Wireless LAN Device Series

CPE2615

User Manual

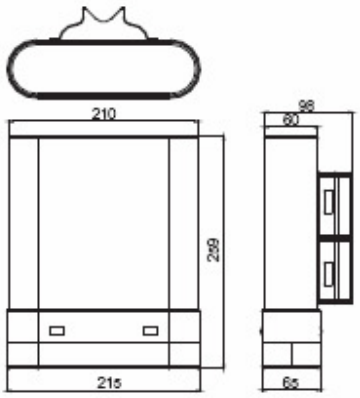
v20080312

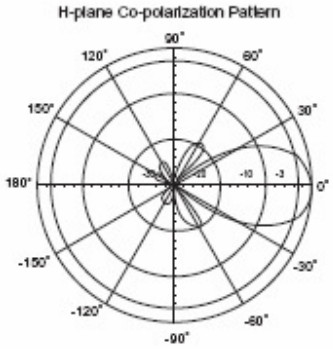
Electrical Specification

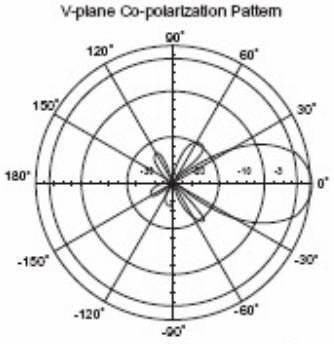
Frequency range	2400 MHz - 2500 MHz
Gain	14 dBi
VSWR	1.8 : 1 Max.
Polarization	Linear, vertical
HPBW / horizontal	30°
HPBW / vertical	30°
Front to back ratio	15 dB
Downtilt	0°
Power handling	50W (cw)
Impedance	50 Ohms
Cable	ULA 316, 16 cm

Environmental & Mechanical Characteristics

Survival wind speed	216 km/hr
Temperature	- 40°C to +80°C
Humidity	95% @ 55° C
Lightning protection	DC ground
Radome color	TBD
Radome material	ABS, UV resistant
Weight	TBD gw
Dimension	259 x 215 x 98 mm



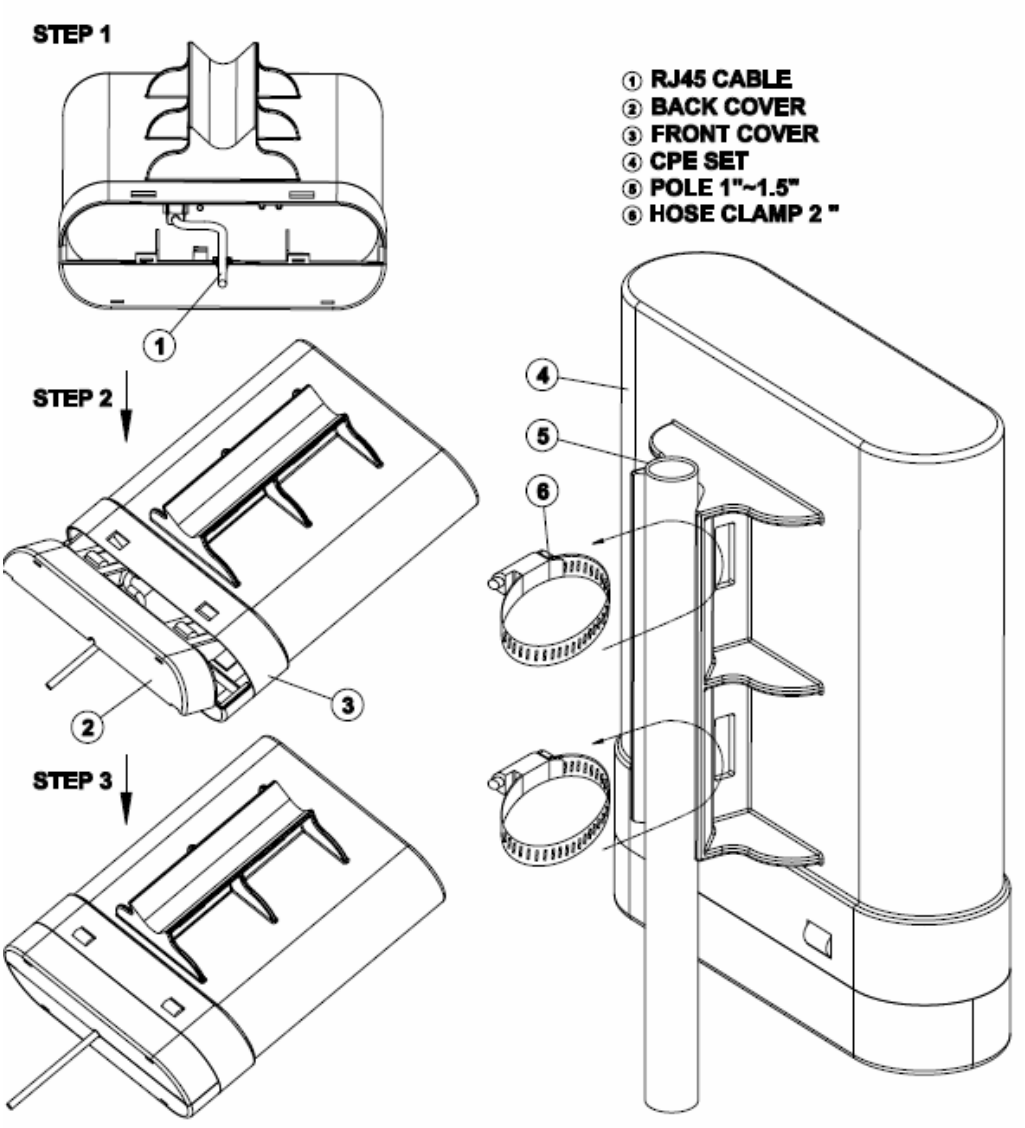




Preface

To use this guide, you should have experience working with the TCP/IP configuration and be familiar with the concepts and terminology of wireless local area networks.

The default IP address for CPE2615 AP is 192.168.1.254
It will take about 55 seconds to complete the boot up sequence after power on from PoE.



Packing List

Before you start to install the CPE2615, make sure the package contains the following items：

* Wireless AP/Router unit
* POE Power Adapter 48VDC@ 400mA
* Host Clamp
* CD User Manual

Before Start to Configure

The WLAN Broadband Router is delivered with the following factory default parameters on the Ethernet LAN interfaces.

Default IP Address: **192.168.1.254**
Default IP subnet mask: **255.255.255.0**
WEB login User Name: <empty>
WEB login Password: <empty>

The device has three operation modes (Gateway/Bridge/WISP). The default IP addresses for the device are 192.168.1.254, so you need to make sure the IP address of your PC is in the same subnet as the device, such as 192.168.1.X.

Prepare your PC to configure the WLAN Broadband Router

For OS of Microsoft Windows 95/ 98/ Me:

1. Click the ***Start*** button and select ***Settings***, then click ***Control Panel***. The ***Control Panel*** window will appear.
   Note: Windows Me users may not see the Network control panel. If so, *select* **View all Control Panel options** on the left side of the window
2. Move mouse and double-click the right button on ***Network*** icon. The ***Network*** window will appear.
3. Check the installed list of ***Network Components***. If TCP/IP is not installed, click the ***Add*** button to install it; otherwise go to step 6.
4. Select ***Protocol*** in the ***Network Component Type*** dialog box and click ***Add*** button.
5. Select ***TCP/IP*** in ***Microsoft*** of ***Select Network Protocol*** dialog box then click OK button to install the TCP/IP protocol, it may need the Microsoft Windows CD to complete the installation. Close and go back to ***Network*** dialog box after the TCP/IP installation.
6. Select ***TCP/IP*** and click the ***properties*** button on the ***Network*** dialog box.
7. Select ***Specify an IP address*** and type in values as following example.
   - ✓ IP Address: **192.168.1.1**, any IP address within 192.168.1.1 to 192.168.1.253 is good to connect the Wireless LAN Access Point.
   - ✓ IP Subnet Mask: **255.255.255.0**
8. Click OK and reboot your PC after completes the IP parameters setting.

For OS of Microsoft Windows 2000, XP:

1. Click the ***Start*** button and select ***Settings***, then click ***Control Panel***. The ***Control Panel*** window will appear.
2. Move mouse and double-click the right button on ***Network and Dial-up Connections*** icon. Move mouse and double-click the ***Local Area Connection*** icon. The ***Local Area Connection*** window will appear. Click ***Properties*** button in the ***Local Area Connection*** window.
3. Check the installed list of ***Network Components***. If TCP/IP is not installed, click the ***Add*** button to install it; otherwise go to step 6.
4. Select ***Protocol*** in the ***Network Component Type*** dialog box and click ***Add*** button.
5. Select ***TCP/IP*** in ***Microsoft*** of ***Select Network Protocol*** dialog box then click OK button to install the TCP/IP protocol, it may need the Microsoft Windows CD to complete the installation. Close and go back to ***Network*** dialog box after the TCP/IP installation.
6. Select ***TCP/IP*** and click the ***properties*** button on the ***Network*** dialog box.
7. Select ***Specify an IP address*** and type in values as following example.
   - ✓ IP Address: **192.168.1.1**, any IP address within 192.168.1.1 to 192.168.1.253 is good to connect the Wireless LAN Access Point.
   - ✓ IP Subnet Mask: **255.255.255.0**
8. Click OK to completes the IP parameters setting.

For OS of Microsoft Windows NT:

1. Click the ***Start*** button and select ***Settings***, then click ***Control Panel***. The ***Control Panel*** window will appear.
2. Move mouse and double-click the right button on ***Network*** icon. The ***Network*** window will appear. Click ***Protocol*** tab from the ***Network*** window.
3. Check the installed list of ***Network Protocol*** window. If TCP/IP is not installed, click the ***Add*** button to install it; otherwise go to step 6.
4. Select ***Protocol*** in the ***Network Component Type*** dialog box and click ***Add*** button.
5. Select ***TCP/IP*** in ***Microsoft*** of ***Select Network Protocol*** dialog box then click OK button to install the TCP/IP protocol, it may need the Microsoft Windows CD to complete the installation. Close and go back to ***Network*** dialog box after the TCP/IP installation.
6. Select ***TCP/IP*** and click the ***properties*** button on the ***Network*** dialog box.
7. Select ***Specify an IP address*** and type in values as following example.
   - ✓ IP Address: **192.168.1.1**, any IP address within 192.168.1.1 to 192.168.1.253 is good to connect the Wireless LAN Access Point.
   - ✓ IP Subnet Mask: **255.255.255.0**
8. Click OK to complete the IP parameters setting.

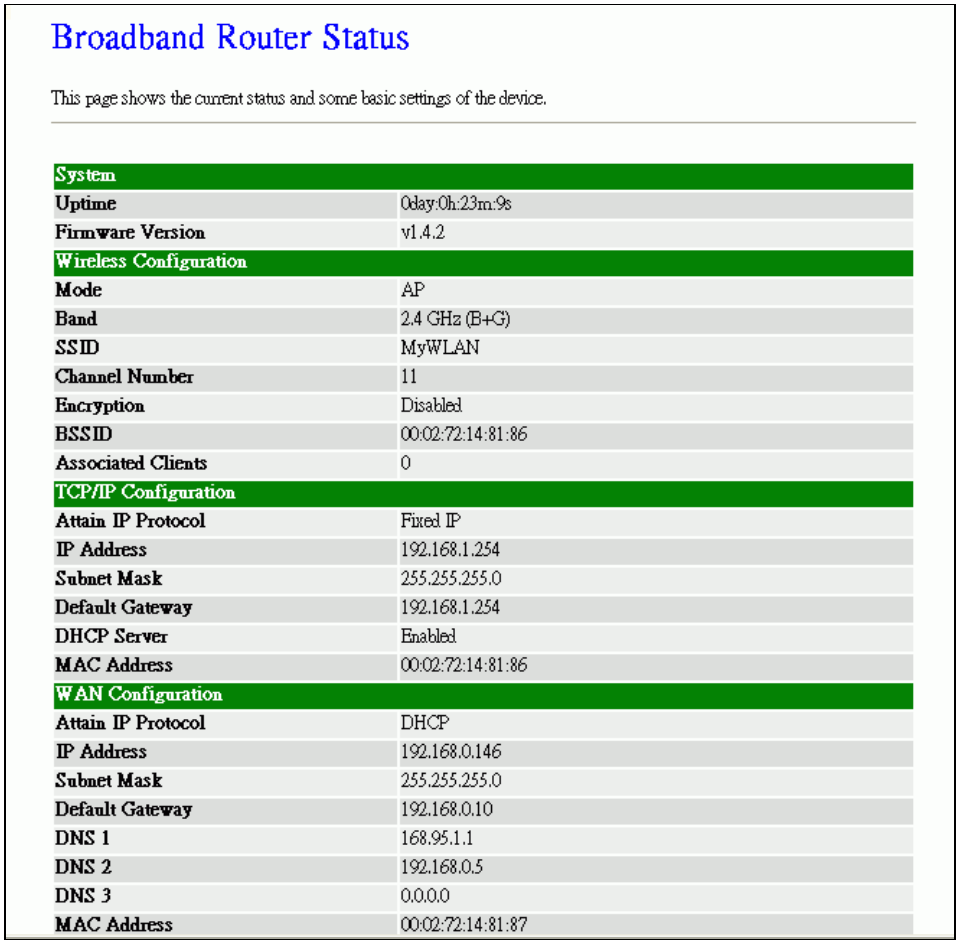
1.1 Connect to the WLAN Broadband Router

Open a WEB browser, i.e. Microsoft Internet Explore, then enter 192.168.1.254 on the URL to connect the WLAN Broadband Router.

1.2 Management and configuration on the WLAN Broadband Router

1.2.1 Status

This page shows the current status and some basic settings of the device, includes system, wireless, Ethernet LAN and WAN configuration information.



Broadband Router Status

This page shows the current status and some basic settings of the device.

System	
Uptime	0day:0h:23m:9s
Firmware Version	v1.4.2
Wireless Configuration	
Mode	AP
Band	2.4 GHz (B+G)
SSID	MyWLAN
Channel Number	11
Encryption	Disabled
BSSID	00:02:72:14:81:86
Associated Clients	0
TCP/IP Configuration	
Attain IP Protocol	Fixed IP
IP Address	192.168.1.254
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.254
DHCP Server	Enabled
MAC Address	00:02:72:14:81:86
WAN Configuration	
Attain IP Protocol	DHCP
IP Address	192.168.0.146
Subnet Mask	255.255.255.0
Default Gateway	192.168.0.10
DNS 1	168.95.1.1
DNS 2	192.168.0.5
DNS 3	0.0.0.0
MAC Address	00:02:72:14:81:87

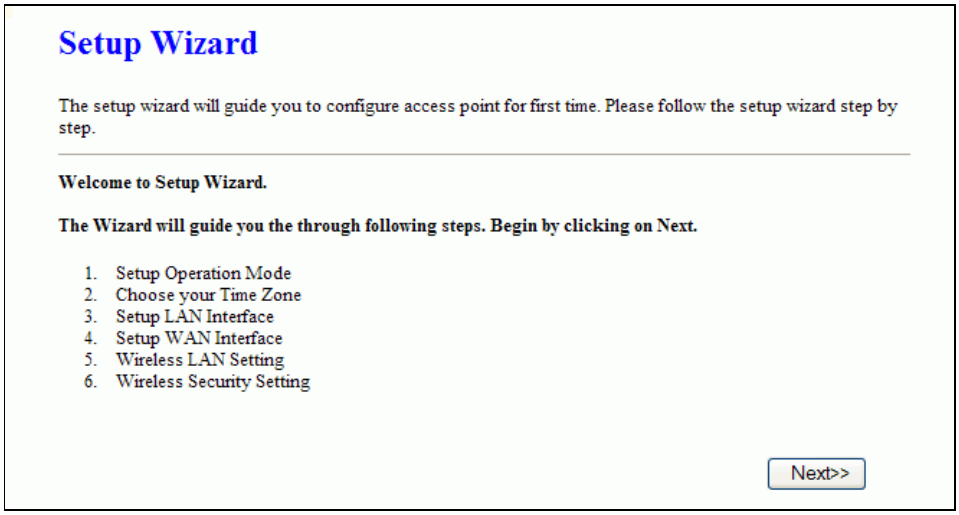
Screen snapshot – Status

Item	Description
System	
Uptime	It shows the duration since WLAN Broadband Router is powered on.
Firmware version	It shows the firmware version of WLAN Broadband Router.
Wireless configuration	
Mode	It shows wireless operation mode
Band	It shows the current wireless operating frequency.
SSID	It shows the SSID of this WLAN Broadband Router.

	The SSID is the unique name of WLAN Broadband Router and shared among its service area, so all devices attempts to join the same wireless network can identify it.
Channel Number	It shows the wireless channel connected currently.
Encryption	It shows the status of encryption function.
BSSID	It shows the BSSID address of the WLAN Broadband Router. BSSID is a six-byte address.
Associated Clients	It shows the number of connected clients (or stations, PCs).
TCP/IP configuration	
Attain IP Protocol	It shows type of connection.
IP Address	It shows the IP address of LAN interfaces of WLAN Broadband Router.
Subnet Mask	It shows the IP subnet mask of LAN interfaces of WLAN Broadband Router.
Default Gateway	It shows the default gateway setting for LAN interfaces outgoing data packets.
DHCP Server	It shows the DHCP server is enabled or not.
MAC Address	It shows the MAC address of LAN interfaces of WLAN Broadband Router.
WAN configuration	
Attain IP Protocol	It shows how the WLAN Broadband Router gets the IP address. The IP address can be set manually to a fixed one or set dynamically by DHCP server or attain IP by PPPoE / PPTP connection.
IP Address	It shows the IP address of WAN interface of WLAN Broadband Router.
Subnet Mask	It shows the IP subnet mask of WAN interface of WLAN Broadband Router.
Default Gateway	It shows the default gateway setting for WAN interface outgoing data packets.
DNS1/DNS2/DNS3	It shows the DNS server information.
MAC Address	It shows the MAC address of WAN interface of WLAN Broadband Router.

1.2.2 Setup Wizard

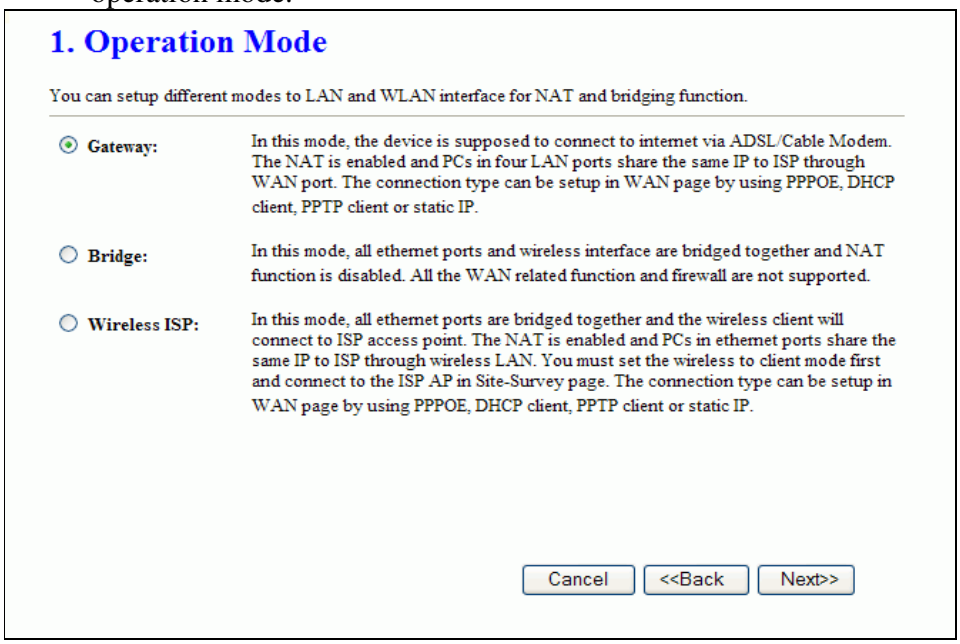
This page guides you to configure wireless broadband router for first time



Screen snapshot – Setup Wizard

1. Operation Mode

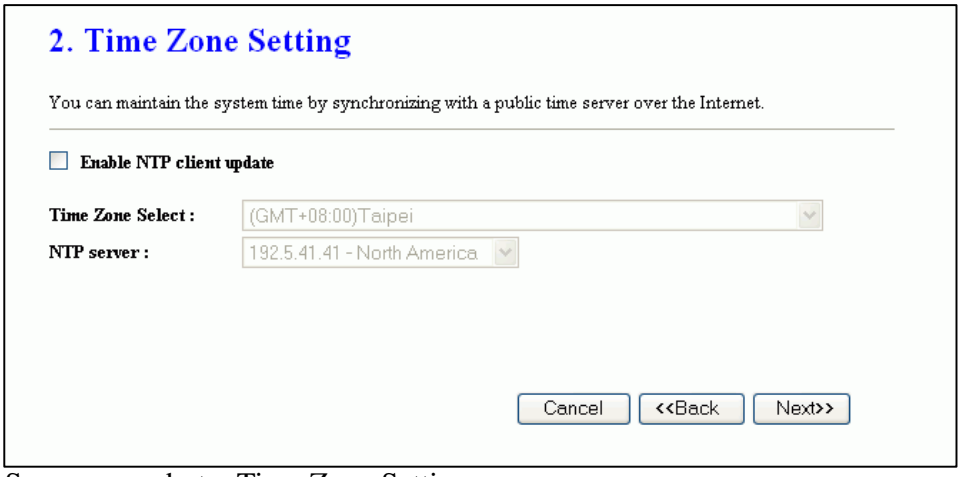
This page followed by Setup Wizard page to define the operation mode.



Screen snapshot – Operation Mode

2. Time Zone Setting

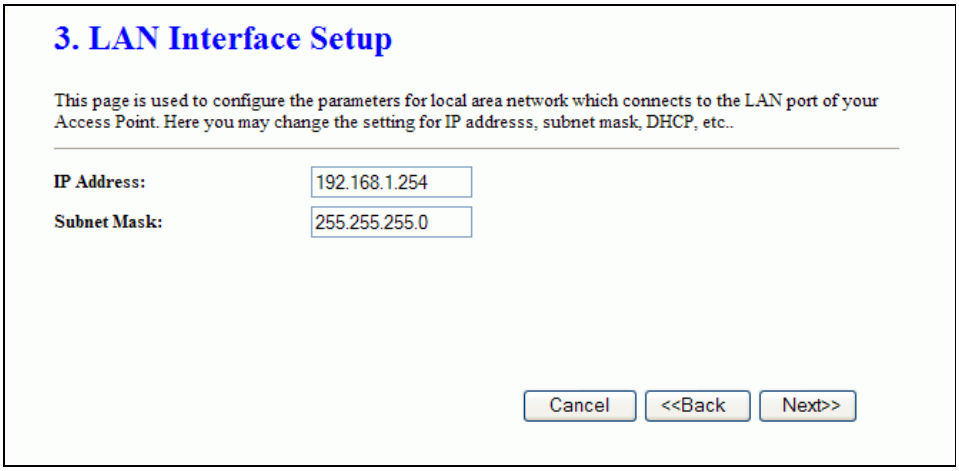
This page is used to enable and configure NTP client



Screen snapshot – Time Zone Settings

3. LAN Interface Setup

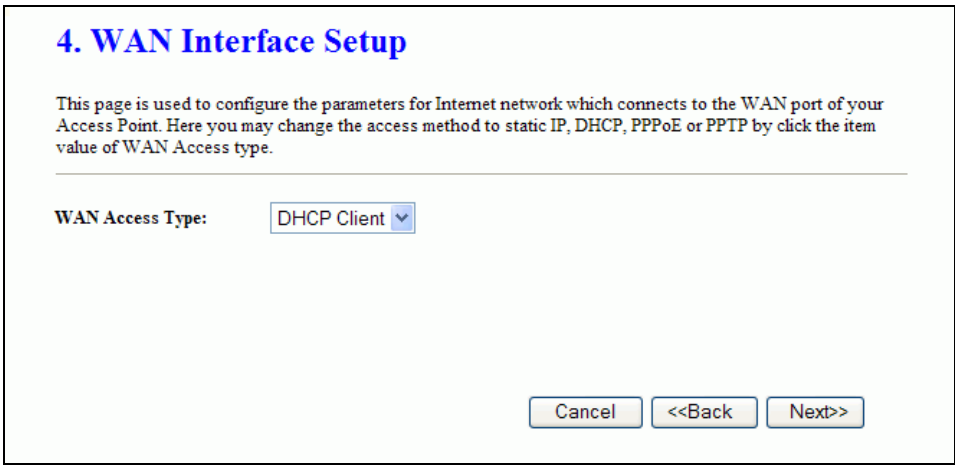
This page is used to configure local area network IP address and subnet mask



Screen snapshot – LAN Interface Setup

4. WAN Interface Setup

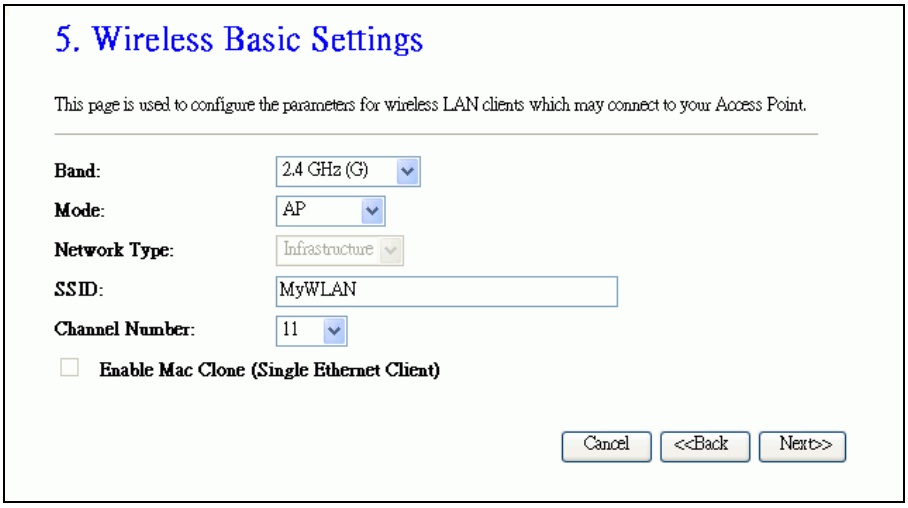
This page is used to configure WAN access type



Screen snapshot – WAN Interface Setup

5. Wireless Basic Settings

This page is used to configure basic wireless parameters like Band, Mode, Network Type SSID, Channel Number, Enable Mac Clone(Single Ethernet Client)



Screen snapshot – Wireless Basic Settings

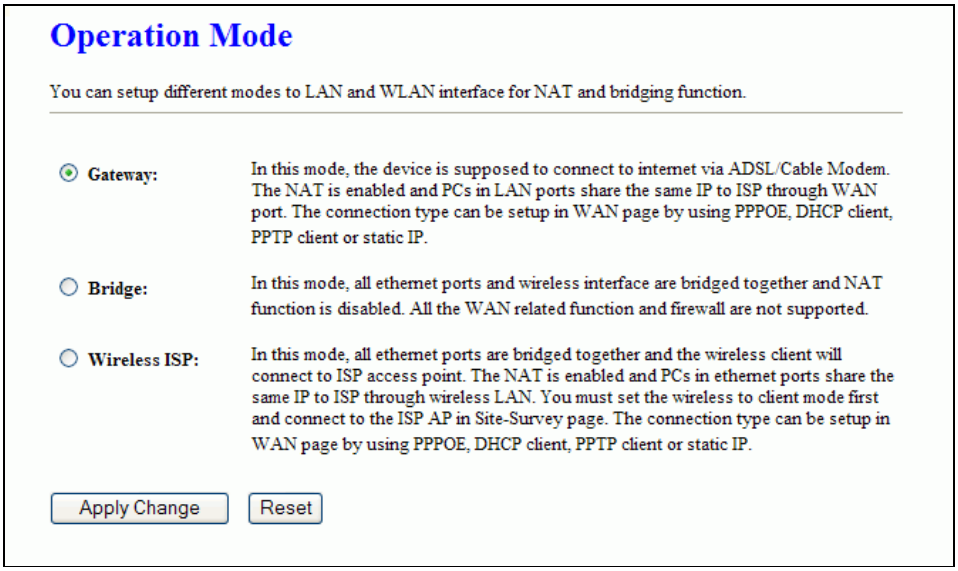
6. Wireless Security Setup

This page is used to configure wireless security

Screen snapshot – Wireless Security Setup

1.2.3 Operation Mode

This page is used to configure which mode wireless broadband router acts



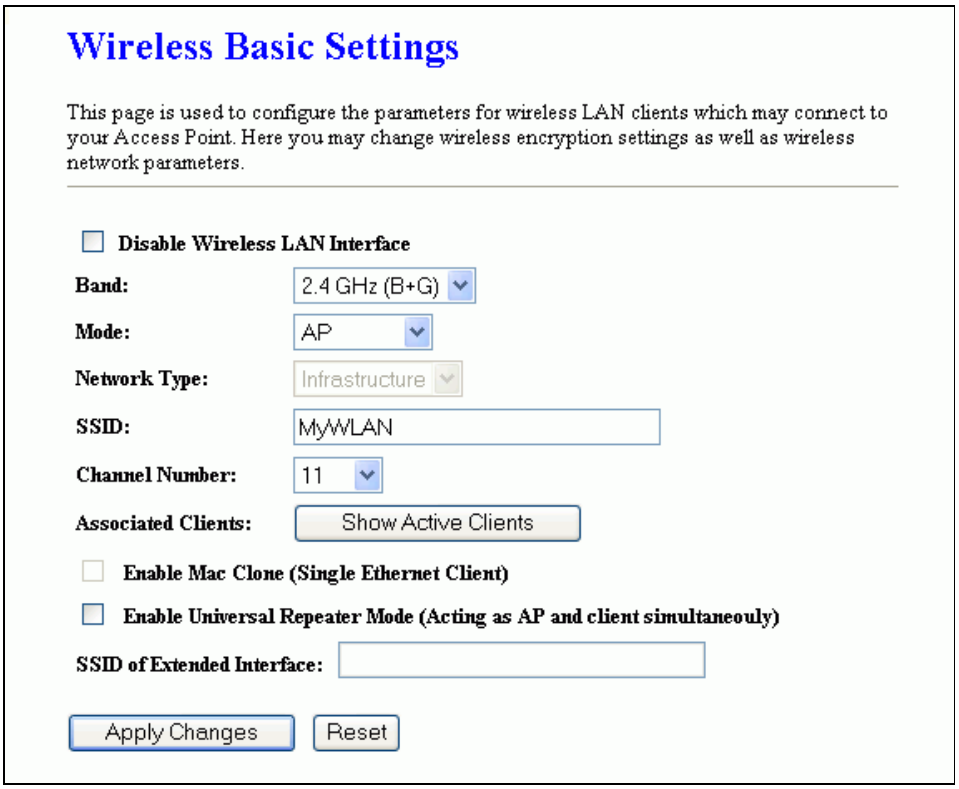
Screen snapshot – Operation Mode

Item	Description
Gateway	Traditional gateway configuration. It always connects internet via ADSL/Cable Modem. LAN interface, WAN interface, Wireless interface, NAT and Firewall modules are applied to this mode
Bridge	Each interface (LAN, WAN and Wireless) regards

	as bridge. NAT, Firewall and all router's functions are not supported
Wireless ISP	Switch Wireless interface to WAN port and all Ethernet ports in bridge mode. Wireless interface can do all router's functions
Apply Changes	Click the ***Apply Changes*** button to complete the new configuration setting.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.

1.2.4 Wireless - Basic Settings

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



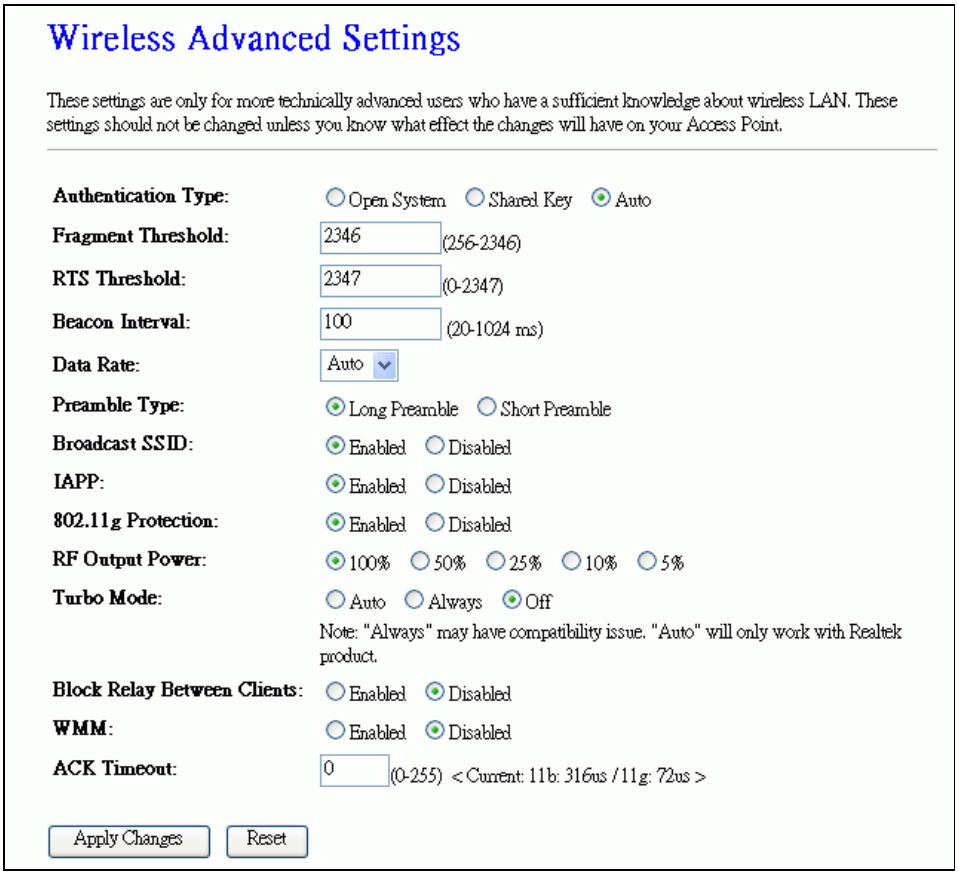
Screen snapshot – Wireless Basic Settings

Item	Description
Disable Wireless LAN Interface	Click on to disable the wireless LAN data transmission.
Band	Click to select 2.4GHz(B) / 2.4GHz(G) / 2.4GHz(B+G)
Mode	Click to select the WLAN AP / Client / WDS / AP+WDS wireless mode.

Site Survey	The ***Site Survey*** button 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. Refer to 3.3.9 Site Survey.
SSID	It is the wireless network name. The SSID can be 32 bytes long.
Channel Number	Select the wireless communication channel from pull-down menu.
Associated Clients	Click the ***Show Active Clients*** button to open Active Wireless Client Table that shows the MAC address, transmit-packet, receive-packet and transmission-rate for each associated wireless client.
Enable Mac Clone (Single Ethernet Client)	Take Laptop NIC MAC address as wireless client MAC address. **[Client Mode only]**
Enable Universal Repeater Mode	Click to enable Universal Repeater Mode
SSID of Extended Interface	Assign SSID when enables Universal Repeater Mode.
Apply Changes	Click the ***Apply Changes*** button to complete the new configuration setting.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.

1.2.5 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 WLAN Broadband Router.



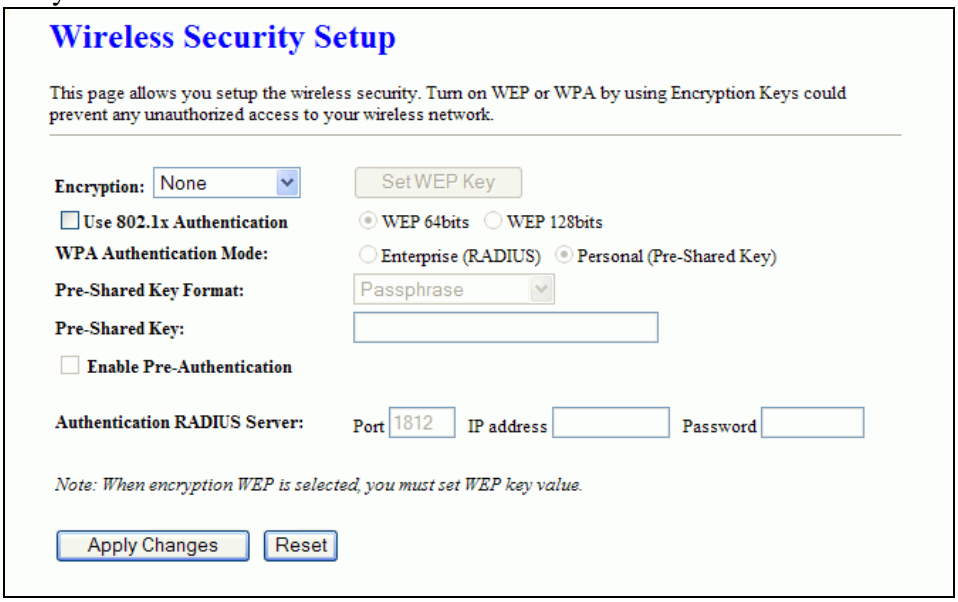
Screen snapshot – Wireless Advanced Settings

Item	Description
Authentication Type	Click to select the authentication type in ***Open System***, ***Shared Key*** or ***Auto*** selection.
Fragment Threshold	Set the data packet fragmentation threshold, value can be written between 256 and 2346 bytes. Refer to 4.10 What is Fragment Threshold?
RTS Threshold	Set the RTS Threshold, value can be written between 0 and 2347 bytes. Refer to 4.11 What is RTS(Request To Send) Threshold?
Beacon Interval	Set the Beacon Interval, value can be written between 20 and 1024 ms. Refer to 4.12 What is Beacon Interval?
Data Rate	Select the transmission data rate from pull-down menu. Data rate can be auto-select, 11M, 5.5M, 2M or 1Mbps.
Preamble Type	Click to select the ***Long Preamble*** or ***Short Preamble*** support on the wireless data packet transmission. Refer to 4.13 What is Preamble Type?

Broadcast SSID	Click to enable or disable the SSID broadcast function. Refer to 4.14 What is SSID Broadcast?
IAPP	Click to enable or disable the IAPP function. Refer to 4.20 What is Inter-Access Point Protocol(IAPP)?
802.11g Protection	Protect 802.11b user.
RF Output Power	To adjust transmission power level.
Turbo Mode	Click to Enable/Disable turbo mode.(***Only apply to WLAN IC of Realtek***).
Block Relay Between Clients	Click Enabled/Disabled to decide if blocking relay packets between clients.
WMM	Click Enabled/Disable*d* to init WMM feature.
ACK Timeout	Set ACK timeout value. It shows current time in the end.
Apply Changes	Click the ***Apply Changes*** button to complete the new configuration setting.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.

1.2.6 Wireless - Security Setup

This page allows you setup the wireless security. Turn on WEP, WPA, WPA2 by using encryption keys could prevent any unauthorized access to your wireless network.

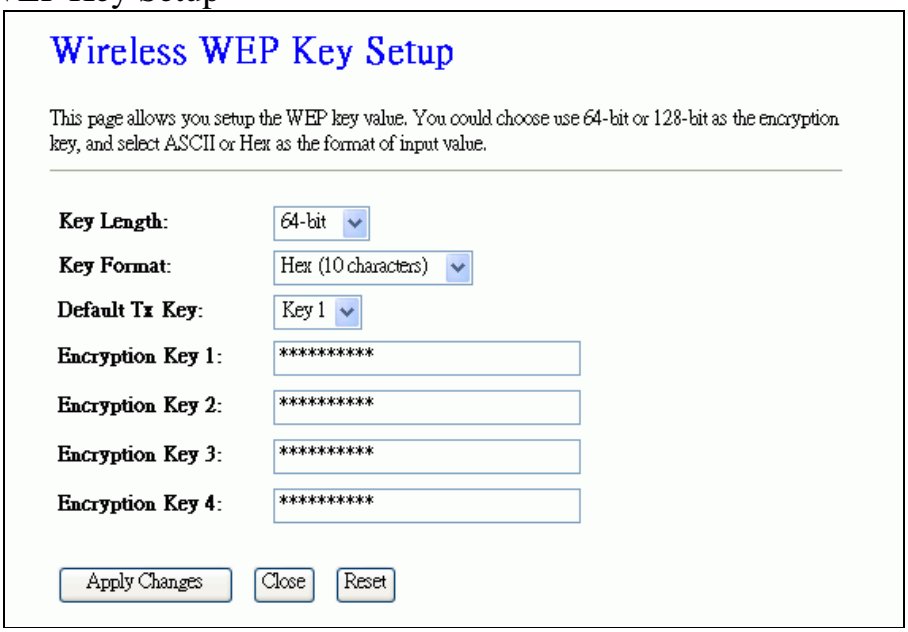


Screen snapshot – Wireless Security Setup

Item	Description
Encryption	Select the encryption supported over wireless access. The encryption method can be None,

	WEP, WPA(TKIP), WPA2 or WPA2 Mixed Refer to 4.9 What is WEP? 4.15 What is Wi-Fi Protected Access (WPA)? 4.16 What is WPA2(AES)? 4.17 What is 802.1X Authentication? 4.18 What is Temporal Key Integrity Protocol (TKIP)? 4.19 What is Advanced Encryption Standard (AES)?
Use 802.1x Authentication	While Encryption is selected to be WEP. Click the check box to enable IEEE 802.1x authentication function. Refer to 4.16 What is 802.1x Authentication?
WPA Authentication Mode	While Encryption is selected to be WPA. Click to select the WPA Authentication Mode with Enterprise (RADIUS) or Personal (Pre-Shared Key). Refer to 4.15 What is Wi-Fi Protected Access (WPA)?
Pre-Shared Key Format	While Encryption is selected to be WPA. Select the Pre-shared key format from the pull-down menu. The format can be Passphrase or Hex (64 characters). **[WPA, Personal(Pre-Shared Key) only]**
Pre-Shared Key	Fill in the key value. [WPA, Personal(Pre-Shared Key) only]
Enable Pre-Authentication	Click to enable Pre-Authentication. [WPA2/WPA2 Mixed only, Enterprise only]
Authentication RADIUS Server	Set the IP address, port and login password information of authentication RADIUS sever.
Apply Changes	Click the ***Apply Changes*** button to complete the new configuration setting.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.

7. WEP Key Setup



Screen snapshot – WEP Key Setup

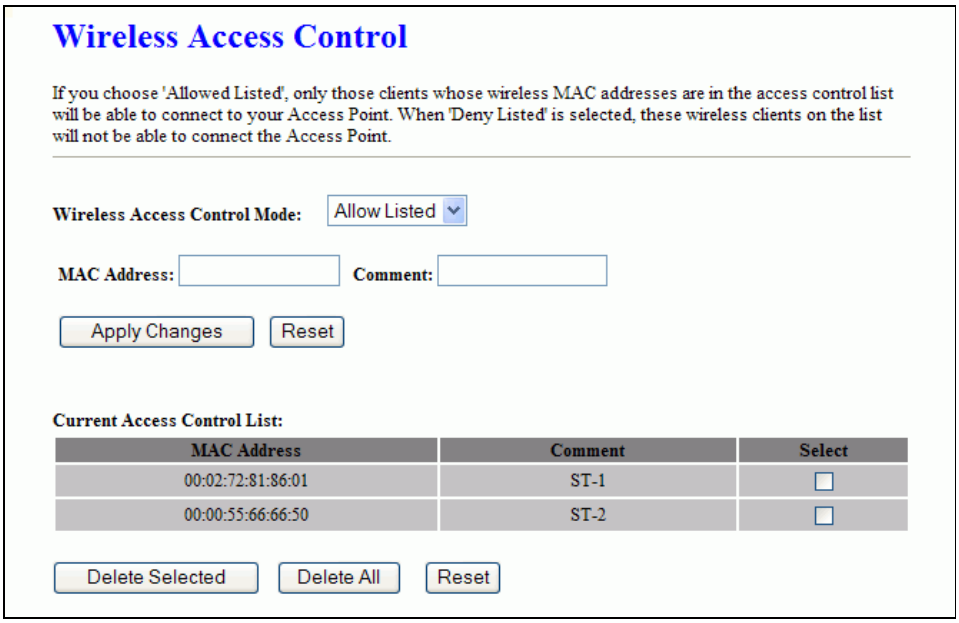
Item	Description
Key Length	Select the WEP shared secret key length from pull-down menu. The length can be chose between 64-bit and 128-bit (known as "WEP2") keys. The WEP key is composed of initialization vector (24 bits) and secret key (40-bit or 104-bit).
Key Format	Select the WEP shared secret key format from pull-down menu. The format can be chose between plant text (ASCII) and hexadecimal (HEX) code.
Default Tx Key	Set the default secret key for WEP security function. Value can be chose between 1 and 4.
Encryption Key 1	Secret key 1 of WEP security encryption function.
Encryption Key 2	Secret key 2 of WEP security encryption function.
Encryption Key 3	Secret key 3 of WEP security encryption function.
Encryption Key 4	Secret key 4 of WEP security encryption function.
Apply Changes	Click the ***Apply Changes*** button to complete the new configuration setting.
Close	Click to close this WEP Key setup window.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.

WEP encryption key (secret key) length:

Length / Format	64-bit	128-bit
ASCII	5 characters	13 characters
HEX	10 hexadecimal codes	26 hexadecimal codes

1.2.7 Wireless - Access Control

If you enable wireless access control, only those clients whose wireless MAC addresses are in the access control list will be able to connect to your Access Point. When this option is enabled, no wireless clients will be able to connect if the list contains no entries.



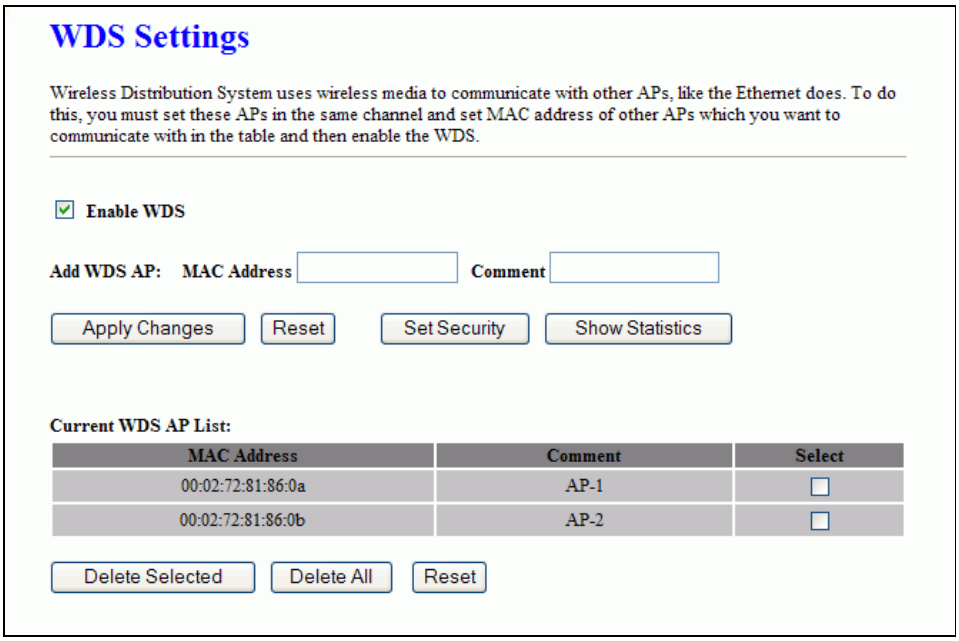
Screen snapshot – Wireless Access Control

Item	Description
Wireless Access Control Mode	Click the ***Disabled***, ***Allow Listed*** or ***Deny Listed*** of drop down menu choose wireless access control mode. This is a security control function; only those clients registered in the access control list can link to this WLAN Broadband Router.
MAC Address	Fill in the MAC address of client to register this WLAN Broadband Router access capability.
Comment	Fill in the comment tag for the registered client.
Apply Changes	Click the ***Apply Changes*** button to register the client to new configuration setting.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.
Current Access	It shows the registered clients that are allowed to

Control List	link to this WLAN Broadband Router.
Delete Selected	Click to delete the selected clients that will be access right removed from this WLAN Broadband Router.
Delete All	Click to delete all the registered clients from the access allowed list.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.

1.2.8 WDS Settings

Wireless Distribution System uses wireless media to communicate with other APs, like the Ethernet does. To do this, you must set these APs in the same channel and set MAC address of other AP that you want to communicate with in the table and then enable the WDS.



Screen snapshot – WDS Setup

Item	Description
Enable WDS	Click the check box to enable wireless distribution system. Refer to 4.21 What is Wireless Distribution System (WDS)?
MAC Address	Fill in the MAC address of AP to register the wireless distribution system access capability.
Comment	Fill in the comment tag for the registered AP.
Apply Changes	Click the ***Apply Changes*** button to register the AP to new configuration setting.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.

Set Security	Click button to configure wireless security like ***WEP(64bits), WEP(128bits), WPA(TKIP), WPA2(AES)*** or ***None***
Show Statistics	It shows the TX, RX packets, rate statistics
Delete Selected	Click to delete the selected clients that will be removed from the wireless distribution system.
Delete All	Click to delete all the registered APs from the wireless distribution system allowed list.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.

8. WDS Security Setup

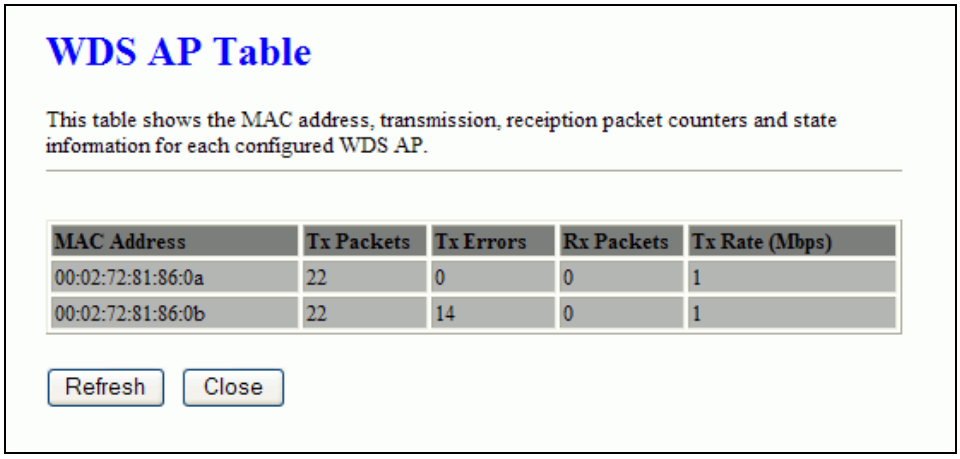
Requirement: Set [Wireless]->[Basic Settings]->[Mode]->AP+WDS

This page is used to configure the wireless security between APs. Refer to 3.3.6 Wireless Security Setup.

Screen snapshot – WDS Security Setup

9. WDS AP Table

This page is used to show WDS statistics

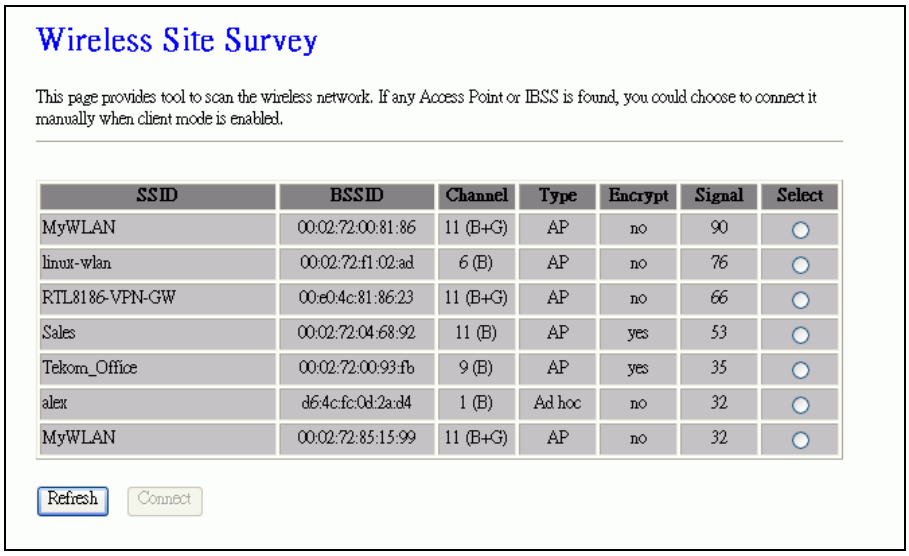


Screen snapshot – WDS AP Table

Item	Description
MAC Address	It shows the MAC Address within WDS.
Tx Packets	It shows the statistic count of sent packets on the wireless LAN interface.
Tx Errors	It shows the statistic count of error sent packets on the Wireless LAN interface.
Rx Packets	It shows the statistic count of received packets on the wireless LAN interface.
Tx Rare (Mbps)	It shows the wireless link rate within WDS.
Refresh	Click to refresh the statistic counters on the screen.
Close	Click to close the current window.

1.2.9 Site Survey

This page is used to view or configure other APs near yours.

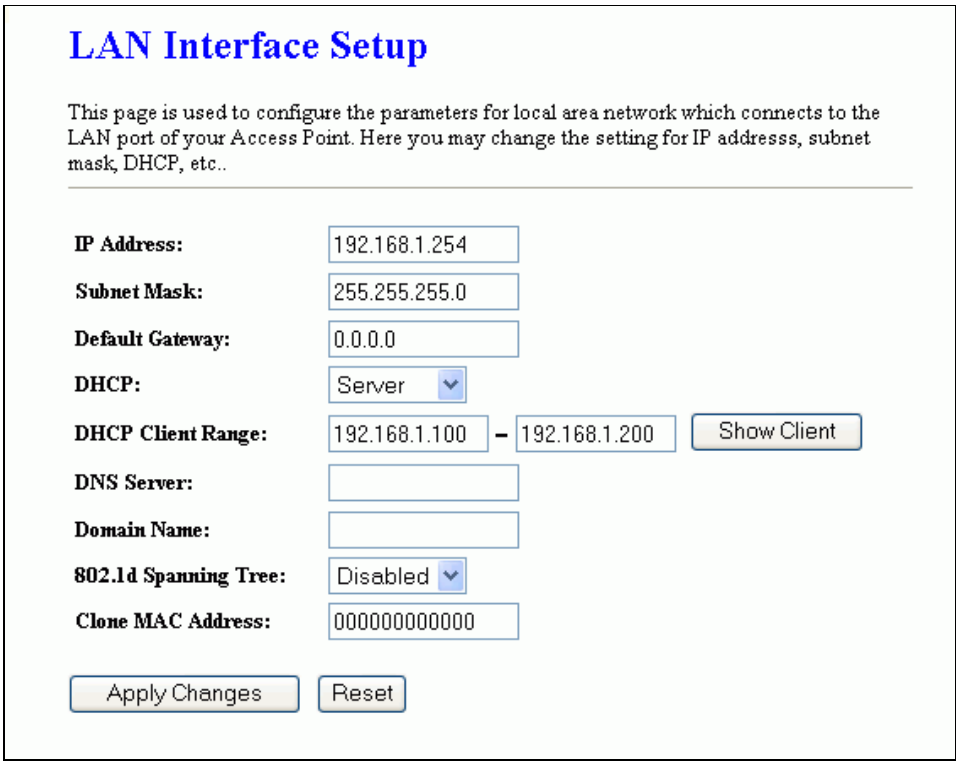


Screen snapshot – Wireless Site Survey

Item	Description
SSID	It shows the SSID of AP.
BSSID	It shows BSSID of AP.
Channel	It show the current channel of AP occupied.
Type	It show which type AP acts.
Encrypt	It shows the encryption status.
Signal	It shows the power level of current AP.
Select	Click to select AP or client you'd like to connect.
Refresh	Click the ***Refresh*** button to re-scan site survey on the screen.
Connect	Click the ***Connect*** button to establish connection.

1.2.10 LAN Interface Setup

This page is used to configure the parameters for local area network that connects to the LAN ports of your WLAN Broadband Router. Here you may change the setting for IP address, subnet mask, DHCP, etc.



Screen snapshot – LAN Interface Setup

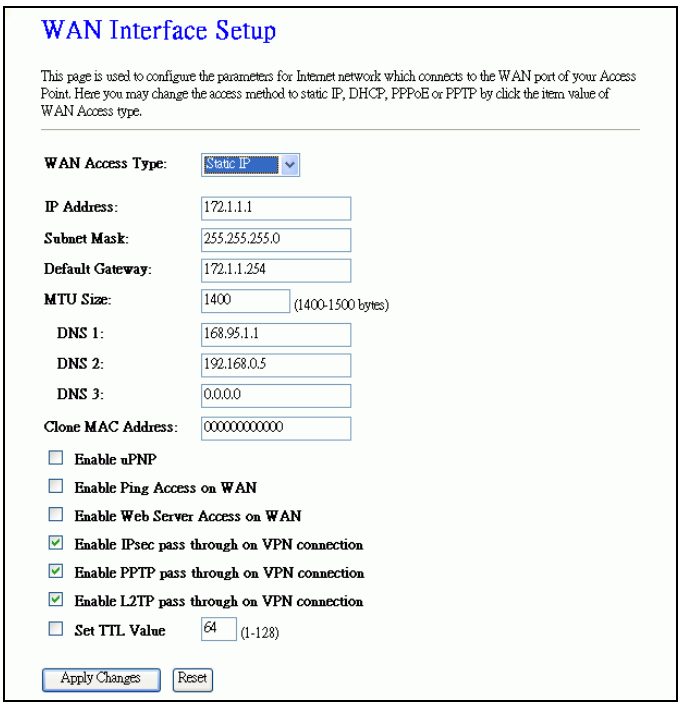
Item	Description
IP Address	Fill in the IP address of LAN interfaces of this WLAN Access Point.

Subnet Mask	Fill in the subnet mask of LAN interfaces of this WLAN Access Point.
Default Gateway	Fill in the default gateway for LAN interfaces out going data packets.
DHCP	Click to select ***Disabled***, ***Client*** or ***Server*** in different operation mode of wireless Access Point.
DHCP Client Range	Fill in the start IP address and end IP address to allocate a range of IP addresses; client with DHCP function set will be assigned an IP address from the range.
Show Client	Click to open the ***Active DHCP Client Table*** window that shows the active clients with their assigned IP address, MAC address and time expired information. **[Server mode only]**
DNS Server	Manual setup DNS server IP address.
Domain Name	Assign Domain Name and dispatch to DHCP clients. It is optional field.
802.1d Spanning Tree	Select to enable or disable the IEEE 802.1d Spanning Tree function from pull-down menu.
Clone MAC Address	Fill in the MAC address that is the MAC address to be cloned. Refer to 4.24 What is Clone MAC Address?
Apply Changes	Click the ***Apply Changes*** button to complete the new configuration setting.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.

1.2.11 WAN Interface Setup

This page is used to configure the parameters for wide area network that connects to the WAN port of your WLAN Broadband Router. Here you may change the access method to ***Static IP***, ***DHCP***, ***PPPoE*** or ***PPTP*** by click the item value of **WAN Access Type**.

10. Static IP

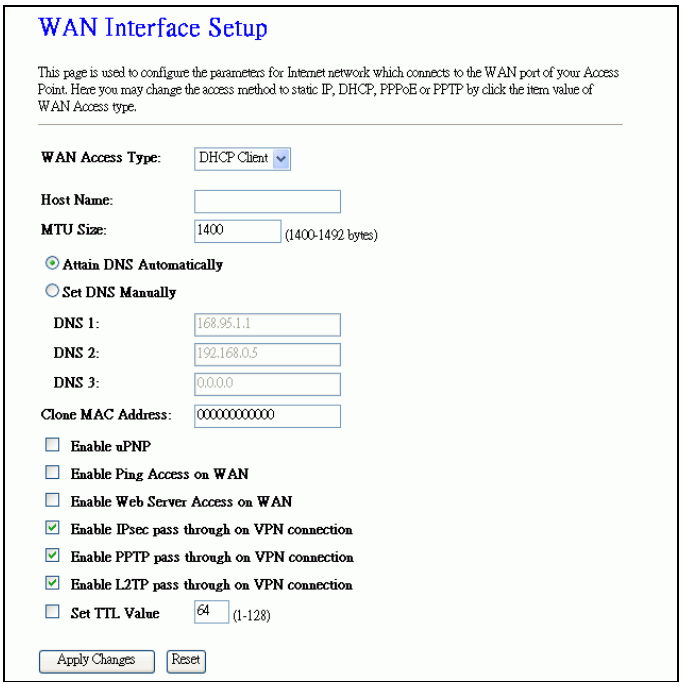


Screen snapshot – WAN Interface Setup – Static IP

Item	Description
Static IP	Click to select Static IP support on WAN interface. There are IP address, subnet mask and default gateway settings need to be done.
IP Address	If you select the Static IP support on WAN interface, fill in the IP address for it.
Subnet Mask	If you select the Static IP support on WAN interface, fill in the subnet mask for it.
Default Gateway	If you select the Static IP support on WAN interface, fill in the default gateway for WAN interface out going data packets.
MTU Size	Fill in the mtu size of MTU Size. The default value is 1400
DNS 1	Fill in the IP address of Domain Name Server 1.
DNS 2	Fill in the IP address of Domain Name Server 2.
DNS 3	Fill in the IP address of Domain Name Server 3.
Clone MAC Address	Fill in the MAC address that is the MAC address to be cloned. Refer to 4.24 What is Clone MAC Address?
Enable uPNP	Click the checkbox to enable uPNP function. Refer to 4.22 What is Universal Plug and Play (uPNP)?
Enable Web Server	Click the checkbox to enable web configuration

Access on WAN	from WAN side.
Enable WAN Echo Reply	Click the checkbox to enable WAN ICMP response.
Enable IPsec pass through on VPN connection	Click the checkbox to enable IPSec packet pass through
Enable PPTP pass through on VPN connection	Click the checkbox to enable PPTP packet pass through
Enable L2TP pass through on VPN connection	Click the checkbox to enable L2TP packet pass through
Set TTL value	Click to Enable and set Time to Live value.
Apply Changes	Click the ***Apply Changes*** button to complete the new configuration setting.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.

11. DHCP Client

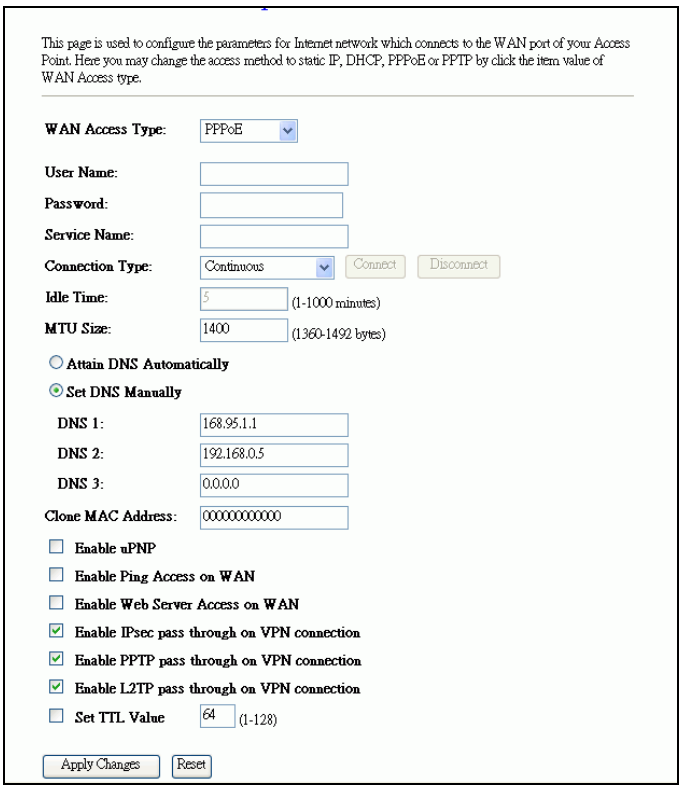


Screen snapshot – WAN Interface Setup – DHCP Client

Item	Description
DHCP Client	Click to select DHCP support on WAN interface for IP address assigned automatically from a DHCP server.
Host Name	Fill in the host name of Host Name. The default value is empty

MTU Size	Fill in the mtu size of MTU Size. The default value is 1400
Attain DNS Automatically	Click to select getting DNS address for ***DHCP*** support. Please select ***Set DNS Manually*** if the ***DHCP*** support is selected.
Set DNS Manually	Click to select getting DNS address for ***DHCP*** support.
DNS 1	Fill in the IP address of Domain Name Server 1.
DNS 2	Fill in the IP address of Domain Name Server 2.
DNS 3	Fill in the IP address of Domain Name Server 3.
Clone MAC Address	Fill in the MAC address that is the MAC address to be cloned. Refer to 4.24 What is Clone MAC Address?
Enable uPNP	Click the checkbox to enable uPNP function. Refer to 4.22 What is Universal Plug and Play (uPNP)?
Enable Web Server Access on WAN	Click the checkbox to enable web configuration from WAN side.
Enable WAN Echo Reply	Click the checkbox to enable WAN ICMP response.
Set TTL value	Click to Enable and set Time to Live value.
Apply Changes	Click the ***Apply Changes*** button to complete the new configuration setting.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.

12. PPPoE

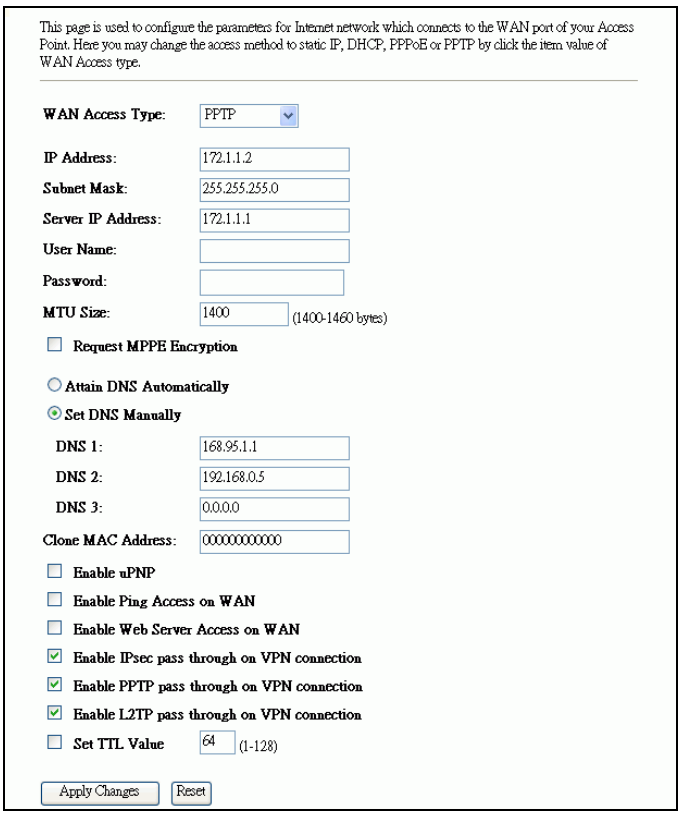


Screen snapshot – WAN Interface Setup – PPPoE

Item	Description
PPPoE	Click to select PPPoE support on WAN interface. There are user name, password, connection type and idle time settings need to be done.
User Name	If you select the PPPoE support on WAN interface, fill in the user name and password to login the PPPoE server.
Password	If you select the PPPoE support on WAN interface, fill in the user name and password to login the PPPoE server.
Service Name	Fill in the service name of Service Name. The default value is empty.
Connection Type	Select the connection type from pull-down menu. There are ***Continuous***, ***Connect on Demand*** and ***Manual*** three types to select. ***Continuous*** connection type means to setup the connection through PPPoE protocol whenever this WLAN Broadband Router is powered on. ***Connect on Demand*** connection type means to setup the connection through PPPoE protocol whenever you send the data packets out through

	the WAN interface; there are a watchdog implemented to close the PPPoE connection while there are no data sent out longer than the idle time set. ***Manual*** connection type means to setup the connection through the PPPoE protocol by clicking the ***Connect*** button manually, and clicking the ***Disconnect*** button manually.
Idle Time	If you select the ***PPPoE*** and ***Connect on Demand*** connection type, fill in the idle time for auto-disconnect function. Value can be between 1 and 1000 minutes.
MTU Size	Fill in the mtu size of MTU Size. The default value is 1400. Refer to 4.23 What is Maximum Transmission Unit (MTU) Size?
Attain DNS Automatically	Click to select getting DNS address for ***PPPoE*** support. Please select ***Set DNS Manually*** if the ***PPPoE*** support is selected.
Set DNS Manually	Click to select getting DNS address for ***Static IP*** support.
DNS 1	Fill in the IP address of Domain Name Server 1.
DNS 2	Fill in the IP address of Domain Name Server 2.
DNS 3	Fill in the IP address of Domain Name Server 3.
Clone MAC Address	Fill in the MAC address that is the MAC address to be cloned. Refer to 4.24 What is Clone MAC Address?
Enable uPNP	Click the checkbox to enable uPNP function. Refer to 4.22 What is Universal Plug and Play (uPNP)?
Enable Web Server Access on WAN	Click the checkbox to enable web configuration from WAN side.
Enable WAN Echo Reply	Click the checkbox to enable WAN ICMP response.
Set TTL value	Click to Enable and set Time to Live value.
Apply Changes	Click the ***Apply Changes*** button to complete the new configuration setting.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.

13. PPTP



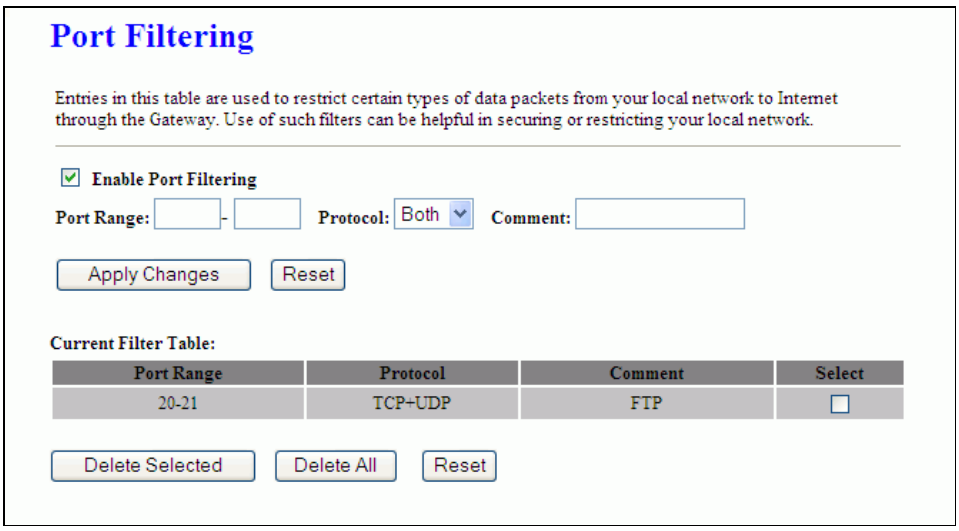
Screen snapshot – WAN Interface Setup – PPTP

Item	Description
PPTP	Allow user to make a tunnel with remote site directly to secure the data transmission among the connection. User can use embedded PPTP client supported by this router to make a VPN connection.
IP Address	If you select the PPTP support on WAN interface, fill in the IP address for it.
Subnet Mask	If you select the PPTP support on WAN interface, fill in the subnet mask for it.
Server IP Address	Enter the IP address of the PPTP Server.
User Name	If you select the PPTP support on WAN interface, fill in the user name and password to login the PPTP server.
Password	f you select the PPTP support on WAN interface, fill in the user name and password to login the PPTP server.
MTU Size	Fill in the mtu size of MTU Size. The default value is 1400. Refer to 4.23 What is Maximum Transmission Unit (MTU) Size?
Request MPPE	Click the checkbox to enable request MPPE

Encryption	encryption.
Attain DNS Automatically	Click to select getting DNS address for ***PPTP*** support. Please select ***Set DNS Manually*** if the ***PPTP*** support is selected.
Set DNS Manually	Click to select getting DNS address for ***PPTP*** support.
DNS 1	Fill in the IP address of Domain Name Server 1.
DNS 2	Fill in the IP address of Domain Name Server 2.
DNS 3	Fill in the IP address of Domain Name Server 3.
Clone MAC Address	Fill in the MAC address that is the MAC address to be cloned. Refer to 4.24 What is Clone MAC Address?
Enable uPNP	Click the checkbox to enable uPNP function. Refer to 4.22 What is Universal Plug and Play (uPNP)?
Enable Web Server Access on WAN	Click the checkbox to enable web configuration from WAN side.
Enable WAN Echo Reply	Click the checkbox to enable WAN ICMP response.
Set TTL value	Click to Enable and set Time to Live value.
Apply Changes	Click the ***Apply Changes*** button to complete the new configuration setting.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.

1.2.12 Firewall - 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.

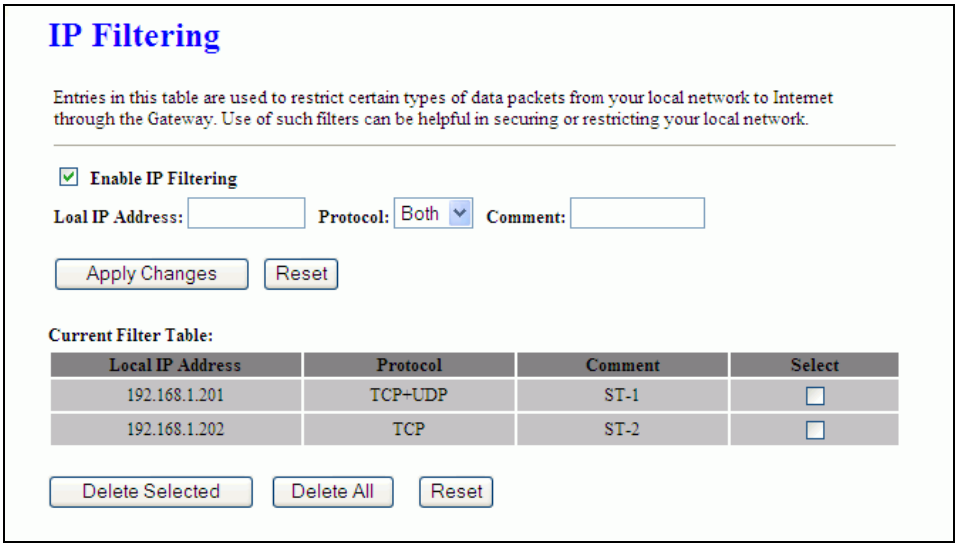


Screen snapshot – Firewall - Port Filtering

Item	Description
Enable Port Filtering	Click to enable the port filtering security function.
Port Range Protocol Comments	To restrict data transmission from the local network on certain ports, fill in the range of start-port and end-port, and the protocol, also put your comments on it. The ***Protocol*** can be TCP, UDP or Both. ***Comments*** let you know about whys to restrict data from the ports.
Apply Changes	Click the ***Apply Changes*** button to register the ports to port filtering list.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.
Delete Selected	Click to delete the selected port range that will be removed from the port-filtering list.
Delete All	Click to delete all the registered entries from the port-filtering list.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.

1.2.13 Firewall - 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.



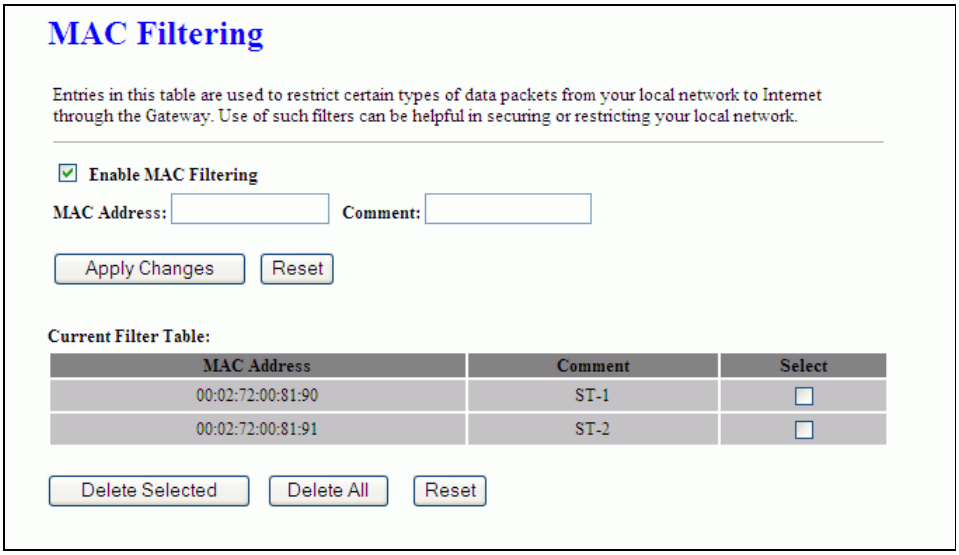
Screen snapshot – Firewall - IP Filtering

Item	Description
Enable IP Filtering	Click to enable the IP filtering security function.
Local IP Address	To restrict data transmission from local network

Protocol Comments	on certain IP addresses, fill in the IP address and the protocol, also put your comments on it. The ***Protocol*** can be TCP, UDP or Both. ***Comments*** let you know about whys to restrict data from the IP address.
Apply Changes	Click the ***Apply Changes*** button to register the IP address to IP filtering list.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.
Delete Selected	Click to delete the selected IP address that will be removed from the IP-filtering list.
Delete All	Click to delete all the registered entries from the IP-filtering list.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.

1.2.14 Firewall - 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.



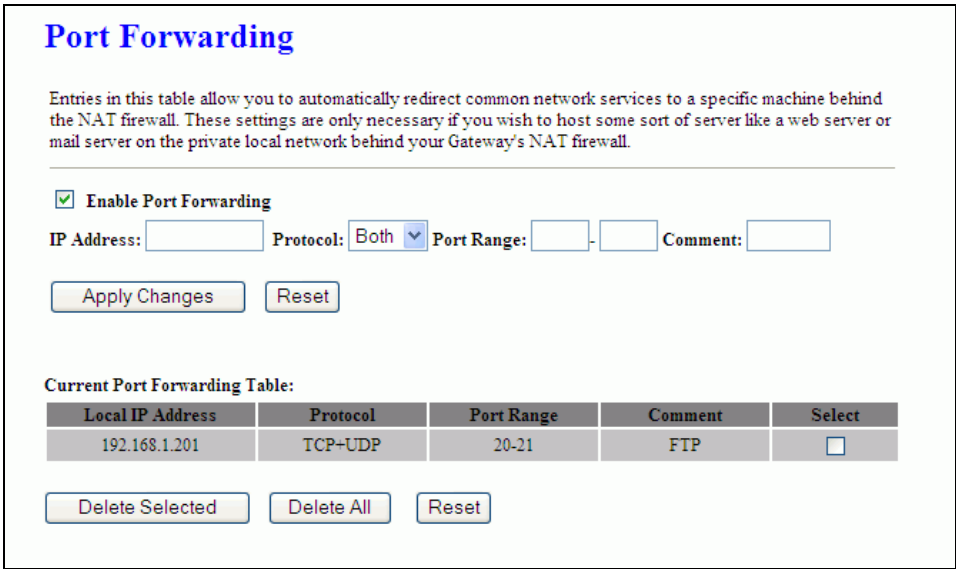
Screen snapshot – Firewall - MAC Filtering

Item	Description
Enable MAC Filtering	Click to enable the MAC filtering security function.
MAC Address Comments	To restrict data transmission from local network on certain MAC addresses, fill in the MAC address and your comments on it. ***Comments*** let you know about whys to restrict data from the MAC address.

Apply Changes	Click the ***Apply Changes*** button to register the MAC address to MAC filtering list.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.
Delete Selected	Click to delete the selected MAC address that will be removed from the MAC-filtering list.
Delete All	Click to delete all the registered entries from the MAC-filtering list.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.

1.2.15 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.



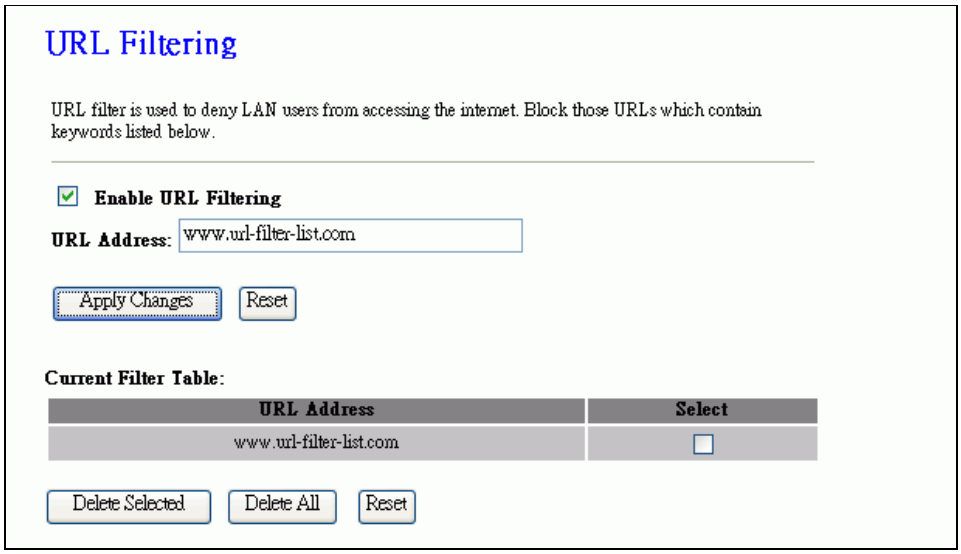
Screen snapshot – Firewall - Port Forwarding

Item	Description
Enable Port Forwarding	Click to enable the Port Forwarding security function.
IP Address Protocol Port Range Comment	To forward data packets coming from WAN to a specific IP address that hosted in local network behind the NAT firewall, fill in the IP address, protocol, port range and your comments. The ***Protocol*** can be TCP, UDP or Both. The ***Port Range*** for data transmission. ***Comments*** let you know about whys to allow data

	packets forward to the IP address and port number.
Apply Changes	Click the ***Apply Changes*** button to register the IP address and port number to Port forwarding list.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.
Delete Selected	Click to delete the selected IP address and port number that will be removed from the port-forwarding list.
Delete All	Click to delete all the registered entries from the port-forwarding list.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.

1.2.16 Firewall – URL Filtering

URL Filtering is used to restrict users to access specific websites in internet.



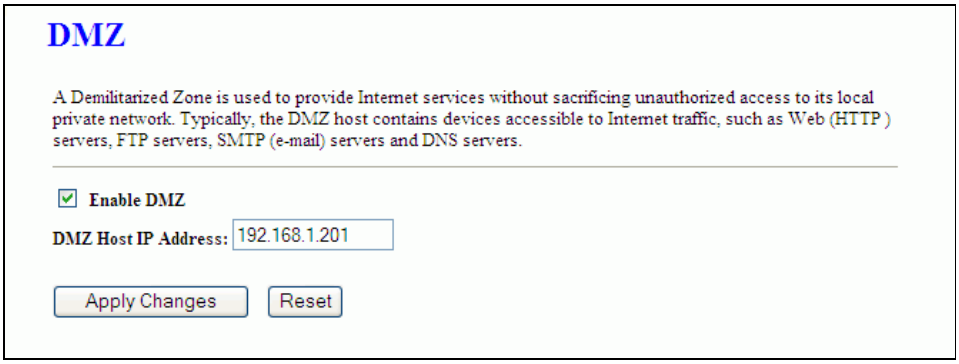
Screen snapshot – Firewall – URL Filtering

Item	Description
Enable URL Filtering	Click to enable the URL Filtering function.
URL Address	Add one URL address.
Apply Changes	Click the ***Apply Changes*** button to save settings.
Reset	Click the ***Reset*** button to abort change and recover

	the previous configuration setting.
Delete Selected	Click to delete the selected URL address that will be removed from the URL Filtering list.
Delete All	Click to delete all the registered entries from the URL Filtering list.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.

1.2.17 Firewall - 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.

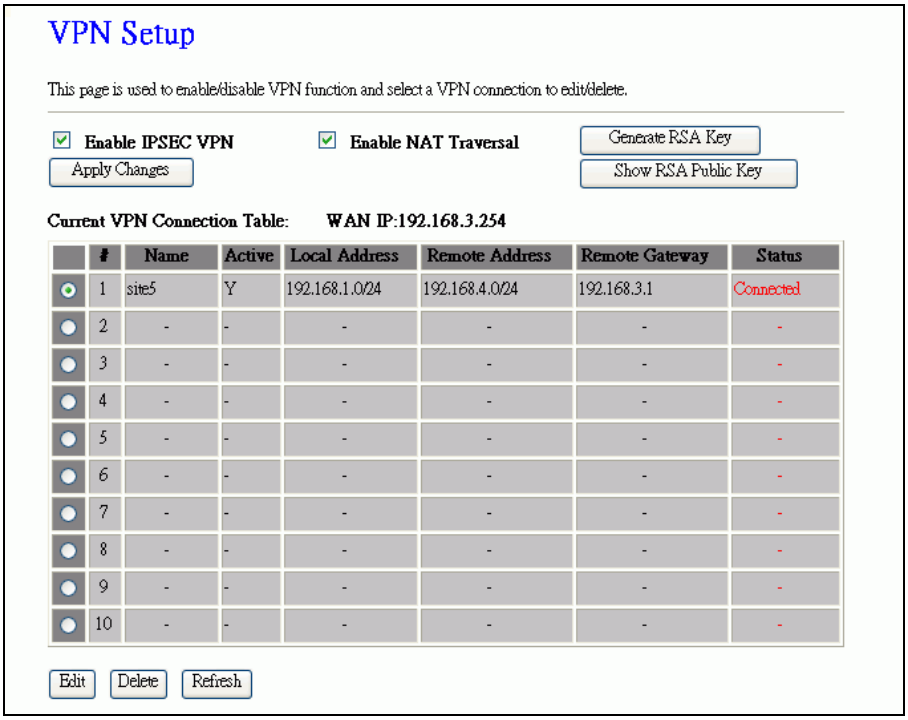


Screen snapshot – Firewall - DMZ

Item	Description
Enable DMZ	Click to enable the DMZ function.
DMZ Host IP Address	To support DMZ in your firewall design, fill in the IP address of DMZ host that can be access from the WAN interface.
Apply Changes	Click the ***Apply Changes*** button to register the IP address of DMZ host.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.

1.2.18 VPN Setting

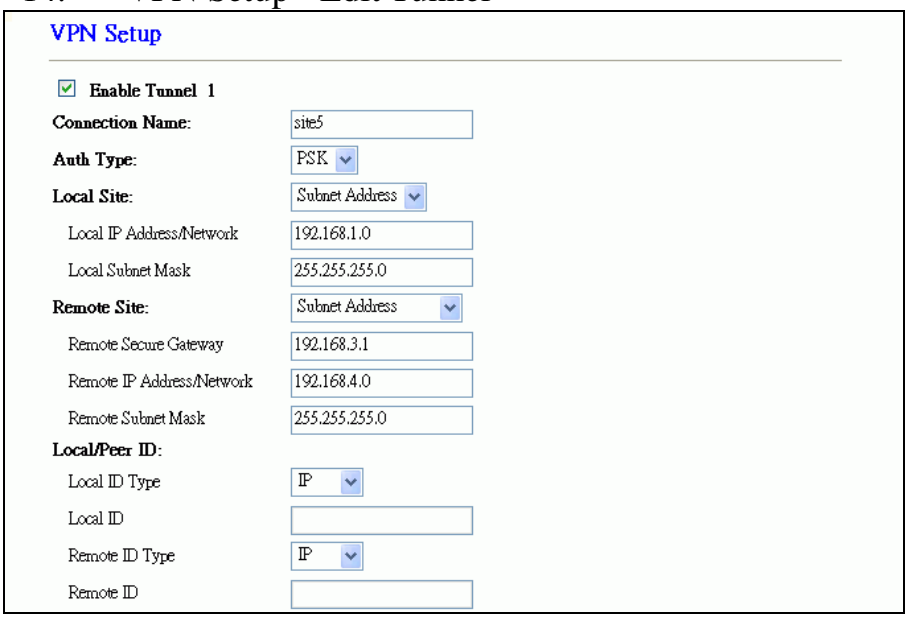
This page is used to show VPN connection table, configure IPSEC VPN, NAT Traversal, Generate RSA Key, Show RSA Public Key.



Screen snapshot – VPN Setup

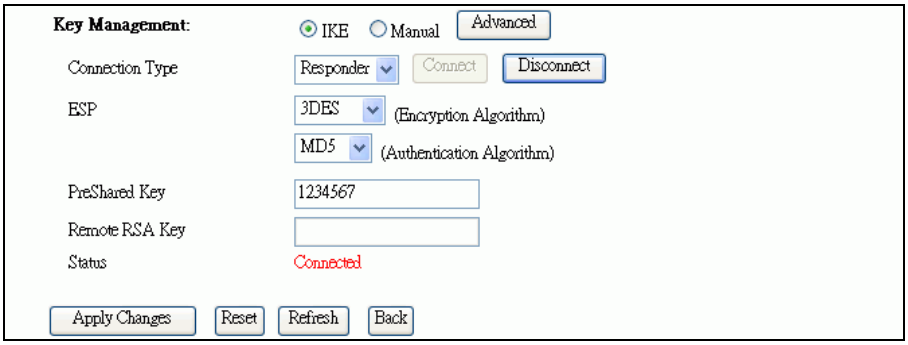
Item	Description
Enable IPSEC VPN	Click to enable IPSEC VPN function. Refer to 4.27 What is VPN? and 4.28 What is IPSEC?
Enable NAT Traversal	Click to enable NAT Traversal function.
Generate RSA Key	Click to generate RSA key.
Show RSA Public Key	Click to show RSA public key that we generate.
Apply Changes	Click the ***Apply Changes*** button to enable IPSEC VPN, NAT Traversal settings.
Current VPN Connection Table	It shows current WAN interface information and VPN connection table.
Edit	Click to enter the current VPN tunnel configuration page.
Delete	Click to delete the current VPN tunnel that radio button stay.
Refresh	Click to refresh the current VPN connection table.

14. VPN Setup - Edit Tunnel



Screen snapshot – VPN Setup-Edit-1

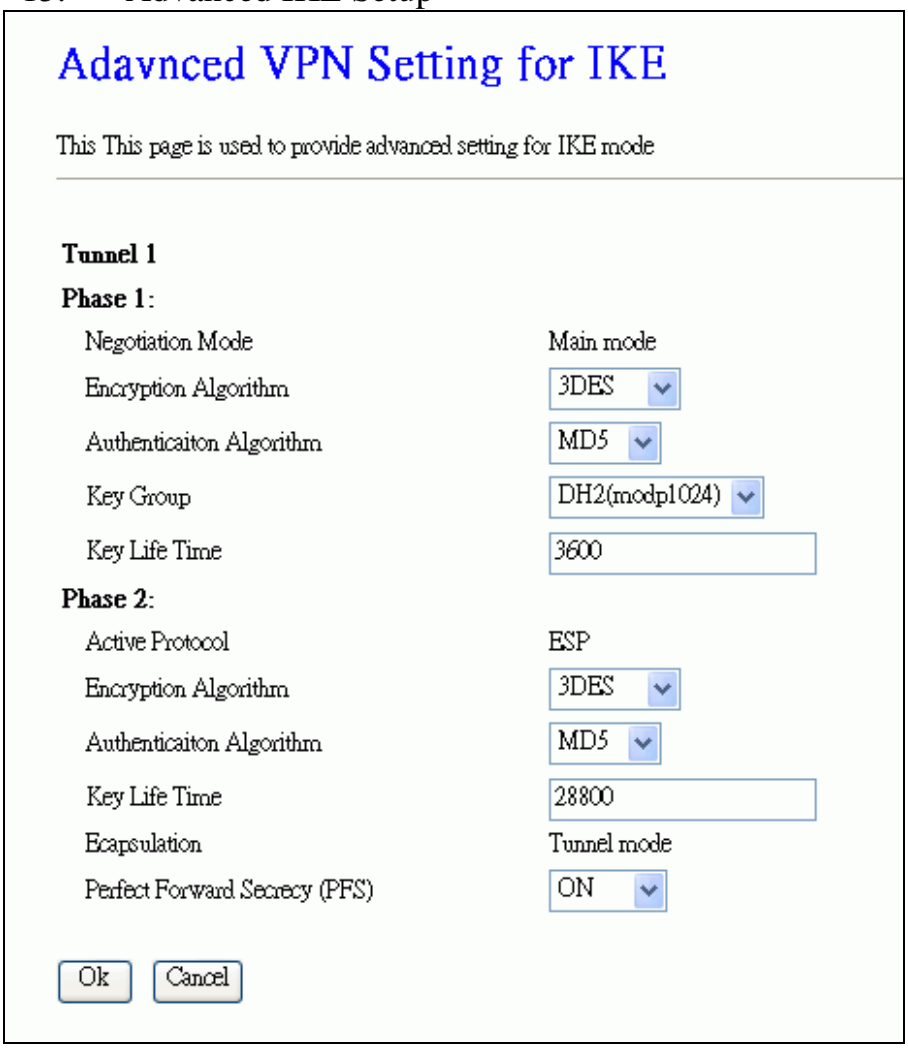
Item	Description
Enable Tunnel #	Click to enable the IPSEC VPN current tunnel.
Connection Name	Assign the connection name tag.
Auth Type	Click to select ***PSK*** or ***RSA***.
Local Site	Click to select ***Single Address*** or ***Subnet Address*** VPN connection.
Local IP Address/Network	Fill in IP address or subnet address depends on which Local Site option you choose.
Local Subnet Mask	Fill in the local subnet mask.
Remote Site	Click to select ***Single Address, Subnet Address***, ***Any Address*** or ***NAT-T Any Address*** VPN remote connection.
Remote Secure Gateway	Fill in remote gateway IP address
Remote IP Address/Network	Fill in IP address or subnet address depends on which Remote Site option you choose.
Remote Subnet Mask	Fill in remote subnet mask
Local/Peer ID	Define IKE exchange information type
Local ID Type	Click to select ***IP***, ***DNS*** or ***E-mail*** as local exchange type
Local ID	Fill in local ID except IP selected
Remote ID Type	Click to select ***IP***, ***DNS*** or ***E-mail*** as remote exchange type
Remote ID	Fill in remote ID except IP selected



Screen snapshot – VPN Setup-Edit-2

Item	Description
Key Management	Click to select ***IKE*** or ***Manual*** mode.
Advanced	Click ***Advanced*** button to configure more IKE settings.
Connection Type	Click to select ***Initiator*** or ***Responder*** mode.
Connect	Click to connect manually. **[Responder mode only]**
Disconnect	Click to disconnect manually. **[Responder mode only]**.
ESP	Click to configure ***3DES***, ***AES128*** or ***NULL*** encryption. Click to configure ***MD5*** or ***SHA1*** authentication.
PreShared Key	Fill in the key value. **[IKE mode only]**
Remote RSA Key	Fill in the remote gateway RSA key. **[IKE mode only]**
Status	It shows connection status. **[IKE mode only]**
SPI	Fill in Security Parameter Index value. **[Manual mode only]**
Encryption Key	Fill in encryption key. **[Manual mode only]**
Authentication Key	Fill in authentication key. **[Manual mode only]**
Apply Change	Click the ***Apply Changes*** button to save current tunnel settings.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.
Refresh	It shows the current connection status. **[Manual mode only]**
Back	It returns back to VPN Setup page.

15. Advanced IKE Setup



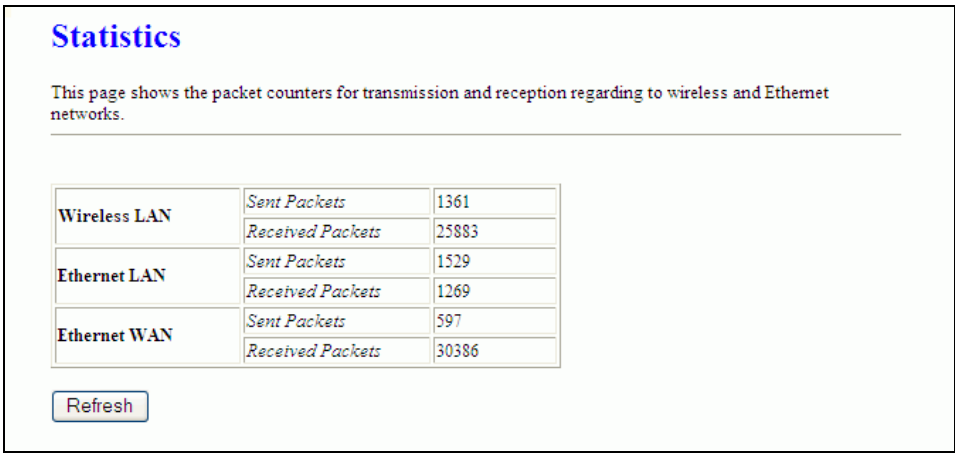
Screen snapshot – Advanced VPN Settings for IKE

Item	Description
Phase 1	
Negotiation Mode	Main mode.
Encryption Algorithm	Click to select ***3DES*** or ***AES128*** encryption.
Authentication Algorithm	Click to select ***MD5*** or ***SHA1*** authentication.
Key Group	Click to select ***DH1(modp768)***, ***DH2(modp1024)*** or ***DH5(modp1536)*** key group. Default value is DH2
Key Life Time	Fill in the key life time value by seconds.
Phase 2	
Active Protocol	ESP.
Encryption Algorithm	Click to select ***3DES***, ***AES128*** or ***NULL*** encryption.

Authentication Algorithm	Click to select ***MD5*** or ***SHA1*** authentication.
Key Life Time	Fill in the key life time value by seconds.
Encapsulation	Tunnel mode.
Perfect Forward Secrecy (PFS)	Click to select ***ON*** or ***NONE***.
Ok	Click the ***Ok*** button to save current tunnel settings.
Cancel	Click the ***Cancel*** button to close current window without any changes.

1.2.19 Management - Statistics

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

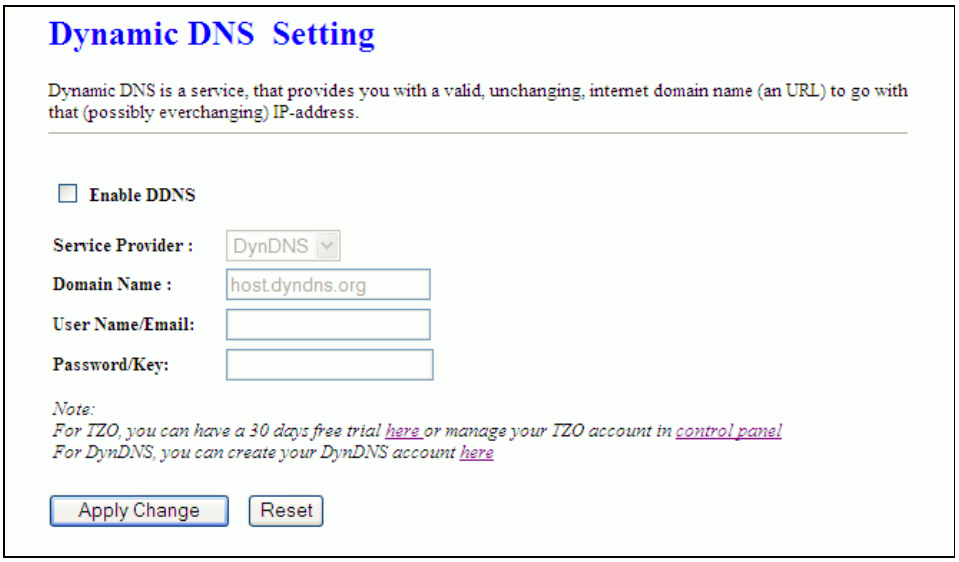


Screen snapshot – Management - Statistics

Item	Description
Wireless LAN ***Sent Packets***	It shows the statistic count of sent packets on the wireless LAN interface.
Wireless LAN ***Received Packets***	It shows the statistic count of received packets on the wireless LAN interface.
Ethernet LAN ***Sent Packets***	It shows the statistic count of sent packets on the Ethernet LAN interface.
Ethernet LAN ***Received Packets***	It shows the statistic count of received packets on the Ethernet LAN interface.
Ethernet WAN ***Sent Packets***	It shows the statistic count of sent packets on the Ethernet WAN interface.
Ethernet WAN ***Received Packets***	It shows the statistic count of received packets on the Ethernet WAN interface.
Refresh	Click the refresh the statistic counters on the screen.

1.2.20 Management - DDNS

This page is used to configure Dynamic DNS service to have DNS with dynamic IP address.

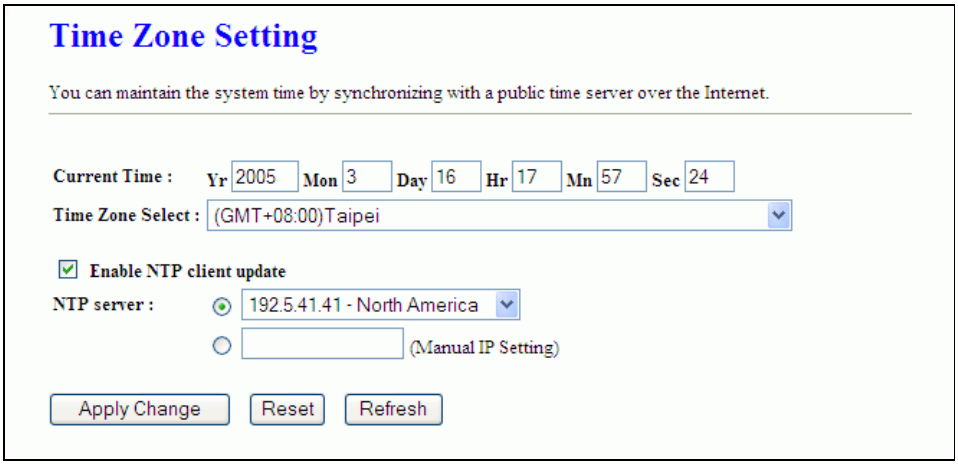


Screen snapshot – Management – DDNS

Item	Description
Enable DDNS	Click the checkbox to enable ***DDNS*** service. Refer to 4.25 What is DDNS?
Service Provider	Click the drop down menu to pickup the right provider.
Domain Name	To configure the Domain Name.
User Name/Email	Configure User Name, Email.
Password/Key	Configure Password, Key.
Apply Change	Click the ***Apply Changes*** button to save the enable DDNS service.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.

1.2.21 Management - Time Zone Setting

This page is used to configure NTP client to get current time.

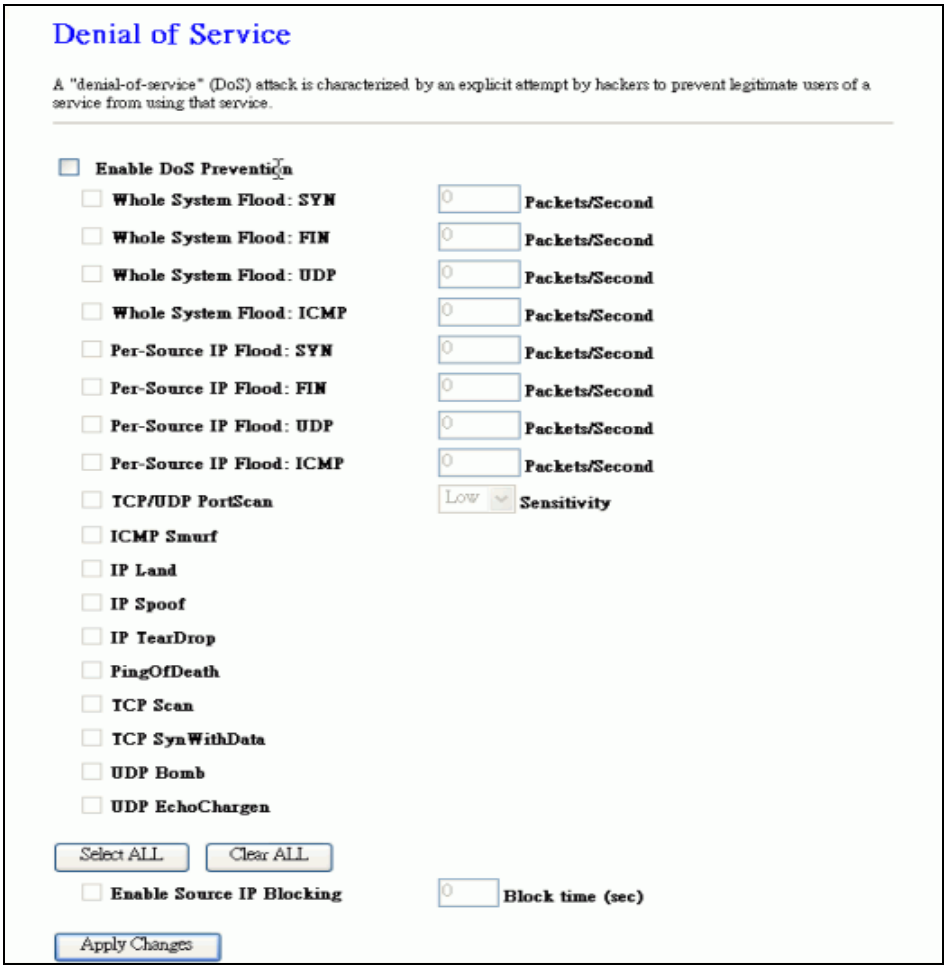


Screen snapshot – Management – Time Zone Settings

Item	Description
Current Time	It shows the current time.
Time Zone Select	Click the time zone in your country.
Enable NTP client update	Click the checkbox to enable NTP client update. Refer to 4.26 What is NTP Client?
NTP Server	Click select default or input NTP server IP address.
Apply Change	Click the ***Apply Changes*** button to save and enable NTP client service.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.
Refresh	Click the refresh the current time shown on the screen.

1.2.22 Management – Denial-of-Service

This page is used to enable and setup protection to prevent attack by hacker's program. It provides more security for users.

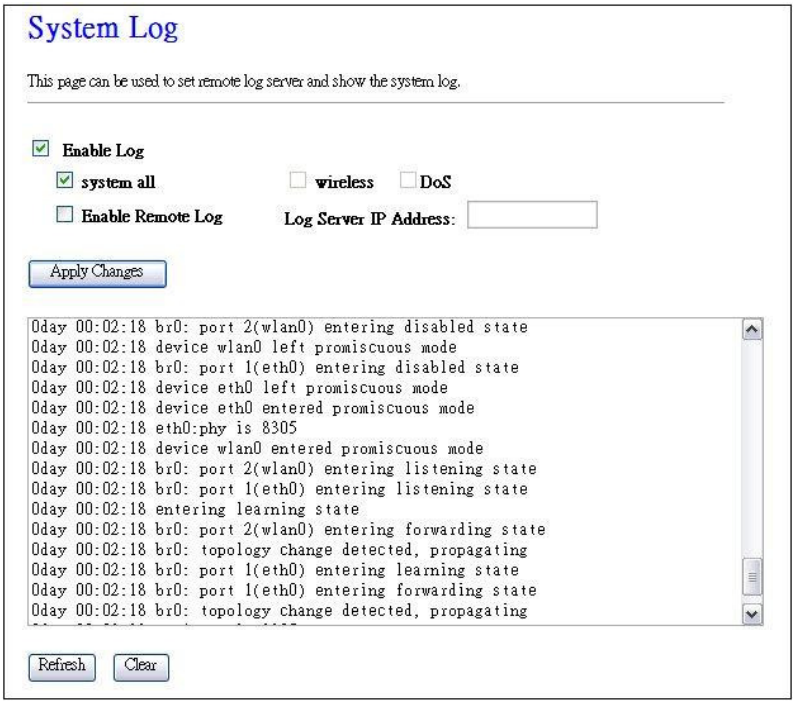


Screen snapshot – Management – Denial-of-Service

Item	Description
Enable DoS Prevention	Click the checkbox to enable DoS prevention.
Whole System Flood / Per-Source IP Flood…	Enable and setup prevention in details.
Select ALL	Click the checkbox to enable all prevention items.
Clear ALL	Click the checkbox to disable all prevention items.
Apply Changes	Click the ***Apply Changes*** button to save above settings.

1.2.23 Management - Log

This page is used to configure the remote log server and shown the current log.

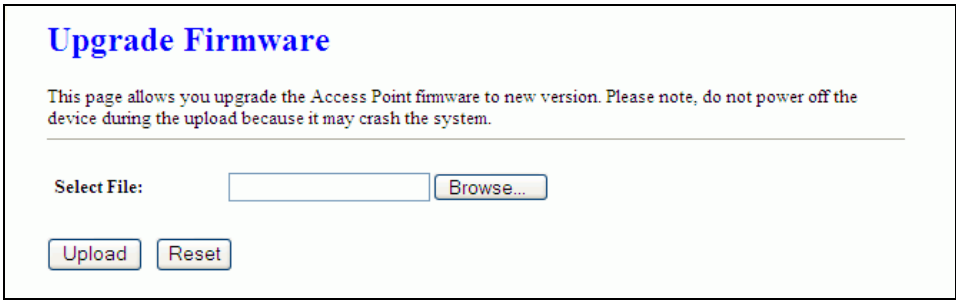


Screen snapshot – Management – Log

Item	Description
Enable Log	Click the checkbox to enable log.
System all	Show all log of wireless broadband router
Wirelessy	Only show wireless log
DoS	Only show Denial-of-Service log
Enable Remote Log	Click the checkbox to enable remote log service.
Log Server IP Address	Input the remote log IP address
Apply Changes	Click the ***Apply Changes*** button to save above settings.
Refresh	Click the refresh the log shown on the screen.
Clear	Clear log display screen

1.2.24 Management - 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.

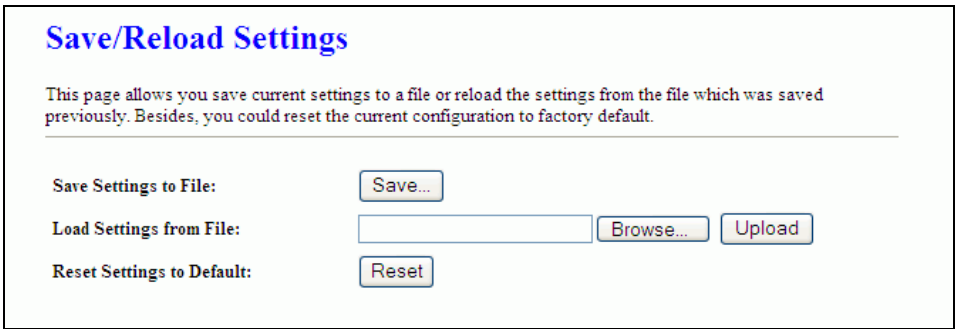


Screen snapshot – Management - Upgrade Firmware

Item	Description
Select File	Click the ***Browse*** button to select the new version of web firmware image file.
Upload	Click the ***Upload*** button to update the selected web firmware image to the WLAN Broadband Router.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.

1.2.25 Management Save/ Reload Settings

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



Screen snapshot – Management - Save/Reload Settings

Item	Description
Save Settings to File	Click the ***Save*** button to download the configuration parameters to your personal computer.
Load Settings from File	Click the ***Browse*** button to select the configuration files then click the ***Upload*** button to update the selected configuration to the WLAN Broadband Router.
Reset Settings to Default	Click the ***Reset*** button to reset the configuration parameter to factory defaults.

1.2.26 Management - 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.

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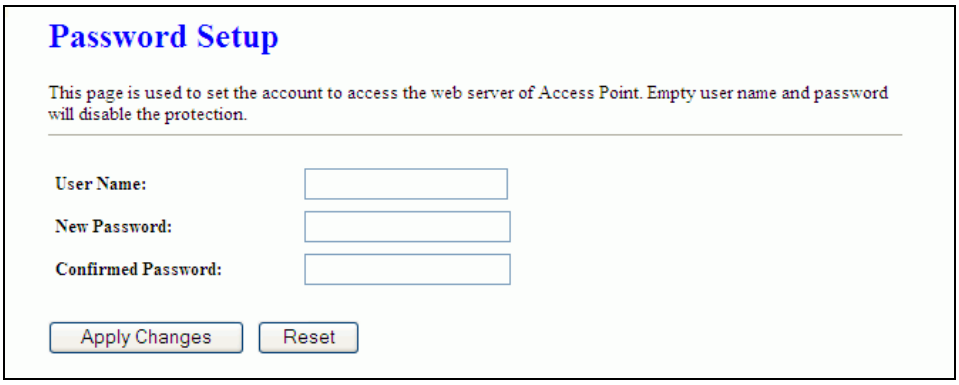
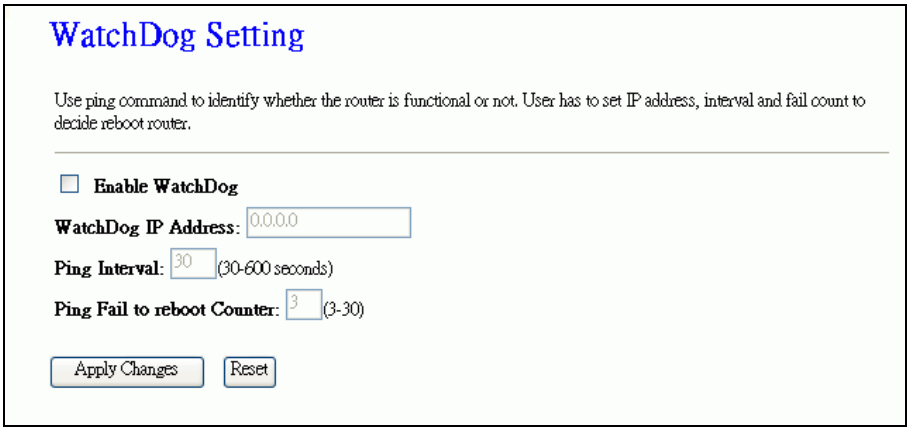


Screen snapshot – Management - Password Setup

Item	Description
User Name	Fill in the user name for web management login control.
New Password	Fill in the password for web management login control.
Confirmed Password	Because the password input is invisible, so please fill in the password again for confirmation purpose.
Apply Changes	Clear the ***User Name*** and ***Password*** fields to empty, means to apply no web management login control. Click the ***Apply Changes*** button to complete the new configuration setting.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.

1.2.27 Management - WatchDog

This page is used to do watchdog function using ping command. User set IP address, interval and ping fail count conditions to decide whether router reboots or not.

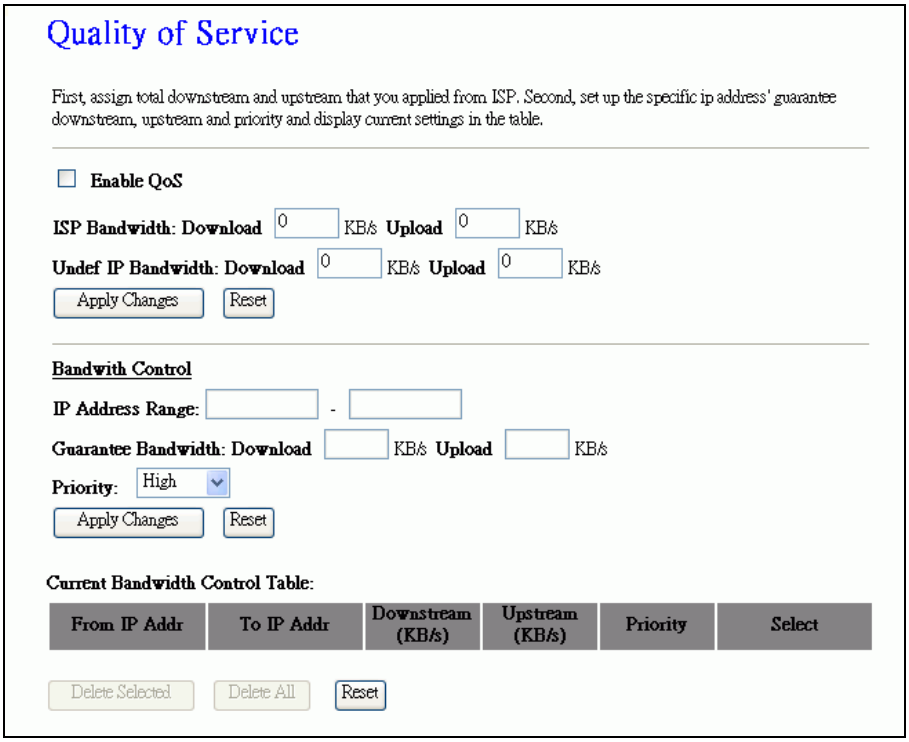


Screen snapshot – Management – WatchDog Settiing

Item	Description
Enable WatchDog	Click to enable watchdog.
WatchDog IP Address	IP address that is referred.
Ping Interval	Fill in the value by seconds.
Ping Fail to reboot Count	Fill in the value that is the threshold to reboot router when ping fails.
Apply Changes	Click the ***Apply Changes*** button to complete the new configuration setting.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.

1.2.28 Management - Quality of Service

This page is used to do bandwidth control by ip address. User sets total and undefined bandwidth first. Then set bandwidth by range of ip addresses.



Screen snapshot – Management – Qaulity of Service

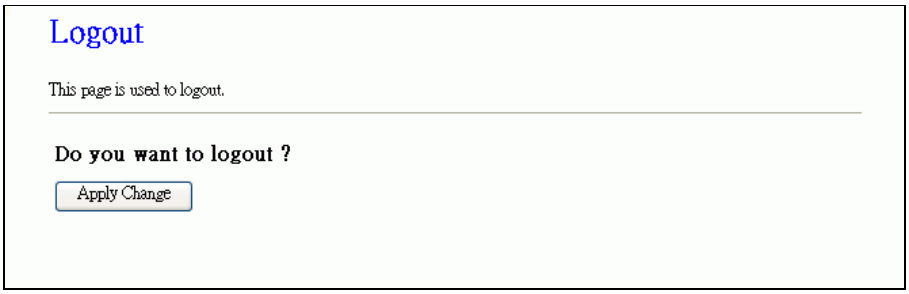
Item	Description
Enable QoS	Click to enable QoS.
ISP Bandwidth	
Download	Fill in the value that is the download stream from ISP by KB/s.
Upload	Fill in the value that is the upload stream from ISP by KB/s.
Undef IP Bandwidth	
Download	Define the download bandwidth that is not defined.
Upload	Define the upload bandwidth that is not defined.
Apply Changes	Click the ***Apply Changes*** button to complete the new configuration setting.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.

Item	Description
Bandwidth Control	
IP Address Range	Set start and end ip address.
Guarantee Bandwidth	
Download	Fill in the value by KB/s.
Upload	Fill in the value by KB/s.

Piority	Click to pick **High**, **Medium** or **Low**
Apply Changes	Click the ***Apply Changes*** button to complete the new configuration setting. It is added into **Current Bandwidth Control Table**.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.
Delete Selected	Click to delete the selected ip addresses that will be removed from the **Current Bandwidth Control Table**.
Delete All	Click to delete all the registered entries from the ip addresses **Current Bandwidth Control Table**.
Reset	Click the ***Reset*** button to abort change and recover the previous configuration setting.

1.2.29 Logout

This page is used to logout web management page. This item will be activated next time you login after you define user account and password.



Screen snapshot – Logout

Screen snapshot – Logout - OK

Item	Description
Apply Change	Click the ***Apply Change*** button, Then click ***OK*** button to logout.