BiPAC 8200N

802.11n VDSL2 4-port Firewall Router

User Manual

Last revised on July 2009

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Chapter 1: Product

Introduction to your Router

Thank you for purchasing BiPAC 8200N Router. Your new router is an all-in-one unit that combines a VDSL modem, VDSL2 router and Ethernet network switch to provide everything you need to get the machines on your network connected to the Internet over a VDSL broadband connection.

The BiPAC 8200N is an all-in-one VDSL2 Router with the latest draft 802.11n technology. It is designed for home and SOHO users who seek extreme mobility, high-speed wireless connection and better wireless coverage while maintaining high-speed broadband access with VDSL2.

The BiPAC 8200N is capable of offering optimal speeds and coverage over the integrated wireless 802.11n access point. The device supports the highest rate of up to 100Mbps/100Mbps in VDSL2 Profile (30a). Since VDSL2 has the characteristic of faster rates over shorter distances, the ideal architecture for Telcoms is to use fiber optic lines as the backbone and a VDSL2 line as the last mile into the home or office. VDSL2 operates over copper wires so that telecom operators can provide bundled services to end-users similar to those that cable operators offer.

With outstanding throughput, the BiPAC 8200N can complement a fiber network to offer the best solution for delivering IPTV or home entertainment services. The SOHO Firewall is integrated to provide protection against hacker attacks while the Quality of Service prioritizes queues and traffic for applications such as music downloads, online gaming, video streaming and file sharing.

Express Internet Access – VDSL2 capable

The router complies with VDSL worldwide standards. Supporting downstream rates of 100Mbps with VDSL and upstream rates of 100 Mbps. Users enjoy not only high-speed VDSL services but also broadband multimedia applications such as interactive gaming, video streaming and real-time audio which are easier and faster than ever. The router is compliant with ITU G994.1 and ITU G.997.1. Support VDSL2 Profiles: 8a, 8b, 8c, 8d, 12a, 12b, 17a and 30a.

802.11n Wireless AP with WPA Support

With integrated 802.11n Wireless Access Point in the router, the device offers a quick and easy access among wired network, wireless network and broadband connection (VDSL) with single device simplicity, and as a result, mobility to the users. In addition to 300 Mbps 802.11n data rate, it also interoperates backward with existing 802.11g and 802.11b equipment. The Wireless Protected Access (WPA) and Wireless Encryption Protocol (WEP) supported features enhance the security level of data protection and access control via Wireless LAN.

Fast Ethernet Switch

A 4-port 10/100Mbps fast Ethernet switch is built-in with automatic switching between MDI and MDI-X for 10Base-T and 100Base-TX ports, with auto detection allowing you to use either straight or cross-over Ethernet cables.

EWAN

Besides using VDSL to get connected to the Internet, this router offers its Ethernet port 4 as a WAN port to be used to connect to Cable Modems and fiber optic lines. This alternative, yet faster method to connect to the internet will provide users more flexibility to get online.

Multi-Protocol to Establish a Connection

The router supports PPP over Ethernet, DHCP Client and Fixed IP address to establish a connection with an ISP.

Universal Plug and Play (UPnP) and UPnP NAT Traversal

This protocol is used to enable simple and robust connectivity among stand-alone devices and PCs from many different vendors. It makes network simple and affordable for users. UPnP architecture leverages TCP/IP and the Web to enable seamless proximity networking in addition to control and data transfer among networked devices. With this feature enabled, you can seamlessly connect to Net Meeting or MSN Messenger.

Network Address Translation (NAT)

It allows multi-users to access outside resources such as the Internet simultaneously with one IP address/one Internet access account. Many application layer gateway (ALG) are supported such as web browser, ICQ, FTP, Telnet, E-mail, News, Net2phone, Ping, NetMeeting, IP phone and others.

Firewall

NAT technology supports simple firewalls and provides options for blocking access from the Internet, like Telnet, FTP, TFTP, WEB, SNMP and IGMP.

Domain Name System (DNS) Relay

It provides an easy way to map the domain name (a friendly name for users such as www.yahoo.com) and IP address. When a local machine sets its DNS server with this router's IP address, every DNS conversion request packet from the PC to this router will be forwarded to the real DNS in the outside network.

Dynamic Domain Name System (DDNS)

The Dynamic DNS service allows you to alias a dynamic IP address to a static hostname. This dynamic IP address is the WAN IP address. For example, to use the service, you must first apply for an account from a DDNS service like http://www.dyndns.org/. More than 5 DDNS servers are supported.

PPP over Ethernet (PPPoE)

This device provides an embedded PPPoE client function to establish a connection. You get greater access speed without changing the operation concept, while sharing the same ISP account and paying for one access account. No PPPoE client software is required for the local computer. Automatic Reconnect and Disconnect Timeout (Idle Timer) functions are also provided.

Quality of Service (QoS)

QoS gives you full control over which types of outgoing data traffic should be given priority by the router, ensuring important data like gaming packets, customer information, or management information move through the router ay lightning speed, even under heavy load. The QoS features are configurable by Internal IP address, External IP address, protocol, and port. You can throttle the speed at which different types of outgoing data pass through the router, to ensure P2P users don't saturate upload bandwidth, or office browsing doesn't bring client web serving to a halt. In addition, or alternatively, you can simply change the priority of different types of upload data and let the router sort out the actual speeds.

Virtual Server

Users can specify some services to be visible from outside users. The router can detect incoming service requests and forward either a single port or a range of ports to the specific local computer to handle it. For example, a user can assign a PC in the LAN acting as a WEB server inside and expose it to the outside network. Outside users can browse inside web servers directly while it is protected by NAT. A DMZ host setting is also provided to a local computer exposed to the outside network, Internet.

Dynamic Host Configuration Protocol (DHCP) Client and Server

In a WAN site, the DHCP client obtains an IP address from the Internet Service Provider (ISP) automatically. In a LAN site, the DHCP server allocates a range of client IP addresses, including subnet masks and DNS IP addresses and distributes them to local computers. This provides an easy way to manage the local IP network.

Rich Packet Filtering

Not only filters the packet based on IP address, but also based on Port numbers. It will filter packets from and to the Internet, and also provides a higher level of security control.

Web-based GUI

It supports web based GUI for configuration and management. It is user-friendly and comes with on-line help. It also supports remote management capability for remote users to configure and manage this product.

Firmware Upgradeable

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

Features

- Compliant with ITU-T G.994.1 and 997.1 VDSL2 Standard
- VDSL2 Profiles: 8a/b/c/d, 12a/b, 17a, 30a
- Band Plan 997 and 998 supported
- Annex A, Annex B, Annex C supported
- US0 Supported
- OLR Supported
- Compliant with VDSL2 MIB
- Integrated 4-port Ethernet Switch
- Ideal for LRE applications
- SOHO Firewall Security with DoS Prevention and Packet Filtering
- Universal Plug and Play (UPnP) Compliant
- Easy Sign-On (EZSO) and Web-based Configuration
- Quality of Service Control
- Easy Network Management
- Supports Draft-802.11n Wireless Access Point with WPA-PSK / WPA2-PSK
- WPS (Wi-Fi Protected Setup) for Easy Setup
- Wireless Speed up to 300Mbps and 3 Times the Coverage of Standard 802.11b/g
- Multiple SSID

Hardware Specifications

Physical Interface

- WLAN: 2 x 2 dBi antennas
- DSL: VDSL port
- Ethernet: 4-port 10/100Mbps auto-crossover (MDI / MDI-X) Switch
- Reset button
- WPS push button
- Power jack
- Power switch

Physical Specifications

- Dimensions: 7.09” x 4.72” x 1.57” (180mm x 120mm x 40mm)

Power Requirements

- Input: 12V DC, 1.2A

Operating Environment

- Operating temperature: 0^0C ~ 40^0C
- Storage temperature: -20^0C ~ 70^0C
- Humidity: 20 - 95% non-condensing

Chapter 2: Product Overview

Standards-Based Technology

The BiPAC 8200N Wireless Router utilizes the 802.11n standard. The IEEE 802.11n standard is an extension of the 802.11g standard. It increases the data rate up to 300 Mbps within the 2.4GHz band, utilizing OFDM technology. This means that in most environments, within the specified range of this device, you will be able to transfer large files quickly or even watch a movie in MPEG format over your network without noticeable delays. This technology works by transmitting high-speed digital data over a radio wave utilizing OFDM (Orthogonal Frequency Division Multiplexing) technology. OFDM works by splitting the radio signal into multiple smaller sub-signals that are then transmitted simultaneously at different frequencies to the receiver. OFDM reduces the amount of crosstalk (interference) in signal transmissions.

Installation Considerations

The BiPAC 8200N Wireless Router lets you access your network, using a wireless connection, from virtually anywhere within its operating range. Keep in mind, however, that the number, thickness and location of walls, ceilings, or other objects that the wireless signals must pass.

Keep the number of walls and ceilings between the BiPAC 8200N and other network devices to a minimum - each wall or ceiling can reduce your BiPAC 8200N wireless product's range from 3-90 feet (1-30 meters.)

Position your devices so that the number of walls or ceilings is minimized. Be aware of the direct line between network devices. Position the devices so that the signal will travel straight through a wall or ceiling (instead of at an angle) for better reception. Building Materials can impede the wireless signal - a solid metal door or aluminium studs may have a negative effect on range.

Try to position wireless devices and computers with wireless adapters so that the signal passes through drywall or open doorways and not other materials. Keep your product away (at least 3-6 feet or 1-2 meters) from electrical devices or appliances that generate extreme RF (radio frequency) noise.

Package Contents

- **BiPAC 8200N VDSL2 Router**
- **CD containing the online manual**
- **RJ-11 VDSL/telephone Cable (1.8M)**
- **Ethernet (CAT-5 LAN) Cable (1.8M Straight)**
- **AC-DC power adapter (12V DC, 1.2A)**
- **Quick Start Guide**
- **Two antennas**
- **Power adapter**

Important note for using this router

Warning

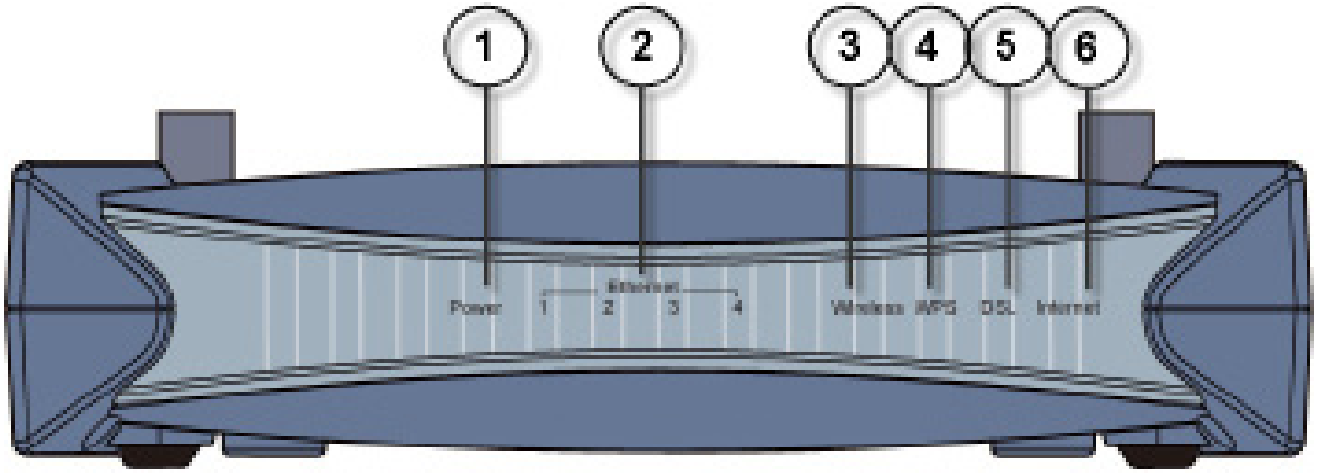
- Do not use the router in high humidity or high temperatures.
- Do not use the same power source for the router as other equipment.
- Do not open or repair the case yourself. If the router is too hot, turn off the power immediately and have it repaired at a qualified service center.
- Avoid using this product and all accessories outdoors.

Attention

- Place the router on a stable surface.
- Only use the power adapter that comes with the package. Using a different voltage rating power adaptor may damage the router.

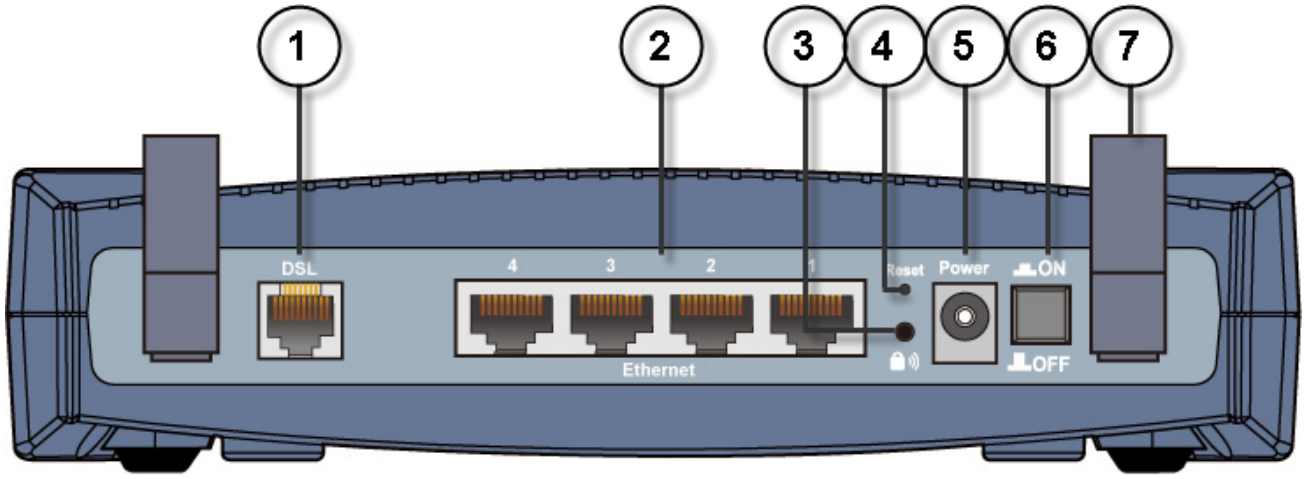
Device Description

The Front LEDs



LED		Meaning
1	**Power**	Lit red when the device is booting. Lit green when the system is ready. Flashes when the system is rebooting or firmware upgrading.
2	**Ethernet port 1X — 4X (RJ-45 connector)**	Lit when one of LAN ports is connected to an Ethernet device. Lit green when the speed of transmission hits 100Mbps; Lit orange when the speed of transmission hits 10Mbps. Blinking when data is transmitted/received.
3	**Wireless**	Lit green when a wireless connection is established. Blinking when data is transmitted/received.
4	**WPS**	Lit green when a wireless connection is established. Blinking when WPS configuration is in progress.
5	**DSL**	Lit green when the device is successfully connected to an VDSL DSLAM. (“line sync”)
6	**Internet**	Lit red when WAN port fails to get IP address. Lit green when WAN port gets IP address successfully. Lit off when the device is in bridge mode or when WAN connection absent.

The Rear Ports



Port		Meaning
1	**DSL**	Connect this port to the VDSL/telephone network with the RJ-11 cable (telephone) provided.
2	**Ethernet**	Connect a UTP Ethernet cable (Cat-5 or Cat-5e) to one of the four LAN ports when connecting to a PC or an office/home network of 10Mbps or 100Mbps. ***Note: Only Ethernet port 4 can be used for EWAN.***
3	**WPS**	Push this button to trigger Wi-Fi Protected Setup function.
4	**Reset**	Press this button for more than 1 second to restore the device to its default mode.
5	**Power**	Connect it with the supplied power adapter.
6	**Power Switch**	Power ON/OFF switch.
7	**Antenna**	Connect the detachable antenna to this port.

Recovery Operation

1. Recovery procedures for non-working routers (e.g. after a failed firmware upgrade flash):

The system will check the firmware of this device automatically while turning on the modem. Once the firmware is not integrated, the system enters the recovery state. The modem emergency-reflash web interface will then be accessible via http://192.168.1.254 where you can upload a firmware image to restore the modem to a functional state. Please note that the modem will only respond via its web interface at this address, and will not respond to ping requests from your PC or to telnet connections.

2. Recovery procedures for a lost web interface password:

After turning the router on, please press the Reset Button on the back of the modem, and hold the button until all the lights on the modem begin to flash and then it will reboot itself to restore the factory default settings. The login username and password will then be reset to admin. You can then access its GUI via its default IP address at http://192.168.1.254/.

Before the router is turned on to initiate its recovery process, please configure the IP address of the PC to 192.168.1.1 and then proceed with the following steps:
1. Turn off the router.
2. Turn on the router (the IP of the router will reset to an Emergency IP address, like 192.168.1.254).

Cabling

One of the most common causes of problems is because of bad cabling or VDSL line(s). Make sure that all connected devices are turned on. On the front of the product is a bank of LEDs. Verify that the LAN Link and VDSL line LEDs are lit. If they are not, verify that you are using the proper cables.

Ensure that all other devices connected to the same telephone line as your router (e.g. telephones, fax machines, analog modems) have a line filter connected between them and the wall socket (unless you are using a Central Splitter or Central Filter installed by a qualified and licensed electrician), and that all line filters are correctly installed in a right way. If line filter is not installed and connected properly, it may cause problem to your VDSL connection or may result in frequent disconnections.

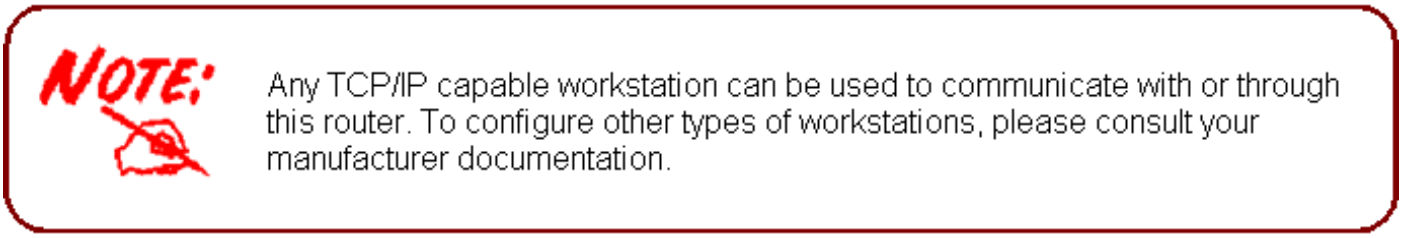
Chapter 3: Basic Installation

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

Please check your PC network components. The TCP/IP protocol stack and Ethernet network adapter must be installed. If not, please refer to your Windows-related or other operating system manuals.

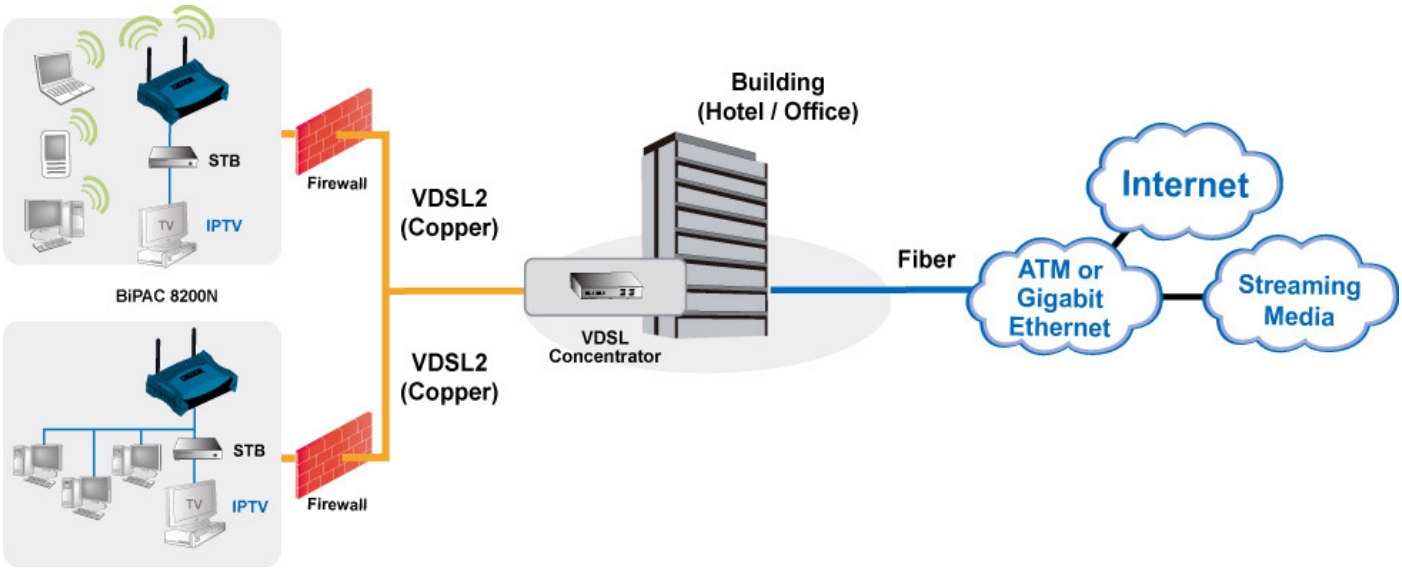
There are ways to connect the router, either through an external repeater hub or connect directly to your PCs. However, make sure that your PCs have an Ethernet interface installed properly prior to connecting the router device. You ought to configure your PCs to obtain an IP address through a DHCP server or a fixed IP address that must be in the same subnet as the router. The default IP address of the router is 192.168.1.254 and the subnet mask is 255.255.255.0 (i.e. any attached PC must be in the same subnet, and have an IP address in the range of 192.168.1.1 to 192.168.1.253). The best and easiest way is to configure the PC to get an IP address automatically from the router using DHCP. If you encounter any problem accessing the router web interface it is advisable to uninstall your firewall program on your PCs, as they can cause problems accessing the IP address of the router. Users should make their own decisions on what is best to protect their network.

Please follow the following steps to configure your PC network environment.



Applications of the device

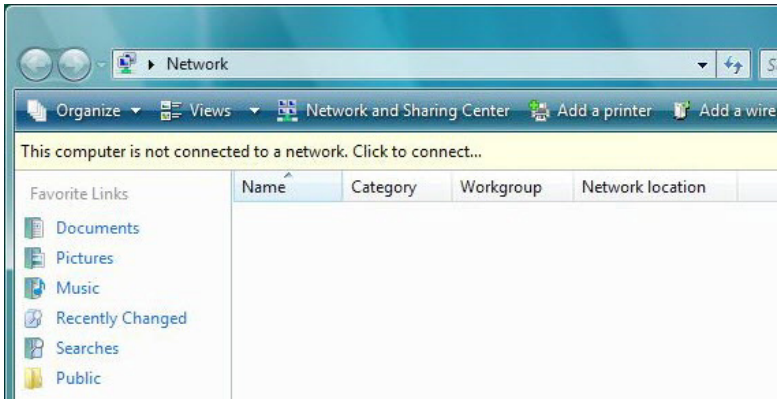
Deployment scenario for VDSL using FTTx



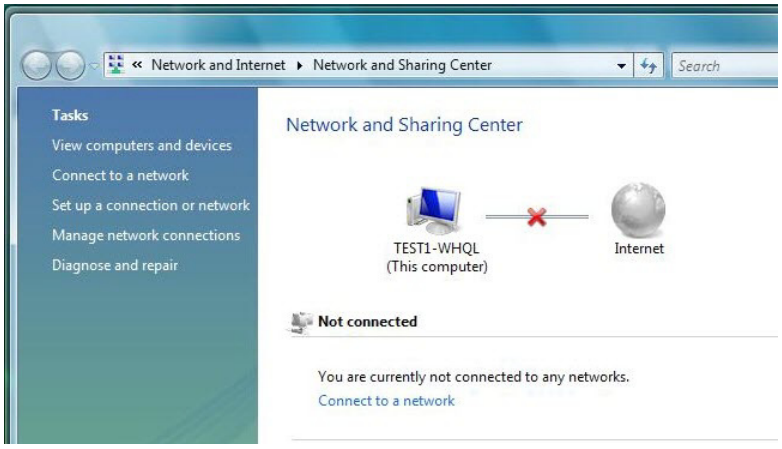
Network Configuration

Configuring PC in Windows Vista

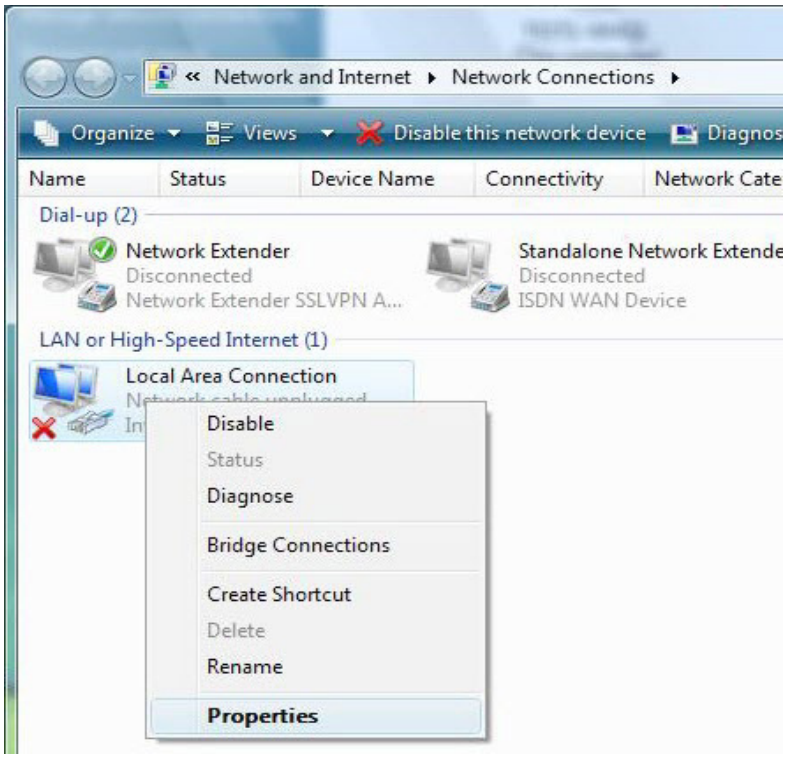
1. Go to Start. Click on Network.
2. Then click on Network and Sharing Center at the top bar.



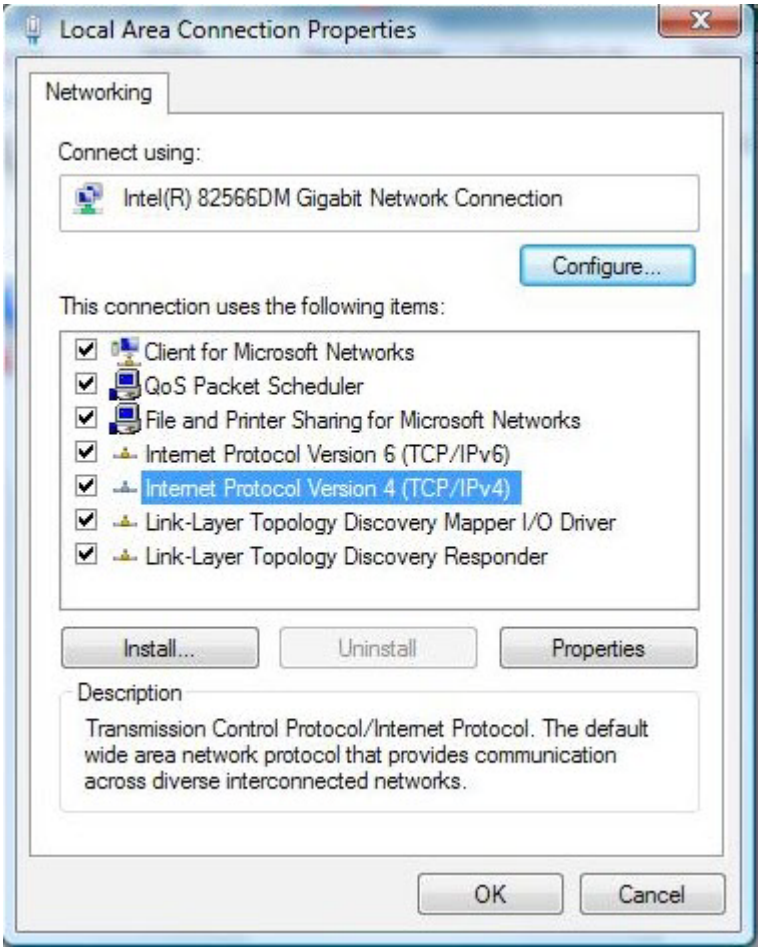
3. When the Network and Sharing Center window pops up, select and click on Manage network connections on the left window column.



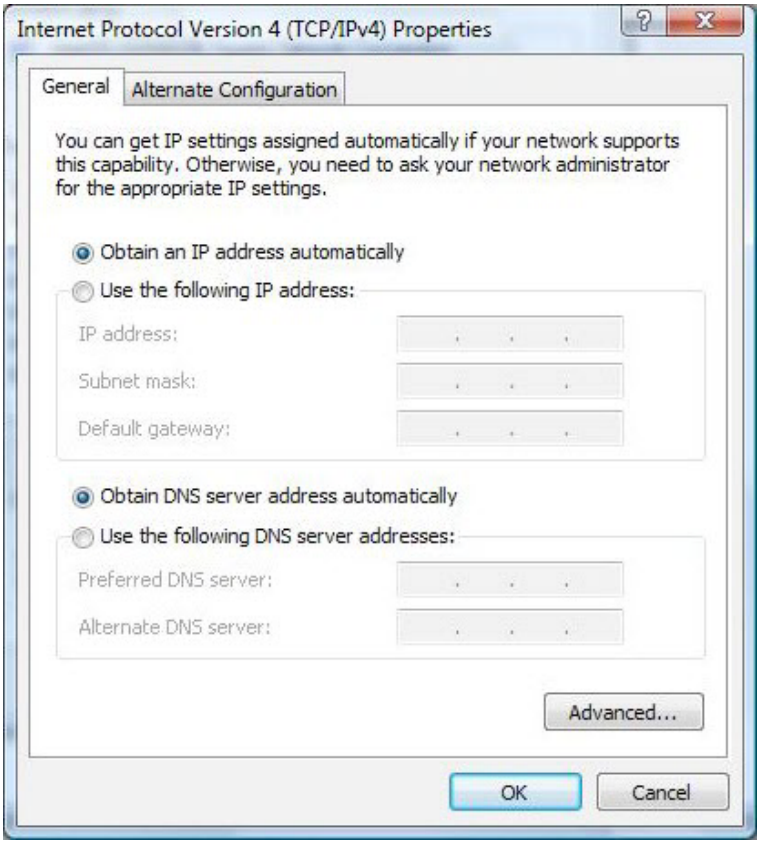
4. Select the Local Area Connection, and right click the icon to select Properties.



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



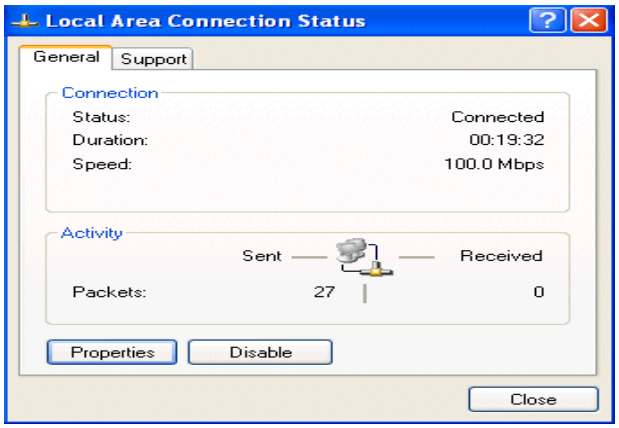
6. In the TCP/IPv4 properties window, select the Obtain an IP address automatically and Obtain DNS Server address automatically radio buttons. Then click OK to exit the setting.
7. Click OK again in the Local Area Connection Properties window to apply the new configuration.



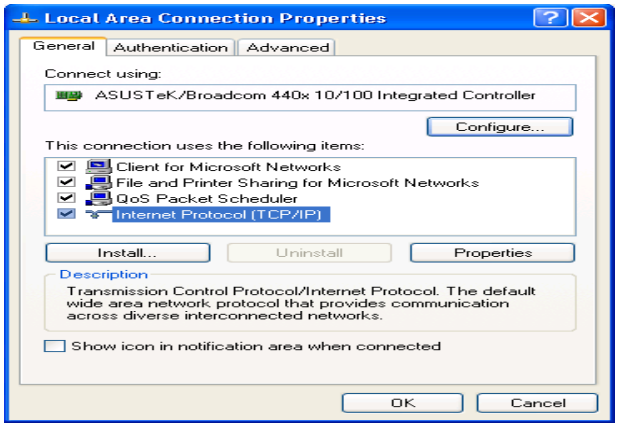
Configuring PC in Windows XP

1. Go to Start > Control Panel (in Classic View). In the Control Panel, double-click on Network Connections
2. Double-click Local Area Connection.

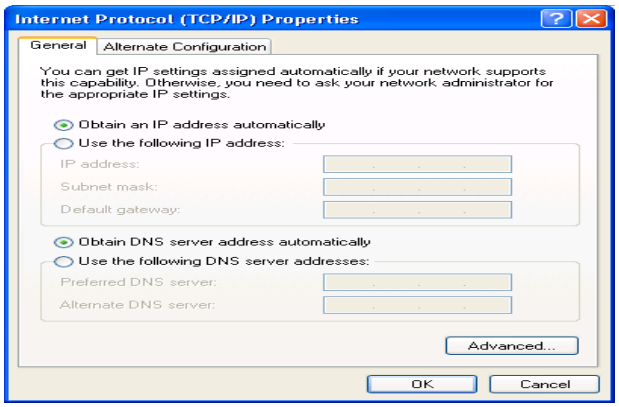
3. In the Local Area Connection Status window, click Properties.



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

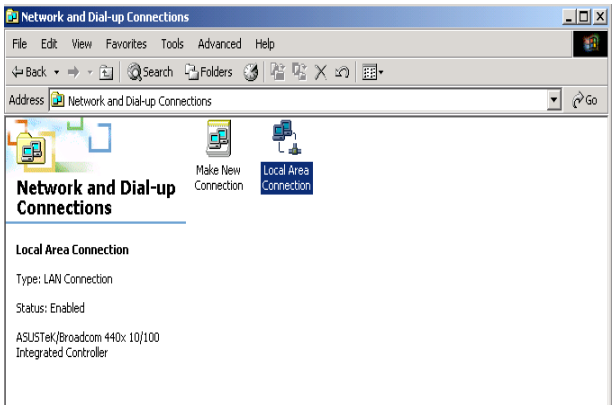


5. Select the Obtain an IP address automatically and the Obtain DNS server address automatically radio buttons.
6. Click OK to finish the configuration.

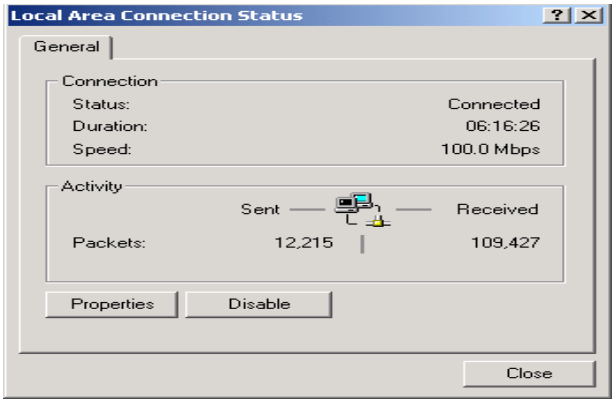


Configuring PC in Windows 2000

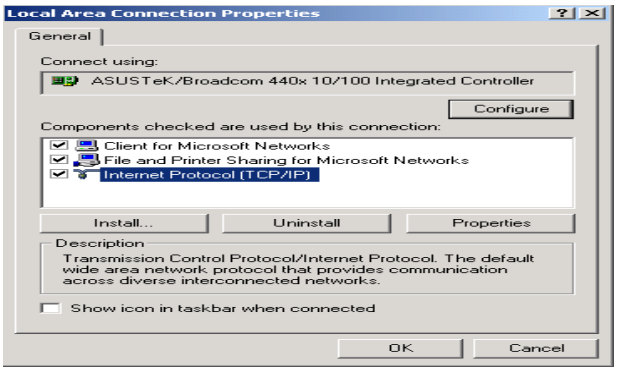
1. Go to Start > Settings > Control Panel. In the Control Panel, double-click on Network and Dial-up Connections.
2. Double-click Local Area Connection.



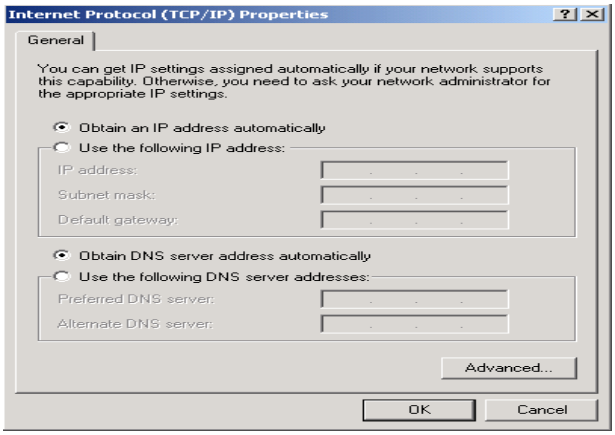
3. In the Local Area Connection Status window click Properties.



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

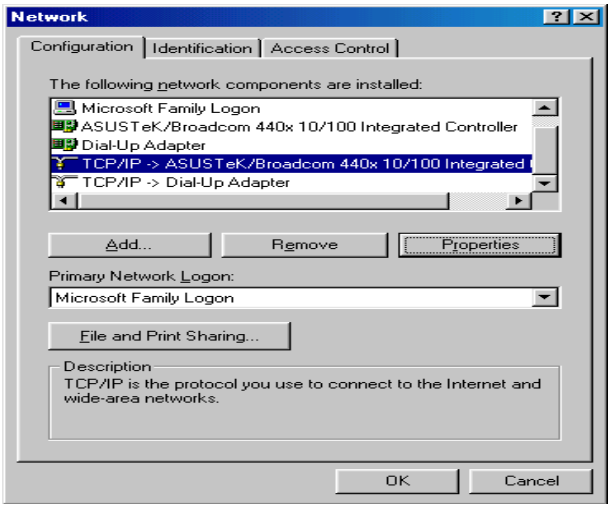


5. Select the Obtain an IP address automatically and the Obtain DNS server address automatically radio buttons.
6. Click OK to finish the configuration.

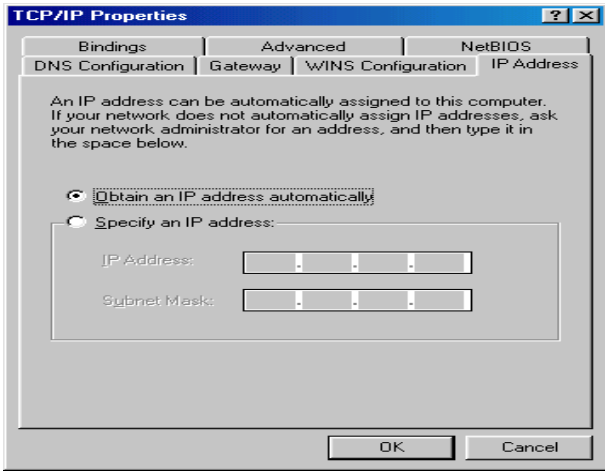


Configuring PC in Windows 95/98/Me

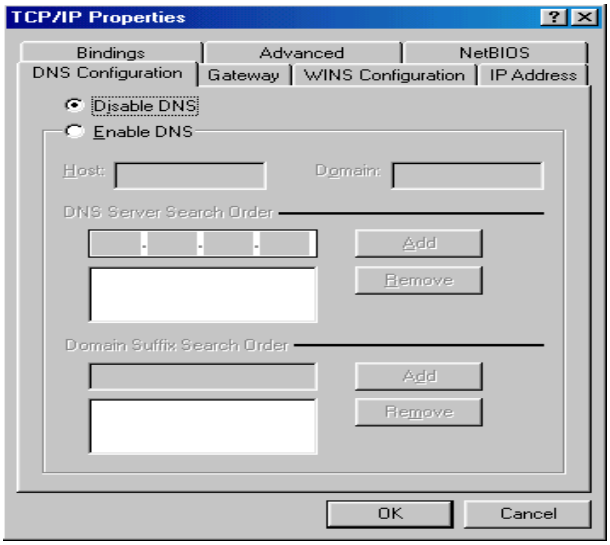
1. Go to Start > Settings > Control Panel. In the Control Panel, double-click on Network and choose the Configuration tab.
2. Select TCP/IP > NE2000 Compatible, or the name of your Network Interface Card (NIC) in your PC.



3. Select the Obtain an IP address automatically radio button.

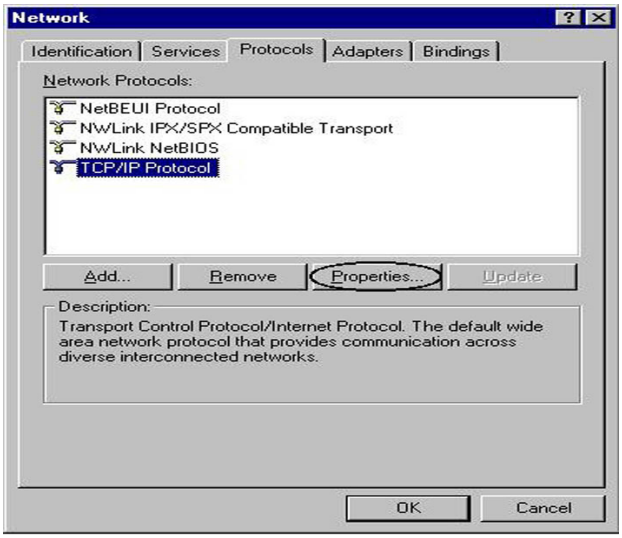


4. Then select the DNS Configurationtab.
5. Select the Disable DNS radio button and click OK to finish the configuration.

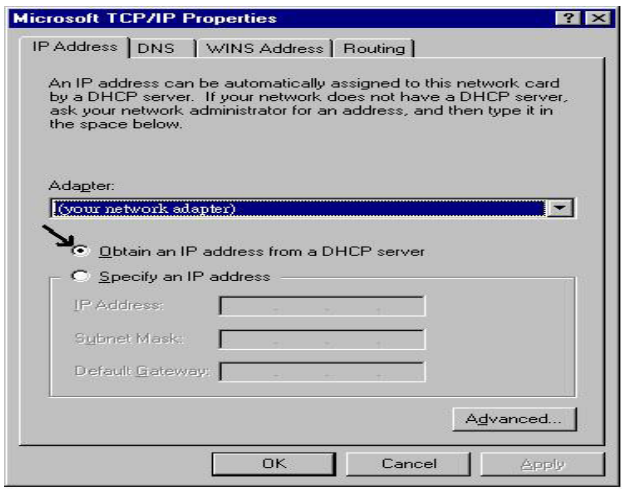


Configuring PC in Windows NT4.0

1. Go to Start > Settings > Control Panel. In the Control Panel, double-click on Network and choose the Protocols tab.
2. Select TCP/IP Protocol and click Properties.



3. Select the Obtain an IP address from a DHCP server radio button and click OK.



Factory Default Settings

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

Web Interface (Username and Password)

- Username: admin
- Password: admin

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

If you have forgotten your username or password for the router, you can restore your device to its default setting by pressing the Reset button for more than 1 second.

Device LAN IP settings

- IP Address: 192.168.1.254
- Subnet Mask: 255.255.255.0

ISP setting in WAN site

- PPPoE

DHCP server

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

LAN and WAN Port Addresses

The parameters of LAN and WAN ports are pre-set in the factory. The default values are shown in the tale.

LAN Port		WAN Port
IP address	192.168.1.254	The PPPoE function is enabled to automatically get the WAN port configuration from the ISP.
Subnet Mask	255.255.255.0	
DHCP server function	Enabled	
IP addresses for distribution to PCs	100 IP addresses continuing from 192.168.1.100 through 192.168.1.199	

Information from your ISP

Before configuring this device, you have to check with your ISP (Internet Service Provider) to find out what kind of service is provided such as PPPoE, Obtain an IP Address Automatically (DHCP), Fixed IP Address (Static IP).

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

PPPoE	Username, Password, Service Name, and Domain Name System (DNS) IP address (it can be automatically assigned by your ISP when you connect or be set manually).
Obtain an IP Address Automatically	DHCP Client (it can be automatically assigned by your ISP when you connect or be set manually).
Fixed IP Address	IP address, Subnet mask, Gateway address, and Domain Name System (DNS) IP address (it is fixed IP address).

Chapter 4: Configuration

To easily configure this device for internet access, you must have IE 5.0 / Netscape 4.5 or above installed on your computer. There are basically 2 ways to configure your router before you are able to connect to the internet: **Easy Sign-On** & **Web Interface**. Configuration of each method will be discussed in detail in the following sections.

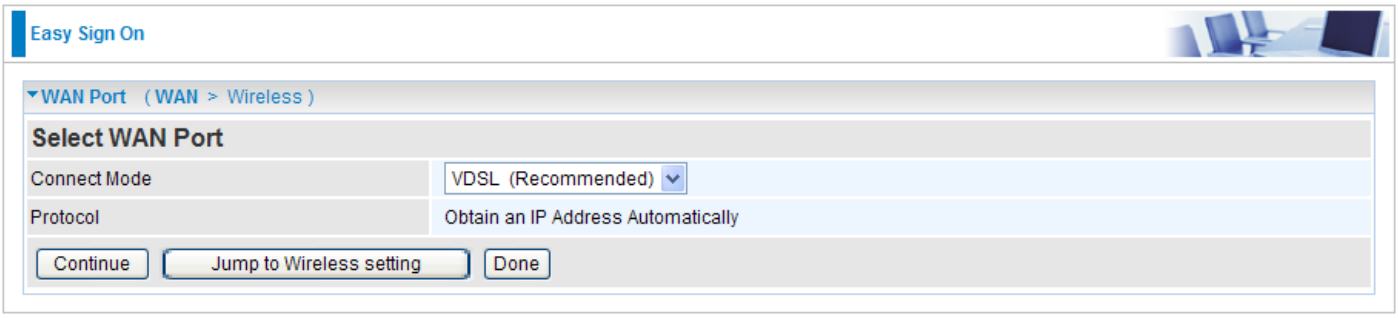
Easy Sign-On (EZSO)

This special feature makes it easier for you to configure your router so that you can connect to the internet in a matter of seconds without having to logon to the router GUI for any detail configuration. This configuration method is usually auto initiated if user is to connect to the internet via Billion's router for the first time.

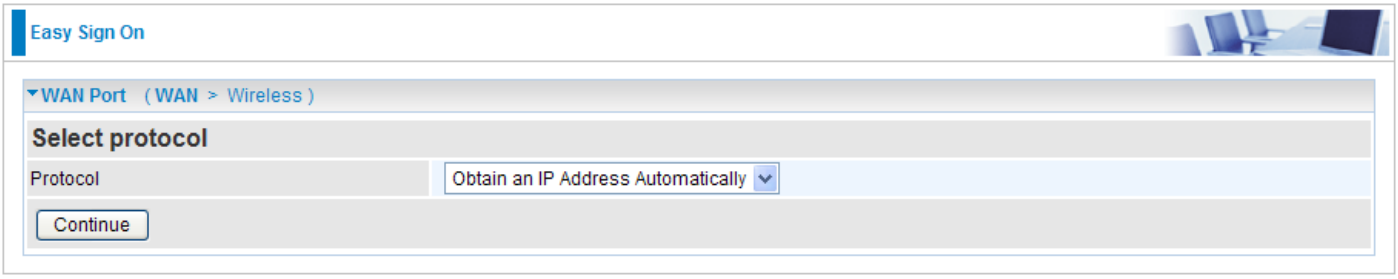
After setting up the router with all the appropriate cables plugged-in, open up your IE browser, the EZSO WEB GUI will automatically pop up and request that you enter some basic information that you have obtained from your ISP. By following the instructions given carefully and through the information you provide, the router will be configured in no time and you will find yourself surfing the internet sooner than you realize.

Follow the Easy Sign-On configuration wizard to complete the basic network configuration.

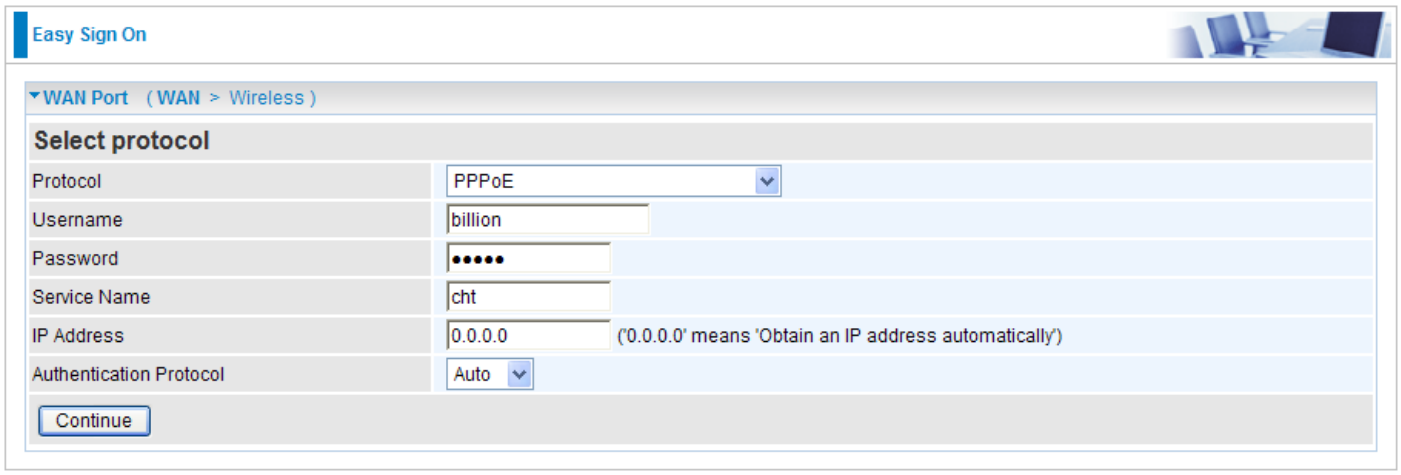
1. Connect your router with all the appropriate cables. Then, load your IE / netscape browser.
2. When the EZSO configuration wizard pops up, select the connect mode which you want to set up and then click continue. (There are two mode that you may select: one is “VDSL” and another is “EWAN”.).



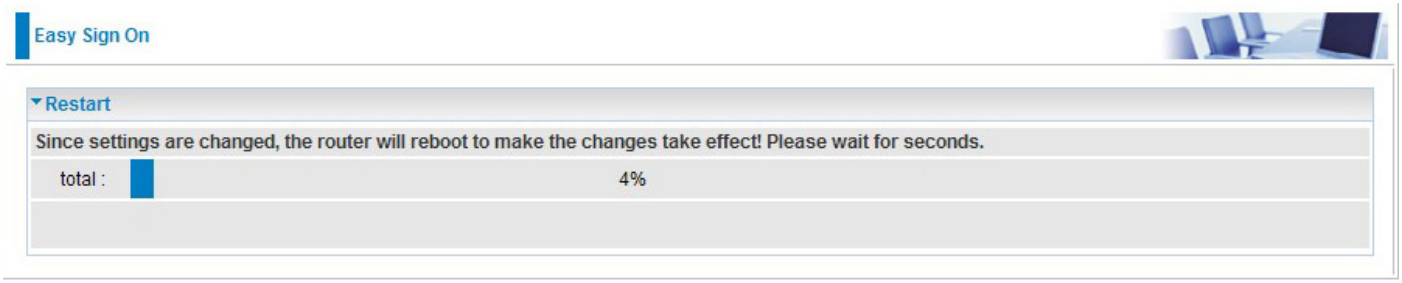
3. Show Auto scan result - Protocol information.



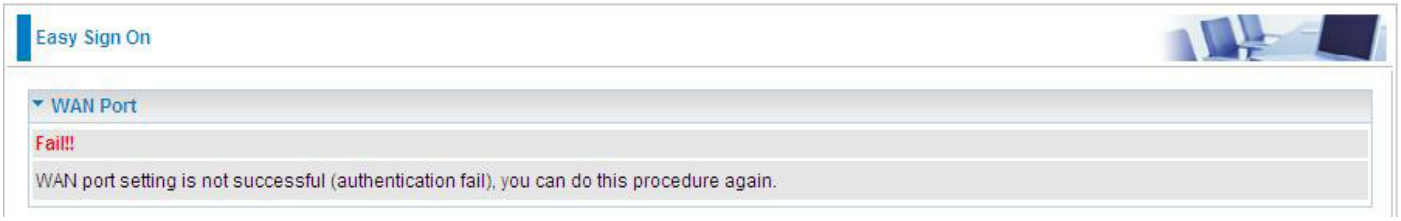
4. Please enter all the information in the blanks provided and then click Continue.



5. The device will reboot and then load the new configuration.

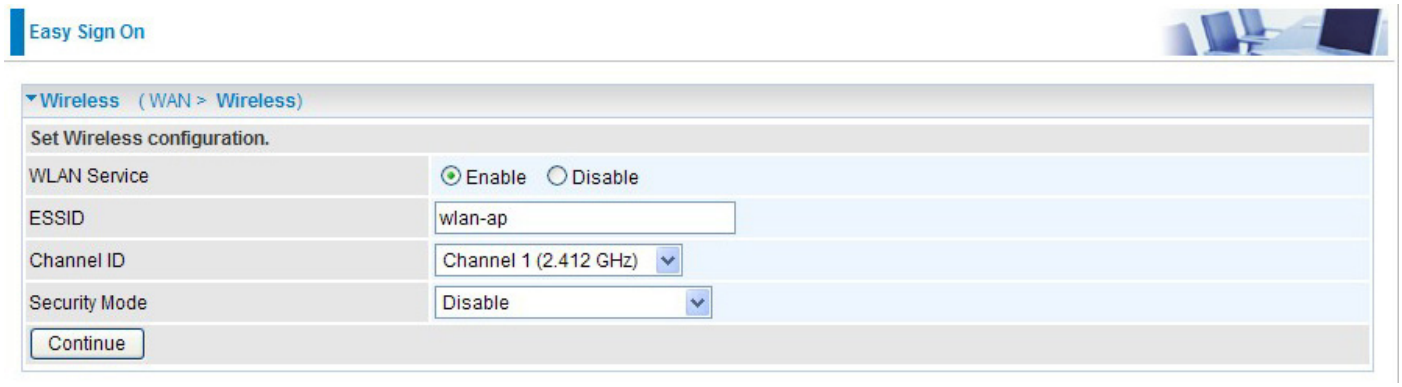


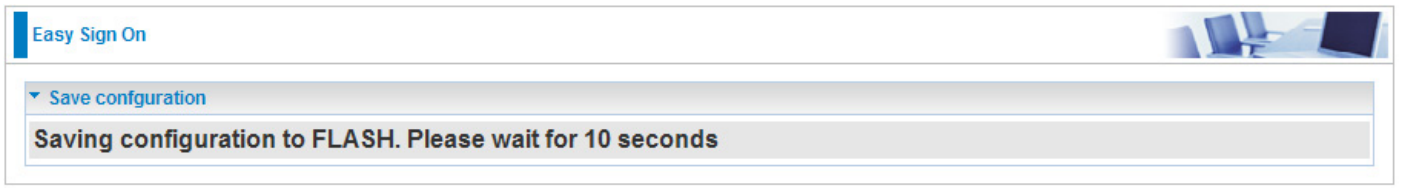
Note: If any error occurs during device configuration that results in WAN connection failure, the system will prompt that the setup has failed.



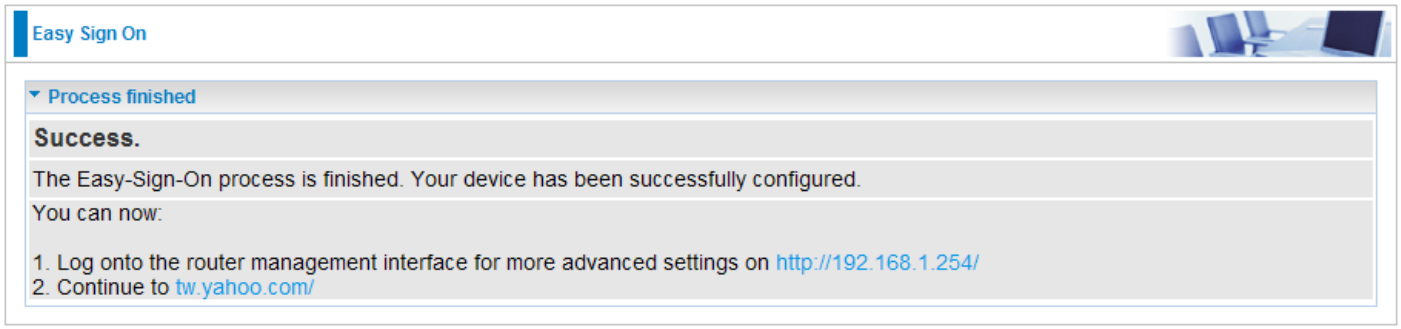
6. If all information provided is valid and the device successfully connects to WAN, a dialog box will appear to signify the completion of the WAN port setup. At this point you can either click Done to finish the EZSO configuration or you can click Next to wireless to proceed to the wireless configuration if you have.

7. Select Enable and enter the necessary information in the blanks provided for the Wireless LAN setting (wireless setting is only available for BiPAC 8200N) if you would like to use this feature and then click Continue.



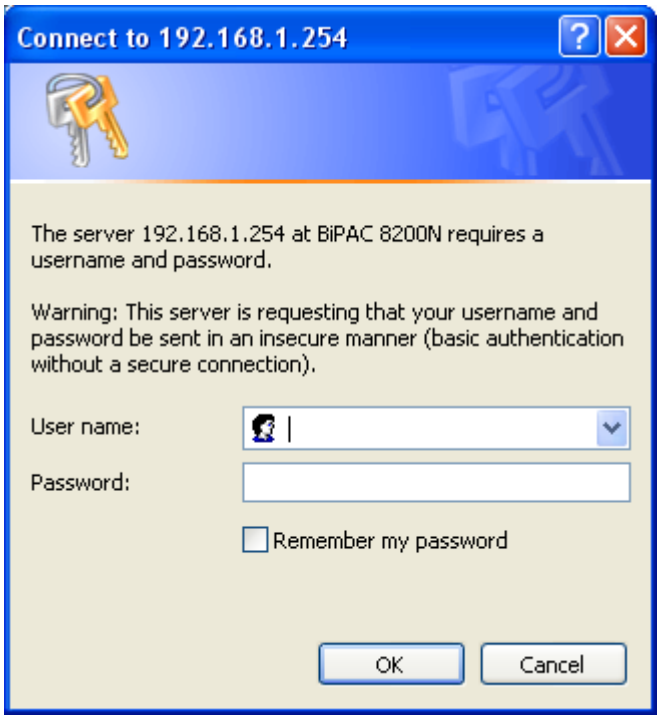


8. The system will save your new configuration and complete the setup. You can test the connection by clicking on the URL link provided. If the setup is successful you will be redirected to website.



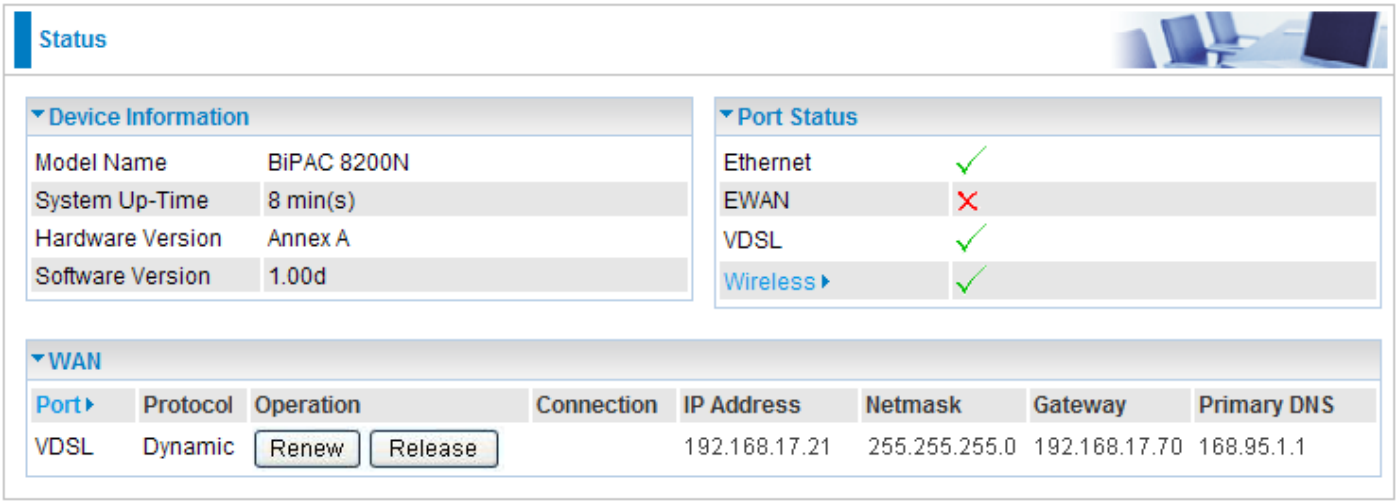
Configuration via Web Interface

Open your web browser, enter the IP address of your router, which by default is 192.168.1.254, and click “Go”, a login window prompt will appear. The default username and password are “admin” and “admin” respectively.



Congratulations! You are now successfully logon to the Router!

If the authentication succeeds, the homepage Status will appear on the screen.

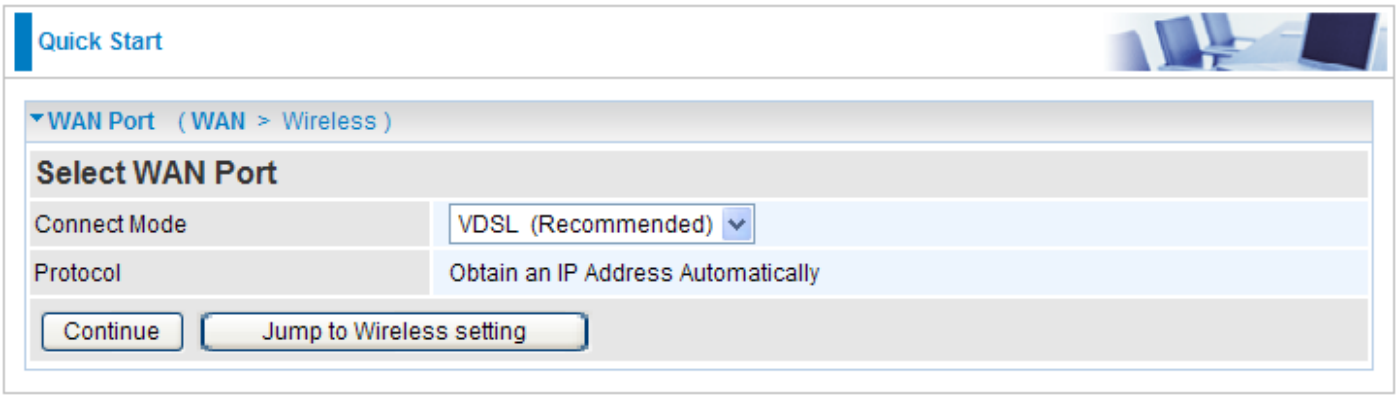


Quick Start

Whether on the Basic or Advanced Configuration Mode, click Quick Start link to WAN Port setup pages.

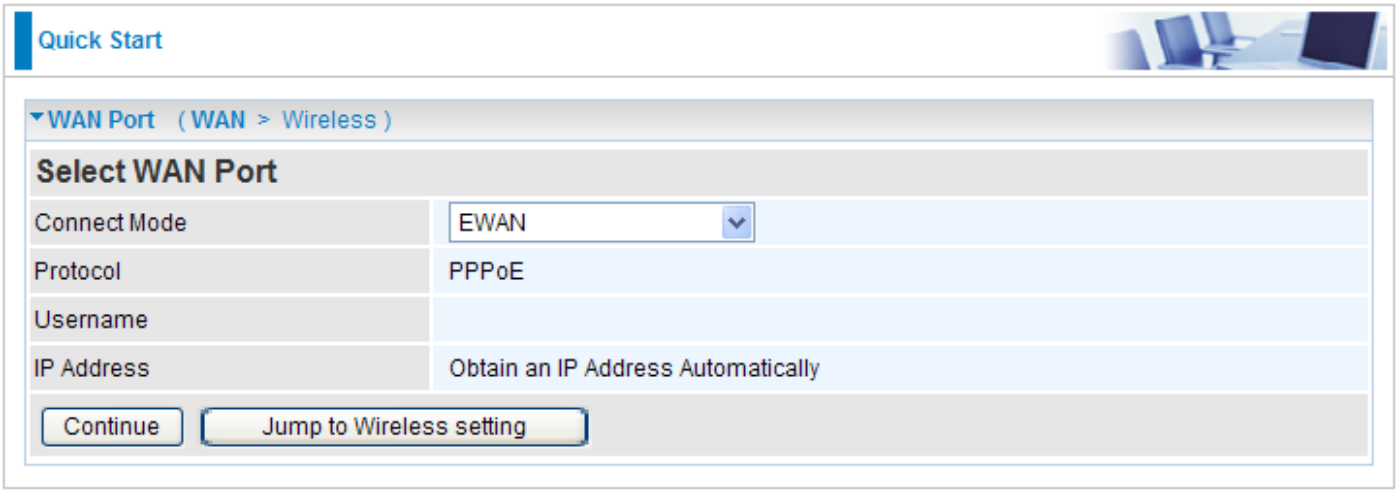
Step 1: This screen displays some information for WAN port. Select Connect Mode from the drop-down menu. There are 2 modes: VDSL and EWAN. Press Continue to go to the next configuration page.

VDSL Mode



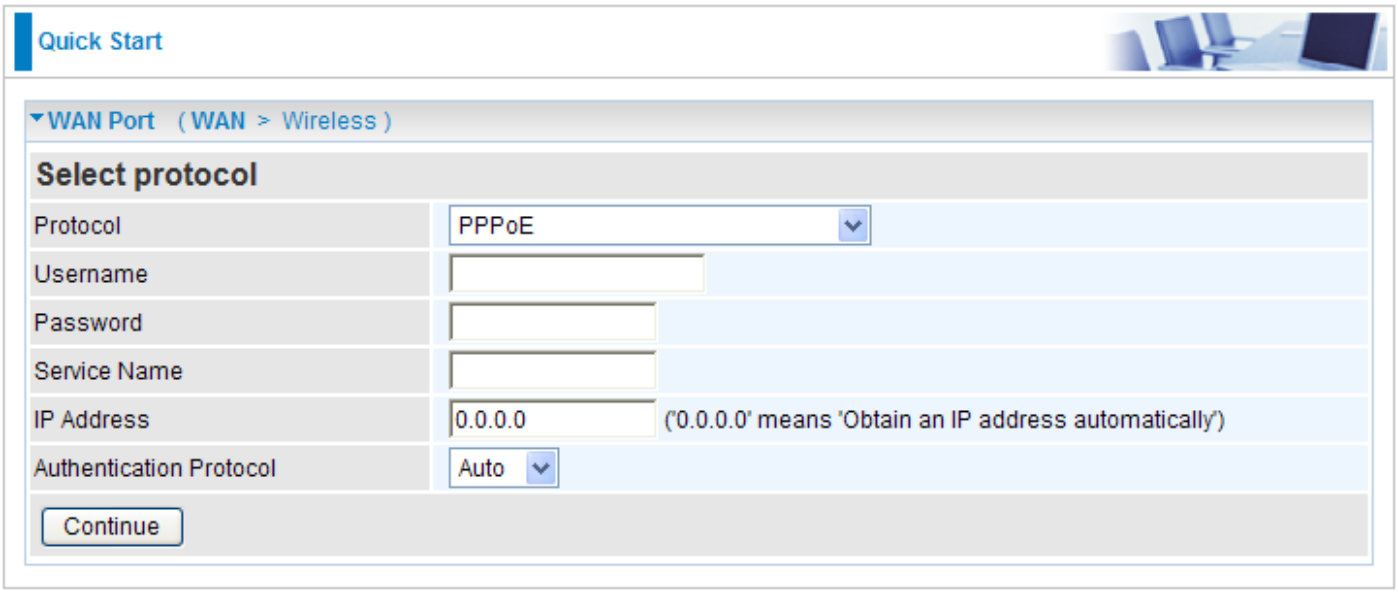
Connect mode: VDSL
Protocol: Shows the current protocol in the device.

EWAN Mode

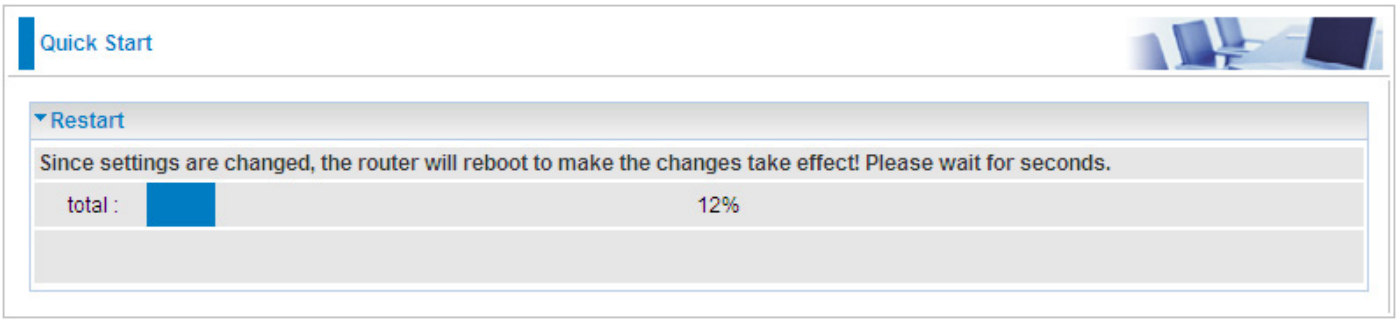


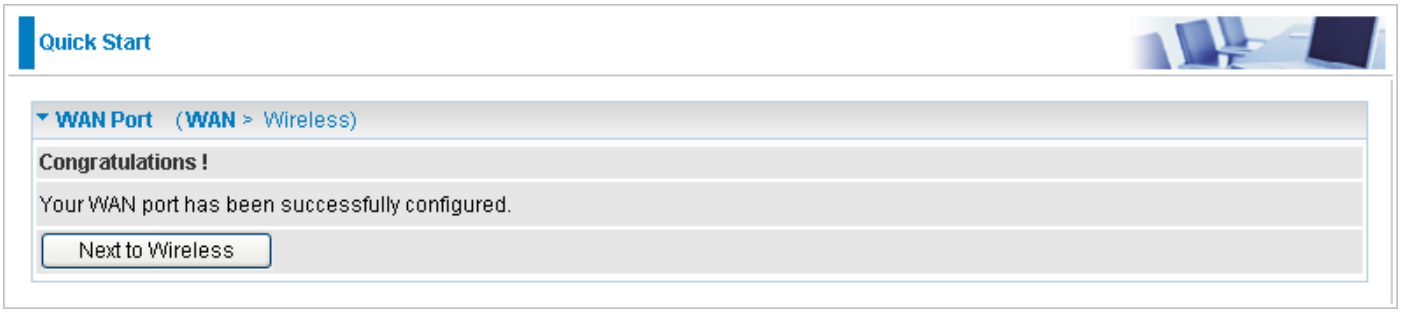
Connect mode: EWAN
Protocol: Shows the current protocol in the device.
Username: Shows the current username.
IP address: Shows the current value of IP address in the device.

Step 2: Click on Continue to choose the Protocol to connect with EWAN or click Jump to Wireless Setting to use Protocol. There are 3 types of connection protocols available for WAN connect mode. ***Each type of connection mode is described in the following sections of WAN Connect mode.***

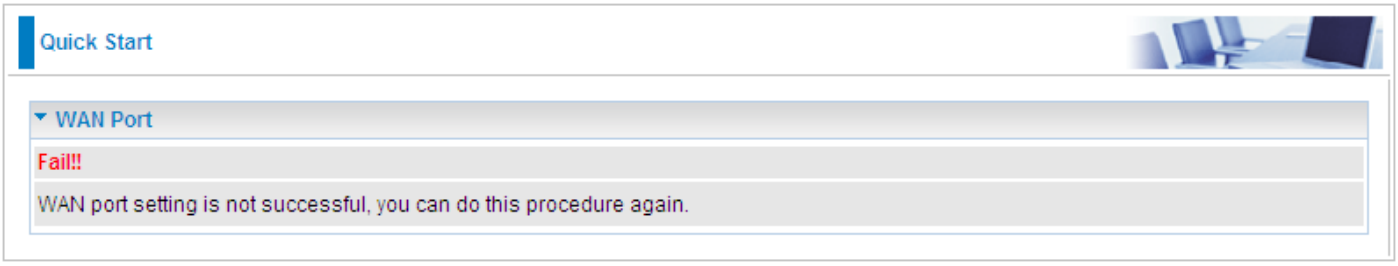


Step 3: After finishing configuring the WAN port connection, click Continue to proceed. The system will upload and apply the new WAN port configuration to the device.

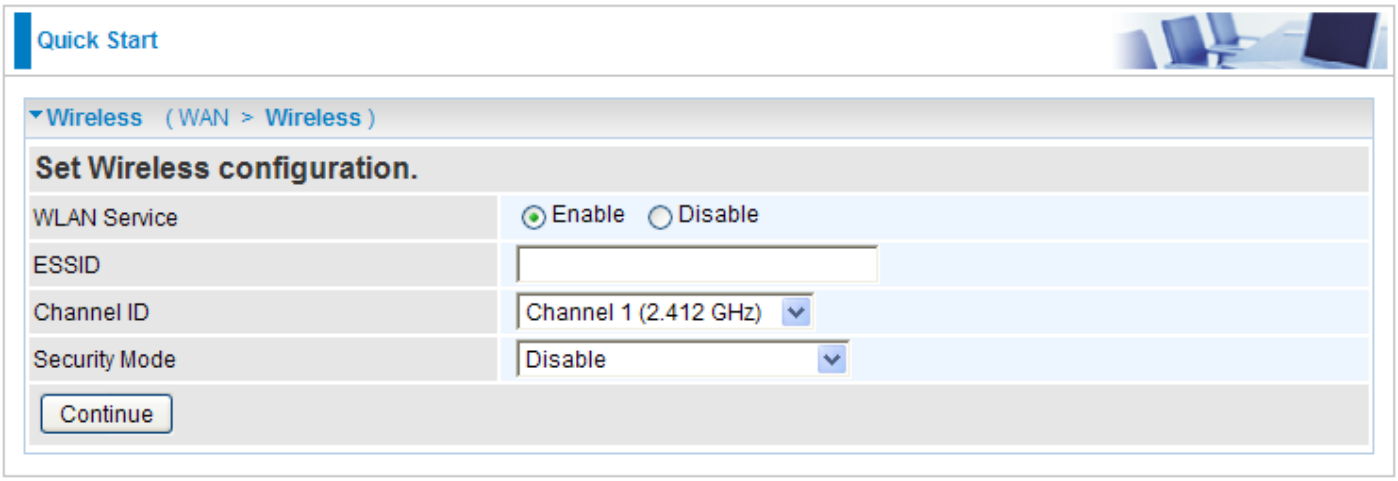




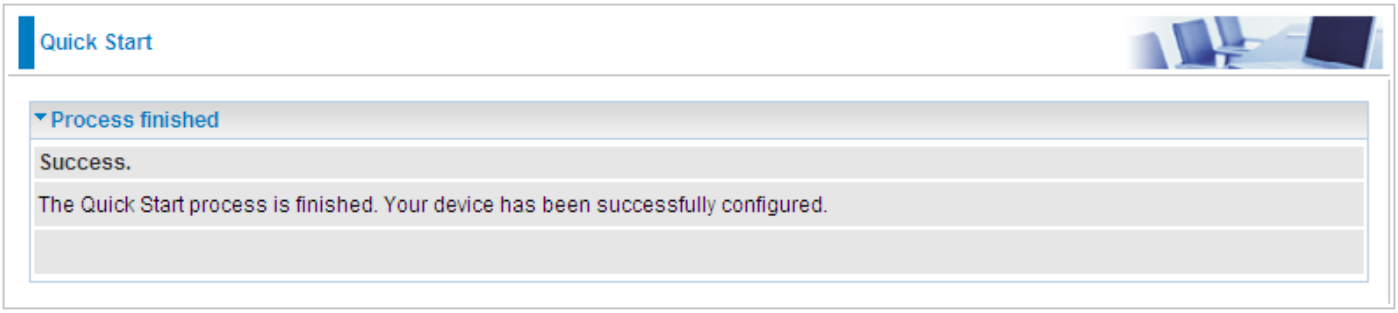
Note: If the WAN line is not ready, a page will display as below and your new configuration can not be saved.



Step 4: After the configuration is successful, click Next to Weireless button and you may proceed to configure the Wireless setting. There are 4 types of security mode: WPA, WPA2, WPA/ WPA2 Pre-Shared Key and WEP. Please refer to the **Wireless Setting Mode** section for detail description of each security mode.



Step 5: After finishing configuring the WLAN setting, press Continue to finish the QuickStart.



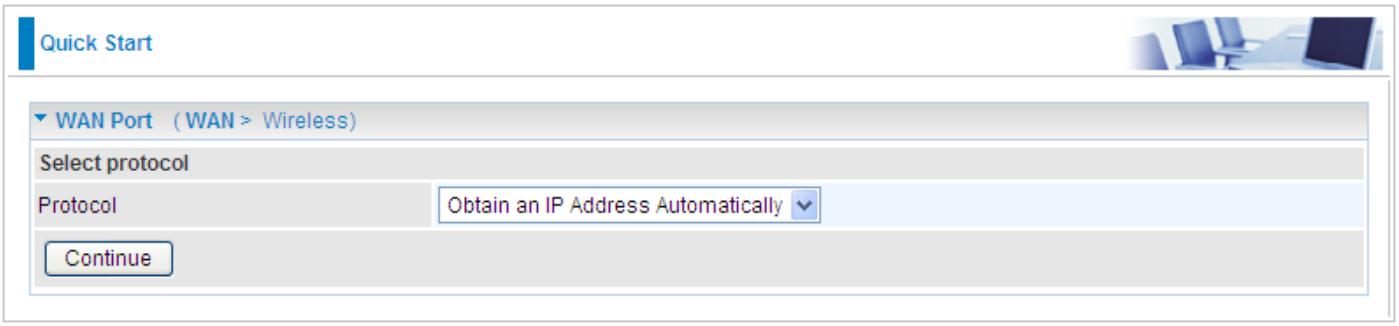
WAN Connect Mode

There are 4 types of wireless connect modes: **Obtain an IP Address Automatically**, **Fixed IP Address**, **PPPoE connection** and **Pure Bridge**.

Obtain an IP Address Automatically

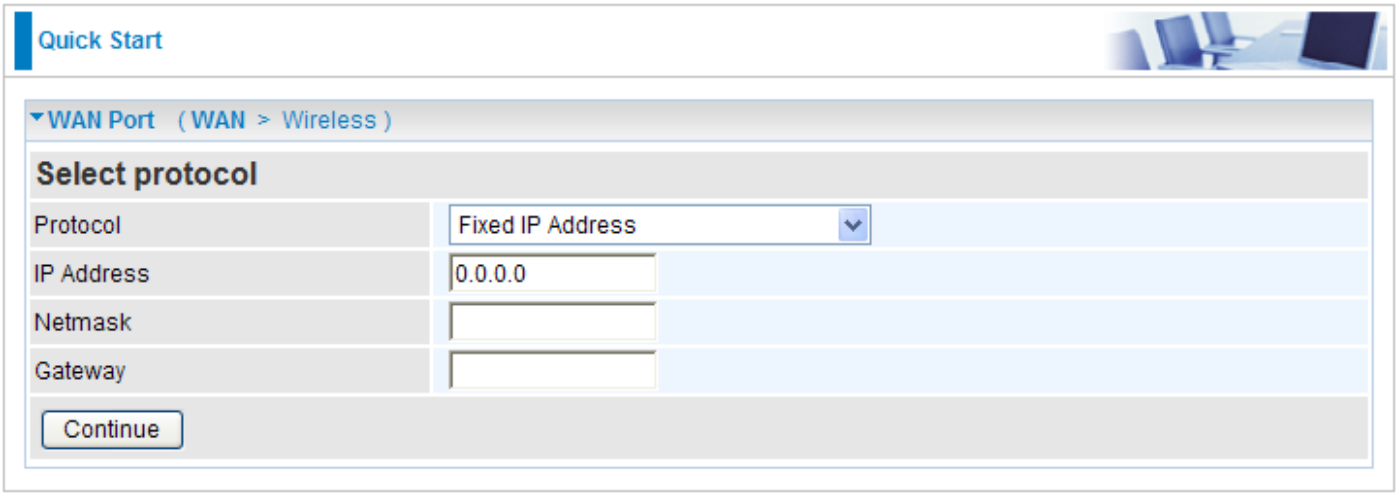
When connecting to the ISP, your router also functions as a DHCP client. The device can automatically obtain an IP address, subnet mask, gateway address, and DNS server addresses if the ISP assigns this information via DHCP.

Select this protocol enables the device to automatically retrieve IP address.



Fixed IP Address

Select this option to set static IP information. You will need to enter the information provided to you by your ISP.



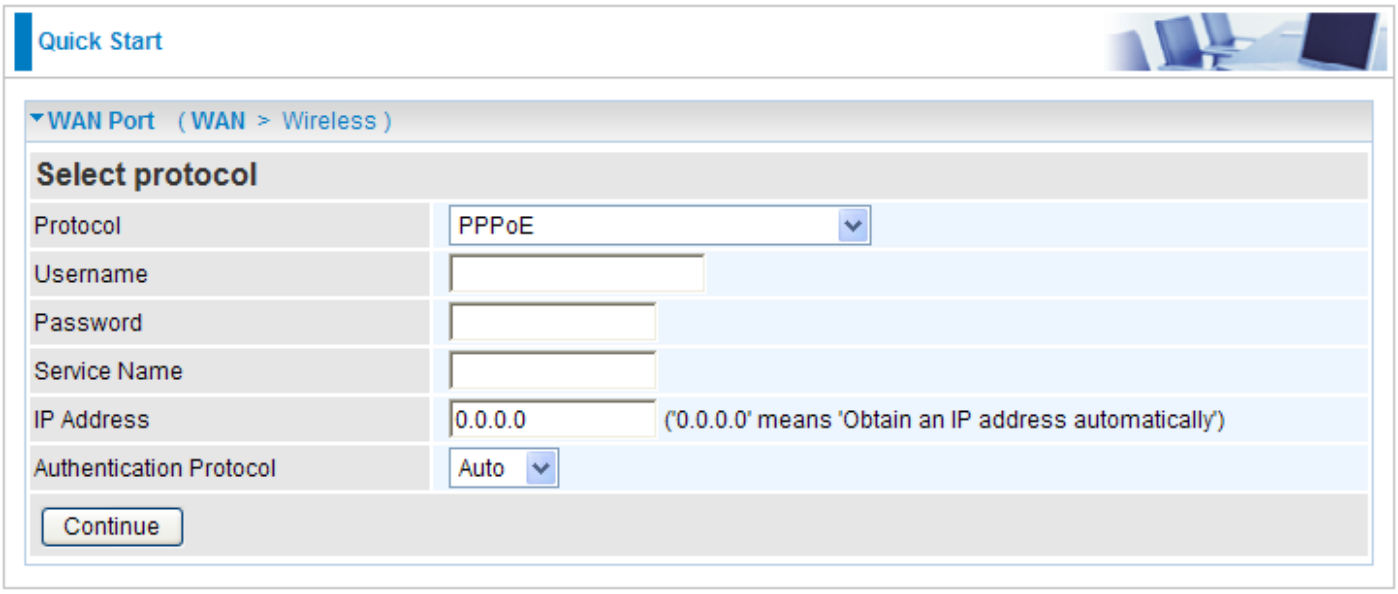
IP Address: Enter your fixed IP address. Each IP address entered must be in the appropriate IP form, which is four IP octets separated by a dot (x.x.x.x). The Router will not accept the IP address if it is not in this format. Leave the IP address as 0.0.0.0 to enable the device to automatically obtain an IP address from your ISP.

Netmask: User can change it to others such as 255.255.255.128. Type the netmask assigned to you by your ISP (if given).

Gateway: Enter the IP address of the default gateway.

PPPoE

PPPoE (PPP over Ethernet) provides access control in a manner which is similar to dial-up services using PPP.



Username: Enter the username provided by your ISP. You can input up to 256 alphanumeric characters (case sensitive). This is the format of username “username@ispname” instead of “username”.

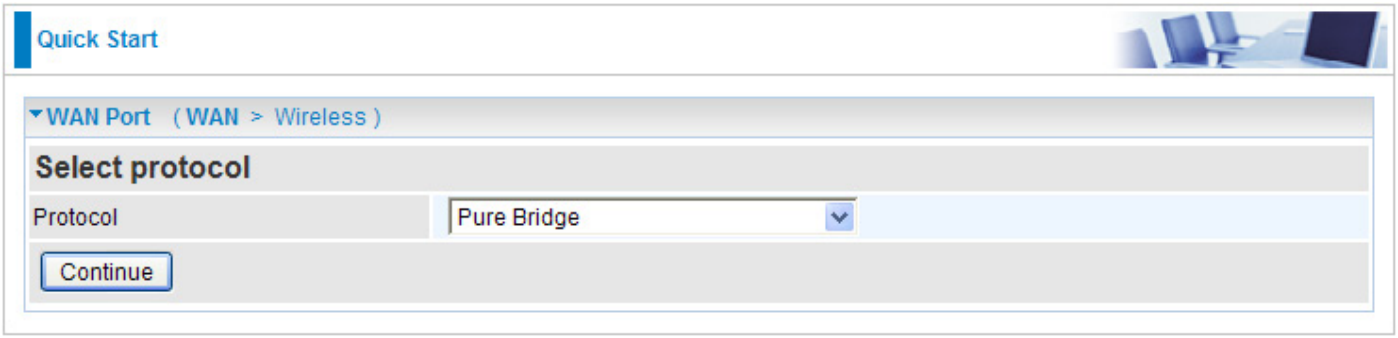
Password: Enter the password provided by your ISP. You can input up to 32 alphanumeric characters (case sensitive).

Service Name: This item is for identification purposes. If it is required, your ISP will provide you the necessary information. Maximum input is 32 alphanumeric characters.

IP Address: Enter your fixed IP address. Leave the IP address as 0.0.0.0 to enable the device to automatically obtain an IP address from your ISP.

Authentication Protocol: Default is Auto. Please consult your ISP on whether to use Pap or Chap.

Pure Bridge

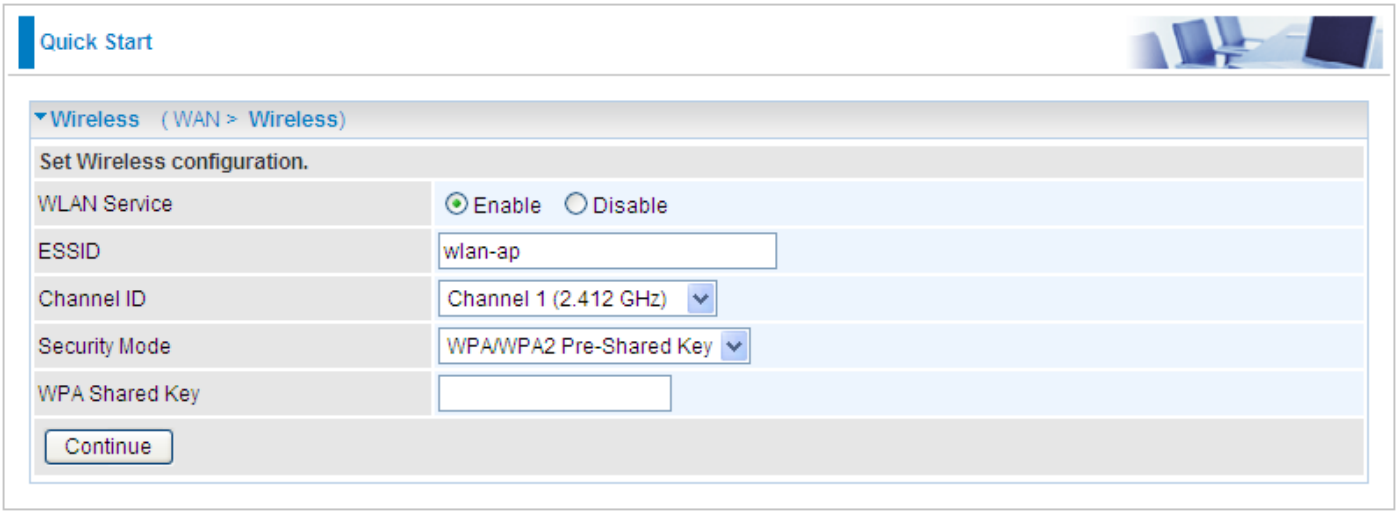


Wireless Setting Mode

There are 4 types of wireless security modes: **WPA Pre-Shared Key**, **WPA2 Pre-Shared Key**, **WPA/WPA2 Pre-Shared Key** and **WEP**.

WPA / WPA2 / WPA/WPA2 Pre-Shared Key

WPA and WPA2 pre-shared keys are an authentication mechanism in which users provide some form of credentials to verify that they should be allowed access to a network. This requires a single password entered into each WLAN node (Access Points, Wireless Routers, client adapters, bridges). As long as the passwords match, a client will be granted access to a WLAN.



WLAN Service: Default setting is Enable. If you want to use wireless, you can select Enable.

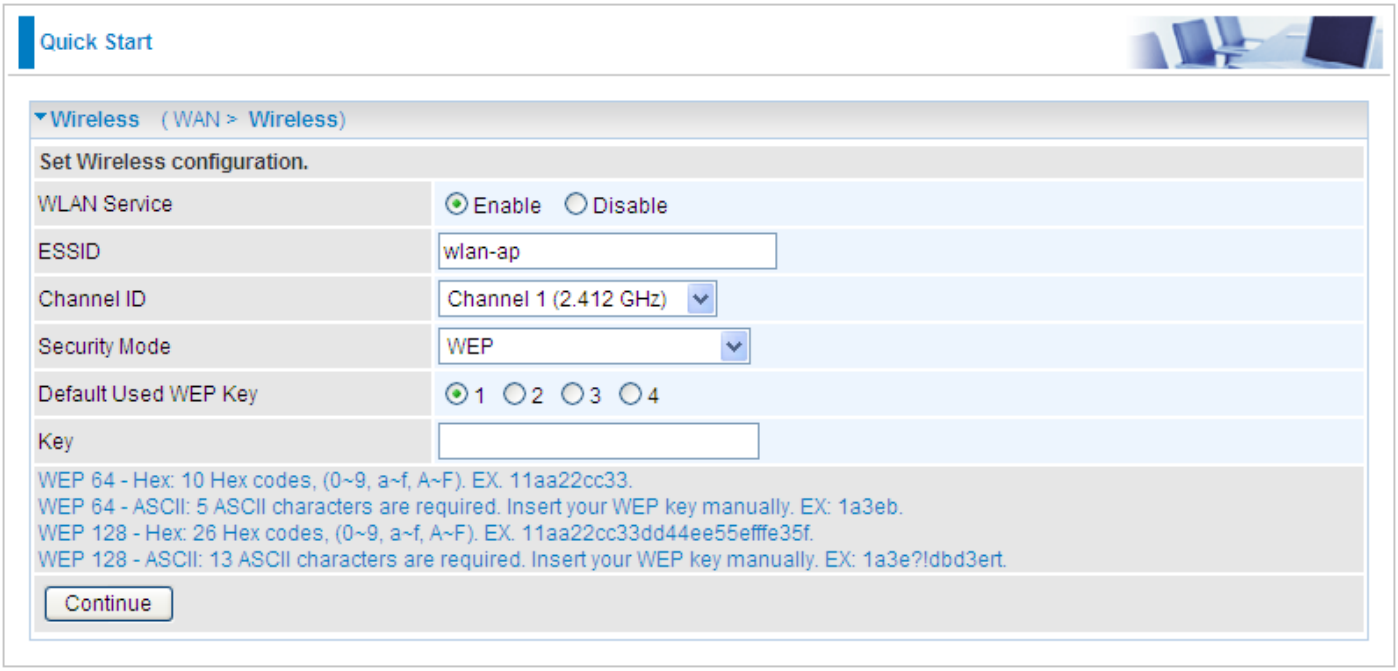
ESSID: The ESSID is the unique name of a wireless access point (AP) used to distinguish one from another. For security propose, change to a unique ID name which is already built into the router wireless interface. It is case sensitive and must not exceed 32 characters. Make sure your wireless clients have exactly the ESSID as the device in order to connect to your network.

Channel ID: Select the channel ID that you would like to use.

Security Mode: You can disable or enable with WPA or WEP to protect wireless network. The default mode of wireless security is Disable.

WPA Shared Key: The key for network authentication. The input format is in character style and key size should be in the range between 8 and 63 characters.

WEP



WLAN Service: Default setting is set to Enable. If you want to use wireless, you can select Enable.

ESSID: The ESSID is the unique name of a wireless access point (AP) used to distinguish one from another. For security propose, change to a unique ID name which is already built into the router wireless interface. It is case sensitive and must not exceed 32 characters. Make sure your wireless clients have exactly the ESSID as the device in order to connect to your network.

Channel ID: Select the channel ID that you would like to use.

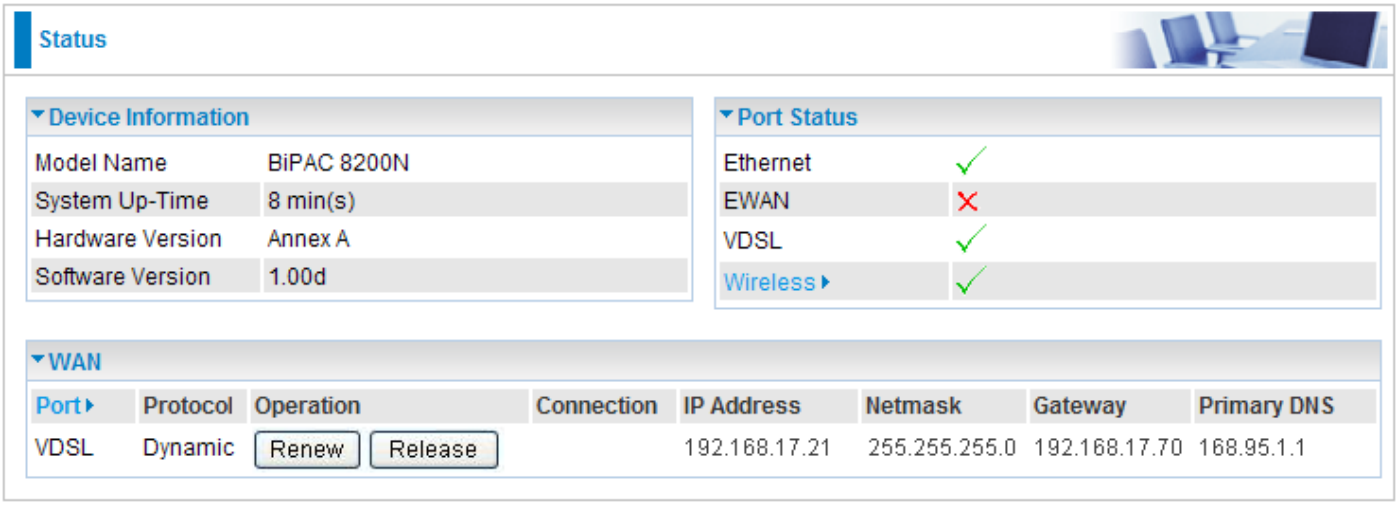
Security Mode: You can disable or enable with WPA or WEP to protect wireless network. The default mode of wireless security is Disable.

Default Used WEP Key: Select the encryption key ID; please refer to **Key (1~4)** below.

Key (1-4): Enter the key to encrypt wireless data. To allow encrypted data transmission, the WEP Encryption Key values on all wireless stations must be the same as the router. There are four keys for your selection. The input format can either be HEX style or ASCII format, 10 and 26 HEX codes or 5 and 13 ASCII codes are required for WEP64 and WEP128 respectively.

Basic Configuration Mode

Status



Device Information

Model Name: Provide a name for the router for identification purposes.

System Up-Time: Record system up-time.

Hardware Version: Device version.

Software Version: Firmware version.

Port Status

Port Status: User can look up to see if they are connected to Ethernet, EWAN, VDSL and Wireless. You are allowed to click Wireless link to go to Wireless Parameters configuration screen.

WAN

Port: Name of the WAN connection. You are allowed to click this link to go to WAN Connection configuration screen.

Protocol: The current protocol in the device.

Operation: Current status in WAN interface.

Connection: Current connection status.

IP Address: WAN port IP address.

Netmask: WAN port IP subnet mask.

Gateway: IP address of the default gateway.

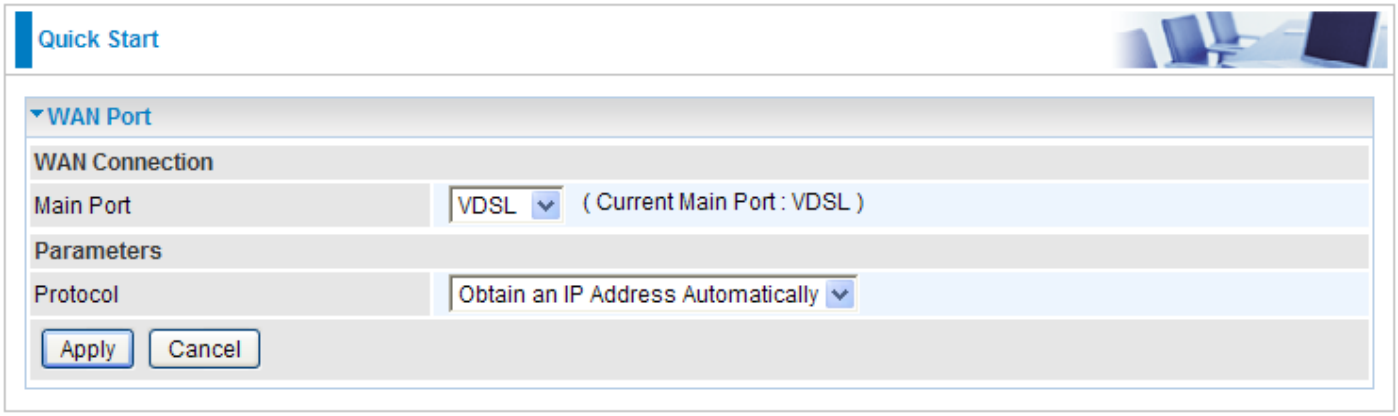
Primary DNS: IP address of the primary DNS server.

WAN – Main Port: VDSL

A WAN (Wide Area Network) is an outside connection to another network or the Internet.

Obtain IP Address Automatically (VDSL)

By configuring these settings, the device is able to obtain IP settings automatically from the ISP.

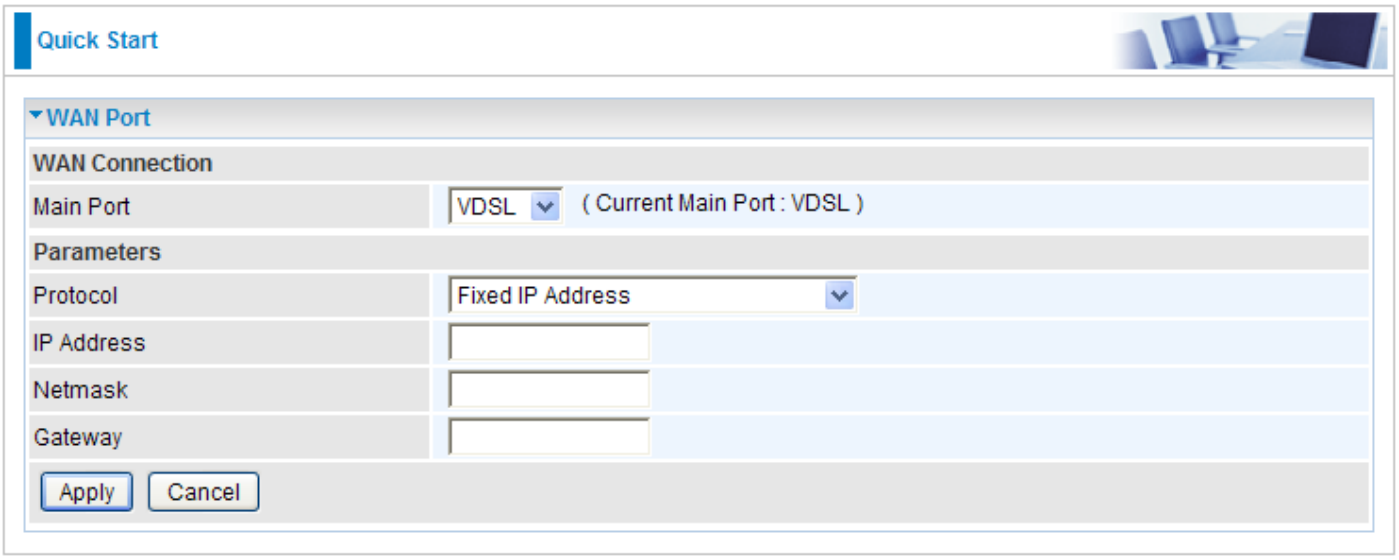


Protocol: Select the protocol you will use in the device.

Click Apply to confirm the settings.

Fixed IP Address (VDSL)

A Static WAN connection will be configured according to the IP properties defined by your ISP.



Protocol: Select the protocol you will use in the device.

IP Address: Enter your fixed IP address.

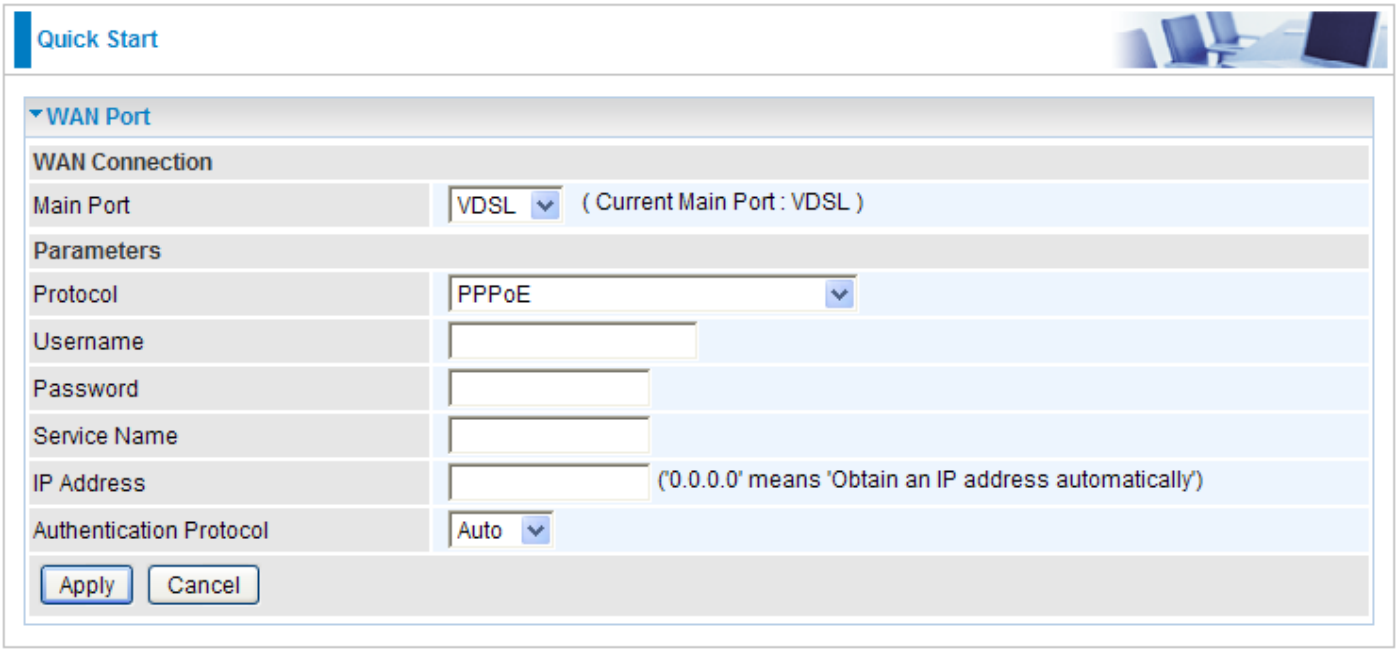
Netmask: User can change it to others such as 255.255.255.128. Type the netmask assigned to you by your ISP (if given).

Gateway: Enter the IP address of the default gateway (if given).

Click Apply to confirm the settings.

PPPoE Connection (VDSL)

PPPoE (PPP over Ethernet) provides access control in a manner which is similar to dial-up services using PPP.



Protocol: Select the protocol you will use in the device.

Username: Enter the username provided by your ISP. You can input up to 256 alphanumeric characters (case sensitive).

Password: Enter the password provided by your ISP. You can input up to 32 alphanumeric characters (case sensitive).

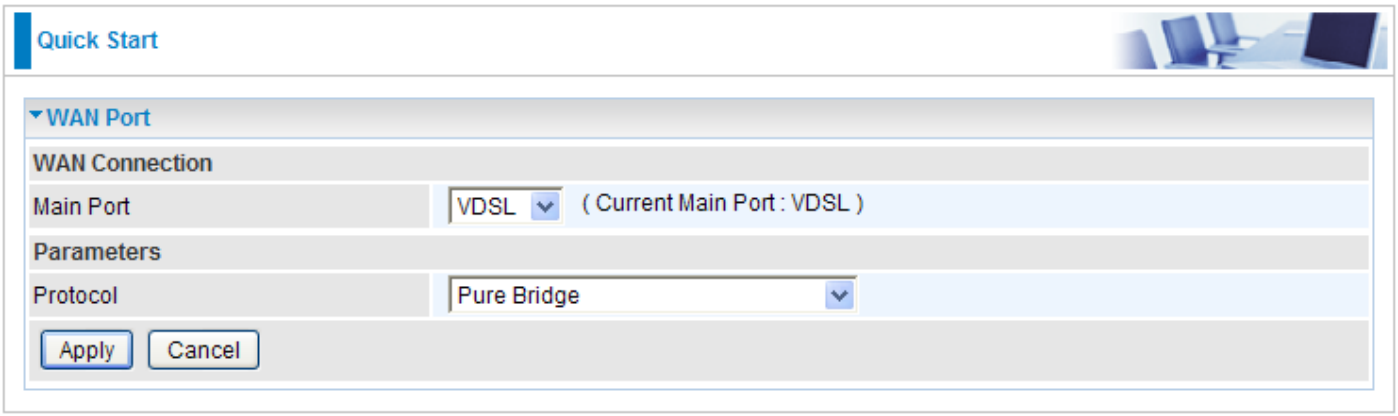
Service Name: This item is for identification purposes. If it is required, your ISP will provide you the necessary information. Maximum input is 32 alphanumeric characters.

IP Address: Enter your WAN IP address. Leave the IP address empty or enter 0.0.0.0 to enable the device to automatically obtain an IP address from your ISP.

Authentication Protocol: Default is Auto. Please consult your ISP on whether to use Pap and Chap.

Click Apply to confirm the settings.

Pure Bridge (VDSL)



Protocol: Select the protocol you will use in the device.

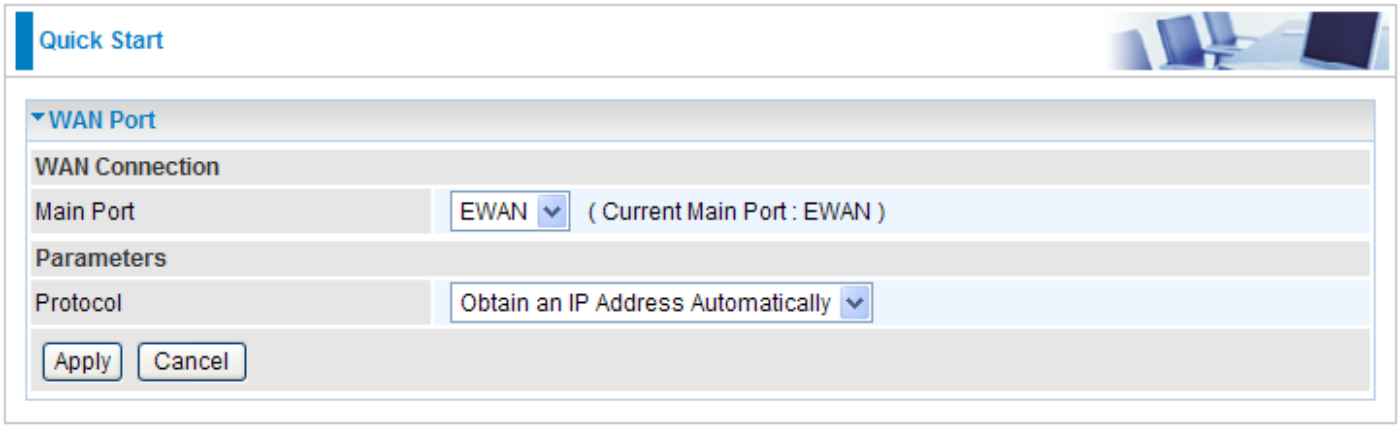
Click Apply to confirm the change.

WAN – Main Port: EWAN

A WAN (Wide Area Network) is an outside connection to another network or the Internet.

Obtain IP Address Automatically (EWAN)

By configuring these settings, the device is able to obtain IP settings automatically from the ISP.

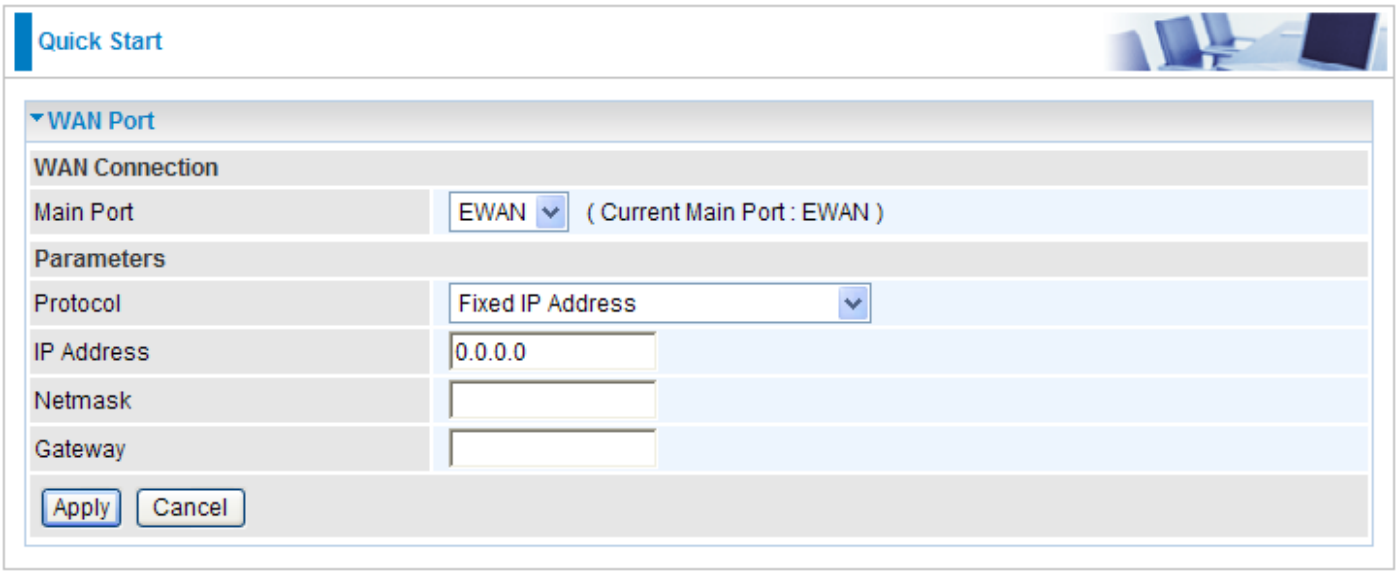


Protocol: Select the protocol you will use in the device.

Click Apply to confirm the settings.

Fixed IP Address (EWAN)

A Static WAN connection will be configured according to the IP properties defined by your ISP.



Protocol: Select the protocol you will use in the device.

IP Address: Enter your fixed IP address. Leave the IP address as 0.0.0.0 to enable the device to automatically obtain an IP address from your ISP.

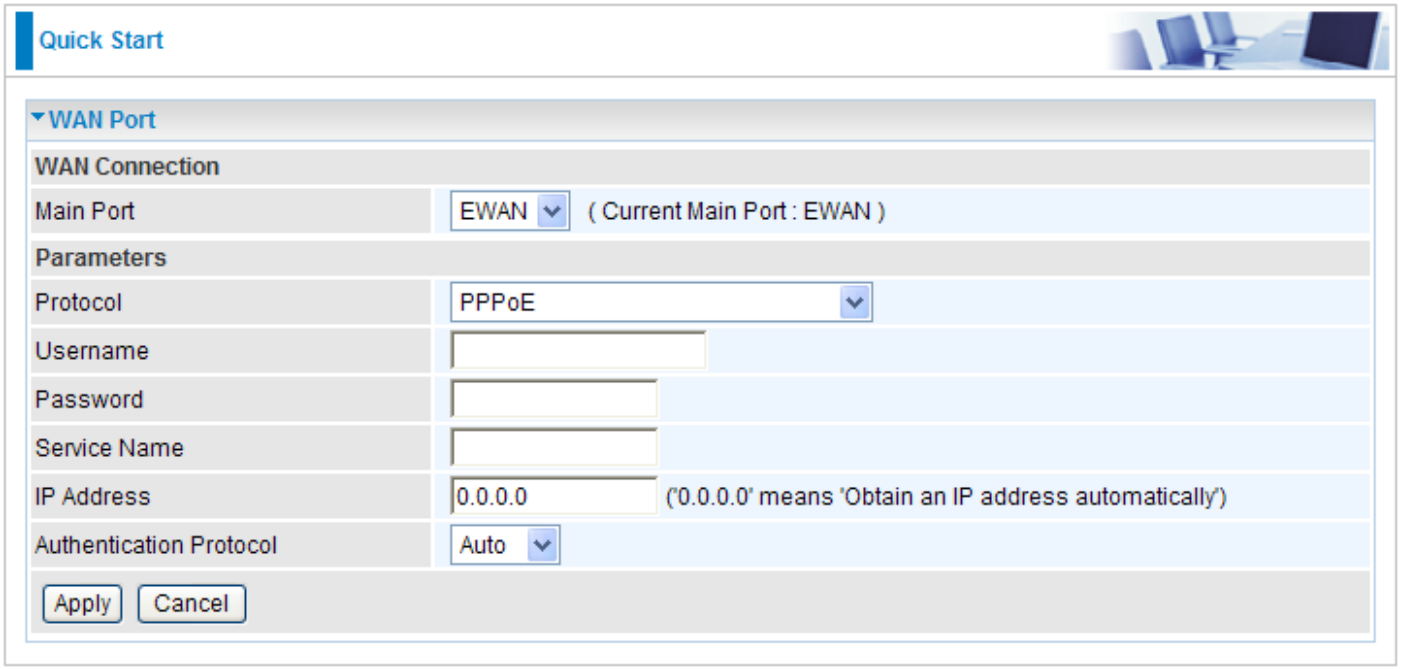
Netmask: User can change it to others such as 255.255.255.128. Type the netmask assigned to you by your ISP (if given).

Gateway: Enter the IP address of the default gateway (if given).

Click Apply to confirm the settings.

PPPoE Connection (EWAN)

PPPoE (PPP over Ethernet) provides access control in a manner which is similar to dial-up services using PPP.



Protocol: Select the protocol you will use in the device.

Username: Enter the username provided by your ISP. You can input up to 256 alphanumeric characters (case sensitive).

Password: Enter the password provided by your ISP. You can input up to 32 alphanumeric characters (case sensitive).

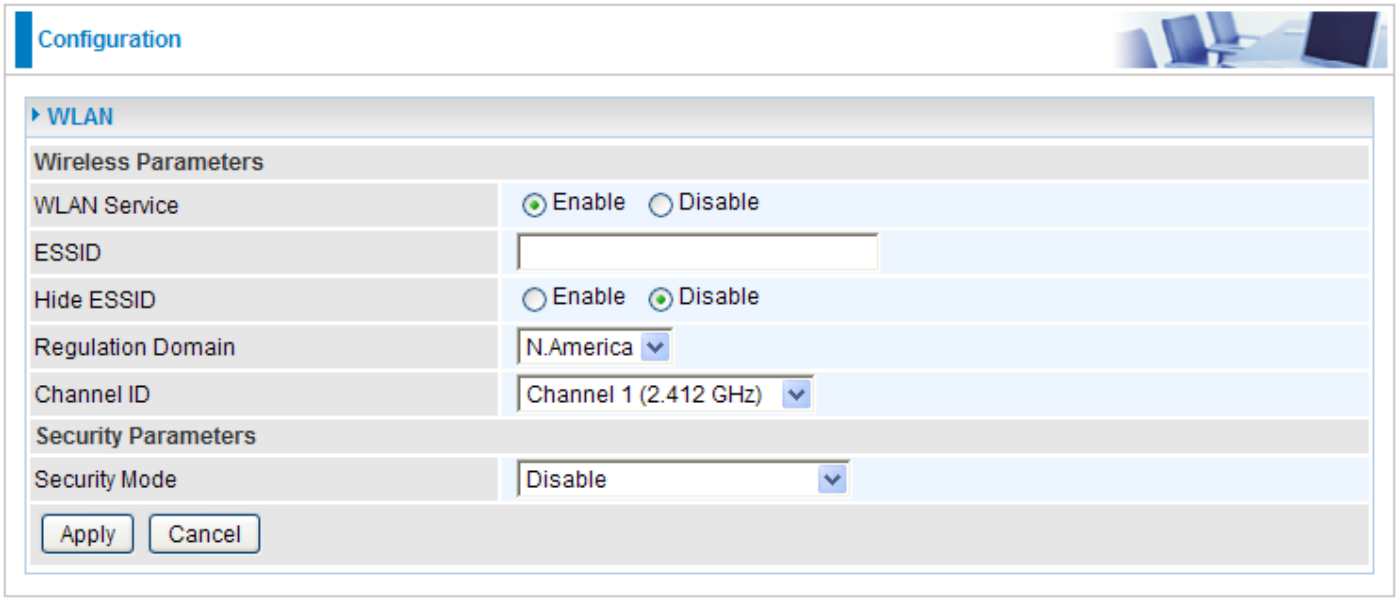
Service Name: This item is for identification purposes. If it is required, your ISP will provide you the necessary information. Maximum input is 32 alphanumeric characters.

IP Address: Enter your WAN IP address. Leave the IP address as 0.0.0.0 to enable the device to automatically obtain an IP address from your ISP.

Auth. Protocol: Default is Auto. Please consult your ISP on whether to use Pap and Chap.

Click Apply to confirm the settings.

WLAN



Wireless Parameters

WLAN Service: Default setting is set to Enable. If you do not have any wireless, select Disable.

ESSID: The ESSID is a unique name of a wireless access point (AP) used to distinguish one from another. For security purpose, change the default wlan-ap to a unique ID name that is already built into the router wireless interface. Make sure your wireless clients have exactly the ESSID as the device in order to connect to your network.

Note: It is case sensitive and must not exceed 32 characters.

Hide ESSID: It is used to broadcast its ESSID on the network so that when a wireless client searches for a network, the router can be discovered and recognized. Default setting is Disable.

> **Enable:** When enabled, you do not broadcast your ESSID. Therefore, no one will be able to locate the Access Point (AP) of your router.
>
> **Disable:** When disabled, you allow anybody with a wireless client to be able to locate the Access Point (AP) of your router.

Regulation Domain: There are seven Regulation Domains for you to choose from, including North America (N.America), Europe, France, etc. The Channel ID will be different based on this setting.

Channel ID: Select the wireless connection channel ID that you would like to use.

Note: Wireless performance may degrade if the selected channel ID is already being occupied by other AP(s).

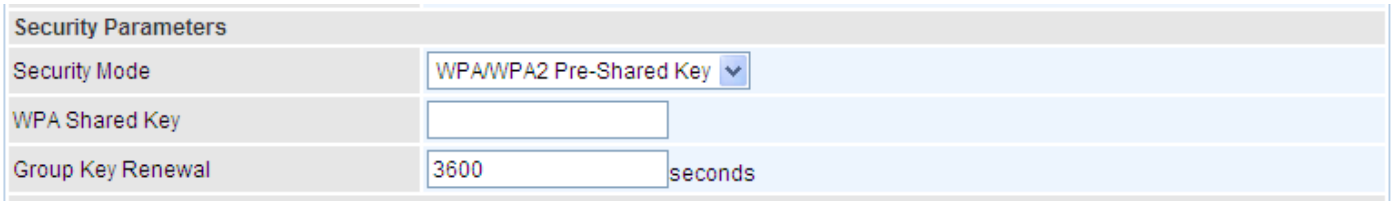
Security Parameters

Security Mode: You can disable or enable the function with WPA or WEP to protect the wireless network. The default mode of wireless security is Disable.

Click Apply to confirm the settings.

Security Mode

WPA / WPA2 / WPA/WPA2 Pre-Shared Key

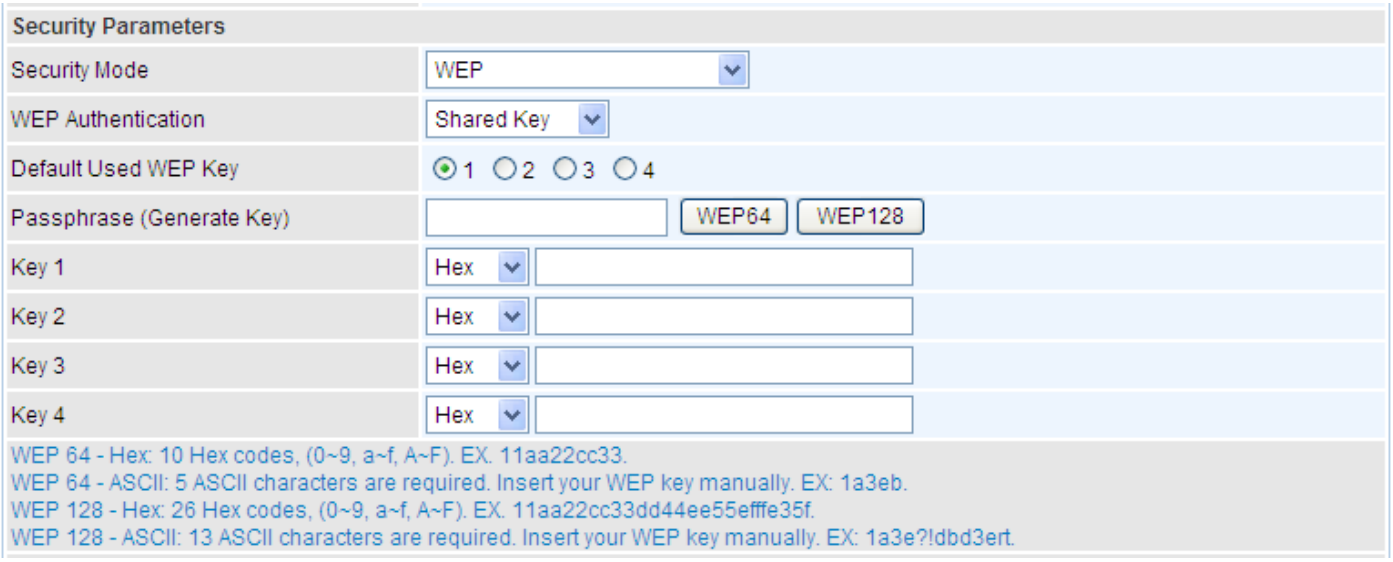


Security Mode: You can disable or enable with WPA or WEP for protecting wireless network.

WPA Shared Key: The key for network authentication. The input format is in character style and key size should be in the range between 8 and 63 characters.

Group Key Renewal: The period of renewal time for changing the security key automatically between wireless client and Access Point (AP). Default value is 3600 seconds.

WEP



Security Mode: You can disable or enable with WPA or WEP for protecting wireless network.

WEP Authentication: To prevent unauthorized wireless stations from accessing data transmitted over the network, the router offers secure data encryption, known as WEP. If you require high security for transmissions, there are 3 options to select from: **Open System, Share Key** and **Both**.

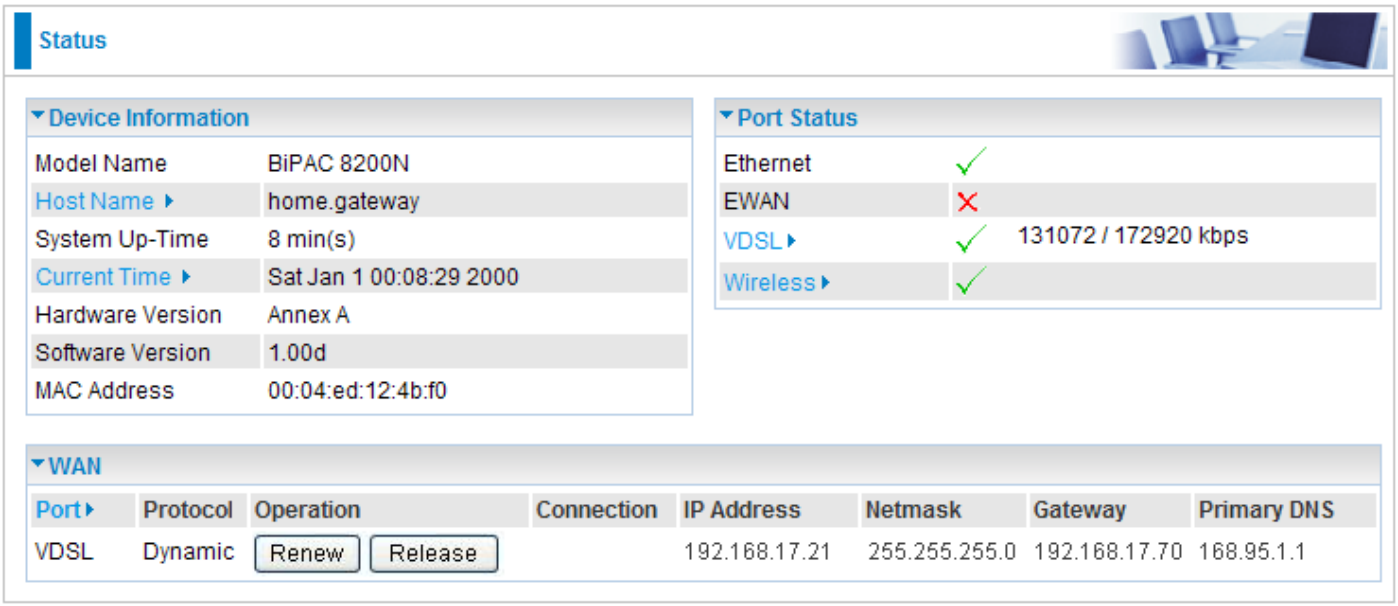
Default Used WEP Key: Select the encryption key ID; please refer to **Key (1~4)** below.

Passphrase: This is used to generate WEP keys automatically based upon the input string and a pre-defined algorithm in WEP64 or WEP128.

Key (1-4): Enter the key to encrypt wireless data. To allow encrypted data transmission, the WEP Encryption Key values on all wireless stations must be the same as the router. There are four keys for your selection. The input format is in HEX or ASCII style, 5 and 13 ASCII codes are required for WEP64 and WEP128 or 10 and 26 HEX codes are required for WEP64 and WEP128 respectively.

Advanced Configuration Mode

Status



Device Information

Model Name: Displays the model name.

Host Name: Provide a name for the router for identification purposes. Host Name lets you change the router name.

System Up-Time: Records system up-time.

Current Time: Set the current time. See the Time Zone section for more information.

Hardware Version: Device version.

Software Version: Firmware version.

MAC Address: The LAN MAC address.

Port Status

Port Status: User can look up to see if they are connected to Ethernet, EWAN, VDSL and Wireless. You are allowed to click VDSL and Wireless link to go to VDSL Status screen or Wireless Parameters configuration screen.

WAN

Port: Name of the WAN connection.

Protocol: The current protocol in the device.

Operation: The current status in WAN interface.

Connection: The current connection status.

IP Address: WAN port IP address.

Netmask: WAN port IP subnet mask.

Gateway: The IP address of the default gateway.

Primary DNS: The IP address of the primary DNS server.

VDSL Status

VDSL (Very High Bitrate DSL) is a DSL technology providing faster data transmission. It can achieve incredible speeds and provides a complete home-communications/entertainment package.

This table displays all the informaiton for VDSL connection.

Status

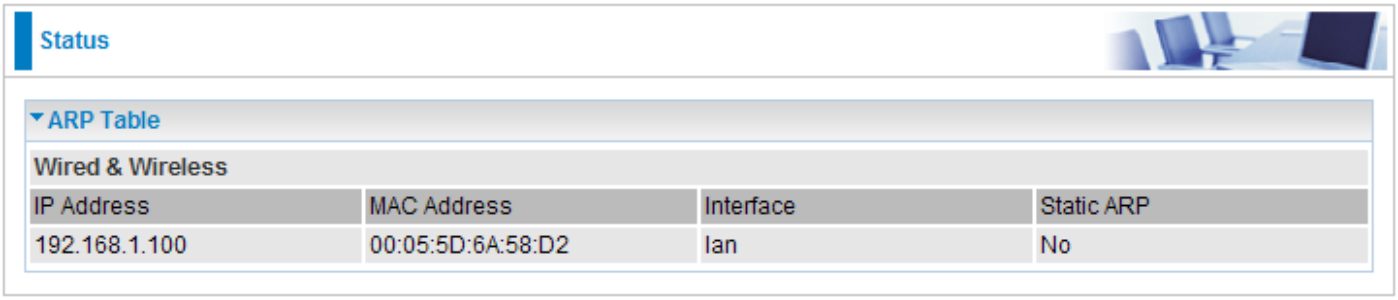
VDSL Status

Parameters		
DSP Firmware Version	010100	
DMT Status	Up	
Electrical Length	0.6 dB	
	Upstream	Downstream
BAND ID	1	2
Line Attenuation	0.0 dB	0.0 dB
Signal Attenuation	0.0 dB	0.0 dB
Line Rate	128912 kbps	172920 kbps
Actual Data Rate	100052 kbps	100061 kbps
Attainable Rate	115419 kbps	191815 kbps
SNR Margin	6.2 db	14.4 db
Line Coding	1	1
Output Power	14.0 dBm	14.4 dBm
Actual Delay	3 ms	5 ms
Actual INP	2.0 symbols	7.0 symbols
Previous Data Rate	0 kbps	0 kbps
15M CV	0	0
15M FEC	0	0
15M FECS	0	0
15M Elapsed time	844 secs	757 secs
15M ES	0	0
15M SES	0	0
15M LOSS	0	0
15M UAS	0	0
1Day CV	0	0
1Day FEC	0	0
1Day FECS	0	0
1Day Elapsed time	86344 secs	86257 secs
1Day ES	0	0
1Day SES	0	0
1Day LOSS	0	0
1Day UAS	0	0

Refresh

ARP Table

This table stores mapping information that the device uses to find the Layer 2 Media Access Control (MAC) address that corresponds to the Layer 3 IP address of the device via the Address Resolution Protocol (ARP) feature.



IP Address: Shows the IP Address of the device that the MAC address maps to.

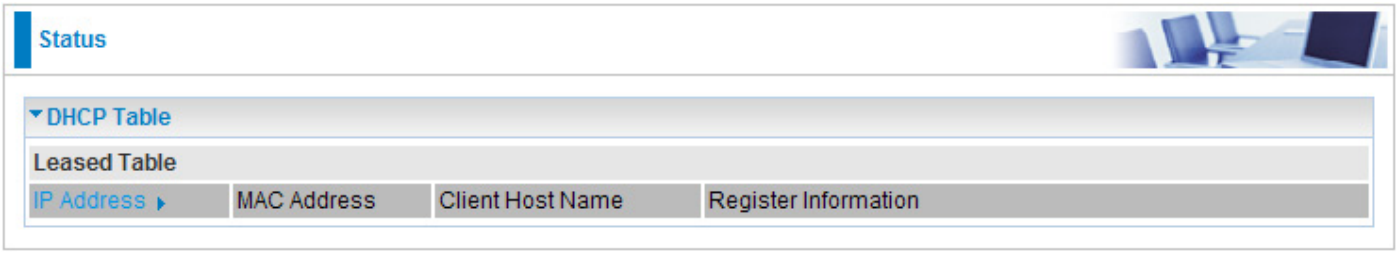
MAC Address: Shows the MAC address that is corresponded to the IP address of the device it is mapped to.

Interface: Shows the interface name (on the router) that this IP address connects to.

Static ARP: Shows the status of static ARP.

DHCP Table

The DHCP Table lists the DHCP lease information for all IP addresses assigned by the DHCP server in the device.



IP Address: The IP address which is assigned to the host with this MAC address.

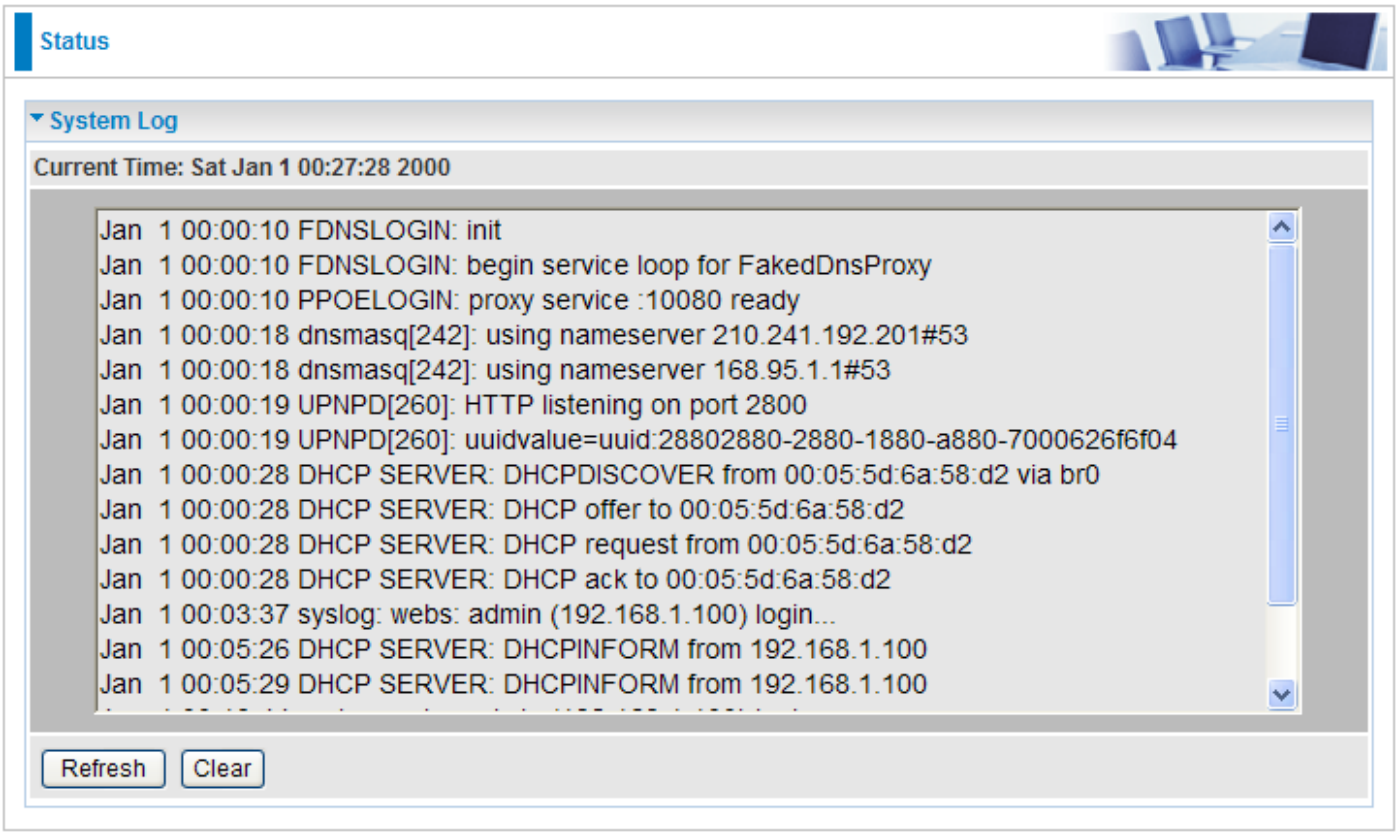
MAC Address: The MAC Address of internal dhcp client host.

Client Host Name: The Host Name of internal dhcp client.

Register Information: Shows the information provided during registration.

System Log

Display system logs accumulated up to the present time. You can trace its historical information with this function.

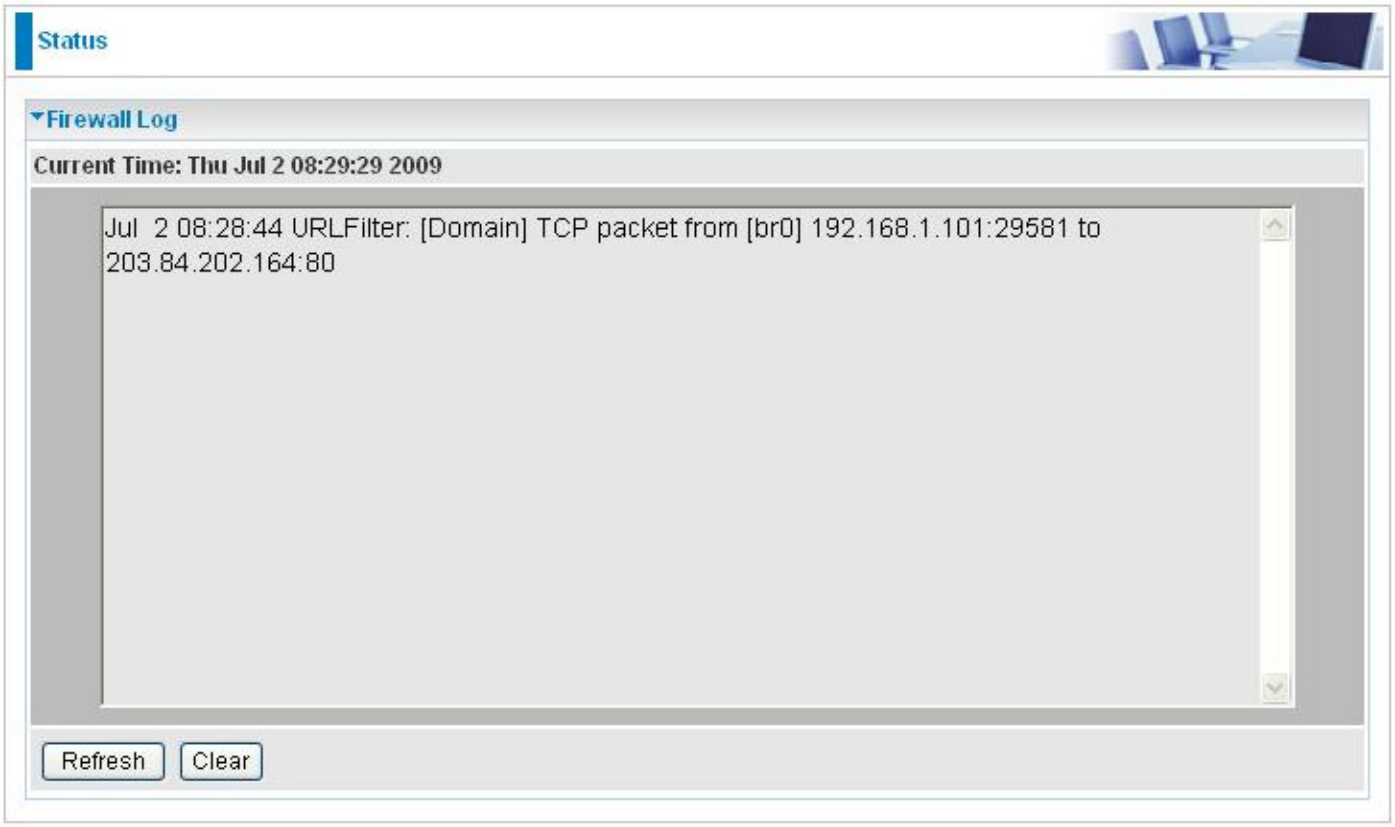


Refresh: Click to update the system log.

Clear: Click to clear the current log from the screen.

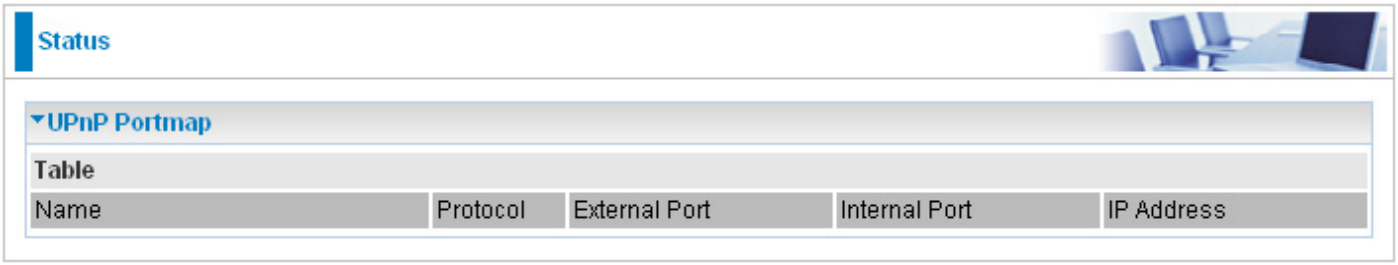
Firewall Log

Firewall Log displays the log information of any unexpected events that occurs to your firewall settings. This page displays the router Firewall Log entries which have been recorded when you have enabled Intrusion Detection or Block WAN PING in the Configuration – Firewall section of the interface. Please see the Firewall section of this manual for more details on how to enable Firewall event logging.



UPnP Portmap

This section lists all the established port-mapping using UPnP (Universal Plug and Play).



Name: The Host Name of the internal UPNP client.

Protocol: The connection protocol of the UPNP client.

External Port: The external port for this connection.

Internal Port: The internal port for this connection.

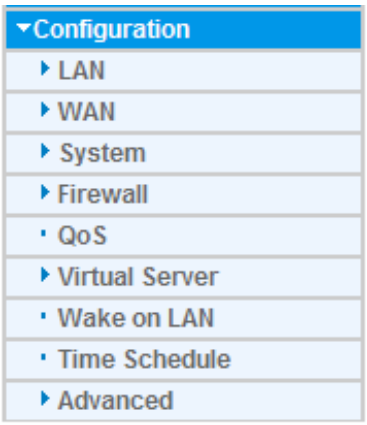
IP Address: IP of the internal UPNP client.

Configuration

When you click this item, the column will expand to display the sub-items that will allow you to further configure your router.

LAN, **WAN**, **System**, **Firewall**, **QoS**, **Virtual Server**, **Wake on LAN**, **Time Schedule** and **Advanced**.

The function of each configuration sub-item is described in the following sections.



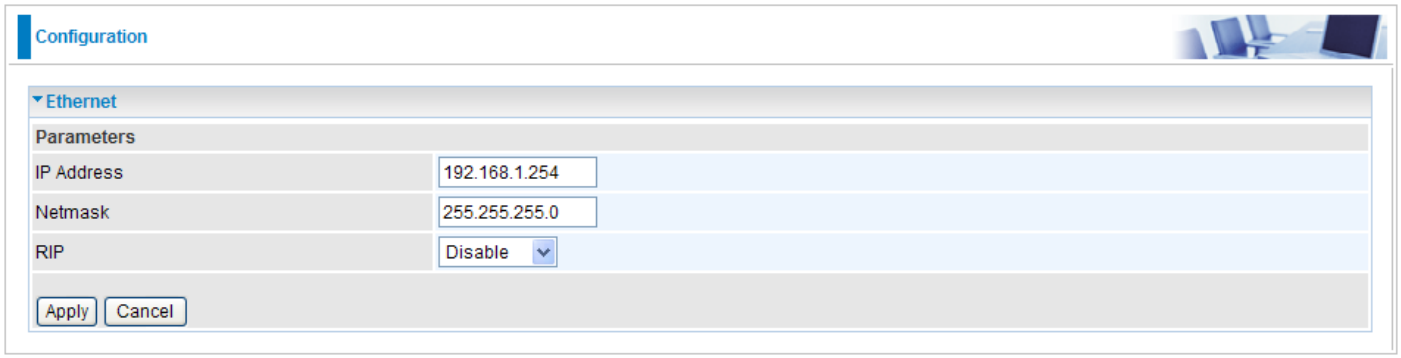
LAN - Local Area Network

A Local Area Network (LAN) is a shared communication system network where many computers are connected. This type of network is area defined and is usually limited to a confined region within a building or just within the same storey of a building.

There are 6 items within the LAN section: **Ethernet**, **IP Alias**, **Wireless**, **Wireless Security**, **WPS** and **DHCP Server**.

Ethernet

The router supports more than one Ethernet IP addresses in the LAN that supports multiple internet access at the same time. Users usually only have one subnet in their LAN. The default IP address for the router is 192.168.1.254.



IP Address: The default IP on this router.

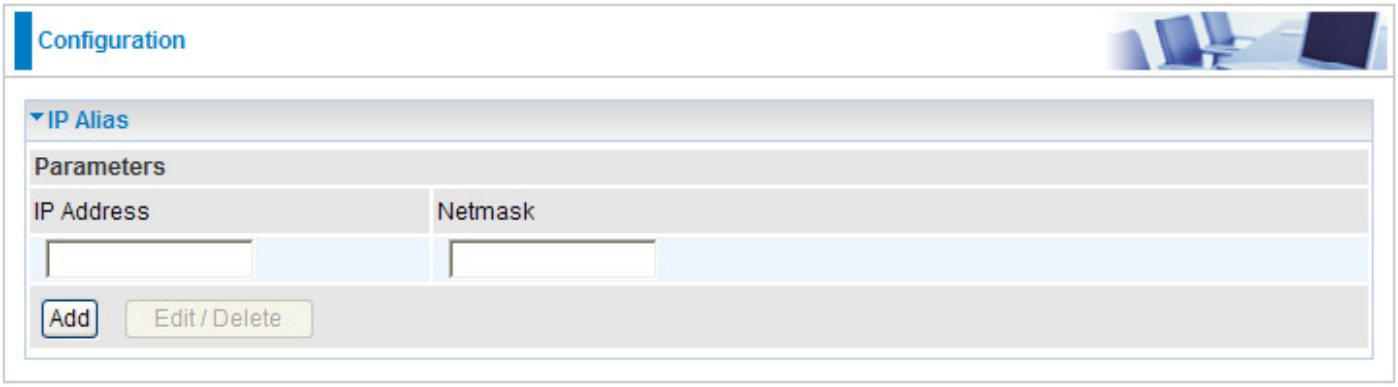
Netmask: The default subnet mask on this router.

RIP: RIP v1, RIP v2 Broadcast, RIP v2 Multicast and RIP v1+v2 Broadcast. Check to enable RIP function.

Click Apply to confirm the settings.

IP Alias

This function allows the addition an IP alias to the network interface. It further allows user the flexibility to assign a specific function to use this IP.

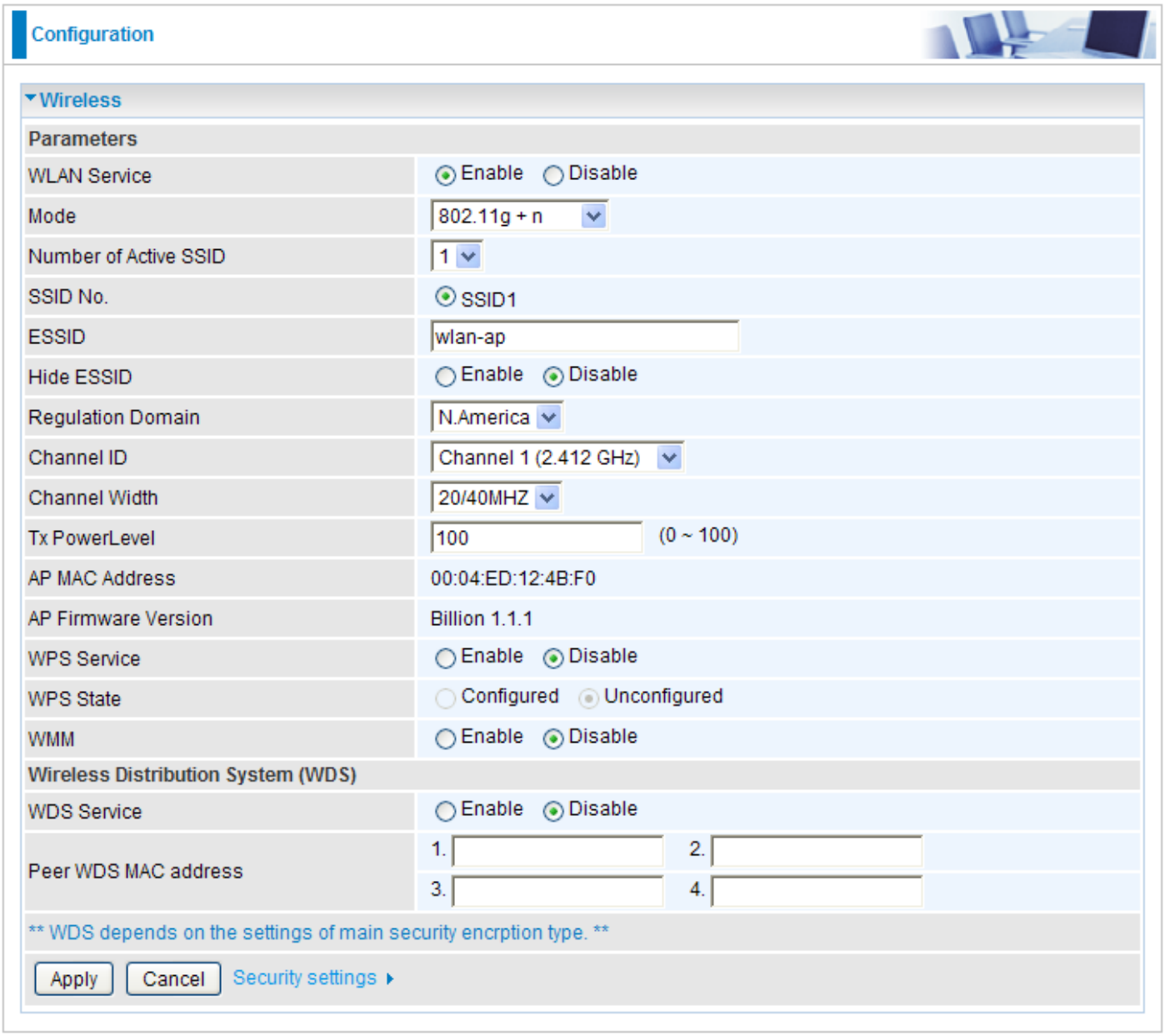


IP Address: Enter the IP address to be added to the network.

Netmask: Specify a subnet mask for the IP to be added.

Click Apply to confirm the settings.

Wireless



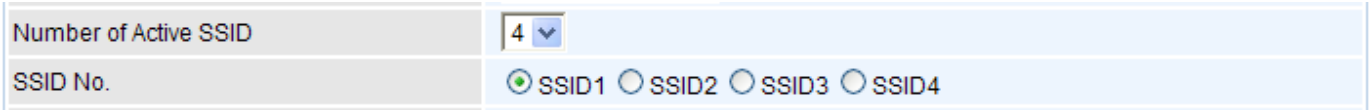
Parameters

WLAN Service: Default setting is set to Enable. If you do not have any wireless, select Disable.

Mode: The default setting is 802.11g+n. If you do not know or have both 11g and 11b devices in your network, then keep the default in mixed mode. From the drop-down manual, you can select 802.11g if you have only 11g card. If you have only 11b card, then select 802.11b. And if you have 11n card, you can select 802.11n.

Number of Active SSID: You can select 1, 2, or 4 SSIDs to be available at the same time.

SSID No.: The selection of SSIDs will depend on the Number of Active SSID. Select each SSID, ranging from SSID1, SSID2, SSID3 and SSID4 and set their individual configurations.



ESSID: The ESSID is the unique name of a wireless access point (AP) used to distinguish one from another. For security propose, change to a unique ID name which is already built into the router wireless interface. It is case sensitive and must not exceed 32 characters. Make sure your wireless clients have exactly the ESSID as the device in order to connect to your network.

Hide ESSID: This function enables the router to become invisible on the network. Thus, any clients using the wireless setting to search for available or specific router on the network will not be able to discover the router whose Hide ESSID function is set to enabled. The default setting is disabled.

> **Enable:** When enabled, you do not broadcast your ESSID. Therefore, no one will be able to locate the Access Point (AP) of your router.
>
> **Disable:** When disabled, you allow anybody with a wireless client to be able to locate the Access Point (AP) of your router.

Regulation Domain: There are seven Regulation Domains for you to choose from, including North America (N.America), Europe, France, etc. The Channel ID will be different based on this setting.

Channel ID: Select the wireless connection channel ID that you would like to use.

Note: Wireless performance may degrade if the selected channel ID is already being occupied by other AP(s).

Channel Width: Select either 20 MHz or 20/40 MHz for the channel bandwidth. The higher the bandwidth the better the performance will be.

TX PowerLevel: It is a function that enhances the wireless transmitting signal strength. User may adjust this power level from minimum 0 up to maximum 100.

Note: The Power Level maybe different in each access network user premise environment, choose the most suitable level for your network.

AP MAC Address: It is a unique hardware address of the Access Point.

AP Firmware Version: The Access Point firmware version.

WPS Service: Select Enable if you would like to activate WPS service.

WPS State: This column allows you to set the status of the device wireless setting whether it has been configured or unconfigured. For WPS configuration please refer to the section on **Wi-Fi Network Setup** for detail.

WMM: This feature is used to control the prioritization of traffic according to 4 Access categories: Voice, Video, Best Effort and Background. Default is set to disable.

Wireless Distribution System (WDS)

It is a wireless access point mode that enables wireless link and communication with other access points. It is easy to install simply by defining the peer's MAC address of the connected AP. WDS takes advantages of the cost saving and flexibility which no extra wireless client device is required to bridge between two access points and extending an existing wired or wireless infrastructure network to create a larger network. It can connect up to 4 wireless APs for extending cover range at the same time.

In addition, WDS also enhances its link connection security mode. Key encryption and channel must be the same for both access points.

WDS Service: The default setting is disabled. Check **Enable** radio button to activate this function.

1. **Peer WDS MAC Address:** It is the associated AP's MAC Address. It is important that your peer's AP must include your MAC address in order to acknowledge and communicate with each other.
2. **Peer WDS MAC Address:** It is the second associated AP's MAC Address.
3. **Peer WDS MAC Address:** It is the third associated AP's MAC Address.
4. **Peer WDS MAC Address:** It is the fourth associated AP's MAC Address.

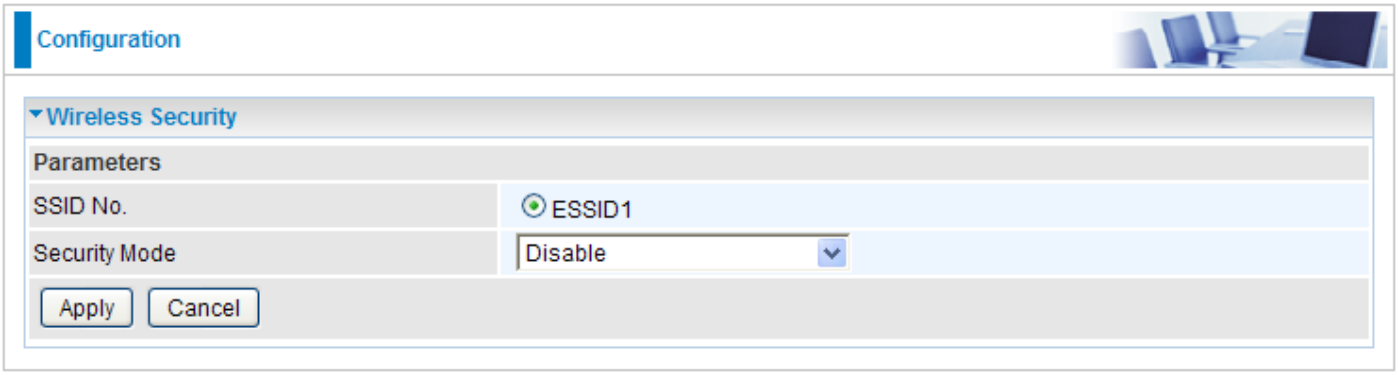
Note: For MAC Address, the format can be: xx:xx:xx:xx:xx:xx or xx-xx-xx-xx-xx-xx.

Click Apply to confirm the settings.

You can click Security settings link next to Cancel button to go to Wireless Security screen (see **Wireless Security** section).

Wireless Security

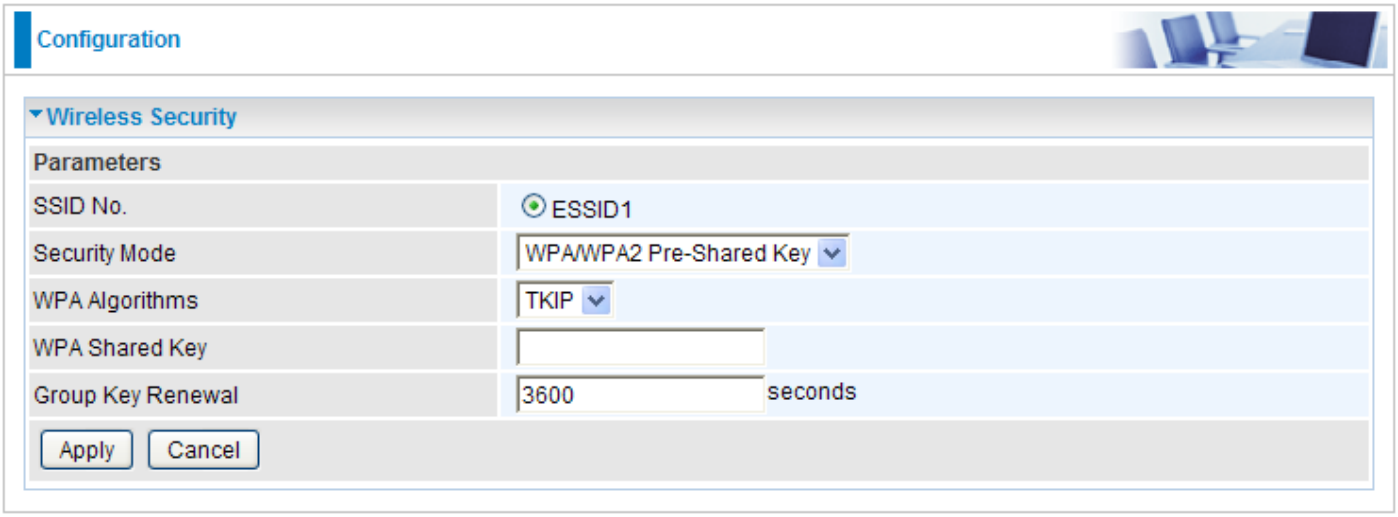
You can disable or enable wireless security function using WPA or WEP for protecting wireless network. The default mode of wireless security is disabled.



SSID No.: The selection of SSIDs will depend on the Number of Active SSID set on Wireless screen.

Security Mode: Select the security mode from the drop-down menu, there are Disable, WPA Pre-Shared Key, WPA2 Pre-Shared Key, WPA/WPA2 Pre-Shared Key and WEP.

WPA / WPA2 / WPA/WPA2 Pre-Shared Key



Security Mode: You can choose the type of security mode you want to apply from the drop-down menu.

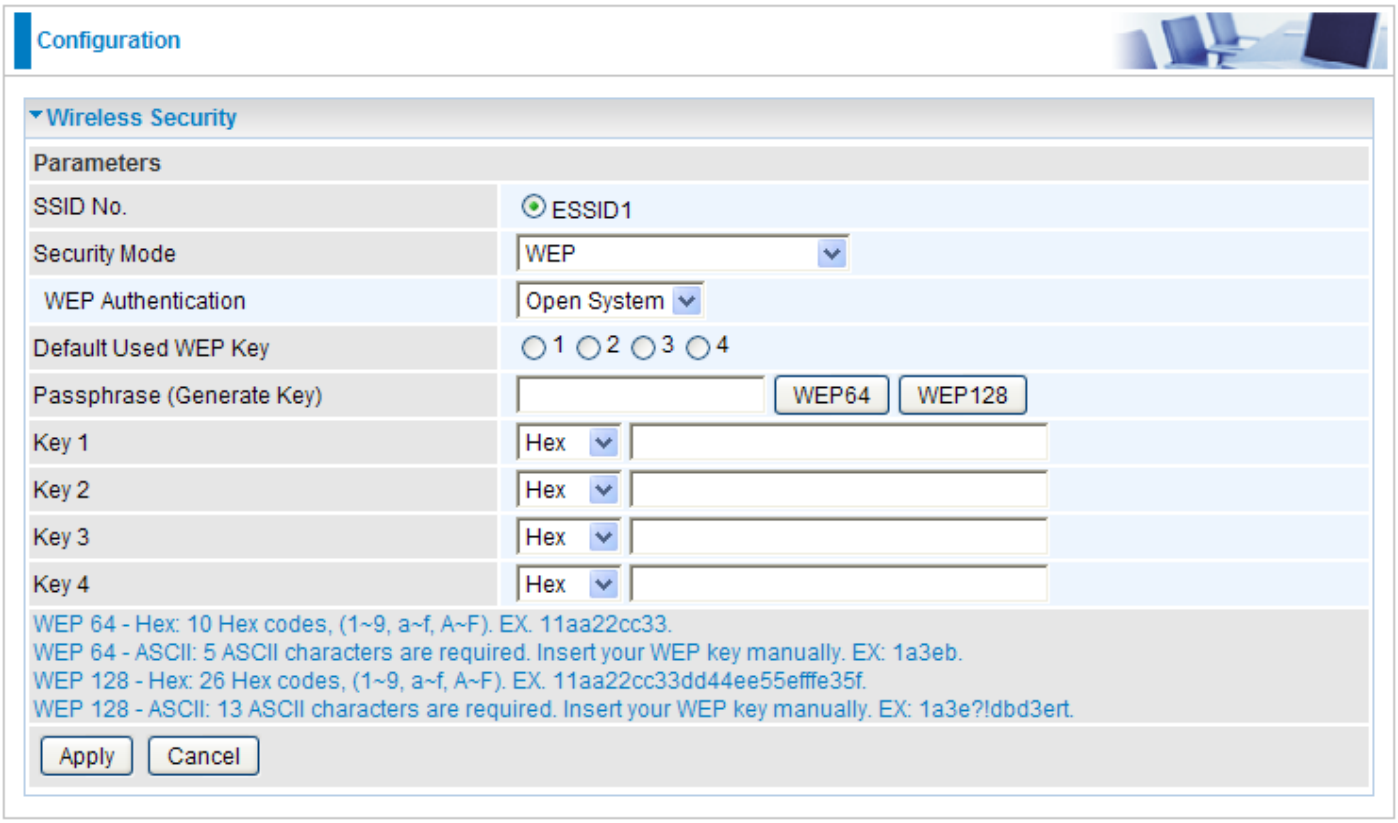
WPA Algorithms: There are 3 types of the WPA-PSK, WPA2-PSK and WPA/WPA2-PSK. The WPA-PSK adapts the TKIP (Temporal Key Integrity Protocol) encrypted algorithms, which incorporates Message Integrity Code (MIC) to provide protection against hackers. The WPA2-PSK adapts CCMP (Cipher Block Chaining Message Authentication Code Protocol) of the AES (Advanced Encryption Security) algorithms.

WPA Shared Key: The key for network authentication. The input format is in character style and key size should be in the range between 8 and 63 characters.

Group Key Renewal: The period of renewal time for changing the security key automatically between wireless client and Access Point (AP). Default value is 3600 seconds.

Click Apply to confirm the settings.

WEP



Security Mode: Choose the type of security mode **WEP** from the drop-down menu.

WEP Authentication: To prevent unauthorized wireless stations from accessing data transmitted over the network, the router offers secure data encryption, known as WEP. There are 3 options to select from: **Open System**, **Shared Key** or **Both**.

Default Used WEP Key: Select the encryption key ID; please refer to **Key (1~4)** below.

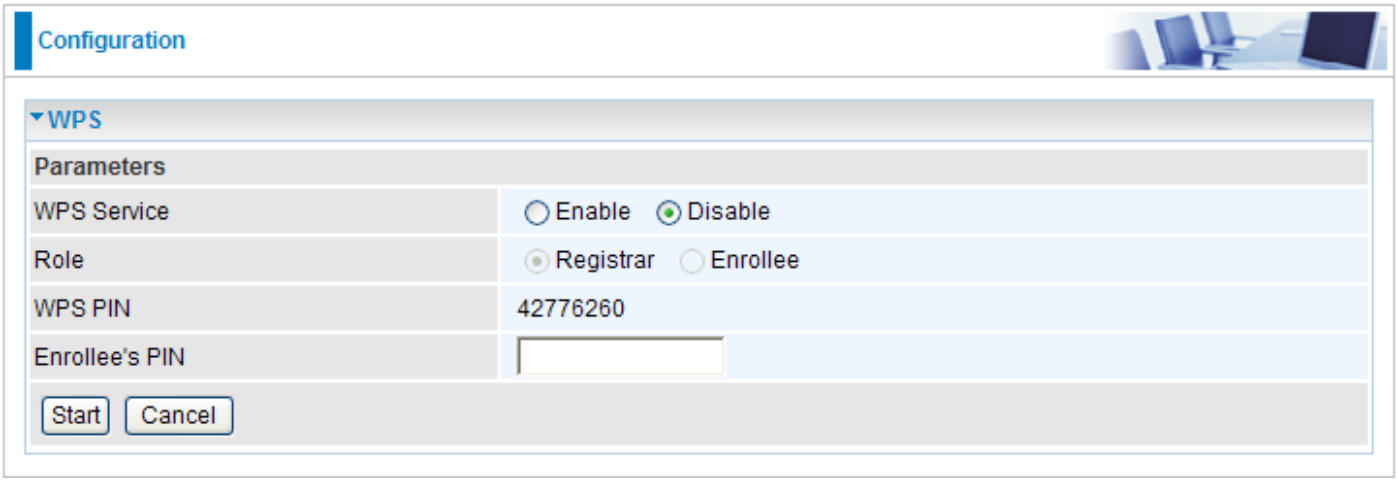
Passphrase: This is used to generate WEP keys automatically based upon the input string and a pre-defined algorithm in WEP64 or WEP128.

Key (1~4): Enter the key to encrypt wireless data. To allow encrypted data transmission, the WEP Encryption Key values on all wireless stations must be the same as the router. There are four keys for your selection. The input format is in HEX or ASCII style, 5 and 13 ASCII codes are required for WEP64 and WEP128 or 10 and 26 HEX codes are required for WEP64 and WEP128 respectively.

Click Apply to confirm the settings.

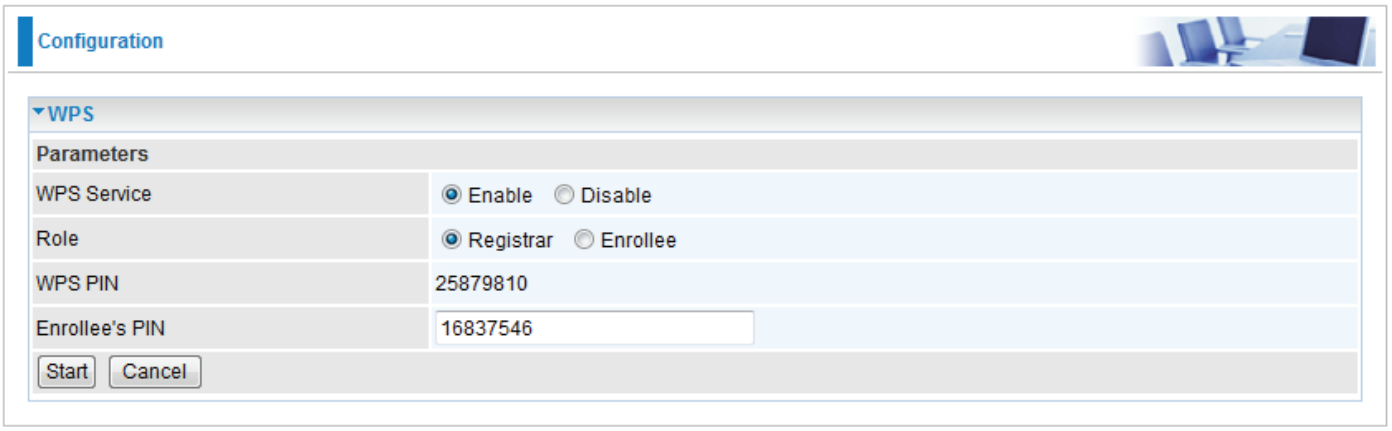
WPS

WPS (WiFi Protected Setup) feature is a standard protocol created by Wi-Fi Alliance. This feature greatly simplifies the steps needed to create a Wi-Fi networks for a residential or an office setting. WPS supports 2 types of configuration methods which are commonly known among consumers: **PIN Method** & **PBC Method**.

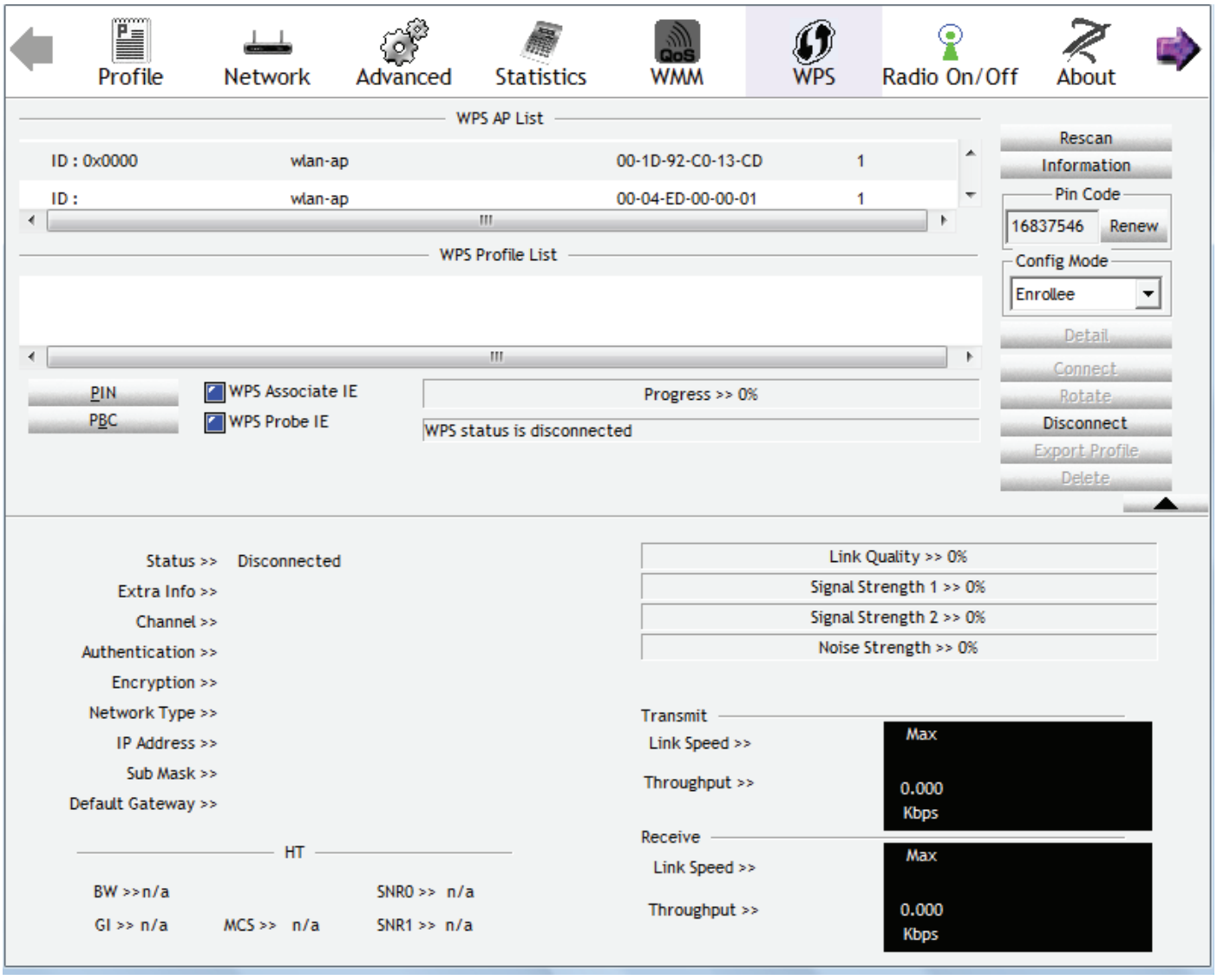


PIN Method: Configure AP as Registrar

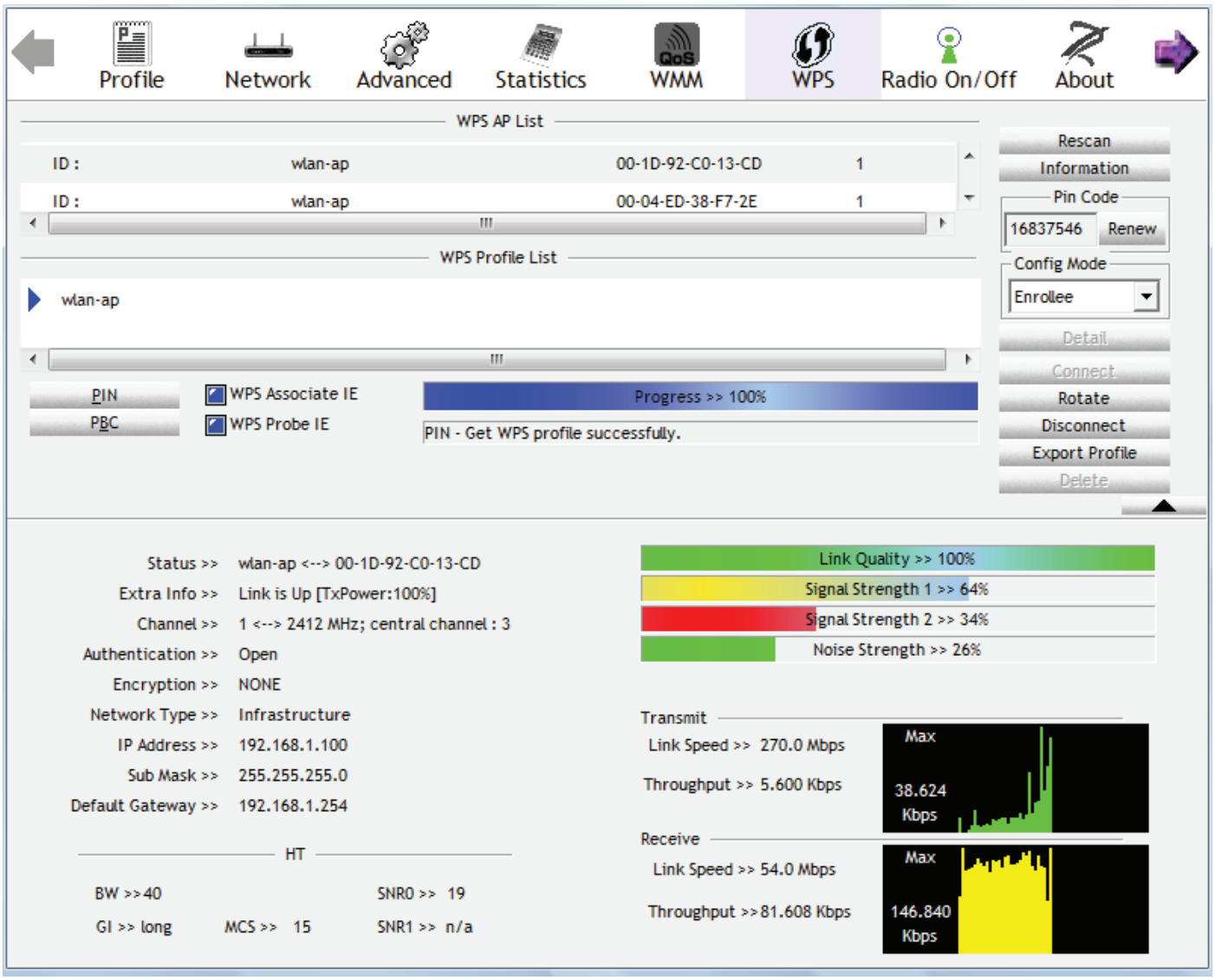
1. Jot down the client's Pin (eg. 16837546).



2. Enter the Enrollee's PIN number and then press Start.
3. Launch the wireless client's WPS utility (eg. Ralink Utility). Set the Config Mode as Enrollee, press the WPS button on the top bar, select the AP (eg. wlan-ap) from the WPS AP List column. Then press the PIN button located on the middle left of the page to run the scan.

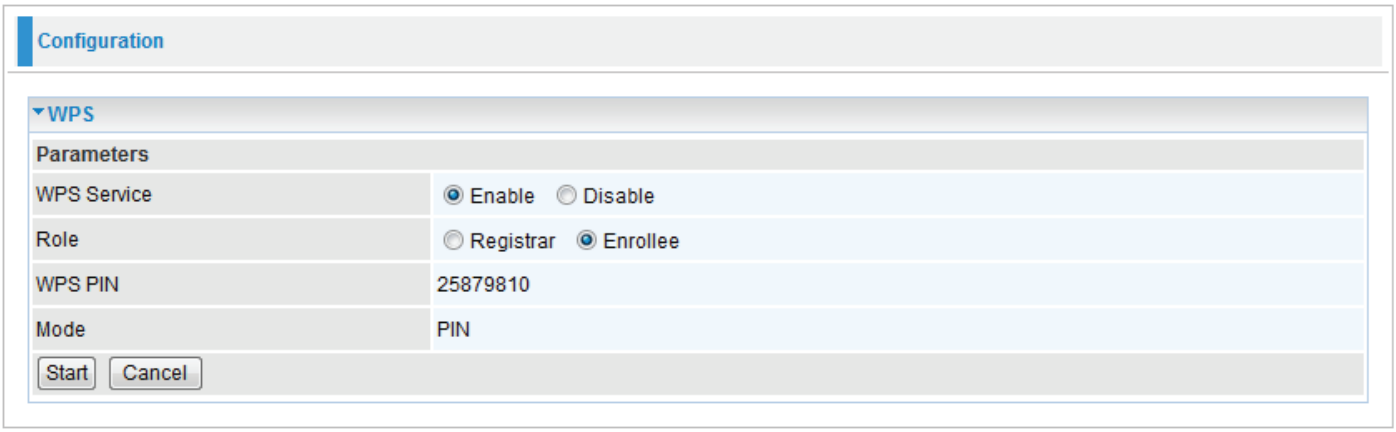


4. The client's SSID and security setting will now be configured to match the SSID and security setting of the registrar.

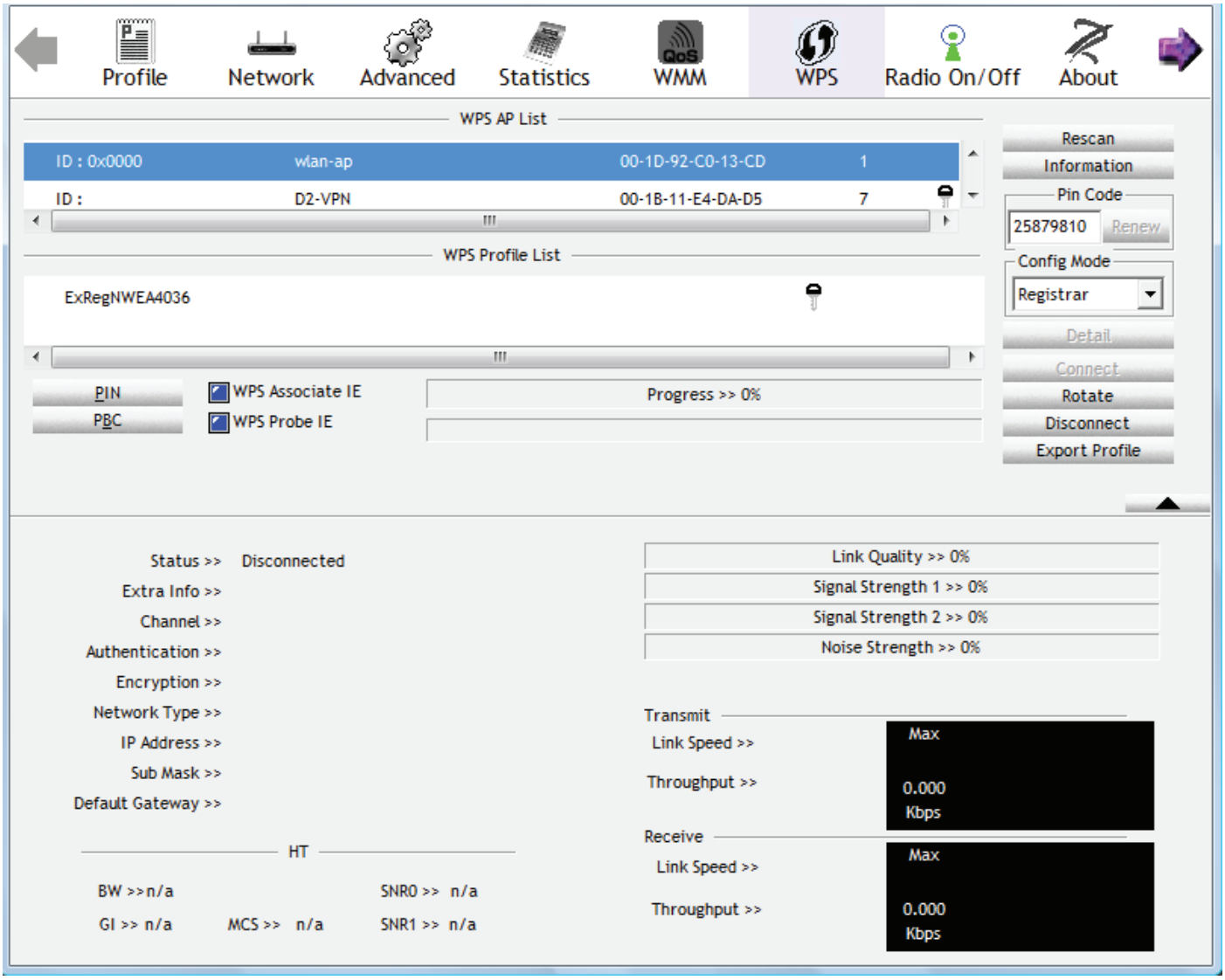


PIN Method: Configure AP as Enrollee

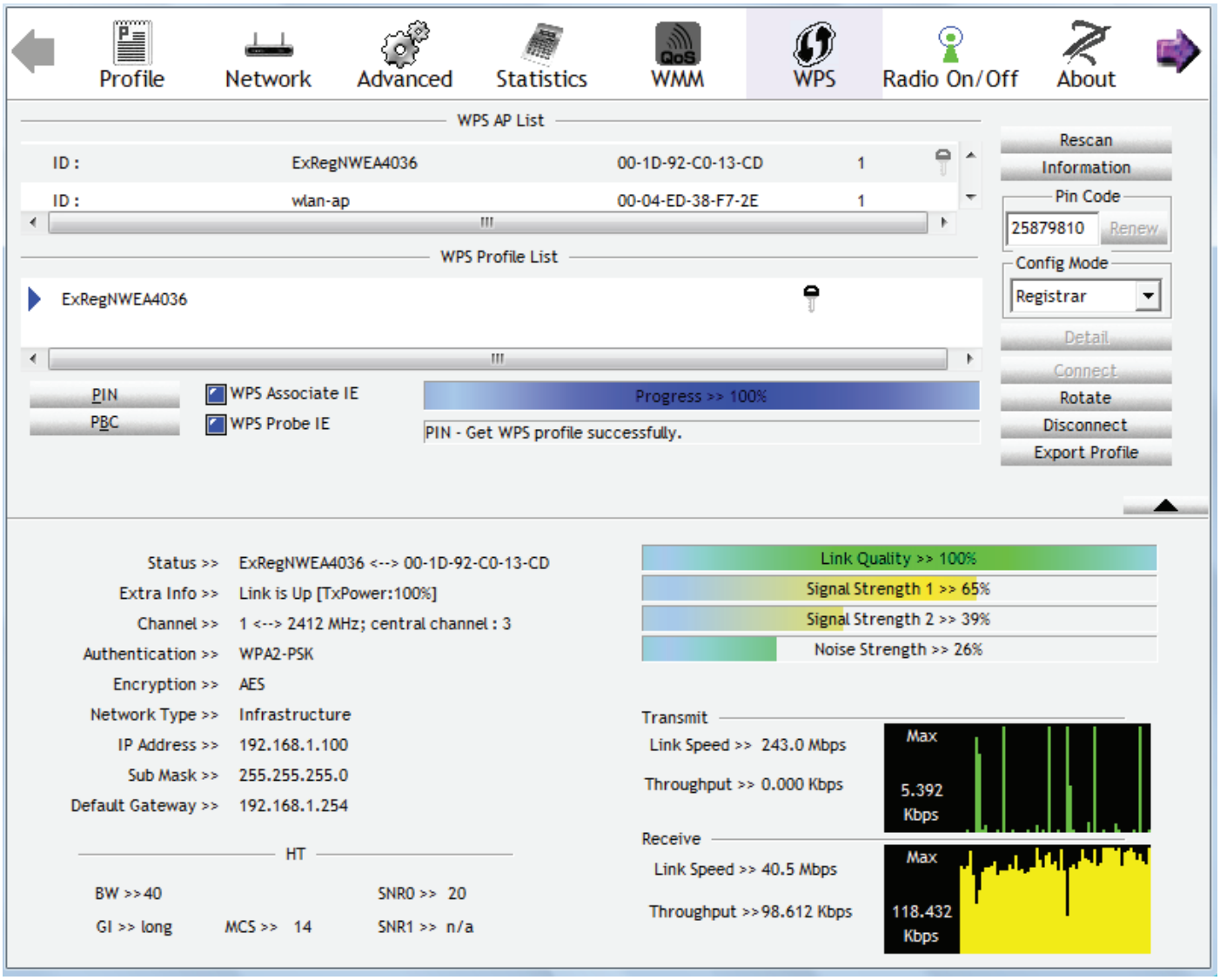
1. In the WPS configuration page, change the Role to Enrollee. Then press Start.
2. Jot down the WPS PIN (eg. 25879810).



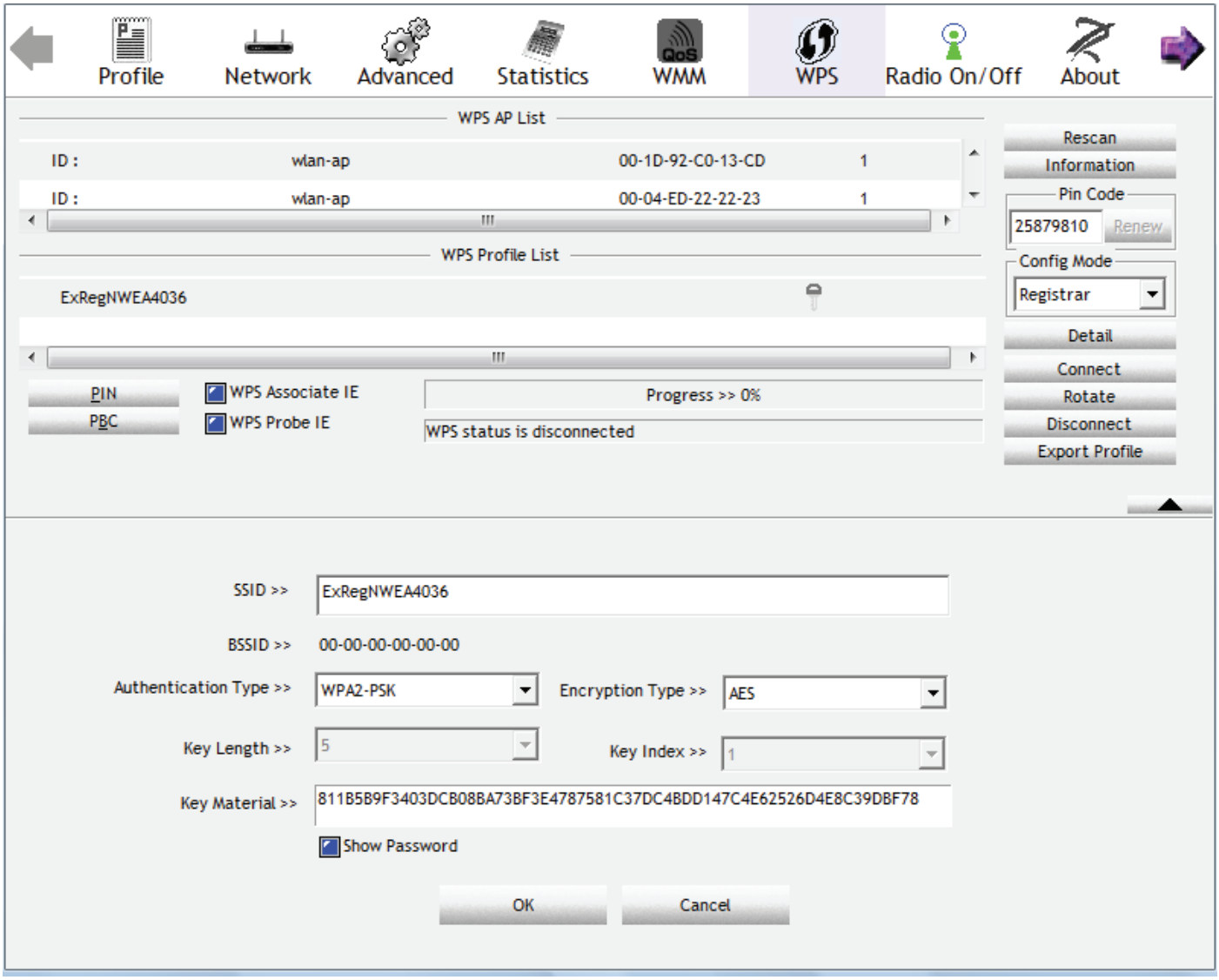
3. Launch the wireless client's WPS utility (eg. Ralink Utility). Set the Config Mode as Registrar. Enter the PIN number in the PIN Code column then choose the correct AP (eg. wlan-ap) from the WPS AP List section before pressing the PIN button to run the scan.



4. The router's (AP's) SSID and security setting will now be configured to match the SSID and security setting of the registrar.



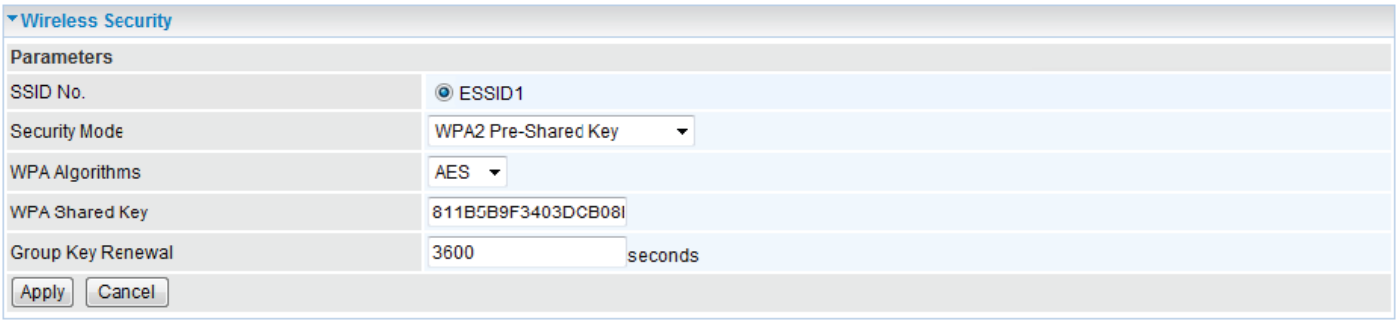
5. Now to make sure that the setup is correctly done, cross check to see if the SSID and the security setting of the registrar setting match with the parameters found on both Wireless Configuration and Wireless Security Configuration page.



Wireless

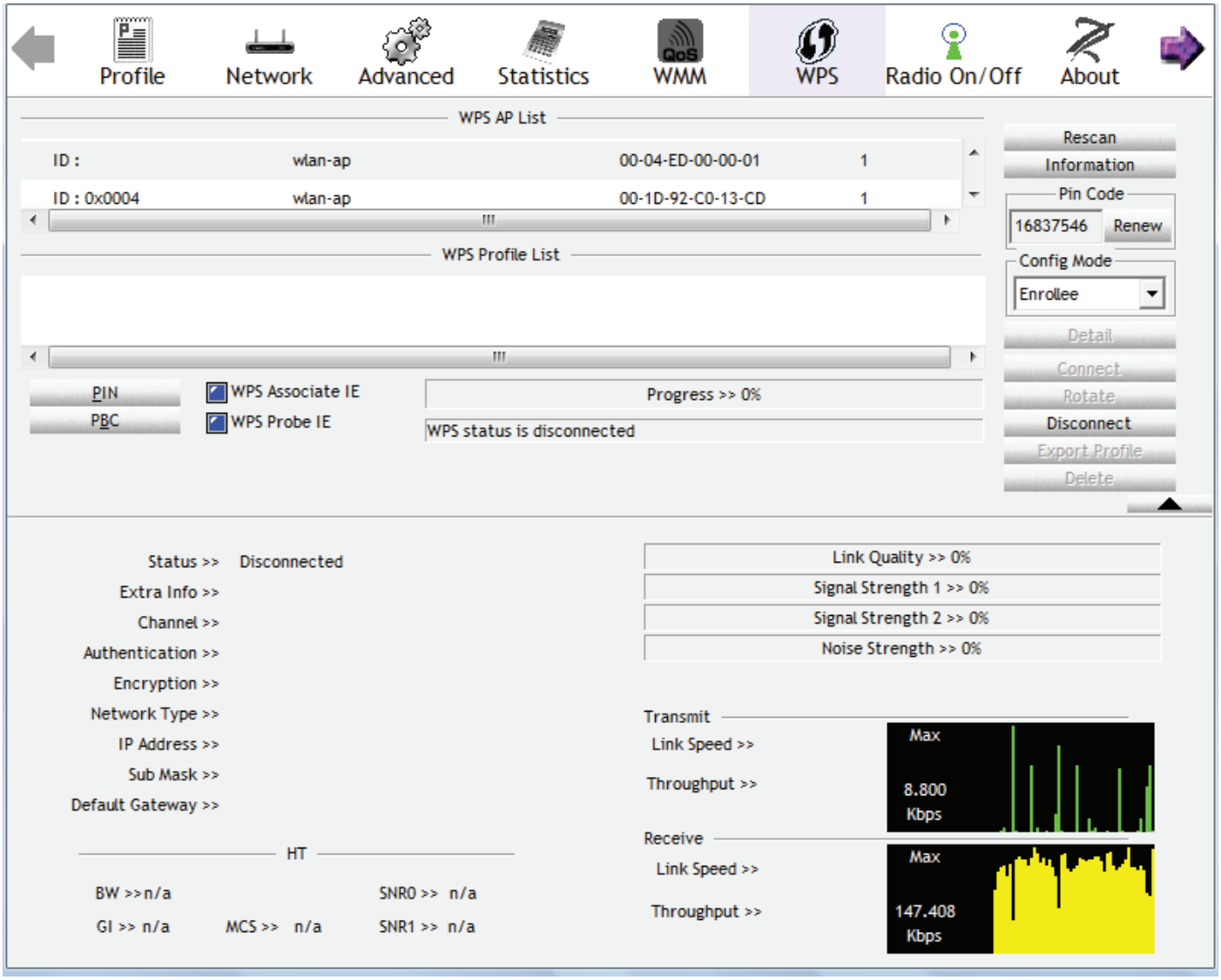
Parameters	
WLAN Service	Enable / Disable
Mode	802.11g + n
Number of Active SSID	1
SSID No.	SSID1
ESSID	ExRegNWEA4036
Hide ESSID	Enable / Disable
Regulation Domain	N.America
Channel ID	Channel 1 (2.412 GHz)
Channel Width	20/40MHZ
Tx Power Level	100 (0 ~ 100)
AP MAC Address	00:1D:92:C0:13:CD
AP Firmware Version	1.1.7.0
WPS Service	Enable / Disable
WPS State	Configured / Unconfigured
WMM	Enable / Disable
Wireless Distribution System (WDS)	
WDS Service	Enable / Disable
Peer WDS MAC address	1. 2. 3. 4.

Apply Cancel Security settings

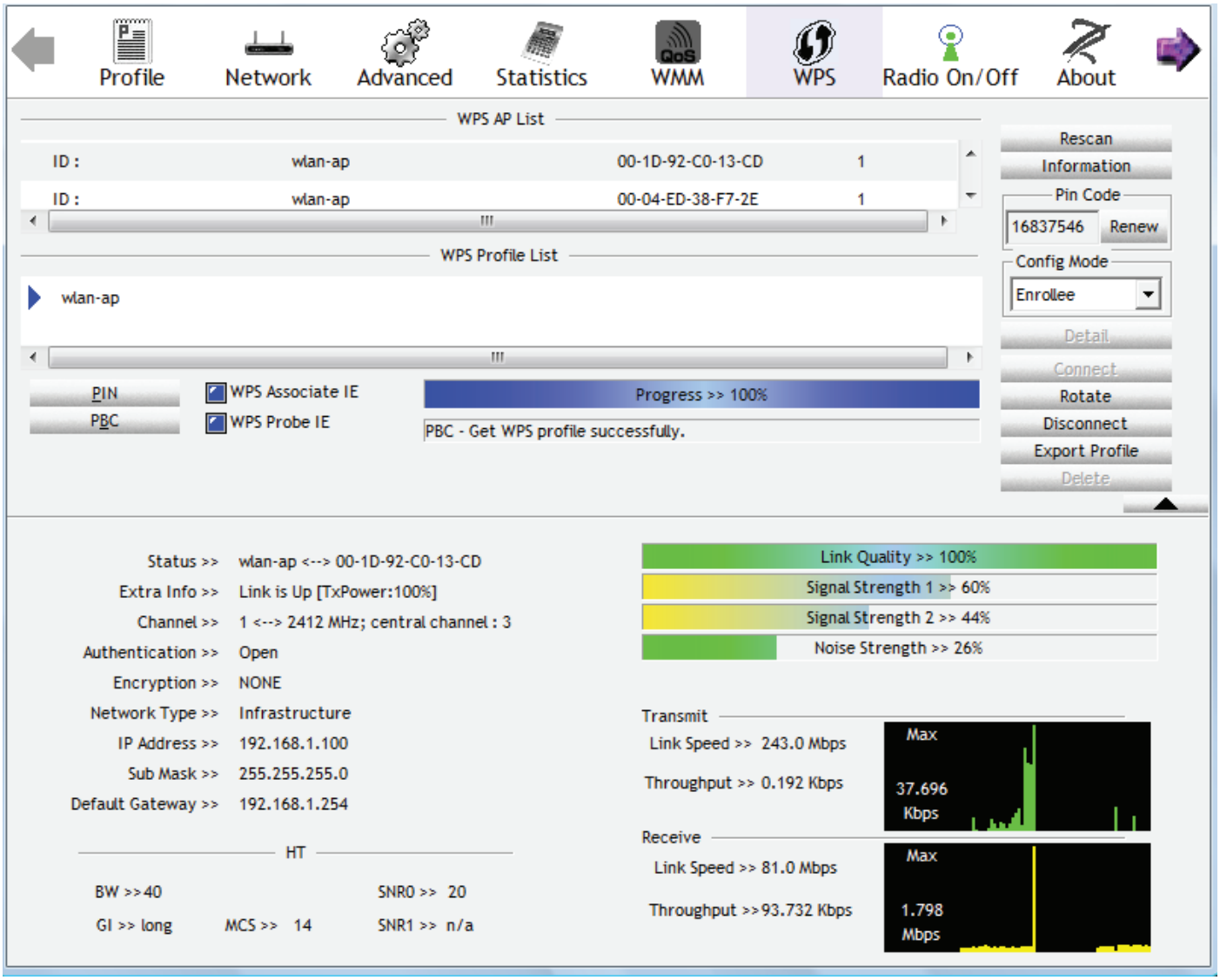

Wireless Security
Parameters
SSID No.
ESSID1
Security Mode
WPA2 Pre-Shared Key
WPA Algorithms
AES
WPA Shared Key
811B5B9F3403DCB08I
Group Key Renewal
3600
seconds
Apply
Cancel

PBC Method:

1. Press the PBC button of the AP.
2. Launch the wireless client's WPS Utility (eg. Ralink Utility). Set the Config Mode as Enrollee. Then press the WPS button and choose the correct AP (eg. wlan-ap) from the WPS AP List section before pressing the PBC button to run the scan.

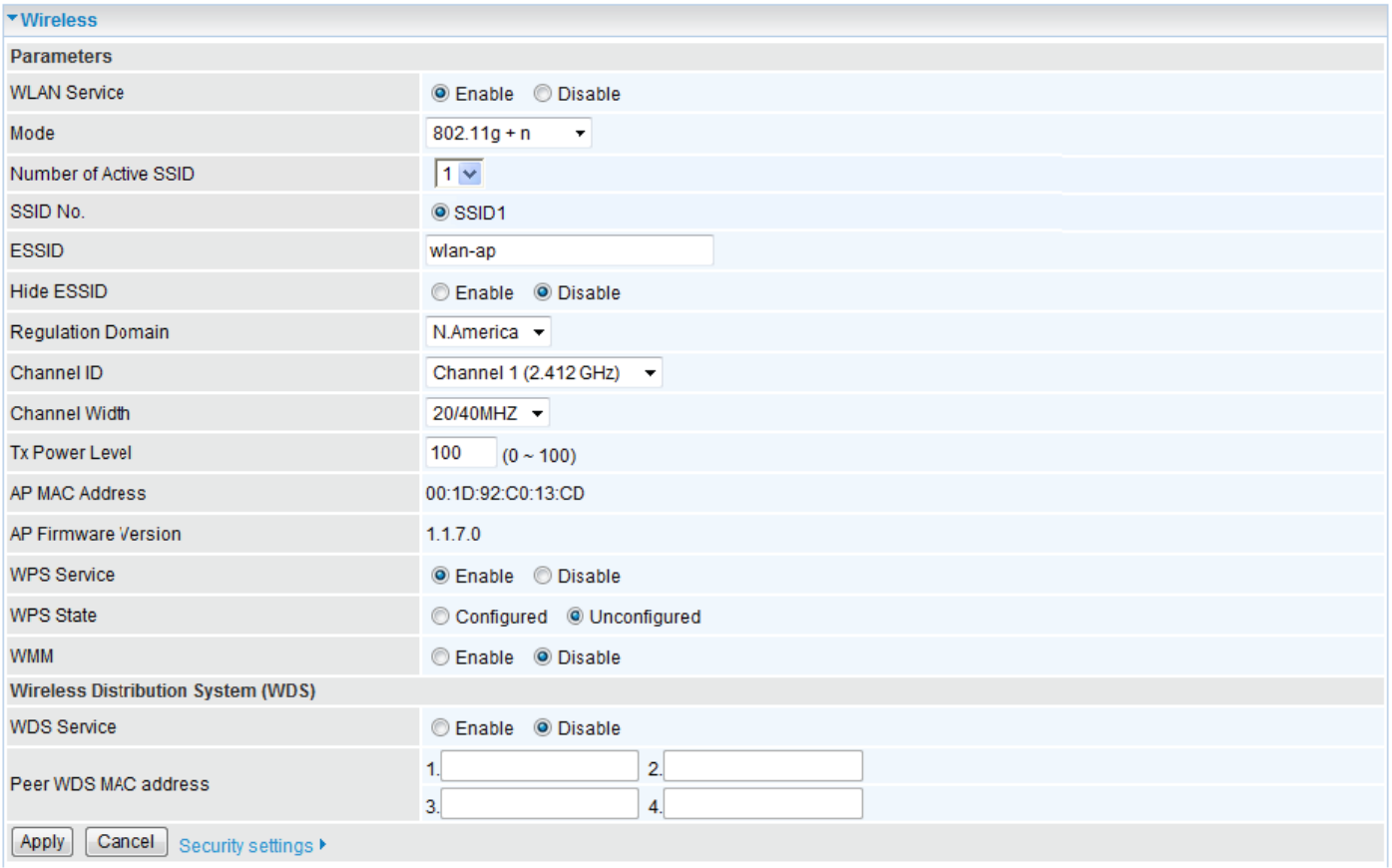


3. When the PBC button is pushed, a wireless communication will be established between your router and the PC. The client's SSID and security setting will now be configured to match the SSID and security setting of the router.



Wi-Fi Network Setup with Windows Vista WCN:

1. Jot down the AP PIN from the Web (eg. 25879810).
2. Access the Wireless configuration of the web GUI. Set the WPS State to Unconfigured then click Apply.



3. In your Vista operating system, access the Control Panel page, then select Network and Internet > View Network Computers and Devices. Double click on the BiPAC 8200N icon and enter the AP PIN in the column provided then press Next.