IFS WMC251-1W-2T-150 User Manual

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Manufacturer Interlogix
3211 Progress Drive, Lincolnton, NC 28092 USA

Authorized EU manufacturing representative:
UTC Climate Controls & Security B.V.,
Kelvinstraat 7, 6003 DH Weert, Netherlands

Intended use Use this product only for the purpose it was designed for; refer to the data sheet and user documentation for details. For the latest product information, contact your local supplier or visit us online at www.interlogix.com.

Certification

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

European Union directives **2004/108/EC (EMC Directive):** Hereby, UTC Building & Industrial Systems, Inc. declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 2004/108/EC.

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense. Any changes or modifications not expressly approved by UTC could void the user's authority to operate this equipment under the rules and regulations of the FCC.

FCC Caution:

To assure continued compliance, (for example, use only shielded interface cables when connecting to computer or peripheral devices) any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

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

Federal Communication Commission (FCC) Radiation Exposure Statement

This equipment complies with FCC radiation exposure set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20 cm (8 inches) during normal operation.

CAUTION: Changes or modifications not expressly approved by UTC for compliance could void the user's authority to operate the equipment.

CE Mark Warning

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

Energy Saving Note of the Device

This power required device does not support Standby mode operation. For energy saving, please remove the DC-plug to disconnect the device from the power circuit. Without removing the DC-plug, the device still consumes power from the power circuit. In view of Saving the Energy, it is strongly suggested to remove the DC-plug for the device if this device is not intended to be active.

Canadian Compliance

This Class B digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations. Cet appareil numérique de la classe B respects toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Canada - Industry Canada (IC)

The wireless radio of this device complies with RSS 247 and RSS 102 of Industry Canada.
This Class B digital device complies with Canadian ICES-003 (NMB-003).
Cet appareil numérique de la classe B respects toutes les exigences du Règlement sur le matériel brouilleur du Canada.

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:
(1) This device may not cause interference; and
(2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :
(1) l'appareil ne doit pas produire de brouillage, et
(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

WMC251-1W-2T-150 complies with IC requirements, IC: 20201-WMC251150.

This radio transmitter (IC: 20201-WMC251150) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

- Internal (Default): 12dBi directional antenna (Vertical-Polarity)
- External (Option): RP-SMA (Female) type Connector

Le présent émetteur radio (IC: 20201-WMC251150) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

- intégré 12dBi antenne double polarisation
- External (Optional): RP-SMA (Female) type Connector

Digital Transmission Systems (DTSs)

DTSs include systems that employ digital modulation techniques resulting in spectral characteristics similar to direct sequence systems. The following applies to the bands 902-928 MHz and 2400-2483.5 MHz.

(1) The minimum 6 dB bandwidth shall be 500 kHz.

(2) The transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of Section 5.4(4), (i.e. the power spectral density shall be determined using the same method as is used to determine the conducted output power).

For DTSs employing digital modulation techniques operating in the bands 902-928 MHz and 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1W. Except as provided in Section 5.4(5), the e.i.r.p. shall not exceed 4 W.

As an alternative to a peak power measurement, compliance can be based on a measurement of the maximum conducted output power. The maximum conducted output power is the total transmit power delivered to all antennas and antenna elements, averaged across all symbols in the signalling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or transmitting at a reduced power level. If multiple modes of operation are implemented, the maximum conducted output power is the highest total transmit power occurring in any mode.

(5) Fixed point-to-point systems in the bands 2400-2483.5 MHz and 5725-5850 MHz are permitted to have an e.i.r.p. higher than 4 W provided that the higher e.i.r.p. is achieved by employing higher gain directional antennas and not higher transmitter output powers. Point-to-multipoint systems,2

omnidirectional applications and multiple co-located transmitters transmitting the same information are prohibited from exceeding an e.i.r.p. of 4 W.

(6) Transmitters may operate in the band 2400-2483.5 MHz, employing antenna systems that emit multiple directional beams simultaneously or sequentially, for the purpose of directing signals to individual receivers or to groups of receivers, provided that the emissions comply with the following:

(i) Different information must be transmitted to each receiver.

(ii) If the transmitter employs an antenna system that emits multiple directional beams, but does not emit multiple directional beams simultaneously, the total output power conducted to the array or arrays that comprise the device (i.e. the sum of the power supplied to all antennas, antenna elements, staves, etc., and summed across all carriers or frequency channels) shall not exceed the applicable output power limit specified in sections 5.4(2) and 5.4(4). However, the total conducted output power shall be reduced by 1 dB below the specified limits for each 3 dB that the directional gain of the antenna/antenna array exceeds 6 dBi. The directional antenna gain shall be computed as the sum of 10 log (number of array elements or staves) plus the directional gain of the element or stave having the highest gain.

(iii) If a transmitter employs an antenna that operates simultaneously on multiple directional beams using the same or different frequency channels, the power supplied to each emission beam is subject to the applicable power limit specified in sections 5.4(2) and 5.4(4). If transmitted beams overlap, the power shall be reduced to ensure that their aggregate power does not exceed the applicable limit specified in sections 5.4(2) and 5.4(4). In addition, the aggregate power transmitted simultaneously on all beams shall not exceed the applicable limit specified in sections 5.4(2) and 5.4(4) by more than 8 dB.

(iv) Transmitters that transmit a single directional beam shall operate under the provisions of sections 5.4(2), 5.4(4) and 5.4(5).

5.5 Unwanted Emissions

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section 5.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

The measurement procedure defined in Annex A of RSS-247 shall be used to verify the compliance to the e.i.r.p. at different elevations.

without obligation on the part of UTC to provide notification of such revision or change. UTC provides this guide without warranty of any kind, implied or expressed, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. UTC may make improvements or changes in the product(s) described in this manual at any time.

CAUTION: TO ENSURE REGULATORY COMPLIANCE, USE ONLY THE PROVIDED POWER AND INTERFACE CABLES.

CAUTION: DO NOT OPEN THE UNIT. DO NOT PERFORM ANY SERVICING OTHER THAN THAT CONTAINED IN THE INSTALLATION AND TROUBLESHOOTING INSTRUCTIONS. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL.

R&TTE Compliance Statement

This equipment complies with all the requirements of DIRECTIVE 1999/5/CE OF THE EUROPEAN PARLIAMENT AND THE COUNCIL OF 9 March 1999 on radio equipment and telecommunication terminal Equipment and the mutual recognition of their conformity (R&TTE). The R&TTE Directive repeals and replaces in the directive 98/13/EEC (Telecommunications Terminal Equipment and Satellite Earth Station Equipment) as of April 8, 2000.

Safety

This equipment is designed with the utmost care for the safety of those who install and use it. However, special attention must be paid to the dangers of electric shock and static electricity when working with electrical equipment. All guidelines of this and of the computer manufacture must therefore be allowed at all times to ensure the safe use of the equipment.

Wireless LAN and your Health

The WMC251-1W-2T-150 like other radio devices, emits radio frequency electromagnetic energy, but operates within the guidelines found in radio frequency safety standards and recommendations.

Restrictions on Use of Wireless Devices

In some situations or environments, the use of wireless devices may be restricted by the proprietor of the building or responsible representatives of the organization. For example, these situations may include:

Using wireless equipment in any environment where the risk of interference to other devices or services is perceived or identified as harmful.

If you are uncertain of the applicable policy for the use of wireless equipment in a specific organization or environment, you are encouraged to ask for authorization to use the device prior to turning on the equipment.

The manufacturer is not responsible for any radio or television interference caused by unauthorized modification of the devices included with this product, or the substitution or attachment of connecting

cables and equipment other than specified by the manufacturer. Correction of interference caused by such unauthorized modification, substitution, or attachment is the responsibility of the user.

The manufacturer and its authorized resellers or distributors are not liable for any damage or violation of government regulations that may arise from failing to comply with these guideline documentation that comes with the product.

Postpone router installation until there is no risk of thunderstorm or lightning activity in the area.

Do not overload outlets or extension cords, as this can result in a risk of fire or electric shock. Overloaded AC outlets, extension cords, frayed power cords, damaged or cracked wire insulation, and broken plugs are dangerous. They may result in a shock or fire hazard.

Route power supply cords so that they are not likely to be walked on or pinched by items placed upon or against them. Pay particular attention to cords where they are attached to plugs and convenience receptacles, and examine the point where they exit from the product.

Place this equipment in a location that is close enough to an electrical outlet to accommodate the length of the power cord.

Place this equipment on a stable surface.
When using this device, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons, including the following:
. Read all of the instructions {listed here and/or in the user manual} before you operate this equipment. Give particular attention to all safety precautions.
Retain the instructions for future reference.
. Comply with all warning and caution statements in the instructions. Observe all warning and caution symbols that are affixed to this equipment.
. Comply with all instructions that accompany this equipment.
. Avoid using this product during an electrical storm. There may be a risk of electric shock from lightning. For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet, and disconnect the cable system. This will prevent damage to the product due to lightning and power surges. We also recommend the use of ESP300 20Kv protection on the input at the switch or network.
. Operate this product only from the type of power source indicated on the product's marking label. If you are not sure of the type of power supplied to your home, consult your dealer or local power company.
. Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in safe operating condition.
It is recommended that the customer install an AC surge protector in the AC outlet to which this device is connected. This is to avoid damaging the equipment by local lightning strikes and other electrical surges.

Different types of cord sets may be used for connections to the main supply circuit. Use only a main line cord that complies with all applicable product safety requirements of the country of use. Installation

of this product must be in accordance with national wiring codes.

Place unit to allow for easy access when disconnecting the power cord/adapter of the device from the AC wall outlet.

Wipe the unit with a clean, dry cloth. Never use cleaning fluid or similar chemicals. Do not spray cleaners directly on the unit or use forced air to remove dust.

This product was qualified under test conditions that included the use of the supplied cables between system components. To be in compliance with regulations, the user must use these cables and install them properly. Connect the unit to a grounding type AC wall outlet using the power adapter supplied with the unit.

Do not cover the device, or block the airflow to the device with any other objects. Keep the device away from excessive heat and humidity and keep the device free from vibration and dust.

Installation must at all times conform to local regulations

National Restrictions

This device is intended for home and office use in all EU countries (and other countries following the EU directive 1999/5/EC) without any limitation except for the countries mentioned below:

Country	Restriction	Reasons/remarks
Bulgaria	None	General authorization required for outdoor use and public service
France	Outdoor use; limited to 10 mW e.i.r.p. within the band 2454-2483.5 MHz	Military Radiolocation use. Reframing of the 2.4 GHz band has been ongoing in recent years to allow current relaxed regulation. Full implementation planned 2012
Italy	None	If used outside of own premises, general authorization is required
Luxembourg	None	General authorization required for network and service supply(not for spectrum)
Norway	Implemented	This subsection does not apply for the geographical area within a radius of 20 km from the centre of Ny-Ålesund
Russian Federation	None	Only for indoor applications

Note: Please don’t use the product outdoors in France.

WEEE regulation

To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end users of electrical and electronic equipment should understand the meaning of the crossed-out wheeled bin symbol. Do not dispose of WEEE as unsorted municipal waste and have to collect such WEEE separately.

Contact Information For contact information, see www.interlogix.com or www.utcfssecurityproducts.eu.

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Figures

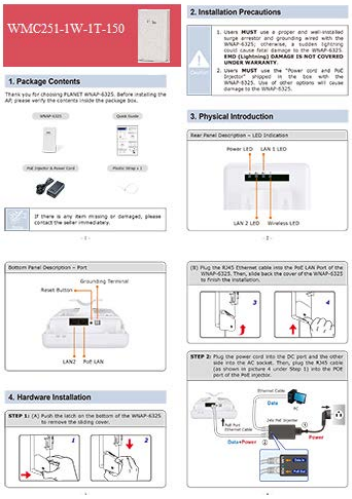
Chapter 1. Product Introduction

1.1 Package Contents

Thank you for choosing IFS WMC251-1W-2T-150. Before installing the AP, please verify the contents inside the package box.

WMC251-1W-2T-150

Quick Guide



Plastic Strap

PoE Injector

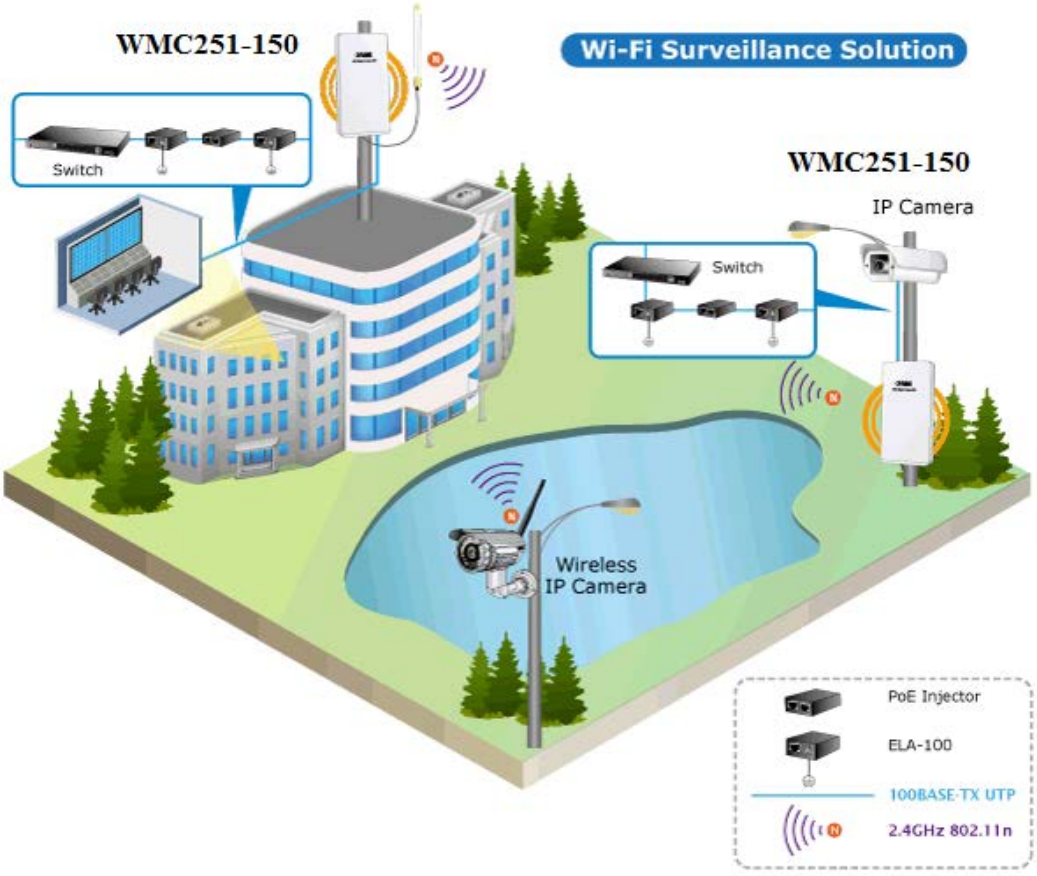
Power Adapter

Note

If there is any item missing or damaged, please contact the seller immediately.

1.2 Product Description

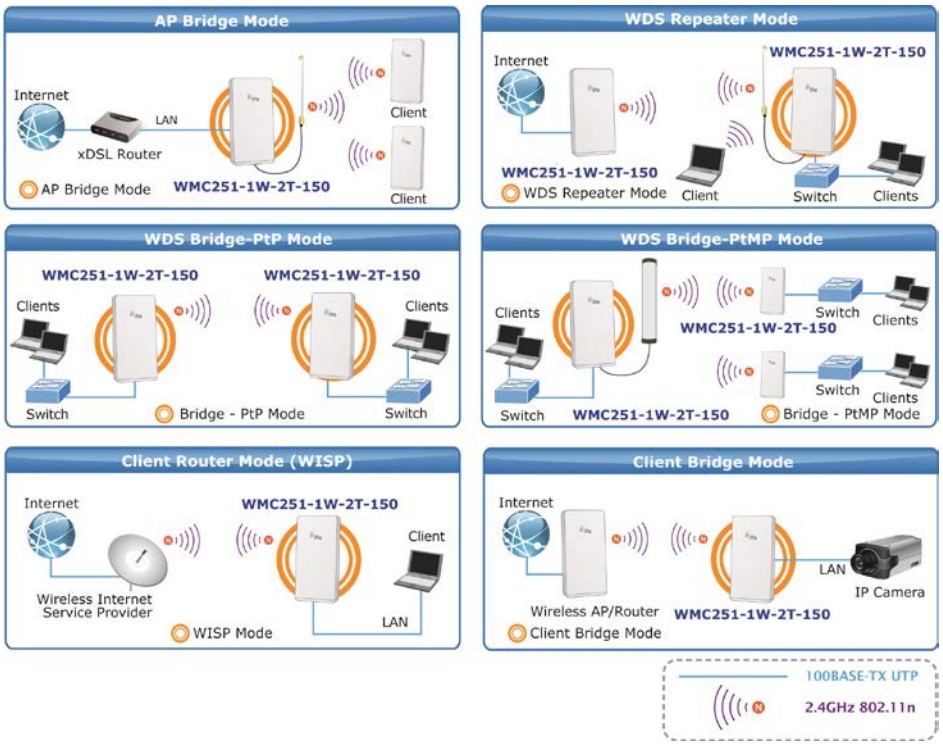
Cost-effective and Flexible Wireless Solution



IFS WMC251-1W-2T-150 is compatible with **IEEE 802.11b/g/n standard** and supports a data rate of up to 150Mbps in 802.11n mode. The WMC251-1W-2T-150 not only has a built-in 12dBi panel antenna but also reserves one **RP-SMA** type antenna connector to allow versatile antenna installations including omnidirectional, yagi, sector, flat-panel and grid antennas. Furthermore, the WMC251-1W-2T-150 can directly communicate with the wireless IP cameras by using the popular 2.4GHz frequency band, thus turning the surveillance services into a wireless environment.

Multiple Operation Modes Designed for Various Applications

The WMC251-150 supports as many as 8 wireless operation modes including **AP Bridge, AP Router, Client Bridge, Client Router (WISP), WDS PtP, WDS PtMP, Repeater** and **Universal Repeater**, thus meeting users' various application requirements.



Advanced Security and Rigorous Authentication

The WMC251-150 supports WEP, WPA / WPA2, WPA-PSK and WPA2-PSK wireless encryptions, the advanced WPA2-AES mechanism, and 802.1 X RADIUS authentications, which can effectively prevent eavesdropping from unauthorized users or stop an unauthenticated wireless access to bandwidth. Users are granted or denied access to the wireless LAN network based on the ACL (Access Control List) that the administrator pre-established. In addition, with the multiple-SSID feature, you can set up different wireless networks. The WMC251-150 can therefore serve as a virtual access point for segmented networks tailored to any industrial need.

Rugged Architecture Provides Reliable Outdoor Connection

The WMC251-150 is equipped with a sturdy and durable housing, meeting the IP55 rating for outdoor usage, which is definitely suitable for harsh environments. Besides, with its UV-resistant feature, the surface of the WMC251-150's lightweight plastic housing does not yield to brittle fracture easily. Thus, it is as reliable as the metal case but more economical. With the proprietary Power over Ethernet (PoE) design, the WMC251-1W-2T-150 can be easily installed in the areas where power outlets are not available. Additionally, the reset button on the PoE injector brings convenience to the administrator who can remotely recover the system's original setting and the self-healing (schedule reboot) capability to keep connection alive all the time.

Easy Deployment and Management

With user-friendly Web UI and step-by-step setup wizard, the WMC251-150 is easy to install, even for users who never experience in setting up a wireless network.

1.3 Product Features

- **Industrial Compliant Wireless LAN and LAN**
  - Compliant with IEEE 802.11n wireless technology capable of having a data rate of up to 150Mbps
  - Backward compatible with 802.11b/g standard
  - Equipped with 10/100Mbps RJ45 ports for LAN and WAN with auto MDI/ MDI-X supported
- **Fixed-network Broadband Router**
  - Supports WAN connection types: Dynamic IP, static IP, PPPoE, PPTP and L2TP
  - Supports multiple sessions like IPSec, L2TP and PPTP VPN pass-through
  - Supports virtual server and DMZ for various networking applications
  - Supports DHCP server, UPnP and IFS DDNS
- **RF Interface Characteristics**
  - Built-in 12dBi-directional antenna
  - High Output Power with multiply-adjustable transmit power control
  - Optional RP-SMA connector for flexible wireless deployment
- **Outdoor Environmental Characteristics**
  - IP55-rated outdoor UV-resistant plastic enclosure
  - Passive PoE design
  - Reset button on PoE injector
  - Operating temperature: -20~70 degrees C
- **Multiple Operations and Wireless Modes**
  - Multiple operation modes: Bridge, Gateway and WISP
  - Multiple wireless modes: AP Bridge, AP Router, Client Bridge, WDS PtP, WDS PtMP, Repeater, Universal Repeater and Client Router (WISP)
  - Supports multiple-SSID to allow users to access different networks through a single AP
  - Supports WMM (Wi-Fi Multimedia) for better performance
- **Secure Network Connection**
  - Supports software Wi-Fi Protected Setup (WPS)
  - Advanced security: 64/128-bit WEP, WPA / WPA2, WPA-PSK / WPA2-PSK (TKIP/AES) and 802.1X authentication
  - Supports NAT firewall features with SPI function to protect against DoS attacks
  - Supports IP / Protocol-based access control and MAC filtering
- **Easy Installation and Management**
  - Web-based UI and Quick Setup Wizard for easy configuration
  - System status monitoring includes DHCP Client and System Log

1.4 Product Specifications

Product	**WMC251-1W-2T-150** **2.4GHz 802.11n Wireless Outdoor CPE AP/ Router**
Hardware	
Standard Support	IEEE 802.11b/g/n IEEE 802.3 IEEE 802.3u IEEE 802.3x
Memory	32 Mbytes DDR SDRAM 4 Mbytes Flash
PoE	Passive PoE
Interface	Wireless IEEE 802.11b/g/n, 1T1R PoE LAN (LAN 1): 1 x 10/100BASE-TX, auto-MDI/MDIX, passive PoE LAN 2/ WAN: 1 x 10/100BASE-TX, auto-MDI/MDIX
Antenna	Internal (Default): 12dBi directional antenna ■ Horizontal: 30 degree ■ Vertical: 20 degree External (Optional): RP-SMA type Connector ■ Switchable by Software ■ For External Antenna Mode, attach antenna before power on
Wireless RF Specifications	
Wireless Technology	IEEE 802.11b/g IEEE 802.11n
Data Rate	IEEE 802.11b: 1, 2, 5.5, 11Mbps IEEE 802.11g: up to 54Mbps IEEE 802.11n (20MHz): up to 72Mbps IEEE 802.11n (40MHz): up to 150Mbps
Media Access Control	CSMA/CA
Modulation	Transmission/Emission type: OFDM Data modulation type: OFDM with BPSK, QPSK, 16-QAM, 64-QAM
Frequency Band	2.412GHz ~ 2.484GHz
Operating Channel	America/ FCC: 2.414~2.462GHz (11 Channels) Europe/ ETSI: 2.412~2.472GHz (13 Channels)
RF Output Power (Max.)	IEEE 802.11b: up to 26 ± 1dBm IEEE 802.11g: up to 21 ± 1dBm IEEE 802.11n: up to 17 ± 1dBm
Receiver Sensitivity (dBm)	IEEE 802.11b: -97dBm IEEE 802.11g: -90dBm IEEE 802.11n: -90dBm
Output Power Control	5-level TX power control
Software Features	
LAN	Built-in DHCP server supporting static IP address distribution

	Supports UPnP
	Supports IGMP Proxy
	Supports 802.1d STP (Spanning Tree)
WAN	■ Static IP ■ DHCP (Dynamic IP) ■ PPPoE ■ PPTP ■ L2TP
VPN Passthrough	■ PPTP ■ L2TP ■ IPSec ■ IPv6
Operation Mode	■ Gateway ■ Bridge ■ WISP
Firewall	NAT firewall with SPI (Stateful Packet Inspection)
	Built-in NAT server supporting virtual server and DMZ
	Built-in firewall with port/ IP address/ MAC/ URL filtering
Wireless Mode	■ AP Bridge ■ AP Router ■ Client Bridge ■ Client Router (WISP) ■ WDS PtP ■ WDS PtMP ■ WDS Repeater ■ Universal Repeater (AP+Client)
Max. SSID	Up to 5
Channel Width	20MHz / 40MHz
Wireless Isolation	Enable to isolate each connected wireless client so that they cannot access mutually
Encryption Type	64/128-bit WEP, WPA, WPA-PSK, WPA2, WPA2-PSK, 802.1X
Wireless Security	Wireless LAN ACL (Access Control List) filtering
	Wireless MAC address filtering
	Supports WPS (Wi-Fi Protected Setup)
	Enable/Disable SSID Broadcast
Max. Wireless Clients	20
Max. WDS APs	8
Max. Wired Clients	253
WMM	Supports Wi-Fi multimedia
QoS	Supports Quality of Service for bandwidth control
NTP	Network Time Management
Self Healing	Supports Schedule Reboot
B/G Protection Mode	Supports protection mechanism to prevent collisions among 802.11b/g modes
IAPP Roaming	Supports IAPP (Inter Access Point Protocol) roaming
Management	Web UI, DHCP Client, Configuration Backup and Restore, Dynamic DNS

Diagnostic Tool	System Log
Mechanical and Power	
IP Level	IP55
Material	Outdoor UV-resistant enclosure
Dimensions (W x D x H)	127 x 63 x 254 mm
Weight	485g
Installation	Pole mounting or wall mounting
Power Requirements	LAN1 ■ 12V DC, 1A/ passive PoE ■ Pin 4 V DC+ ■ Pin 5 reset ■ Pin 7, 8 V DC-
Power Consumption (Max.)	4W
Environment and Certification	
Operating Temperature	-20~70 degrees C
Operating Humidity	10~95% non-condensing
Regulatory	CE, FCC, RoHS
Accessory	
Standard Accessories	■ WMC251-1W-2T-150 x 1 ■ 12V Power Adapter x 1 ■ PoE Injector x 1 ■ Plastic Strap x 1 ■ Quick Installation Guide x 1

Chapter 2. Hardware Installation

Please follow the instructions below to connect WMC251-1W-2T-150 to the existing network devices and your computers.

2.1 Hardware Description

- **Dimensions**: 127 x 63 x 254 mm (W x D x H)

Figure 2-1 Three-way View

Rear Panel – LED

Figure 2-2 LED

LED Definition

LED	Color	State	Meaning
Power	Blue	On	System On
	Blue	Off	System Off
WLAN	Blue	On	Wireless Radio On.
	Blue	Off	Wireless Radio Off.
	Blue	Blinking	Data is transmitting or receiving on the wireless.
LAN1	Blue	On	Port linked.
	Blue	Off	No link.
	Blue	Blinking	Data is transmitting or receiving on the LAN interface.
LAN2 (WAN)	Blue	On	Port linked.
	Blue	Off	No link.
	Blue	Blinking	Data is transmitting or receiving on the WAN interface.

Table 2-1 The LED Indication

2.1.1 The Bottom Panel – Port

The bottom panel provides the physical connectors connected to the power adapter and any other network device. **Figure 2-3** shows the bottom panel of the WMC251-150.

Bottom Panel

Figure 2-3 Port and Connector of WMC251-150

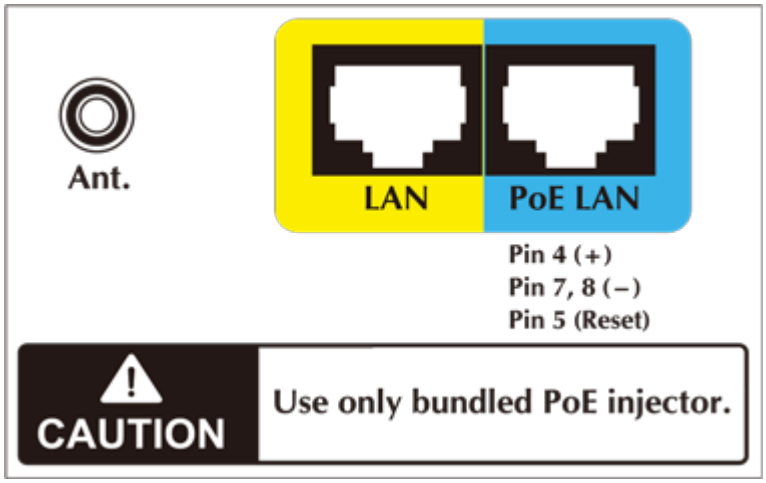


Figure 2-4 Port and Connector Description Label

PoE Injector

Figure 2-5 PoE Injector of WMC251-150

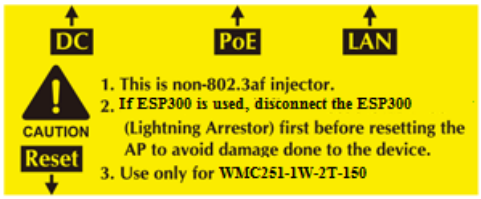


Figure 2-6 Label of PoE Injector

H/W Interface Definition

Interface	Function
RP-SMA Connector	You can use the RP-SMA connector to connect with the 2.4GHz outdoor antenna. ※ For External Antenna Mode, you MUST physically attach antenna before powering on. Then, configure the Antenna Switch (Wireless Advanced page) from "**Internal**" to "**External**" via Web UI.

LAN (Passive PoE)	10/100Mbps RJ45 port, auto MDI/ MDI-X & passive PoE supported. Connect LAN port to the PoE injector to power on the device. **PIN assignment:** ■ Pin 4 VDC+ ■ Pin 5 Reset ■ Pin 7, 8 VDC-
WAN	10/100Mbps RJ45 port, auto MDI/ MDI-X. Connect this port to the xDSL modem in gateway mode. Connect this port to the network equipment in bridge mode.
Reset	Push continually the reset button on the PoE injector about 10 seconds to reset the configuration parameters to factory defaults. **※ If you have connected with a lightning protector like IFS ESP300, please DO NOT press the reset button on the PoE injector to prevent the ESP300 from being damaged. Remove the thunder protector before pushing the reset button.**

Table 2-2 The PoE Injector Indication

Chapter 3. Connecting to the AP

3.1 Preparation before Installation

3.1.1 Professional Installation Required

Please seek assistance from a professional installer who is well trained in the RF installation and knowledgeable in the local regulations.

3.1.2 Safety Precautions

1. To keep you safe and install the hardware properly, please read and follow these safety precautions.
2. If you are installing the WMC251-150 for the first time, for your safety as well as others', please seek assistance from a professional installer who has received safety training on the hazards involved.
3. Keep safety as well as performance in mind when selecting your installation site, especially where there are electric power and phone lines.
4. When installing the WMC251-150, please note the following things:
   - Do not use a metal ladder;
   - Do not work on a wet or windy day;
   - Wear shoes with rubber soles and heels, rubber gloves, long sleeved shirt or jacket.
5. When the system is operational, avoid standing directly in front of it. Strong RF fields are present when the transmitter is on.

3.2 Installation Precautions

- Users **MUST** use a proper and well-installed surge arrestor and grounding kit with WMC251-150; otherwise, a random lightning could easily cause fatal damage to the WMC251-150. **(Lightning DAMAGE IS NOT COVERED UNDER WARRANTY).**
- Users MUST use the "**PoE Injector**" and "**Power Adapter**" shipped in the box with the WMC251-150. Otherwise, the product might be damaged.

OUTDOOR INSTALLATION WARNING

IMPORTANT SAFETY PRECAUTIONS:

LIVES MAY BE AT RISK! Carefully observe these instructions and any special instructions that are included with the equipment you are installing.

CONTACTING POWER LINES CAN BE LETHAL. Make sure no power lines are anywhere where possible contact can be made. Antennas, masts, towers, guy wires or cables may lean or fall and contact these lines. People may be injured or killed if they are touching or holding any part of equipment when it contacts electric lines. Make sure that equipment or personnel do not come in contact directly or indirectly with power lines.

The horizontal distance from a tower, mast or antenna to the nearest power line should be at least twice the total length of the mast/antenna combination. This will ensure that the mast will not contact power if it falls either during installation or later.

TO AVOID FALLING, USE SAFE PROCEDURES WHEN WORKING AT HEIGHTS ABOVE GROUND.

- Select equipment locations that will allow safe, simple equipment installation.
- Don't work alone. A friend or co-worker can save your life if an accident happens.
- Use approved non-conducting lasers and other safety equipment. Make sure all equipment is in good repair.
- If a tower or mast begins falling, don't attempt to catch it. Stand back and let it fall.
- If anything such as a wire or mast does come in contact with a power line, **DON'T TOUCH IT OR ATTEMPT TO MOVE IT**. Instead, save your life by calling the power company.
- Don't attempt to erect antennas or towers on windy days.

MAKE SURE ALL TOWERS AND MASTS ARE SECURELY GROUNDED, AND ELECTRICAL CABLES CONNECTED TO ANTENNAS HAVE LIGHTNING ARRESTORS. This will help prevent fire damage or human injury in case of lightning, static build-up, or short circuit within equipment connected to the antenna.

- The base of the antenna mast or tower must be connected directly to the building protective ground or to one or more approved grounding rods, using 1OAWG ground wire and corrosion-resistant connectors.
- Refer to the National Electrical Code for grounding details.

IF A PERSON COMES IN CONTACT WITH ELECTRICAL POWER, AND CANNOT MOVE:

- **DON'T TOUCH THAT PERSON, OR YOU MAY BE ELECTROCUTED.**
- Use a non-conductive dry board, stick or rope to push or drag them so they no longer are in contact with electrical power.

Once they are no longer contacting electrical power, administer CPR if you are certified, and make sure that emergency medical aid has been requested.

3.3 Installing the AP

Please install the AP according to the following Steps. Don't forget to pull out the power plug and keep your hands dry.

Step 1. Push the latch on the bottom of the WMC251-150 to remove the sliding cover.

Figure 3-1 Connect the Antenna

Step 2. Plug the RJ45 Ethernet cable into the PoE LAN Port of the WMC251-150. Then, slide back the cover of the WMC251-150 to finish the installation.

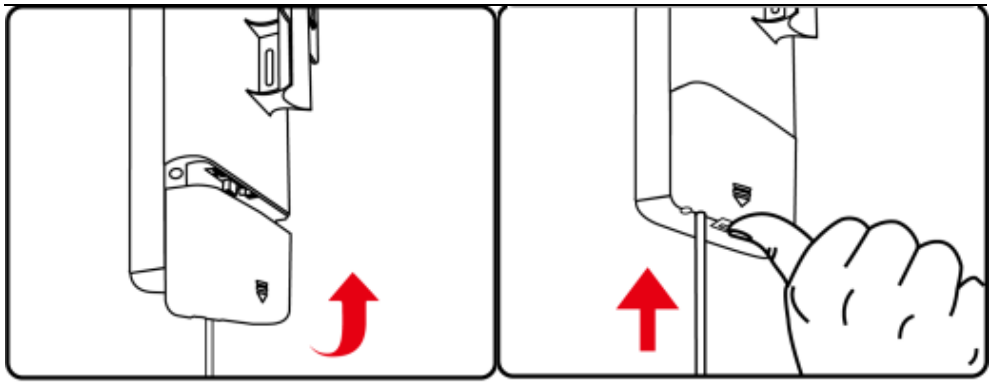


Figure 3-2 Connect the Ethernet cable

Step 3. Plug the power cord into the DC port and plug the other end of the RJ45 cable into the POE port of the PoE injector (See Step 2).

Figure 3-3 Connect the PoE injector

Step 4. Successful installation.

Figure 3-4 Connect the PoE injector

Step 5. Pole Mounting:

Place the strap through the slot on the back of the WMC251-1W-2T-150 and then around the pole. Tighten the strap to secure the WMC251-1W-2T-150.

Figure 3-5 Pole Mounting

Chapter 4. Quick Installation Guide

This chapter will show you how to configure the basic functions of your AP within minutes.

A computer with wired Ethernet connection to the Wireless AP is required for the first-time configuration.

4.1 Manual Network Setup - TCP/IP Configuration

The default IP address of the WMC251-150 is **192.168.0.100**. And the default Subnet Mask is 255.255.255.0. These values can be changed as you want. In this guide, we use all the default values for description.

Connect the WMC251-150 with your PC by an Ethernet cable plugging in LAN port on one side and in LAN port of PC on the other side. Please power on the WMC251-150 by PoE injector through the PoE port.

In the following sections, we'll introduce how to install and configure the TCP/IP correctly in **Windows 7**. And the procedures in other operating systems are similar. First, make sure your Ethernet Adapter is working, and refer to the Ethernet adapter manual if needed.

4.1.1 Configuring the IP Address Manually

Summary:

- Set up the TCP/IP Protocol for your PC.
- Configure the network parameters. The IP address is 192.168.1.xxx (if the default IP address of the WMC251-150 is 192.168.0.100, and the DSL router is 192.168.0.254, the "xxx" can be configured to any number from 1 to 252), Subnet Mask is 255.255.255.0.

1 Select **Use the following IP address** radio button, and then configure the IP address of the PC.

2 For example, as the default IP address of the WMC251-150 is 192.168.0.100 and the DSL router is 192.168.0.254, you may choose from 192.168.0.1 to 192.168.0.252.

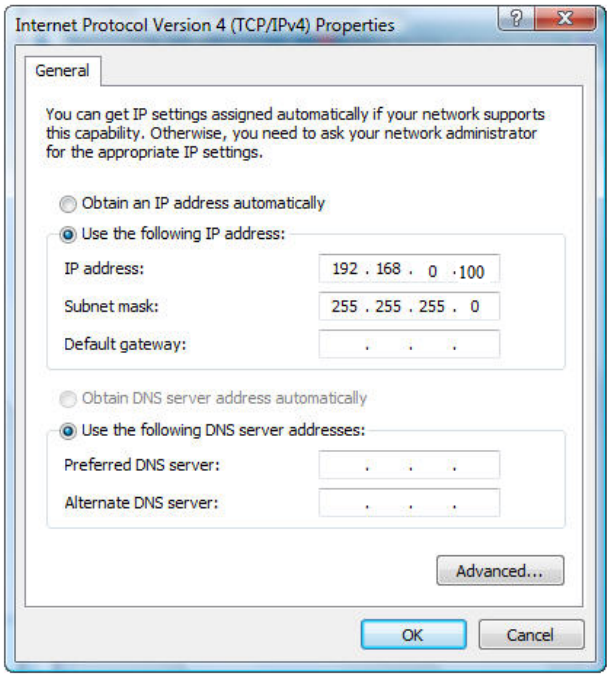


Figure 4-1 TCP/IP Setting

Now click **OK** to save your settings.

Now, you can run the Ping command in the **command prompt** to verify the network connection between your PC and the AP. The following example is in **Windows 7** OS. Please follow the steps below:

1. Click on **Start > Run**.

2. Type "**cmd**" in the Search box.

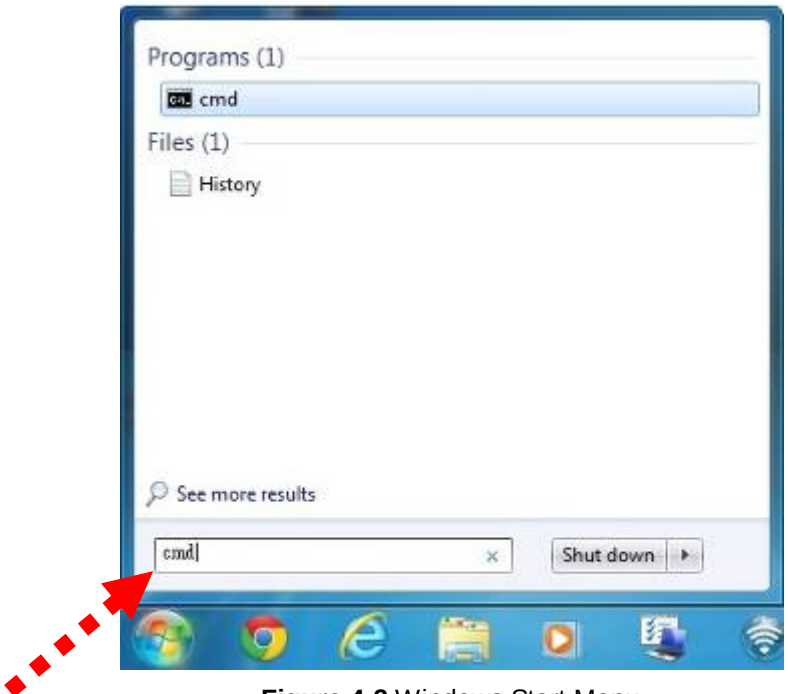


Figure 4-2 Windows Start Menu

3. Open a command prompt, type ping **192.168.0.100** and then press **Enter**.

- If the result displayed is similar to **Figure 4-3**, it means the connection between your PC and the AP has been established well.

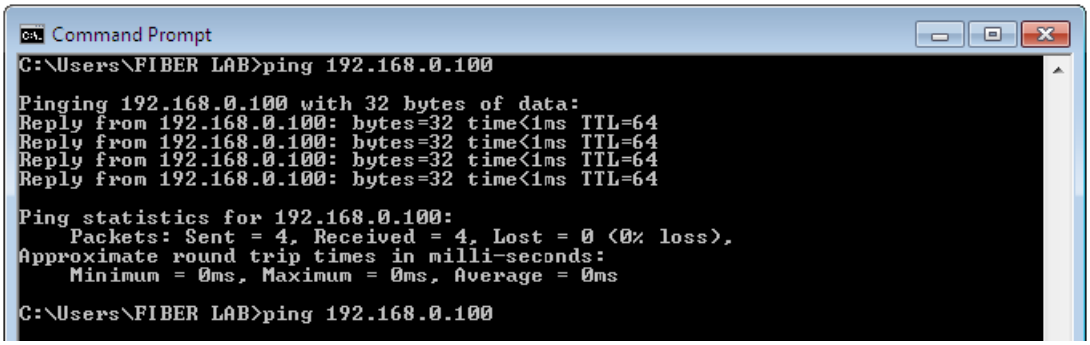


Figure 4-3 Successful result of Ping command

- If the result displayed is similar to **Figure 4-4**, it means the connection between your PC and the AP has failed.

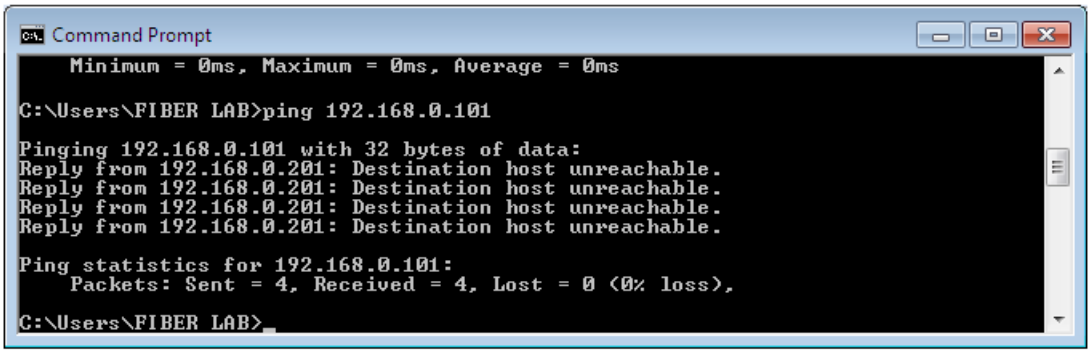


Figure 4-4 Failed Result of Ping Command

If the address is 0.0.0.0, check your adapter installation, security settings, and the settings on your AP. Some firewall software programs may block a DHCP request on newly installed adapters.

4.2 Starting Setup in the Web UI

It is easy to configure and manage the AP with the web browser.

Step 1. To access the configuration utility, open a web-browser and enter the default IP address http://192.168.0.100 in the web address field of the browser.

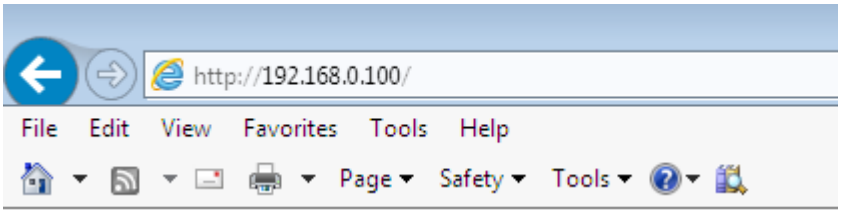


Figure 4-5 Login by default IP address

After a moment, a login window will appear. Enter **admin** for the User Name and Password, both in lower case letters. Then click the **OK** button or press the **Enter** key.

Figure 4-6 Login Window

Default IP Address: **192.168.0.100**

Default User name: **admin**

Default Password: **admin**

Note

If the above screen does not pop up, it may mean that your web-browser has been set to a proxy. Go to **Tools menu>Internet Options>Connections>LAN Settings** on the screen that appears, cancel the Using Proxy checkbox, and click OK to finish it.

Chapter 5. Configuring the AP

This chapter delivers a detailed presentation of AP's functionalities and features under the main menu below, allowing you to manage the AP with ease.

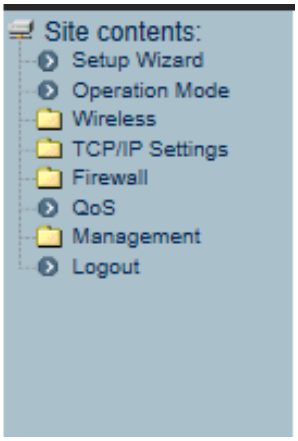


Figure 5-1 Main Menu

5.1 Setup Wizard

The Setup Wizard will guide the user to configure the WMC251-1W-2T-150 easily and quickly. Select the Setup Wizard on the left side of the screen and by clicking on Next on the Setup Wizard screen shown below, you will then name your WMC251-1W-2T-150 and set up its security.

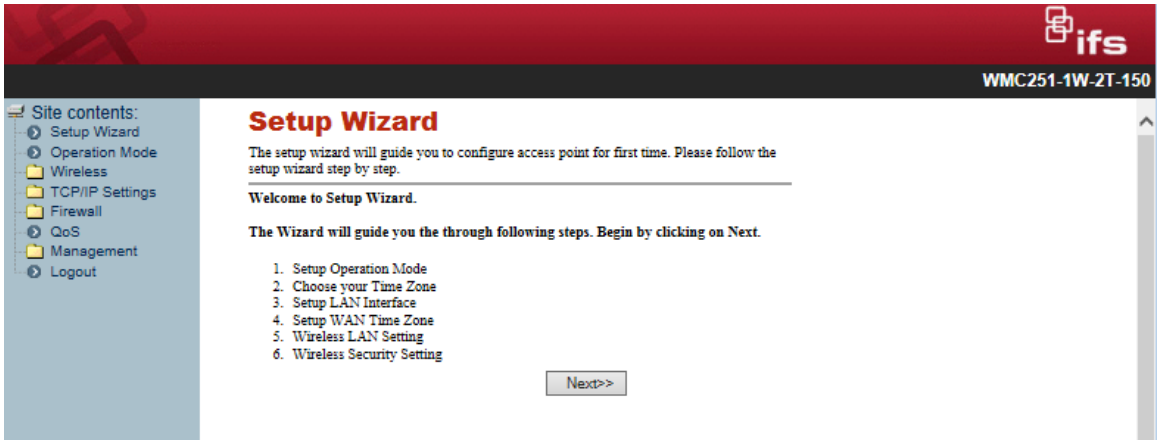
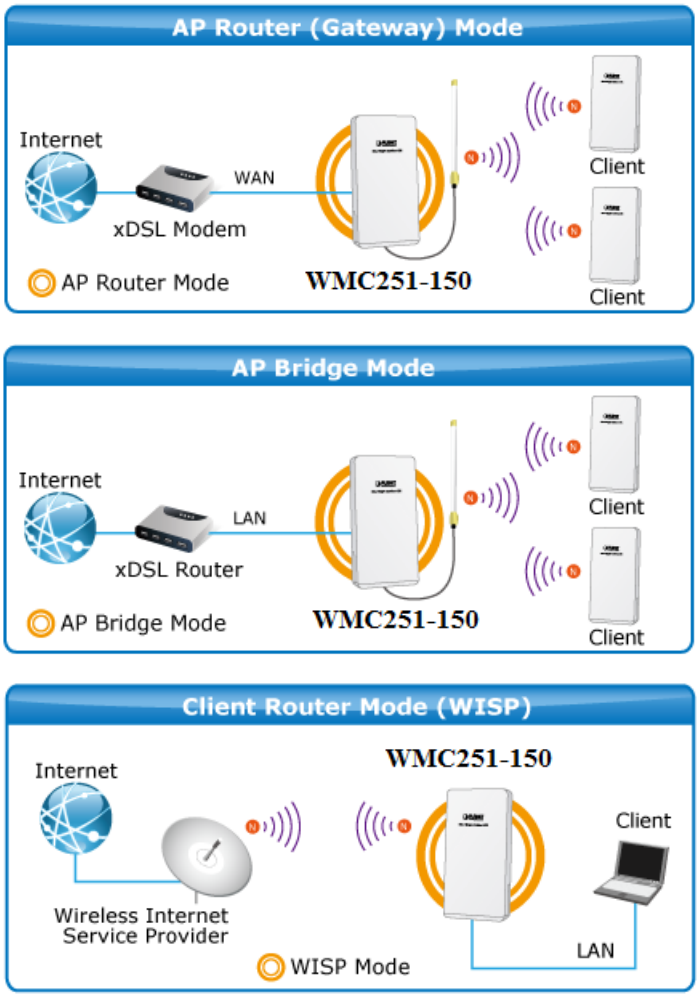


Figure 5-2 Setup Wizard

Step 1: Setup Operation Mode

The AP supports three operation modes**, Gateway**, **Bridge** and **Wireless ISP**.



Each mode is suitable for different uses. Please choose the correct mode.

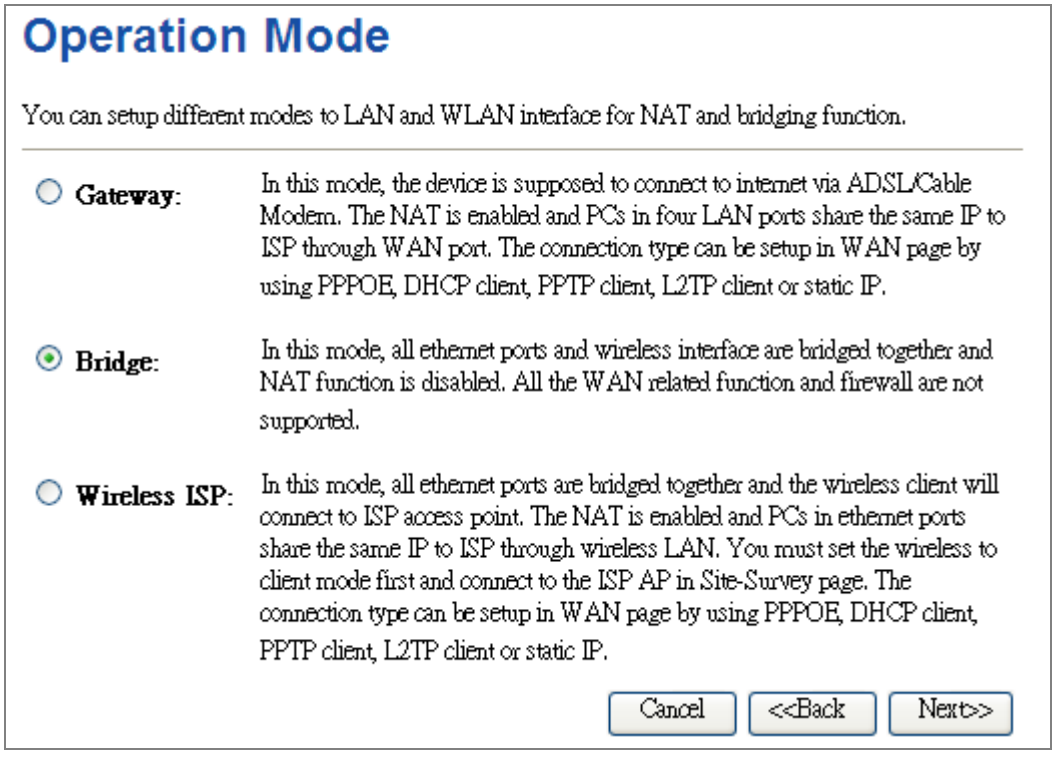


Figure 5-3 Wizard –Setup Operation Mode

Step 2: Time Zone Setting

The Time Configuration option allows you to configure, update, and maintain the correct time on the internal system clock. Daylight Saving can also be configured to automatically adjust the time when needed.

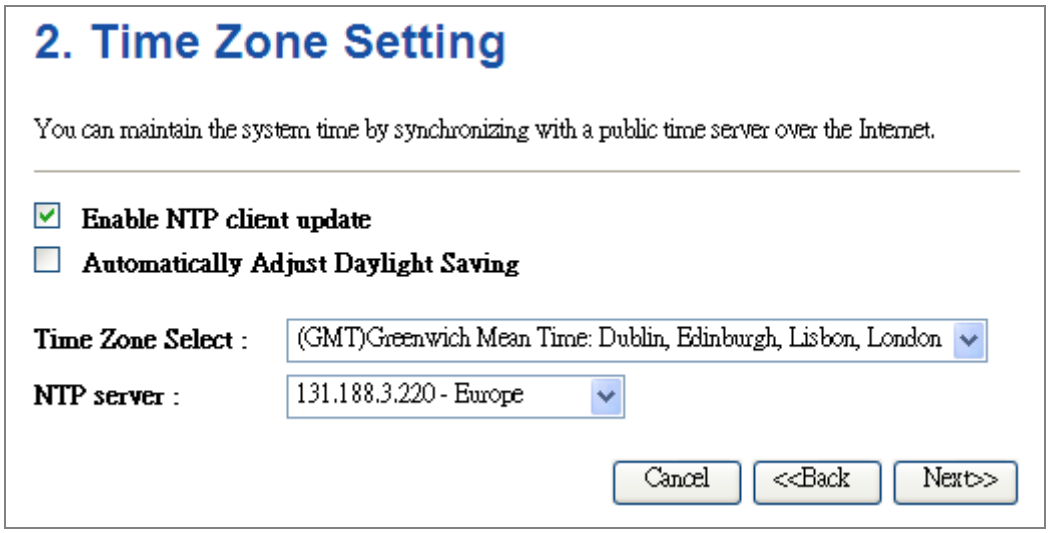


Figure 5-4 Wizard – Time Zone Setup

Step 3: Setup LAN Interface

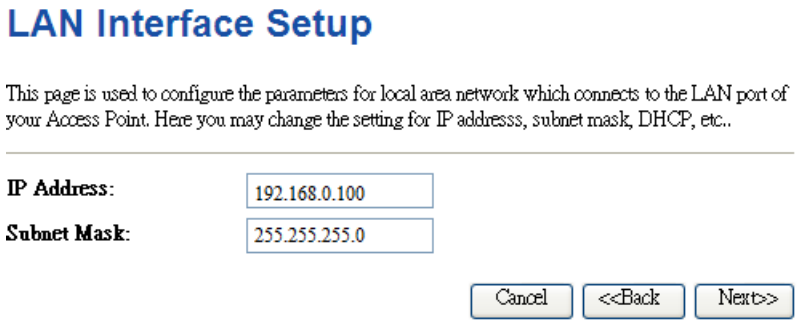


Figure 5-5 Wizard – Setup LAN Interface

Step 4: Setup WAN Interface

The Wireless AP supports five access modes in the WAN side. Please choose the correct mode according to your ISP Service.

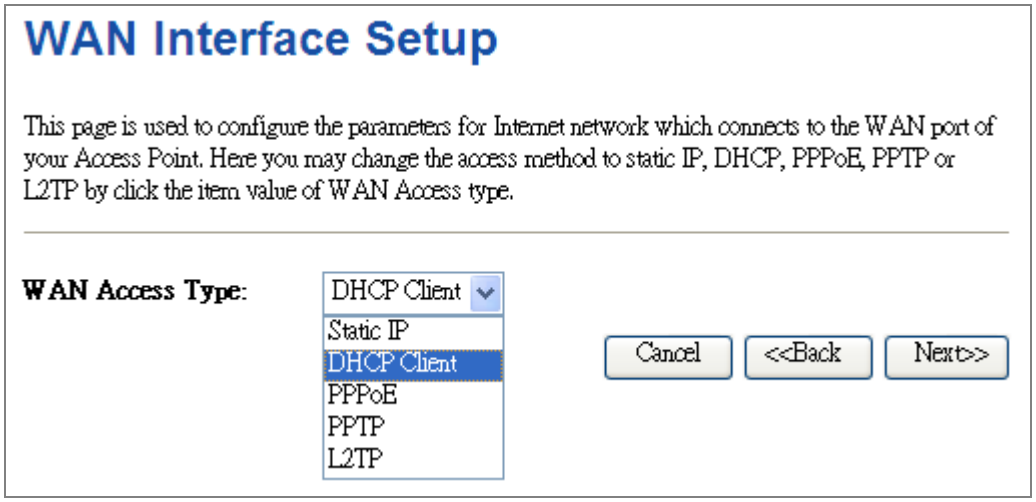


Figure 5-6 Wizard – WAN Interface Setup

Step 5: Wireless LAN Setting

Configure the wireless parameters according to your application. For this section you can set **AP**, **Client**, **WDS** and **AP+WDS (Repeater)** mode.

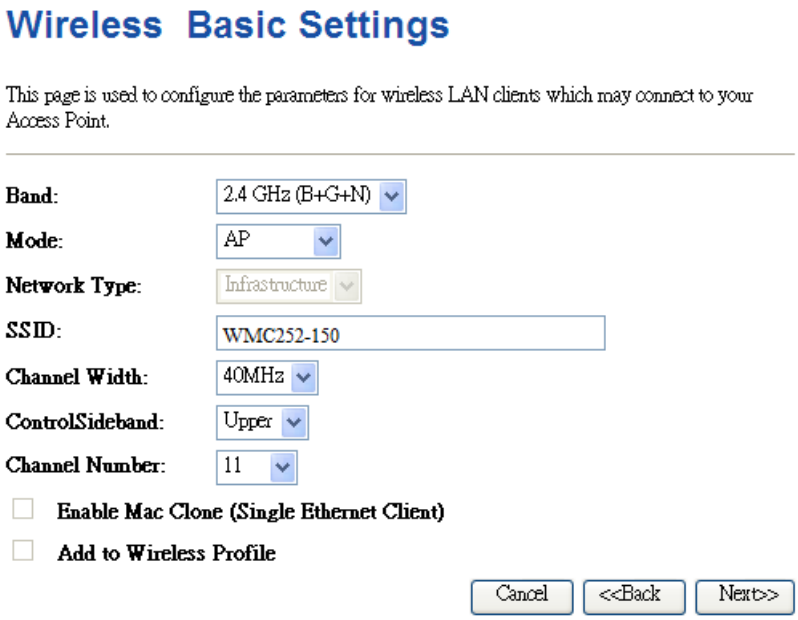


Figure 5-7 Wizard - Wireless LAN Setting

Step 6: Wireless Security Setting

Secure your wireless network by turning on the WPA or WEP security feature on the AP. For this section you can set **WEP** and **WPA-PSK** security mode.

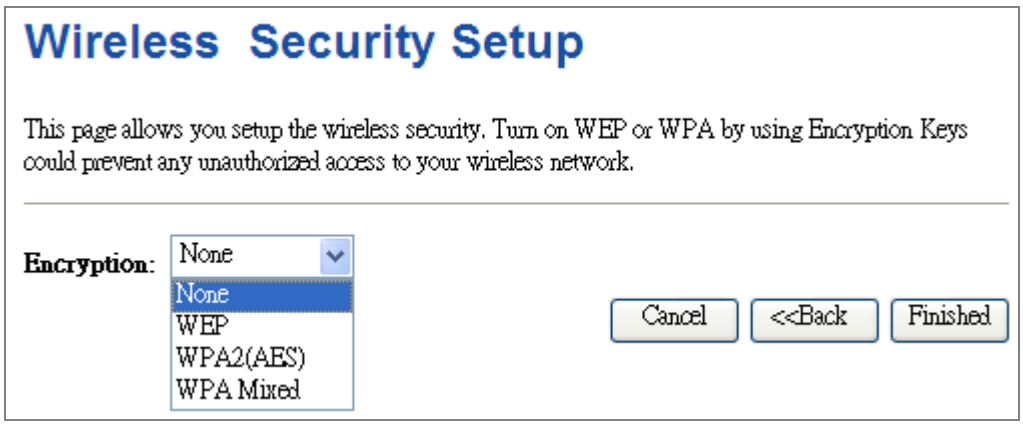


Figure 5-8 Wizard - Wireless Security Setting

Click the Finished button to make your wireless configuration to take effect.

5.2 Operation Mode

This page shows the current operation mode, and users can set different modes to LAN and WLAN interface for NAT and bridging function on the WMC251-150.

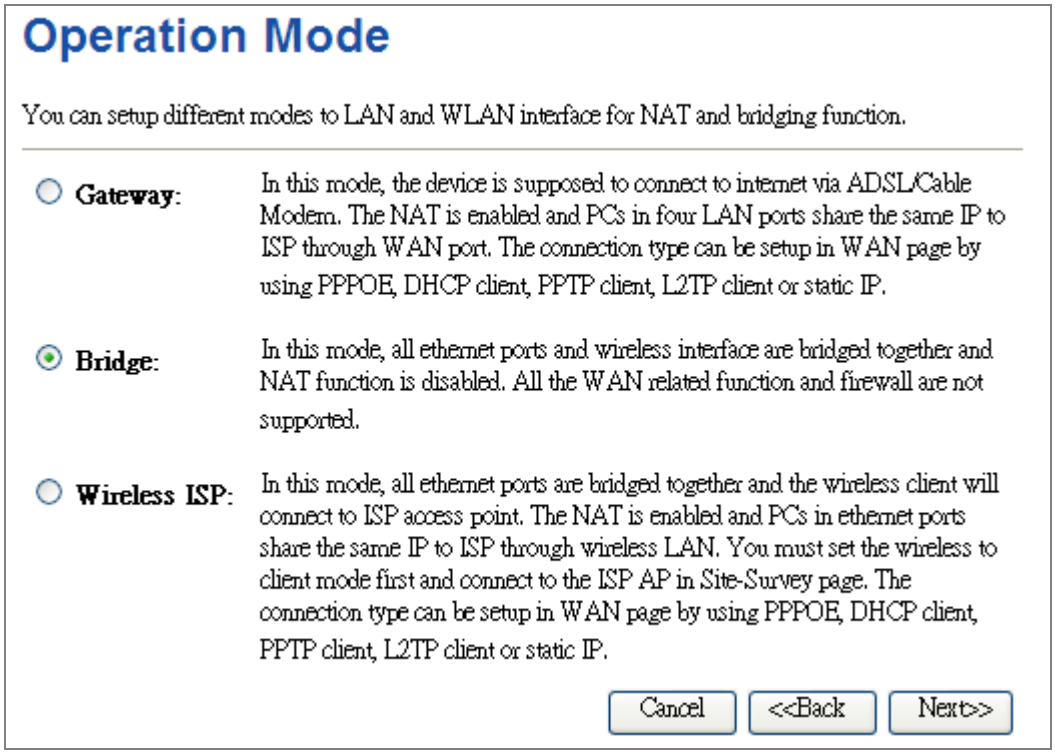
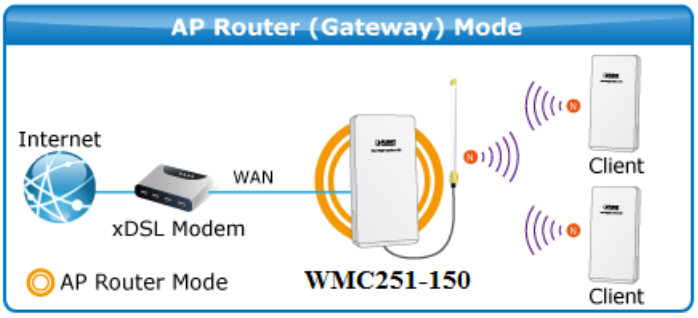
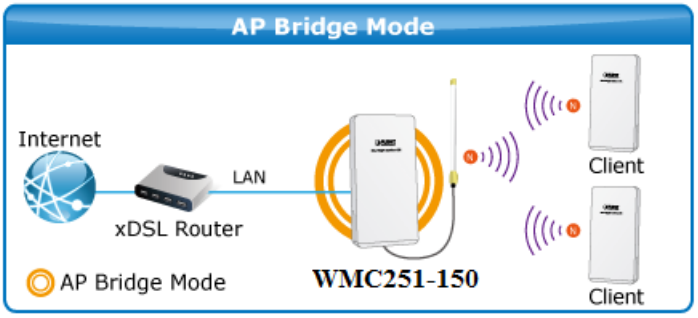
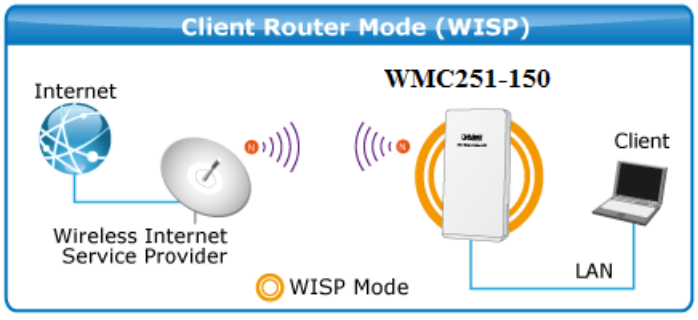


Figure 5-9 Operation Mode

The page includes the following fields:

Object	Description
Gateway	In this mode, the device enables multi-user to share Internet via ADSL/Cable Modem. The wireless port shares the same IP to ISP through Ethernet WAN port. The Wireless port acts the same as a LAN port while at AP Router mode. 
Bridge	In this mode, the device can be used to combine multiple local networks together to the same one via wireless connections, especially for a home or office where separated networks can't be connected easily together with a cable. 
Wireless ISP	In this mode, the device enables multi-user to share Internet from WISP. The LAN port devices share the same IP from WISP through Wireless port. While connecting to WISP, the **Wireless port works as a WAN port** at **Client Router** mode. The Ethernet port acts as a LAN port. 

5.3 TCP/IP Settings

This page is used to configure the parameters for local area network which connects to the LAN port of your AP. Here you may change the setting for IP address, subnet mask, DHCP, etc.

5.3.1 LAN Interface

On the LAN Settings page, you can configure the IP parameters of the LAN on the screen as shown below.

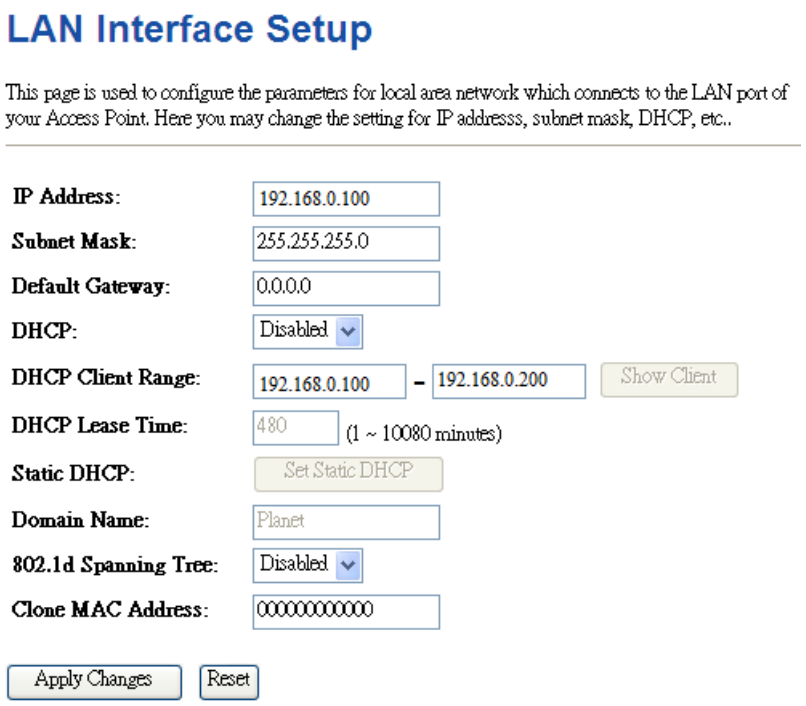


Figure 5-10 LAN Setting

The page includes the following fields:

Object	Description
IP Address	The default LAN IP address of the WMC251-1W-2T-150 is **192.168.0.100**. You can change it according to your request.
Subnet Mask	Default is **255.255.255.0**. You can change it according to your request.
Default Gateway	Default is **192.168.0.100**. You can change it according to your request.
DHCP	You can select a **Disabled**, **Client**, **and Server**. Default is **Disabled**, meaning the WMC251-150 must connect to a router to assign IP addresses to clients.
DHCP Client Range	For the **Server** mode, you must enter the DHCP client IP address range in the field. And you can click the "**Show Client**" button to show the Active DHCP Client Table.
Static DHCP	Click the "**Set Static DHCP**" button and you can reserve some IP addresses for those network devices with the specified MAC addresses anytime when they request IP addresses.

Domain Name	Default is **IFS**.
802.1d Spanning Tree	You can enable or disable the Spanning Tree function.
Clone MAC Address	You can input an MAC address here for using clone function.
UPnP Enable	You can enable or disable the UPnP function. The UPnP feature allows the devices, such as Internet computers, to access the local host resources or devices as needed. UPnP devices can be automatically discovered by the UPnP service application on the LAN.

If you change the IP address of LAN, you must use the new IP address to login the AP.

When the IP address of the WMC251-150 is changed, the clients on the network often need to wait for a while or even reboot before they can access the new IP address. For an immediate access to the AP, please flush the netbios cache on the client computer by running the "**nbtstat –r**" command before using the device name of the WMC251-150 to access its Web Management page.

5.3.2 WAN Interface

On the WAN Settings page, you can configure the IP parameters of the WAN on the screen as shown below.

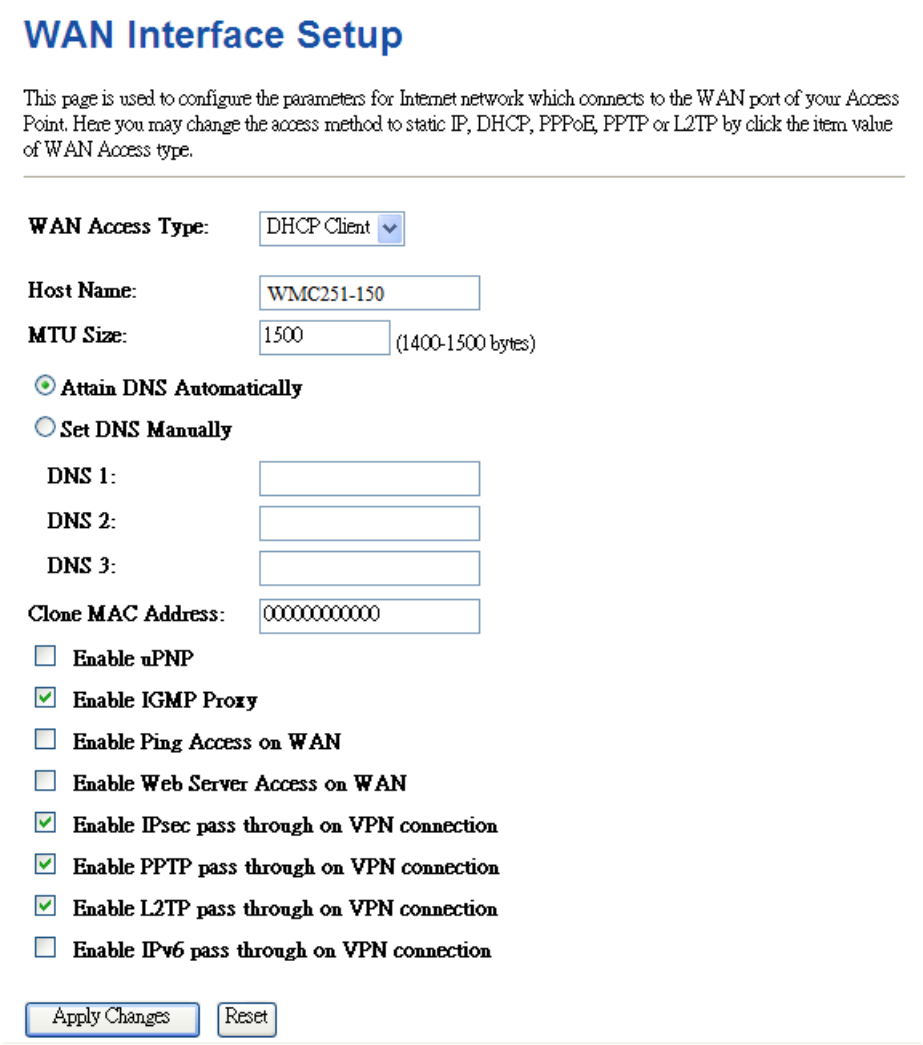


Figure 5-11 WAN Setting

The page includes the following fields:

Object	Description

WAN Access Type	Please select the corresponding WAN Access Type for the Internet, and fill the correct parameters from your local ISP in the fields which appear below.	
	DHCP Client	Select DHCP Client to obtain IP Address information automatically from your ISP.
	Static IP	Select Static IP Address if all the Internet port's IP information is provided to you by your ISP (Internet Service Provider). You will need to enter the IP address, subnet mask, gateway address, and DNS address provided to you by your ISP. Each IP address entered in the fields must be in the appropriate IP form, which are four octets separated by a dot (x.x.x.x). The Router will not accept the IP address if it is not in this format. **IP Address** Enter the IP address assigned by your ISP. **Subnet Mask** Enter the Subnet Mask assigned by your ISP. **Default Gateway** Enter the Gateway assigned by your ISP. **DNS** The DNS server information will be supplied by your ISP.
	PPPoE	Choose PPPoE (Point to Point Protocol over Ethernet) if your ISP uses a PPPoE connection. Your ISP will provide you with a username and password. This option is typically used for DSL services. **User Name** Enter your PPPoE user name. **Password** Enter your PPPoE password.
	PPTP	Choose PPTP (Point-to-Point-Tunneling Protocol) if your ISP uses a PPTP connection. Your ISP will provide you with IP information and PPTP Server IP Address; of course, it also includes a username and password. This mode is typically used for DSL services. **IP Address** Enter the IP address. **Subnet Mask** Enter the Subnet Mask. **Server IP Address** Enter the PPTP Server IP address provided by your ISP. **User Name** Enter your PPTP user name. **Password**

		Enter your PPTP password.
	L2TP	Choose L2TP (Layer 2 Tunneling Protocol) if your ISP uses a L2TP connection. Your ISP will provide you with a username and password. **IP Address** Enter the IP address. **Subnet Mask** Enter the Subnet Mask. **Server IP Address** Enter the L2TP Server IP address provided by your ISP. **User Name** Enter your L2TP user name. **Password** Enter your L2TP password.
Host Name	This option specifies the Host Name of the Wireless AP.	
MTU Size	The normal **MTU** (Maximum Transmission Unit) value for most Ethernet networks is 1492 Bytes. It is not recommended that you change the default **MTU Size** unless required by your ISP.	
Attain DNS Automatically	Select "**Attain DNS Automatically**", the DNS servers will be assigned dynamically from your ISP.	
Set DNS Manually	If your ISP gives you one or two DNS addresses, select **Set DNS Manually** and enter the primary and secondary addresses into the correct fields.	
Clone MAC Address	You can input a MAC address here for using clone function.	
Enable uPNP	Check to disable/enable uPNP function (default = disabled)	
Enable IGMP Proxy	Check to disable/enable IGMP function (default = enabled)	
Enable Ping Access on WAN	Check to enable the Ping Access on WAN function (default = disabled)	
Enable Web Server Access on WAN	Check to enable the Web Server Access on WAN function (default = disabled)	
Enable IPsec pass through on VPN connection	Check to enable the IPsec pass through on VPN connection function (default = enabled)	
Enable PPTP pass through on VPN connection	Check to enable the PPTP pass through on VPN connection function (default = enabled)	
Enable L2TP pass through on VPN connection	Check to enable the L2TP pass through on VPN connection function (default = enabled)	

Enable IPv6 pass through on VPN connection	Check to enable the IPv6 pass through on VPN connection function (default = disabled)

If you get Address not found error when you access a Web site, it is likely that your DNS servers are set up improperly. You should contact your ISP to get DNS server addresses.

WAN IP, whether obtained automatically or specified manually, should NOT be on the same IP net segment as the LAN IP; otherwise, the router will not work properly. In case of emergency, press the hardware "Reset" button.

5.4 Wireless

The wireless menu contains submenus of the settings about wireless network. Please refer to the following sections for the details.

Figure 5-12 Wireless – Main Menu

5.4.1 Basic Settings

Choose menu "**Wireless → Basic Settings**" and you can configure the wireless basic settings for the wireless network on this page. After the configuration is done, please click the "**Apply Changes**" button to save the settings.

First of all, the wireless AP supports multiple wireless modes for different network applications, which include:

- **AP**
- **Multiple SSIDs**
- **Universal Repeater**
- **Client**
- **WDS**
- **AP+WDS**

It is so easy to combine the WMC251-1W-2T-150 with the existing wired network. The WMC251-1W-2T-150 definitely provides a total network solution for the home and the SOHO users.

■ **AP**

Standard **Access Point**

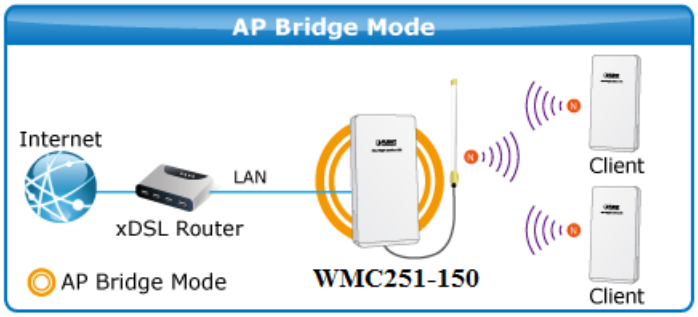


Figure 5-13 Topology – AP Bridge Mode

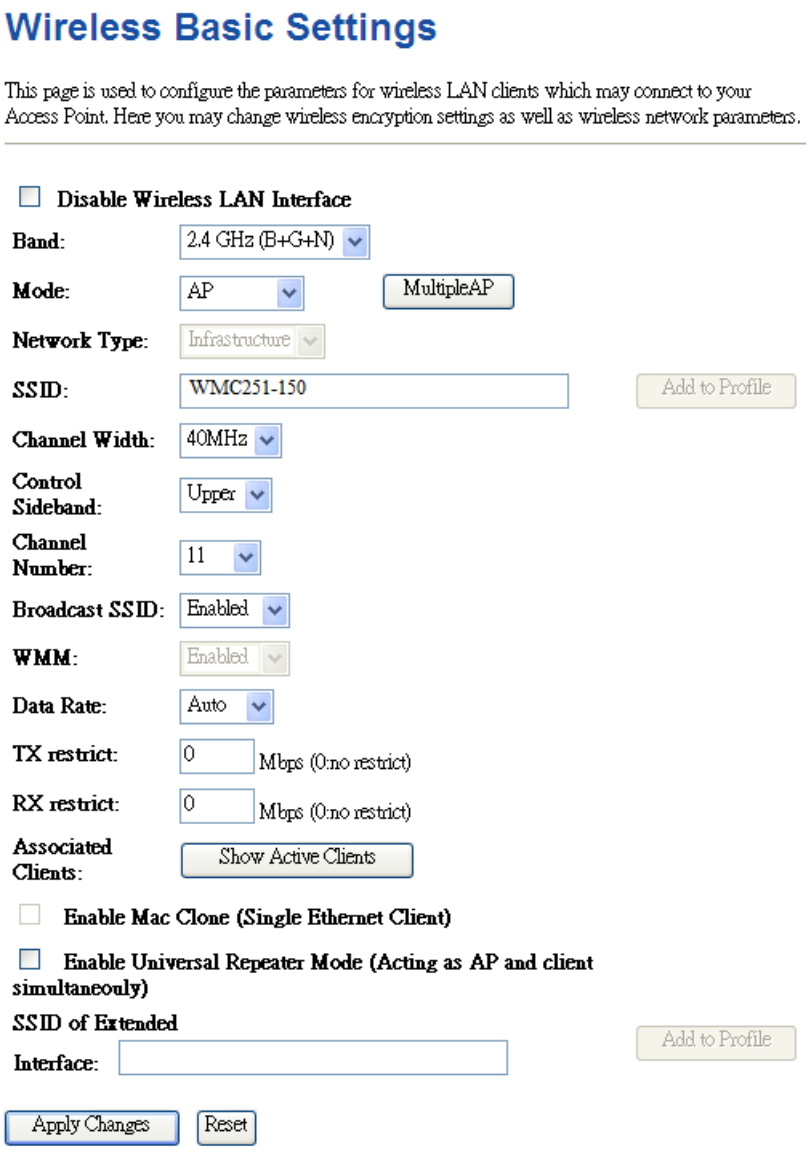


Figure 5-14 Wireless Basic Settings of AP

The page includes the following fields:

Object	Description
Disable Wireless LAN	Check the box to disable the wireless function.

Interface	
Band	Select the desired mode. Default is "**2.4GHz (B+G+N)**". It is strongly recommended that you set the Band to "2.4GHz (B+G+N)", and all of 802.11b, 802.11g, and 802.11n wireless stations can connect to the WMC251-1W-2T-150. ■ **2.4 GHz (B)**: 802.11b mode, rate is up to 11Mbps ■ **2.4 GHz (G)**: 802.11g mode, rate is up to 54Mbps ■ **2.4 GHz (N)**: 802.11n mode, rate is up to 150Mbps(1T1R) ■ **2.4 GHz (B+G)**: 802.11b/g mode, rate is up to 11Mbps or 54Mbps ■ **2.4 GHz (G+N)**: 802.11g/n mode, rate is up to 54Mbps or 150Mbps ■ **2.4 GHz (B+G+N)**: 802.11b/g/n mode, rate is up to 11Mbps, 54Mbps, or 150Mbps
Mode	There are four kinds of wireless mode selections: ■ **AP** ■ **Client** ■ **WDS** ■ **AP+WDS** If you select WDS or AP+WDS, please click "**WDS Settings**" submenu for the related configuration. Furthermore, click the "**Multiple AP"** button to enable multiple SSID function.
SSID	The ID of the wireless network. User can access the wireless network via the ID only. However, if you switch to Client Mode, this field becomes the SSID of the AP you want to connect with. Default: **WMC251-150**
Channel Width	You can select **20MHz**, or **40MHz**.
Channel Number	You can select the operating frequency of wireless network. Default: **11**
Broadcast SSID	If you enable "Broadcast SSID", every wireless station located within the coverage of the AP can discover its signal easily. If you are building a public wireless network, enabling this feature is recommended. In private network, disabling "Broadcast SSID" can provide better wireless network security. Default is "**Enabled**".
Data Rate	Set the wireless data transfer rate to a certain value. Since most of wireless devices will negotiate with each other and pick a proper data transfer rate automatically, **it's not necessary to change this value unless you know what will happen after modification.** Default is "**Auto"**.
Associated Clients	Click the "**Show Active Clients**" button to show the status table of active wireless clients.

Enable Universal Repeater Mode **(Acting as AP and client simultaneously)**	Universal Repeater is a technology used to extend wireless coverage. To enable Universal Repeater mode, check the box and enter the SSID you want to broadcast in the field below. Then please click "Security" submenu for the related settings of the AP you want to connect with.

■ Multiple-SSID

Enable multiple-SSID can broadcast multiple WLAN SSID's using virtual interfaces. You can have different encryption settings for each WLAN and you can restrict what they have access to.

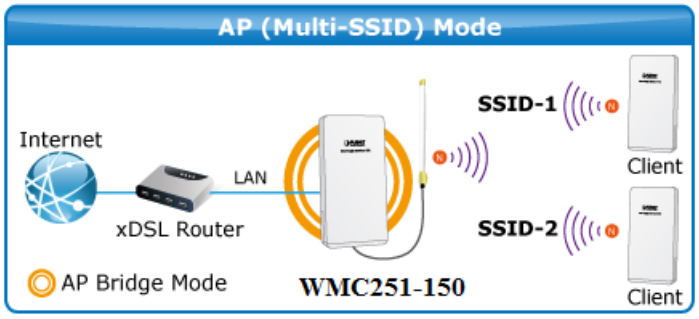


Figure 5-15 Topology – Multiple-SSID Mode

Choose menu "**Wireless → Basic Settings → Multiple AP**" to configure the device as a general wireless access point with multiple SSIDs.

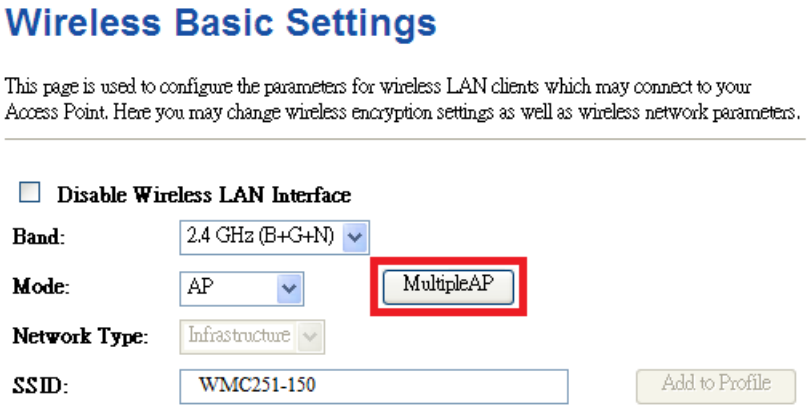


Figure 5-16 Wireless Basic Settings – Multiple AP

The device supports up to four multiple Service Set Identifiers. You can back to the **Basic Settings** page to set the Primary SSID. The SSID's factory default setting is **WMC251-1W-2T-150 VAP1~4 (Multiple-SSID 1~4)**. The SSID can be easily changed to connect to an existing wireless network or to establish a new wireless network. When the information for the new SSID is finished, click the **Apply Changes** button to let your changes take effect.

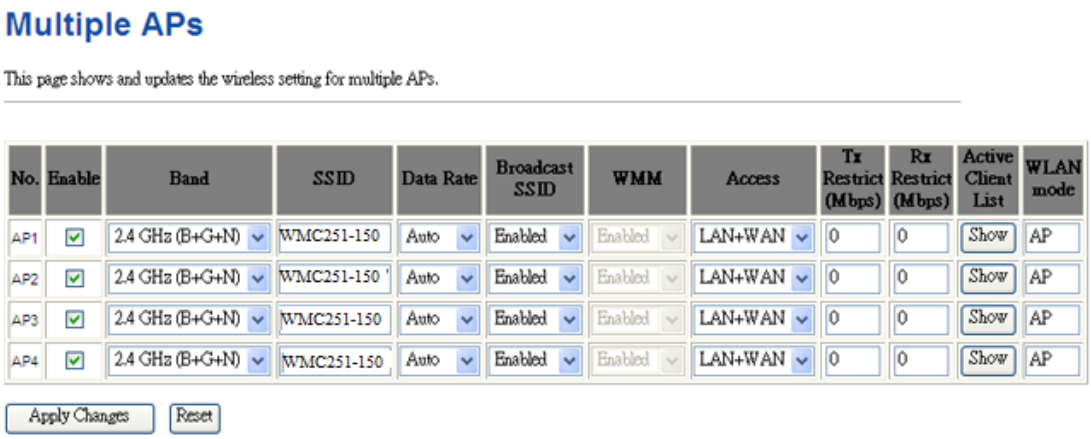


Figure 5-17 Multiple-SSID

Once you have applied and saved those settings, you can then go to the "**Wireless → Security**" page on the AP to set up security settings for each of the SSIDs.

■ Universal Repeater

This mode allows the AP with its own BSS to relay data to a root AP to which it is associated with WDS disabled. The wireless repeater relays signal between its stations and the root AP for greater wireless range.

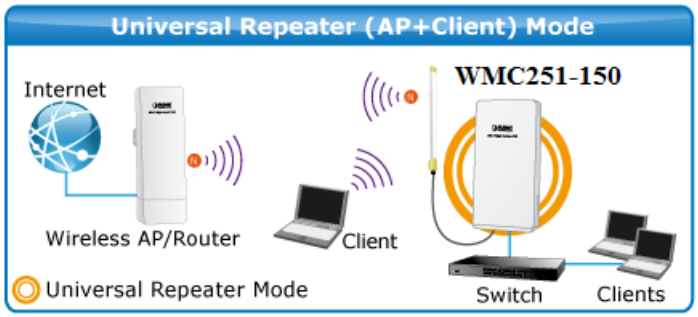


Figure 5-18 Topology – Universal Repeater Mode

1. Example of how to configure **Universal Repeater Mode**. Please take the following steps:

To configure each wireless parameter, please go to the "**Wireless→ Basic Settings**" page.

Step 1. Configure wireless mode to "**AP**" and then check "**Enable Universal Repeater Mode (Acting as AP and client simultaneously)**". Click "**Apply Changes**" to take effect.

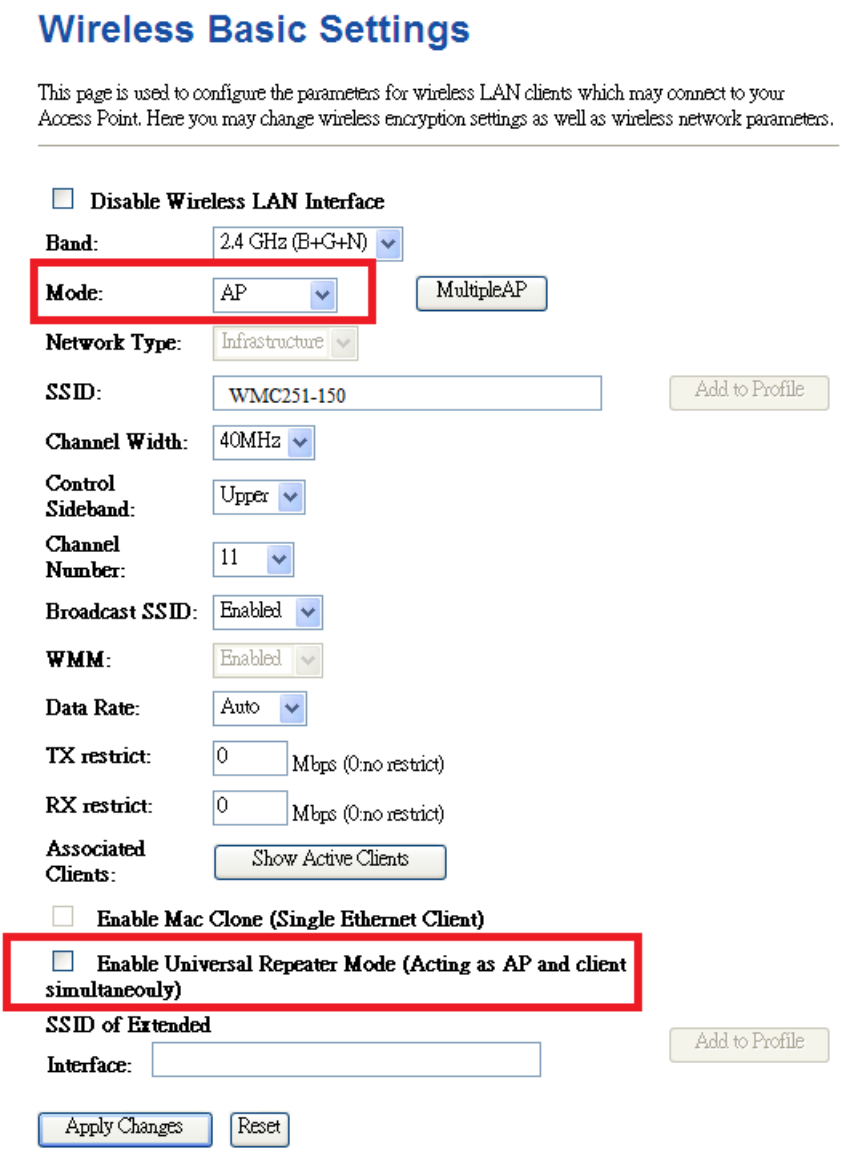


Figure 5-19 Universal Repeater-1

Step 2. Go to **Site Survey** page to find the root AP. Select the root AP that you want to repeat the signal and then click "**Next**".

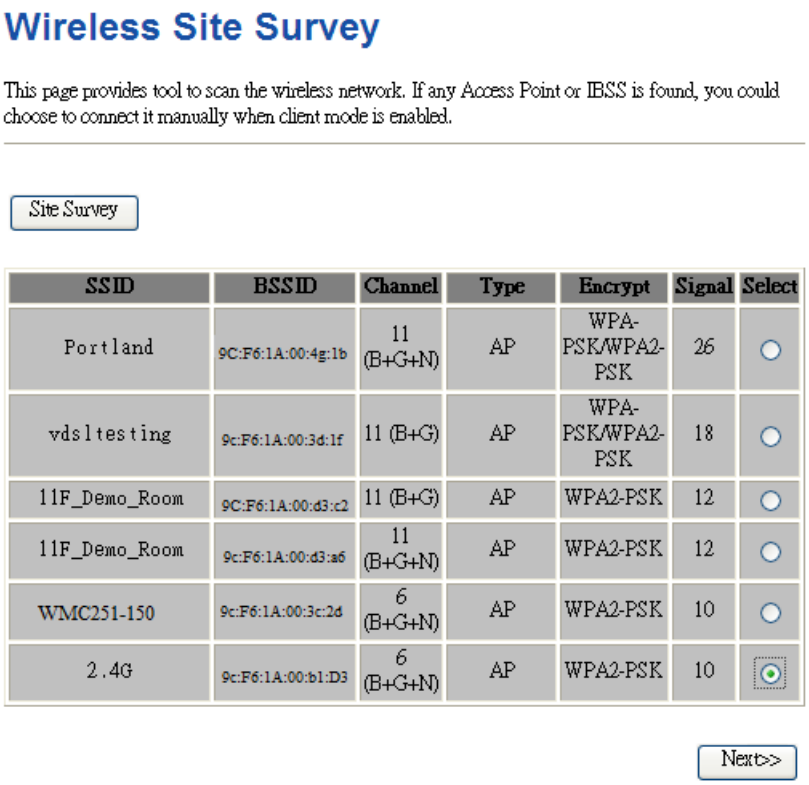


Figure 5-20 Universal Repeater-2

Step 3. Select the correct encryption method and enter the security key. Then, click "**Connect**".

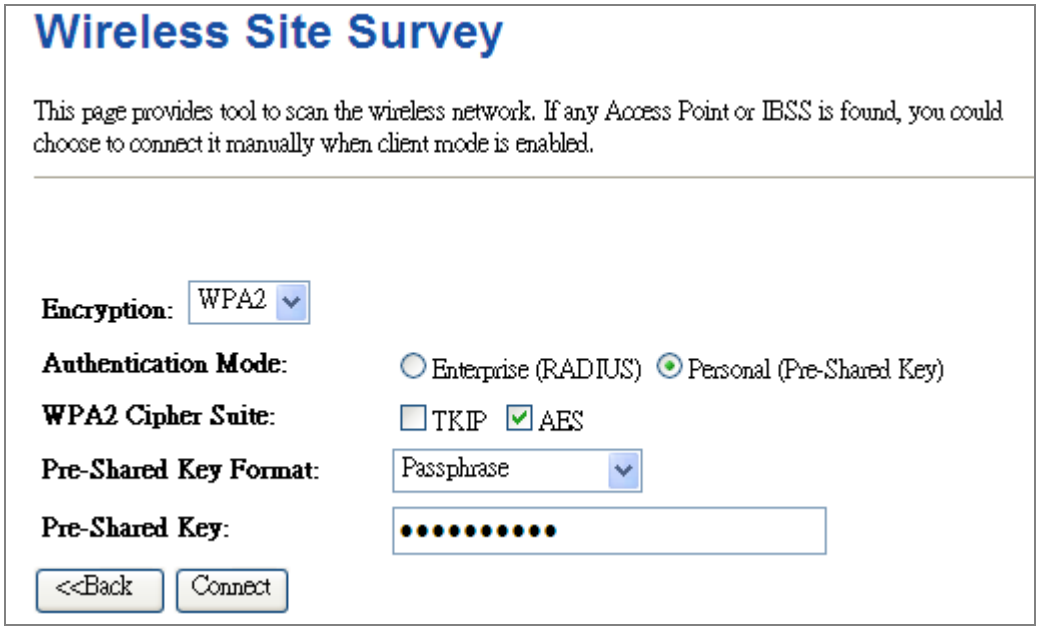


Figure 5-21 Universal Repeater-3

Step 4. Check "**Add to Wireless Profile**" and click "**Reboot Now**".

Figure 5-22 Universal Repeater-4

Step 5. Go to "**Management-> Status**" page to check whether the state of Repeater interface should be "**Connected**".

Wireless Repeater Interface Configuration	
Mode	Infrastructure Client
SSID	2.4G
Encryption	WPA2
BSSID	9c:F6:1A:00:3c:2d
State	Connected

Figure 5-23 Universal Repeater-5

■ Client (Infrastructure)

Combine the Wireless AP to the Ethernet devices such as IP camera to make it be wireless station.

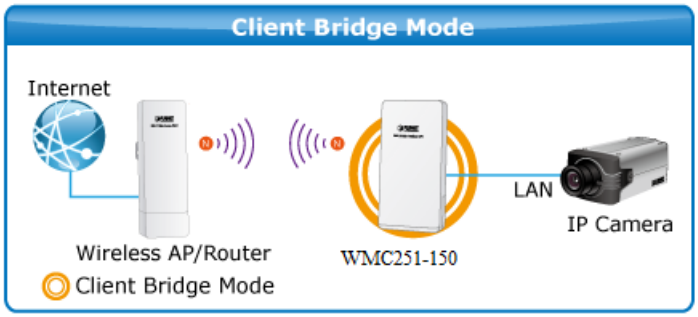


Figure 5-24 Topology – Client Mode

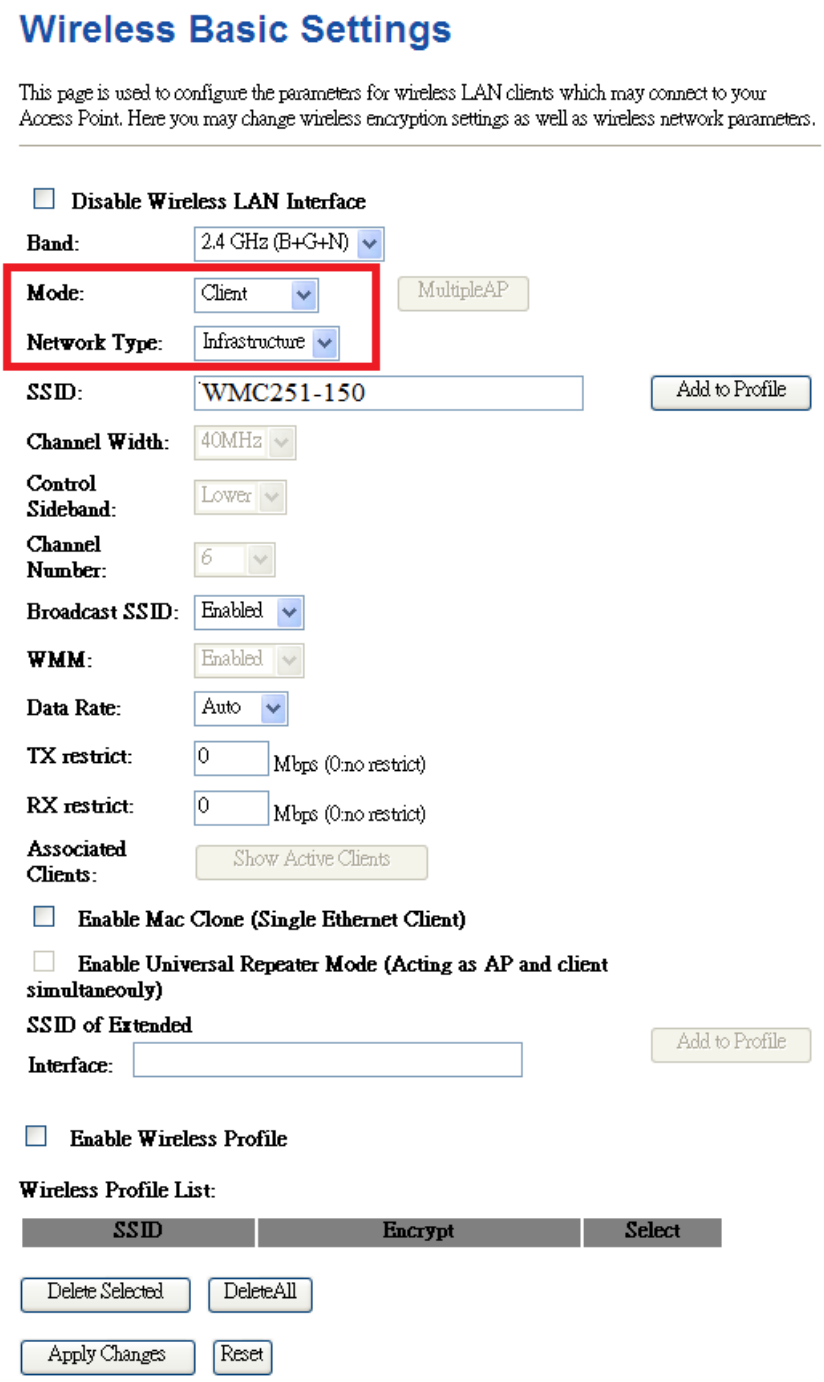


Figure 5-25 Wireless Basic Settings – Client

The page includes the following fields:

Object	Description
Disable Wireless LAN Interface	Check the box to disable the wireless function.
Band	Select the desired mode. Default is "**2.4GHz (B+G+N)**". It is strongly recommended that you set the Band to "2.4GHz (B+G+N)", and all of 802.11b, 802.11g, and 802.11n wireless stations can connect to the WMC251-150. ■ **2.4 GHz (B)**: 802.11b mode, rate is up to 11Mbps ■ **2.4 GHz (G)**: 802.11g mode, rate is up to 54Mbps ■ **2.4 GHz (N)**: 802.11n mode, rate is up to 150Mbps(1T1R) ■ **2.4 GHz (B+G)**: 802.11b/g mode, rate is up to 11Mbps or 54Mbps ■ **2.4 GHz (G+N)**: 802.11g/n mode, rate is up to 54Mbps or 150Mbps ■ **2.4 GHz (B+G+N)**: 802.11b/g/n mode, rate is up to 11Mbps, 54Mbps, or 150Mbps
Mode	There are four kinds of wireless mode selections: ■ **AP** ■ **Client** ■ **WDS** ■ **AP+WDS** If you select WDS or AP+WDS, please click "**WDS Settings**" submenu for the related configuration. Furthermore, click the "**Multiple AP"** button to enable multiple SSID function.
Network Type	In **Infrastructure**, the wireless LAN serves as a wireless station. And the user can use the PC equipped with the WMC251-150 to access the wireless network via other access points. In **Ad hoc**, the wireless LAN will use the Ad-hoc mode to operate. Default is "**Infrastructure**". Note: only while the wireless mode is set to "**Client**", then the **Network Type** can be configured.
SSID	The ID of the wireless network. User can access the wireless network via the ID only. However, if you switch to Client Mode, this field becomes the SSID of the AP you want to connect with. Default: **WMC251-150**
Broadcast SSID	If you enable "Broadcast SSID", every wireless station located within the coverage of the WMC251-150 can discover its signal easily. If you are building a public wireless network, enabling this feature is recommended. In private network, disabling "Broadcast SSID" can provide better wireless network security. Default is "**Enabled**".

Data Rate	Set the wireless data transfer rate to a certain value. Since most of wireless devices will negotiate with each other and pick a proper data transfer rate automatically, **it's not necessary to change this value unless you know what will happen after modification.** Default is "**Auto"**.
Enable Mac Clone (Single Ethernet Client)	Enable Mac Clone.

➢ Example of how to configure **Client Mode**. Please take the following steps:

To configure each wireless parameter, please go to the "**Wireless** → **Basic Settings**" page.

Step 1. Go to "**Wireless** → **Site Survey**" page and click "**Site Survey**" button.

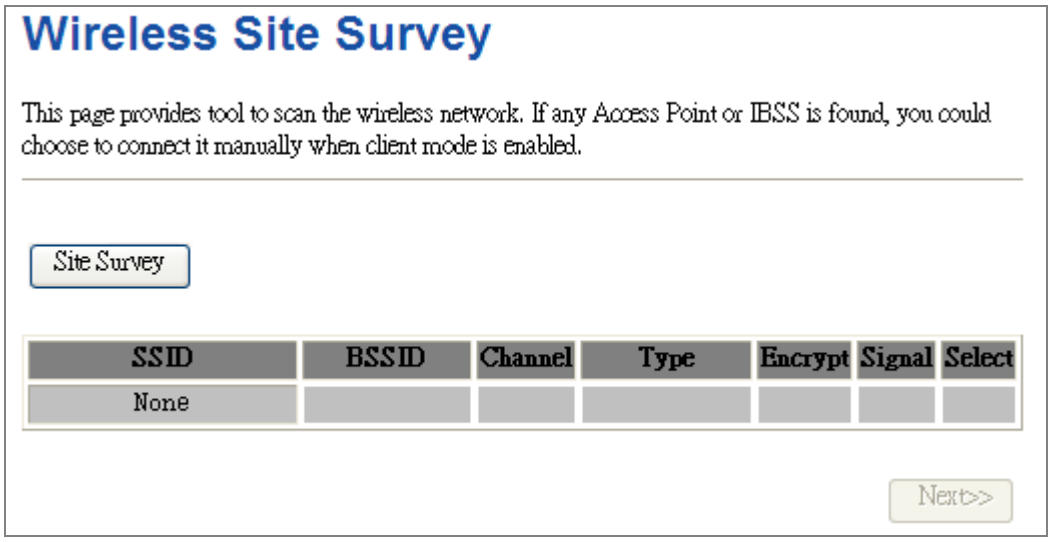


Figure 5-26 Client – Survey

Step 2. Choose the root AP from the list. If the root AP is not listed in the table, re-click "**Site Survey**" to update the list.

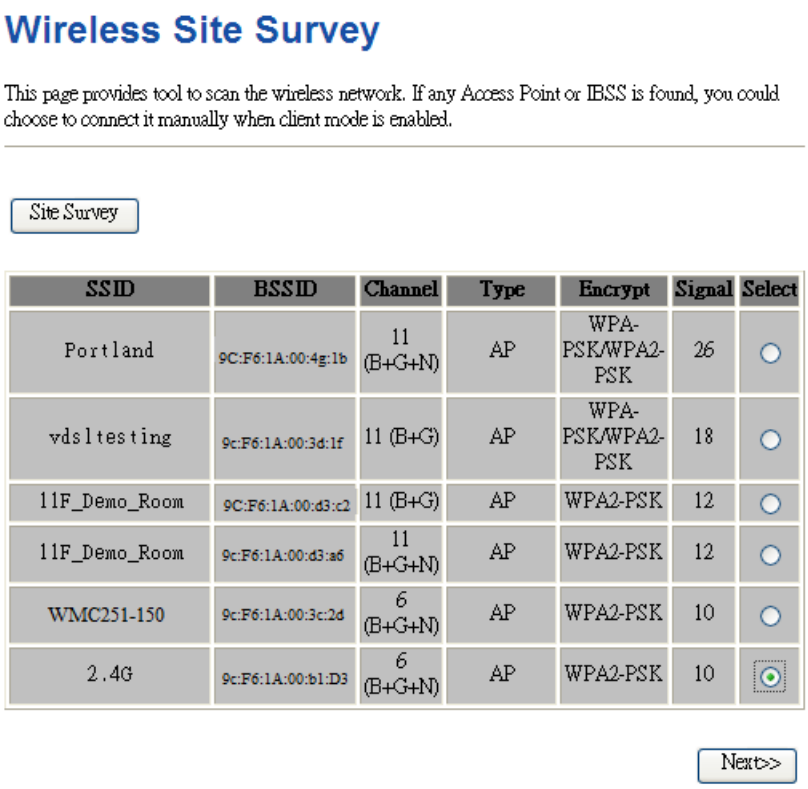


Figure 5-27 Client – AP List

Step 3. Enter the Security Key of the root AP and then click "**Connect**".

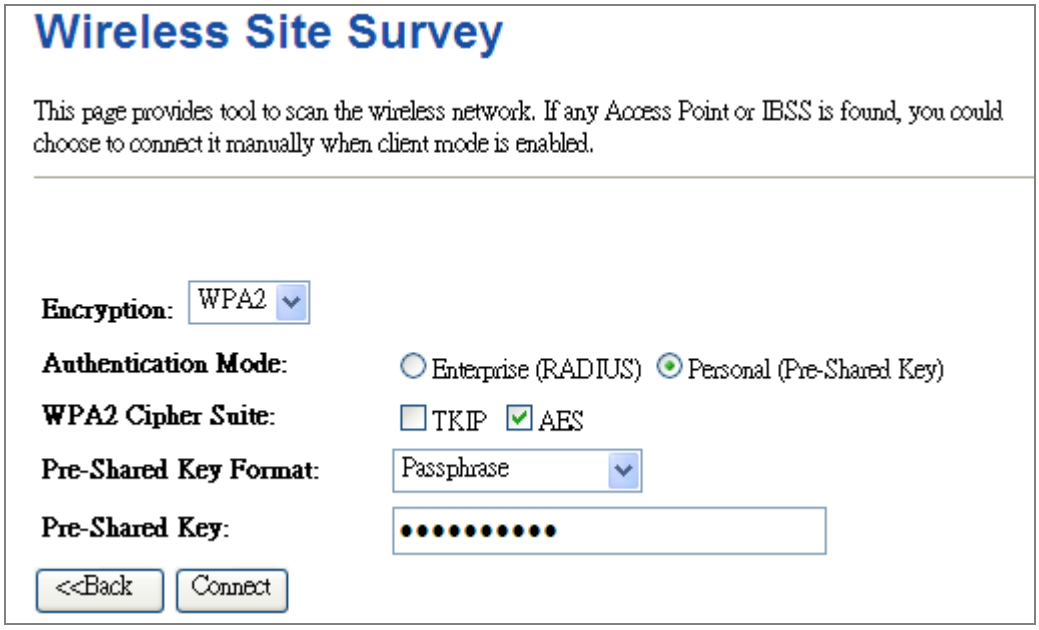


Figure 5-28 Client – Security

Step 4. Wait until the connection established. Check the "**Add to Wireless Profile**" option and then reboot it.

Figure 5-29 Client – Status

■ WDS

Connect this Wireless AP with up to 8 WDS-capable wireless APs to expand the scope of network.

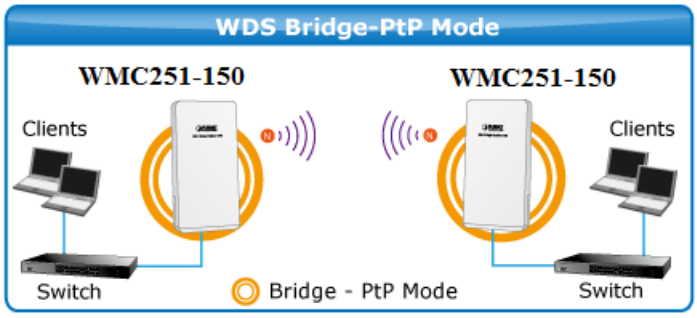


Figure 5-30 Topology – WDS PtP Mode

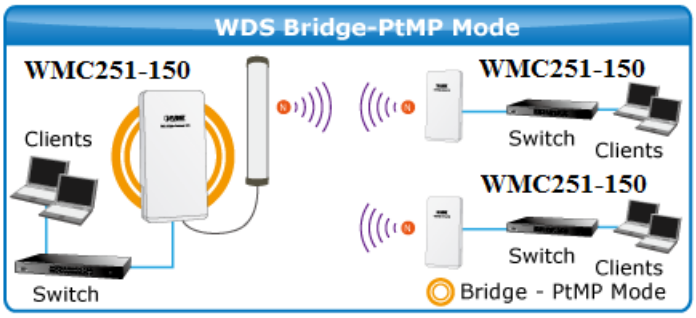


Figure 5-31 Topology – WDS PtMP Mode

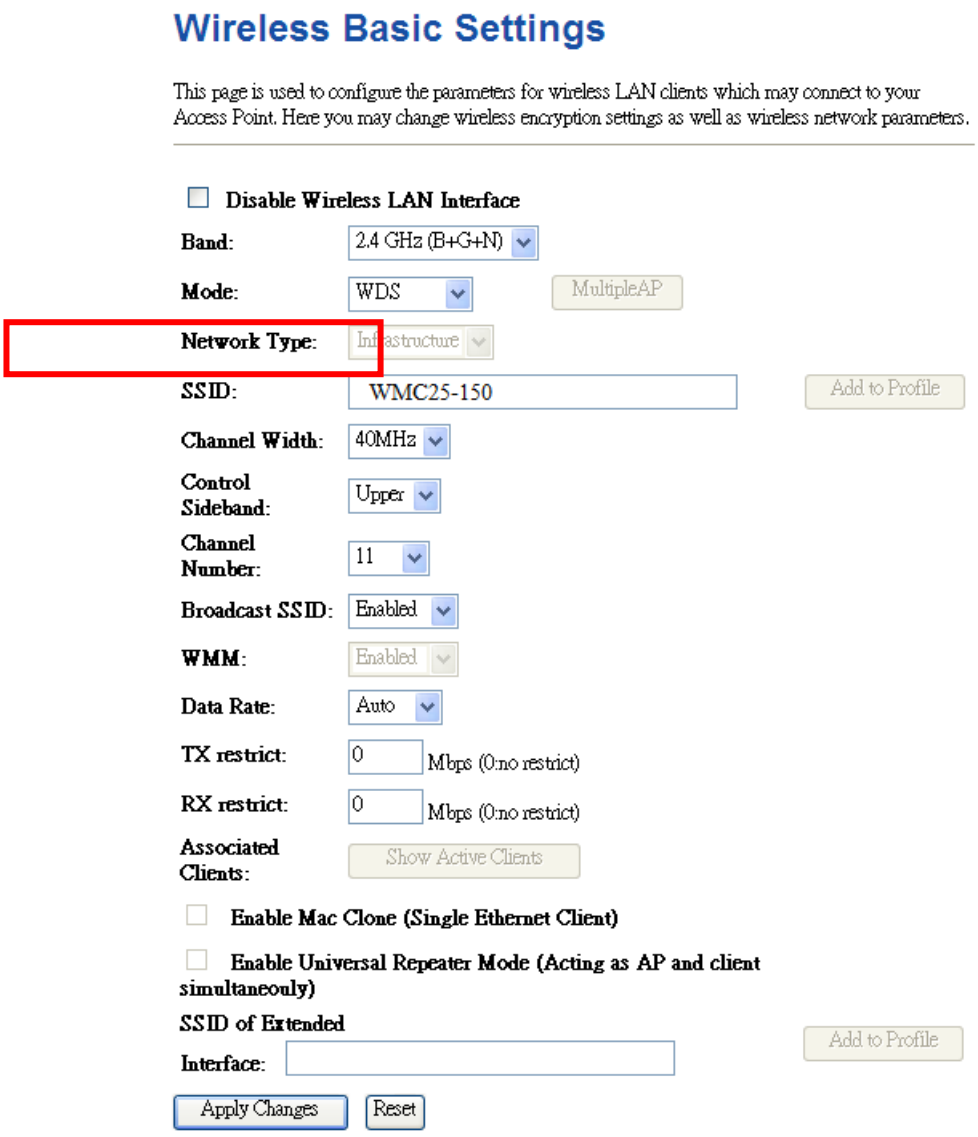


Figure 5-32 Wireless Basic Settings – WDS

The page includes the following fields:

Object	Description
Disable Wireless LAN Interface	Check the box to disable the wireless function.
Band	Select the desired mode. Default is "**2.4GHz (B+G+N)**". It is strongly recommended that you set the Band to "2.4GHz (B+G+N)", and all of 802.11b, 802.11g, and 802.11n wireless stations can connect to the WMC251-150. ■ **2.4 GHz (B)**: 802.11b mode, rate is up to 11Mbps ■ **2.4 GHz (G)**: 802.11g mode, rate is up to 54Mbps ■ **2.4 GHz (N)**: 802.11n mode, rate is up to 150Mbps(1T1R) ■ **2.4 GHz (B+G)**: 802.11b/g mode, rate is up to 11Mbps or 54Mbps ■ **2.4 GHz (G+N)**: 802.11g/n mode, rate is up to 54Mbps or 150Mbps

	■ **2.4 GHz (B+G+N)**: 802.11b/g/n mode, rate is up to 11Mbps, 54Mbps, or 150Mbps
Mode	There are four kinds of wireless mode selections: ■ **AP** ■ **Client** ■ **WDS** ■ **AP+WDS** If you select WDS or AP+WDS, please click "**WDS Settings**" submenu for the related configuration. Furthermore, click the "**Multiple AP"** button to enable multiple SSID function.
Channel Width	You can select **20MHz**, or **40MHz**
Control Sideband	You can select **Upper** or **Lower**.
Channel Number	You can select the operating frequency of wireless network.
Data Rate	Set the wireless data transfer rate to a certain value. Since most of wireless devices will negotiate with each other and pick a proper data transfer rate automatically, **it's not necessary to change this value unless you know what will happen after modification.** Default is "**Auto"**.

■ **AP+ WDS**

Connect this Wireless AP with up to 8 WDS-capable wireless APs, and connect another AP to provide service for all wireless stations within its coverage.

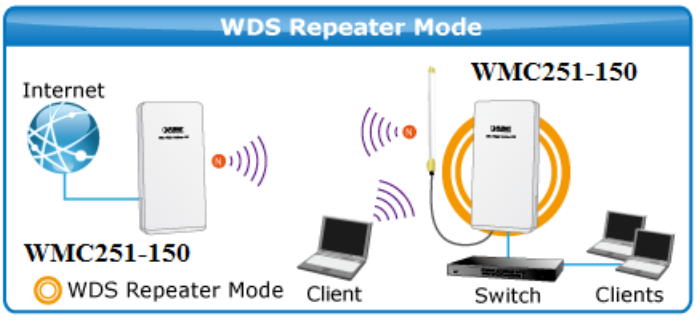


Figure 5-33 Topology – WDS+AP Mode

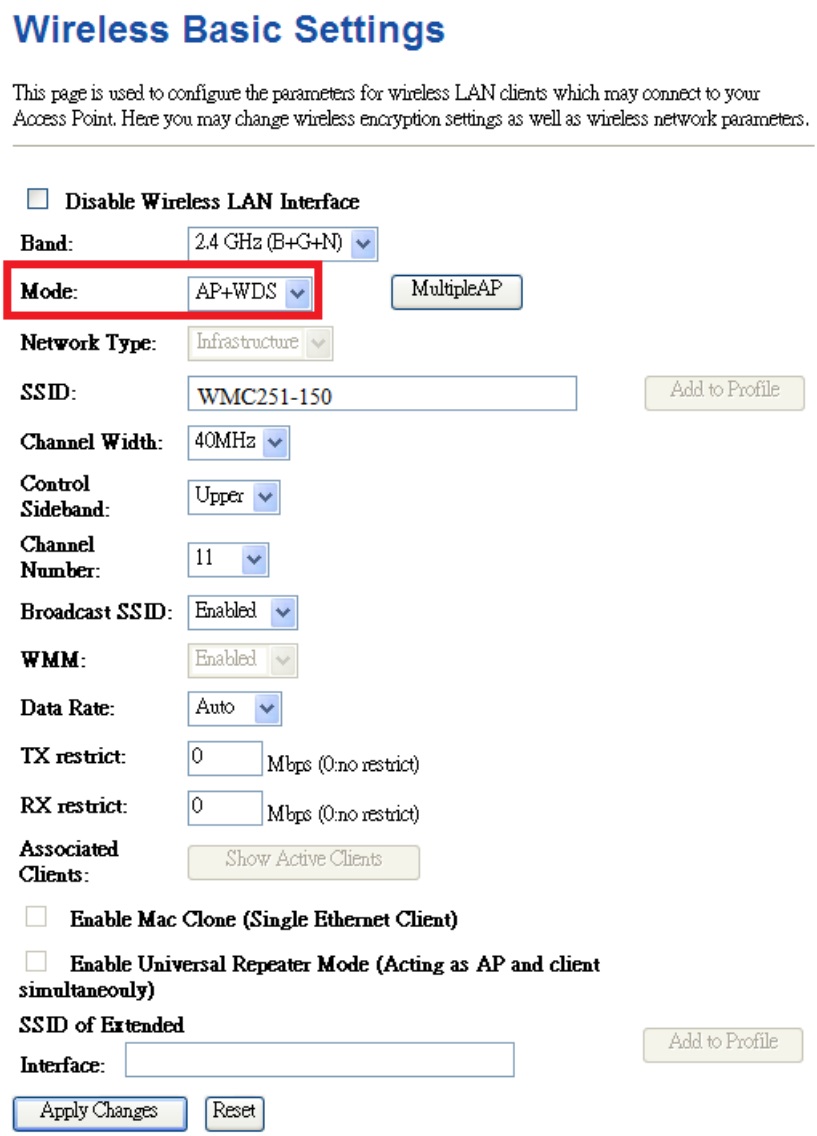


Figure 5-34 Wireless Basic Settings – WDS+AP

The page includes the following fields:

Object	Description
Disable Wireless LAN Interface	Check the box to disable the wireless function.
Country	Select your region from the pull-down list. This field specifies the region where the wireless function of the Router can be used. It may be illegal to use the wireless function of the Router in a region other than one of those specified in this field. If your country or region is not listed, please contact your local government agency for assistance.
Band	Select the desired mode. Default is "**2.4GHz (B+G+N)**". It is strongly recommended that you set the Band to "2.4GHz (B+G+N)", and all of 802.11b, 802.11g, and 802.11n wireless stations can connect to the WMC251-150. ■ **2.4 GHz (B)**: 802.11b mode, rate is up to 11Mbps

	■ **2.4 GHz (G)**: 802.11g mode, rate is up to 54Mbps ■ **2.4 GHz (N)**: 802.11n mode, rate is up to 150Mbps(1T1R) ■ **2.4 GHz (B+G)**: 802.11b/g mode, rate is up to 11Mbps or 54Mbps ■ **2.4 GHz (G+N)**: 802.11g/n mode, rate is up to 54Mbps or 150Mbps ■ **2.4 GHz (B+G+N)**: 802.11b/g/n mode, rate is up to 11Mbps, 54Mbps, or 150Mbps
Mode	There are four kinds of wireless mode selections: ■ **AP** ■ **Client** ■ **WDS** ■ **AP+WDS** If you select WDS or AP+WDS, please click "**WDS Settings**" submenu for the related configuration. Furthermore, click the "**Multiple AP"** button to enable multiple SSID function.
SSID	The ID of the wireless network. User can access the wireless network via the ID only. However, if you switch to Client Mode, this field becomes the SSID of the AP you want to connect with. Default: **WMC251-1W-2T-150**
Channel Width	You can select **20MHz**, or **40MHz**
Control Sideband	You can select **Upper** or **Lower**.
Channel Number	You can select the operating frequency of wireless network.
Broadcast SSID	If you enable "Broadcast SSID", every wireless station located within the coverage of the WMC251-150 can discover its signal easily. If you are building a public wireless network, enabling this feature is recommended. In private network, disabling "Broadcast SSID" can provide better wireless network security. Default is "**Enabled**".
Data Rate	Set the wireless data transfer rate to a certain value. Since most of wireless devices will negotiate with each other and pick a proper data transfer rate automatically, **it's not necessary to change this value unless you know what will happen after modification.** Default is "**Auto"**.
Associated Clients	Click the "**Show Active Clients**" button to show the status table of active wireless clients.
Enable Universal Repeater Mode (Acting as AP and client simultaneously)	Universal Repeater is a technology used to extend wireless coverage. To enable Universal Repeater Mode, check the box and enter the SSID you want to broadcast in the field below. Then please click "Security" submenu for the related settings of the AP you want to connect with.

5.4.2 Advanced Settings

Choose menu "**Wireless→ Advanced Settings**" to configure the wireless advanced settings for the wireless network on this page. After the configuration, please click the "Apply Changes" button to save the settings.

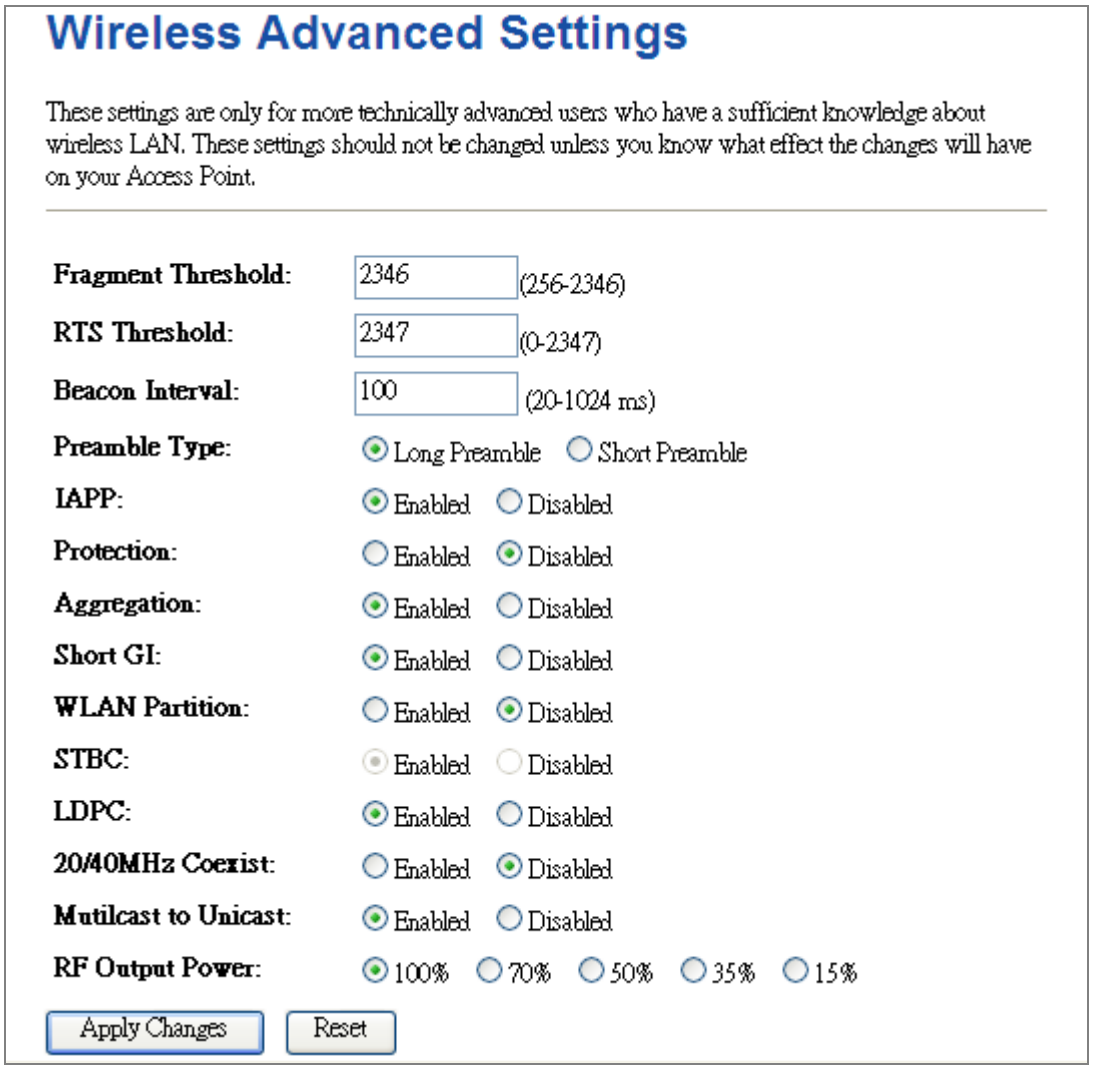


Figure 5-35 Wireless Advanced Settings

The page includes the following fields:

Object	Description
Fragment Threshold	You can specify the maximum size of packet during the fragmentation of data to be transmitted. If you set this value too low, it will result in bad performance. Default is “2346”.
RTS Threshold	When the packet size is smaller than the RTS threshold, the access point will not use the RTS/CTS mechanism to send this packet. Default is “2347”.
Beacon Interval	The interval of time that this access point broadcasts a beacon. Beacon is used to synchronize the wireless network. Default is “100”.
Preamble Type	Preamble type defines the length of CRC block in the frames during the wireless communication. “**Short Preamble**” is suitable for high traffic wireless network. “**Long Preamble**” can provide more reliable communication. Default is “Long Preamble”.
IAPP	**IAPP (Inter-Access Point Protocol)** enabled is recommended as it describes an optional extension to IEEE 802.11 that provides wireless access-point communications among multivendor systems. Default is “Enabled”.
Protection	Enables a backward compatible protection mechanism for 802.11b clients. When the protection mode is enabled can slow the throughput of the 802.11g/n clients by as much as 50%. Default is “Disabled”.
Aggregation	It is a function where the values of multiple rows are grouped together. Default is “Enabled”
Short GI	It is used to set the time that the receiver waits for RF reflections to settle out before sampling data. Default is “Enabled”
WLAN Partition	This feature also called “**WLAN isolation**” or “**Block Relay**”. If this is enabled, wireless clients cannot exchange data through the WMC251-1W-2T-150. Default is “Disabled”.
STBC	Activate **Space Time Blocking Code (STBC)** which does not need channel statement information (CSI). Default Setting: "Enabled"
LDPC	Low-density Parity-check Code is wireless data transmit algorithm. Default Setting: "Enabled"
20/40MHz Coexist	Configure 20/40MHz coexisting scheme. If you set up as "Enabled", "20MHz" and "40MHz" will coexist. Default Setting: "Disabled"
Multicast to Unicast:	Enables multicast traffic streams to be converted to unicast traffic before delivery to wireless clients. Converting multicast traffic to unicast before sending to wireless clients allows a longer DTIM (Data Beacon Rate) interval to be set. A longer DTIM interval prevents clients in power-save mode having to activate their radios to receive the multicast

	data, which reduce power consumption. Default Setting: “Enabled”
RF Output Power	Users can adjust the wireless output power to different levels. For short distance of PtP connection within 1Km, it is suggested to reduce the output power to 50% or lower to prevent interference with each other. Default is “100%”.

5.4.3 Security

Choose menu “**Wireless → Security**” to configure the settings of wireless security for the wireless network on this page. After the configuration, please click the “Apply Changes” button to save the settings.

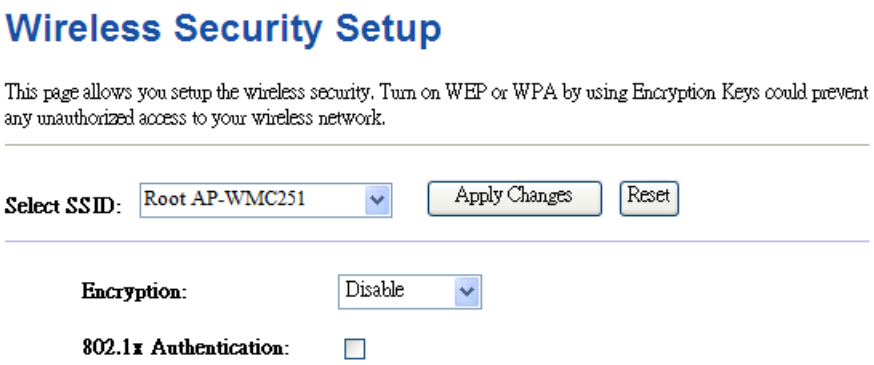


Figure 5-36 Wireless Security Settings

The page includes the following fields:

Object	Description
Select SSID	Select the SSID you want to configure the wireless security function, which includes the root one and the client one.
Encryption	■ **Disable:** No security setup for wireless connection.
	■ **WEP:** It is based on the IEEE 802.11 standard. And the default setting of authentication is **Automatic**, which can select **Open System** or **Shared Key** authentication type automatically based on the wireless station's capability and request. Furthermore, you can select **Key Length** and enter 10 and 26 **Hexadecimal** digits (any combination of 0-9, a-f, A-F, zero key is not promoted) or 5 and 13 **ASCII** characters in the **Encryption Key** field.
	■ **WPA2:** WPA2 is a high level encryption and is supported by most wireless devices and operating systems.
	■ **WPA-Mixed:** WPA Mixed Mode allows the use of both WPA and WPA2 at the same time.

Authentication Mode	■ **Enterprise (RADIUS)** When you select the authentication mode based on Enterprise (Radius Server), please enter the **IP Address**, **Port**, and **Password** of the Radius Server. ■ **Personal (Pre-Shared Key)** When you select the other authentication mode based on Personal (Pre-Shared Key), please enter at least 8 ASCII characters (Passphrase) or 64 Hexadecimal characters. All of the Cipher Suites support **TKIP** and **AES**.
802.1x Authentication	Enable 802.1x authentication function and then enter the **IP Address**, **Port**, and **Password** of the Radius Server.

■ **Disable:**

Authentication is disabled and no password/key is required to connect to the access point.

■ **WEP:**

WEP (Wired Equivalent Privacy) is a basic encryption. For a higher level of security consider using the WPA encryption.

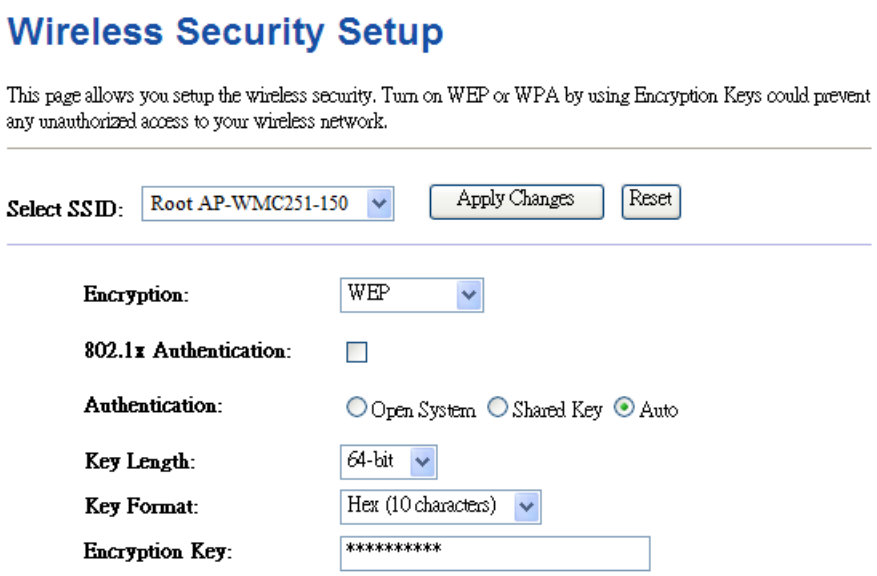


Figure 5-37 Security Settings – WEP

The page includes the following fields:

Object	Description
Encryption	You can disable the encryption or select WEP, WPA2, and WPA-Mixed as the encryption method to your wireless network.
802.1x Authentication	Enable 802.1x authentication function and then enter the IP Address, Port, and Password of the Radius Server.
Authentication	Configures the WEP security mode used by clients. When using WEP, be sure to define at least one static WEP key for the Wireless AP and all its clients.

	There are three options provided: **Open System** — this authentication accepts any client attempting to connect the Wireless AP without verifying its identity. **Shared Key** — the shared-key security uses a WEP key to authenticate clients connecting to the network and for data encryption. **Auto** — allows wireless clients to connect to the network using Open-WEP (uses WEP for encryption only) or Shared-WEP (uses WEP for authentication and encryption).
Key Length	Choose the WEP key length. You can choose **64-bit** or **128-bit**.
Key Format	You can choose **ASCII** or **Hex** format.
Encryption Key	Enter 5 alphanumeric characters or 10 hexadecimal digits for 64-bit keys, or enter 13 alphanumeric characters or 26 hexadecimal digits for 128-bit keys.

■ **WPA2:**

Wi-Fi Protected Access (WPA) was introduced as an interim solution for the vulnerability of WEP pending the adoption of a more robust wireless security standard. WPA2 includes the complete wireless security standard, but also offers backward compatibility with WPA. Both WPA and WPA2 provide an enterprise and personal mode of operation.

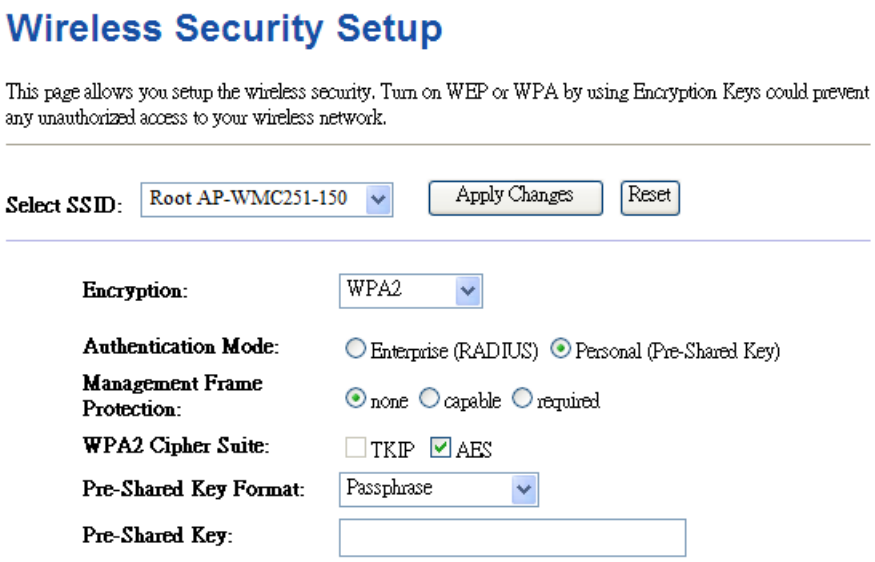


Figure 5-38 Security Settings – WPA2 Personal

The page includes the following fields:

Object	Description
Encryption	You can disable the encryption or select WEP, WPA2, and WPA-Mixed as the encryption method to your wireless network.
Authentication Mode	Select “Enterprise (RADIUS)” for user authentication and you will require a RADIUS authentication server to be configured on the wired network. Select

	"Personal (Pre-Shared Key)" and you will require a pre-shared key to be configured for client authentication.
Management Frame Protection	Management frame protection (MFP) provides security for the otherwise unprotected and unencrypted 802.11 management messages passed between access points and clients. MFP provides both infrastructure and client support. If you choose this to "Required", then clients are allowed to associate only if MFP is negotiated. If you choose "Capable", then the non-supporting clients are allows to associate (without using MFP).
WPA2 Cipher Suite	Selects the data encryption type to use. (Default is determined by the Encryption Mode selected.) **TKIP** — Uses Temporal Key Integrity Protocol (TKIP) keys for encryption. WPA specifies TKIP as the data encryption method to replace WEP. TKIP avoids the problems of WEP static keys by dynamically changing data encryption keys. **AES** — Uses Advanced Encryption Standard (AES) keys for encryption. WPA2 uses AES Counter-Mode encryption with Cipher Block Chaining Message Authentication Code (CBC-MAC) for message integrity. The AES Counter-Mode/CBCMAC Protocol (AESCCMP) provides extremely robust data confidentiality using a 128- bit key. Use of AES-CCMP encryption is specified as a standard requirement for WPA2. Before implementing WPA2 in the network, be sure client devices are upgraded to WPA2-compliant hardware.
Pre-Shared Key Format	Specify the format of the key, pass phrase or hex. The WPA Pre-shared Key can be input as an ASCII string (an easy-to-remember form of letters and numbers that can include spaces) or Hexadecimal format. (Range: 8~63 ASCII characters, or exactly 64 Hexadecimal digits)
Pre-Shared Key	Enter the key whose format is limited by the key format.

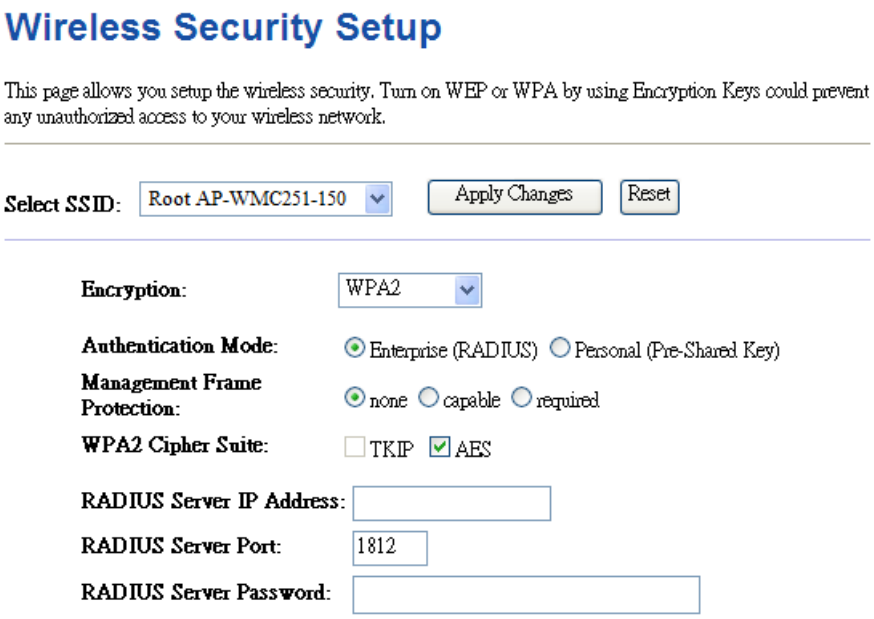


Figure 5-39 Security Settings – WPA2 Enterprise

The page includes the following fields:

Object	Description
Encryption	You can disable the encryption or select WEP, WPA2, and WPA-Mixed as the encryption method to your wireless network.
Authentication Mode	Select “Enterprise (RADIUS)” for user authentication and you will require a RADIUS authentication server to be configured on the wired network. Select “Personal (Pre-Shared Key)” and you will require a pre-shared key to be configured for client authentication.
Management Frame Protection	Management frame protection (MFP) provides security for the otherwise unprotected and unencrypted 802.11 management messages passed between access points and clients. MFP provides both infrastructure and client support. If you choose this to “Required”, then clients are allowed to associate only if MFP is negotiated. If you choose “Capable”, then the non-supporting clients are allows to associate (without using MFP).
WPA2 Cipher Suite	Selects the data encryption type to use. (Default is determined by the Encryption Mode selected.) **TKIP** — Uses Temporal Key Integrity Protocol (TKIP) keys for encryption. WPA specifies TKIP as the data encryption method to replace WEP. TKIP avoids the problems of WEP static keys by dynamically changing data encryption keys. **AES** — Uses Advanced Encryption Standard (AES) keys for encryption. WPA2 uses AES Counter-Mode encryption with Cipher Block Chaining Message Authentication Code (CBC-MAC) for message integrity. The AES

	Counter-Mode/CBCMAC Protocol (AESCCMP) provides extremely robust data confidentiality using a 128- bit key. Use of AES-CCMP encryption is specified as a standard requirement for WPA2. Before implementing WPA2 in the network, be sure client devices are upgraded to WPA2-compliant hardware.
RADIU Server IP Address	Enter the RADIUS server host IP address.
RADIU Server Port	Set the UDP port used in the authentication protocol of the RADIUS server. (Range: 1024-65535; Default: 1812)
RADIU Server Password	A shared text string used to encrypt messages between the access point and the RADIUS server. Be sure that the same text string is specified on the RADIUS server. Do not use blank spaces in the string. Enter a shared secret/password between 1 and 99 characters in length.

■ **WPA-Mixed:**

Please refer to the WPA2 section for the definition of each field.

Figure 5-40 Security Settings – WPA-Mixed Personal

Figure 5-41 Security Settings – WPA-Mixed Enterprise

■ **802.1x Authentication:**

IEEE 802.1X is a standard framework for network access control that uses a central RADIUS server for user authentication. This control feature prevents unauthorized access to the network by requiring an 802.1X client application to submit user credentials for authentication.

Figure 5-42 Security Settings – 802.1x Authentication

The page includes the following fields:

Object	Description
Encryption	You can disable the encryption or select WEP, WPA2, and WPA-Mixed as the encryption method to your wireless network.
802.1x Authentication	Enable 802.1x authentication function and then enter the IP Address, Port, and Password of the Radius Server.
RADIU Server IP	Enter the RADIUS server host IP address.

Address	
RADIU Server Port	Set the UDP port used in the authentication protocol of the RADIUS server. (Range: 1024-65535; Default: 1812)
RADIU Server Password	A shared text string used to encrypt messages between the access point and the RADIUS server. Be sure that the same text string is specified on the RADIUS server. Do not use blank spaces in the string. Enter a shared secret/password between 1 and 99 characters in length.

5.4.4 Access Control

Choose menu "**Wireless → Access Control**" to allow or deny the computer of specified MAC address to connect with the WMC251-1W-2T-150 on this page. After the configuration, please click the "Apply Changes" button to save the settings.

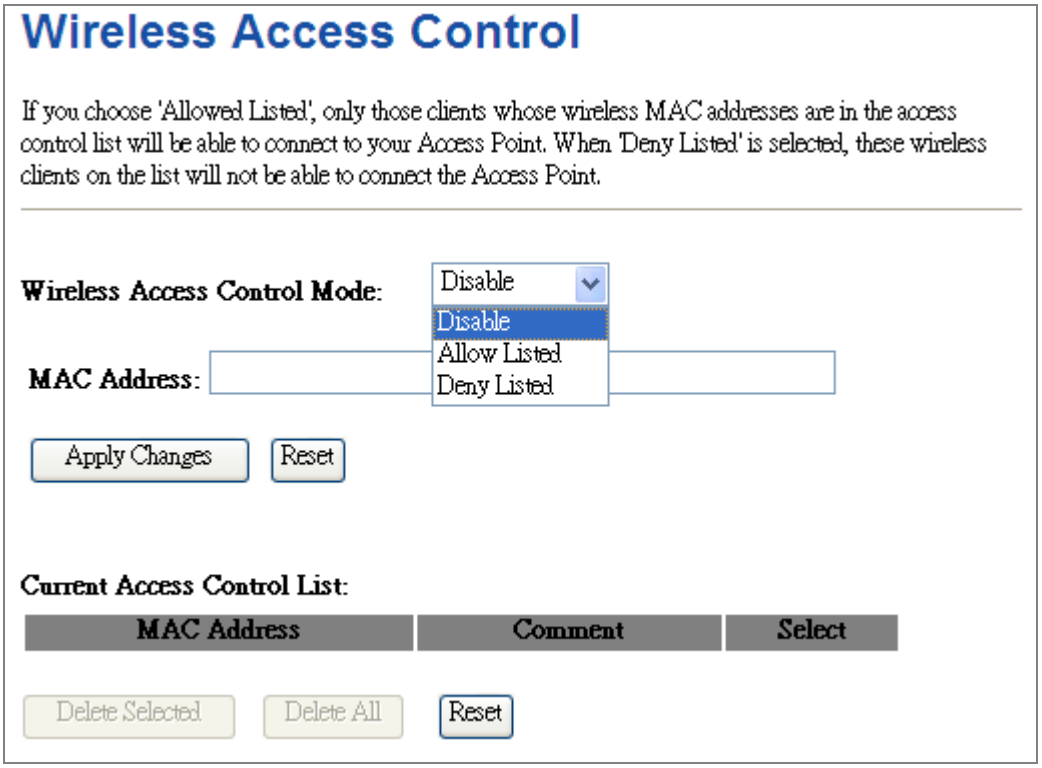


Figure 5-43 Wireless Access Control

The page includes the following fields:

Object	Description
Wireless Access Control Mode	You can choose to set the Allowed-List, Denied-List, or disable this function.
MAC Address	Enter the MAC address you want to allow or deny connection to the WMC251-1W-2T-150 in the field.
Comment	You can make some comment on each MAC address on the list.

Current Access Control List	You can select some MAC addresses and click the “Delete Selected” button to delete it.

■ **Wireless Access Control example:**

To deny a PC at the MAC address of 9c:F6:1A:00:00:01 to connect to your wireless network, do as follows:

Step 1. Select “**Deny**” from MAC Address Filter drop-down menu.

Step 2. Enter 9c:F6:1A:00:00:01 in the MAC address box and click “**Add**”.

Step 3. Click the “**OK**” button to save your settings and you can add more MAC addresses, if you like, simply repeat the above steps.

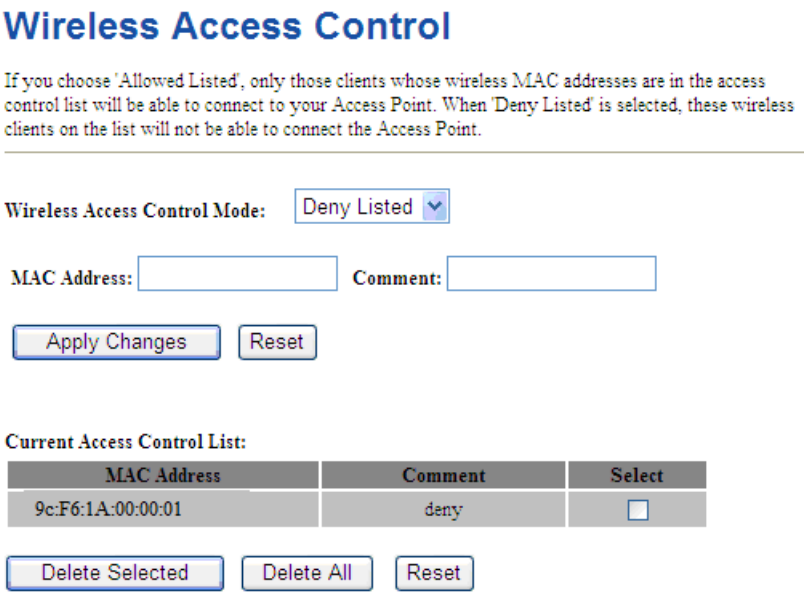
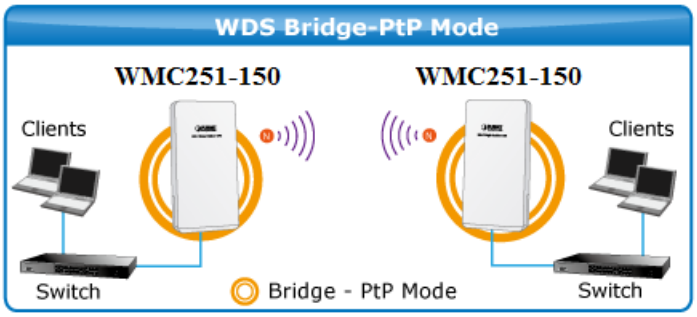
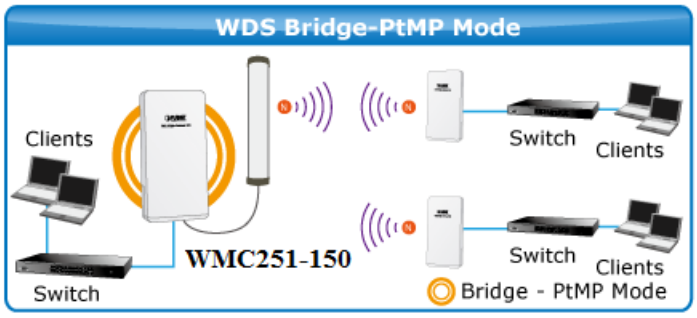


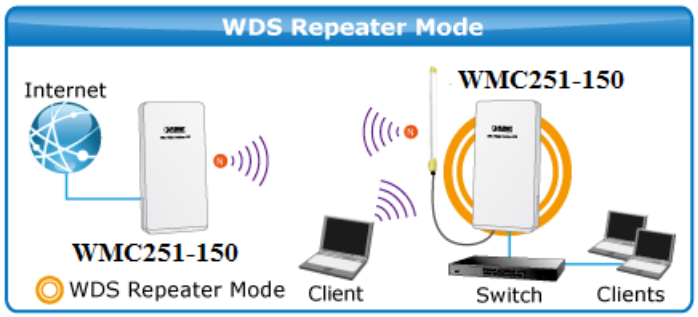
Figure 5-44 Wireless Access Control – Deny

5.4.5 WDS

WDS (Wireless Distribution System) feature can be used to extend your existing wireless network coverage.







Before configuring the WDS Setting page, you have to select the wireless mode to "**WDS**" on the **Wireless** -> **Basic Settings** web page.

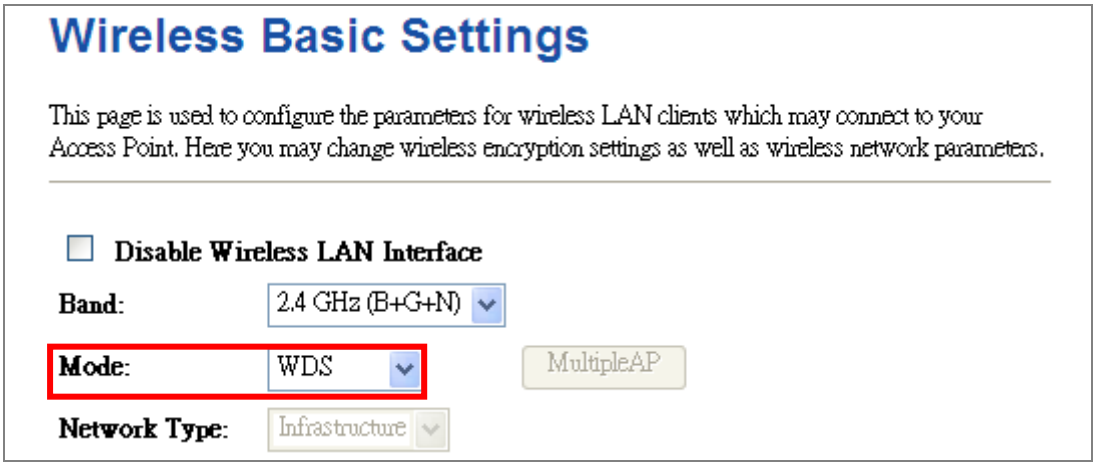


Figure 5-45 WDS Mode

Choose menu "**Wireless → WDS Settings**" to configure WDS to connect the WMC251-1W-2T-150 with another AP on this page. After the configuration, please click the "**Apply Changes**" button to save the settings.

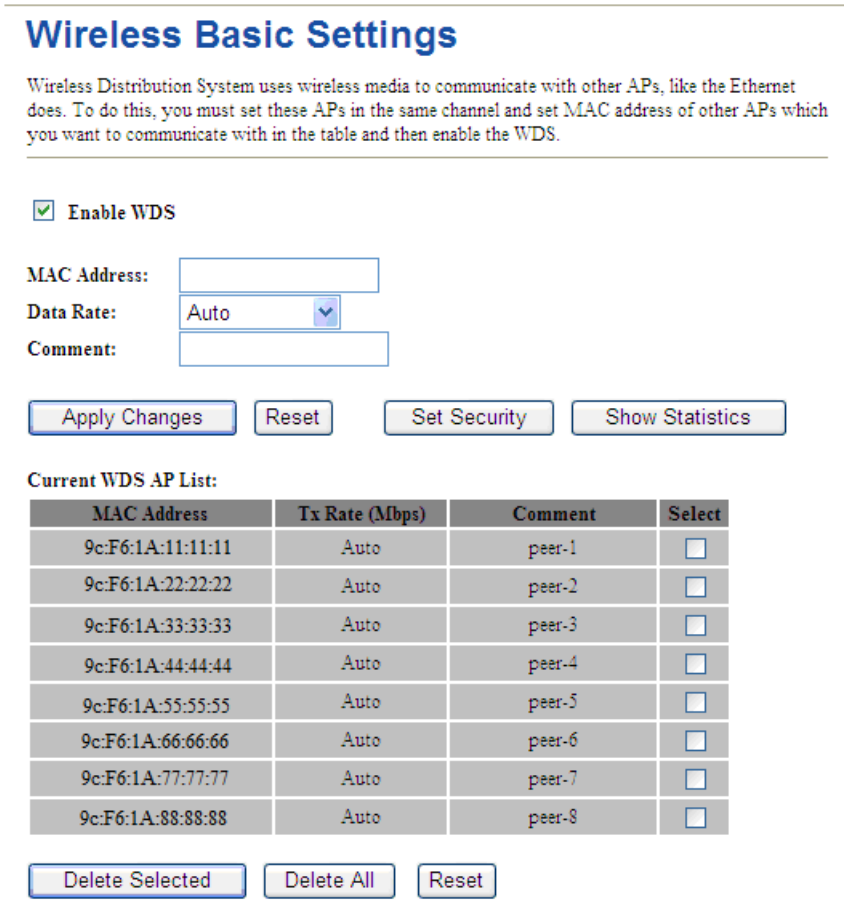


Figure 5-46 WDS Settings

The page includes the following fields:

Object	Description
Enable WDS	Check the box to enable the WDS function. Please select **WDS** or **AP+WDS** in the Mode of **Wireless Basic Settings** before you enable WDS on this page.
MAC Address	You can enter the MAC address of the AP you want to connect with.
Data Rate	Default is "**Auto"**.
Comment	You can make some comment for each MAC address on the list.
Set Security	Click the "**Set Security**" button to configure the wireless security parameters of the AP you want to connect via WDS.
Show Statics	Click the "Show Statics" button to show the WDS AP.
Current WDS AP List	You can select some MAC addresses of the AP and click the "Delete Selected" button to delete it.

Once clicked “Set Security” to enter the following page to configure the encryption method and pre-shared key for the WDS connection.

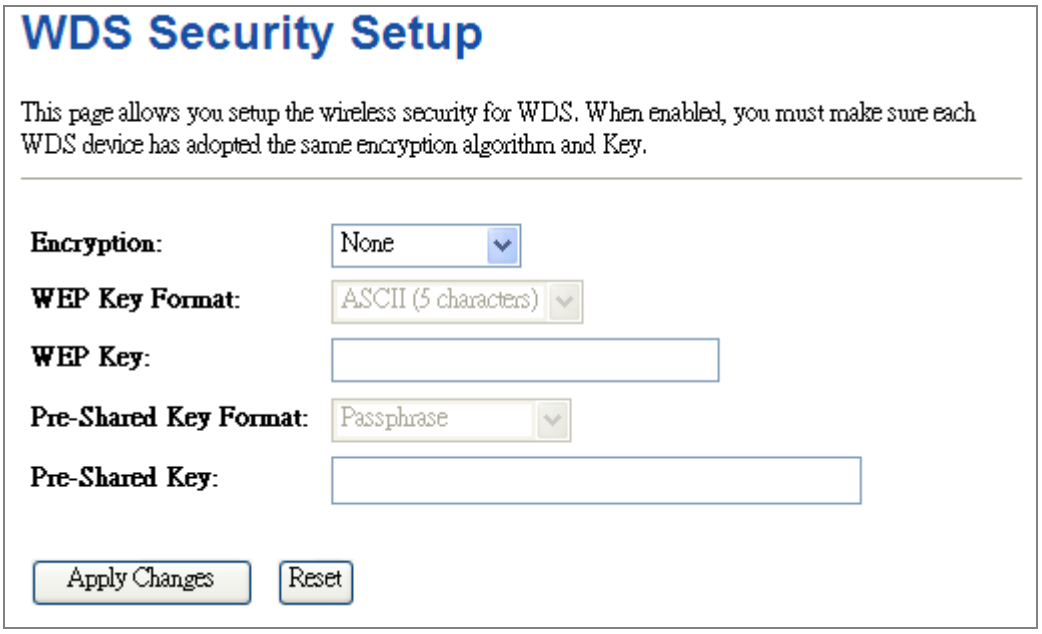


Figure 5-47 WDS – Set Security

Note	WDS feature can only be implemented between 2 wireless devices that both support the WDS feature. Plus, **channel**, **security settings** and **security key** must be **the same** on both such devices.

Note	To encrypt your wireless network, click “**Set Security**”. For the detail of wireless security, see **section 5.5.4**. Do remember to reboot the device after you save your wireless security settings; otherwise, the WDS feature may not function.

5.4.6 Site Survey

Choose menu “**Wireless → Site Survey**” to scan the available local AP. If any Access Point is found, you could choose any one to connect with manually when the **Client Mode** is enabled.

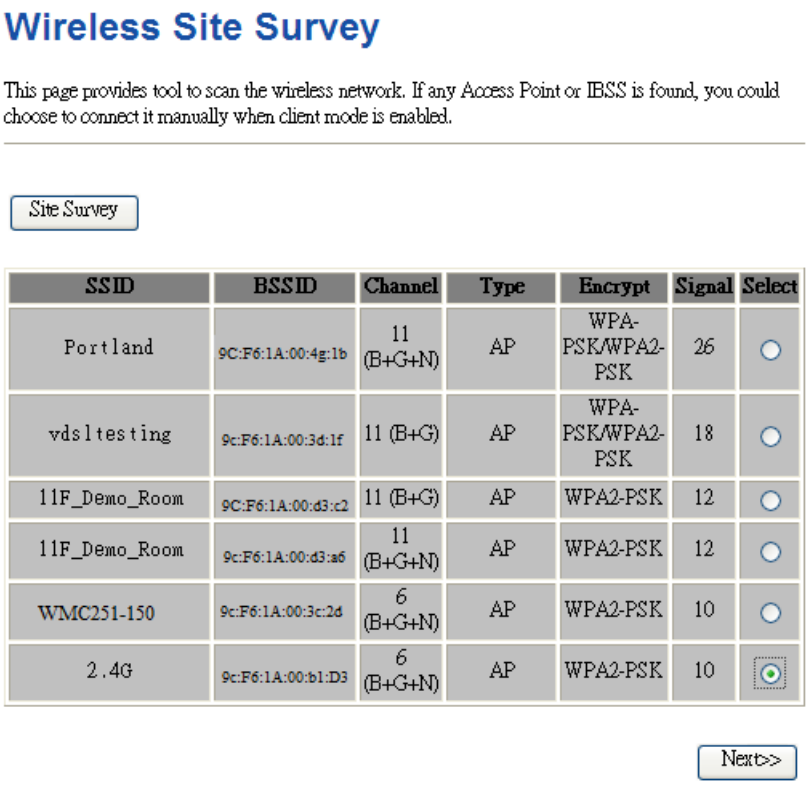


Figure 5-48 Site Survey

5.4.7 WPS

WPS (**Wi-Fi Protected Setup**) is designed to ease setup of security Wi-Fi networks and subsequently network management. This Wireless Router supports WPS features for **AP mode**, **AP+WDS mode**, **Infrastructure-Client mode**, and the wireless root interface of **Universal Repeater mode**.

Simply enter a PIN code or press the software PBC button or hardware WPS button (if any) and a secure wireless connection is established.

- **PBC:** If you find the WPS LED blinking for 2 minutes after you press the hardware WPS button on the device, it means that PBC encryption method is successfully enabled. And an authentication will be performed between your router and the WPS/PBC-enabled wireless client device during this time; if it succeeds, the wireless client device connects to your device, and the WPS LED turns off. Repeat steps mentioned above if you want to connect more wireless client devices to the device.
- **PIN**：To use this option, you must know the PIN code from the wireless client and enter it in corresponding field on your device while using the same PIN code on client side for such connection.

The page includes the following fields:

Object	Description
Disable WPS	You can check the box to disable the WPS function.

WPS Status	Here you can check if the connection via WPS is established or not.
Self-PIN Number	It is the PIN number of the WMC251-1W-2T-150 here.
Push Button Configuration	Click the “Start PBC” to activate WPS as well in the client device within 2 minutes.
Client PIN Number	In addition to the PBC method, you can also use the PIN method to activate the WPS. Just enter the PIN number of the client device in the field and click the “Start PIN” button.

Note

The WPS encryption can be implemented only between your Router and another WPS-capable device.

➢ Example of how to establish wireless connection using **WPS**. Please take the following steps:

Step 1. Choose menu “**Wireless → WPS**” to configure the setting for WPS. After the configuration, please click the “Apply Changes” button to save the settings.

Step 2. Add a new device.

If the wireless adapter supports Wi-Fi Protected Setup (WPS), you can establish a wireless connection between wireless adapter and AP using either Push Button Configuration (PBC) method or PIN method.

Note

To build a successful connection by WPS, you should also do the corresponding configuration of the new device for WPS function.

A. By Push Button Configuration (PBC)

i. Click the “Start PBC” Button on the WPS page of the AP.

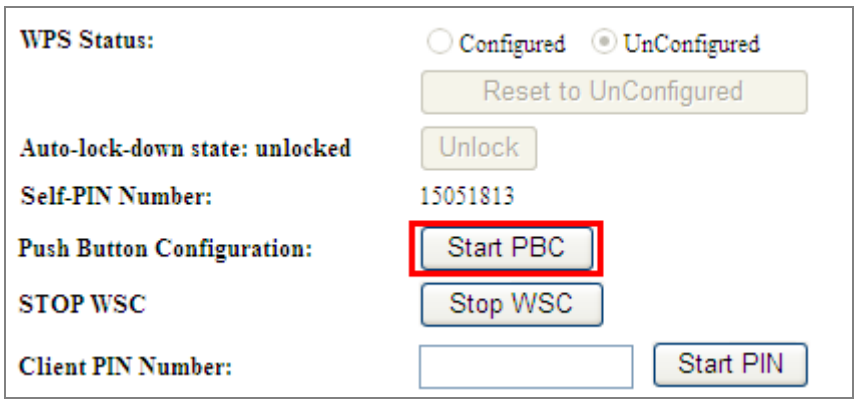


Figure 5-49 WPS-PBC

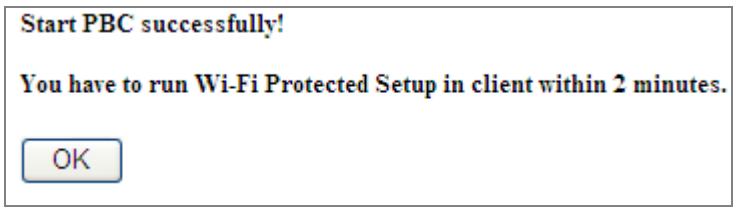


Figure 5-50 WPS-PBC

ii. Press and hold the WPS Button equipped on the adapter directly for 2 or 3 seconds. Or you can click the WPS button with the same function in the configuration utility of the adapter. The process must be finished within 2 minutes.

iii. Wait for a while until the next screen appears. Click **OK** to complete the WPS configuration.

B. By PIN

If the new device supports Wi-Fi Protected Setup and the PIN method, you can add it to the network by PIN with the following two methods.

Method One: Enter the PIN of your Wireless adapter into the configuration utility of the AP

i. Enter the PIN code of the wireless adapter in the field behind **Client PIN Number** in the following figure and then click **Start PIN**.

The PIN code of the adapter is always displayed on the WPS configuration screen.

Figure 5-51 WPS-PIN

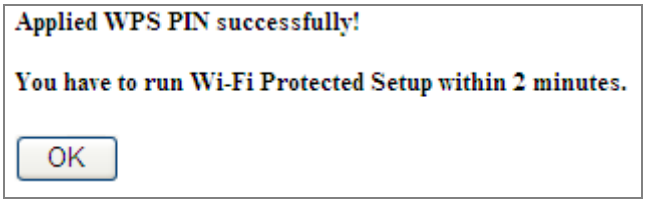


Figure 5-52 WPS-PIN

ii. For the configuration of the wireless adapter, please choose the option that you want to **enter PIN into the AP (Enrollee)** in the configuration utility of the WPS and click **Next** until the process finishes.

Method Two: Enter the PIN of the AP into the configuration utility of your Wireless adapter

i. Click the "Start PBC" Button on the WPS page of the AP. Get the Current PIN code of the AP in WPS page (each AP has its unique PIN code).

Figure 5-53 WPS-PIN

ii. For the configuration of the wireless adapter, please choose the option that you want to **enter the PIN of the AP (Registrar)** in the configuration utility of the Wireless adapter and enter it into the field. Then click **Next** until the process finishes.

5.4.8 Schedule

Wireless Schedules will enable or disable your wireless access at a set time based on your predefined schedule. This feature is often used for restricting access to all users (such as children, employees and guests) during specific times of the day for parental control or security reasons.

Choose menu "**Wireless → Schedule**" to configure the schedule rule of enabling wireless function. After the configuration, please click the "**Apply Changes**" button to save the settings.

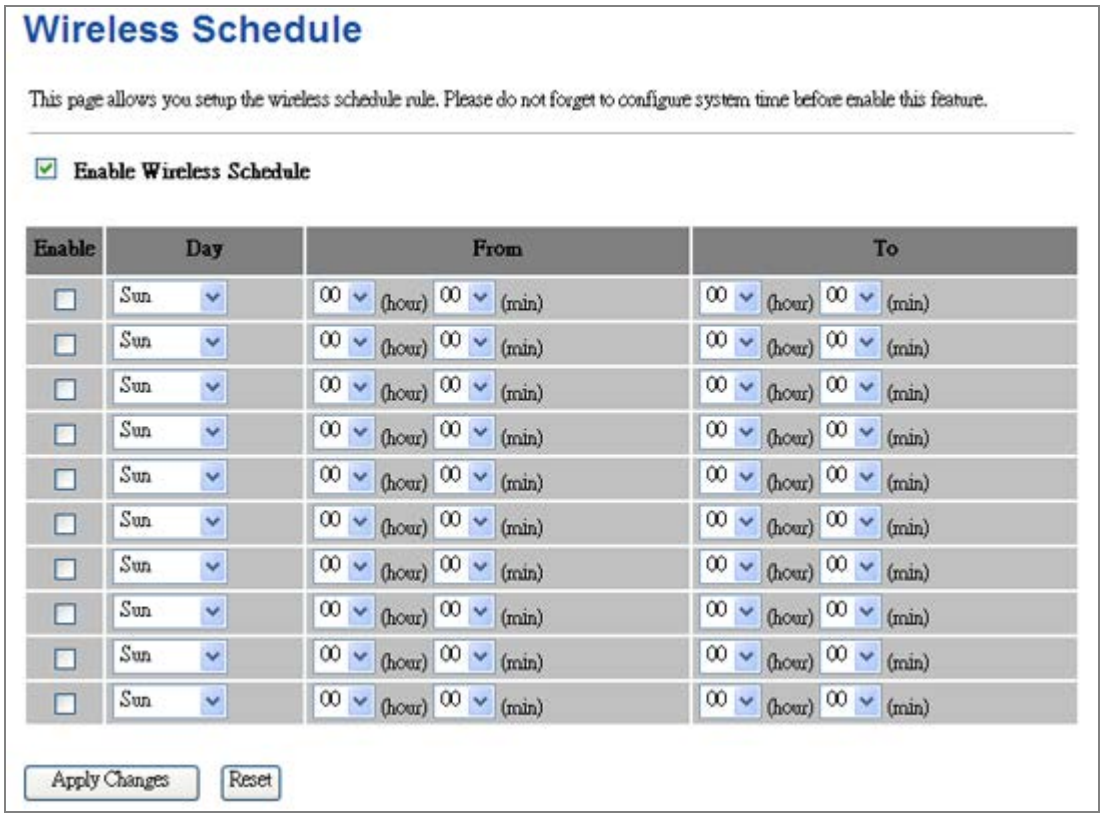


Figure 5-54 Schedule

When setting the Wireless Schedule, it is important to ensure that your **System Clock** settings have been configured. If not, your Wireless Schedule will not function correctly.

5.5 Firewall

This section contains firewall settings include Port/IP/MAC/URL Filtering/Forwarding and DMZ which are only functioning when the AP configured to “Gateway” mode. Please refer to the following sections for the details.

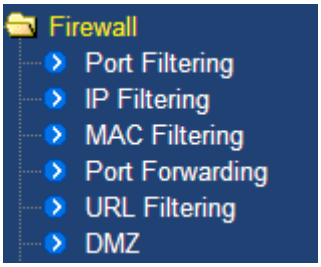


Figure 5-55 Firewall – Main Menu

5.5.1 Port Filtering

Choose menu “**Firewall → Port Filtering**”, and you can configure to re-direct a particular range of service port numbers from the Internet network to a particular LAN IP address. It helps users to host some servers behind the firewall. After the configuration, please click the “**Apply Changes**” button to save the settings.

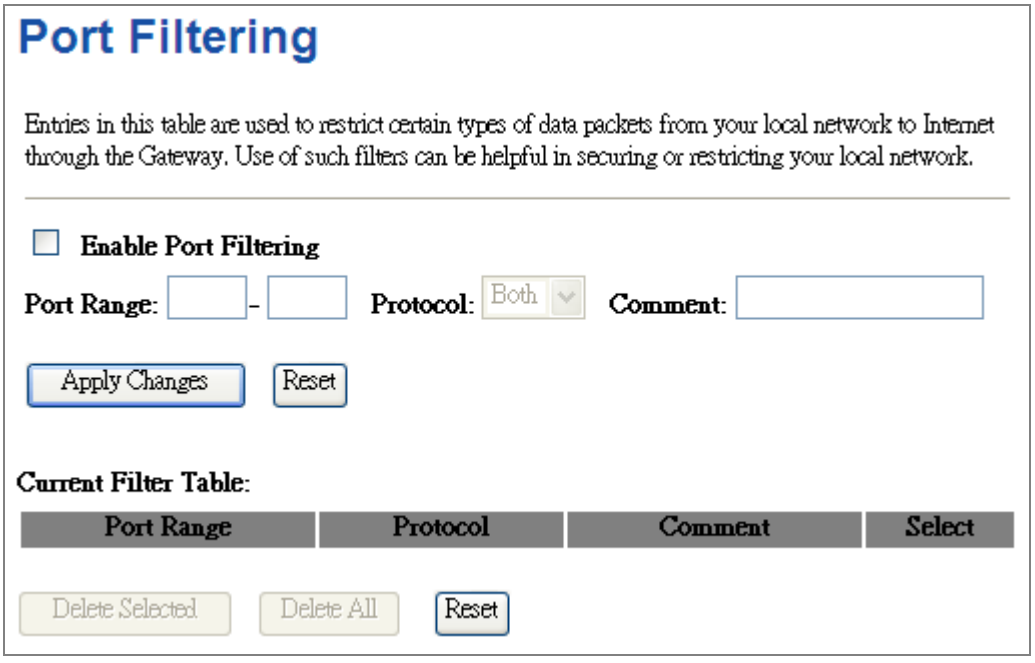


Figure 5-6-1 Port Filtering

The page includes the following fields:

Object	Description
Enable Port Filtering	Enable Port Filtering function
Port Range	Add ports you want to control. For TCP and UDP Services, enter the beginning of the range of port numbers used by the service. If the service uses a single port number, enter it in both the start and finish fields.
Protocol	Select the port number protocol type (TCP, UDP or both). If you are unsure, then leave it to the default both protocol

Comment	The description of this setting

Check the "**Select**" box of which rule you want to delete, and then click the "**Delete Selected**" button to delete it.

5.5.2 IP Filtering

IP Filtering is used to block internet or network access to **specific IP addresses** on your local network. The restricted user may still be able to login to the network but will not be able to access the internet. To begin blocking access to an IP address, enable IP Filtering and enter the IP address of the user you wish to block.

Choose menu "**Firewall → IP Filtering**", and you can configure which IP address and protocol to be restricted. After the configuration, please click the "**Apply Changes**" button to save the settings.

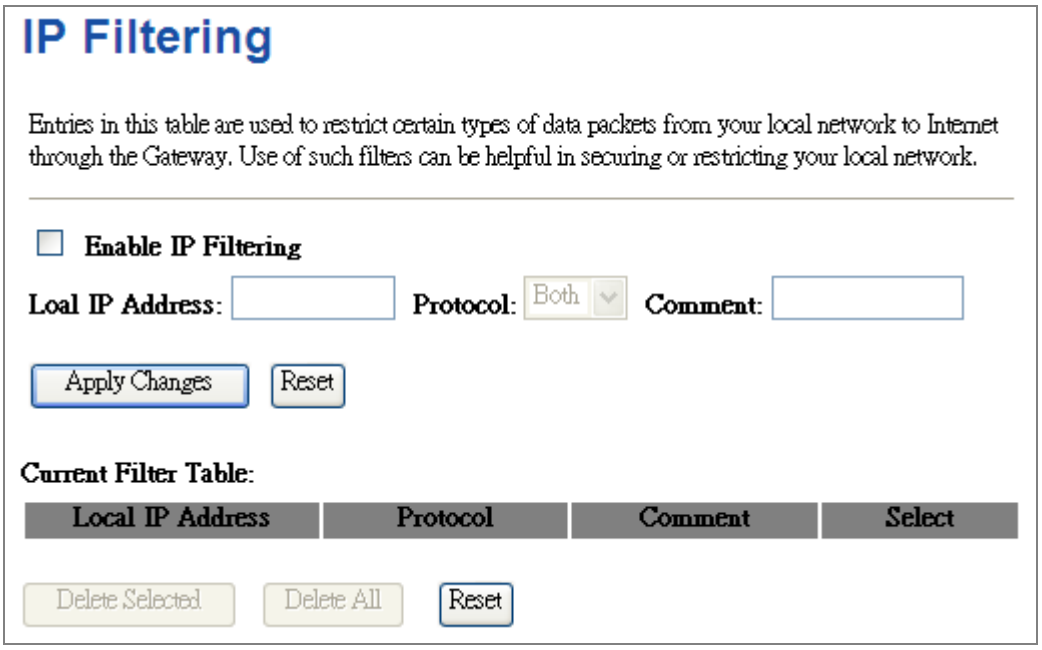


Figure 5-6-1 IP Filtering

The page includes the following fields:

Object	Description
Enable IP Filtering	Check this box to enable IP Filter function
Local IP Address	Add LAN IP address you want to control
Protocol	Select the port number protocol type (TCP, UDP or both). If you are unsure, then leave it to the default both protocol
Comment	The description of this setting

Check the "**Select**" box of which rule you want to delete, and then click the "**Delete Selected**" button to delete it.

5.5.3 MAC Filtering

Entries in this table are used to restrict certain types of data packets from your local network to Internet through

the Wireless Router. Use of such filters can be helpful in securing or restricting your local network.

Choose menu "**Security Setup→ MAC Filter**", and you can configure which computer of the specified MAC address to be restricted. After the configuration, please click the "**Apply Changes**" button to save the settings.

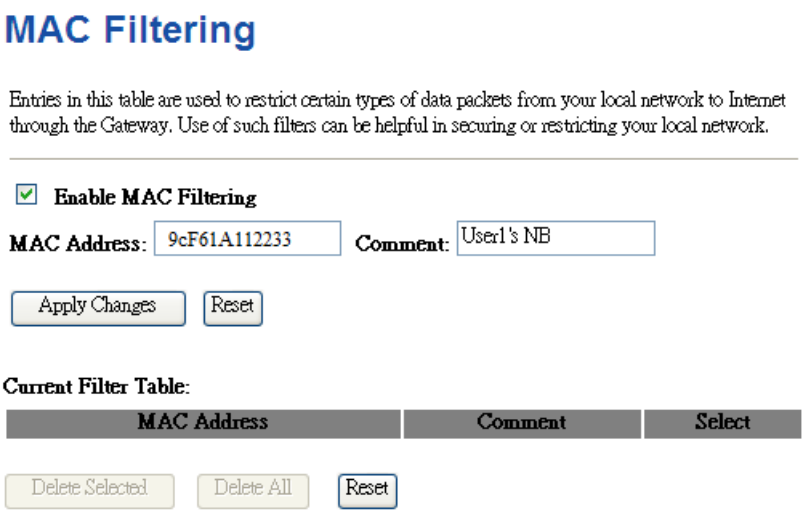


Figure 5-7-4 MAC Filtering

The page includes the following fields:

Object	Description
Enable MAC Filtering	Enable MAC filtering
MAC Address	Add MAC address you want to control. You can add maximum 20 MAC Addresses in the table.
Comment	The description of this setting

Check the "**Select**" box of which rule you want to delete, and then click the "**Delete Selected**" button to delete it.

5.5.4 Port Forwarding

Choose menu "**Firewall → Port Forwarding**", and you can configure to re-direct a particular range of service port numbers from the Internet network to a particular LAN IP address. It helps users to host some servers behind the firewall.

After the configuration, please click the "**Apply Changes**" button to save the settings.

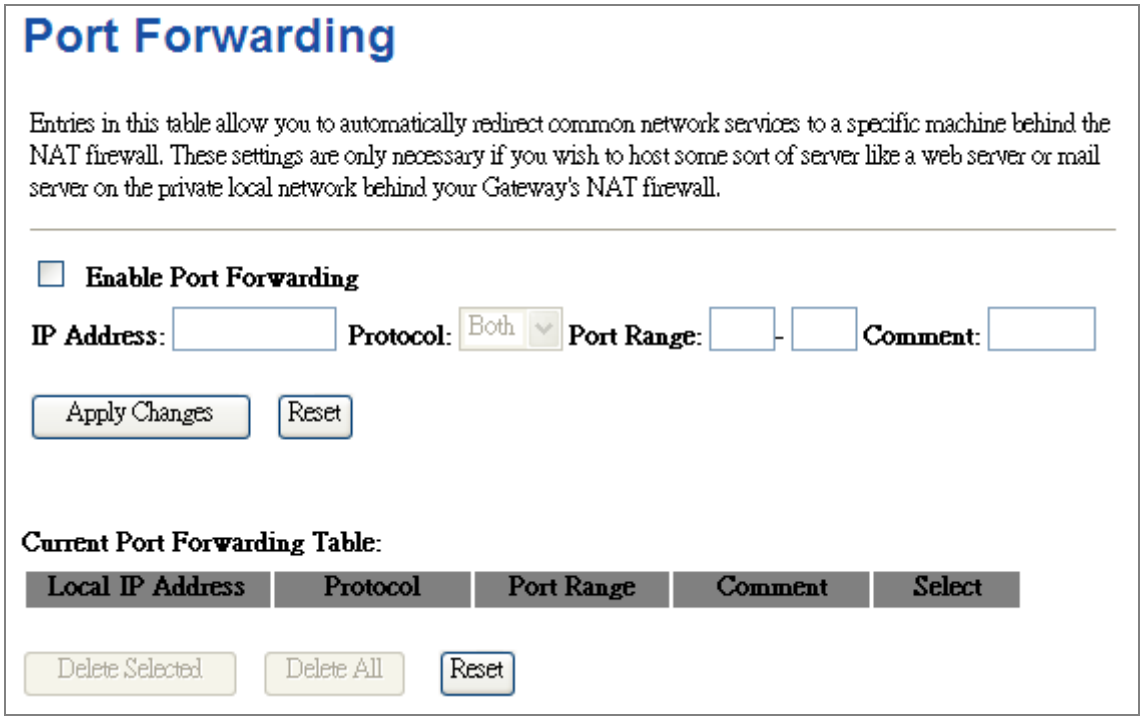


Figure 5-6-1 Port Forwarding

The page includes the following fields:

Object	Description
Enable Port Forwarding	Enable Port Forwarding function
IP Address	Add **LAN IP address** of specified host or server on the private local network
Protocol	Select the port number protocol type (TCP, UDP or both). If you are unsure, then leave it to the default both protocol
Port Range	Add ports you want to control. For TCP and UDP Services, enter the beginning of the range of port numbers used by the service. If the service uses a single port number, enter it in both the start and finish fields.
Comment	The description of this setting

Check the "**Select**" box of which rule you want to delete, and then click the "**Delete Selected**" button to delete it.

5.5.5 URL Filtering

URL filter is used to deny LAN users from accessing the internet. Block those URLs which contain keywords listed below.

Choose menu "**Firewall → URL Filtering**", and you can configure which URL addresses to be blocked. After the configuration, please click the "**Apply Changes**" button to save the settings.

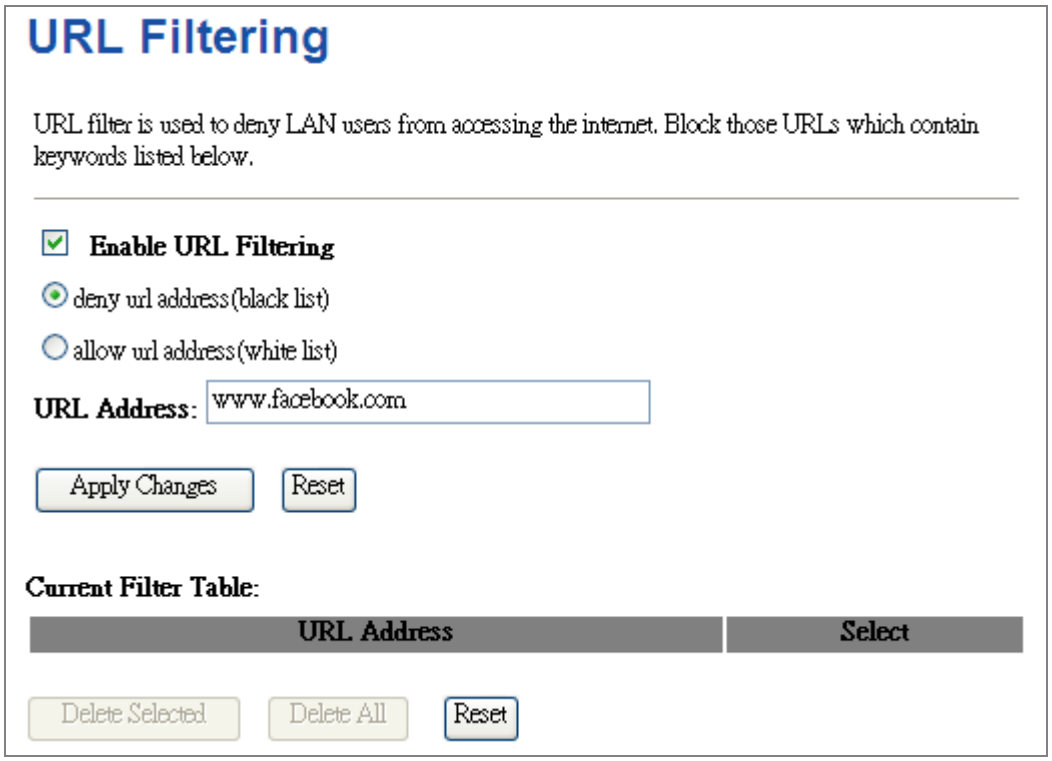


Figure 5-7-3 URL Filtering

The page includes the following fields:

Object	Description
Enable URL Filtering:	Check this box to enable URL Filter function.
IP Address:	The IP Address that you want to filter.
URL Address:	The URL Address that you want to filter.

Check the "**Select**" box of which rule you want to delete, and then click the "**Delete Selected**" button to delete it.

Note

If you wish to block www.facebook.com, simply type in "facebook" and the Wireless AP/Router will block all websites with the text "facebook" in the URL.

5.5.6 DMZ

This page allows you to set a **De-militarized Zone (DMZ)** to separate internal network and Internet.

Choose menu "**Firewall → DMZ**", and you can configure the private IP address of DMZ. The DMZ feature allows one local host to be exposed to the Internet for a special-purpose service such as Internet gaming or video conferencing. After the configuration, please click the "**Apply Changes**" button to save the settings.

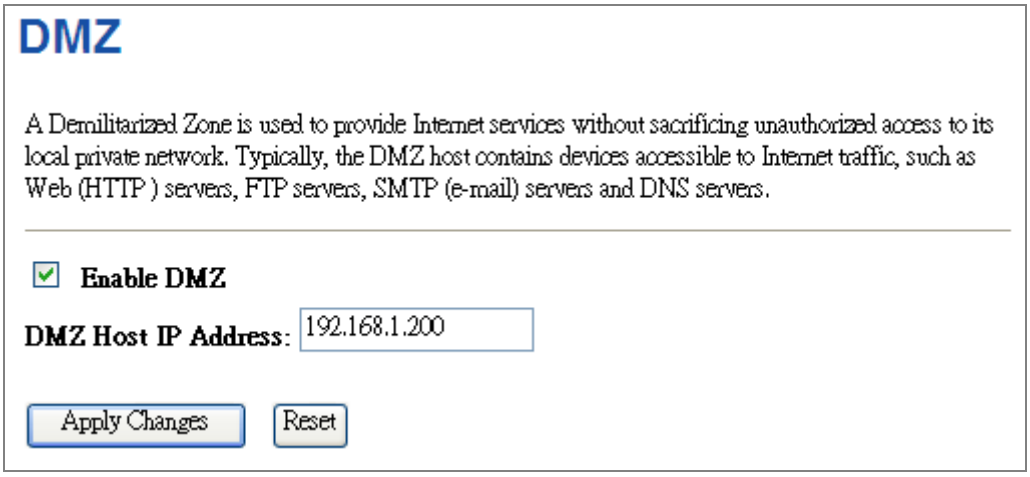


Figure 5-6-2 DMZ

The page includes the following fields:

Object	Description
Enable DMZ	Check the box to enable DMZ function. If the DMZ Host Function is enabled, it means that you set up DMZ host at a particular computer to be exposed to the Internet so that some applications/software, especially Internet / online game can have two way connections.
DMZ Host IP Address	Enter the IP address of a particular host in your LAN which will receive all the packets originally going to the WAN port / Public IP address above.

5.6 QoS

The **QoS (Quality of Service)** helps improve your network gaming performance by prioritizing applications. By default the bandwidth control are disabled and application priority is not classified automatically. In order to complete this settings, please follow the steps below.

1. Enable this function.
2. Enter the total speed or choose automatic mode.
3. Enter the IP address or MAC address user want to control.
4. Specify how to control this PC with this IP address or MAC address, including maximum or minimum bandwidth, priority and its up/down speed.

After the configuration, please click the "**Apply Changes**" button to save the settings.

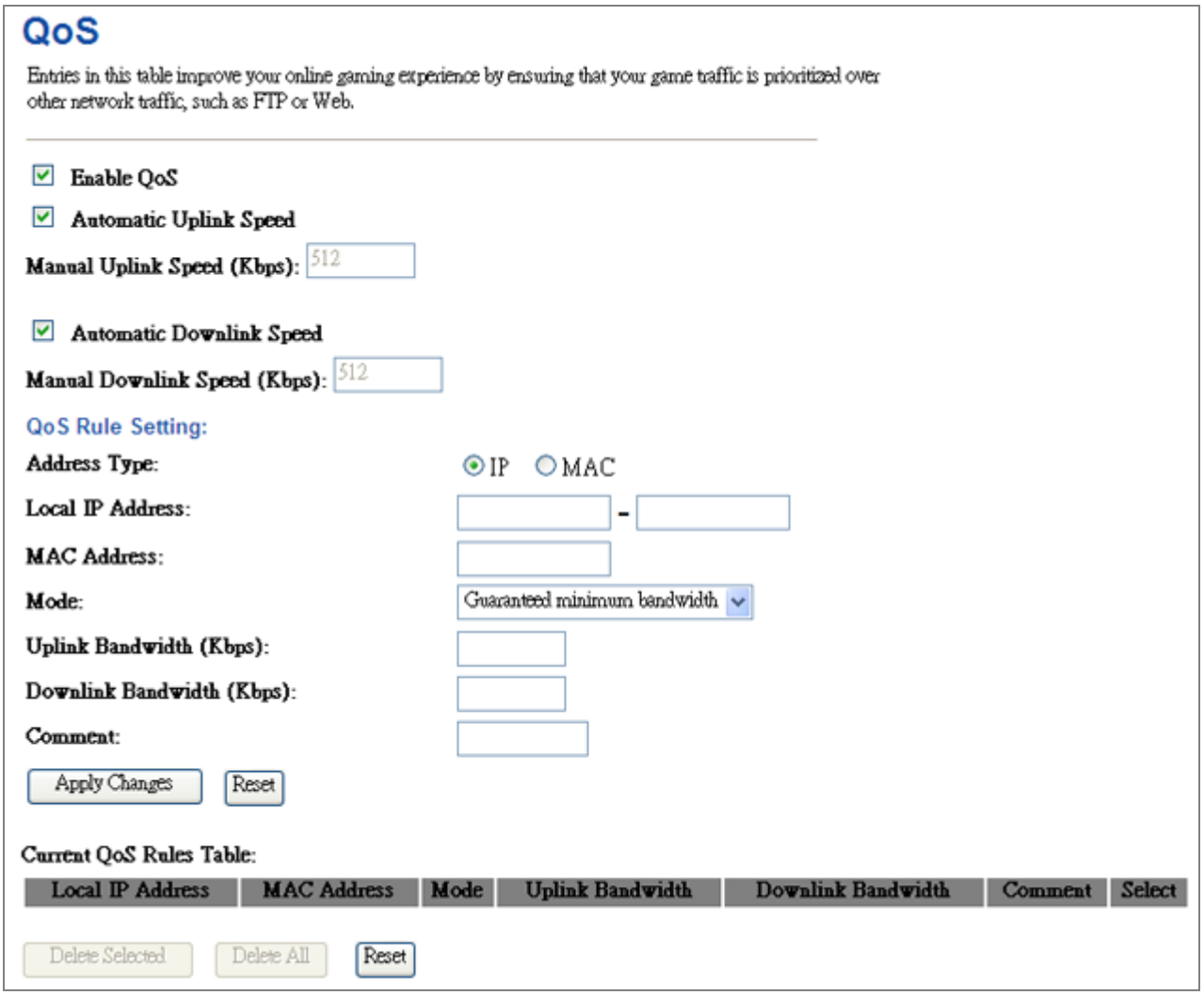


Figure 5-9-1 QoS

The page includes the following fields:

Object	Description
Enable QoS	Check the box to enable the QoS function.
Automatic Uplink Speed	Check the box to adjust the uplink speed automatically by the WMC251-150. Or enter the uplink data rate manually in the field below.
Automatic Downlink Speed	Check the box to adjust the downlink speed automatically by the WMC251-150. Or enter the downlink data rate manually in the field below.
QoS Rule Setting	To set the priority rule, you can appoint the computer by **IP** address or **MAC** address, and enter it in the correct field. Select **minimum** or **maximum** bandwidth, and then fill the **uplink** and **downlink** data rate into the field.

5.7 Management

This section focuses on how to maintain AP, including Restore to Factory Default Setting, Backup/Restore, Firmware Upgrade, Reboot, Password Change and Syslog.

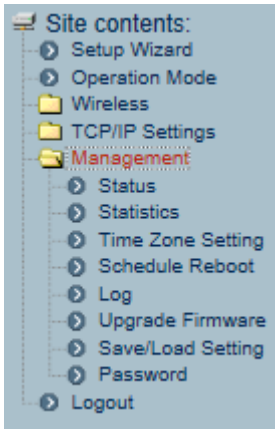
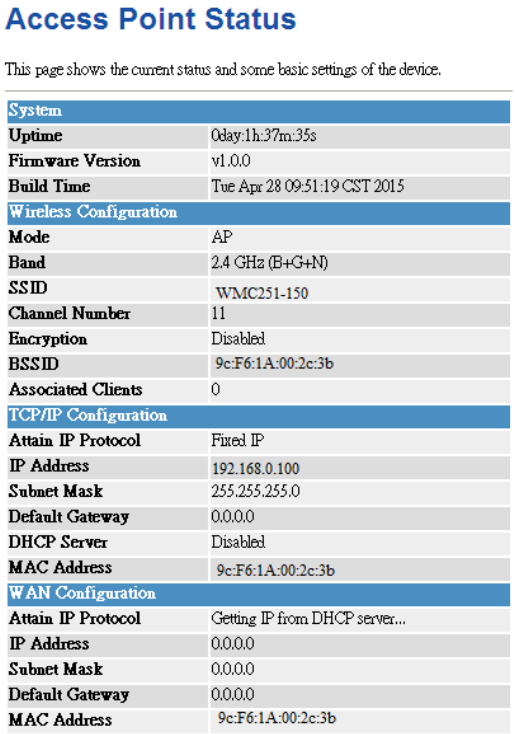


Figure 5-56 Management – Main Menu

5.7.1 Status

You can use this function to realize the instantaneous information of the Wireless AP. The Information displayed here may vary on different configurations.

Choose menu "**Management → Status**" to show the current status and some basic settings of the WMC251-150.



Access Point Status

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

System	
Uptime	0day:1h:37m:35s
Firmware Version	v1.0.0
Build Time	Tue Apr 28 09:51:19 CST 2015
Wireless Configuration	
Mode	AP
Band	2.4 GHz (B+G+N)
SSID	WMC251-150
Channel Number	11
Encryption	Disabled
BSSID	9c:F6:1A:00:2c:3b
Associated Clients	0
TCP/IP Configuration	
Attain IP Protocol	Fixed IP
IP Address	192.168.0.100
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DHCP Server	Disabled
MAC Address	9c:F6:1A:00:2c:3b
WAN Configuration	
Attain IP Protocol	Getting IP from DHCP server...
IP Address	0.0.0.0
Subnet Mask	0.0.0.0
Default Gateway	0.0.0.0
MAC Address	9c:F6:1A:00:2c:3b

Figure 5-57 Status

5.7.2 Statistics

Choose menu "**Management → Statistics**" to show the packet counters for transmission and reception regarding wireless and Ethernet network.

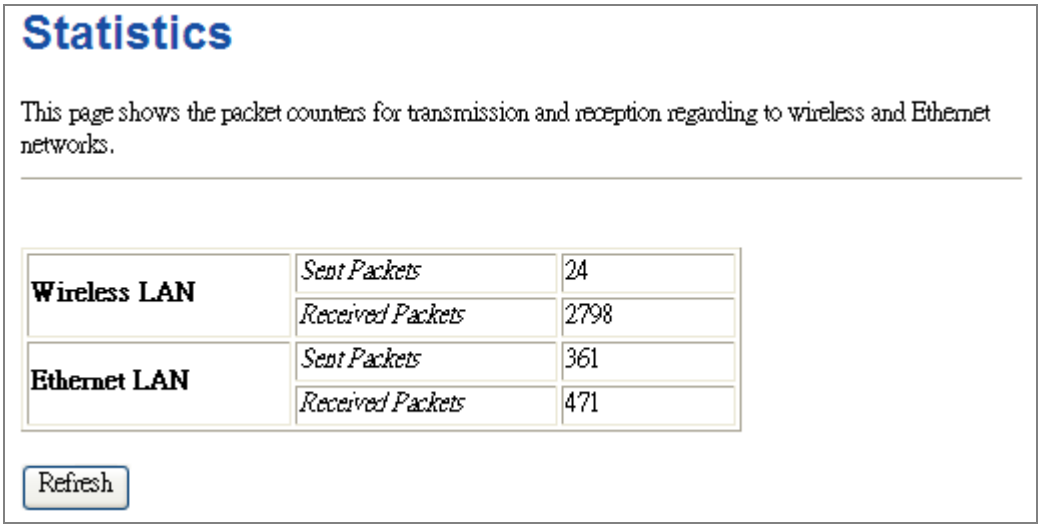


Figure 5-58 Statistics

The page includes the following fields:

Object	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.
Refresh	Click the refresh the statistic counters on the screen.

5.7.3 DDNS (Dynamic DNS Settings)

Enable "**Operation Mode**" → "**Gateway**" or "**Wireless ISP**" mode and then enter the "**DDNS**" page by choosing menu "**Management → DDNS**". This section allows you to configure the DDNS settings.

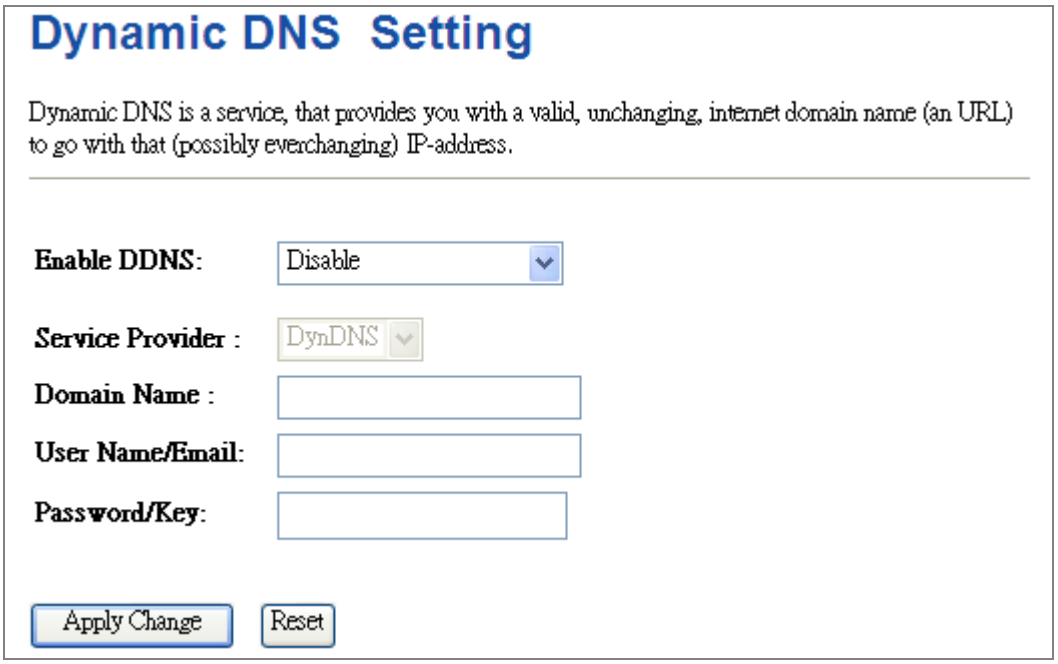
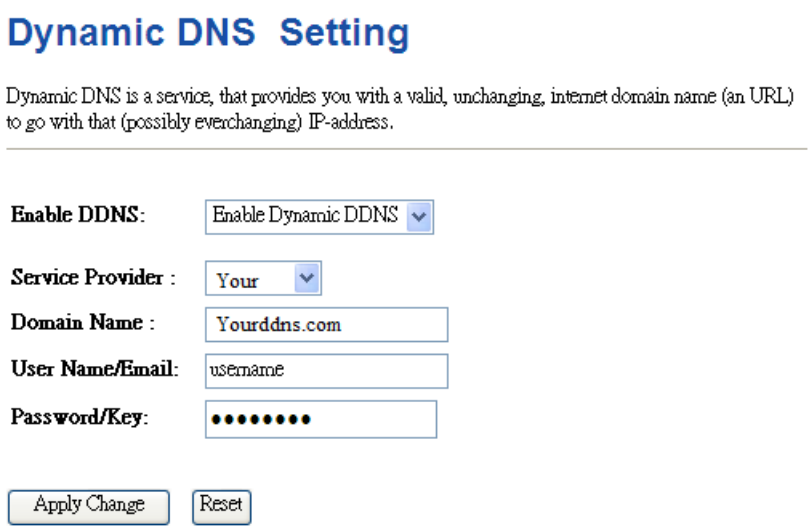


Figure 5-59 Dynamic DNS Settings

Object	Description
• **Enable DDNS**	**Disable:** Disable DDNS function **Enable Easy DDNS:** Enable IFS Easy DDNS **Enable Dynamic DDNS:** You are allowed to modify the DDNS settings.
• **Service Provider**	Select a server provider or disable the existing server.
• **Domain Name**	Enter the host name or domain name provided by DDNS provider.
• **Account**	Enter the DDNS user name of the DDNS account.
• **Password**	Enter the DDNS password of the DDNS account.

Enable "**Operation Mode**" → "**Gateway**" or "**Wireless ISP**" mode and then enter the "**DDNS**" page by choosing menu "**Management → DDNS**".

Step 1. Select "**Enable Dynamic DDNS**" from the list of Dynamic DNS Provider to use your DDNS service.



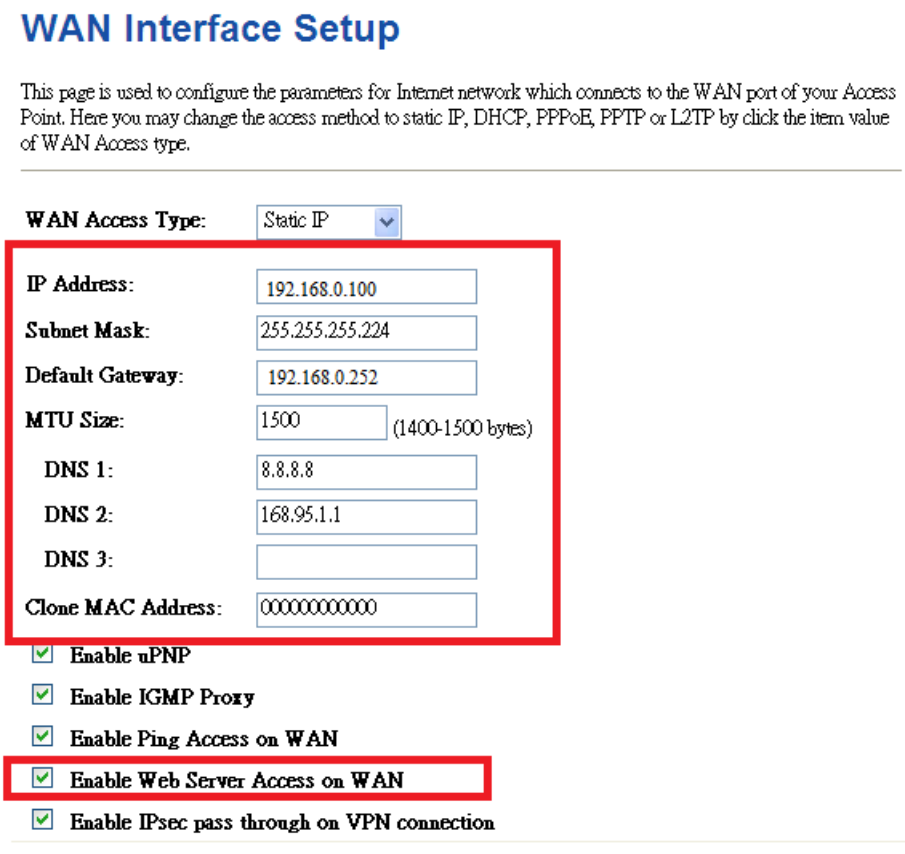
Step 2. Configure the DDNS account that has been registered in IFS DDNS website.

Domain Name: Enter your DDNS host (format: xxx.Yourddns.com, xxx is the registered domain name)

User Name/Email: Enter your registered DDNS user name.

Password: Enter the password of your account.

Step 3. Go to "**TCP/IP Settings → WAN Interface Setup**" to enable Web Server Access on WAN port and configure WAN connection to Static IP (fixed IP).



Step 4. Save the setting and connect your WAN port of the Wireless AP to the internet via Ethernet cable. In a remote computer, enter the DDNS host name as the figure shown below. Then, you should be able to login the WMC251-1W-2T-150 remotely.

Example of Easy DDNS Settings:

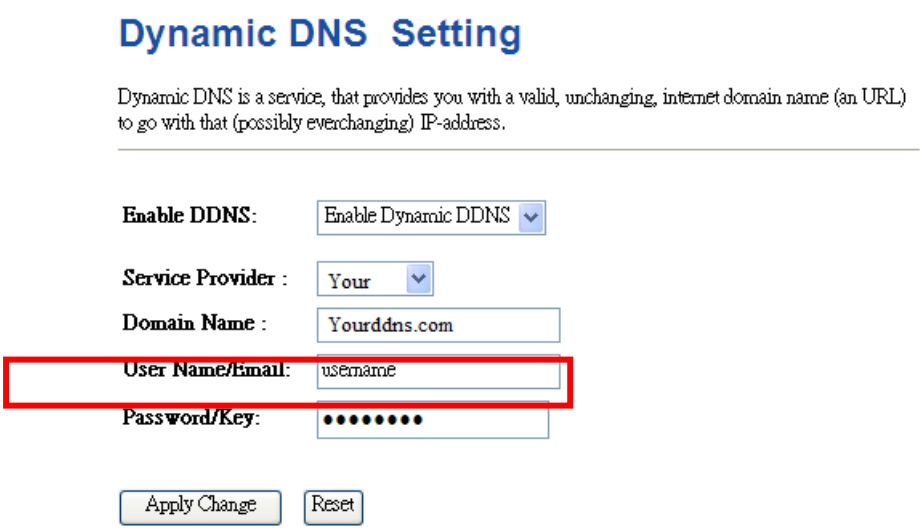
Note

This service is not required to register any DDNS account.

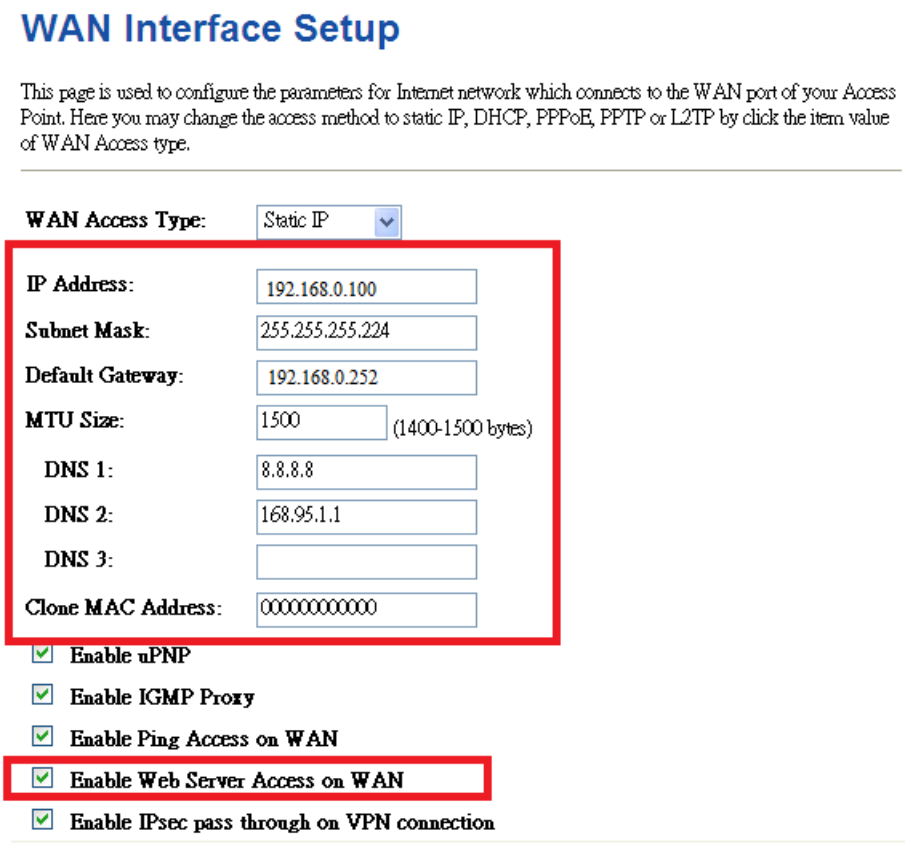
Please refer to the procedure listed as follows to configure using IFS Easy DDNS service.

Step 1. Select "**Enable Easy DDNS**" to use the IFS Easy DDNS service.

Domain Name: Display the specified domain name for this device. (Format: xxxxxx.Yourddns.com, xxxxxx is the last six-digit of the WAN Port MAC address)



Step 2. Go to "**TCP/IP Settings → WAN Interface Setup**" to enable Web Server Access on WAN port and configure WAN connection to Static IP (fixed IP).



Step 3. Save the setting and connect your WAN port of the Wireless AP to the internet via Ethernet cable. In a remote computer, enter the Easy Domain Name displayed in **Step 1**. Then, you should be able to login the WMC251-1W-2T-150 remotely.

5.7.4 Time Zone Setting

This section assists you in setting the Wireless AP's system time. You can either select to set the time and date manually or automatically obtain the GMT time from Internet.

Choose menu "**Management → Time Zone Setting**" to configure the system time. You can also maintain the system time by synchronizing with a public time server over the Internet. After the configuration, please click the "**OK**" button to save the settings.

The configured time and date settings are lost when the Wireless AP is powered off.

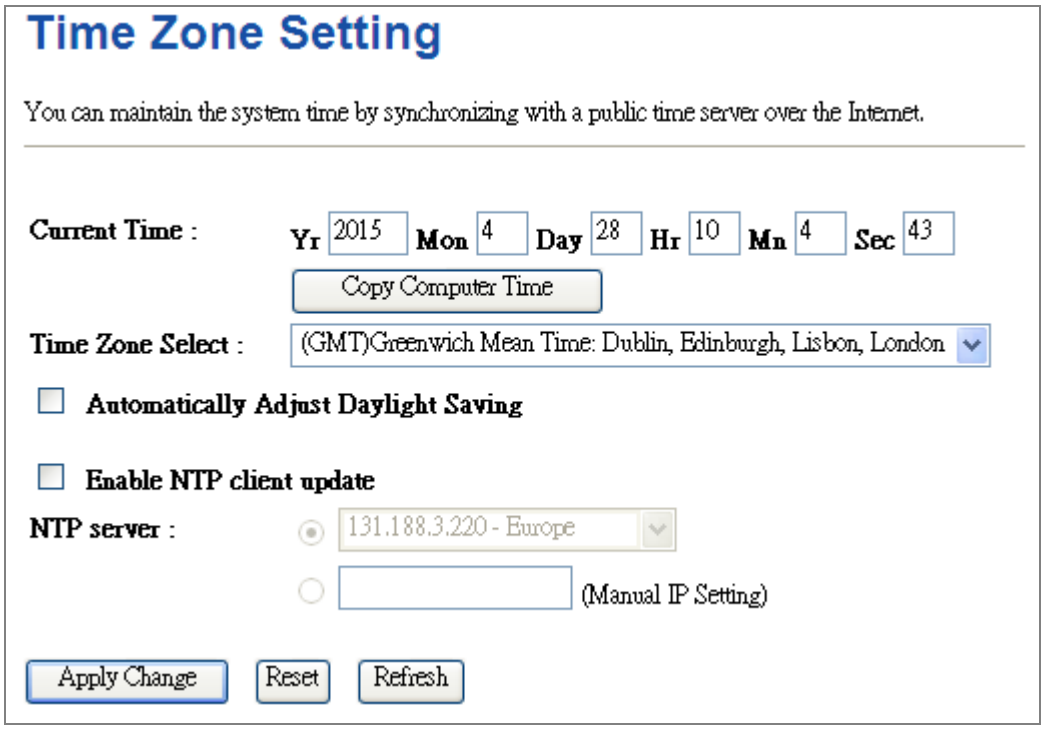


Figure 5-60 Time Zone Settings

The page includes the following fields:

Object	Description
Current Time	Input current time manually. You can click "**Copy Computer Time**" button to copy the PC's current time to the AP.
Time Zone Select	Select the time zone of the country you are currently in. The router will set its time based on your selection.
Automatically Adjust Daylight Saving	Select the time offset, if your location observes daylight saving time.
Enable NTP client update	Check to enable NTP update. Once this function is enabled, AP will automatically update current time from NTP server.
NTP Server	User may select prefer NTP sever or input address of NTP server manually.

If the AP loses power for any reason, it cannot keep its clock running, and will not have the correct time when it is started again. To maintain correct time for schedules and logs, either you must enter the correct time after you restart the AP, or you must enable the NTP Server option.

5.7.5 Schedule Reboot

This page allows you to enable and configure system reboot schedule. The device can regularly reboot according to the reserved time when connecting to the Internet.

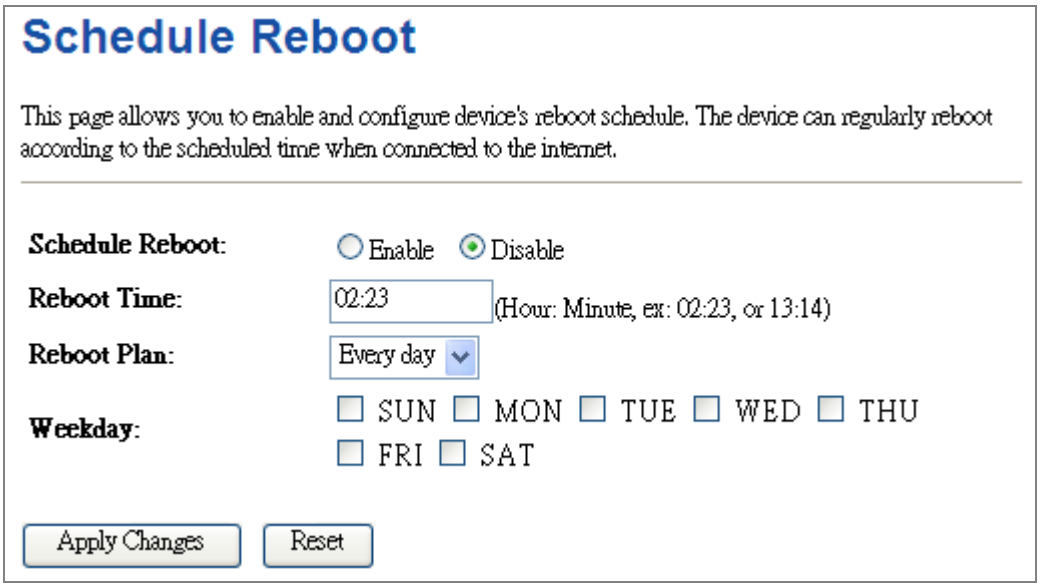


Figure 5-61 Schedule Reboot

The page includes the following fields:

Object	Description
Schedule Reboot Setting	Enable or disable the Schedule Reboot function.
Reboot Time	Enter the Reboot Time (24-hour format) to enable this function to take effect.
Reboot Plan	There are two Reboot Plans supported in the AP: **Weekday:** select this option to let the device reboot automatically according to the reserved time in one or more days of a week. **Every day:** select this option to let the device reboot automatically according to the reserved time every day.
Weekday	Check one or more days to let the device auto reboot on schedule. When choosing "Every day" as your reboot plan, the "Weekday" will be grayed out (disabled), which means Every day will auto reboot at the time that you scheduled.

Note

1. This setting will only take effect when the Internet connection is accessible and the GMT time is configured correctly.
2. You must select at least one day when choosing "**Weekday**" as your reboot plan.
3. When choosing "**Every day**" as your reboot plan, the "**Weekday**" will be grayed out (disabled), which means **Every day** will auto reboot at the time that you schedule.

■ Example of how to configure **Schedule Reboot**. Please take the following steps:

Before configured schedule reboots, please ensure the Internet connection is accessible and the GMT time is configured correctly according to **NTP Settings** page.

Step 1. Select the Schedule Reboot Setting checkbox.

Step 2. Enter the Reboot Time (24-hour format) to enable this function to take effect. For example, if you want this function to work at 23:00 every Sunday, choose "Weekday" in the Reboot Plan field.

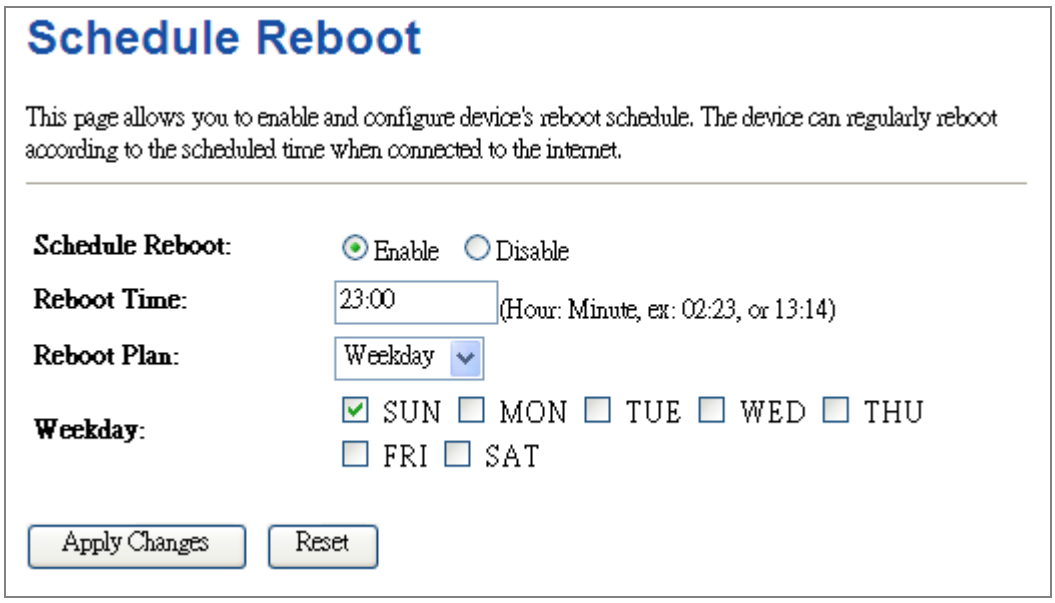


Figure 5-62 Schedule Reboot - Example

Step 3. Click the “Apply Changes” button to take this function effect.

5.7.6 Denial of Service (DoS)

The Wireless Router can prevent specific DoS attacks from entering your network. A "**Denial-of-Service**" (**DoS**) attack is characterized by an explicit attempt by hackers to prevent legitimate users of a service from using that service.

Choose menu “**Management → Denial-of-Service**” to configure the settings of DoS attack prevention. After the configuration, please click the “**Apply Changes**” button to save the settings.

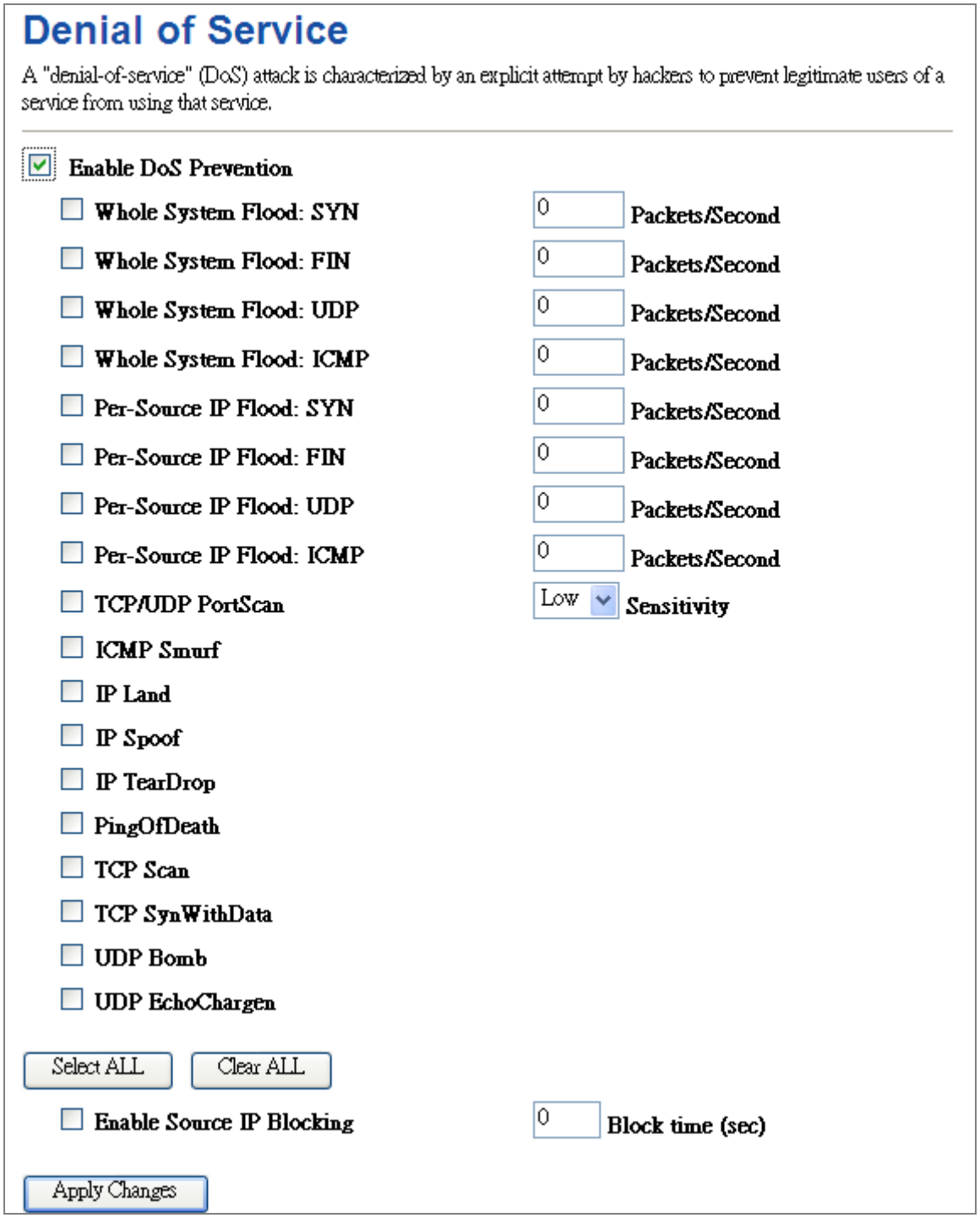


Figure 5-7-6 Denial of Service

The page includes the following fields:

Object	Description
Enable DoS Prevention	Check to enable DoS function. User may set other related configurations about DoS below

5.7.7 LOG

Choose menu “**Management → Log**” to configure the settings of system log. You can check the box of the items you want to record it in the log. After the configuration, please click the “Apply” button to save the settings.

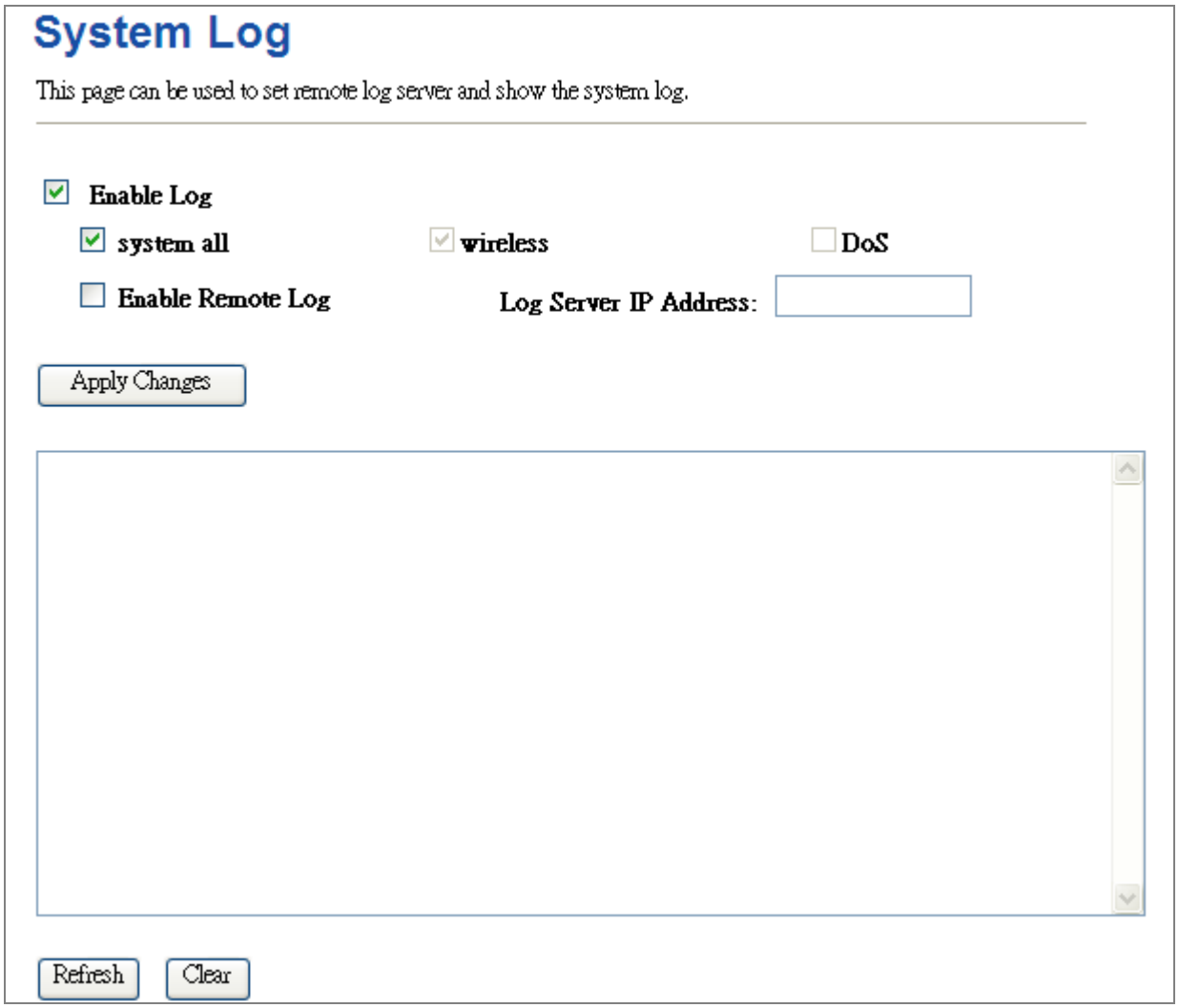


Figure 5-63 System Log

The page includes the following fields:

Object	Description
Enable Log	Check to enable log function.
System all	Check this option to display all the system logs.
Wireless	Check this option to display only the logs related to wireless module.
Enable Remote Log	Enable this option if you have a syslog server currently running on the LAN and wish to send log messages to it.
Log Server IP Address	Enter the LAN IP address of the Syslog Server.
Refresh	Click this button to update the log.
Clear	Click this button to clear the current log.

5.7.8 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.

Choose menu "**Management → Upgrade Firmware**" to upgrade the firmware of the WMC251-1W-2T-150. Select the new firmware file downloaded from the IFS website and then click "**Upload**" button to upgrade it.

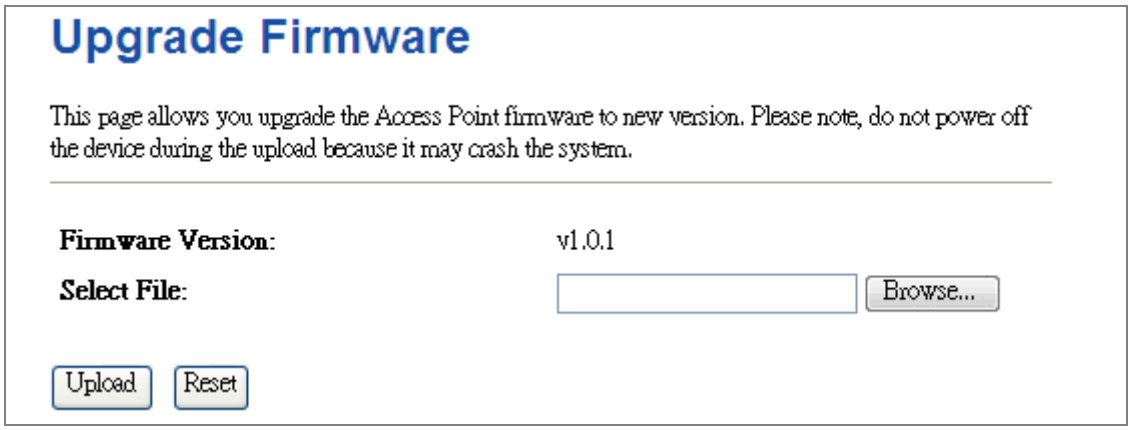


Figure 5-64 Upgrade Firmware

The page includes the following fields:

Object	Description
Firmware Version	Display the current firmware version of the AP.
Select File	Browse and select file you want to upgrade and press Upload to perform upgrade. **Please wait till the related information is shown on the screen after upgrade is finished.**

Note

Do not disconnect the Wireless AP from your management PC (the PC you use to configure the device) or power off it during the upgrade process; otherwise, it may be permanently damaged. The Wireless AP will restart automatically when the upgrade process, which takes several minutes, to complete.

5.7.9 Save/Load Setting

Choose menu "**Management → Save/Load Setting**" to back up or reset the configuration of the WMC251-1W-2T-150.

Once you have configured the Wireless AP the way you want it, you can save these settings to a configuration file on your local hard drive that can later be imported to your Wireless AP in case the device is restored to factory default settings.

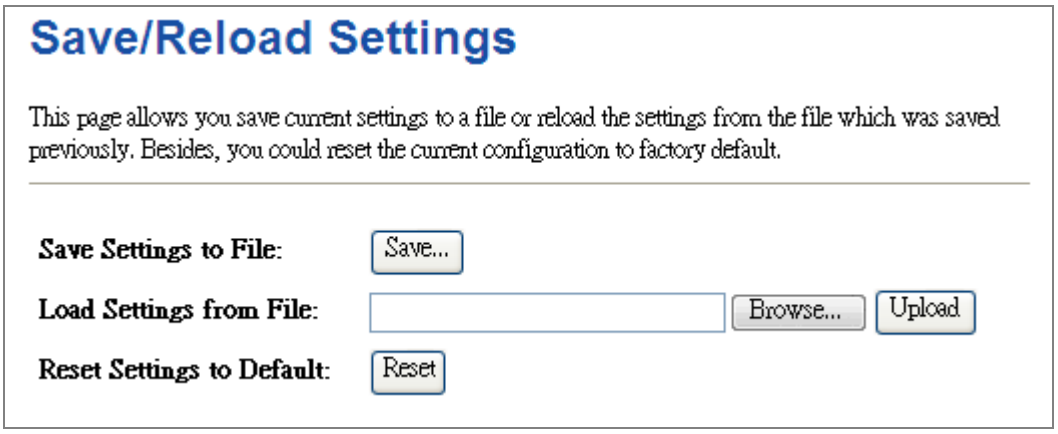


Figure 5-65 Save/Reload Settings

The page includes the following fields:

Object	Description
Save Settings to File	Click the "**Save…**" button to back up the configuration of the WMC251-1W-2T-150 and then save the "config.dat" in your computer.
Load Settings from File	Select the configuration file of the WMC251-1W-2T-150 and then click the "**Upload**" button to reload the configuration back into the WMC251-1W-2T-150.
Reset Settings to Default	Click the "**Reset**" button to reset all settings of the WMC251-1W-2T-150 to factory default. **Factory Default Settings:** User Name: **admin** Password: **admin** IP Address: **192.168.0.100** Subnet Mask: **255.255.255.0** Default Gateway: **192.168.0.253** DHCP: **Disabled** SSID: **WMC251-1W-2T-150** Wireless Security: **None**

To activate your settings, you need to reboot the Wireless AP after you reset it.

5.7.10 Password

To ensure the Wireless AP's security, you will be asked for your password when you access the Wireless AP's Web-based Utility. The default user name and password are "admin". This page will allow you to add or modify the user name and password.

Choose menu "**Management → Password**" to change the user name and password which is inputted to access the web UI of the WMC251-1W-2T-150.

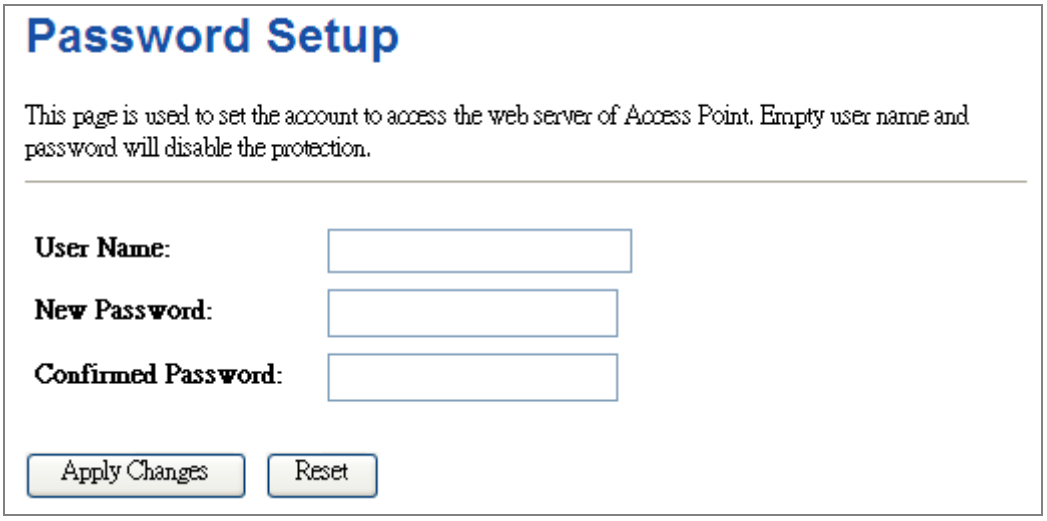


Figure 5-66 Password Setup

The page includes the following fields:

Object	Description
User Name	Enter user name.
New Password	Input password for this user.
Confirmed Password	Confirm password again.

Note

For the sake of security, it is highly recommended that you change default login password and user name.

5.7.11 Logout

To logout the WMC251-1W-2T-150, please select “**Logout**” from the left-side menu. Then, click “**OK**” to logout.

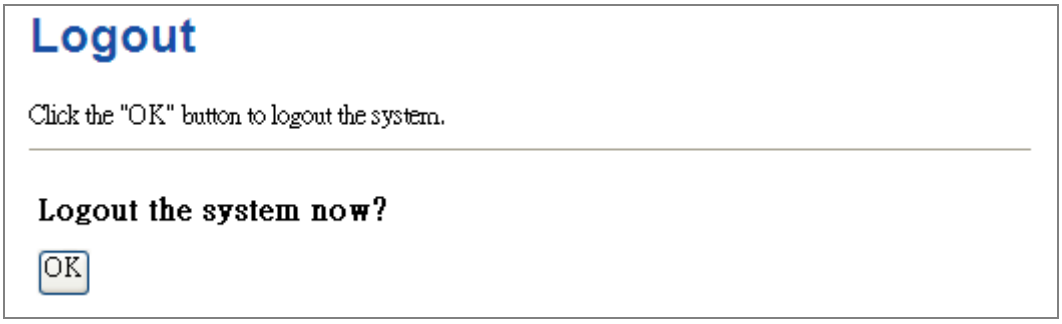


Figure 5-67 Logout

Chapter 6. Quick Connection to a Wireless Network

In the following sections, the **default SSID** is configured to "**default**".

6.1 Windows XP (Wireless Zero Configuration)

Step 1: Right-click on the **wireless network icon** displayed in the system tray

Figure 6-1 System Tray – Wireless Network Icon

Step 2: Select [**View Available Wireless Networks**]

Step 3: Highlight and select the wireless network (SSID) to connect

(1) Select SSID [default]

(2) Click the [**Connect**] button

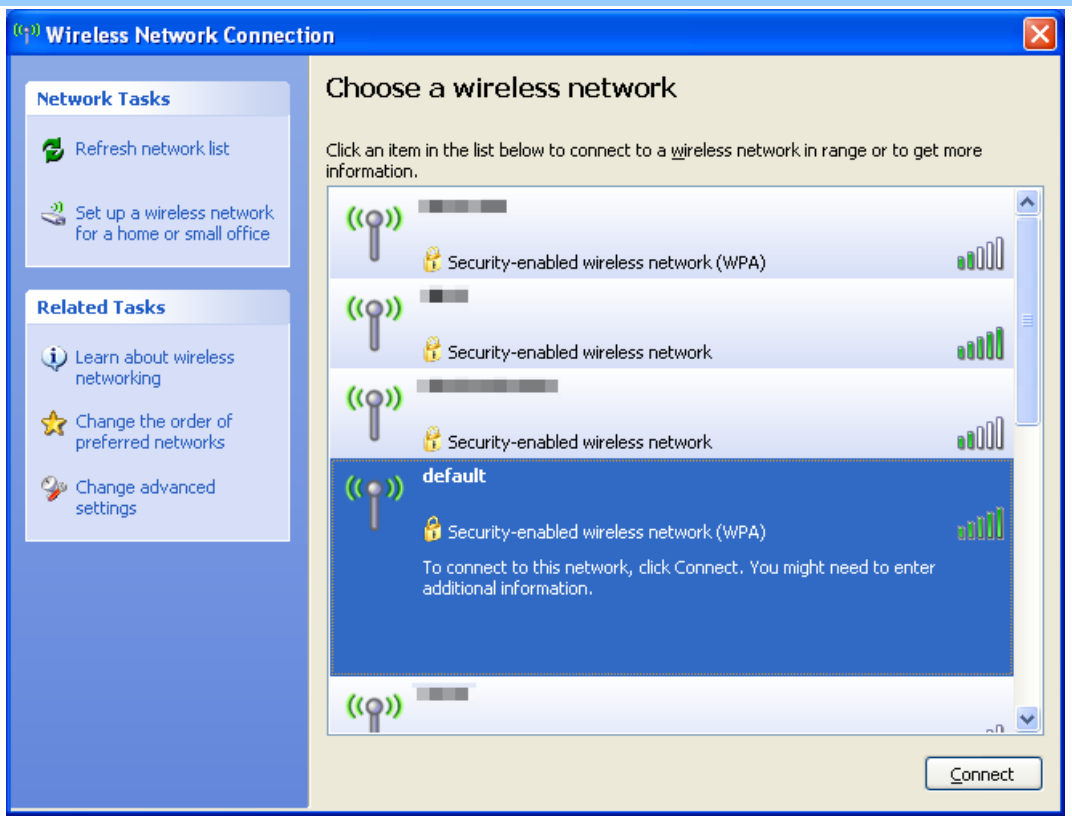


Figure 6-2 Choose a wireless network

Step 4: Enter the **encryption key** of the Wireless AP

(1) The Wireless Network Connection box will appear

(2) Enter the encryption key that is configured in section 5.4.3

(3) Click the [Connect] button

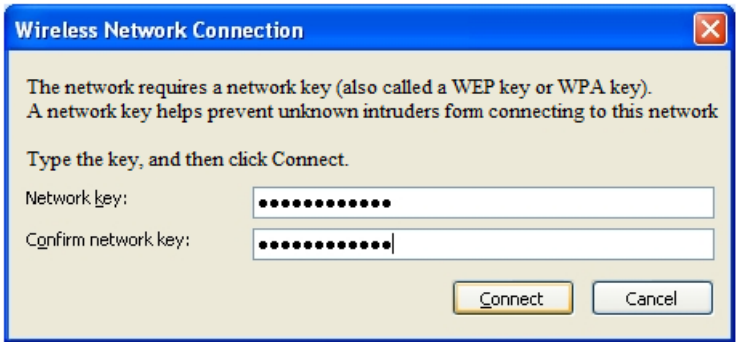


Figure 6-3 Enter the network key

Step 5: Check if "**Connected**" is displayed

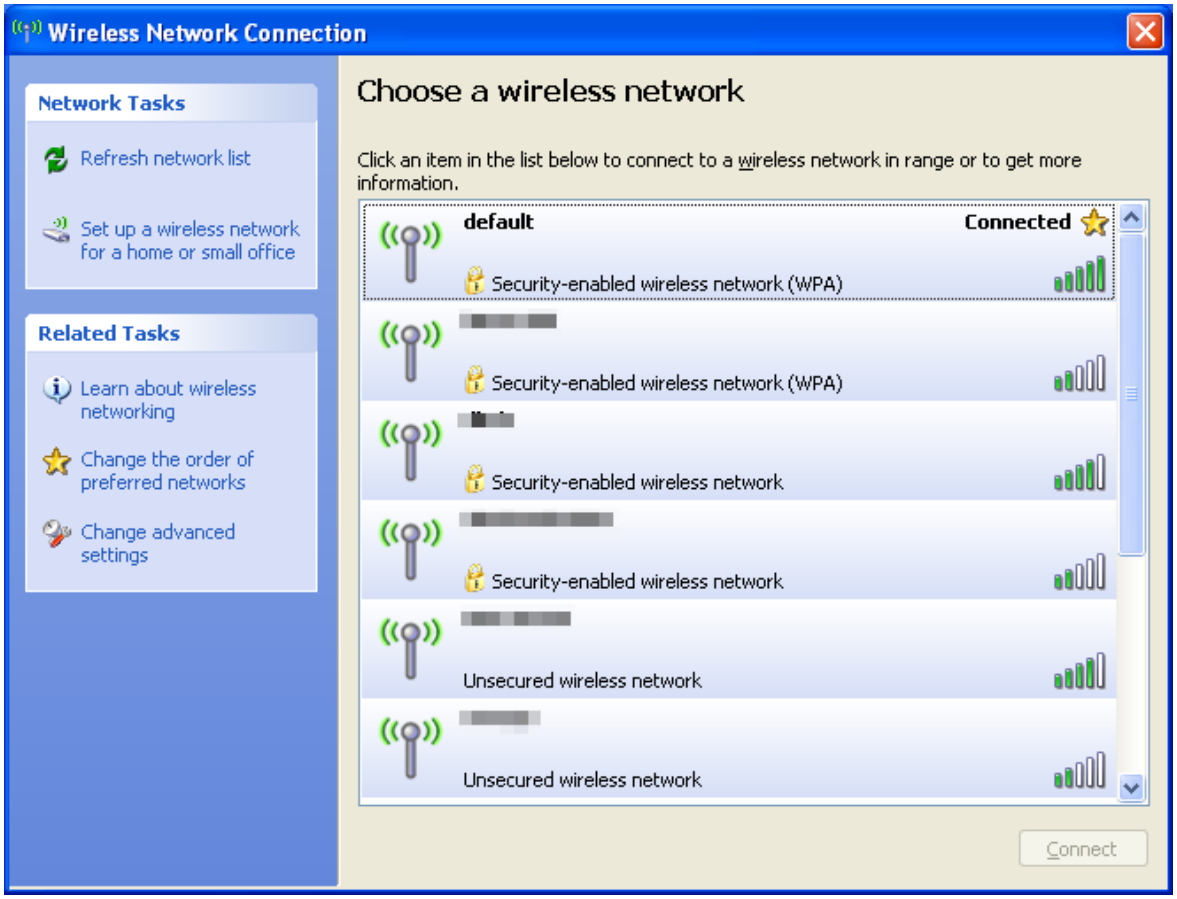


Figure 6-4 Choose a wireless network -- Connected

Note

Some laptops are equipped with a "Wireless ON/OFF" switch for the internal wireless LAN. Make sure the hardware wireless switch is switched to "ON" position.

6.2 Windows 7 (WLAN AutoConfig)

WLAN AutoConfig service is built-in in Windows 7 that can be used to detect and connect to wireless network. This built-in wireless network connection tool is similar to wireless zero configuration tool in Windows XP.

Step 1: Right-click on the **network icon** displayed in the system tray

Figure 6-5 Network icon

Step 2: Highlight and select the wireless network (SSID) to connect

(1) Select SSID [**default**]

(2) Click the [**Connect**] button

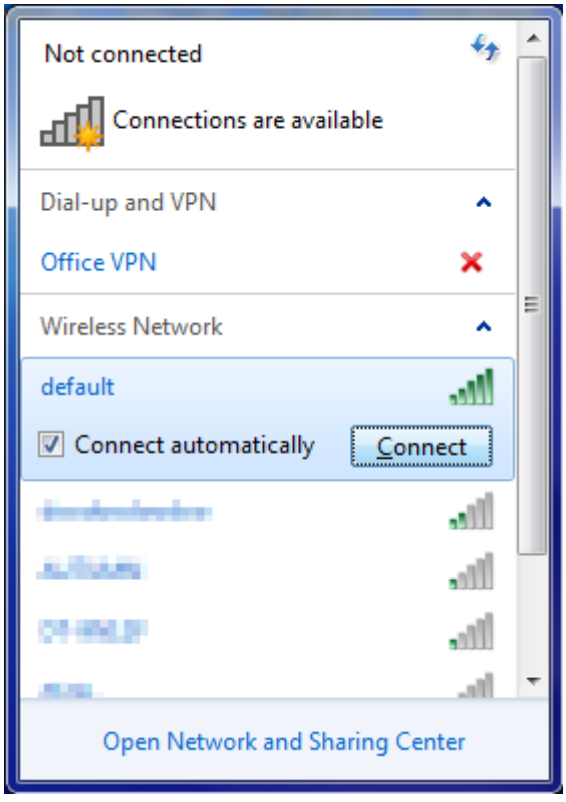


Figure 6-6 WLAN AutoConfig

Note

If you will be connecting to this Wireless AP in the future, check [**Connect automatically**].

Step 4: Enter the **encryption key** of the Wireless AP

(1) The Connect to a Network box will appear

(2) Enter the encryption key that is configured in section 5.4.3

(3) Click the [OK] button

Figure 6-7 Type the network key

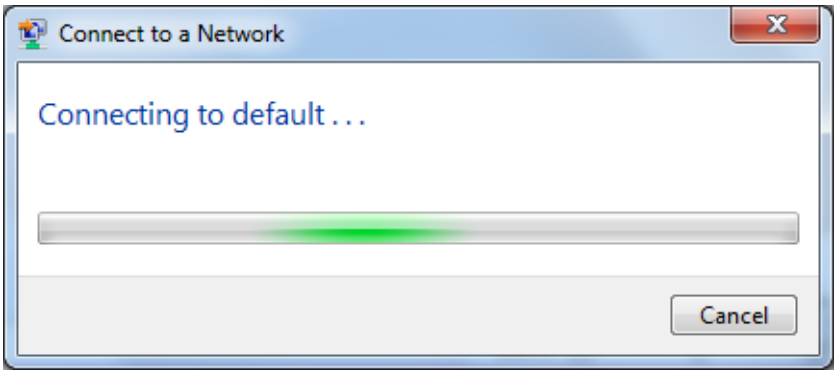


Figure 6-8 Connecting to a Network

Step 5: Check if "**Connected**" is displayed

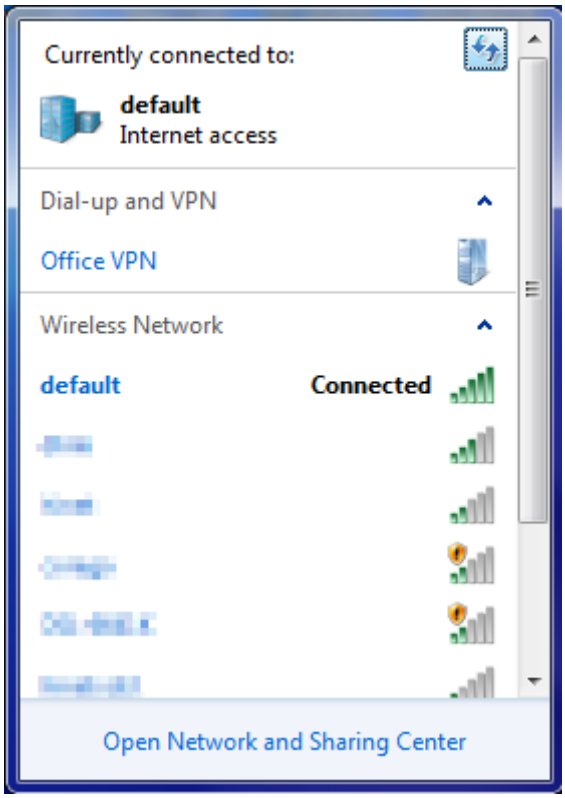


Figure 6-9 Connected to a Network

6.3 Mac OS X 10.x

In the following sections, the default SSID is configured to “default”.

Step 1: Right-click on the **network icon** displayed in the system tray

The AirPort Network Connection menu will appear

Figure 6-10 Mac OS – Network icon

Step 2: Highlight and select the wireless network (SSID) to connect

(1) Select and SSID [**default**]

(2) Double-click on the selected SSID

Figure 6-11 Highlight and select the wireless network

Step 4: Enter the **encryption key** of the Wireless AP

(1) Enter the encryption key that is configured in section 5.4.3

(2) Click the [OK] button

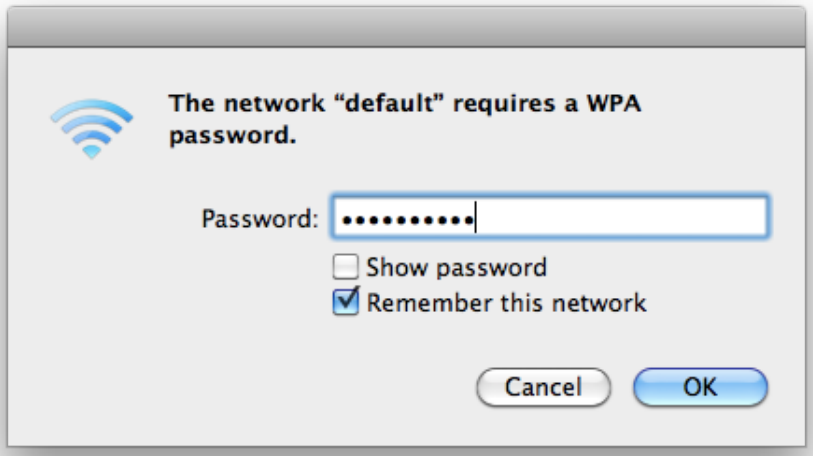


Figure 6-12 Enter the Password

Note

If you will be connecting to this Wireless AP in the future, check [**Remember this network**].

Step 5: Check if the AirPort is connected to the selected wireless network.

If "Yes", then there will be a "check" symbol in the front of the SSID.

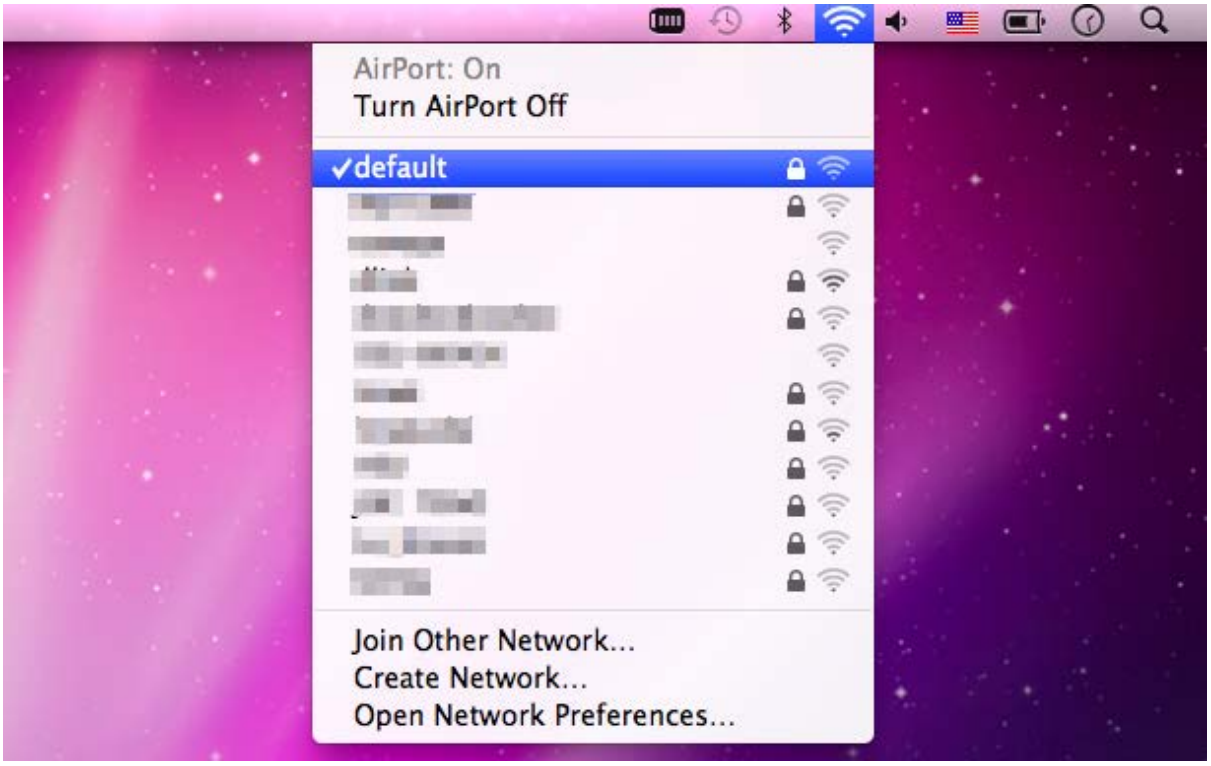


Figure 6-13 Connected to the Network

There is another way to configure the MAC OS X Wireless settings:

Step 1: Click and open the [**System Preferences**] by going to **Apple** > **System Preference** or **Applications**

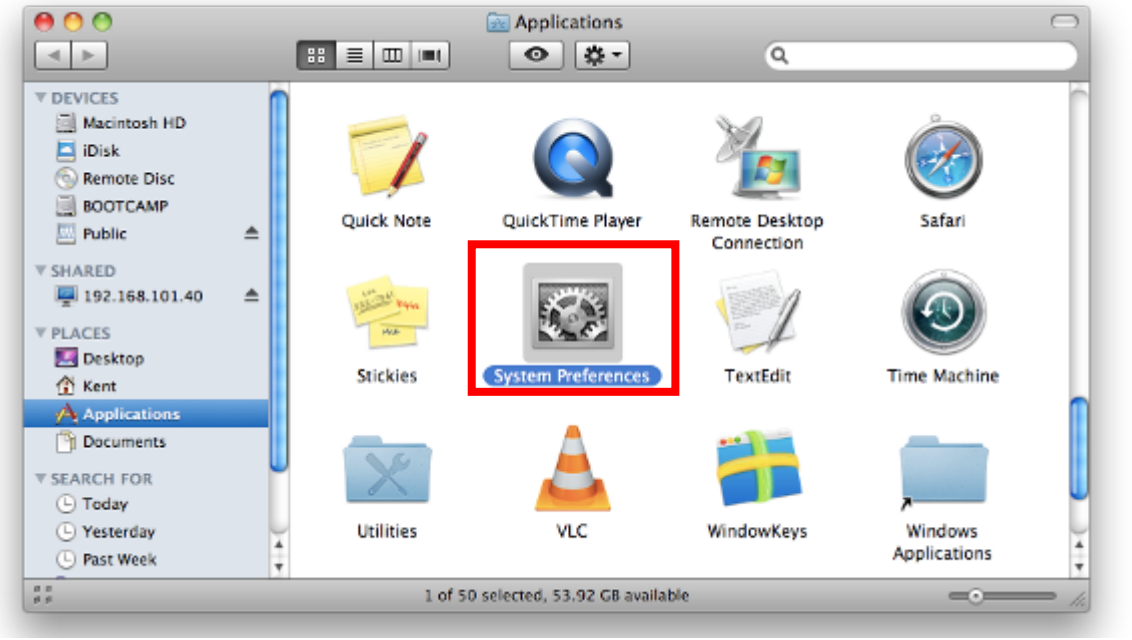


Figure 6-14 System Preferences

Step 2: Open **Network Preference** by clicking on the [**Network**] icon

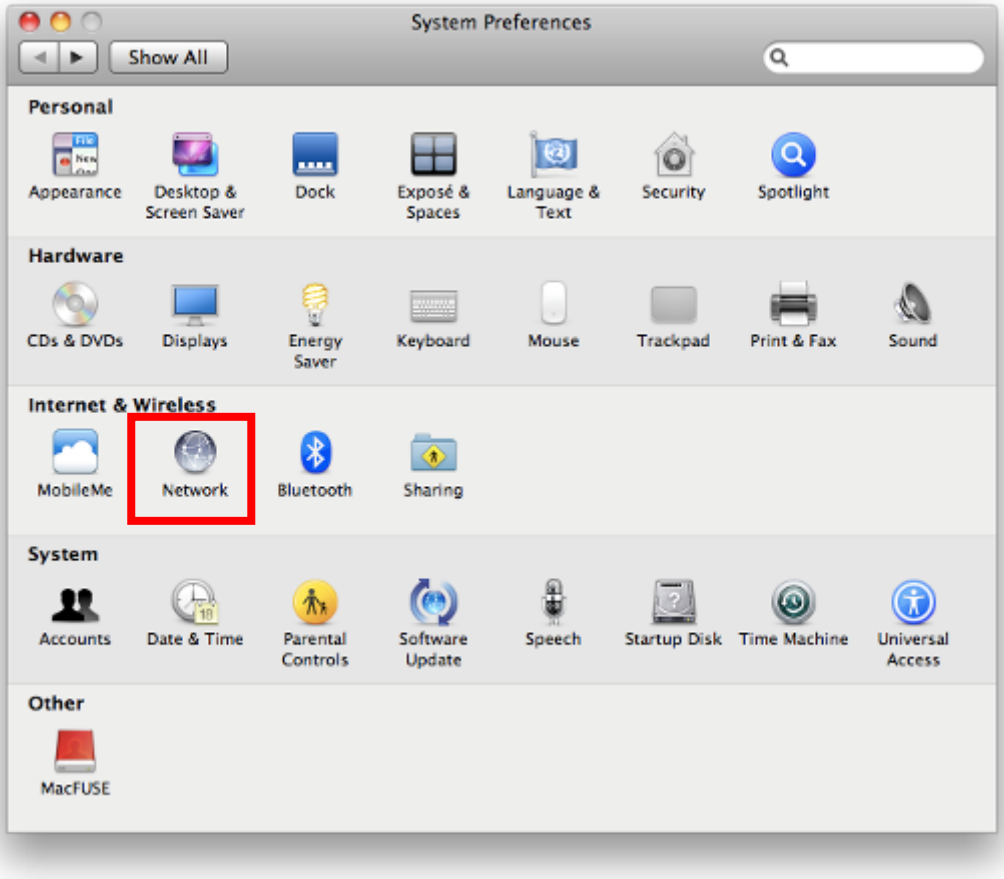


Figure 6-15 System Preferences -- Network

Step 3: Check Wi-Fi setting and select the available wireless network

(1) Choose the **AirPort** on the left-menu (make sure it is ON)

(2) Select Network Name [**default**] here

If this is the first time to connect to the Wireless AP, it should show “Not network selected”.

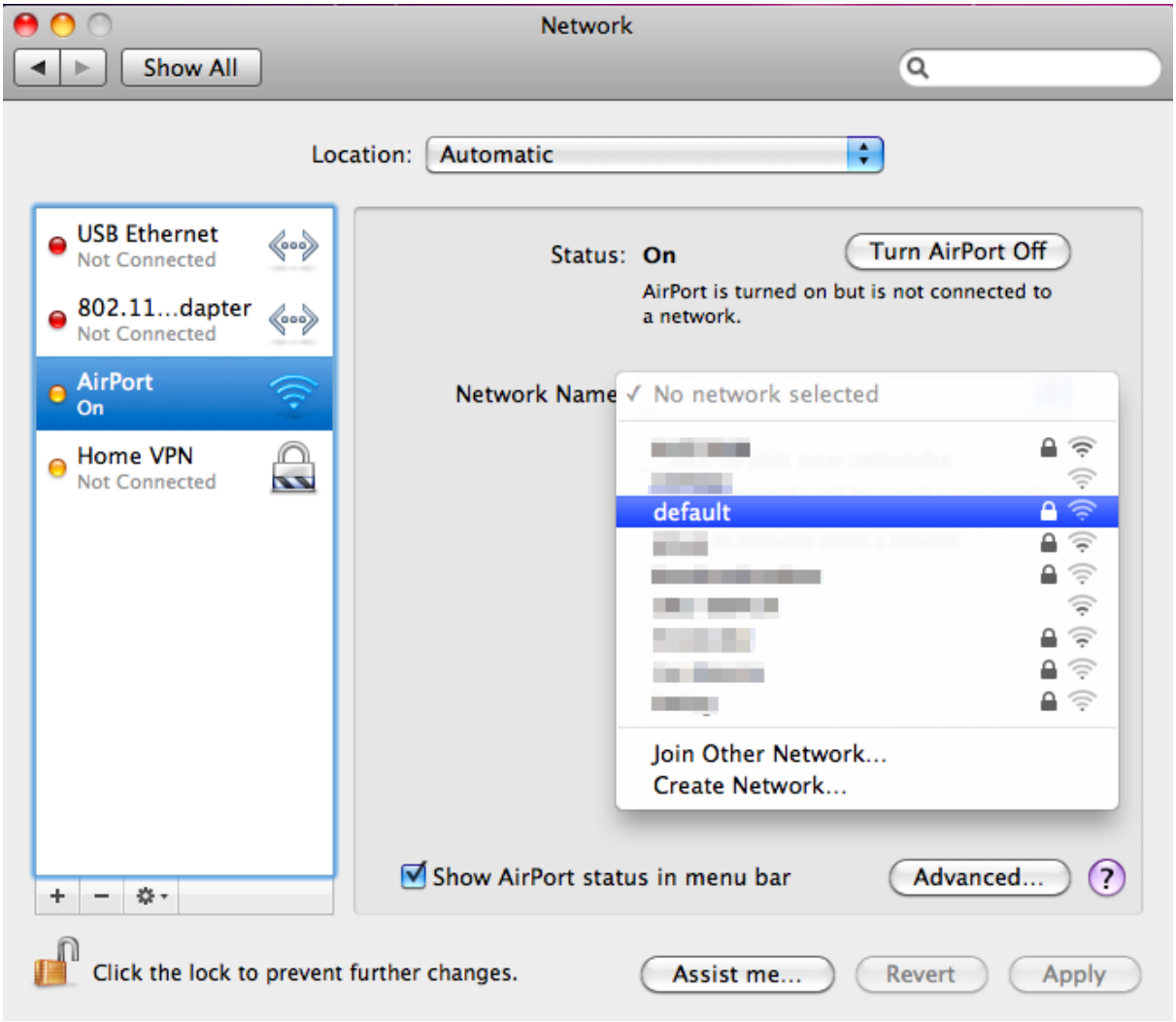


Figure 6-16 Select the Wireless Network

6.4 iPhone / iPod Touch / iPad

In the following sections, the **default SSID** is configured to "**default**".

Step 1: Tap the [**Settings**] icon displayed in the home screen

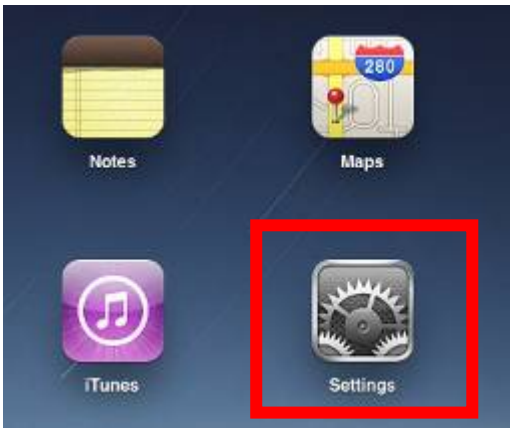


Figure 6-17 iPhone – Settings icon

Step 2: Check Wi-Fi setting and select the available wireless network

(3) Tap [**General**] \ [**Network**]

(4) Tap [**Wi-Fi**]

If this is the first time to connect to the Wireless AP, it should show "Not Connected".

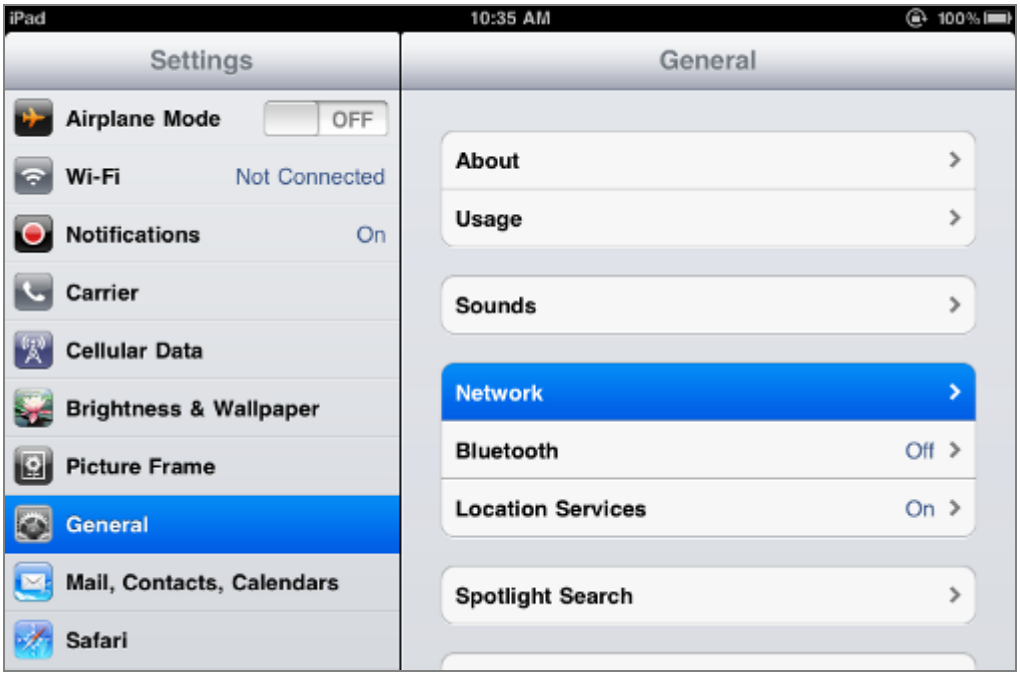


Figure 6-18 Wi-Fi Setting

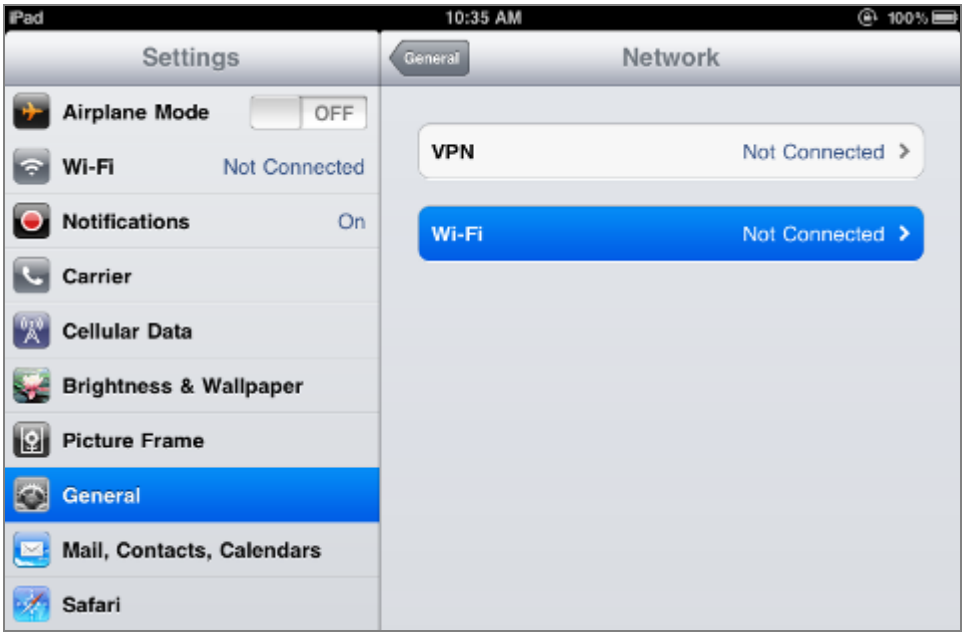


Figure 6-19 Wi-Fi Setting – Not Connected

Step 3: Tap the target wireless network (SSID) in "**Choose a Network…**"

(1) Turn on Wi-Fi by tapping "**Wi-Fi**"

(2) Select SSID [**default**]

Figure 6-20 Turn on Wi-Fi

Step 4: Enter the **encryption key** of the Wireless AP

(1) The password input screen will be displayed

(2) Enter the encryption key that is configured in section 5.4.3

(3) Tap the [**Join**] button

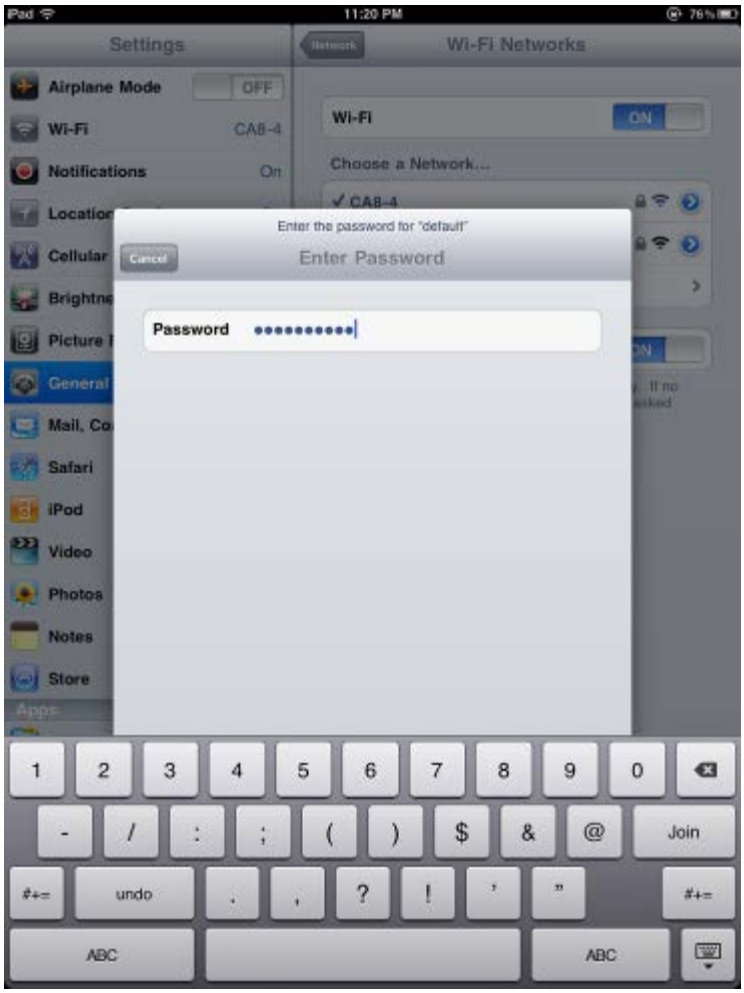


Figure 6-21 iPhone -- Enter the Password

Step 5: Check if the device is connected to the selected wireless network.

If “Yes”, then there will be a “check” symbol in the front of the SSID.

Figure 6-22 iPhone -- Connected to the Network

Appendix A: Troubleshooting

If you find the AP is working improperly or stop responding to you, please read this troubleshooting first before contacting the dealer for help. Some problems can be solved by yourself within a very short time.

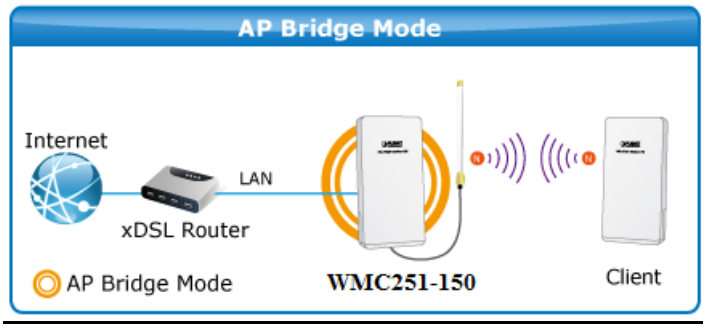
Scenario	Solution
The AP is not responding to me when I want to access it by Web browser.	a. Please check the connection of the power cord and the Ethernet cable of this AP. All cords and cables should be correctly and firmly inserted to the AP. b. If all LED on this AP is off, please check the status of power adapter, and make sure it is correctly powered. c. You must use the same IP address section which AP uses. d. Are you using MAC or IP address filter? Try to connect the AP by another computer and see if it works; if not, please reset the AP to the factory default settings (pressing 'reset' button for over 7 seconds). e. If you did a firmware upgrade and this happens, contact your dealer of purchase for help. f. If all the solutions above don't work, contact the dealer for help.
I can't get connected to the Internet.	a. Go to 'Status' -> 'Internet Connection' menu on the router connected to the AP, and check Internet connection status. b. Please be patient, sometimes Internet is just that slow. c. If you've connected a computer to Internet directly before, try to do that again, and check if you can get connected to Internet with your computer directly attached to the device provided by your Internet service provider. d. Check PPPoE / L2TP / PPTP user ID and password entered in the router's settings again. e. Call your Internet service provider and check if there's something wrong with their service. f. If you just can't connect to one or more website, but you can still use other internet services, please check URL/Keyword filter. g. Try to reset the AP and try again later. h. Reset the device provided by your Internet service provider too. i. Try to use IP address instead of host name. If you can use IP address to communicate with a remote server, but can't use host name, please check DNS setting.

I can't locate my AP by my wireless device.	a. 'Broadcast ESSID' set to off? b. Both two antennas are properly secured. c. Are you too far from your AP? Try to get closer. d. Please remember that you have to input ESSID on your wireless client manually, if ESSID broadcast is disabled.
File downloading is very slow or breaks frequently.	a. Are you using QoS function? Try to disable it and try again. b. Internet is slow sometimes. Please be patient. c. Try to reset the AP and see if it's better after that. d. Try to know what computers do on your local network. If someone's transferring big files, other people will think Internet is really slow. e. If this never happens before, call you Internet service provider to know if there is something wrong with their network.
I can't log into the web management interface; the password is wrong.	a. Make sure you're connecting to the correct IP address of the AP! b. Password is case-sensitive. Make sure the 'Caps Lock' light is not illuminated. c. If you really forget the password, do a hard reset.
The AP becomes hot	a. This is not a malfunction, if you can keep your hand on the AP's case. b. If you smell something wrong or see the smoke coming out from AP or A/C power adapter, please disconnect the AP and power source from utility power (make sure it's safe before you're doing this!), and call your dealer of purchase for help.

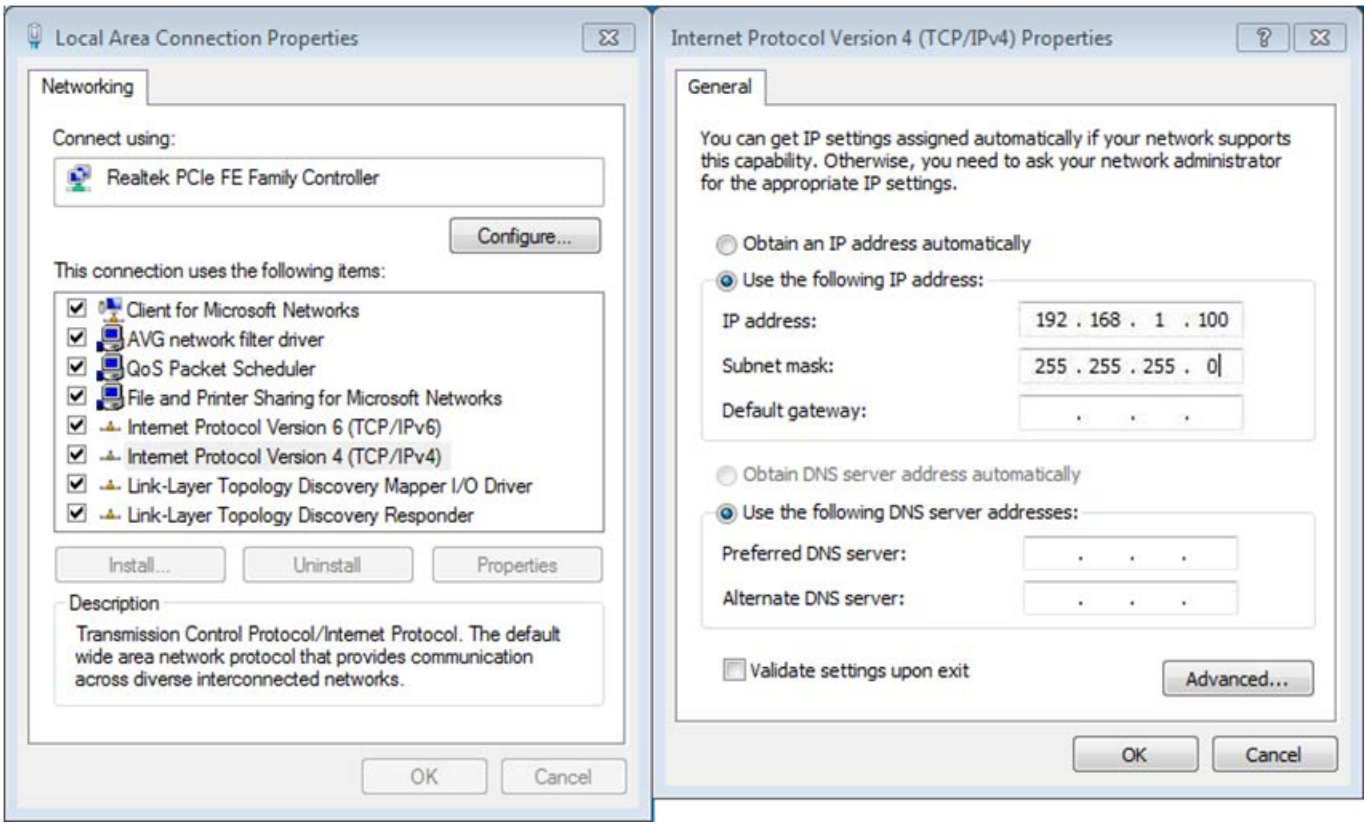
Appendix B: Frequently Asked Questions

Q1: How to set up the AP Client Connection

Topology:

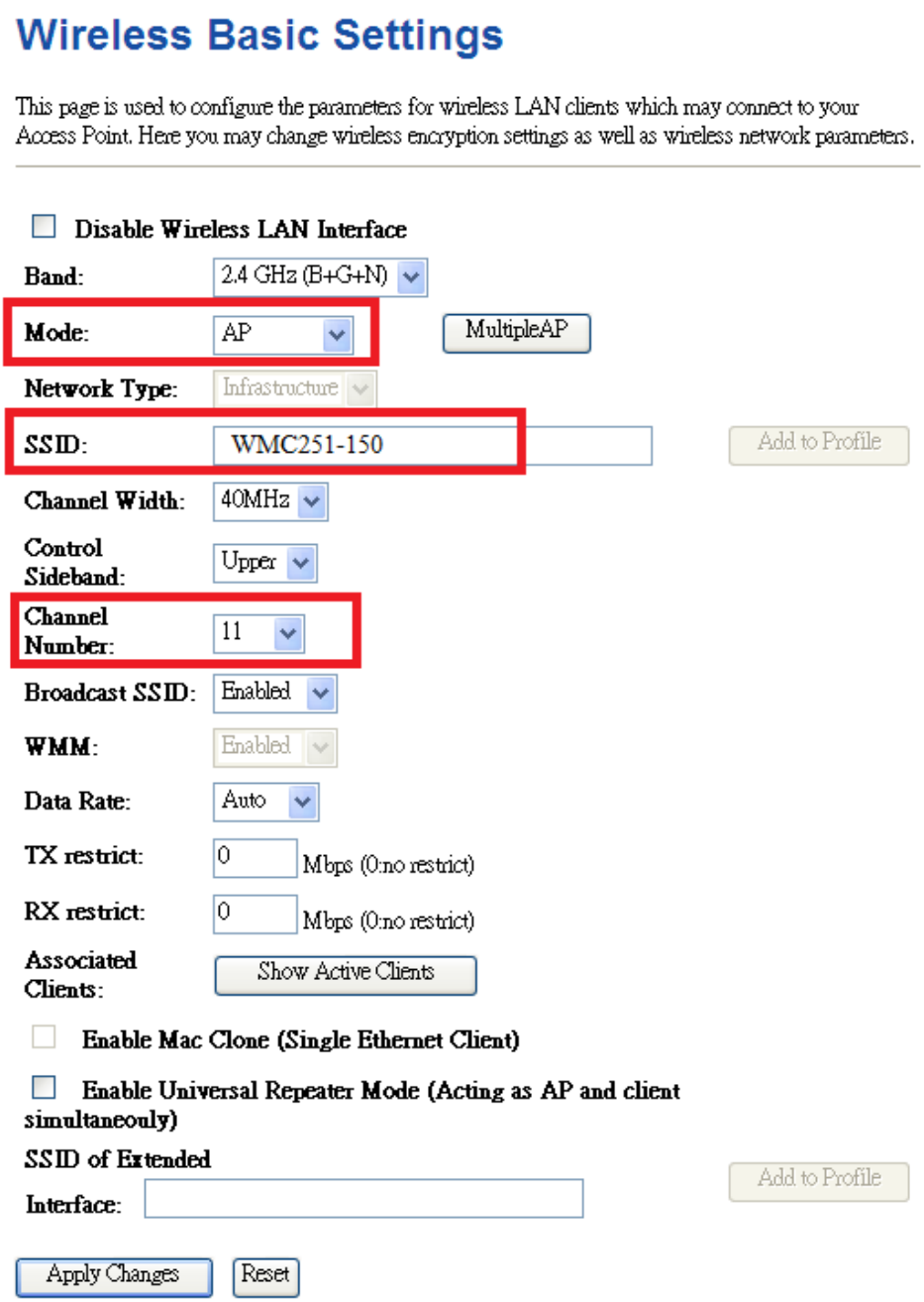


Step 1. Use static IP in the PCs that are connected with AP-1(WMC251-1W-2T-150, Site-1) and AP-2 (Client, Site-2). In this case, Site-1 is "**192.168.1.100**", and Site-2 is "**192.168.1.200**".



Step 2. In AP-1, go to "**Wireless→ Basic Settings**" to configure it to **AP** Mode. Then, configure the following wireless parameters for your wireless network.

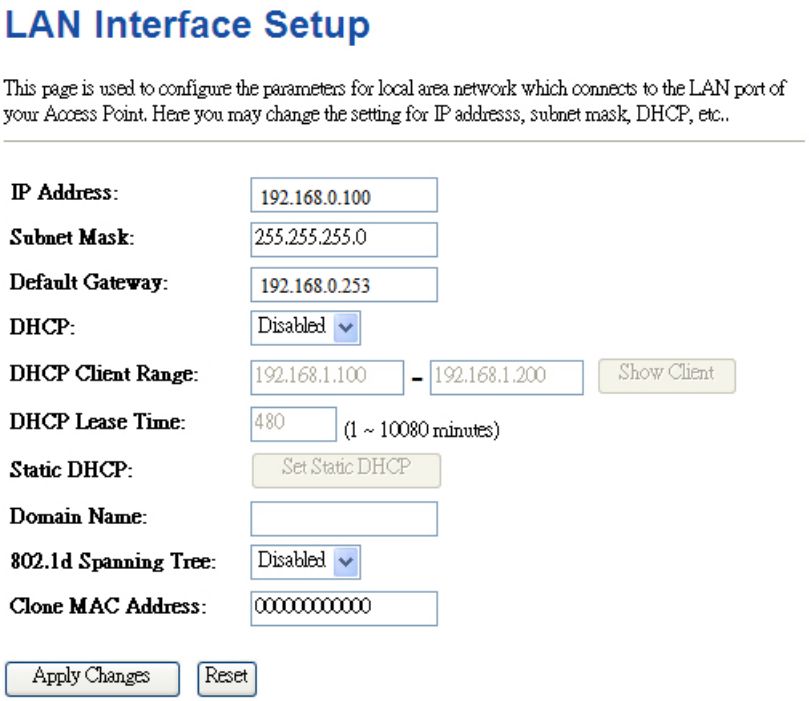
1) **Network ID (SSID)**: set to a unique value
2) **Channel**: set to a fixed one or auto (suggested set to fixed channel).



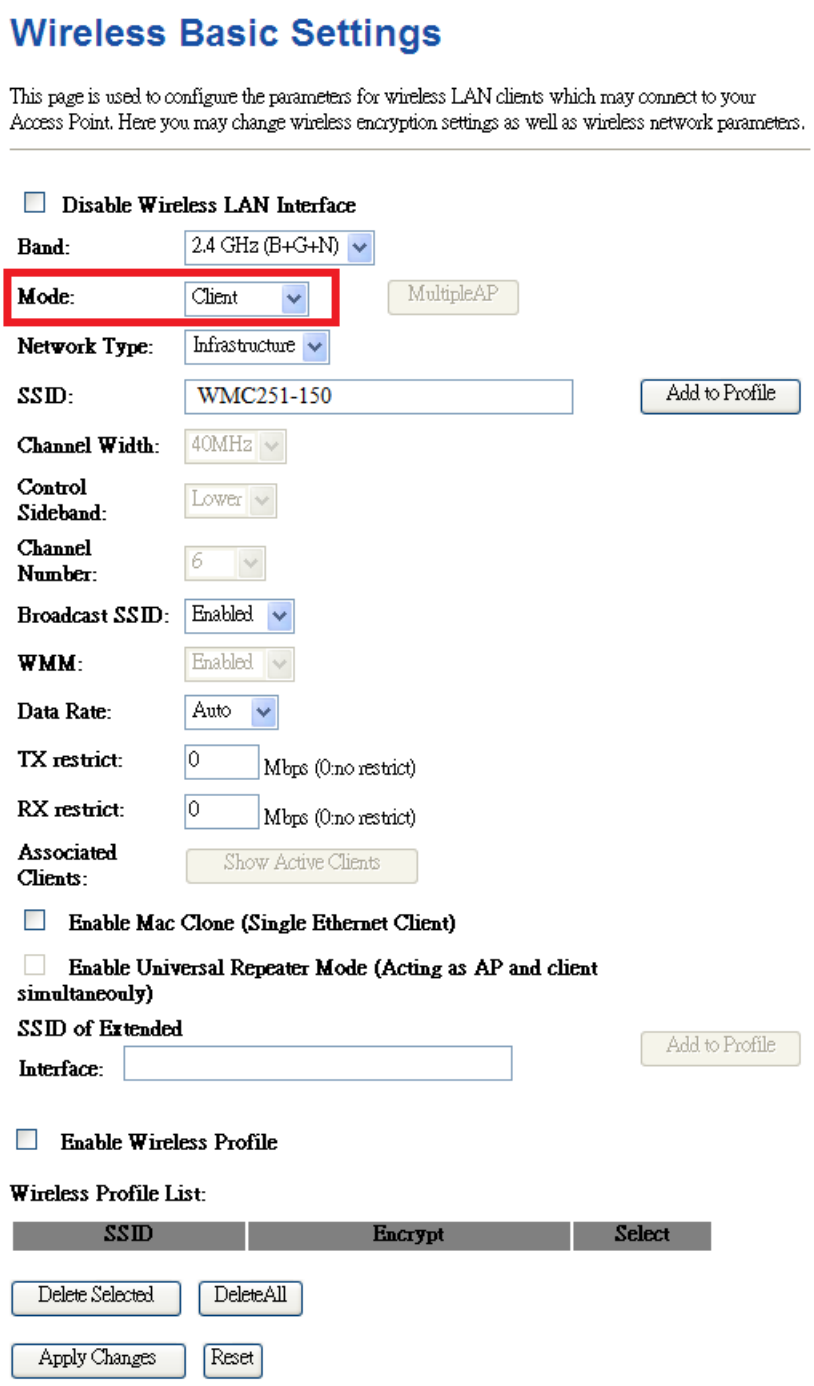
Step 3. Go to "**Wireless→ Security**" to configure the security setting.

Step 4. In AP-2, modify the default IP to the same IP range but different from AP-1.

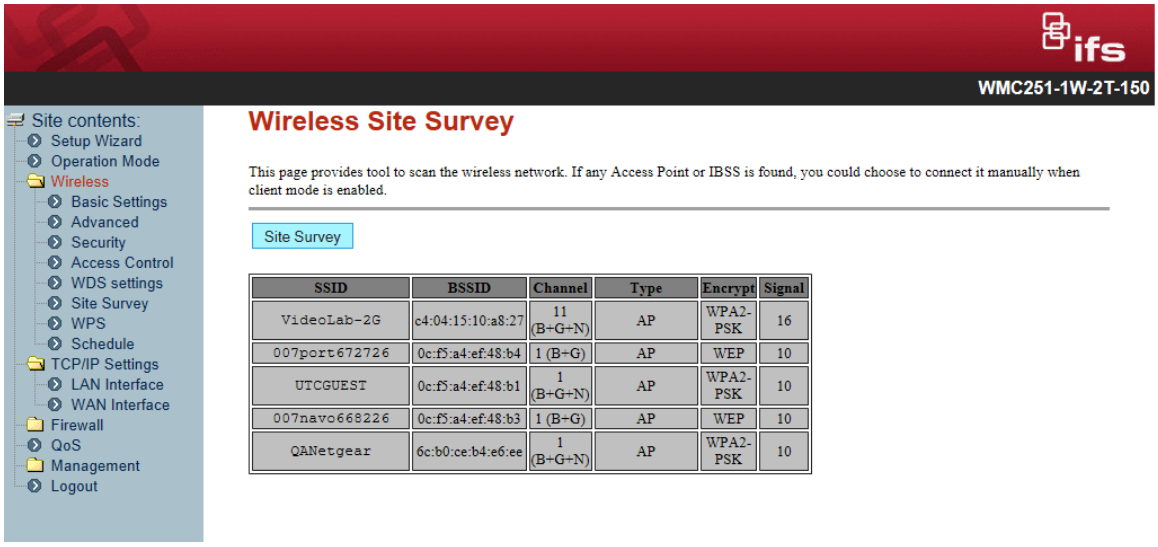
In this case, the IP is changed to **192.168.1.252**.



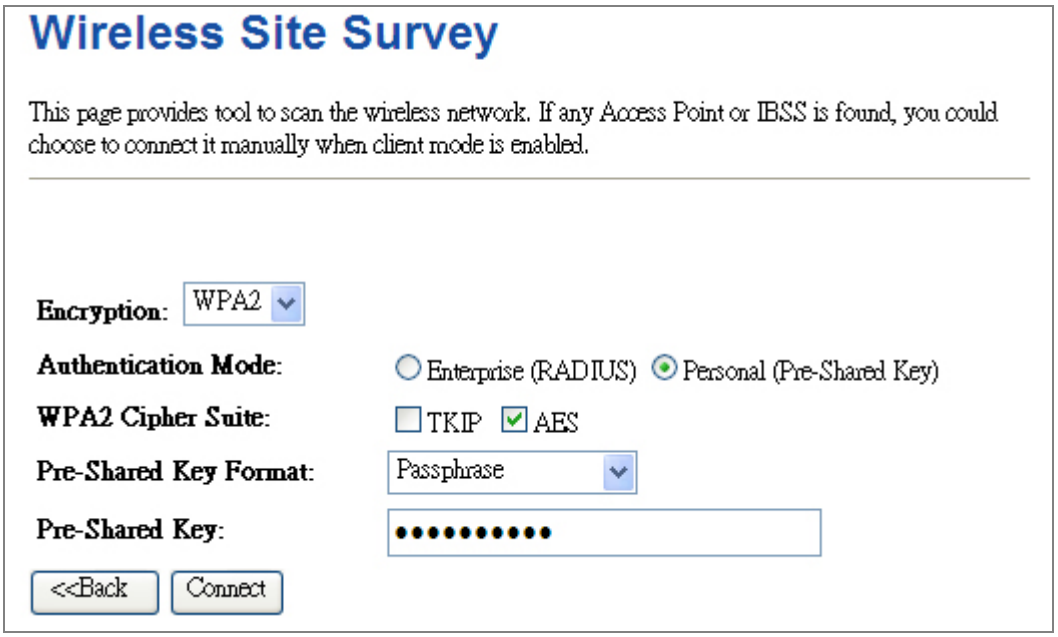
Step 5. In AP-2, configure it in "**Client**" mode.



Step 6. Go to "**Wireless→ Site Survey**" to find the AP-1. Then, select it and click "**Next**".



Step 7. Configure the Encryption and Pre-Shared Key which must be the same as AP-1. Then click "**Connect**".



Step 8. Check "**Add to Wireless Profile**" and click "**Reboot Now**" to apply the setting.

Step 9. Go to "**Management→ Status**" to check the connection state should be "**Connected**".

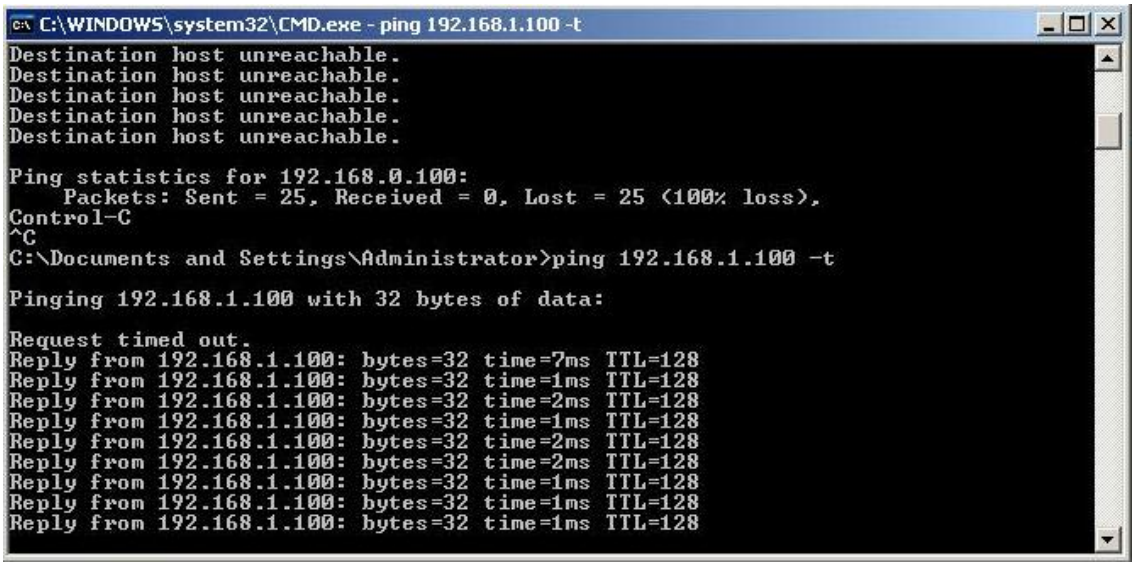
Access Point Status

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

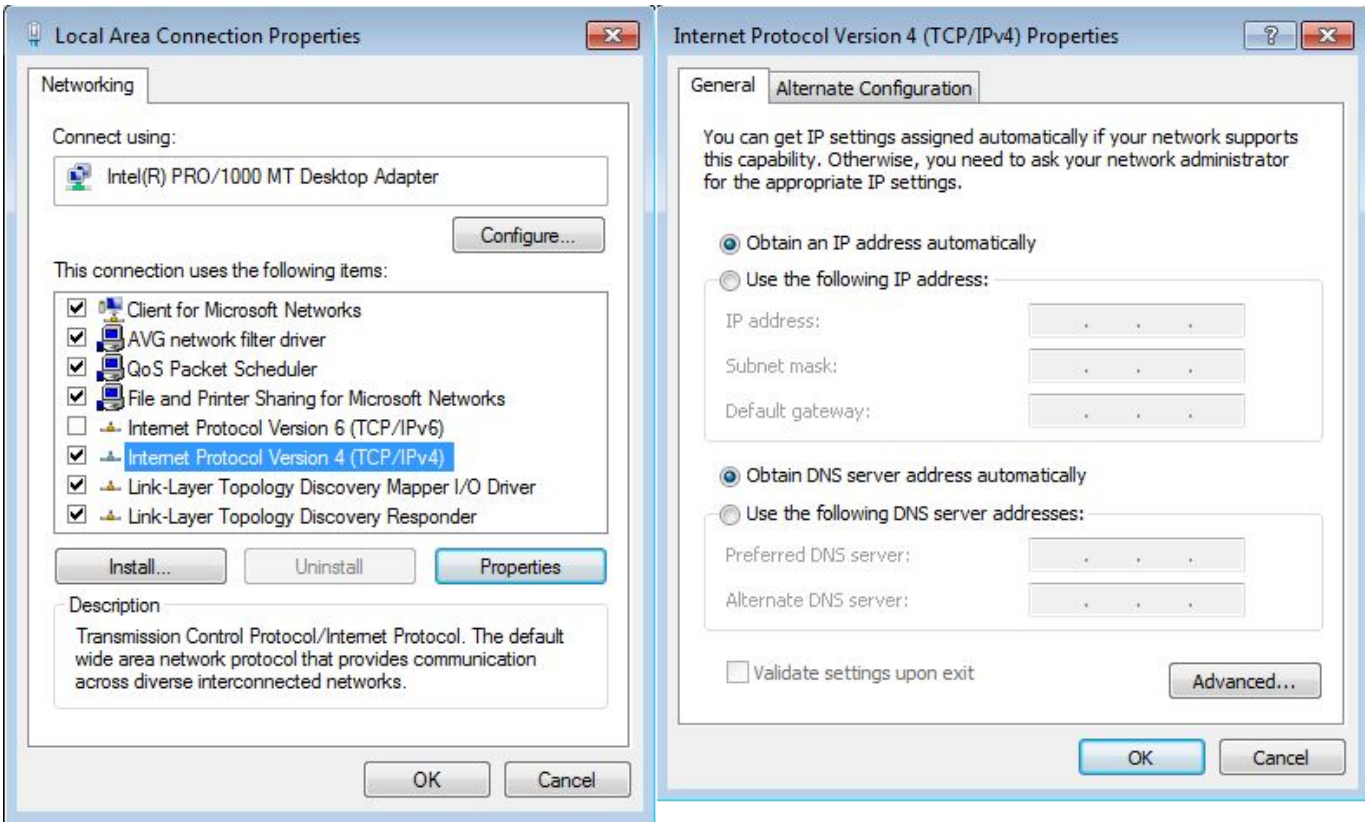
System	
Uptime	0day:0h:5m:2s
Firmware Version	v1.0.1
Build Time	Mon May 18 10:34:23 CST 2015
Wireless Configuration	
Mode	Infrastructure Client
Band	2.4 GHz (B+G+N)
SSID	
Channel Number	11
Encryption	WPA2
BSSID	9c:F6:1A:00:01:2c
State	Connected
TCP/IP Configuration	
Attain IP Protocol	Fixed IP
IP Address	192.168.1.252
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.252
DHCP Server	Disabled
MAC Address	9c:F6:1A:00:01:2c

Step 10. Use command line tool to ping each other to ensure the link is successfully established.

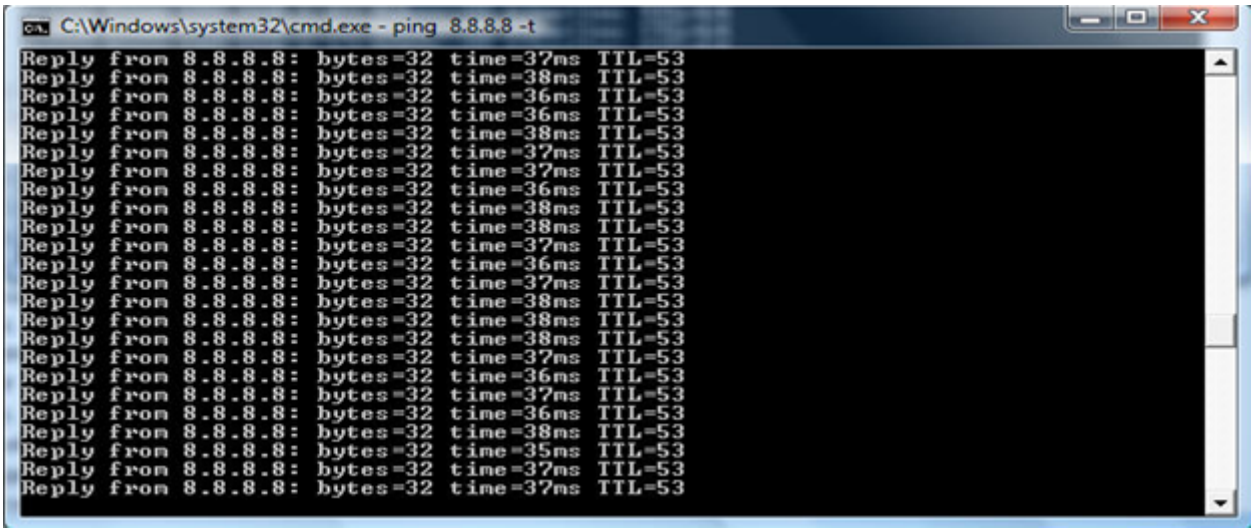
From Site-1, ping 192.168.1.200; and in Site-2, ping 192.168.1.100.



Step 11. Configure the TCP/IP settings of Site-2 to "**Obtain an IP address automatically**".



Step 12. Use command line tool to ping the DNS (e.g. Google) to ensure the Site-2 can access internet through the wireless connection.



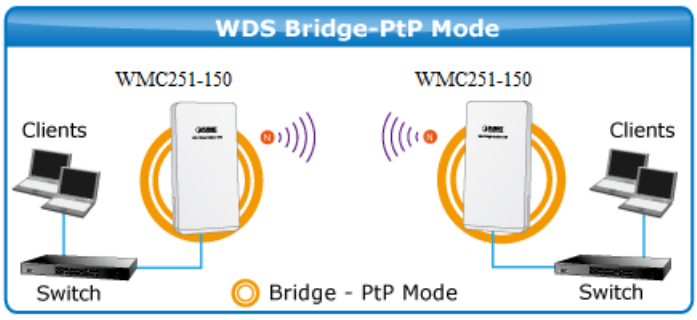
Note

The attention of the following hints should be paid:

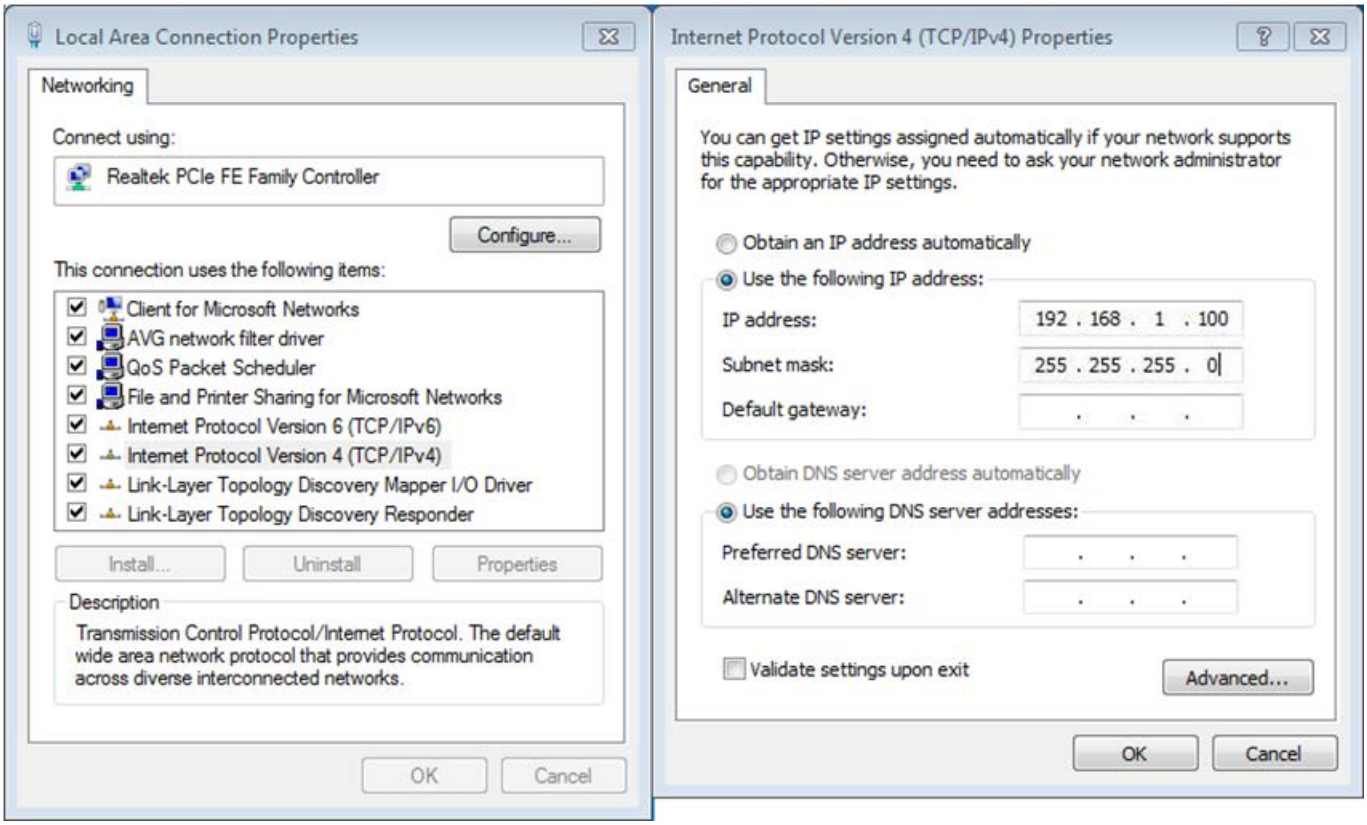
1) The encryption method must be the same as that of both sites if configured.
2) Both sites should be Line-of-Sight.
3) For the short distance connection less than 1km, please reduce the "**RF Output Power**" of both sites to half or lower.

Q2: How to setup the WDS Connection

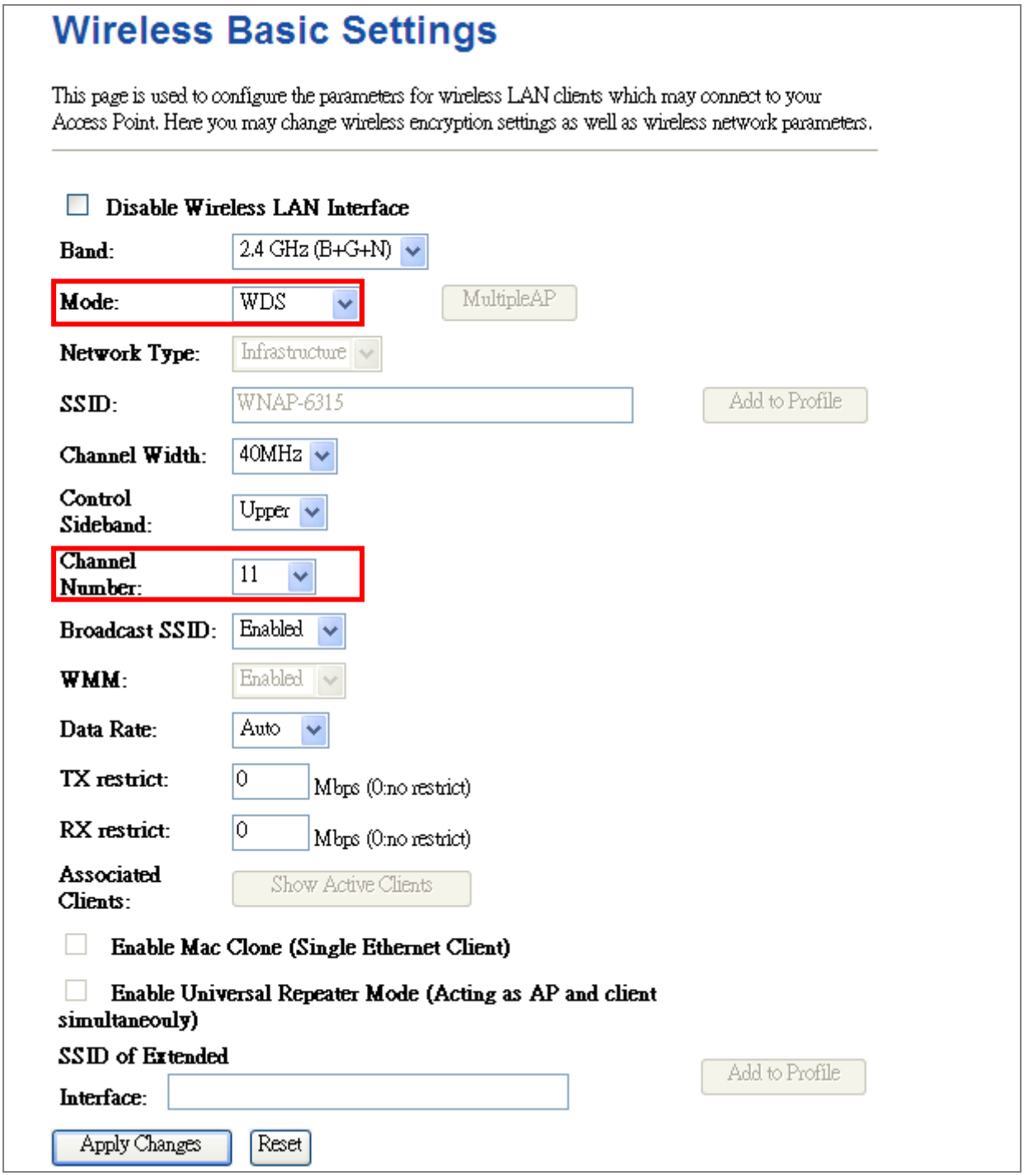
Topology:



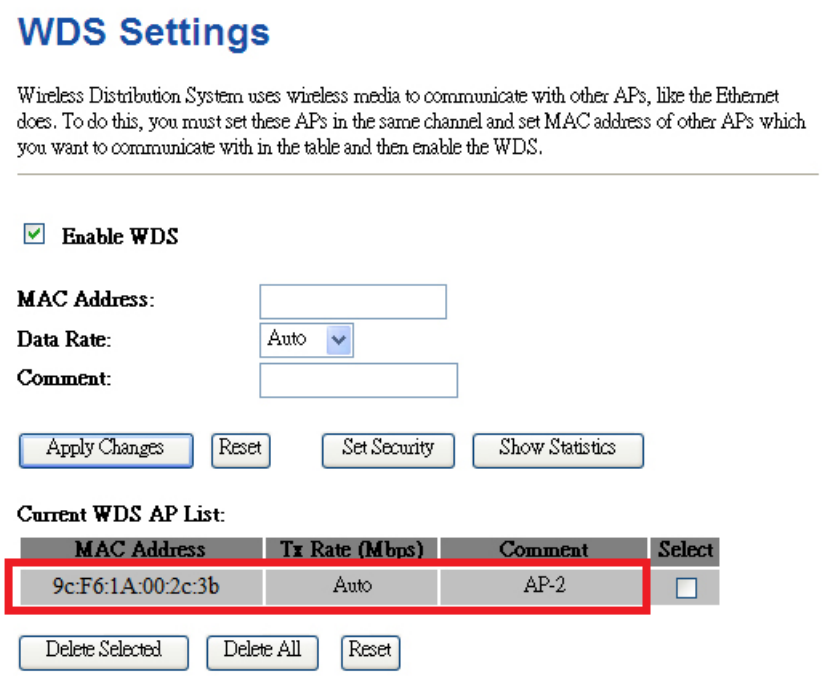
Step 1. Use static IP in the PCs that are connected with WMC251-150-1(Site-1) and WMC251-150-2(Site-2), in this case, Site-1 is "**192.168.1.100**", and Site-2 is "**192.168.1.200**".



Step 2. In AP-1, go to "**Wireless→ Basic Settings**" to configure it to "**WDS**" Mode. Then, set the channel number to a fixed one.

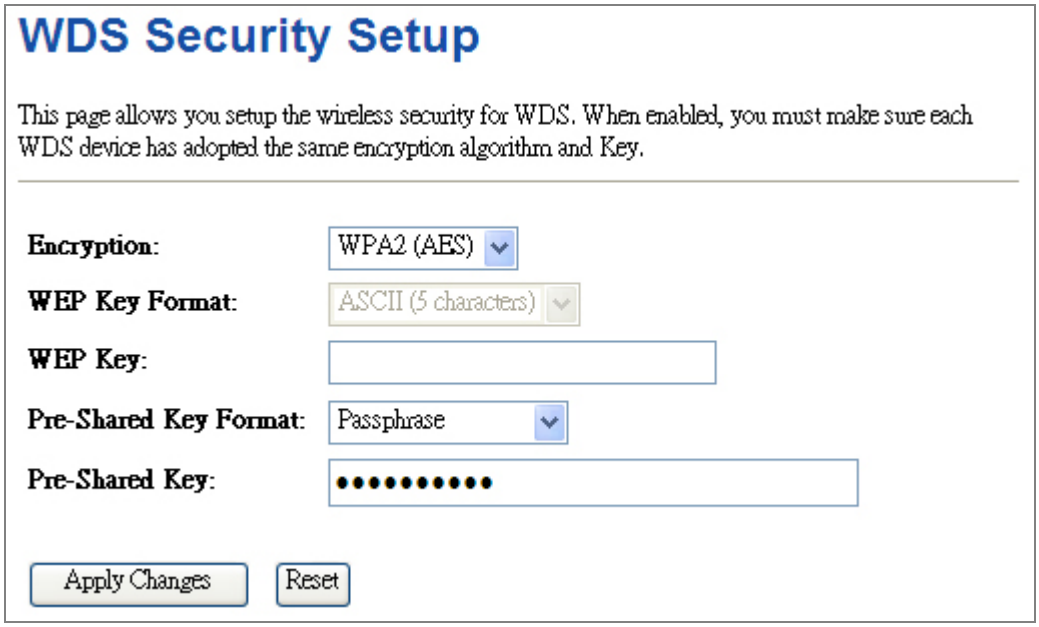


Step 3. Go to "**Wireless→ WDS Settings**" to configure the AP-2's MAC address.



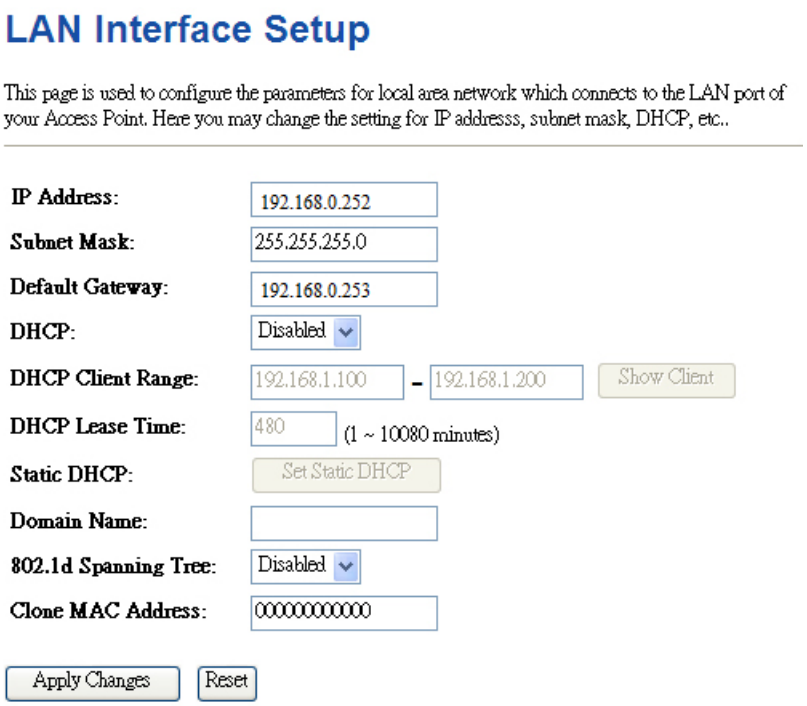
In AP-1's WDS Setting, configure AP-2's MAC address.

Step 4. If you select "**Reboot Later**", you can click "**Set Security**" to continue to configure the encryption and security key of the WDS connection. Then, click "**Apply Changes**" to apply the setting.

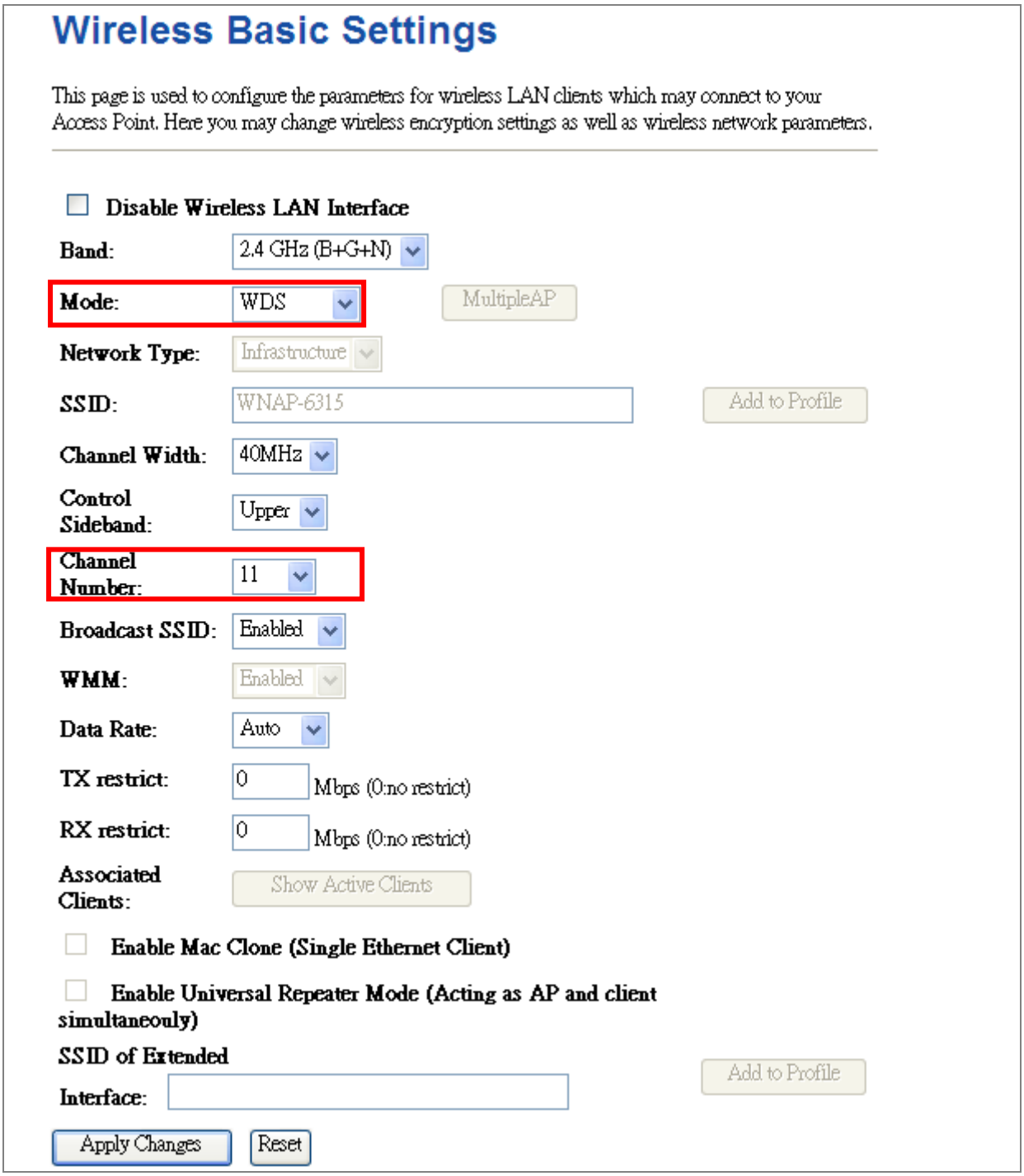


Step 5. In AP-2, modify the default IP to the same IP range but different from AP-1.

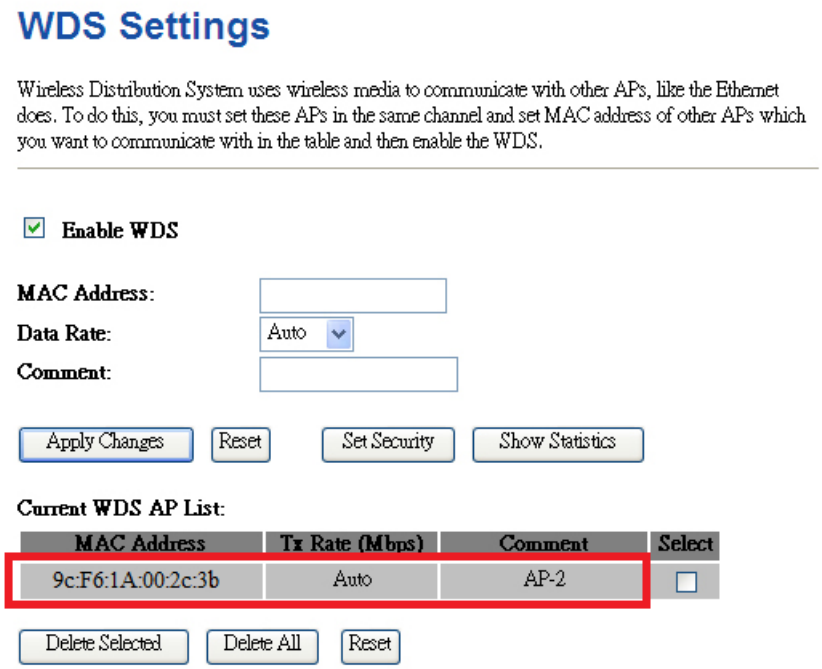
In this case, the IP is changed to **192.168.0.252**.



Step 6. In AP-2, configure it to "**WDS**" mode and set the channel to the fixed one which is the same as AP-1.

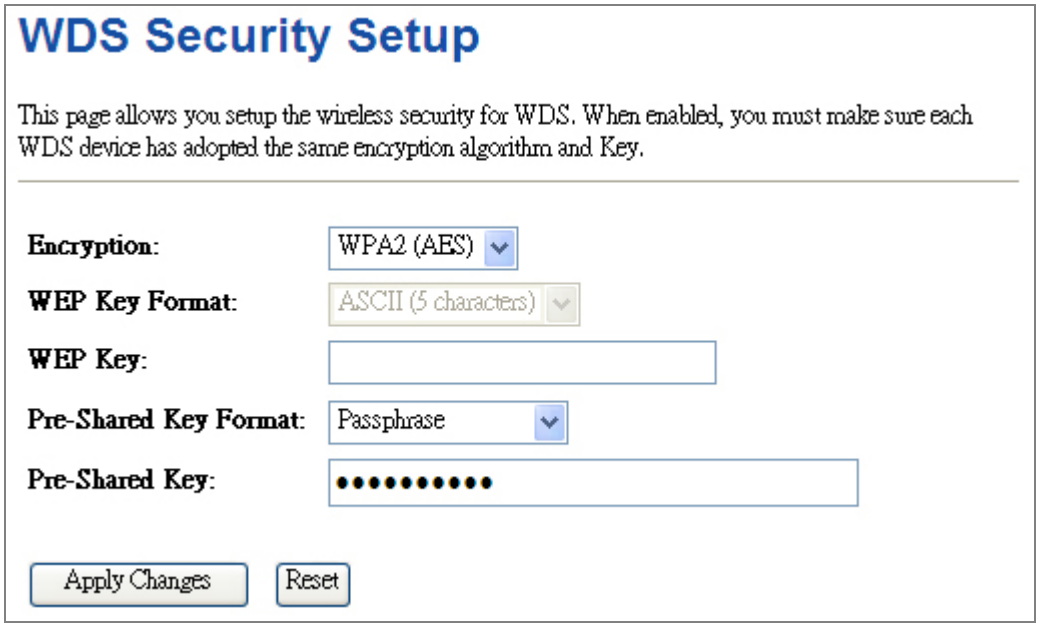

Wireless Basic Settings
This page is used to configure the parameters for wireless LAN clients which may connect to your Access Point. Here you may change wireless encryption settings as well as wireless network parameters.
Disable Wireless LAN Interface
Band:
2.4 GHz (B+G+N)
Mode:
WDS
MultipleAP
Network Type:
Infrastructure
SSID:
WNAP-6315
Add to Profile
Channel Width:
40MHz
Control Sideband:
Upper
Channel Number:
11
Broadcast SSID:
Enabled
WMM:
Enabled
Data Rate:
Auto
TX restrict:
0
Mbps (0:no restrict)
RX restrict:
0
Mbps (0:no restrict)
Associated Clients:
Show Active Clients
Enable Mac Clone (Single Ethernet Client)
Enable Universal Repeater Mode (Acting as AP and client simultaneouly)
SSID of Extended Interface:
Add to Profile
Apply Changes
Reset

Step 7. Go to "**Wireless→ WDS Settings**" to configure the AP-1's MAC address.



In AP-1's WDS Setting, configure AP-2's MAC address.

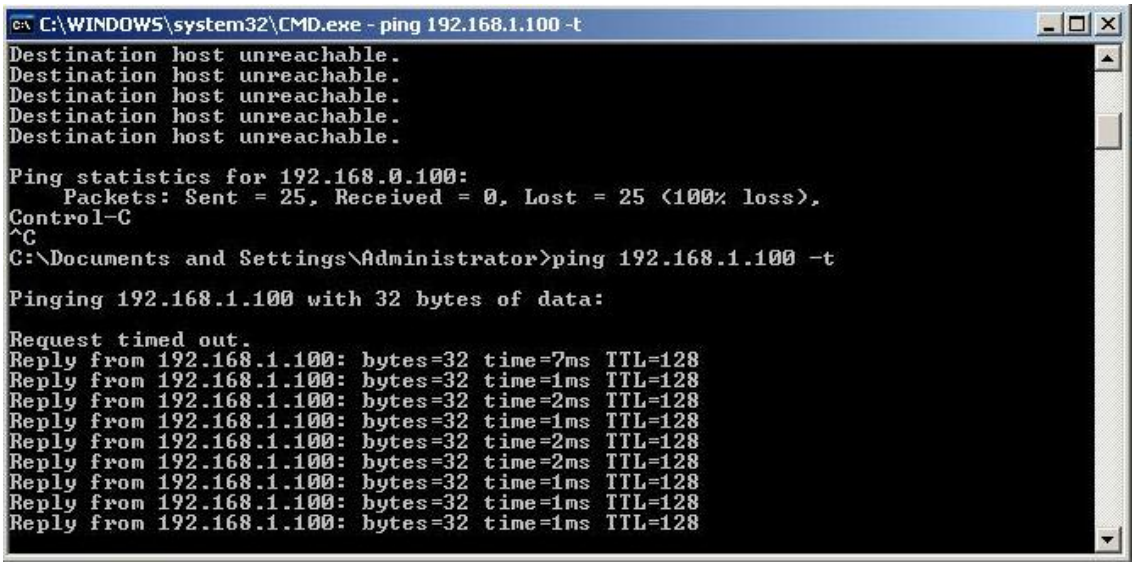
Step 8. If you select "**Reboot Later**", you can click "**Set Security**" to continue to configure the encryption and security key of the WDS connection.



Step 9. Click "**Apply Changes**" to apply the settings.

Step 10. Use command line tool to ping each other to ensure the link is successfully established.

From Site-1, ping 192.168.0.200; and in Site-2, ping 192.168.0.100.



Note

The attention of the following hints should be paid:

1) The encryption method and channel must be the same for both sites.
2) Both sites should be Line-of-Sight.
3) For the short distance connection less than 1km, please reduce the "**RF Output Power**" of both sites to half or lower.

EC Declaration of Conformity

English	Hereby, **IFS Technology Corporation,** declares that this **Outdoor Wireless AP** is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.	**Lietuviškai**	Šiuo **IFS Technology Corporation,**, skelbia, kad **Outdoor Wireless AP** tenkina visus svarbiausius 1999/5/EC direktyvos reikalavimus ir kitas svarbias nuostatas.
Česky	Společnost **IFS Technology Corporation,** tímto prohlašuje, že tato **Outdoor Wireless AP** splňuje základní požadavky a další příslušná ustanovení směrnice 1999/5/EC.	**Magyar**	A gyártó **IFS Technology Corporation**, kijelenti, hogy ez a **Outdoor Wireless AP** megfelel az 1999/5/EK irányelv alapkövetelményeinek és a kapcsolódó rendelkezéseknek.
Dansk	**IFS Technology Corporation,** erklærer herved, at følgende udstyr **Outdoor Wireless AP** overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF	**Malti**	Hawnhekk, **IFS Technology Corporation,** jiddikjara li dan **Outdoor Wireless AP** jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 1999/5/EC
Deutsch	Hiermit erklärt **IFS Technology Corporation,** dass sich dieses Gerät **Outdoor Wireless AP** in Übereinstimmung mit den grundlegenden Anforderungen und den anderen relevanten Vorschriften der Richtlinie 1999/5/EG befindet". (BMWi)	**Nederlands**	Hierbij verklaart , **IFS Technology orporation,** dat **Outdoor Wireless AP** in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG
Eestikeeles	Käesolevaga kinnitab **IFS Technology Corporation,** et see **Outdoor Wireless AP** vastab Euroopa Nõukogu direktiivi 1999/5/EC põhinõuetele ja muudele olulistele tingimustele.	**Polski**	Niniejszym firma **IFS Technology Corporation,** oświadcza, że **Outdoor Wireless AP** spełnia wszystkie istotne wymogi i klauzule zawarte w dokumencie „Directive 1999/5/EC".
Ελληνικά	*ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ* , **IFS Technology Corporation,** *ΔΗΛΩΝΕΙ ΟΤΙ ΑΥΤΟ* **Outdoor Wireless AP***ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ*	**Português**	**IFS Technology Corporation**, declara que este **Outdoor Wireless AP** está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
Español	Por medio de la presente, **IFS Technology Corporation,** declara que **Outdoor Wireless AP** cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE	**Slovensky**	Výrobca **IFS Technology Corporation,** týmto deklaruje, že táto **Outdoor Wireless AP** je v súlade so základnými požiadavkami a ďalšími relevantnými predpismi smernice 1999/5/EC.
Français	Par la présente, **IFS Technology Corporation,** déclare que les appareils du **Outdoor Wireless AP** sont conformes aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE	**Slovensko**	**IFS Technology Corporation**, **s tem potrjuje,** da je ta **Outdoor Wireless AP** skladen/a z osnovnimi zahtevami in ustreznimi določili Direktive 1999/5/EC.
Italiano	Con la presente , **IFS Technology Corporation,** dichiara che questo **Outdoor Wireless AP** è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.	**Suomi**	**IFS Technology Corporation,** vakuuttaa täten että **Outdoor Wireless AP** tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Latviski	Ar šo **IFS Technology Corporation,** apliecina, ka šī **Outdoor Wireless AP** atbilst Direktīvas 1999/5/EK pamatprasībām un citiem atbilstošiem noteikumiem.	**Svenska**	Härmed intygar, **IFS Technology Corporation,** att denna **Outdoor Wireless AP** står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.