



# **ENHWI-2AN3**

802.11n Wireless Router



User's Manual

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**ENHWI-2AN3 User's Manual**  
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Fax – (626) 336-2345  
Web Site – [www.encore-usa.com](http://www.encore-usa.com)

# I - Introduction

---

**Thank You** for your purchase of Encore's ENHWI-2AN3 802.11n Wireless Router. ENHWI-2AN3 is backward compatible with wireless devices running 802.11g and 802.11b technologies. ENHWI-2AN3 is not only a Wireless Access Point, but also a wireless Repeater use to extend your wireless coverage farther in established Local Area Networks. The 4-port 10/100 Mbps full-duplex Switch connects your wired Ethernet devices together to join the LAN.

At 300 Mbps wireless transmission rate, the Access Point built into the router uses advanced MIMO (Multi-Input, Multi-Output) technology to transmit multiple streams of data into a single wireless channel providing a seamless access to multimedia contents. Its robust RF signal travels farther, eliminates dead spots and extends network range. For data protection, wireless security and privacy, the ENHWI-2AN3 encodes all wireless transmissions with WEP, WPA, and WPA2 data encryptions.

With the built-in DHCP Server & a powerful SPI firewall, the ENHWI-2AN3 protects your computers against intruders and known Internet attacks, and still provides safe and secured VPN pass-through with data rate at incredible speed and QoS function. The ENHWI-2AN3 is ideal for media-centric applications such as streaming video, internet gaming, and VoIP telephony to run multiple media-intense data streams through the network at the same time, with no degradation in performance.

With multiple SSID you can setup up to 4 wireless networks with up to 254 total connections, setup one SSID for your family, another for Guests, for neighbors or possibly one for kids, each SSID can have own connection policies. Plus, with QoS Feature you can control any device to have more or less bandwidth control over another computer, this is a good feature for users who use a lot of WiFi Multimedia, audio or video streaming, etc, or just plain wireless computing.

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## II - Key Features

---

Features	Advantages
Incredible Data Rate up to 300 Mbps**	<b>Easily handled heavy data loads such as Wi-Fi Multimedia, MPEG audio / video streaming,</b>
Multiple SSID	<b>Up to 4 SSID that can be used to group your family or visitors wireless connection in one router to up to 4 different SSID, each can have own connection policies, security and password</b>
IEEE 802.11b/g/n Compliant	<b>Fully Interoperable with IEEE 802.11b/g/n compliant devices with legacy protection</b>
Four 10/100 Mbps Fast Switch RJ-45 Ports (with Auto-Crossover)	<b>Scalability. Extend your network computers.</b>
Firewall supports, DMZ, MAC Filter, IP Filter, URL Filter, ICMP Blocking, SPI, Port Mapping, Port Forwarding, Port Trigger	<b>Use to prevent attacks from hackers or viruses from the internet, Parental Control and Internet Keyword Control</b>
Support 802.1x Authenticator, 802.11i (WPA/WPA2, AES), VPN pass-through	<b>Provide mutual authentication (Client and dynamic encryption keys to enhance wireless security)</b>
WDS (Wireless Distribution System)	<b>Make Wireless AP and Bridge mode simultaneously as a wireless repeater</b>

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*\*\* Theoretical wireless signal rate based on IEEE standard of 802.11a, b, g, n chipset used. Actual throughput may vary. Network conditions and environmental factors lower actual throughput rate. All specifications are subject to change without notice.*

## III - Package Contents

---

Check and make sure that none of the items listed below are missing. Do not discard the packing materials, in case of return; the unit must be shipped back in its original packaging.

1. ENHWI-2AN3 Wireless 802.11n Router
2. 100V~240V Power Adapter (Use only the supplied power adapter)
3. Two pieces 2 dBi 2.4 GHz SMA Upgradeable Antenna
4. Quick Installation Guide leaflet
5. CD-ROM (Smart Install Setup Wizard and User's Manual)
6. Patch cable – Ethernet CAT5e RJ-45 Connector





## IV - Product Layout

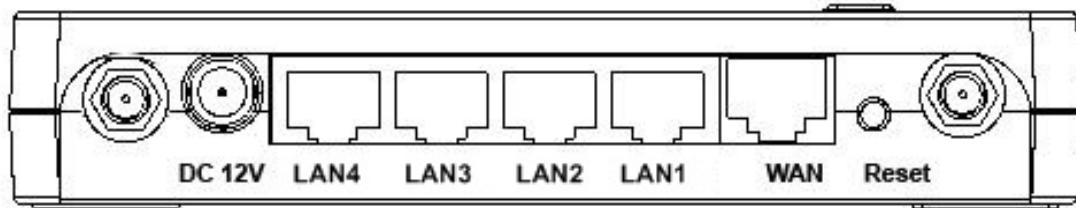
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*Front Panel View*

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LED Lights	Description
 POWER	Lights up in Red when powered ON. Blinks on TEST/RESET
 WLAN	Lights up in Green when Wireless LAN is enabled. Blinks on traffic
 1 to 4	Blinks in Green on data traffic
 WAN	Lights up in Green when WAN port is use



*Rear View*

Item	Description
Reset	Press and release this button to reboot the device. Press and hold this button for 10 seconds to load the factory default settings of the system.
WPS™	Press this button to start WPS™ function.
	Power connector, connects to a DC 12V

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DC 12V	1A Power Adapter (Supplied)
LAN1 ~ LAN4	Ports 1 to 4 Local Area Network (LAN) 10/100 Mbps RJ-45 ports
WAN	Wide Area Network (WAN) port or Internet Port. Connects to xDSL or Cable Modem

## V - Network + System Requirements

---

To begin using the ENHWI-2AN3, make sure you meet the following as minimum requirements:

- PC / Notebook Computer
- Operating System – Microsoft™ Windows® 98SE/ME/XP/2000/Windows Vista™ / Windows® 7
- 1 Free RJ-45 Network Interface Card port
- Wi-Fi adapter card – optional.
- External xDSL (ADSL) or Cable modem with an Ethernet WAN port (RJ-45).
- A Web Browser (Internet Explorer, Safari, Firefox, Opera etc.)
- Few Ethernet compatible CAT5 or better cables.

## VI - ENHWI-2AN3 - Where to place

---

You can place ENHWI-2AN3 on a desk or other flat surface, or you can mount it on a wall. For optimal performance, place your ENHWI-2AN3 Wireless Router in the center of your office (or your home) in a location that is away from any potential source of interference, such as a metal wall or microwave oven. This

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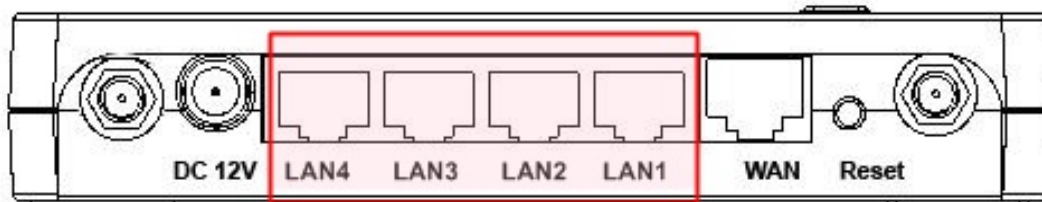
location must be close to a power connection and your ADSL/Cable modem. If the antennas are not positioned correctly, performance loss can occur.

## VII - Setup LAN, WAN

---

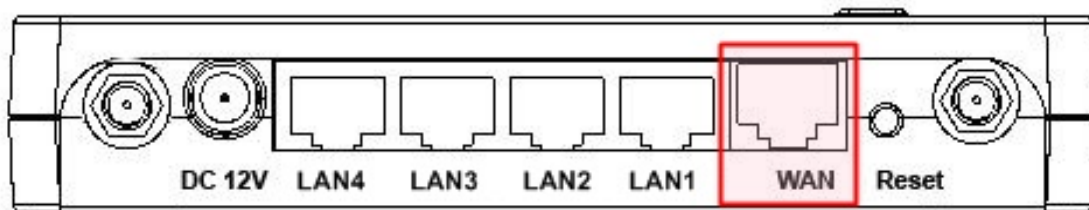
### LAN connection:

Connect Ethernet cable between your PC/Notebook LAN port & one of the 4 available LAN ports on ENHWI-2AN3.



### WAN connection:

Connect Ethernet cable between WAN port of your ADSL/CABLE modem & WAN port of ENHWI-2AN3. Make sure your ADSL/CABLE modem is already setup and working well. Contact your ISP (Internet Service Provider) if you have any questions.



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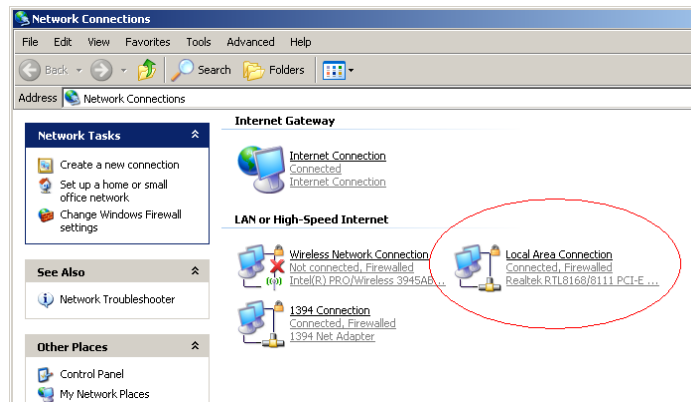


## VIII - PC Network Adapter Setup

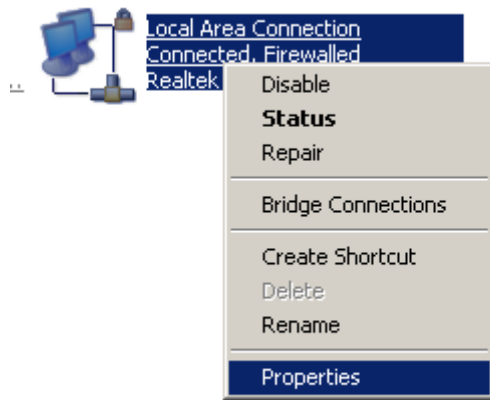
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### Windows XP

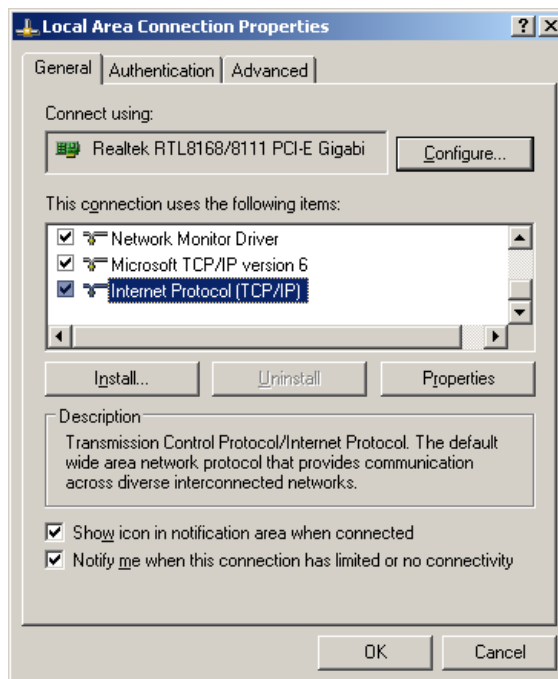
- Assuming your PC or Laptop is equipped with a Network Interface Card. Click on **START** → select “**Control panel**” → From the Control Panel Window select “**Network Connections**”



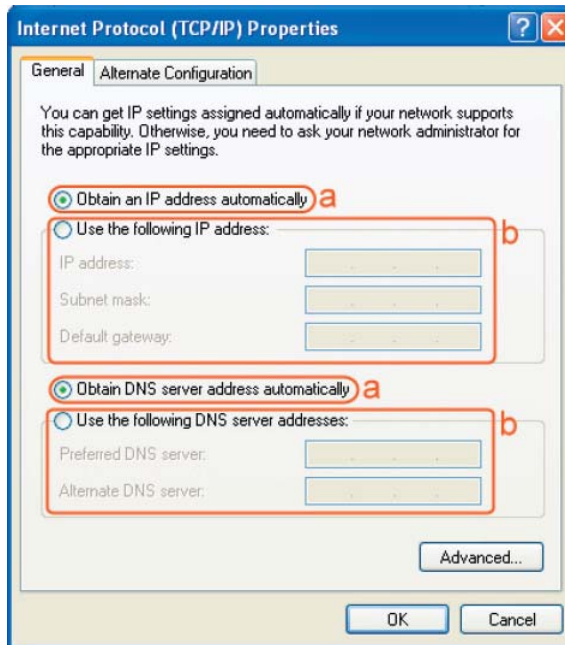
- Right-click (Use the right button of your mouse) the “**Local Area Connection**” icon then select and click “**Properties**”



- Click to Highlight the “**Internet Protocol (TCP/IP)**” then click “**Properties**” button



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- Select the “General” tab.  
ENHWI-2AN3 supports DHCP Server, select both “**Obtain an IP address automatically**” and “**Obtain DNS server address automatically**”

## IX - Power up the ENHWI-2AN3

---

Connect the supplied power-adaptor to the power port and then plug it to a wall power outlet. The ENHWI-2AN3 automatically enters and run the self-test phase in just a few seconds. The Power LED will light a steady red light indicating that the ENHWI-2AN3 is ready for operation.

## X - Smart Wizard

---

**Before you start the ENHWI-2AN3 router’s Smart Wizard, check the followings:**

- Internet connection should be running & ready to use (ADSL or cable modem).
- xDSL Modem or Cable Modem must have an RJ-45 LAN port

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- Microsoft Windows compatible PC/Notebook with UPnP enabled Network Interface Card adapter. (This can be found in your network cards advanced properties within MS Windows) Optional, this is if you prefer to use the UPnP feature.
- CAT 5 or better network Ethernet cable(s), RJ-45 connector\*\* for PC/Notebook connections. (\*\* RJ-45 looks like a telephone cable connector but bigger)

**Step 1:** Connect the ENHWI-2AN3 “WAN Port” & your Cable or DSL Modem’s LAN port using the provided Ethernet / RJ-45 patch cable.

**Step 2:** Connect any of the four available LAN ports to your PC or Notebooks RJ-45 network interface card port using an Ethernet network cable (not provided).

**Step 3:** Power-on the ENHWI-2AN3 unit. The red power LED in the front the panel should light up & stay on to indicate that the router is ready.

**Step 4:** Bring up the Smart Wizard. The “Smart Wizard” is a user friendly step-by-step instruction to initially help you in setting up your router connecting your computer(s) to the internet and to help you install administrator’s user ID and password, setup the wireless security to protect your router and your LAN computers from hackers and other type of intrusions. Insert the ENHWI-2AN3 Setup Disc CD into your CDROM drive. An Encore logo will popup in a few seconds then will disappear then immediately followed by the menu screen. Click on the “Setup Wizard” icon to start the “SMART WIZARD”. (Refer to the graphical instruction below this section)

If in case after you have inserted the CD onto your CDROM drive and nothing happens or there is no Welcome screen came up, open your computer’s Windows Explorer or browse the CD contents, go to the root directory and look for the file **Setup.exe**, double click it to start the Smart Wizard.

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— *Making Connections Easy* —

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A welcome screen will pop up a few seconds and then will disappear, followed by the menu screen below.

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Click **Setup Wizard** to run user friendly step-by-step basic setup settings

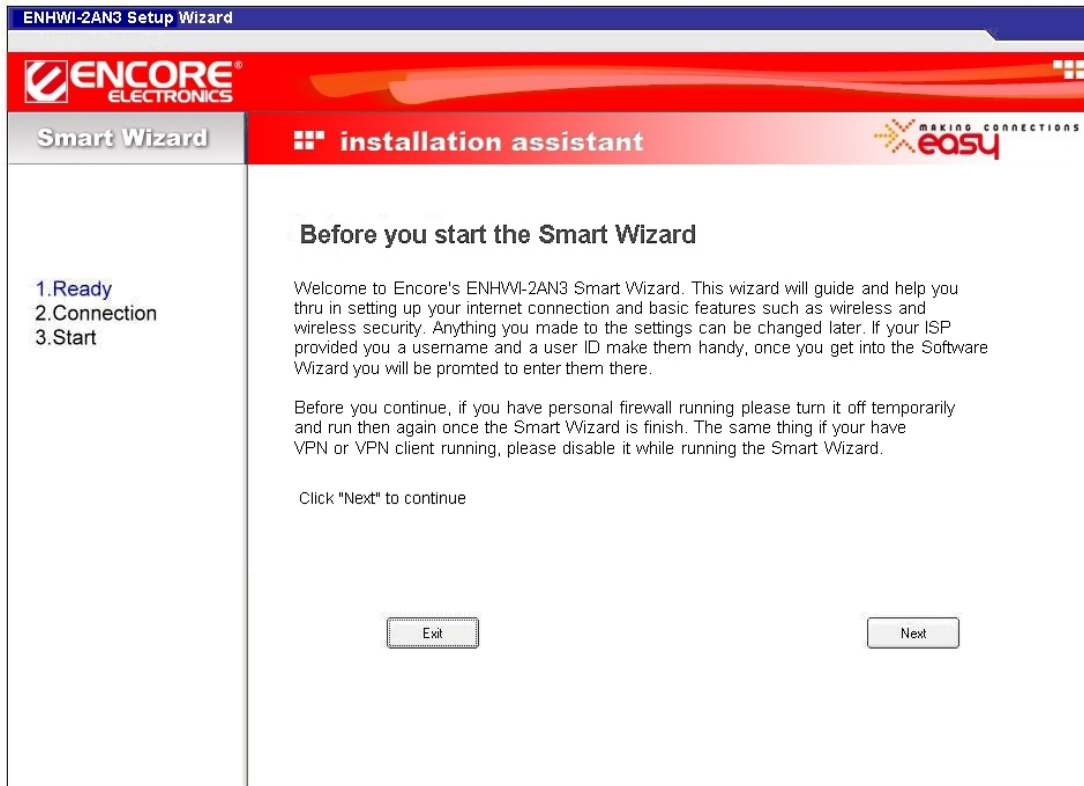
Click **User Manual** to open the user manual (you are stepping into it right now).

Click **Adobe Reader** to install Adobe Acrobat reader on your PC/Notebook (NOTE: When clicked Adobe Reader will start installing. Click Cancel to stop).

Click **EXIT** when finish or anytime you want to abort.

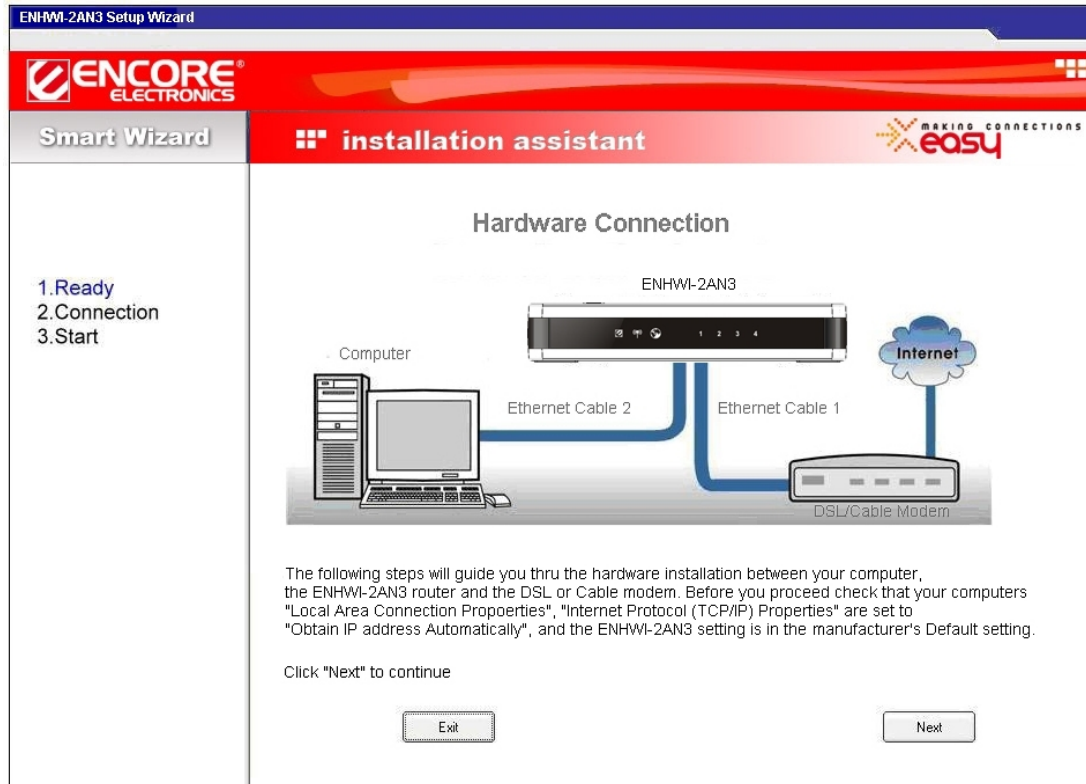
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# ENHWI-2AN3 Setup Wizard



Click  to proceed to the next step. Click **<Exit>** to abort.

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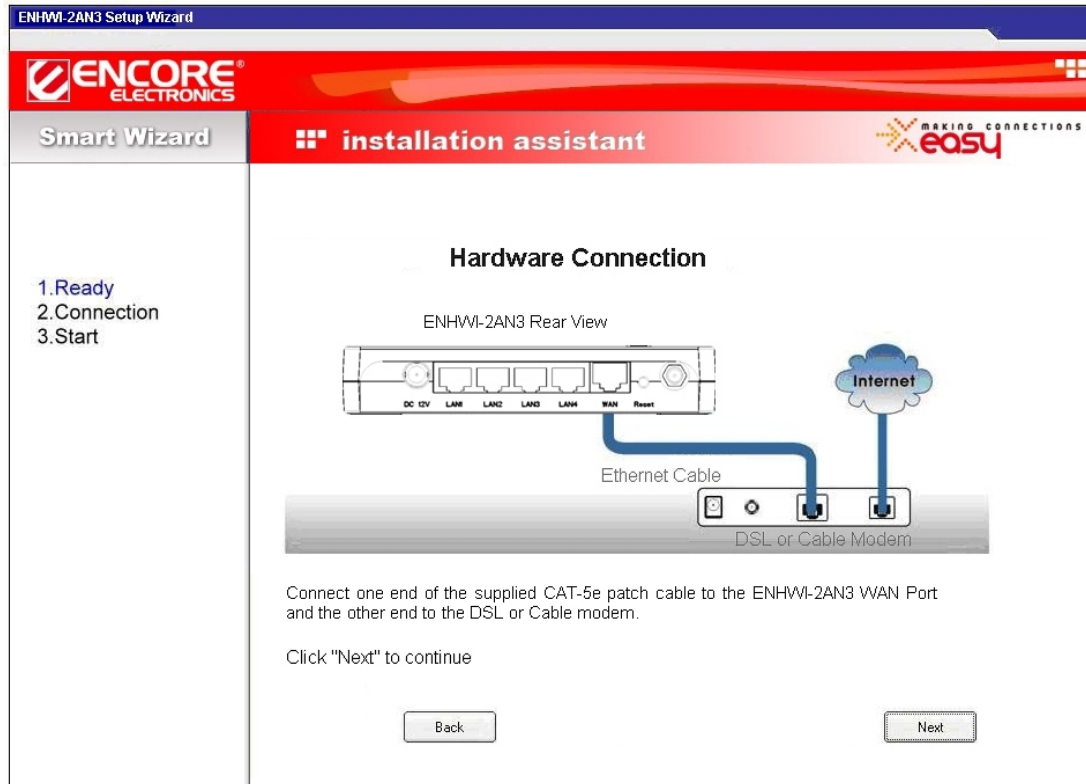


Make sure your **DSL/CABLE modem** is setup and working prior to this Smart Wizard. If not, call your Internet Service Provider and have them check and help you in setting up your DSL/Cable modem.

Click  to proceed.

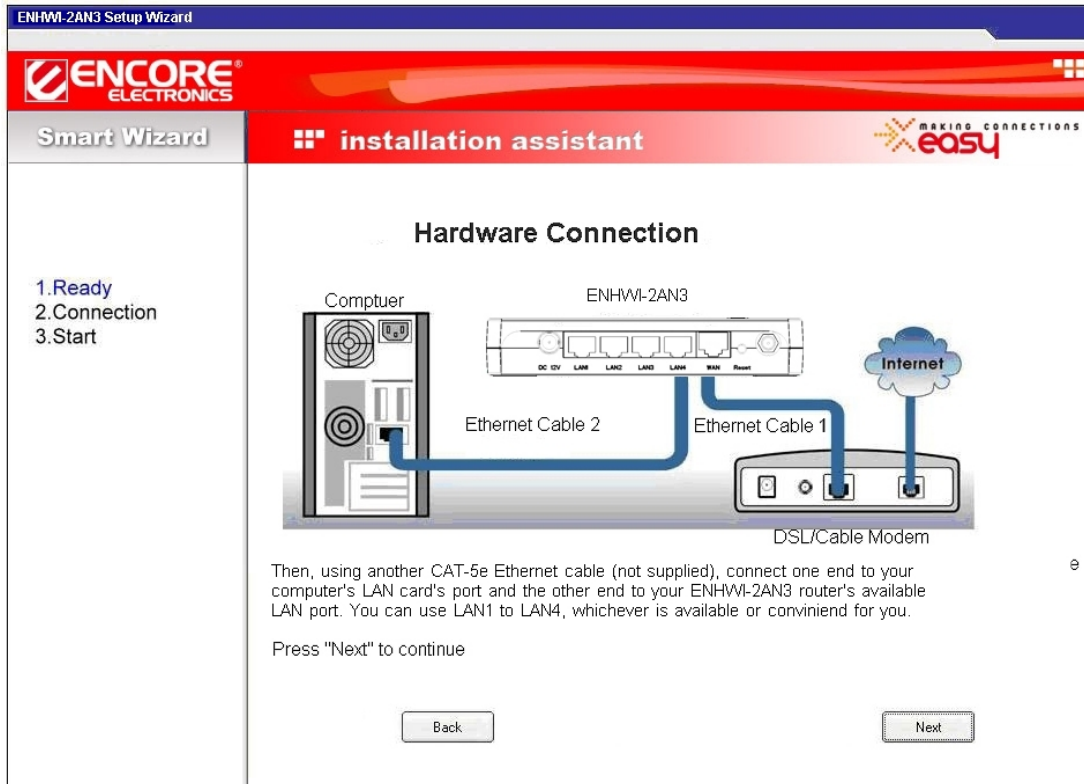
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Check the Cable or DSL Modem and the ENHWI-2AN3 connection.

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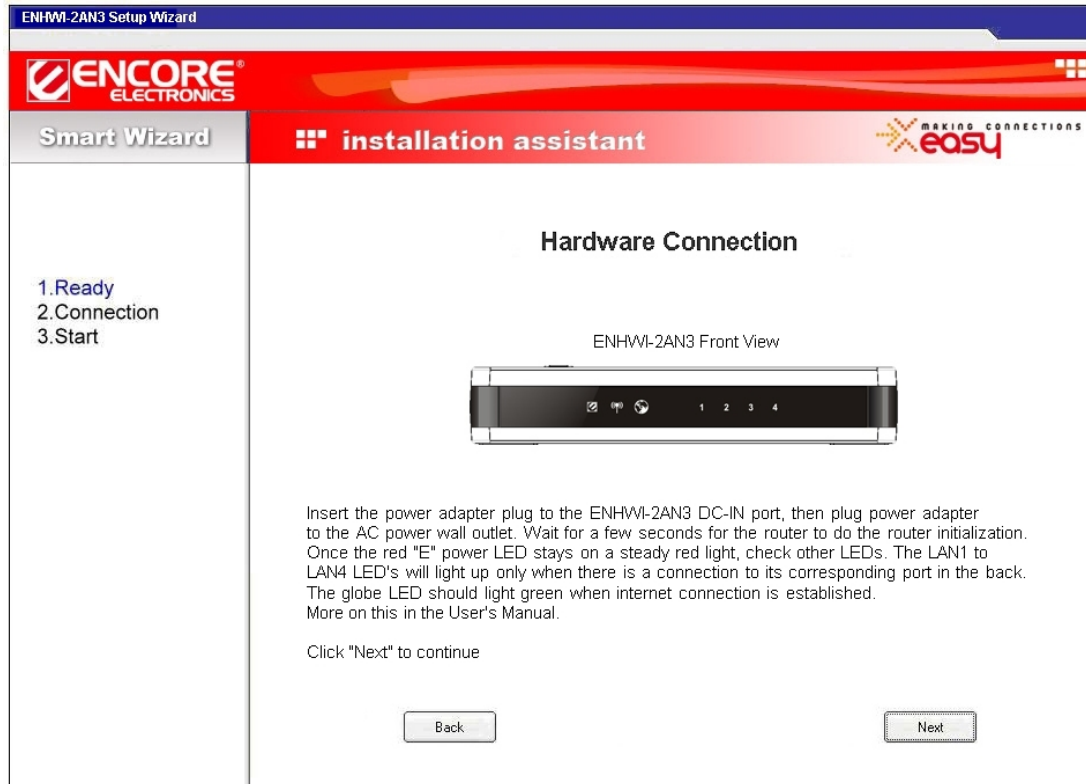


Check power connection for modem as well as ENHWI-2AN3.

Make sure the antenna is connected to rear panel of ENHWI-2AN3.

Click **<Next>** to proceed.

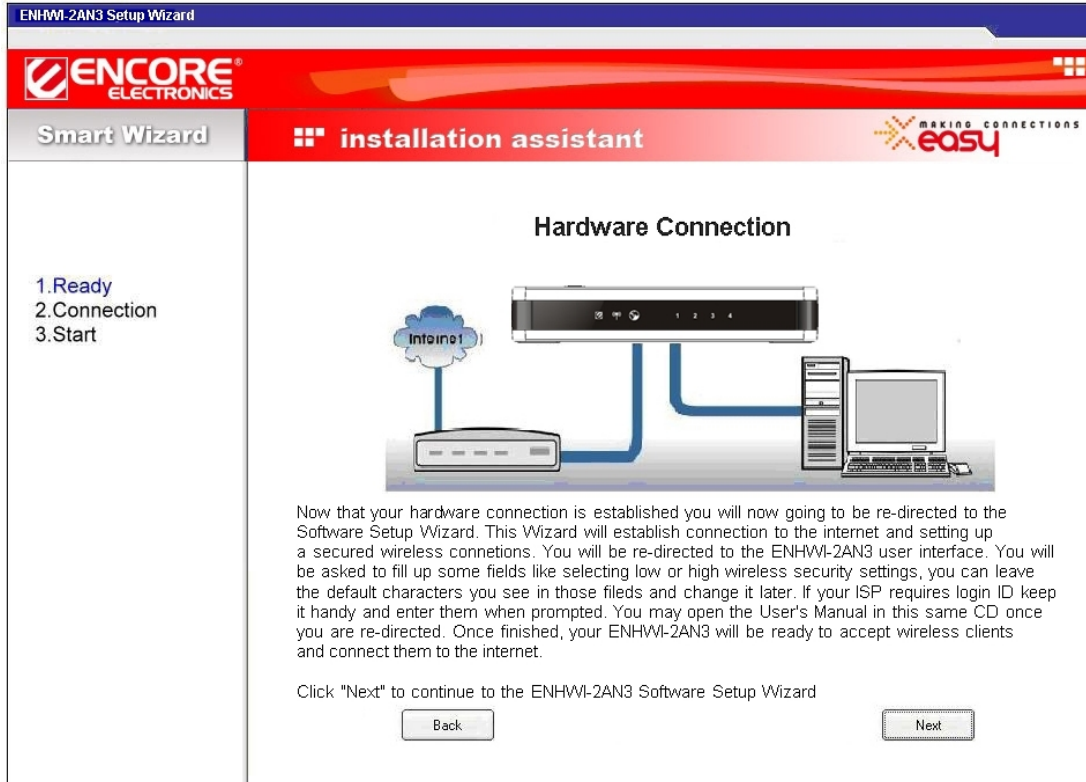
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Notice the LED will light up on this stage. If not, check back the procedures.

Click **Next** to configure WAN & Wireless settings.

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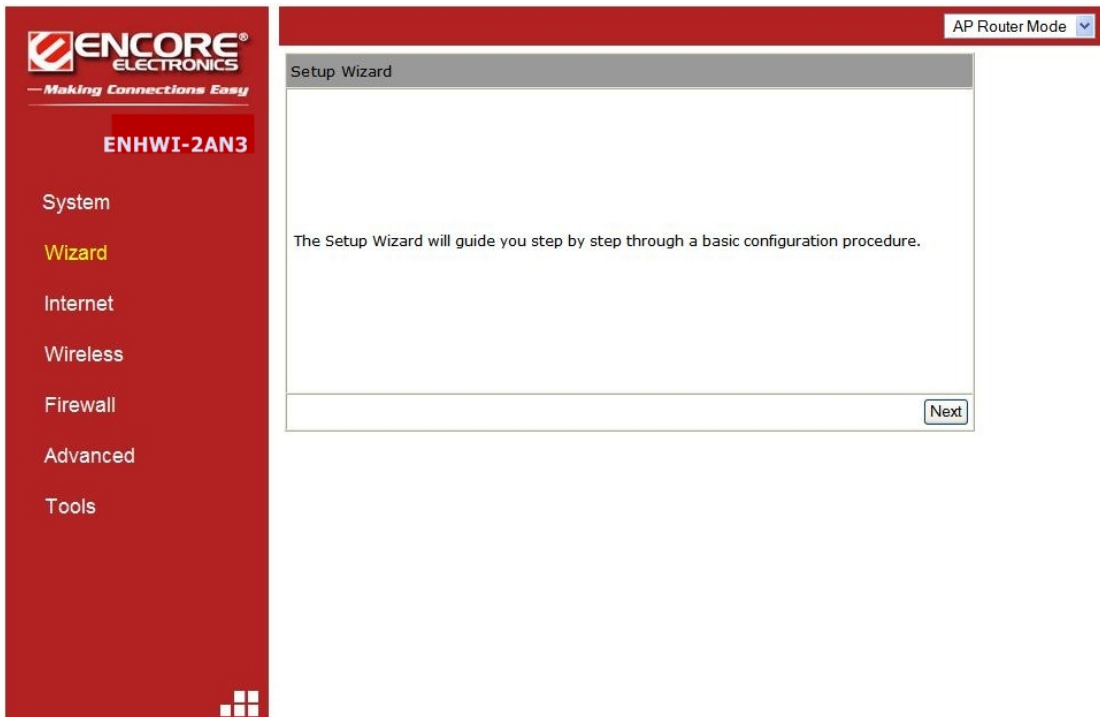


**Logging into the Software Wizard for the first time:**



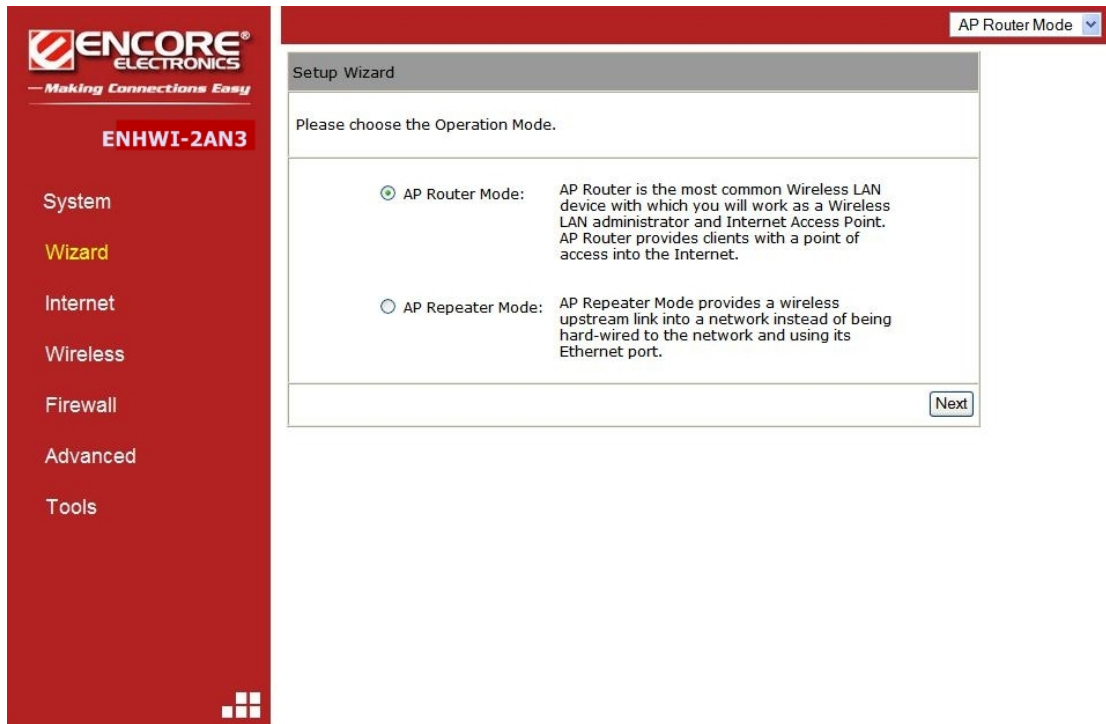
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Enter the factory default username is **admin** and password is also **admin**. Click  to continue. Your default browser screen will connect to the ENHWI-2AN3 User Interface screen using the factory default address <http://192.168.0.1> .



Click  to enter the mode selection screen.

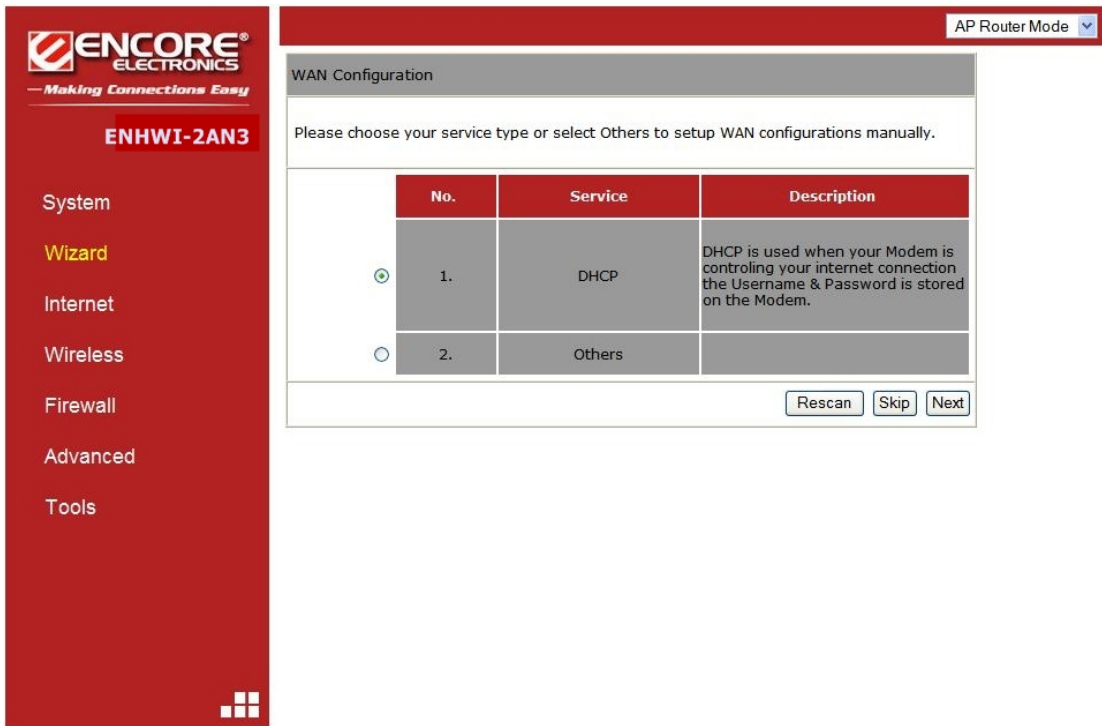
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Select the mode your ENHWI-2AN3 is going to use. The Setup Wizard will skip the WAN configuration under **AP Repeater Mode**.

Click  and your ENHWI-2AN3 will automatically detect your “Internet” Network settings.

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The Smart Wizard will detect the DHCP and PPPoE connections automatically. In the picture above it shows that the Smart Wizard detected a DHCP server. You can choose the detected service type or select “**Others**” to setup the WAN settings manually.

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Here, you can configure the host name and MAC address of the ENHWI-2AN3. The **“Clone MAC Address”** button clones the MAC address of your PC and use it as the MAC address of your ENHWI-2AN3 router instead of the real MAC address of the router.

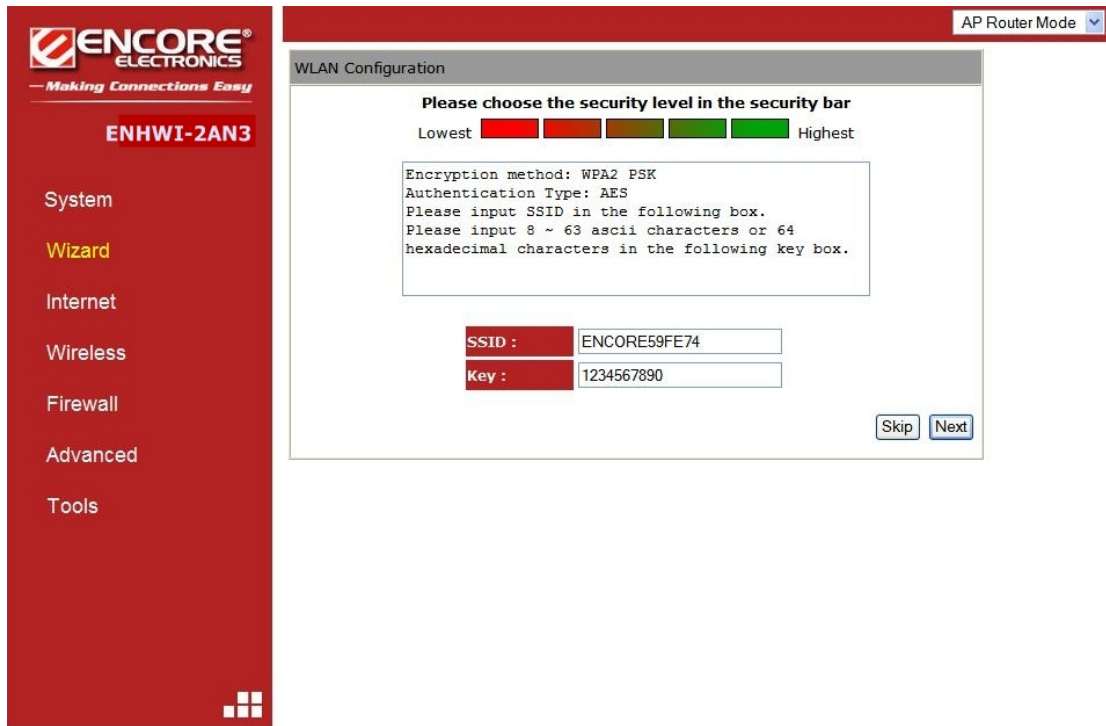
The Smart Wizard has finished setting up the **WAN Configuration** portion. Click

to proceed to other portions.

## Setting up the Wireless LAN

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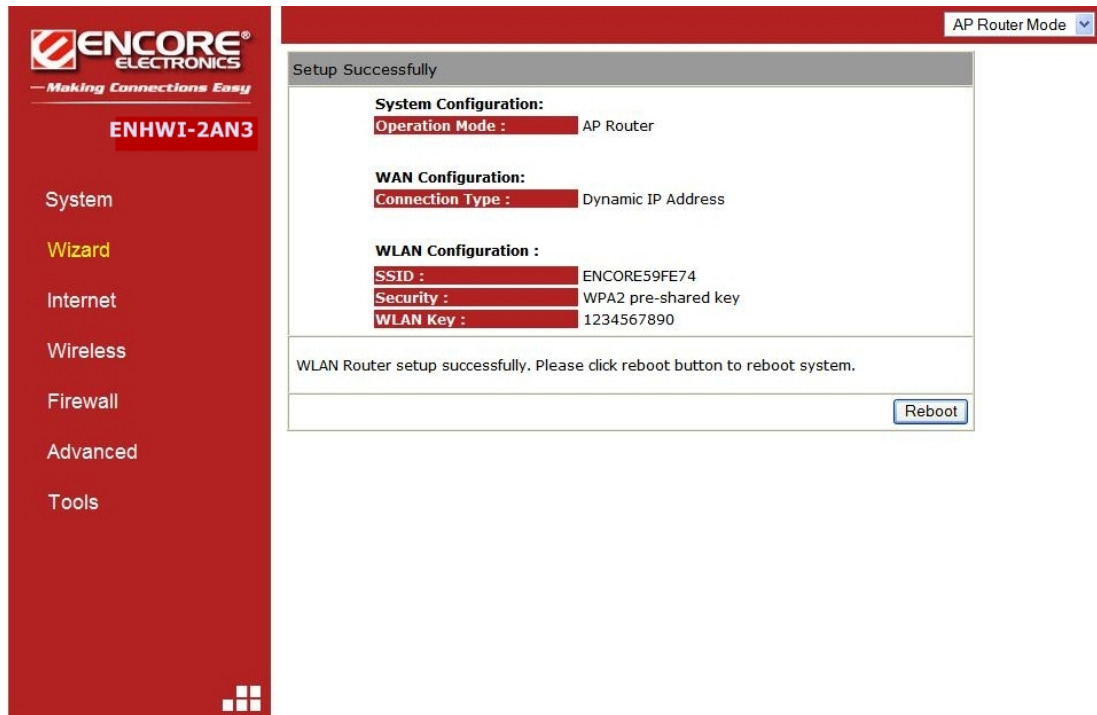


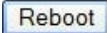


Enter the name for your wireless network SSID (the default is ENCORE59FE74) and security key (default is 1234567890). Move and point your mouse over to the security level blocks from the weakest (red block) to the strongest (green block), and click on the selected block to select the level of security you desired. The “Key” type will depend on the wireless security you selected. If you choose WEP as the wireless security you will be prompted whether an ASCII or Hexadecimal is your preferred key type. Hexadecimal requires 10 character digits on the KEY: field.

Click  to proceed

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To save configuration changes click 

**NOTE:**

*After the Wireless settings are saved and the ENHWI-2AN3 is rebooted, you need to reconnect your WLAN client using the new security settings you just changed. You will need to reenter the new wireless security key for the client and the ENHWI-2AN3 reestablish wireless connections.*

## **XI – How to login to the ENHWI-2AN3 Web Based Graphical User Interface**

---

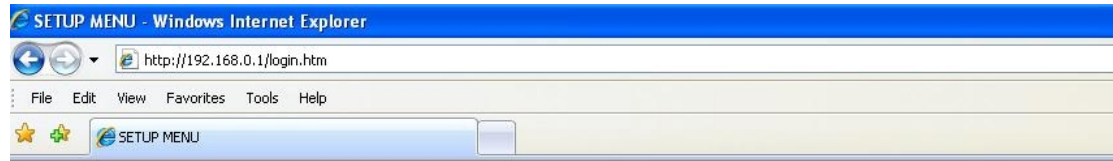
The ENHWI-2AN3 use a web based user interface for setting up your router's configuration, it can be access through your web browser such as Internet Explorer or Mozilla Firefox.

### **ENHWI-2AN3 web based user interface login procedure**

1. OPEN your browser (Example: Internet Explorer, Mozilla, Netscape, etc).

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2. Type-in **http://192.168.0.1** exactly in address field and hit the **[Enter]** key on your keyboard.

A login form for Encore Electronics. The form has a red header with the "ENCORE ELECTRONICS" logo. Below the header, it says "Please enter user name and password. The default UN/PW is admin/admin." There are two input fields: "Username:" and "Password:". At the bottom, there are two buttons: "LOGIN" and "CANCEL".

3. Type-in the ENHWI-2AN3 Username and Password (the factory default is admin and admin)
4. Click **LOGIN** to navigate into the ENHWI-2AN3 configuration home page.
5. You will see the configuration home page of the ENHWI-2AN3 as follows.

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**ENHWI-2AN3**

System  
Wizard  
Internet  
Wireless  
Firewall  
Advanced  
Tools  
Guest Network

AP Router Mode

Status LAN DHCP Schedule Log Monitor Language

You can use the Status page to monitor the connection status for the WAN/LAN interfaces, firmware and hardware version numbers, any illegal attempts to access your network and information on all DHCP client PCs currently connected to your network.

**System**

Model	Wireless Network Broadband Router
Mode	AP Router
Uptime	2 days 17 hours 20 min 58 sec
Current Date/Time	2009/01/03 17:20:59
Hardware version	1.0.0
Serial Number	00000016
Kernel version	1.0.0
Application version	1.0.6

**WAN Settings**

Attain IP Protocol	Dynamic IP Address
Authentication Mode	---
Subnet Mask	---
Default Gateway	---
MAC address	00:02:6F:59:FE:D8

*ENHW-2AN3 Home Page Screen*

## XII - The AP Router Mode

### SYSTEM

**System:**

Shows the Uptime, Hardware information, Serial number as well as the Firmware version information and other vital information

- **Status Tab**  
This page allows you to monitor the status of your router.

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System  
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Guest Network

AP Router Mode

Status LAN DHCP Schedule Log Monitor Language

You can use the Status page to monitor the connection status for the WAN/LAN interfaces, firmware and hardware version numbers, any illegal attempts to access your network and information on all DHCP client PCs currently connected to your network.

**System**

Model	Wireless Network Broadband Router
Mode	AP Router
Uptime	2 days 17 hours 20 min 58 sec
Current Date/Time	2009/01/03 17:20:59
Hardware version	1.0.0
Serial Number	00000016
Kernel version	1.0.0
Application version	1.0.6

**WAN Settings**

Attain IP Protocol	Dynamic IP Address
Authentication Mode	---
Subnet Mask	---
Default Gateway	---
MAC address	00:02:6F:59:FE:D8

### 1. WAN Settings:

Scroll down to see the full information. This section displays whether the WAN port is connected to a Cable / DSL modem. It also displays the router's WAN IP address, Subnet Mask, ISP Gateway, MAC address and the Primary DNS.

**WAN Settings**

Attain IP Protocol	Dynamic IP Address
Authentication Mode	---
Subnet Mask	---
Default Gateway	---
MAC address	00:02:6F:59:FE:D8
Primary DNS	---

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## 2. LAN Settings:

Scroll down to see this section, displays the ENHWI-2AN3 Router's LAN ports current information. It also shows whether the DHCP Server is enabled or disabled.

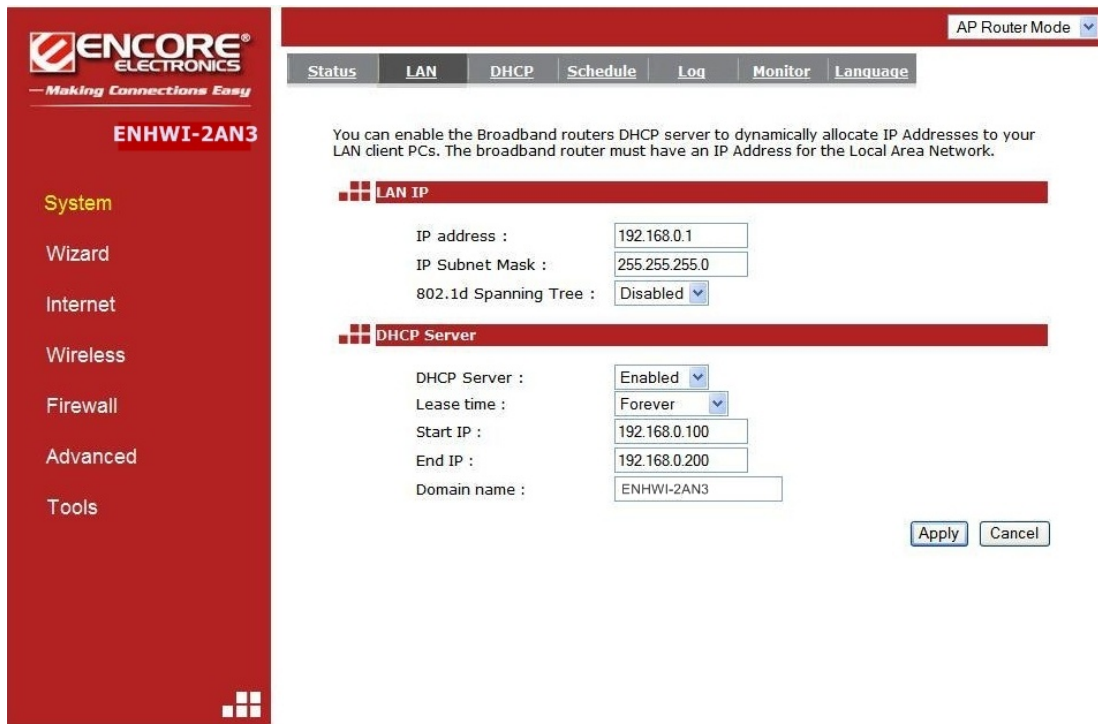
LAN Settings	
IP address	192.168.0.1
Subnet Mask	255.255.255.0
DHCP Server	Enabled
MAC address	00:02:6F:59:FE:74


3. **WLAN Settings:** Scroll down to see this section. This section displays the current WLAN configuration settings. The wireless configuration details such as the SSID, Security settings, ESSID, BSSID, Channel number and wireless clients connected info are briefly shown.

WLAN Settings	
Channel	11
<b>SSID_1</b>	
ESSID	ENCORE59FE74
Security	WPA2 pre-shared key
BSSID	00:02:6F:59:FE:74
Associated Clients	0

- LAN Tab

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The LAN Tab is where LAN settings can be changed. If you are an entry level user, after hooking up the necessary cables, try to access the internet from your computer. If you can open a website with no problem, leave the settings as it is. If changes were made, click the  button to save the changed configurations.

## LAN IP

**IP address:** 192.168.0.1 is the router's LAN manufacturers default IP address (this will also be the "Default Gateway" IP address of your LAN clients). It can be change based on your LAN design and configurations. Typical designs don't need to change this IP address.

**IP Subnet Mask:** 255.255.255.0 specifies the Subnet Mask address for your LAN segment. This is based on the IP address range used.

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**802.1d Spanning Tree:** This is disabled by default. If 802.1d Spanning Tree function is enabled, this router will use the spanning tree protocol to prevent network loops.

## **DHCP Server**

**DHCP Server:** This can be enabled or disabled, “Enabled” by default.

**Lease time:** Lease time assigned to all IP address by the DHCP server.

**Start IP:** This is the first IP address in the IP pool range in which are being assigned and leased to DHCP clients.

**End IP:** This is the end of the IP address pool range

**Domain Name:** The Domain Name for the existing or customized network.

- DHCP Tab



The screenshot displays the DHCP Client Table configuration interface. At the top right, it indicates 'AP Router Mode'. The navigation menu on the left includes 'System', 'Wizard', 'Internet', 'Wireless', 'Firewall', 'Advanced', and 'Tools'. The main section is titled 'DHCP Client Table' and contains the following elements:

- A description: 'This DHCP Client Table shows client IP address assigned by the DHCP Server'.
- A table with the following data:
 

IP address	MAC address	Expiration Time
192.168.0.100	00:21:70:BE:37:B2	Forever
- A 'Refresh' button.
- A note: 'You can assign an IP address to the specific MAC address'.
- An unchecked checkbox labeled 'Enable Static DHCP IP'.
- Input fields for 'IP address' and 'MAC address' with 'Add' and 'Reset' buttons below them.
- A section titled 'Current Static DHCP Table' with a table:
 

NO.	IP address	MAC address	Select
- Buttons for 'Delete Selected', 'Delete All', and 'Reset' below the static table.
- 'Apply' and 'Cancel' buttons at the bottom right.

This is where to view the current LAN clients that have assigned or leased IP address by the DHCP server. This screen also shows all the DHCP clients that are currently connected to your network. The table shows the assigned or leased IP address, MAC address and the lease expiration data for each DHCP clients. Use the **<Refresh>** button to update the available information. Click the **<Refresh>** button to get the updated table.

You can click to put a check mark on “**Enable Static DHCP IP**“. It is possible to add more static DHCP IP addresses. They are listed in the table “**Current Static DHCP Table**“. IP address can be deleted if wanted to.

Click the **<Apply>** button to save the changes made to the configuration.

- Schedule Tab

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This page allows users to set up a scheduled function for the Firewall and Power Saving features of the ENHWI-2AN3 router.

AP Router Mode ▼

Status
LAN
DHCP
Schedule
Log
Monitor
Language

You can use the Schedule page to Start/Stop the Services regularly. The Schedule will start to run, when it get GMT Time from Time Server. Please set up the Time Server correctly in Toolbox. The services will start at the time in the following Schedule Table or it will stop.

**Enabled Schedule Table (up to 8)**

NO.	Description	Service	Schedule	Select
1	schedule 01	Power Saving	All Time---Mon, Tue, Wed, Thu, Fri, Sat, Sun	<input type="checkbox"/>

Add
Edit
Delete Selected
Delete All

Apply
Cancel

Edit the scheduled function to allow configuration for firewall or power savings services. Fill in the schedule and select type of service you desired. Click **<Apply>** to save the settings.

AP Router Mode ▼

Status
LAN
DHCP
Schedule
Log
Monitor
Language

You can use the Schedule page to Start/Stop the Services regularly. The services will start at the time in the following Schedule Table or it will stop.

<b>Schedule Description :</b>	<input style="width: 90%;" type="text" value="schedule 01"/>
<b>Service :</b>	<input type="checkbox"/> Firewall <input checked="" type="checkbox"/> Power Saving
<b>Days :</b>	<input checked="" type="checkbox"/> Every Day <input checked="" type="checkbox"/> Mon <input checked="" type="checkbox"/> Tue <input checked="" type="checkbox"/> Wed <input checked="" type="checkbox"/> Thu <input checked="" type="checkbox"/> Fri <input checked="" type="checkbox"/> Sat <input checked="" type="checkbox"/> Sun
<b>Time of day :</b>	<input checked="" type="checkbox"/> All Day (use 24-hour clock) From <input style="width: 30px;" type="text"/> : <input style="width: 30px;" type="text"/> To <input style="width: 30px;" type="text"/> : <input style="width: 30px;" type="text"/>

Apply
Cancel

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The “Schedule” table screen lists the pre-scheduled services. Select any of the schedules by using the check box located on the right side of each line to edit or Delete selected schedule line.

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ENHWI-2AN3

System  
Wizard  
Internet  
Wireless  
Firewall  
Advanced  
Tools

AP Router Mode

Status LAN DHCP **Schedule** Log Monitor Language

You can use the Schedule page to Start/Stop the Services regularly. The Schedule will start to run, when it get GMT Time from Time Server. Please set up the Time Server correctly in Toolbox. The services will start at the time in the following Schedule Table or it will stop.

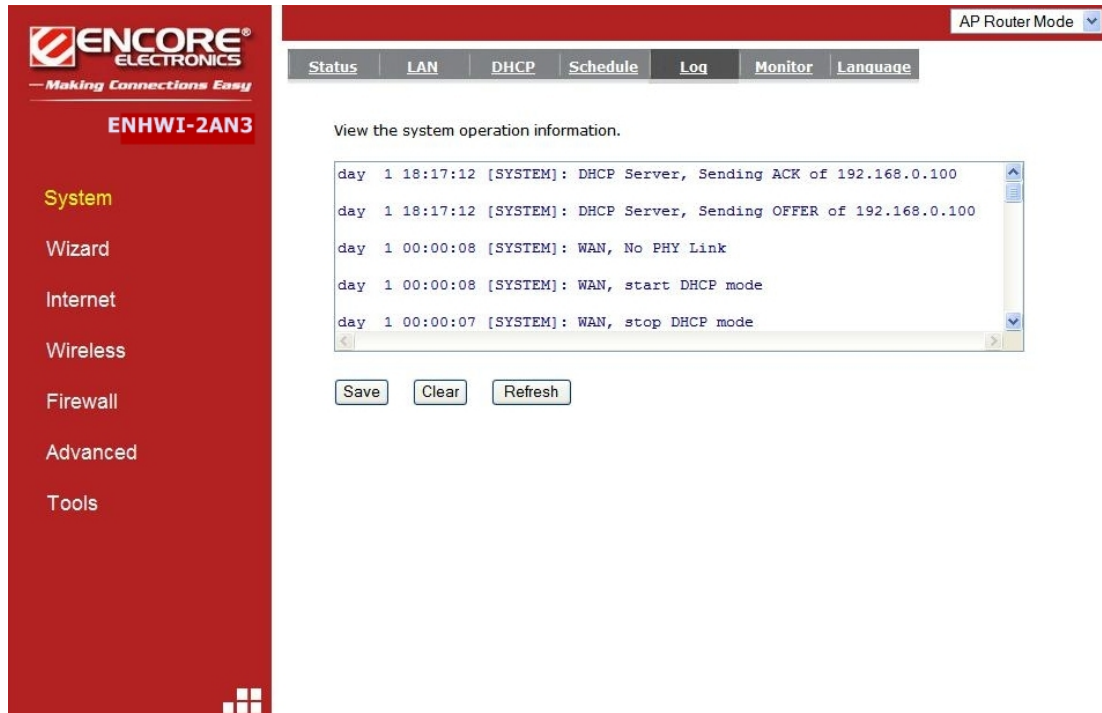
Enabled Schedule Table (up to 8)

NO.	Description	Service	Schedule	Select
<input type="button" value="Add"/>	<input type="button" value="Edit"/>	<input type="button" value="Delete Selected"/>	<input type="button" value="Delete All"/>	<input type="button" value="Apply"/> <input type="button" value="Cancel"/>

- **Event Log Tab**

On this “Event Log” screen, it displays all events and events information occurred after the start-up. Scroll down to see more. The Event Log can be saved to the local file-storage device such as hard disc drive by using the **<Save>** button, or the Event Log can be emptied using the **<Clear>** button. Use the **<Refresh>** button to reset the Event Log and to get the most updated information. When the router is powered OFF, the Event Log will be wiped out and will come up empty. The saved logs can be uploaded and viewed again.

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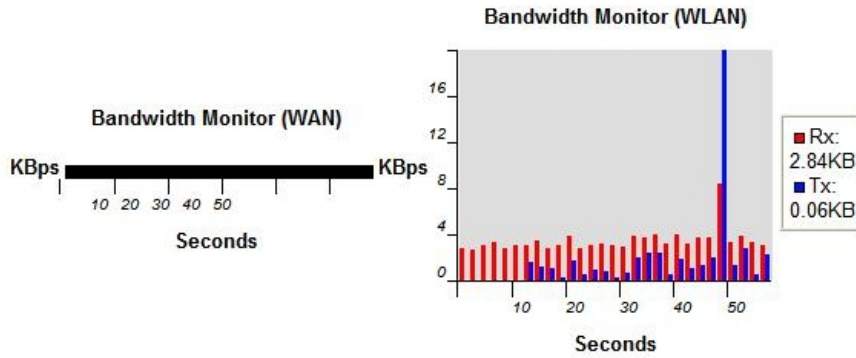


- **Monitor Tab**

This screen shows the histogram of the network connection on WAN, LAN & WLAN. Auto refresh keeps information updated frequently.

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You can monitor the bandwidth in different interface. This page will refresh in every five seconds.



- **Language Tab**

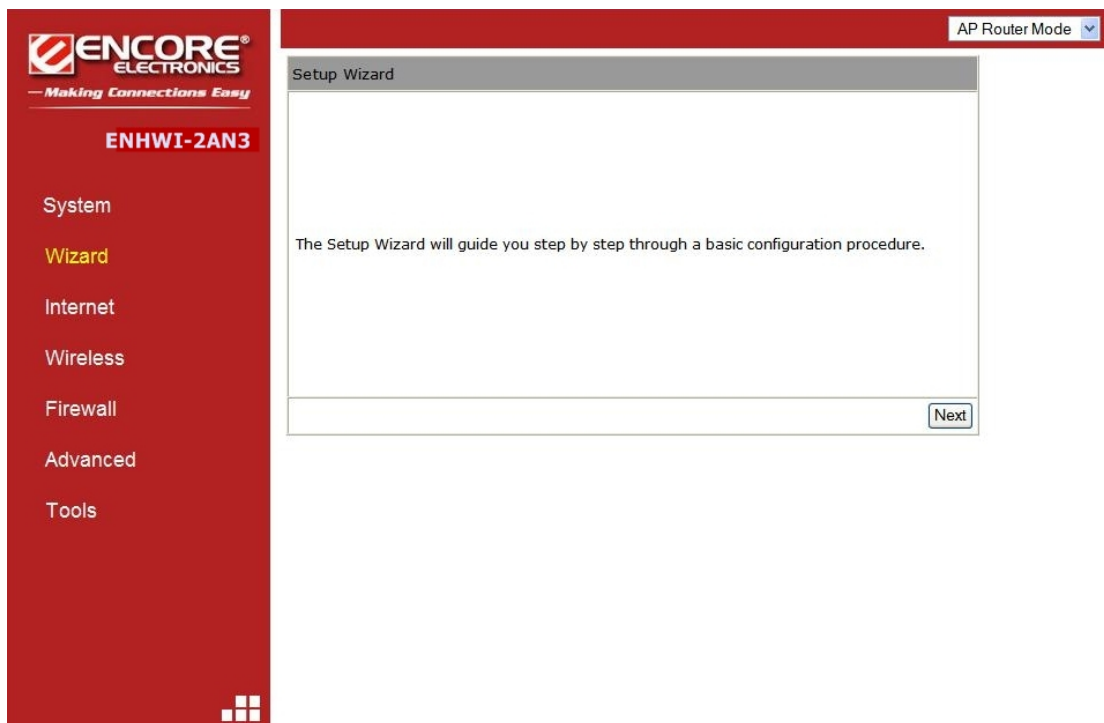
This is where you select preferred language.

The screenshot shows the ENHWI-2AN3 web interface. On the left is a red sidebar with the Encore Electronics logo and a menu with items: System, Wizard, Internet, Wireless, Firewall, Advanced, and Tools. The main content area has a top navigation bar with "AP Router Mode" and tabs for "Status", "LAN", "DHCP", "Schedule", "Log", "Monitor", and "Language". Below the tabs, it says "You can select other language in this page." and features a "Multiple Language" section with a dropdown menu. The dropdown menu is open, showing options: "Choose your language", "English", and "Italiano".

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# WIZARD

Click **Wizard** to configure the basic functionalities of the ENHWI-2AN3 Router. A popup Setup Wizard Window will be immediately displayed. If the popup window for Setup Wizard failed to appear check your Popup Settings and make sure popup is allowed at least temporarily for this purpose. Before you continue, check all the needed cables if they are properly hooked up. Check your DSL or Cable Modem if working properly and is connected to your ISP and then click **<Next>**. Refer to the **Smart Wizard** section for more details.



# INTERNET

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## - Status

This page shows the current Internet connection type and status

The screenshot displays the web interface for the ENHWI-2AN3 device. On the left is a red sidebar with the Encore Electronics logo and navigation menu items: System, Wizard, Internet (highlighted), Wireless, Firewall, Advanced, and Tools. The main content area has a red header with 'AP Router Mode' and a navigation bar with tabs for Status, Dynamic IP, Static IP, PPPoE, PPTP, and L2TP. Below the tabs, it says 'View the current internet connection status and related information.' A 'WAN Settings' section is shown with a table of parameters:

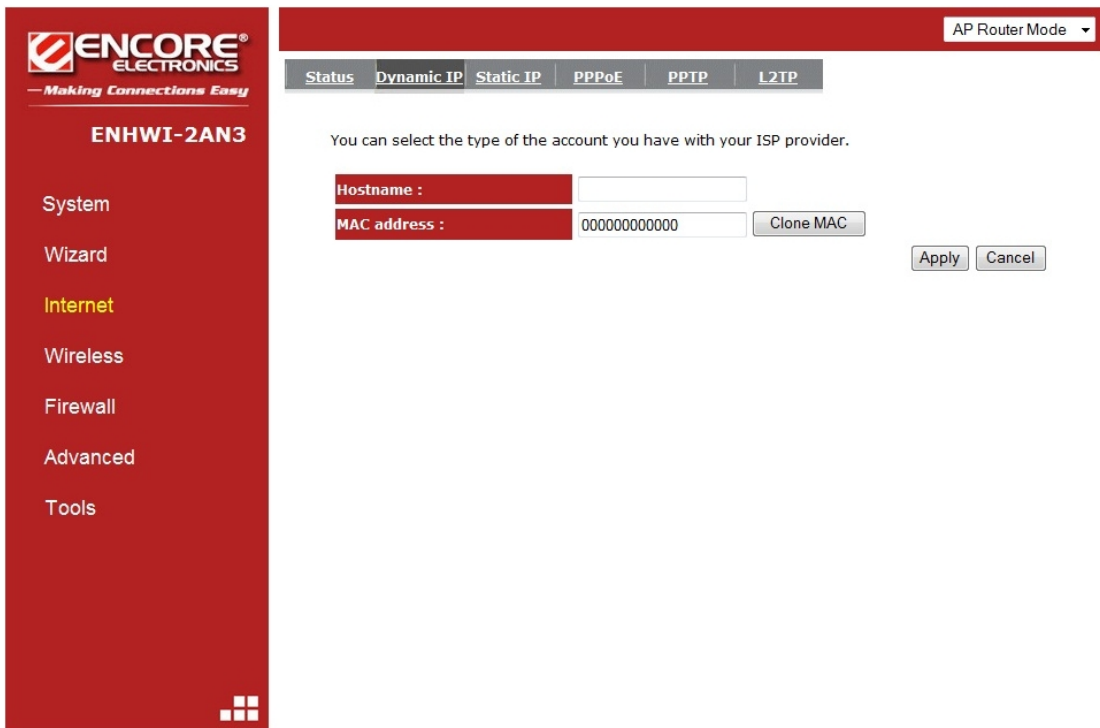
WAN Settings	
Attain IP Protocol	Dynamic IP Address
IP address	---
Subnet Mask	---
Default Gateway	---
MAC address	00:02:6F:62:D2:AE
Primary DNS	---

A 'Renew' button is located to the right of the table.

## - Dynamic IP

Use the MAC address when registering for the Internet service, and do not change it unless required by your ISP. If your ISP use the MAC address of the Ethernet card as an identifier, connect only the PC with the registered MAC address to the broadband router and click the **<Clone MAC Address>** button. This will replace the current MAC address with the already registered Ethernet card MAC address.

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**Host Name:** This is optional.

**MAC address:** The default value is set to the WAN's physical address or MAC of the broadband router.

## - Static IP

If your ISP Provider has assigned a fixed public IP address for you to use, enter the assigned IP address, Subnet Mask, Default Gateway IP address, Primary and Secondary DNS (if available) of your ISP provider.

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**ENHWI-2AN3**

System  
Wizard  
**Internet**  
Wireless  
Firewall  
Advanced  
Tools

AP Router Mode

Status Dynamic IP **Static IP** PPPoE PPTP L2TP

You can select the type of the account you have with your ISP provider.

IP address:

IP Subnet Mask :

Default Gateway :

Primary DNS :

Secondary DNS :

Apply Cancel

## - Point-to-Point Protocol over Ethernet (PPPoE)

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ENHWI-2AN3

System  
Wizard  
**Internet**  
Wireless  
Firewall  
Advanced  
Tools

AP Router Mode

Status Dynamic IP Static IP **PPPoE** PPTP L2TP

You can select the type of the account you have with your ISP provider.

Login :

Password :

Service Name :

MTU :  (512<=MTU Value <=1492)

Authentication type :

Type :

Idle Timeout :  (1-1000 Minutes )

Apply Cancel

**Login / Password:** Enter the PPPoE username and password assigned by your ISP Provider or internet service provided.

**Service Name:** This is optional.

**Maximum Transmission Unit (MTU):** This is the maximum size of the packets.

**Type: Keep Connection** - will stay connected to the Internet

**Automatic Connection** - automatically connects to the Internet when an application needs it, and drops the connection after the designated idle time period.

**Manual Connection** – manually connect and disconnect to the internet by the user

**Idle Timeout (available only under Automatic Connection):** This is a maximum period of time for which the Internet connection is maintained

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during inactivity. If the application is inactive for certain time designated here the internet connection will be automatically dropped.

## - Point-to-Point Tunneling Protocol (PPTP)

The screenshot shows the configuration page for the ENHWI-2AN3 device, specifically the PPTP settings. The interface is in AP Router Mode. The left sidebar contains navigation options: System, Wizard, Internet (highlighted), Wireless, Firewall, Advanced, and Tools. The main content area has tabs for Status, Dynamic IP, Static IP, PPPoE, PPTP (selected), and L2TP. Below the tabs, there is a message: "You can select the type of the account you have with your ISP provider." The configuration is divided into two sections: WAN Interface Settings and PPTP Settings. WAN Interface Settings includes fields for WAN Interface Type (Dynamic IP Address), Hostname, and MAC address (000000000000) with a Clone MAC button. PPTP Settings includes fields for Login, Password, Service IP address, Connection ID (0, Optional), MTU (1400, with a note 512<=MTU Value <=1492), Type (Keep Connection), and Idle Timeout (10, with a note 1-1000 Minutes). At the bottom right, there are Apply and Cancel buttons.

PPTP allows the secure connection over the Internet by simply dialing in to a local point provided by your ISP provider. The image screen allows client PCs to establish a normal PPTP session and provides hassle-free configuration of the PPTP client on each client PC.

Click **<Apply>** to save configuration and connect to ISP provider.

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## - Layer 2 Tunneling Protocol (L2TP)

The screenshot shows the configuration interface for the ENHWI-2AN3 router. The top navigation bar includes 'Status', 'Dynamic IP', 'Static IP', 'PPPoE', 'PPTP', and 'L2TP'. The 'L2TP' tab is selected. Below the navigation bar, there is a dropdown menu for 'AP Router Mode'. The main content area is titled 'You can select the type of the account you have with your ISP provider.' and contains two sections: 'WAN Interface Settings' and 'L2TP Settings'. The 'WAN Interface Settings' section includes fields for 'WAN Interface Type' (set to 'Dynamic IP Address'), 'Hostname', and 'MAC address' (with a 'Clone MAC' button). The 'L2TP Settings' section includes fields for 'Login', 'Password', 'Service IP address', 'MTU' (set to 1460), 'Type' (set to 'Keep Connection'), and 'Idle Timeout' (set to 10). 'Apply' and 'Cancel' buttons are located at the bottom right of the settings area.

### WAN Interface Settings:

#### WAN Interface Type :

- **Dynamic IP Address** – Use the DHCP client function to retrieve WAN port IP address, which will be used to establish the L2TP tunnel. The router's L2TP tunnel address will be assigned after the tunnel is established, which will be different from the WAN IP address it gets earlier.
- **Hostname** : This is optional. If your ISP requires you to put a hostname, you may enter it here.
- **MAC address** : Optional. This address will overwrite the WAN port default MAC address. If your ISP provides this MAC address, enter it here. You can also click the "Clone MAC" button to clone your PC's MAC address to overwrite the WAN port default MAC address.
- **DNS** : Optional. If your ISP doesn't provide you with a DNS server address automatically through DHCP, enter a DNS server IP address here, if the "Service IP/Name" field is a domain name in "L2TP Settings".

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- **Static IP Address** – Manually configure WAN port IP address, contents of this are:
  - **My IP Address** : This is the WAN port IP address provided by your ISP to establish the L2TP tunnel.
  - **My Subnet Mask** : This is the WAN port Subnet Mask provided by your ISP to establish the L2TP tunnel.
  - **Gateway IP Address** : This is the WAN port Gateway IP address provided by your ISP to establish L2TP tunnel.
  - **DNS** : This is optional. This is the WAN port DNS address provided by your ISP to resolve the website IP Address into the domain or URL name during establishing L2TP tunnel if you use domain name in “Service IP/Name” instead of IP address .

**L2TP Settings :**

- **Login** : Enter the L2TP username assigned by your ISP Provider.
- **Password** : Enter the L2TP password assigned by your ISP Provider.
- **Service IP/Name** : Enter the L2TP server IP address or domain name.
- **MTU** : What would you select would be the maximum size of packets. Keep it in default if you are not familiar with this setting.
- **Type** :
  - **Keep Connection** - stay connected to the Internet
  - **Automatic Connection** - automatically connects to the Internet when an application needs it, and drops the connection after the designated idle time period.
  - **Manual Connection** – manually connect and disconnect to the internet by the user
- **Idle Timeout** : This function is available only if Automatic Connection is selected under “Type”. This is a maximum period of time for which the Internet connection is maintained during inactivity. If the application is inactive for certain time designated here the internet connection will be automatically dropped.

# WIRELESS

## - Basic

In basic setting page, you can set wireless Radio, Mode, Band, SSID, and Channel.

AP Router Mode

Basic | Advanced | Security | Filter | WPS | Client List | Policy

This page allows you to define SSID, and Channel for the wireless connection. These parameters are used for the wireless stations to connect to the Access Point .

Radio :  Enable  Disable

Mode : AP

Band : 2.4 GHz (B+G+N)

Enable SSID#: 1

SSID1 : ENCORE59FE74

Auto Channel :  Enable  Disable

Channel : 11

Apply Cancel

**Radio:** You can turn on/off wireless radio. If wireless Radio is turned off, the ENHWI-2AN3 will not take wireless connections.

**Mode:** Three operation modes for selections, the **AP router** and **AP router with WDS**. If you choose **AP Router Mode**, there will be two selections under it, the **AP** or **WDS** function in the drop-down menu.

**Band:** You can select the wireless standards running on your network environment such as the following:

**2.4 GHz(B):** If all your clients are using 802.11b

**2.4 GHz(N):** If all your clients are using 802.11n

**2.4 GHz(B+G):** If both 802.11b or a 802.11g

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**2.4 GHz(G):** If all your clients are using 802.11g

**2.4 GHz(B+G+N):** If your clients are mixed using 802.11b,  
802.11g, or 802.11n

**Enable ESSID:** ENHWI-2AN3 supports up to 4 SSID. Use the down arrow to select the number of SSID you wanted to have in your wireless LAN. Once established you can set the security policy settings for each. See “Policy” section for more details.

**ESSID1 to ESSID4:** ESSID is the name of your wireless network. It is recommended to use a unique name to identify your wireless device in the LAN. This is case sensitive and up to 32 printable characters.

**Auto Channel:** Disable by default. If Enabled will automatically search all channels and automatically change to the clearest channel detected. Different items are visible below the **Auto Channel**.

**Channel:** Channel 11 by default. This is visible only when the **Auto Channel** is disabled. You can enter your preferred channel number here for the ENHWI-2AN3 wireless LAN.

**Check Channel Time:** This menu is visible only when the **Auto Channel** is enabled. Selections are from One Hour to One Week. This is the duration of when will the ENHWI-2AN3 check for and use the clearest channel in the area automatically.

## - WDS with AP Router

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Wireless Distribution System. The WDS is a way of interconnecting wireless routers and allow an extended wireless network coverage using multiple wireless routers without the use of a wired backbone. Each WDS AP requires the same channel and encryption type to work.

AP Router Mode

Basic Advanced Security Filter WPS Client List Policy

This page allows you to define SSID, and Channel for the wireless connection. These parameters are used for the wireless stations to connect to the Access Point .

Radio :  Enable  Disable

Mode : WDS

Band : 2.4 GHz (B+G+N)

Enable SSID#: 1

SSID1 : ENCORE59FE74

Auto Channel :  Enable  Disable

Channel : 11

MAC address 1 : 000000000000

MAC address 2 : 000000000000

MAC address 3 : 000000000000

MAC address 4 : 000000000000

Set Security : Set Security

Apply Cancel

**MAC address 1~4:** Please enter the MAC address of the neighboring APs that participates in the WDS. A maximum of 4 devices are allowed.

**Set Security:** WDS Security depends on your AP security settings. Note: It does not support **mixed mode** such as WPA-PSK/WPA2-PSK Mixed mode.

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## - Advanced

On this tab you can set the advanced wireless settings. If you're in doubt what to enter or use here, leave these settings as it is. This is for advance users only. Wrong parameters can make the router un-operational.

The screenshot shows the configuration interface for the ENHWI-2AN3 router. The left sidebar contains navigation options: System, Wizard, Internet, Wireless (highlighted), Firewall, Advanced, and Tools. The main content area is titled 'Advanced' and includes a warning: 'These settings are only for more technically advanced users who have a sufficient knowledge about wireless LAN. These settings should not be changed unless you know what effect the changes will have on your Broadband router .'. Below the warning are several settings:

Fragment Threshold :	<input type="text" value="2346"/>	(256-2346)
RTS Threshold :	<input type="text" value="2347"/>	(1-2347)
Beacon Interval :	<input type="text" value="100"/>	(20-1024 ms)
DTIM Period :	<input type="text" value="1"/>	(1-10)
Data rate :	<input type="button" value="Auto"/>	
N Data rate :	<input type="button" value="Auto"/>	
Channel Bandwidth :	<input checked="" type="radio"/> Auto 20/40 MHZ	<input type="radio"/> 20 MHZ
Preamble Type :	<input type="radio"/> Long Preamble	<input checked="" type="radio"/> Short Preamble
CTS Protection :	<input checked="" type="radio"/> Auto	<input type="radio"/> Always <input type="radio"/> None
Tx Power :	<input type="button" value="100 %"/>	

At the bottom right of the settings area are 'Apply' and 'Cancel' buttons.

**Fragment Threshold:** Default value is 2346.Specifies the maximum size of a

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packet during the fragmentation of data to be transmitted. If you set this value too low, it will result in a bad performance.

**RTS Threshold:** Default value is 2347. When the packet size is smaller than the RTS threshold, the wireless router will not use the RTS/CTS mechanism to send this packet.

**Beacon Interval:** Default value is 100. This is the interval of time that this wireless router broadcasts a beacon. A Beacon is used to synchronize the wireless network.

**DTIM Period:** Default value is 1. Enter a value between 1 and 255 for the Delivery Traffic Indication Message (DTIM). A DTIM is a countdown informing clients of the next window for listening to broadcast and multicast messages.

**Data Rate:** The “Data Rate” is the rate that this access point uses to transmit data packets. The access point will use the highest possible selected transmission rate to transmit the data packets.

**N Data Rate:** The “Data Rate” is the rate that this access point uses to transmit data packets for N compliant wireless nodes. Highest to lowest data rate can be fixed.

**Channel Bandwidth:** This is the range of frequencies that will be used.

**Preamble Type:** The “Long Preamble” can provide better wireless LAN compatibility while the “Short Preamble” can provide better wireless LAN performance.

**CTS Protection:** It is recommended to enable the protection mechanism. This mechanism can decrease the rate of data collision between 802.11b and 802.11g wireless stations. When the protection mode is enabled, the throughput of the AP will be a lower due to an increase of data frame transmission.

**TX Power:** 10% to 100%. Default value is 100%.

## - Security

ENHWI-2AN3 provides complete wireless LAN security types. Selections are WEP, IEEE 802.1x, IEEE 802.1x with WEP, WPA with pre-shared key or PSK and WPA with RADIUS. With these wireless securities, unauthorized access can be prevented. Make sure all other wireless stations use the same security type, and were setup with the same security key.

The screenshot shows the web interface for the ENHWI-2AN3 device. The top navigation bar includes 'Basic', 'Advanced', 'Security', 'Filter', 'WPS', 'Client List', and 'Policy'. The 'Security' tab is selected. The main content area contains the following fields and options:

- SSID Selection : ENCORE59FE74
- Broadcast SSID : Enable
- WMM : Enable
- Encryption : Disable
- Enable 802.1x Authentication
- Buttons: Apply, Cancel

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**ESSID Selection:** ENHWI-2AN3 router supports multiple ESSID, you can name your wireless ESSID here.

**Broadcast ESSID:** If you enabled “Broadcast ESSID”, every wireless station located within the coverage of this Router can see this ESSID. If you are building a public wireless network, enabling this feature is recommended. Disabling “Broadcast ESSID” can provide better security.

**WMM:** Wi-Fi Multi Media if enabled supports QoS to dedicate line and other resource for better audio, video and voice streaming to a particular station and applications.

**Encryption:** If set to Disable, the router will have no protection against uninvited wireless guests, your LAN will be prone to hackers. It is highly recommended to Enable this function and set your own wireless security.

### **Enable 802.1x Authentication**

IEEE 802.1x is an authentication protocol using RADIUS server. When this is Enabled, every LAN user must use an account to login to this Access Point before accessing the wireless LAN. The authentication is processed by a RADIUS server. This mode only authenticates users by IEEE 802.1x, but it does not encrypt the data during communication.

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The screenshot shows the web interface for the ENHWI-2AN3 device. The top navigation bar includes 'Basic', 'Advanced', 'Security', 'Filter', 'WPS', 'Client List', and 'Policy'. The 'Security' tab is selected. The page title is 'ENHWI-2AN3' and the mode is 'AP Router Mode'. The left sidebar lists navigation options: System, Wizard, Internet, Wireless (highlighted), Firewall, Advanced, and Tools. The main content area contains the following configuration options:

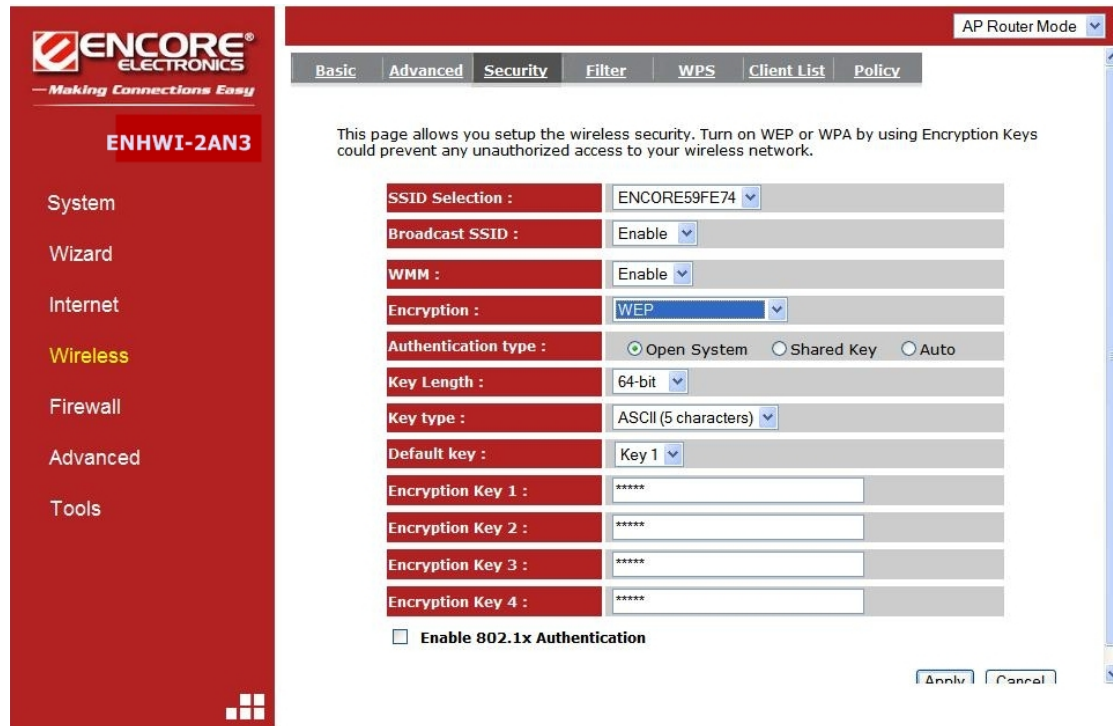
- SSID Selection : ENCORE59FE74
- Broadcast SSID : Enable
- WMM : Enable
- Encryption : Disable
- Enable 802.1x Authentication
- RADIUS Server IP address : [Empty field]
- RADIUS Server port : 1812
- RADIUS Server password : [Empty field]

Buttons for 'Apply' and 'Cancel' are located at the bottom right of the configuration area.

## WEP Encryption

When you select 64-bit or 128-bit WEP key, you have to enter WEP keys to encrypt data. You can generate the key by yourself. You can enter up to four WEP keys and select one of them as a default key. The AP can receive any packet encrypted by one of the four keys.

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**Authentication Type:** There are two authentication types: "**Open System**" and "**Shared Key**". Both AP and wireless client must be configured with the same authentication type.

**Key Length:** You can select the WEP key length for encryption, 64-bit or 128-bit. The larger the key will be the higher level of security is used, but the throughput will be lower.

**Key Type:** You may select ASCII Characters (alphanumeric format) or Hexadecimal Digits (in the "A-F", "a-f" and "0-9" range) to be the WEP Key.

**Default Key:** It's the key used to encrypt data.

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**Key1 - Key4:** The WEP keys are used to encrypt data transmitted in the wireless network. Use the following rules to setup a WEP key on the device.

**64-bit WEP:** input 10-digits Hex values (in the "A-F", "a-f" and "0-9" range) or 5-digit ASCII character as the encryption keys.

**128-bit WEP:** input 26-digit Hex values (in the "A-F", "a-f" and "0-9" range) or 13-digit ASCII characters as the encryption keys.

Click **<Apply>** at the bottom of the screen to save the above configurations.

### **WPA Pre-Shared Key Encryption**

Wi-Fi Protected Access (WPA) is an advanced security standard. You can use a pre-shared key to authenticate wireless stations and encrypt data during communication. It uses TKIP or CCMP (AES) to change the encryption key frequently. The encryption key is not easy to be cracked by hackers. This is the best security available.

The screenshot shows the web interface for the ENHWI-2AN3 router. The top navigation bar includes 'Basic', 'Advanced', 'Security', 'Filter', 'WPS', 'Client List', and 'Policy'. The 'Security' tab is selected. The page title is 'ENHWI-2AN3' and the mode is 'AP Router Mode'. A sidebar on the left lists various settings: System, Wizard, Internet, Wireless (highlighted), Firewall, Advanced, and Tools. The main content area contains a message: 'This page allows you setup the wireless security. Turn on WEP or WPA by using Encryption Keys could prevent any unauthorized access to your wireless network.' Below this is a configuration form with the following fields:

SSID Selection :	ENCORE59FE74
Broadcast SSID :	Enable
WMM :	Enable
Encryption :	WPA pre-shared key
WPA type :	<input checked="" type="radio"/> WPA(TKIP) <input type="radio"/> WPA2(AES) <input type="radio"/> WPA2 Mixed
Pre-shared Key type :	Passphrase
Pre-shared Key :	1234567890

At the bottom right of the form are 'Apply' and 'Cancel' buttons.

## WPA-RADIUS Encryption

Wi-Fi Protected Access (**WPA**) is an advanced security standard. You can use an external RADIUS server to authenticate wireless stations and provide the session key to encrypt data during communication.

It uses **TKIP** or **CCMP (AES)** to change the encryption key frequently. Press **<Apply>** button when you are done.

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The screenshot shows the configuration interface for the ENHWI-2AN3 router. The top navigation bar includes 'Basic', 'Advanced', 'Security', 'Filter', 'WPS', 'Client List', and 'Policy'. The 'Security' tab is active. The page title is 'ENHWI-2AN3' and the mode is 'AP Router Mode'. A sidebar on the left lists navigation options: System, Wizard, Internet, Wireless (highlighted), Firewall, Advanced, and Tools. The main content area contains a warning: 'This page allows you setup the wireless security. Turn on WEP or WPA by using Encryption Keys could prevent any unauthorized access to your wireless network.' Below this is a form with the following fields:

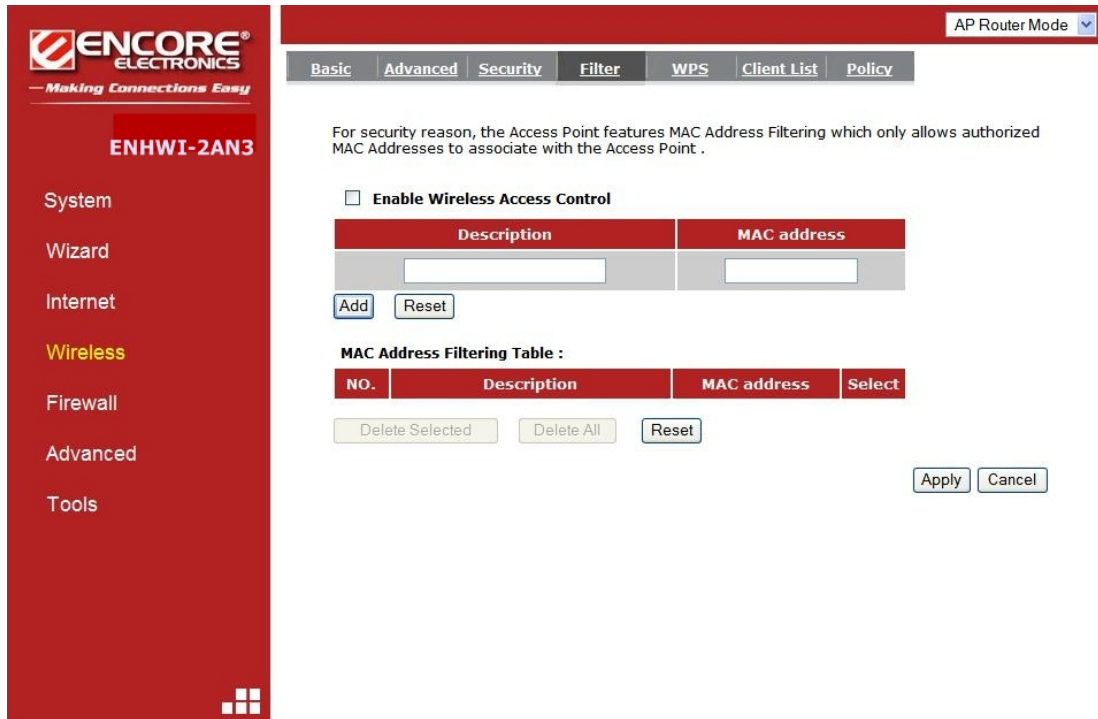
- SSID Selection : ENCORE59FE74
- Broadcast SSID : Enable
- WMM : Enable
- Encryption : WPA RADIUS
- WPA type :  WPA(TKIP)  WPA2(AES)  WPA2 Mixed
- RADIUS Server IP address : [Empty]
- RADIUS Server port : 1812
- RADIUS Server password : [Empty]

Buttons for 'Apply' and 'Cancel' are located at the bottom right of the form.

## - MAC Address Filtering

This wireless router supports MAC Address Control, which prevents unauthorized clients from accessing your wireless network.

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**Enable wireless access control:** Enable the wireless access control function

### **Adding an address into the list**

Enter the "MAC Address" and "Description" of the wireless station to be added and then click **<Add>**. The wireless station will now be added into the "MAC Address Filtering Table" below. If you are having any difficulties filling in the fields, just click "Reset" and both "MAC Address" and "Description" fields will be cleared.

### **Remove an address from the list**

If you want to remove a MAC address from the "MAC Address Filtering Table", select the MAC address that you want to remove in the list and then click "Delete Selected". If you want to remove all the MAC addresses from the list, just click the **<Delete All>** button. Click **<Reset>** will clear your current selections.

Click **<Apply>** at the bottom of the screen to save the above configurations.

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## - Wi-Fi Protected Setup™ (WPS™)

WPS™ is the simplest way to establish a connection between the wireless clients and the wireless router. You don't have to select the encryption mode and fill in a long encryption passphrase every time when you try to setup a wireless connection. You only need to press a button on both wireless client and wireless router, and the WPS will do the rest for you.

The wireless router supports two types of WPS, the WPS via Push Button and WPS via PIN code. If you want to use the Push Button, you have to push a specific button on the wireless client or in the utility of the wireless client to start the WPS mode, and switch the wireless router to WPS mode. You can simply push the WPS button of the wireless router, or click the 'Start to Process' button in the web configuration interface. If you want to use the PIN code, you have to know the PIN code of the wireless client and switch it to WPS mode, then fill-in the PIN code of the wireless client through the web configuration interface of the wireless router.

The screenshot shows a web configuration interface for WPS. At the top right, there is a dropdown menu set to "AP Router Mode". Below this is a navigation bar with tabs: Basic, Advanced, Security, Filter, WPS (selected), Client List, and Policy. The main content area is titled "WPS" and includes a checkbox for "Enable" which is checked. Under "Wi-Fi Protected Setup Information", there are several fields: "WPS Current Status" is "Configured" with a "Release Configuration" button; "Self Pin Code" is "58978443"; "SSID" is "ENCORE59FE74"; "Authentication Mode" is "WPA/WPA2 pre-shared key"; "Passphrase Key" is "encore-usa"; "WPS Via Push Button" has a "Start to Process" button; and "WPS via PIN" has an empty input field and a "Start to Process" button.

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**WPS:** Check the box to enable WPS function and uncheck it to disable the WPS function.

**WPS Current Status:** If the wireless security (encryption) function of this wireless router is properly set, you'll see a 'Configured' message here. Otherwise, you'll see '**UnConfigured**'. Click the "Release Configuration" can clear the security settings of the 1<sup>st</sup> SSID.

**Self Pin Code:** This is the WPS PIN code of the wireless router. You may need this information when connecting to other WPS-enabled wireless devices.

**SSID:** This is the network broadcast name (SSID) of the router.

**Authentication Mode:** It shows the active authentication mode for the wireless connection.

**Passphrase Key:** It shows the passphrase key that is randomly generated by the wireless router during the WPS process. You may need this information when using a device which doesn't support WPS.

**Interface:** If device is set to repeater mode, you can choose "**Client**" interface to connect with other AP by using WPS, otherwise you may choose "**AP**" interface to do WPS with other clients.

**WPS via Push Button:** Press the button to start the WPS process. The router will wait for the WPS request from the wireless devices within 2 minutes.

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**WPS via PIN:** You can fill-in the PIN code of the wireless device and press the button to start the WPS process. The router will wait for the WPS request from the wireless device within 2 minutes.

## - Client List

WLAN Client Table shows the Wireless clients associated to this Wireless Router.

AP Router Mode

Basic Advanced Security Filter WPS Client List Policy

**WLAN Client Table :**

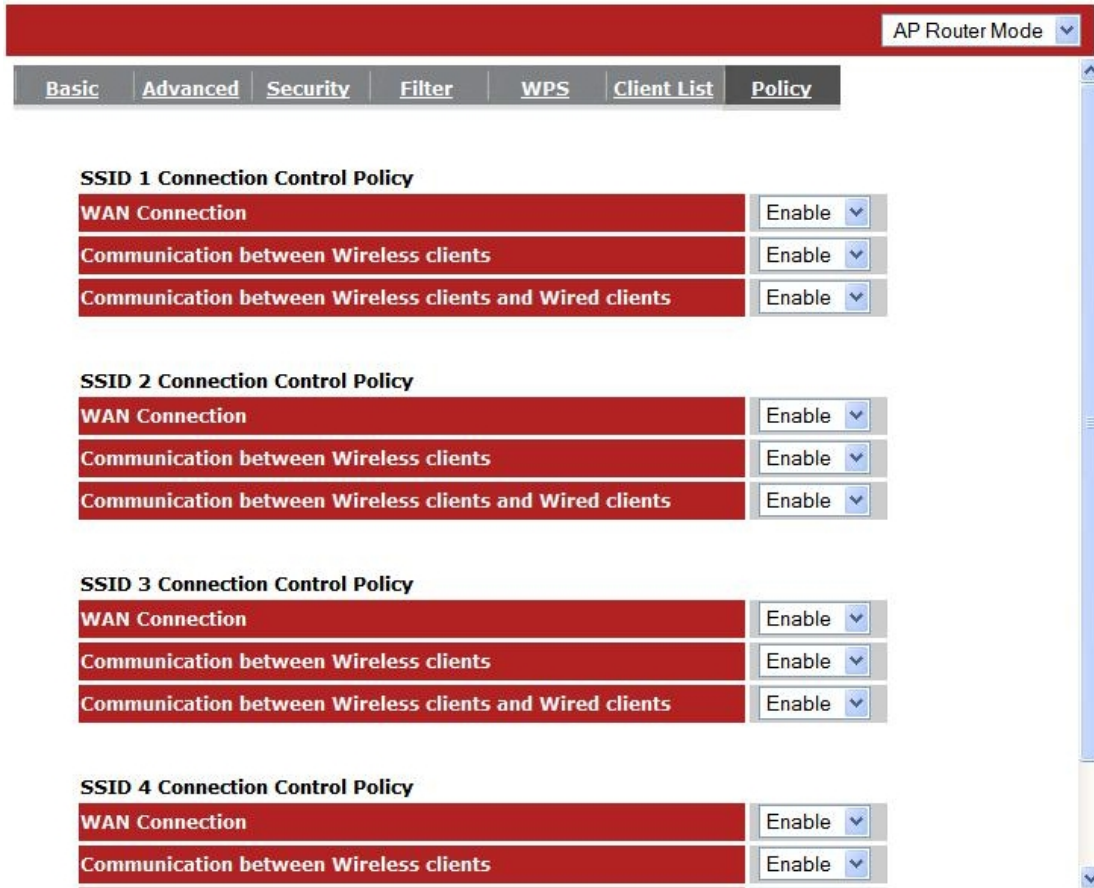
This WLAN Client Table shows client MAC address associate to this Broadband Router

Interface	MAC Address	Signal (%)	Idle Time
No client connecting to the Router.			

Refresh

## - Policy

The Broadband router can allow you to set up the Wireless Access Policy up to 4 SSID's.



## FIREWALL

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

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- Enable
- Advanced
- DMZ
- DoS
- MAC Filter
- IP Filter
- URL Filter

Firewall automatically detects and blocks Denial of Service (DoS) attacks. URL blocking, packet filtering and SPI (Stateful Packet Inspection) are also supported. The hackers attack will be recorded associated with timestamp in the security logging area.

Firewall :  Enable  Disable

Apply

**Note:**

To enable the Firewall settings select Enable and click Apply

### - Advanced

You can allow the VPN packets to pass through this Broadband router.

- Enable
- Advanced
- DMZ
- DoS
- MAC Filter
- IP Filter
- URL Filter

Description	Select
VPN PPTP Pass-Through	<input checked="" type="checkbox"/>
VPN IPSec Pass-Through	<input checked="" type="checkbox"/>

Apply Cancel

### - Demilitarized Zone (DMZ)

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

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particular IP address in your LAN. The difference between the virtual server and the DMZ function is that the virtual server re-directs a particular service/Internet application (e.g. FTP, websites) to a particular LAN client/server, whereas DMZ re-directs all packets (regardless of services) from your WAN IP address to a particular LAN client/server.

AP Router Mode

Enable Advanced **DMZ** DoS MAC Filter IP Filter URL Filter

If you have a local client PC that cannot run an Internet application properly from behind the NAT firewall, you can open unrestricted two-way Internet access for this client by defining a Virtual DMZ Host.

Enable DMZ

Local IP Address :  Please select a PC.

Apply Cancel

**Enable DMZ:** Enable / Disable DMZ

**LAN IP Address:** Fill-in the IP address of a particular host in your LAN Network or select a PC from the list on the right that will receive all the packets originally from the WAN port/Public IP address.

Click **<Apply>** at the bottom of the screen to save the above configurations.

## - Denial of Service (DoS)

The Broadband router's firewall can block common hacker attacks, including Denial of Service, Ping of Death, Port Scan and Sync Flood. If Internet attacks occur the router can log the events.

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The Firewall can detect and block DOS attacks, DOS (Denial of Service) attacks can flood your Internet Connection with invalid packets and connection requests, using so much bandwidth and so many resources that Internet access becomes unavailable.

Block DoS :  Enable  Disable

Apply Cancel

**Flood:** Protects the router from Sync Flood attack.

## - MAC Filter

If you want to restrict users from accessing certain Internet applications / services (e.g. Internet websites, email, FTP etc.), and then this is the place to set that configuration. MAC Filter allows users to define the traffic type permitted in your LAN. You can control which PC client can have access to these services.

MAC Filters are used to deny or allow LAN computers from accessing the Internet.

**Enable MAC filtering**

Deny all clients with MAC address listed below to access the network

Allow all clients with MAC address listed below to access the network

Description	LAN MAC Address
<input type="text"/>	<input type="text"/>

**MAC Filtering table :**

NO.	Description	LAN MAC Address	Select
-----	-------------	-----------------	--------

**Enable MAC Filtering:** Check to enable or disable MAC Filtering.

**Deny:** If you select “Deny” then all clients will be allowed to access Internet except the clients in the list below.

**Allow:** If you select “Allow” then all clients will be denied to access Internet except the PCs in the list below.

### **Add PC MAC Address**

Fill in “**LAN MAC Address**” and **<Description>** of the PC that is allowed / denied to access the Internet, and then click **<Add>**. If you find any typo before adding it and want to retype again, just click **<Reset>** and the fields will be cleared.

### **Remove PC MAC Address**

If you want to remove some PC from the "**MAC Filtering Table**", select the PC you want to remove in the table and then click **<Delete Selected>**. If you want to remove all PCs from the table, just click the **<Delete All>** button. If you want to clear the selection and re-select again, just click **<Reset>**.

Click **<Apply>** at the bottom of the screen to save the above configurations.

## - IP Filter

AP Router Mode ▼

Enable Advanced DMZ DoS MAC Filter IP Filter URL Filter

IP Filters are used to deny or allow LAN computers from accessing the Internet.

**Enable IP Filtering Table**

Deny all clients with IP address listed below to access the network  
 Allow all clients with IP address listed below to access the network

Description :	<input style="width: 90%;" type="text"/>
Protocol :	<input style="width: 90%;" type="text" value="Both"/>
Local IP Address :	<input style="width: 45%;" type="text"/> ~ <input style="width: 45%;" type="text"/>
Port range :	<input style="width: 20%;" type="text"/> ~ <input style="width: 20%;" type="text"/>

Add Reset

NO.	Description	Local IP Address	Protocol	Port range	Select
<span style="border: 1px solid black; padding: 2px 10px;">Delete Selected</span> <span style="border: 1px solid black; padding: 2px 10px;">Delete All</span> <span style="border: 1px solid black; padding: 2px 10px;">Reset</span>					

Apply Cancel

**Enable IP Filtering:** Check to enable or uncheck to disable IP Filtering.

**Deny:** If you select “Deny” then all clients will be allowed to access Internet except for the clients in the list below.

**Allow:** If you select “Allow” then all clients will be denied to access Internet except for the PCs in the list below.

### Add PC IP Address

You can click **<Add>** PC to add an access control rule for users by an IP address or IP address range.

## Remove PC IP Address

If you want to remove some PC IP from the **<IP Filtering Table>**, select the PC you want to remove in the table and then click **<Delete Selected>**. If you want to remove all PCs from the table, just click the **<Delete All>** button.

Click **<Apply>** at the bottom of the screen to save the above configurations.

## **- URL Filter**

You can block access to some Web sites from particular PCs by entering a full URL address or just keywords of the Web site.

The screenshot shows a web interface for configuring a URL filter. At the top right, there is a red bar with 'AP Router Mode' and a dropdown arrow. Below this is a navigation menu with tabs: 'Enable', 'Advanced', 'DMZ', 'DoS', 'MAC Filter', 'IP Filter', and 'URL Filter'. The 'URL Filter' tab is selected. Below the navigation menu, there is a text box with the instruction: 'You can block access to certain Web sites for a particular PC by entering either a full URL address or just a keyword of the Web site'. Below this text box is a checkbox labeled 'Enable URL Blocking'. To the right of the checkbox is a text input field labeled 'URL/keyword'. Below the input field are two buttons: 'Add' and 'Reset'. Below the input field and buttons is a table titled 'Current URL Blocking Table :'. The table has three columns: 'NO.', 'URL/keyword', and 'Select'. Below the table are three buttons: 'Delete Selected', 'Delete All', and 'Reset'. At the bottom right of the form are two buttons: 'Apply' and 'Cancel'.

**Enable URL Blocking:** Enable or disable URL Blocking

## Add a URL Keyword

Fill-in the "URL/Keyword" field with your url / keyword, and then click **<Add>**. You can enter the full URL address or the keyword of the web site you want to block. If

you happen to make a mistake and want to retype again, just click "Reset" and the field will be cleared.

### **Remove URL Keyword**

If you want to remove some URL keywords from the "**Current URL Blocking Table**", select the URL keyword you want to remove in the table and then click **<Delete Selected>**. If you want remove all URL keywords from the table, click **<Delete All>** button. If you want to clear the selection and re-select again, just click **<Reset>**.

Click **<Apply>** to save the above configurations

# ADVANCED

## - Network Address Translation (NAT)

Network Address Translation (NAT) allows multiple users at your local LAN site to access the Internet using a single Public IP Address or multiple Public IP Addresses. NAT provides Firewall protection from hacker attacks and has the flexibility to allow you to map Private IP Addresses to Public IP Addresses for key services such as Websites and FTP. Select Disable to disable the NAT function.

AP Router Mode

**NAT** | Port map. | Port fw. | Port tri. | ALG | UPnP | QoS | Routing

NAT(Network Address Translation) involves re-writing the source and/or destination addresses of IP packets as they pass through a Router or firewall, NAT enable multiple hosts on a private network to access the Internet using a single public IP address.

NAT :  Enable  Disable

Apply

## - Port Mapping

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

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Entries in this table allow you to automatically redirect common network services to a specific PC behind the NAT firewall. These settings are only necessary if you wish to host some sort of server like a web server or mail server on the local network .

**Enable Port Mapping**

Description :

Local IP :

Protocol : Both ▼

Port range :  ~

**Current Port Mapping Table :**

NO.	Description	Local IP	Type	Port range	Select
<input type="button" value="Delete Selected"/> <input type="button" value="Delete All"/> <input type="button" value="Reset"/>					
<input type="button" value="Apply"/> <input type="button" value="Cancel"/>					

**Enable Port Mapping:** Enable or disable port mapping function.

**Description:** description of this setting.

**Local IP:** This is the local IP of the server behind the NAT firewall.

**Protocol:** This is the protocol type to be forwarded. You can choose to forward “TCP” or “UDP” packets only, or select “BOTH” to forward both “TCP” and “UDP” packets.

**Port Range:** The range of ports to be forward to the private IP.

**Add Port Mapping**

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Fill in the "**Local IP**", "**Protocol**", "**Port Range**" and "**Description**" of the setting to be added and then click "**Add**". Then this Port Mapping setting will be added into the "**Current Port Mapping Table**" below. If you find any typo before adding it and want to retype again, just click **<Reset>** and the fields will be cleared.

### **Remove Port Mapping**

If you want to remove a Port Mapping setting from the "**Current Port Mapping Table**", select the Port Mapping setting that you want to remove in the table and then click **D<Delete Selected>**. If you want to remove all Port Mapping settings from the table, click **<Delete All>** button. Click **<Reset>** will clear your current selections.

Click **<Apply>** at the bottom of the screen to save the above configurations.

## **- Port Forwarding (Virtual Server)**

Use the Port Forwarding (Virtual Server) function when you want different servers/clients in your LAN to handle different service/Internet application type (e.g. Email, FTP, Web server etc.) from the Internet. Computers use numbers called port numbers to recognize a particular service/Internet application type. The Virtual Server allows you to re-direct a particular service port number (from the Internet/WAN Port) to a particular LAN private IP address (See Glossary for an explanation on Port number).

You can configure the router as a Virtual Server allowing remote users to access services such as Web or FTP at your local PC. Depending on the requested service (TCP/UDP) port number, the router will redirect the external service request to the appropriate internal server (located at one of your local PCs).

**Enable Port Forwarding**

Description :

Local IP :

Protocol : Both ▼

Local Port :

Public Port :

**Current Port Forwarding Table :**

NO.	Description	Local IP	Local Port	Type	Public Port	Select
-----	-------------	----------	------------	------	-------------	--------

**Enable Port Forwarding:** Enable or disable Port Forwarding.

**Description:** The description of this setting.

**Local IP / Local Port:** This is the LAN Client/Host IP address and Port number that the Public Port number packet will be sent to.

**Protocol:** Select the port number protocol type (TCP, UDP or both). If you are unsure, then leave it to the default “both” setting. Public Port enters the service (service/Internet application) port number from the Internet that will be re-directed to the above Private IP address host in your LAN Network.

**Public Port:** Port number will be changed to Local Port when the packet enters your LAN Network.

### **Add Port Forwarding**

Fill in the "**Description**", "**Local IP**", "**Local Port**", "**Protocol**" and "**Public Port**" of the setting to be added and then click **<Add>** button. Then this Virtual Server setting will be added into the "**Current Port Forwarding Table**" below. If you find any typo before adding it and want to retype again, just click **<Reset>** and the fields will be cleared.

### **Remove Port Forwarding**

If you want to remove Port Forwarding settings from the "**Current Port Forwarding Table**", select the Port Forwarding settings you want to remove in the table and then click "**Delete Selected**". If you want to remove all Port Forwarding settings from the table, just click the **<Delete All>** button. Click **<Reset>** will clear your current selections.

Click **<Apply>** at the bottom of the screen to save the above configurations.

## **- Port Triggering (Special Applications)**

Some applications require multiple connections, such as Internet games, video Conferencing, Internet telephony and others. In this section you can configure the router to support multiple connections for these types of applications.

Port Triggering, also called Special Applications allows you to use Internet applications which normally do not function when used behind a firewall.

**Enable Trigger Port**

**Description :**   
**Popular applications :** Select an application ▼ Add  
**Trigger port :**  ~   
**Trigger type :** Both ▼  
**Public Port :**   
**Public type :** Both ▼

Add Reset

**Current Trigger-Port Table :**

NO.	Trigger port	Trigger type	Public Port	Public type	Name	Select
-----	--------------	--------------	-------------	-------------	------	--------

Delete Selected Delete All Reset

Apply Cancel

**Enable Trigger Port:** Enable or disable the Port Trigger function.

**Trigger Port:** This is the outgoing (Outbound) range of port numbers for this particular application.

**Trigger Type:** Select whether the outbound port protocol is “TCP”, “UDP” or “BOTH”.

**Public Port:** Enter the In-coming (Inbound) port or port range for this type of application (e.g. 2300-2400, 47624)

**Public Type:** Select the Inbound port protocol type: “TCP”, “UDP” or “BOTH”

**Popular Applications:** This section lists the more popular applications that require multiple connections. Select an application from the Popular Applications selection. Once you have selected an application, select a location (1-5) in the “Add” selection box and then click the <Add> button. This will automatically list the Public Ports

required for this popular application in the location (1-5) you specified.

### **Add Port Triggering**

Fill in the "**Trigger Port**", "**Trigger Type**", "**Public Port**", "**Public Type**", "**Public Port**" and "**Description**" of the setting to be added and then Click **<Add>**. The Port Triggering setting will be added into the "**Current Trigger-Port Table**" below. If you happen to make a mistake, just click **<Reset>** and the fields will be cleared.

### **Remove Port Triggering**

If you want to remove Special Application settings from the "**Current Trigger-Port Table**", select the Port Triggering settings you want to remove in the table and then click **<Delete Selected>**. If you want remove all Port Triggering settings from the table, just click the **<Delete All>** button. Click **<Reset>** will clear your current selections.

## **- Application Layer Gateway (ALG)**

You can select applications that need **ALG** support. The router will let the selected application to correctly pass through the NAT gateway.

The ALG (Application Layer Gateway) serves the purpose of a window between correspondent application processes so that they may exchange information on the open environment.

Description	Select
H323	<input type="checkbox"/>
MMS	<input type="checkbox"/>
TFTP	<input type="checkbox"/>
Egg	<input type="checkbox"/>
IRC	<input type="checkbox"/>
Amanda	<input type="checkbox"/>
Quake3	<input type="checkbox"/>
Talk	<input type="checkbox"/>
IPsec	<input type="checkbox"/>
FTP	<input type="checkbox"/>

Apply

Cancel

## - UPnP

With UPnP, all PCs in your Intranet will discover this router automatically. So, you don't have to configure your PC and it can easily access the Internet through this router.

Universal Plug and Play is designed to support zero-configuration, "invisible" networking, and automatic discovery for a range of device from a wide range of vendors. With UPnP, a device can dynamically join a network, obtain an IP address and learn about the presence and capabilities of other devices all automatically. Devices can subsequently communicate with each other directly .

- Enable the Universal Plug and Play (UPnP) Feature
- Allow users to make port forwarding changes through UPnP

**Enable / Disable UPnP:** You can enable or Disable the UPnP feature here.

After you enabled the UPnP feature, all client systems that support UPnP, like Windows XP, can discover this router automatically and access the Internet through this router without having to configure anything. The NAT Traversal function provided by UPnP can let applications that support UPnP connect to the internet without having to configure the virtual server sections.

## - Quality of Service (QoS)

QoS lets you classify Internet application traffic by source/destination IP address and port number. You can assign priority for each type of application and reserve bandwidth for it. The packets of applications with higher priority will always go first. Lower priority applications will get bandwidth after higher priority applications get enough bandwidth. This can let you have a better experience in

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using critical real time services like Internet phone, video conference ...etc. All the applications not specified by you are classified as rule “Others”.

### Priority Queue

This can put the packets of specific protocols in High/Low Queue. The packets in High Queue will process first.

AP Router Mode v

NAT
Port map.
Port fw.
Port tri.
ALG
UPnP
QoS
Routing

Quality of Service (QoS) refers to the capability of a network to provide better service to selected network traffic. The primary goal of QoS is to provide priority including dedicated bandwidth, controlled jitter and latency (required by some real-time and interactive traffic), and improved loss characteristics. Also important is making sure that providing priority for one or more flows does not make other flows fail .

**QoS :**       Priority Queue    Bandwidth Allocation    Disabled

**Unlimited Priority Queue**

Local IP Address	Description
<input style="width: 100%;" type="text"/>	The IP address will not be bounded in the QoS limitation

**High/Low Priority Queue**

Protocol	High Priority	Low Priority	Specific Port
FTP	<input type="radio"/>	<input checked="" type="radio"/>	20,21
HTTP	<input type="radio"/>	<input checked="" type="radio"/>	80
TELNET	<input type="radio"/>	<input checked="" type="radio"/>	23
SMTP	<input type="radio"/>	<input checked="" type="radio"/>	25
POP3	<input type="radio"/>	<input checked="" type="radio"/>	110
Name: <input style="width: 100%;" type="text"/>	<input type="radio"/>	<input checked="" type="radio"/>	Both <span style="font-size: small;">v</span> <input style="width: 50px;" type="text"/> ~ <input style="width: 50px;" type="text"/>
Name: <input style="width: 100%;" type="text"/>	<input type="radio"/>	<input checked="" type="radio"/>	Both <span style="font-size: small;">v</span> <input style="width: 50px;" type="text"/> ~ <input style="width: 50px;" type="text"/>

**Unlimited Priority Queue:** The LAN IP address will not be bounded in the QoS limitation.

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**High/Low Priority Queue:** This can put the packets in the protocol and port range to High/Low QoS Queue.

**Bandwidth Allocation:**

This can reserve / limit the throughput of specific protocols and port range. You can set the upper bound and Lower bound.

AP Router Mode

NAT | Port map. | Port fw. | Port tri. | ALG | UPnP | **QoS** | Routing

Quality of Service (QoS) refers to the capability of a network to provide better service to selected network traffic. The primary goal of QoS is to provide priority including dedicated bandwidth, controlled jitter and latency (required by some real-time and interactive traffic), and improved loss characteristics. Also important is making sure that providing priority for one or more flows does not make other flows fail .

**QoS :**  Priority Queue  Bandwidth Allocation  Disabled

Type : Download

Local IP range : ~

Protocol : ALL

Port range : 1 ~ 65535

Policy : Min

Rate(bps) : Full

Add Reset

**Current QoS Table:**

NO.	Type	Local IP range	Protocol	Port range	Policy	Rate (bps)	Select
Delete Selected							
Delete All							
Reset							

Apply Cancel

**Type:** Specify the direction of packets. Upload / Download or both.

**IP range:** Specify the IP address range. You could also fill one IP address

**Protocol:** Specify the packet type. The default ALL will put all packets in the QoS priority Queue.

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**Port range:** Specify the Port range. You could also fill one Port.

**Policy:** Specify the policy of QoS, **Min** option will reserve the selected data rate in QoS queue. **Max** option will limit the selected data rate in QoS queue.

**Rate:** The data rate of QoS queue.

**Disabled:** This turn off QoS Service.

AP Router Mode ▾

NAT | Port map. | Port fw. | Port tri. | ALG | UPnP | **QoS** | Routing

Quality of Service (QoS) refers to the capability of a network to provide better service to selected network traffic. The primary goal of QoS is to provide priority including dedicated bandwidth, controlled jitter and latency (required by some real-time and interactive traffic), and improved loss characteristics. Also important is making sure that providing priority for one or more flows does not make other flows fail .

QoS :  Priority Queue  Bandwidth Allocation  Disabled

Apply Cancel

## - Routing

You can set Enable Static Routing to let the router forward packets using your routing policy.

**Enable**   **Routing**

You can enable Static Routing to turn off the NAT function of the router and let the router forward packets by your routing policy .

**To take Static Route effect, please disable NAT function.**

**Enable Static Routing**

**Destination LAN IP :**

**Subnet Mask :**

**Default Gateway :**

**Hops:**

**Interface :** LAN 

**Current Static Routing Table :**

NO.	Destination LAN IP	Subnet Mask	Default Gateway	Hops	Interface	Select
-----	--------------------	-------------	-----------------	------	-----------	--------

**Destination LAN IP:** Specify the destination LAN IP address of static routing rule.

**Subnet Mask:** Specify the Subnet Mask of static routing rule.

**Default Gateway:** Specify the default gateway of static routing rule.

**Hops:** Specify the Max Hops number of static routing rule.

**Interface:** Specify the Interface of static routing rule.

## TOOLS

- Admin

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You can change the password required to log into the broadband router's system web-based management. By default, the password is: admin. Passwords can contain 0 to 12 alphanumeric characters, and are case sensitive.

The screenshot shows a web management interface with a red header bar containing 'AP Router Mode' and a dropdown arrow. Below the header is a navigation menu with buttons for 'Admin', 'Time', 'DDNS', 'Power', 'Diagnosis', 'Firmware', 'Back-up', and 'Reset'. The 'Admin' button is selected. The main content area contains the following text: 'You can change the password that you use to access the router, this is not your ISP account password.' Below this are three input fields: 'Old Password :', 'New Password :', and 'Repeat New Password :'. Further down, there is a paragraph: 'Remote management allows the router to be configured from the Internet by a web browser, A username and password is still required to access the Web-Management interface.' Below this is a table with three columns: 'Host Address', 'port', and 'Enable'. The 'port' column contains the value '8080' and the 'Enable' column contains an unchecked checkbox. At the bottom right of the table are 'Apply' and 'Reset' buttons.

Host Address	port	Enable
<input type="text"/>	8080	<input type="checkbox"/>

**Old Password:** Fill in the current password to allow changing to a new password.

**New Password:** Enter your new password and type it again in **Repeat New Password** for verification purposes

### Remote management

Allows you to designate a host in the Internet. The ability to configure the Broadband router from a remote site. Enter the designated host IP Address in the Host IP Address field.

**Host Address:** This is the IP address of the host in the Internet that will have management/configuration access to the Broadband router from a remote site. If the Host Address is left 0.0.0.0 this means anyone can access the router's web-based configuration from a remote location, providing they know the password.

**Port:** The port number of the remote management web interface.

**Enabled:** Check to enable the remote management function.

Click <**Apply**> at the bottom of the screen to save the above configurations.

## **- Time**

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

### **Setting Up Time:**

**Synchronize with the NTP server**

The Router reads the correct time from NTP servers on the Internet and sets its system clock accordingly. The Daylight Savings option merely advances the system clock by one hour. The time zone setting is used by the system clock when displaying the correct time in schedule and the log files.

<b>Time Setup:</b>	Synchronize with the NTP Server ▾
<b>Time Zone :</b>	(GMT)Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London ▾
<b>NTP Time Server :</b>	<input type="text"/>
<b>Daylight Saving :</b>	<input type="checkbox"/> Enable From <input type="text" value="January"/> <input type="text" value="1"/> To <input type="text" value="January"/> <input type="text" value="1"/>

**Time Zone:** Select the time zone of the country you are currently located. The router will set its time based on your selection.

**NTP Time Server:** The router can be set up to use external NTP Time Server.

**Daylight Savings:** The router can also be set to automatically adjust to the Daylight Savings changes. If you wish to use this function, you must select the Daylight Savings Time period and put a checkmark on the Enable box to enable your daylight savings time configuration.

Click **<Apply>** at the bottom of the screen to save the above configurations.

### **Synchronize with your PC**

You could synchronize timer with your computers time.

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The Router reads the correct time from NTP servers on the Internet and sets its system clock accordingly. The Daylight Savings option merely advances the system clock by one hour. The time zone setting is used by the system clock when displaying the correct time in schedule and the log files.

<b>Time Setup:</b>	Synchronize with PC ▾
<b>PC Date and Time:</b>	Thursday, May 21, 2009 12:10:51 PM
<b>Daylight Saving :</b>	<input type="checkbox"/> Enable From January ▾ 1 ▾ To January ▾ 1 ▾

Apply Reset

**PC Date and Time:** This field would display your computer's date and time.

**Daylight Savings:** The router can also take Daylight Savings into account. If you wish to use this function, you must select the Daylight Savings Time period and check/tick the enable box to enable your daylight saving configuration.

Click **<Apply>** at the bottom of the screen to save the above configurations.

## - DDNS

DDNS allows you to map the static domain name to a dynamic IP address. You must register to a DDNS services and to get an account, password and your static domain name from the DDNS service providers. This router supports DynDNS, TZO and other common DDNS service providers.

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

**Dynamic DNS :**  Enable  Disable

**Server Address :** 3322(qdns) ▼

**Host Name :**

**Username :**

**Password :**

Apply Cancel

**Enable/Disable DDNS:** Enable or disable the DDNS function of this router

**Server Address:** Select a DDNS service provider

**Host Name:** Fill in your static domain name that uses DDNS.

**Username:** The account that your DDNS service provider assigned to you.

**Password:** The password you set for the DDNS service account above.

Click **<Apply>** at the bottom of the screen to save the above configurations.

**- Power**

Saving power in WLAN mode can be enabled / disabled in this page.



You can use the power page to save energy for WLAN interfaces.

**Power Saving Mode :**

**WLAN :**  Enable  Disable

Apply Cancel

## - Diagnosis

In this page lets you run diagnosis to your network status.

This page can diagnose the current network status

**Address to Ping :**  Start

**Ping Result :**

## - Firmware

This page allows you to upgrade the router's firmware. To upgrade the firmware of your Broadband router, you need to download the firmware file to your local hard disk, and enter that file name and path in the appropriate field on this page.

You can also use the Browse button to find the firmware file in your PC.

You can upgrade the firmware of the router in this page. Ensure, the firmware you want to use is on the local hard drive of your computer. Click on Browse to browse and locate the firmware to be used for your update.

Once you've selected the new firmware file, click **<Apply>** at the bottom of the screen to start the upgrade process

### - Back-up

This page allows you to save the current router configurations. When you save the configurations, you also can restore the saved configurations into the router through the **Restore Settings**. If extreme problems occur you can use the **Restore to Factory Defaults** to set all configurations to its original default settings. Warning: You will loose any saved data and settings when you set back to the manufacturer's default settings, but you can re-enter your previous settings manually.

Use BACKUP to save the routers current configuration to a file named config.dif. You can use RESTORE to restore the saved configuration. Alternatively, you can use RESTORE TO FACTORY DEFAULT to force the router to restore the factory default settings.

Restore to factory default :	<input type="button" value="Reset"/>
Backup Settings :	<input type="button" value="Save"/>
Restore Settings :	<input style="width: 150px;" type="text"/> <input type="button" value="Browse..."/>
	<input type="button" value="Upload"/>

**Backup Settings:** This can save the current Broadband router configuration to a file named "**config.bin**" on your PC. You can also use the **<Upload>** button to restore the saved configuration to the Broadband router. Alternatively, you can use the "**Restore to Factory Defaults**" tool to force the Broadband router to perform a power reset and restore the original factory settings.

**- Reset**

You can reset the broadband router when system stops responding correctly or stop functions.

In the event the system stops responding correctly or stops functioning, you can perform a reset. Your settings will not be changed. To perform the reset, click on the APPLY button. You will be asked to confirm your decision. The reset will be completed when the LED Power light stops blinking .

## XIII - Repeater Mode

---

Repeater mode has limited settings compared to the AP mode. Choose “Repeater mode” on the top right corner of the configuration page.

System restarts and connects to the IP address <http://192.168..0.1>

You will see the configuration homepage under “**REPEATER**” mode now.

The screenshot shows the web interface for the ENHWI-2AN3 router. The top navigation bar includes 'Status', 'LAN', 'Schedule', 'Log', 'Monitor', and 'Language'. The 'Status' page provides a summary of the router's current state, including system details, LAN configuration, and WLAN settings. The system information section lists the model as 'Wireless Network Broadband Router', mode as 'AP Repeater', and uptime as '17 sec'. The LAN settings section shows an IP address of '192.168.0.1' and a MAC address of '00:02:6F:59:FE:74'. The WLAN settings section is partially visible. A 'Repeater' button is located at the bottom of the settings sections.

## System

### - Status

System status section allows you to monitor the current status of your router.

You can see the Uptime, hardware information, serial number as well as firmware version information.

**LAN Settings:** This page displays the Broadband router LAN port's current LAN information.

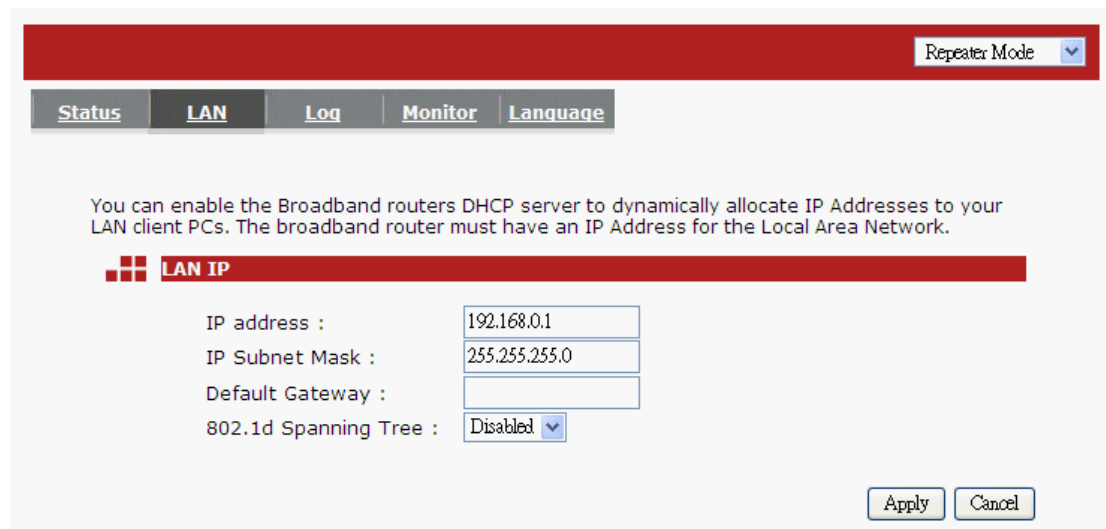
**WLAN Settings:** Wireless configuration details such as SSID, Status(Connected/Disconnected), Security and Channel are briefly shown.

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## - LAN

The LAN Tabs shows LAN settings. LAN settings can be change as needed. If you are an entry level user, try opening a website from your computer. If you're successful and able to connect and browse the web site you opened without any problem, do not change any of the settings.

Click **<Apply>** at the bottom of this screen to save the changed configurations.



The screenshot shows a web interface for LAN configuration. At the top right, there is a 'Repeater Mode' dropdown menu. Below it is a navigation bar with tabs for 'Status', 'LAN', 'Log', 'Monitor', and 'Language'. The main content area contains a paragraph explaining DHCP server functionality. Below this is a red header for 'LAN IP' with a grid icon. The configuration fields are: 'IP address' (192.168.0.1), 'IP Subnet Mask' (255.255.255.0), 'Default Gateway' (empty), and '802.1d Spanning Tree' (Disabled). At the bottom right are 'Apply' and 'Cancel' buttons.

**IP address:** This is the router's LAN IP address (Your LAN clients default gateway IP address). It can be changed based on your network architecture.

**IP Subnet Mask:** Specify a Subnet Mask IP address for your LAN segment.

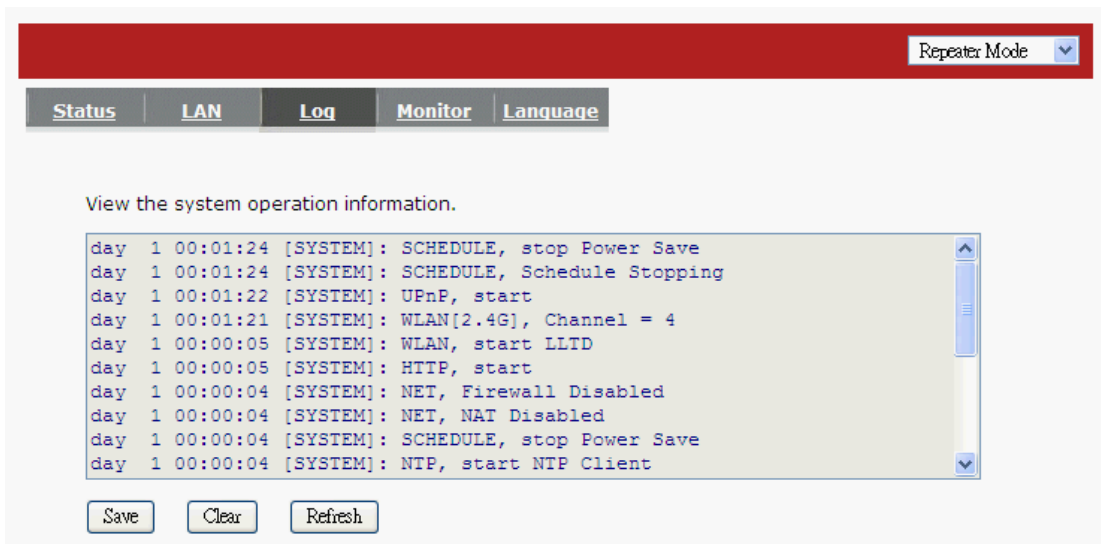
**802.1d Spanning Tree:** This is disabled by default. If 802.1d Spanning Tree function is enabled, this router will use the spanning tree protocol to prevent network loops.

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## - Event Log

View operations log of the **ENHWI-2AN3**. This page shows the current system log of the ENHWI-2AN3 router. It displays any event occurred after system start up. Use the scroll bar to go down to the bottom of the page, the system log can be saved **<Save>** to a local file for future use or the system log can be cleared **<Clear>** or it can be refreshed **<Refresh>** to get the most updated information. When the system is powered down, the system log will disappear if not saved to a local file.



Repeater Mode

Status LAN **Log** Monitor Language

View the system operation information.

```
day 1 00:01:24 [SYSTEM]: SCHEDULE, stop Power Save
day 1 00:01:24 [SYSTEM]: SCHEDULE, Schedule Stopping
day 1 00:01:22 [SYSTEM]: UPnP, start
day 1 00:01:21 [SYSTEM]: WLAN[2.4G], Channel = 4
day 1 00:00:05 [SYSTEM]: WLAN, start LLTD
day 1 00:00:05 [SYSTEM]: HTTP, start
day 1 00:00:04 [SYSTEM]: NET, Firewall Disabled
day 1 00:00:04 [SYSTEM]: NET, NAT Disabled
day 1 00:00:04 [SYSTEM]: SCHEDULE, stop Power Save
day 1 00:00:04 [SYSTEM]: NTP, start NTP Client
```

Save Clear Refresh

## - Monitor

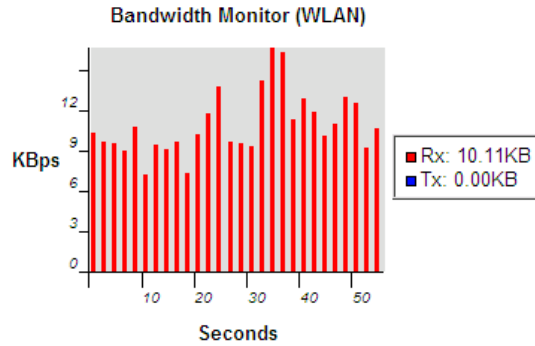
The Monitor Tab shows the bandwidth monitoring feature of each network interface of the ENHWI-2AN3 router, wireless or wired and of the network packet histogram for the network connection on WLAN. Auto refresh keeps information updated frequently.

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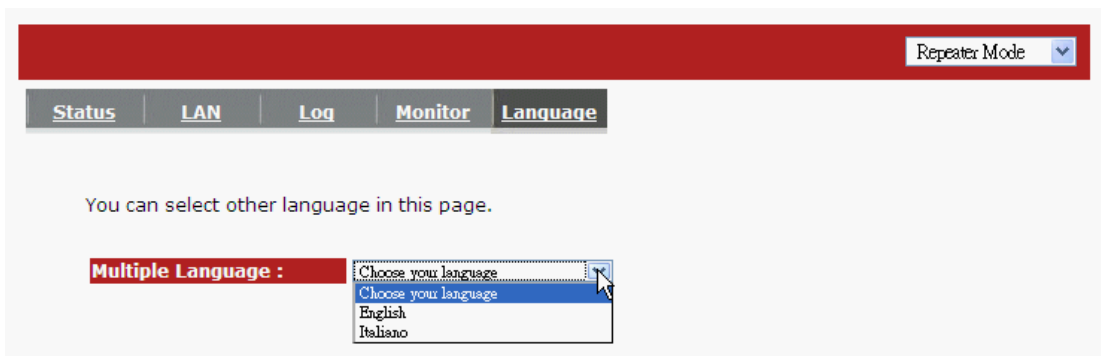


You can monitor the bandwidth in different interface. This page will refresh in every five seconds.



## - Language

This Wireless Router supports multiple languages for user interface. Select your preferred language.



# Wireless

## - Basic

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You can set parameters use by the wireless stations to connect to this router. The parameter includes Mode, ESSID, Channel Number and Associated Client.

Repeater Mode ▾

Basic Client List Policy

This page allows you to define SSID, and Channel for the wireless connection. These parameters are used for the wireless stations to connect to the Access Point .

<b>Radio :</b>	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
<b>Mode :</b>	Repeater ▾
<b>Band :</b>	2.4 GHz (B+G+N) ▾
<b>Enable SSID#:</b>	1 ▾
<b>SSID1 :</b>	ENCORE59FE74
<b>Site Survey :</b>	<input type="button" value="Site Survey"/>

**Wireless Information**

<b>SSID:</b>	ENCORE59FE74
<b>Status:</b>	Disconnected
<b>Channel :</b>	

**Radio:** Enable or Disable Wireless function

**Band:** Allows you to set the frequency band of the router. Fix at 802.11b, 802.11g or 802.11n modes. You can also select B+G mode to allow 802.11b and 802.11g clients at the same time.

**Enable ESSID:** You can specify the maximum ESSID number.

**ESSID1~3:** Allow you to specify ESSID of WLAN.

**Site Survey:** Click this button to scan the available wireless routers that can be set as this router's parent router. By doing so this ENHWI-2AN3 router will become a wireless extender / repeater of the selected parent router. Select one router from the list for that router to become this router's parent router.

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### Site Survey

NO.	Select	Channel	SSID	BSSID	Encryption	Auth	Signal(%)	Mode
1	<input type="radio"/>	1	Encore	00:02:6F:4F:5A:7F	TKIPAES	WPAPSKWPA2PSK	5	11b/g
2	<input type="radio"/>	1	SENAOWL	00:02:6F:53:0C:9B	WEP	AUTOWEP	55	11b/g
3	<input type="radio"/>	11	SQA_ADSL	00:0C:F6:47:C0:4C	TKIPAES	WPAPSKWPA2PSK	100	11b/g/n
4	<input type="radio"/>	3	SNADSL	00:02:6F:48:0D:8F	WEP	AUTOWEP	20	11b/g
5	<input type="radio"/>	4	SQA7750B	00:02:6F:5D:16:E8	NONE	OPEN	100	11b/g/n

### - Client List

This WLAN Client Table shows the Wireless client associated to this Wireless Router.

Repeater Mode

Basic **Client List** Policy

#### WLAN Client Table :

This WLAN Client Table shows client MAC address associate to this Broadband Router

Interface	MAC Address	Signal (%)	Idle Time
ENCORE59FE74	00:23:4D:36:D7:BE	100	0 secs

### - Policy

The Broadband router allows you to set up the Wireless Access Policy. If multiple SSID is created, this is the place to set the policy for each SSID.

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### Communication between Wireless clients:

This function is to allow other Wireless Client to communicate with another Wireless Client on the LAN connected on the same SSID.

### Communication between Wireless clients and wired clients:

This function allows the Wireless Client to communicate with other Wireless Client in the LAN on specific SSID as well as the Wired Client connected to the switch portion of this router.

The screenshot shows a web interface for configuring SSID 1. At the top, there is a red header bar with a dropdown menu set to "Repeater Mode". Below the header are three tabs: "Basic", "Client List", and "Policy". The "Policy" tab is selected, showing the "SSID 1 Connection Control Policy" section. This section contains two rows of settings, each with a red background and a dropdown menu set to "Enable":  
1. "Communication between Wireless clients" with a dropdown menu set to "Enable".  
2. "Communication between Wireless clients and Wired clients" with a dropdown menu set to "Enable".  
At the bottom right of the settings area are two buttons: "Apply" and "Cancel".

## Tools

### - Admin

You can change the password that is required to log into the broadband router's system web-based management. By default, the password is: admin. Passwords can contain 0 to 12 alphanumeric characters, and are case sensitive.

Repeater Mode ▾

**Admin** | Time | Diagnosis | Firmware | Back-up | Reset

You can change the password that you use to access the router, this is not your ISP account password.

**Old Password :**

**New Password :**

**Repeat New Password :**

**Old Password:** Fill-in the current password to be replaced. This is required to allow changing to a new password.

**New Password:** Enter your new password and again in **Repeat New Password** for verification purpose

Click **<Apply>** at the bottom of the screen to save the above configurations

## - Time

The Time Zone allows your router to use external source to time synchronizations. This affects other functions such as Event Log entries and Schedule settings that use time to do its tasks.

### How to Set up Time:

**Synchronize with the NTP server**

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Repeater Mode ▾

Admin
Time
Diagnosis
Firmware
Back-up
Reset

The Router reads the correct time from NTP servers on the Internet and sets its system clock accordingly. The Daylight Savings option merely advances the system clock by one hour. The time zone setting is used by the system clock when displaying the correct time in schedule and the log files.

<b>Time Setup:</b>	Synchronize with the NTP Server ▾
<b>Time Zone :</b>	(GMT)Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London ▾
<b>NTP Time Server :</b>	<input style="width: 100%;" type="text"/>
<b>Daylight Saving :</b>	<input type="checkbox"/> Enable From <span style="border: 1px solid #ccc; padding: 2px;">January ▾</span> <span style="border: 1px solid #ccc; padding: 2px;">1 ▾</span> To <span style="border: 1px solid #ccc; padding: 2px;">January ▾</span> <span style="border: 1px solid #ccc; padding: 2px;">1 ▾</span>

**Time Zone:** Select the time zone of the country you are located. The router will set its time based on your selection.

**NTP Time Server:** Enter the NTP Time Server address or URL here. This also accepts local the IP address if the NTP Time Server is on the same LAN.

**Daylight Savings:** The router can also setup to automatically adjust the Daylight Savings Time changes each time DST changes. To use this feature, click to put a checkmark on the Enable box then enter the dates the DST would starts and ends.

Click <Apply> at the bottom of the screen to save the above configurations

### Synchronize and use your computer's clock

The ENHWI-2AN3 can be synchronized the time to your computer's time.

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Repeater Mode ▾

Admin
Time
Diagnosis
Firmware
Back-up
Reset

The Router reads the correct time from NTP servers on the Internet and sets its system clock accordingly. The Daylight Savings option merely advances the system clock by one hour. The time zone setting is used by the system clock when displaying the correct time in schedule and the log files.

Time Setup:

 ▾

PC Date and Time:

Daylight Saving :

 Enable  
 From  ▾  ▾ To  ▾  ▾



**PC Date and Time:** This field would display the user computers date and time.

**Daylight Savings:** The router can also setup to automatically adjust the Daylight Savings Time changes each time DST changes. To use this feature, click to put a checkmark on the Enable box then enter the dates the DST would starts and ends.

Click **<Apply>** at the bottom of the screen to save the above configurations.

## - Diagnosis

This page lets you diagnose the connection problem and the network status by executing the Ping function. The result tells you whether the connection is broken or successful.

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## - Firmware

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

Once you've selected the new firmware file, click <**Apply**> at the bottom of the screen to start the upgrade process. Warning: Once the loading of the new firmware started, do not power down the router.

## - Back-up

The page allows you to save (Backup) the router's current configuration settings.

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The saved backup can be restored again if needed by using the **Restore Settings** selection and browse the saved backup file to restore back to the expected settings. If restore is not an option the **Restore to Factory Default** may be the only way to recover the router from damage. **Using Restore to Factory Default** will reset all configurations and settings to its original factory default settings (e.g. when you first purchased the router).

The screenshot shows a web-based configuration interface for a router. At the top right, there is a red header bar with a dropdown menu labeled "Repeater Mode". Below this is a navigation menu with tabs for "Admin", "Time", "Diagnosis", "Firmware", "Back-up", and "Reset". The "Back-up" tab is currently selected. Below the navigation menu, there is a text box containing instructions: "Use BACKUP to save the routers current configuration to a file named config.dlf. You can use RESTORE to restore the saved configuration. Alternatively, you can use RESTORE TO FACTORY DEFAULT to force the router to restore the factory default settings." Below the text box, there are three sections with red headers: "Restore to factory default :" with a "Reset" button; "Backup Settings :" with a "Save" button; and "Restore Settings :" with a text input field, a "Browse" button, and an "Upload" button.

**Backup Settings:** Use this function to save the router's current settings and configuration to a file named "**config.bin**" to your computer. You can also use the **<Upload>** button to restore the saved configuration to the router. Alternatively, you can use the "**Restore to Factory Defaults**" to force the Broadband router to perform a power reset and restore the original factory settings.

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## - Reset

You can software reset the broadband router when system stops responding or stop working. This is different from the hardware reset that can reset the settings by physically pressing the button.



In the event the system stops responding correctly or stops functioning, you can perform a reset. Your settings will not be changed. To perform the reset, click on the APPLY button. You will be asked to confirm your decision. The reset will be completed when the LED Power light stops blinking.



## Appendix A – FCC Interference Statement

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### Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that

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interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

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

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

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

#### **IMPORTANT NOTE:**

##### **FCC Radiation Exposure Statement:**

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

We declare that the product is limited in CH1~CH11 by specified firmware controlled in the USA.

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

## **Appendix B – IC Interference Statement**

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### **Industry Canada statement:**

This device complies with RSS-210 of the Industry Canada Rules. Operation is subject to the following two conditions:

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

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**IMPORTANT NOTE:**

**Radiation Exposure Statement:**

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This device has been designed to operate with an antenna having a maximum gain of 2 dBi. Antenna having a higher gain is strictly prohibited per regulations of Industry Canada. The required antenna impedance is 50 ohms.

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