



# **BiPAC 8200N**

**802.11n VDSL2 4-port Firewall Router**

**User Manual**

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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 at 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°C ~ 40°C
- Storage temperature: -20°C ~ 70°C
- 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.

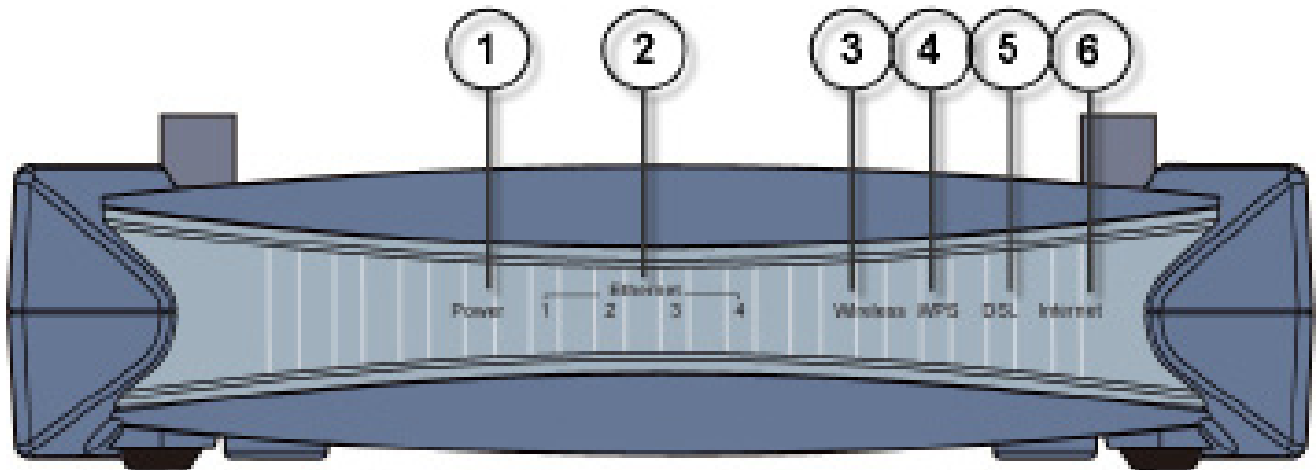


### Attention

- 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.

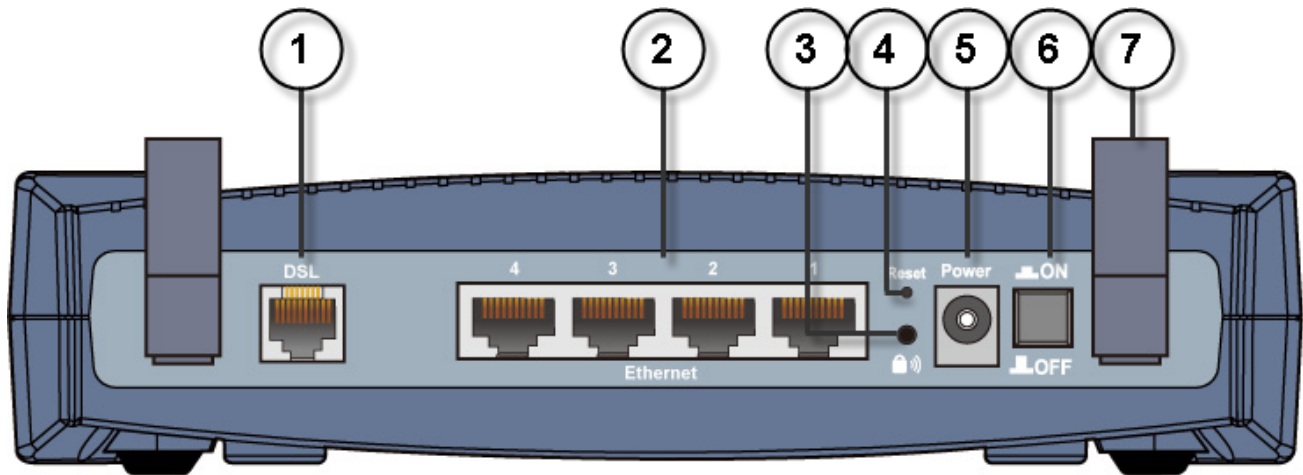
# Device Description

## The Front LEDs



| LED |  | Meaning   |
|-----|--|---|
| 1   | <b>Power</b>   | Lit red when the device is booting.<br>Lit green when the system is ready.<br>Flashes when the system is rebooting or firmware upgrading.   |
| 2   | <b>Ethernet port<br/>1X — 4X<br/>(RJ-45 connector)</b> | Lit when one of LAN ports is connected to an Ethernet device.<br>Lit green when the speed of transmission hits 100Mbps; Lit orange when the speed of transmission hits 10Mbps.<br>Blinking when data is transmitted/received. |
| 3   | <b>Wireless</b>  | Lit green when a wireless connection is established.<br>Blinking when data is transmitted/received.   |
| 4   | <b>WPS</b>   | Lit green when a wireless connection is established.<br>Blinking when WPS configuration is in progress.   |
| 5   | <b>DSL</b>   | Lit green when the device is successfully connected to an VDSL DSLAM. ("line sync")   |
| 6   | <b>Internet</b>  | Lit red when WAN port fails to get IP address.<br>Lit green when WAN port gets IP address successfully.<br>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.<br><b>Note: Only Ethernet port 4 can be used for EWAN.</b> |
| 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.

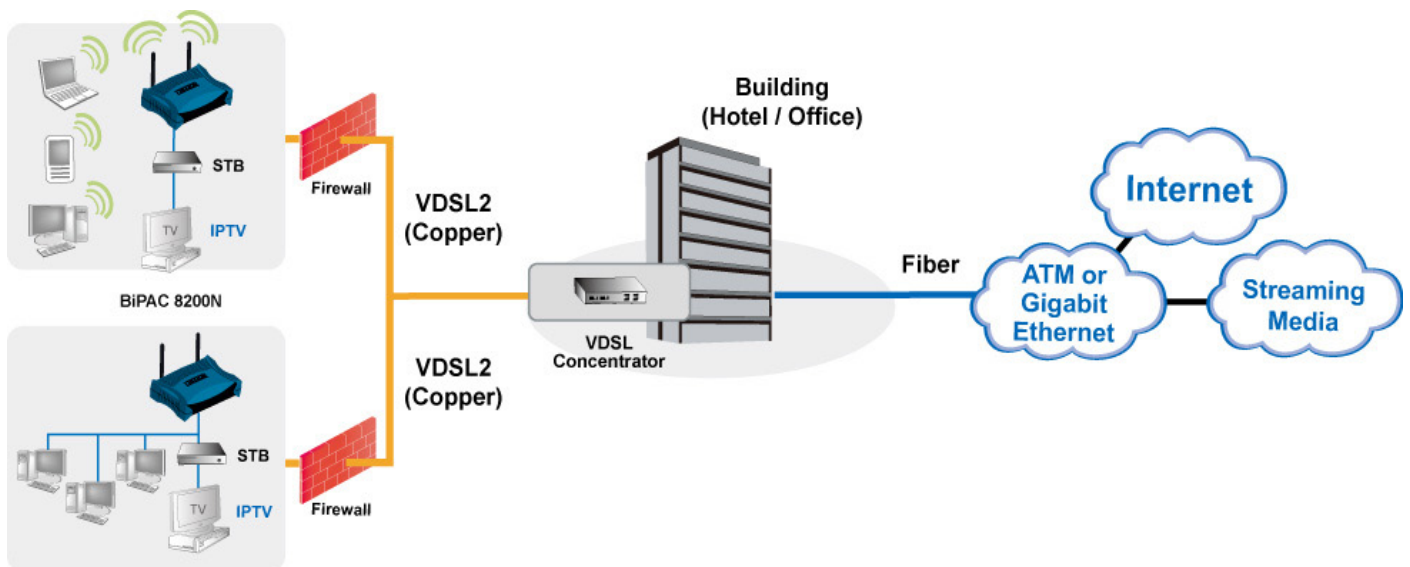


Any TCP/IP capable workstation can be used to communicate with or through this router. To configure other types of workstations, please consult your manufacturer documentation.



# Applications of the device

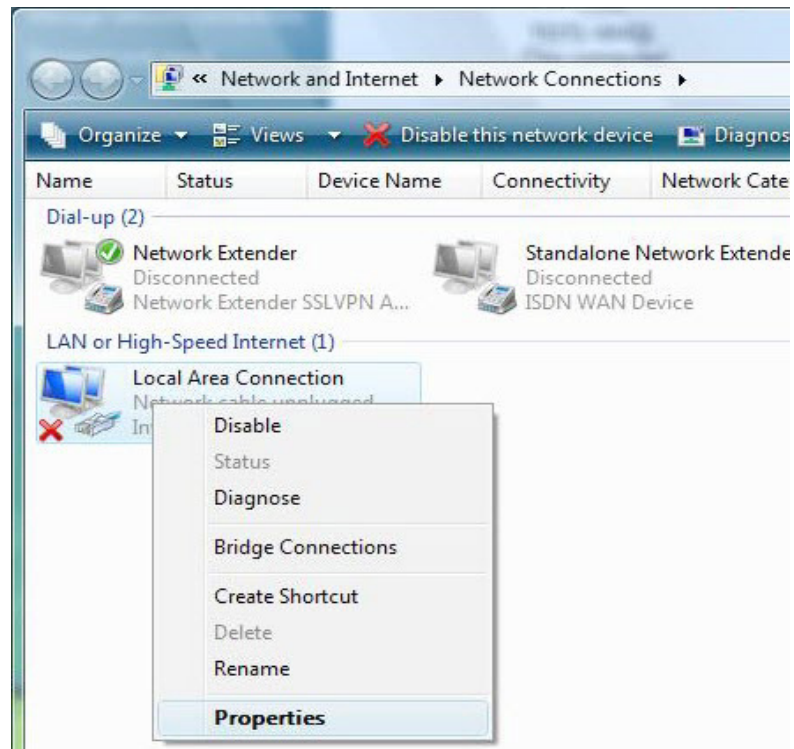
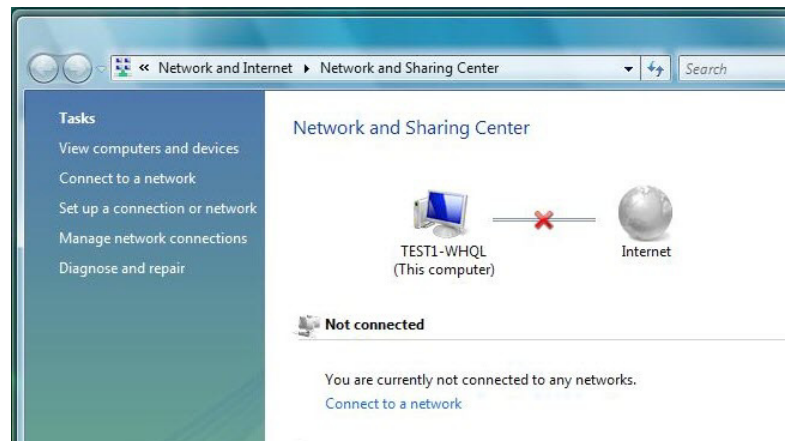
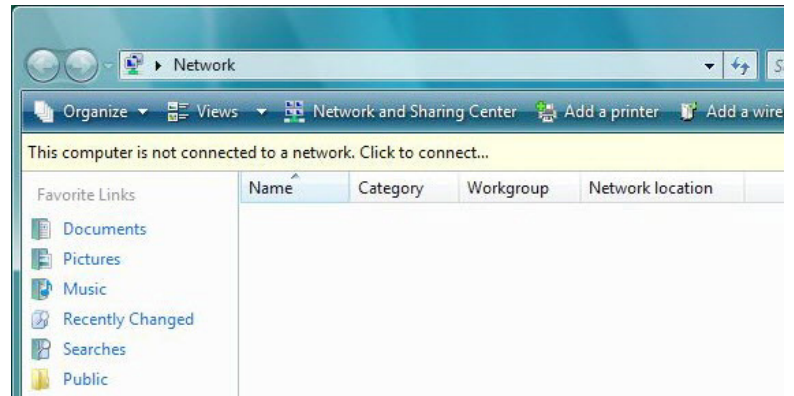
## Deployment scenario for VDSL using FTTx



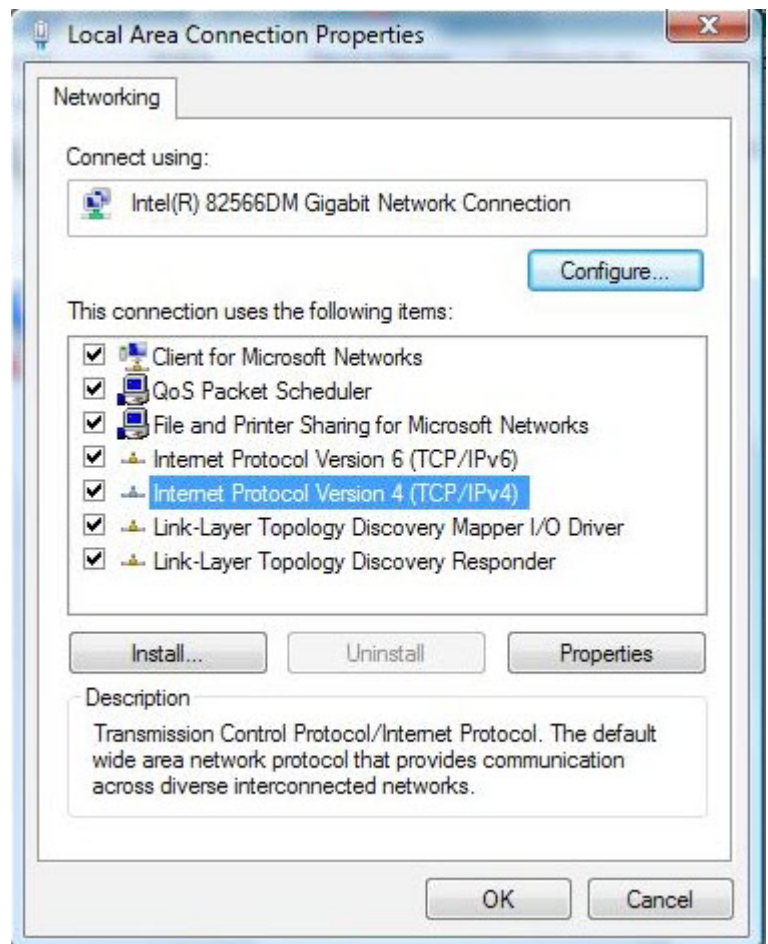
# Network Configuration

## Configuring PC in Windows Vista

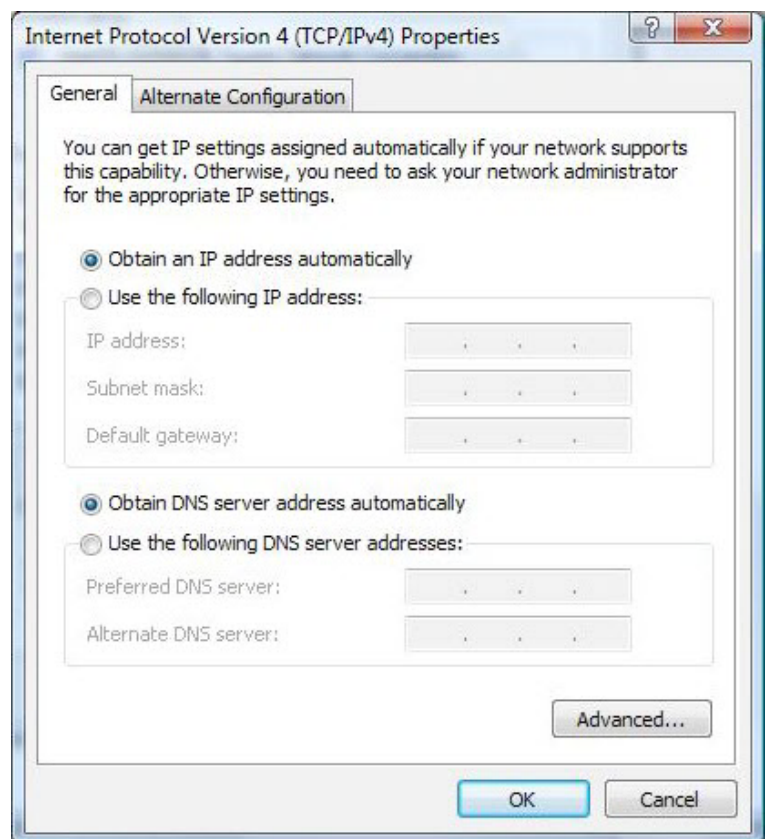
1. Go to Start. Click on Network.
2. Then click on Network and Sharing Center at the top bar.
3. When the Network and Sharing Center window pops up, select and click on Manage network connections on the left window column.
4. Select the Local Area Connection, and right click the icon to select Properties.



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

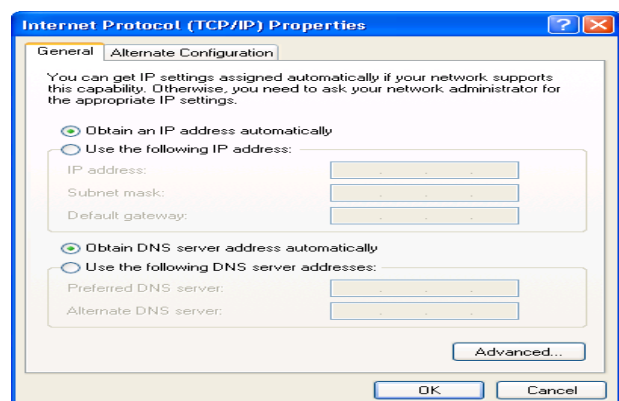
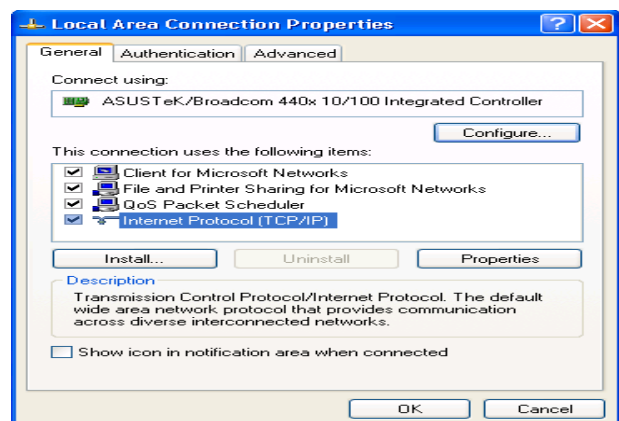
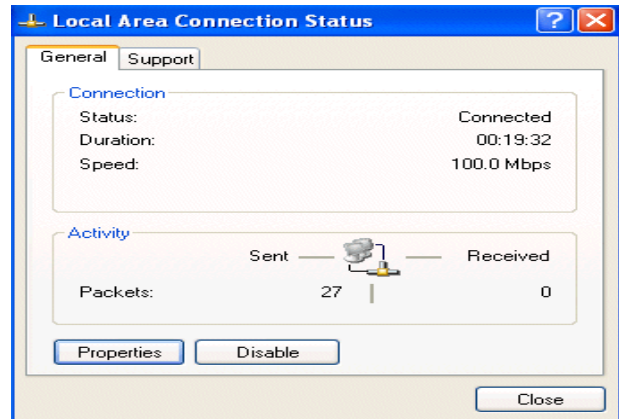


6. In the TCP/IPv4 properties window, select the Obtain an IP address automatically and Obtain DNS Server address automatically radio buttons. Then click OK to exit the setting.
7. Click OK again in the Local Area Connection Properties window to apply the new configuration.



# Configuring PC in Windows XP

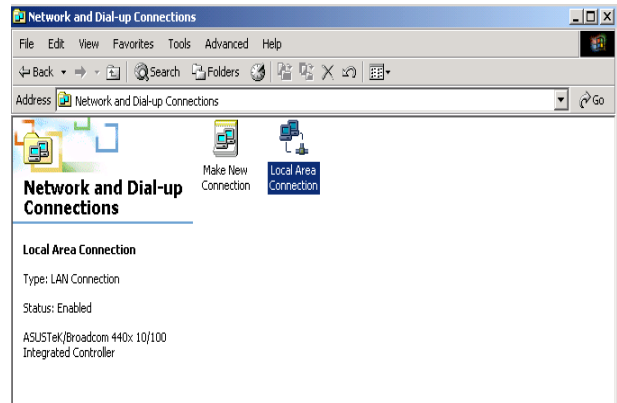
1. Go to Start > Control Panel (in Classic View). In the Control Panel, double-click on Network Connections
2. Double-click Local Area Connection.
3. In the Local Area Connection Status window, click Properties.
4. Select Internet Protocol (TCP/IP) and click Properties.
5. Select the Obtain an IP address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



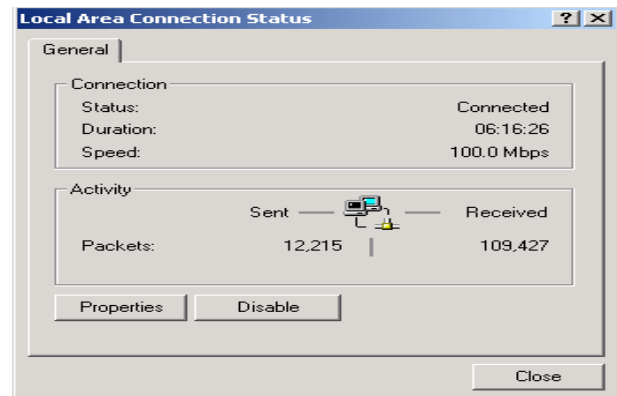
# Configuring PC in Windows 2000

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

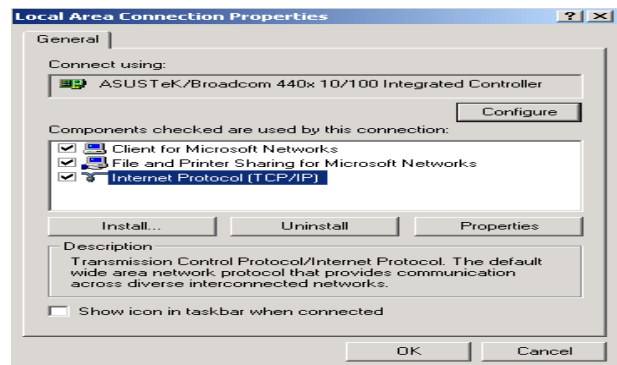
2. Double-click Local Area Connection.



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

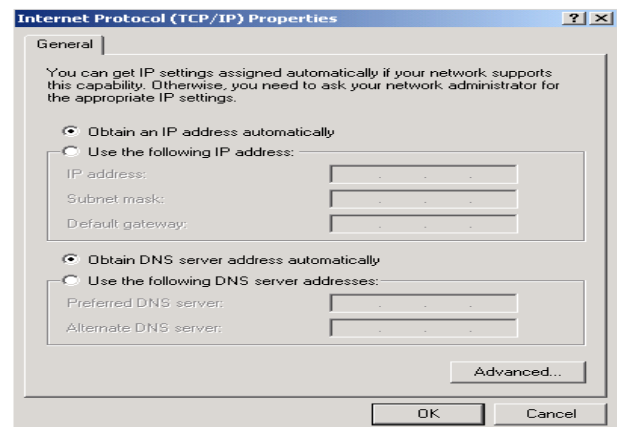


4. Select Internet Protocol (TCP/IP) and click Properties.



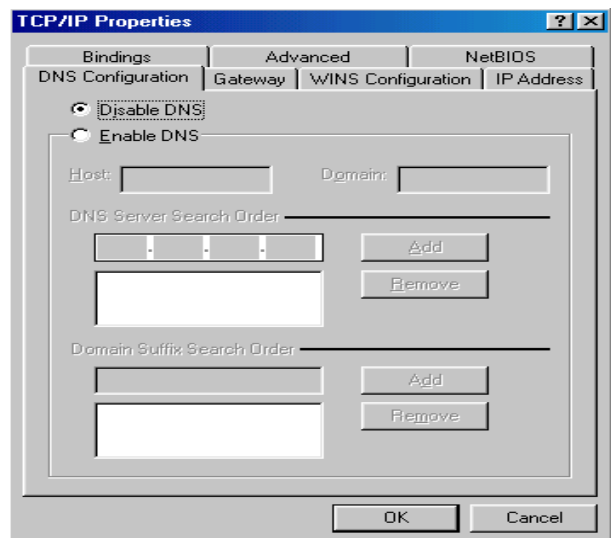
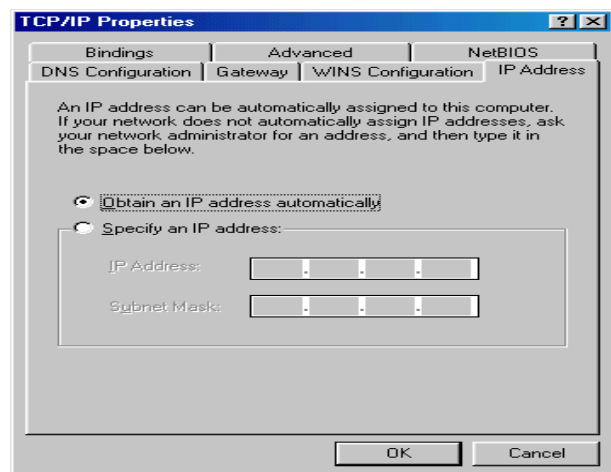
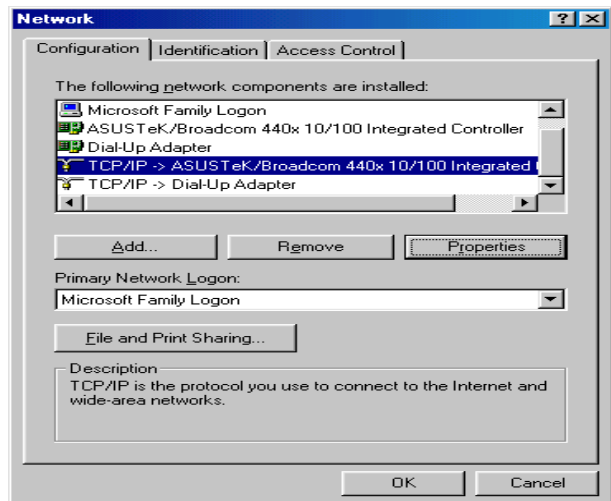
5. Select the Obtain an IP address automatically and the Obtain DNS server address automatically radio buttons.

6. Click OK to finish the configuration.



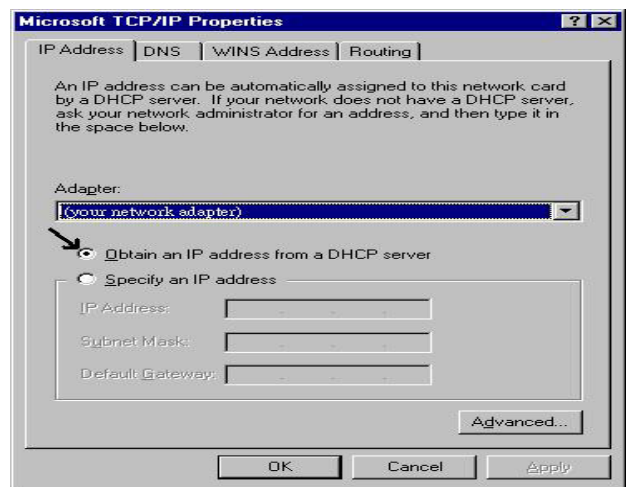
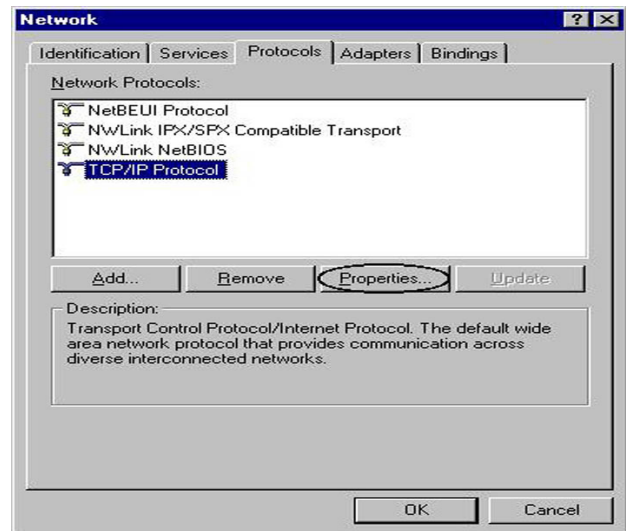
# Configuring PC in Windows 95/98/Me

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 Configuration tab.
5. Select the Disable DNS radio button and click OK to finish the configuration.



# Configuring PC in Windows NT4.0

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



# 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.



### Attention

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 table.

| 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.

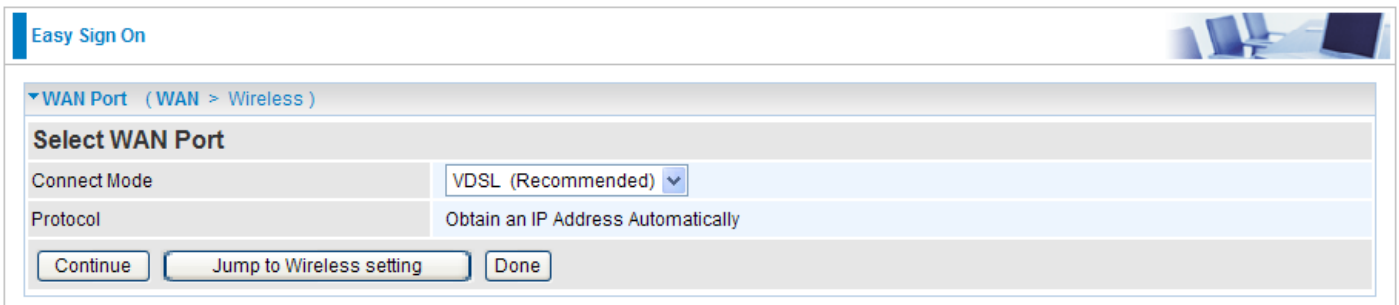
## Easy Sign-On (EZSO)

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.

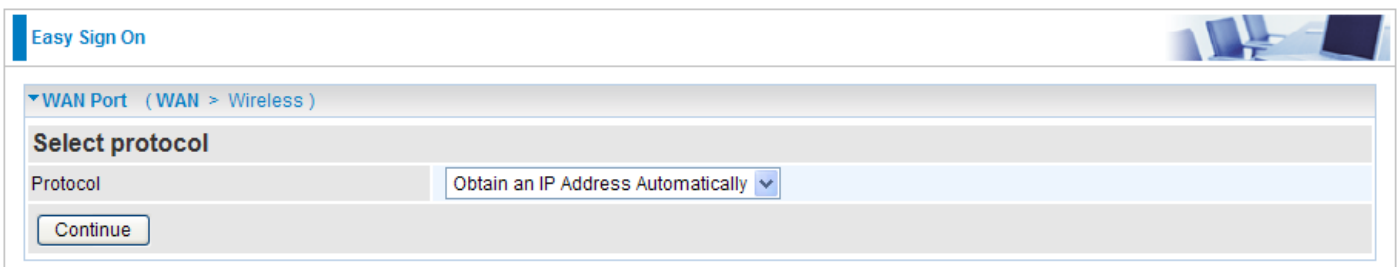
**Follow the Easy Sign-On configuration wizard to complete the basic network configuration.**

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".).



The screenshot shows the 'Easy Sign On' configuration wizard. The title bar reads 'Easy Sign On'. Below it, a breadcrumb trail shows 'WAN Port (WAN > Wireless)'. The main heading is 'Select WAN Port'. There are two rows of configuration options: 'Connect Mode' with a dropdown menu set to 'VDSL (Recommended)', and 'Protocol' with the text 'Obtain an IP Address Automatically'. At the bottom, there are three buttons: 'Continue', 'Jump to Wireless setting', and 'Done'.

3. Show Auto scan result - Protocol information.



The screenshot shows the 'Easy Sign On' configuration wizard. The title bar reads 'Easy Sign On'. Below it, a breadcrumb trail shows 'WAN Port (WAN > Wireless)'. The main heading is 'Select protocol'. There is one row of configuration options: 'Protocol' with a dropdown menu set to 'Obtain an IP Address Automatically'. At the bottom, there is a single 'Continue' button.

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

Easy Sign On

WAN Port (WAN > Wireless)

Select protocol

|                         |  |
|-------------------------|--|
| Protocol                | PPPoE  |
| Username                | billion  |
| Password                | •••••  |
| Service Name            | cht  |
| IP Address              | 0.0.0.0 (0.0.0.0' means 'Obtain an IP address automatically) |
| Authentication Protocol | Auto   |

Continue

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

Easy Sign On

Restart

Since settings are changed, the router will reboot to make the changes take effect! Please wait for seconds.

total : 4%

Easy Sign On

WAN Port (WAN > Wireless)

Please wait while the device is configured.

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

Easy Sign On

WAN Port

Fail!!

WAN port setting is not successful (authentication fail), you can do this procedure again.

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.

Easy Sign On


WAN Port (WAN > Wireless)

Congratulations !

Your WAN port has been successfully configured.

Next to Wireless Done


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.

Easy Sign On 

▼ Wireless (WAN > Wireless)

Set Wireless configuration.


|               |   |
|---------------|---|
| WLAN Service  | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| ESSID         | <input type="text" value="wlan-ap"/>                                  |
| Channel ID    | <input type="text" value="Channel 1 (2.412 GHz)"/>                    |
| Security Mode | <input type="text" value="Disable"/>                                  |

Easy Sign On 

▼ Save configuration

**Saving configuration to FLASH. Please wait for 10 seconds**

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.

Easy Sign On 

▼ Process finished

**Success.**

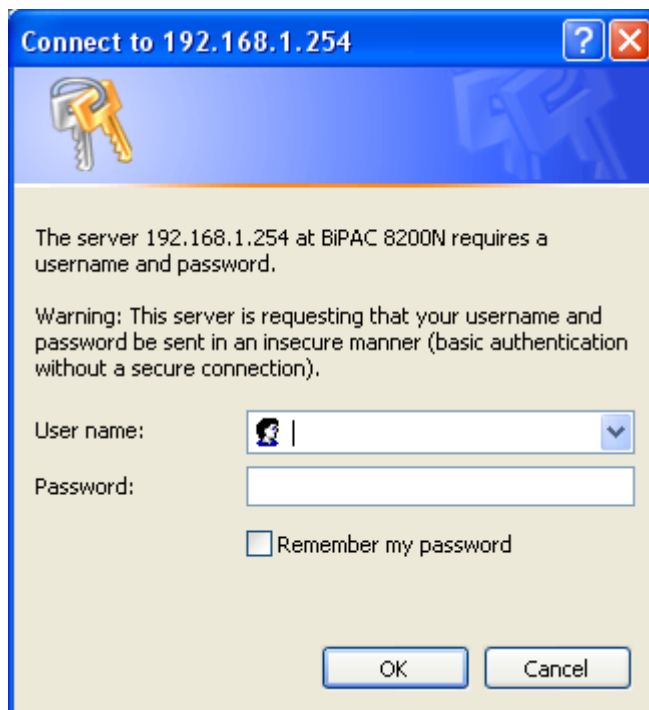
The Easy-Sign-On process is finished. Your device has been successfully configured.

You can now:

1. Log onto the router management interface for more advanced settings on <http://192.168.1.254/>
2. Continue to [tw.yahoo.com/](http://tw.yahoo.com/)

## 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.

### Status



| Device Information |             | Port Status |   |
|--------------------|-------------|-------------|---|
| Model Name         | BiPAC 8200N | Ethernet    | ✓ |
| System Up-Time     | 8 min(s)    | EWAN        | ✗ |
| Hardware Version   | Annex A     | VDSL        | ✓ |
| Software Version   | 1.00d       | Wireless ▶  | ✓ |

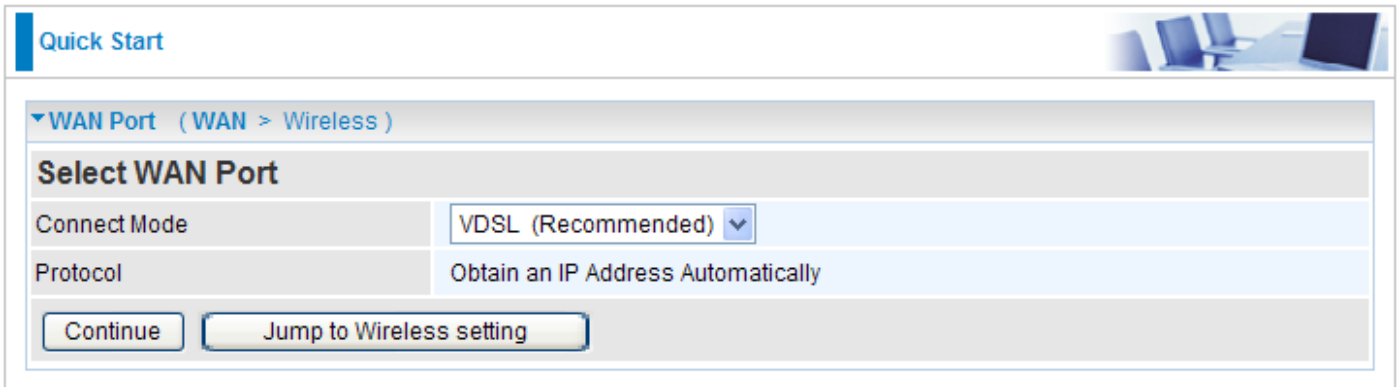
| WAN    |          |   |            |               |               |               |             |
|--------|----------|---|------------|---------------|---------------|---------------|-------------|
| Port ▶ | Protocol | Operation   | Connection | IP Address    | Netmask       | Gateway       | Primary DNS |
| VDSL   | Dynamic  | <input type="button" value="Renew"/> <input type="button" value="Release"/> |            | 192.168.17.21 | 255.255.255.0 | 192.168.17.70 | 168.95.1.1  |

# 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

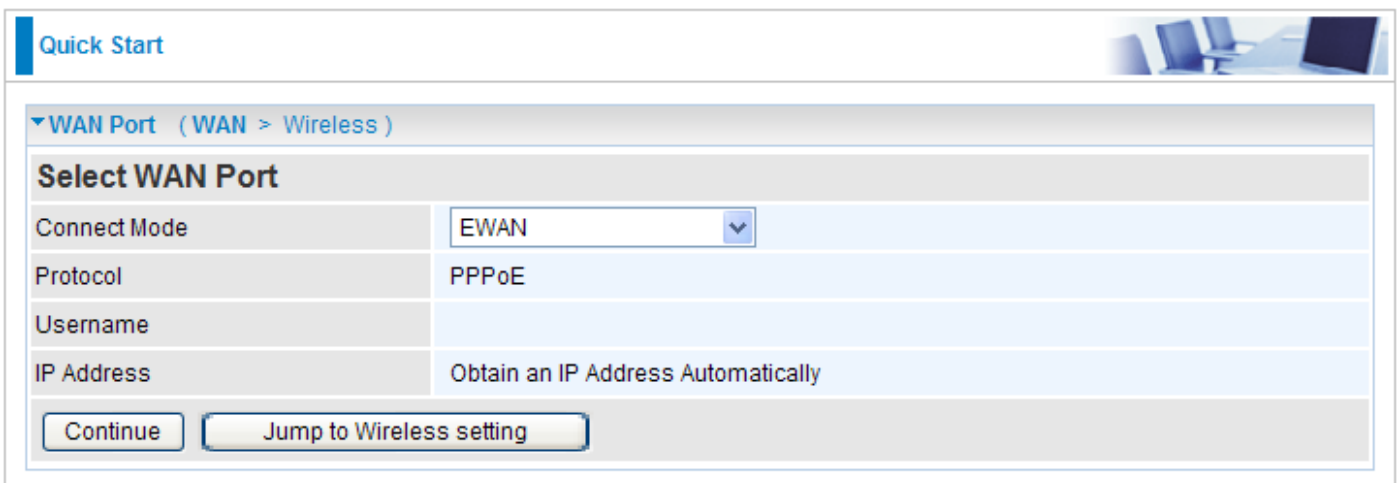


|   |   |
|---|---|
| Quick Start                             |   |
| WAN Port (WAN > Wireless)               |   |
| <b>Select WAN Port</b>                  |   |
| Connect Mode                            | VDSL (Recommended) ▼                                    |
| Protocol                                | Obtain an IP Address Automatically                      |
| <input type="button" value="Continue"/> | <input type="button" value="Jump to Wireless setting"/> |

**Connect mode:** VDSL

**Protocol:** Shows the current protocol in the device.

## EWAN Mode



|   |   |
|---|---|
| Quick Start                             |   |
| WAN Port (WAN > Wireless)               |   |
| <b>Select WAN Port</b>                  |   |
| Connect Mode                            | EWAN ▼  |
| Protocol                                | PPPoE   |
| Username                                |   |
| IP Address                              | Obtain an IP Address Automatically                      |
| <input type="button" value="Continue"/> | <input type="button" value="Jump to Wireless setting"/> |

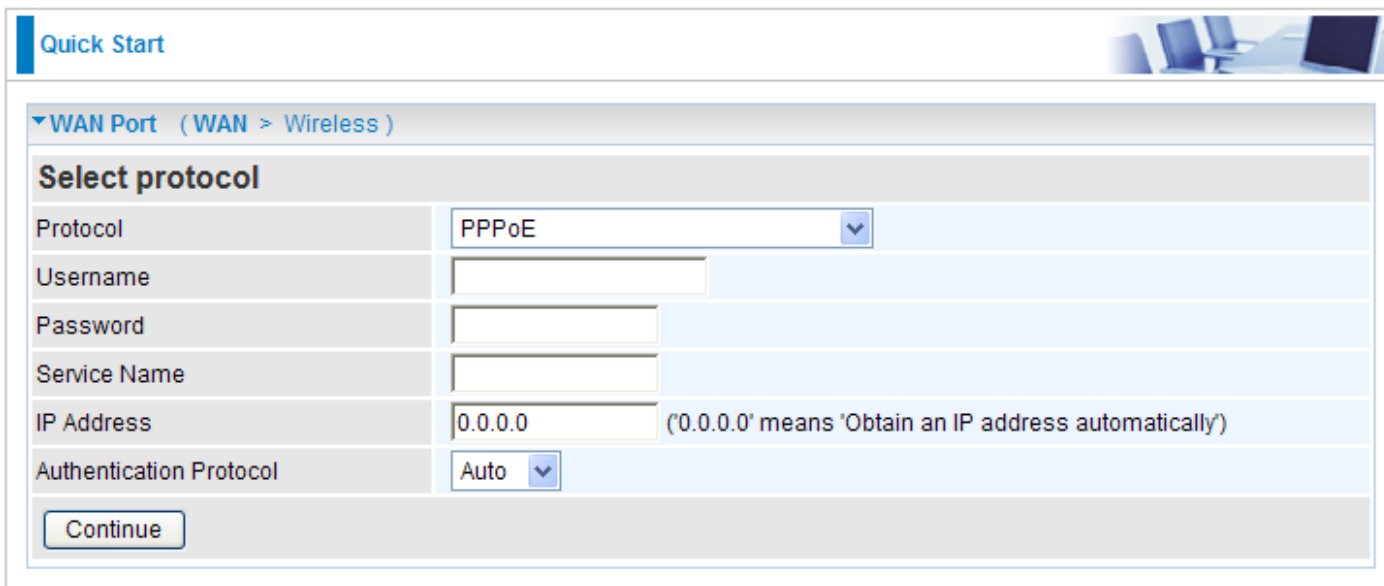
**Connect mode:** EWAN

**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.**



Quick Start

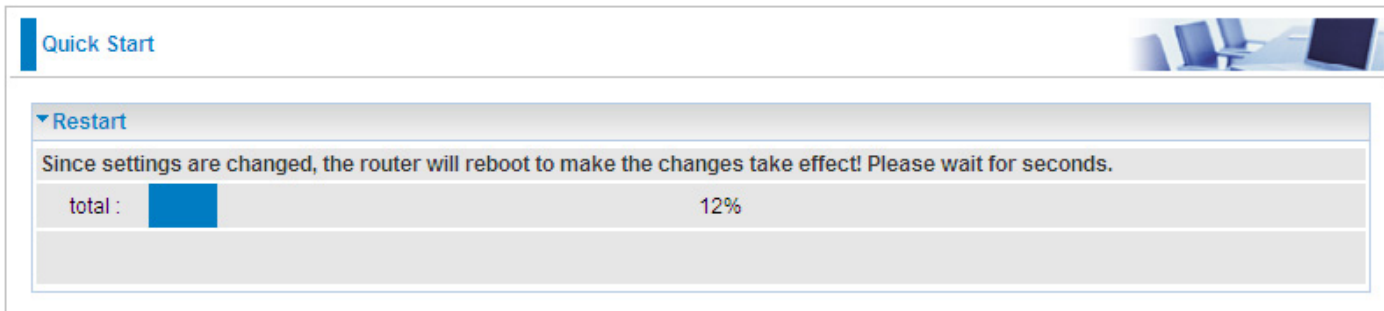
▼ WAN Port (WAN > Wireless)

### Select protocol

|                         |  |
|-------------------------|--|
| Protocol                | PPPoE  |
| Username                | <input type="text"/>   |
| Password                | <input type="password"/>                                       |
| Service Name            | <input type="text"/>   |
| IP Address              | 0.0.0.0 ('0.0.0.0' means 'Obtain an IP address automatically') |
| Authentication Protocol | Auto   |

Continue

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.

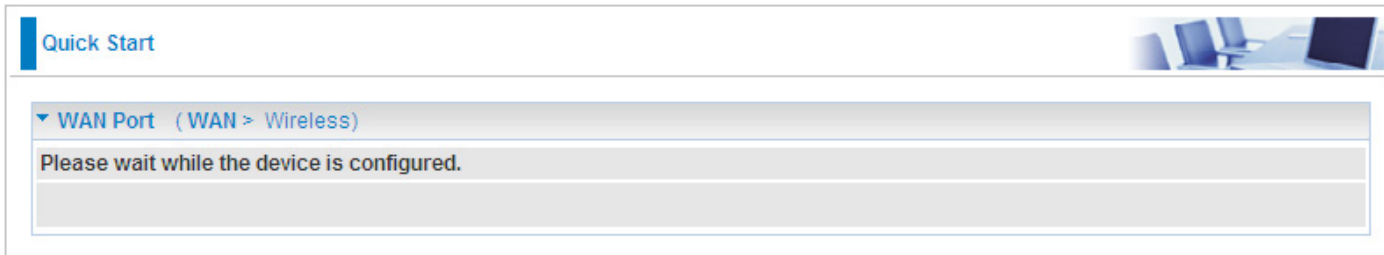


Quick Start

▼ Restart

Since settings are changed, the router will reboot to make the changes take effect! Please wait for seconds.

total :  12%



Quick Start

▼ WAN Port (WAN > Wireless)

Please wait while the device is configured.



Quick Start

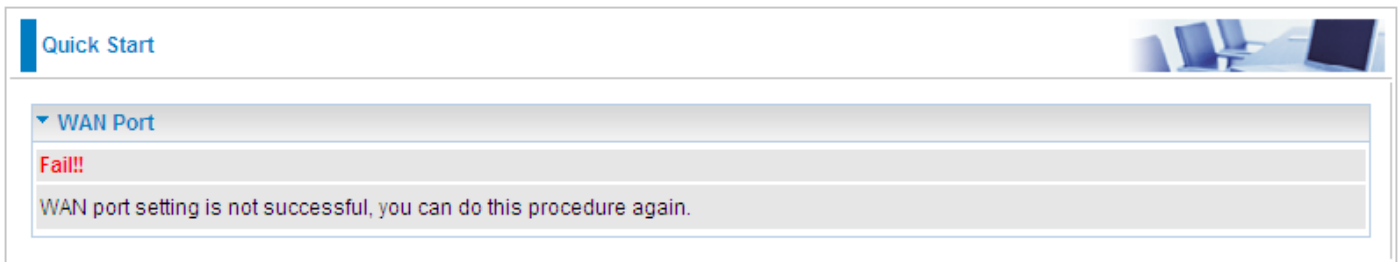
▼ WAN Port (WAN > Wireless)

### Congratulations !

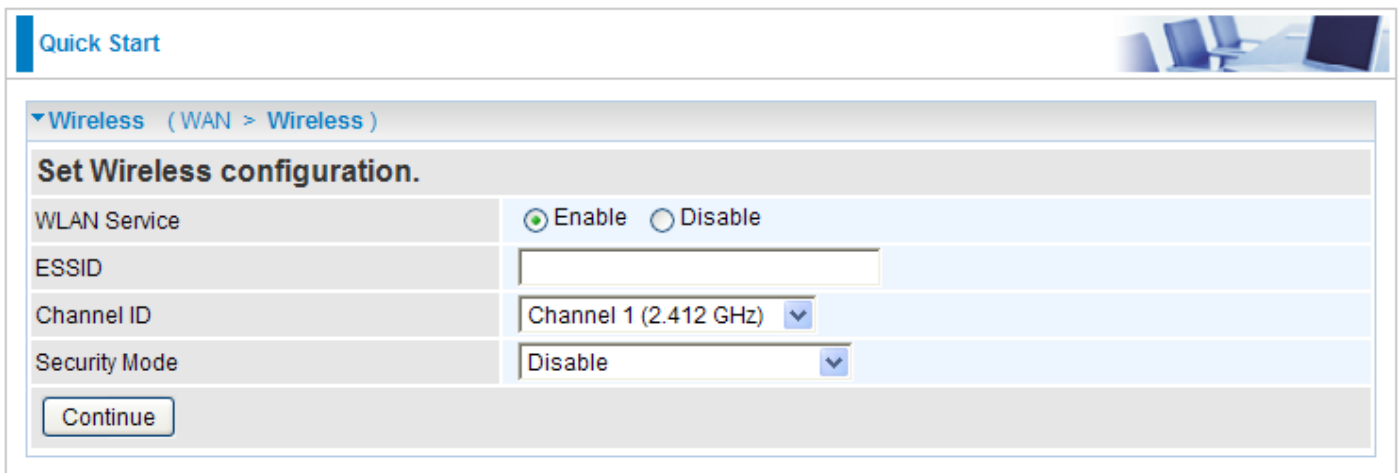
Your WAN port has been successfully configured.

Next to Wireless

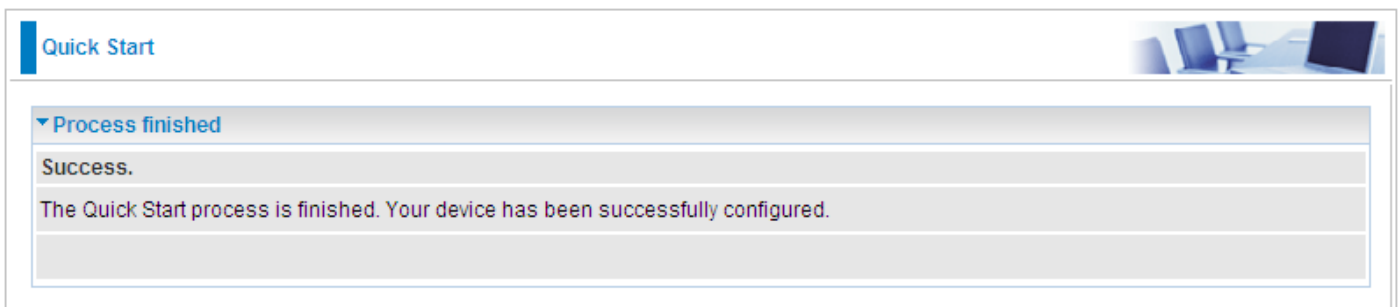
**Note: If the WAN line is not ready, a page will display as below and your new configuration can not be saved.**



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.





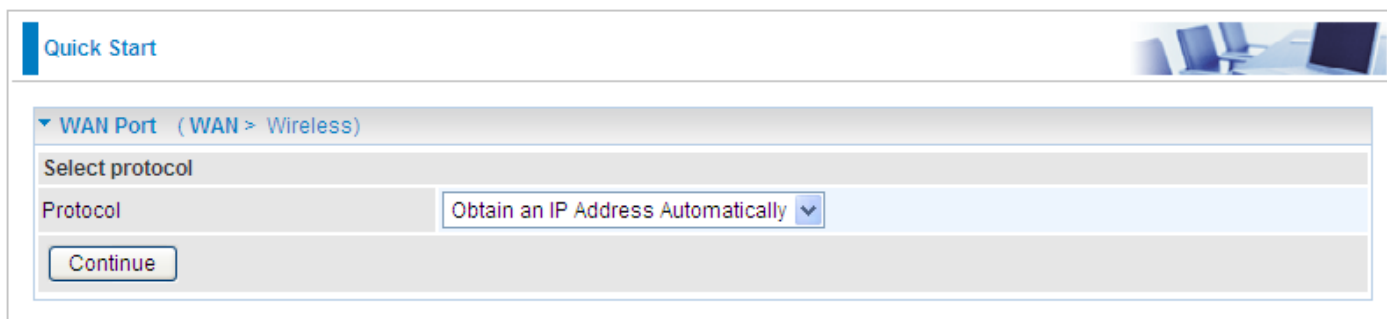
## WAN Connect Mode

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.

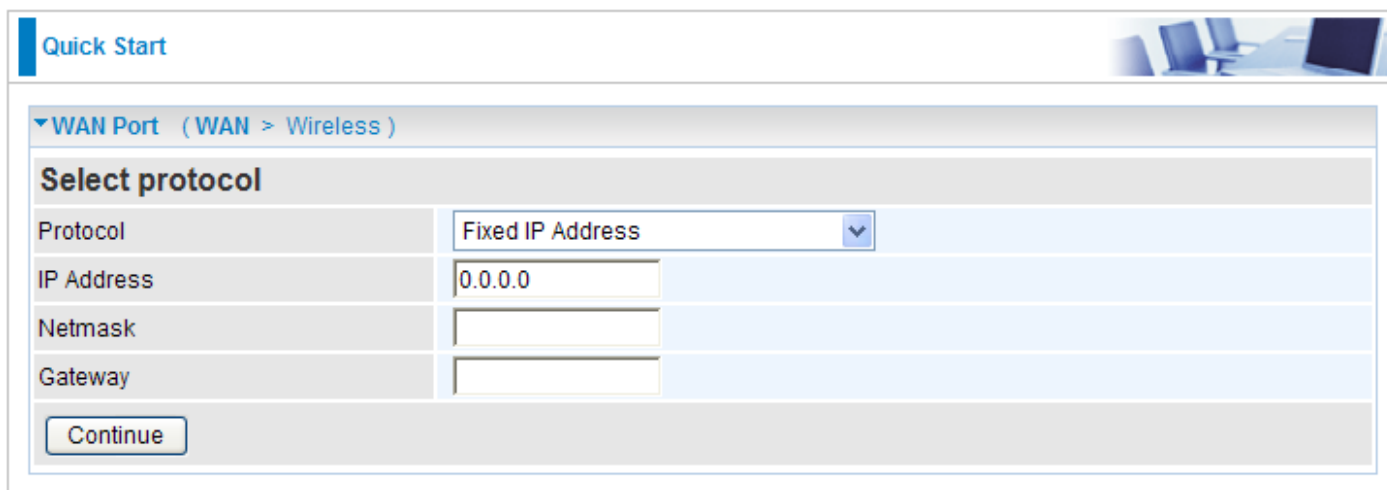
Select this protocol enables the device to automatically retrieve IP address.



The screenshot shows the 'Quick Start' section of the router's configuration interface. Under the 'WAN Port (WAN > Wireless)' heading, there is a 'Select protocol' section. The 'Protocol' dropdown menu is set to 'Obtain an IP Address Automatically'. A 'Continue' button is visible at the bottom of the form.

### Fixed IP Address

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



The screenshot shows the 'Quick Start' section of the router's configuration interface. Under the 'WAN Port (WAN > Wireless)' heading, there is a 'Select protocol' section. The 'Protocol' dropdown menu is set to 'Fixed IP Address'. Below this, there are three input fields: 'IP Address' (containing '0.0.0.0'), 'Netmask', and 'Gateway'. A 'Continue' button is visible at the bottom of the form.

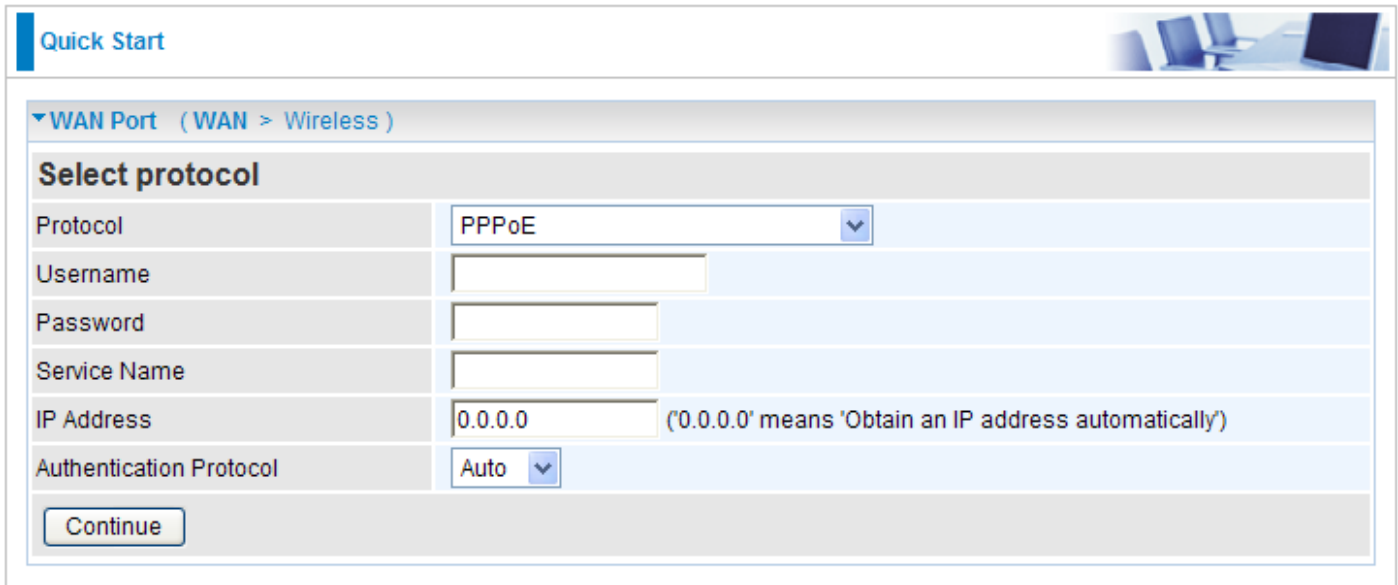
**IP Address:** Enter your fixed IP address. Each IP address entered must be in the appropriate IP form, which is four IP octets separated by a dot (x.x.x.x). The Router will not accept the IP address if it is not in this format. Leave the IP address as 0.0.0.0 to enable the device to automatically obtain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



The screenshot shows a web interface for configuring a WAN port. At the top left, there is a 'Quick Start' link. The main heading is 'WAN Port (WAN > Wireless)'. Below this, there is a section titled 'Select protocol'. The 'Protocol' dropdown menu is set to 'PPPoE'. Below the protocol selection, there are several input fields: 'Username', 'Password', 'Service Name', and 'IP Address'. The 'IP Address' field is currently set to '0.0.0.0', with a note next to it stating '('0.0.0.0' means 'Obtain an IP address automatically')'. The 'Authentication Protocol' dropdown menu is set to 'Auto'. At the bottom of the form, there is a 'Continue' button.

**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”.

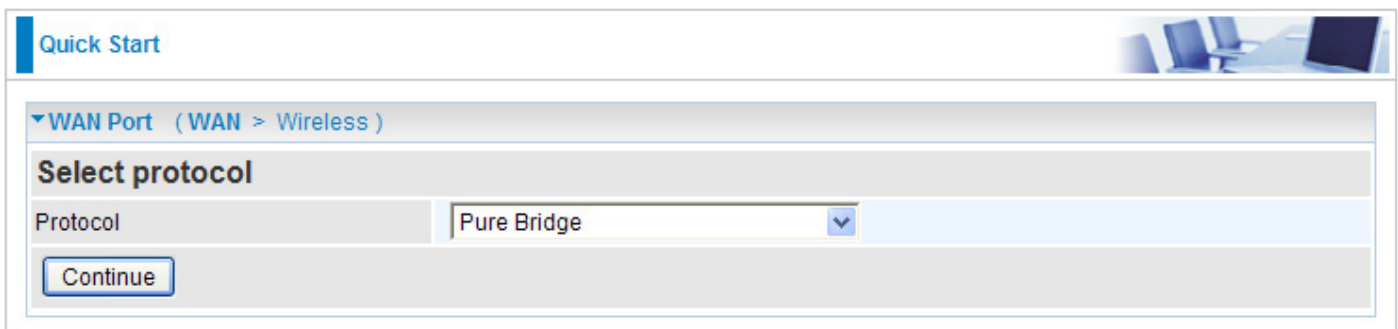
**Password:** Enter the password provided by your ISP. You can input up to 32 alphanumeric characters (case sensitive).

**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



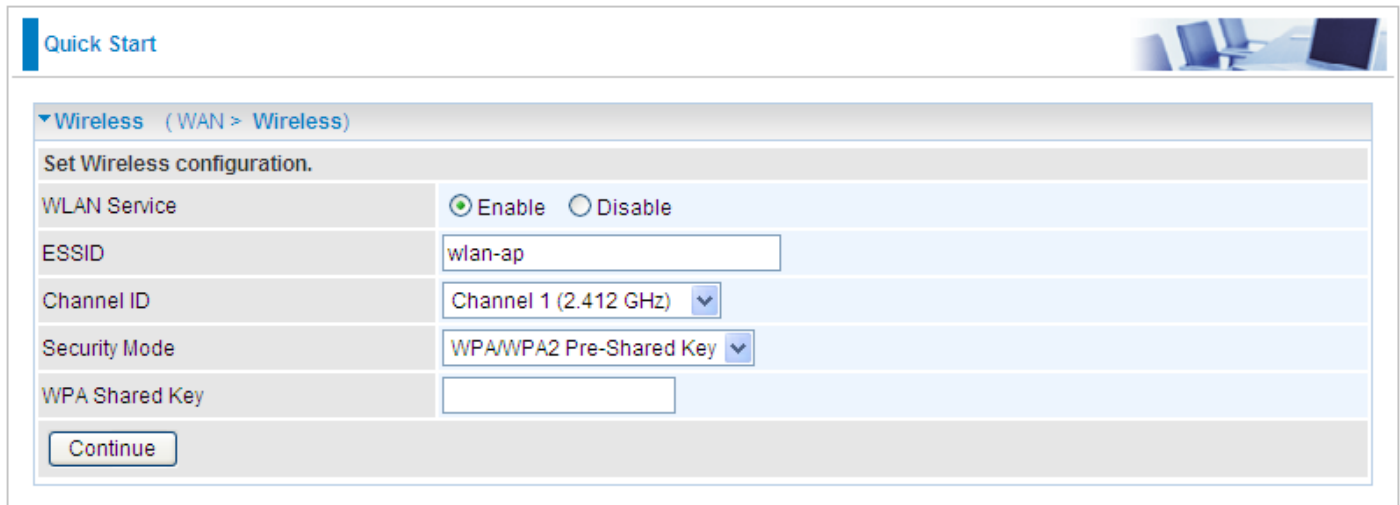
The screenshot shows a web interface for configuring a WAN port. At the top left, there is a 'Quick Start' link. The main heading is 'WAN Port (WAN > Wireless)'. Below this, there is a section titled 'Select protocol'. The 'Protocol' dropdown menu is set to 'Pure Bridge'. At the bottom of the form, there is a 'Continue' button.

## 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.



Quick Start

▼ Wireless (WAN > Wireless)

Set Wireless configuration.

|                |   |
|----------------|---|
| WLAN Service   | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| ESSID          | <input type="text" value="wlan-ap"/>                                  |
| Channel ID     | <input type="text" value="Channel 1 (2.412 GHz)"/>                    |
| Security Mode  | <input type="text" value="WPA/WPA2 Pre-Shared Key"/>                  |
| WPA Shared Key | <input type="text"/>  |

**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.

Quick Start

▼ Wireless (WAN > Wireless)

**Set Wireless configuration.**

|                      |  |
|----------------------|--|
| WLAN Service         | <input checked="" type="radio"/> Enable <input type="radio"/> Disable                                      |
| ESSID                | <input type="text" value="wlan-ap"/>   |
| Channel ID           | <input type="text" value="Channel 1 (2.412 GHz)"/> ▼   |
| Security Mode        | <input type="text" value="WEP"/> ▼   |
| Default Used WEP Key | <input checked="" type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 |
| Key                  | <input type="text"/>   |

WEP 64 - Hex: 10 Hex codes, (0~9, a~f, A~F). EX: 11aa22cc33.  
 WEP 64 - ASCII: 5 ASCII characters are required. Insert your WEP key manually. EX: 1a3eb.  
 WEP 128 - Hex: 26 Hex codes, (0~9, a~f, A~F). EX: 11aa22cc33dd44ee55efffe35f.  
 WEP 128 - ASCII: 13 ASCII characters are required. Insert your WEP key manually. EX: 1a3e?l!dbd3ert.

**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

Status 

| Device Information |             | Port Status |   |
|--------------------|-------------|-------------|---|
| Model Name         | BIPAC 8200N | Ethernet    | ✓ |
| System Up-Time     | 8 min(s)    | EWAN        | ✗ |
| Hardware Version   | Annex A     | VDSL        | ✓ |
| Software Version   | 1.00d       | Wireless ▶  | ✓ |

| WAN    |          |   |            |               |               |               |             |
|--------|----------|---|------------|---------------|---------------|---------------|-------------|
| Port ▶ | Protocol | Operation   | Connection | IP Address    | Netmask       | Gateway       | Primary DNS |
| VDSL   | Dynamic  | <input type="button" value="Renew"/> <input type="button" value="Release"/> |            | 192.168.17.21 | 255.255.255.0 | 192.168.17.70 | 168.95.1.1  |

### 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.

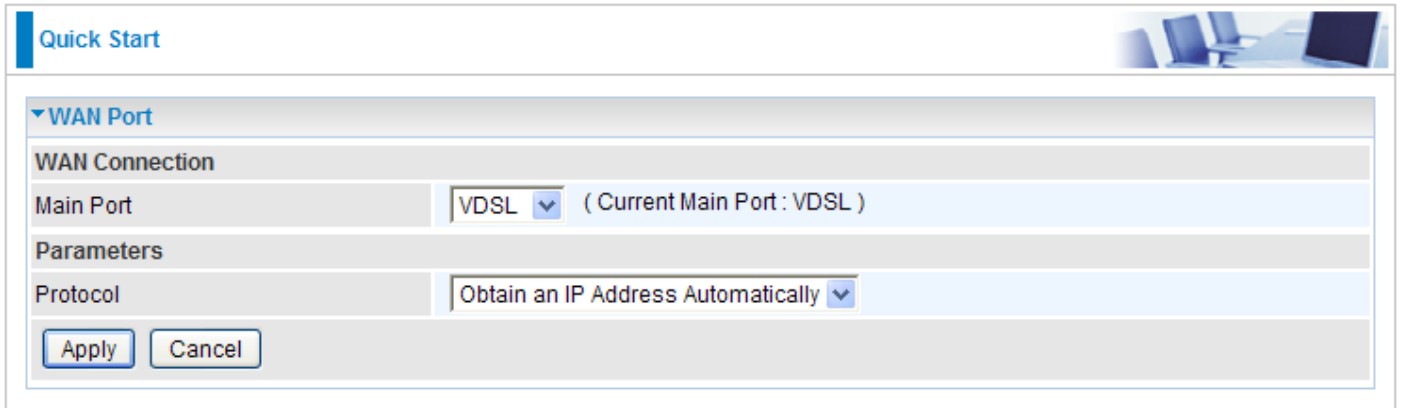
**Primary DNS:** IP address of the primary DNS server.

## 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.



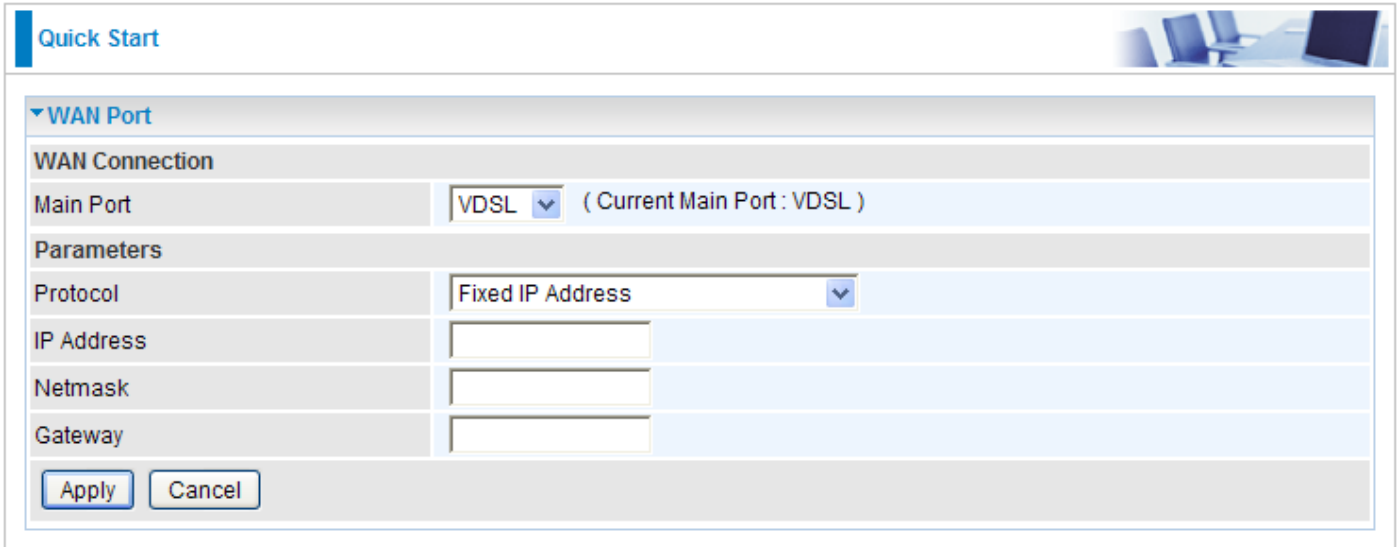
The screenshot shows a configuration window titled "Quick Start" with a "WAN Port" section. Under "WAN Connection", the "Main Port" is set to "VDSL" with a dropdown arrow and the text "( Current Main Port : VDSL )". Under "Parameters", the "Protocol" is set to "Obtain an IP Address Automatically" with a dropdown arrow. At the bottom, there are "Apply" and "Cancel" buttons.

**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.



The screenshot shows a web-based configuration interface for a WAN Port. At the top left, there is a 'Quick Start' tab. Below it, the 'WAN Port' section is expanded. Under 'WAN Connection', the 'Main Port' is set to 'VDSL' with a dropdown arrow and the text '( Current Main Port : VDSL )'. Below this is the 'Parameters' section, which includes a 'Protocol' dropdown menu set to 'Fixed IP Address'. There are three empty text input fields for 'IP Address', 'Netmask', and 'Gateway'. At the bottom of the form, there are two buttons: 'Apply' and 'Cancel'.

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

**IP Address:** Enter your fixed IP address.

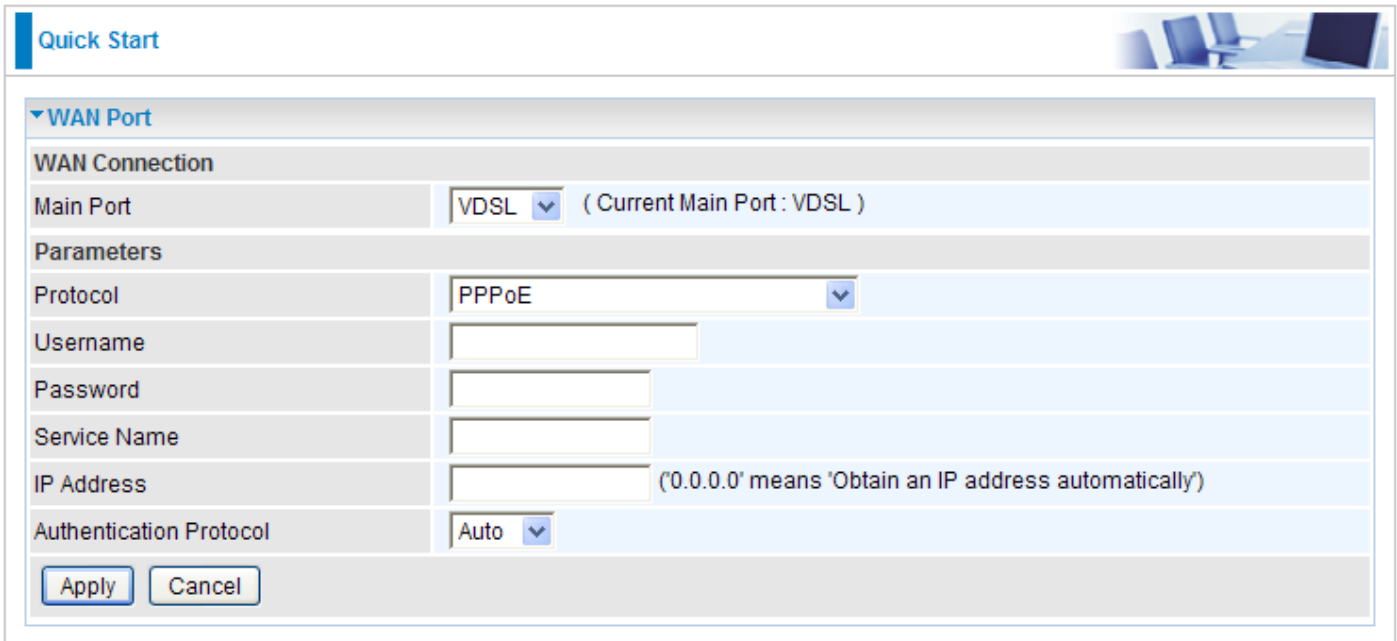
**Netmask:** User can change it to others such as 255.255.255.128. Type the netmask assigned to you by your ISP (if given).

**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.



The screenshot shows a 'Quick Start' window for configuring a WAN Port. The 'WAN Connection' section is expanded, showing the 'Main Port' set to 'VDSL' (Current Main Port: VDSL). Under the 'Parameters' section, the 'Protocol' is set to 'PPPoE'. The 'Username', 'Password', and 'Service Name' fields are empty. The 'IP Address' field is empty, with a note that '(0.0.0.0' means 'Obtain an IP address automatically)'. The 'Authentication Protocol' is set to 'Auto'. At the bottom, there are 'Apply' and 'Cancel' buttons.

**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.

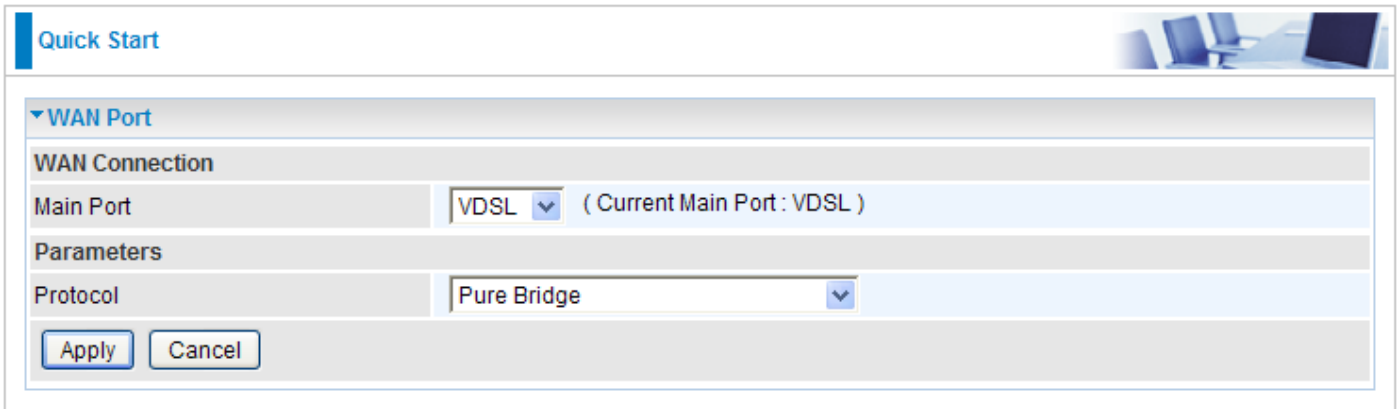
**IP Address:** Enter your WAN IP address. Leave the IP address empty or enter 0.0.0.0 to enable the device to automatically obtain an IP address from your ISP.

**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)



The screenshot shows a configuration window titled "Quick Start" with a "WAN Port" section. Under "WAN Connection", the "Main Port" is set to "VDSL" (Current Main Port: VDSL). Under "Parameters", the "Protocol" is set to "Pure Bridge". There are "Apply" and "Cancel" buttons at the bottom.

| WAN Port       |                                   |
|----------------|-----------------------------------|
| WAN Connection |                                   |
| Main Port      | VDSL ( Current Main Port : VDSL ) |
| Parameters     |                                   |
| Protocol       | Pure Bridge                       |
| Apply Cancel   |                                   |

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

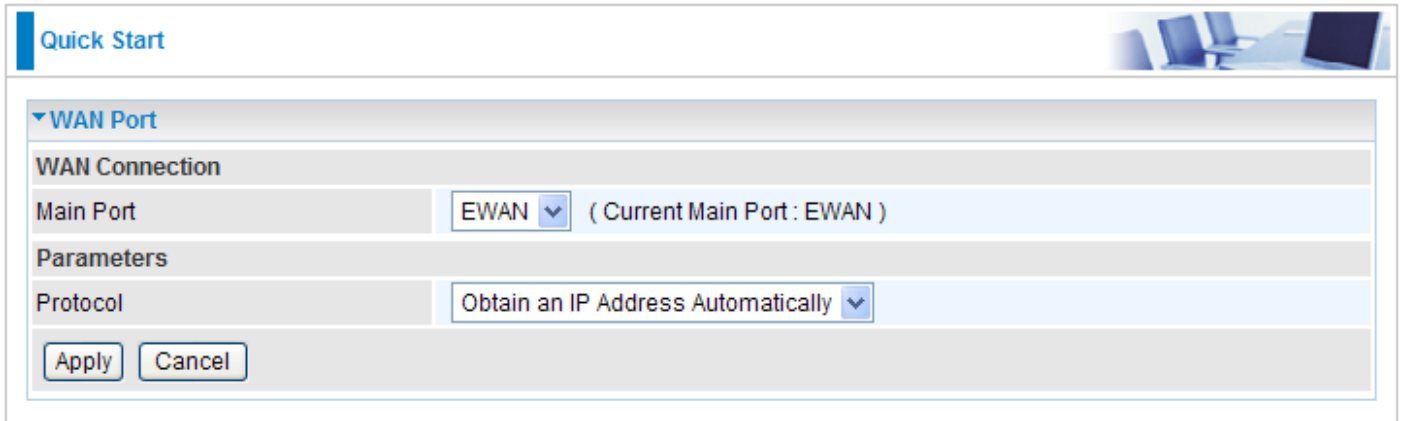
Click Apply to confirm the change.

## 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.



The screenshot shows a configuration window titled "Quick Start" with a "WAN Port" section. Under "WAN Connection", the "Main Port" is set to "EWAN" (Current Main Port: EWAN). Under "Parameters", the "Protocol" is set to "Obtain an IP Address Automatically". There are "Apply" and "Cancel" buttons at the bottom.

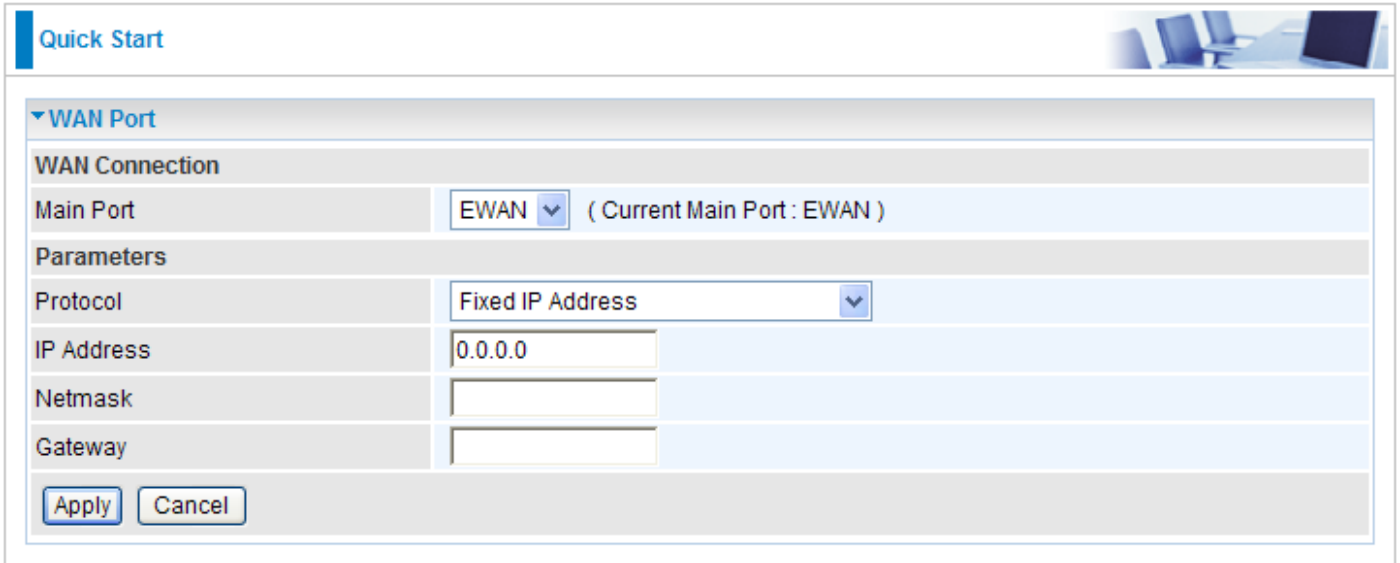
| WAN Port   |                                    |
|--|------------------------------------|
| WAN Connection   |                                    |
| Main Port  | EWAN ( Current Main Port : EWAN )  |
| Parameters   |                                    |
| Protocol   | Obtain an IP Address Automatically |
| <input type="button" value="Apply"/> <input type="button" value="Cancel"/> |                                    |

**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.



The screenshot shows a network configuration window titled "Quick Start" in the top right corner. The main section is "WAN Port" with a dropdown arrow. Under "WAN Connection", the "Main Port" is set to "EWAN" with a dropdown arrow and the text "( Current Main Port : EWAN )". Below this is the "Parameters" section, which includes a "Protocol" dropdown set to "Fixed IP Address", an "IP Address" text box containing "0.0.0.0", an empty "Netmask" text box, and an empty "Gateway" text box. At the bottom left of the parameters section are "Apply" and "Cancel" buttons.

**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.

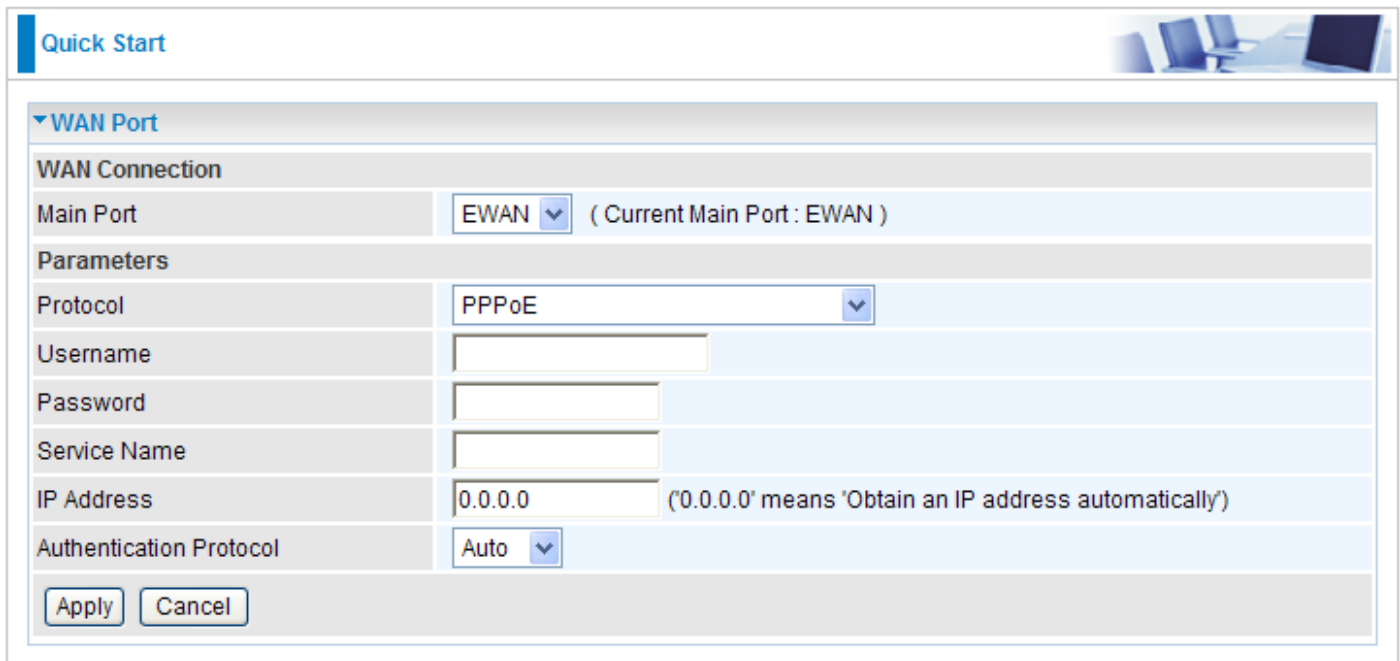
**Netmask:** User can change it to others such as 255.255.255.128. Type the netmask assigned to you by your ISP (if given).

**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.



The screenshot shows a web-based configuration interface for a WAN Port. At the top left, there is a 'Quick Start' tab. The main section is titled 'WAN Port' and contains a 'WAN Connection' section. Under 'WAN Connection', the 'Main Port' is set to 'EWAN' (Current Main Port: EWAN). Below this is a 'Parameters' section with the following fields: 'Protocol' is set to 'PPPoE'; 'Username', 'Password', and 'Service Name' are empty text boxes; 'IP Address' is set to '0.0.0.0' with a note that '(0.0.0.0) means 'Obtain an IP address automatically''; and 'Authentication Protocol' is set to 'Auto'. At the bottom of the form are 'Apply' and 'Cancel' buttons.

**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).

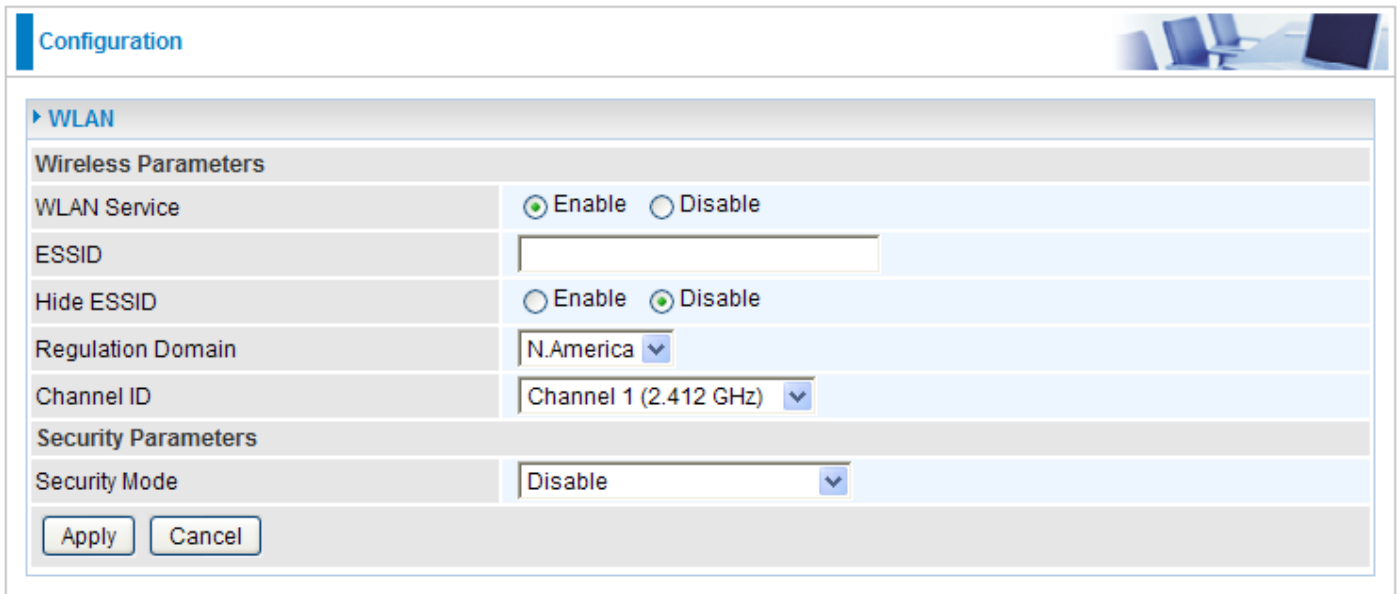
**Service Name:** This item is for identification purposes. If it is required, your ISP will provide you the necessary information. Maximum input is 32 alphanumeric characters.

**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



The screenshot shows a web-based configuration interface for WLAN. At the top, there is a 'Configuration' tab and a small image of a laptop and chair. Below this is a 'WLAN' section with a dropdown arrow. Underneath, there are two main sections: 'Wireless Parameters' and 'Security Parameters'. In the 'Wireless Parameters' section, 'WLAN Service' is set to 'Enable' (radio button selected), 'ESSID' is an empty text field, 'Hide ESSID' is set to 'Disable' (radio button selected), 'Regulation Domain' is set to 'N.America' (dropdown menu), and 'Channel ID' is set to 'Channel 1 (2.412 GHz)' (dropdown menu). In the 'Security Parameters' section, 'Security Mode' is set to 'Disable' (dropdown menu). At the bottom of the form, there are 'Apply' and 'Cancel' buttons.

## 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 Parameters |                           |
|---------------------|---------------------------|
| Security Mode       | WPA/WPA2 Pre-Shared Key ▾ |
| WPA Shared Key      | <input type="text"/>      |
| Group Key Renewal   | 3600 seconds              |

**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 Parameters       |  |
|---------------------------|--|
| Security Mode             | WEP ▾  |
| WEP Authentication        | Shared Key ▾   |
| Default Used WEP Key      | <input checked="" type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 |
| Passphrase (Generate Key) | <input type="text"/> <input type="button" value="WEP64"/> <input type="button" value="WEP128"/>            |
| Key 1                     | Hex ▾ <input type="text"/>   |
| Key 2                     | Hex ▾ <input type="text"/>   |
| Key 3                     | Hex ▾ <input type="text"/>   |
| Key 4                     | Hex ▾ <input type="text"/>   |

WEP 64 - Hex: 10 Hex codes, (0~9, a~f, A~F). EX: 11aa22cc33.  
WEP 64 - ASCII: 5 ASCII characters are required. Insert your WEP key manually. EX: 1a3eb.  
WEP 128 - Hex: 26 Hex codes, (0~9, a~f, A~F). EX: 11aa22cc33dd44ee55effe35f.  
WEP 128 - ASCII: 13 ASCII characters are required. Insert your WEP key manually. EX: 1a3e?!dbd3ert.

**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

### Status



#### Device Information

|                  |                         |
|------------------|-------------------------|
| Model Name       | BiPAC 8200N             |
| Host Name ▶      | home.gateway            |
| System Up-Time   | 8 min(s)                |
| Current Time ▶   | Sat Jan 1 00:08:29 2000 |
| Hardware Version | Annex A                 |
| Software Version | 1.00d                   |
| MAC Address      | 00:04:ed:12:4b:f0       |

#### Port Status

|            |   |                      |
|------------|---|----------------------|
| Ethernet   | ✓ |                      |
| EWAN       | ✗ |                      |
| VDSL ▶     | ✓ | 131072 / 172920 kbps |
| Wireless ▶ | ✓ |                      |

#### WAN

| Port ▶ | Protocol | Operation   | Connection | IP Address    | Netmask       | Gateway       | Primary DNS |
|--------|----------|---|------------|---------------|---------------|---------------|-------------|
| VDSL   | Dynamic  | <input type="button" value="Renew"/> <input type="button" value="Release"/> |            | 192.168.17.21 | 255.255.255.0 | 192.168.17.70 | 168.95.1.1  |

### 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 information for VDSL connection.

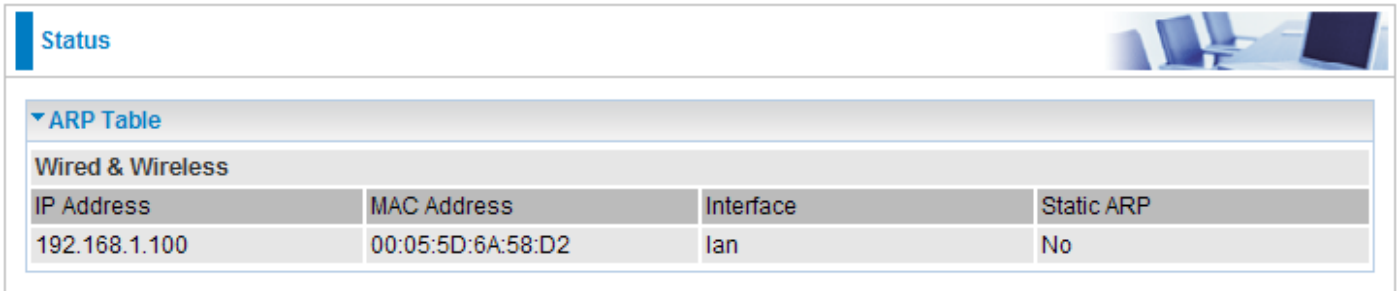
Status

**▼ 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           |

## 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.



| Status           |                   |           |            |
|------------------|-------------------|-----------|------------|
| ▼ ARP Table      |                   |           |            |
| Wired & Wireless |                   |           |            |
| IP Address       | MAC Address       | Interface | Static ARP |
| 192.168.1.100    | 00:05:5D:6A:58:D2 | lan       | No         |

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

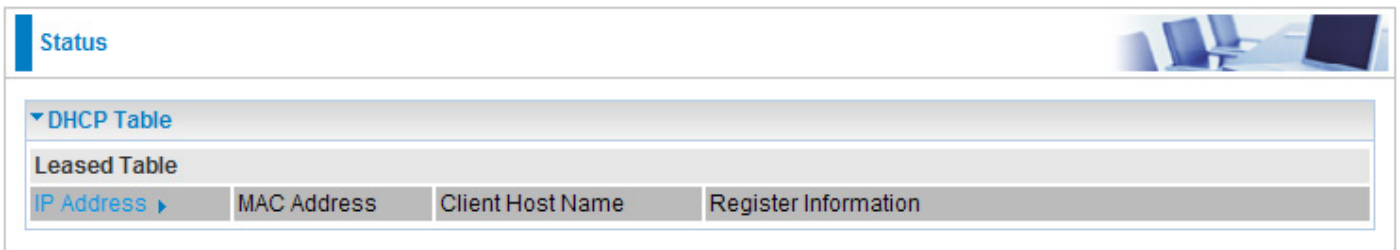
**MAC Address:** Shows the MAC address that is corresponded to the IP address of the device it is mapped to.

**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.



The screenshot shows a web-based interface for configuring network settings. At the top, there is a 'Status' tab. Below it, a 'DHCP Table' section is expanded, showing a 'Leased Table' with the following columns: 'IP Address', 'MAC Address', 'Client Host Name', and 'Register Information'. The 'IP Address' column has a small blue arrow pointing to the right.

| IP Address | MAC Address | Client Host Name | Register Information |
|------------|-------------|------------------|----------------------|
|------------|-------------|------------------|----------------------|

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

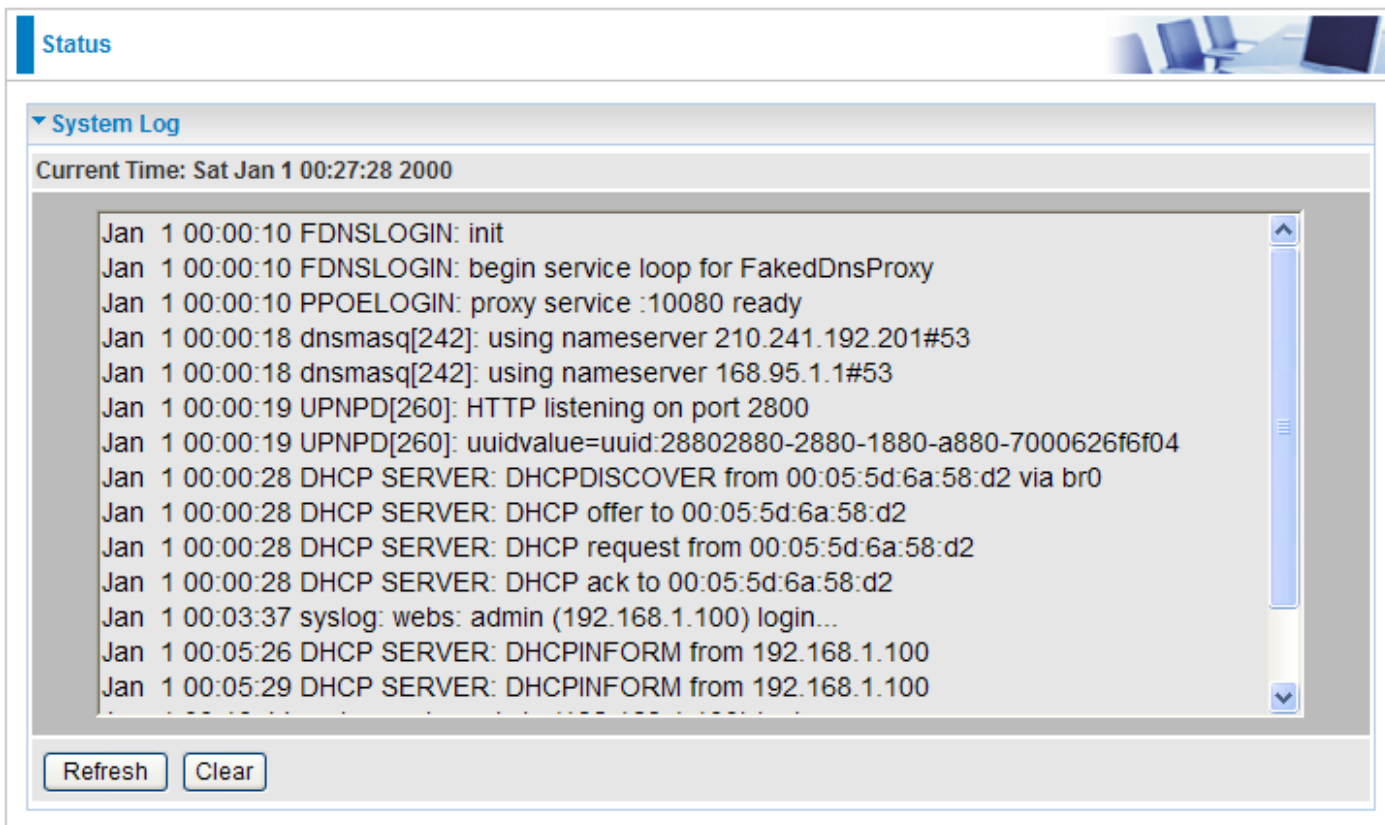
**MAC Address:** The MAC Address of internal dhcp client host.

**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.



The screenshot shows a web interface with a 'Status' header and a 'System Log' section. The current time is 'Sat Jan 1 00:27:28 2000'. The log entries are as follows:

```
Jan 1 00:00:10 FDNSLOGIN: init
Jan 1 00:00:10 FDNSLOGIN: begin service loop for FakedDnsProxy
Jan 1 00:00:10 PPOELOGIN: proxy service :10080 ready
Jan 1 00:00:18 dnsmasq[242]: using nameserver 210.241.192.201#53
Jan 1 00:00:18 dnsmasq[242]: using nameserver 168.95.1.1#53
Jan 1 00:00:19 UPNPD[260]: HTTP listening on port 2800
Jan 1 00:00:19 UPNPD[260]: uuidvalue=uuid:28802880-2880-1880-a880-7000626f6f04
Jan 1 00:00:28 DHCP SERVER: DHCPDISCOVER from 00:05:5d:6a:58:d2 via br0
Jan 1 00:00:28 DHCP SERVER: DHCP offer to 00:05:5d:6a:58:d2
Jan 1 00:00:28 DHCP SERVER: DHCP request from 00:05:5d:6a:58:d2
Jan 1 00:00:28 DHCP SERVER: DHCP ack to 00:05:5d:6a:58:d2
Jan 1 00:03:37 syslog: webs: admin (192.168.1.100) login...
Jan 1 00:05:26 DHCP SERVER: DHCPINFORM from 192.168.1.100
Jan 1 00:05:29 DHCP SERVER: DHCPINFORM from 192.168.1.100
```

At the bottom of the log area, there are two buttons: 'Refresh' and 'Clear'.

**Refresh:** Click to update the system log.

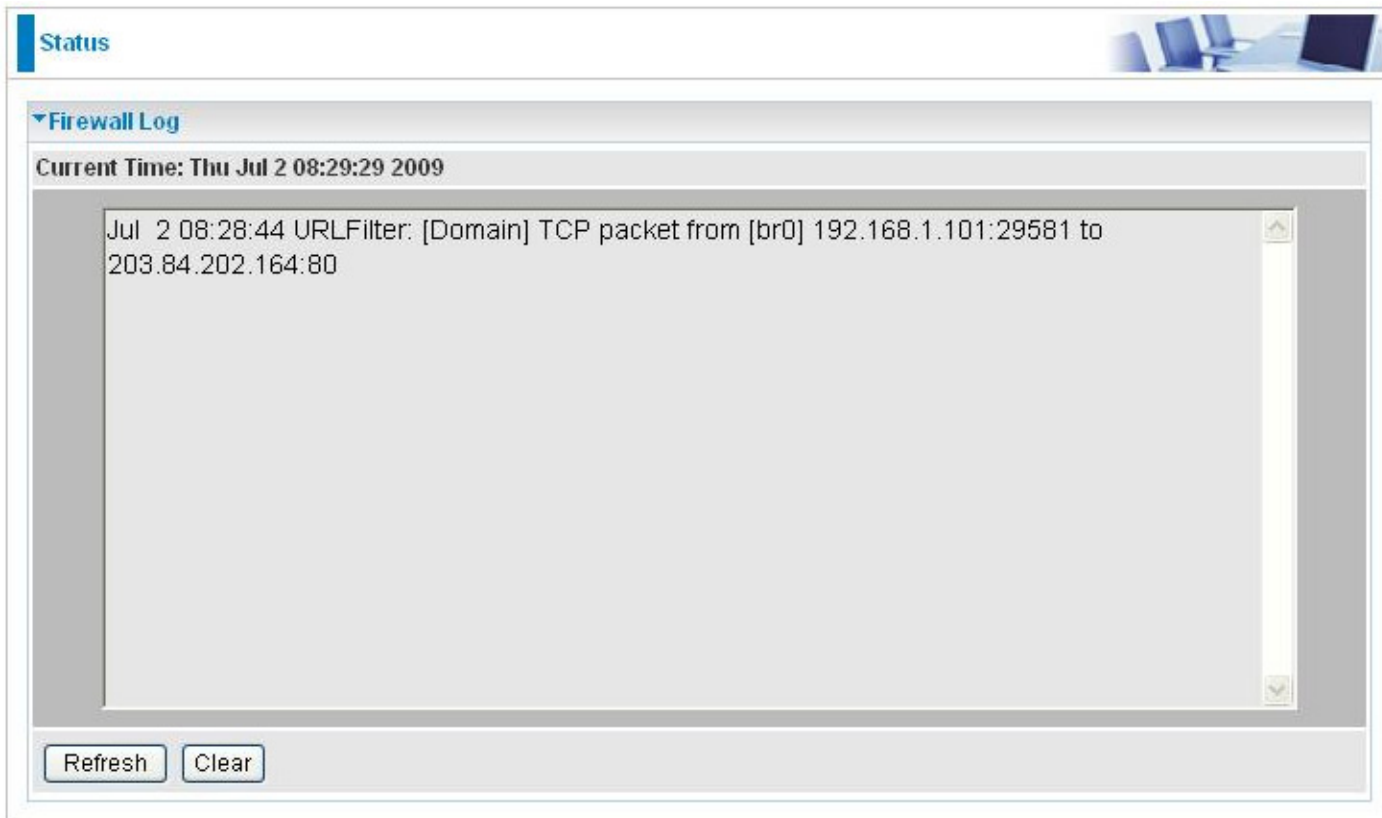
**Clear:** Click to clear the current log from the screen.



The screenshot shows the same web interface as above, but the log area is now empty. The current time is 'Sat Jan 1 00:27:48 2000'. The 'Refresh' and 'Clear' buttons are still present at the bottom.

# Firewall Log

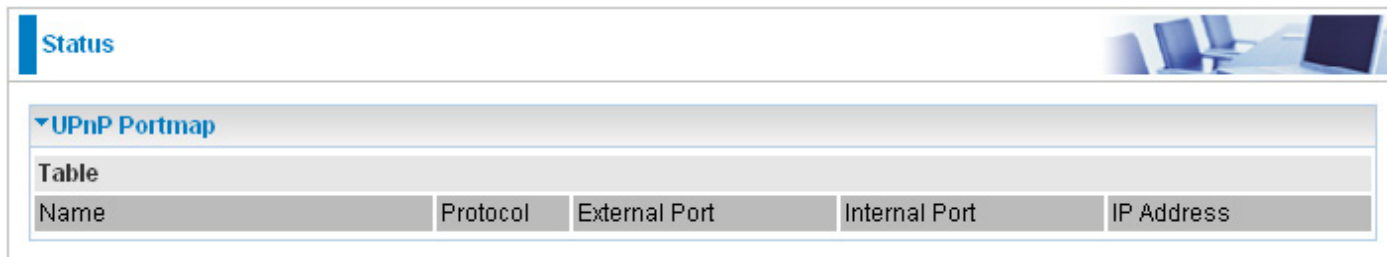
Firewall Log displays the log information of any unexpected events that occurs to your firewall settings. This page displays the router Firewall Log entries which have been recorded when you have enabled Intrusion Detection or Block WAN PING in the Configuration – Firewall section of the interface. Please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



The screenshot shows a web interface for the Firewall Log. At the top left, there is a 'Status' tab. Below it, the 'Firewall Log' section is expanded, showing the current time as 'Thu Jul 2 08:29:29 2009'. A log entry is displayed in a scrollable area: 'Jul 2 08:28:44 URLFilter: [Domain] TCP packet from [br0] 192.168.1.101:29581 to 203.84.202.164:80'. At the bottom of the log area, there are two buttons: 'Refresh' and 'Clear'.

## UPnP Portmap

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



The screenshot shows a web-based configuration interface. At the top left, there is a blue bar with the word "Status" in white. To the right of this bar is a small image of a computer desk. Below the status bar is a section titled "UPnP Portmap" with a downward-pointing arrow. Underneath this title is a table with the following columns: Name, Protocol, External Port, Internal Port, and IP Address. The table is currently empty.

| Name | Protocol | External Port | Internal Port | IP Address |
|------|----------|---------------|---------------|------------|
|------|----------|---------------|---------------|------------|

**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.

|                  |
|------------------|
| ▼ Configuration  |
| ▶ LAN            |
| ▶ WAN            |
| ▶ System         |
| ▶ Firewall       |
| ▪ QoS            |
| ▶ Virtual Server |
| ▪ Wake on LAN    |
| ▪ Time Schedule  |
| ▶ Advanced       |

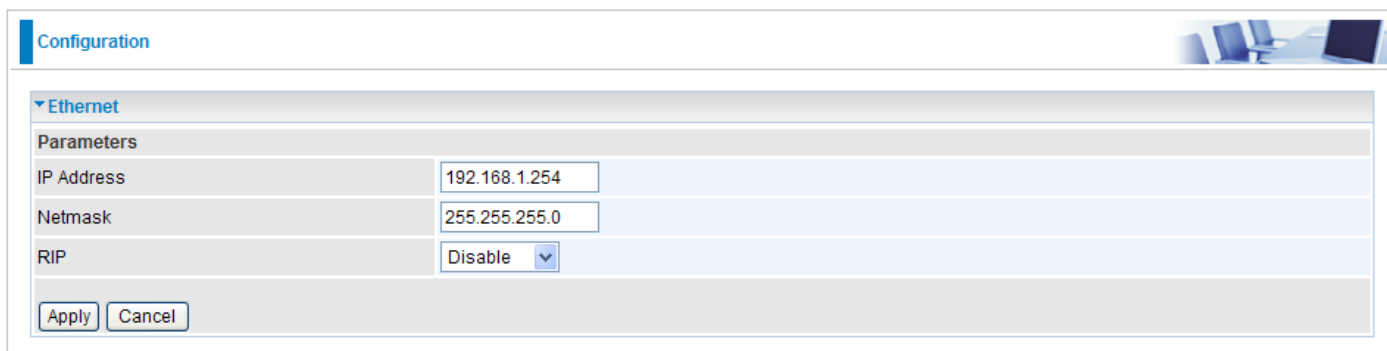
## LAN - Local Area Network

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.



Configuration

▼ Ethernet

Parameters

|            |               |
|------------|---------------|
| IP Address | 192.168.1.254 |
| Netmask    | 255.255.255.0 |
| RIP        | Disable ▼     |

Apply Cancel

**IP Address:** The default IP on this router.

**Netmask:** The default subnet mask on this router.

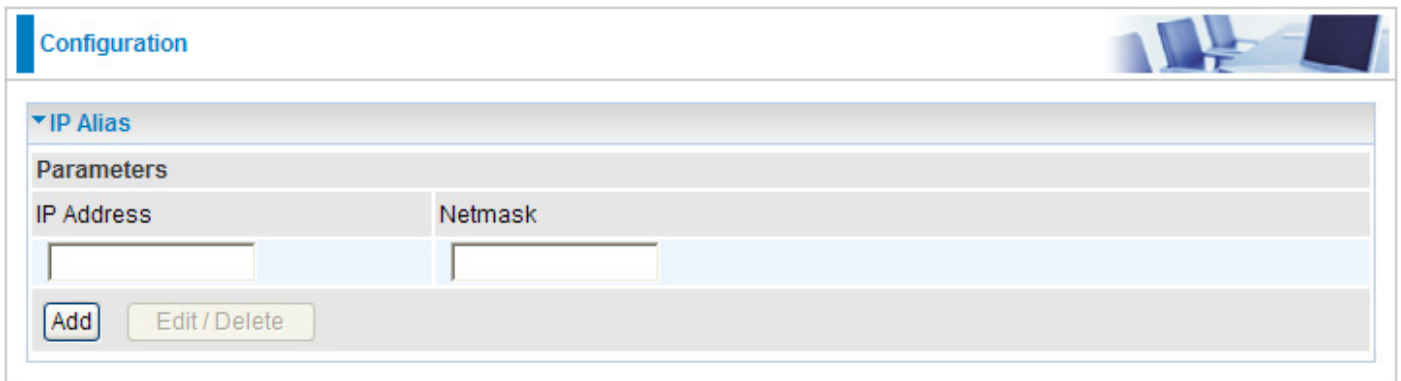
**RIP:** RIP v1, RIP v2 Broadcast, RIP v2 Multicast and RIP v1+v2 Broadcast. Check to enable RIP function.

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.



The screenshot shows a web-based configuration interface. At the top left, there is a blue header with the word "Configuration". To the right of the header is a small image of a computer workstation. Below the header, there is a section titled "IP Alias" with a downward-pointing arrow. Underneath this section is a "Parameters" label. Below the label, there are two input fields: "IP Address" and "Netmask". Each field has a text input box. At the bottom of the form, there are two buttons: "Add" and "Edit / Delete".

**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

**Configuration**

**Wireless**

**Parameters**

|                       |  |
|-----------------------|--|
| WLAN Service          | <input checked="" type="radio"/> Enable <input type="radio"/> Disable          |
| Mode                  | 802.11g + n  |
| Number of Active SSID | 1  |
| SSID No.              | <input checked="" type="radio"/> SSID1   |
| ESSID                 | wlan-ap  |
| Hide ESSID            | <input type="radio"/> Enable <input checked="" type="radio"/> Disable          |
| Regulation Domain     | N.America  |
| Channel ID            | Channel 1 (2.412 GHz)  |
| Channel Width         | 20/40MHZ   |
| Tx PowerLevel         | 100 (0 ~ 100)  |
| AP MAC Address        | 00:04:ED:12:4B:F0  |
| AP Firmware Version   | Billion 1.1.1  |
| WPS Service           | <input type="radio"/> Enable <input checked="" type="radio"/> Disable          |
| WPS State             | <input type="radio"/> Configured <input checked="" type="radio"/> Unconfigured |
| WMM                   | <input type="radio"/> Enable <input checked="" type="radio"/> Disable          |

**Wireless Distribution System (WDS)**

|                      |  |
|----------------------|--|
| WDS Service          | <input type="radio"/> Enable <input checked="" type="radio"/> Disable                              |
| Peer WDS MAC address | 1. <input type="text"/> 2. <input type="text"/><br>3. <input type="text"/> 4. <input type="text"/> |

**\*\* WDS depends on the settings of main security encryption type. \*\***

[Security settings ▶](#)

## 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.

|                       |  |
|-----------------------|--|
| Number of Active SSID | 4  |
| SSID No.              | <input checked="" type="radio"/> SSID1 <input type="radio"/> SSID2 <input type="radio"/> SSID3 <input type="radio"/> SSID4 |

**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.

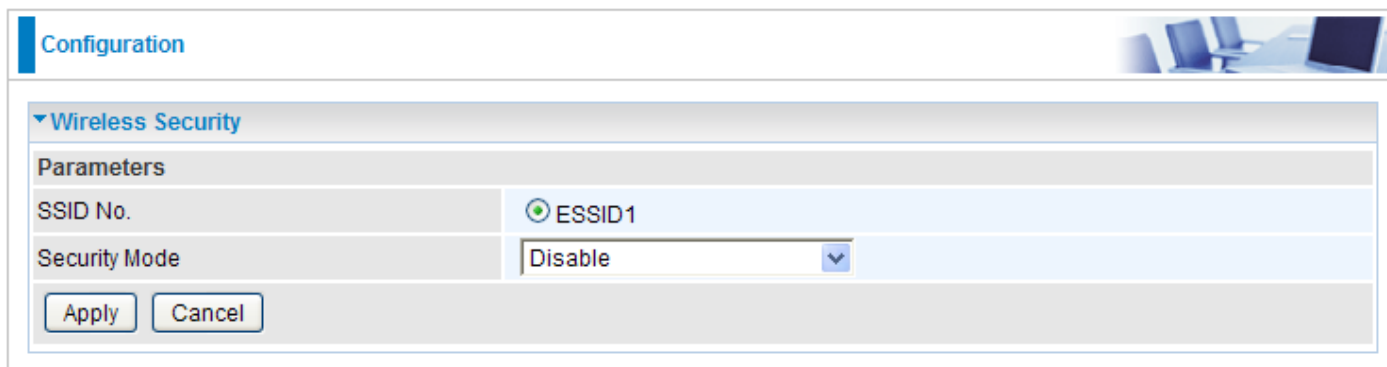
**Note:** For MAC Address, the format can be: *xx:xx:xx:xx:xx:xx* or *xx-xx-xx-xx-xx-xx*.

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.

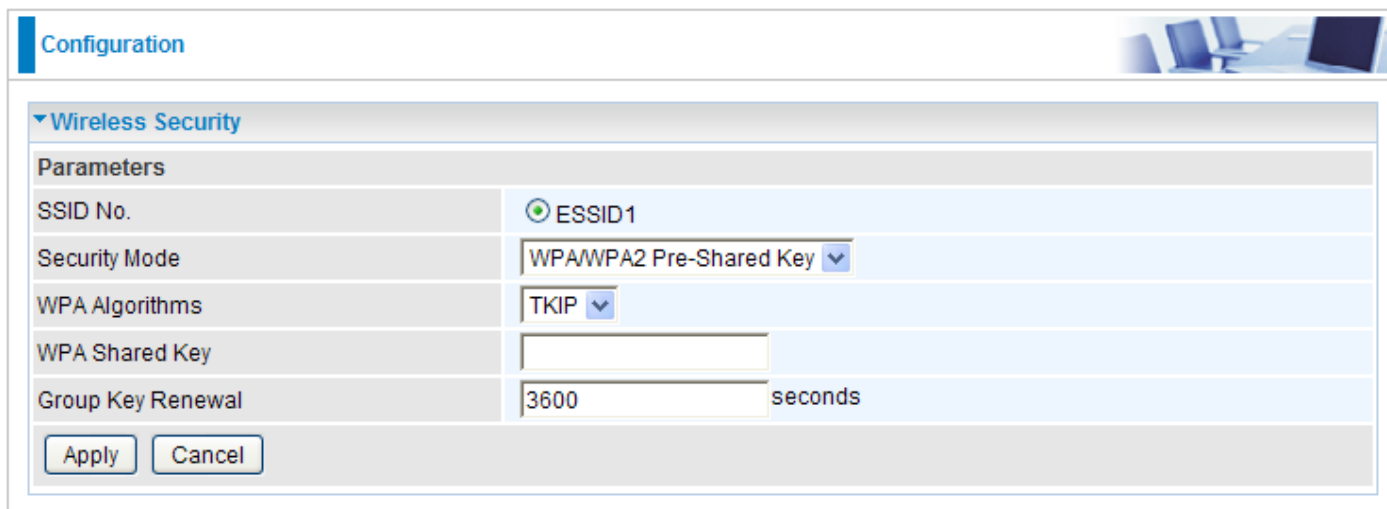


The screenshot shows a configuration window titled "Configuration" with a sub-section "Wireless Security". Under "Parameters", the "SSID No." is set to "ESSID1" and the "Security Mode" is set to "Disable". There are "Apply" and "Cancel" buttons at the bottom.

**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



The screenshot shows the same configuration window as above, but with "Security Mode" set to "WPA/WPA2 Pre-Shared Key". Additional settings are visible: "WPA Algorithms" is set to "TKIP", "WPA Shared Key" is an empty text field, and "Group Key Renewal" is set to "3600 seconds".

**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

Configuration 

▼ Wireless Security

Parameters

|                           |   |
|---------------------------|---|
| SSID No.                  | <input checked="" type="radio"/> ESSID1   |
| Security Mode             | WEP   |
| WEP Authentication        | Open System   |
| Default Used WEP Key      | <input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 |
| Passphrase (Generate Key) | <input type="text"/> <input type="button" value="WEP64"/> <input type="button" value="WEP128"/> |
| Key 1                     | Hex <input type="text"/>  |
| Key 2                     | Hex <input type="text"/>  |
| Key 3                     | Hex <input type="text"/>  |
| Key 4                     | Hex <input type="text"/>  |

WEP 64 - Hex: 10 Hex codes, (1~9, a~f, A~F). EX: 11aa22cc33.  
WEP 64 - ASCII: 5 ASCII characters are required. Insert your WEP key manually. EX: 1a3eb.  
WEP 128 - Hex: 26 Hex codes, (1~9, a~f, A~F). EX: 11aa22cc33dd44ee55efffe35f.  
WEP 128 - ASCII: 13 ASCII characters are required. Insert your WEP key manually. EX: 1a3e?!dbd3ert.

**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.**

Configuration 

▼ WPS

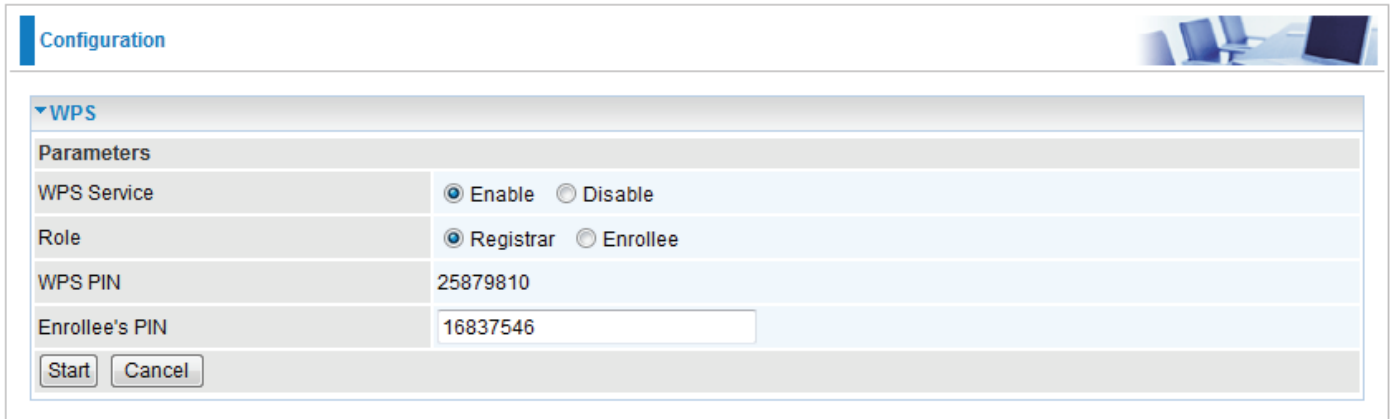
Parameters

|                |   |
|----------------|---|
| WPS Service    | <input type="radio"/> Enable <input checked="" type="radio"/> Disable     |
| Role           | <input checked="" type="radio"/> Registrar <input type="radio"/> Enrollee |
| WPS PIN        | 42776260  |
| Enrollee's PIN | <input type="text"/>  |

## Wi-Fi Network Setup

### PIN Method: Configure AP as Registrar

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

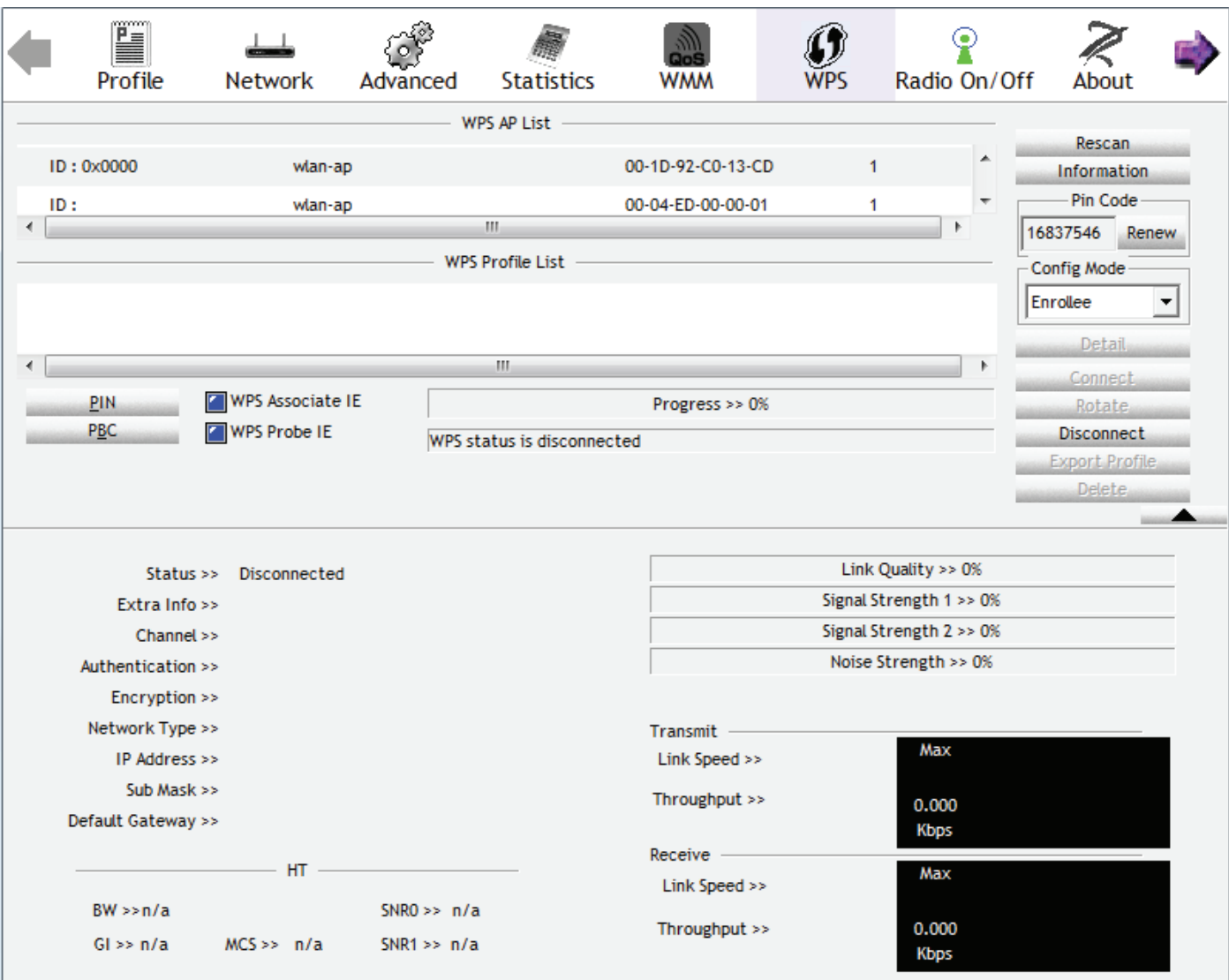


The screenshot shows the 'Configuration' page for WPS. Under the 'WPS' section, the 'Parameters' table is as follows:

| Parameters     |   |
|----------------|---|
| WPS Service    | <input checked="" type="radio"/> Enable <input type="radio"/> Disable     |
| Role           | <input checked="" type="radio"/> Registrar <input type="radio"/> Enrollee |
| WPS PIN        | 25879810  |
| Enrollee's PIN | <input type="text" value="16837546"/>                                     |

Buttons for 'Start' and 'Cancel' are located at the bottom left of the configuration area.

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.



The screenshot shows the WPS utility interface with the 'WPS' tab selected in the top navigation bar. The main area contains the following sections:

- WPS AP List:** A table with columns for ID, Name, MAC Address, and Count. Two entries are visible:

| ID     | Name    | MAC Address       | Count |
|--------|---------|-------------------|-------|
| 0x0000 | wlan-ap | 00-1D-92-C0-13-CD | 1     |
|        | wlan-ap | 00-04-ED-00-00-01 | 1     |
- WPS Profile List:** An empty table.
- Buttons:** PIN, PBC, WPS Associate IE (checked), WPS Probe IE (checked), Progress >> 0%, and WPS status is disconnected.
- Right Panel:** Rescan, Information, Pin Code (16837546, Renew), Config Mode (Enrollee), Detail, Connect, Rotate, Disconnect, Export Profile, Delete.
- Status & Performance:**
  - Status >> Disconnected
  - Link Quality >> 0%
  - Signal Strength 1 >> 0%
  - Signal Strength 2 >> 0%
  - Noise Strength >> 0%
  - Transmit: Link Speed >> Max, Throughput >> 0.000 Kbps
  - Receive: Link Speed >> Max, Throughput >> 0.000 Kbps
  - HT: BW >> n/a, SNR0 >> n/a, GI >> n/a, MCS >> n/a, SNR1 >> n/a



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

The screenshot displays the WPS configuration page for a wireless network. At the top, a navigation menu includes Profile, Network, Advanced, Statistics, WMM, WPS, Radio On/Off, and About. The WPS section is active, showing a 'WPS AP List' with two entries for 'wlan-ap' and their respective MAC addresses. Below this is the 'WPS Profile List' for 'wlan-ap', which includes checkboxes for 'WPS Associate IE' and 'WPS Probe IE', both of which are checked. A progress bar shows 'PIN - Get WPS profile successfully' at 100%. On the right side, there are several control buttons: Rescan, Information, Pin Code (16837546), Renew, Config Mode (Enrollee), Detail, Connect, Rotate, Disconnect, Export Profile, and Delete. The bottom section provides detailed status information for the 'wlan-ap' profile, including its MAC address, link status, channel, authentication, encryption, network type, IP address, and subnet mask. It also displays HT (High Throughput) parameters like BW, GI, MCS, SNR0, and SNR1. On the right, there are performance metrics for Transmit and Receive, including Link Speed and Throughput, accompanied by signal strength graphs.

## 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).

**Configuration**

▼ WPS

Parameters

|             |   |
|-------------|---|
| WPS Service | <input checked="" type="radio"/> Enable <input type="radio"/> Disable     |
| Role        | <input type="radio"/> Registrar <input checked="" type="radio"/> Enrollee |
| WPS PIN     | 25879810  |
| Mode        | PIN   |

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.

← Profile Network Advanced Statistics WMM **WPS** Radio On/Off About →

WPS AP List

|             |         |                   |   |
|-------------|---------|-------------------|---|
| ID : 0x0000 | wlan-ap | 00-1D-92-C0-13-CD | 1 |
| ID :        | D2-VPN  | 00-1B-11-E4-DA-D5 | 7 |

WPS Profile List

ExRegNWEA4036

|                                    |  |                |
|------------------------------------|--|----------------|
| <input type="button" value="PIN"/> | <input checked="" type="checkbox"/> WPS Associate IE | Progress >> 0% |
| <input type="button" value="PBC"/> | <input checked="" type="checkbox"/> WPS Probe IE     |                |

Pin Code

Config Mode

---

|                        |                          |
|------------------------|--------------------------|
| Status >> Disconnected | Link Quality >> 0%       |
| Extra Info >>          | Signal Strength 1 >> 0%  |
| Channel >>             | Signal Strength 2 >> 0%  |
| Authentication >>      | Noise Strength >> 0%     |
| Encryption >>          |                          |
| Network Type >>        |                          |
| IP Address >>          | Transmit                 |
| Sub Mask >>            | Link Speed >> Max        |
| Default Gateway >>     | Throughput >> 0.000 Kbps |
|                        | Receive                  |
| HT                     | Link Speed >> Max        |
| BW >> n/a              | Throughput >> 0.000 Kbps |
| GI >> n/a              |                          |
| MCS >> n/a             |                          |
| SNR0 >> n/a            |                          |
| SNR1 >> n/a            |                          |

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

The screenshot displays the WPS configuration interface of a router. At the top, there are navigation tabs: Profile, Network, Advanced, Statistics, WMM, WPS (selected), Radio On/Off, and About. The main content area is divided into several sections:

- WPS AP List:** A table listing available WPS APs.
 

| ID            | SSID              | MAC | Priority |
|---------------|-------------------|-----|----------|
| ExRegNWEA4036 | 00-1D-92-C0-13-CD | 1   |          |
| wlan-ap       | 00-04-ED-38-F7-2E | 1   |          |
- WPS Profile List:** Shows the selected profile 'ExRegNWEA4036'.
- Configuration Options:**
  - WPS Associate IE
  - WPS Probe IE
- Progress Bar:** Shows 'Progress >> 100%' and a message: 'PIN - Get WPS profile successfully.'
- Right Panel:** Contains buttons for 'Rescan', 'Information', 'Pin Code' (with input '25879810' and 'Renew' button), 'Config Mode' (set to 'Registrar'), 'Detail', 'Connect', 'Rotate', 'Disconnect', and 'Export Profile'.
- Connection Statistics:**
  - Status >> ExRegNWEA4036 <-> 00-1D-92-C0-13-CD
  - Extra Info >> Link is Up [TxPower:100%]
  - Channel >> 1 <-> 2412 MHz; central channel : 3
  - Authentication >> WPA2-PSK
  - Encryption >> AES
  - Network Type >> Infrastructure
  - IP Address >> 192.168.1.100
  - Sub Mask >> 255.255.255.0
  - Default Gateway >> 192.168.1.254
- HT (High Throughput) Parameters:**
  - BW >> 40
  - GI >> long
  - MCS >> 14
  - SNR0 >> 20
  - SNR1 >> n/a
- Link Quality and Signal Metrics:**
  - Link Quality >> 100%
  - Signal Strength 1 >> 65%
  - Signal Strength 2 >> 39%
  - Noise Strength >> 26%
- Transmit/Receive Performance:**
  - Transmit:** Link Speed >> 243.0 Mbps, Throughput >> 0.000 Kbps. Graph shows Max 5.392 Kbps.
  - Receive:** Link Speed >> 40.5 Mbps, Throughput >> 98.612 Kbps. Graph shows Max 118.432 Kbps.

- 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.

Profile Network Advanced Statistics WMM **WPS** Radio On/Off About

WPS AP List

|      |         |                   |   |
|------|---------|-------------------|---|
| ID : | wlan-ap | 00-1D-92-C0-13-CD | 1 |
| ID : | wlan-ap | 00-04-ED-22-22-23 | 1 |

WPS Profile List

ExRegNWEA4036

WPS Associate IE
 
 WPS Probe IE

WPS status is disconnected

SSID >> ExRegNWEA4036  
 BSSID >> 00-00-00-00-00-00  
 Authentication Type >> WPA2-PSK Encryption Type >> AES  
 Key Length >> 5 Key Index >> 1  
 Key Material >> 811B5B9F3403DCB08BA73BF3E4787581C37DC4BDD147C4E62526D4E8C39D8F78  
 Show Password

▼ 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.

[Security settings ▾](#)

▼ Wireless Security

| Parameters   |   |
|--|---|
| SSID No.   | <input checked="" type="radio"/> ESSID1 |
| Security Mode  | WPA2 Pre-Shared Key ▼                   |
| WPA Algorithms   | AES ▼                                   |
| WPA Shared Key   | 811B5B9F3403DCB081                      |
| Group Key Renewal  | 3600 seconds                            |
| <input type="button" value="Apply"/> <input type="button" value="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.

The screenshot displays the WPS Utility interface with the following components:

- Navigation Bar:** Profile, Network, Advanced, Statistics, WMM, **WPS**, Radio On/Off, About.
- WPS AP List:**

| ID     | SSID    | BSSID             | Priority |
|--------|---------|-------------------|----------|
| 0x0004 | wlan-ap | 00-04-ED-00-00-01 | 1        |
|        | wlan-ap | 00-1D-92-C0-13-CD | 1        |
- WPS Profile List:** (Empty)
- WPS Configuration:**
  - WPS Associate IE
  - WPS Probe IE
  - Progress >> 0%
  - WPS status is disconnected
- Right Panel:**
  - Rescan
  - Information
  - Pin Code: 16837546 (Renew)
  - Config Mode: Enrollee
  - Detail
  - Connect
  - Rotate
  - Disconnect
  - Export Profile
  - Delete
- Status & Performance:**
  - Status >> Disconnected
  - Link Quality >> 0%
  - Signal Strength 1 >> 0%
  - Signal Strength 2 >> 0%
  - Noise Strength >> 0%
  - Transmit: Link Speed >> 8.800 Kbps
  - Receive: Link Speed >> 147.408 Kbps
- HT (High Throughput) Parameters:**
  - BW >> n/a
  - GI >> n/a
  - MCS >> n/a
  - SNR0 >> n/a
  - SNR1 >> n/a

- 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.

The screenshot displays the WPS configuration interface of a router. At the top, there is a navigation menu with icons for Profile, Network, Advanced, Statistics, WMM, WPS (selected), Radio On/Off, and About. Below the menu, the 'WPS AP List' section shows two entries for 'wlan-ap' with MAC addresses 00-1D-92-C0-13-CD and 00-04-ED-38-F7-2E, both with a count of 1. The 'WPS Profile List' section shows the 'wlan-ap' profile with 'PIN' and 'PBC' buttons. The 'PBC' button is highlighted, and a progress bar indicates 'Progress >> 100%' with the message 'PBC - Get WPS profile successfully.' On the right side, there are buttons for 'Rescan', 'Information', 'Pin Code' (with input '16837546' and 'Renew' button), 'Config Mode' (set to 'Enrollee'), 'Detail', 'Connect', 'Rotate', 'Disconnect', 'Export Profile', and 'Delete'. The bottom section shows connection details for 'wlan-ap <-> 00-1D-92-C0-13-CD', including 'Link Quality >> 100%', 'Signal Strength 1 >> 60%', 'Signal Strength 2 >> 44%', and 'Noise Strength >> 26%'. It also displays 'Transmit' and 'Receive' statistics with corresponding graphs: Transmit Link Speed >> 243.0 Mbps, Throughput >> 0.192 Kbps; Receive Link Speed >> 81.0 Mbps, Throughput >> 93.732 Kbps. Additional details include Authentication >> Open, Encryption >> NONE, Network Type >> Infrastructure, IP Address >> 192.168.1.100, Sub Mask >> 255.255.255.0, and Default Gateway >> 192.168.1.254. Under the 'HT' section, it shows BW >> 40, SNR0 >> 20, GI >> long, MCS >> 14, and SNR1 >> n/a.

## 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.

| Wireless   |  |
|--|--|
| Parameters   |  |
| WLAN Service   | <input checked="" type="radio"/> Enable <input type="radio"/> Disable                              |
| Mode   | 802.11g + n  |
| Number of Active SSID  | 1  |
| SSID No.   | <input checked="" type="radio"/> SSID1   |
| ESSID  | wlan-ap  |
| Hide ESSID   | <input type="radio"/> Enable <input checked="" type="radio"/> 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  | <input checked="" type="radio"/> Enable <input type="radio"/> Disable                              |
| WPS State  | <input type="radio"/> Configured <input checked="" type="radio"/> Unconfigured                     |
| WMM  | <input type="radio"/> Enable <input checked="" type="radio"/> Disable                              |
| Wireless Distribution System (WDS)   |  |
| WDS Service  | <input type="radio"/> Enable <input checked="" type="radio"/> Disable                              |
| Peer WDS MAC address   | 1. <input type="text"/> 2. <input type="text"/><br>3. <input type="text"/> 4. <input type="text"/> |
| <input type="button" value="Apply"/> <input type="button" value="Cancel"/> <a href="#">Security settings</a> |  |

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.

