802.11g Wireless LAN Broadband Router

Manual

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Federal Communication Commission Interference Statement

FCC Part 15

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of 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:

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

FCC Caution

This equipment must be installed and operated in accordance with provided instructions and a minimum 20 cm spacing must be provided between computer mounted antenna and person's body (excluding extremities of hands, wrist and feet) during wireless modes of operation.

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

Any changes or modifications not expressly approved by the party responsible for compliance could void the authority to operate equipment.

Federal Communication Commission (FCC) Radiation Exposure Statement

This equipment complies with FCC radiation exposure set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20cm (8 inches) during normal operation.

The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The equipment version marketed in US is restricted to usage of the channels 1-11 only.

R&TTE Compliance Statement

This equipment complies with all the requirements of DIRECTIVE 1999/5/EC OF THE EUROPEAN PARLIAMENT AND THE COUNCIL of March 9, 1999 on radio equipment and telecommunication terminal Equipment and the mutual recognition of their conformity (R&TTE).

The R&TTE Directive repeals and replaces in the directive 98/13/EEC (Telecommunications Terminal Equipment and Satellite Earth Station Equipment) As of April 8, 2000.

Safety

This equipment is designed with the utmost care for the safety of those who install and use it. However, special attention must be paid to the dangers of electric shock and static electricity when working with electrical equipment. All guidelines of this and of the computer manufacture must therefore be allowed at all times to ensure the safe use of the equipment.

EU Countries Intended for Use

The ETSI version of this device is intended for home and office use in Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom.

The ETSI version of this device is also authorized for use in EFTA member states: Iceland, Liechtenstein, Norway, and Switzerland.

EU Countries Not intended for use

None.

Chapter 1 ..... **8**
Introduction **8**
Features **8**
Minimum Requirements **8**
Package Content **8**
Note **8**
Get to know the Broadband Router **9**
Back Panel **9**
Front Panel **10**
Setup Diagram **11**
Getting started **11**
Chapter 2 ..... **23**
Quick Setup **23**
Step 1) Time Zone **23**
Step 2) LAN Interface **24**
Step 3) WAN Interface **25**
2.31 Static IP **26**
2.32 DHCP Client **27**
2.33 PPPoE **28**
2.34 PPTP **29**
2.35 L2TP **30**
Step 4) Wireless Basic Settings **31**
Step 5) Wireless Security Settings **32**
2.51 WEP **33**
2.52 WPA(TKIP) **35**
2.53 WPA2(AES) **36**
2.54 WPA2 Mixed **37**
Chapter 3 ..... **38**
General Settings **38**
3.1 System **39**
3.1.1 Time Zone Setting **40**
3.1.2 Password Setup **41**
3.2 WAN **42**
3 ..... **43**
.2.1 Static IP **43**
3.2.2 DHCP Client **43**
3.2.3 PPPoE (PPP over Ethernet) **43**
3.2.4 PPTP **43**
3.2.5 L2TP **43**
3.2.6 DDNS **44**
3.3 LAN **45**
3.4 Wireless **46**
3.4.1 Basic Settings **47**
3.4.2 Advanced Settings **49**
3.4.3 Security **51**

3.4.4 Access Control **53**
3.4.5 Site Survey **54**
3.4.6 WDS Settings **55**
3.5 Firewall **56**
3.5.1 Port Filtering **57**
3.5.2 IP Filtering **58**
3.5.3 MAC Filtering **59**
3.5.4 Port Forwarding **60**
3.5.5 DMZ **61**
Chapter 4 ..... **62**
Status **62**
4.1 Status **63**
4.2 System Log **64**
4.3 Statistics **65**
Chapter 5 ..... **66**
Tool **66**
5.1 Save/Reload Settings **67**
5.2 Firmware Upgrade **68**
Appendix A **69**
Glossary **70**

Chapter 1

Introduction

Congratulations on purchasing this 802.11g Wireless LAN 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 802.11g/b access point that allows you to build up a wireless LAN. 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.

Features

- High Internet Access throughput (50M).
- Allow multiple users to share a single Internet line.
- Supports up to 253 users.
- Internet Access via Cable or xDSL modem.
- Access Private LAN Servers from the Public Network.
- Equipped with four LAN ports (10/100M) and one WAN port (10/100M).
- Provides IEEE 802.11g/b wireless LAN access point.
- Support DHCP (Server/Client) for easy setup.
- Support advance features such as: Special Applications, DMZ, and Access Control.
- Supports System Status (Port Connectivity) and Remote Log for network management.
- Easy to use Web-based GUI for configuration and management purposes.
- Remote Management allows configuration and upgrades from a remote site (over the Internet).

Minimum Requirements

- One External xDSL (ADSL) or Cable modem with an Ethernet port (RJ-45)
- Network Interface Card (NIC) for each Personal Computer (PC)
- PCs with a Web-Browser (Internet Explorer 4.0 or higher, or Netscape Navigator 4.7 or higher)

Package Content

- One 4-port Broadband router unit
- One Quick Installation Guide
- One User Manual CD
- One Power Adapter
- Accessories

Note

The WAN "idle timeout" auto-disconnect function may not work due to abnormal activities of some network application software, computer virus or hacker attacks from the Internet. For example, some software sends network packets to the Internet in the background, even when you are not using the Internet. So please turn off your computer when you are not using it. This function also may not work with some ISP. So please make sure this function can work properly when you use this function in the first time, especially your ISP charge you by time used.

Get to know the Broadband Router

Back Panel

The diagram (fig1.0) below shows the broadband router's back panel. The router's back panel is divided into three sections, **LAN**, **WAN** and **Reset**:

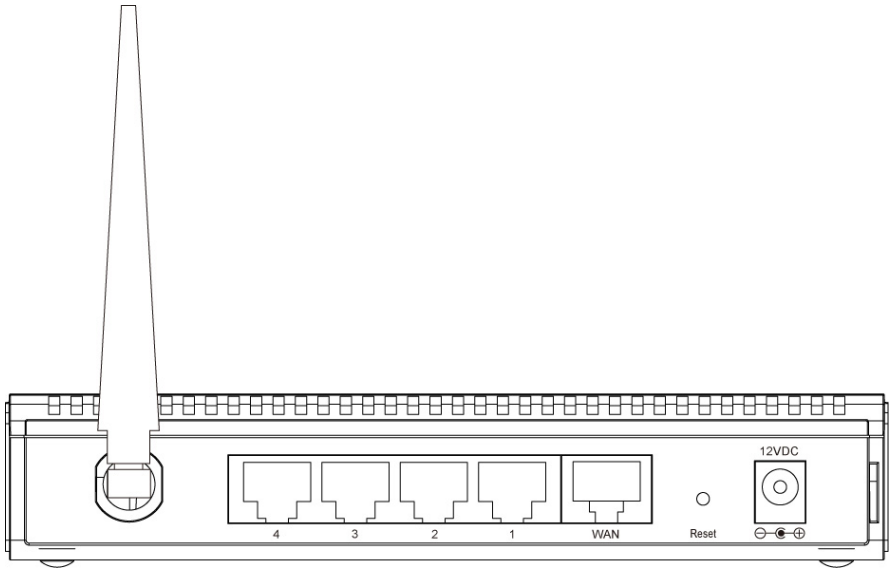


Figure 1.0

1) Antenna

There is a 2dBi dipole antenna.

1) Local Area Network (LAN)

The Broadband router's 4 LAN ports are where you connect your LAN's PCs, printer servers, hubs and switches etc.

2) Wide Area Network (WAN)

The WAN port is the segment connected to your xDSL or Cable modem and is linked to the Internet.

3) Reset

The Reset button allows you to do one of two things.

1) If problems occur with your router, press the router's reset button with a pencil tip (for less than 4 seconds) and the router will re-boot itself, keeping your original configurations.

2) If problems persist or you experience extreme problems or you forgot your password, press the reset button for longer than 4 seconds and the router will reset itself to the factory default settings (**warning**: your original configurations will be replaced with the factory default settings)

Front Panel

On the router's front panel there are LED lights that inform you of the router's current status. Below is an explanation of each LED and its description.

LED	Light Status	Description
Power	ON	Router's power supply is on
WLAN	ON	Wireless LAN has been activated
	OFF	Wireless LAN is disabled
	Flashing	Wireless LAN has Activity (ACT) data being sent
WAN LNK/ACT	ON	WAN is connected
	OFF	No WAN connection
	Flashing	WAN port has Activity (ACT), data being sent
LAN LNK/ACT (Port 1-4)	ON	LAN is connected
	OFF	No LAN connection
	Flashing	LAN port has Activity (ACT), data being sent

Setup Diagram

Figure 1.2 below shows a typical setup for a Local Area Network (LAN).

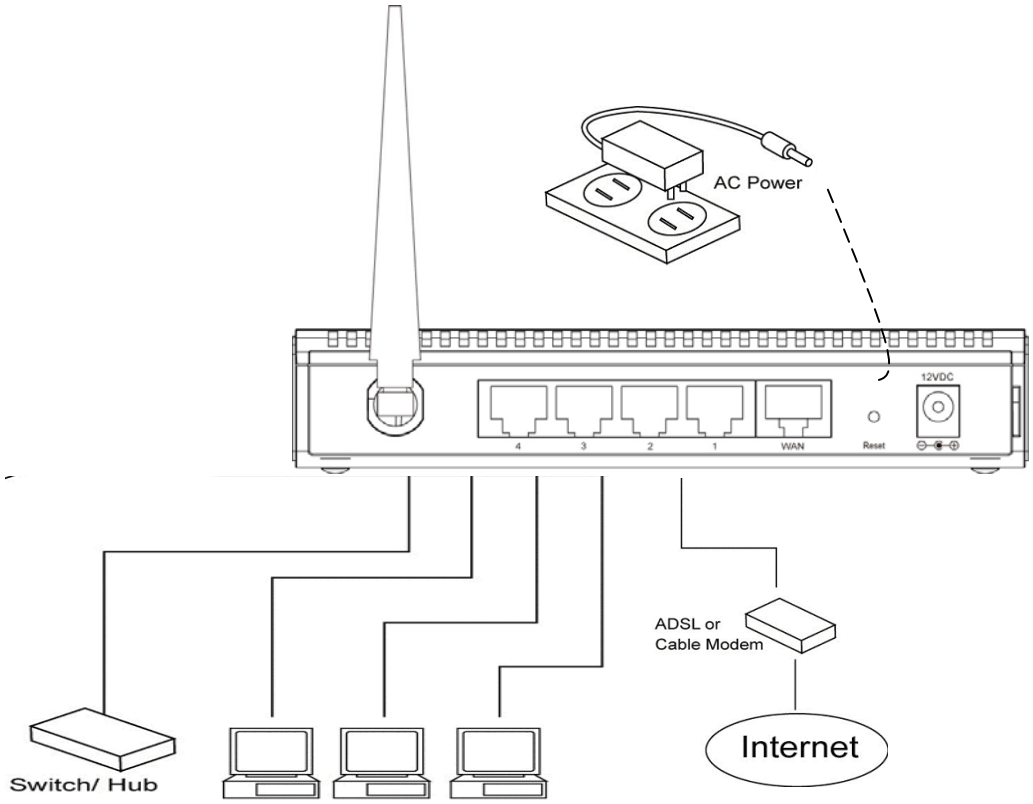


Figure 1.2

Getting started

This is a step-by-step instruction on how to start using the router and get connected to the Internet.

1) Setup your network as shown in the setup diagram above (fig 1.2).

2) You then need to set your LAN PC clients so that it can obtain an IP address automatically. All LAN clients require an IP address. Just like an address, it allows LAN clients to find one another. (If you have already configured your PC to obtain an IP automatically then proceed to step 3, page 11)

Configure your PC to obtain an IP address automatically

By default the broadband router's DHCP is on, this means that you can obtain an IP address automatically once you've configured your PC to obtain an IP address automatically. This section will show you how to configure your PC's so that it can obtain an IP address automatically for either Windows 95/98/Me, 2000 or NT operating systems. For other operating systems (Macintosh, Sun, etc.), follow the manufacturer's instructions. The following is a step-by-step illustration on how to configure your PC to obtain an IP address

automatically for 2a) **Windows 95/98/Me**, 2b) **Windows XP**, 2c) **Windows 2000,** 2d) **Windows NT**, and 2e) **Windows Vista**.

2a) Windows 95/98/Me

1: Click the *Start* button and select *Settings*, then click *Control Panel*. The *Control Panel* window will appear.

2: Double-click *Network* icon. The *Network* window will appear.

3: Check your list of Network Components. If TCP/IP is not installed, click the *Add* button to install it now. If TCP/IP is installed, go to **step 6**.

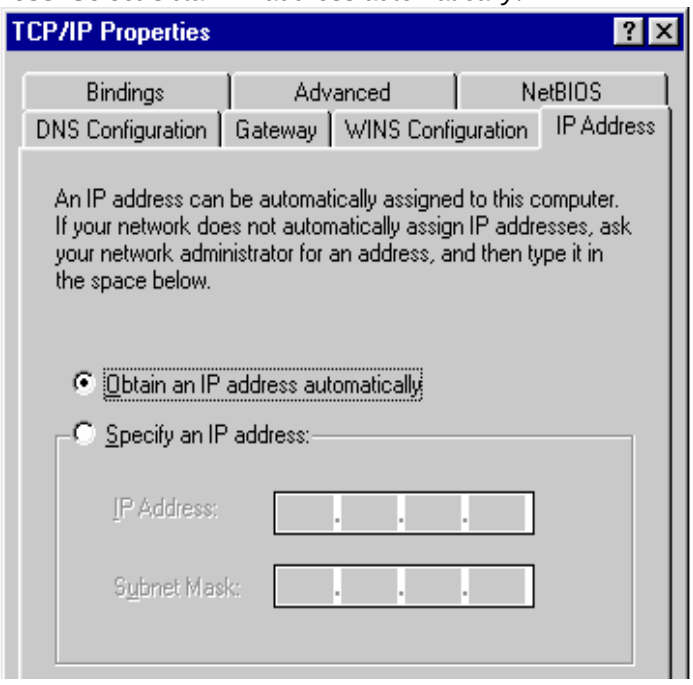
4: In the *Network Component Type* dialog box, select *Protocol* and click *Add* button.

5: In the *Select Network Protocol* dialog box, select *Microsoft* and *TCP/IP* and then click the *OK* button to start installing the TCP/IP protocol. You may need your Windows CD to complete the installation.

6: After installing TCP/IP, go back to the *Network* dialog box. Select *TCP/IP* from the list of *Network Components* and then click the *Properties* button.

7: Check each of the tabs and verify the following settings:

- **Bindings**: Check *Client for Microsoft Networks* and *File and printer sharing for Microsoft Networks*.
- **Gateway**: All fields are blank.
- **DNS Configuration**: Select *Disable DNS.*
- **WINS Configuration**: Select *Disable WINS Resolution.*
- **IP Address**: Select *Obtain IP address automatically***.**



8: Reboot the PC. Your PC will now obtain an IP address automatically from your

Broadband Router's DHCP server.

Note: Please make sure that the Broadband router's DHCP server is the only DHCP server available on your LAN.

Once you've configured your PC to obtain an IP address automatically, please proceed to Step 3

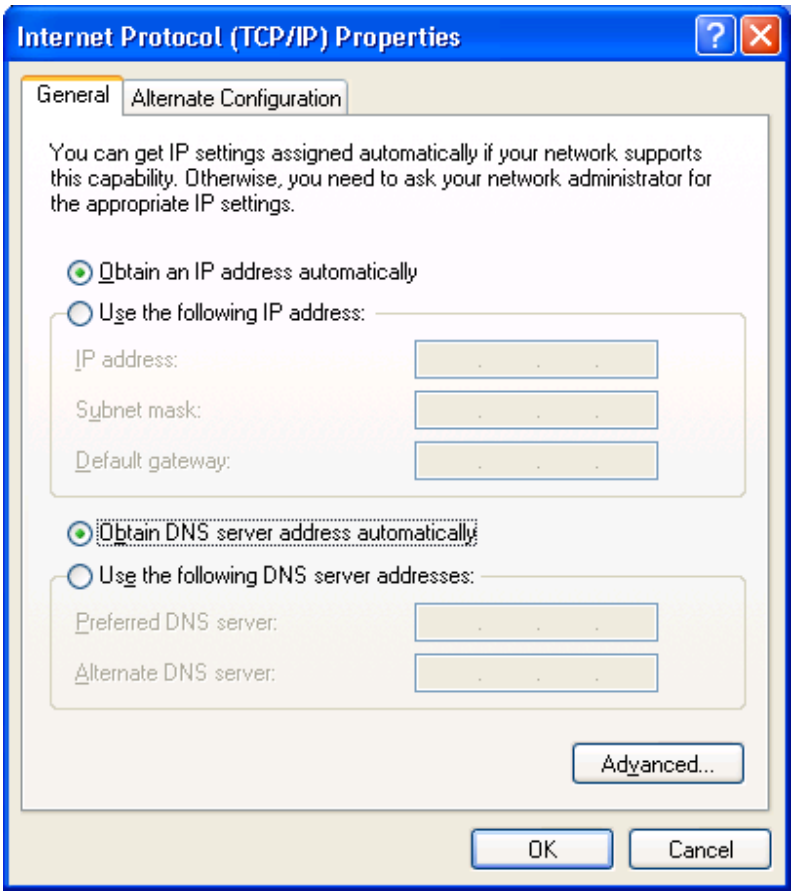
2b) Windows XP

1: Click the *Start* button and select *Settings*, then click *Network Connections.* The *Network Connections* window will appear.

2: Double-click *Local Area Connection* icon. The *Local Area Connection* window will appear.

3: Check your list of Network Components. You should see *Internet Protocol [TCP/IP]* on your list. Select it and click the *Properties* button.

4: In the Internet Protocol (TCP/IP) Properties window, select *Obtain an IP address automatically* and *Obtain DNS server address automatically* as shown on the following screen.



5: Click *OK* to confirm the setting. Your PC will now obtain an IP address automatically from your Broadband Router's DHCP server.

Note: Please make sure that the Broadband router's DHCP server is the only DHCP server available on your LAN.

Once you've configured your PC to obtain an IP address automatically, please proceed to Step 3.

2c) Windows 2000

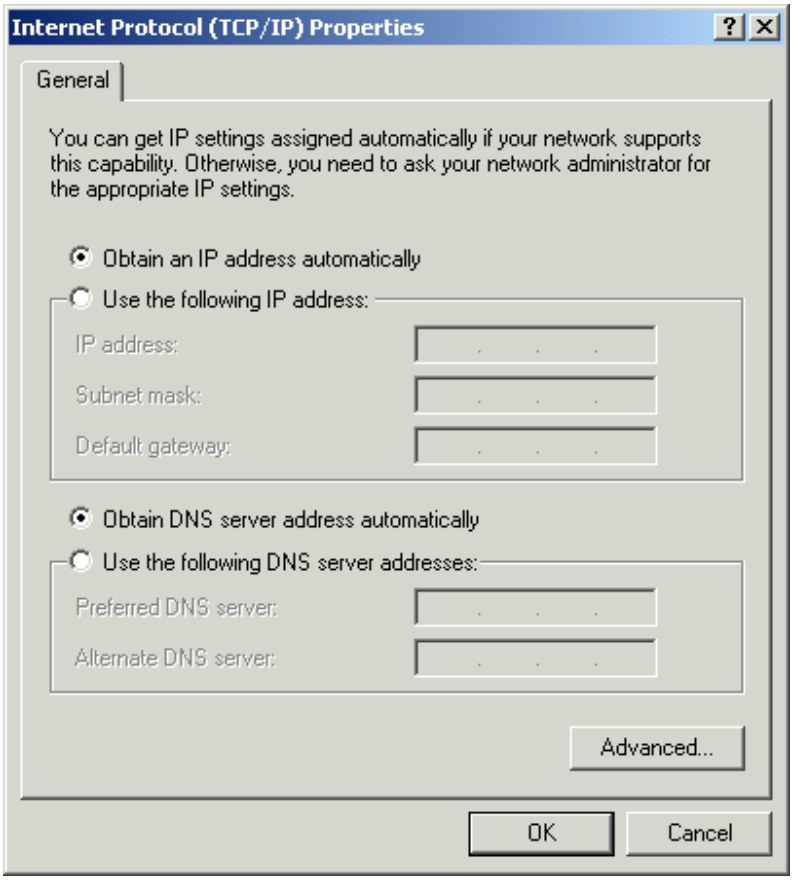
1: Click the *Start* button and select *Settings*, then click *Control Panel*. The *Control Panel* window will appear.

2: Double-click *Network and Dial-up Connections* icon. In the *Network and Dial-up Connection* window, double-click *Local Area Connection* icon. The *Local Area Connection* window will appear.

3: In the *Local Area Connection* window, click the *Properties* button.

4: Check your list of Network Components. You should see *Internet Protocol [TCP/IP]* on your list. Select it and click the *Properties* button.

5: In the Internet Protocol (TCP/IP) Properties window, select *Obtain an IP address automatically* and *Obtain DNS server address automatically* as shown on the following screen.



6: Click *OK* to confirm the setting. Your PC will now obtain an IP address automatically from your Broadband Router's DHCP server.

Note: Please make sure that the Broadband router's DHCP server is the only DHCP server available on your LAN.

Once you've configured your PC to obtain an IP address automatically, please proceed to Step 3.

2d) Windows NT

1: Click the *Start* button and select *Settings*, then click *Control Panel*. The *Control Panel* window will appear.

2: Double-click *Network* icon. The *Network* window will appear. Select the *Protocol* tab from the *Network* window.

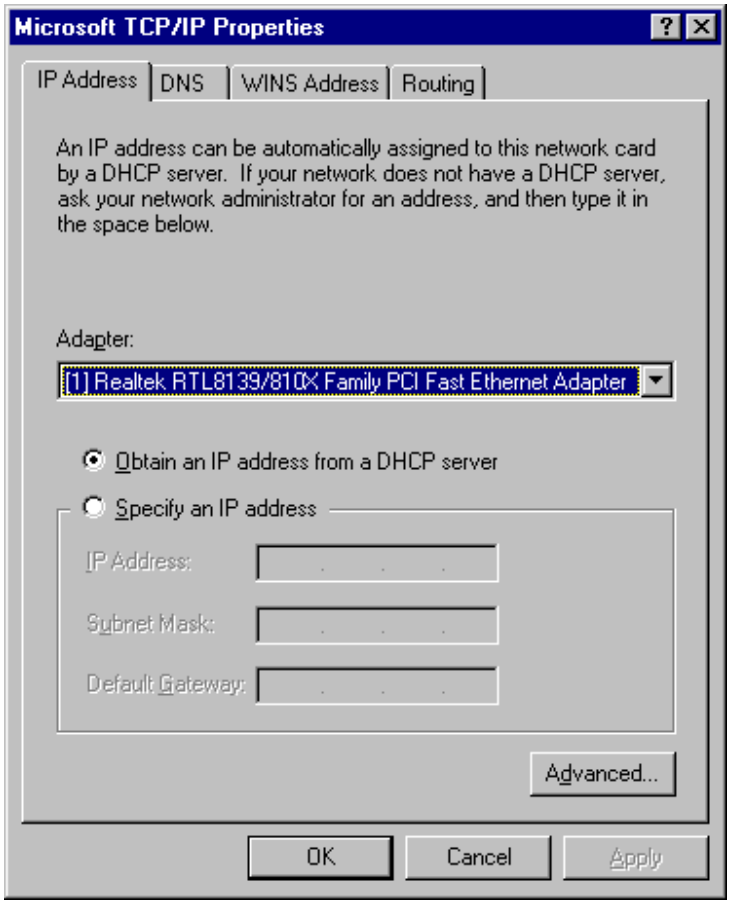
3: Check if the *TCP/IP Protocol* is on your list of *Network Protocols*. If TCP/IP is not installed, click the *Add* button to install it now. If TCP/IP is installed, go to **step 5**.

4: In the *Select Network Protocol* window, select the *TCP/IP Protocol* and click the *Ok* button to start installing the TCP/IP protocol. You may need your Windows CD to complete the installation.

5: After you install TCP/IP, go back to the *Network* window. Select *TCP/IP* from the list of *Network Protocols* and then click the *Properties* button.

6: Check each of the tabs and verify the following settings:

- **IP Address:** Select *Obtain an IP address from a DHCP server*.
- **DNS:** Let all fields are blank.
- **WINS:** Let all fields are blank.
- **Routing:** Let all fields are blank.



7: Click *OK* to confirm the setting. Your PC will now obtain an IP address automatically from your Broadband Router's DHCP server.

Note: Please make sure that the Broadband router's DHCP server is the only DHCP server available on your LAN.

Once you've configured your PC to obtain an IP address automatically, please proceed to Step 3.

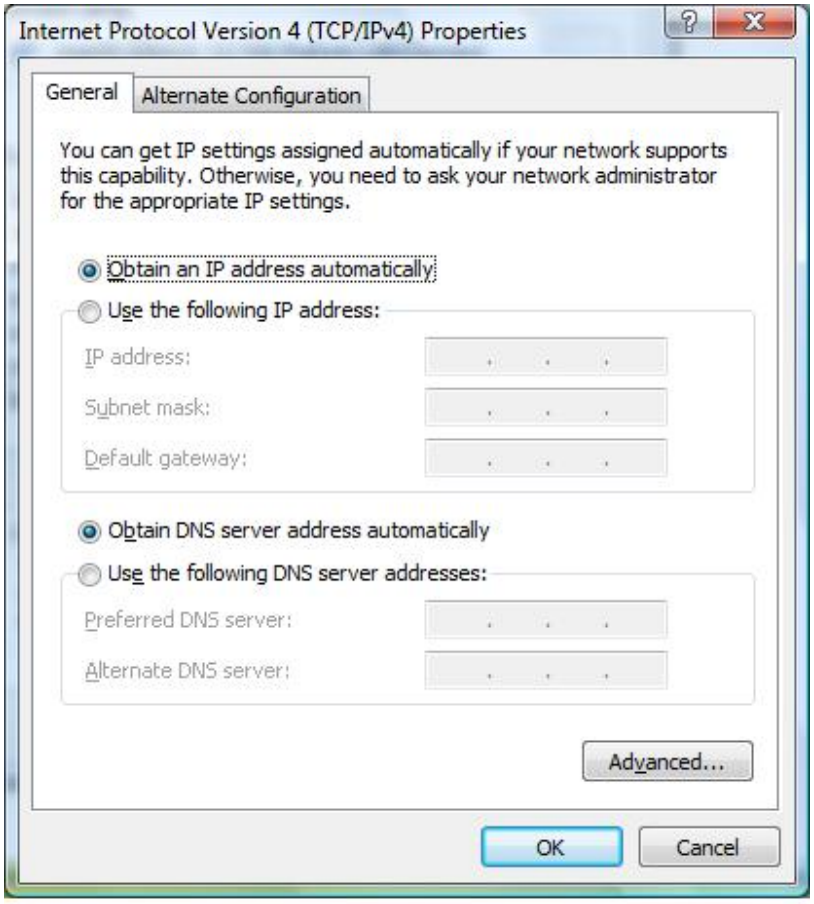
2e) Windows Vista

1. Click the *Start* button and select *Settings and then select Control Panel.* Double click *Network and Sharing Center*, the *Network and Sharing Center* window will appear.

2. Click *Manage network connections* and right click on the *Local Area Connection* icon and select *Properties*. The *Local Area Connection* window will appear.

3. Check your list of Network Components. You should see Internet Protocol Version 4 (TCP/IPv4) on your list. Select it and click the *Properties* button.

4. In the Internet Protocol Version 4 (TCP/IPv4) Properties window, select *Obtain an IP address automatically* and *Obtain DNS server address automatically* as shown on the following screen.



5. Click *OK* to confirm the setting. Your PC will now obtain an IP address automatically from your router's DHCP server.

Note: Please make sure that the Broadband router's DHCP server is the only DHCP server available on your LAN.

Once you've configured your PC to obtain an IP address automatically, please proceed to

Step 3.

3) Once you have configured your PCs to obtain an IP address automatically, the router's DHCP server will automatically give your LAN clients an IP address. By default the Broadband Router's DHCP server is enabled so that you can obtain an IP address automatically. To see if you have obtained an IP address, see Appendix A.

   Note: Please make sure that the Broadband router's DHCP server is the only DHCP server available on your LAN. If there is another DHCP on your network, then you'll need to switch one of the DHCP servers off. (To disable the Broadband router's DHCP server see chapter 3 LAN Port)

4) Once your PC has obtained an IP address from your router, enter the default IP address **192.168.2.1** (broadband router's IP address) into your PC's web browser and press <enter>

5) The login screen below will appear. Enter the "User Name" and "Password" and then click <OK> to login.

   Note: By default the user name is "admin" and the password is "1234". For security reasons it is recommended that you change the password as soon as possible (in General setup/system/password, see chapter 3)

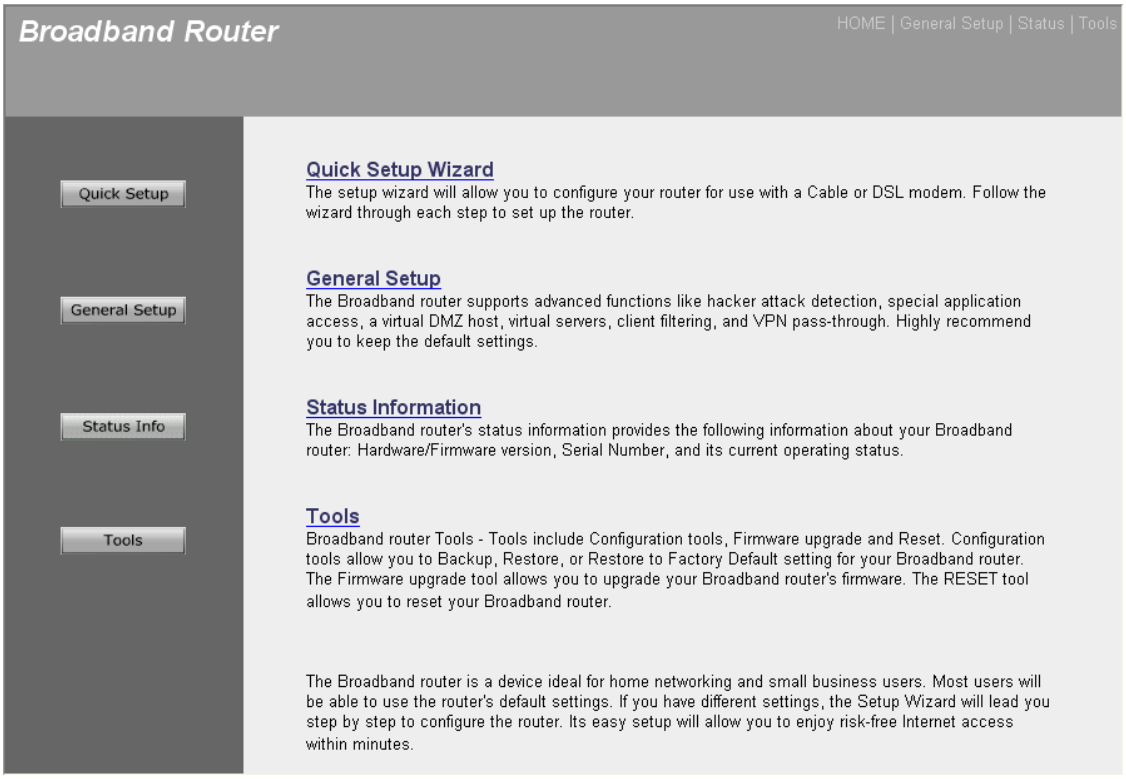
6) The **HOME** page screen below will appear. The **Home** Page is divided into four sections, **Quick Setup Wizard**, **General Setup**, **Status Information** and **Tools.**

Quick Setup Wizard *(Chapter 2)*
If you only want to start using the broadband router as an Internet Access device then you ONLY need to configure the screens in the Quick Setup Wizard section.

General Setup *(Chapter 3)*
If you want to use more advanced features that the broadband router has to offer, then you'll need to configure the Quick Setup Wizard and the General Setup section. Alternatively, you can just configure the General Setup section, since the General Setup/WAN and the Quick Setup Wizard contain the same configurations.

Status Information *(Chapter 4)*
The Status Information section is for you to monitor the router's current status information only.

Tools *(Chapter 5)*
If you want to Reset the router (because of problems) or save your configurations or upgrade the firmware then the Tools section is the place to do this.



Menu	Description
Quick Setup Wizard *(Chapter 2)*	Select your Internet connection type and then input the configurations needed to connect to your Internet Service Provider (ISP).
General Setup *(Chapter 3)*	This section contains configurations for the Broadband router's advance functions such as: Address Mapping, Access Control, Hacker Attack Prevention, DMZ, Special applications and other functions to meet your LAN requirements.
Status Information *(Chapter 4)*	In this section you can see the Broadband router's system information, Internet Connection, Device Status, System Log, Security Log and DHCP client information.
Tools *(Chapter 5)*	This section contains the broadband router's Tools - Tools include Configuration tools, Firmware upgrade and Reset. Configuration tools allow you to Backup (save), Restore, or Restore to Factory Default configuration for your Broadband router. The Firmware upgrade tool allows you to upgrade your Broadband router's

firmware. The RESET tool allows you to reset your Broadband router.

7) Click on **Quick Setup Wizard** (see chapter 2) to start configuring settings required by your ISP so that you can start accessing the Internet. The other sections (General Setup, Status Information and Tools) do not need to be configured unless you wish to implement/monitor more advance features/information.

Select the section (Quick Setup Wizard, General Setup, Status Information and Tools) you wish to configure and proceed to the corresponding chapter. Use the selections on the web management's top right hand page (see below) to navigate around the web-based management User Interface.

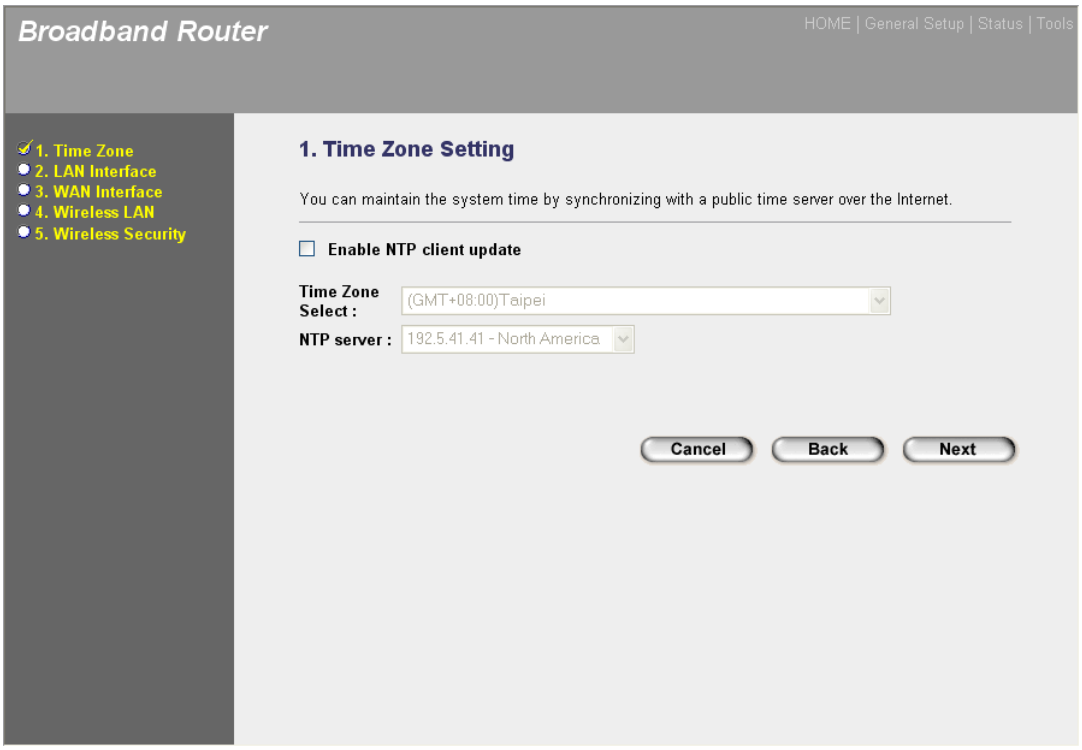
Chapter 2

Quick Setup

The Quick Setup section is designed to get you using the broadband router as quick as possible. In the Quick Setup you are required to fill in only the information necessary to access the Internet. Once you click on the **Quick Setup Wizard** in the HOME page, you should see the screen below.

Step 1) Time Zone

The Time Zone allows your router to base its time on the settings configured here, this will affect functions such as Log entries and Firewall settings.

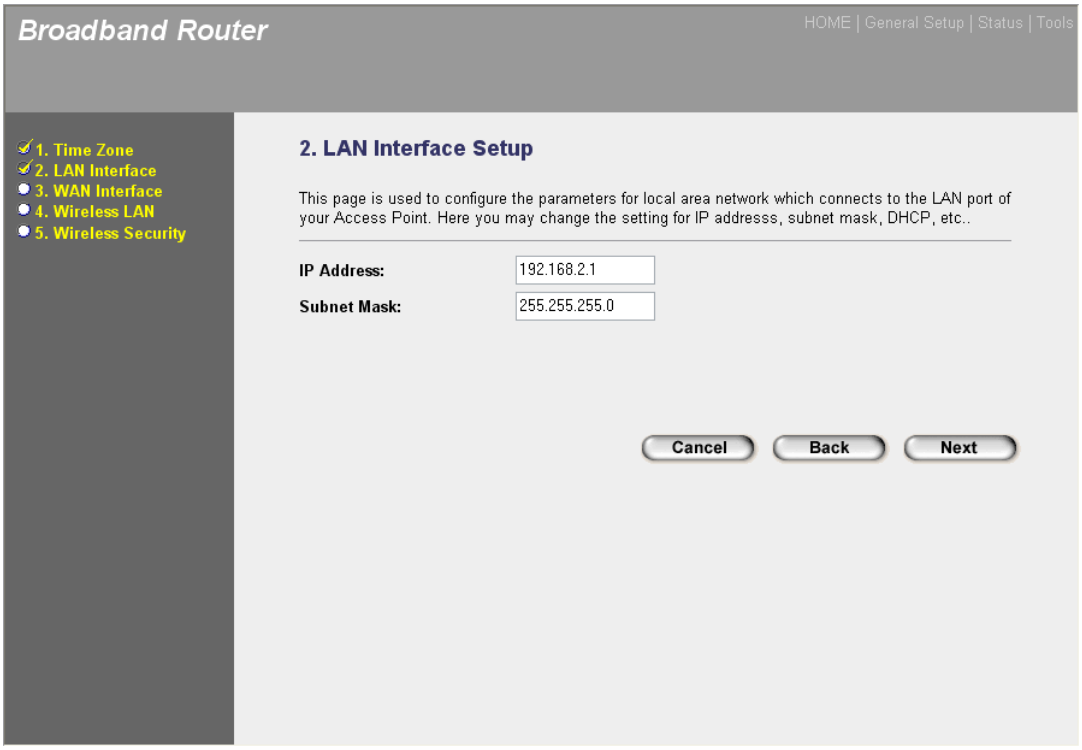


Parameter	Description
Enable NTP client update	Check this box to enable the auto time synchronization function. The router will set its time based on your selection.
Time Zone Select	You can select your local time zone here. The router will sync time according to your time zone selection.
NTP server	Select the time server to synchronize with.

Click on **NEXT** to proceed to the next page (step 2) LAN Interface.

Step 2) LAN Interface

The LAN Interface settings allow you to configure the parameters for local area network.



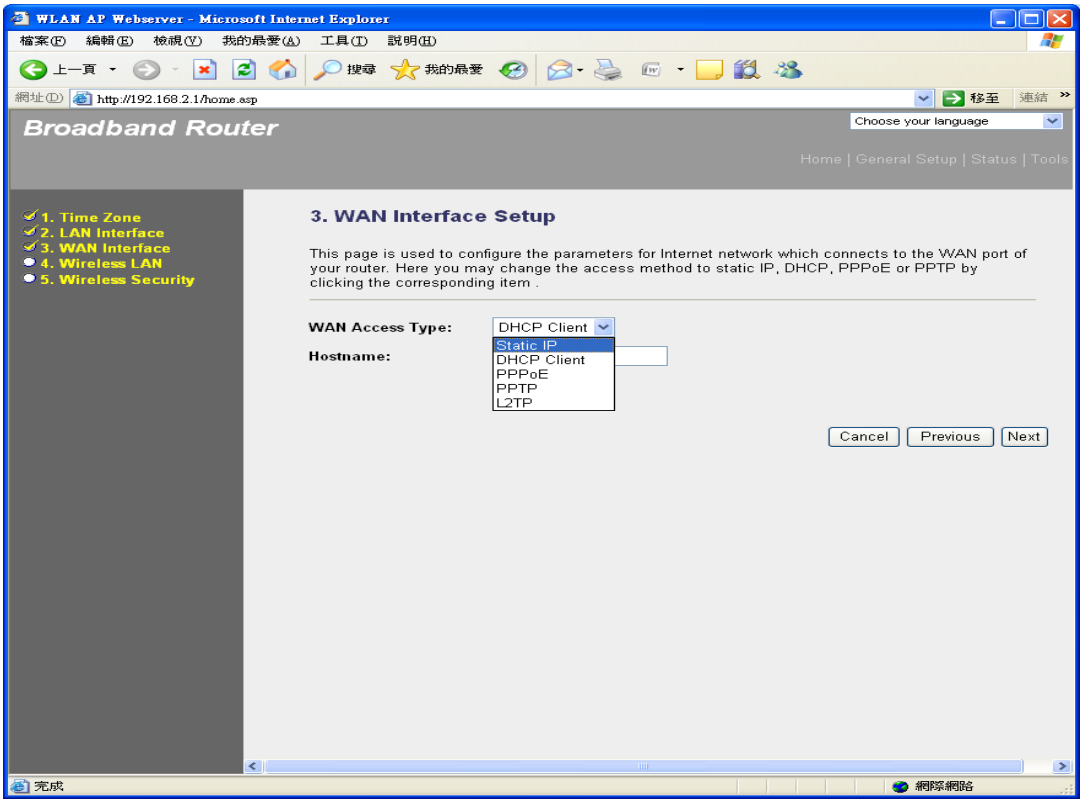
Parameter	Description
IP Address	This is the router's LAN port IP address (Your LAN clients default gateway IP address)
Subnet Mask	Specify a Subnet Mask for your LAN segment.

Click on **NEXT** to proceed to the next page (step 3) WAN Interface.

Step 3) WAN Interface

In this section you have to select one of four types of connections that you will be using to connect your broadband router's WAN port to your ISP (see screen below).

Note: Different ISP's require different methods of connecting to the Internet, please check with your ISP as to the type of connection it requires.

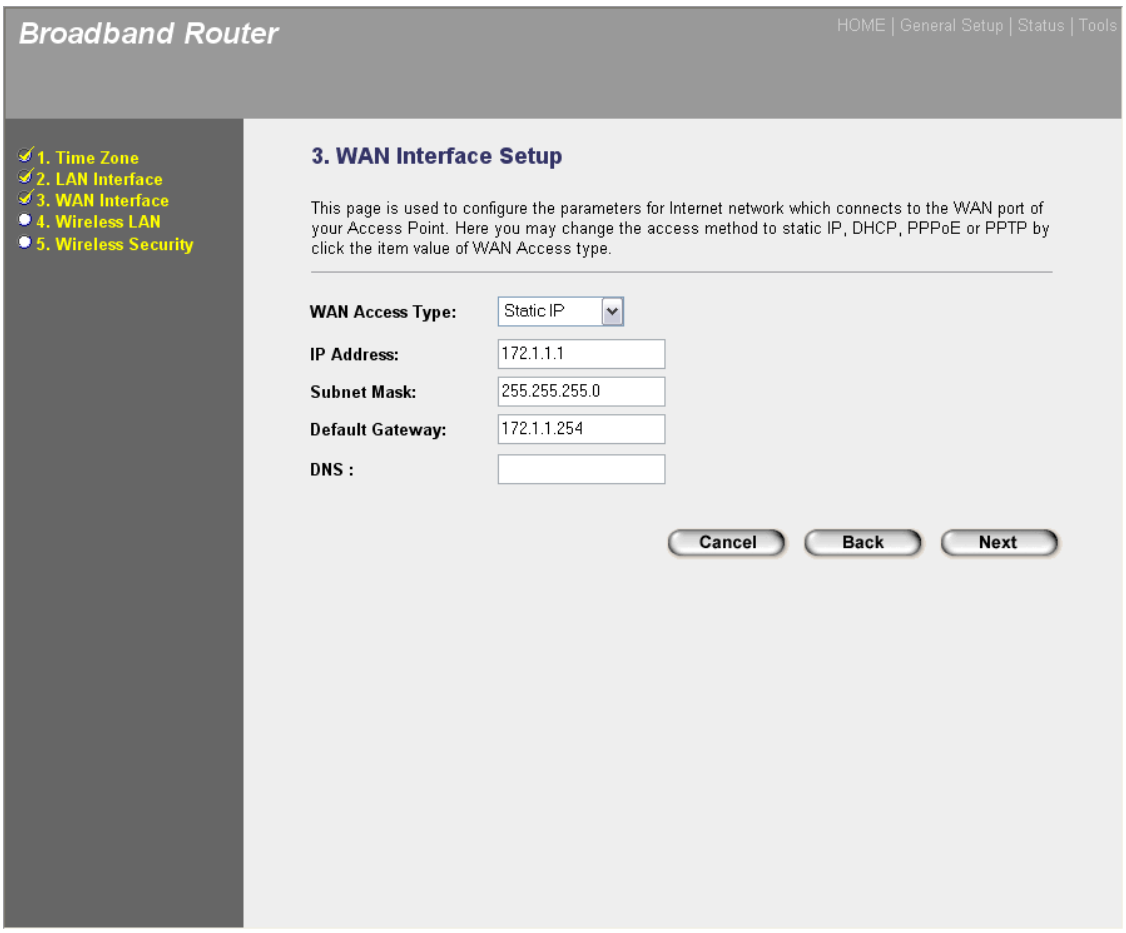


Menu	Description
2.31 Static IP	Your ISP has given you an IP address already
2.32 DHCP Client	Your ISP will automatically give you an IP address
2.33 PPPoE	Your ISP requires you to use a Point-to-Point Protocol over Ethernet (PPPoE) connection.
2.34 PPTP	Your ISP requires you to use a Point-to-Point Tunneling Protocol (PPTP) connection.
2.35 L2TP	Your ISP requires you to use a Point-to-Point Tunneling Protocol (L2TP) connection.

Select one of the WAN types and set the manual's relevant sub-section (**2.31**, **2.32**, **2.33**, or **2.34**). Click on **Back** to return to the previous screen.

2.31 Static IP

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.

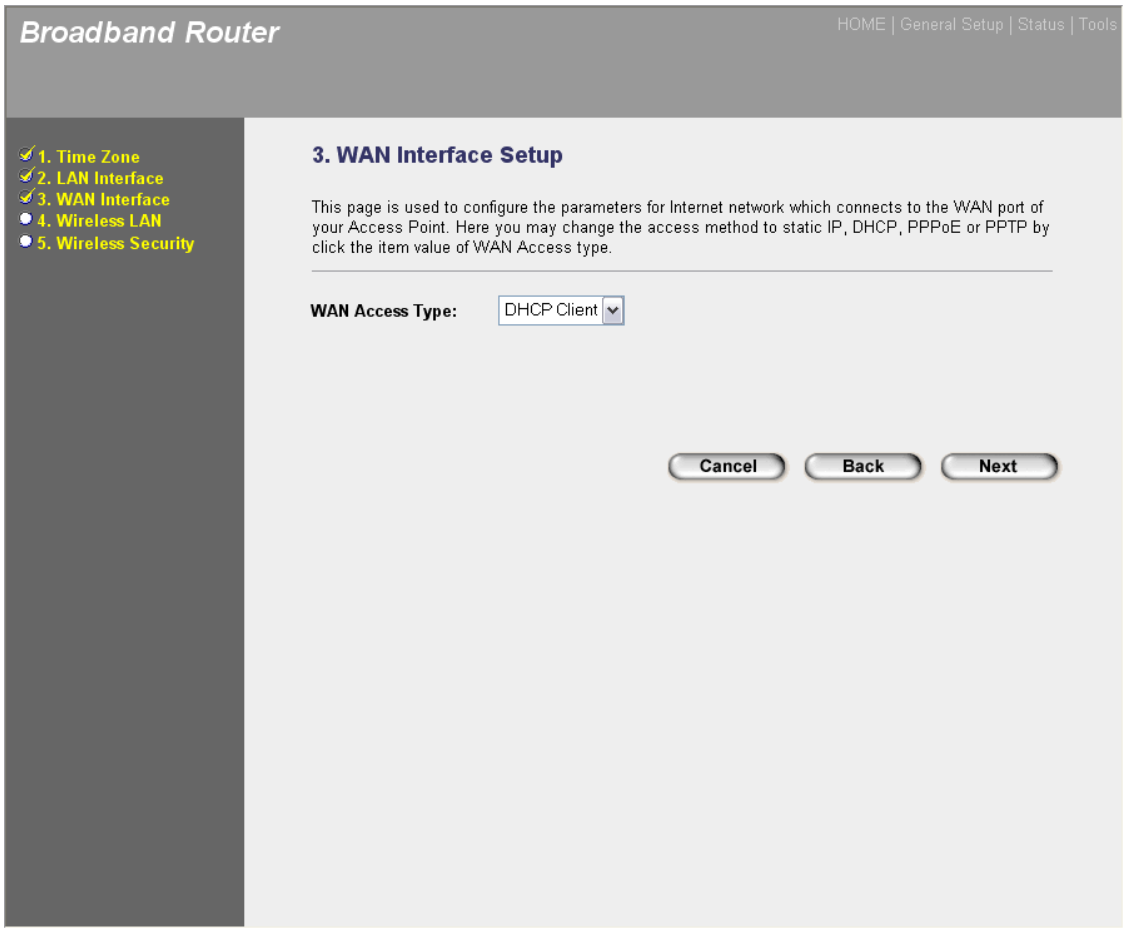


Parameters	Description
IP Address	This is the IP address that your ISP has given you.
Subnet Mask (e.g. 255.255.255.0)	Enter the Subnet Mask provided by your ISP
Default Gateway IP	This is the ISP's IP address gateway
DNS	This is the ISP's DNS server IP address

Click on **NEXT** to proceed to the next page (step 4) Wireless Basic Settings.

2.32 DHCP Client

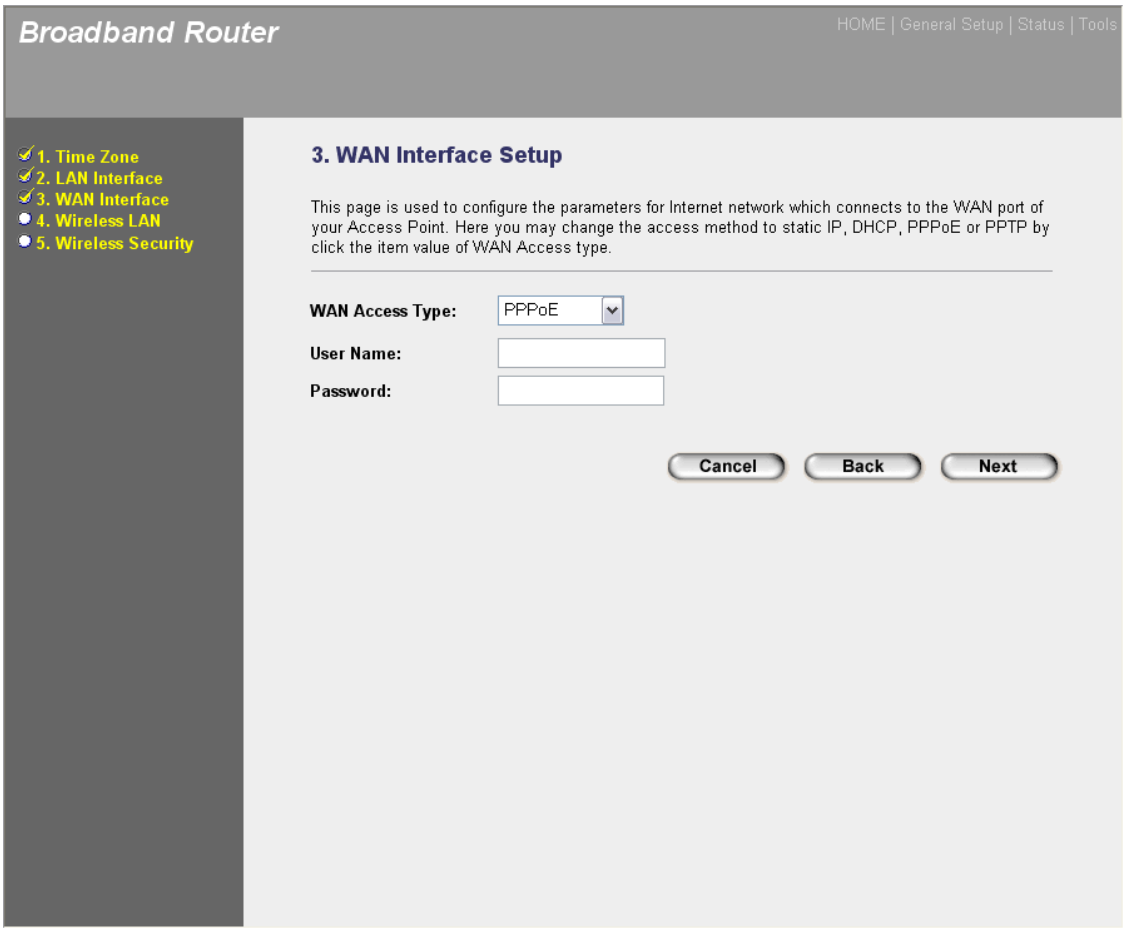
Choose DHCP Client if your ISP will automatically give you an IP address.



Click on **NEXT** to proceed to the next page (step 4) Wireless Basic Settings.

2.33 PPPoE

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.

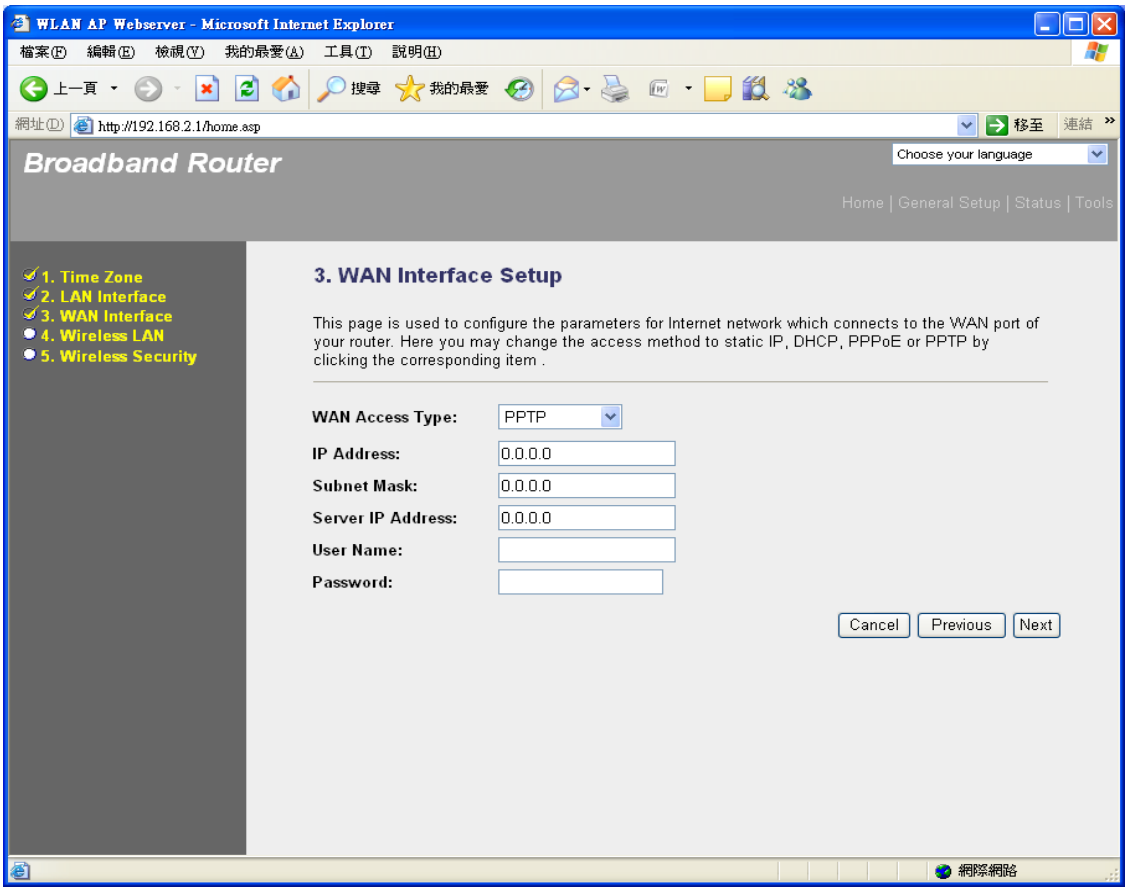


Parameter	Description
User Name	Enter the User Name provided by your ISP for the PPPoE connection
Password	Enter the Password provided by your ISP for the PPPoE connection

Click on **NEXT** to proceed to the next page (step 4) Wireless Basic Settings.

2.34 PPTP

Select PPTP if your ISP requires the PPTP protocol to connect you to the Internet. Your ISP should provide all the information required in this section.

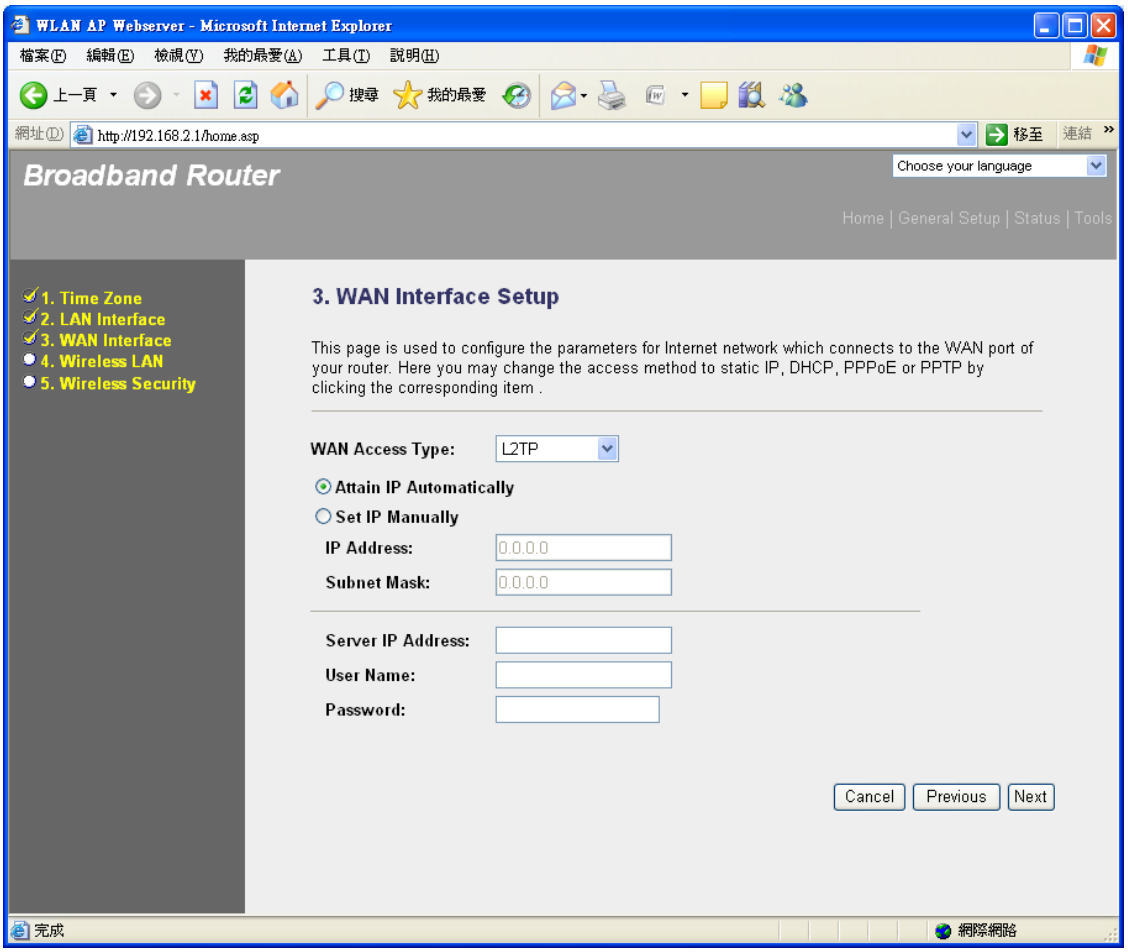


Parameter	Description
IP Address	This is the IP address that your ISP has given you to establish a PPTP connection.
Subnet Mask	Enter the Subnet Mask provided by your ISP (e.g. 255.255.255.0)
Server IP Address	Enter the IP address of the ISP Gateway
User Name	Enter the User Name provided by your ISP for the PPTP connection. Sometimes called a Connection ID
Password	Enter the Password provided by your ISP for the PPTP connection

Click on **NEXT** to proceed to the next page (step 4) Wireless Basic Settings.

2.35 L2TP

Select L2TP if your ISP requires the L2TP protocol to connect you to the Internet. Your ISP should provide all the information required in this section.



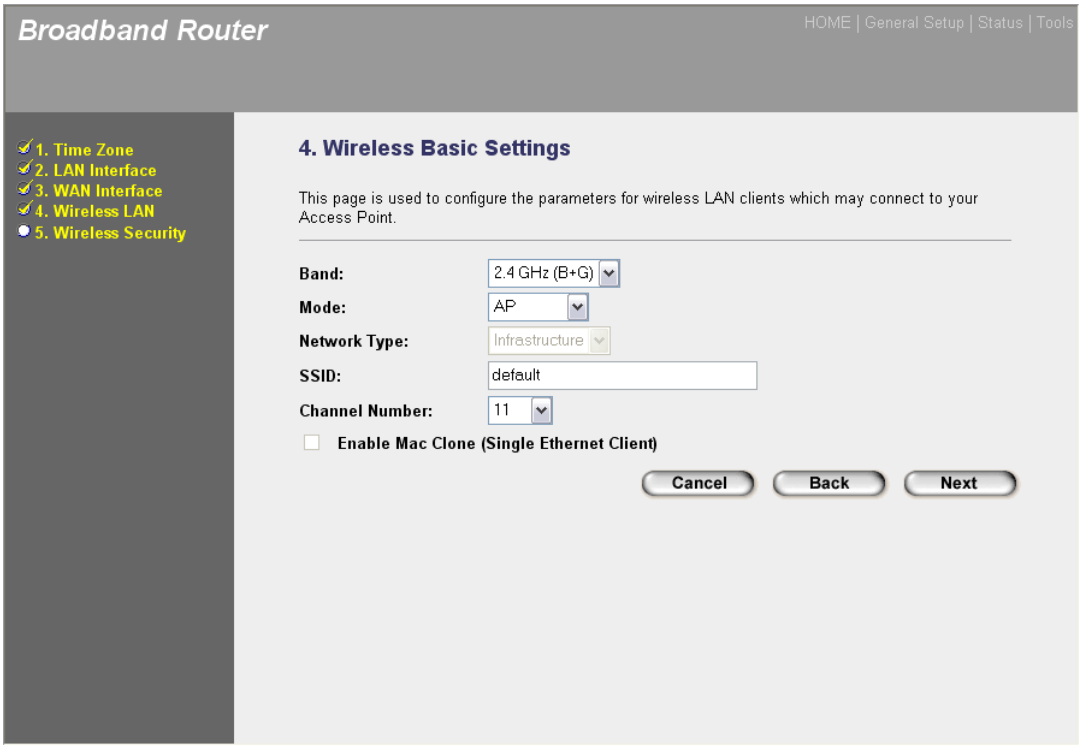
Parameter	Description
Attain IP Automatically	The ISP requires you to obtain an IP address by DHCP before connecting to the L2TP server.
Set IP Manually	The ISP gives you a static IP to be used to connect to the L2TP server.
IP Address	This is the IP address that your ISP has given you to establish a L2TP connection.
Subnet Mask	Enter the Subnet Mask provided by your ISP
Server IP Address	Enter the IP address of the ISP Gateway

User Name	Enter the User Name provided by your ISP for the L2TP connection. Sometimes called a Connection ID
Password	Enter the Password provided by your ISP for the L2TP connection

Click on **NEXT** to proceed to the next page (step 4) Wireless Basic Settings.

Step 4) Wireless Basic Settings

Wireless Access Point builds a wireless LAN and can let all PCs equipped with IEEE 802.11b or 801.11g wireless network adaptor connect to your Intranet. It supports WEP and WPA2 encryption to enhance the security of your wireless network.



Menu	Description
Band	It allows you to set the AP fix at 802.11b or 802.11g mode. You also can select B+G mode to allow the AP select 802.11b and 802.11g connection automatically.
Mode	It allows you to set the AP to AP, Client, WDS or AP + WDS mode.
Network Type	In client mode, you can specify your client to connect as an infrastructure client or an ad hoc client.

SSID	This is the name of the wireless LAN. All the devices in the same wireless LAN should have the same ESSID.
Channel Number	The channel used by the wireless LAN. All devices in the same wireless LAN should use the same channel.
Enable MAC Clone	Check the check box will let router copy the first seen MAC address to the WLAN MAC.

Click on **NEXT** to proceed to the next page (step 5) Wireless Security.

Step 5) Wireless Security Settings

This page allows you setup the wireless security. Turn on WEP or WPA by using Encryption Keys could prevent any unauthorized access to your wireless network.

Menu	Description
None	Do not apply any encryption to wireless usage. Everyone can access the wireless without permission.

2.51 WEP You can select the WEP key length for encryption, 64-bit or 128-bit. Larger WEP key length will provide higher level of security, but the throughput will be lower.

2.52 WPA(TKIP) You can use a pre-shared key to authenticate wireless stations and encrypt data during communication. And use TKIP to change the encryption key frequently.

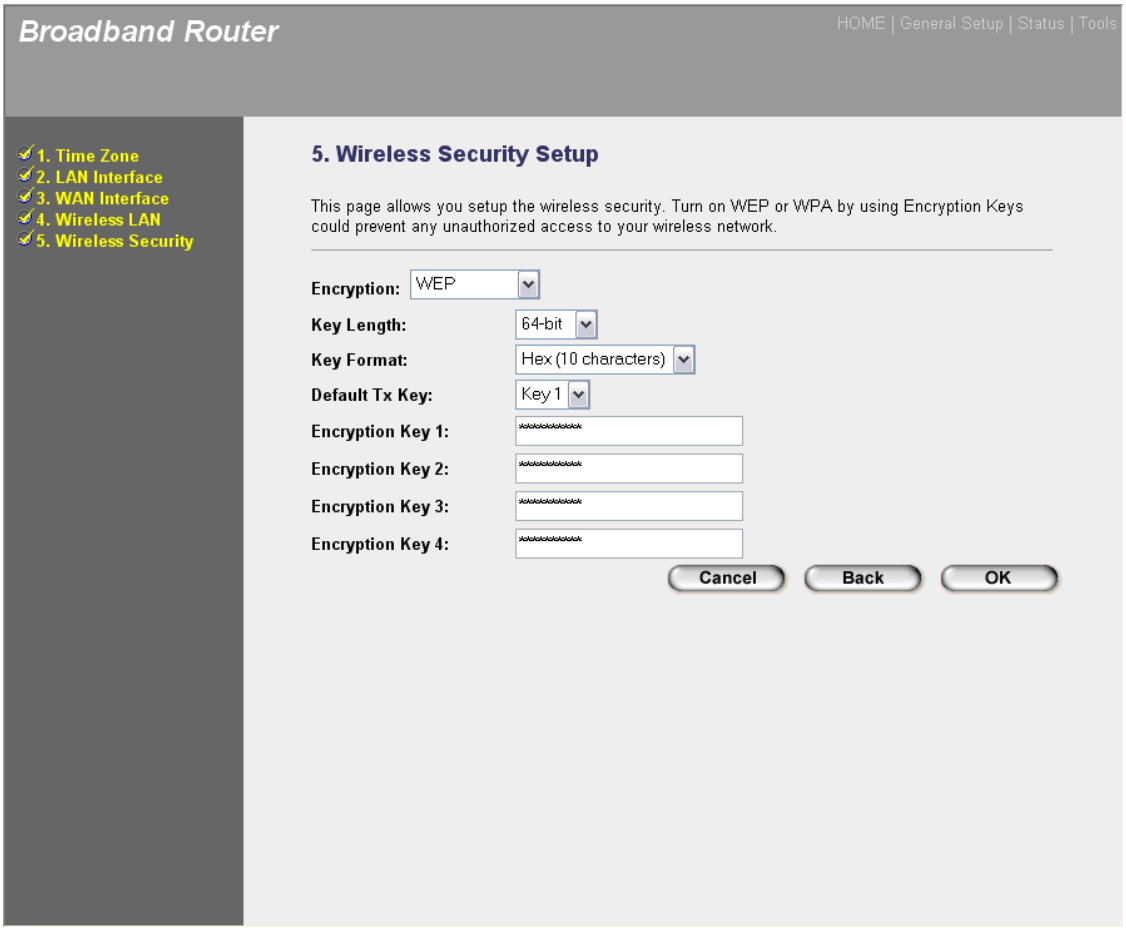
2.53 WPA2(AES) You can use a pre-shared key to authenticate wireless stations and encrypt data during communication. And use CCMP(AES) to change the encryption key frequently.

2.54 WPA2 Mixed This will use TKIP or AES based on the other communication peer automatically.

Select one of the Security types and set the manual's relevant sub-section (**2.51**, **2.52**, **2.53**, or **2.54**). Click on **Back** to return to the previous screen.

2.51 WEP

When you select 64-bit or128-bit WEP key, you have to enter WEP keys to encrypt data. You can generate the key by yourself and enter it. You can enter four WEP keys and select one of them as default key. Then the router can receive any packets encrypted by one of the four keys.



Parameters	Description
Key Length	You can select the WEP key length for encryption, 64-bit or 128-bit. Larger WEP key length will provide higher level of security, but the throughput will be lower.
Key Format	You may select to select ASCII Characters (alphanumeric format) or Hexadecimal Digits (in the "A-F", "a-f" and "0-9" range) to be the WEP Key. For example: ASCII Characters: guest Hexadecimal Digits: 12345abcde
Default Tx Key	Select one of the four keys to encrypt your data. Only the key you select it in the "Default key" will take effect.
Encryption Key 1~4	The WEP keys are used to encrypt data transmitted in the wireless network. Fill the text box by following the rules below. 64-bit WEP: input 10-digit Hex values (in the "A-F", "a-f" and "0-9" range) or 5-digit ASCII character as the encryption keys. 128-bit WEP: input 26-digit Hex values (in the "A-F", "a-f" and "0-9" range) or 13-digit ASCII characters as the encryption keys.

Clicking on **OK** to save and active all the settings. Now, you can start to use the router as your internet gateway.

2.52 WPA(TKIP)

Wi-Fi Protected Access (WPA) is an advanced security standard. You can use a pre-shared key to authenticate wireless stations and encrypt data during communication. It uses TKIP to change the encryption key frequently. So the encryption key is not easy to be broken by hackers. This can improve security very much.

Parameters	Description
Pre-shared Key Format	You may select to select Passphrase (alphanumeric format) or Hexadecimal Digits (in the “A-F”, “a-f” and “0-9” range) to be the Pre-shared Key. For example: Passphrase: iamguest Hexadecimal Digits: 12345abcde
Pre-shared Key	The Pre-shared key is used to authenticate and encrypt data transmitted in the wireless network. Fill the text box by following the rules below. Hex: input 64-digit Hex values (in the “A-F”, “a-f” and “0-9” range) or at least 8 character pass phrase as the pre-shared keys.

Clicking on **OK** to save and active all the settings. Now, you can start to use the router as your internet gateway.

2.53 WPA2(AES)

Wi-Fi Protected Access 2(WPA2) is an advanced security standard. You can use a pre-shared key to authenticate wireless stations and encrypt data during communication. It uses CCMP(AES) to change the encryption key frequently. So the encryption key is not easy to be broken by hackers. This can improve security very much.

Parameters	Description
Pre-shared Key Format	You may select to select Passphrase (alphanumeric format) or Hexadecimal Digits (in the "A-F", "a-f" and "0-9" range) to be the Pre-shared Key. For example: Passphrase: iamguest Hexadecimal Digits: 12345abcde
Pre-shared Key	The Pre-shared key is used to authenticate and encrypt data transmitted in the wireless network. Fill the text box by following the rules below. Hex: input 64-digit Hex values (in the "A-F", "a-f" and "0-9" range) or at least 8 character pass phrase as the pre-shared keys.

Clicking on **OK** to save and active all the settings. Now, you can start to use the router as your internet gateway.

2.54 WPA2 Mixed

Wi-Fi Protected Access 2(WPA2) is an advanced security standard. You can use a pre-shared key to authenticate wireless stations and encrypt data during communication. It uses TKIP or CCMP(AES) to change the encryption key frequently. So the encryption key is not easy to be broken by hackers. This can improve security very much.

Parameters	Description
Pre-shared Key Format	You may select to select Passphrase (alphanumeric format) or Hexadecimal Digits (in the “A-F”, “a-f” and “0-9” range) to be the Pre-shared Key. For example: Passphrase: iamguest Hexadecimal Digits: 12345abcde
Pre-shared Key	The Pre-shared key is used to authenticate and encrypt data transmitted in the wireless network. Fill the text box by following the rules below. Hex: input 64-digit Hex values (in the “A-F”, “a-f” and “0-9” range) or at least 8 character pass phrase as the pre-shared keys.

Clicking on **OK** to save and active all the settings. Now, you can start to use the router as your internet gateway.

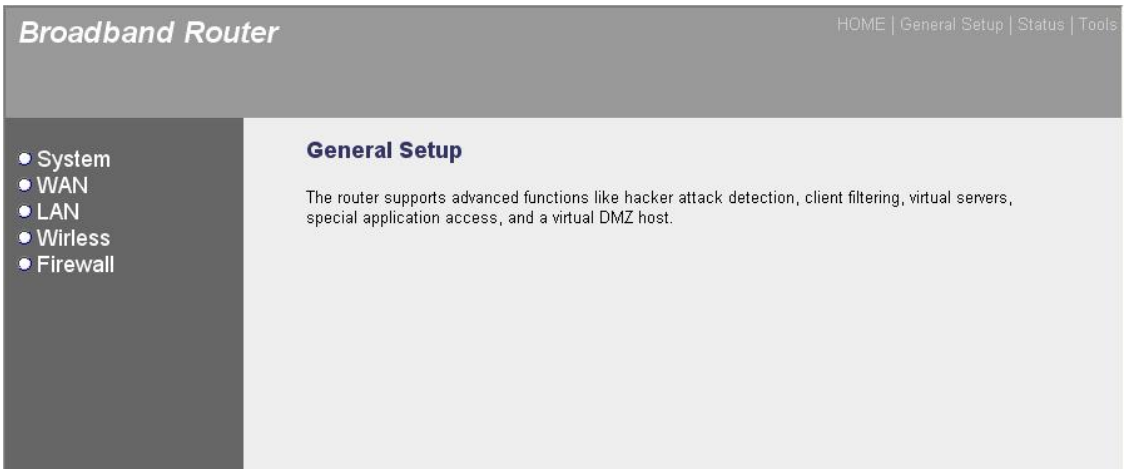
Chapter 3

General Settings

Once you click on the **General Setup** button at the Home Page, you should see the screen below.

If you have already configured the Quick Setup Wizard you do NOT need to configure anything thing in the General Setup screen for you to start using the Internet.

The General Setup contains advanced features that allow you to configure the router to meet your network's needs such as: Wireless, Address Mapping, Access Control, Hacker Attack Prevention, Special Applications, DMZ and other functions.



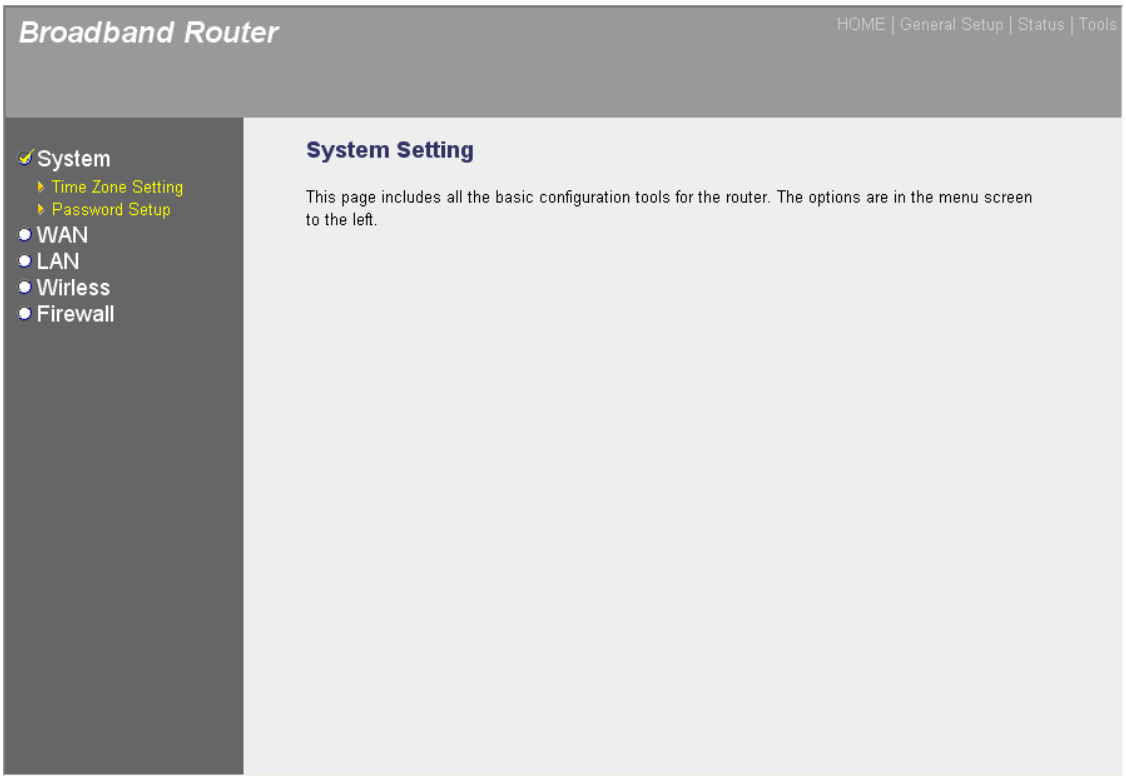
Below is a general description of what advance functions are available for this broadband router.

Menu	Description
2.1 System	This section allows you to set the Broadband router's system Time Zone, Password and Remote Management Administrator.
2.2 WAN	This section allows you to select the connection method in order to establish a connection with your ISP (same as the Quick Setup Wizard section)
2.3 LAN	You can specify the LAN segment's IP address, subnet Mask, enable/disable DHCP and select an IP range for your LAN
2.4 Wireless	You can setup the wireless LAN's SSID, WEP key, MAC filtering.
2.5 Firewall	The Firewall section allows you to configure Access Control, Hacker Prevention and DMZ.

Select one of the above five General Setup selections and proceed to the manual's relevant sub-section

3.1 System

The system screen allows you to specify a time zone, to change the system password and to specify a remote management user for the broadband router.

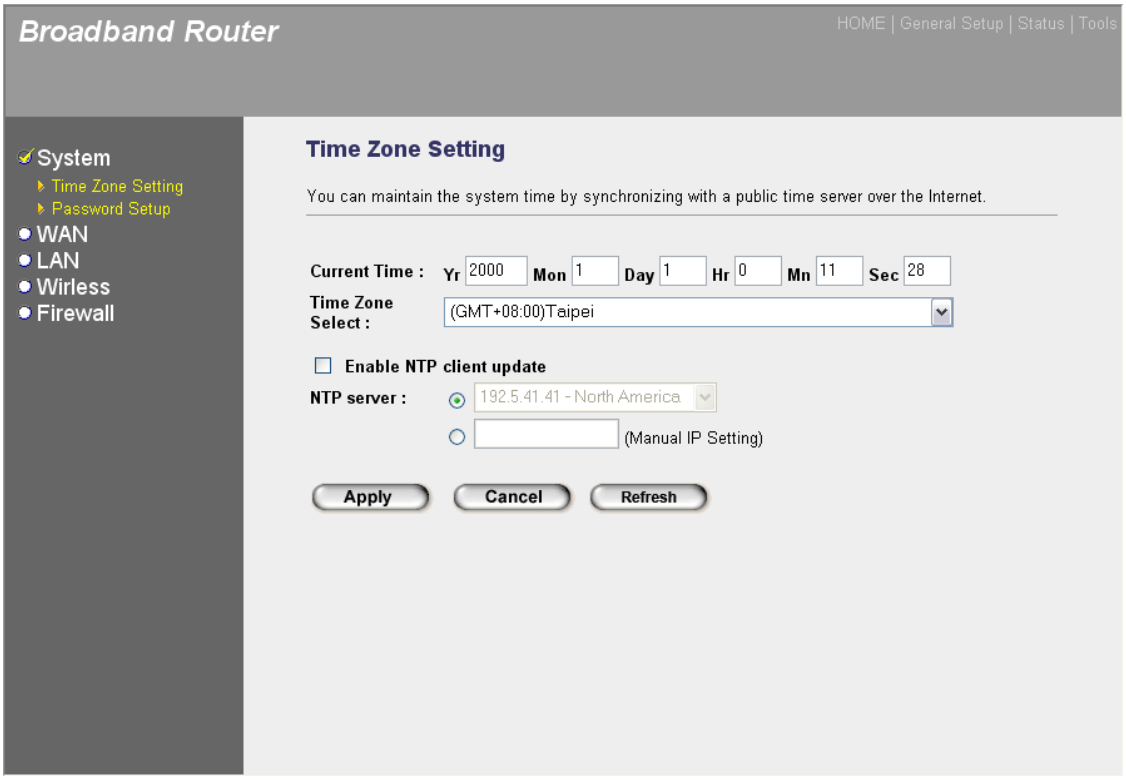


Parameters	Description
System Settings	
2.1.1 Time Zone Setting	Select the time zone of the country you are currently in. The router will set its time based on your selection.
2.1.2 Password Setup	Allows you to select a password in order to access the web-based management website.

Select one of the above three system settings selections and proceed to the manual's relevant sub-section

3.1.1 Time Zone Setting

The Time Zone Setting allows your router to reference or base its time on the settings configured here, which will affect functions such as Log entries and Firewall settings.

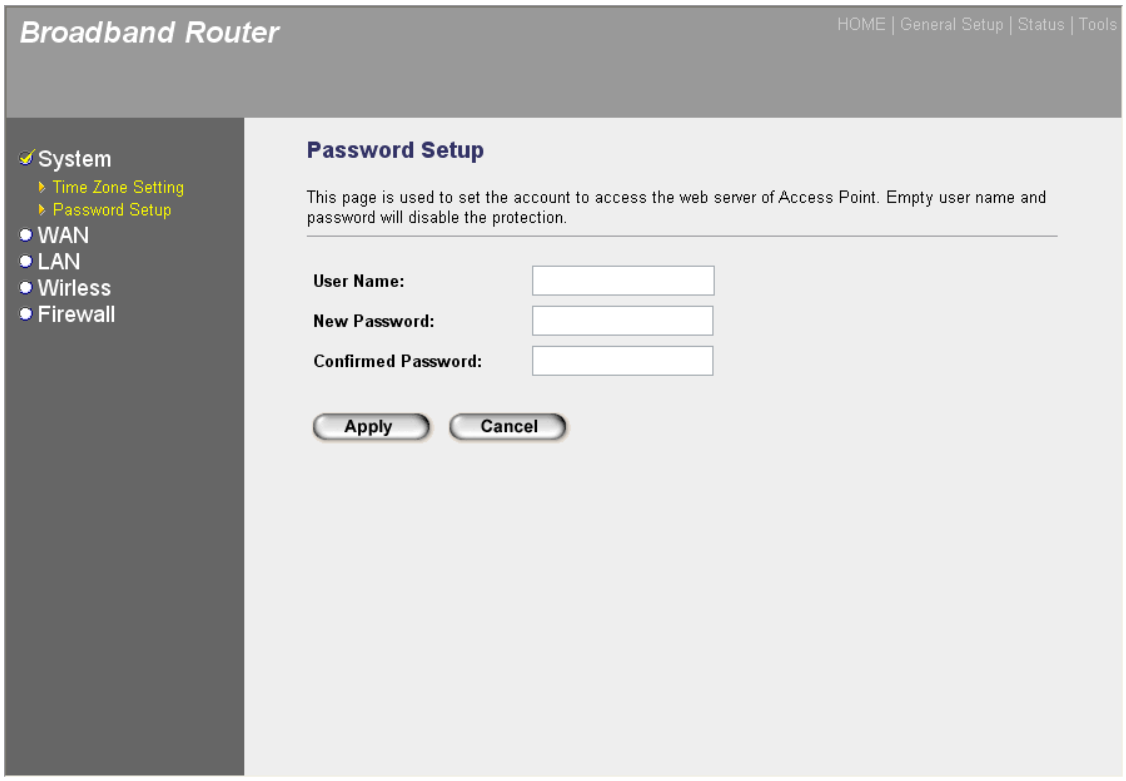


Parameter	Description
Current Time	Set the current time.
Time Zone Select	Select the time zone of the country you are currently in. The router will set its time based on your selection.
Enable NTP client update	Check the box to enable router to update time from NTP server.
NTP Server	Select one preset time server or manual input a server IP.

Click <**Apply>** at the bottom of the screen to save the above configurations. You can now configure other advance sections or start using the router (with the advance settings in place)

3.1.2 Password Setup

You can change the password required to log into the broadband router's system web-based management. By default, there is no password. So please assign a password to the Administrator as soon as possible, and store it in a safe place. Passwords can contain 0 to 12 alphanumeric characters, and are case sensitive.

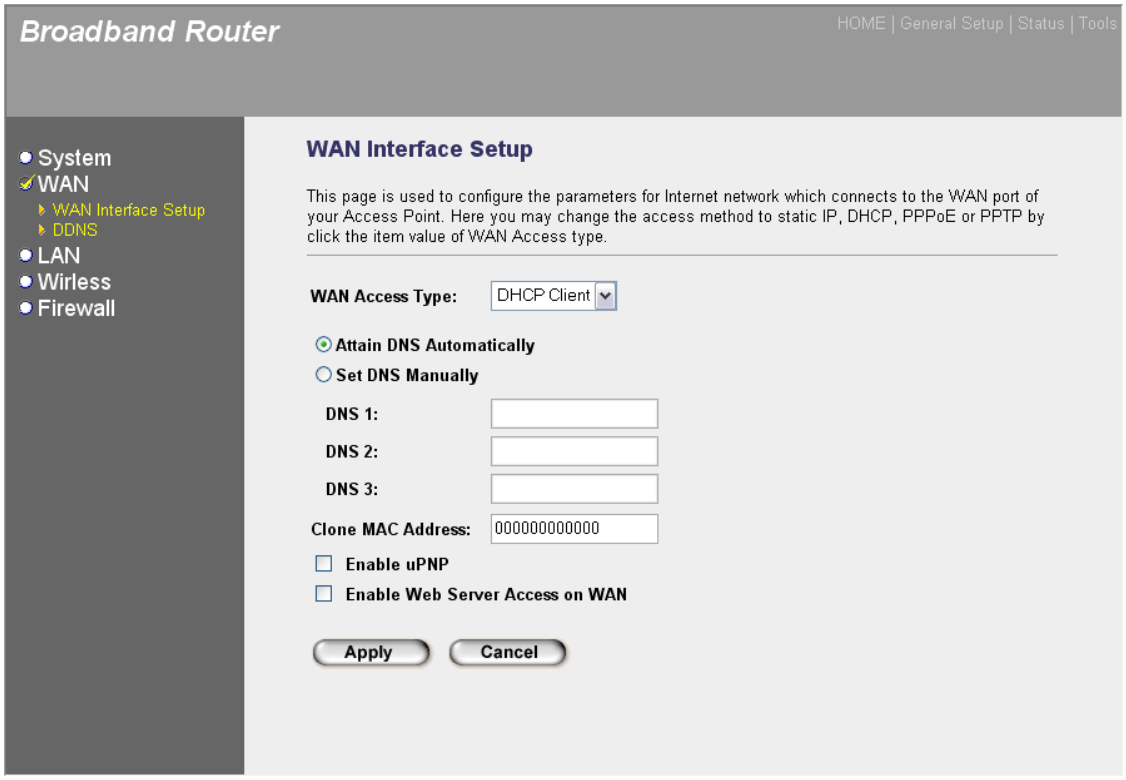


Parameters	Description
User Name	Change your login user name.
New Password	Enter your new password
Confirmed Password	Enter your new password again for verification purposes **Note**: If you forget your password, you'll have to reset the router to the factory default (No password) with the reset button (see router's back panel)

Click <**Apply>** at the bottom of the screen to save the above configurations. You can now configure other advance sections or start using the router (with the advance settings in place)

3.2 WAN

Use the WAN Settings screen if you have already configured the Quick Setup Wizard section and you would like to change your Internet connection type. The WAN Settings screen allows to specify the type of WAN port connect you want to establish with your ISP. The WAN settings offer the following selections for the router's WAN port, **Static IP Address**, **DHCP Client**, **PPPoE**, **PPTP**, and **DDNS**.



Parameters	Description
3.2.1 Static IP	Your ISP has given you an IP address already.
3.2.2 DHCP Client	Your ISP will automatically give you an IP address.
3.2.3 PPPoE	Your ISP requires PPPoE connection.
3.2.4 PPTP	Your ISP requires you to use a Point-to-Point Tunneling Protocol (PPTP) connection.
3.2.5 L2TP	Your ISP requires L2TP connection.

Once you have made a selection, proceed to the manual's relevant sub-section

3.2.1 Static IP

Select Static IP address 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. (See chapter 1 “Static IP” for more detail)

3.2.2 DHCP Client

Choose the Dynamic IP selection if your ISP will automatically give you an IP address. Some ISP’s may also require that you fill in additional information such as Host Name, Domain Name and MAC address (see chapter 1 “DHCP Client” for more detail)

3.2.3 PPPoE (PPP over Ethernet)

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. (See chapter 1 “PPPoE” for more detail)

3.2.4 PPTP

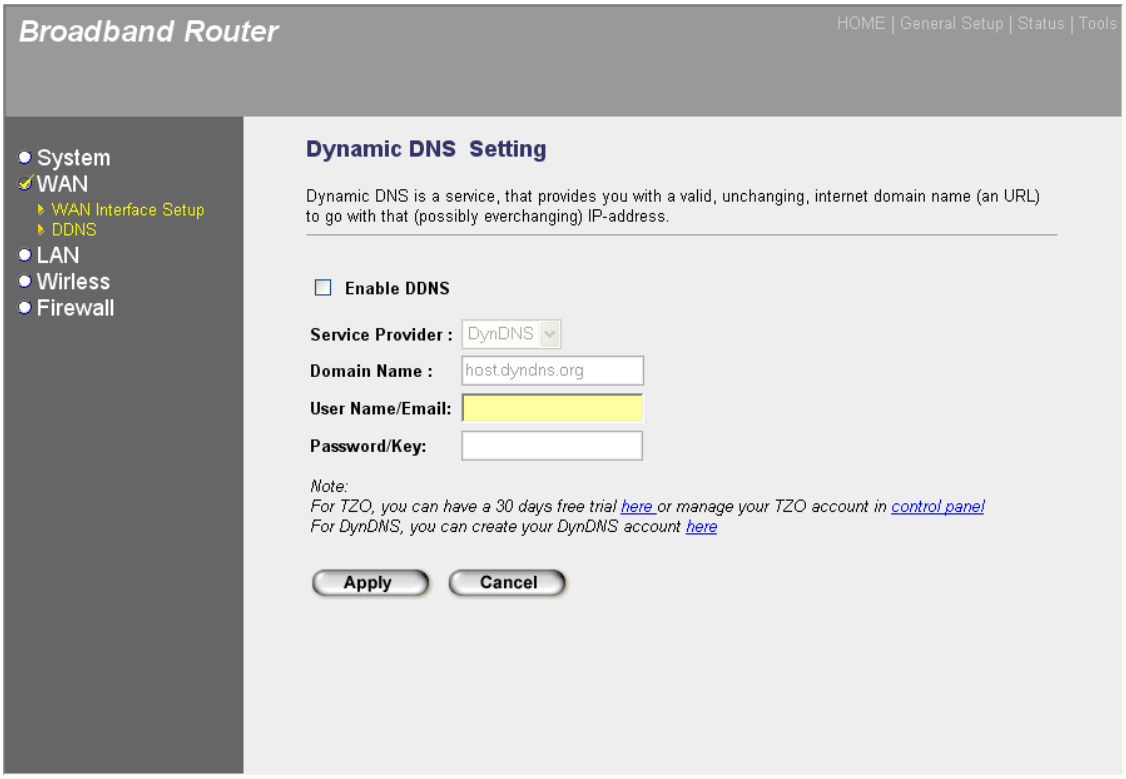
Select PPTP if your ISP requires the PPTP protocol to connect you to the Internet. Your ISP should provide all the information required in this section. (See chapter 1 “PPTP” for more detail)

3.2.5 L2TP

Select L2TP if your ISP requires the L2TP protocol to connect you to the Internet. Your ISP should provide all the information required in this section. (See chapter 1 “L2TP” for more detail)

3.2.6 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. This router supports DynDNS, and TZO.

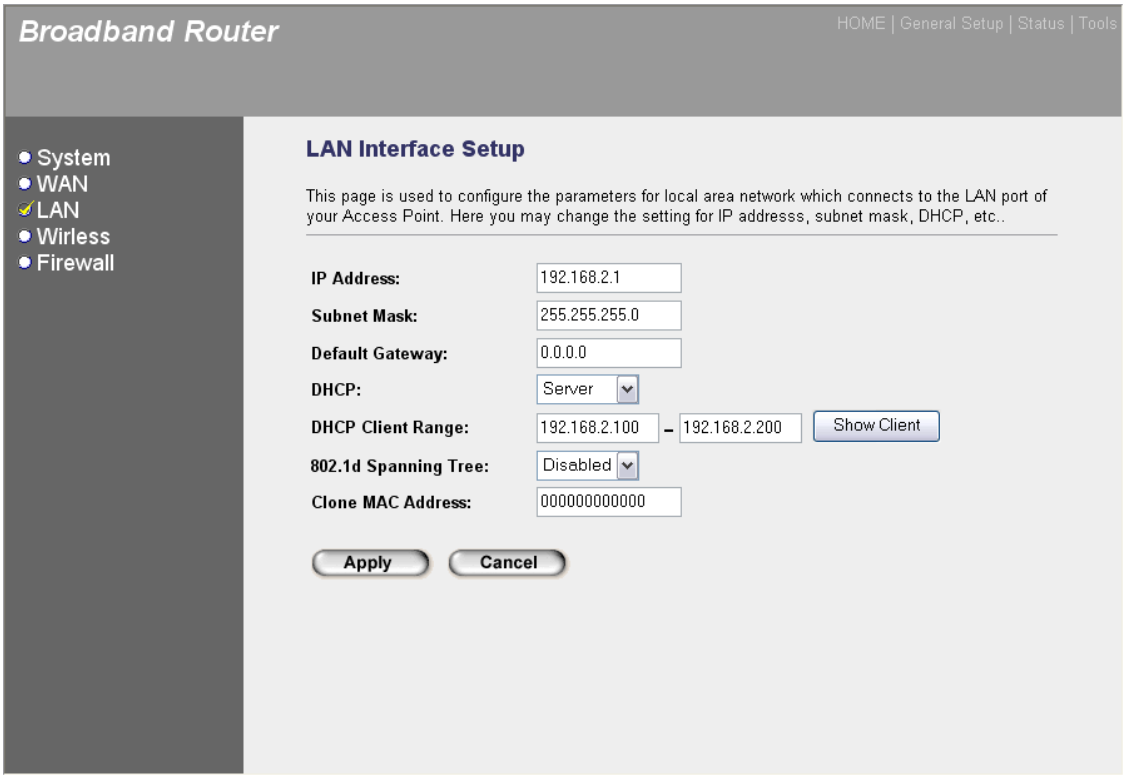


Parameters	Default	Description
Enable DDNS	Disable	Enable/Disable the DDNS function of this router
Service Provider		Select a DDNS service provider
Domain name		Your static domain name that use DDNS
User Name/Email		The account that your DDNS service provider assigned to you
Password/Key		The password you set for the DDNS service account above

Click <**Apply>** at the bottom of the screen to save the above configurations. You can now configure other advance sections or start using the router (with the advance settings in place)

3.3 LAN

The LAN Port screen below allows you to specify a private IP address for your router's LAN ports as well as a subnet mask for your LAN segment.



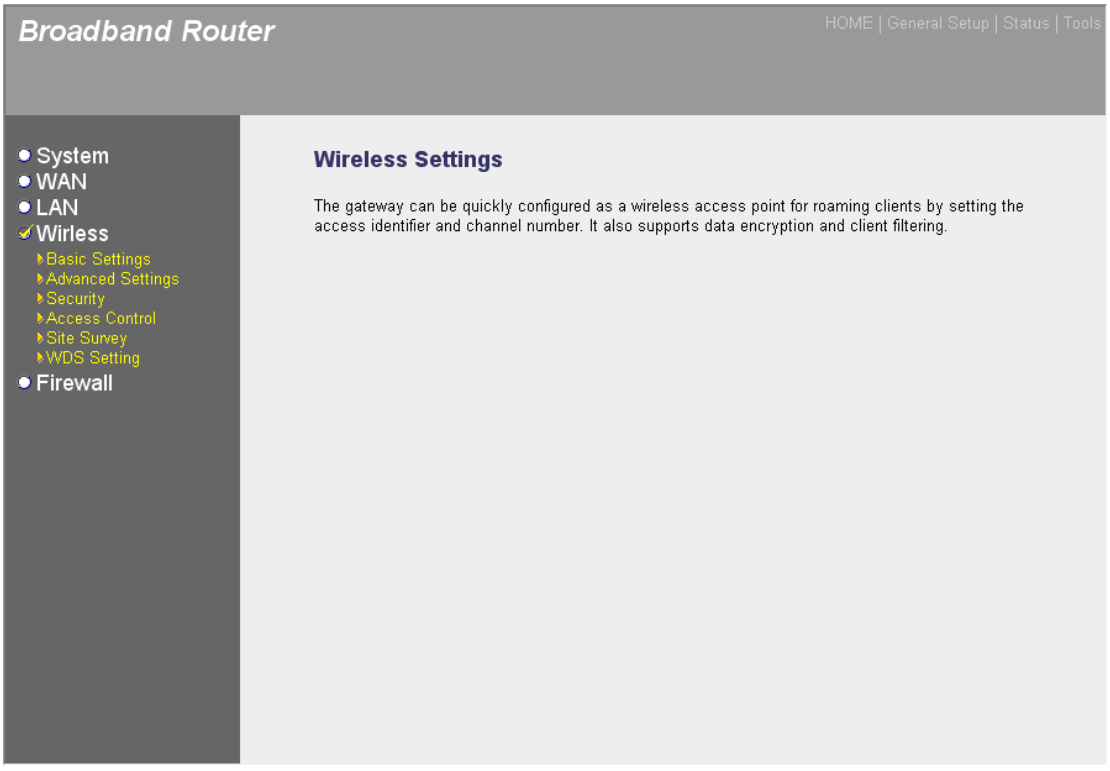
Parameters	Default	Description
IP address	192.168.2.1	This is the router's LAN port IP address (Your LAN clients default gateway IP address)
Subnet Mask	255.255.255.0	Specify a Subnet Mask for your LAN segment
Default Gateway		Specify the default gateway for LAN segment.
DHCP	Server	You can select the DHCP type for LAN segment. By selecting the DHCP server, the router will automatically give your LAN clients an IP address. By selecting the DHCP client, the router will get an IP address from LAN DHCP server automatically. If the DHCP server is not enabled then you'll have to manually set your LAN client's IP addresses; make sure the LAN Client is in the same subnet as this broadband router if you want the router to be your LAN client's default gateway

DHCP Client Range		You can select a particular IP address range for your DHCP server to issue IP addresses to your LAN Clients. **Note:** By default the IP range is from: Start IP **192.168.2.100** to End IP **192.168.2.199**. If you want your PC to have a static/fixed IP address then you'll have to choose an IP address outside this IP address Pool
802.1d Spanning Tree	Disabled	If 802.1d Spanning Tree function is enabled, this router will use the spanning tree protocol to prevent from network loop happened in the LAN ports.
Clone MAC Address		Specify the MAC Address for your LAN interface.

Click <**Apply>** at the bottom of the screen to save the above configurations. You can now configure other advance sections or start using the router (with the advance settings in place)

3.4 Wireless

Wireless Access Point builds a wireless LAN and can let all PCs equipped with IEEE 802.11b or 801.11g wireless network adaptor connect to your Intranet. It supports WEP, WPA and WPA2 encryption to enhance the security of your wireless network.



3.4.1 Basic Settings

You can set parameters that are used for the wireless stations to connect to this router. The parameters include Mode, ESSID, Channel Number and Associated Client.

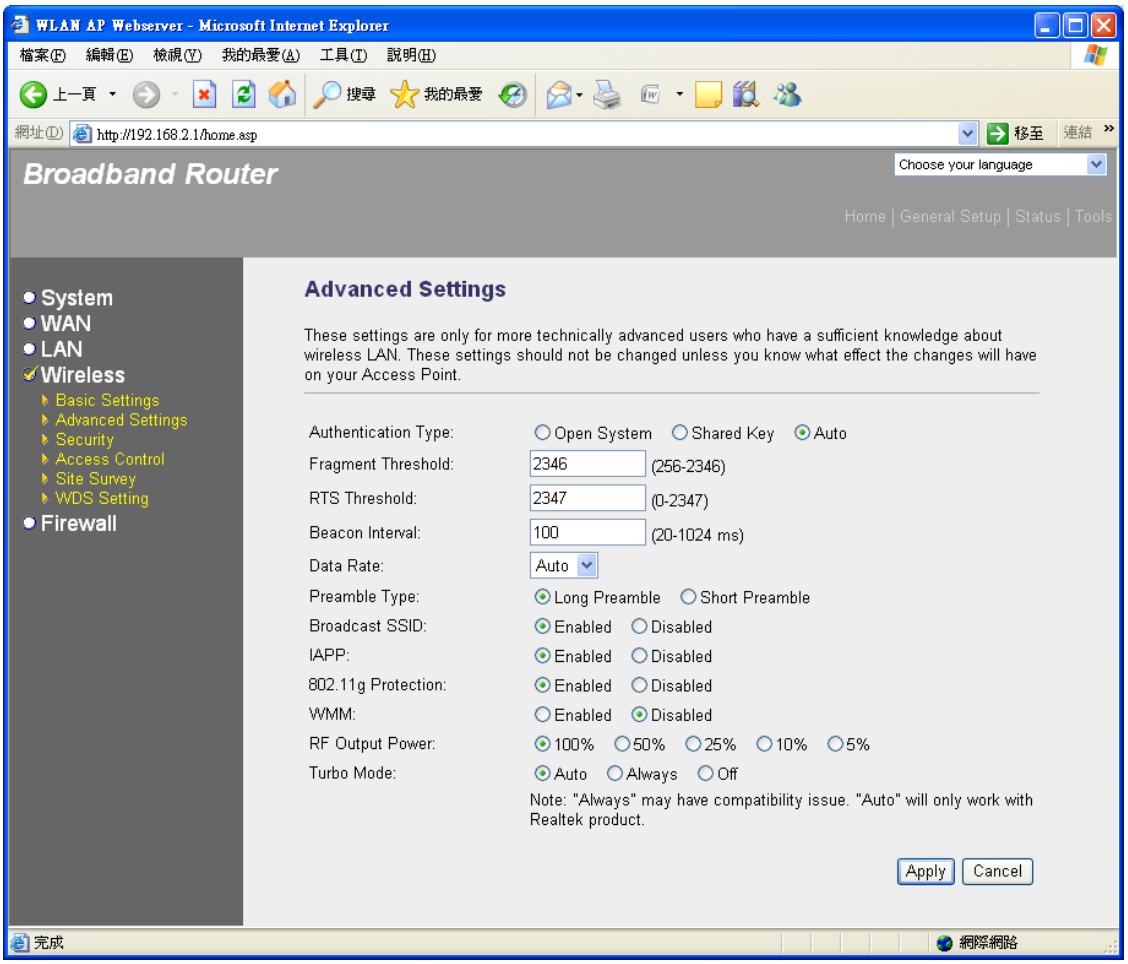
Parameters	Default	Description
Disable Wireless LAN Interface		Check this box to disable wireless LAN.
Band		It allows you to set the AP fix at 802.11b or 802.11g mode. You also can select B+G mode to allow the AP select 802.11b and 802.11g connection automatically.
Mode		It allows you to set the AP to AP, Client, WDS or AP+WDS mode.
Network Type		You can set the client mode to Infrastructure or Ad Hoc mode here.
ESSID	default	This is the name of the wireless LAN. All the devices in the same wireless LAN should have the same ESSID.

Channel Number	11	The channel used by the wireless LAN. All devices in the same wireless LAN should use the same channel.
Associated Clients		Click “Show Active Clients” button, then an “Active Wireless Client Table” will pop up. You can see the status of all active wireless stations that are connecting to the access point.
Enable MAC Clone		Check the check box will copy the MAC address of your PC to wireless Interface when the first packet was received.
Enable Universal Repeater Mode		By enable the universal repeater mode, the. router will act as AP and client simultaneously.
SSID of Extended Interface		Set the SSID for the extended wireless interface.

Click <**Apply>** at the bottom of the screen to save the above configurations. You can now configure other advance sections or start using the router (with the advance settings in place)

3.4.2 Advanced Settings

You can set advanced wireless LAN parameters of this router. The parameters include Authentication Type, Fragment Threshold, RTS Threshold, Beacon Interval, Preamble Type …… You should not change these parameters unless you know what effect the changes will have on this router.



Parameters	Default	Description
Authentication Type		There are two authentication types: "Open System" and "Shared Key". When you select "Open System", wireless stations can associate with this wireless router without WEP encryption. When you select "Shared Key", you should also setup WEP key in the "Encryption" page and wireless stations should use WEP encryption in the authentication phase to associate with this wireless router. If you select "Auto", the wireless client can associate with this wireless router by using any one of these two authentication types.

Fragment Threshold	"Fragment Threshold" specifies the maximum size of packet during the fragmentation of data to be transmitted. If you set this value too low, it will result in bad performance.
RTS Threshold	When the packet size is smaller the RTS threshold, the wireless router will not use the RTS/CTS mechanism to send this packet.
Beacon Interval	The interval of time that this wireless router broadcast a beacon. Beacon is used to synchronize the wireless network.
Data Rate	The “Data Rate” is the rate this access point uses to transmit data packets. The access point will use the highest possible selected transmission rate to transmit the data packets.
Preamble Type	The “Long Preamble” can provide better wireless LAN compatibility while the “Short Preamble” can provide better wireless LAN performance.
Broadcast ESSID	If you enable “Broadcast ESSID”, every wireless station located within the coverage of this access point can discover this access point easily. If you are building a public wireless network, enabling this feature is recommended. Disabling “Broadcast ESSID” can provide better security.
IAPP	If you enable “IAPP”, it will allow wireless station roaming between IAPP enabled access points within the same wireless LAN.
802.11g Protection	This is also called CTS Protection. It is recommended to enable the protection mechanism. This mechanism can decrease the rate of data collision between 802.11b and 802.11g wireless stations. When the protection mode is enabled, the throughput of the AP will be a little lower due to many of frame traffic should be transmitted.
WMM	The short of Wi-Fi MultiMedia, it will enhance the data transfer performance of multimedia contents when they’re being transferred over wireless network. **If you don’t know what it is / not sure if you need it, it’s safe to set this**

	option to 'Enable', however, default value is 'Disable'.
RF Output Power	You can set the output power of wireless radio. Unless you're using this wireless router in a really big space, you may not have to set output power to 100%. **This will enhance security (malicious / unknown users in distance will not be able to reach your wireless router).**
Turbo Mode	Enhance the data transfer rate of WLAN (up to 35Mbps), **default value is 'Auto', it's recommended to set this option to 'Auto'.**

Click <**Apply>** at the bottom of the screen to save the above configurations. You can now configure other advance sections or start using the router.

3.4.3 Security

This Access Point provides complete wireless LAN security functions, include WEP, IEEE 802.11x, IEEE 802.11x with WEP, WPA with pre-shared key and WPA with RADIUS. With these security functions, you can prevent your wireless LAN from illegal access. Please make sure your wireless stations use the same security function.

Parameters	Default	Description

Encryption		You can choose no encryption, WEP, WPA, WPA2 or WPA2 mixed mode for security.
Use 802.1x Authentication		IEEE 802.1x is an authentication protocol. Every user must use a valid account to login to this Access Point before accessing the wireless LAN. The authentication is processed by a RADIUS server. Check this box to authenticates user by IEEE 802.1x.
Key Length	WEP 64-bit	You can select the WEP key length for encryption, 64-bit or 128-bit. Larger WEP key length will provide higher level of security, but the throughput will be lower.
WPA Authentication Mode		WPA can authenticate by RADIUS or by pre-shared key.
WPA/WPA2 Cipher		You can choose TKIP or AES for WPA/WPA2 key exchange method.
Pre-shared Key Format		You may select to select Passphrase (alphanumeric format) or Hexadecimal Digits (in the “A-F”, “a-f” and “0-9” range) to be the Pre-shared Key. For example: Passphrase: iamguest Hexadecimal Digits: 12345abcde
Pre-shared Key		The Pre-shared key is used to authenticate and encrypt data transmitted in the wireless network. Fill the text box by following the rules below. Hex WEP: input 64-digit Hex values (in the “A-F”, “a-f” and “0-9” range) or at least 8 character pass phrase as the pre-shared keys.
Radius Server Port		The service port of the external RADIUS server.
Radius Server IP		The IP address of external RADIUS server.
Radius Server Password		The password used by external RADIUS server.

Click <**Apply>** at the bottom of the screen to save the above configurations. You can now configure other advance sections or start using the router (with the advance settings in place)

3.4.4 Access Control

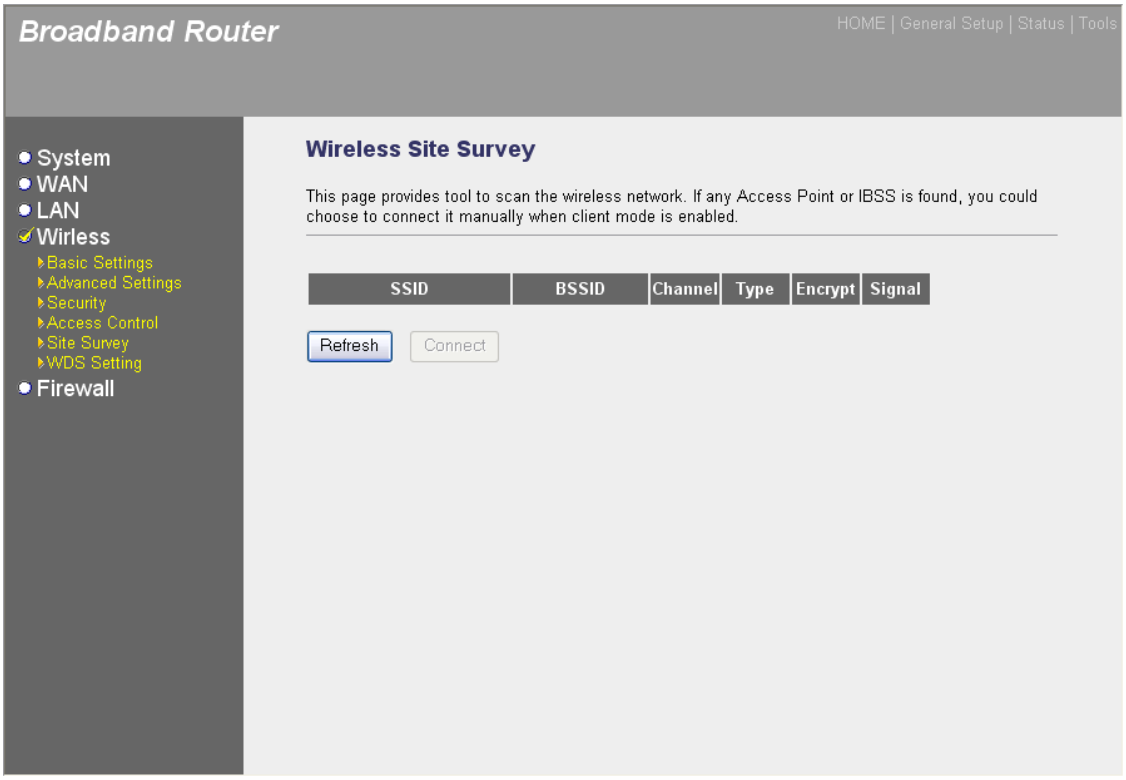
This wireless router provides MAC Address Control, which prevents the unauthorized MAC Addresses from accessing your wireless network.

Parameters	Description
Wireless Access Control Mode	Enable/Disable wireless access control
Add MAC address into the list	Fill in the "MAC Address" and "Comment" of the wireless station to be added and then click "Add". Then this wireless station will be added into the "Current Access Control List" below.
Remove MAC address from the list	If you want to remove some MAC address from the "Current Access Control List ", select the MAC addresses you want to remove in the list and then click "Delete Selected". If you want remove all MAC addresses from the table, just click "Delete All" button. Click "Reset" will clear your current selections.

Click <**Apply>** at the bottom of the screen to save the above configurations. You can now configure other advance sections or start using the router (with the advance settings in place)

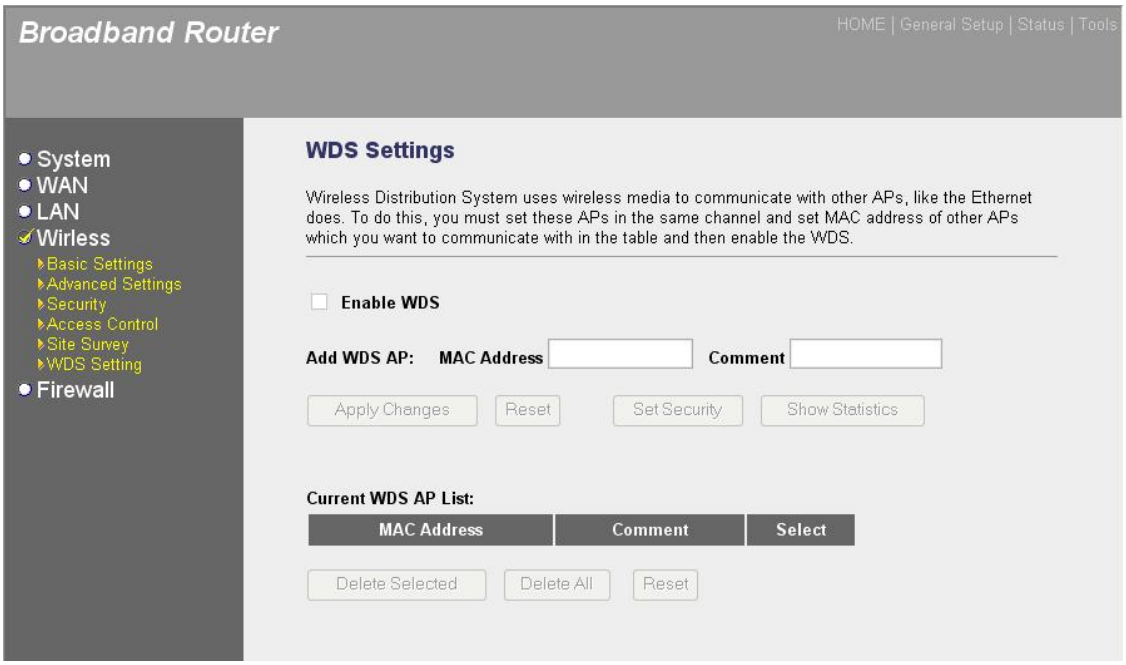
3.4.5 Site Survey

This page provides tool to scan the wireless network. If any Access Point or IBSS is found, you could choose to connect it manually when client mode is enabled.



3.4.6 WDS Settings

Wireless Distribution System uses wireless media to communicate with other APs, like the Ethernet does. To do this, you must set these APs in the same channel and set MAC address of other APs which you want to communicate with in the table and then enable the WDS.

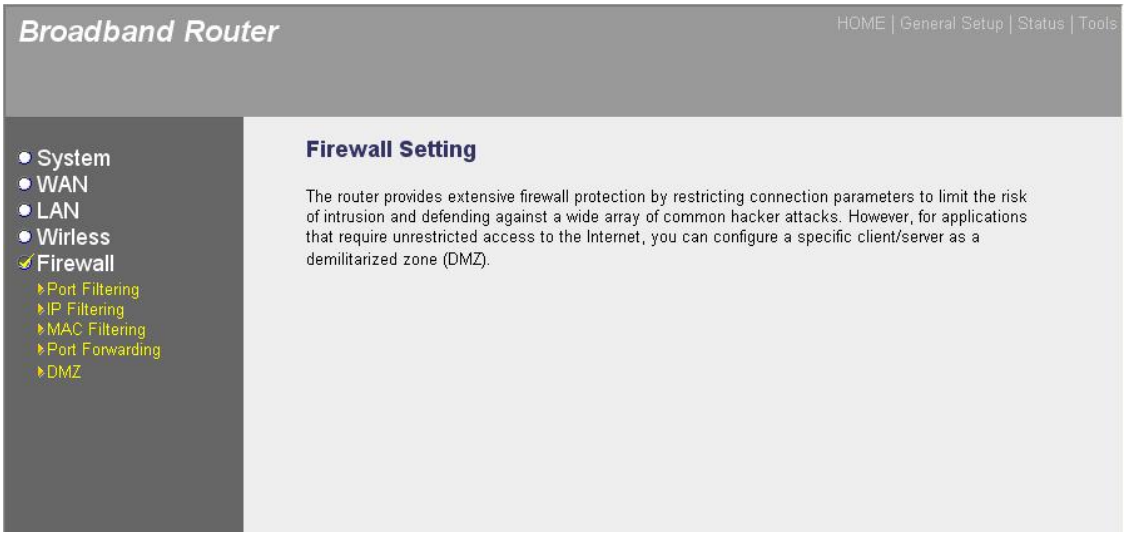


Parameters	Description
Enable WDS	Check this box to enable Wireless Distribution System.
Add WDS AP into the list	Fill in the "MAC Address" and "Comment" of the wireless station to be added and then click "Apply Changes". Then this wireless AP will be added into the "Current WDS AP List" below. If you find any issues before adding it and want to retype again. Just click "Reset" and both "MAC Address" and "Comment" fields will be cleared.
Remove WDS AP from the list	If you want to remove some AP from the "Current WDS AP List ", select the MAC addresses you want to remove in the list and then click "Delete Selected". If you want remove all MAC addresses from the table, just click "Delete All" button. Click "Reset" will clear your current selections.

Click <**Apply>** at the bottom of the screen to save the above configurations. You can now configure other advance sections or start using the router (with the advance settings in place)

3.5 Firewall

The Broadband router provides extensive firewall protection by restricting connection parameters, thus limiting the risk of hacker attack, and defending against a wide array of common Internet attacks. However, for applications that require unrestricted access to the Internet, you can configure a specific client/server as a Demilitarized Zone (DMZ).

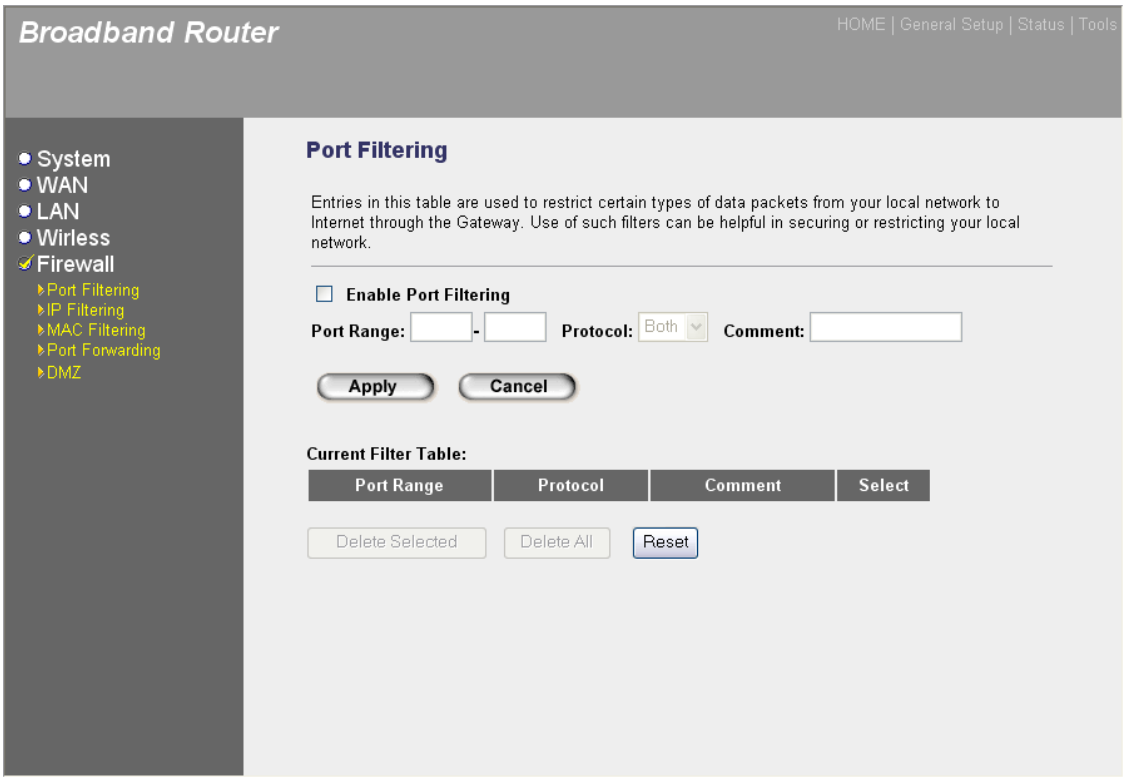


Parameters	Description
3.5.1 Port Filtering	Entries in this table are used to restrict certain types of data packets from your local network to Internet through the Gateway.
3.5.2 IP Filtering	IP Filtering allows you to specify which IP can or can not be used to access to internet.
3.5.3 MAC Filtering	MAC Filtering allows you to specify which MAC Address can or can not be used to access to internet.
3.5.4 Port Forwarding	You can have different services (e.g. email, FTP, Web etc.) going to different service servers/clients in your LAN. The Port Forwarding allows you to re-direct a particular range of service port numbers (from the Internet/WAN Ports) to a particular LAN IP address.
3.5.5 DMZ	The DMZ function allows you to re-direct all packets going to your WAN port IP address to a particular IP address in your LAN.

Click on one of the firewall selections and proceed to the manual's relevant sub-section

3.5.1 Port Filtering

If you want to restrict users from accessing certain Internet applications/services (e.g. Internet websites, email, FTP etc.), then this is the place to set that configuration. Entries in this table are used to restrict certain types of data packets from your local network to Internet through the Gateway. Use of such filters can be helpful in securing or restricting your local network.

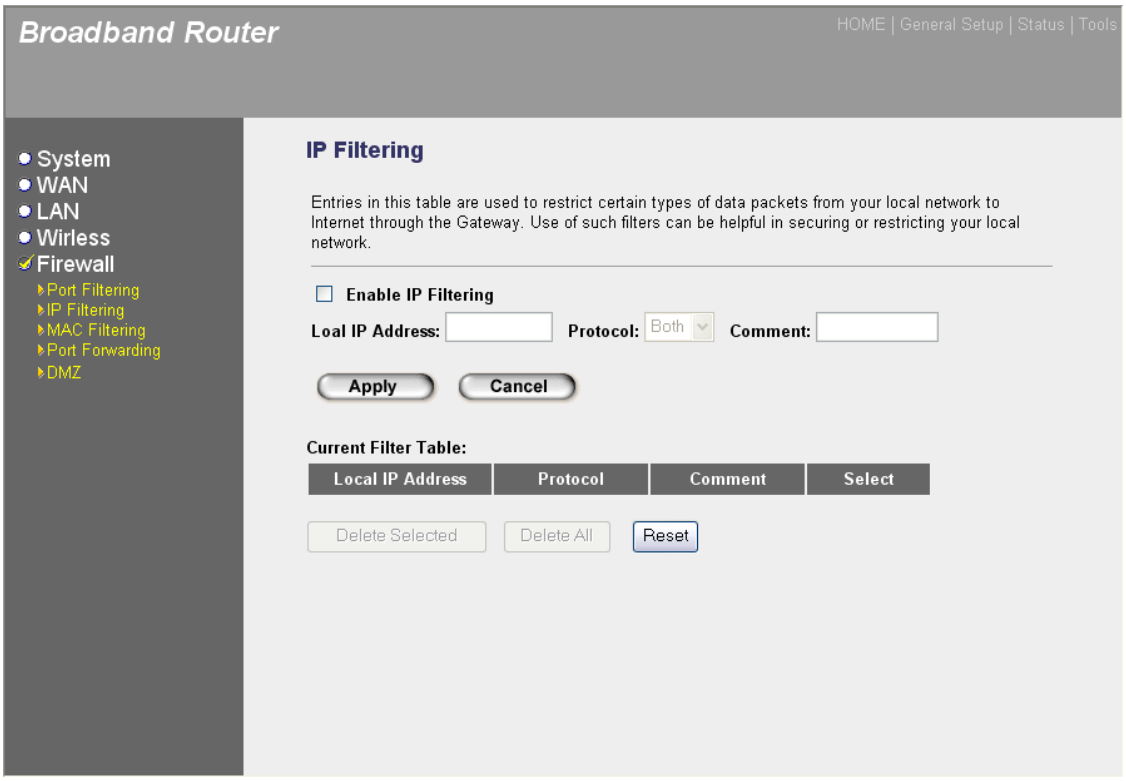


Parameters	Description
Enable Port Filtering	Check this box to enable the port filtering function.
Add a new entry into the list	Fill in the "Port Range", "Protocol" and "Comment" of the filtering rule to be added and then click "Apply ". Then specified port will be added into the "Current Filter Table" below. If you find any issues before adding it and want to retype again. Just click "Cancel" and all inputed fields will be cleared.
Remove an entry from the list	If you want to remove some filter rule from the "Current Filter Table", select the Port Range you want to remove in the table and then click "Delete Selected". If you want remove all Port Ranges from the table, just click "Delete All" button. Click "Reset" will clear your current selections.

You can now configure other advance sections or start using the router (with the advance settings in place)

3.5.2 IP Filtering

If you want to restrict users from accessing certain Internet applications/services (e.g. Internet websites, email, FTP etc.), then this is the place to set that configuration. Entries in this table are used to restrict certain types of data packets from your local network to Internet through the Gateway. Use of such filters can be helpful in securing or restricting your local network.

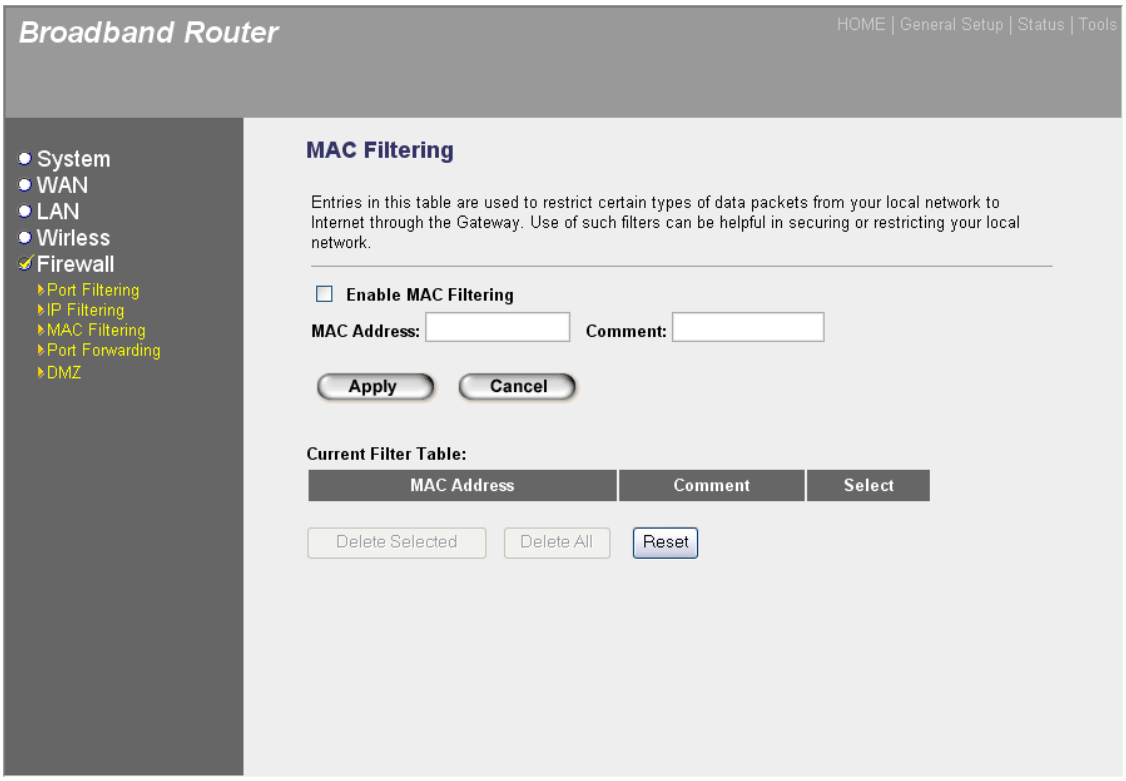


Parameters	Description
Enable IP Filtering	Check this box to enable the IP filtering function.
Add a new entry into the list	Fill in the "Local IP Address", "Protocol" and "Comment" of the filtering rule to be added and then click "Apply ". Then specified IP will be added into the "Current Filter Table" below. If you find any issues before adding it and want to retype again. Just click "Cancel" and all inputed fields will be cleared.
Remove an entry from the list	If you want to remove some filter rule from the "Current Filter Table", select the Local IP Address you want to remove in the table and then click "Delete Selected". If you want remove all Local IP Address from the table, just click "Delete All" button. Click "Reset" will clear your current selections.

You can now configure other advance sections or start using the router (with the advance settings in place)

3.5.3 MAC Filtering

If you want to restrict users from accessing certain Internet applications/services (e.g. Internet websites, email, FTP etc.), then this is the place to set that configuration. Entries in this table are used to restrict certain types of data packets from your local network to Internet through the Gateway. Use of such filters can be helpful in securing or restricting your local network.

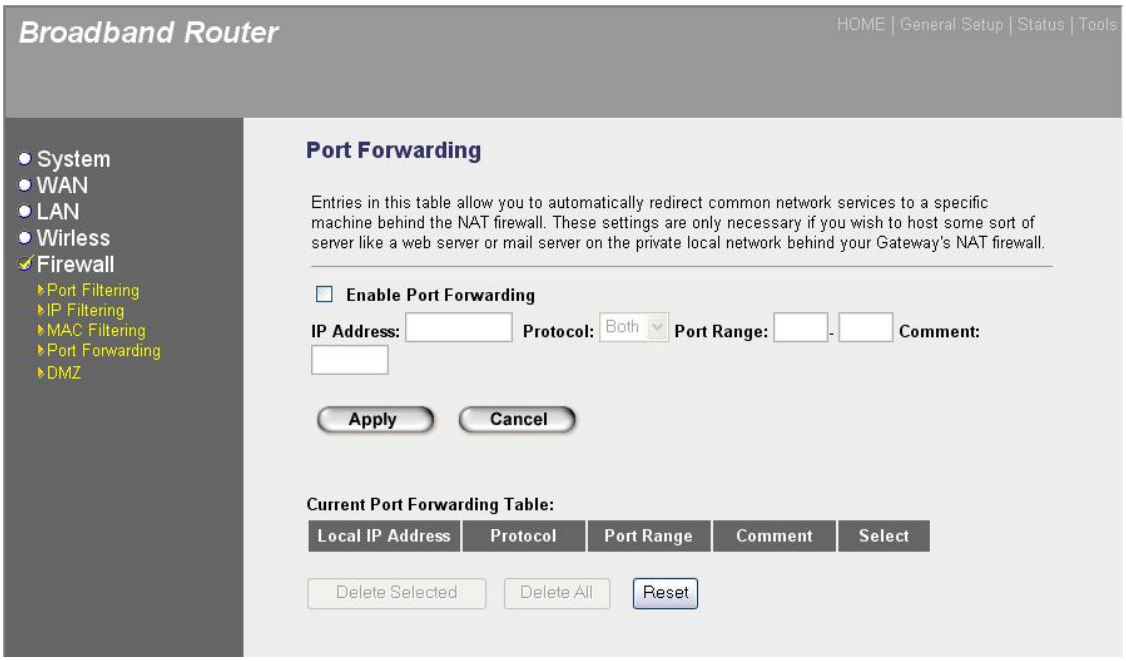


Parameters	Description
Enable MAC Filtering	Check this box to enable the MAC filtering function.
Add a new entry into the list	Fill in the "MAC Address" and "Comment" of the filtering rule to be added and then click "Apply ". Then specified MAC will be added into the "Current Filter Table" below. If you find any issues before adding it and want to retype again. Just click "Cancel" and all inputed fields will be cleared.
Remove an entry from the list	If you want to remove some filter rule from the "Current Filter Table", select the MAC Address you want to remove in the table and then click "Delete Selected". If you want remove all MAC Address from the table, just click "Delete All" button. Click "Reset" will clear your current selections.

You can now configure other advance sections or start using the router (with the advance settings in place)

3.5.4 Port Forwarding

The Port Forwarding allows you to re-direct a particular range of service port numbers (from the Internet/WAN Ports) to a particular LAN IP address. It helps you to host some servers behind the router NAT firewall.



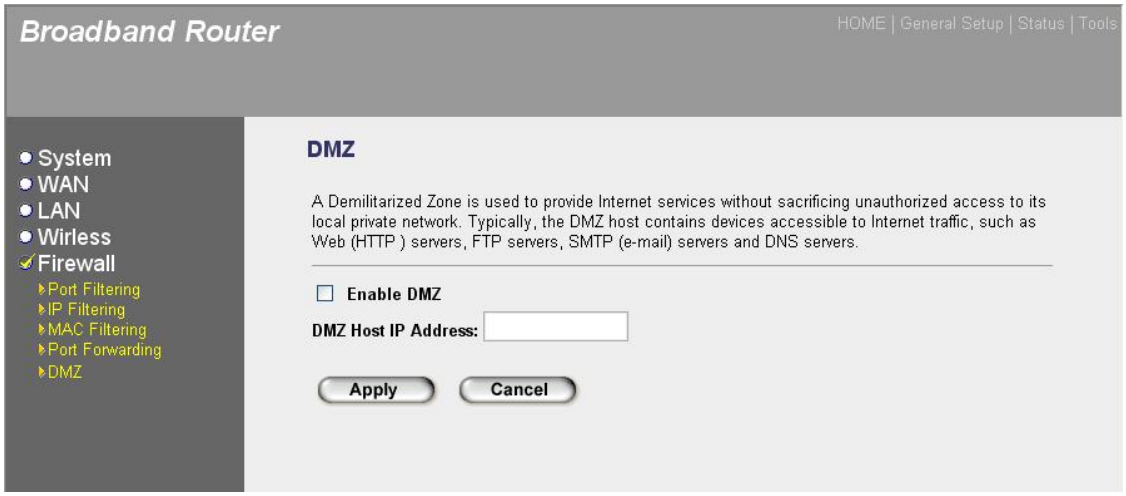
Parameter	Description
Enable Port Forwarding	Enable Port Forwarding
IP Address	This is the private IP of the server behind the NAT firewall. **Note:** You need to give your LAN PC clients a fixed/static IP address for Port Forwarding to work properly.
Protocol	This is the protocol type to be forwarded. You can choose to forward “TCP” or “UDP” packets only or select “both” to forward both “TCP” and “UDP” packets.
Port Range	The range of ports to be forward to the private IP.
Comment	The description of this setting.
Add Port Forwarding into the table	Fill in the "IP Address", “Protocol”, “Port Range” and "Comment" of the setting to be added and then click "Apply". Then this Port Forwarding setting will be added into the "Current Port Forwarding Table" below. If you find any typo

	before adding it and want to retype again, just click "Cancel" and the fields will be cleared.
Remove Port Forwarding into the table	If you want to remove some Port Forwarding settings from the "Current Port Forwarding Table", select the Port Forwarding settings you want to remove in the table and then click "Delete Selected". If you want remove all Port Forwarding settings from the table, just click "Delete All" button. Click "Reset" will clear your current selections.

Click <**Apply>** at the bottom of the screen to save the above configurations. You can now configure other advance sections or start using the router (with the advance settings in place)

3.5.5 DMZ

If you have a local client PC that cannot run an Internet application (e.g. Games) properly from behind the NAT firewall, then you can open the client up to unrestricted two-way Internet access by defining a DMZ Host. The DMZ function allows you to re-direct all packets going to your WAN port IP address to a particular IP address in your LAN.



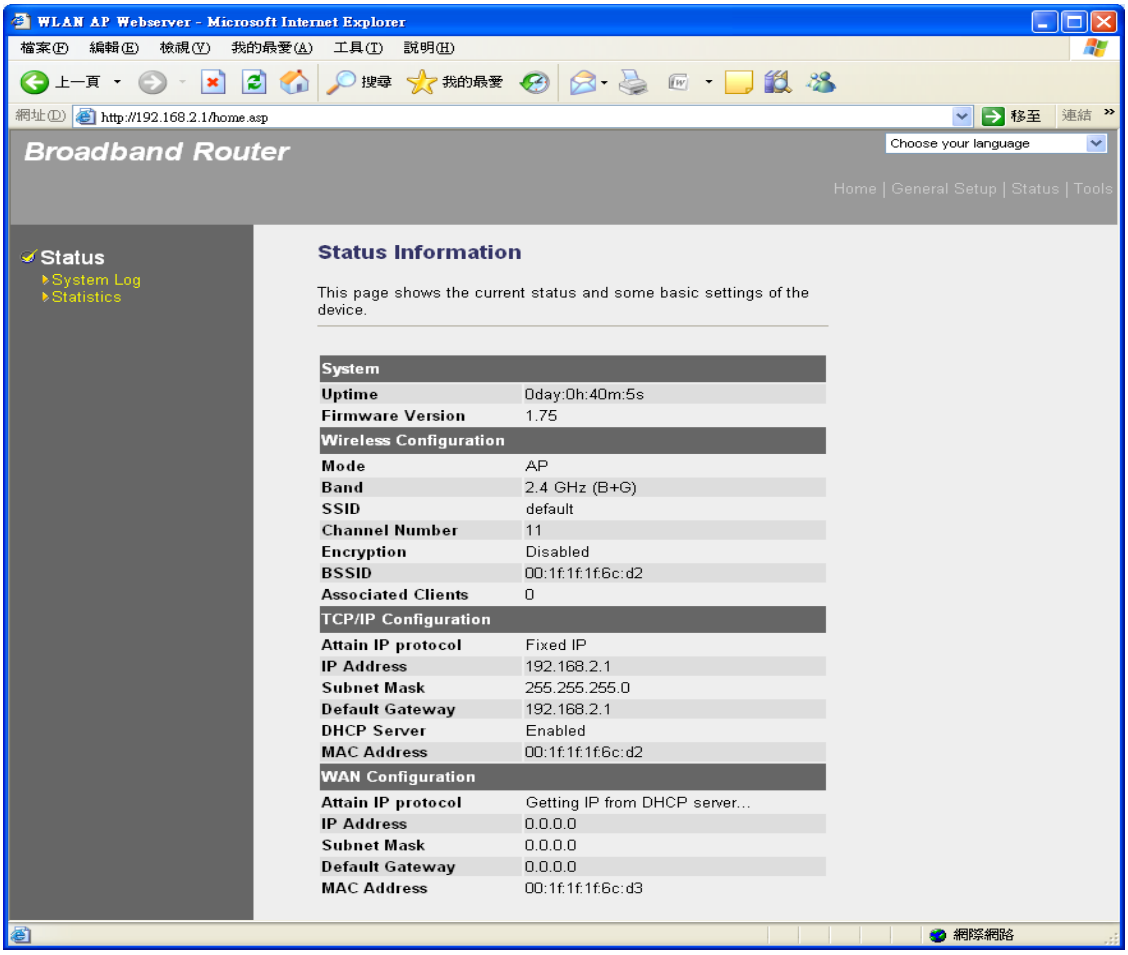
Parameters	Description
Enable DMZ	Enable/disable DMZ
DMZ Host IP Address	Input the IP address of a particular host in your LAN that will receive all the packets originally going to the WAN port/Public IP address above **Note:** You need to give your LAN PC clients a fixed/static IP address for DMZ to work properly.

You can now configure other advance sections or start using the router (with the advance settings in place

Chapter 4

Status

The Status section allows you to monitor the current status of your router. You can use the Status page to monitor: the connection status of the Broadband router's WAN/LAN interfaces, the current firmware version numbers, and any illegal attempts to access your network.

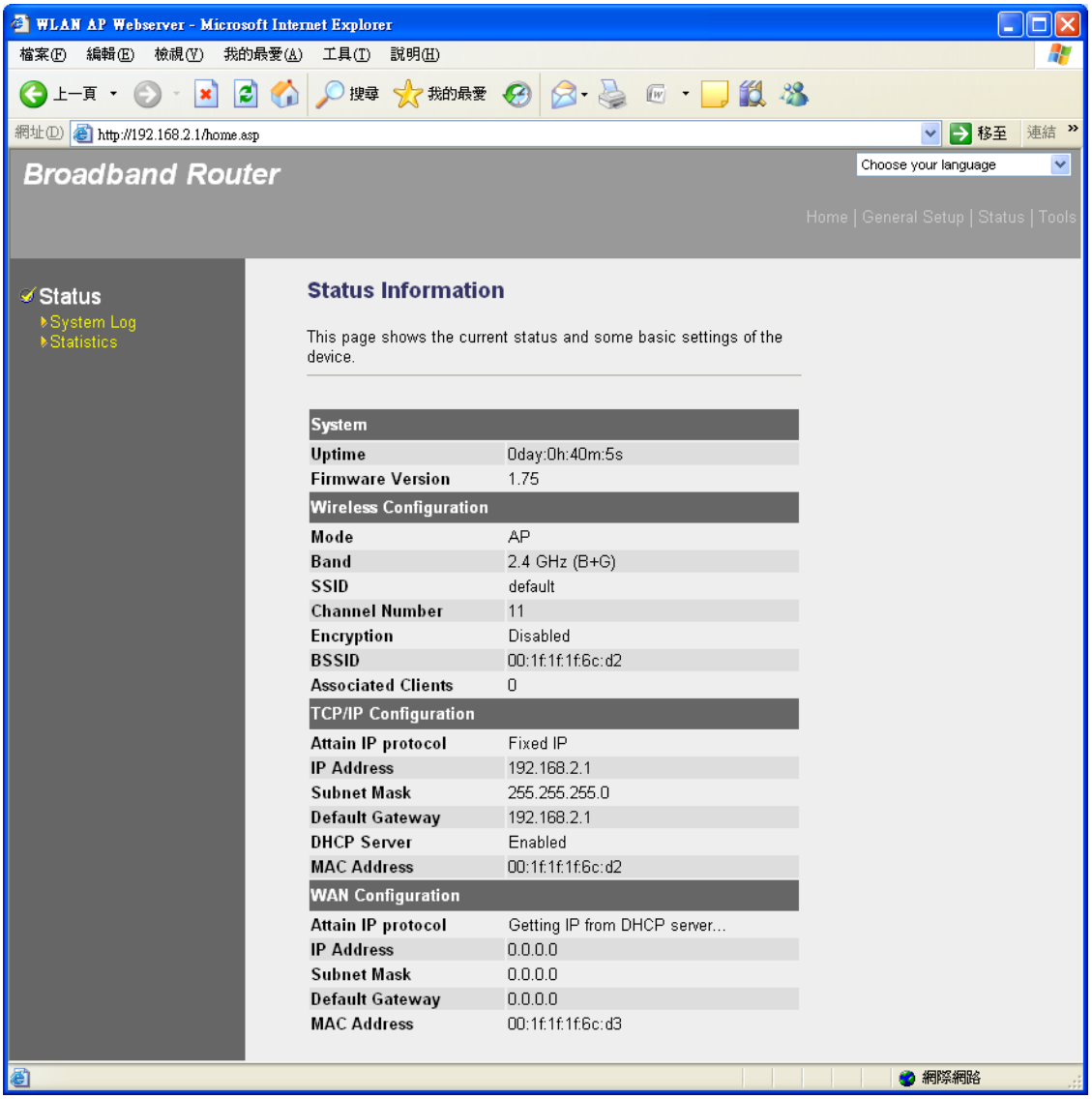


Parameters	Description
4.1 Status	Shows the router's system information
4.2 System Log	View the Broadband router's system log
4.3 Statistics	Shows the statistics

Select one of the above five Status selections and proceed to the manual's relevant sub-section

4.1 Status

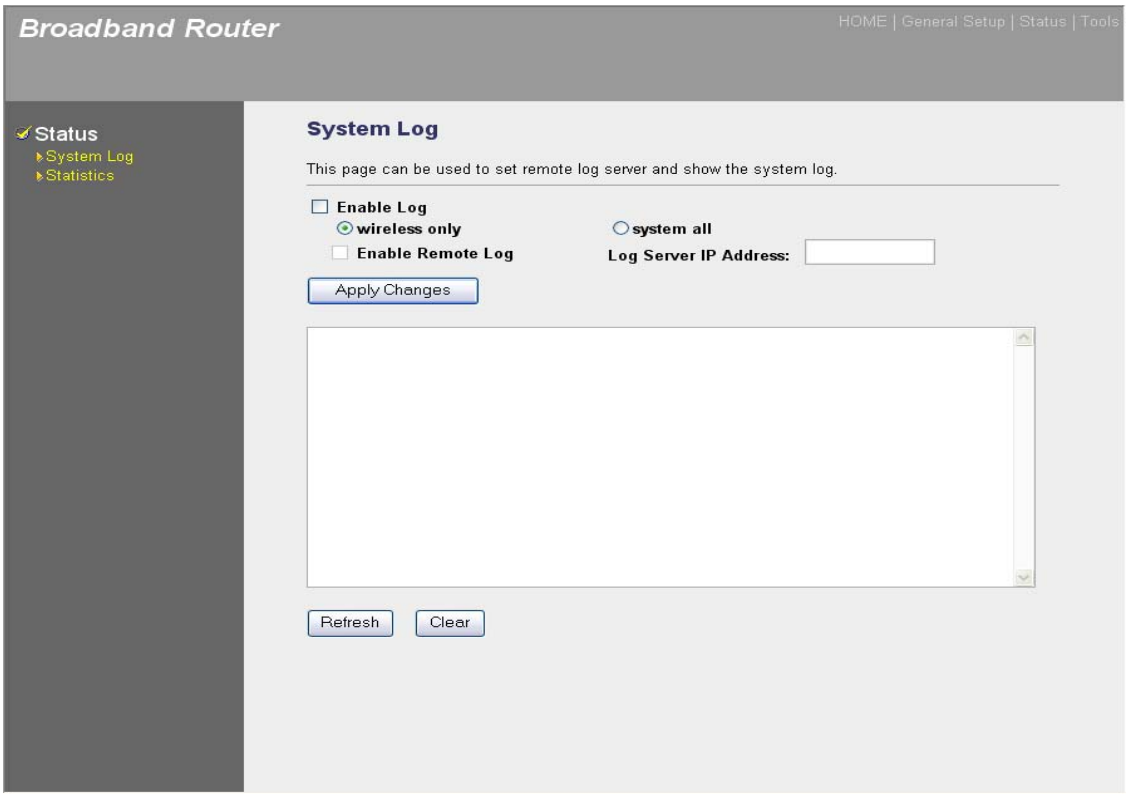
The Status section allows you to view the router's system information



Parameters	Description
Information	You can see the router's system information such as the router's: Uptime, Firmware version, Wireless Configuration, LAN Address information, WAN Configuration information.

4.2 System Log

View the operation log of the system.



Parameters	Description
Enable Log	Check this box to enable the logging system.
Log mode	By select this options, you can have wireless log only or all system log.
Enable Remote Log	If you want to send all log information to remote server, please check this box to enable this function and fill the server IP Address in the “Log Server IP Address” field.
System Log	This page shows the current system log of the Broadband router. It displays any event occurred after system start up. At the bottom of the page, the system log can be cleared <**Clear**> or it can be refreshed <**Refresh**> to get the most updated situation. When the system is powered down, the system log will disappear if not saved to a local file.

4.3 Statistics

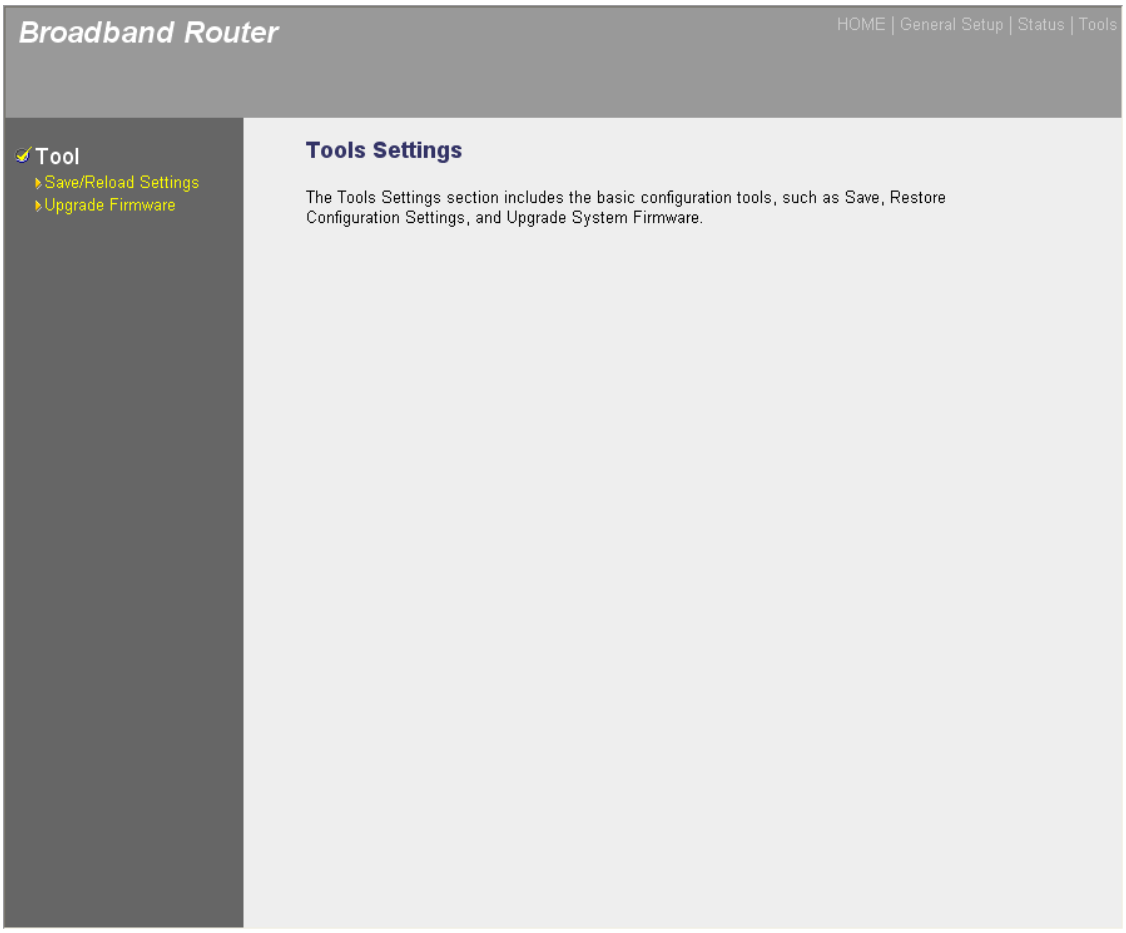
View the statistics of packets sent and received on WAN, LAN and Wireless LAN.

Parameters	Description
Statistics	Shows the counters of packets sent and received on WAN, LAN and Wireless LAN.

Chapter 5

Tool

This page includes the basic configuration tools, such as Configuration Tools (save or restore configuration settings), Firmware Upgrade (upgrade system firmware) and Reset.

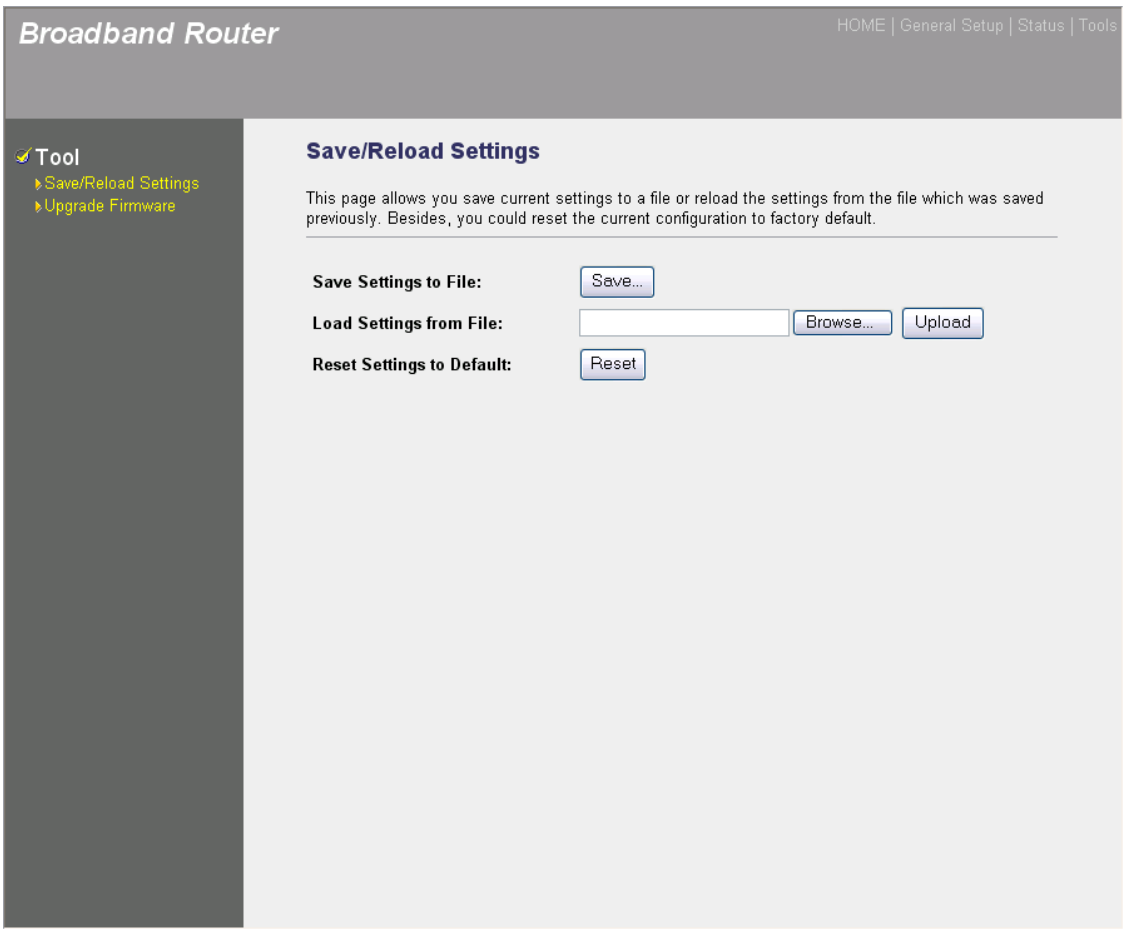


Parameters	Description
5.1 Save/Reload Settings	You can save the router's current configuration, restore the router's saved configuration files and restore the router's factory default settings
5.2 Upgrade Firmware	This page allows you to upgrade the router's firmware

Select one of the above three **Tools Settings** selection and proceed to the manual's relevant sub-section

5.1 Save/Reload Settings

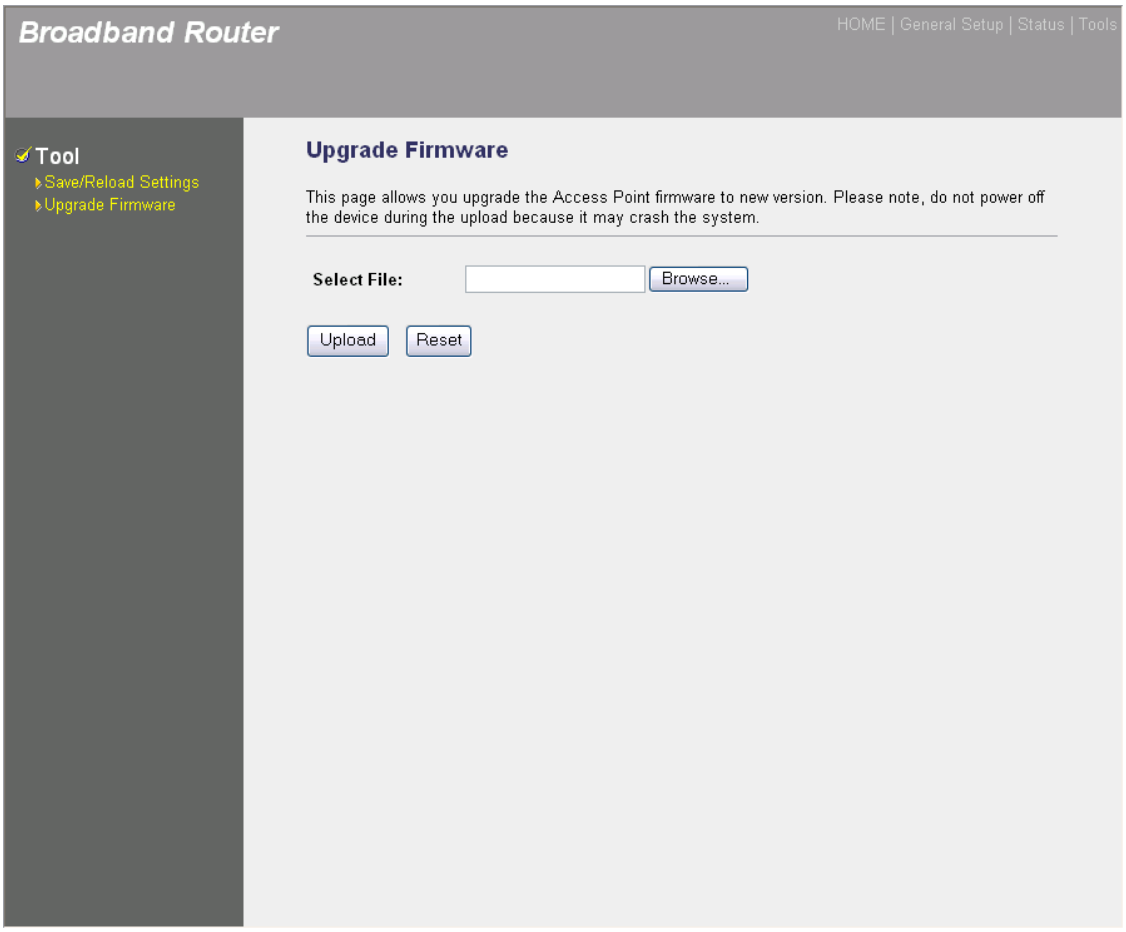
The Save/Reload Settings screen allows you to save (**Backup**) the router's current configuration setting. Saving the configuration settings provides an added protection and convenience should problems occur with the router and you have to reset to factory default. When you save the configuration setting (Backup) you can re-load the saved configuration into the router through the **Restore** selection. If extreme problems occur you can use the **Restore Settings to Defaults** selection, this will set all configurations to its original default settings (e.g. when you first purchased the router).



Parameters	Description
Configuration Tools	Use the "**Backup**" tool to save the Broadband router current configuration to a file named "config.bin" on your PC. You can then use the "**Restore**" tool to restore the saved configuration to the Broadband router. Alternatively, you can use the "**Restore Settings to Default**" tool to force the Broadband router to perform a power reset and restore the original factory settings.

5.2 Firmware Upgrade

This page allows you to upgrade the router's firmware



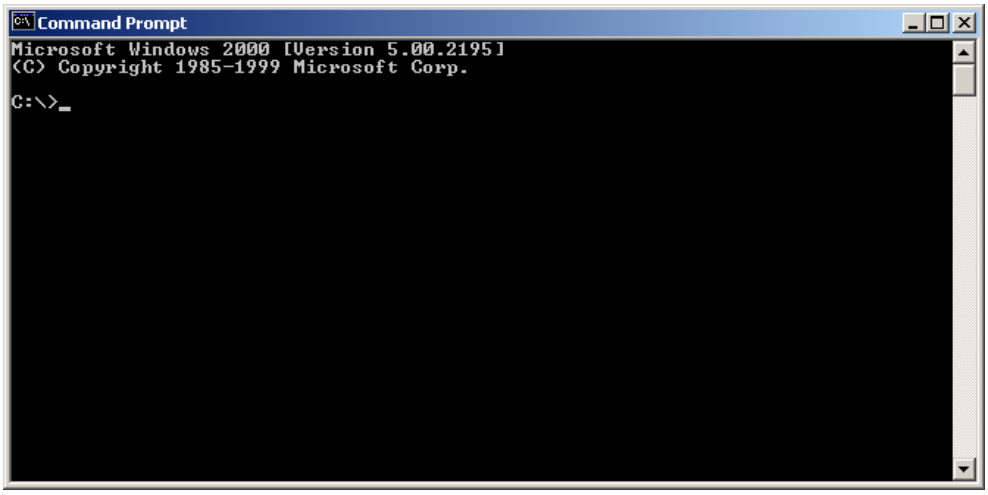
Parameters	Description
Upgrade Firmware	This tool allows you to upgrade the Broadband router's system firmware. To upgrade the firmware of your Broadband router, you need to download the firmware file to your local hard disk, and enter that file name and path in the appropriate field on this page. You can also use the Browse button to find the firmware file on your PC.

Once you've selected the new firmware file, click <**Apply>** at the bottom of the screen to start the upgrade process. (You may have to wait a few minutes for the upgrade to complete). Once the upgrade is complete you can start using the router.

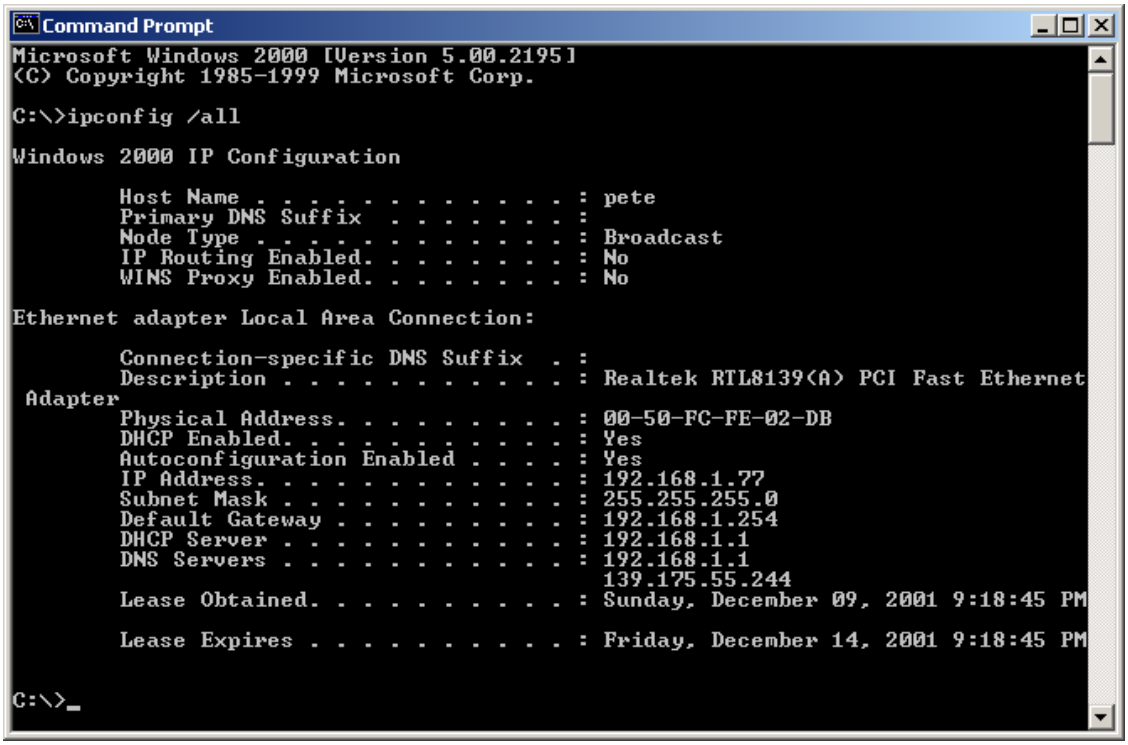
Appendix A

How to Manually find your PC's IP and MAC address

1) In Window's open the Command Prompt program



2) Type **Ipconfig /all** and <enter>



- Your PC's IP address is the one entitled **IP address** (192.168.1.77)
- The router's IP address is the one entitled **Default Gateway** (192.168.1.254)
- Your PC's MAC Address is the one entitled **Physical Address** (00-50-FC-FE-02-DB)

Glossary

Default Gateway (Router): Every non-router IP device needs to configure a default gateway's IP address. When the device sends out an IP packet, if the destination is not on the same network, the device has to send the packet to its default gateway, which will then send it out towards the destination.

DHCP: Dynamic Host Configuration Protocol. This protocol automatically gives every computer on your home network an IP address.

DNS Server IP Address: DNS stands for Domain Name System, which allows Internet servers to have a domain name (such as www.Broadbandrouter.com) and one or more IP addresses (such as 192.34.45.8). A DNS server keeps a database of Internet servers and their respective domain names and IP addresses, so that when a domain name is requested (as in typing "Broadbandrouter.com" into your Internet browser), the user is sent to the proper IP address. The DNS server IP address used by the computers on your home network is the location of the DNS server your ISP has assigned to you.

DSL Modem: DSL stands for Digital Subscriber Line. A DSL modem uses your existing phone lines to transmit data at high speeds.

Ethernet: A standard for computer networks. Ethernet networks are connected by special cables and hubs, and move data around at up to 10/100 million bits per second (Mbps).

Idle Timeout: Idle Timeout is designed so that after there is no traffic to the Internet for a pre-configured amount of time, the connection will automatically be disconnected.

IP Address and Network (Subnet) Mask: IP stands for Internet Protocol. An IP address consists of a series of four numbers separated by periods, that identifies a single, unique Internet computer host in an IP network. Example: 192.168.2.1. It consists of 2 portions: the IP network address, and the host identifier.

The IP address is a 32-bit binary pattern, which can be represented as four cascaded decimal numbers separated by ".": aaa.aaa.aaa.aaa, where each "aaa" can be anything from 000 to 255, or as four cascaded binary numbers separated by ".": bbbbbbbb.bbbbbbbb.bbbbbbbb.bbbbbbbb, where each "b" can either be 0 or 1.
A network mask is also a 32-bit binary pattern, and consists of consecutive leading 1's followed by consecutive trailing 0's, such as 11111111.11111111.11111111.00000000. Therefore sometimes a network mask can also be described simply as "x" number of leading 1's.
When both are represented side by side in their binary forms, all bits in the IP address that correspond to 1's in the network mask become part of the IP network address, and the remaining bits correspond to the host ID.

For example, if the IP address for a device is, in its binary form,
11011001.10110000.10010000.00000111, and if its network mask is,
11111111.11111111.11110000.00000000
It means the device's network address is
11011001.10110000.10010000.00000000, and its host ID is,
00000000.00000000.00000000.00000111. This is a convenient and efficient method for routers to route IP packets to their destination.

ISP Gateway Address: (see ISP for definition). The ISP Gateway Address is an IP address for the Internet router located at the ISP's office.

ISP: Internet Service Provider. An ISP is a business that provides connectivity to the Internet for individuals and other businesses or organizations.

LAN: Local Area Network. A LAN is a group of computers and devices connected together in a relatively small area (such as a house or an office). Your home network is considered a LAN.

MAC Address: MAC stands for Media Access Control. A MAC address is the hardware address of a device connected to a network. The MAC address is a unique identifier for a device with an Ethernet interface. It is comprised of two parts: 3 bytes of data that corresponds to the Manufacturer ID (unique for each manufacturer), plus 3 bytes that are often used as the product's serial number.

NAT: Network Address Translation. This process allows all of the computers on your home network to use one IP address. Using the broadband router's NAT capability, you can access the Internet from any computer on your home network without having to purchase more IP addresses from your ISP.

Port: Network Clients (LAN PC) uses port numbers to distinguish one network application/protocol over another. Below is a list of common applications and protocol/port numbers:

Application	Protocol	Port Number
Telnet	TCP	23
FTP	TCP	21
SMTP	TCP	25
POP3	TCP	110
H.323	TCP	1720
SNMP	UCP	161
SNMP Trap	UDP	162
HTTP	TCP	80
PPTP	TCP	1723
PC Anywhere	TCP	5631
PC Anywhere	UDP	5632

PPPoE: Point-to-Point Protocol over Ethernet. Point-to-Point Protocol is a secure data transmission method originally created for dial-up connections; PPPoE is for Ethernet connections. PPPoE relies on two widely accepted standards, Ethernet and the Point-to-Point Protocol. It is a communications protocol for transmitting information over Ethernet between different manufacturers

Protocol: A protocol is a set of rules for interaction agreed upon between multiple parties so that when they interface with each other based on such a protocol, the interpretation of their behavior is well defined and can be made objectively, without confusion or misunderstanding.

Router: A router is an intelligent network device that forwards packets between different networks based on network layer address information such as IP addresses.

Subnet Mask: A subnet mask, which may be a part of the TCP/IP information provided by your ISP, is a set of four numbers (e.g. 255.255.255.0) configured like an IP address. It is used to

create IP address numbers used only within a particular network (as opposed to valid IP address numbers recognized by the Internet, which must be assigned by InterNIC).

TCP/IP, UDP: Transmission Control Protocol/Internet Protocol (TCP/IP) and Unreliable Datagram Protocol (UDP). TCP/IP is the standard protocol for data transmission over the Internet. Both TCP and UDP are transport layer protocol. TCP performs proper error detection and error recovery, and thus is reliable. UDP on the other hand is not reliable. They both run on top of the IP (Internet Protocol), a network layer protocol.

WAN: Wide Area Network. A network that connects computers located in geographically separate areas (e.g. different buildings, cities, countries). The Internet is a wide area network.

Web-based management Graphical User Interface (GUI): Many devices support a graphical user interface that is based on the web browser. This means the user can use the familiar Netscape or Microsoft Internet Explorer to Control/configure or monitor the device being managed.