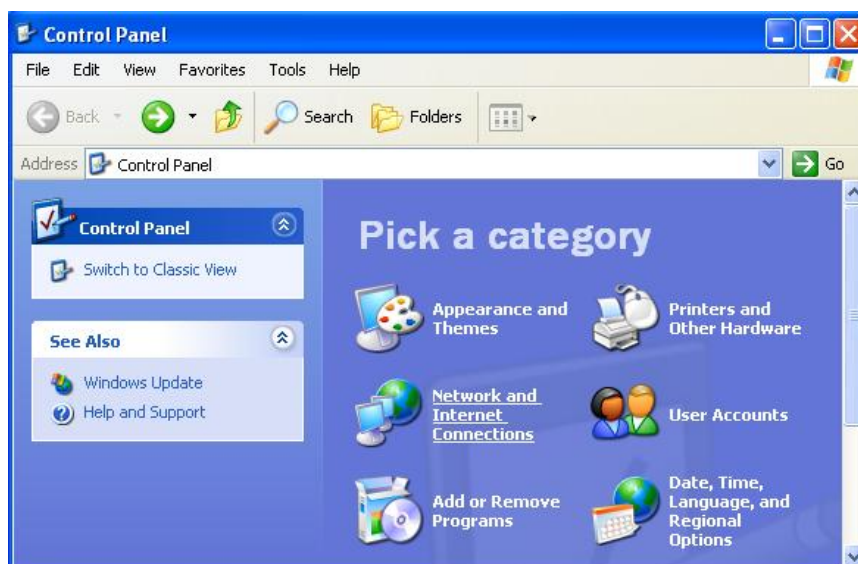


Figure - 9

3. Click Network Connections



Figure - 10

4. Highlight the icon Local Area Connection, right click your mouse, click Properties



Figure - 11

5. Highlight Internet Protocol (TCP/IP), and then press Properties button



Figure - 12

6. Choose Obtain an IP address automatically and Obtain DNS server address automatically, and then press OK to close the Internet Protocol (TCP/IP) Properties window

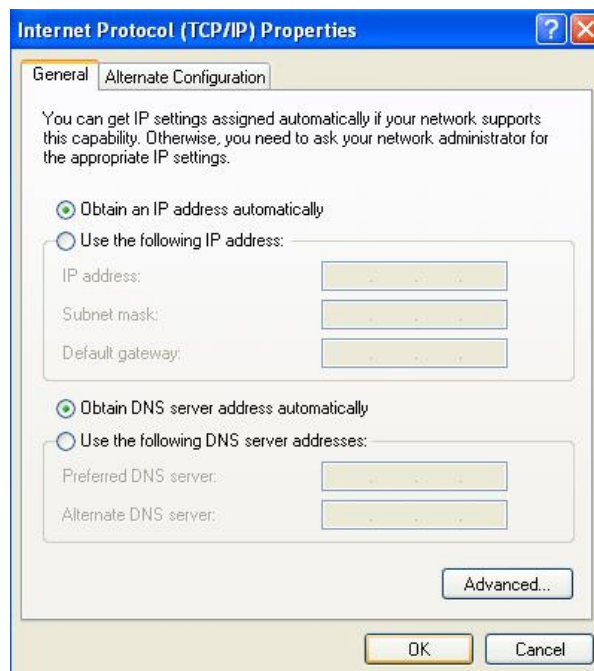


Figure - 13

7. Press OK to close the Local Area Connection Properties window

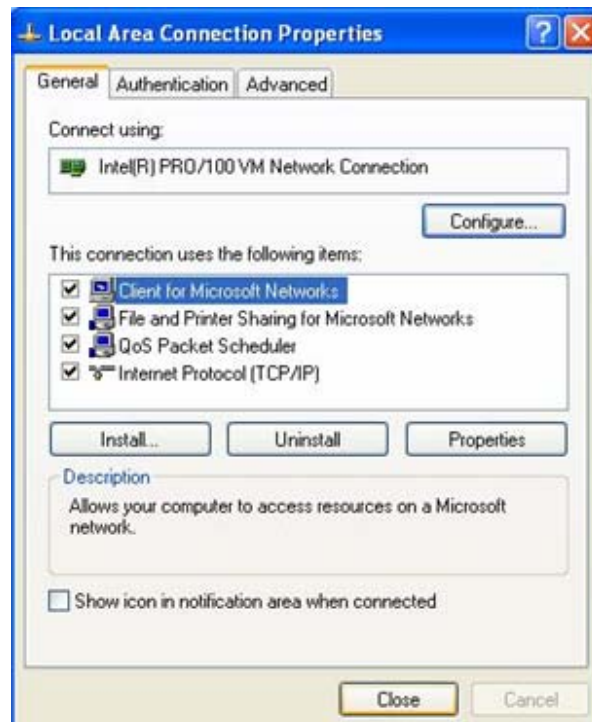


Figure - 14

2.3.2 Additional Settings for Wireless Client

If you choose to access the router via a wireless client, also verify the following:

1. Make sure your PC is equipped with 802.11n, 802.11g or 802.11b wireless adapter and has appropriate WLAN card driver/utility and TCP/IP installed.
2. Set the wireless adapter to use appropriate TCP/IP settings as described in previous section.
3. Launch the wireless adapter's provided utility and verify that your wireless client is configured with these settings:

- **Operation Mode:** Infrastructure
- **SSID:** default
- **Authentication:** Disabled
- **Encryption:** Off
- **Radio Band:** 802.11B/G



If you only finished the wireless settings and didn't configure the wireless adapter's TCP/IP settings, even your link status indicates a successful connection with the AP, this connection applies to the "physical" network layer only. Your wireless adapter cannot communicate with the AP. Make sure to set the TCP/IP properties as described in this previous section.

2.3.3 Checking PC's IP and Connection with the Router

After configuring the TCP/IP protocol, use the ping command to verify if the computer can communicate with the Router. To execute the ping command, open the DOS window and ping the IP address of the Wireless Broadband Router at the DOS prompt:

- For Windows 98/Me: **Start -> Run**. Type **command** and click OK.
- For Windows 2000/XP: **Start -> Run**. Type **cmd** and click OK.

At the DOS prompt, type the following command:

If the Command window returns something similar to the following:

```
C:\Documents and Settings\admin>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

Reply from 192.168.1.1: bytes=32 time=1ms TTL=64
Reply from 192.168.1.1: bytes=32 time=1ms TTL=64
Reply from 192.168.1.1: bytes=32 time=1ms TTL=64
Reply from 192.168.1.1: bytes=32 time=1ms TTL=64

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 1ms, Average = 1ms
```

Then the connection between the router and your computer has been successfully established.

If the computer fails to connect to the router, the Command window will return the following:

```
C:\Documents and Settings\admin>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
```

Request timed out.

Ping statistics for 192.168.1.1:

Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

Verify your computer's network settings are correct and check the cable connection between the router and the computer.

Chapter 3. Quick Configuration Guide

3.1 Login

In order to make the whole network operate successfully, it is necessary to configure the Wireless Router through your computer has a WEB browser installed. Please follow the steps listed below.

Step 1 Start your Web browser and type **http://192.168.1.1** in the Address field. This address is the default private IP of your router.



Figure - 15



If the router's LAN port has been changed with new IP address, enter the new IP address instead.

Step 2 After connecting to the device, you will be prompted to enter the username and password. Type **guest** in the User Name field, and enter the default password as **guest**.

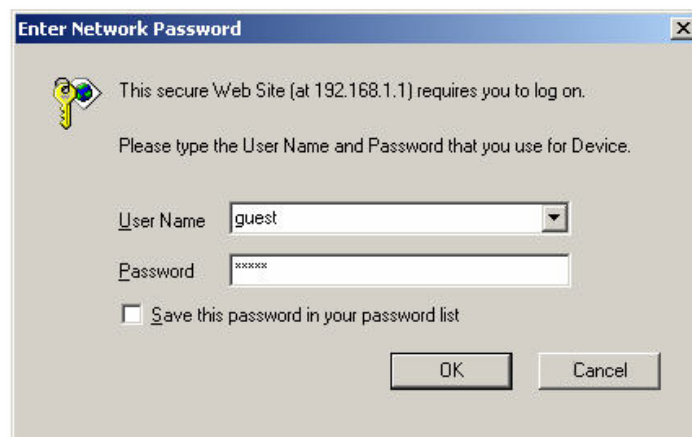


Figure - 16

Step 3 Click "OK" button.

After successful login, you will be able to see the Wireless Broadband Router's web-based configuration utility. From now on the Wireless Broadband Router acts as a Web server sending HTML pages/forms at your request. You can click the menu options at the left to start

the configuration task.



When first configuring your router, it is recommended that you have an Ethernet cable connected to the router. Performing the INITIAL configuration using a wireless connection is not secure and is not recommended. After you have finished the initial configuration of the router, your connection will be secure and you can safely use either a wired or wireless connection.

In the home page of the Wireless Router, the left navigation bar shows the main options to configure the system. In the right navigation screen is the summary of system status for viewing the configurations. You can usually get context sensitive help by clicking on the Help link at the top right of the page.

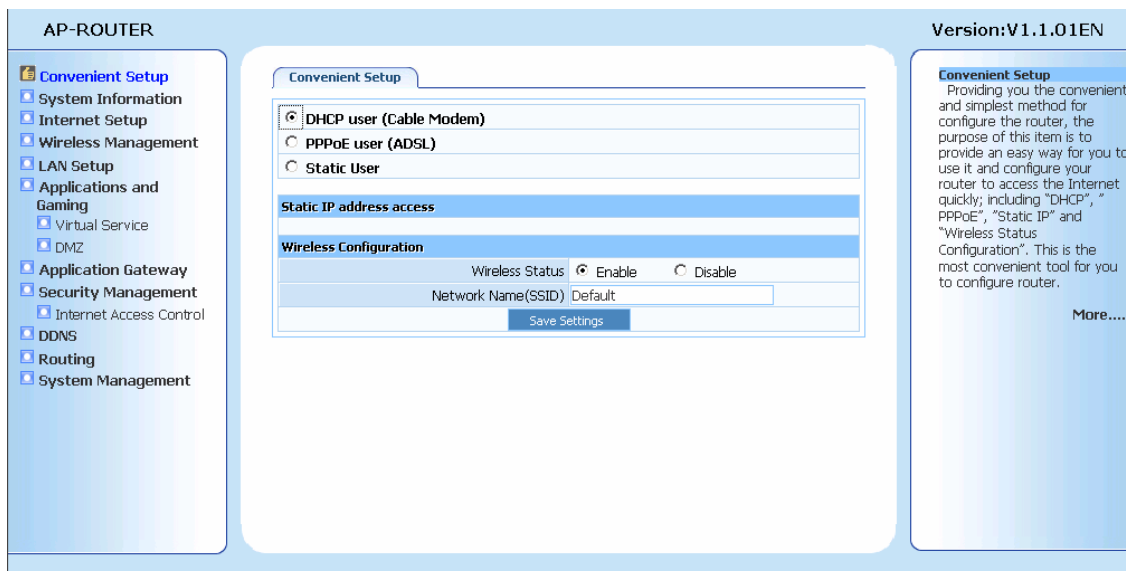


Figure - 17

3.2 Quick Setup

The Convenient Setup section is designed to get you using the broadband router as quickly as possible.

In the Convenient Setup you are required to fill in only the information necessary to access the Internet.

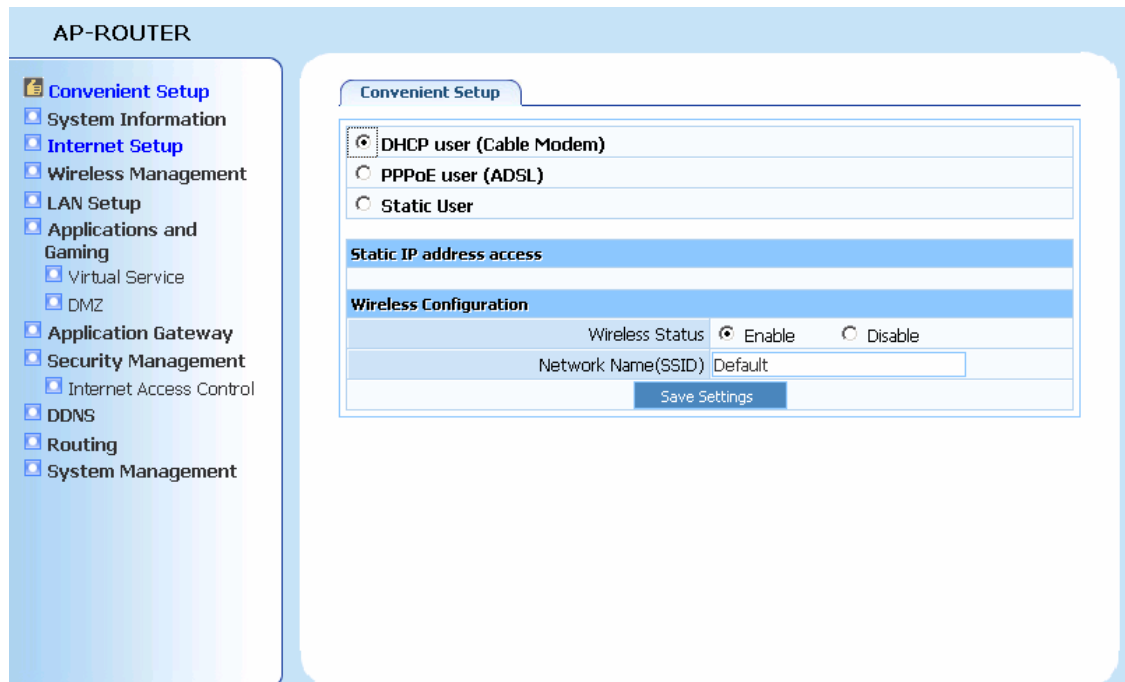


Figure - 18

- **For DHCP user**
 1. Choose **DHCP user** if your ISP will automatically give you an IP address. And then click on "**Save Settings**".
- **For PPPoE user**
 1. Select **PPPoE** if your ISP requires the PPPoE protocol to connect you to the Internet. Your ISP should provide all the information required in this section.
 2. Enter the **User Name** and **Password** provided by your ISP for the PPPoE connection, and then click on "**Save Settings**".

The screenshot shows the 'AP-ROUTER' interface with a sidebar menu on the left containing: Convenient Setup, System Information, Internet Setup, Wireless Management, LAN Setup, Applications and Gaming (Virtual Service, DMZ), Application Gateway, Security Management (Internet Access Control), DDNS, Routing, and System Management. The main content area is titled 'Convenient Setup' and features three radio button options: 'DHCP user (Cable Modem)', 'PPPoE user (ADSL)' (which is selected), and 'Static User'. Below these are two sections: 'PPPoE Client Access' with input fields for 'PPPoE Username' and 'PPPoE Password', and 'Wireless Configuration' with 'Wireless Status' set to 'Enable' and 'Network Name(SSID)' set to 'Default'. A 'Save Settings' button is located at the bottom right of the configuration area.

Figure - 19

- **For Static user**
 1. Select **Static IP** if your ISP has given you a specific IP address for you to use. Your ISP should provide all the information required in this section.
 2. Fill the blank input box with the values which are supplied from your ISP And then click on “**Save Settings**”.

This screenshot shows the same 'AP-ROUTER' interface as Figure 19, but with the 'Static User' radio button selected. The 'Static IP address access' section is now active, containing input fields for 'WAN IP address', 'Subnet Mask', 'Default Gateway', 'Primary DNS', and 'Secondary DNS'. The 'Wireless Configuration' section remains the same, with 'Wireless Status' set to 'Enable' and 'Network Name(SSID)' set to 'Default'. A 'Save Settings' button is at the bottom right.

Figure - 20

Chapter 4. Configuring The Wireless Broadband Router

4.1 Convenient Setup

Please refer to [3.2 Quick Setup](#)

4.2 System Information

This page indicate current status of the router, including “Internet Access Status”, “LAN”, “Primary AP Status”, “Secondary AP Status” and statistics information about the bits router send and received . This item is used for monitor the current status of router for administrator, and also supplies help information about judge working situation of router.

Internet Access Info	
Connection Type	DHCP
Physical Address	00:e0:de:00:12:36
IP Address	172.16.12.100
Subnet Mask	255.255.255.0
Default Gateway	172.16.12.1
Primary DNS	61.139.2.69
Secondary DNS	192.168.2.1
MTU:	1500
disconnect	
Version	
Current version:	

Figure - 21

● Internet Access Info:

Internet Access Info	
Connection Type	DHCP
Physical Address	00:e0:de:00:12:36
IP Address	172.16.12.100
Subnet Mask	255.255.255.0
Default Gateway	172.16.12.1
Primary DNS	61.139.2.69
Secondary DNS	192.168.2.1
MTU:	1500
disconnect	

Figure - 22

Connection Type(ISP) : Display router's current connection type, It should be one of "PPPoE", "DHCP", "Static IP", depending on what kind of connection type your ISP provides.

Physical Address: The MAC address of WAN port, this is a unique address assigned by manufacturer.

IP Address: The IP address you obtained after connect to the Internet, if you haven't connected to the Internet yet, this field is blank.

Subnet Mask : The Subnet mask you obtained after connect to the Internet, if you haven't connected to Internet yet, this field is blank.

Default Gateway: The IP address of Default gateway you obtained after connect to the Internet, if you haven't connected to Internet yet, this field is blank.

Primary DNS: The DNS server translates domain or website names into IP address, input the most common DNS server address you used or provided by your ISP.

Secondary DNS: Input IP address of a backup DNS server, or you can leave this field blank.

MTU: The MTU (Maximum Transmission Unit) setting specifies the largest packet size permitted for network transmission. Most DSL users should use the value 1492. You can set MTU manually, and you should leave this value in the 1200 to 1500 range. If the value you set is not in accord with the value ISP provide, it may causes some problems, such as fail to send Email, or fail to browse website. So if that happen, you can contact your ISP for more information and correct your router's MTU value.

Current Version : The version information of your current firmware.

- **LAN Info:**

Internet Access Info	LAN Info	Primary AP Info	Secondary AP Info	Statistics Info										
<table border="1"> <tr> <td>MAC address:</td> <td>00:e0:de:00:12:34</td> </tr> <tr> <td>IP address:</td> <td>192.168.1.1</td> </tr> <tr> <td>Subnet Mask:</td> <td>255.255.255.0</td> </tr> <tr> <td>DHCP Server:</td> <td>Start</td> </tr> <tr> <td>DHCP Server IP Pool:</td> <td>192.168.1.2 --- 192.168.1.128</td> </tr> </table>					MAC address:	00:e0:de:00:12:34	IP address:	192.168.1.1	Subnet Mask:	255.255.255.0	DHCP Server:	Start	DHCP Server IP Pool:	192.168.1.2 --- 192.168.1.128
MAC address:	00:e0:de:00:12:34													
IP address:	192.168.1.1													
Subnet Mask:	255.255.255.0													
DHCP Server:	Start													
DHCP Server IP Pool:	192.168.1.2 --- 192.168.1.128													

Figure - 23

This item provides information about router's LAN port, display LAN port's MAC address, IP address and current situation of DHCP server.

- **Primary AP Info:**

Wireless Status:	On
Number of Wireless Client:	0
Wireless Mode:	AP
Channel:	6
SSID:	Default
Wireless Interface MAC Address:	00:E0:4C:86:51:D1
SSID Broadcasting:	on
Security Mode:	None

Figure - 24

Primary AP : The wireless router supplies the function of act as two AP simultaneously, but because the difference of privilege, besides normal function of AP, the primary AP also has extra function for some advanced settings and right management.

Wireless status : Display wireless interface status is enabled or not.

Wireless Client : Display the current number of wireless stations associated with router.

Wireless Mode : Current wireless mode of wireless router , the default setting is “AP(Access Point)” mode.

Channel : Display current channel of your wireless router.

SSID : SSID (Service Set Identifier) is your wireless network's name shared among all points in a wireless network. The SSID must be identical for all devices in the wireless network. So make sure all points in the wireless network have the same SSID, we suggested to use the default SSID.

Wireless MAC Address: The MAC address is used for wireless communication.

SSID Broadcasting: You can select “enable” or “disable” to enable or disable the broadcast SSID function, If the setting of this field is disable, wireless client can not obtain this SSID to login in, then user have to input the SSID value manually.

Security Mode : Display whether your security wireless function have been applied.

- **System Info:**

System Uptime:	0 Day(s) 0 Hour(s) 3 Minute(s) 49 Second(s)
CPU Usage:	0.1%
Memory Usage:	7%
Firmware Version:	
Refresh	

Figure - 25

This item provides current running information of System.

- **Statistics Info:**

Internet Access Info		LAN Info	Primary AP Info	Secondary AP Info	Statistics Info
System Uptime		0 Day(s) 1 Hour(s) 50 Minute(s) 31 Second(s)			
Type	Sending Packets	Receiving Packets	Sending data (Kbytes)	Receiving data(KBytes)	
LAN	10200	5087	5289	545	
WAN	10488	5087	5455	635	
WLAN	3901	0	273	0	
Refresh					

Figure - 26

System Run Time: Display System Run Time.

Statistics: This item provides statistics information about the bits router sends and received.

4.3 Internet Setup

4.3.1 DHCP User(cable modem)

The default setting for the router, DHCP is most commonly used for cable modem connections. There is no configuration necessary for this setting because the ISP automatically supplies the information. Choose this type when Cable mode is used.

Internet Setup	
<input checked="" type="radio"/>	DHCP user (Cable Modem)
<input type="radio"/>	PPPoE user (ADSL)
<input type="radio"/>	Static user
DHCP Client Access	
Clone MAC address	00:e0:de:00:12:35 Clone MAC address
Default MAC address	00:e0:de:00:12:35 Default MAC address
MTU	1500
Primary DNS	<input type="text"/>
Secondary DNS	<input type="text"/>
Save Settings	

Figure - 27

Clone MAC: The WAN port of router has a unique MAC address assigned by manufacturer; it called as "Default MAC". The "Clone MAC" is used for some special situations; For example, ISP only allows certain MAC address to access the Internet, thus you can modify your WAN port's MAC address in accord with the requirement of ISP, avoiding ISP's detection.

MTU: The MTU (Maximum Transmission Unit) setting specifies the largest packet size permitted for network transmission. Most DSL users should use the value 1492. You can set

MTU manually, and you should leave this value in the 1200 to 1500 range. If the value you set is not in accord with the value ISP provide, it may causes some problems, such as fail to send Email, or fail to browse website. So if that happened, you can contact your ISP for more information and correct your router's MTU value.

Primary DNS: DNS server is used for resolve domain name. Your ISP will provide you with at least one DNS IP address, input IP address of your DNS server in this field.

Secondary DNS: Input IP address of backup DNS server or you can leave this field blank.

4.3.2 PPPoE User

Some DSL-based ISPs use PPPoE (Point-to-Point Protocol over Ethernet) to establish Internet connections. If you are connected to the Internet through a DSL line, check with your ISP to see if they use PPPoE. If they do, you will have to select **PPPoE**.

The screenshot shows the 'Internet Setup' configuration page. At the top, there are three radio button options: 'DHCP user (Cable Modem)', 'PPPoE user (ADSL)' (which is selected), and 'Static user'. Below this is the 'PPPoE Client Access' section, which contains several input fields and buttons:

- PPPoE Username: [Empty text box]
- PPPoE Password: [Empty text box]
- Clone MAC address: [00:e0:de:00:12:35] with a 'Clone MAC address' button to its right.
- Default MAC address: [00:e0:de:00:12:35] with a 'Default MAC address' button to its right.
- MTU: [1492]
- Primary DNS: [Empty text box]
- Secondary DNS: [Empty text box]

At the bottom of the section, there are three radio button options for connection behavior:

- Connect to Internet automatically (Default) - This option is selected.
- Auto disconnect when idle, time out ,After [0] (1-30) minutes, if no found the access request then auto-break off!
- Connect to Internet manually

A 'Save Settings' button is located at the bottom right of the configuration area.

Figure - 28

- **PPPoE Username:** Enter the User Name provided by your ISP for the PPPoE connection
- **PPPoE Password:** Enter the Password provided by your ISP for the PPPoE connection
- **MAC:** Your ISP may require a particular MAC address in order for you to connect to the Internet. This MAC address is the PC's MAC address that your ISP had originally connected your Internet connection to. Type in this MAC address in this section or use the "Clone MAC" button to replace the WAN MAC address with the MAC address of that PC (you have to be using that PC for the Clone MAC Address button to work). Check "Clone MAC" to clone PC's physical address to WAN interface.

- **Default MAC:** Check "**Default MAC**" to restore the default MAC address of the WAN interface.
- **MTU:** MTU is the Maximum Transmission Unit. It specifies the largest packet size permitted for Internet transmission. Enter your MTU number in the text-box to set the limitation. The default value of MTU is 1492 and use 1300 for the line condition is bad.
- **DNS:** Check "**DNS**" and enter the IP address to specify DNS server for LAN DHCP server.
- **Connection Type:** Select your PPPoE connection from these options:
 - **Auto connect:** This feature will keep your Internet connection always alive. the Router will periodically check your Internet connection. If you are disconnected, then the Router will automatically re-establish your connection. To use this option, click the radio button next to **Auto Connect**.
 - **Connect on demand:** If enabled, the router will trigger a PPPoE session for connection to the Internet if any client PC on your WLAN/LAN sends out a request for Internet access. However, the router automatically disconnects the PPPoE session after the WAN connection has been idle for the amount of time you specified in the timeout box (default, 3 minutes). If your Internet account is billed based on the amount of time of your Internet connection, you probably want to enable this option and enter an idle time value best suitable for your network. To use this option, click the radio button next to **Connect on demand**.
 - **Connect manually:** The router will connect to Internet only when you click "**Connect**" manually from the Web user interface. And the WAN connection will disconnect. If you click "**Disconnect**" manually from the Web user interface. the router will not auto-connect to the Internet. To use this option, click the radio button next to **Connect on demand**.
- Click "**Apply**" to save these settings with the Router. The System will apply the new settings and start rebooting right away. After reboot, the Wireless Router will enable these settings with the Router.

4.3.3 Static User

If you are required to use a permanent IP address to connect to the Internet, select **Static IP**.

Internet Setup

DHCP user (Cable Modem)
 PPPoE user (ADSL)
 Static user

Static IP address Access

WAN IP address	<input type="text"/>	
Subnet Mask	<input type="text"/>	
Default Gateway	<input type="text"/>	
Clone MAC address	<input type="text" value="00:e0:de:00:12:35"/>	<input type="button" value="Clone MAC address"/>
Default MAC address	<input type="text" value="00:e0:de:00:12:35"/>	<input type="button" value="Default MAC address"/>
MTU	<input type="text" value="1500"/>	
Primary DNS	<input type="text"/>	
Secondary DNS	<input type="text"/>	
<input type="button" value="Save Settings"/>		

Figure - 29

- **WAN IP Address:** This is the Router's IP address, when seen from the Internet. Your ISP will provide you with the IP Address you need to specify here.
- **Subnet Mask:** This is the Router's Subnet Mask, as seen by users on the Internet (including your ISP). Your ISP will provide you with the Subnet Mask.
- **Default Gateway:** Your ISP will provide you with the Gateway Address, which is the ISP server's IP address.
- **MAC:** Your ISP may require a particular MAC address in order for you to connect to the Internet. This MAC address is the PC's MAC address that your ISP had originally connected your Internet connection to. Type in this MAC address in this section or use the "**Clone MAC**" button to replace the WAN MAC address with the MAC address of that PC (you have to be using that PC for the Clone MAC Address button to work). Check "**Clone MAC**" to clone PC's physical address to WAN interface.
- **Default MAC:** Check "**Default MAC**" to restore the default MAC address of the WAN interface.
- **MTU:** MTU is the Maximum Transmission Unit. It specifies the largest packet size permitted for Internet transmission. Enter your MTU number in the text-box to set the limitation. The recommended size, entered in the Size field, is 1500. You should leave this value in the 1200 to 1500 range.
- **DNS:** Check "**DNS**" and enter the IP address to specify DNS server for LAN DHCP server.
- Click "**Apply**" to save these settings with the Router. The System will apply the new settings and start rebooting right away. After reboot, the Wireless Router will enable these settings with the Router.

4.4 Wireless Management

- **Wireless Basic:** Providing basic configuration items for wireless router users, including "Wireless network status", "Radio Band", "Radio mode", "SSID", "SSID Broadcasting", "Channel Width", "Control Sideband" and "channel" eight basic configuration items.

Wireless Basic		Security	Host Filter	Association Table	Advanced
Wireless Network Status	<input checked="" type="radio"/> Enable		<input type="radio"/> Disable		
Radio Band	802.11b+g+n				
Radio Mode	Access Point				
SSID	Default				
SSID Broadcasting	<input checked="" type="radio"/> Enable		<input type="radio"/> Disable		
Channel Width	<input type="radio"/> 20MHZ		<input checked="" type="radio"/> 40MHZ		
Control Sideband	<input checked="" type="radio"/> Lower		<input type="radio"/> Upper		
Channel	Channel 6				
Save Settings					

Figure - 30

Wireless Network Status : You can choose "enable" or "disable" to enable or disable the "Wireless Network Status", if what you choose is "Disable", the AP function of wireless router will be turned off.

Radio Band : You can select the wireless standards running on your network, If you have Wireless-G, and Wireless-B devices in your network, keep the default setting, 802.11b/g Mixed.

Radio Mode: You can select radio mode of wireless router, the default setting is AP mode.

SSID: Service Set Identifier (SSID) is the name of your wireless network. Create a name using up to 32 characters. The SSID is case-sensitive.

SSID Broadcasting: Disabled essentially makes your Access Point invisible unless a wireless client already knows the SSID, or is using tools that monitor or 'sniff' traffic from an AP's associated clients.

Channel Width: Select the Channel Width:

40MHz - Select if you are using all 802.11n devices for maximum performance.

20MHz - Select if you are not using any 802.11n wireless clients.

Control Sideband: Select the Control Sideband:

Channel : You can select one channel from 1 to 11 manually, which provides a choice of avoiding interference.

- **Security:** The item allows you to encrypt your wireless communication, and you can also protect your wireless network from unauthorized user access.

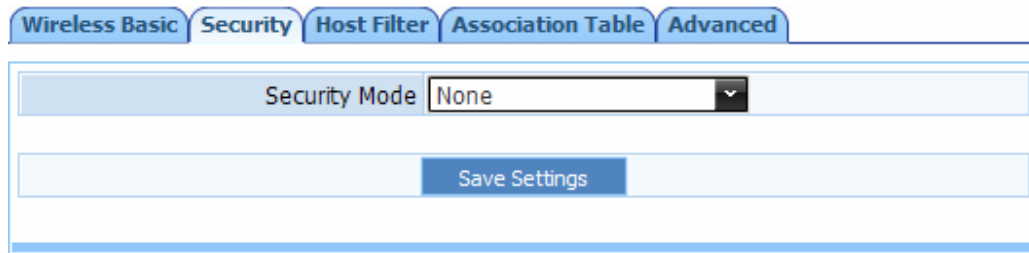


Figure - 31

Security Mode : “Security Mode” supplies “None” ,”WEP” ,”WPA SOHO USER” ,”WPA2 SOHO USER”. And ”WPA&WPA2 SOHO USER” five different encryption modes. ”None” means do not encrypt wireless data.

WEP : There are two basic levels of WEP encryption, 64 bits and 128 bits, the more bits password have, the better security wireless network is, at the same time the speed of wireless is more slower. If you select WEP to encrypt your data, choose the bits of password, it should be 64 bits or 128 bits. Then choose the format of password; it should be HEX or ASCII. The valid character for HEX format should be numbers from 0 to 9 or letters from A to F. HEX doesn’t support mixed letter and number mode. And ASCII supports mixed both letters and numbers. By default, router provides four fields to input four groups of password, you can input all of them or only one of them, and the client ‘s password only need to match one group of password.

WPA SOHO USER: You can select the algorithm you want to use, TKIP or AES. TKIP means “Temporal Key Integrity Protocol”, which incorporates Message Integrity Code (MIC) to provide protection against hackers. AES, means “Advanced Encryption System”, which utilizes a symmetric 128-Bit block data encryption. You can set key renewal time in the “Key Renewal” field.

WPA2 SOHO USER: The WPA2 SOHO USER is similar to WPA SOHO USER and with stronger encryption method than WPA SOHO USER , using WPA2 SOHO USER; you should input password (leave this value in the range of 8 to 63 characters) and key renewal time (leave this value in the range of 60 to 86400 seconds).

WPA&WPA2 SOHO USER: This item mixed WPA SOHO USER and WPA2 SOHO USER mode, which provides higher security level; you can configure it according with WPA SOHO USER or WPA2 SOHO USER.

- **Host Filter:** You can filter wireless users by enabling this function; thus unauthorized users can not access the network. To disable “Wireless Host Filter”, keep the default setting “Disable”. To enable “Wireless Host Filter”, follow these steps to set “Wireless Host Filter”.

Figure - 32

1. Add MAC address you want to control in the “MAC address” field (the format is XX-XX-XX-XX-XX-XX), then click “Add” button, and you will see the MAC address has displayed in the MAC list.
2. There are two items supplied, “Permit wireless connection for MAC address listed (others are Denied)” and “Deny wireless connection for MAC address listed (others are Permitted)”, Select the item you want, and click “Save Settings” button.

- **Association Table:** Display current status of the wireless client associate with AP .

Figure - 33

- **Advanced:** Display current status of the wireless client associate with AP.

Figure - 34

Authentication Type : The default is set to “Auto Select”, which allows “Open System” or “Shared Key” authentication to be used. Select “Shared Key” if you only want to use “Shared Key” authentication (the sender and recipient use a WEP key for authentication).

Aggregation: AMPDU+ASMDU – In this mode, you will get the max performance.

Disable – In this mode, you will disable the Aggregation.

Short GI: Check this box to reduce the guard interval time therefore increasing the data capacity. However, it's less reliable and may create higher data loss.

Fragmentation Threshold : This value specifies the maximum size for a packet before data is fragmented into multiple packets. You should leave this value in the 256 to 2346 range. In most cases, it should remain as its default value of 2346. Setting the Fragmentation Threshold too low may result in poor network performance.

RTS Threshold: You can set RTS Threshold value in this field, the valid range should be 256-2347 and default value is 2347. If a network packet is smaller than the preset RTS threshold size, the RTS/CTS mechanism will not be enabled.

DTIM Interval : The “DTIM Interval” indicates the interval of the Delivery Traffic Indication Message, you can set this value in the 20-1000 range, the default value is 100.

Transmit Rate : Transmit rate indicates the transmission speed of wireless LAN access .The default setting is “Auto” and you can set this value between 1 – 130Mbps range.

Preamble Type : "Short Preamble" is suitable for heavy traffic wireless network. "Long Preamble" provides much communication reliability; the default setting is "Long Preamble".

Protection: Using 802.11n, 802.11b and 802.11g mixed mode may result in poor network performance. By enabling 802.11 protection, it will ameliorate performance of 802.11g devices in your wireless network.

4.5 LAN Setup

The Wireless Broadband Router communicates with the wired/wireless clients through its LAN port. The LAN configuration page allows you to define the private IP address and DHCP server settings over the LAN interface.

- **LAN IP Address:** Enter the IP address and subnet mask for the Wireless Broadband Router LAN port. All local wired/wireless devices communicate with the device through this port. It is also the IP address of the Web-based Configuration Utility. By default, the IP address and subnet mask of the LAN port is 192.168.1.1 and 255.255.255.0 respectively.

LAN IP address		DHCP Server
IP Address	192.168.1.1	
Subnet Mask	255.255.255.0	
Save Settings		

Figure - 35

- **DHCP Server:** The DHCP server can be **Enable** or **Disable** in this screen. If you choose to set this device as a DHCP server, then it will assign IP addresses to its clients. The DHCP pool range is also changeable.

Figure - 36



If you change the private IP address and apply the changes, the PC from which you configure the router will lose the communication to the router. To reconnect, you will need to renew the IP address of the PC or change to an IP address compatible with the new LAN port IP address.

4.6 Applications And Gaming

4.6.1 Virtual Service

Some games, servers, and applications (such as BT, QQ video, Edunkey, Web server) are no longer effect when behind the NAT router, so this item provides function of port mapping from LAN to WAN.

ID	Description	Internal host IP address	Protocol	External Port	Internal Port	Delete
----	-------------	--------------------------	----------	---------------	---------------	--------

Figure - 37

Description: Describe current virtual server item.

Internal Host IP Address: The “Internal Host IP Address” indicates IP address of the internal host using virtual server.

Protocol : The protocol item supplies several protocols. For example, if you have web server within LAN, you can select the HTTP template then the router will input port number 80 automatically.

External Port: Input an extranet port number.

Internal Port : Input an intranet port number .

4.6.2 DMZ

DMZ opens all the ports of one computer, exposing the computer to the Internet. So it should only be used for some special-purpose, especial for Internet online games. Using this function you can select "DMZ" item and input IP address of DMZ host, then click "Save Setting". For the purpose of security, we suggested that using "Virtual server" instead of "DMZ".

DMZ SETTING	
DMZ Status	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
DMZ Host IP Address	<input type="text" value="0.0.0.0"/>
<input type="button" value="Save Settings"/>	

Figure - 38

4.7 Application Gateway

This feature provides port mapping for some applications. FTP and VPN are both the most common applications, so there are two ways of application gateway: "FTP Pass-through" and "VPN Pass-through".

- **FTP Pass-through:** LAN user is able to use nonstandard port number to communicate with FTP server on the Internet by enabling this function.

FTP Pass-through	
FTP Pass-through Status	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
Port List	<input type="text" value="21"/>
<input type="button" value="Save Settings"/>	

Figure - 39

- **VPN Pass-through:** VPN is commonly used for encapsulate and encrypt data across the public network. For VPN tunnel, the router supports IPSEC pass-through, PPTP pass-through and L2TP pass-through.

VPN Pass-through	
PPTP Pass-through	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
L2TP Pass-through	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
IPSEC Pass-through	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
<input type="button" value="Save Settings"/>	

Figure - 40

PPTP Pass-through : PPTP means the "Point to Point Tunneling Protocol", you can select "enable" to allow PPTP pass-through the router.

L2TP Pass-through : L2TP means the "Layer 2 Tunneling Protocol", you can select "enable" to allow L2TP pass-through the router.

IPSEC Pass-through: IPSEC (Internet Protocol Security) is a suite of protocols used to

implement secure exchange; you can select “enable” to allow IPSEC pass-through the router.

4.8 Security Management

This feature provides security and network protection by using “Internet access control”, “Firewall” and some other options. 4.8.1 Internet Access Control”, “Firewall” and some other options.

4.8.1 Internet Access Control

- **MAC Filter** : You can filter wired users by enabling this function; thus unauthorized users can not access the network. Follow these steps to set MAC filter

Access Control			
MAC Filter Rule		<input checked="" type="radio"/> Enable	<input type="radio"/> Disable
Save Settings			
MAC Filter Management			
Description		<input type="text"/>	
MAC Address		<input type="text"/>	
Add			
ID	MAC Address	Description	Delete

Figure - 41

1. Add MAC address you want to control in the “MAC address” field (the format is XX-XX-XX-XX-XX-XX), then click “Add” button, and you will see the MAC address has displayed in the MAC list.

2. There are two items supplied, “Permit wireless connection for MAC address listed (others are Denied)” and “Deny wireless connection for MAC address listed (others are Permitted)”, Select the item you want, and click “Save Settings” button.

- **Internet Access Control:** The rules of “Internet access control” based on source IP, port number and protocol. Follow these steps to set Internet Access Control:

IP Filter Parameter

IP Firewall Status Enable Disable

Save Settings

IP Filter List Management

Description

Source IP Address -

Protocol Template Please select a template ▼

Protocol and Port ALL ▼ -

Save Settings

Description	Source IP	Protocol	Destination Port	Delete
-------------	-----------	----------	------------------	--------

Figure - 42

1. You can select “Default IP Firewall Rule” and click “Save Settings” to enable “Internet Access Control” function. This is only the first step, you should continued to create appropriate rules for “Internet Access Control”.
2. Input description information for current access control rule in the “Description” field. Input IP address of host you want to restrict .If the rule has already existed in “Protocol Template”. You can select appropriate item and apply it. Or you can input protocol type and port number manually, click “add” button, then the item will displayed in the list.
3. If you want to delete certain item on the list, select appropriate item on the list, click “delete” to delete it.

- **DNS Filter:** “DNS filter”is able to filter certain domain name such as www.sina.com Follow these steps to set DNS filter:

DNS Filter Parameter

DNS Filter Status Enable Disable

Save Settings

DNS Filter List Management

Description

DNS Filter Key words

Add

ID	Description	DNS Filter Key words	Delete
----	-------------	----------------------	--------

Figure - 43

1. You can select “Default DNS filter rule” and click “Save Settings” to enable “DNS Filter” function. This is only the first step, you should continued to create appropriate rules for “DNS

Filter”.

2. Input description information in the “Description” field for current access control rule, input website name or Domain name in the “DNS Key Words” field, such as www.163.com.

4.9 DDNS

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

DDNS Status	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
DDNS Server Provider	oray www.oray.net
Username	<input type="text"/>
Password	<input type="text"/>
DDNS Server Domain Name	PH003.oray.net
DDNS Server Port	6060
Dynamic Domain Name	<input type="text"/>
Status Information	<input type="text"/>
<input type="button" value="Save Settings"/> <input type="button" value="Refresh"/>	

Figure - 44

- **Enable Dynamic DNS:** To enable or disable DDNS feature. Enable DDNS is checked.
- **DDNS Service Provider:** Select a dynamic DNS service provider from the Service Provider drop list.
- **User ID/Password/Host Name:** Enter your registered domain name and your username and password for this service.
- **Status:** The status of the DDNS service connection is displayed here. To see the latest DDNS status, click Refresh button.

4.10 Routing

Routing Table					
ID	Type	Destination Network or IP address	Subnet Mask	Next-hop address	Delete

Figure - 45

Most of broadband router and wireless router are using NAT mode, so this feature is designed for most common network environment.

1. Destination Network or IP Address: Specify a certain destination Network or IP address which static route forward to.
2. Subnet Mask: Subnet mask is used for distinguish Network portion and Host portion for an IP address.
3. The Next-hop IP Address: This is an IP address of the next-hop device (and also is the gateway address for local host) that allows forwarding data between router and remote network or host.
4. Routing Table: You can check out all current route items , click “delete” button to delete an route item existed in routing table.

4.11 System Management

- **Password Setting:** The default username/password is guest/guest. To ensure the Router’s security, It is suggested that you change the default password to one of your choice, here enter a new password and then Re-enter it again to Confirm your new password. Click “Save Settings” button to save settings.

Figure - 46

- **Web Setup:** “Web Remote management status” and setting for “Remote management port”, you can configure your firewall according to your requirement.

Password Setting	Web Setup	Firmware Upgrade	Restart System	Restore Default
Web Remote Management Status		<input checked="" type="radio"/> Enable	<input type="radio"/> Disable	
Remote Management Port		8080		
Save Settings				

Figure - 47

Firmware Update: Click "Browse..." button and select a File to upgrade, After you have selected the appropriate file, click "Upgrade" button to execute upgrade procedure. Do not cut off the power supply during the process of upgrading.

Password Setting	Web Setup	Firmware Upgrade	Restart System	Restore Default
Upgrade File		浏览...		
Upgrade				
Warning: Upgrading firmware may take a few minutes, please don't turn off the power or press the reset button.				

Figure - 48

- **Restart System:**

Password Setting	Web Setup	Firmware Upgrade	Restart System	Restore Default
Restart System				

Figure - 49

- **Restore Default :** Click "Restore Default" button, the Router will erase all of your settings and replace them with the factory defaults , make sure you have backup current settings before click this button .

Password Setting	Web Setup	Firmware Upgrade	Restart System	Restore Default
Restore Default				

Figure - 50

Appendix I : Troubleshooting

1. I cannot access the Web-based Configuration Utility from the Ethernet computer used to configure the router.

- Check that the LAN LED is on. If the LED is not on, verify that the cable for the LAN connection is firmly connected.
- Check whether the computer resides on the same subnet with the router's LAN IP address.
- If the computer acts as a DHCP client, check whether the computer has been assigned an IP address from the DHCP server. If not, you will need to renew the IP address.
- Use the ping command to ping the router's LAN IP address to verify the connection.
- Make sure your browser is not configured to use a proxy server.
- Check that the IP address you entered is correct. If the router's LAN IP address has been changed, you should enter the reassigned IP address instead.

2. I forget Password (Reset the Router without Login)

- Plug out the power of the Router.
- Use a pencil to press and hold the default button on the back panel of the Router. then plug in the power of the Router.
- Press and hold the default button wait for a few seconds until the CPU LED indicator stays green.
- Reboot the AP.
- After the above those steps, the manufacture's parameters will be restored in the Router. The default password is **guest**.

3. I have some problems related to Connection with Cable Modem

Please follow the following steps to check the problems:

- Check whether the DSL modem works well or the signal is stable. Normally there will be some indicator lights on the modem, users can check whether the signal is ok or the modem works well from those lights. If not, please contact the ISP.
- Check the front panel of the Router, there are also some indicator lights there. When the physical connection is correct, the Power light and the CPU light should be solid; the WAN light should be blinking. If you use your computer, the corresponding LAN port light should be blinking too. If not, please check whether the cables work or not.
- Repeat the steps in **WAN Setup** Connect with Internet through DSL Modem.

4. I can browse the router's Web-based Configuration Utility but cannot access the Internet.

- Check if the WAN LED is ON. If not, verify that the physical connection between the router and the DSL/Cable modem is firmly connected. Also ensure the DSL/Cable

modem is working properly.

- If WAN LED is ON, open the System Overview page of the Web configuration utility and check the status group to see if the router's WAN port has successfully obtained an IP address.
- Make sure you are using the correction method (Dynamic IP Address, PPPoE, or Static IP) as required by the ISP. Also ensure you have entered the correct settings provided by the ISP.
- For cable users, if your ISP requires a registered Ethernet card MAC address, make sure you have cloned the network adapter's MAC address to the WAN port of the router. (See the **MAC Address** field in **WAN Setup**.)

5. My wireless client cannot communicate with another Ethernet computer.

- Ensure the wireless adapter functions properly. You may open the Device Manager in Windows to see if the adapter is properly installed.
- Make sure the wireless client uses the same SSID and security settings (if enabled) as the Wireless Broadband Router.
- Ensure that the wireless adapter's TCP/IP settings are correct as required by your network administrator.
- If you are using a 802.11b wireless adapter, and check that the **802.11G** Mode item in **Wireless Basic Setting** page, is not configured to use 802.11G Performance.
- Use the ping command to verify that the wireless client is able to communicate with the router's LAN port and with the remote computer. If the wireless client can successfully ping the router's LAN port but fails to ping the remote computer, then verify the TCP/IP settings of the remote computer.

FCC statement

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

To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example- use only shielded interface cables when connecting to computer or peripheral devices).

FCC Radiation Exposure Statement

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body. This equipment complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

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

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

The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.