

Wireless LAN Device Series

WLAN Outdoor Bridge

ZPlus-G192-OD User Manual

Version. 1.2.1 (25.03.2005)

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Preface

This guide is for the networking professional who installs and manages the Ziwell

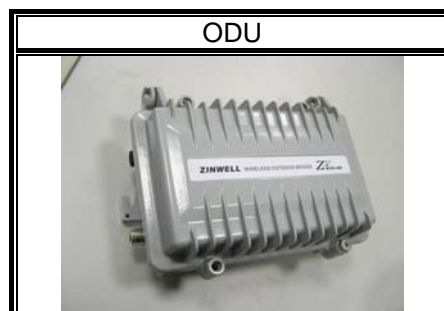
ZWA-G192 outdoor product, hereafter referred to as the “device”. To use this guide, you should have experience working with the TCP/IP configuration and be familiar with the concepts and terminology of wireless local area networks.

Chapter 1 - ZWA-G192 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
- 6 dBi omni directional antenna * 1 (separated package)
- RJ-45 Cable (1.5M) * 1





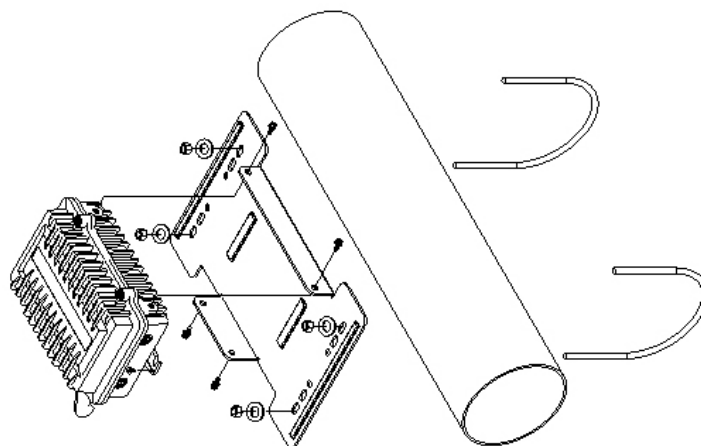
Hardware Installation

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 :

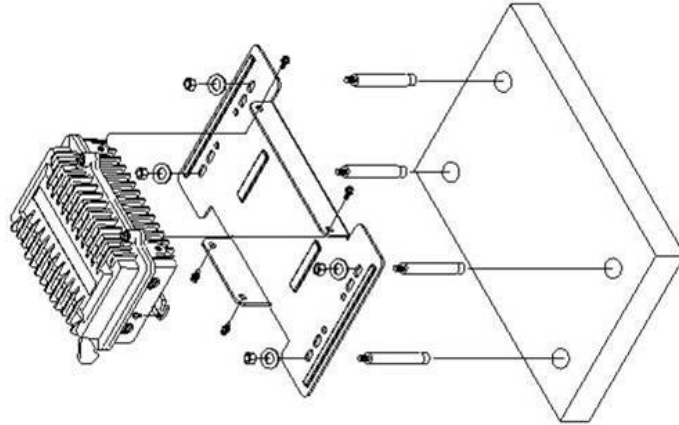
1. You must mount the ODU into the bracket first.

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.

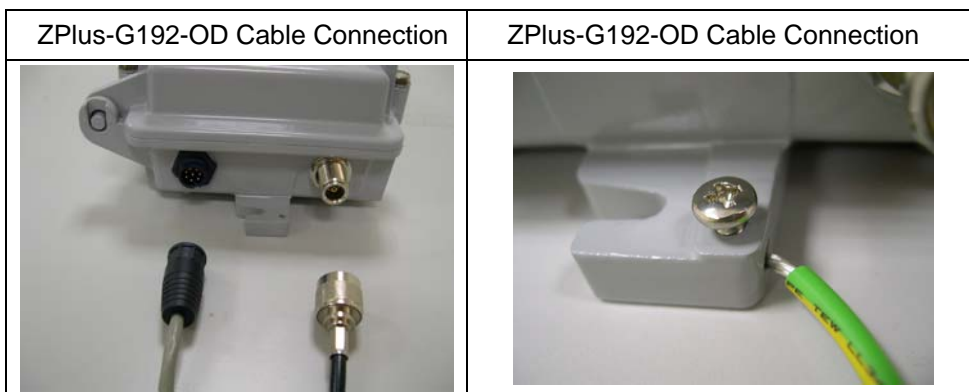


Pipe Mounting Figure

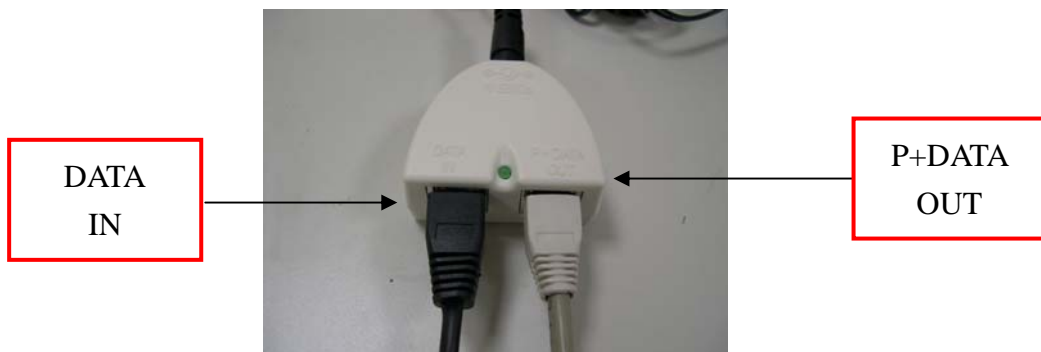


Wall Mounting Figure

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 lightning protector between antenna and antenna port. Connecting 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.

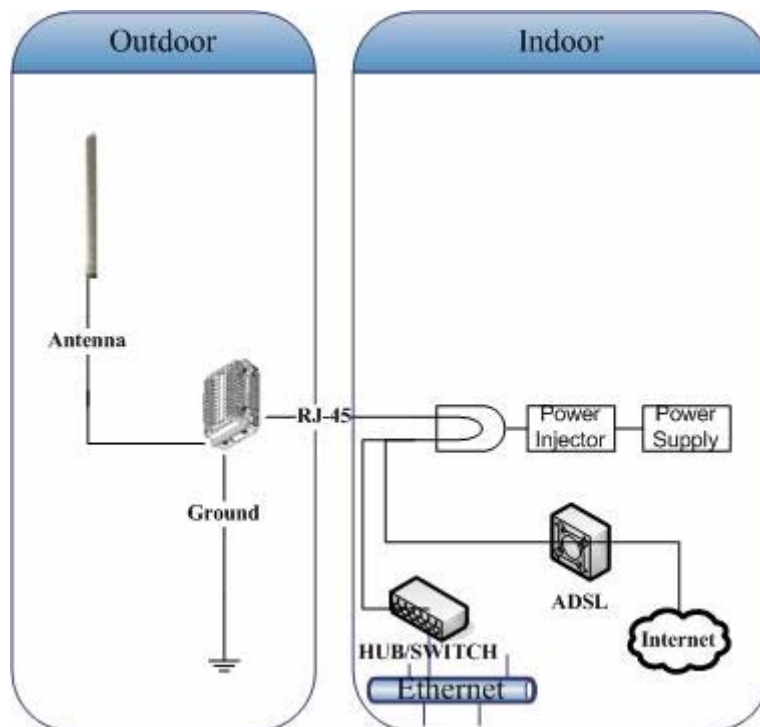
If the RJ-45 cable's length is not long enough to connect to your network device for indoor parts installation, you can extend the cable length. However, make sure the maximum length of the RJ-45 cable is shorter than 100M (about 109 yards) for normal operation under IEEE 802.3 standards.

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.



Chapter 2 - First Time Configuration

Before Start to Configure

There are two interfaces to configure the device, one is web-browser interface, and the other is 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, 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 subnet, otherwise it will cause abnormal situation.

Inside the CD, we provide the device auto-discovery tool, the tool can detect the device even your PC is not in the same subnet as the device in case the IP address of device is changed and forgot by user. The tool only can discover the device in your local area network.

Knowing the Network Application

ZWA-G192-OD 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 met 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.

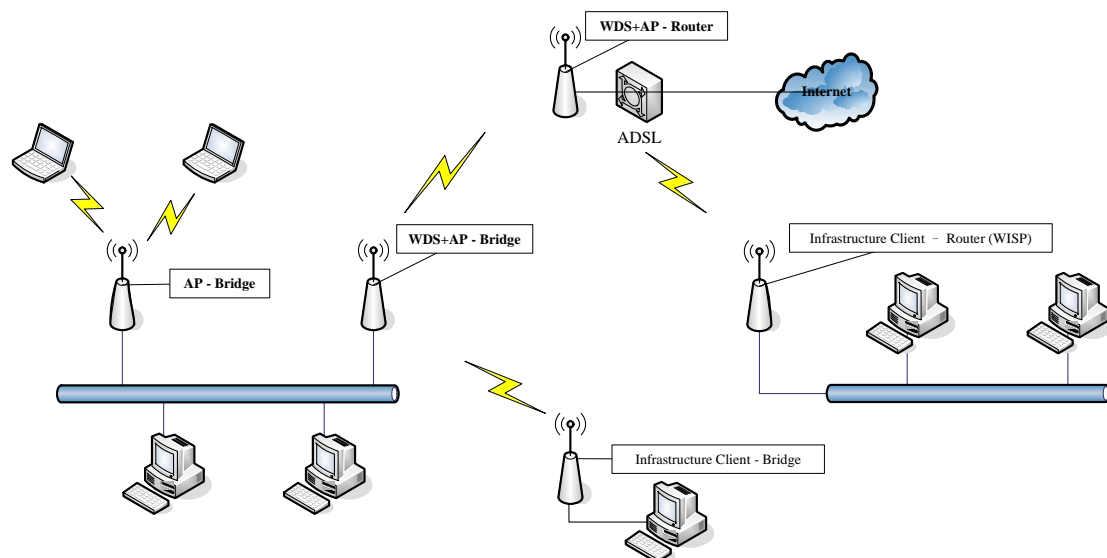
WDS+AP

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.

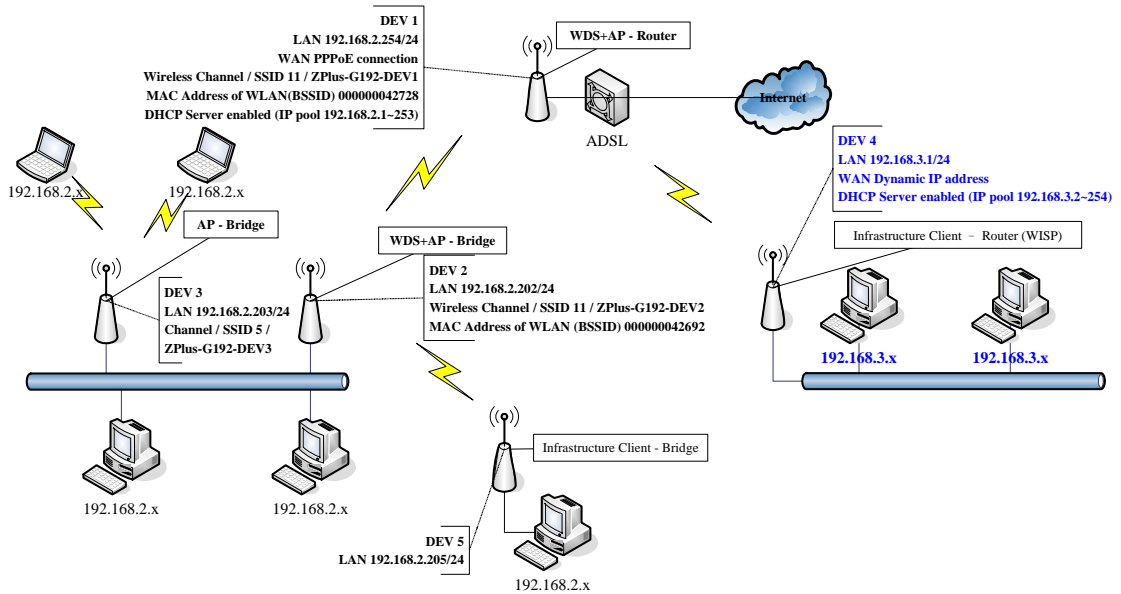
The following table shows the supporting combination of operation and wireless radio modes.

	<i>Bridge</i>	<i>Router</i>	<i>WISP</i>
<i>AP</i>	✓	✓	✗
<i>WDS</i>	✓	✓	✗
<i>Client</i>	✓	✗	✓
<i>AP+WDS</i>	✓	✓	✗

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.

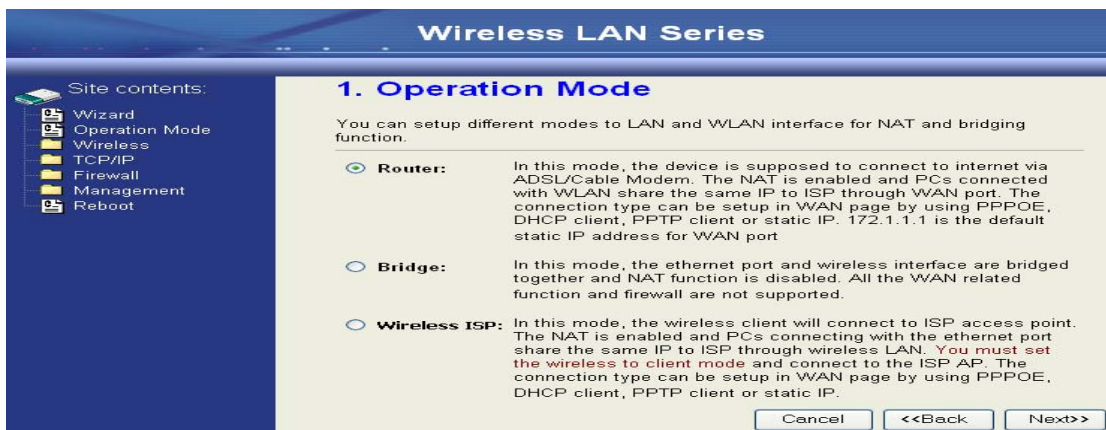
The following descriptions show the steps to configure DEV1 to DEV5.

Configure DEV1:

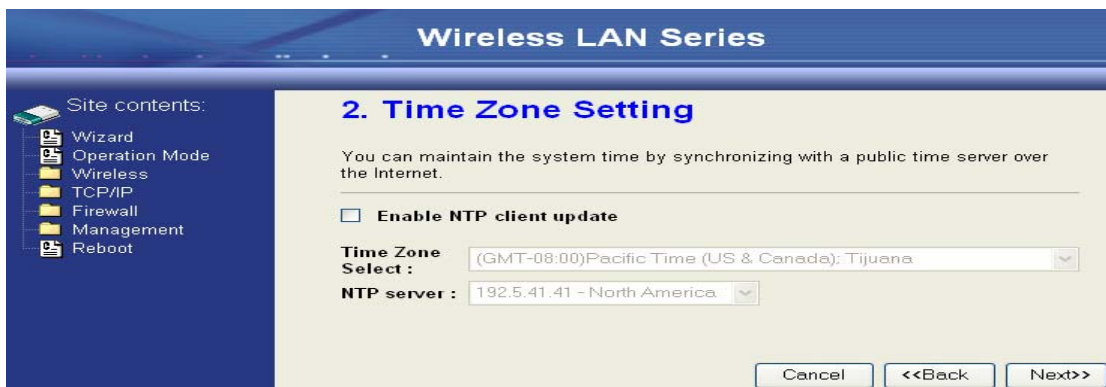
1. Connect the ADSL modem to Ethernet port of device using Ethernet cable.
2. Access the web server (<http://192.168.2.254>) of device from the wireless station.
3. Use Wizard page to setup device.



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



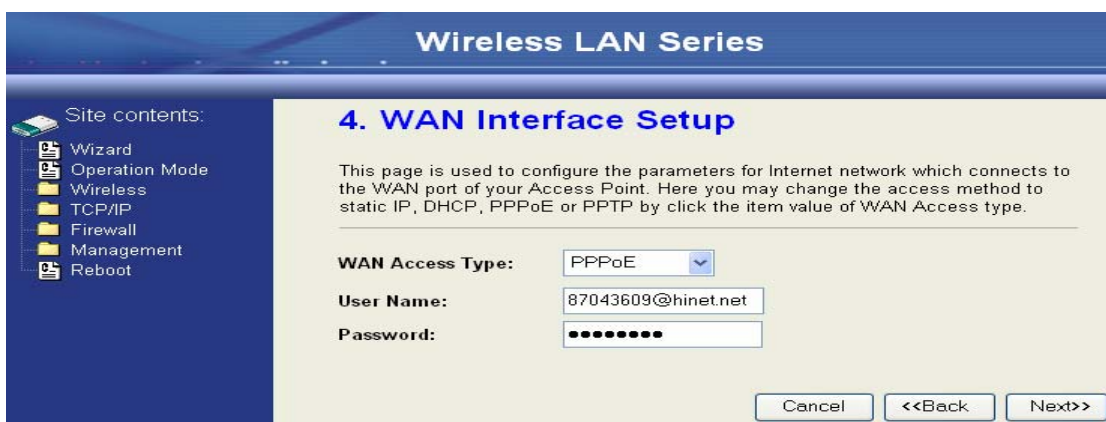
5. Press "Next>>" button then disable "Time Zone" function.



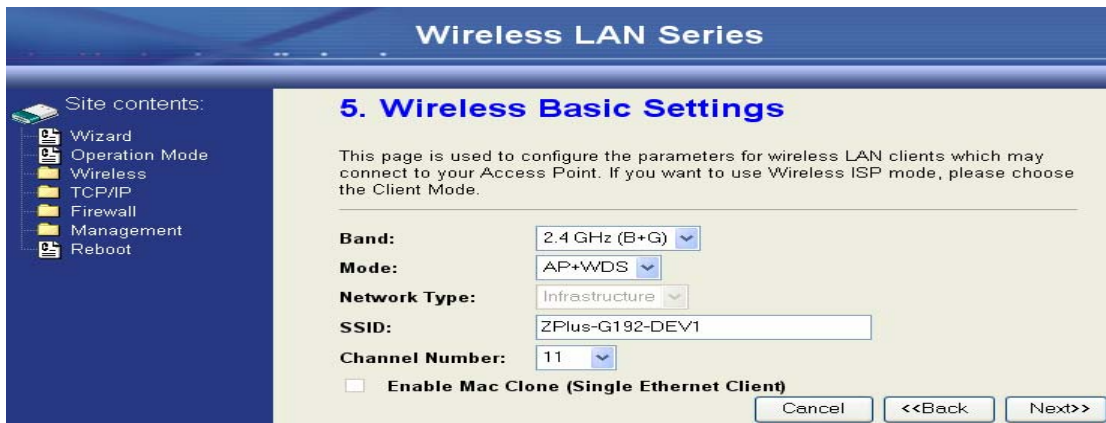
6. Press "Next>>" button then set the IP address of LAN interface.



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



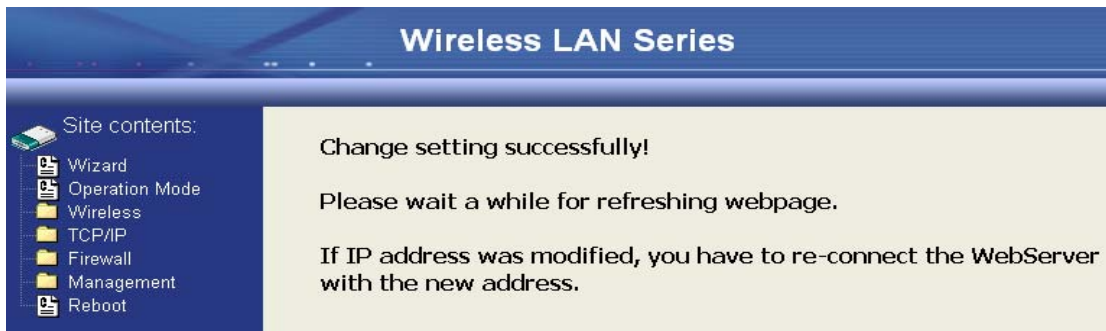
8. Press “Next>>” button then select the “AP+WDS” for “mode” and change the SSID to “ZPlus-G192-DEV1”.



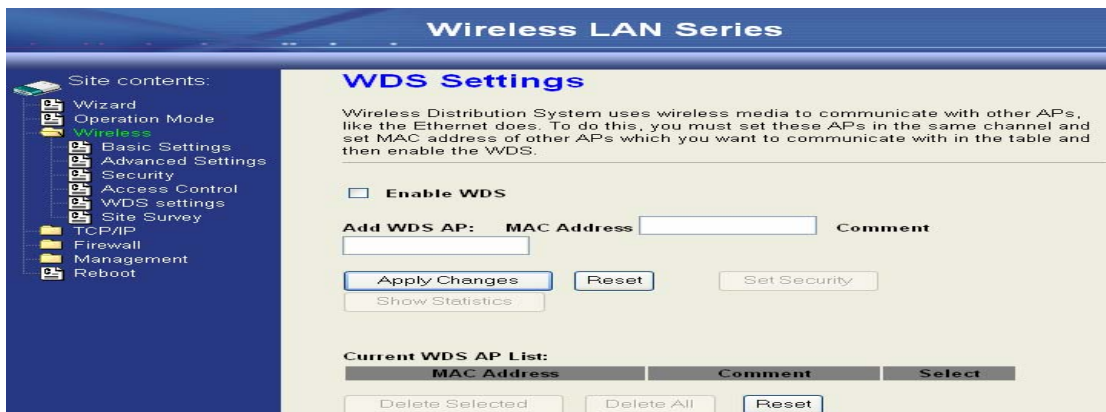
9. Press “Next>>” button then select “None” for “Encryption” then press “Finished” button.



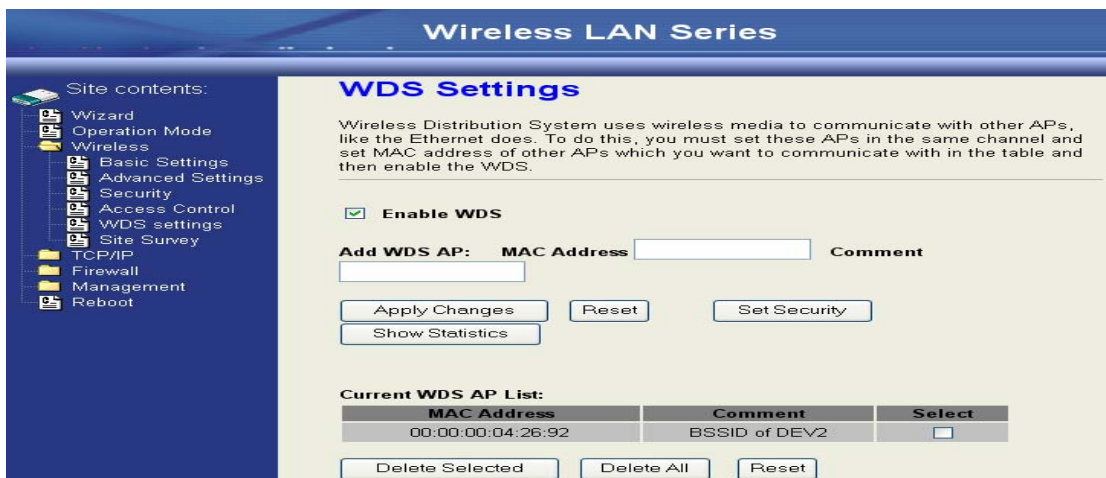
10. Wait for refreshing web page.



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.

The screenshot displays the web interface for a Wireless LAN Series device. On the left is a navigation tree under 'Site contents:' with categories like Wizard, Operation Mode, Wireless, TCP/IP, Firewall, and Management. The 'Management' category is expanded, showing 'Status' as the selected page. The main content area shows system information and configuration settings for Wireless, TCP/IP, and WAN.

Free Memory	1060 kB
Firmware Version	v1.2.1
Webpage Version	v1.2.1
Wireless Configuration	
Mode	AP+WDS - Router
Band	2.4 GHz (B+G)
SSID	ZPlus-G192
Channel Number	11
Encryption	Disabled(AP), Disabled(WDS)
BSSID	00:00:00:04:27:28
Associated Clients	2
Power(OFDM/G)	100mW
Power(CCK/B)	250mW
TCP/IP Configuration	
Attain IP Protocol	Fixed IP
IP Address	192.168.2.254
Subnet Mask	255.255.255.0
Default Gateway	192.168.2.254
DHCP Server	Enabled
MAC Address	00:00:00:04:27:28
WAN Configuration	
Attain IP Protocol	PPPoE Connected
IP Address	218.168.150.18
Subnet Mask	255.255.255.255
Default Gateway	218.168.128.254
MAC Address	04:05:06:07:08:09

Configure DEV2:

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

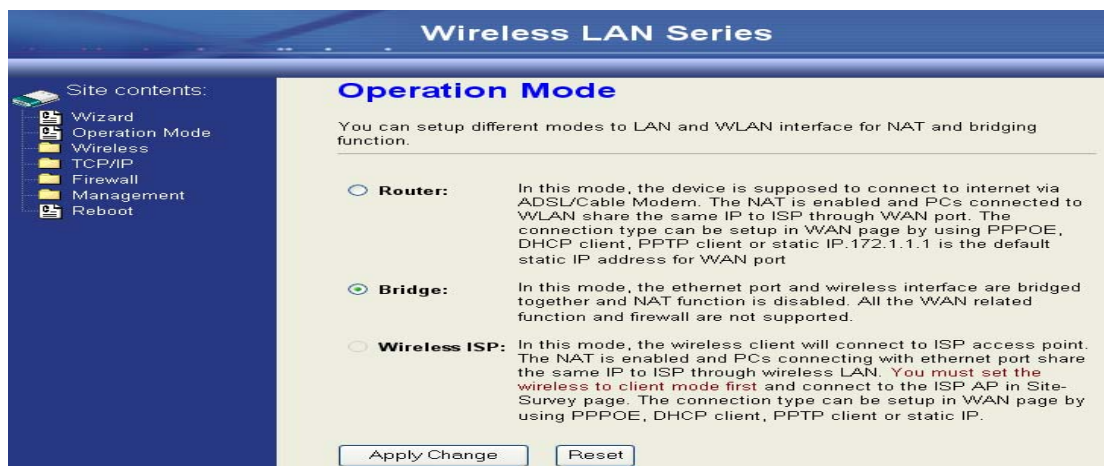
Caution

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 can't 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.

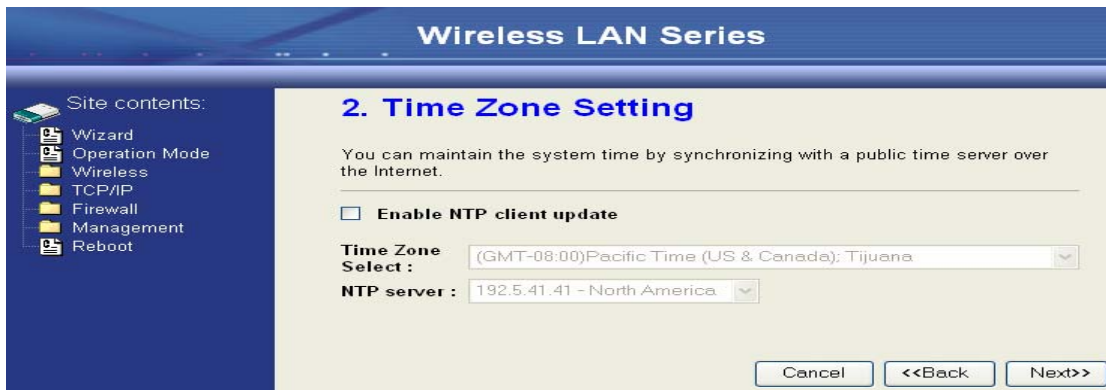
2. Use Wizard page to setup device.



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



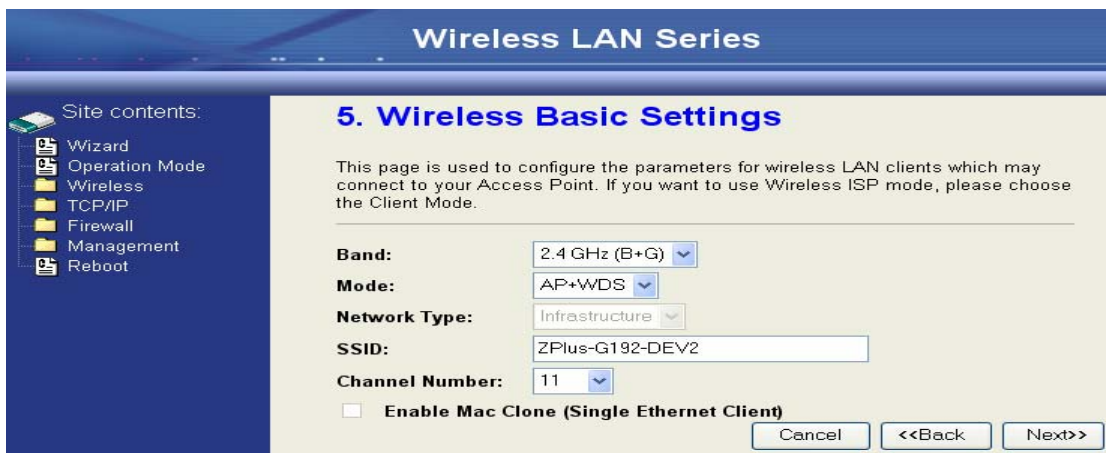
4. Press "Next>>" button then disable "Time Zone" function.



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



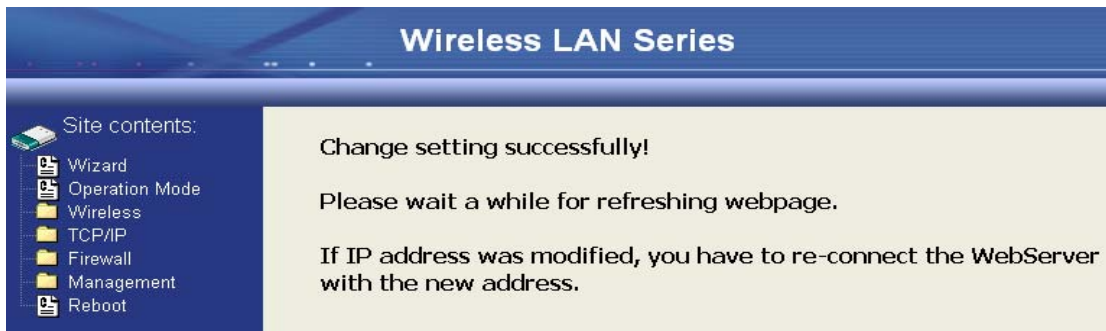
6. Press “Next>>” button then select the “AP+WDS” for “mode” and change the SSID to “ZPlus-G192-DEV2”.



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



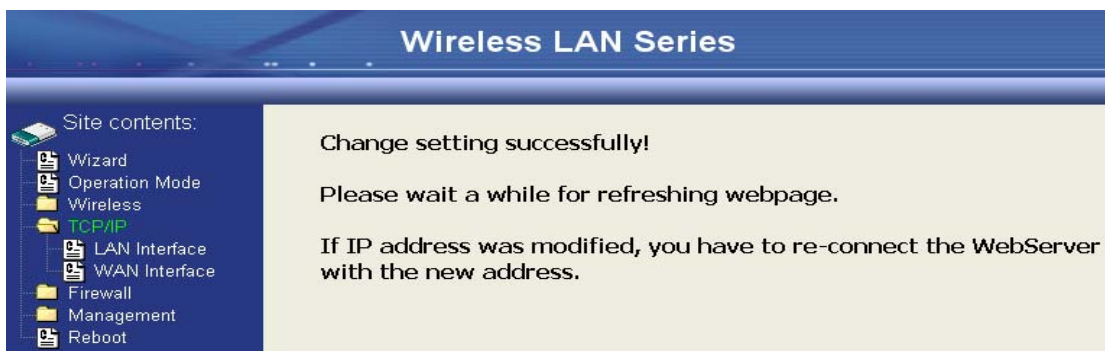
8. Wait for refreshing web page.



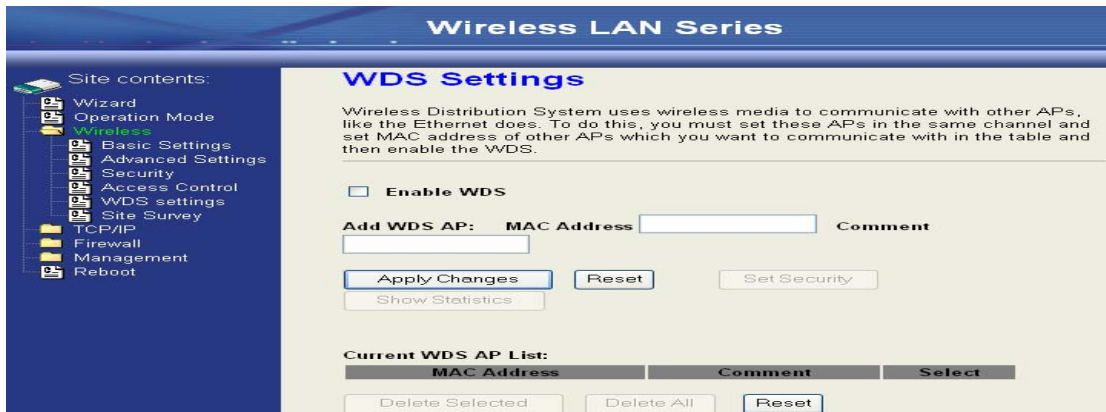
9. Access the web server by new IP address “192.168.2.202” then use “LAN Interface” page to disable DHCP Server.



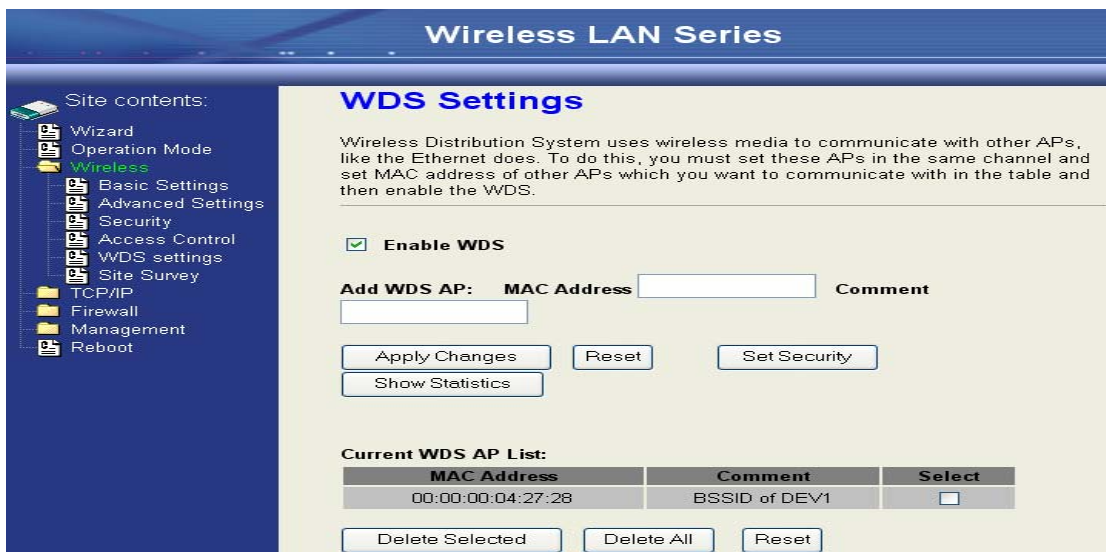
10. Wait for refreshing web page.



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.

Wireless LAN Series

- Site contents:
- Wizard
 - Operation Mode
 - Wireless
 - TCP/IP
 - Firewall
 - Management
 - Status
 - Statistics
 - DDNS
 - Time Zone
 - Log
 - Upgrade Firmware
 - Save/Reload Setting
 - Password
 - Reboot

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

System

Uptime	0day:1h:46m:9s
Free Memory	2136 kB
Firmware Version	v1.2.1
Webpage Version	v1.2.1

Wireless Configuration

Mode	AP+WDS - Bridge
Band	2.4 GHz (B+G)
SSID	ZPlus-G192-DEV2
Channel Number	11
Encryption	Disabled(AP), Disabled(WDS)
BSSID	00:00:00:04:26:92
Associated Clients	2
Power(OFDM/G)	100mW
Power(CCK/B)	250mW

TCP/IP Configuration

Attain IP Protocol	Fixed IP
IP Address	192.168.2.202
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DHCP Server	Disabled
MAC Address	00:00:00:04:26:92

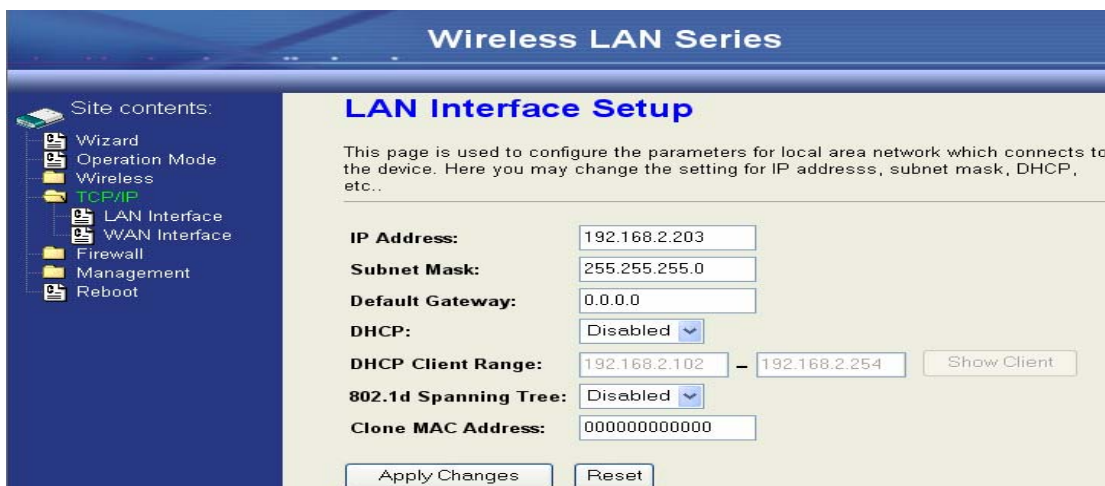
Configure DEV3:

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

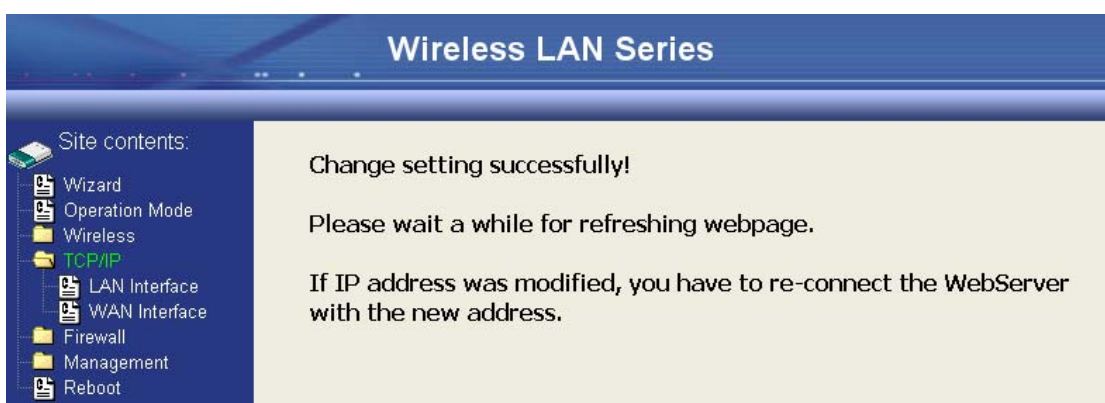
Caution

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 can't 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.



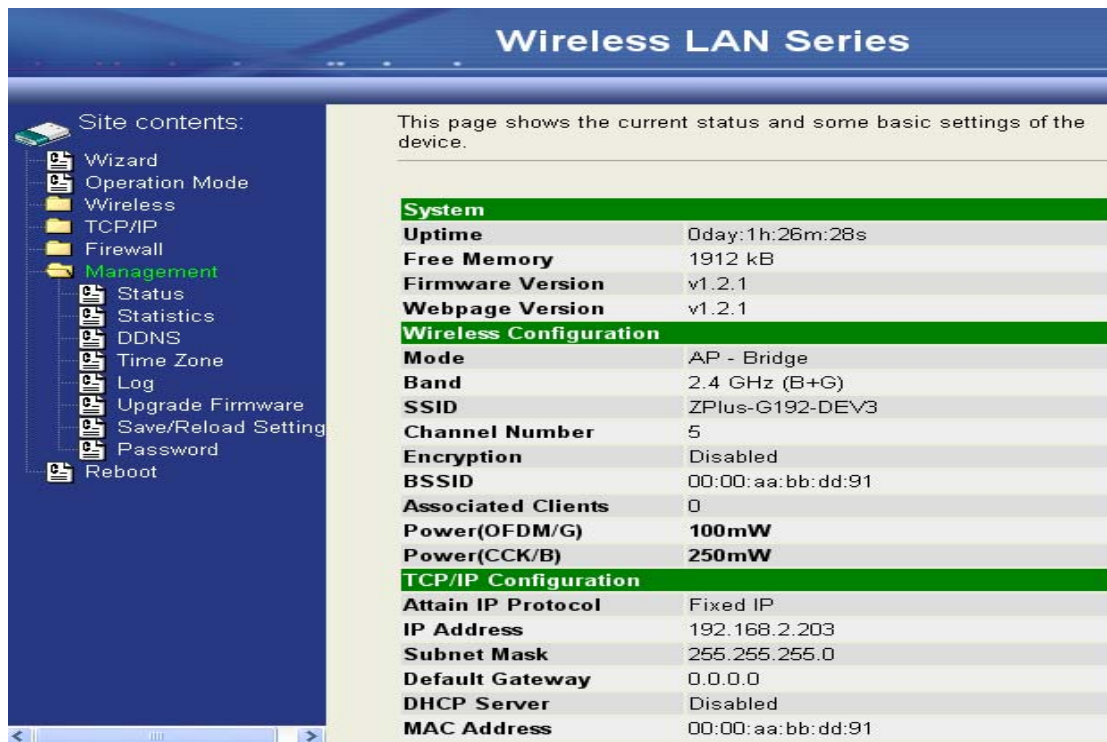
3. Wait for refreshing web page.



4. Access the web server by new IP address "192.168.2.203" then use "Basic Settings" page to change SSID and CHANNEL.



5. Use the “Status “ page to check the settings.



Configure DEV4:

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

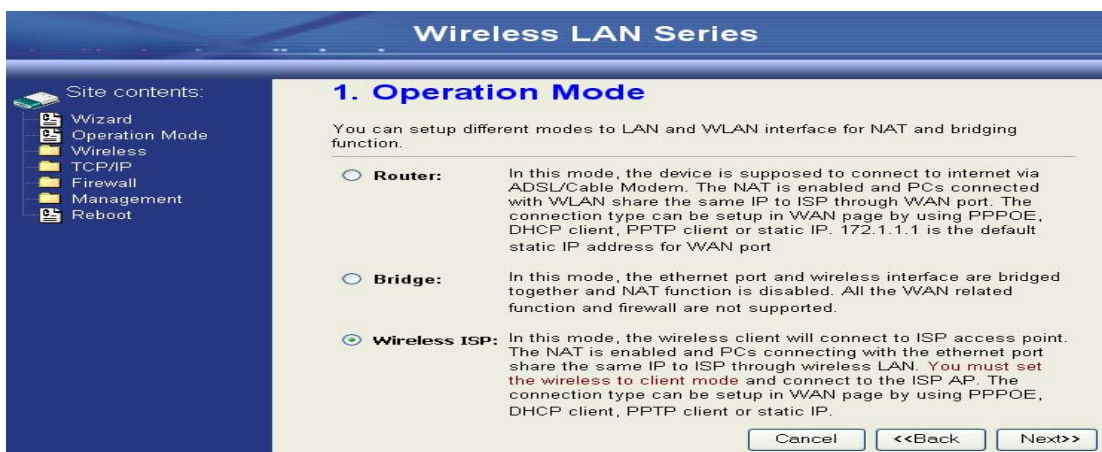
Caution

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 can't 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.

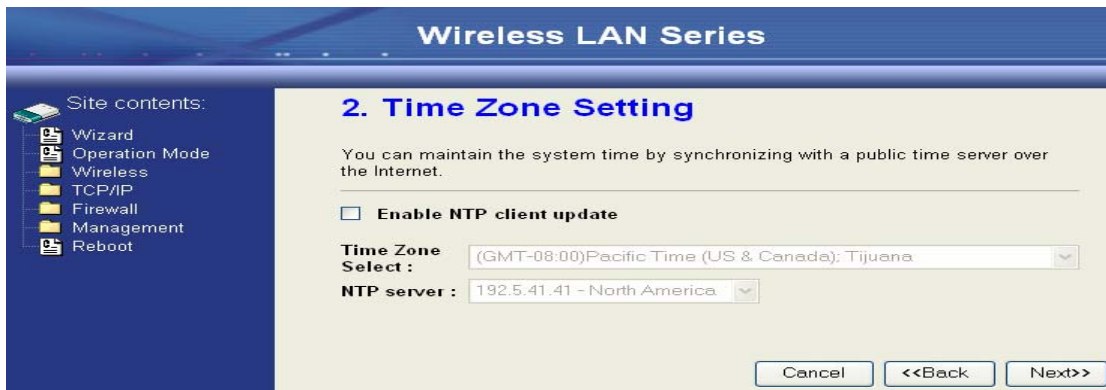
2. Use Wizard page to setup device.



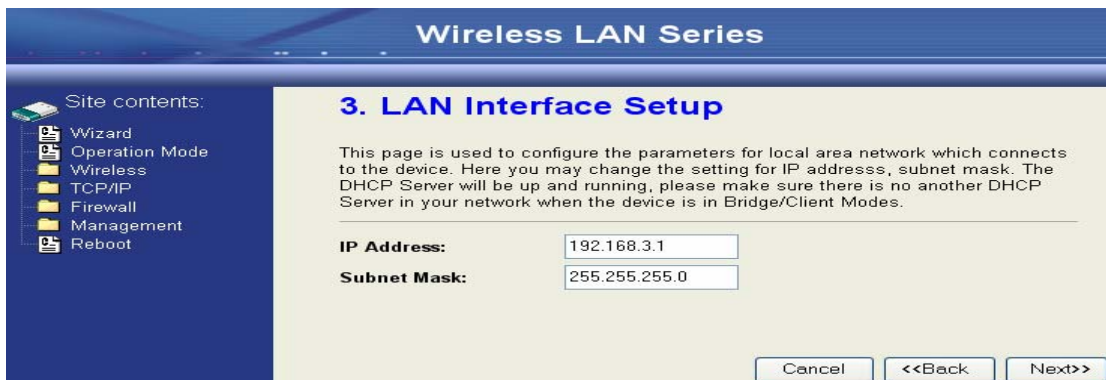
3. Press "Next>>" button then set the "Operation Mode" to "Wireless ISP" mode.



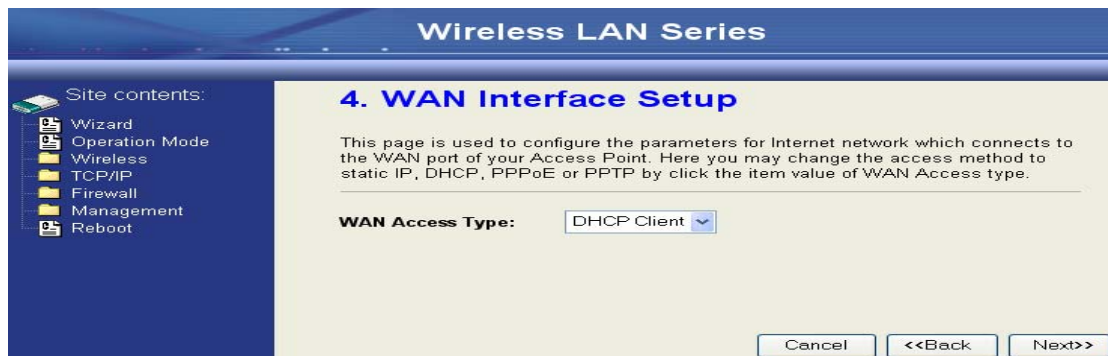
4. Press "Next>>" button then disable "Time Zone" function.



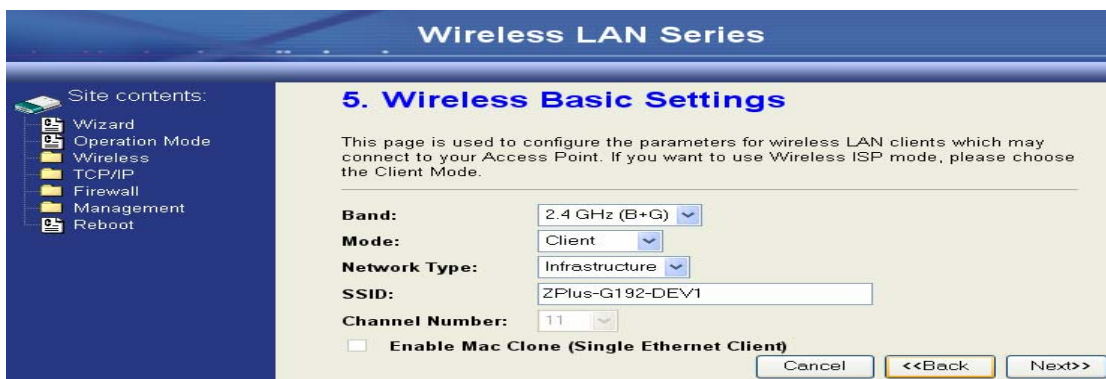
5. Press “Next>>” button then set the IP address of LAN interface.



6. Press “Next>>” button then select the “DHCP Client” for “WAN Access Type”.



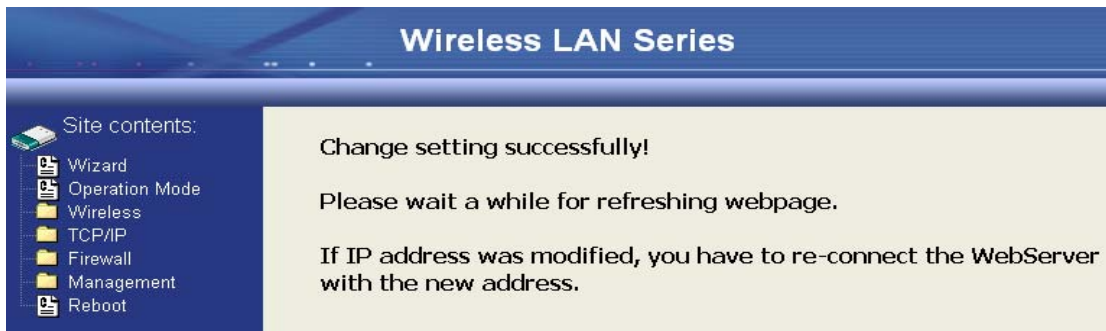
7. Press “Next>>” button then select the “Client” for “mode” and change the SSID to “ZPlus-G192-DEV1”.



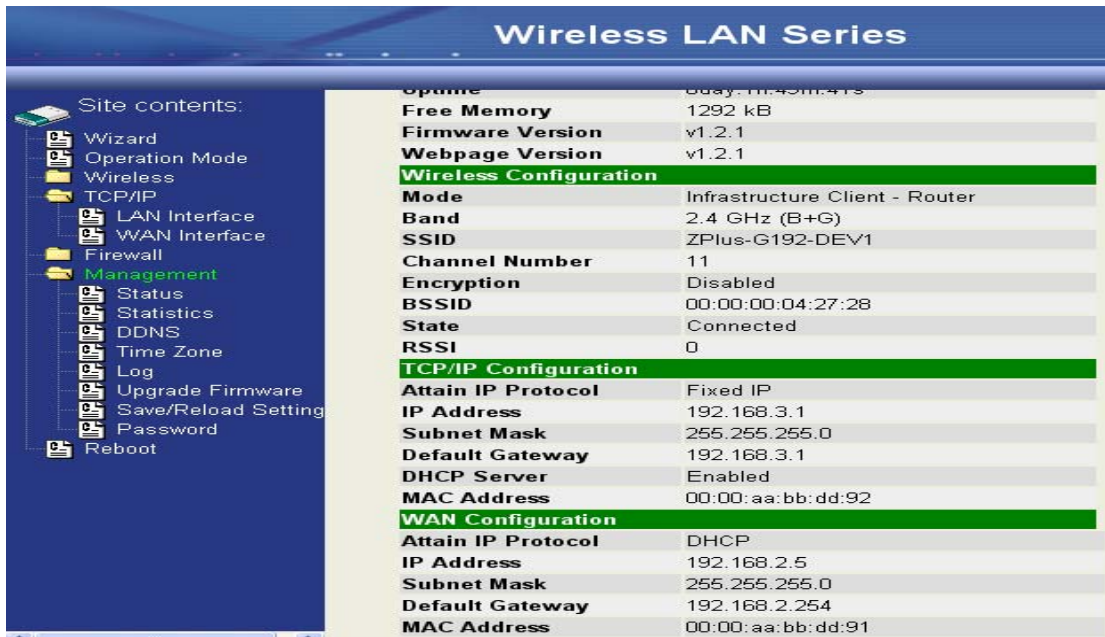
8. Press “Next>>” button then select “None” for “Encryption” then press “Finished” button.



9. Wait for refreshing web page.



10. Change the IP address of your PC to 192.168.3.x then access the web server by the new IP address “192.168.3.1” and use “Status” page check the setting.



11. If the “State” of “Wireless Configuration” is not “Connected” or you want to refresh the “RSSI “, please use “Site Survey” page to re-connect a AP.

Wireless LAN Series

- Site contents:
- Wizard
 - Operation Mode
 - Wireless
 - Basic Settings
 - Advanced Settings
 - Security
 - Access Control
 - WDS settings
 - Site Survey
 - TCP/IP
 - LAN Interface
 - WAN Interface
 - Firewall
 - Management
 - Status
 - Statistics
 - DDNS
 - Time Zone
 - Log
 - Upgrade Firmware
 - Save/Reload Setting
 - Password
 - Reboot

Wireless Site Survey

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

SSID	BSSID	Channel	Type	Encrypt	Signal	Select
ZPlus-G192-DEV1	00:00:00:04:27:28	11 (B+G)	AP	no	100	<input checked="" type="radio"/>
Mercy_CA_SSID	00:0d:14:00:80:18	9 (B+G)	AP	no	100	<input type="radio"/>
Zinwell	00:05:9e:80:01:f8	1 (B)	AP	no	81	<input type="radio"/>
ZPlus-G192-DEV2	00:00:00:04:26:92	11 (B+G)	AP	no	81	<input type="radio"/>
default	00:0f:3d:3d:89:62	6 (B+G)	AP	no	75	<input type="radio"/>
linksys	00:06:25:d7:c3:97	6 (B+G)	AP	no	67	<input type="radio"/>
ZPlus-G192	00:aa:ee:ff:99:01	11 (B+G)	AP	no	63	<input type="radio"/>
ZPlus-G192-mike-cli	00:00:00:04:27:01	2 (B+G)	AP	no	52	<input type="radio"/>
G192-wds2	00:00:00:04:26:93	11 (B+G)	AP	no	50	<input type="radio"/>
DFC-test	00:05:9e:80:46:3b	1 (B)	AP	no	35	<input type="radio"/>
G192-wds1	00:00:00:04:26:88	11 (B+G)	AP	no	21	<input type="radio"/>

Refresh

Connect

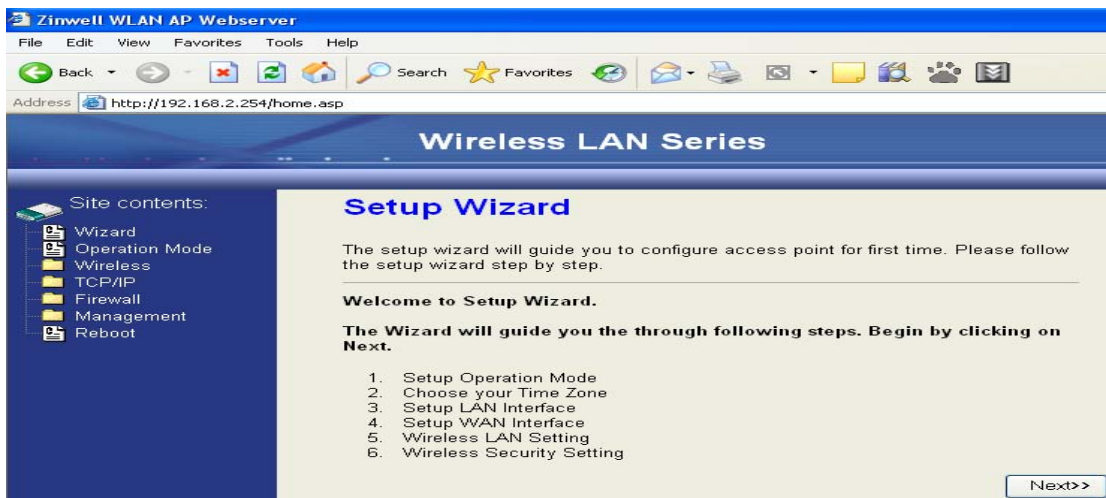
Configure DEV5:

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

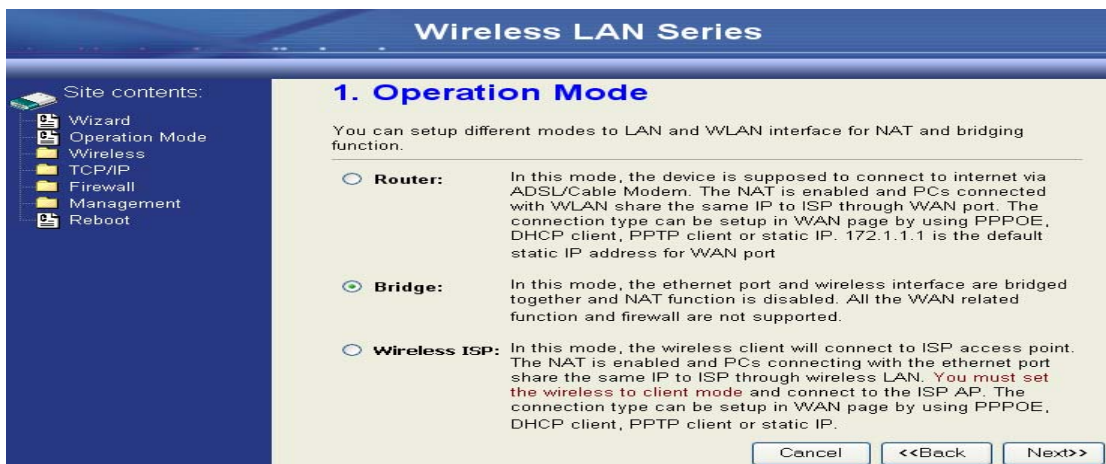
Caution

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 can't 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.

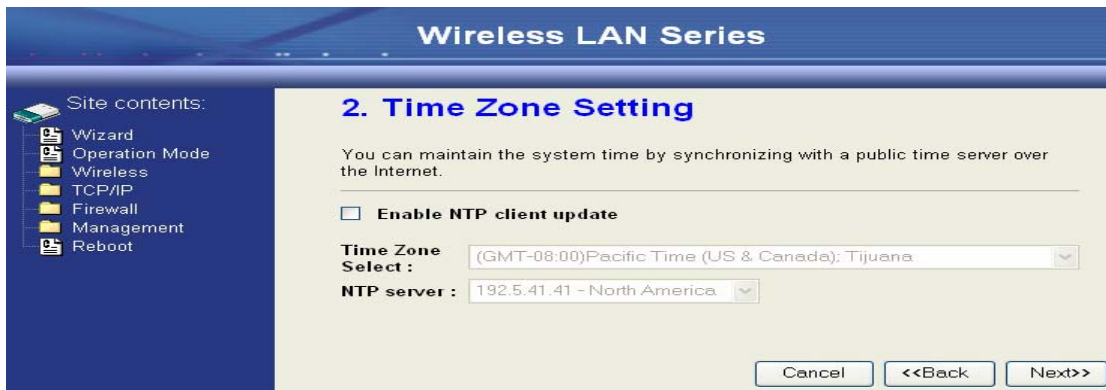
2. Use Wizard page to setup device.



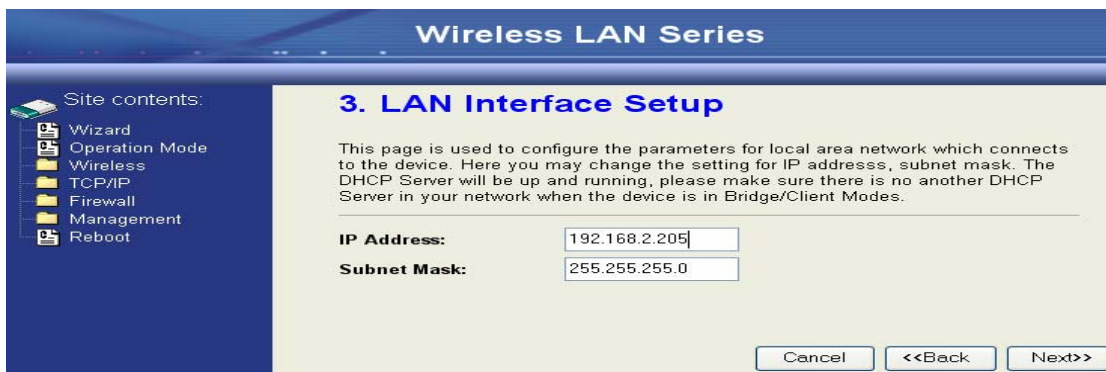
3. Press "Next>>" button then set the "Operation Mode" to "Wireless ISP" mode.



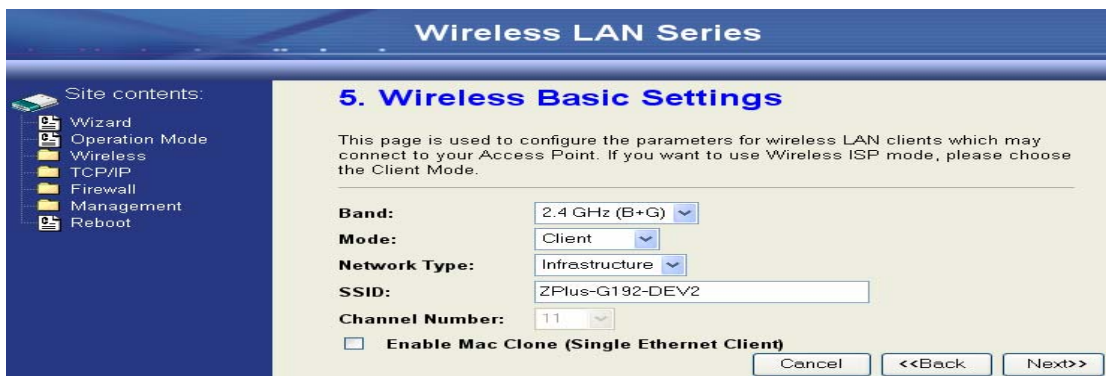
4. Press "Next>>" button then disable "Time Zone" function.



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



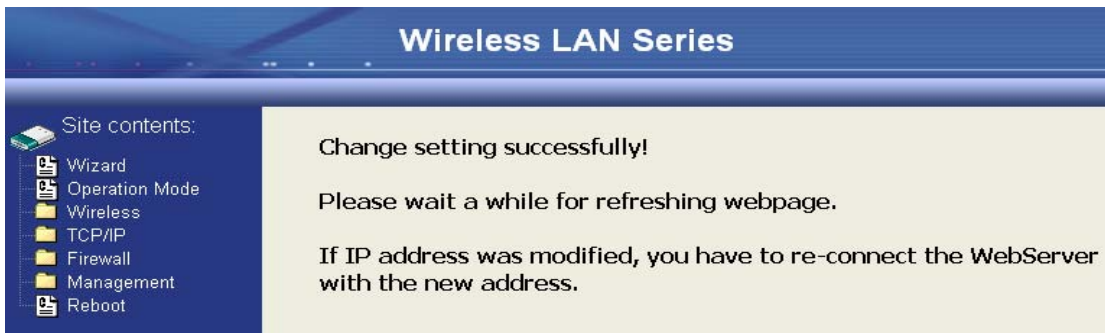
6. Press “Next>>” button then select the “Client” for “mode” and change the SSID to “ZPlus-G192-DEV2”.



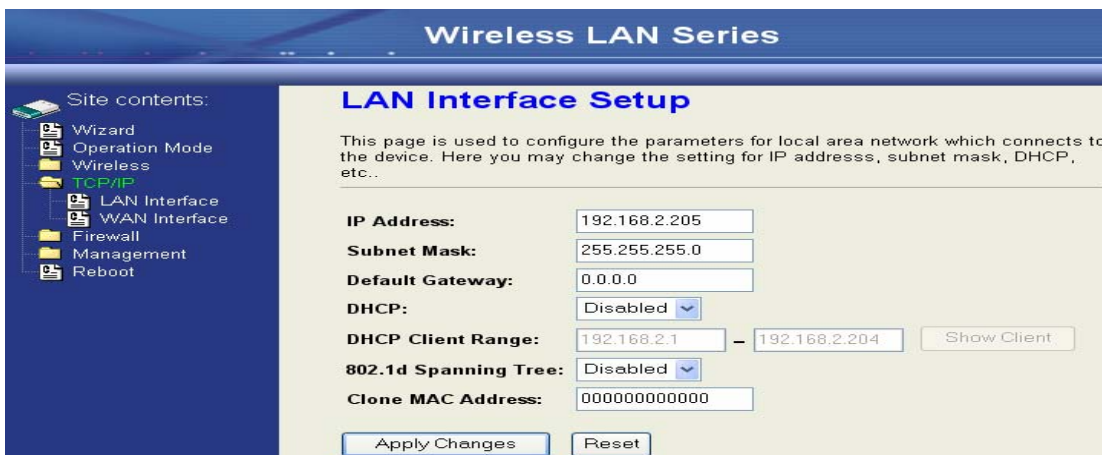
7. Press “Next>>” button then select “None” for “Encryption” then press “Finished” button.



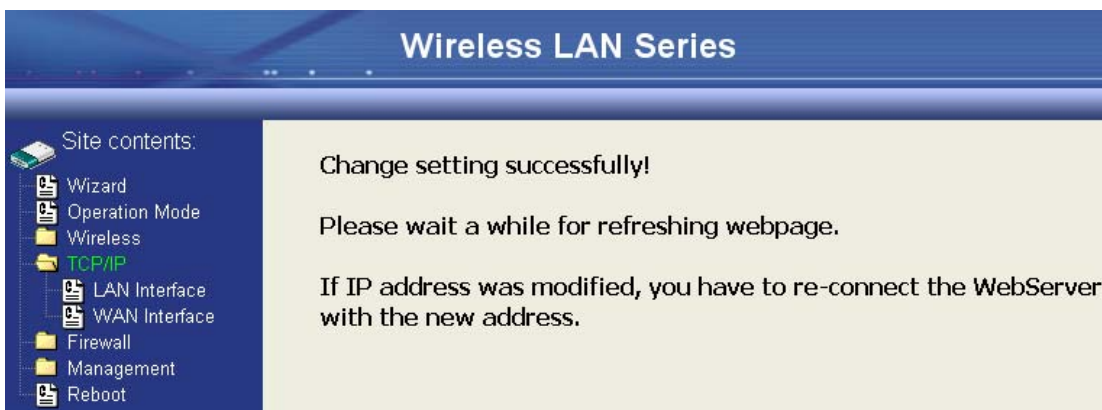
8. Wait for refreshing web page.



9. Access the web server by the new IP address “192.168.2.205” and use “LAN Interface” page to disable DHCP Server.



10. Wait for refreshing webpage.



11. Use “State” page to check setting.

Wireless LAN Series

Site contents:

- Wizard
- Operation Mode
- Wireless
- TCP/IP
- Firewall
- Management
 - Status
 - Statistics
 - DDNS
 - Time Zone
 - Log
 - Upgrade Firmware
 - Save/Reload Setting
 - Password
 - Reboot

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

System	
Uptime	0day:2h:56m:6s
Free Memory	1520 kB
Firmware Version	v1.2.1
Webpage Version	v1.2.1

Wireless Configuration	
Mode	Infrastructure Client - Bridge
Band	2.4 GHz (B+G)
SSID	ZPlus-G192-DEV2
Channel Number	11
Encryption	Disabled
BSSID	00:00:00:04:26:92
State	Connected
RSSI	0

TCP/IP Configuration	
Attain IP Protocol	Fixed IP
IP Address	192.168.2.205
Subnet Mask	255.255.255.0
Default Gateway	0.0.0.0
DHCP Server	Disabled
MAC Address	00:00:aa:bb:dd:91

12. If the “State” of “Wireless Configuration” is not “Connected” or you want to refresh the “RSSI “, please use “Site Survey” page to re-connect a AP.

Wireless LAN Series

Site contents:

- Wizard
- Operation Mode
- Wireless
 - Basic Settings
 - Advanced Settings
 - Security
 - Access Control
 - WDS settings
 - Site Survey
- TCP/IP
- Firewall
- Management
- Reboot

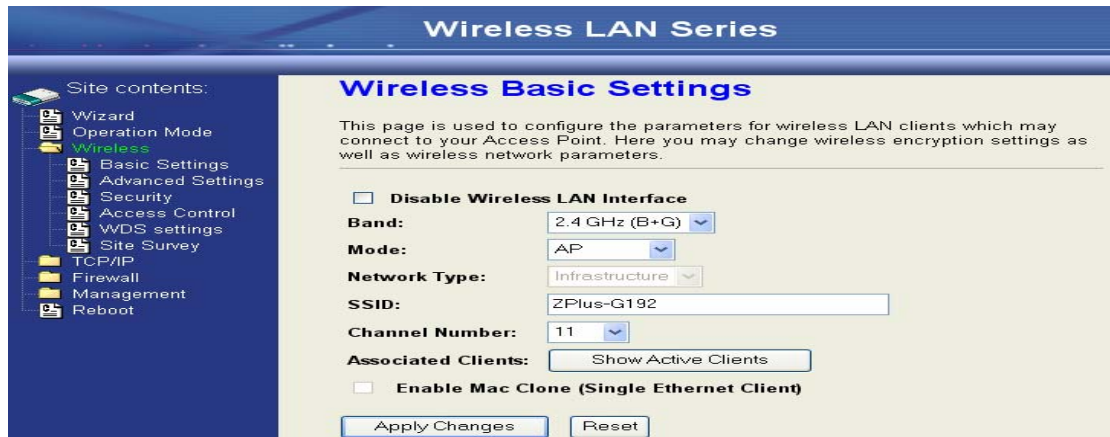
Wireless Site Survey

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

SSID	BSSID	Channel	Type	Encrypt	Signal	Select
Mercy_CA_SSID	00:0d:14:00:80:18	9 (B+G)	AP	no	100	<input type="radio"/>
ZPlus-G192-DEV1	00:00:00:04:27:28	11 (B+G)	AP	no	100	<input type="radio"/>
ZPlus-G192-DEV2	00:00:00:04:26:92	11 (B+G)	AP	no	84	<input checked="" type="radio"/>
default	00:0f:3d:3d:89:62	6 (B+G)	AP	no	81	<input type="radio"/>
Zinwell	00:05:9e:80:01:f8	1 (B)	AP	no	80	<input type="radio"/>
ZPlus-G192	00:aa:ee:ff:99:01	11 (B+G)	AP	no	63	<input type="radio"/>
linksys	00:06:25:d7:c3:97	6 (B+G)	AP	no	61	<input type="radio"/>
ZPlus-G192-mm	00:00:00:04:27:01	2 (B+G)	AP	no	52	<input type="radio"/>
G192-wds2	00:00:00:04:26:93	11 (B+G)	AP	no	41	<input type="radio"/>
DFC-test	00:05:9e:80:46:3b	1 (B)	AP	no	29	<input type="radio"/>
G192-wds1	00:00:00:04:26:88	11 (B+G)	AP	no	23	<input type="radio"/>
3F-PRINTER	00:0c:6e:c1:9b:11	7 (B+G)	AP	yes	18	<input type="radio"/>

Refresh Connect

Basic Settings



Disable Wireless LAN Interface

Disable the wireless interface of device

Band:

The device supports 2.4GHz(B), 2.4GHz(G) and 2.4GHz(B+G) mixed modes.

Mode:

The radio of device supports different modes as following:

1. AP

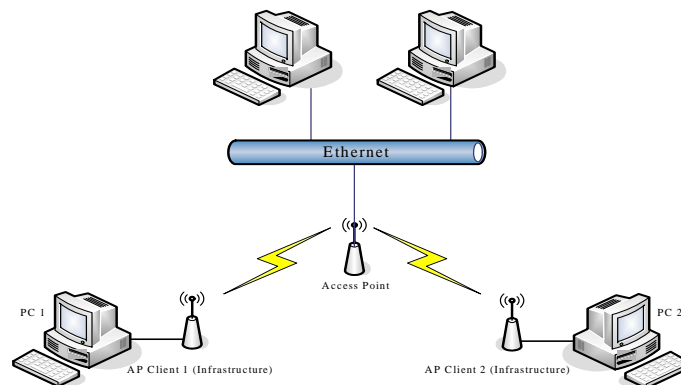
The radio of device acts as an Access Point to serves all wireless clients to join a wireless local network.

2. Client

Support Infrastructure and Ad-hoc network types to act as a wireless adapter.

● **Infrastructure:**

This type requires the presence of 802.11b/g Access Point. All communication is done via the Access Point.



● **Ad Hoc:**

This type provides a peer-to-peer communication between wireless