NBG6503F/NBG6503P Wireless Router

Quick Install Guide

1 Hardware button Overview

LAN	Use standard LAN cables (RJ45 connectors) to connect your PCs to this port. If required, any port can be connected to other hub. Any LAN port will automatically function as an “Uplink” port when necessary.
WAN	Connect the ADSL or Cable Modem here with RJ45 cable. If your modem came with a cable, use the supplied cabled, otherwise, use a standard LAN cable.
Power	DC 12V/1A. Connect the supplied power adapter here.
WPS	Press WPS button to connect with other WPS complied devices via secured WLAN connection.
Reset	Keep on pressing the Reset button more than 5 seconds, the unit will be reset to factory default.
Power button	Pressing down the button to power the device up and press it up to power down.
WiFi button	Pressing down the button to enable Wi-Fi connection and press it up to disable Wi-Fi connection.

2 Hardware Connection

Notes:
Before you start hardware connection, you are advised to find an appropriate location to place the device. Usually, the best place is at the center of your wireless network, with line of sight to all wireless stations. Also, higher antenna position usually results in better performance.

Step1. Connect to your local area network: connect the Ethernet cable to LAN port of the device, and the other end to a PC, hub, switch, router or other Wireless Access Point.

Step2. Power on the device: connect the included AC power adapter to the power port of this wireless router and other end the wall outlet.

Step3. Check the LEDs: the power LED should be always on when system is ready.

3 Software Configuration

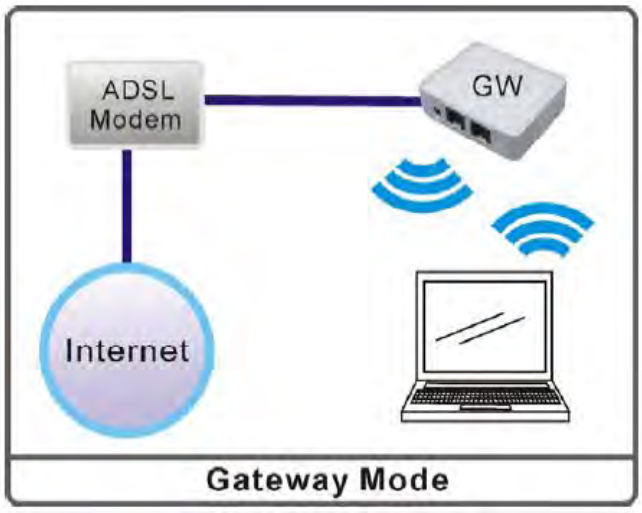
Notes:
The operation mode is totally controlled by hardware slide switch not software. Before you start to setup the device, you are advised to change the switch the operation mode you need. Then the device will reboot automatically into the mode you have selected.

Login

2. Start your computer and make sure the connection by an Ethernet cable between your computer and the Wireless Router.
3. Start your WEB Browser.
4. In the Address box, enter the IP address: 192.168.1.1
5. Login User Name **admin** and Password **1234**

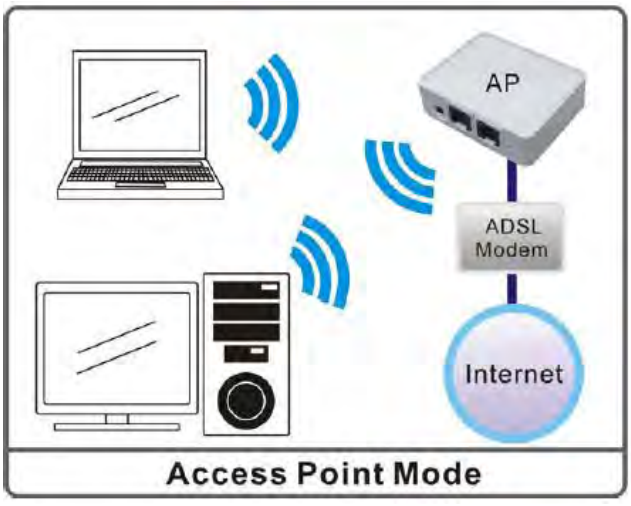
Gateway Mode

When Gateway mode is selected, the device will enter gateway mode. And the wireless connection will be set up from a point-to-point local LAN into a point-to-multipoint WAN.



Access Point Mode

When acting as Access Point (AP), this device connects all the stations to a wireless network. All stations can have the Internet access if only the Access Point has the Internet connection.



FCC Statement:

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 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.

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.

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.

For product available in the USA/Canada market, only channel 1~11 can be operated. Selection of other channels is not possible.

This device and it's antennas(s) must not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with FCC multi-transmitter product procedures.

This device is going to be operated in 5.15~5.25GHz frequency range, it is restricted in indoor environment only.

IMPORTANT NOTE:

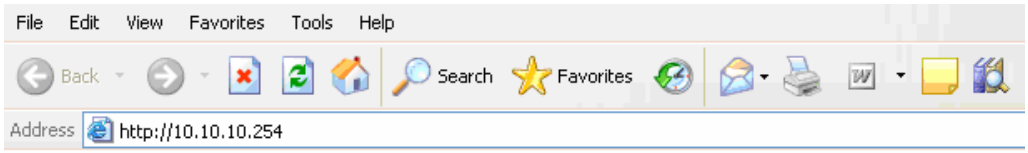
FCC Radiation Exposure Statement:

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.

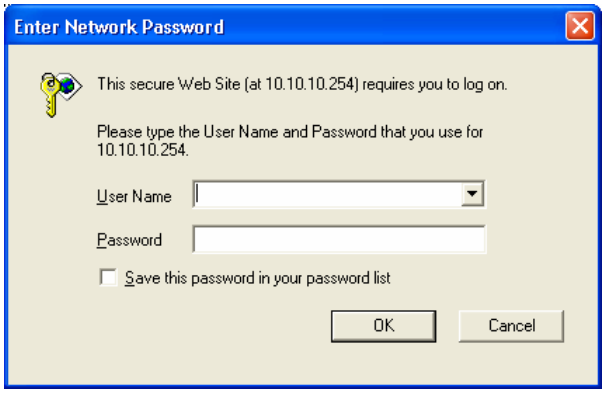
Chapter 3: Router Configuration

Login

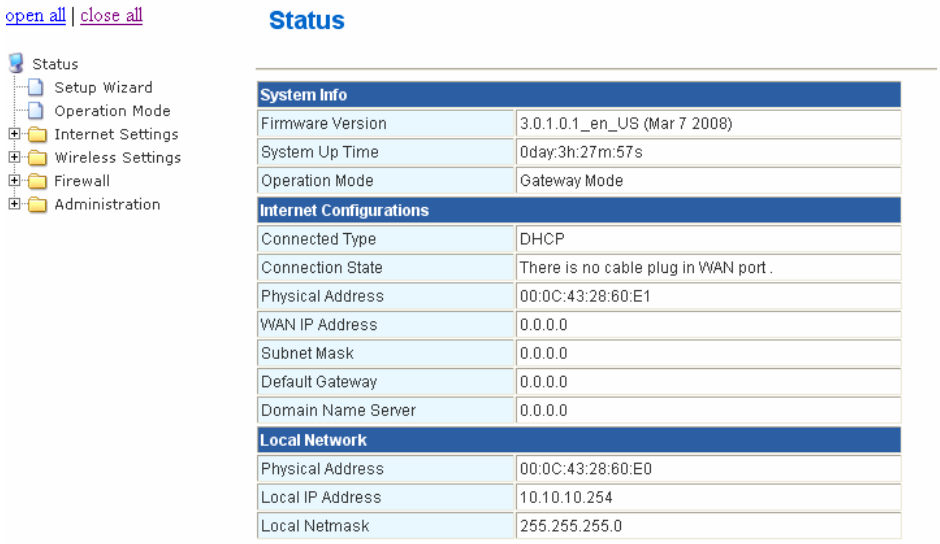
1. Start your computer. Connect an Ethernet cable between your computer and the Wireless Router.
2. Make sure your wired station is set to the same subnet as the Wireless Router, i.e. 10.10.10.254
3. Start your WEB browser. In the *Address* box, enter the following: http://10.10.10.254



4. Please enter the username “admin” and password “admin” for login.



The configuration menu is divided into four folders: Internet Settings, Wireless Settings, Firewall, and Administration. Click on the desired setup item to expand the folder in the main navigation page. The setup pages covered in this utility are described below.



Common Connection Types

Cable Modems

Type	Details	ISP Data required
Dynamic IP Address	Your IP Address is allocated automatically, when you connect to you ISP.	Usually, none. However, some ISP's may require you to use a particular Hostname, Domain name, or MAC (physical) address.
Static (Fixed) IP Address	Your ISP allocates a permanent IP Address to you.	IP Address allocated to you. Some ISP's may also require you to use a particular Hostname, Domain name, or MAC (physical) address.

DSL Modems

Type	Details	ISP Data required
Dynamic IP Address	Your IP Address is allocated automatically, when you connect to you ISP.	None.
Static (Fixed) IP Address	Your ISP allocates a permanent IP Address to you.	IP Address allocated to you.
PPPoE	You connect to the ISP only when required. The IP address is usually allocated automatically.	User name and password.
PPTP	Mainly used in Europe. You connect to the ISP only when required. The IP address is usually allocated automatically, but may be Static (Fixed).	• PPTP Server IP Address. • User name and password. • IP Address allocated to you, if Static (Fixed).

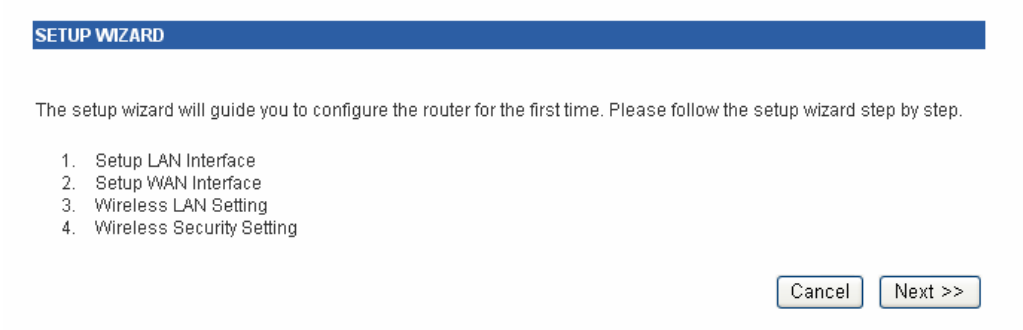
Other Modems (e.g. Broadband Wireless)

Type	Details	ISP Data required
Dynamic IP Address	Your IP Address is allocated automatically, when you connect to you ISP.	None.
Static (Fixed) IP Address	Your ISP allocates a permanent IP Address to you.	IP Address allocated to you.

Setup Wizard

The Setup Wizard provides brief and basic configuration of this device, you may enter each screen to change the default settings. For more detailed settings, you may refer to the "*Configuration via Web*" section.

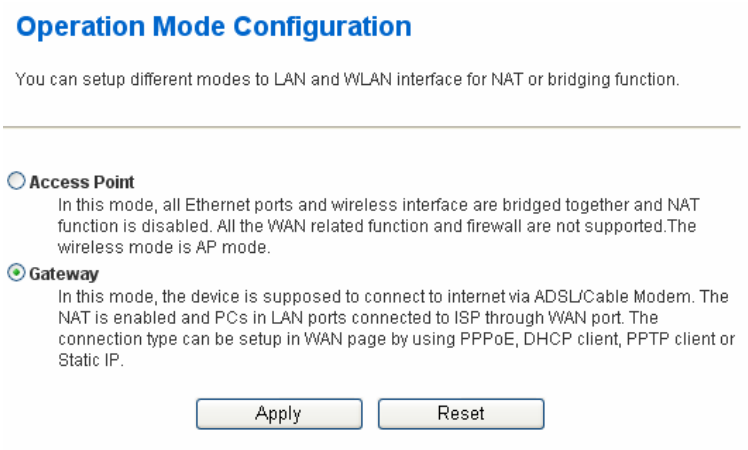
1. View the listed configuration items and click **Next** to continue.



Configuration via Web

Operation Mode

Select an operation mode then click **Apply** to enable the mode you preferred or click **Reset** button to discard current settings. Default operation mode is Gateway mode.

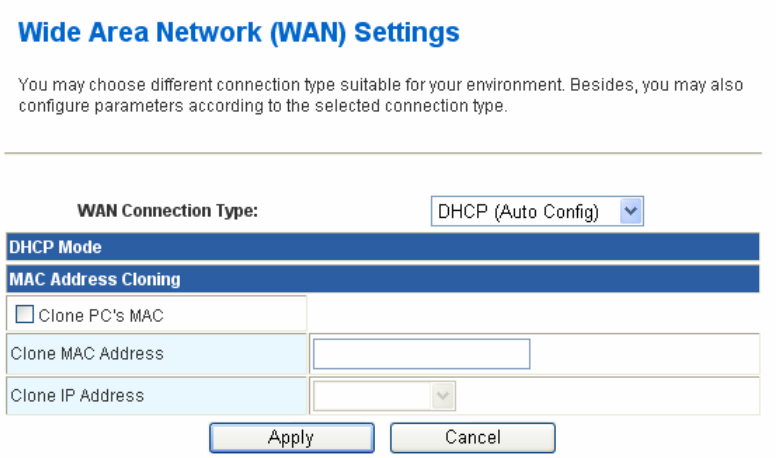


Operation Mode	
Access Point	When acting as an access point, this device connects all the stations (PC/notebook with wireless network adapter) to a wired network. All stations can have the Internet access if only the Access Point has the Internet connection.
Gateway	In this mode, the device is supposed to connect to internet via ADSL/Cable Modem. The NAT is enabled and PCs in LAN ports share the same IP to ISP through WAN port. The connection type can be setup in WAN page by using PPPOE, DHCP client, PPTP client or static IP.

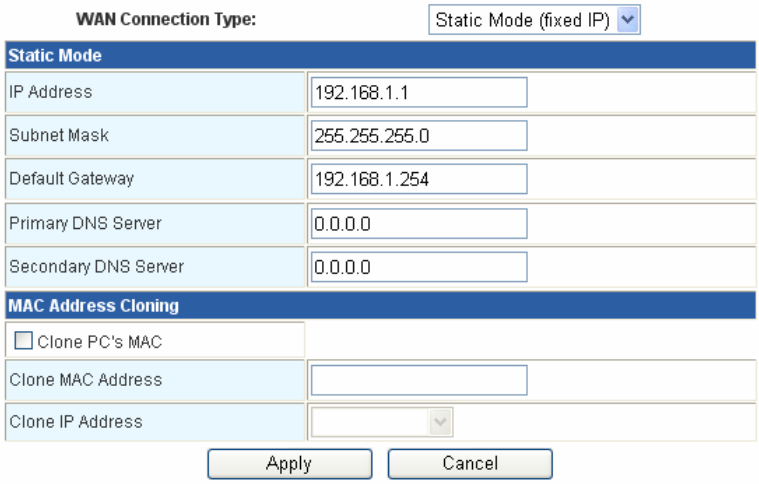
Internet Settings

WAN (Wide Area Network) Settings

WAN Connection Type, select the WAN access type (Static Mode (fixed IP), DHCP (Auto Config), PPPoE (ADSL), L2TP and PPTP) from the pull-down menu. Default setting is DHCP (Auto Config) Type.



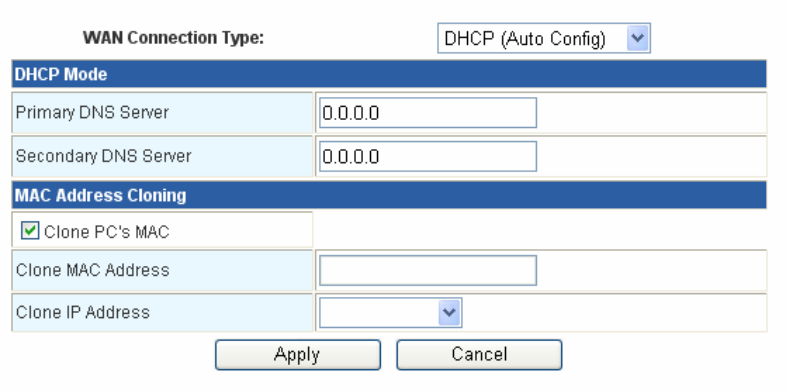
Static Mode



IP Address	Enter the WAN IP address provided by your ISP in this column.
Subnet Mask	Enter the Subnet Mask in this column.
Default Gateway	Enter the default gateway IP provided by your ISP in this column.
Primary and Secondary DNS Server	The *DNS* should be set to the address provided by your ISP.
Clone PC's MAC Address	Check to enable this function.

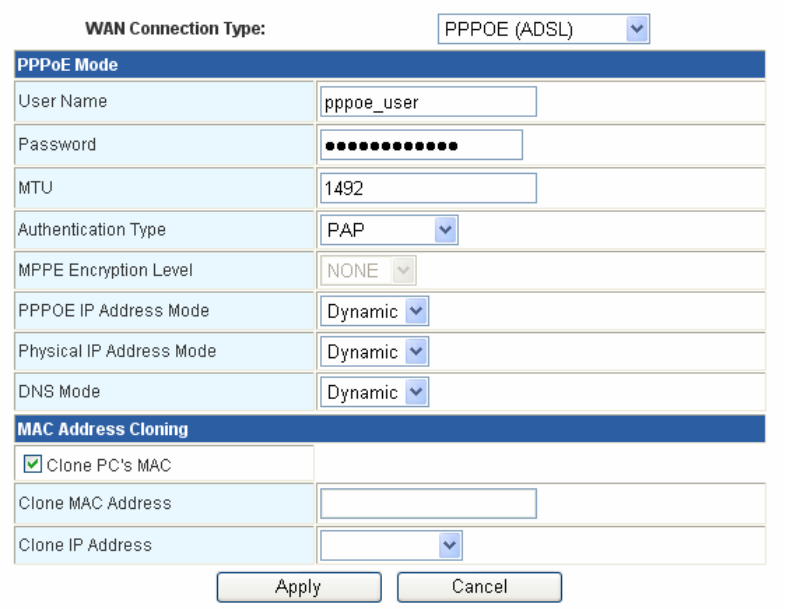
Clone MAC Address	Your ISP may require a particular MAC address in order for you to connect to the Internet. This MAC address is the PC's MAC address that your ISP had originally connected your Internet connection to. Type in this Clone MAC address in this section to replace the WAN MAC address with the MAC address of that PC.
Clone IP Address	Shows the IP address of the device from the pull-down menu.
Apply	Click to save and apply the current settings.
Cancel	Click to discard the current settings.

DHCP Mode



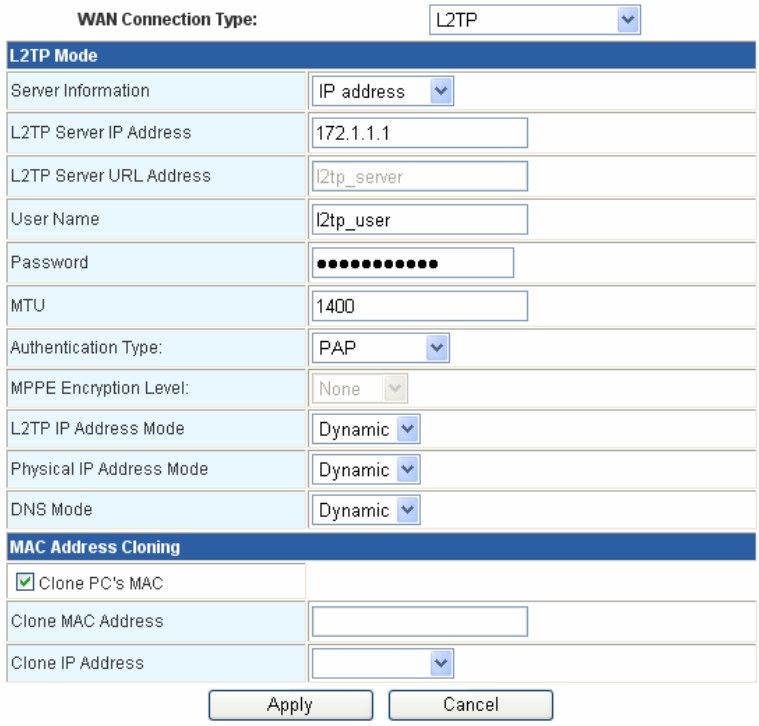
Primary and Secondary DNS Server	The *DNS* should be set to the address provided by your ISP.
Clone PC's MAC Address	Check to enable this function.
Clone MAC Address	Your ISP may require a particular MAC address in order for you to connect to the Internet. This MAC address is the PC's MAC address that your ISP had originally connected your Internet connection to. Type in this Clone MAC address in this section to replace the WAN MAC address with the MAC address of that PC.
Clone IP Address	Shows the IP address of the device from the pull-down menu.
Apply	Click to save and apply the current settings.
Cancel	Click to discard the current settings.

PPPoE Mode



User Name	Maximum input is 20 alphanumeric characters (case sensitive).
Password	Maximum input is 20 alphanumeric characters (case sensitive).
MTU (Maximum Transmission Unit)	Click the pull-down menu to select the most appropriate MTU (Maximum Transmission Unit, namely the maximum packet size, the default value is 1492) for your application. Reducing the packet size can help connecting to certain web sites or speeding up packet transfer rate. If the incorrect selection is entered, you may not be able to open certain web sites.
Authentication Type	Select PAP, CHAP, MSCHAP-v1, MSCHAP-v2 or Auto form the pull-down menu.
MPPE Encryption Level	When the authentication type has been set to be MSCHAP-v1, MSCHAP-v2 or Auto, here can select None, 40 bits, 56bits, 128bits or Auto form the pull-down menu.
PPPoE IP Address Mode	Select Dynamic or Static for the pull-down menu.
Physical IP Address Mode	Select Dynamic or Static for the pull-down menu.
DNS mode	Select from the pull-down menu for Static or Dynamic DNS mode.
Clone PC's MAC Address	Check to enable this function.
Clone MAC Address	Your ISP may require a particular MAC address in order for you to connect to the Internet. This MAC address is the PC's MAC address that your ISP had originally connected your Internet connection to. Type in this Clone MAC address in this section to replace the WAN MAC address with the MAC address of that PC.
Clone IP Address	Shows the IP address of the device from the pull-down menu.
Apply	Click to save and apply the current settings.
Cancel	Click to discard the current settings.

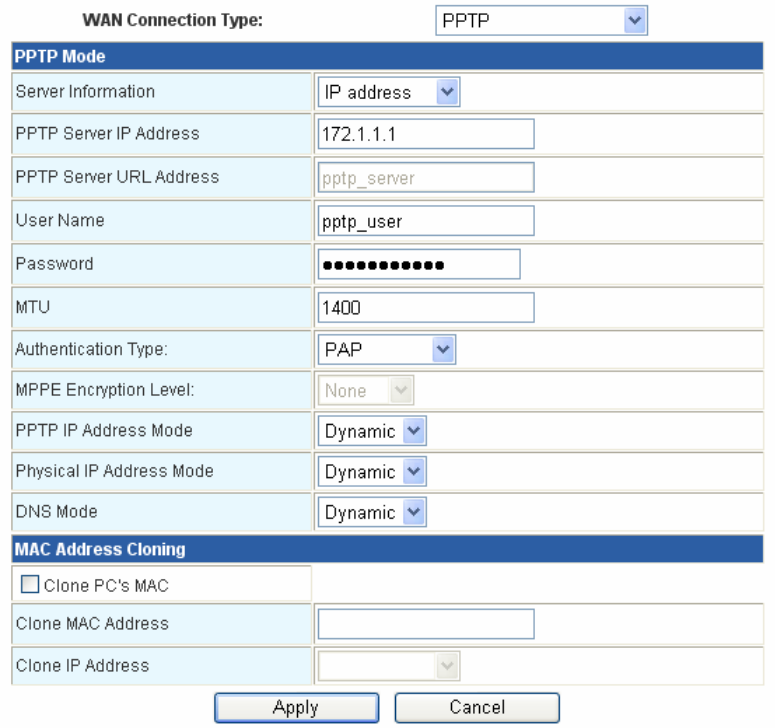
L2TP Mode



Server Information	Select IP address or URL address form the pull-down menu.
L2TP Server IP Address	Enter the L2TP Server IP Address in this column.
L2TP Server URL Address	Enter the L2TP Server URL Address in this column.
User Name	Maximum input is 20 alphanumeric characters (case sensitive).
Password	Maximum input is 20 alphanumeric characters (case sensitive).
MTU (Maximum Transmission Unit)	Click the pull-down menu to select the most appropriate MTU (Maximum Transmission Unit, namely the maximum packet size, the default value is 1400) for your application. Reducing the packet size can help connecting to certain web sites or speeding up packet transfer rate. If the incorrect selection is entered, you may not be able to open certain web sites.
Authentication Type	Select PAP, CHAP, MSCHAP-v1, MSCHAP-v2 or Auto form the pull-down menu.
MPPE Encryption Level	When the authentication type has been set to be MSCHAP-v1, MSCHAP-v2 or Auto, here can select None, 40 bits, 56bits, 128bits or Auto form the pull-down menu.
L2TP IP Address Mode	Select Dynamic or Static for the pull-down menu.
Physical IP Address Mode	Select Dynamic or Static for the pull-down menu.
DNS mode	Select from the pull-down menu for Static or Dynamic DNS mode.
Clone PC's MAC Address	Check to enable this function.

Clone MAC Address	Your ISP may require a particular MAC address in order for you to connect to the Internet. This MAC address is the PC's MAC address that your ISP had originally connected your Internet connection to. Type in this Clone MAC address in this section to replace the WAN MAC address with the MAC address of that PC.
Clone IP Address	Shows the IP address of the device from the pull-down menu.
Apply	Click to save and apply the current settings.
Cancel	Click to discard the current settings.

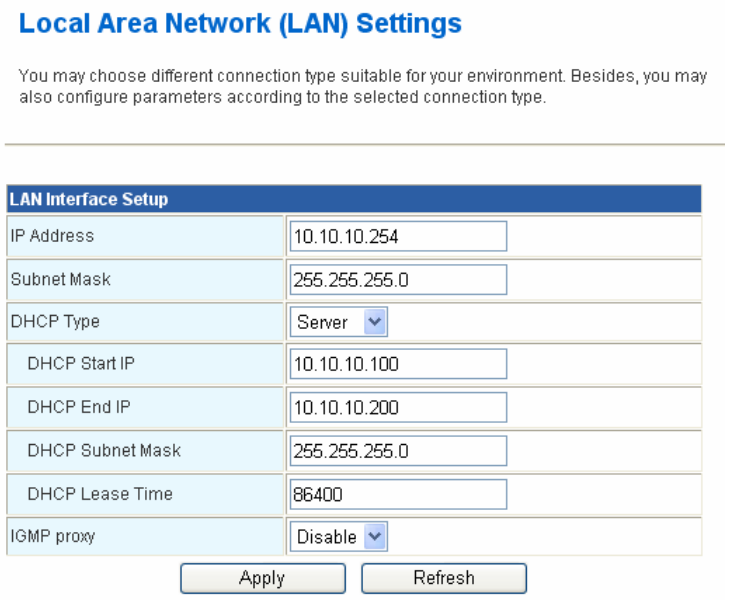
PPTP Mode



Server Information	Select IP address or URL address form the pull-down menu.
PPTP Server IP Address	Enter the PPTP Server IP Address in this column.
PPTP Server URL Address	Enter the PPTP Server URL Address in this column.
User Name	Maximum input is 20 alphanumeric characters (case sensitive).
Password	Maximum input is 20 alphanumeric characters (case sensitive).
MTU (Maximum Transmission Unit)	Click the pull-down menu to select the most appropriate MTU (Maximum Transmission Unit, namely the maximum packet size, the default value is 1400) for your application. Reducing the packet size can help connecting to certain web sites or speeding up packet transfer rate. If the incorrect selection is entered, you may not be able to open certain web sites.
Authentication Type	Select PAP, CHAP, MSCHAP-v1, MSCHAP-v2 or Auto form the pull-down menu.
MPPE Encryption Level	When the authentication type has been set to be MSCHAP-v1, MSCHAP-v2 or Auto, here can select None, 40 bits, 56bits, 128bits

	or Auto form the pull-down menu.
PPTP IP Address Mode	Select Dynamic or Static for the pull-down menu.
Physical IP Address Mode	Select Dynamic or Static for the pull-down menu.
DNS mode	Select from the pull-down menu for Static or Dynamic DNS mode.
Clone PC's MAC Address	Check to enable this function.
Clone MAC Address	Your ISP may require a particular MAC address in order for you to connect to the Internet. This MAC address is the PC's MAC address that your ISP had originally connected your Internet connection to. Type in this Clone MAC address in this section to replace the WAN MAC address with the MAC address of that PC.
Clone IP Address	Shows the IP address of the device from the pull-down menu.
Apply	Click to save and apply the current settings.
Cancel	Click to discard the current settings.

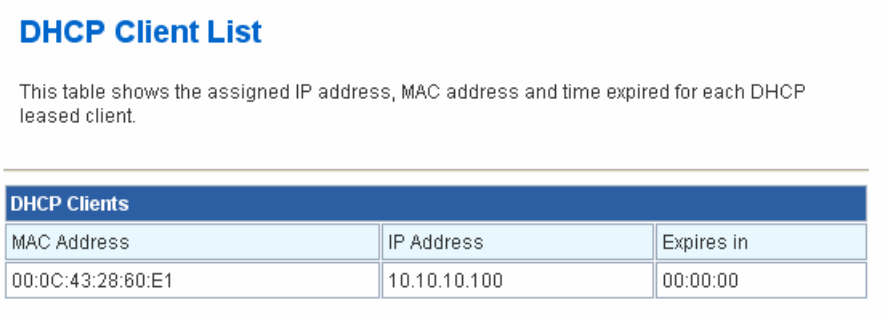
LAN (Local Area Network) Settings



LAN Interface Setup	
IP Address	Shows the IP address of the router.
Subnet Mask	The subnet mask of the router.
DHCP Type	**Disable**: Select to disable this Router to distribute IP addresses. **Server**: Select to enable this Router to distribute IP Addresses (DHCP Server). And the following field will be activated for you to enter the starting IP Address.
DHCP Start IP	The starting address of this local IP network address pool.
DHCP End IP	The ending address of this local IP network address pool.

DHCP Subnet Mask	Shows the DHCP subnet mask.
DHCP Lease Time	Default settings are 86400 seconds.
IGMP Proxy	Select Disable or Enable from the pull-down menu.
Apply	Click to save and apply the current settings.
Refresh	Click to get the latest information.

DHCP Clients



DHCP Clients	
MAC Address	Shows the client MAC address information.
IP Address	Shows the client IP address information.
Expires in	Shows the expired time of the client.

Wireless Settings

Basic

Basic Wireless Settings

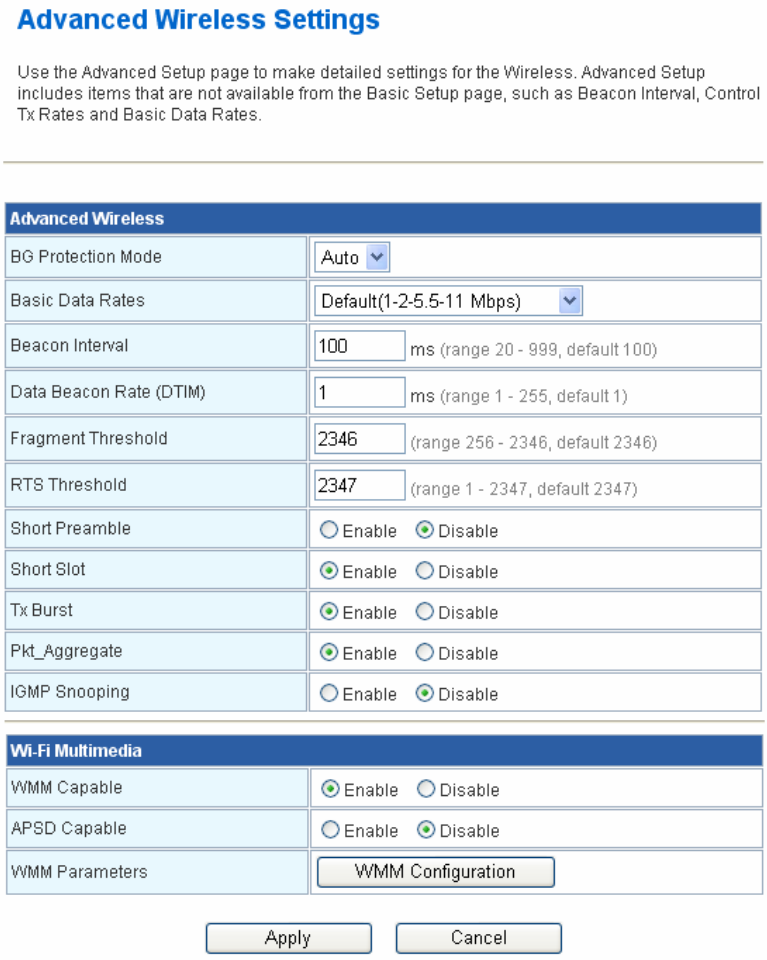
This page is used to configure the minimum number of Wireless settings for communication, such as Network Name (SSID) and Channel. The Access Point can be set simply with only the minimum setting items.

Wireless Network	
Radio On/Off	RADIO OFF
Network Mode	11b/g/n mixed mode
Network Name(SSID)	ABOCOM_AP
Multiple SSID1	
Multiple SSID2	
Multiple SSID3	
Multiple SSID4	
Multiple SSID5	
Multiple SSID6	
Broadcast Network Name (SSID)	Enable Disable
BSSID	000C432860E0
Frequency (Channel)	2437MHz (Channel 6)
Wireless Distribution System(WDS)	
WDS Mode	Disable
HT Physical Mode	
Operating Mode	Mixed Mode Green Field
Channel BandWidth	20 20/40
Guard Interval	long Auto
MCS	Auto
Reverse Direction Grant(RDG)	Disable Enable
Extension Channel	2457MHz (Channel 10)
Aggregation MSDU(A-MSDU)	Disable Enable
Auto Block ACK	Disable Enable
Decline BA Request	Disable Enable
Other	
HT TxStream	2
HT RxStream	2

Apply Cancel

Wireless Network	
Radio On/Off	Click **Radio OFF** button to turn off the radio function.
Network Mode	Select 11 b/g mixed mode, 11b only, 11g only or 11 b/g/n mixed mode from the pull-down menu. Default is 11 b/g/n mixed mode.
Network Name (SSID)	A SSID is referred to a network name because essentially it is a name that identifies a wireless network.
Multiple SSID 1~6	A multiple SSID is referred to a network name because essentially it is a name that identifies a wireless network.
Broadcast Network Name(SSID)	**Enable**: This wireless AP will broadcast its SSID to stations. **Disable**: This wireless AP will not broadcast its SSID to stations. If stations want to connect to this wireless AP, this AP's SSID should be known in advance to make a connection.
BSSID	Shows the MAC address of the router.
Frequency (Channel)	Select 1~11 or Auto Select from the pull-down menu.
Wireless Distribution System(WDS)	
WDS Mode	Select the mode from the pull-down menu, Disable, Lazy Mode, Bridge Mode or Repeater Mode.
HT Physical Mode	
Operating Mode	Select Mixed Mode or Green Field. Default setting is Mixed Mode.
Channel Band Width	Select 20 or 20/40, default setting is 20/40.
Guard Interval	Select Long or Auto, default setting is Auto.
MCS	Default setting is Auto. Or select form the pull-down menu 0~15, 32 or Auto.
Reverse Direction Grant(RDG)	Select Disable or Enable this function, default setting is Enable.
Extension Channel	You can select 2457MHz (Channel 10) or 2417MHz (Channel 2) form the pull-down menu.
Aggregation MSDU (A-MSDU)	Select Disable or Enable, default setting is Disable.
Auto Block ACK	Select Disable or Enable, default setting is Enable.
Decline BA Request	Select Disable or Enable, default setting is Disable.
Other	
HT Tx Stream	Select 1 or 2 form the pull-down menu.
HT Rx Stream	Select 1 or 2 form the pull-down menu.
Apply	Click to save and apply the current settings.
Cancel	Click to discard the current settings.

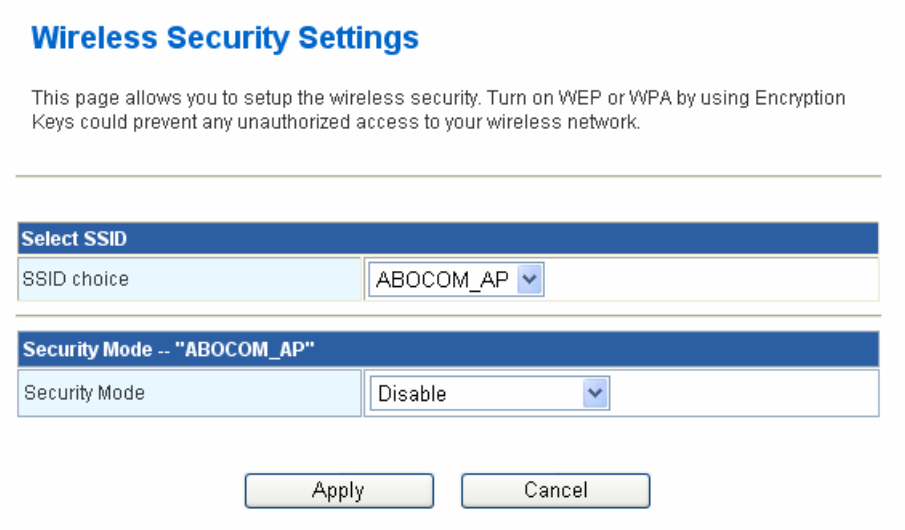
Advanced



Advanced Wireless	
BG Protection Mode	Select **Auto**, **On** or **Off** from the pull-down menu.
Basic Data Rates	By default, the unit adaptively selects the highest possible rate for transmission. Select the basic rates to be used among the following options: 1-2Mbps, Default (1-2-5.5-11Mbps), or All(1-2-5,5-6-11-12-24Mbps.)
Beacon Interval	Beacon Interval is the amount of time between beacon transmissions. Before a station enters power save mode, the station needs the beacon interval to know when to wake up to receive the beacon. Range 20-999, default is 100.
Data Beacon Rate (DTIM)	Range from 1 to 255, default setting is 1.
Fragment Threshold	Fragmentation mechanism is used for improving the efficiency when high traffic flows along in the wireless network. If the 802.11g MIMO Wireless Router often transmit large files in wireless network, you can enter new Fragment Threshold value to split the packet. The value can be set from 256 to 2346. The default value is **2346**.
RTS Threshold	RTS Threshold is a mechanism implemented to prevent the "**Hidden Node**" problem. If the "Hidden Node" problem is an issue, please

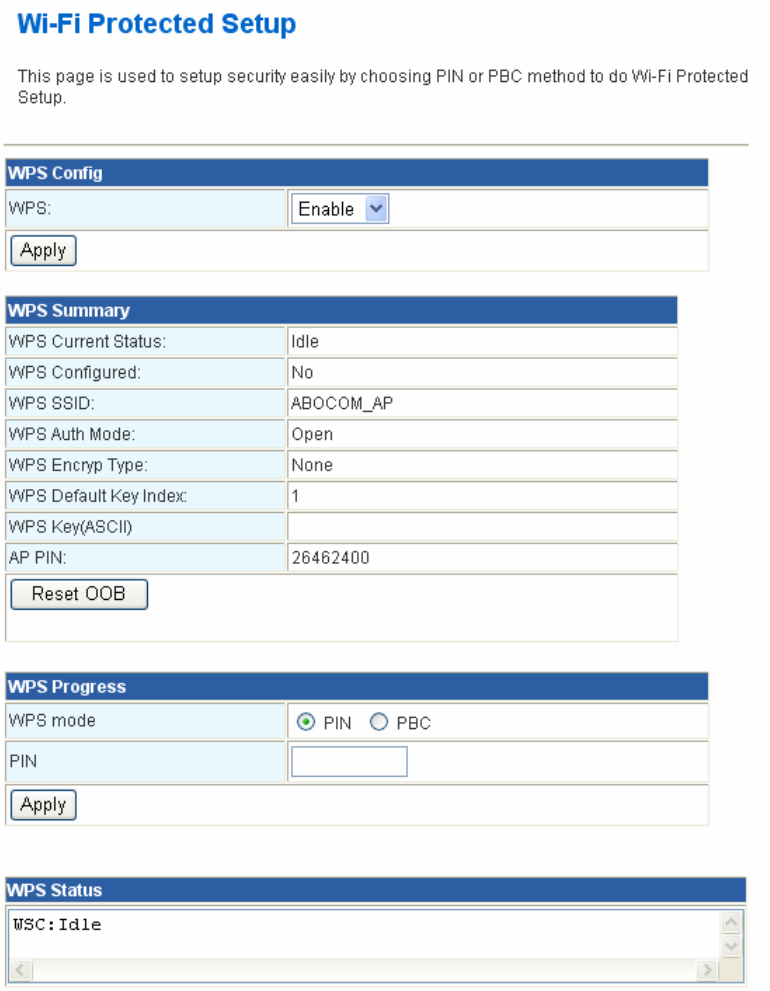
	specify the packet size. *The RTS mechanism will be activated if the data size exceeds the value you set.*. The default value is **2347**. **Warning:** Enabling RTS Threshold will cause redundant network overhead that could negatively affect the throughput performance instead of providing a remedy. This value should remain at its default setting of **2347**. Should you encounter inconsistent data flow, only minor modifications of this value are recommended.
Short Preamble	Select Disable or Enable this function, default setting is **Disable**. A preamble is a signal used in wireless environment to synchronize the transmitting timing including Synchronization and Start frame delimiter.
Short Slot	Select Disable or Enable this function, default setting is Enable.
Tx Burst	Select Disable or Enable this function, default setting is Enable.
Pkt_Aggregate	Select Disable or Enable this function, default setting is Enable.
IGMP Snooping	Select Disable or Enable this function, default setting is Disable.
Wi-Fi Multimedia	
WMM Capable	Select Disable or Enable this function, default setting is Enable.
APSD Capable	Select Disable or Enable this function, default setting is Disable.
WMM Parameters	Click the **WMM Configuration** button to go further settings.
Apply	Click to save and apply the current settings.
Cancel	Click to discard the current settings.

Security



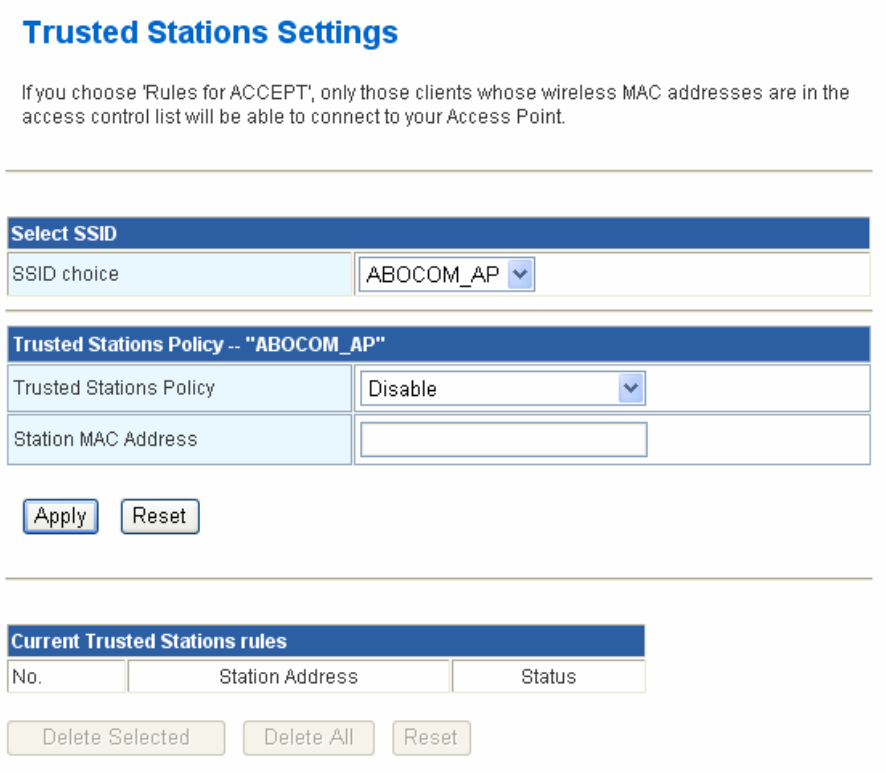
Select SSID	
SSID choice	Select the SSID form the pull-down menu for security settings.
Security Mode	There are eleven type of authentication modes including **Disable**, **Open, Shared, WEP Auto, WPA, WPA-PSK, WPA2, WPA2-PSK**, **WPA-PSK/WPA2-PSK, WPA/WPA2 and 802.1X.** • **Open**: If your wireless router is using "**Open"** authentication, then the wireless adapter will need to be set to the same authentication type. • **Shared**: Shared key is when both the sender and the recipient share a secret key. • **WPA, WPA-PSK, WPA2, WPA2-PSK**, **WPA-PSK/WPA2-PSK, and WPA1/WPA2:** WPA-PSK offers two encryption methods, TKIP and AES. Select the type of algorithm, TKIP or AES and then enter a WPA Shared Key of 8~64 characters in the WPA Pre-shared Key field. **Encryption** Type: For **Open** and **Shared** authentication mode, the selection of encryption type are **None** and **WEP**. For **WPA, WPA2, WPA-PSK** and **WPA2-PSK** authentication mode, the encryption type supports both **TKIP** and **AES**. **WPA Pre-shared Key**: This is the shared secret between AP and STA. For WPA-PSK and WPA2-PSK authentication mode, this field must be filled with character longer than 8 and less than 64 lengths. **WEP Key**: Only valid when using WEP encryption algorithm. The key must match with the AP's key. There are several formats to enter the keys. • Hexadecimal (128bits): 26 Hex characters (0~9, a~f). • ASCII (128bits): 13 ASCII characters.
WPA Algorithms	Select TKIP, AES or TKIP/AES for the WPA Algorithms.
Enable Pre-Authentication	The two most important features beyond WPA to become standardized through 802.11i/WPA2 are: pre-authentication, which enables secure fast roaming without noticeable signal latency.
RADIUS Server	RADIUS is an authentication, authorization and accounting client-server protocol. The client is a Network Access Server that desires to authenticate its links. The server is a server that has access to a user database with authentication information.
IP Address	Enter the RADIUS Server's IP Address provided by your ISP.
Port	Enter the RADIUS Server's port number provided by your ISP. The default is **1812**.
Shared Secret	Enter the password that the router shares with the RADIUS Server.
Apply	Click to save and apply the current settings.
Cancel	Click to discard the current settings.

WPS



WPS Configuration	
WPS	Select Enable or Disable from the pull-down menu.
Apply	Click to save and apply the current settings.
WPS Summary	Here shows the WPS function status.
Reset OOB	Click the button to reset the settings.
WPS Process	
WPS mode	Select PCB or PIN WPS mode.
PIN	Enter the PIN code form the registrar or enrollee.
Apply	Click to save and apply the current settings.
WPS Status	Here shows the current status of the WPS function.

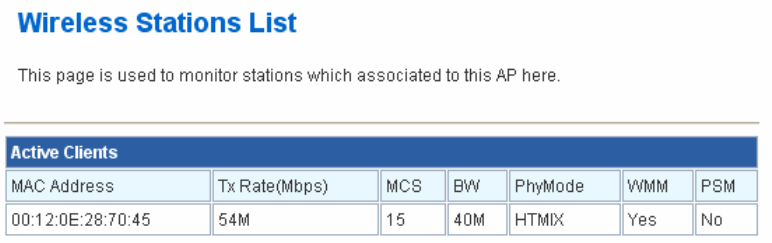
Trusted Stations



Select SSID	
SSID choice	Select the SSID from the pull-down menu.
Trusted Stations Policy	
Trusted Stations Policy	Select Disable, Enable –Rules for DROP, or Enable –Rules for ACCEPT form the pull-down menu.
Station MAC Address	Enter the MAC address of the station.
Apply	Click to save and apply the current settings.
Reset	Press to discard the current settings.
Current Trusted Stations rules	Here shows the information of the trusted stations clients.
Delete Selected	Select the unwanted trusted station MAC addresses and then click the Delete Selected button to eliminate them.
Delete All	Click to delete all the trusted station MAC addresses in the table.
Reset	Click to clear the current settings.

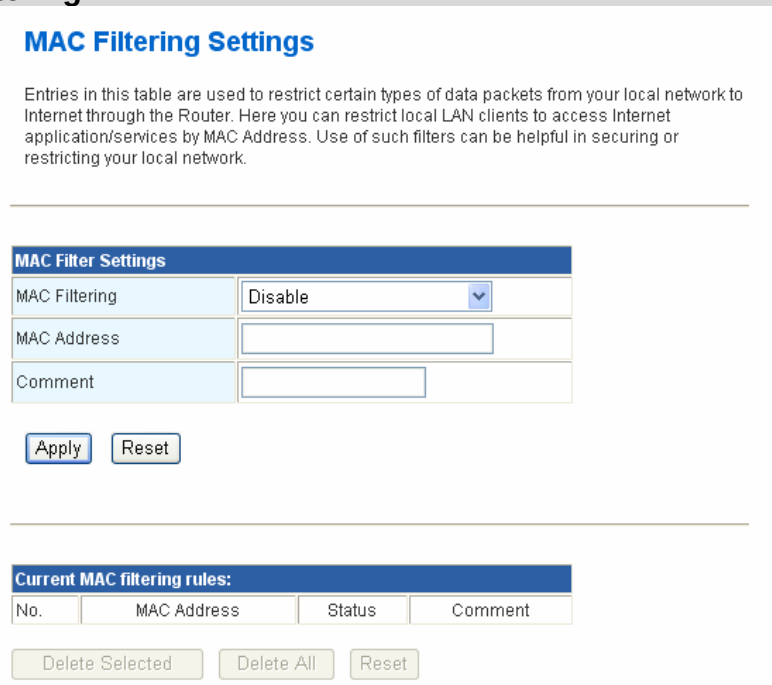
Station List

Here shows the information of stations that connected with the AP.



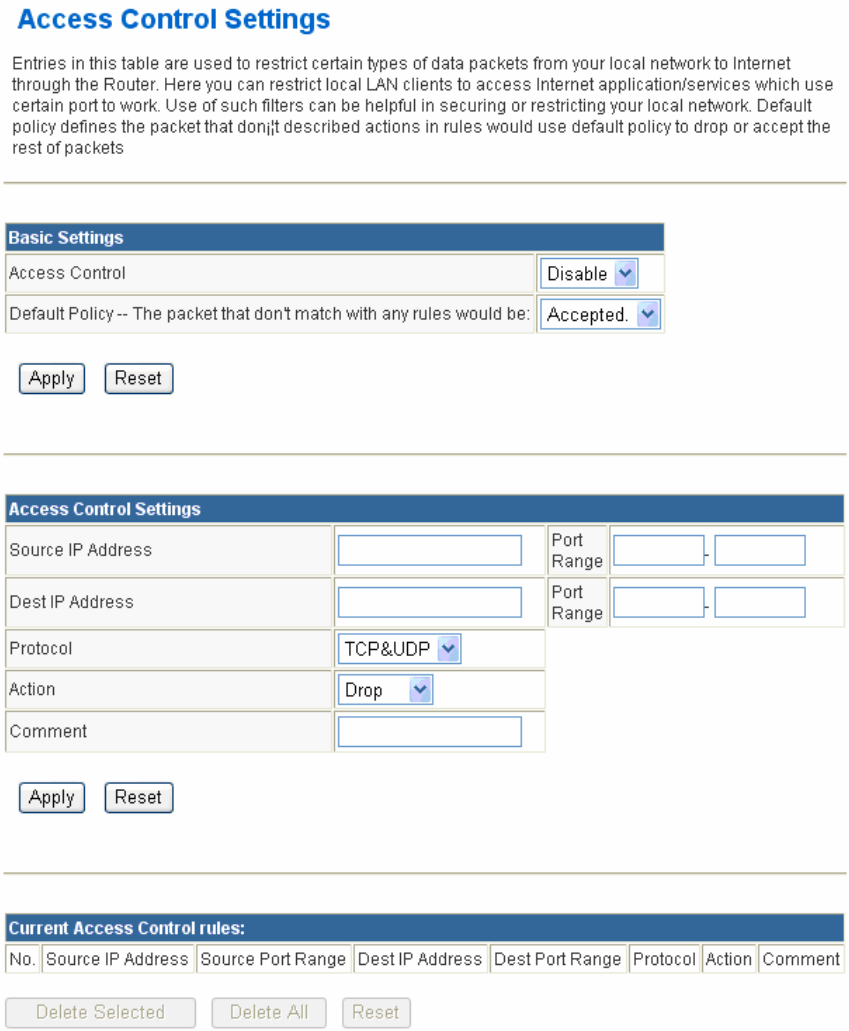
Firewall

MAC Filtering



MAC Filtering Settings	
MAC Filtering	Select Disable, enable –Rules for DROP, or enable –Rules for ACCEPT form the pull-down menu.
MAC Address	Enter the client MAC address.
Comment	You may key in a description for the MAC address.
Apply	Click to save and apply the current settings.
Reset	Press to discard the current settings.
Current MAC filtering rules	Here shows the information of the MAC filtering clients.
Delete Selected	Select the unwanted MAC addresses and then click the Delete Selected button to eliminate them.
Delete All	Click to delete all the MAC addresses in the table.
Reset	Click to clear the current settings.

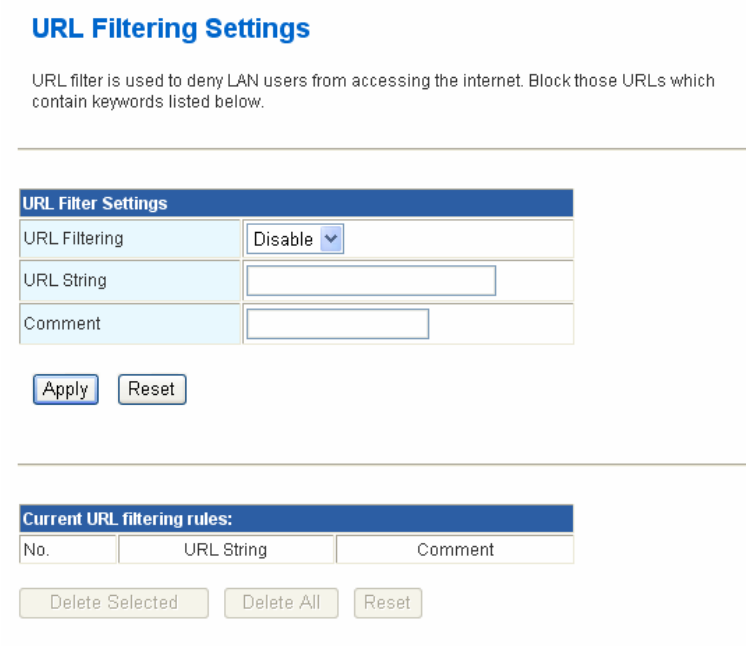
Access Control



Basic Settings	
Access Control	Select Disable or Enable from the pull-down menu.
Default Policy -- The packet that don't match with any rules would be:	Select Accepted or Dropped from the pull-down menu.
Apply	Click to save and apply the current settings.
Reset	Press to discard the current settings.
Access Control Settings	
Source IP Address	Enter the client IP address.
Dest IP Address	Enter the destined IP address.
Port Range	For TCP and UDP services enter the beginning of the range of port numbers used by the service. If the service uses a single port number, enter it in both the start and finish fields.

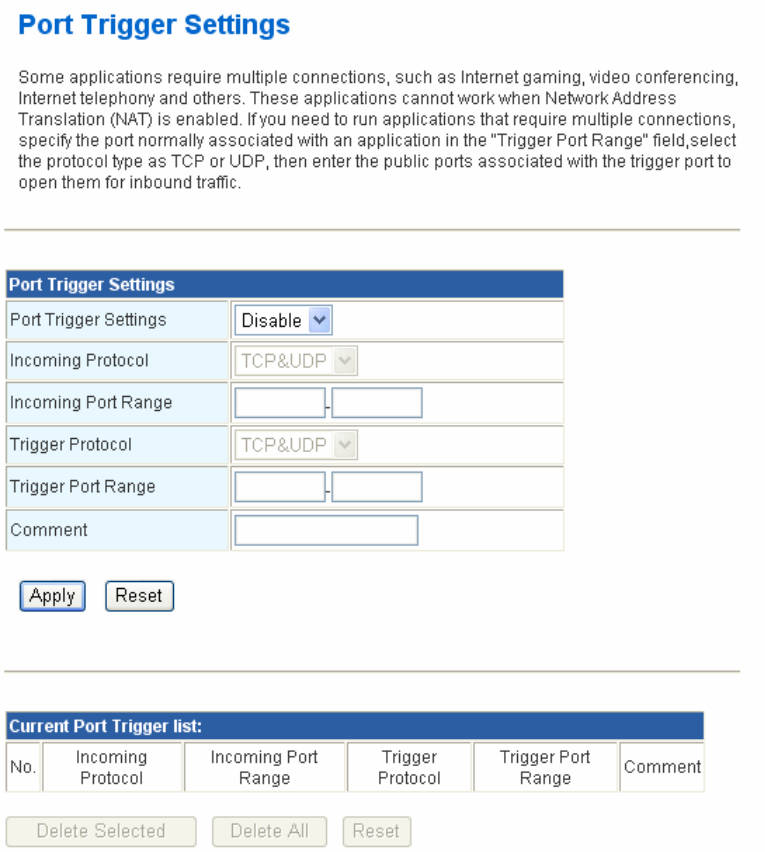
Protocol	Select the protocol (TCP, UDP or TCP&UDP) used to the remote system or service.
Action	Select Drop or Accept from the pull-down menu.
Comment	You may key in a description for the local IP address
Apply	Click to save and apply the current settings.
Reset	Press to discard the current settings.
Current Access Control rules	Here shows the information of the Access Control clients.
Delete Selected	Select the unwanted IP addresses and then click the Delete Selected button to eliminate them.
Delete All	Click to delete all the IP addresses in the table.
Reset	Click to clear the current settings.

URL Filtering



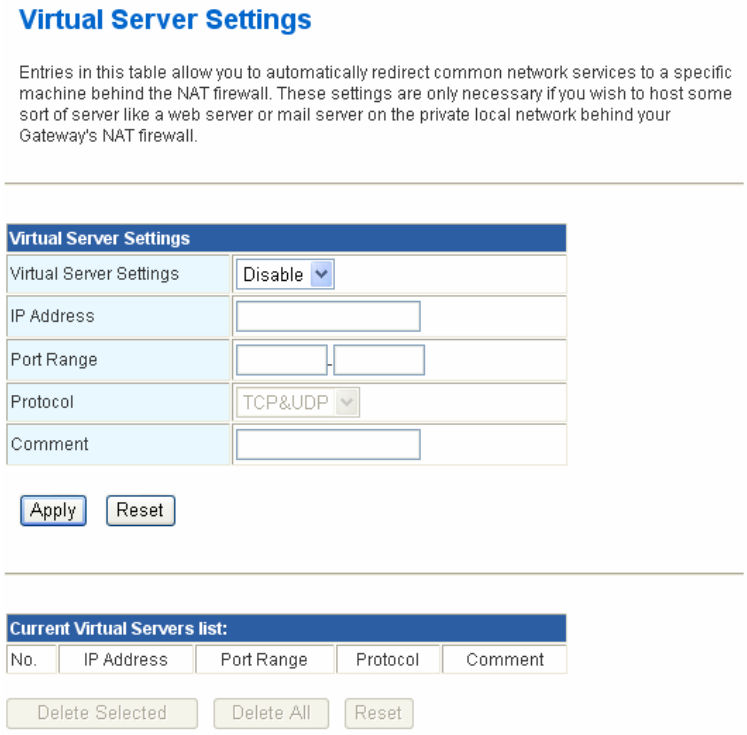
URL Filter Settings	
URL Filtering	Select Disable or Enable from the pull-down menu.
URL String	You can block websites with specific URL addresses.
Comment	You may key in a description for the URL address.
Apply	Click to save and apply the current settings.
Reset	Press to discard the current settings.
Current URL filtering rules	Shows the current URL address status.
Delete Selected	Select the unwanted URL addresses and then click the Delete Selected button to eliminate them.
Delete All	Click to delete all the URL addresses in the table.
Reset	Click to clear the current settings.

Port Trigger



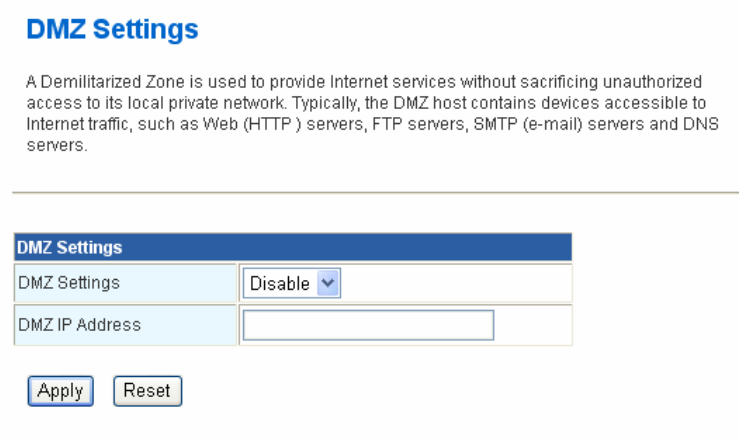
Port Trigger Settings	
Port Trigger Settings	Select Disable or Enable from the pull-down menu.
Incoming Protocol	Select the protocol (TCP, UDP or TCP&UDP) used to the remote system or service.
Incoming Port Range	For TCP and UDP Services, enter the beginning of the range of port numbers used by the service. If the service uses a single port number, enter it in both the start and finish fields.
Trigger Protocol	Select the protocol (TCP, UDP or TCP&UDP) used to the remote system or service.
Trigger Port Range	For TCP and UDP Services, enter the beginning of the range of port numbers used by the service. If the service uses a single port number, enter it in both the start and finish fields.
Comment	You may key in a description for the port trigger.
Current Port Trigger list	Shows the current Port Trigger status.
Delete Selected	Select the unwanted URL addresses and then click the Delete Selected button to eliminate them.
Delete All	Click to delete all the URL addresses in the table.
Reset	Click to clear the current settings.

Virtual Server



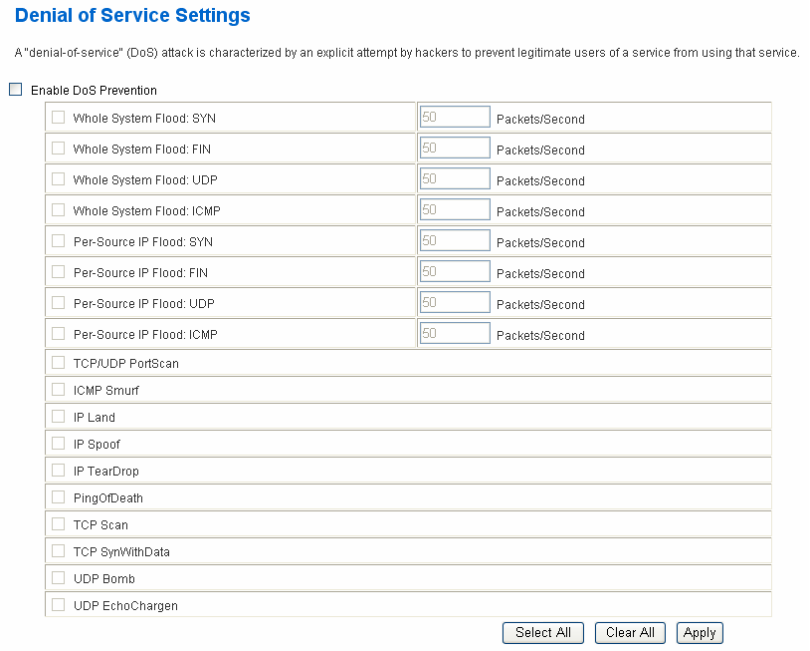
Virtual Server Settings	
Virtual Server Settings	Select Enable or Disable from the pull-down menu.
IP Address	Enter the local server's IP address.
Port Range	For TCP and UDP services enter the beginning of the range of port numbers used by the service. If the service uses a single port number, enter it in both the start and finish fields.
Protocol	Select the protocol (TCP, UDP or TCP&UDP) used to the remote system or service.
Comment	You may key in a description for the IP address.
Apply	Click to save and apply the current settings.
Reset	Press to discard the current settings.
Delete Selected	Select the unwanted IP addresses and then click the Delete Selected button to eliminate them.
Delete All	Click to delete all the IP addresses in the table.
Reset	Click to clear the current settings.

DMZ



DMZ Settings	
DMZ Settings	If the DMZ Host Function is enabled, it means that you set up DMZ host at a particular computer to be exposed to the Internet so that some applications/software, especially Internet / online game can have two-way connections. Select Enable or Disable from the pull-down menu.
DMZ IP Address	Enter the IP address of a particular host in your LAN that will receive all the packets originally going to the WAN port/ Public IP address above. **Note:** You need to give your LAN PC clients a fixed/ static IP address for DMZ to work properly.
Apply	Click to save and apply the current settings.
Reset	Press to discard current settings.

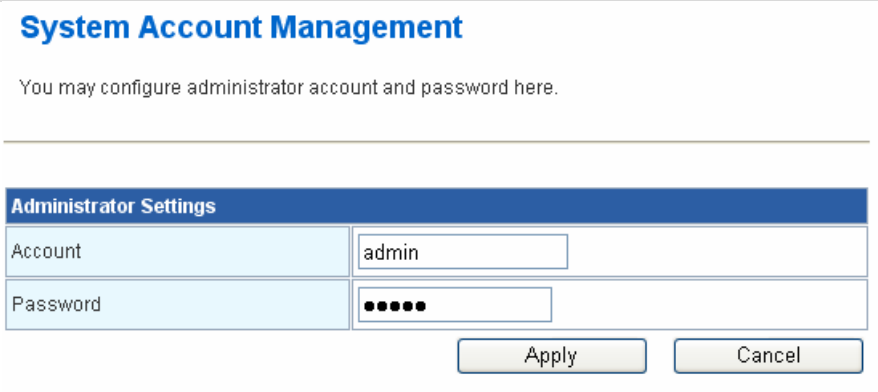
Denial of Service



Denial of Service Settings	
Enable DoS Prevention	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. The Wireless Router incorporates protection against DoS attacks. This screen allows you to configure DoS protection. Check the box to enable the DoS settings.
Select All	After you enabled the DoS prevention, you can click to select all DoS preventions.
Clear All	After you enabled the DoS prevention, you can click to uncheck all DoS preventions.
Apply	Click to enable selected DoS preventions.

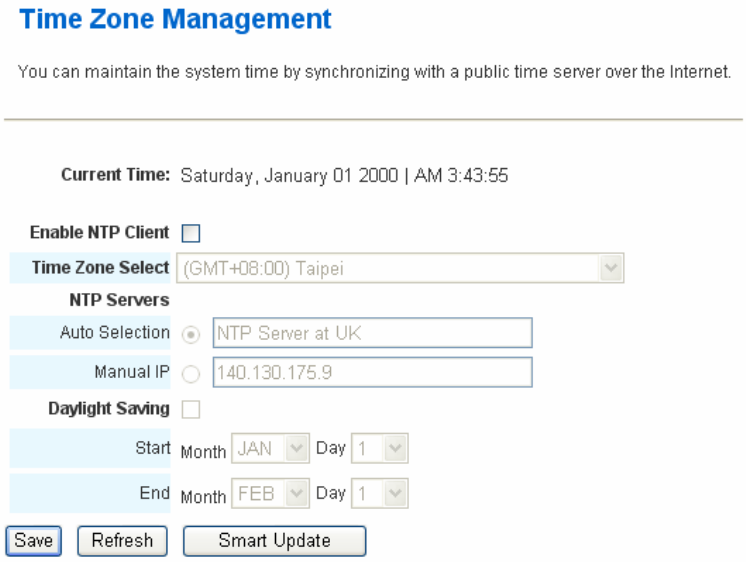
Administration

User/ Password



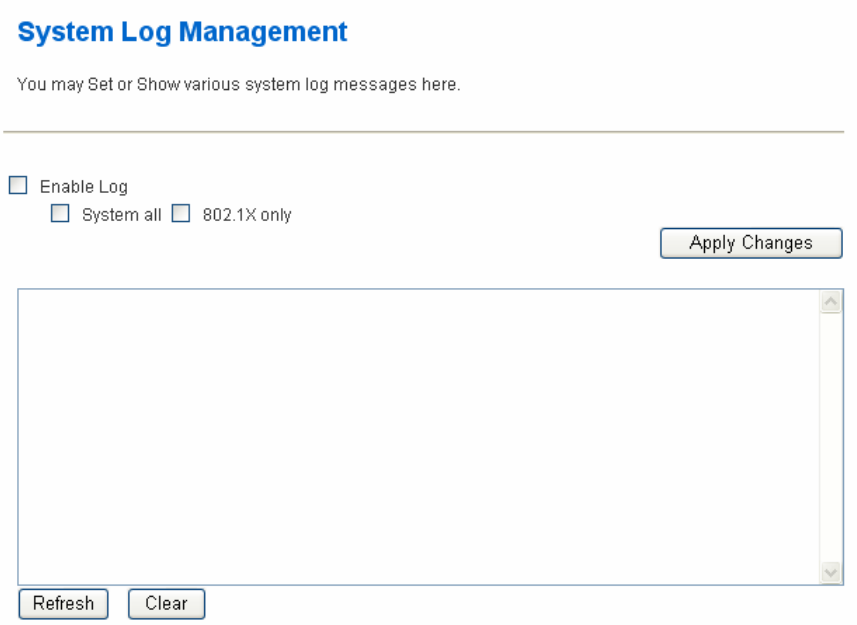
Administrator Settings	
Account	Enter the user name for managing this device. Maximum Input is 16 alphanumeric characters.
Password	Enter the passwords for managing this device.
Apply	Click to save and apply the current settings.
Cancel	Click to discard the current settings.

Time Zone Setting



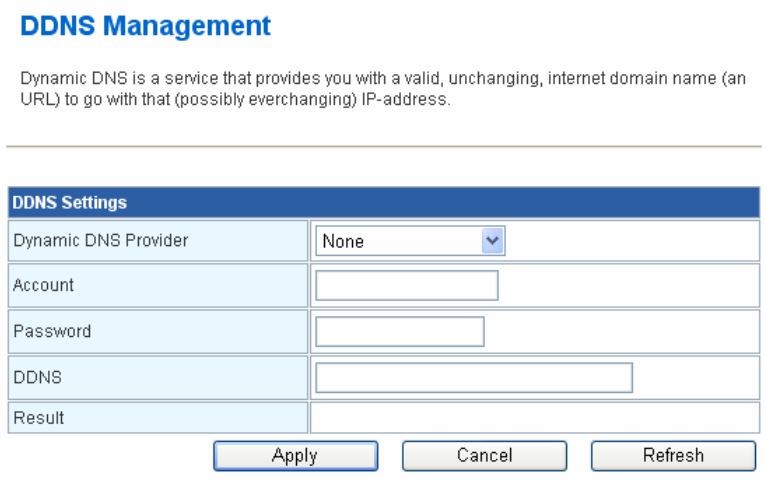
Time Zone Management	
Current Time	Here shows the current time information.
Enable NTP Client	Check the box to enable below time zone settings.
Time Zone Select	Select the preferred time zone from the pull-down menu.
NTP Servers	**Auto Selection**: Select Auto Selection to choose the server automatically. **Manual IP:** Enter an IP address of a specific server.
Daylight Saving	Check the box to enable this function, select start and end date from the pull-down menu.
Save	Click to save the current settings.
Refresh	Click to renew the current settings.
Smart Update	Click to update the current time information.

System Log



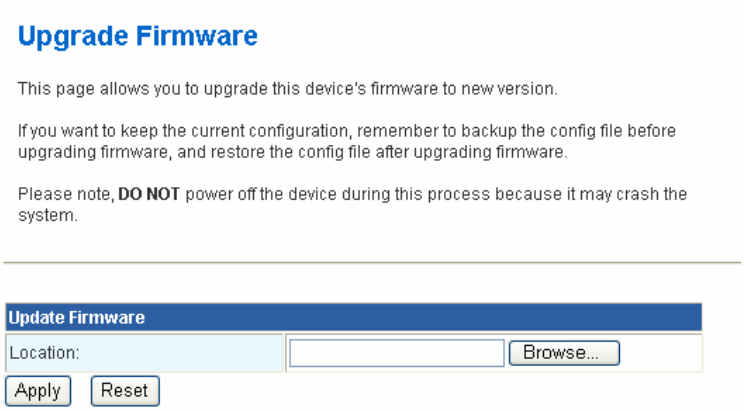
System Log Management	
Enable Log	Check the box to enable this function.
System all	Check to show all system related log files.
802.1X only	Check to show 802.1X log file only.
Apply Changes	Click this button to save the settings.
Refresh	Click to renew the current log message.
Clear	Click to remove current log message.

DDNS



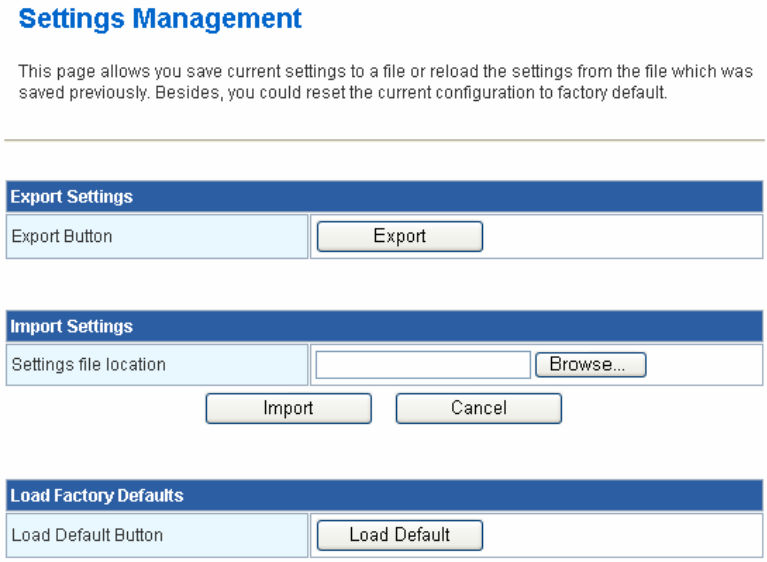
DDNS Settings	
Dynamic DNS Provider	• Select the desired DDNS Service Provider **None, Dyndns.org, www.zoneedit.com, or www.no-ip.com** from the pull-down list. • Details of your DDNS account (Name, password, Domain name) must then be entered and saved on this screen. • This device will then automatically ensure that your current IP Address is recorded by the DDNS Service Provider. • From the Internet, users will now be able to connect to your Virtual Servers (or DMZ PC) using your Domain name.
Account	Enter the user name for managing this device.
Password	Enter the password for managing this device.
DDNS	Apply for a Domain Name, and ensure it is allocated to you.
Result	The result of the update DNS result will show here.
Apply	Click to save and apply the current settings.
Cancel	Click to discard the current settings.
Refresh	Click to refresh the settings.

Upload Firmware



Update Firmware	
Location	Click the **Browse** button, find and open the firmware file (the browser will display to correct file path).
Apply	Click the Apply button to perform.
Reset	Click Reset to restore to default values.

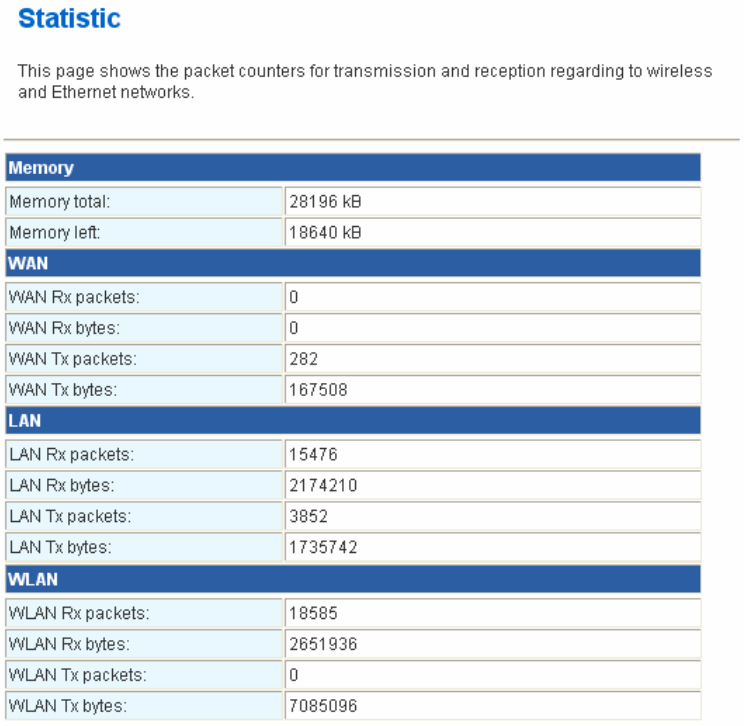
Settings Management



Export Settings	
Export Button	Click the **Export** button to export the current device settings.
Import Settings	
Settings file location	Click the **Browse** button, find and open the file that has been saved before. (The browser will display to correct file path).
Import	Click the **Import** button to import the device settings.
Cancel	Click to discard the current settings.
Load Factory Defaults	
Load Default Button	Click to **Load Default** button to set the device back to factory default settings.

Statistics

This screen displays the transmission and reception statistics on your current networks.



Statistic

This page shows the packet counters for transmission and reception regarding to wireless and Ethernet networks.

Memory	
Memory total:	28196 kB
Memory left:	18640 kB
WAN	
WAN Rx packets:	0
WAN Rx bytes:	0
WAN Tx packets:	282
WAN Tx bytes:	167508
LAN	
LAN Rx packets:	15476
LAN Rx bytes:	2174210
LAN Tx packets:	3852
LAN Tx bytes:	1735742
WLAN	
WLAN Rx packets:	18585
WLAN Rx bytes:	2651936
WLAN Tx packets:	0
WLAN Tx bytes:	7085096

Chapter 4: PC Configuration

Overview

For each PC, the following may need to be configured:

- TCP/IP network settings
- Internet Access configuration
- Wireless configuration

Windows Clients

- This section describes how to configure Windows clients for Internet access via the Wireless Router.
- The first step is to check the PC's TCP/IP settings.
- The Wireless Router uses the TCP/IP network protocol for all functions, so it is essential that the TCP/IP protocol be installed and configured on each PC.

TCP/IP Settings - Overview

If using default Wireless Router settings, and default Windows TCP/IP settings, no changes need to be made.

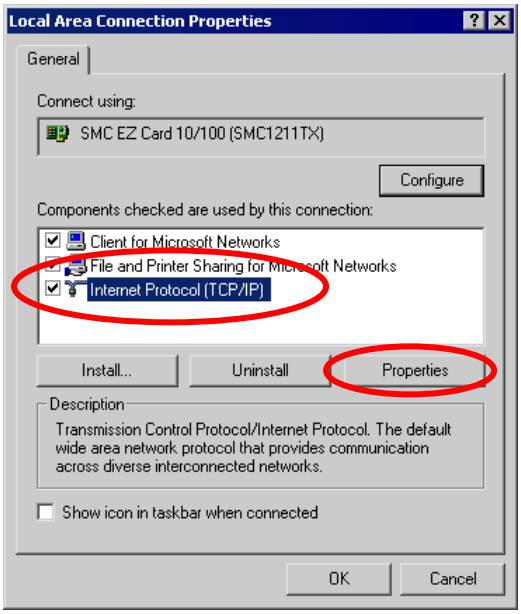
- By default, the Wireless Router will act as a DHCP Server, automatically providing a suitable IP Address (and related information) to each PC when the PC boots.
- For all non-Server versions of Windows, the default TCP/IP setting is to act as a DHCP client.

If using a Fixed (specified) IP address, the following changes are required:

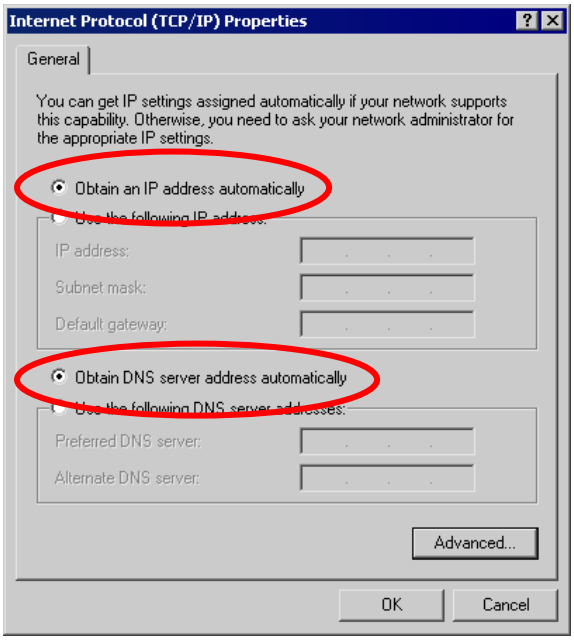
- The *Gateway* must be set to the IP address of the Wireless Router.
- The *DNS* should be set to the address provided by your ISP.

Checking TCP/IP Settings - Windows 2000

1. Select Control Panel - Network and Dial-up Connection.
2. Right - click the *Local Area Connection* icon and select *Properties*. You should see a screen like the following:



3. Select the *TCP/IP* protocol for your network card.
4. Click on the *Properties* button. You should then see a screen like the following.



5. Ensure your TCP/IP settings are correct, as described below.

Using DHCP

- To use DHCP, select the radio button *Obtain an IP Address automatically*. This is the default Windows setting. **Using this is recommended**. By default, the Wireless Router will act as a DHCP Server.
- Restart your PC to ensure it obtains an IP Address from the Wireless Router.

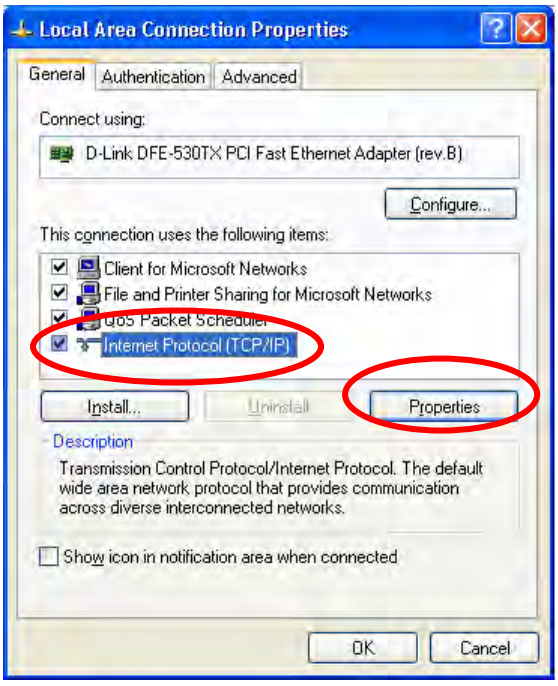
Using a fixed IP Address ("Use the following IP Address")

If your PC is already configured, check with your network administrator before making the following changes.

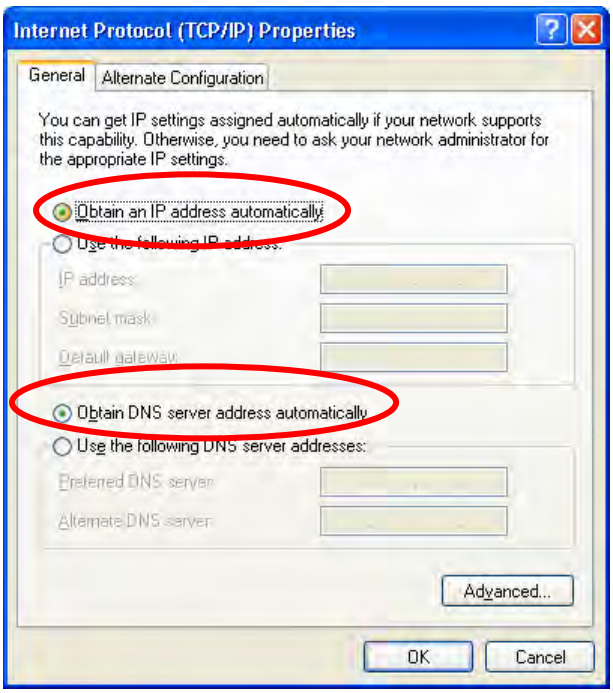
- Enter the Wireless Router's IP address in the *Default gateway* field and click *OK*. (Your LAN administrator can advise you of the IP Address they assigned to the Wireless Router.)
- If the *DNS Server* fields are empty, select *Use the following DNS server addresses*, and enters the DNS address or addresses provided by your ISP, then click *OK*.

Checking TCP/IP Settings - Windows XP

1. Select Control Panel - Network Connection.
2. Right click the *Local Area Connection* and choose *Properties*. You should see a screen like the following:



3. Select the *TCP/IP* protocol for your network card.
4. Click on the *Properties* button. You should then see a screen like the following.



5. Ensure your TCP/IP settings are correct.

Using DHCP

- To use DHCP, select *Obtain an IP Address automatically*. This is the default Windows setting. **Using this is recommended**. By default, the Wireless Router will act as a DHCP Server.
- Restart your PC to ensure it obtains an IP Address from the Wireless Router.

Using a fixed IP Address ("Use the following IP Address")

If your PC is already configured, check with your network administrator before making the following changes.

- In the *Default gateway* field, enter the Wireless Router's IP address and click *OK*. Your LAN administrator can advise you of the IP Address they assigned to the Wireless Router.
- If the *DNS Server* fields are empty, select *Use the following DNS server addresses*, and enters the DNS address or addresses provided by your ISP, then click *OK*.

Internet Access

To configure your PCs to use the Wireless Router for Internet access:

- Ensure that the DSL modem, Cable modem, or other permanent connection is functional.
- Use the following procedure to configure your Browser to access the Internet via the LAN, rather than by a Dial-up connection.

For Windows 2000

1. Select Start Menu - Settings - Control Panel - Internet Options.
2. Select the Connection tab, and click the *Setup* button.
3. Select "I want to set up my Internet connection manually, or I want to connect through a local area network (LAN)" and click *Next*.
4. Select "I connect through a local area network (LAN)" and click *Next*.
5. Ensure all of the boxes on the following Local area network Internet Configuration screen are **unchecked**.
6. Check the "No" option when prompted "Do you want to set up an Internet mail account now?"
7. Click *Finish* to close the Internet Connection Wizard. Setup is now completed.

For Windows XP

1. Select Start Menu - Control Panel - Network and Internet Connections.
2. Select *Set up or change your Internet Connection*.
3. Select the *Connection* tab, and click the *Setup* button.
4. Cancel the pop-up "Location Information" screen.
5. Click *Next* on the "New Connection Wizard" screen.
6. Select "Connect to the Internet" and click *Next*.
7. Select "Set up my connection manually" and click *Next*.
8. Check "Connect using a broadband connection that is always on" and click *Next*.
9. Click *Finish* to close the New Connection Wizard. Setup is now completed.

Accessing AOL

To access AOL (America On Line) through the Wireless Router, the *AOL for Windows* software must be configured to use TCP/IP network access, rather than a dial-up connection. The configuration process is as follows:

1. Start the *AOL for Windows* communication software. Ensure that it is Version 2.5, 3.0 or later. This procedure will not work with earlier versions.
2. Click the *Setup* button.
3. Select *Create Location*, and change the location name from "New Locality" to "Wireless Router."
4. Click *Edit Location*. Select *TCP/IP* for the *Network* field. (Leave the *Phone Number* blank.)
5. Click *Save*, then *OK*. Configuration is now complete.
6. Before clicking "Sign On", always ensure that you are using the "Wireless Router" location.

Macintosh Clients

From your Macintosh, you can access the Internet via the Wireless Router. The procedure is as follows.

1. Open the TCP/IP Control Panel.
2. Select *Ethernet* from the *Connect via* pop-up menu.
3. Select *Using DHCP Server* from the *Configure* pop-up menu. The DHCP Client ID field can be left blank.
4. Close the TCP/IP panel, saving your settings.

Note:

If using manually assigned IP addresses instead of DHCP, the required changes are:

- Set the *Router Address* field to the Wireless Router's IP Address.
- Ensure your DNS settings are correct.

Linux Clients

To access the Internet via the Wireless Router, it is only necessary to set the Wireless Router as the "Gateway".
Ensure you are logged in as "root" before attempting any changes.

Fixed IP Address

By default, most Unix installations use a fixed IP Address. If you wish to continue using a fixed IP Address, make the following changes to your configuration.

- Set your "Default Gateway" to the IP Address of the Wireless Router.
- Ensure your DNS (Name server) settings are correct.

To act as a DHCP Client (Recommended)

The procedure below may vary according to your version of Linux and X -windows shell.

1. Start your X Windows client.
2. Select *Control Panel - Network*
3. Select the "Interface" entry for your Network card. Normally, this will be called "eth0".
4. Click the *Edit* button, set the "protocol" to "DHCP", and save this data.
5. To apply your changes:
   - Use the "Deactivate" and "Activate" buttons, if available.
   - OR, restart your system.

Other Unix Systems

To access the Internet via the Wireless Router:

- Ensure the "Gateway" field for your network card is set to the IP Address of the Wireless Router.
- Ensure your DNS (Name Server) settings are correct.

Wireless Station Configuration

- This section applies to all Wireless stations wishing to use the Wireless Router's Access Point, regardless of the operating system that is used on the client.
- To use the Wireless Station with Wireless Router, each Wireless Station must have compatible settings, as follows:

Mode	The mode must be set to ***Infrastructure***.
SSID (ESSID)	This must match the value used on the Wireless Router. The default value is **Untitled**. **Note! *The SSID is case sensitive.***
WEP	By default, the security setting on the Wireless Router is **Disabled**. • If security setting remains disabled on the Wireless Router, all stations must have it disabled. • If security setting is enabled on the Wireless Router, each station must use the same settings as the Wireless Router.
WPA **WPA2 (AES)** **WPA2 Mixed**	WPA (TKIP/AES)/ WPA2 (AES)/ WPA2 Mixed: If one of these securities is enabled on the Wireless Router, each station must use the same settings as the Wireless Router. If there is no security is enabled on the Wireless Router, the security of each station should be disabled as well.

Note: By default, the Wireless Router will allow both 802.11b and 802.11g connections.

Appendix A:
Troubleshooting

Overview

This chapter covers some common problems that may be encountered while using the Wireless Router and some possible solutions to them. If you follow the suggested steps and the Wireless Router still does not function properly, contact your dealer for further advice.

General Problems

Problem 1:	**Can't connect to the Wireless Router to configure it.**
Solution 1:	Check the following: • The Wireless Router is properly installed, LAN connections are OK, and it is powered ON. • Ensure that your PC and the Wireless Router are on the same network segment. (If you don't have a router, this must be the case.) • If your PC is set to "Obtain an IP Address automatically" (DHCP client), restart it. • If your PC uses a Fixed (Static) IP address, ensure that it is using an IP Address within the range 10.10.10.1 to 10.10.10.253 and thus compatible with the Wireless Router's default IP Address of 10.10.10.254. Also, the Network Mask should be set to 255.255.255.0 to match the Wireless Router. In Windows, you can check these settings by using *Control Panel-Network* to check the *Properties* for the TCP/IP protocol.

Internet Access

Problem 1:	**When I enter a URL or IP address I get a time out error.**
Solution 1:	A number of things could be causing this. Try the following troubleshooting steps. • Check if other PCs work. If they do, ensure that your PCs IP settings are correct. If using a Fixed (Static) IP Address, check the Network Mask, Default gateway and DNS as well as the IP Address. • If the PCs are configured correctly, but still not working, check the Wireless Router. Ensure that it is connected and ON. Connect to it and check its settings. (If you can't connect to it, check the LAN and power connections.) • If the Wireless Router is configured correctly, check your Internet connection (DSL/Cable modem etc) to see that it is working correctly.
Problem 2:	**Some applications do not run properly when using the Wireless Router.**
Solution 2:	The Wireless Router processes the data passing through it, so it is not transparent. Use the *Special Applications* feature to allow the use of Internet applications, which do not function correctly. If this does solve the problem you can use the *DMZ* function. This should work with almost every application, but: • It is a security risk, since the firewall is disabled. • Only one (1) PC can use this feature.

Wireless Access

Problem 1:	**My PC can't locate the Wireless Router.**
Solution 1:	Check the following: • Your PC is set to *Infrastructure Mode*. (Access Points are always in *Infrastructure Mode.*) • The SSID on your PC and the Wireless Router are the same. Remember that the SSID is case-sensitive. So, for example "Workgroup" does NOT match "workgroup". • Both your PC and the Wireless Router must have the same setting for security. The default setting for the Wireless Router is disabled, so your wireless station should also have security setting disabled. • If security setting is enabled on the Wireless Router, your PC must have it enabled, and the password or key must match. • If the Wireless Router's *Wireless* screen is set to *Allow LAN access to selected Wireless Stations only*, then each of your Wireless stations must have been selected, or access will be blocked. • To see if radio interference is causing a problem, see if connection is possible when close to the Wireless Router. Remember that the connection range can be as little as 100 feet in poor environments.
Problem 2:	**Wireless connection speed is very slow.**
Solution 2:	The wireless system will connect at the highest possible speed, depending on the distance and the environment. To obtain the highest possible connection speed, you can experiment with the following: • **Wireless Router location.** Try adjusting the location and orientation of the Wireless Router. • **Wireless Channel.** If interference is the problem, changing to another channel may show a marked improvement. • **Radio Interference.** Other devices may be causing interference. You can experiment by switching other devices Off, and see if this helps. Any "noisy" devices should be shielded or relocated. • **RF Shielding**. Your environment may tend to block transmission between the wireless stations. This will mean high access speed is only possible when close to the Wireless Router.

Appendix B:
About Wireless LANs

BSS

BSS

A group of Wireless Stations and a single Access Point, all using the same ID (SSID), form a Basic Service Set (BSS).
Using the same SSID is essential. Devices with different SSIDs are unable to communicate with each other.

Channels

The Wireless Channel sets the radio frequency used for communication.

- Access Points use a fixed Channel. You can select the Channel used. This allows you to choose a Channel which provides the least interference and best performance. In the USA and Canada, 11 channel are available. If using multiple Access Points, it is better if adjacent Access Points use different Channels to reduce interference.
- In "Infrastructure" mode, Wireless Stations normally scan all Channels, looking for an Access Point. If more than one Access Point can be used, the one with the strongest signal is used. (This can only happen within an ESS.)

Security

Authentication methods include **Disable**, **Open, Shared, WEP Auto, WPA, WPA-PSK, WPA2, WPA2-PSK**, **WPA-PSK/WPA2-PSK, WPA1/WPA2 and 802.1X.** Once you choose your authentication, you then need to select the **Data Encryption** methods which may includes **WEP** Key, **Pass Phrase** and **Radius** Server settings.

Encryption

Enabling **WEP** can protect your data from eavesdroppers. There are two levels of WEP Encryption: 64 bits and 128 bits. 64 bits WEP encryption requires enter 10 Hex characters as a "secret key", whereas 128 bits WEP requires users to enter 26 Hex characters as "secret key".
PASS PHRASE is applicable only when you select to use WPA-PSK authentication. You will need to enter an 8~63 characters password to kick off the encryption process, which will generate four WEP keys automatically.
RADIUS setup is used to set up additional parameters for authorizing wireless clients through RADIUS server. The **RADIUS** setup is required when you select to use **Open System with 802.1x** or **WPA/WPA2** authentication.

Open, Shared, WEP auto

With **Shared Key or Open System,** the Wireless Router can automatically change its authentication method to **Shared Key** or **Open System** depending on its client's setting.
WEP (Wired Equivalent Privacy) is a standard for encrypting data before it is transmitted.
This is desirable because it is impossible to prevent snoopers from receiving any data that is transmitted by your Wireless Stations. But if the data is encrypted, then it is meaningless unless the receiver can decrypt it.
If WEP is used, the Wireless Stations and the Access Point must have the same settings for each of the following:

WEP	Off, 64 Bit, 128 Bit.
Key	For 64 Bit encryption, the Key value must match. For 128 Bit encryption, the Key value must match.
WEP Authentication	Open System or Shared Key.

WPA/WPA2

WPA/WPA2 (Wi-Fi Protected Access) is more secure than WEP. It uses a "Shared Key" which allows the encryption keys to be regenerated at a specified interval. There are four encryption options: **TKIP, AES, TKIP-AES** and additional setup for **RADIUS** is required in this method.

WPA-PSK/WPA2-PSK

WPA/WPA2 (Wi-Fi Protected Access using Pre-Shared Key) is recommended for users who are not using a RADIUS server in a home environment and all their clients support WPA/WPA2. This method provides a better security.

Encryption	WEP Key 1~4	Passphrase
TKIP	NOT REQUIRED	8-63 characters
AES		

802.1x

With **802.1x** authentication, a wireless PC can join any network and receive any messages that are not encrypted, however, additional setup for **RADIUS** to issue the WEP key dynamically will be required.

Wireless LAN Configuration

To allow Wireless Stations to use the Access Point, the Wireless Stations and the Access Point must use the same settings, as follows:

Mode	On client Wireless Stations, the mode must be set to "Infrastructure." (The Access Point is always in "Infrastructure" mode.)
SSID (ESSID)	Wireless Stations should use the same SSID (ESSID) as the Access Point they wish to connect to, but the SSID can not set to be null (blank).
WEP	The Wireless Stations and the Access Point must use the same settings for WEP (Off, 64 Bit, 128 Bit). **WEP Key:** If WEP is enabled, the Key must be the same on the Wireless Stations and the Access Point. **WEP Authentication:** If WEP is enabled, all Wireless Stations must use the same setting as the Access Point (either "Open System" or "Shared Key").
WPA **WPA2 (AES)** **WPA2 Mixed**	WPA (TKIP/AES)/ WPA2 (AES)/ WPA2 Mixed: If one of these securities is enabled on the Wireless Router, each station must use the same settings as the Wireless Router. If there is no security is enabled on the Wireless Router, the security of each station should be disabled as well.

Regulatory Approvals

CE Standards

This product complies with the 99/5/EEC directives, including the following safety and EMC standards:

- EN300328-2
- EN301489-1/-17
- EN60950

CE Marking Warning

This is a Class B product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.