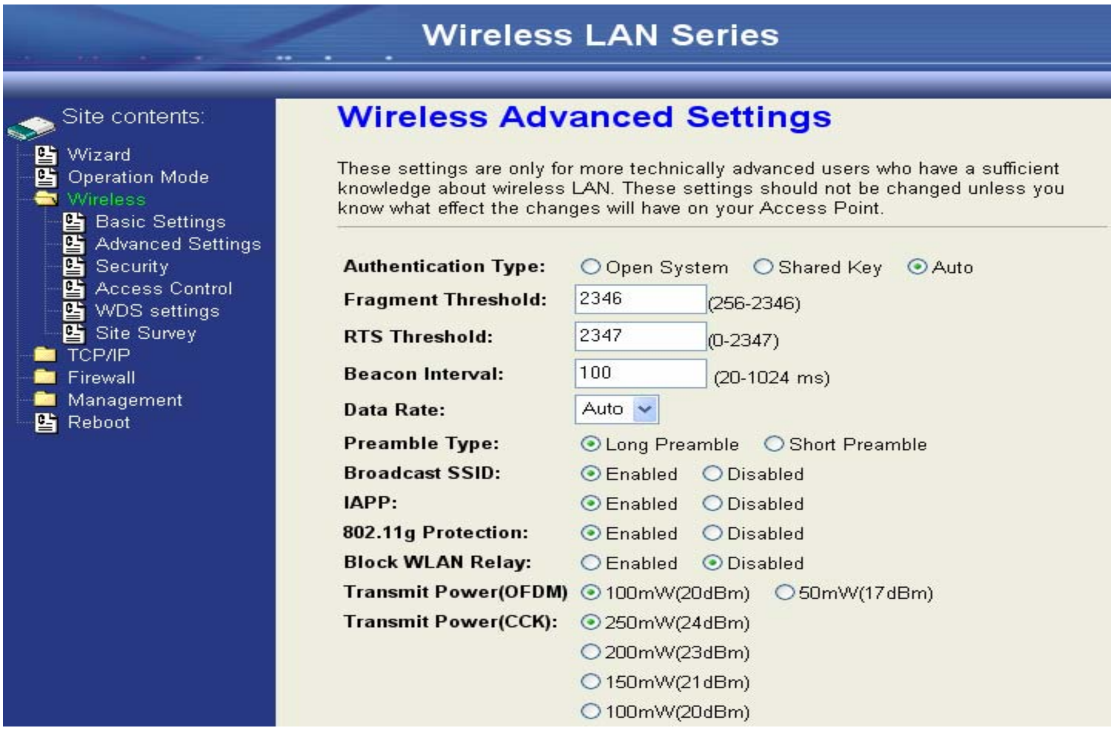
# Advanced Settings

These settings are only for more technically advanced users who have sufficient knowledge about wireless LAN. These settings should not be changed unless you know what effect the changes will have on your device. The default setting is optimized for the normal operation. For specific application, setting configuration will required highly attention to reach optimistic condition.

**Note**：
Any unreasonable value change to default setting will reduce the throughput of the device.



**Wireless Advanced Settings**

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 Access Point.

Authentication Type: ○ Open System ○ Shared Key ● Auto
Fragment Threshold: 2346 (256-2346)
RTS Threshold: 2347 (0-2347)
Beacon Interval: 100 (20-1024 ms)
Data Rate: Auto
Preamble Type: ● Long Preamble ○ Short Preamble
Broadcast SSID: ● Enabled ○ Disabled
IAPP: ● Enabled ○ Disabled
802.11g Protection: ● Enabled ○ Disabled
Block WLAN Relay: ○ Enabled ● Disabled
Transmit Power(OFDM) ● 100mW(20dBm) ○ 50mW(17dBm)
Transmit Power(CCK): ● 250mW(24dBm)
○ 200mW(23dBm)
○ 150mW(21dBm)
○ 100mW(20dBm)

**Authentication Type**

The device supports two Authentication Types “Open system” and “Shared Key”. When you select “Share Key”, you need to setup “WEP” key in “Security” page (See the next section). The default setting is “Auto”. The wireless client can associate with the device by using one of the two types.

**Fragment Threshold**

The fragmentation threshold determines the size at which packets are fragmented (sent as several pieces instead of as one block). Use a low setting in areas where communication is poor or where there is a great deal of radio interference. This function will help you to improve the network performance.

**RTS Threshold**

The RTS threshold determines the packet size at which the radio issues a request to send (RTS) before sending the packet. A low RTS Threshold setting can be useful in areas where many client devices are associating with the device, or in areas where the clients are far apart and can detect only the device and not each other. You can enter a setting ranging from 0 to 2347 bytes.

**Data Rate**

The standard IEEE 802.11b/11g supports 1, 2, 5.5, 11 / 6, 9, 12, 18, 24, 36, 48 and 54 Mbps data rates. You can choose the rate that the device uses for data transmission. The default value is “auto”. The device will use the highest possible selected transmission rate.

**Beacon Interval**

The beacon interval is the amount of time between access point beacons in mini-seconds. The default beacon interval is 100.

**Broadcast SSID**

Broadcasting the SSID will let your wireless clients find the device automatically. If you are building a public Wireless Network, disable this function can provide better security. Every wireless stations located within the coverage of the device must connect this device by manually configure the SSID in your client settings.

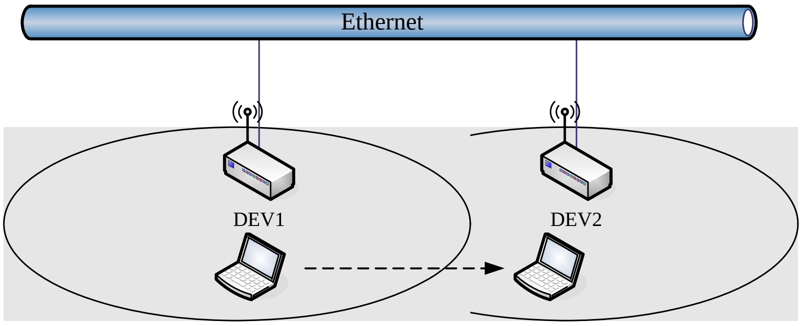
**Int. Roaming**

This function will let Wireless Stations roam among a network environment with multiple devices. Wireless Stations are able to switch from one device to another as they move between the coverage areas. Users can have more wireless working range. An example as the following figure

You should comply with the following instructions to roam among the wireless coverage areas.

**Note**： **For implementing the roaming function, the setting MUST comply the following two items.**

- All the devices must be in the same subnet network and the SSID must be the same.
- If you use the 802.1x authentication, you need to have the user profile in these devices for the roaming station.



Wireless Station moves
between the coverage areas

**Block WLAN Relay (Isolate Client)**

The device supports isolation function. If you are building a public Wireless Network, enable this function can provide better security. The device will block packets between wireless clients (relay). All the wireless clients connected to the device can't see each other.

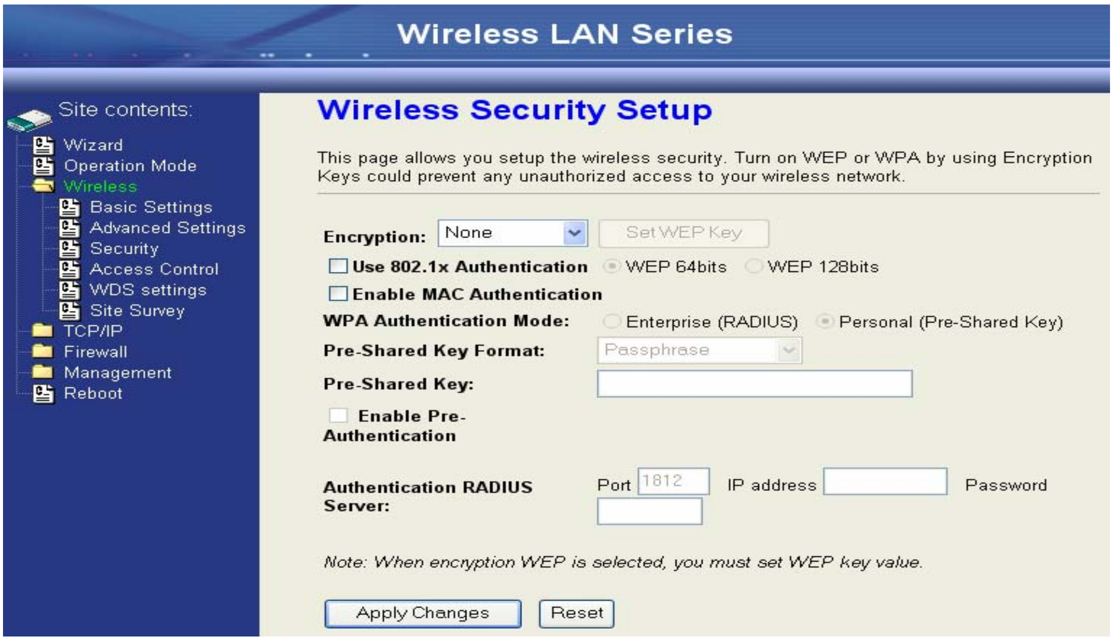
**Transmit Power**

The device supports four transmission output power levels 250, 200, 150 and 100mW for CCK (802.11b) mode and two transmission output power levels 100 and 50mW for OFDM (802.11g) mode. User can adjust the power level to change the coverage of the device. Every wireless stations located within the coverage of the device also needs to have the high power radio. Otherwise the wireless stations only can survey the device, but can't establish connection with device.

# Configuring Wireless Security

This device provides complete wireless security function include WEP, 802.1x, WPA-TKIP, WPA2-AES and WPA2-Mixed in different mode (see the Security Support Table).

The default security setting of the encryption function is disabled. Choose your preferred security setting depending on what security function you need.



**Wireless Security Setup**

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.

Encryption: None

□ Use 802.1x Authentication ● WEP 64bits ○ WEP 128bits

□ Enable MAC Authentication

WPA Authentication Mode: ○ Enterprise (RADIUS) ● Personal (Pre-Shared Key)

Pre-Shared Key Format: Passphrase

Pre-Shared Key:

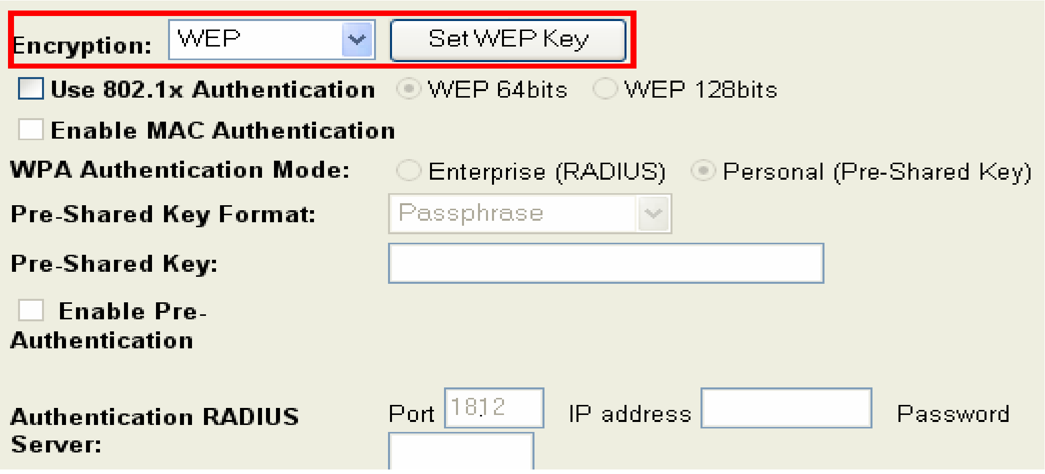
□ Enable Pre-Authentication

Authentication RADIUS Server: Port 1812 IP address Password

*Note: When encryption WEP is selected, you must set WEP key value.*

### WEP Encryption Setting

Wired Equivalent Privacy (WEP) is implemented in this device to prevent unauthorized access to your wireless network. The WEP setting must be as same as each client in your wireless network. For more secure data transmission, you can change encryption type to “WEP” and click the “Set WEP Key” button to open the “Wireless WEP Key setup” page.



Encryption: WEP

□ Use 802.1x Authentication ● WEP 64bits ○ WEP 128bits

□ Enable MAC Authentication

WPA Authentication Mode: ○ Enterprise (RADIUS) ● Personal (Pre-Shared Key)

Pre-Shared Key Format: Passphrase

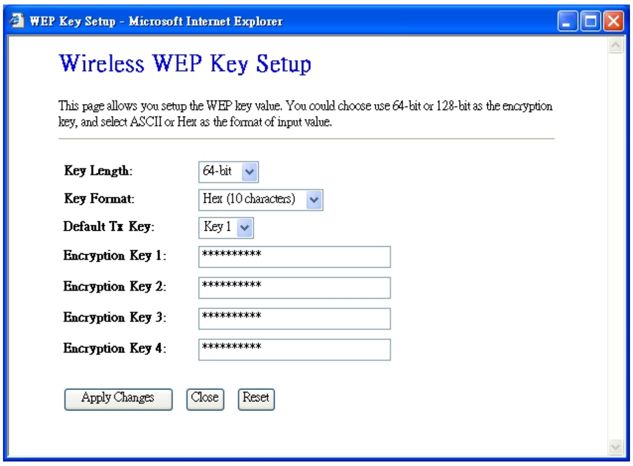
Pre-Shared Key:

□ Enable Pre-Authentication

Authentication RADIUS Server: Port 1812 IP address Password

When you decide to use the WEP encryption to secure your WLAN, please refer to the following setting of the WEP encryption:

- 64-bit WEP Encryption：64-bit WEP keys are as same as the encryption method of 40-bit WEP. You can input 10 hexadecimal digits (0~9, a~f or A~F) or 5 ACSII chars.
- 128-bit WEP Encryption：128-bit WEP keys are as same as the encryption method of 104-bit WEP. You can input 26 hexadecimal digits (0~9, a~f or A~F) or 10 ACSII chars.
- The Default Tx Key field decides which of the four keys you want to use in your WLAN environment.



WEP Key Setup - Microsoft Internet Explorer

Wireless WEP Key Setup

This page allows you setup the WEP key value. You could choose use 64-bit or 128-bit as the encryption key, and select ASCII or Hex as the format of input value.

**Key Length:** 64-bit

**Key Format:** Hex (10 characters)

**Default Tx Key:** Key 1

**Encryption Key 1:** **********

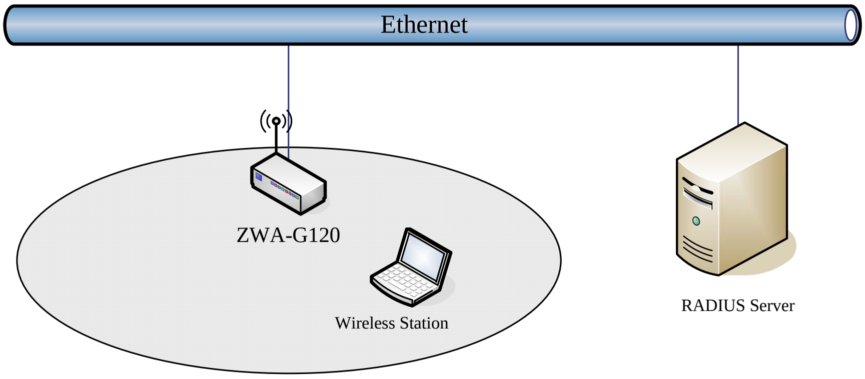
**Encryption Key 2:** **********

**Encryption Key 3:** **********

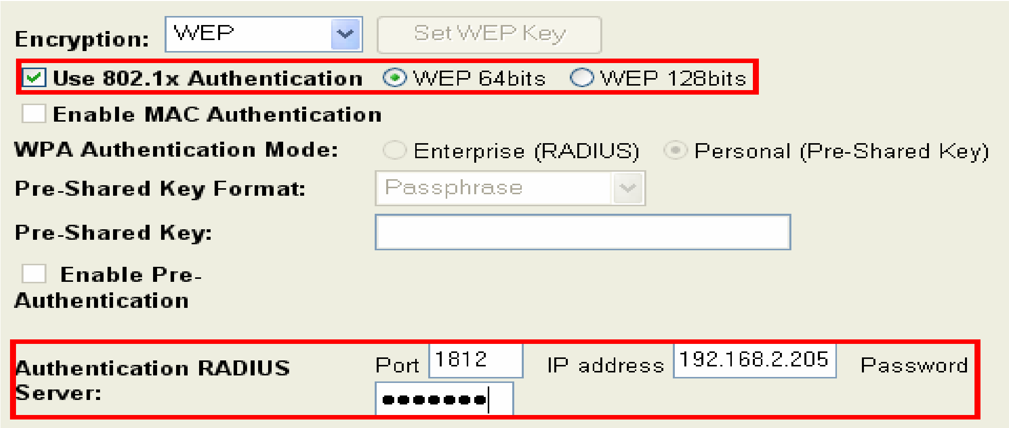
**Encryption Key 4:** **********

### WEP Encryption with 802.1x Setting

The device supports external RADIUS Server that can secure networks against unauthorized access. If you use the WEP encryption, you can also use the RADIUS server to check the admission of the users. By this way every user must use a valid account before accessing the Wireless LAN and requires a RADIUS or other authentication server on the network. An example is shown as following.



You should choose WEP 64 or 128 bit encryption to fit with your network environment first. Then add user accounts and the target device to the RADIUS server. In the device , you need to specify the IP address、Password (Shared Secret) and Port number of the target RADIUS server.



Encryption: WEP Set WEP Key

☑ Use 802.1x Authentication ● WEP 64bits ○ WEP 128bits

□ Enable MAC Authentication

WPA Authentication Mode: ○ Enterprise (RADIUS) ● Personal (Pre-Shared Key)

Pre-Shared Key Format: Passphrase

Pre-Shared Key:

□ Enable Pre-Authentication

Authentication RADIUS Server: Port 1812 IP address 192.168.2.205 Password ●●●●●●●●

**WPA Encryption Setting**

WPA feature provides a high level of assurance for end-users and administrators that their data will remain private and access to their network restricted to authorized users. You can choose the WPA encryption and select the Authentication Mode.

**WPA Authentication Mode**

This device supports two WPA modes. For personal user, you can use the Pre-shared Key to enhance your security setting. This mode requires only an access point and client station that supports WPA-PSK. For Enterprise, authentication is achieved via WPA RADIUS Server. You need a RADIUS or other authentication server on the network.

- **Enterprise (RADIUS):**

  When WPA Authentication mode is Enterprise (RADIUS), you have to add user accounts and the target device to the RADIUS Server. In the device , you need to specify the IP address、Password (Shared Secret) and Port number of the target RADIUS server.

- **Pre-Share Key:**

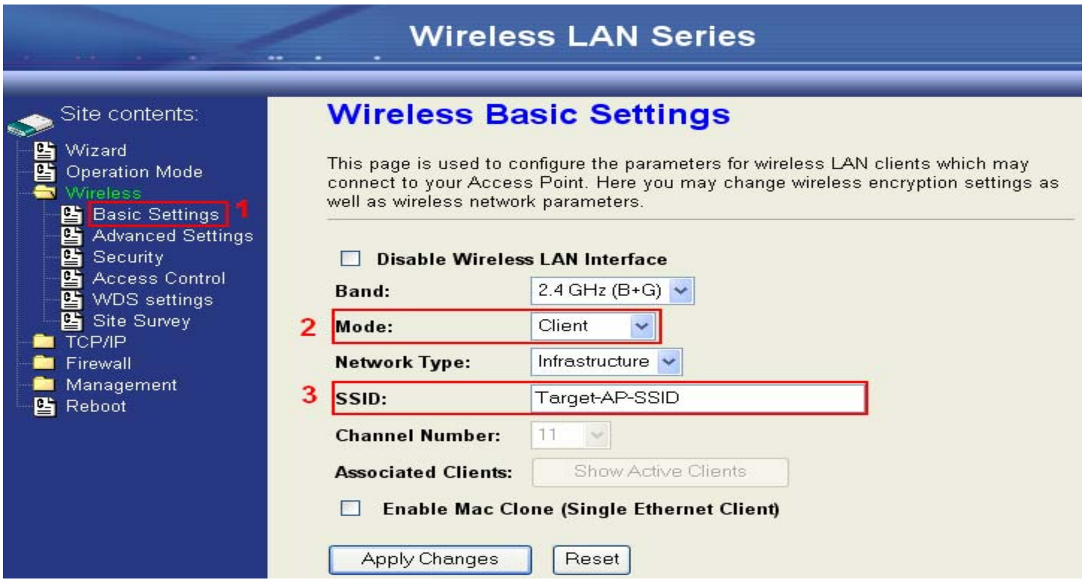
  This mode requires only an access point and client station that supports WPA-PSK. The WPA-PSK settings include Key Format, Length and Value. They must be as same as each wireless client in your wireless network. When Key format is Passphrase, the key value should have 8~63 ACSII chars. When Key format is Hex, the key value should have 64 hexadecimal digits (0~9, a~f or A~F).

# Configuring as WLAN Client Adapter

This device can be configured as a wireless Ethernet adapter. In this mode, the device can connect to the other wireless stations (Ad-Hoc network type) or Access Point (Infrastructure network type) and you don't need to install any driver.

# Quick start to configure

***Step 1.*** In "Basic Settings" page, change the Mode to "Client" mode. And key in the SSID of the AP you want to connect then press "Apply Changes" button to apply the change.



## Wireless Basic Settings

This page is used to configure the parameters for wireless LAN clients which may connect to your Access Point. Here you may change wireless encryption settings as well as wireless network parameters.

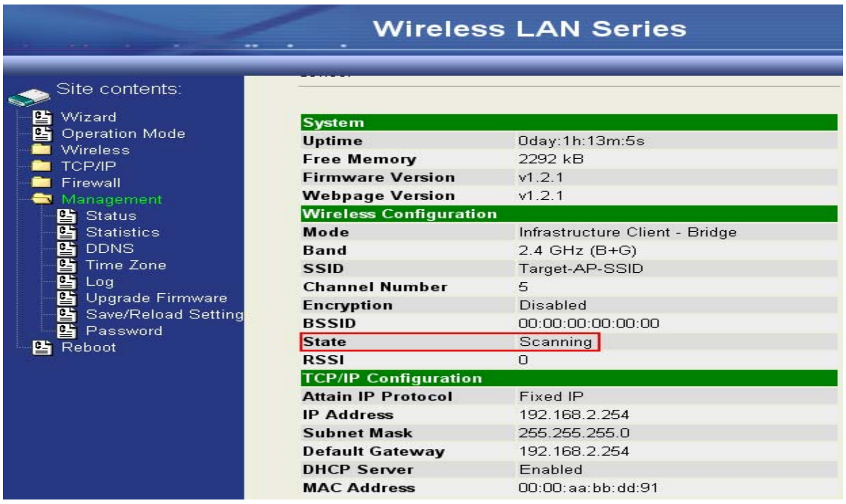
□ Disable Wireless LAN Interface

| | |
|---|---|
| Band: | 2.4 GHz (B+G) |
| Mode: | Client |
| Network Type: | Infrastructure |
| SSID: | Target-AP-SSID |
| Channel Number: | 11 |
| Associated Clients: | Show Active Clients |

□ Enable Mac Clone (Single Ethernet Client)

Apply Changes  Reset

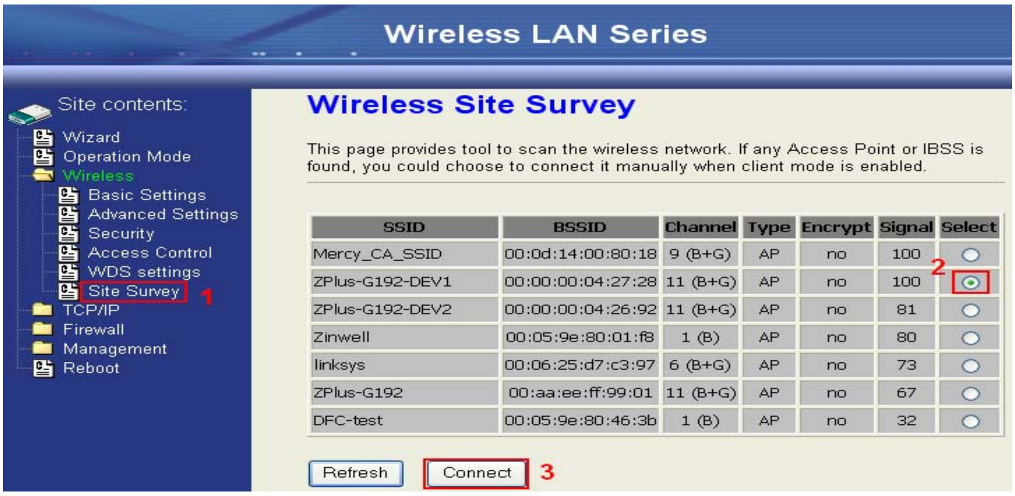
***Step 2.*** Check the status of connection in "Status" web page



| System | |
|---|---|
| Uptime | 0day:1h:13m:5s |
| Free Memory | 2292 kB |
| Firmware Version | v1.2.1 |
| Webpage Version | v1.2.1 |
| **Wireless Configuration** | |
| Mode | Infrastructure Client - Bridge |
| Band | 2.4 GHz (B+G) |
| SSID | Target-AP-SSID |
| Channel Number | 5 |
| Encryption | Disabled |
| BSSID | 00:00:00:00:00:00 |
| State | Scanning |
| RSSI | 0 |
| **TCP/IP Configuration** | |
| Attain IP Protocol | Fixed IP |
| IP Address | 192.168.2.254 |
| Subnet Mask | 255.255.255.0 |
| Default Gateway | 192.168.2.254 |
| DHCP Server | Enabled |
| MAC Address | 00:00:aa:bb:dd:91 |

The alternative way to configure as following:

***Step 1.*** In “Wireless Site Survey” page, select one of the SSIDs you want to connect and then press “Connect” button to establish the link.

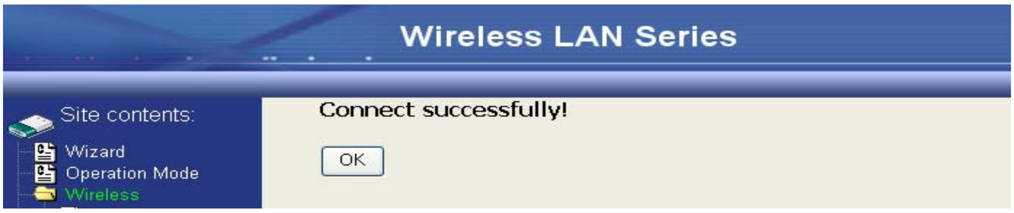


Wireless Site Survey

This page provides tool to scan the wireless network. If any Access Point or IBSS is found, you could choose to connect it manually when client mode is enabled.

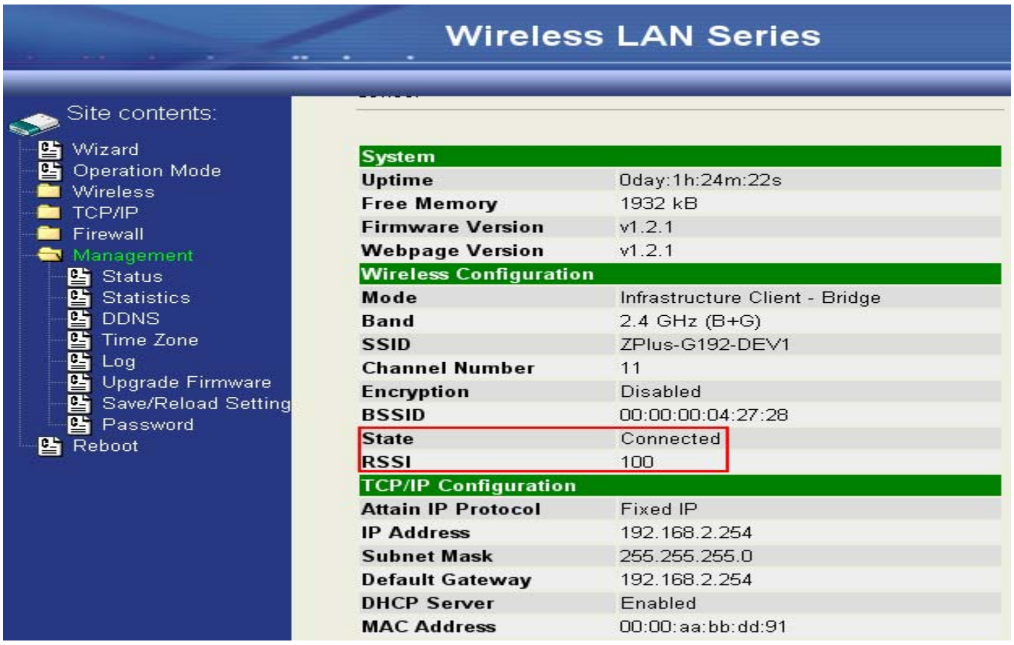
| SSID | BSSID | Channel | Type | Encrypt | Signal | Select |
|---|---|---|---|---|---|---|
| Mercy_CA_SSID | 00:0d:14:00:80:18 | 9 (B+G) | AP | no | 100 | ○ |
| ZPlus-G192-DEV1 | 00:00:00:04:27:28 | 11 (B+G) | AP | no | 100 | ● |
| ZPlus-G192-DEV2 | 00:00:00:04:26:92 | 11 (B+G) | AP | no | 81 | ○ |
| Zinwell | 00:05:9e:80:01:f8 | 1 (B) | AP | no | 80 | ○ |
| linksys | 00:06:25:d7:c3:97 | 6 (B+G) | AP | no | 73 | ○ |
| ZPlus-G192 | 00:aa:ee:ff:99:01 | 11 (B+G) | AP | no | 67 | ○ |
| DFC-test | 00:05:9e:80:46:3b | 1 (B) | AP | no | 32 | ○ |

***Step 2.*** If the linking is established successfully. It will show the message “Connect successfully”. Then press “OK”.



Connect successfully!

***Step 3.*** Then you can check the linking information in “Status” page.



| System | |
|---|---|
| Uptime | 0day:1h:24m:22s |
| Free Memory | 1932 kB |
| Firmware Version | v1.2.1 |
| Webpage Version | v1.2.1 |
| **Wireless Configuration** | |
| Mode | Infrastructure Client - Bridge |
| Band | 2.4 GHz (B+G) |
| SSID | ZPlus-G192-DEV1 |
| Channel Number | 11 |
| Encryption | Disabled |
| BSSID | 00:00:00:04:27:28 |
| State | Connected |
| RSSI | 100 |
| **TCP/IP Configuration** | |
| Attain IP Protocol | Fixed IP |
| IP Address | 192.168.2.254 |
| Subnet Mask | 255.255.255.0 |
| Default Gateway | 192.168.2.254 |
| DHCP Server | Enabled |
| MAC Address | 00:00:aa:bb:dd:91 |

**Note** ：

If the available network requires authentication and data encryption, you need to setup the authentication and encryption before step1 and all the settings must be as same as the Access Point or Station. About the detail authentication and data encryption settings, please refer the security section.

**Authentication Type**

In client mode, the device also supports two Authentication Types "Open system" and "Shared Key". Although the default setting is "Auto", not every Access Points can support "Auto" mode. If the authentication type on the Access Point is knew by user, we suggest to set the authentication type as same as the Access Point.

**Data Encryption**

In client mode, the device supports WEP and WPA Personal/Enterprise except WPA2 mixed mode data encryption. About the detail data encryption settings, please refer the security section.

# Ch 3. Configuring WDS

Wireless Distribution System (WDS) uses wireless media to communicate with the other devices, like the Ethernet does. This function allows one or more remote LANs connect with the local LAN. To do this, you must set these devices in the same channel and set MAC address of other devices you want to communicate with in the WDS AP List and then enable the WDS.

When you decide to use the WDS to extend your WLAN, please refer the following instructions for configuration.

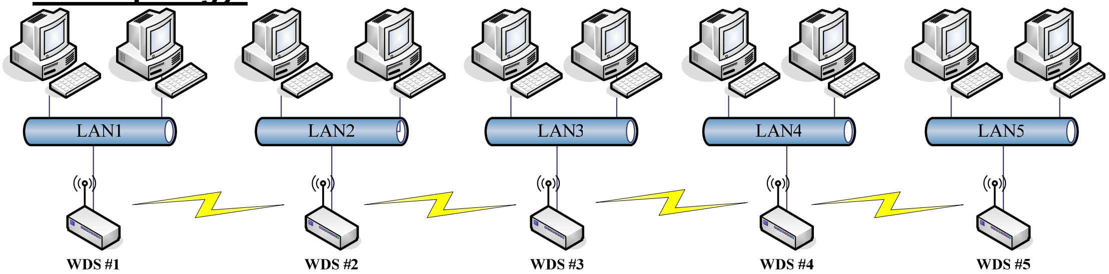
- The bridging devices by WDS must use the same radio channel.
- When the WDS function is enabled, all wireless stations can't connect the device.
- If your network topology has a loop, you need to enable the 802.1d Spanning Tree function.
- You don't need to add all MAC address of devices existed in your network to WDS AP List. WDS AP List only needs to specify the MAC address of devices you need to directly connect to.
- The bandwidth of device is limited, to add more bridging devices will split the more bandwidth to every bridging device.

## WDS network topology

In this section, we will demonstrate the WDS network topologies and WDS AP List configuration. You can setup the four kinds of network topologies: bus, star, ring and mesh.

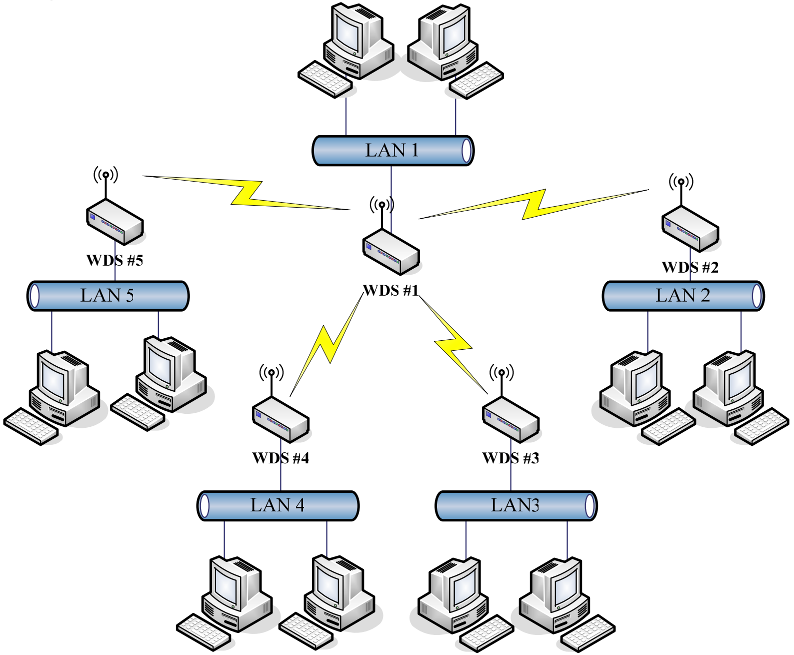
In this case, there are five devices with WDS enabled: WDS1, WDS2, WDS3, WDS4 and WDS5.

**Bus topology:**



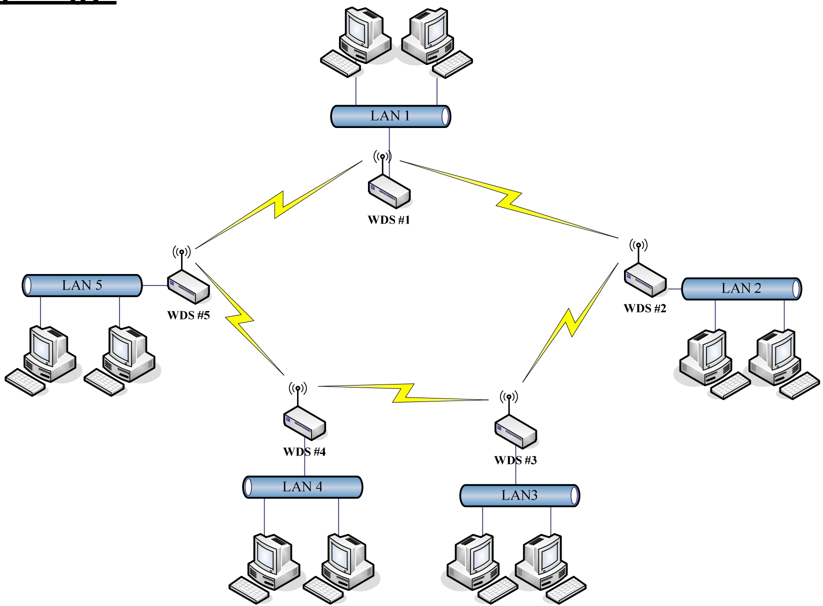
| Device | Entries of WDS AP List | Spanning Tree Protocol Required |
|---|---|---|
| WDS1 | The MAC Address of WDS2 | No |
| WDS2 | The MAC Addresses of WDS1 and WDS3 | No |
| WDS3 | The MAC Addresses of WDS2 and WDS4 | No |
| WDS4 | The MAC Addresses of WDS3 and WDS5 | No |
| WDS5 | The MAC Address of WDS4 | No |

## Star topology:



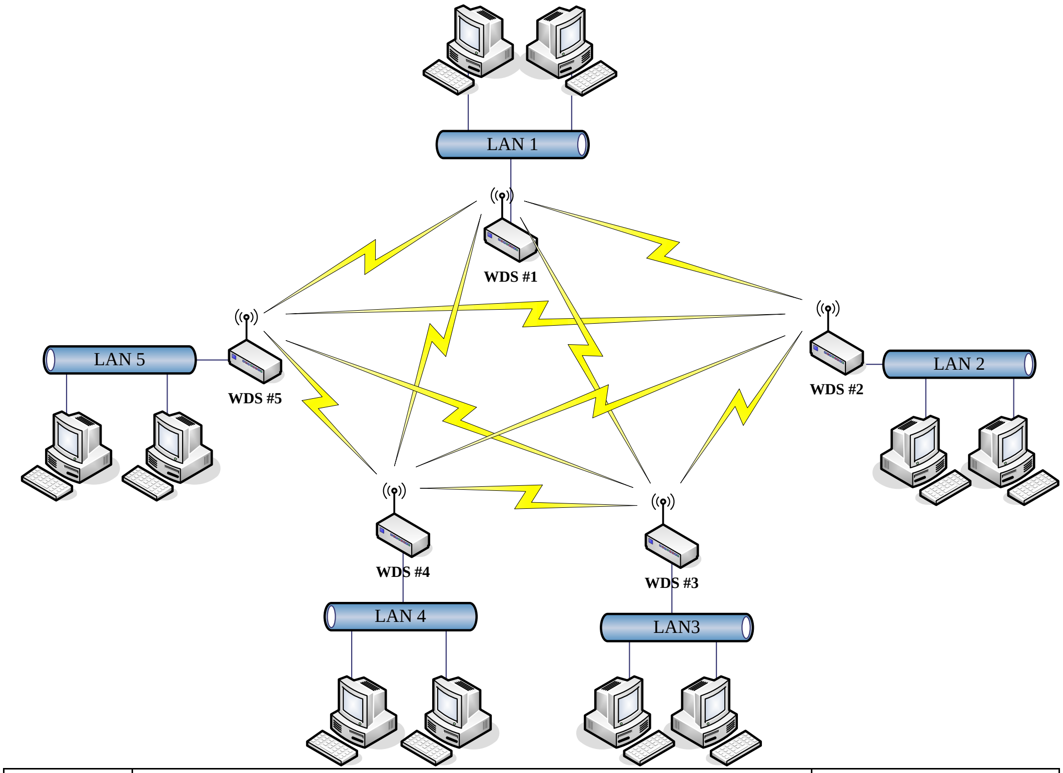
| Device | Entries of WDS AP List | Spanning Tree Protocol Required |
|---|---|---|
| WDS1 | The MAC Addresses of WDS2, WDS3, WDS4 and WDS5 | No |
| WDS2 | The MAC Address of WDS1 | No |
| WDS3 | The MAC Address of WDS1 | No |
| WDS4 | The MAC Address of WDS1 | No |
| WDS5 | The MAC Address of WDS1 | No |

## Ring topology:



| Device | Entries of WDS AP List | Spanning Tree Protocol Required |
|---|---|---|
| WDS1 | The MAC Addresses of WDS2 and WDS5 | Yes |
| WDS2 | The MAC Addresses of WDS1 and WDS3 | Yes |
| WDS3 | The MAC Addresses of WDS2 and WDS4 | Yes |
| WDS4 | The MAC Addresses of WDS3 and WDS5 | Yes |
| WDS5 | The MAC Addresses of WDS4 and WDS1 | Yes |

**Mesh topology：**



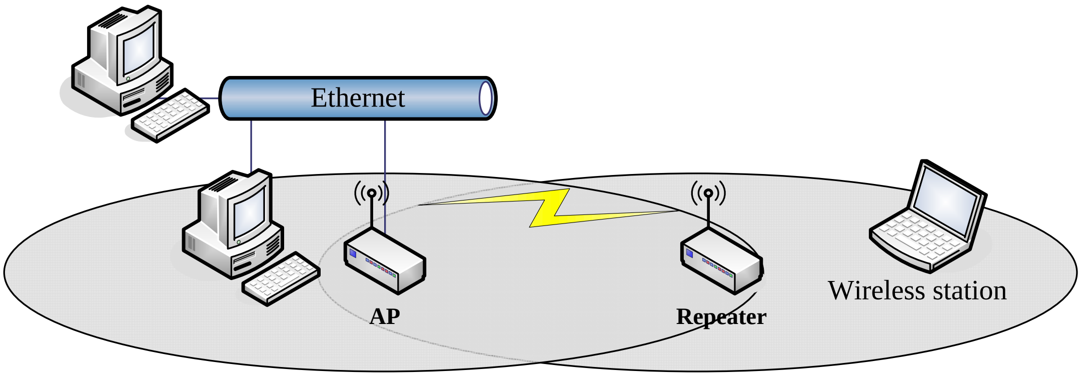
| Device | Entries of WDS AP List | Spanning Tree Protocol Required |
|---|---|---|
| WDS1 | The MAC Addresses of WDS2, WDS3, WDS4 and WDS5 | Yes |
| WDS2 | The MAC Addresses of WDS1, WDS3, WDS4 and WDS5 | Yes |
| WDS3 | The MAC Addresses of WDS1, WDS2, WDS4 and WDS5 | Yes |
| WDS4 | The MAC Addresses of WDS1, WDS2, WDS3 and WDS5 | Yes |
| WDS5 | The MAC Addresses of WDS1, WDS2, WDS3 and WDS4 | Yes |

# WDS Application

## Wireless Repeater

Wireless Repeater can be used to increase the coverage area of another device (Parent AP). Between the Parent AP and the Wireless Repeater, wireless stations can move among the coverage areas of both devices. When you decide to use the WDS as a Repeater, please refer the following instructions for configuration.

- In AP mode, enable the WDS function.
- You must set these connected devices with the same radio channel and SSID.
- Choose “WDS+AP” mode.
- Using the bus or star network topology.



| Description | Entries of WDS AP List | Spanning Tree Protocol Required |
|---|---|---|
| Access Point | The MAC Address of Repeater | Yes |
| Repeater | The MAC Address of Access Point | Yes |

### Wireless Bridge

Wireless Bridge can establish a wireless connection between two or more Wired LANs. When you decide to use the WDS as a Wireless Bridge, please refer the following instructions for configuration.

- In AP mode, enable the WDS function.
- You must set these connected devices with the same radio channel, but you may use different SSID.
- Choose “WDS” mode for only wireless backbone extension purpose.
- You can use any network topology, please refer the WDS topology section.

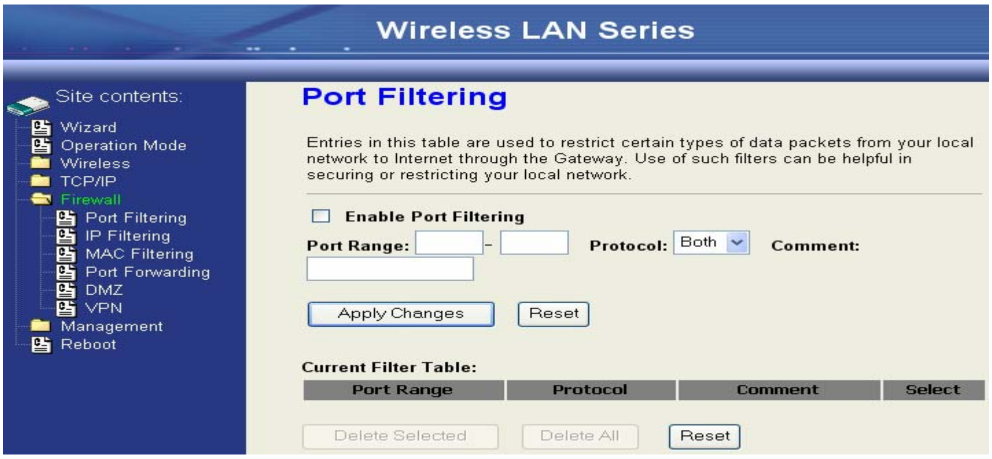
# Ch 4. Advanced Configurations

## Configuring LAN to WAN Firewall

Filtering function is used to block packets from LAN to WAN. The device supports three kinds of filter Port Filtering, IP Filtering and MAC Filtering. All the entries in current filter table are used to restrict certain types of packets from your local network to through the device. Use of such filters can be helpful in securing or restricting your local network.

### Port Filtering

When you enable the Port Filtering function, you can specify a single port or port ranges in current filter table. Once the source port of outgoing packets match the port definition or within the port ranges in the table, the firewall will block those packets from LAN to WAN.



**Port Filtering**

Entries in this table are used to restrict certain types of data packets from your local network to Internet through the Gateway. Use of such filters can be helpful in securing or restricting your local network.

□ Enable Port Filtering

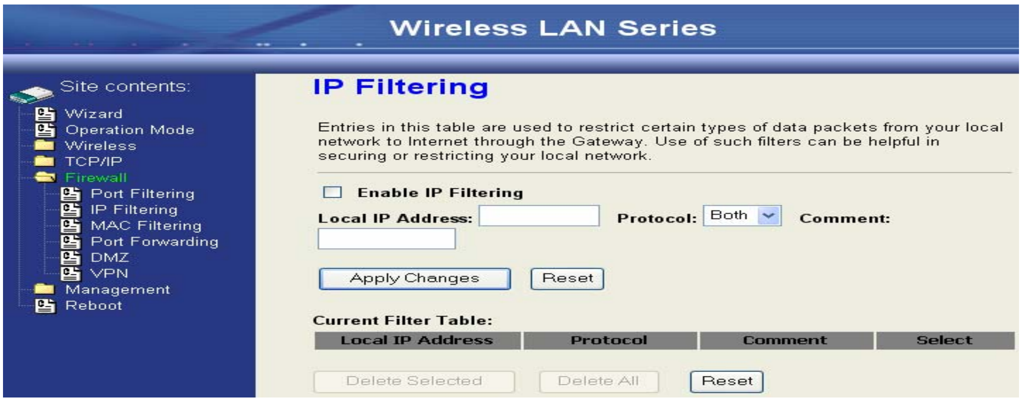
Port Range: ______ - ______ Protocol: Both Comment: ______

Current Filter Table:

| Port Range | Protocol | Comment | Select |
|---|---|---|---|

### IP Filtering

When you enable the IP Filtering function, you can specify local IP Addresses in current filter table. Once the source IP address of outgoing packets match the IP Addresses in the table, the firewall will block this packet from LAN to WAN.



**IP Filtering**

Entries in this table are used to restrict certain types of data packets from your local network to Internet through the Gateway. Use of such filters can be helpful in securing or restricting your local network.

□ Enable IP Filtering

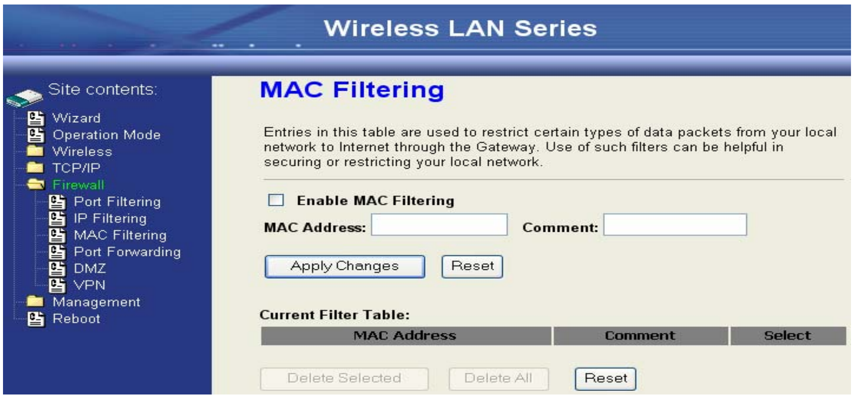
Local IP Address: ______ Protocol: Both Comment: ______

Current Filter Table:

| Local IP Address | Protocol | Comment | Select |
|---|---|---|---|

## MAC Filtering

When you enable the MAC Filtering function, you can specify the MAC Addresses in current filter table. Once the source MAC Address of outgoing packets match the MAC Addresses in the table, the firewall will block this packet from LAN to WAN.



MAC Filtering

Entries in this table are used to restrict certain types of data packets from your local network to Internet through the Gateway. Use of such filters can be helpful in securing or restricting your local network.

☐ Enable MAC Filtering

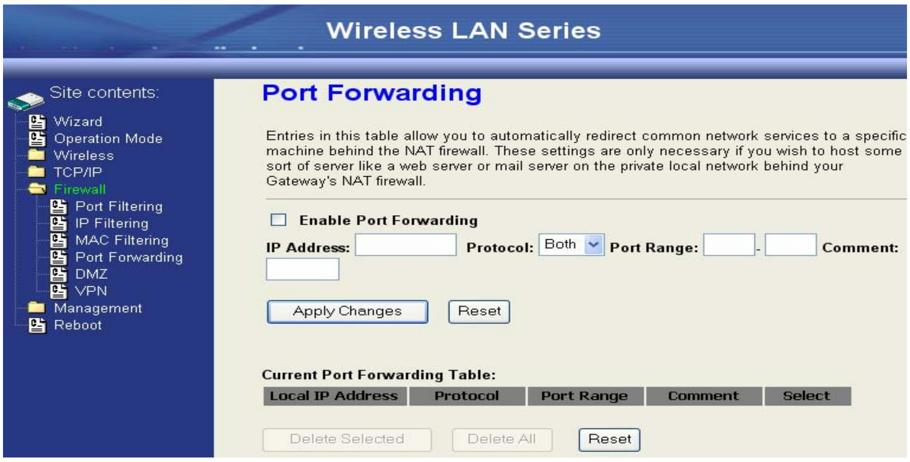
MAC Address: Comment:

Current Filter Table:

| MAC Address | Comment | Select |
|---|---|---|

# Configuring Port Forwarding (Virtual Server)

This function allows you to automatically redirect common network services to a specific machine behind the NAT firewall. These settings are only necessary if you wish to host some sort of server like a web server or mail server on the private local network behind the device's NAT firewall.



Port Forwarding

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

☐ Enable Port Forwarding

IP Address: Protocol: Both Port Range: - Comment:

Current Port Forwarding Table:

| Local IP Address | Protocol | Port Range | Comment | Select |
|---|---|---|---|---|

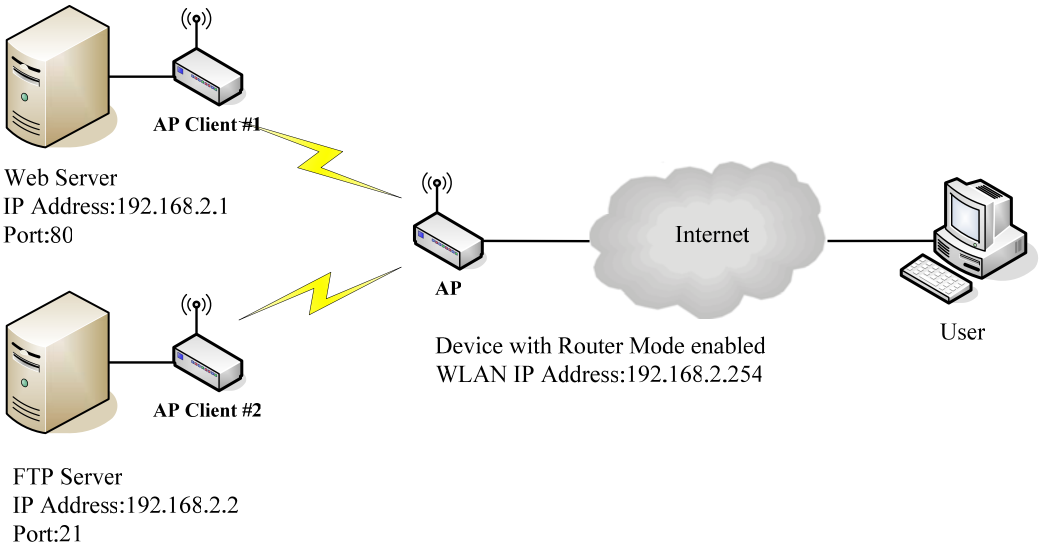
The most often used port numbers are shown in the following table.

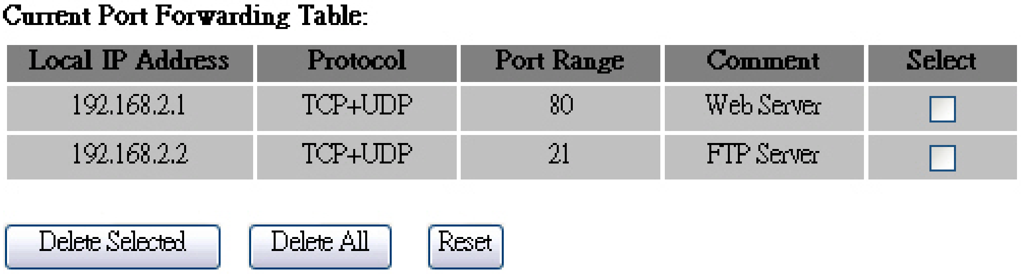
| Services | Port Number |
|---|---|
| ECHO | 7 |
| FTP (File Transfer Protocol) | 21 |
| Telnet | 23 |
| SMTP (Simple Mail Transfer Protocol) | 25 |
| DNS (Domain Name System) | 53 |
| Finger | 79 |
| HTTP (Hyper Text Transfer Protocol) | 80 |

| | |
|---|---|
| POP3 (Post Protocol) | 110 |
| NNTP (Network News Transport Protocol) | 119 |
| SNMP (Simple Network Management Protocol) | 161 |
| SNMP trap | 162 |
| SIP (Session Initiation Protocol) | 5060 |
| PPTP (Point-to-Point Tunneling Protocol) | 1723 |

## Multiple Servers behind NAT Example:

In this case, there are two PCs in the local network accessible for outside users.



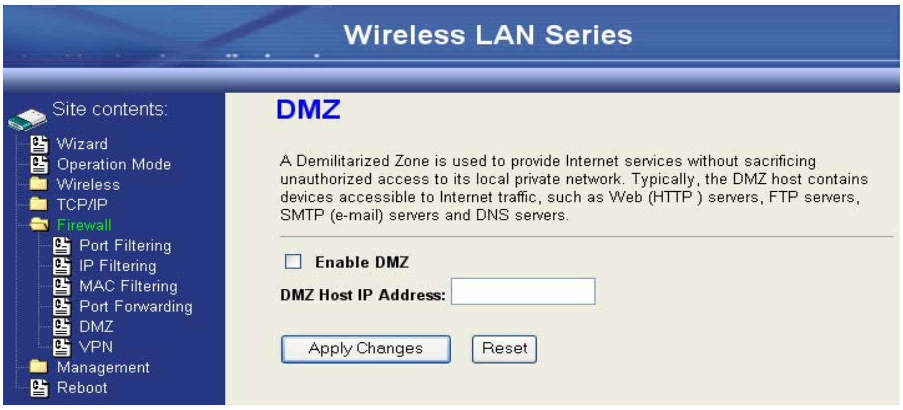


**Current Port Forwarding Table:**

| Local IP Address | Protocol | Port Range | Comment | Select |
|---|---|---|---|---|
| 192.168.2.1 | TCP+UDP | 80 | Web Server | □ |
| 192.168.2.2 | TCP+UDP | 21 | FTP Server | □ |

## Configuring DMZ

A Demilitarized Zone is used to provide Internet services without sacrificing unauthorized access to its local private network. Typically, the DMZ host contains devices accessible to Internet traffic, such as Web (HTTP) servers, FTP servers, SMTP (e-mail) servers and DNS servers. So that all inbound packets will be redirected to the computer you set. It also is useful while you run some applications (ex. Internet game) that use uncertain incoming ports.



DMZ

A Demilitarized Zone is used to provide Internet services without sacrificing unauthorized access to its local private network. Typically, the DMZ host contains devices accessible to Internet traffic, such as Web (HTTP ) servers, FTP servers, SMTP (e-mail) servers and DNS servers.

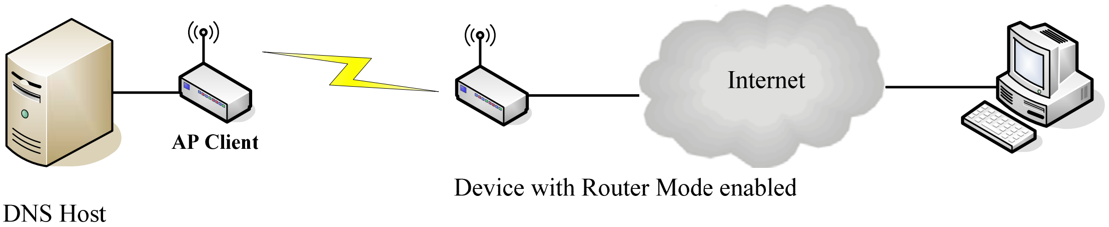
□ Enable DMZ

DMZ Host IP Address:

Apply Changes | Reset

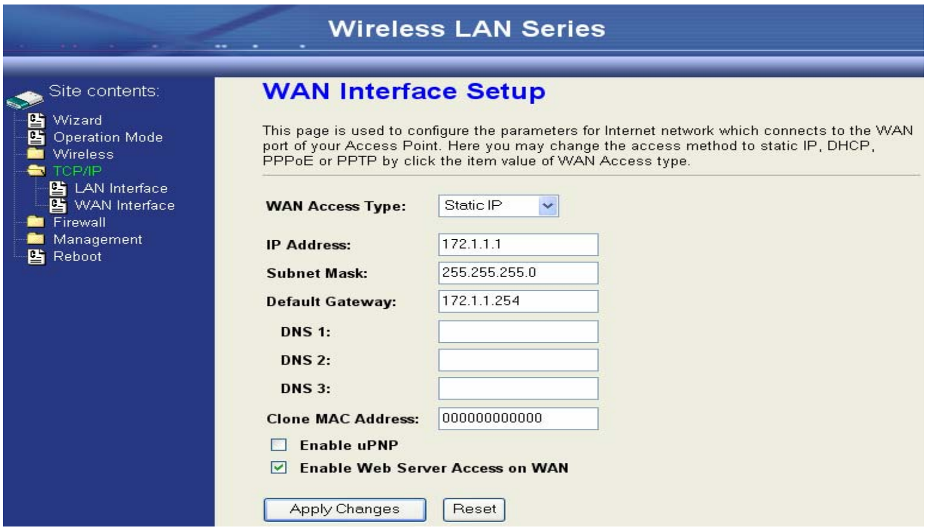
**Enable DMZ:** Enable the "Enable DMZ", and then click "Apply Changes" button to save the changes.

**DMZ Host IP Address:** Input the IP Address of the computer that you want to expose to Internet.



## Configuring WAN Interface

The device supports four kinds of IP configuration for WAN interface, including Static IP, DHCP Client, PPPoE and PPTP. You can select one of the WAN Access Types depend on your ISP required. The default WAN Access Type is "Static IP".



WAN Interface Setup

This page is used to configure the parameters for Internet network which connects to the WAN port of your Access Point. Here you may change the access method to static IP, DHCP, PPPoE or PPTP by click the item value of WAN Access type.

WAN Access Type: Static IP

IP Address: 172.1.1.1

Subnet Mask: 255.255.255.0

Default Gateway: 172.1.1.254

DNS 1:

DNS 2:

DNS 3:

Clone MAC Address: 000000000000

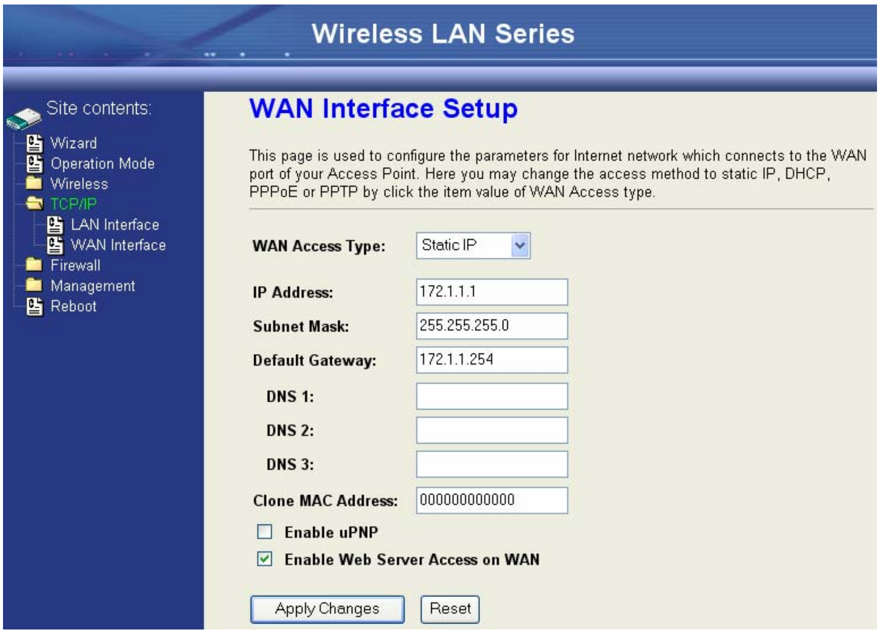
□ Enable uPNP

☑ Enable Web Server Access on WAN

Apply Changes | Reset

## Static IP

You can get the IP configuration data of Static-IP from your ISP. And you will need to fill the fields of IP address, subnet mask, gateway address, and one of the DNS addresses.



WAN Interface Setup

This page is used to configure the parameters for Internet network which connects to the WAN port of your Access Point. Here you may change the access method to static IP, DHCP, PPPoE or PPTP by click the item value of WAN Access type.

WAN Access Type: Static IP

IP Address: 172.1.1.1

Subnet Mask: 255.255.255.0

Default Gateway: 172.1.1.254

DNS 1:

DNS 2:

DNS 3:

Clone MAC Address: 000000000000

☐ Enable uPNP

☑ Enable Web Server Access on WAN

Apply Changes | Reset

**IP Address:** The Internet Protocol (IP) address of WAN interface provided by your ISP or MIS. The address will be your network identifier besides your local network.

**Subnet Mask:** The number used to identify the IP subnet network, indicating whether the IP address can be recognized on the LAN or if it must be reached through a gateway.

**Default Gateway:** The IP address of Default Gateway provided by your ISP or MIS. Default Gateway is the intermediate network device that has knowledge of the network IDs of the other networks in the Wide Area Network, so it can forward the packets to other gateways until they are delivered to the one connected to the specified destination.

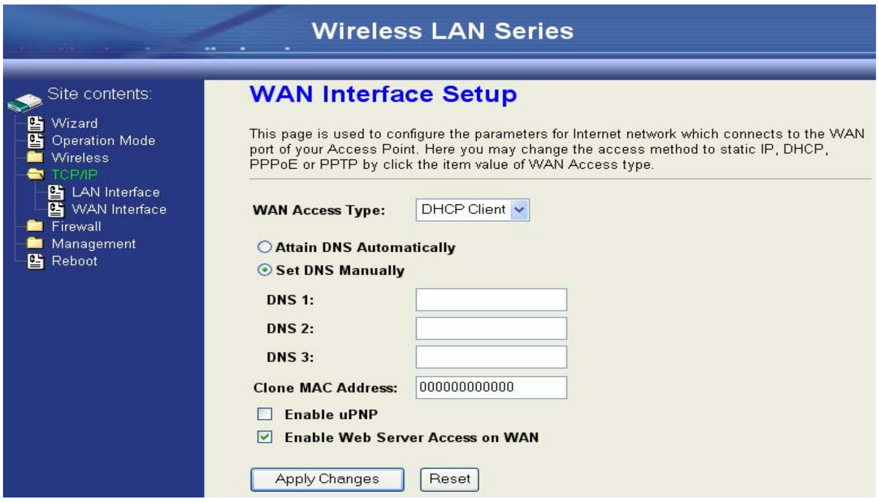
**DNS 1~3:** The IP addresses of DNS provided by your ISP. DNS (Domain Name Server) is used to map domain names to IP addresses. DNS maintain central lists of domain name/IP addresses and map the domain names in your Internet requests to other servers on the Internet until the specified web site is found.

**Clone MAC Address:** Clone device MAC address to the specify MAC address required by your ISP

**Enable uPnP:** Enable uPnP, this function allows the device to be found and configured automatically by the system. (Ex. Window XP)

## DHCP Client (Dynamic IP)

All IP configuration data besides DNS will obtain from the DHCP server when DHCP-Client WAN Access Type is selected.



### WAN Interface Setup

This page is used to configure the parameters for Internet network which connects to the WAN port of your Access Point. Here you may change the access method to static IP, DHCP, PPPoE or PPTP by click the item value of WAN Access type.

WAN Access Type: DHCP Client

○ Attain DNS Automatically

● Set DNS Manually

DNS 1:

DNS 2:

DNS 3:

Clone MAC Address: 000000000000

□ Enable uPNP

☑ Enable Web Server Access on WAN

**DNS1~3:** The IP addresses of DNS provided by your ISP.

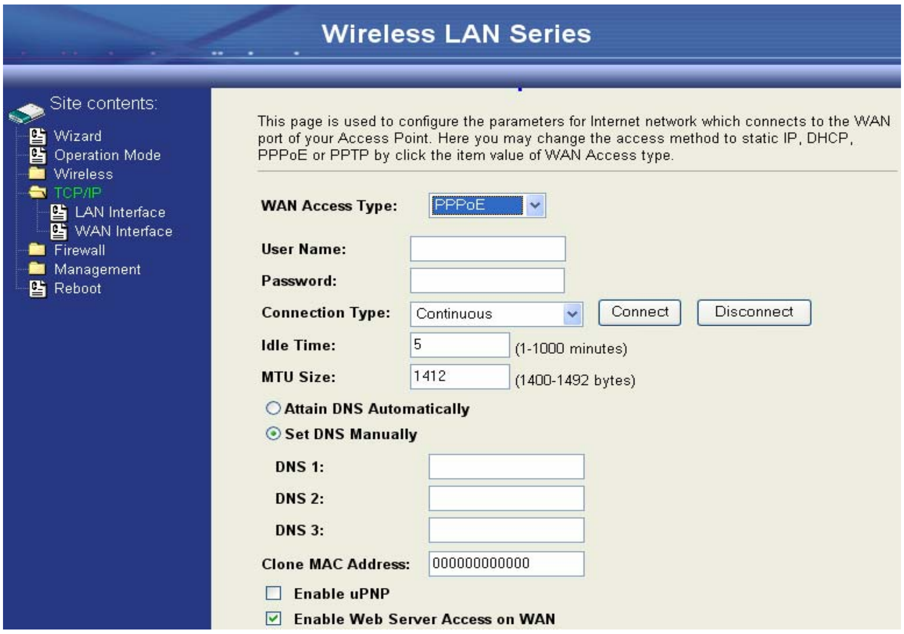
DNS (Domain Name Server) is used to map domain names to IP addresses. DNS maintain central lists of domain name/IP addresses and map the domain names in your Internet requests to other servers on the Internet until the specified web site is found.

**Clone MAC Address:** Clone device MAC address to the specify MAC address required by your ISP

**Enable uPnP:** Enable uPnP, this function allows the device to be found and configured automatically by the system. (Ex. Window XP)

## PPPoE

When the PPPoE((Point to Point Protocol over Ethernet) WAN Access Type is selected, you must fill the fields of User Name, Password provided by your ISP. The IP configuration will be done when the device successfully authenticates with your ISP.



This page is used to configure the parameters for Internet network which connects to the WAN port of your Access Point. Here you may change the access method to static IP, DHCP, PPPoE or PPTP by click the item value of WAN Access type.

WAN Access Type: PPPoE

User Name:

Password:

Connection Type: Continuous

Idle Time: 5 (1-1000 minutes)

MTU Size: 1412 (1400-1492 bytes)

○ Attain DNS Automatically

● Set DNS Manually

DNS 1:

DNS 2:

DNS 3:

Clone MAC Address: 000000000000

□ Enable uPNP

☑ Enable Web Server Access on WAN

**User Name:** The account provided by your ISP

**Password:** The password for your account.

**Connect Type:** “Continuous “ : connect to ISP permanently

“Manual” : Manual connect/disconnect to ISP

“On-Demand” : Automatically connect to ISP when user need to access the Internet.

**Idle Time:** The number of inactivity minutes to disconnect from ISP. This setting is only available when “Connect on Demand” connection type is selected.

**MTU Size:** Maximum Transmission Unit, 1412 is the default setting, you may need to change the MTU for optimal performance with your specific ISP.

**DNS1~3:** The IP addresses of DNS provided by your ISP.

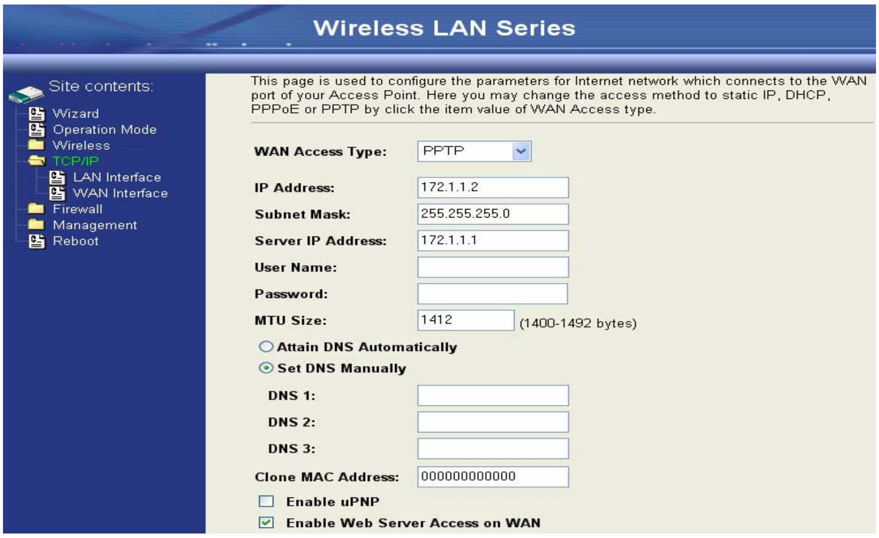
DNS (Domain Name Server) is used to map domain names to IP addresses. DNS maintain central lists of domain name/IP addresses and map the domain names in your Internet requests to other servers on the Internet until the specified web site is found.

**Clone MAC Address:** Clone device MAC address to the specify MAC address required by your ISP.

**Enable UPnP:** Enable UPnP, this function allows the device to be found and configured automatically by the system. (Ex. Window XP)

## PPTP

Point to Point Tunneling Protocol (PPTP) is a service that applies to connections in Europe only



This page is used to configure the parameters for Internet network which connects to the WAN port of your Access Point. Here you may change the access method to static IP, DHCP, PPPoE or PPTP by click the item value of WAN Access type.

WAN Access Type: PPTP

IP Address: 172.1.1.2

Subnet Mask: 255.255.255.0

Server IP Address: 172.1.1.1

User Name:

Password:

MTU Size: 1412 (1400-1492 bytes)

○ Attain DNS Automatically

● Set DNS Manually

DNS 1:

DNS 2:

DNS 3:

Clone MAC Address: 000000000000

□ Enable uPNP

☑ Enable Web Server Access on WAN

**IP Address:** The Internet Protocol (IP) address of WAN interface provided by your ISP or MIS. The address will be your network identifier besides your local network.

**Subnet Mask:** The number used to identify the IP subnet network, indicating whether the IP address can be recognized on the LAN or if it must be reached through a gateway.

**Server IP Address: (Default Gateway)** The IP address of PPTP server

**User Name:** The account provided by your ISP

**Password:** The password of your account

**MTU Size:** Maximum Transmission Unit, 1412 is the default setting, you may need to change the MTU for optimal performance with your specific ISP.

**DNS1~3:** The IP addresses of DNS provided by your ISP.

DNS (Domain Name Server) is used to map domain names to IP addresses. DNS maintain central lists of domain name/IP addresses and map the domain names in your Internet requests to other servers on the Internet until the specified web site is found.

**Clone MAC Address:** Clone device MAC address to the specify MAC address required by your ISP.

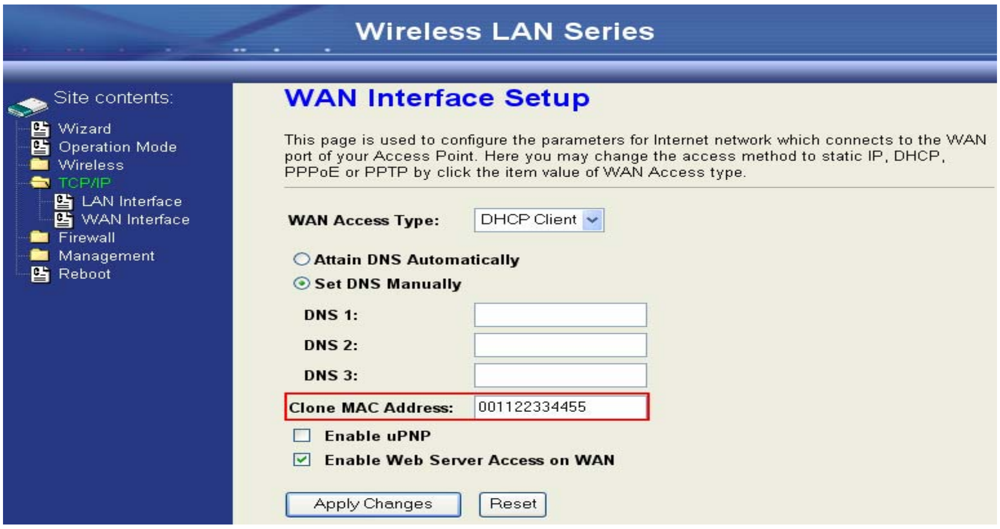
**Enable uPnP:** Enable uPnP, this function allows the device to be found and configured automatically by the system. (Ex. Window XP)

## Configuring Clone MAC Address

The device provides MAC address clone feature to fit the requirement of some ISP need to specify the client MAC address.

Physical WAN interface MAC Address clone

1. Clone MAC address for DHCP Client WAN access type



**WAN Interface Setup**

This page is used to configure the parameters for Internet network which connects to the WAN port of your Access Point. Here you may change the access method to static IP, DHCP, PPPoE or PPTP by click the item value of WAN Access type.

WAN Access Type: DHCP Client

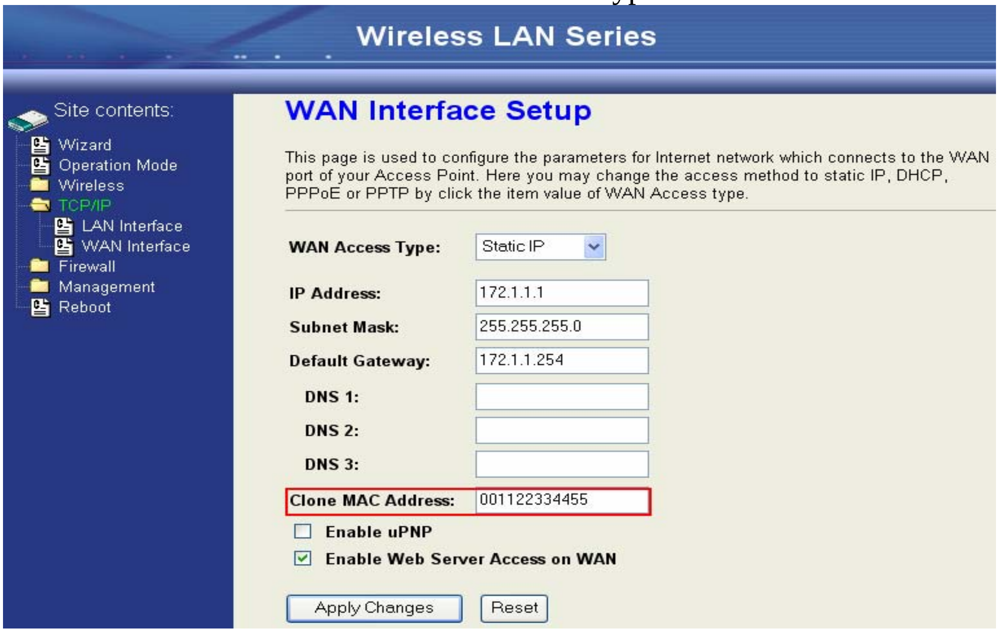
○ Attain DNS Automatically
● Set DNS Manually

DNS 1:
DNS 2:
DNS 3:

Clone MAC Address: 001122334455

□ Enable uPNP
☑ Enable Web Server Access on WAN

2. Clone MAC address for Static IP WAN access type



**WAN Interface Setup**

This page is used to configure the parameters for Internet network which connects to the WAN port of your Access Point. Here you may change the access method to static IP, DHCP, PPPoE or PPTP by click the item value of WAN Access type.

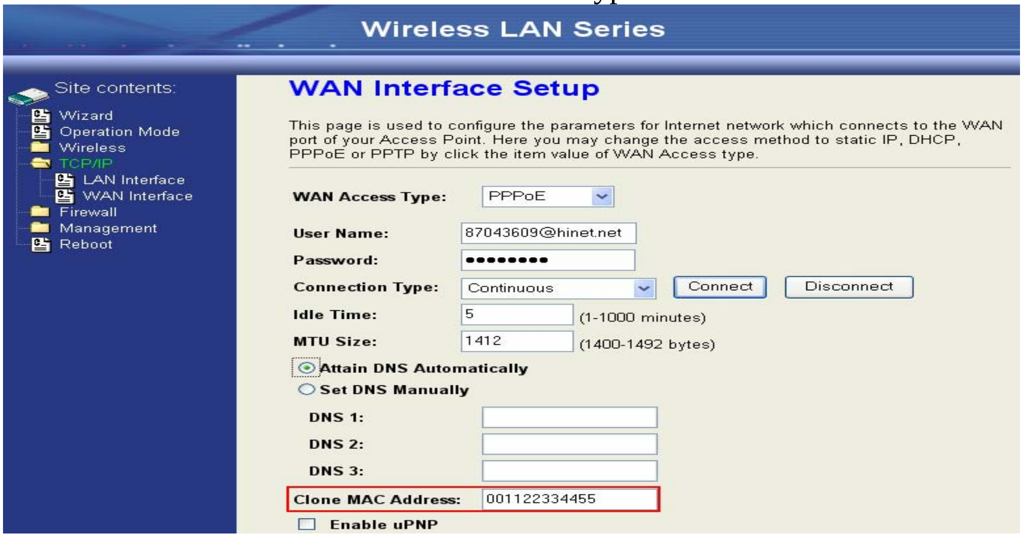
WAN Access Type: Static IP

IP Address: 172.1.1.1
Subnet Mask: 255.255.255.0
Default Gateway: 172.1.1.254
DNS 1:
DNS 2:
DNS 3:

Clone MAC Address: 001122334455

□ Enable uPNP
☑ Enable Web Server Access on WAN

3. Clone MAC address for PPPoE WAN access type



**WAN Interface Setup**

This page is used to configure the parameters for Internet network which connects to the WAN port of your Access Point. Here you may change the access method to static IP, DHCP, PPPoE or PPTP by click the item value of WAN Access type.

WAN Access Type: PPPoE

User Name: 87043609@hinet.net
Password: ●●●●●●●●●
Connection Type: Continuous
Idle Time: 5 (1-1000 minutes)
MTU Size: 1412 (1400-1492 bytes)

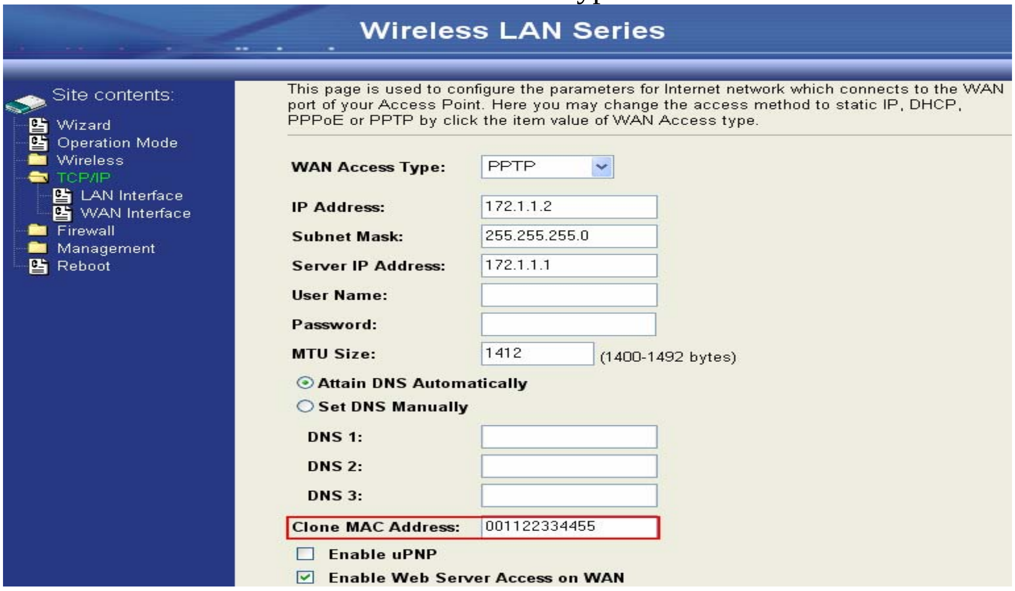
● Attain DNS Automatically
○ Set DNS Manually

DNS 1:
DNS 2:
DNS 3:

Clone MAC Address: 001122334455

□ Enable uPNP

4. Clone MAC address for PPTP WAN access type



This page is used to configure the parameters for Internet network which connects to the WAN port of your Access Point. Here you may change the access method to static IP, DHCP, PPPoE or PPTP by click the item value of WAN Access type.

WAN Access Type: PPTP

IP Address: 172.1.1.2

Subnet Mask: 255.255.255.0

Server IP Address: 172.1.1.1

User Name:

Password:

MTU Size: 1412 (1400-1492 bytes)

● Attain DNS Automatically

○ Set DNS Manually

DNS 1:

DNS 2:

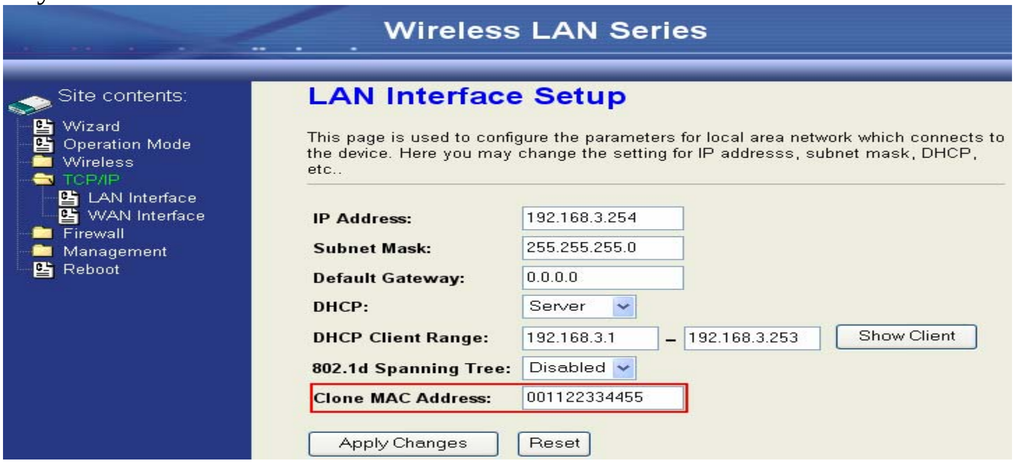
DNS 3:

Clone MAC Address: 001122334455

□ Enable uPNP

☑ Enable Web Server Access on WAN

5. Physical LAN interface MAC address clone



LAN Interface Setup

This page is used to configure the parameters for local area network which connects to the device. Here you may change the setting for IP addresss, subnet mask, DHCP, etc..

IP Address: 192.168.3.254

Subnet Mask: 255.255.255.0

Default Gateway: 0.0.0.0

DHCP: Server

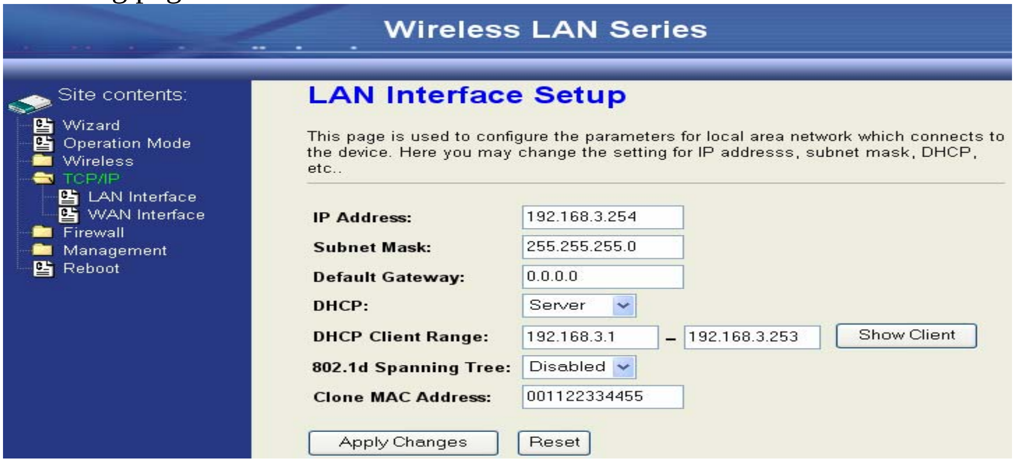
DHCP Client Range: 192.168.3.1 – 192.168.3.253

802.1d Spanning Tree: Disabled

Clone MAC Address: 001122334455

## Configuring DHCP Server

1. To use the DHCP server inside the device, please make sure there is no other DHCP server existed in the same network as the device.
2. Enable the DHCP Server option and assign the client range of IP addresses as following page.



LAN Interface Setup

This page is used to configure the parameters for local area network which connects to the device. Here you may change the setting for IP addresss, subnet mask, DHCP, etc..

IP Address: 192.168.3.254

Subnet Mask: 255.255.255.0

Default Gateway: 0.0.0.0

DHCP: Server

DHCP Client Range: 192.168.3.1 – 192.168.3.253

802.1d Spanning Tree: Disabled

Clone MAC Address: 001122334455

3. When the DHCP server is enabled and also the device router mode is enabled

then the default gateway for all the DHCP client hosts will set to the IP address of device.

## Using CLI Menu

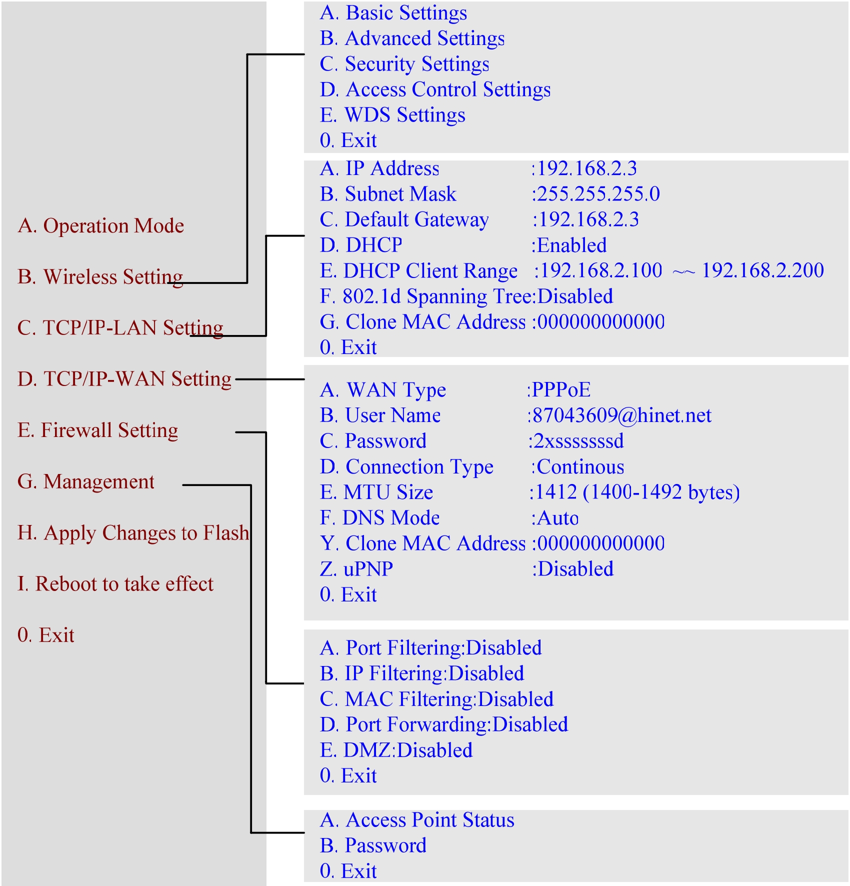
### Start a SSH(Secure Shell) client session to login the device

The SSH server daemon inside device uses well-known TCP port 22. User must use SSH client utility such like Putty to login the device. The default password for user “root” is “qwert”, once user login the device then can change the password by CLI command.

### Execute CLI program

This program won’t execute automatically when user login the device. User must manually execute it by typing the case-sensitive command “cli”. Please note that any modified settings won’t save permanently until user “Apply Changes to Flash” or reboot it. The new settings modified by CLI will take effect after rebooting the device.

### Menu Tree List



A. Operation Mode
B. Wireless Setting
C. TCP/IP-LAN Setting
D. TCP/IP-WAN Setting
E. Firewall Setting
G. Management
H. Apply Changes to Flash
I. Reboot to take effect
0. Exit

A. Basic Settings
B. Advanced Settings
C. Security Settings
D. Access Control Settings
E. WDS Settings
0. Exit

```
A. IP Address            :192.168.2.3
B. Subnet Mask           :255.255.255.0
C. Default Gateway       :192.168.2.3
D. DHCP                  :Enabled
E. DHCP Client Range     :192.168.2.100 ~~ 192.168.2.200
F. 802.1d Spanning Tree:Disabled
G. Clone MAC Address :000000000000
0. Exit
```

```
A. WAN Type              :PPPoE
B. User Name             :87043609@hinet.net
C. Password              :2xsssssssd
D. Connection Type       :Continous
E. MTU Size              :1412 (1400-1492 bytes)
F. DNS Mode              :Auto
Y. Clone MAC Address :000000000000
Z. uPNP                  :Disabled
0. Exit
```

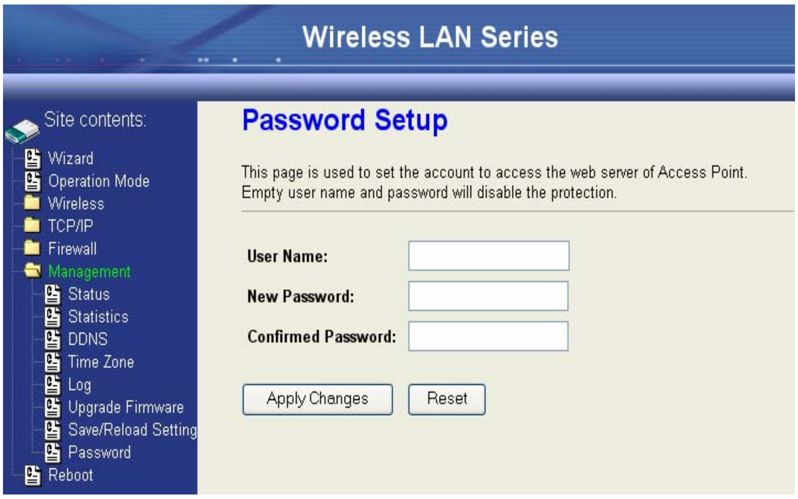
```
A. Port Filtering:Disabled
B. IP Filtering:Disabled
C. MAC Filtering:Disabled
D. Port Forwarding:Disabled
E. DMZ:Disabled
0. Exit
```

A. Access Point Status
B. Password
0. Exit

## The System Management

### Password Protection

Both Web-Browser and SSH configuration interfaces have password protection.



Password Setup

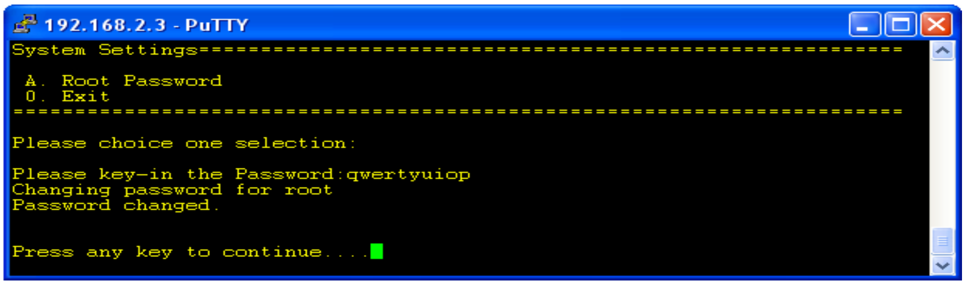
This page is used to set the account to access the web server of Access Point. Empty user name and password will disable the protection.

User Name:

New Password:

Confirmed Password:

To disable the Web-Browser password protection just leave the “User Name” field to blank then click “Apply Changes” button.



```
System Settings===========================================================

 A. Root Password
 0. Exit
==========================================================================

Please choice one selection:

Please key-in the Password:qwertyuiop
Changing password for root
Password changed.

Press any key to continue....
```

To change the password of user “root” for SSH session, please use the CLI menu item G. System Setting→A. Root Password

## About SNMP Agent

This device is compatible with SNMP v1/v2c and provide standard MIB II. Currently only the “public” community string is available and the modified settings by SNMP SET request will be lost after rebooting the device.

## Firmware Upgrade

### Firmware Types

The firmware for this device is divided into 2 parts, one is web pages firmware the other is application firmware, and the naming usually are **g120webpage.bin** and **g120linux.bin**. To upgrade firmware, we suggest user first upgrade the application firmware then web pages firmware.

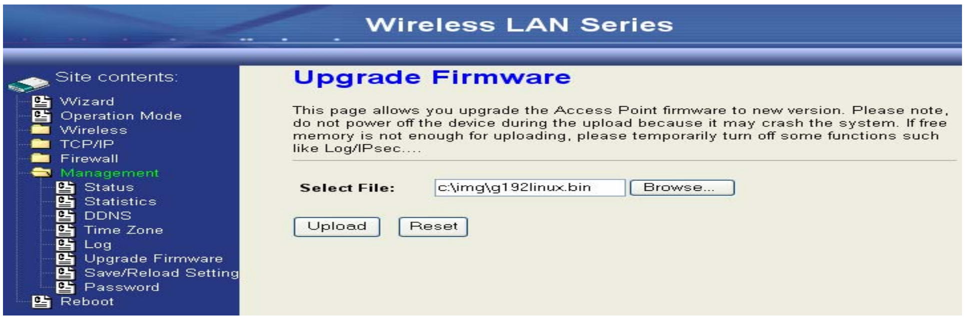
### Upgrading Firmware

The Web-Browser upgrading interface is the simplest and safest way for user, it will check the firmware checksum and signature, and the wrong firmware won’t be accepted. After upgrading, the device will reboot and please note that depends on the version of firmware, the upgrading may cause the device configuration to be restored to the factory default setting, and the original configuration data will be lost!

To upgrade firmware, just assign the file name with full path then click “Upload” button as the following page.

Memory Limitation

To make sure the device have enough memory to upload firmware, the system will check the capacity of free memory, if the device lack of memory to upload firmware, please temporarily turn-off some functions then reboot the device to get enough memory for firmware uploading.



Wireless LAN Series

Upgrade Firmware

This page allows you upgrade the Access Point firmware to new version. Please note, do not power off the device during the upload because it may crash the system. If free memory is not enough for uploading, please temporarily turn off some functions such like Log/IPsec....

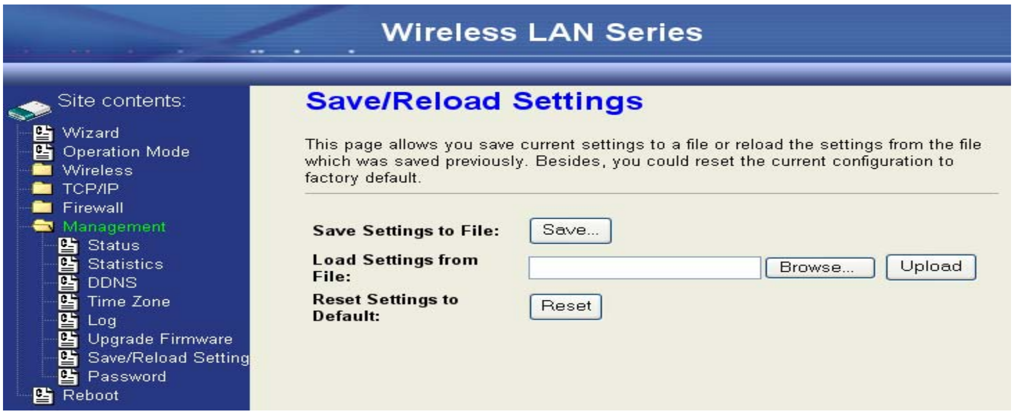
Select File: c:\img\g192linux.bin

## Configuration Data Backup & Restore

Rest Setting to Factory Default Value

Since the device is designed for outdoor used, there is no interface outside the housing to reset the configuration value to the factory default value. The device provides the Web-Browser interface to rest the configuration data. After resetting it, the current configuration data will be lost and restored to factory default value.

Saving & Restoring Configuration Data



Wireless LAN Series

Save/Reload Settings

This page allows you save current settings to a file or reload the settings from the file which was saved previously. Besides, you could reset the current configuration to factory default.

Save Settings to File:

Load Settings from File:

Reset Settings to Default:

To save & restore configuration data of device, just assign the target filename with full path at your local host, then you can backup configuration data to local host or restore configuration data to the device.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

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 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 installation. , May cause harmful interference to radio communication. 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 or more 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 RF radiation exposure statement:

1. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
2. This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.