Wireless LAN Device Series

WLAN Outdoor Bridge

ZW-2000-IA User Manual

Version.

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Preface

This guide is for the networking professional who installs and manages the Zinwell ZW-2000 outdoor product hereafter referred to as the “device”. To use this guide, you should have experience working with the TCP/IP configuration and be familiar with the concepts and terminology of wireless local area networks.

Ch 1. ZW-2000 Installation

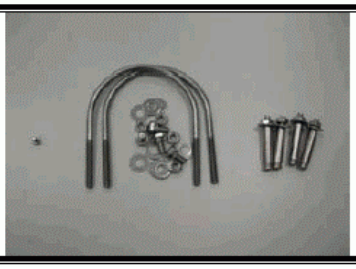
Packing List

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

- Wireless Outdoor Bridge unit * 1
- Mounting Kit * 1
- Waterproof (IP67) RJ-45 Cable (30M) * 1
- Waterproof (IP66) RF Cable (1M) * 1
- Power Over Ethernet Kit * 1
- Ground Wire * 1
- 2.5” /4” U bolts * 2 and Anchor * 4
- RJ-45 Cable (1.5M) * 1

RJ-45 Cable

2.5” /4” U bolt and Anchor



Hardware Installation

Once you check off everything from the package, you can start to install the ODU. You can mount to a pipe, a pole or to the side of a building. The steps are showed in the following：

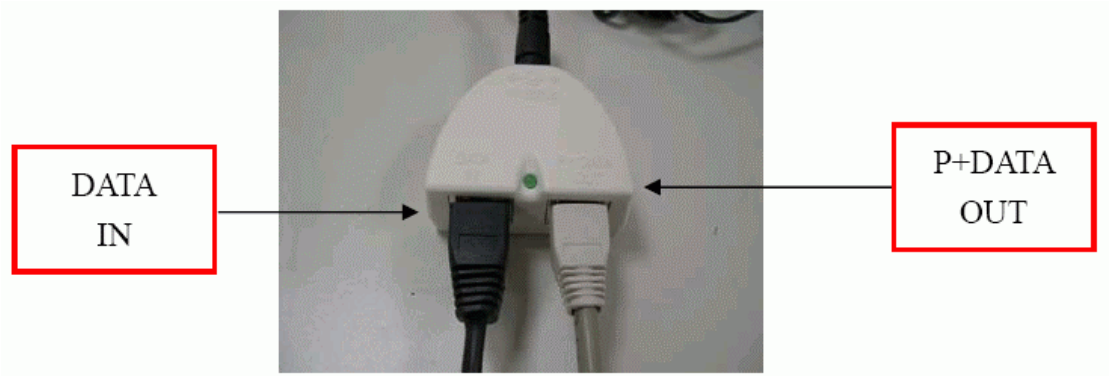
1. You must mount the ODU into the bracket first.

Note: ALL the 4 screws had been tightened onto the ODU and Bracket

2. You can use the 2 or 4 inches U bolt to mount on the pipe, depending on the radius of the pipe. (Wall mounting is referred to Wall Mounting Figure) The two U bolts must be mounted tightly. Be aware of not over-tighten the U bolt.

3. After checking the ODU is mounted well, you can connect the following two cables: the Waterproof RJ-45 network cable to “P+ DATA OUT” port of ODU and the RF cable to antenna port. Additional waterproof tool, such as waterproof tape, is recommended to use to enhance the waterproof function. It is suggested to have a lightening protector between antenna and antenna port. Connect the ground wire as the figure of “ODU ground wire connection.”

4. Plug the other end of the waterproof RJ-45 cable to the PoE device. The PoE device is guaranteed only in indoor environment.

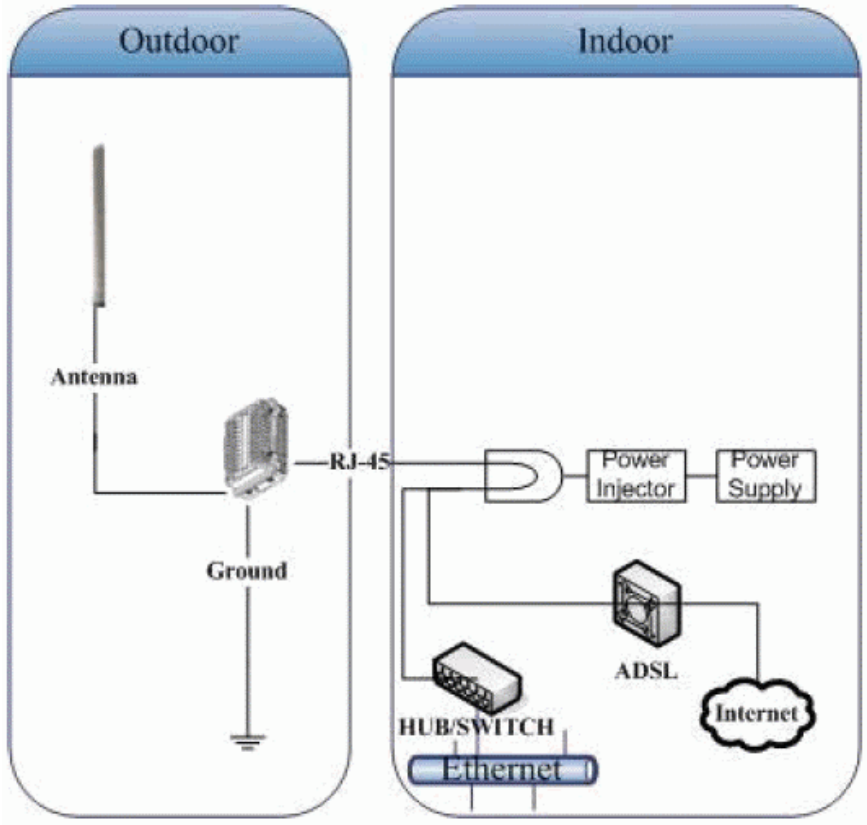


Caution: DON'T plug the power cord into PoE device before you finish install the antenna and Ground wire to ensure the safety.

If the RJ-45 cable's length is not long enough to connect to your network device for indoor parts installation, you can extend the cable length.
However, make sure the maximum length of the RJ-45 cable is shorter than 100M (about 109 yards) for normal operation under IEEE 802.3 standards.
When you plug the regular RJ-45 cable into the PoE device, you should use the regular RJ-45 cable to plug into the "DATA IN" of "Power Over Ethernet Kit" to connect to hub/switch or use the crosslink RJ-45 cable (Not included in the Packing List) to connect with user's PC.
The waterproof RJ-45 cable must be connected to the "P+DATA OUT" port.

Caution: Be careful! Don't plug the two cables inversely. It will damage the devices!

We recommend you refer to the following illustration as a guideline for hardware installation.



Ch 2. First Time Configuration

Before Start to Configure

There are two ways to configure the device, one is through web-browser, and the other is through Secure Shell CLI interface. To access the configuration interfaces, make sure you are using a computer connected to the same network as the device. The default IP address of the device is 192.168.2.254, and the subnet-mask is 255.255.255.0.

The device has three operation modes (Router/Bridge/WISP). In bridge mode, also known as AP Client, you can access the device by both WLAN (Wireless Local Area Network) and wired LAN. And in router/WISP modes, the device can be accessed by both WLAN and WAN. The default IP addresses for the device are 192.168.2.254(for LAN), 172.1.1.1(for WAN), so you need to make sure the IP address of your PC is in the same subnet as the device, such as 192.168.2.X (for LAN), 172.1.1.X (for WAN).

Please note that the DHCP server inside the device is default to up and running. Do not have multiple DHCP servers in your network environment, otherwise it will cause abnormal situation.

We also provide an auto-discovery tool which is for finding out the IP of the device. In case, you've forgot the IP of the device or the IP of the device has been changed, you can use the tool to find out the IP of the device even your PC is not in the same subnet as the device is.

Knowing the Network Application

ZW-2000 can act as the following roles, and it supports WDS (Wireless Distribution System) function.

- Access Point
- WDS (Wireless Repeater)
- Bridge/Router
- WISP
- AP Client

The device provides 3 different operation modes and the wireless radio of device can act as AP/Client/WDS. The operation mode is about the communication mechanism between the wired Ethernet NIC and wireless NIC, the following is the

types of operation mode.

Router

The wired Ethernet (WAN) port is used to connect with ADSL/Cable modem and the wireless NIC is used for your private WLAN. The NAT is existed between the 2 NIC and all the wireless clients share the same public IP address through the WAN port to ISP. The default IP configuration for WAN port is static IP. You can access the web server of device through the default WAN IP address 172.1.1.1 and modify the setting base on your ISP requirement.

Bridge

The wired Ethernet and wireless NIC are bridged together. Once the mode is selected, all the WAN related functions will be disabled.

WISP (Wireless ISP)

This mode can let you access the AP of your wireless ISP and share the same public IP address form your ISP to the PCs connecting with the wired Ethernet port of the device. To use this mode, first you must set the wireless radio to be client mode and connect to the AP of your ISP then you can configure the WAN IP configuration to meet your ISP requirement.

The wireless radio of the device acts as the following roles.

AP (Access Point)

The wireless radio of device serves as communications "hub" for wireless clients and provides a connection to a wired LAN.

AP Client

This mode provides the capability to connect with the other AP using infrastructure/Ad-hoc networking types. With bridge operation mode, you can directly connect the wired Ethernet port to your PC and the device becomes a wireless adapter. And with WISP operation mode, you can connect the wired Ethernet port to a hub/switch and all the PCs connecting with hub/switch can share the same public IP address from your ISP.

WDS (Wireless Distribution System)

This mode serves as a wireless repeater; the device forwards the packets to another AP with WDS function. When this mode is selected, all the wireless clients can't survey and connect to the device. The device only allows the WDS connection.

WDS+AP

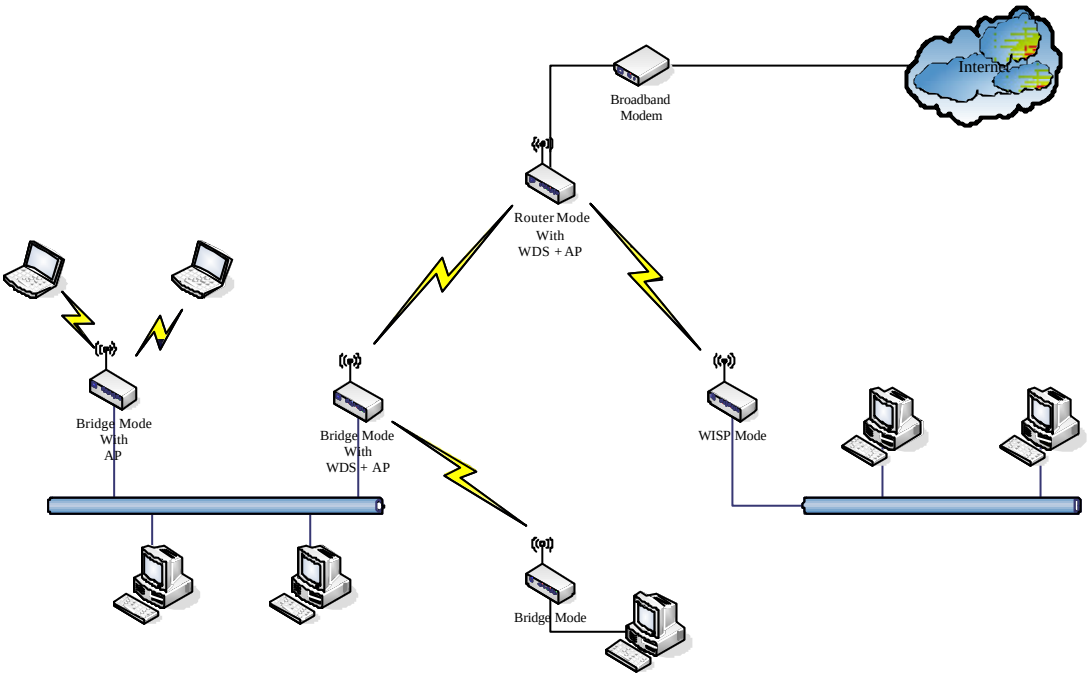
This mode combines WDS plus AP modes, it not only allows WDS connections but

also the wireless clients can survey and connect to the device.

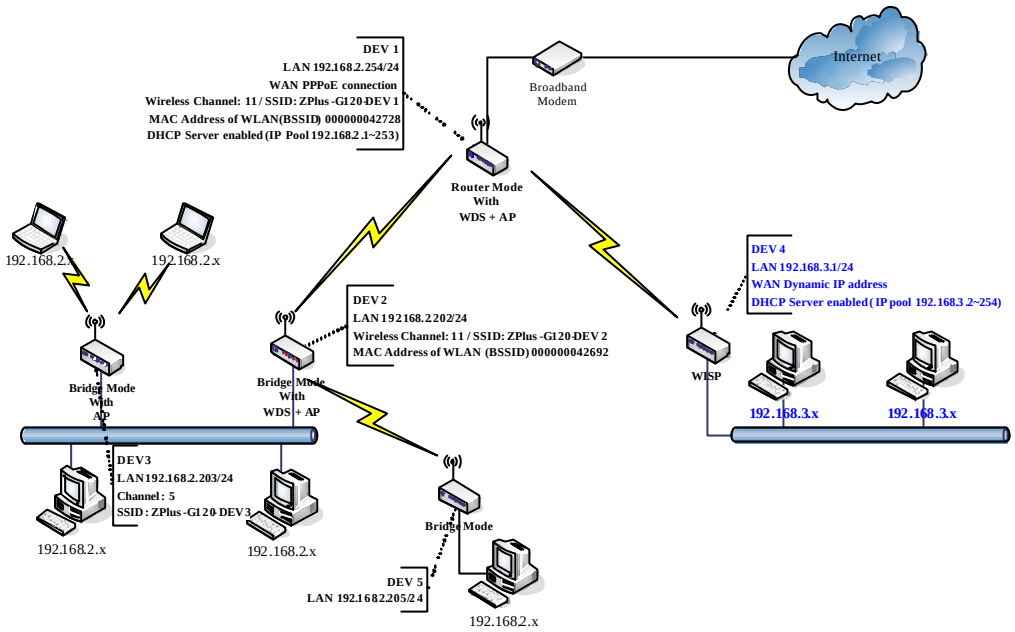
The following table shows the supporting combination of operation and wireless radio modes.

	Bridge	*Router*	*WISP*
AP	V	V	X
WDS	V	V	X
Client	V	X	V
AP+WDS	V	V	X

Hereafter are some topologies of network application for your reference.



Examples of Configuration



This example demonstrates how to set up a network with different device configurations. There are 2 DHCP servers (DEV1/DEV4) in the network to control the IP configuration of 2 domains (192.168.2.x/192.168.3.x). Once the setting is done, all the PCs can visit Internet through DEV1.

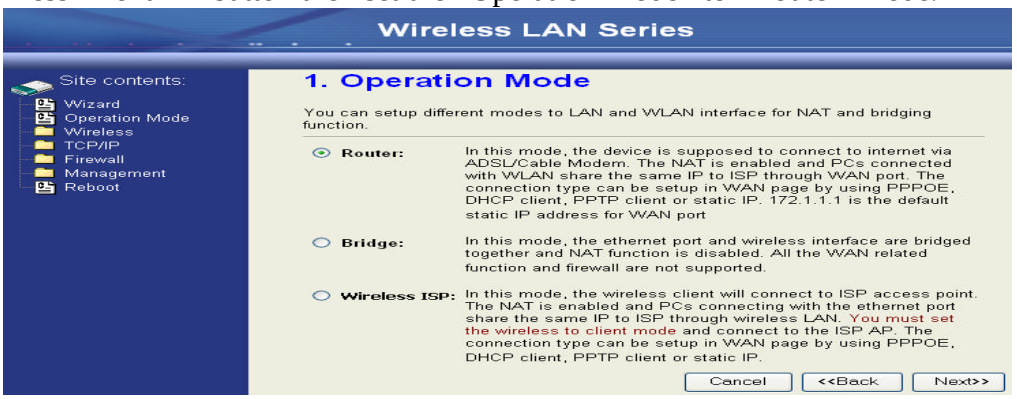
We assume all the devices keep the factory default setting. To make sure that user can continuing press the rest button for more than 5 seconds to restore the factory default setting.

The following descriptions show the steps to configure DEV1 to DEV5.

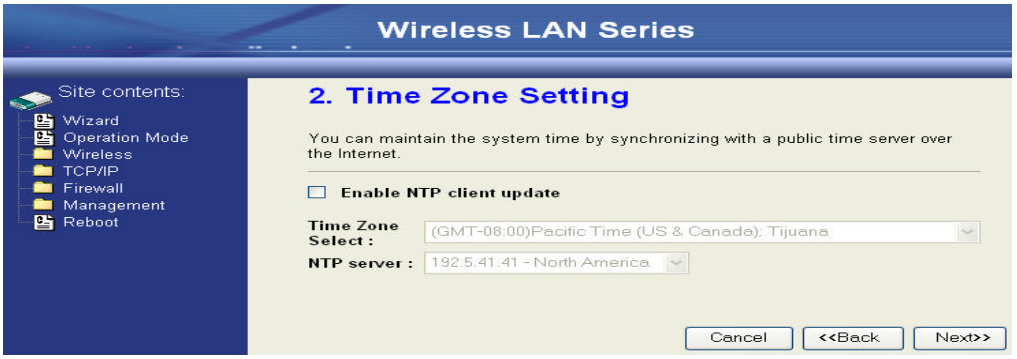
Configure DEV1:

1. Connect the ADSL modem to Ethernet port of device using Ethernet cable.
2. Access the web server (http://192.168.2.254) of device from the wireless station.
3. Use Wizard page to setup device.

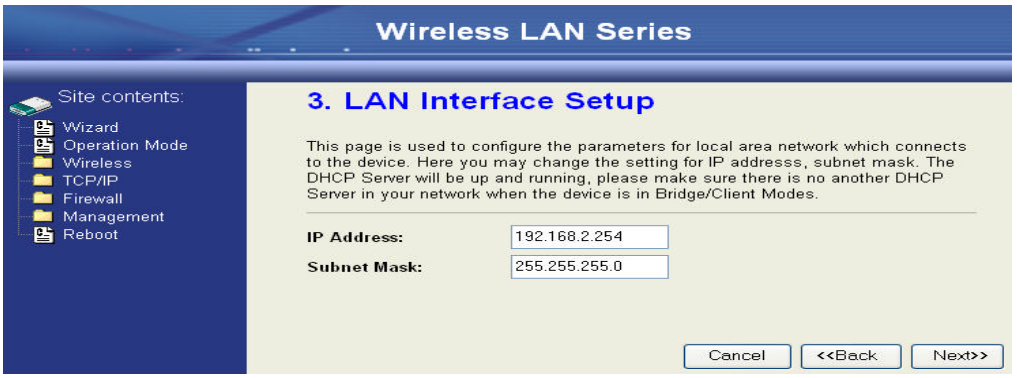
4. Press “Next>>” button then set the “Operation Mode” to “Router” mode.



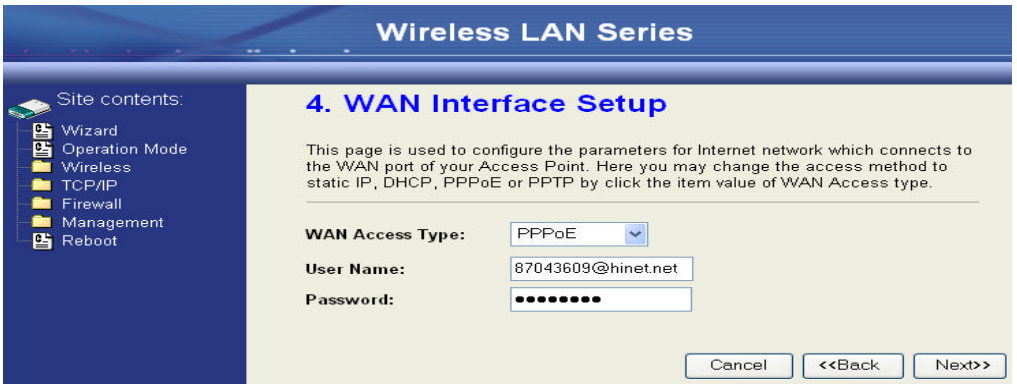
5. Press “Next>>” button then disable “Time Zone” function.



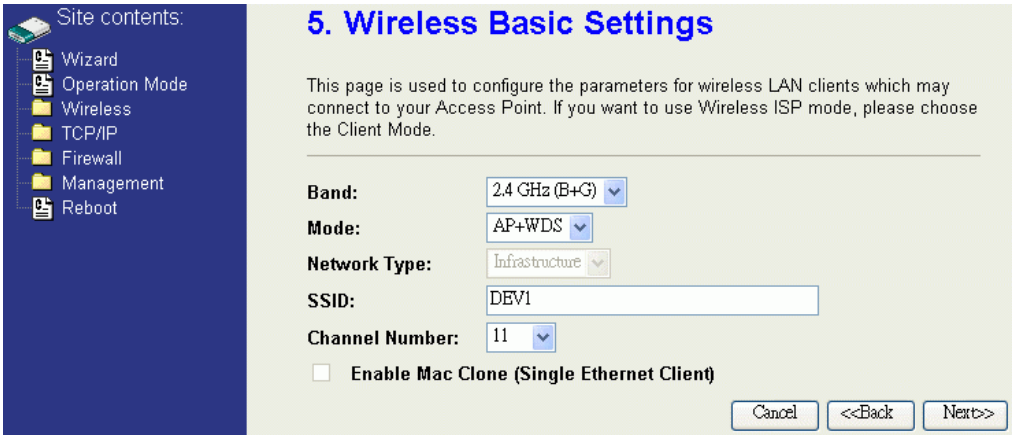
6. Press “Next>>” button then set the IP address of LAN interface.



7. Press “Next>>” button then select the “PPPoE” for “WAN Access Type” and fill in the “User Name” and “Password” fields.

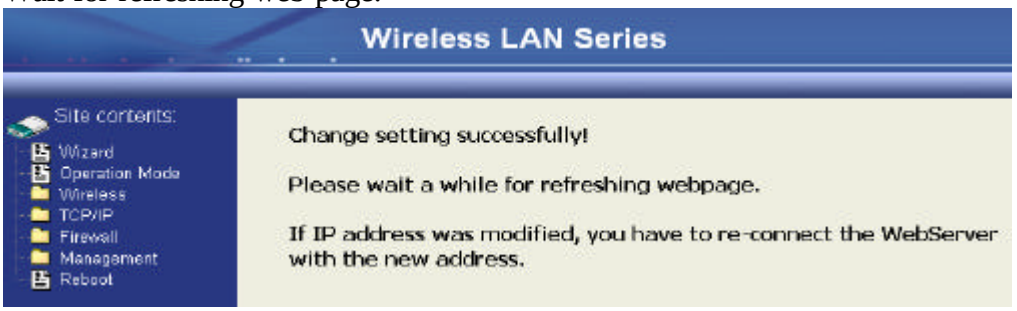


8. Press “Next>>” button then select the “AP+WDS” for “mode” and change the SSID to “DEV1”.

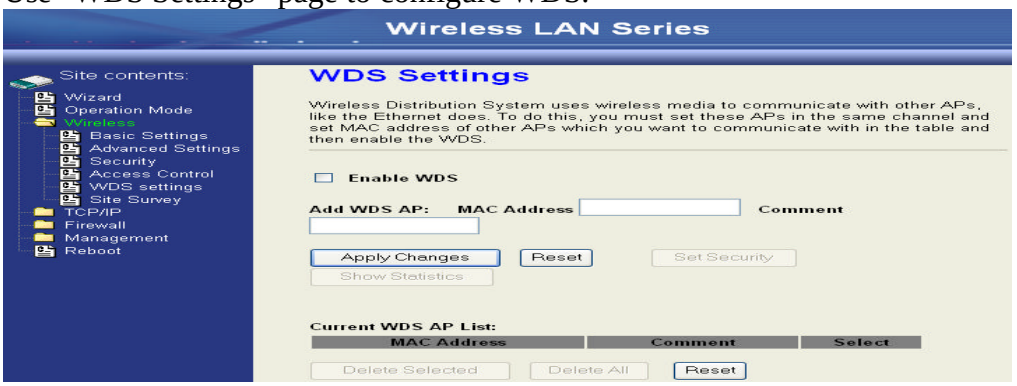


9. Press “Next>>” button then select “None” for “Encryption” then press “Finished” button.

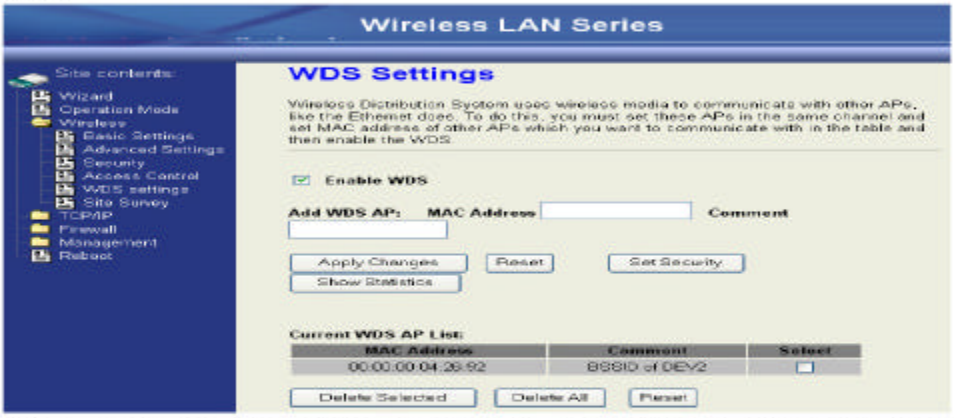
10. Wait for refreshing web page.



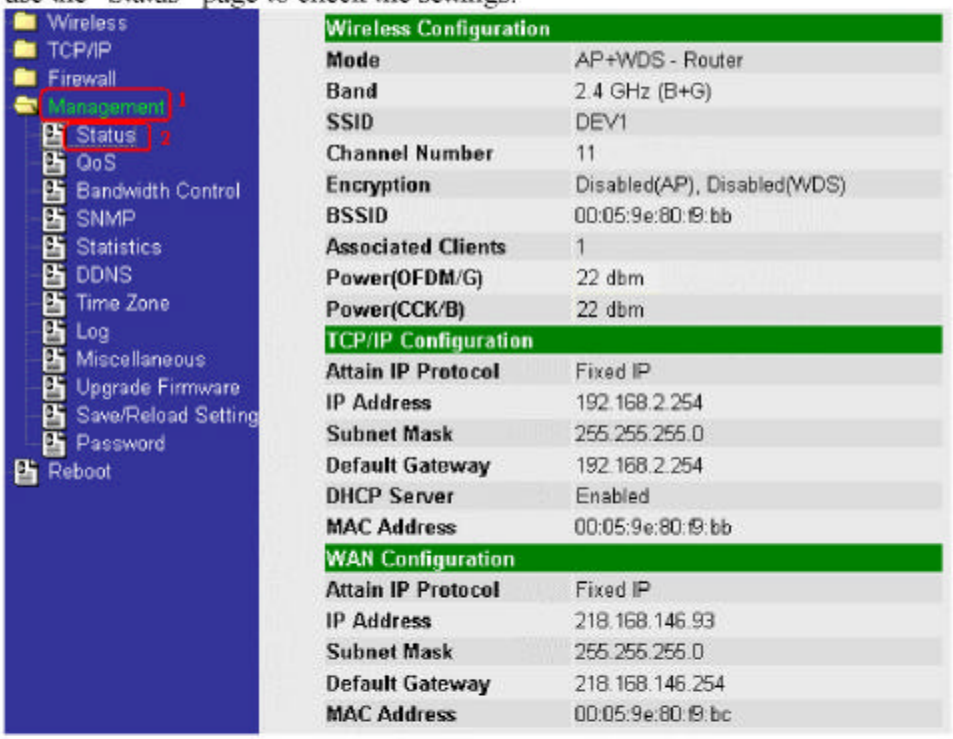
11. Use “WDS Settings” page to configure WDS.



12. Enable WDS function and add the BSSID of DEV2 to "Current WDS AP List".



13. Since we access the device by wireless connection, it may temporarily disconnect when applying the WDS setting. After re-connecting to the device, use the "Status" page to check the settings.



Configure DEV2:

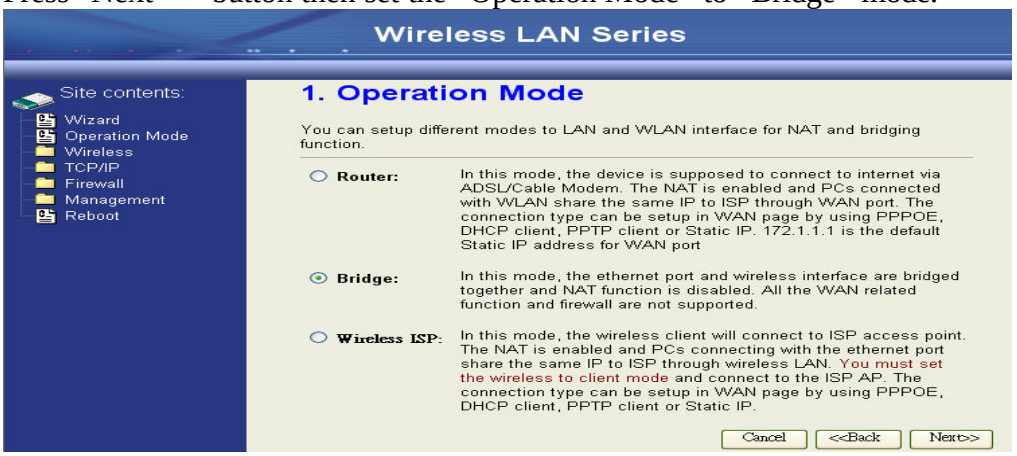
1. Access the web server (http://192.168.2.254) of device from the Ethernet port.

Caution

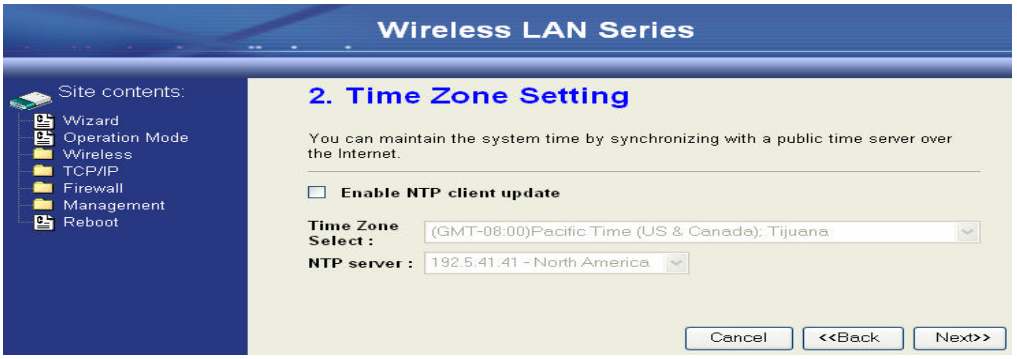
If you configure multiple devices in the same PC, since the devices have the same default IP address but different MAC addresses, it may cause you not able to access the web server of device. If the situation happens, please try to clean the ARP table of your PC by DOS command "arp –d" then you can access the web server of device using the default IP address.

2. Use Wizard page to setup device.

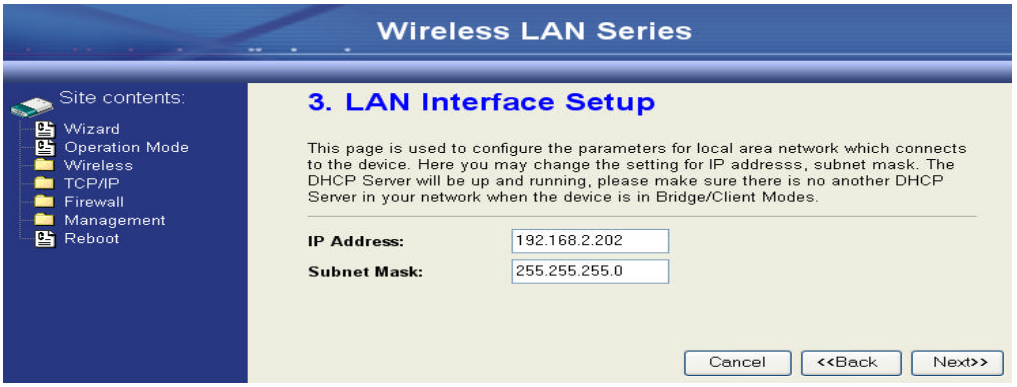
3. Press "Next>>" button then set the "Operation Mode" to "Bridge" mode.



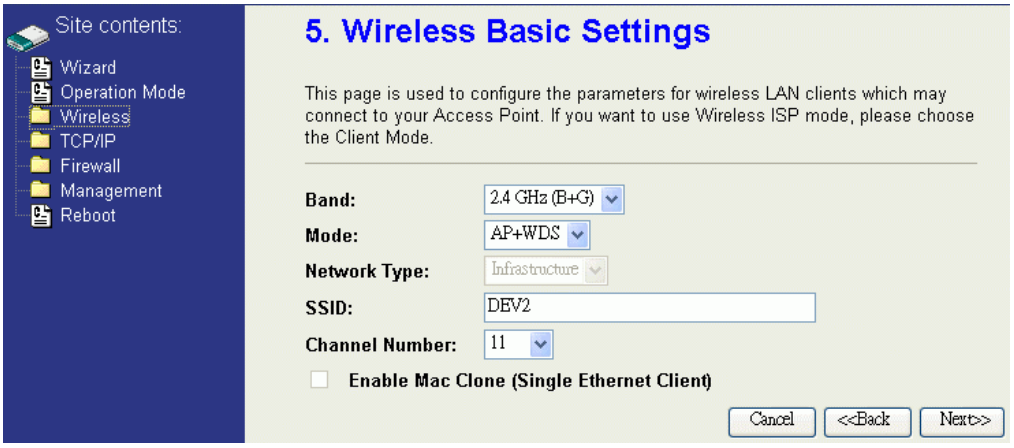
4. Press "Next>>" button then disable "Time Zone" function.



5. Press “Next>>” button then set the IP address of LAN interface.

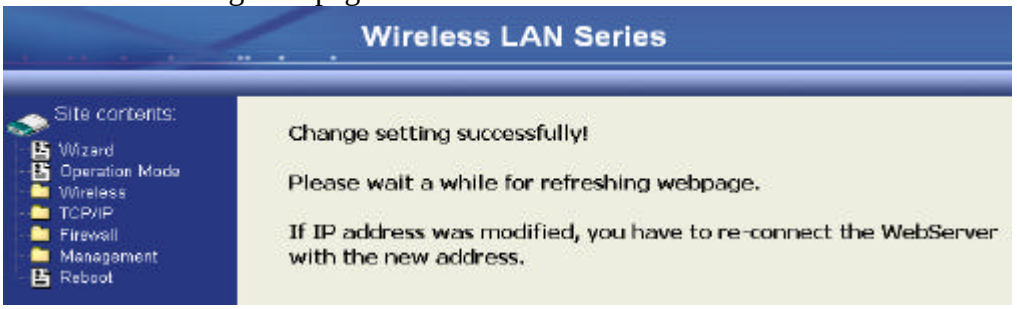


6. Press “Next>>” button then select the “AP+WDS” for “mode” and change the SSID to “DEV2”.

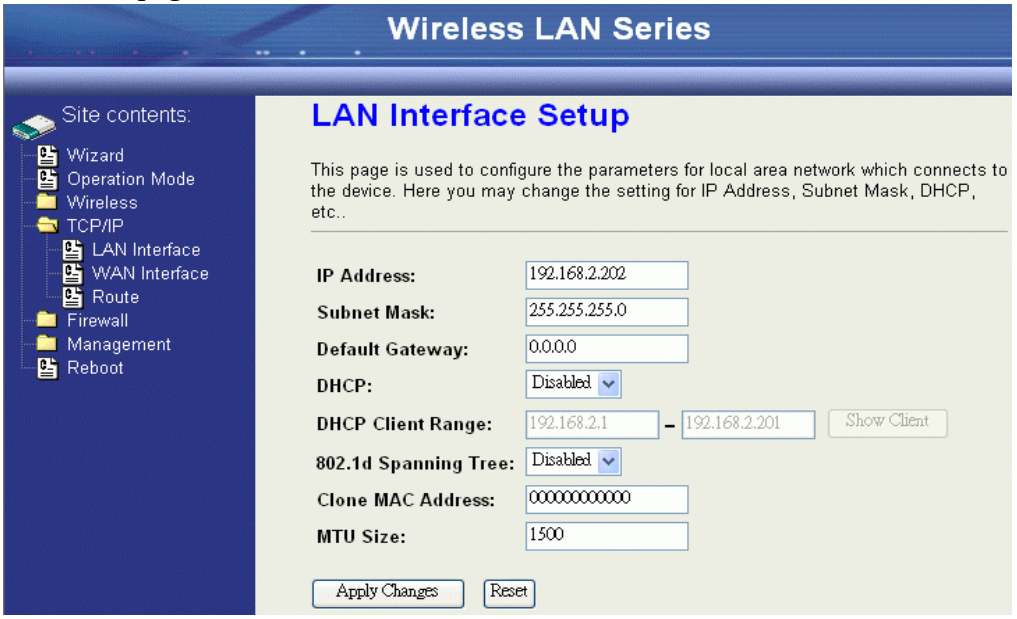


7. Press “Next>>” button then select “None” for “Encryption” then press “Finished” button.

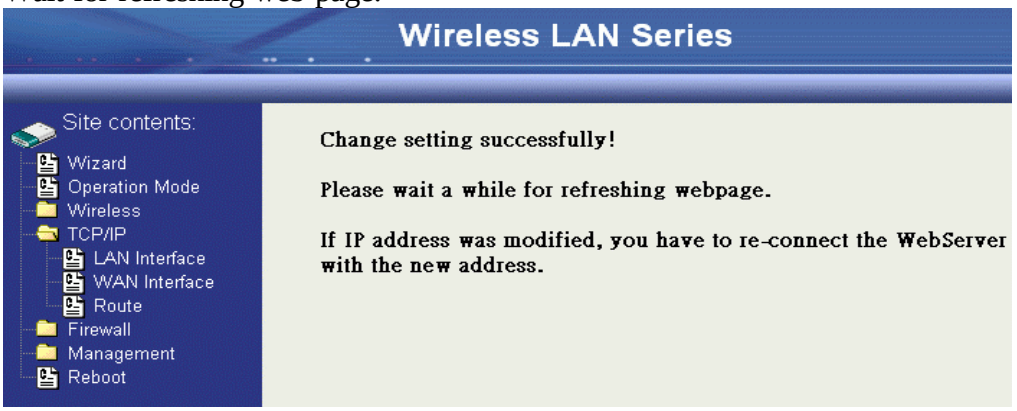
8. Wait for refreshing web page.



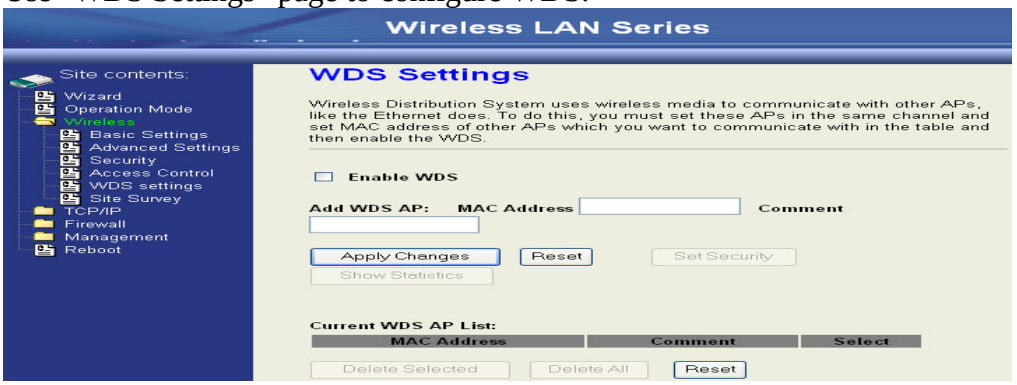
9. Access the web server by new IP address “192.168.2.202” then use “LAN Interface” page to disable DHCP Server.



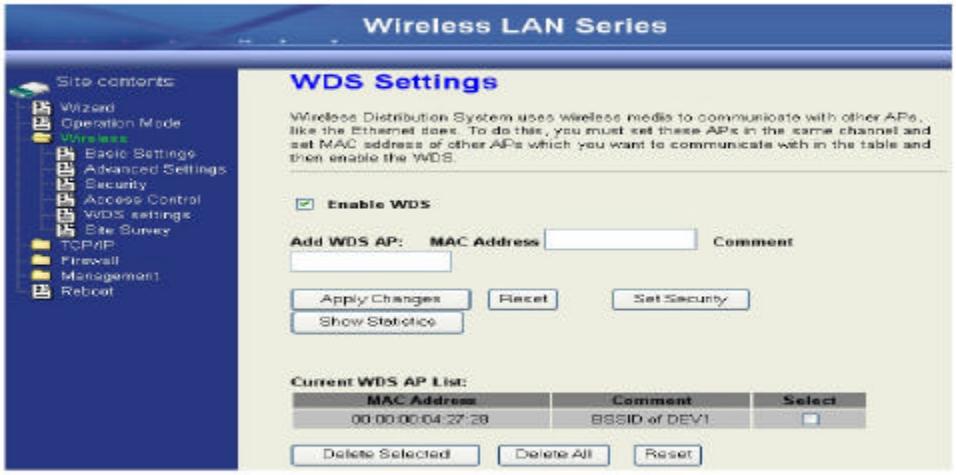
10. Wait for refreshing web page.



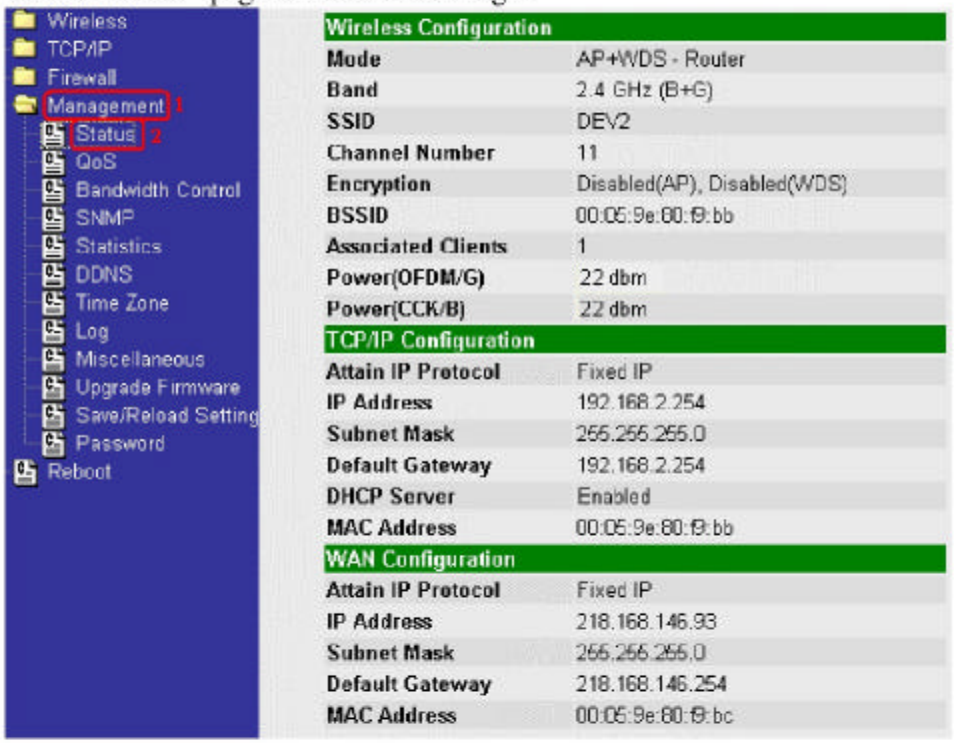
11. Use “WDS Settings” page to configure WDS.



12. Enable WDS function and add the BSSID of DEV1 to "Current WDS AP List".



13. Use the "Status" page to check the settings.

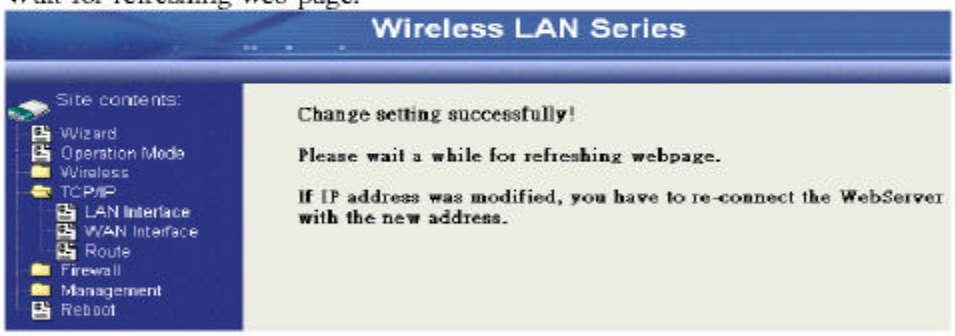


Configure DEV3:

1. Access the web server (http://192.168.2.254) of device from the Ethernet port.

Caution

If you configure multiple devices in the same PC, since the devices have the same default IP address but different MAC addresses, it may cause you not able to access the web server of device. If the situation happens, please try to clean the ARP table of your PC by DOS command "arp –d" then you can access the web server of device using the default IP address.

2. Use "LAN Interface" page to set the IP address of LAN interface and disable DHCP server.

3. Wait for refreshing web page.