

ESR6650

3G Wireless Router Ultra Speed

(IEEE 802.11 b/g)



User Manual

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Revision History

Version	Date	Notes
1.0	January 16, 2009	Initial

1. Introduction

1.1. Summary

Congratulations on your purchase of ESR6650 3G Wireless Router. ESR6650 is compatible with the most popular 3G standards and 802.11g & 802.11b gadgets. ESR6650 is not only a Wireless Access Point, but also doubles as a 4-port full-duplex Switch that connects your wired-Ethernet devices together at incredible speeds.

At 150Mbps wireless transmission rate, Access Point built into the Router uses advanced MIMO (Multi-Input, Multi-Output) technology to transmit multiple streams of data in a single wireless channel giving you seamless access to multimedia content. Robust RF signal travels farther, eliminates dead spots and extends network range. For data protection and privacy, ESR6650 encodes all wireless transmissions with WEP, WPA, and WPA2 encryption.

With inbuilt DHCP Server & powerful SPI firewall ESR6650 protects your computers against intruders and most known Internet attacks but provides safe VPN pass-through. With incredible speed and QoS function, ESR6650 is ideal for media-centric applications like streaming video, gaming, and VoIP telephony to run multiple media-intense data streams through the network at the same time, with no degradation in performance.

1.2. Key Features

Features	Advantages
3G Data Card Support	Allows user to share 3G network among multiple users. It supports WCDMA (HSDPA), CDMA2000 and TD-SCDMA.
Incredible Data Rate up to 150Mbps**	Heavy data payloads such as MPEG video streaming
IEEE 802.11b/g Compliant	Fully Interoperable with IEEE 802.11b / IEEE 802.11g compliant devices with legacy protection
Four 10/100 Mbps Fast Switch Ports (Auto-Crossover)	Scalability, extend your network.
Firewall supports, DMZ, MAC Filter, IP Filter, URL Filter, ICMP Blocking, SPI, Port Mapping, Port Forwarding, Port Trigger	Avoids the attacks of Hackers or Viruses from Internet
Support 802.1x Authenticator, 802.11i (WPA/WPA2, AES), VPN pass-through	Provide mutual authentication (Client and dynamic encryption keys to enhance security
WDS (Wireless Distribution System)	Make wireless AP and Bridge mode simultaneously as a wireless repeater
Multiple SSID	Easy management of users of various groups.

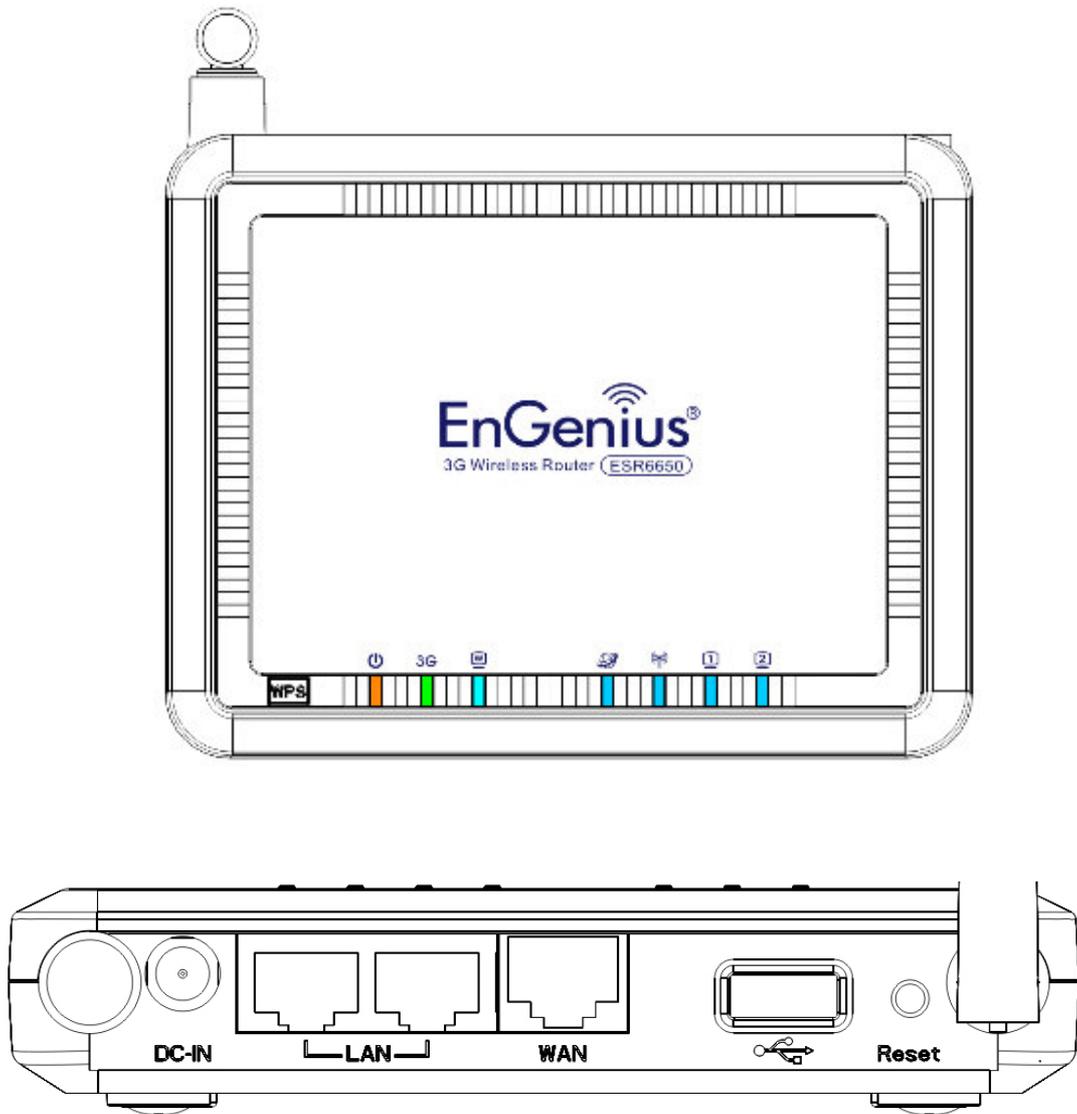
*** Theoretical wireless signal rate based on IEEE standard of 802.11a, b, g, n chipset used. Actual throughput may vary. Network conditions and environmental factors lower actual throughput rate. All specifications are subject to change without notice.*

1.3. Package Contents

Open the package carefully, 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 package.

1. SOHO Router
2. 100V or 240V Power Adapter
3. 2dBi 2.4GHz SMA Upgradable Antennas x 1 pcs
4. Quick Install Guide
5. CAT 5 UTP Cable
6. CD (User's Manual)

1.4. Product Layout



LED	Description
Power	1 (On-> red Test/reset default->blink)
3G	1 (Link-> green on, traffic->blink)
WAN	1 (Link-> blue on, traffic->blink)
Internet	1 (Link-> blue on, traffic->blink)
WLAN	1 (Link-> blue on, traffic->blink)
LAN1	1 (Link-> blue on, traffic->blink)

Interface	Description
Reset	Push this button to restart the system Press this button and hold for 10 seconds to reset to default.
WPS	Push this button once to start WPS.
DC IN	Power connector, connects to DC 12V Power Adapter
LAN1 & 2	Local Area Network (LAN) ports 1 and 2
USB	USB socket for 3G data card
WAN	WAN port for ADSL / Cable Modem

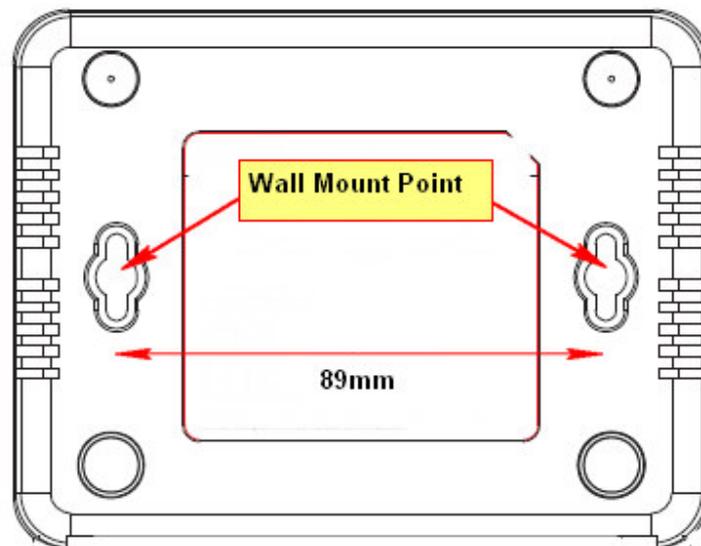
2. Installation

2.1. Network + System Requirements

To begin using the ESR6650, make sure you meet the following as minimum requirements:

- PC/Notebook.
- Operating System – Microsoft Windows 98SE/ME/XP/2000/VISTA
- 1 Free Ethernet port.
- WiFi card/USB dongle (802.11b/g/n) – optional.
- Internet
 - 3G data card or
 - ADSL or Cable modem with an Ethernet port (RJ-45).
- PC with a Web-Browser (Internet Explorer, Safari, Firefox, Opera etc.)
- Few Ethernet compatible CAT5 cables.

2.2. Wall Mounting



You can mount the device on the wall. There are two mounting points on the bottom of the device. Please find a proper spot where two nails can be applied. The distance between the two nails is 89mm. Finally, carefully mount the device onto the wall and make sure the nails are firmly locked on the mount points.

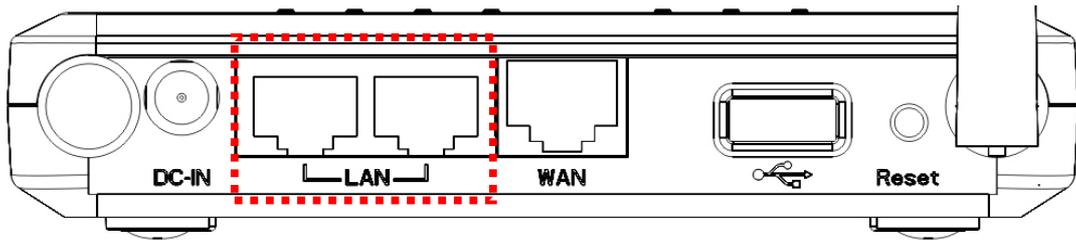
2.3. ESR6650 Placement

You can place ESR6650 on a desk or other flat surface, or you can mount it on a wall. For optimal performance, place your 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 location must be close to a power connection and your ADSL/Cable modem. If the antennas are not positioned correctly, performance loss can occur.

2.4. Setup LAN & 3G (WAN)

LAN connection:

Connect Ethernet cable between your PC/Notebook LAN port & one of the 2 available LAN ports on ESR6650.



3G connection:

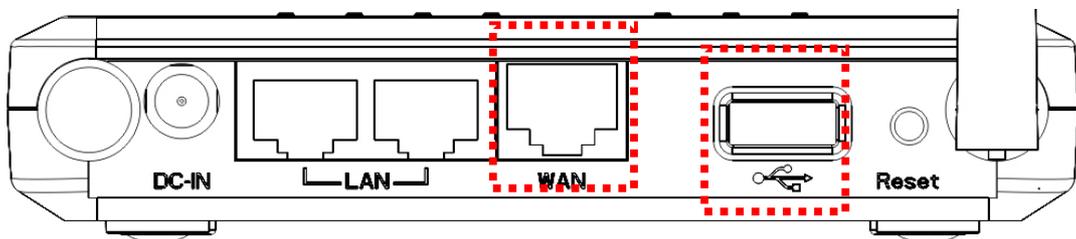
Plug-in your 3G data card into USB port if you would like to access Internet through 3G network.

Contact your ISP if you have any questions concerning the access account and password.

ADSL (Cable Modem):

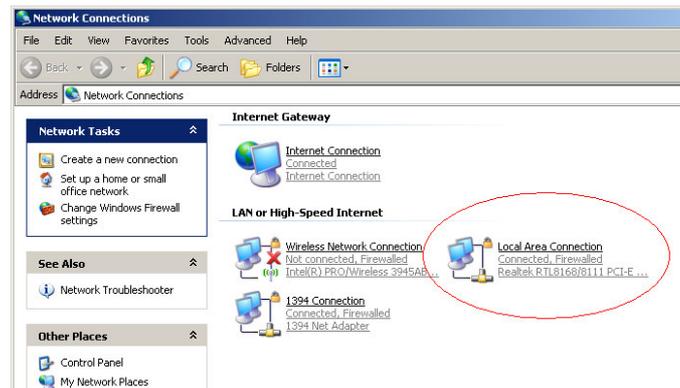
Connect Ethernet cable between WAN ports of your ADSL/CABLE modem & WAN port of ESR6650. Make sure your ADSL/CABLE modem is working well.

Contact your ISP if you have any questions concerning the access account and password.

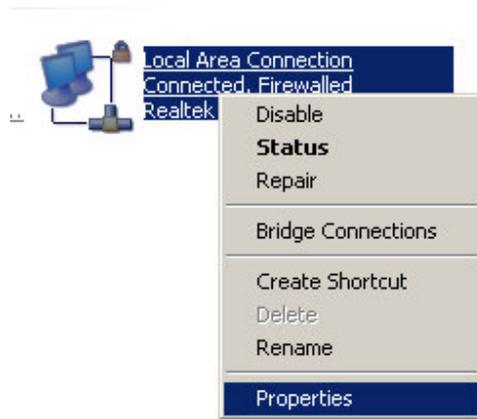


2.5. PC Network Adapter setup (*Windows XP*)

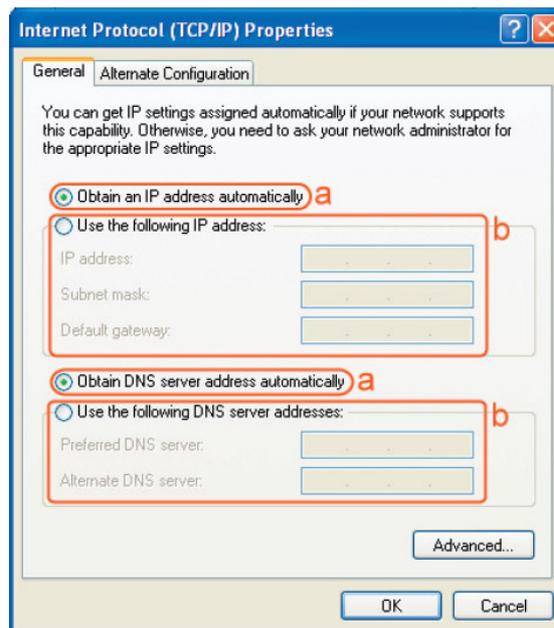
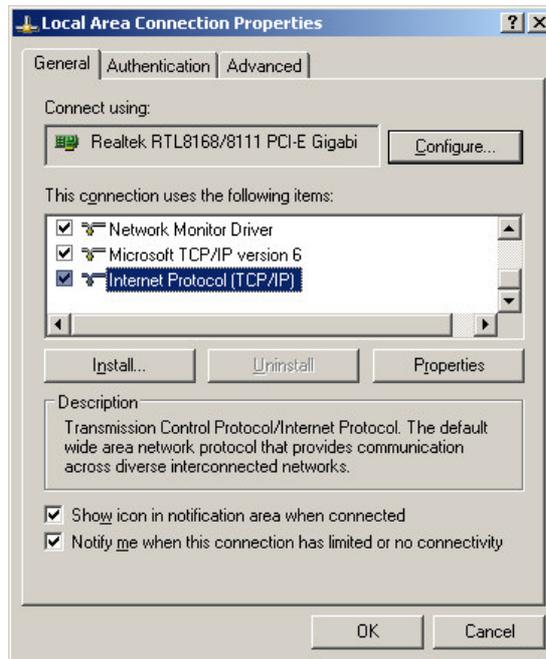
- Enter [Start Menu] → select [Control panel] → select [Network].



- Select [Local Area Connection] icon=>select [properties]



- Select [Internet Protocol (TCP/IP)] =>Click [Properties].



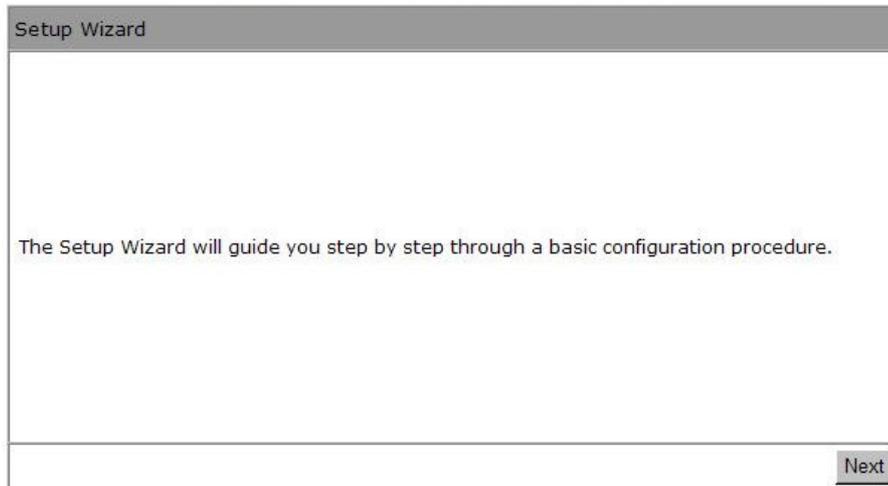
- Select the [General] tab.

ESR6650 supports [DHCP] function, please select both [Obtain an IP address automatically] and [Obtain DNS server address automatically].

2.6. Bring up ESR6650

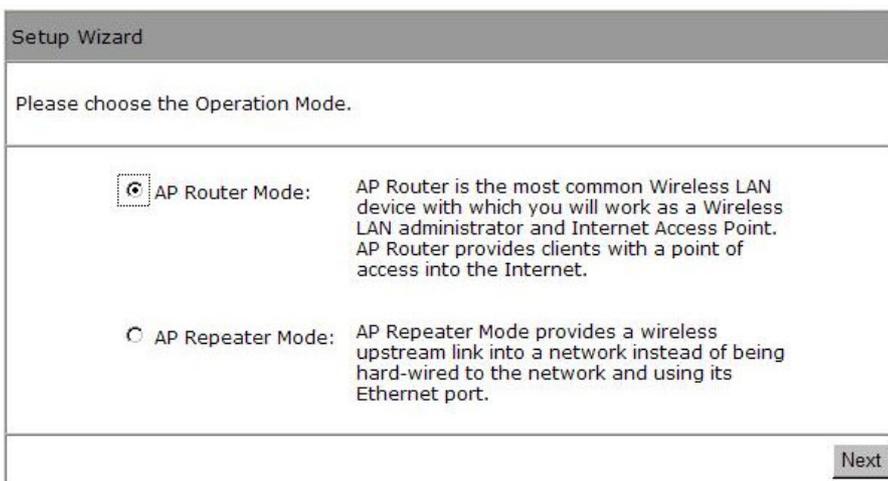
Connect the supplied power-adaptor to the power inlet port and connect it to a wall outlet. Then, ESR6650 automatically enters the self-test phase. During self-test phase, Power LED will blink briefly, and then will be lit continuously to indicate that this product is in normal operation.

3. Smart Wizard



Click **<Next>** to enter mode selection.

Select the mode that ESR6650 is going to be and set its configurations. **AP Repeater mode** does not enable WAN interface, Setup Wizard will skip WAN Configuration.



Click **<Next>** to automatically detect your **Internet Network** settings.

You could choose your service type or select Others to setup WAN configurations manually.

WAN Configuration			
Please choose your service type or select Others to setup WAN configurations manually.			
	No.	Service	Description
<input checked="" type="radio"/>	1.	DHCP	DHCP is used when your Modem is controlling your internet connection the Username & Password is stored on the Modem.
<input type="radio"/>	2.	PPPoE	PPPoE is used when your modem is set in Bridge Mode and your Router is used to control the internet connection. IE: router houses ISP's Username & Password.
<input type="radio"/>	3.	Others	
<input type="button" value="Rescan"/> <input type="button" value="Skip"/> <input type="button" value="Next"/>			

Smart Wizard has detected DHCP client. Configure the host name and MAC address of ESR6650. Click Next to proceed.

Setup Wizard	
Please, enter the data which is supplied by your ISP.	
Login Method:	<input type="text" value="Dynamic IP Address"/>
Hostname :	<input type="text"/>
Mac :	<input type="text"/>
	<input type="button" value="Clone MAC Address"/>
<input type="button" value="Next"/>	

Smart Wizard has finished setting up **WAN Configuration**. Click **<Next>** to proceed.

WLAN Configuration

Please choose the security level in the security bar

Lowest Highest

Encryption method: None
 Authentication Type: None
 Please input SSID in the following box.

SSID :

Skip Next

Enter the name for your wireless network (SSID) and security key

Click **<Next>** to proceed

Setup Successfully

System Configuration:
Operation Mode : AP Router

WAN Configuration:
Connection Type : Dynamic IP

WLAN Configuration :
SSID : EnGeniusCCDD10
Security : Disabled
WLAN Key : ---

WLAN Router setup successfully. Please click reboot button to reboot system.

Reboot

To apply the entire configuration, click **<Reboot>**.

NOTE:

After Wireless settings are applied, you need to connect from your WLAN client with the security settings you just finished configuring. Remember the type of security & security key.

4. Initial Setup ESR6650

ESR6650 uses web-interface for configuration to be accessed through your web browser, such as Internet Explorer or Firefox.

- LOGIN Procedure

1. OPEN your browser (e.g. Internet Explorer).
2. Type <http://192.168.0.1> in address bar and hit [Enter] button on your keyboard.





3. Click **<OK>** to navigate into ESR6650 configuration home page.
4. You will see the home page of ESR6650 as follows.

EnGenius
ESR6650

System
Wizard
Internet
Wireless
Firewall
Advanced
Tools

3G Wireless Router AP Router Mode

Status LAN DHCP Schedule Event 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	17 min 13 sec
Current Date/Time	2008/01/01 00:17:19
Hardware version	0.0.1
Serial Number	000000001
Kernel version	1.0.3
Application version	1.0.3

WAN Settings

3G **WPS** **Antenna Upgradable** **HACKER SHIELD** **WEP** **TKIP** **AES**

5. AP Router Mode

5.1. System

- Status

This page allows you to monitor the current status of your router.

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

System

Model	3G Wireless Router
Mode	AP Router
Uptime	17 min 13 sec
Current Date/Time	2009/01/20 00:12:15
Hardware version	0.0.1
Serial Number	000000001
Kernel version	1.0.3
Application version	1.0.3

WAN Settings: This section displays whether the WAN port is connected to a Cable/DSL connection. 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
IP address	10.0.174.13
Subnet Mask	255.255.254.0
Default Gateway	10.0.175.254
MAC address	00:AA:BB:CC:DD:11
Primary DNS	10.0.200.101,10.0.200.102

LAN Settings: This section displays the Router LAN port's current information. It also shows whether the DHCP Server function is enabled / disabled.

LAN Settings	
IP address	192.168.0.1
Subnet Mask	255.255.255.0
DHCP Server	Enabled
MAC address	00:AA:BB:CC:DD:10

WLAN Settings: This section displays the current WLAN configuration settings. Wireless configuration details such as SSID, Security settings, BSSID, Channel number and mode of operation are briefly shown.

WLAN Settings	
Channel	11
SSID_1	
ESSID	EnGeniusCCDD10
Security	WEP
BSSID	00:AA:BB:CC:DD:10

- LAN

The LAN Tabs reveals LAN settings which can be altered at will. If you are an entry level user, try accessing a website from your browser. If you can access website without a glitch, just do not change any of these settings.

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

You can enable the Broadband routers DHCP server to dynamically allocate IP Addresses to your LAN client PCs. The broadband router must have an IP Address for the Local Area Network.

LAN IP

IP address : 192.168.0.1
 IP Subnet Mask : 255.255.255.0
 802.1d Spanning Tree : Disabled

DHCP Server

DHCP Server : Enabled
 Lease time : Forever
 Start IP : 192.168.0.100
 End IP : 192.168.0.200
 Domain name : esr6650

Apply Cancel

LAN IP

IP address: 192.168.0.1. It is the router’s LAN IP address (the “Default Gateway” IP address of your LAN clients). It can be changed based on your own choice.

IP Subnet Mask: 255.255.255.0 Specify a Subnet Mask 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.

DHCP Server

DHCP Server: This can enable or disable the Dynamic Pool setting.

Lease time: This is the lease time of each assigned IP address.

Start IP: This is the beginning of the IP pool for DHCP client hosts.

End IP:. This is the end of the IP pool for DHCP client hosts

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

- DHCP

View the current LAN clients which are assigned with an IP Address by the DHCP-server. This page shows all DHCP clients (LAN PCs) currently connected to your network. The table shows the assigned IP address, MAC address and expiration time for each DHCP leased client. Use the **<Refresh>** button to update the available information. Hit **<Refresh>** to get the updated table.

You can check **"Enable Static DHCP IP"**. It is possible to add more static DHCP IPs. They are listed in the table **"Current Static DHCP Table"**. IP address can be deleted at will.

Click **<Apply>** button to save the changed configuration.

Status	LAN	DHCP	Schedule	Event Log	Monitor	Language
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DHCP Client Table :		
This DHCP Client Table shows client IP address assigned by the DHCP Server		
IP address	MAC address	Expiration Time
192.168.0.100	00:11:BB:22:1C:3A	Forever

You can assign an IP address to the specific MAC address

Enable Static DHCP IP

IP address	MAC address
<input type="text"/>	<input type="text"/>

Current Static DHCP Table :

NO.	IP address	MAC address	Select
-----	------------	-------------	--------

- Schedule

This page allows users to set up schedule function for Firewall and Power Saving

Status	LAN	DHCP	Schedule	Event 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	Firewall	All Time---Mon, Tue, Wed, Thu, Fri, Sat, Sun	<input type="checkbox"/>

Edit schedule options to allow configuration of firewall and power savings services. Fill in the schedule and select type of service. Click <Apply> to keep the settings.

Status	LAN	DHCP	Schedule	Event 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.

Schedule Description :

Service : Firewall Power Saving

Days : Every Day
 Mon Tue Wed Thu Fri Sat Sun

Time of day : All Day (use 24-hour clock)
From : To :

The schedule table lists the pre-schedule service-runs. You can select any of the schedule record using the check box.

Status	LAN	DHCP	Schedule	Event 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	Firewall	All Time---Mon, Tue, Wed, Thu, Fri, Sat, Sun	<input type="checkbox"/>
2	schedule 02	Power Saving	All Time---Mon, Tue, Wed, Thu, Fri, Sat, Sun	<input type="checkbox"/>
3	schedule 03	Power Saving+Firewall	All Time---Mon, Tue, Wed, Thu, Fri, Sat, Sun	<input type="checkbox"/>

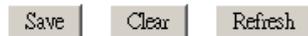
- Event Log

View **operation event log**. This page shows the current system log of the Router. It displays any event occurred after system start up. At the bottom of the page, the system log can be saved **<Save>** to a local file for further processing 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 be cleared if not saved to a local file.



View the system operation information.

```
day 1 00:02:16 [SYSTEM]: WAN, Automatic Detection
day 1 00:00:54 [SYSTEM]: DHCP Server, Sending ACK of 192.168.0.100
day 1 00:00:51 [SYSTEM]: DHCP Server, Sending ACK of 192.168.0.100
day 1 00:00:18 [SYSTEM]: WAN, No PHY Link
day 1 00:00:18 [SYSTEM]: WAN, start DHCP mode
day 1 00:00:17 [SYSTEM]: WAN, stop DHCP mode
day 1 00:00:16 [SYSTEM]: WAN, stop DHCP mode
day 1 00:00:15 [SYSTEM]: HTTP, start
day 1 00:00:14 [SYSTEM]: NET, start Firewall
day 1 00:00:14 [SYSTEM]: NET, start NAT
```

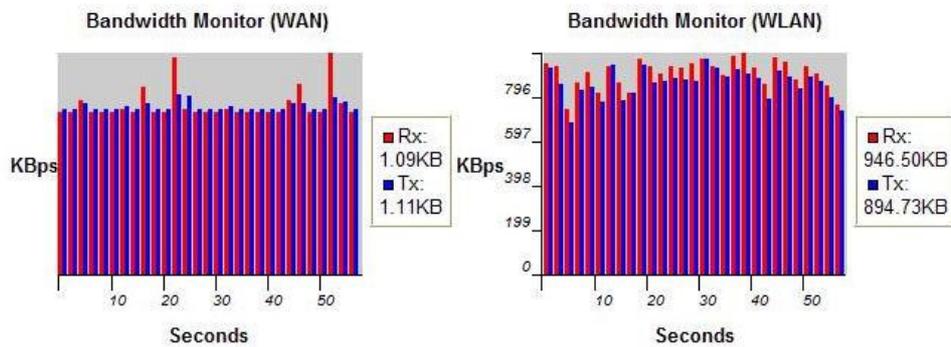


- Monitor

Show histogram for network connection on WAN, LAN & WLAN. Auto refresh keeps information updated frequently.



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



- Language

This Wireless Router support multiple language of web pages, You could select your native language here.



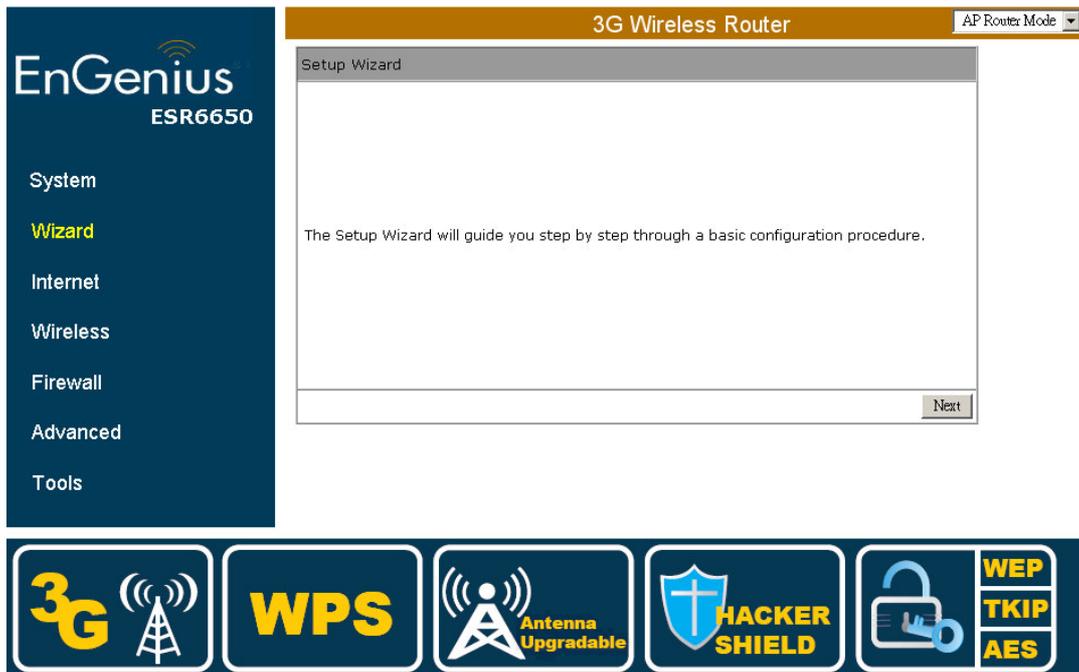
You can select other language in this page.

Multiple Language :

English

5.2. Wizard

Click **Wizard** to configure the Router. Setup wizard will now be displayed; check that the modem is connected and click **<Next>**. The details please refer to **Smart Wizard <Page 13>**.



5.3. INTERNET

ESR6650 supports both 3G and ADSL for Internet access. Please note that 3G (USB interface) network by default is the preferred Internet option. Therefore, in case you have both 3G and ADSL connection setup, ESR6650 will automatically use 3G for Internet access.

Please note that inserting 3G data card will switch off ADSL connection immediately. If you prefer to use ADSL for Internet access, do not insert 3G data card into the USB socket.

Your 3G data card may take more than 20 seconds to initiate and respond to ESR6650. Please be patient and pay attention to the 3G LED on the top panel. Green Light on 3G LED signifies that your 3G card is ready.

- Status

This page shows the current Internet connection type and status



View the current internet connection status and related information.

WAN Settings

Attain IP Protocol	PPPoE
IP address	118.161.71.133
Subnet Mask	255.255.255.255
Default Gateway	118.161.64.254
MAC address	00:AA:BB:CC:11:03
Primary DNS	168.95.192.1,168.95.1.1

Connect

Disconnect

- Dynamic IP

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



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

Hostname :	<input type="text"/>	
MAC address:	<input type="text" value="000000000000"/>	<input type="button" value="Clone MAC"/>
		<input type="button" value="Apply"/> <input type="button" value="Cancel"/>

Host Name: This is optional.

MAC address: The default value is set to the WAN's physical interface of the Router.

- Static IP

If your ISP Provider has assigned a fixed IP address, enter the assigned IP address, Subnet mask, Default Gateway IP address, and Primary DNS and Secondary DNS (if available) of your ISP provider.

Status	Dynamic IP	Static IP	PPPOE	PPTP	3G
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You can select the type of the account you have with your ISP provider.

IP address:	<input type="text" value="174.123.80.90"/>
IP Subnet Mask :	<input type="text" value="255.255.255.255"/>
Default Gateway :	<input type="text" value="172.123.80.254"/>
Primary DNS :	<input type="text" value="174.123.80.1"/>
Secondary DNS :	<input type="text"/>

<input type="button" value="Apply"/>	<input type="button" value="Cancel"/>
--------------------------------------	---------------------------------------

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

Status	Dynamic IP	Static IP	PPPOE	PPTP	3G
--------	------------	-----------	--------------	------	----

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

Login :	<input type="text" value="loginTest"/>
Password :	<input type="password" value="•••••"/>
Service Name	<input type="text"/>
MTU :	<input type="text" value="1492"/> (512<=MTU Value<=1492)
Authentication type :	<input type="text" value="Auto"/>
Type :	<input type="text" value="Keep Connection"/>
Idle Timeout :	<input type="text" value="10"/> (1-1000 Minutes)

Login / Password: Enter the PPPoE username and password assigned by your ISP Provider.

Service Name: This is normally optional.

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

Type: Enable the **Automatic Connection** option to automatically re-establish the connection when an application attempts to access the Internet again.

Idle Timeout (available only under Automatic Connection): This is a maximum period of time for which the Internet connection is maintained during inactivity. If the connection is inactive for longer than the Maximum Idle Time, it will be dropped.

- Point-to-Point Tunneling Protocol (PPTP)



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

WAN Interface Settings :

WAN Interface Type :	<input type="text" value="Dynamic IP Address"/>
Hostname :	<input type="text"/>
MAC Address:	<input type="text" value="000000000000"/> <input type="button" value="Clone Mac"/>

PPTP Settings :

Login :	<input type="text" value="loginTest"/>
Password :	<input type="text" value="*****"/>
Service IP address :	<input type="text" value="172.123.20.2"/>
ConnectionID :	<input type="text" value="0"/> (Optional)
MTU :	<input type="text" value="1400"/> (512<=MTU Value<=1492)
Type :	<input type="text" value="Keep Connection"/>
Idle Timeout :	<input type="text" value="10"/> (1-1000 Minutes)

PPTP allows the secure connection over the Internet by simply dialing in a local point provided by your ISP provider. The following 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.

- 3G Network



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

ISP:	Taiwan	Taiwan Mobile	Select
APN Code:	internet		
Dial Number:	*99#		
User Name:			
Password:			
Type:	Keep Connection		
Idle Timeout :	10	(1-1000 Minutes)	

Apply Cancel

ISP: It shows a list of supported 3G Network Internet Service Provider.

APN Code: Enter APN if ISP requires it.

Dial Number: Enter phone number if ISP requires it.

User Name: Enter 3G network account / username

Password: Enter 3G network account password

Type:

Keep Connection: Keep connection with or without the presence of traffic.

Automatic Connection: Connect when traffic is detected.

Manual Connection: Connect only on user's demand (see status)

Idle Timeout: Disconnect from 3G network if there's no traffic in the specified timeout period.

Note: You may need 3G account detail and configuration pre-requisite from your local ISP.

5.4. Wireless Settings

- Basic

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



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 :	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Mode :	AP
Band :	2.4 GHz (B+G+N)
Enabled SSID#:	1
SSID1 :	EnGeniusCCDD10
Auto Channel :	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
Channel :	11

Apply Cancel

Radio: You can turn on/off wireless radio. If wireless Radio is off, you cannot associate with AP through wireless.

Mode: In this device, we support three operation modes which are **AP router** and **AP route with WDS**. If you choose AP Router Mode, you can select AP or WDS function in the drop-down menu.

Band: You can select the wireless standards running on your network environment.

2.4 GHz(B): If all your clients are 802.11b, select this one.

2.4 GHz(N): If all your clients are 802.11n, select this one.

2.4 GHz(B+G): Either 802.11b or 802.11g wireless devices are in your environment.

2.4 GHz(G): If all your clients are 802.11g, select this one.

2.4 GHz(B+G+N): Either 802.11b, 802.11g, or 802.11n wireless devices are in your environment.

Enable ESSID: We support 4 multiple SSIDs in this device. Please select how many SSIDs you would like to use in your network environment.

ESSID1~4: ESSID is the name of your wireless network. It might be a unique name to identify this wireless device in the Wireless LAN. It is case sensitive and up to 32 printable characters. You might change the default ESSID for added security.

Auto Channel: Device will search all valid channels, then select a cleanest channel and change to this channel if you enable this function. Depend on this function is enabled or not, you will see different items below **Auto Channel**.

Channel: If Auto Channel is disabled, you should choose a static channel and AP will use this channel to communicate with other clients.

Check Channel Time: If Auto Channel is enabled, you can choose a period from the drop-down menu. AP will change to a clean channel periodically.

- WDS with AP Router

Wireless Distribution System, a system that enables the wireless interconnection of access point, allows a wireless network to be extended using multiple APs without a wired backbone to link them. Each WDS AP needs same channel and encryption type settings.



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 :	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Mode :	WDS ▼
Band :	2.4 GHz (B+G+N) ▼
Enabled SSID#:	1 ▼
SSID1 :	EnGeniusOCDD10
Auto Channel :	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
Channel :	11 ▼
MAC address 1 :	000000000000
MAC address 2 :	000000000000
MAC address 3 :	000000000000
MAC address 4 :	000000000000
Set Security :	Set Security



MAC address 1~4: Please enter the MAC address(es) of the neighboring APs which participate in WDS. There can be maximum of 4 devices now.

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.

- Advanced

This tab allows you to set the advanced wireless options. You should not change these parameters unless you know what effect the changes will have on the router.

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.

Fragment Threshold :	<input type="text" value="2346"/>	(256-2346)
RTS Threshold :	<input type="text" value="2347"/>	(0-2347)
Beacon Interval :	<input type="text" value="100"/>	(20-1024 ms)
DTIM Period :	<input type="text" value="1"/>	(1-10)
Data rate :	<input type="text" value="Auto"/>	
N Data rate:	<input type="text" 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="text" value="100 %"/>	

Fragment Threshold: This specifies the maximum size of a packet during the fragmentation of data to be transmitted. If you set this value too low, it will result in bad performance.

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

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

DTIM Period: 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 little lower due to a lot of frame-network that is transmitted.

- Security

This Access Point provides complete wireless LAN security functions, included are WEP, IEEE 802.1x, IEEE 802.1x with WEP, WPA with pre-shared key and WPA with RADIUS. With these security functions, you can prevent your wireless LAN from illegal access. Please make sure your wireless stations use the same security function, and are setup with the same security key.

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

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.

SSID Selection : EnGeniusCCDD10

Broadcast SSID : Enable

WMM : Enable

Encryption : Disable

Enable 802.1x Authentication

Apply Cancel

ESSID Selection: This Router support multiple ESSID, you could select and set up the wanted ESSID.

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

WMM: Wi-Fi MultiMedia if enabled supports QoS for experiencing better audio, video and voice in applications.

Encryption: When you choose to disable encryption, it is very insecure to operate ESR6650.

Enable 802.1x Authentication

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

SSID Selection :	EnGeniusCCDD10
Broadcast SSID :	Enable
WMM :	Enable
Encryption :	Disable
<input checked="" type="checkbox"/> Enable 802.1x Authentication	
RADIUS Server IP address :	
RADIUS Server port :	1812
RADIUS Server password :	
<input type="button" value="Apply"/> <input type="button" value="Cancel"/>	

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 and enter it. You can enter four WEP keys and select one of them as a default key. Then AP can receive any packet encrypted by one of the four keys.

SSID Selection :	EnGeniusCCDD10
Broadcast SSID :	Enable
WMM :	Enable
Encryption :	WEP
Authentication type :	<input checked="" type="radio"/> Open System <input type="radio"/> Shared Key <input type="radio"/> Auto
Key Length :	64-bit
Key type :	ASCII (5 characters)
Default key :	Key 1
Encryption Key 1 :	*****
Encryption Key 2 :	*****
Encryption Key 3 :	*****
Encryption Key 4 :	*****

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.

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. So the encryption key is not easy to be cracked by hackers. This is the best security available.