PLANET
Networking & Communication

User's Manual

300Mbps 802.11n

Ceiling-mount Wireless Access Point

► WNAP-C3220E

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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 FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio technician for help.

FCC Caution

To assure continued compliance, 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.

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.

CE Compliance Statement

This device meets the RED 2014/53/EU requirements on the limitation of exposure of the general public to electromagnetic fields by way of health protection. The device complies with RF specifications when it is used at a safe distance of 20 cm from your body.

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.

National Restrictions

This device is intended for home and office use in all EU countries (and other countries following the EU directive 2014/53/EU) 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. Refarming 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.

Revision

User Manual of PLANET 802.11n Ceiling-mount Wireless Access Point

Model: WNAP-C3220E

Rev: 1.0 (Sep., 2018)

Part No. EM-WNAP-C3220E_v1.0

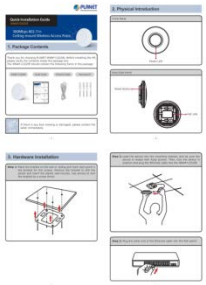
CONTENTS

FIGURE

Chapter 1. Product Introduction

1.1 Package Contents

Thank you for choosing PLANET WNAP-C3220E Wireless AP. Please verify the contents inside the package box.

Package Contents of WNAP-C3220E			
WNAP-C3220E	Quick Guide	Ethernet Cable	Mounting Kit
			

Note

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

1.2 Product Description

Centrally-Managed Wireless Network for Enterprises

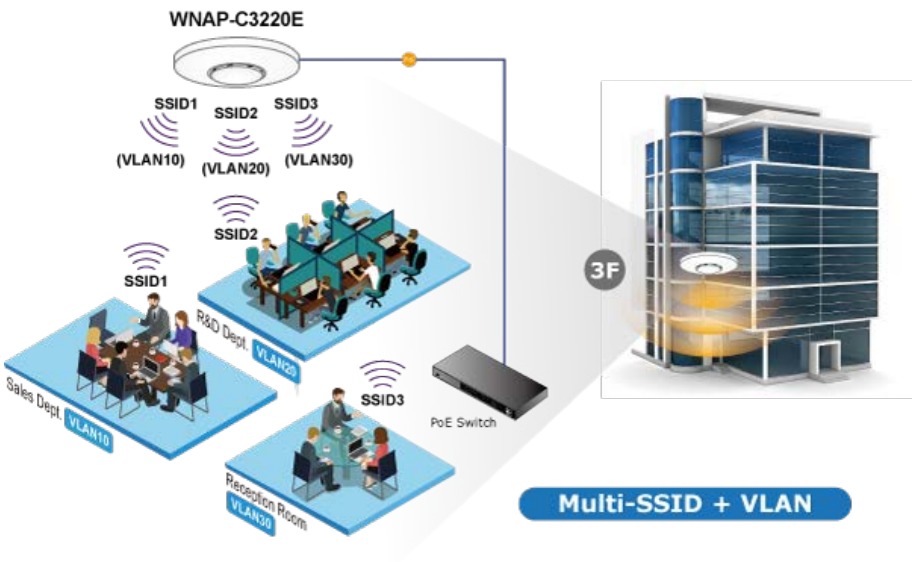
PLANET WNAP-C3220E 300Mbps 802.11n Wireless Access Point offers high power and user limitation control that can extend your wireless network coverage and manage clients easily. With 802.1Q VLAN and PLANET AP Controller compliance, the WNAP-C3220E can help create a secure, cost-effective and highly-scalable wireless LAN infrastructure that provides a seamlessly and centrally managed wireless network.

Wireless Range Extender

To extend the coverage and eliminate the dead spot of wireless network in every place, the WNAP-C3220E supports Universal Repeater mode which can solve the incompatibility between brands and provides a high-speed, wide coverage. The space-saving and ceiling-mountable design makes the WNAP-C3220E exquisite and easy to be mounted on the ceiling or wall in different places. The built-in intelligent 5dBi high-gain antennas offer 360 degrees of wider coverage with excellent performance.

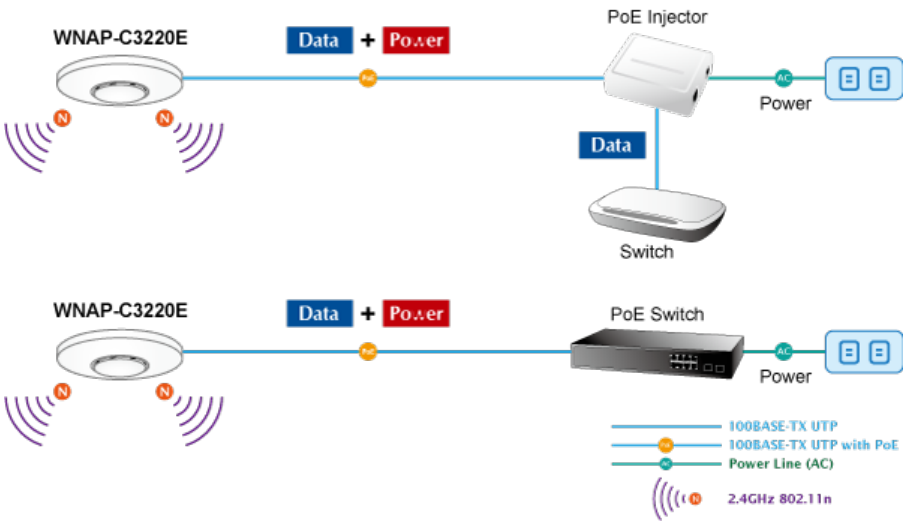
Advanced, Secure and Rigorous Authentication

The WNAP-C3220E supports 128-bit WEP, WPA / WPA2, WPA-PSK and WPA2-PSK wireless encryptions, the advanced WPA2-AES mechanism and 802.1X RADIUS authentication, which can effectively prevent eavesdropping by unauthorized users or bandwidth occupied by unauthenticated wireless access. Furthermore, any users are granted or denied access to the wireless LAN network based on the ACL (Access Control List) that the administrator pre-established. For management purposes, the IEEE 802.1Q VLAN supported allows multiple VLAN tags to be mapped to multiple SSIDs to distinguish the wireless access.



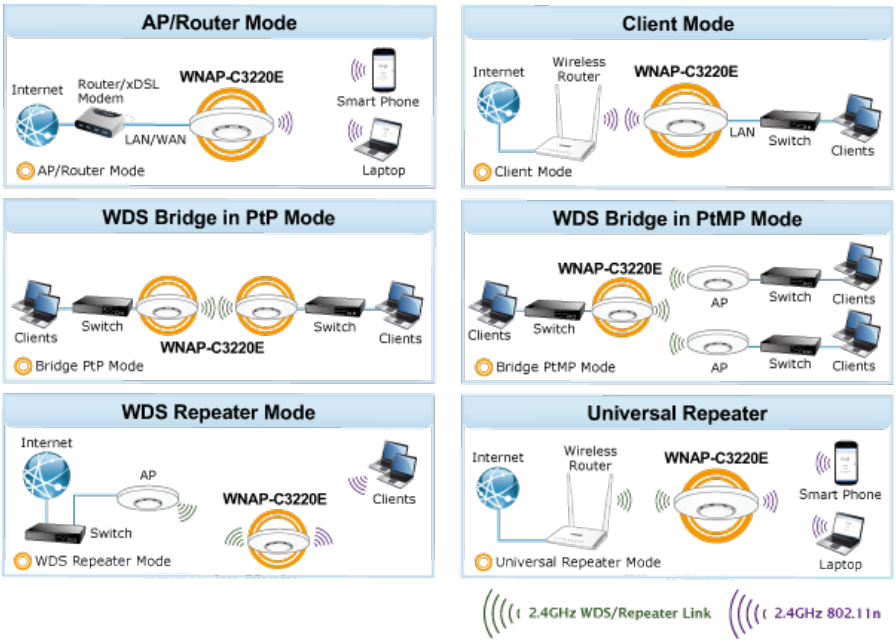
Flexible Deployment with PoE Feature

Compliant with IEEE 802.3af/at Power over Ethernet standard, the WNAP-C3220E can be powered and networked by a single UTP cable. It thus reduces the needs of extra cables and dedicated electrical outlets on the wall, ceiling or any other place which is difficult to reach. The wireless AP deployment becomes more flexible and worry-free from the power outlet locations.



Comprehensive Wireless Operation Mode

The WNAP-C3220E supports multiple types of wireless connectivity such as AP, Gateway, Repeater, WDS Point-to-Point (PtP) and WDS Point-to-Multipoint (PtMP), allowing users to comprehensively experience various applications. It also helps users to easily build wireless network and extend the wireless range of the existing wireless network.



Easy Installation and Management

With user-friendly Web UI and step-by-step Quick Setup Wizard, the WNAP-C3200E is easy to install, even for users who never experience setting up a wireless network. Furthermore, simply install our software controller, PLANET SAPC (Smart AP Control), to deliver wireless profiles to multiple APs simultaneously, thus making the central management simple.

1.3 Product Features

- **Wireless Standard Compliance**
  - Compliant with IEEE 802.11n wireless technology with data rate of up to 300Mbps
  - Backward compatible with 802.11b/g standard
  - Supports IEEE 802.3af/at standard-based PoE
- **Secure Network Connection**
  - Advanced security: 64-/128-bit WEP, WPA/WPA2 and WPA-PSK/WPA2-PSK (TKIP/AES encryption), 802.1x
  - Supports wireless MAC address filtering control to limit the connected wireless clients
  - Supports 802.1Q VLAN and SSID-to-VLAN mapping
  - Supports IP/Port/MAC address/URL filtering, DoS, SPI Firewall
  - Supports DMZ and port forwarding
  - Bandwidth control per IP address to increase network stability
- **Multiple Operation Modes and Wireless Features**
  - Multiple operation modes: AP, Gateway, Repeater, WDS
  - WMM (Wi-Fi multimedia) provides higher priority to multimedia transmitting over wireless
  - Coverage threshold to limit the weak signal of clients occupying session
  - Real-time Wi-Fi channel analysis chart and client limit control for better performance
- **Easy Deployment and Management**
  - Supports PLANET AP Controllers in AP mode
  - Easy discovery by PLANET Smart Discovery
  - Self-healing mechanism through system auto reboot setting
  - System status monitoring through remote Syslog Server
  - Supports PLANET DDNS/ Easy DDNS

1.4 Product Specifications

Product	**WDAP-C3220E** 300Mbps 802.11n Ceiling-mount Wireless Access Point	
Hardware Specifications		
Interfaces	LAN	1 x 10/100BASE-TX RJ45 port Auto-negotiation and auto MDI/MDI-X
Antennas	Gain:	2 x 5dBi antenna
Button	Reset button (Press over 7 seconds to reset the device to the factory default)	
LED Indicators	Power	
Dimensions (Φ x H)	159 x 45mm	
Weight	161 ±5g	
Power Requirements	48V 0.5A, IEEE 802.3af/at PoE+	
Power Consumption	< 5W	
Mounting	Ceiling mount	
Wireless Interface Specifications		
Standard	IEEE 802.11b/g/n 2.4GHz	
Media Access Control	CSMA/CA	
Data Modulation	Transmission/emission type: DSSS/OFDM Data modulation type: OFDM: BPSK, QPSK, 16-QAM, 64-QAM, DBPSK, DQPSK, CCK	
Frequency Range	FCC: 2.412~2.462GHz ETSI: 2.412~2.472GHz	
Operating Channels	FCC: 1~11 ETSI: 1~13	
RF Power	FCC: up to 25 ± 1.5dBm ETSI: <20dBm (EIRP)	
Receive Sensitivity	Network Mode	Data Rate / Receive Sensitivity (dBm)
	2.4GHz	
	802.11b	1Mbps / -95
		11Mbps / -90
	802.11g	6Mbps / -92
		54Mbps / -72
	802.11n	MCS0/MCS8 / -92
		MCS7/MCS15 / -70
Software Features		
LAN	Static IP	
	Supports IP MAC binding	
Wireless Mode	■ Access Point ■ Gateway ■ Repeater ■ WDS (AP/Bridge/Station)	
Channel Width	20MHz, 40MHz,	

Encryption Security	64-/128-bit WEP, WPA, WPA-PSK, WPA2, WPA2-PSK, 802.1X
Wireless Security	Enable/Disable SSID Broadcast
	Wireless MAC address filtering
	User Isolation
Max. SSIDs	4
Max. Clients	64 per radio (50 is suggested, depending on usage)
Max. WDS Peers	4
Wireless QoS	Supports Wi-Fi Multimedia (WMM)
Wireless Advanced	Auto channel selection
	5-level transmit power control (100%, 75%, 50%, 25%, 12.5%)
	Client limit control, coverage threshold
	Wi-Fi channel analysis chart
	Fast Roaming
Status Monitoring	Device status, wireless client List
	PLANET Smart Discovery
	DHCP client table
	System Log supports remote syslog server
VLAN	IEEE 802.1Q VLAN (VID: 3~4094)
	SSID-to-VLAN mapping to up to 4 SSIDs
Self-healing	Supports auto reboot settings per day/hour
System Management	Supports PLANET Hardware AP Controller/ Software AP Controller Applicable controllers[1]: WAPC-500, SAPC
	Remote management through PLANET DDNS/Easy DDNS
	Configuration backup and restore
	Supports UPnP
	Supports IGMP Proxy
	Supports PPTP/L2TP/IPSec VPN pass-through
	SNMP v1/v2c/v3 support, MIB I/II, Private MIB
Remarks	1. ^ the feature will be supported through firmware/system upgrade.
Environment & Certification	
Temperature	Operating: 0 ~ 40 degrees C Storage: -40 ~ 70 degrees C
Humidity	Operating: 10 ~ 90% (non-condensing) Storage: 5 ~ 90% (non-condensing)
Regulatory	CE, RoHS

Chapter 2. Hardware Installation

2.1 Product Outlook

WNAP-C3220E

- **Dimensions:** 159 x 45mm
- **Weight:** 161 ±5g
- **Triple View**

Figure 2-1 WNAP-C3220E Triple View

Front Panel

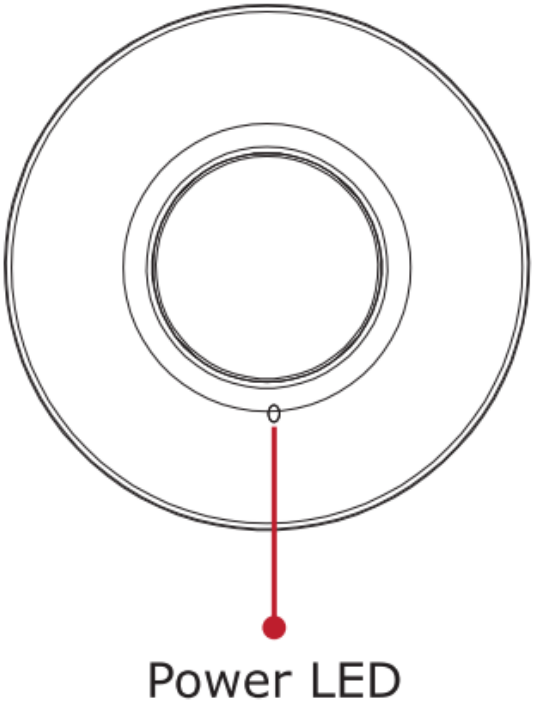


Figure 2-2 WNAP-C3220E Front Panel

Rear Panel

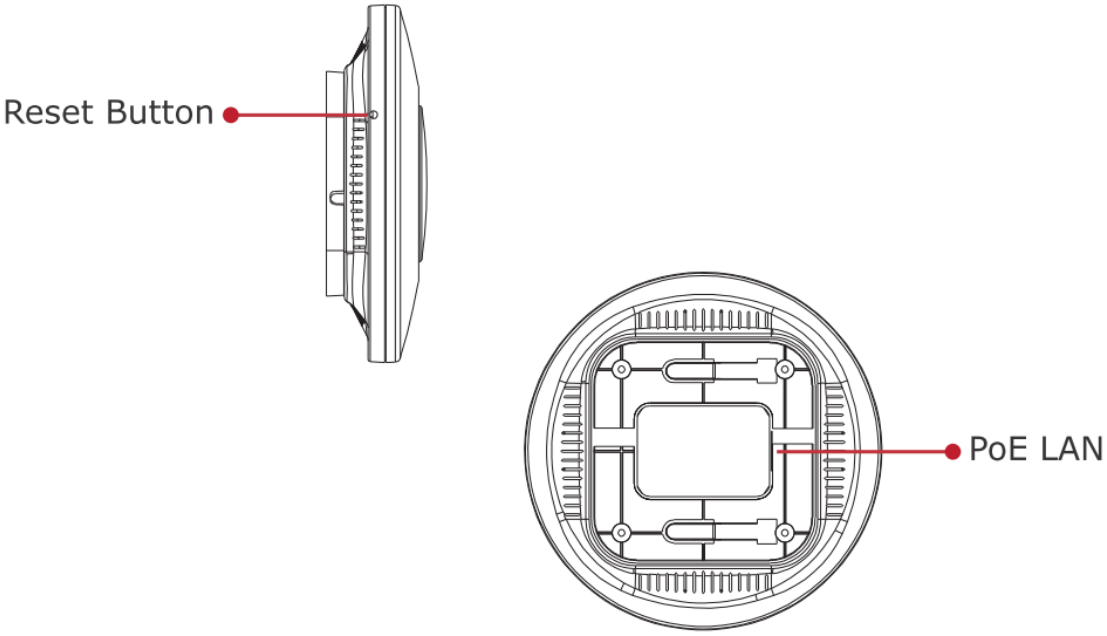


Figure 2-3 WNAP-C3220E Rear Panel

Chapter 3. Connecting to the AP

3.1 System Requirements

- Broadband Internet Access Service (Cable/xDSL/Ethernet connection)
- One IEEE 802.3at PoE switch (supply power to the WNAP-C3220E)
- PCs with a working Ethernet adapter and an Ethernet cable with RJ45 connectors
- PCs running Windows 98/ME, NT4.0, 2000/XP, Windows Vista / Win 7, MAC OS 9 or later, Linux, UNIX or other platforms compatible with **TCP/IP** protocols

Note

1. The AP in the following instructions refers to PLANET WNAP-C3220E.
2. It is recommended to use Internet Explorer 11, Firefox or Chrome to access the AP.

3.2 Installing the AP

Before installing the AP, make sure your PoE switch is connected to the Internet through the broadband service successfully at this moment. If there is any problem, please contact your local ISP.

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. Place the bracket on the wall or ceiling and mark each point in the bracket for the screws. Remove the bracket to drill the points and insert the plastic wall-mounts. Use screws to lock the bracket by a screw driver.

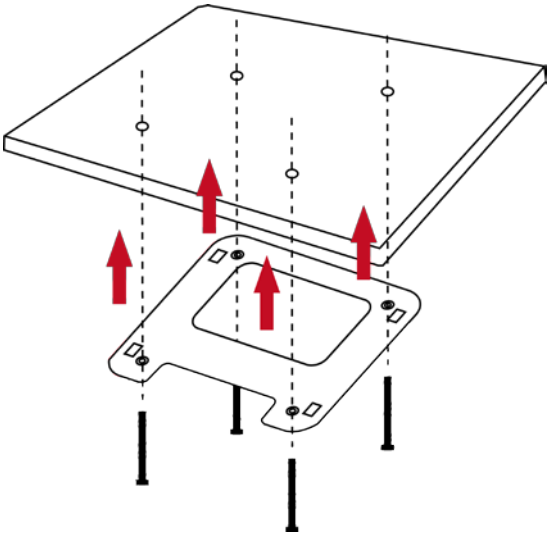


Figure 3-1 Fix it with the screws

Step 2. Load the device into the mounting bracket, and be sure the device is mated with fixed screws. Then, lock the device in position and plug the Ethernet cable into the WNAP-C3220E.

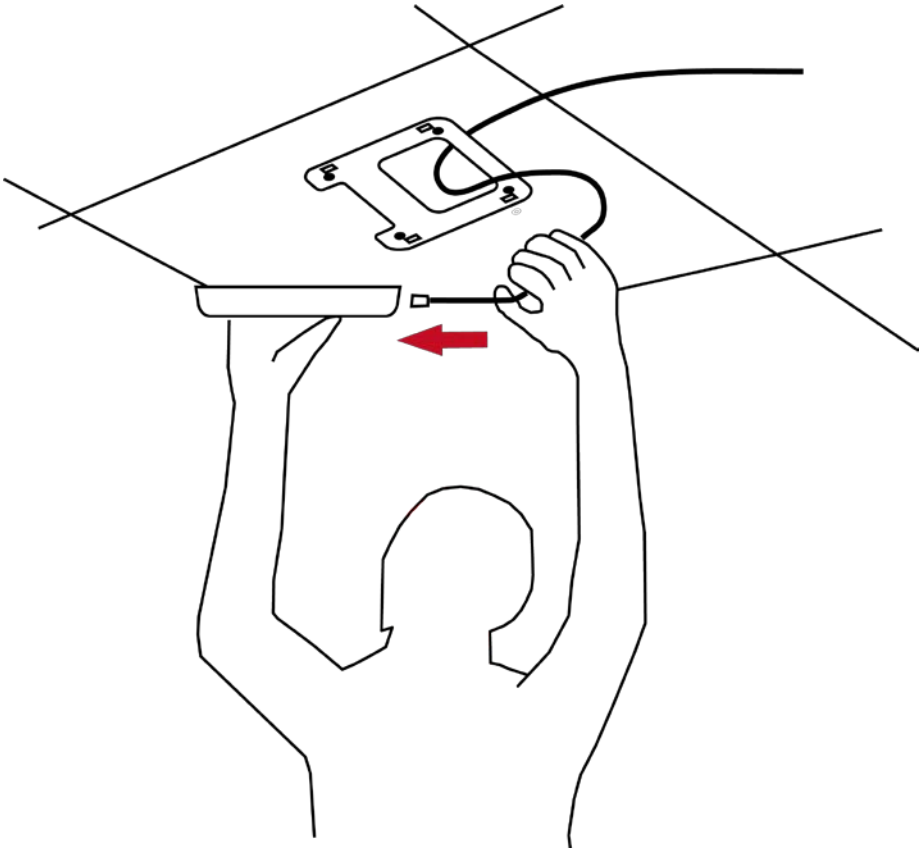


Figure 3-2 Connect the Ethernet cable

Step 3. Plug the other end of the Ethernet cable into the PoE switch.

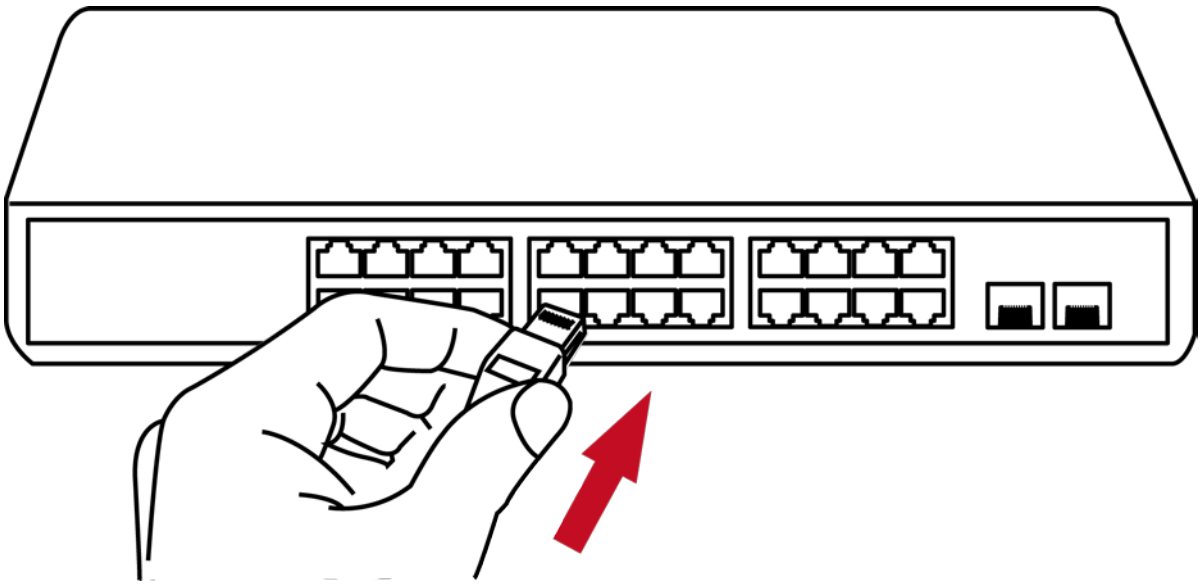


Figure 3-3 Connect the PoE injector

Chapter 4. Quick Installation Guide

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

Note

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 WNAP-C3220E is **192.168.1.253**. 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 WNAP-C3220E 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 WNAP-C3220E by PoE switch through the PoE port.

In the following sections, we'll introduce how to install and configure the TCP/IP correctly in **Windows 10**. 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 WNAP-C3220E is 192.168.1.253, and the DSL router is 192.168.1.254, the "xxx" can be configured to any number from 1 to 252.) and subnet mask is 255.255.255.0.

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

2 For example, as the default IP address of the WNAP-C3220E is 192.168.1.253 and the DSL router is 192.168.1.254, you may choose from 192.168.1.1 to 192.168.1.252.

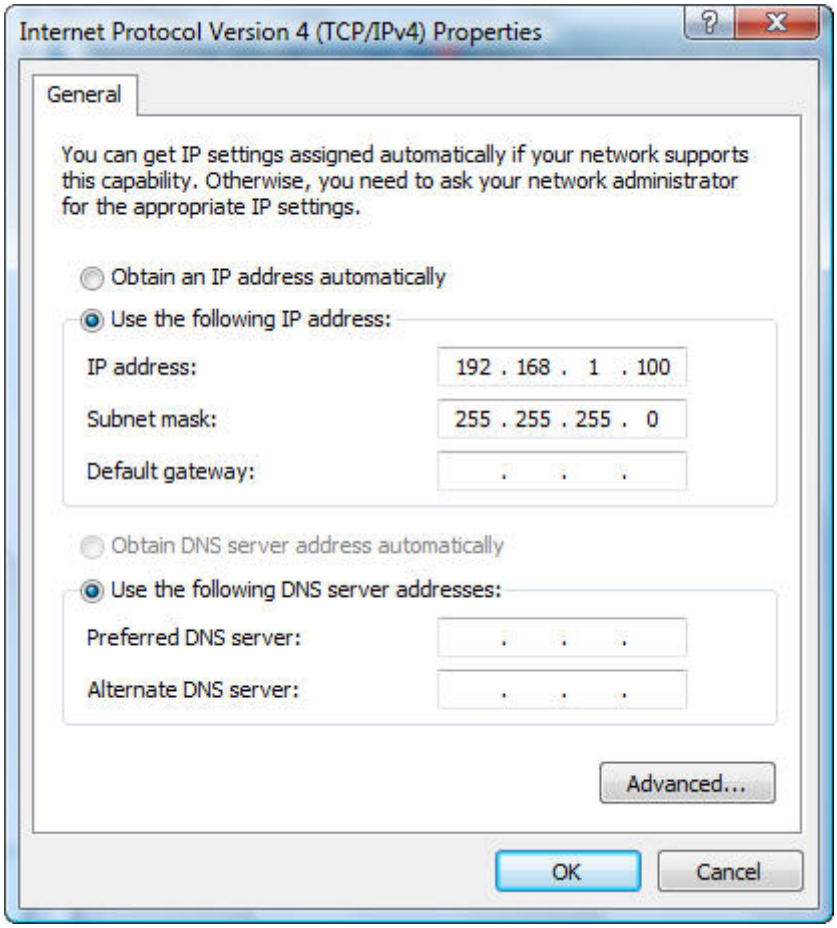


Figure 4-1 TCP/IP Setting

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 10** OS. Please follow the steps below:

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

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

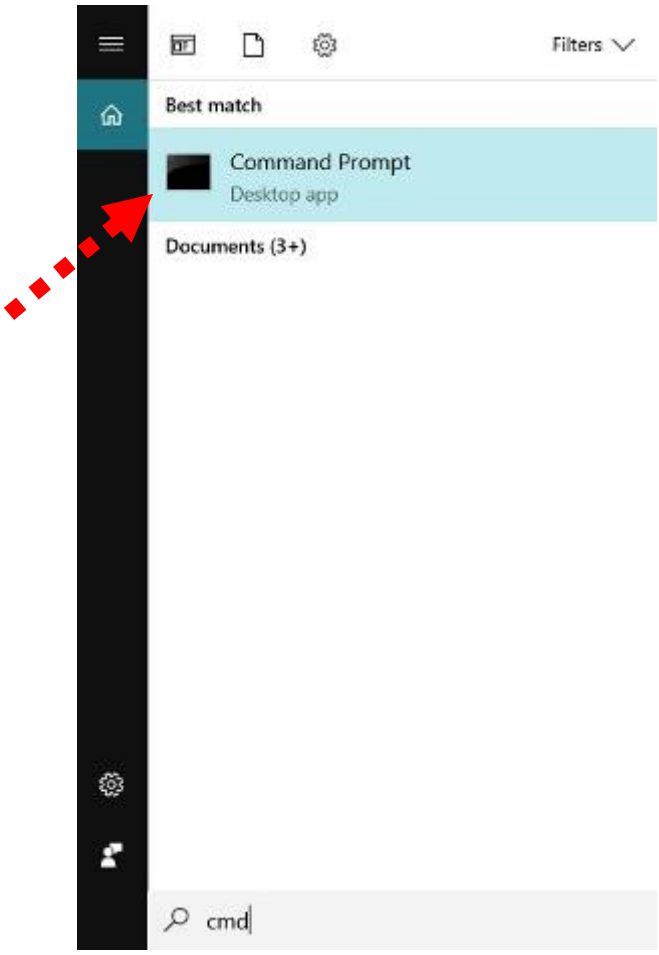


Figure 4-2 Windows Start Menu

3. Open a command prompt, type ping **192.168.1.253** 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.

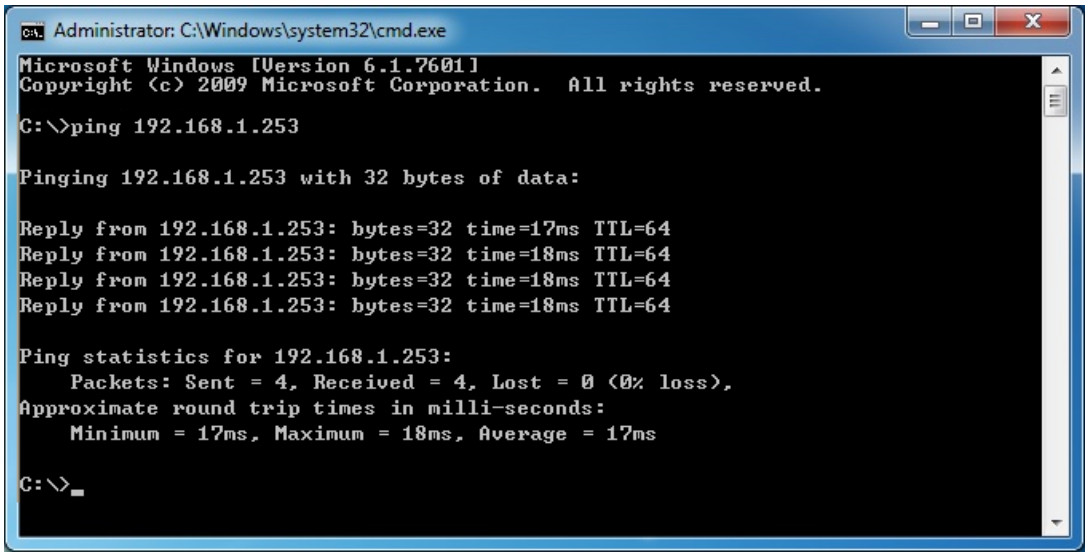


Figure 4-3 Successful Result of Ping Command

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

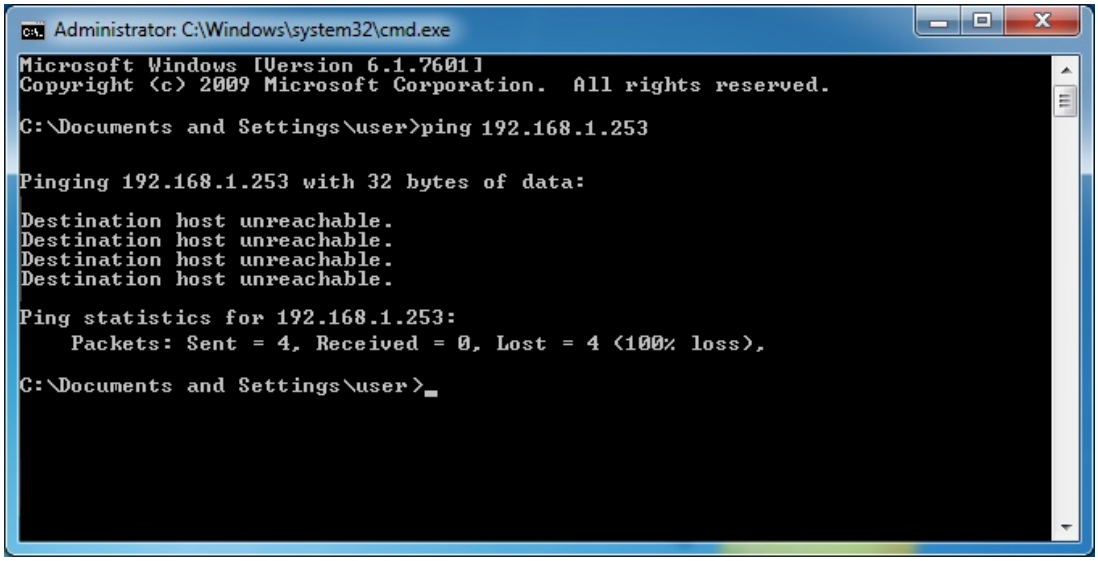


Figure 4-4 Failed Result of Ping Command

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://192.168.1.253 in the web address field of the browser.

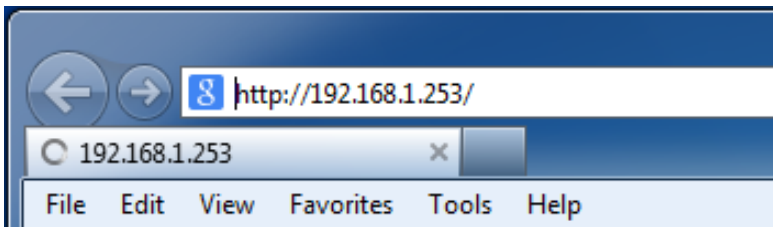


Figure 4-5 Login by Default IP Address

After a moment, a login window will appear. Enter **admin** for the password in lower case letters. Then click **LOGIN** or press the **Enter** key.

Figure 4-6 Login Window

Default IP Address: **192.168.1.253**

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, uncheck **Using Proxy** and click **OK** to finish it.

Chapter 5. Configuring the AP

This chapter delivers a detailed presentation of AP's functionalities and features 3 main items below, allowing you to manage the AP with ease. The screenshots use the WNAP-C3220E as an example.

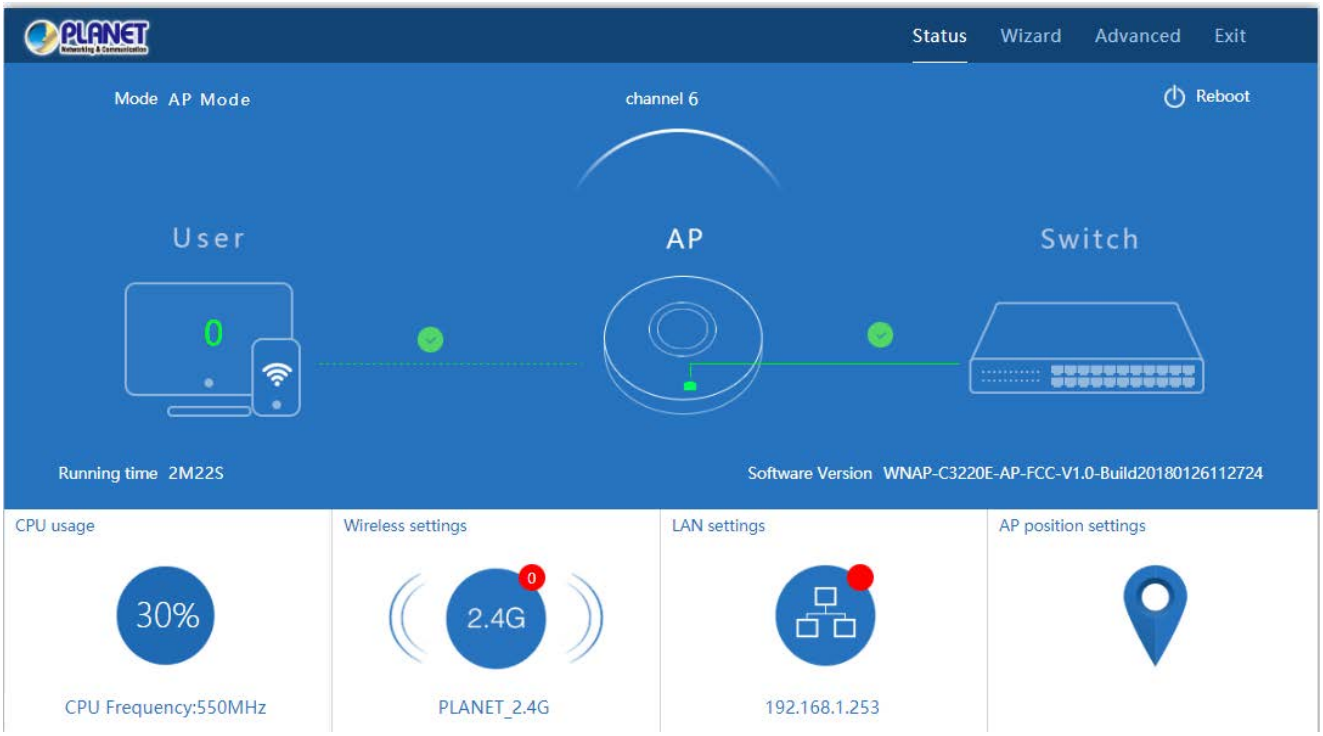


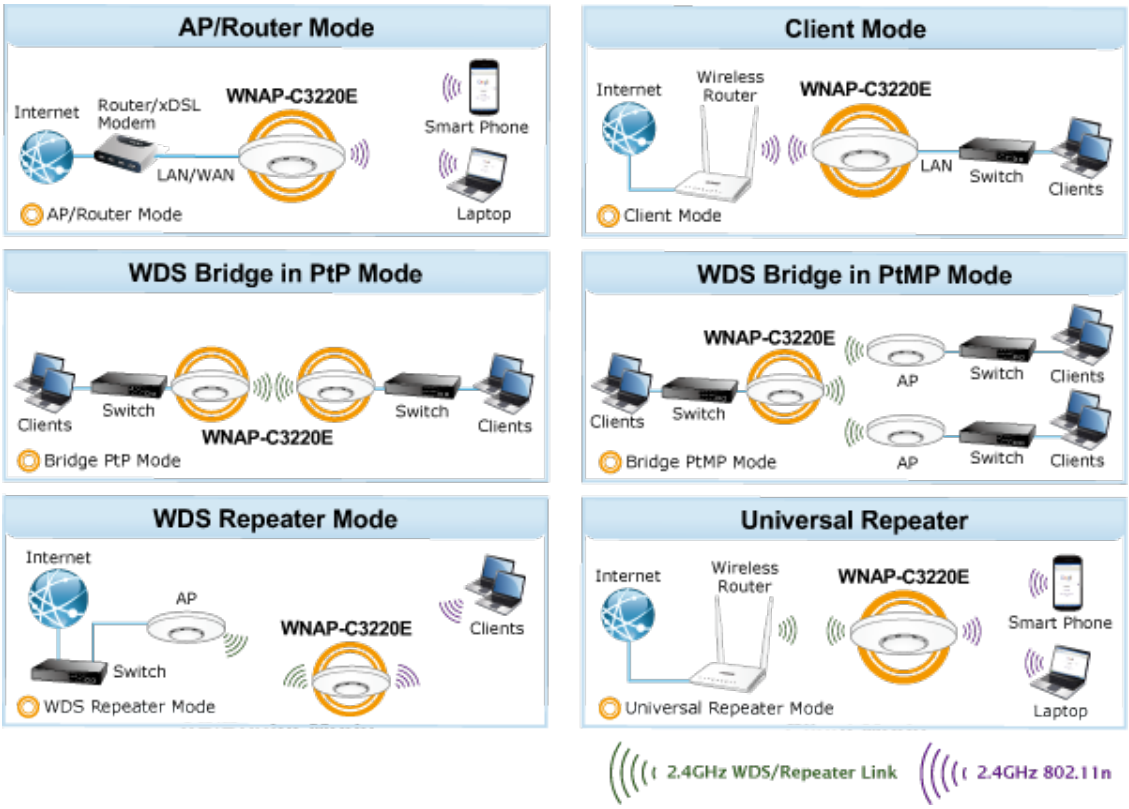
Figure 5-1 Main Menu

The page includes the following fields:

Object	Description
2.4G Wireless Settings	Enter the 2.4G wireless settings to enable or disable wireless LAN.
LAN Settings	Enter the LAN settings to change the LAN IP address.
AP Position Settings	Configure the AP name and Location.

5.1 Wizard

The Wizard guides you to configuring the WNAP-C3220E in a different mode, including Gateway, Repeater, AP and Super WDS mode.



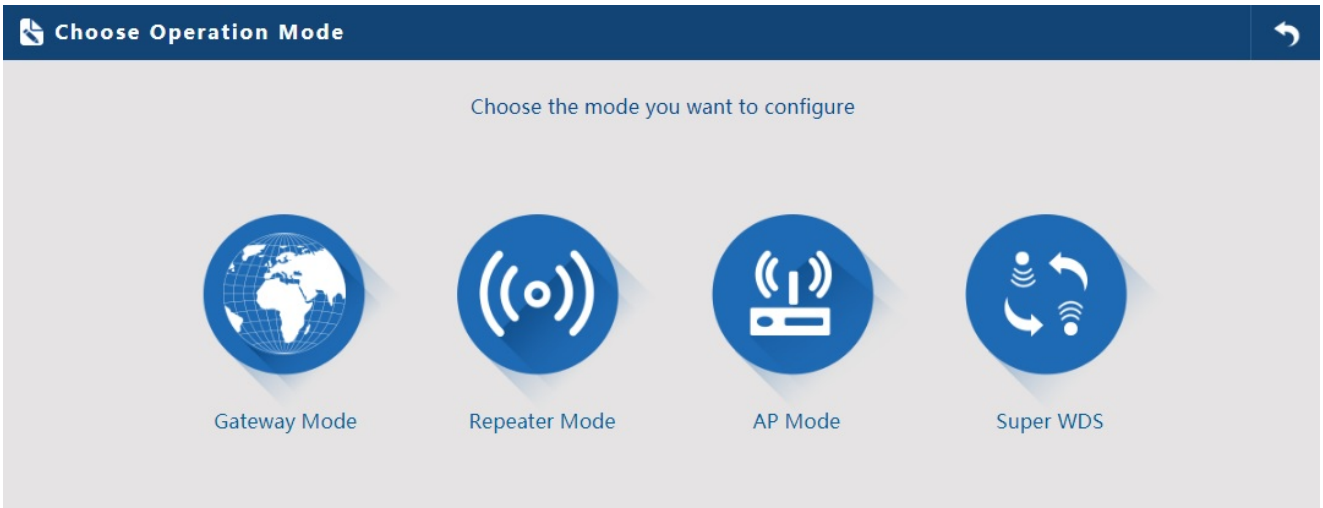


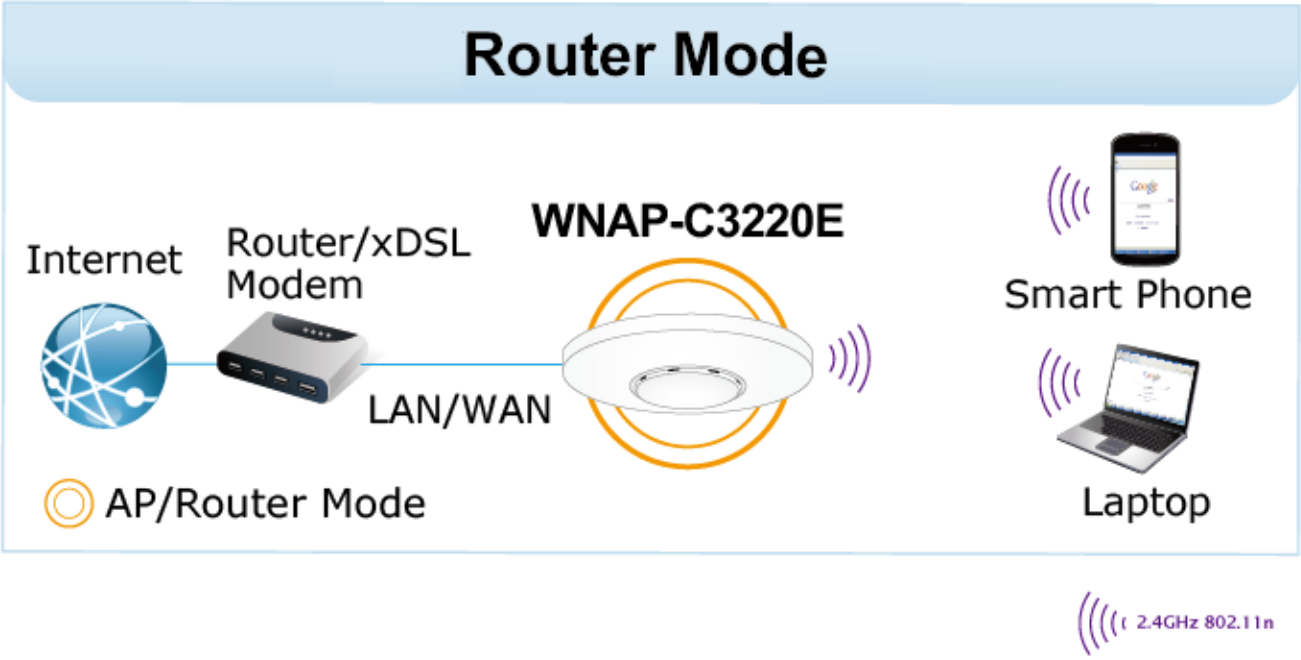
Figure 5-2 Operation Mode

Note

The default operation mode is **AP Mode**.

5.2 Gateway Mode (Router)

Click "**Wizard**" → "**Gateway Mode**" and the following page will be displayed. This section allows you to configure the Gateway mode.



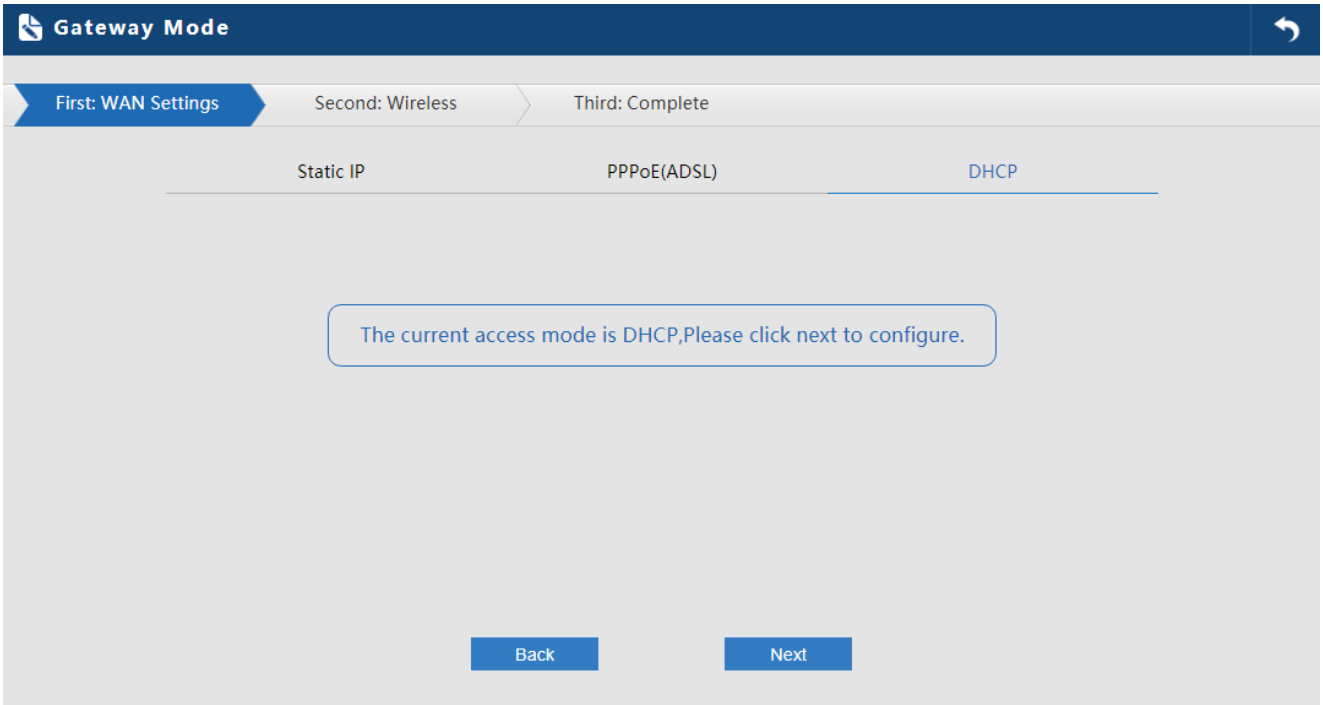


Figure 5-3 Gateway Mode

5.2.1 WAN Settings

Static IP

If your ISP offers you static IP Internet connection type, select "**Static IP**" and then enter IP address, subnet mask, default gateway and primary DNS information provided by your ISP in the corresponding fields.

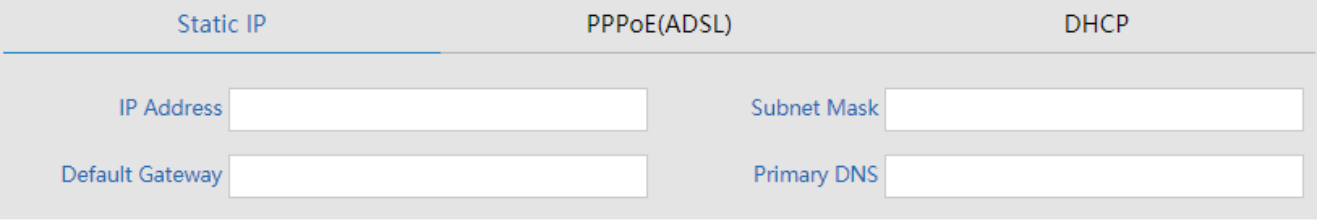


Figure 5-4 Gateway -- Static IP

The page includes the following fields:

Object	Description
IP Address	Enter the WAN IP address provided by your ISP. Enquire your ISP if you are not clear.
Subnet Mask	Enter WAN Subnet Mask provided by your ISP.
Default Gateway	Enter the WAN Gateway address provided by your ISP.
Primary DNS	Enter the necessary DNS address provided by your ISP.

PPPoE (ADSL)

Select **PPPOE** if your ISP is using a PPPoE connection and provide you with PPPoE user name and password info.

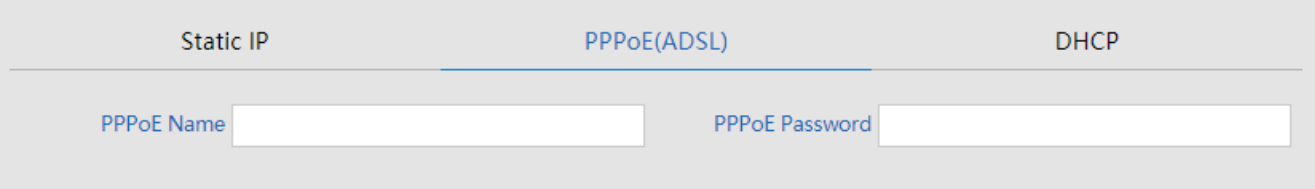


Figure 5-5 Gateway – PPPoE (ADSL)

The page includes the following fields:

Object	Description
PPPoE Name	Enter the user name provided by your ISP.
PPPoE Password	Enter the password provided by your ISP.

DHCP

Choose "**DHCP**" and the router will automatically obtain IP addresses, subnet masks and gateway addresses from your ISP.

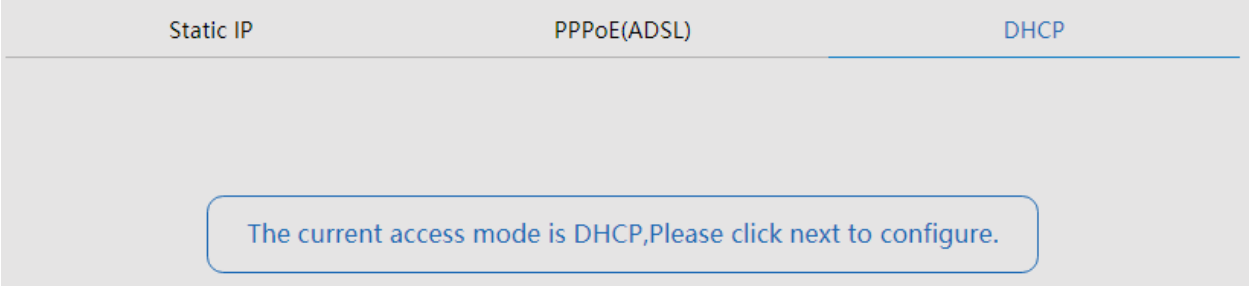


Figure 5-6 Gateway – DHCP

5.2.2 Wireless

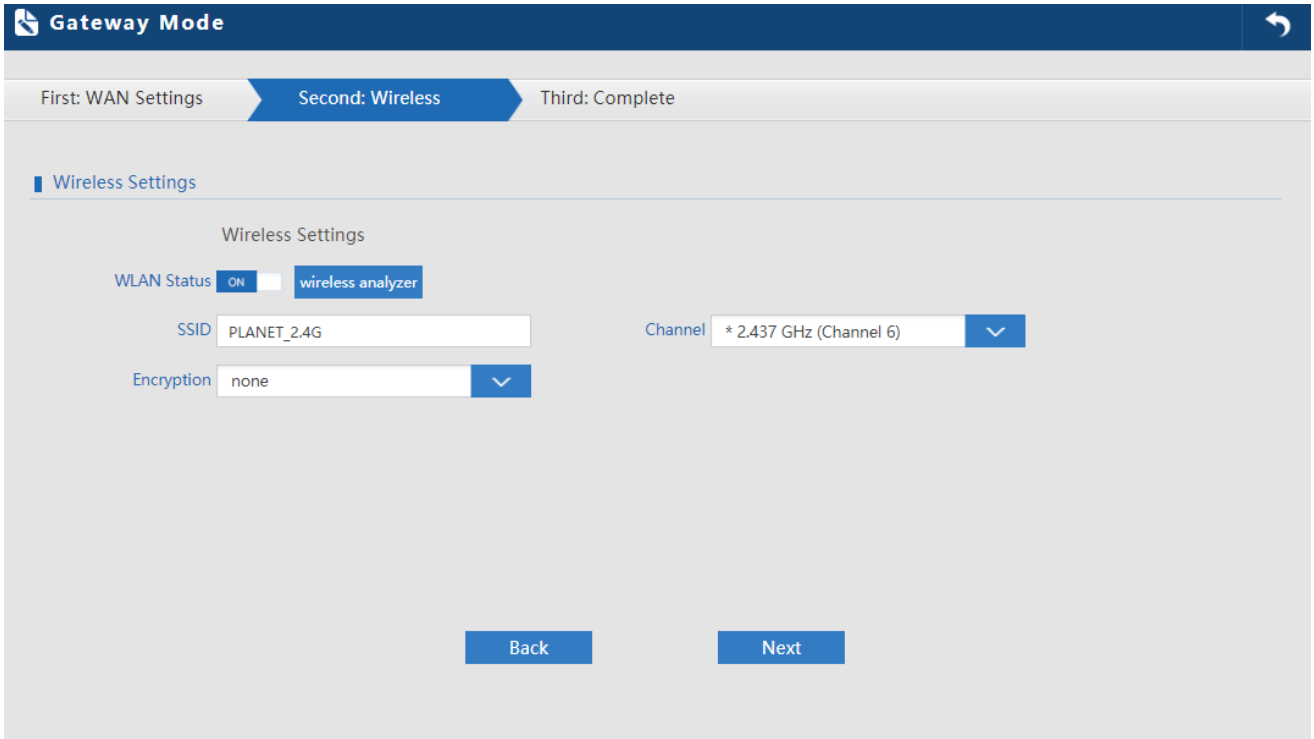


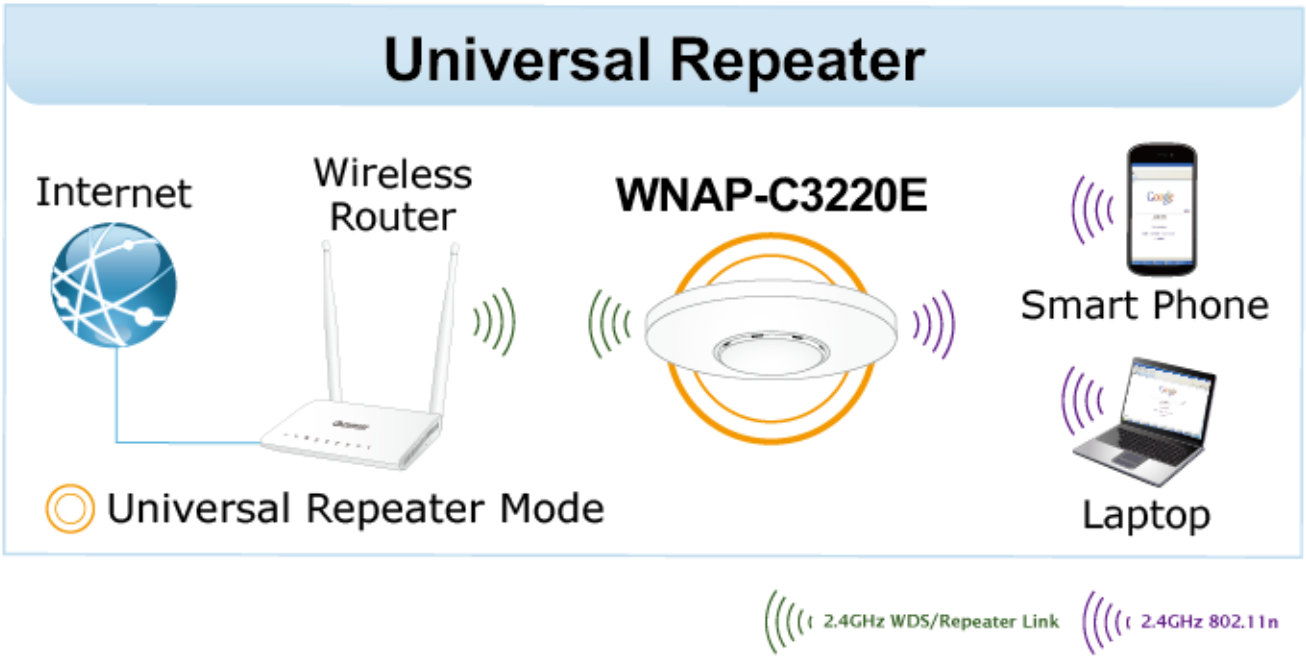
Figure 5-7 Gateway – Wireless

The page includes the following fields:

Object	Description
WLAN Status	Select **ON** or **OFF** to enable or disable wireless LAN.
Wireless Analyzer	Press the button to check your wireless environment.
SSID	It is the wireless network name. The default SSID is **PLANET_2.4G**.
Channel	Select the operating channel you would like to use. The channel range will be changed by selecting a different domain.
Encryption	Select the wireless encryption. The default is **None**.

5.3 Repeater Mode (Universal Repeater)

Click "**Wizard**" → "**Repeater Mode**" and the following page will be displayed. This section allows you to configure the Repeater mode.



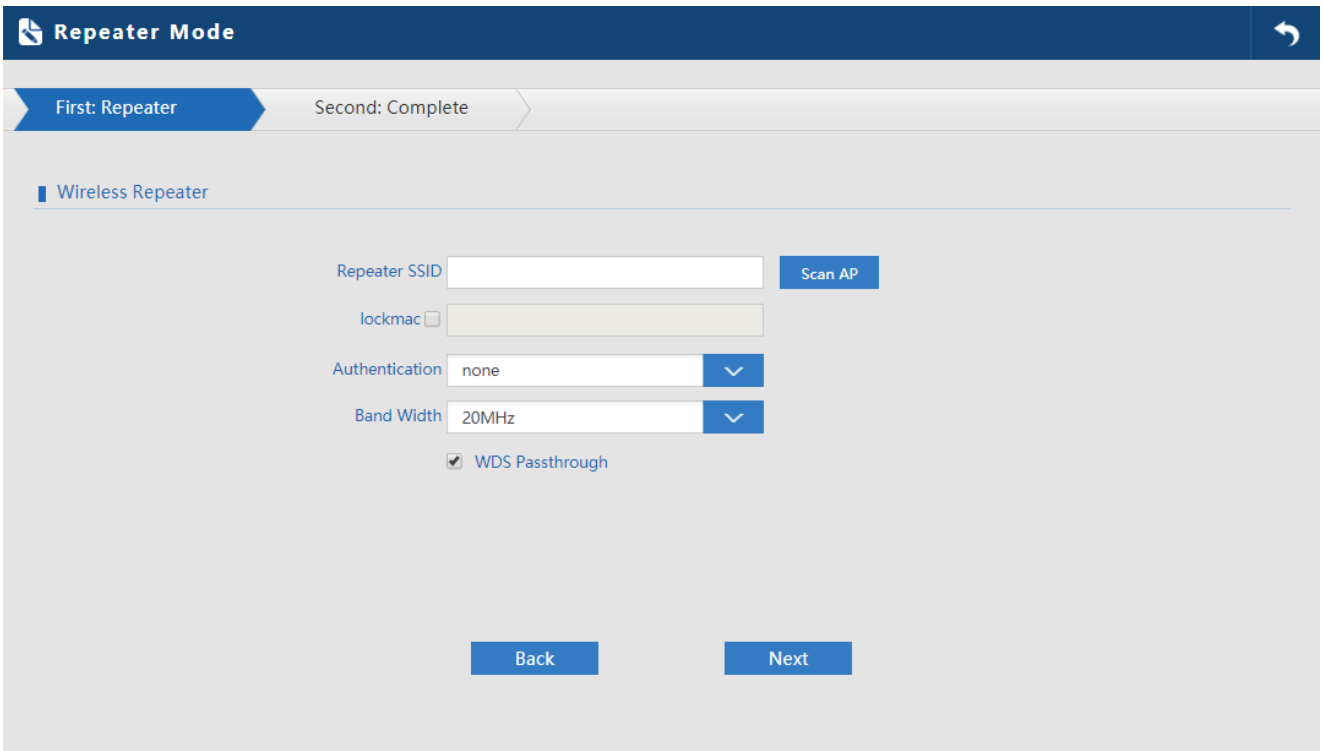


Figure 5-8 Repeater Mode

The page includes the following fields:

Object	Description
Repeater SSID	Enter the root AP's SSID or press "**Scan AP**" to select.
Lockmac	Check to lock the root AP MAC address.
Authentication	Select the wireless encryption of root AP.
Bandwidth	Select the operating channel width, "**20MHz**" or "**40MHz**".
WDS Passthrough	Check to enable WDS passthrough if the root AP is the same model as client.

Press **Scan AP** to show the root AP that you need to repeat and press **Choice** to select the AP.

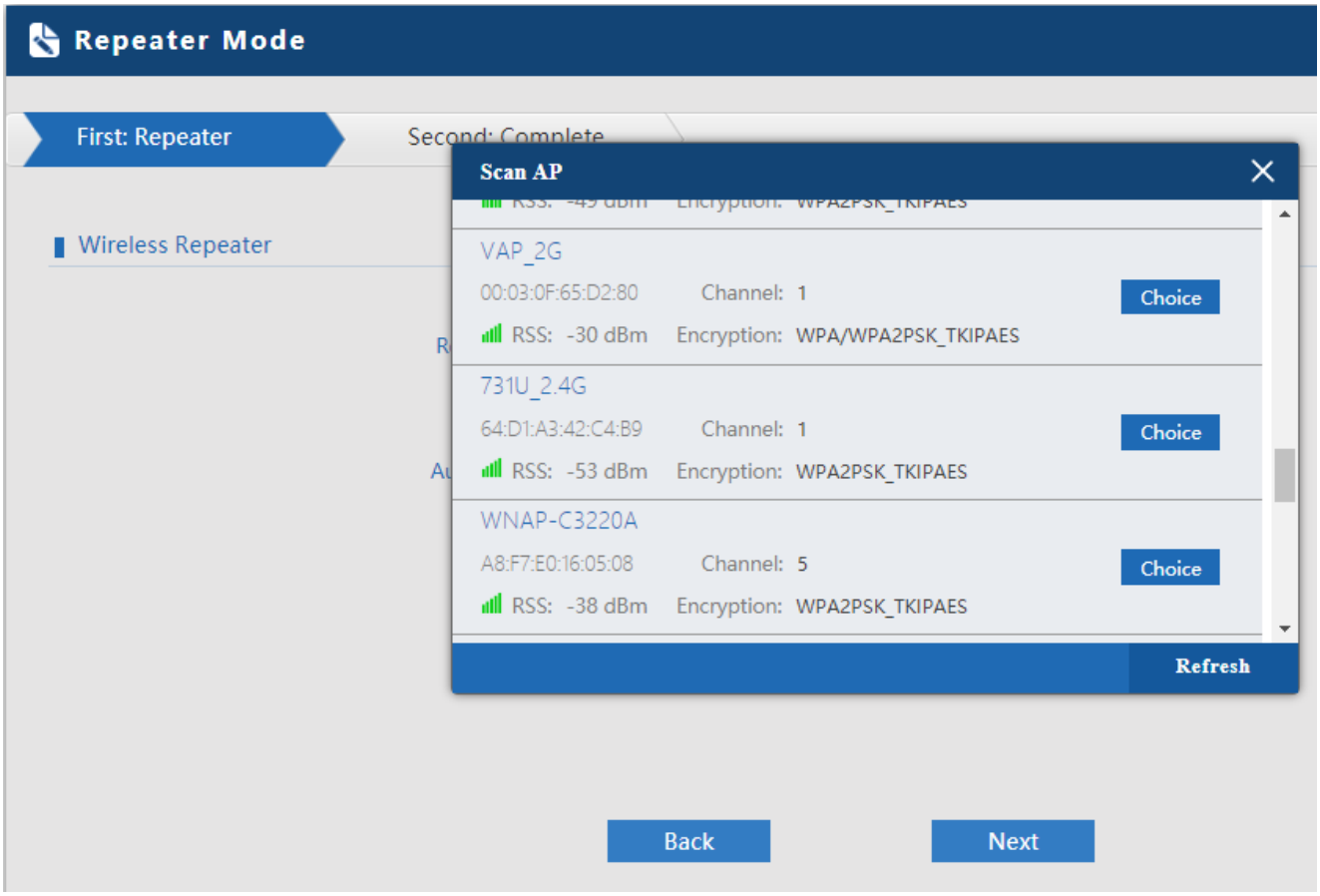


Figure 5-9 Repeater Mode -- Scan AP

Select the authentication and bandwidth which are the same as root AP to establish the connection.

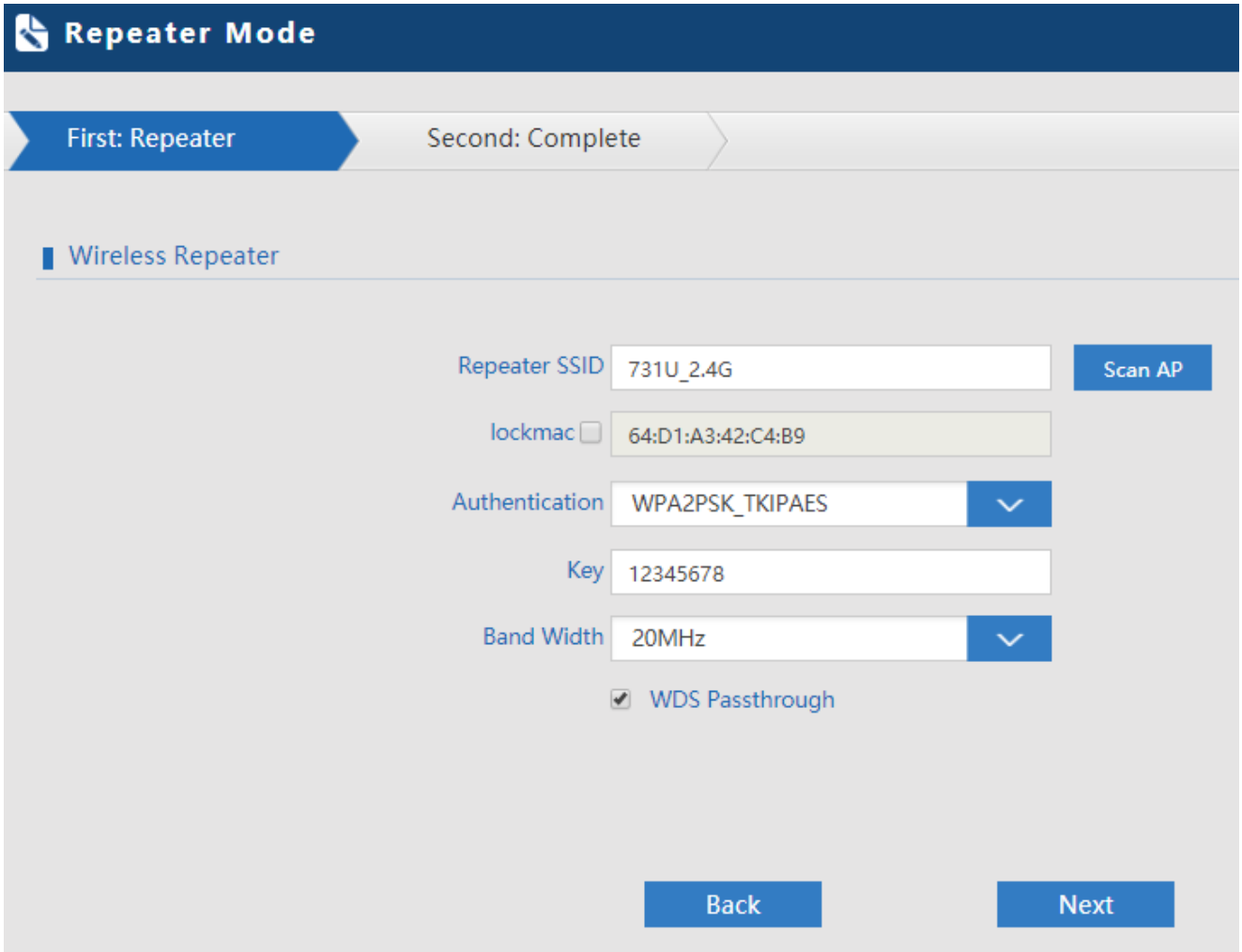
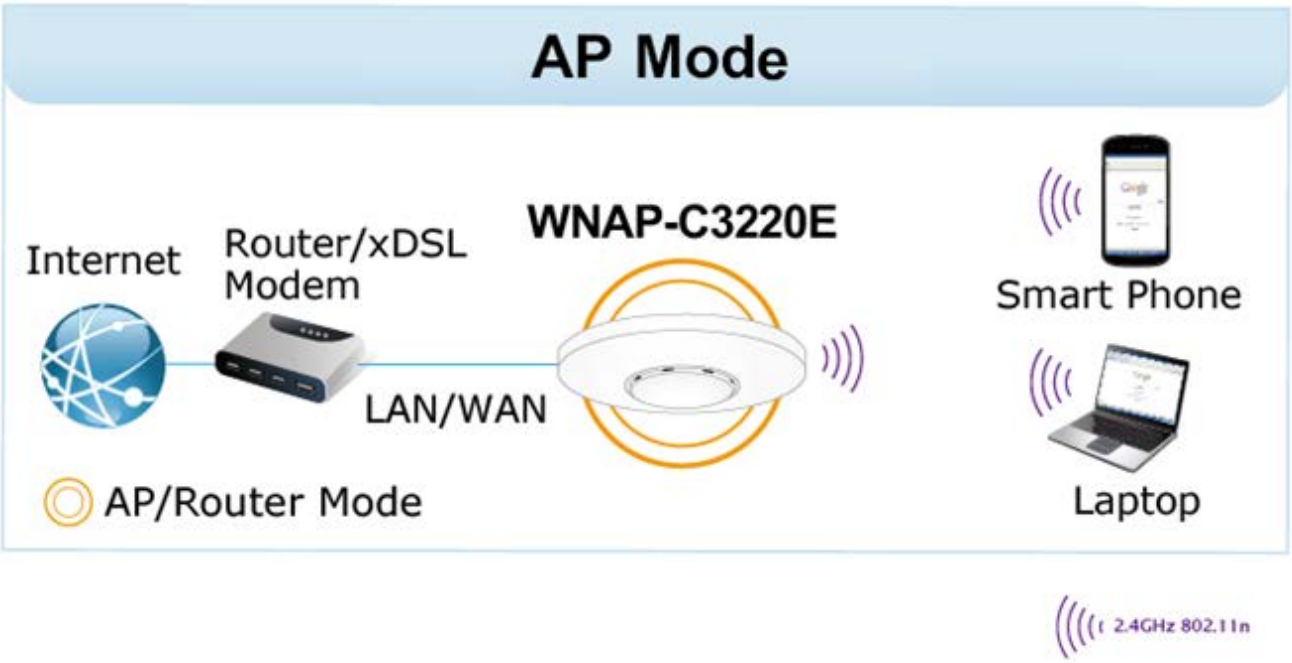


Figure 5-10 Repeater Mode -- Select AP

5.4 AP Mode

In the AP mode, the AP wireless interface and cable interface bridge together. Click "**Wizard**" → "**AP Mode**" and the following page will be displayed. This section allows you to configure the AP mode.



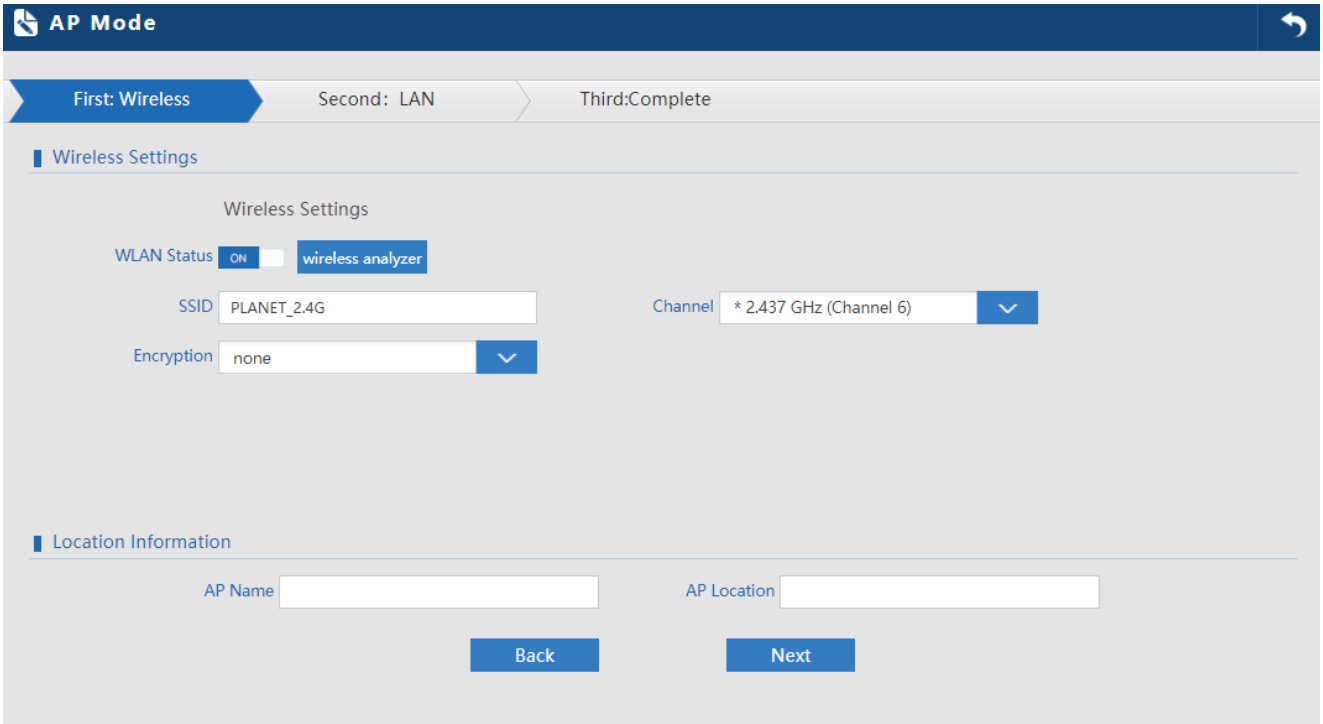


Figure 5-111 AP Mode

The page includes the following fields:

Object	Description
WLAN	Select "**ON**" or "**OFF**" to enable or disable 2.4G or 5.8G wireless LAN.
Wireless Analyzer	Press the button to check your wireless environment.
Status SSID	It is the wireless network name. The default SSID is "**PLANET_2.4G**".
Channel	Select the operating channel you would like to use. The channel range will be changed by selecting a different domain.
Encryption	Select the wireless encryption. The default is "**None**".
AP Name	Enter the name of AP.
AP Location	Enter the location of AP.

Enter the LAN IP address.

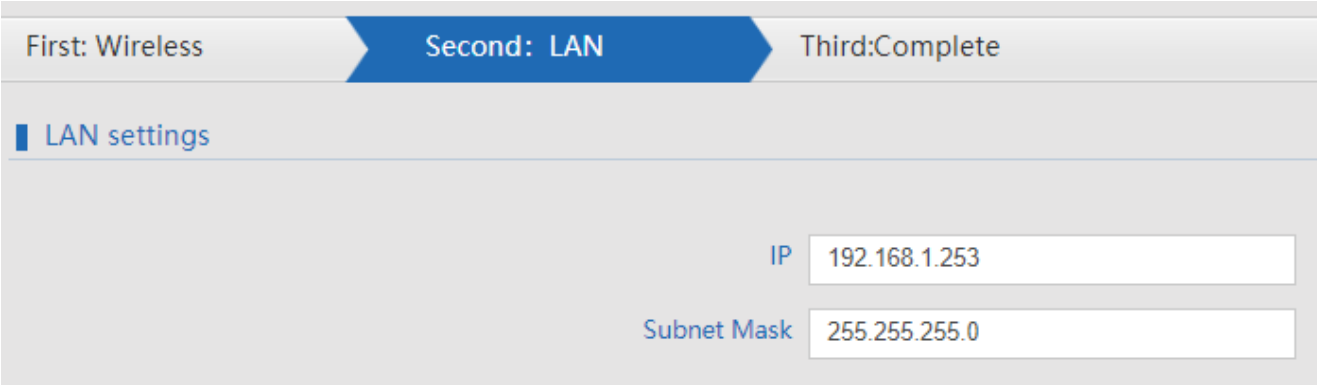
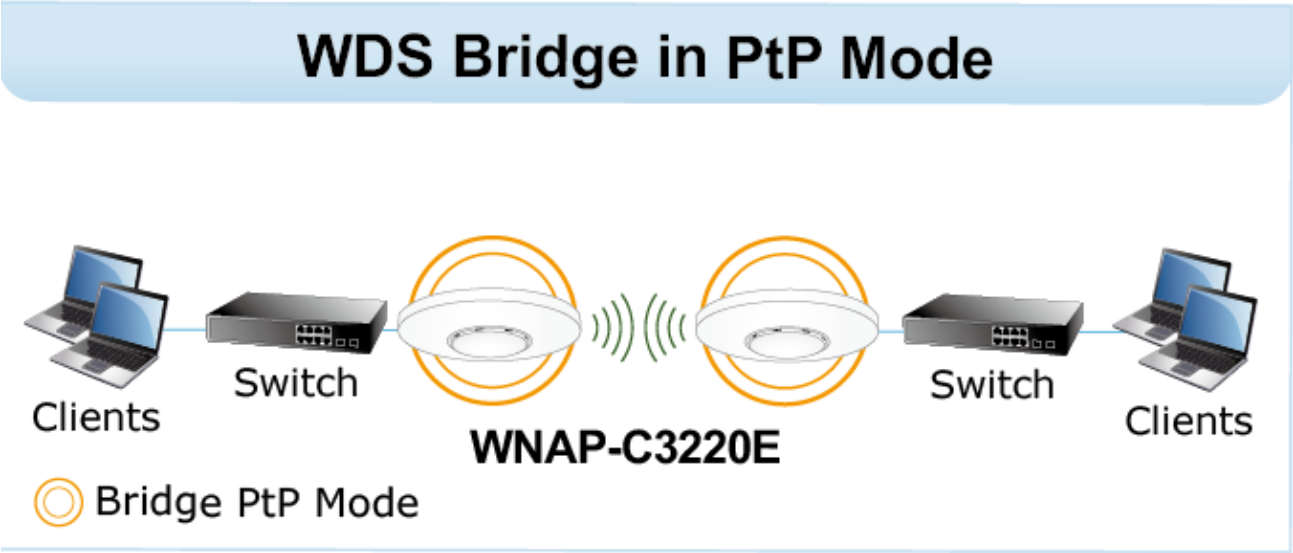
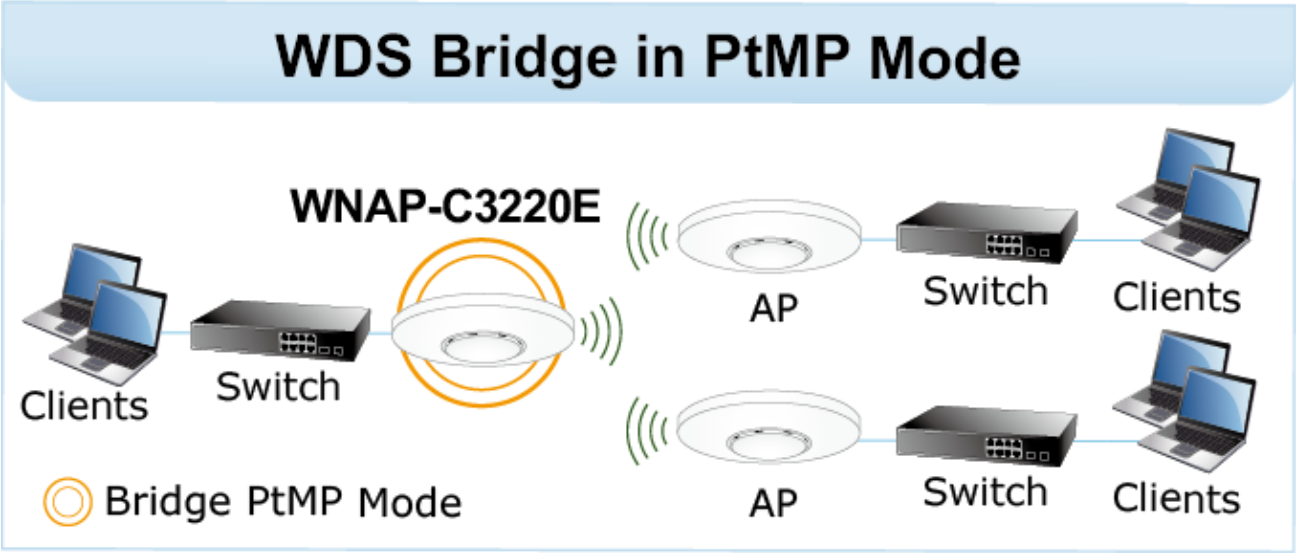


Figure 5-12 AP Mode -- LAN

5.5 Super WDS Mode (WDS Bridge in PtP/PtMP)

In the Super WDS mode, the wireless interface can be connected with other wireless APs through WDS, and the wireless interface and cable interface. Click "**Wizard**" → "**Super WDS Mode**" and the following page will be displayed. This section allows you to configure the AP mode.





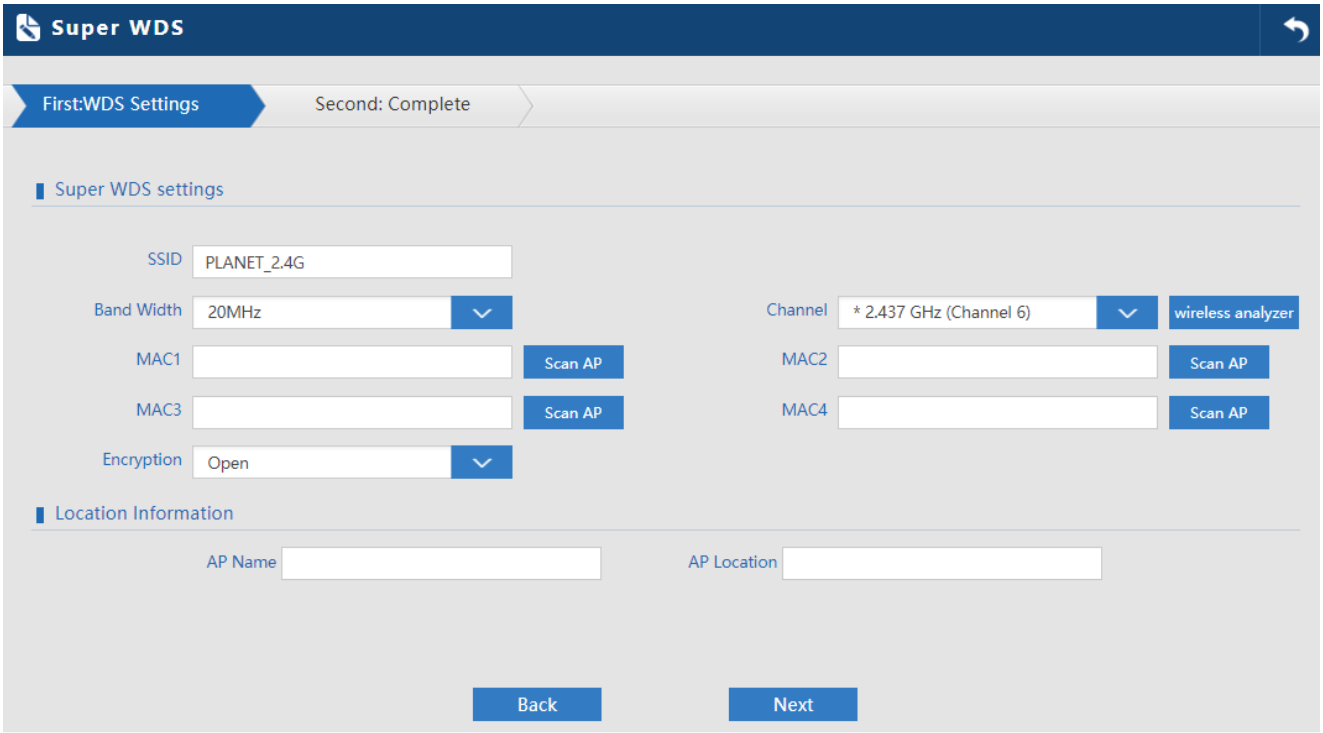


Figure 5-13 Super WDS Mode

The page includes the following fields:

Object	Description
2.4GHz WLAN	Select "**ON**" or "**OFF**" to enable or disable 2.4G wireless LAN.
Status SSID	It is the wireless network name. The default SSID is "**PLANET_2.4G**".
Channel	Select the operating channel you would like to use. The channel range will be changed by selecting a different domain.
Encryption	Select the wireless encryption. The default is "**None**".

AP1 enters the MAC address of AP2. And AP2 enters the MAC address of AP1. Then select the same Channel to establish the connection.

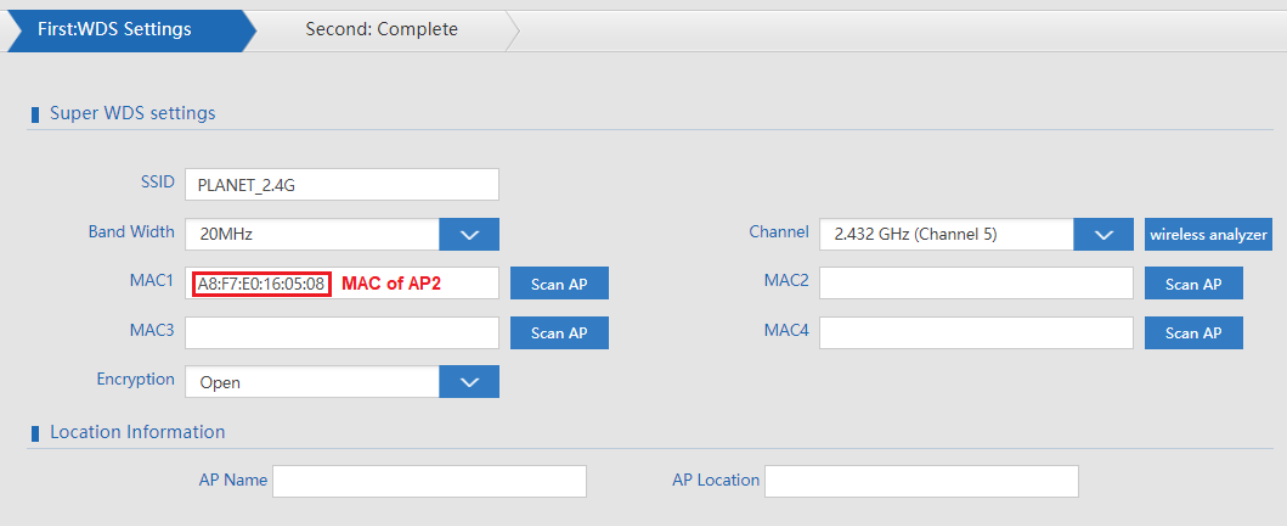


Figure 5-14 Super WDS Mode – AP1

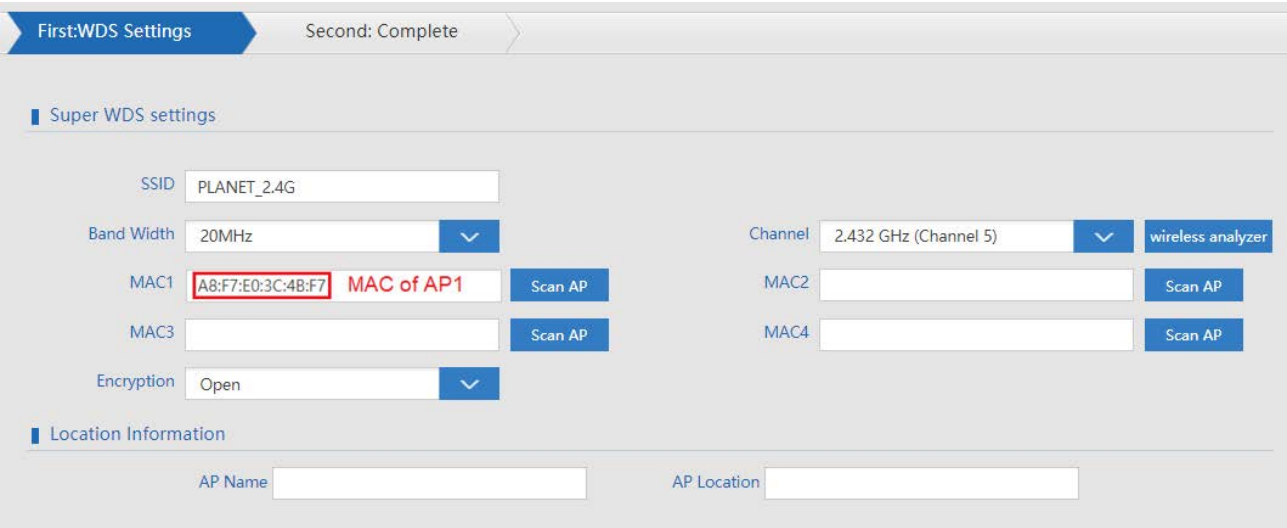


Figure 5-155 Super WDS Mode – AP2

The page includes the following fields:

Object	Description
SSID	It is the wireless network name. The default SSID is "**PLANET_2.4G**".
Bandwidth	Select the operating channel width, "**20MHz**" or "**40MHz**".
Channel	Select the operating channel you would like to use. The channel range will be changed by selecting a different domain.
MAC	Enter the MAC address of slave AP.
Encryption	Select the wireless encryption. The default is "**Open**".

5.6 Advanced

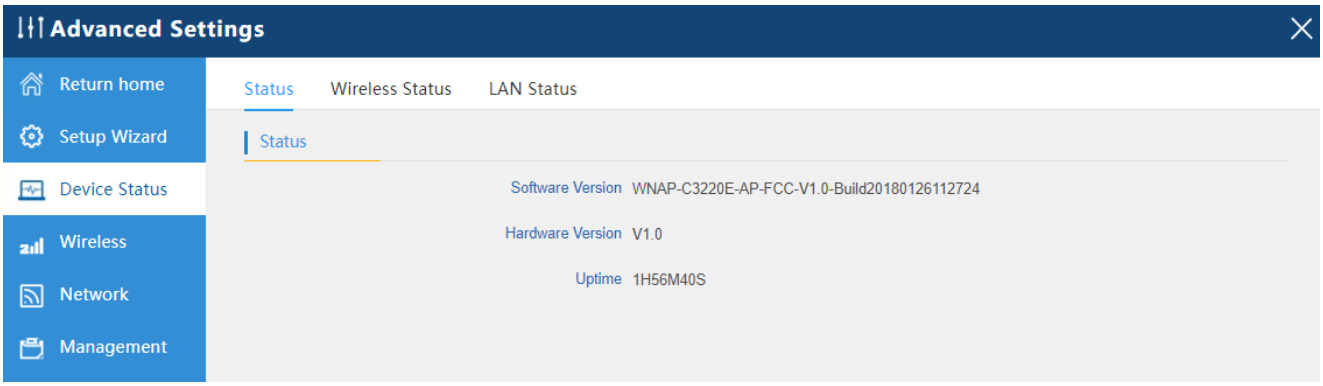


Figure 5-166 Advanced

5.6.1 Device Status

5.6.1.1. Status

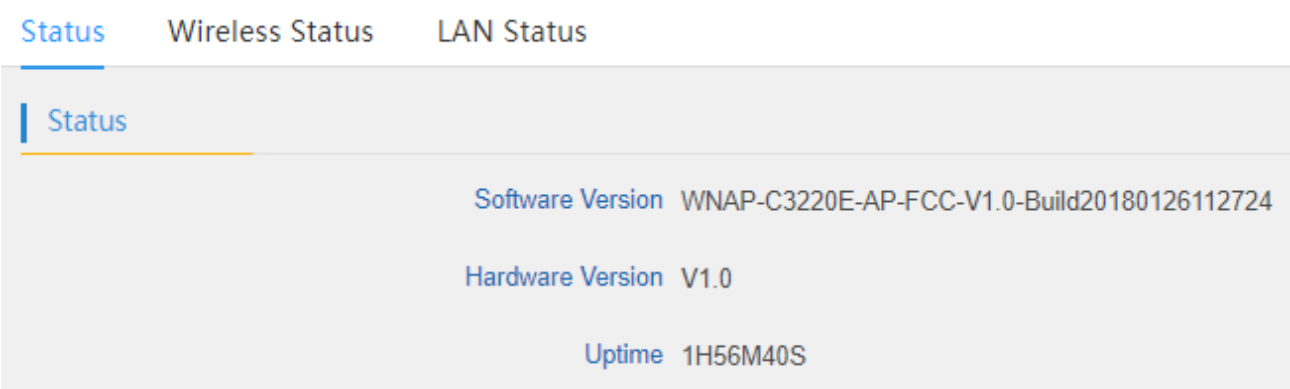


Figure 5-177 Status

The page includes the following fields:

Object	Description
Software Version	It shows the firmware version of AP.
Hardware Version	It shows the hardware version of AP.
Uptime	It shows the AP uptime.

5.6.1.2. 2.4G Status

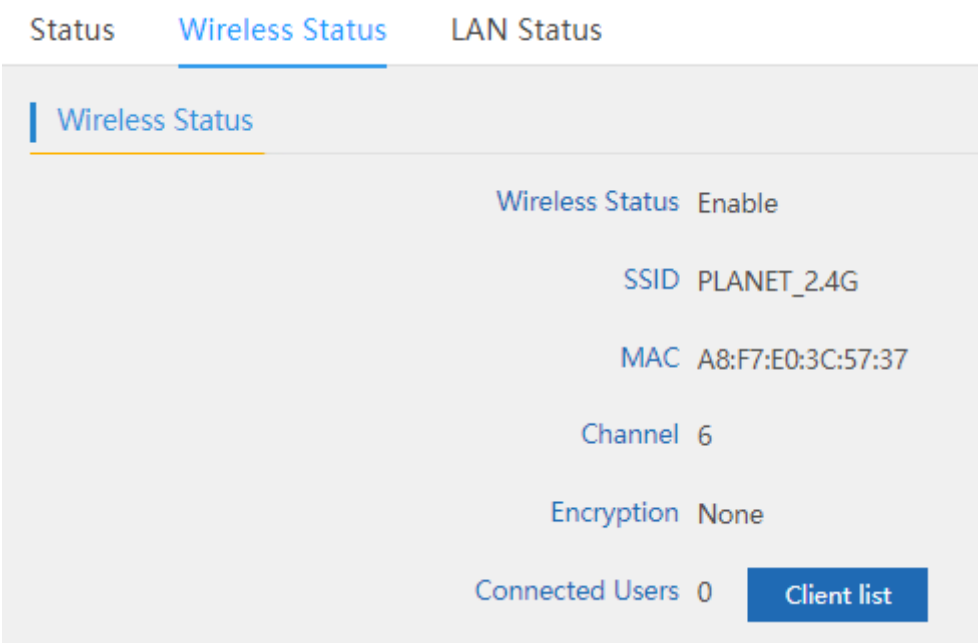


Figure 5-188 Wireless Status

The page includes the following fields:

Object	Description
2.4G / 5.8G Wireless Status	It shows the wireless status is **Enable** or **Disable**.
SSID	It shows the SSID of the AP. Default is **PLANET_2.4G.**
MAC	It shows the MAC address of the AP.
Channel	It shows the channel of the AP. Default 2.4GHz is channel 6.
Encryption	It shows the wireless encryption.
Connected Users	It shows the wireless connected users.

5.6.1.3. LAN Status

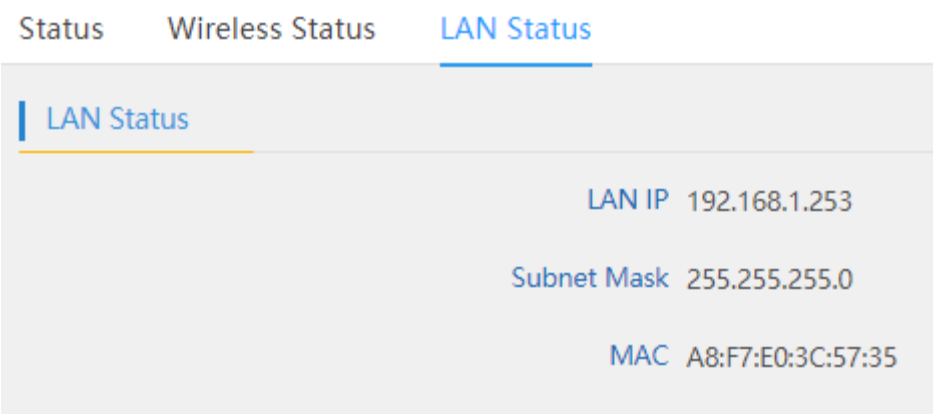


Figure 5-19 LAN Status

The page includes the following fields:

Object	Description
LAN IP	It shows the IP of the AP. Default is **192.168.1.253**.
Subnet Mask	It shows the subnet mask of the AP. Default is **255.255.255.0**.
MAC	It shows the MAC address of the LAN por.t

5.6.2 Wireless

5.6.2.1. Basic Settings

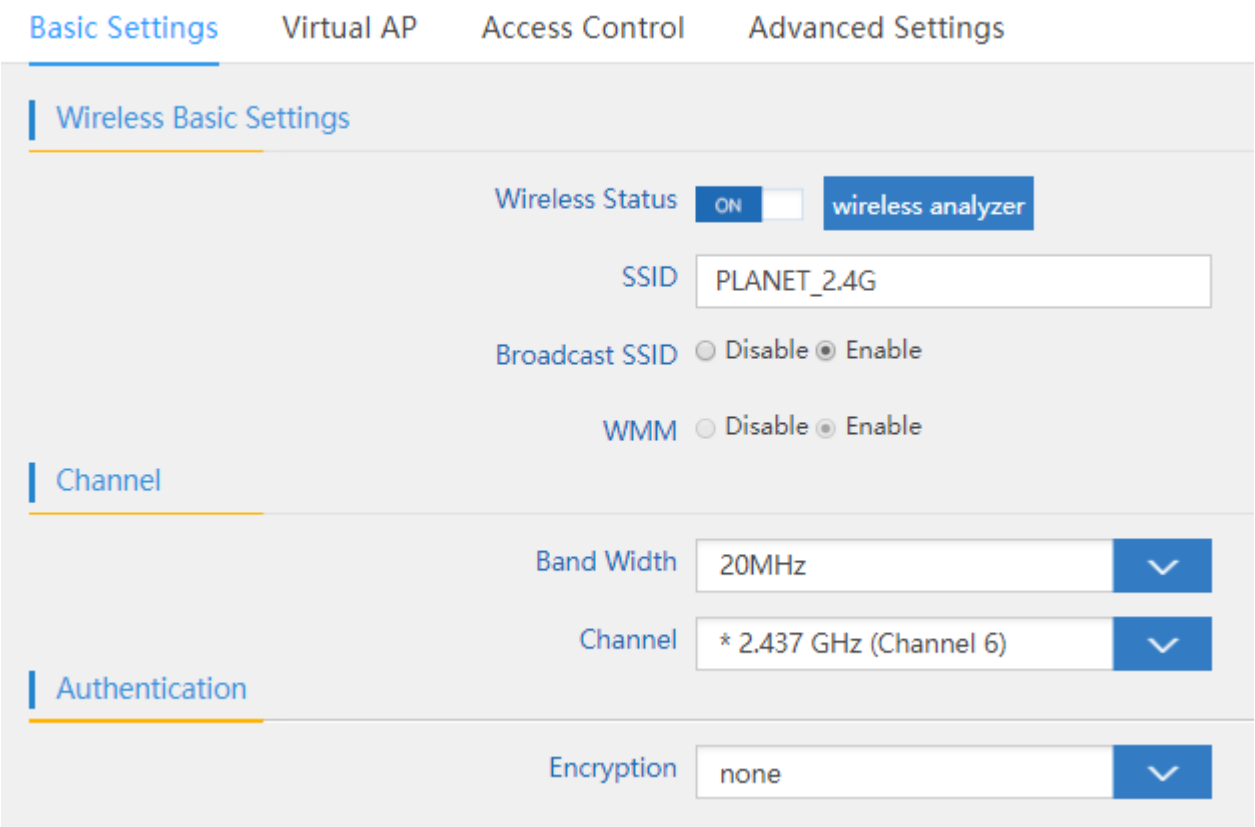


Figure 5-20 Basic Settings

The page includes the following fields:

Object	Description
Wireless Status	It shows the wireless status is **Enable** or **Disable**.
SSID	It shows the SSID of the AP. Default is **PLANET_2.4G**.
Broadcast SSID	Select **Enable** or **Disable** the SSID.
WMM	It supports Wi-Fi multimedia and default is enabled.
Bandwidth	It displays operating channel width which is **20MHz** or **40MHz**.
Channel	It shows the channel of the AP. Default 2.4GHz is **Channel 6**.
Encryption	It shows the wireless encryption.

5.6.2.2. Virtual AP

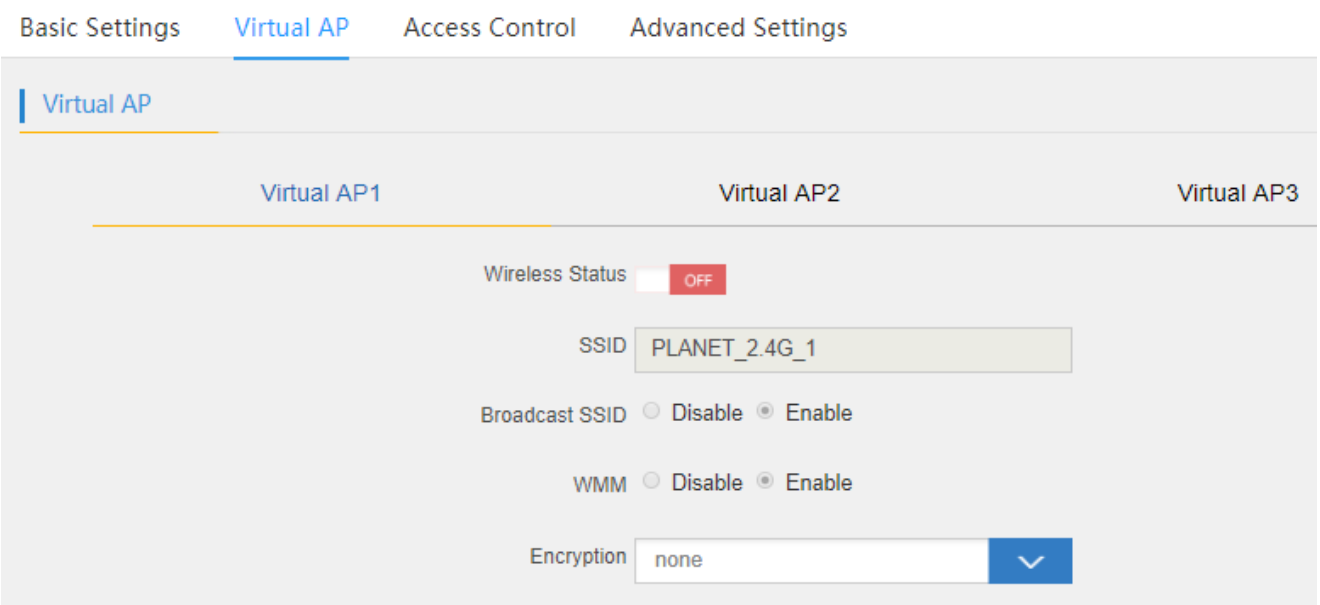


Figure 5-21 Virtual AP

The page includes the following fields:

Object	Description
Wireless Status	It shows the wireless status is **ON** or **OFF**.
SSID	It shows the SSID of the AP. Default is **PLANET_2.4G_1**.
Broadcast SSID	Select **Enable** or **Disable** the SSID.
WMM	It supports Wi-Fi multimedia and default is enabled.
Encryption	It shows the wireless encryption.

5.6.2.3. Access Control

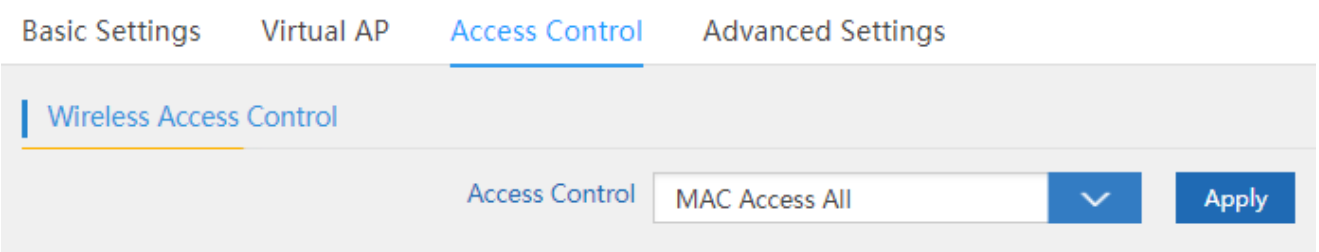


Figure 5-22 Access Control - Access All

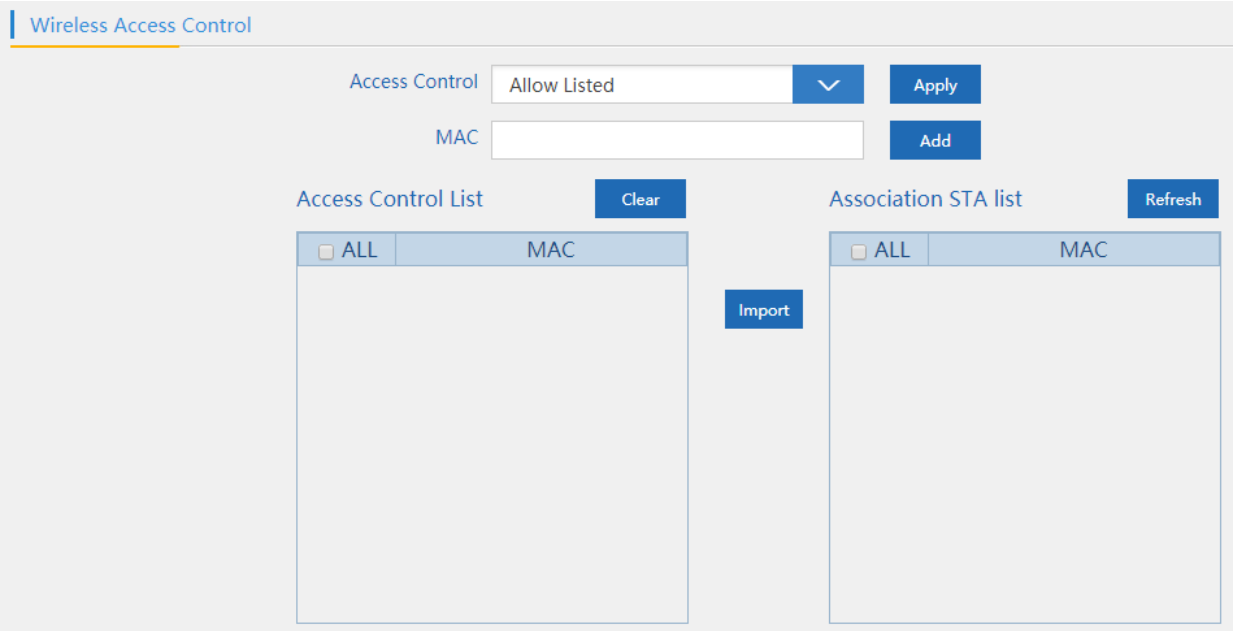


Figure 5-23 Access Control – Allow Listed

The page includes the following fields:

Object	Description
Access Control	Select **MAC Access All**, **Allow Listed** or **Deny Listed**.
MAC	Enter the MAC address that you need to allow or deny access.
Clear	Delete the MAC address that you select.

5.6.2.4. Advanced Settings

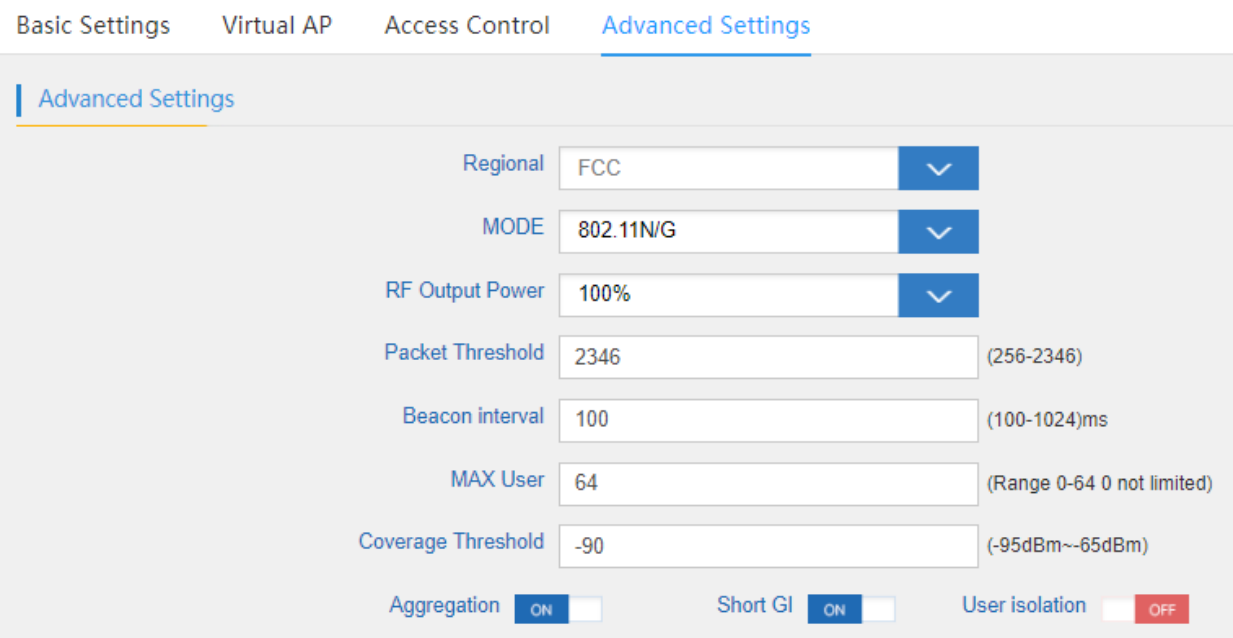


Figure 5-244 Advanced Settings

The page includes the following fields:

Object	Description
Regional	It shows **FCC** or **ETSI** depending on the firmware.
Mode	Select **802.11N/G** or **802.11B/G** in 2.4G AP.
RF Output Power	The range of transmit power is **100%**, **75%**, **50%**, **25%** or **12.5%**. In case of shortening the distance and the coverage of the wireless network, input a smaller value to reduce the radio transmission power.
Packet Threshold	When the length of a data packet exceeds this value, the router will send an RTS frame to the destination wireless node, and the latter will reply with a CTS frame, and thus they are ready to communicate. The default value is **2346**.
Beacon interval	Set beacon interval, the value range is from 100 to 1024. The default value is **100**.
Maximum Users	The maximum users are **64**.
Coverage Threshold	The coverage threshold is to limit the weak signal of clients occupying session. The default is -90dBm.
Distance	Select a specified distance of the two nodes.
Aggregation	A part of the 802.11n standard that allows sending multiple frames per single access to the medium by combining frames together into one larger frame. It creates the larger frame by combining smaller frames with the same physical source, destination end points, and traffic class (QoS) into one large frame with a common MAC header.
Short GI	Guard intervals are used to ensure that distinct transmissions do not interfere with one another.
User Isolation	Enable it to isolate each connected wireless client so that they cannot access mutually.

5.6.3 Network

5.6.3.1. LAN Settings

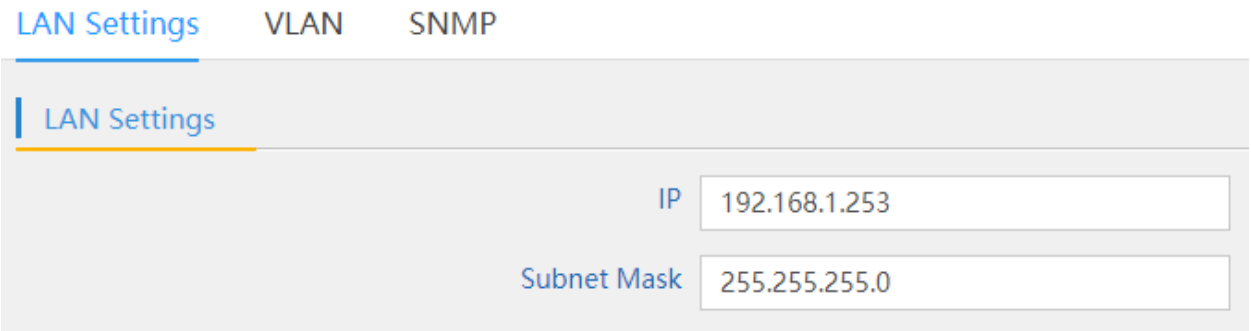


Figure 5-25 LAN Settings

The page includes the following fields:

Object	Description
IP	Enter an IP address of LAN.
Subnet Mask	Enter a subnet mask of LAN.

5.6.3.2. VLAN

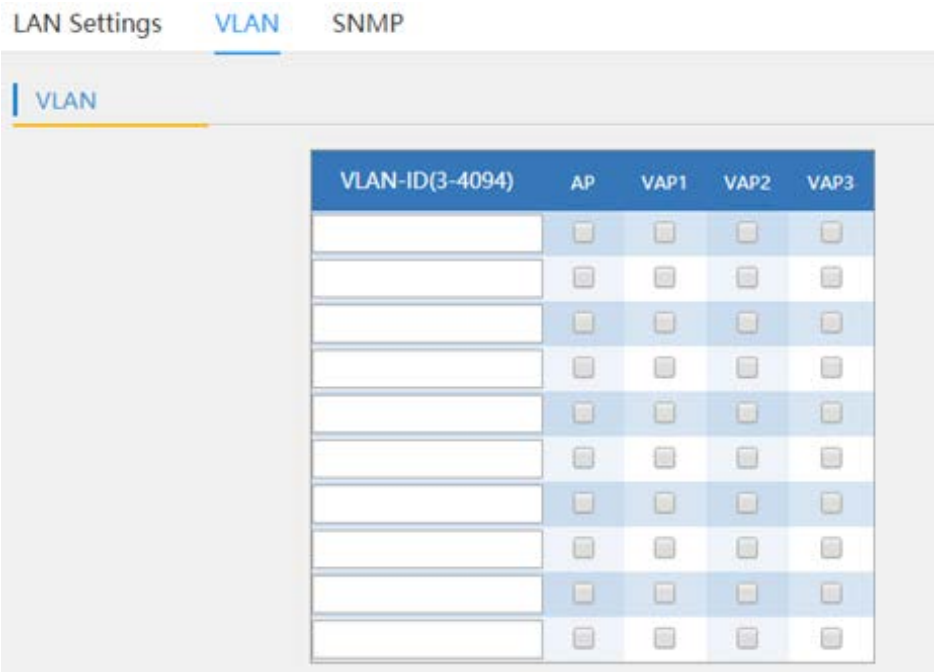


Figure 5-26 VLAN

The page includes the following fields:

Object	Description
VLAN ID	Enter the VLAN ID from 3 to 4094.
AP	Select AP or VAP included in the VLAN.

5.6.3.3. SNMP

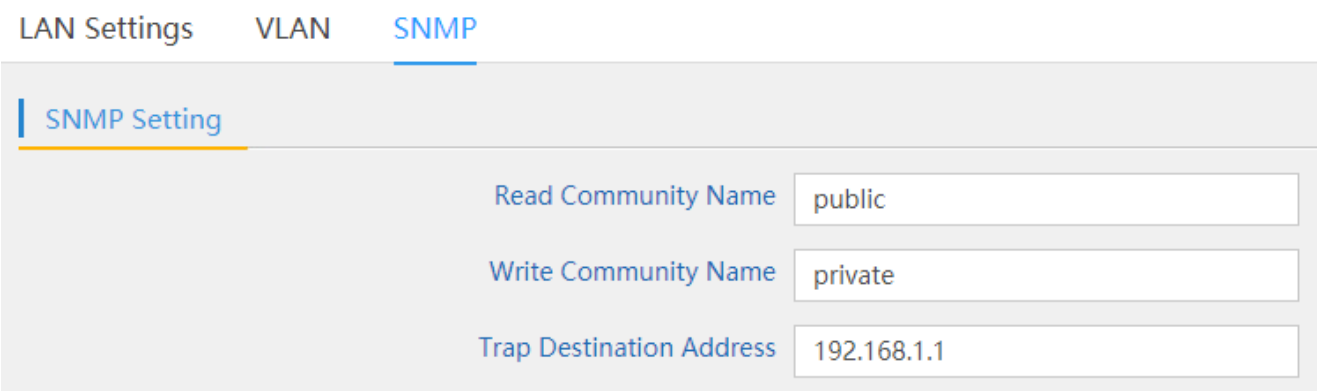


Figure 5-27 SNMP

The page includes the following fields:

Object	Description
Read Community	Enter the read community, default is **public**
Write Community	Enter the write community, default is **private**
Trap Destination Address	Enter the SNMP trap IP address, default is **192.168.1.1**

5.6.4 Management

5.6.4.1. System Time

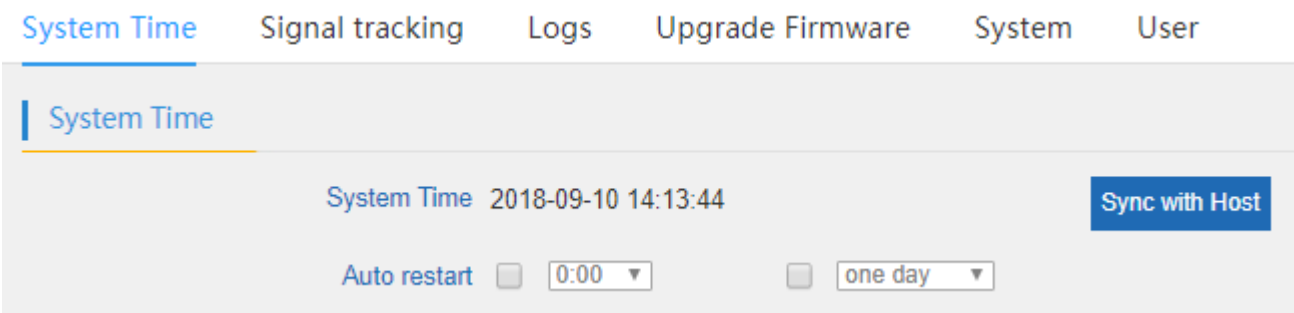
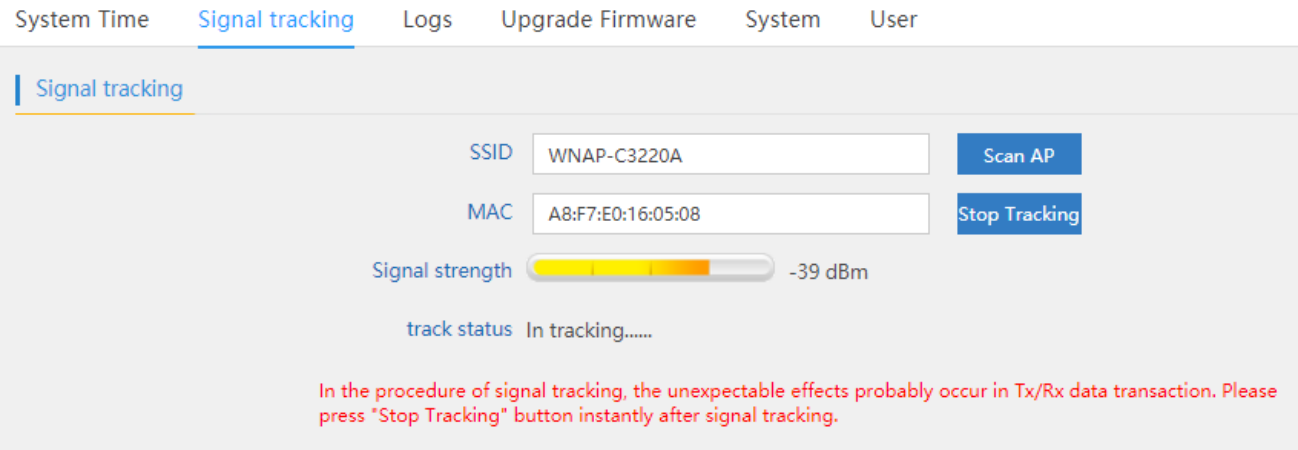


Figure 5-28 System Time

The page includes the following fields:

Object	Description
System Time	It shows the system time
Auto Restart	Select the time that you want to reboot

5.6.4.2. Signal Tracking



The page includes the following fields:

Object	Description
SSID	Select the SSID you need to check by pressing the **Scan AP** button
MAC	It shows the MAC address of the tracked AP
Signal Strength	It shows the signal strength of the AP

5.6.4.3. Logs

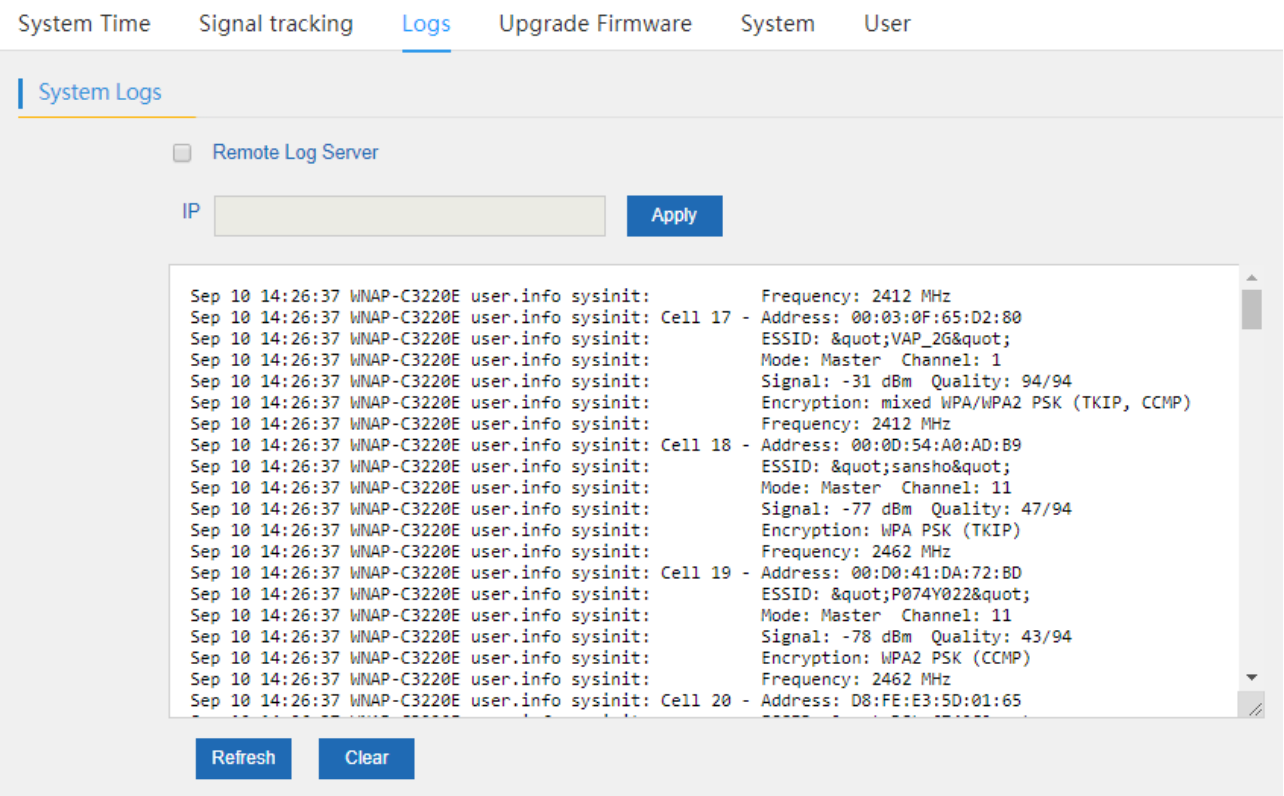


Figure 5-29 Logs

The page includes the following fields:

Object	Description
Remote Log Server	Enable remote log server
IP	Enter the IP of remote log server
Refresh	Press to refresh the system log
Clear	Press to clear the system log

5.6.4.4. Upgrade Firmware

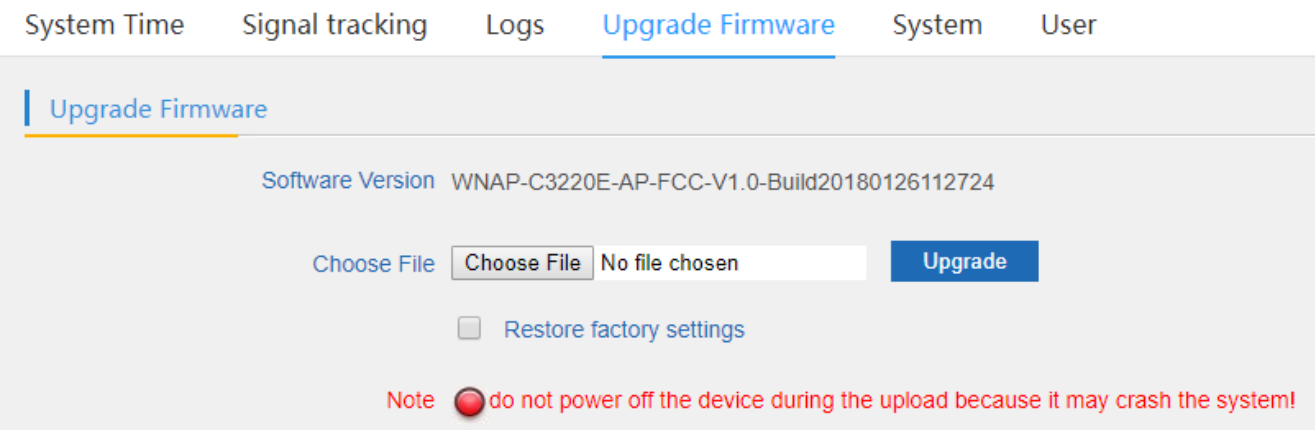


Figure 5-30 Upgrade Firmware

The page includes the following fields:

Object	Description
Choose File	Press to select the firmware file
Upgrade	Press to upgrade the firmware
Restore Factory Settings	Select to reset the device to default when upgrading firmware

5.6.4.5. System

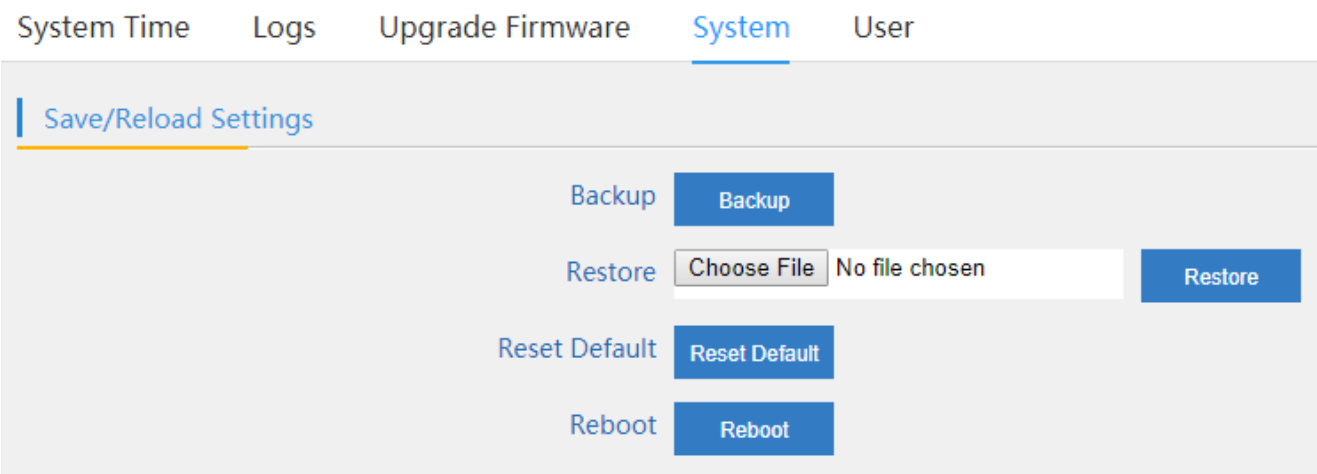


Figure 5-311 System

The page includes the following fields:

Object	Description
Backup	Press to back up the configuration
Choose File	Press to select the configuration file
Restore	Press to restore the configuration
Reset Default	Press to reset the device to default
Reboot	Press to reboot the device

5.6.4.6. User

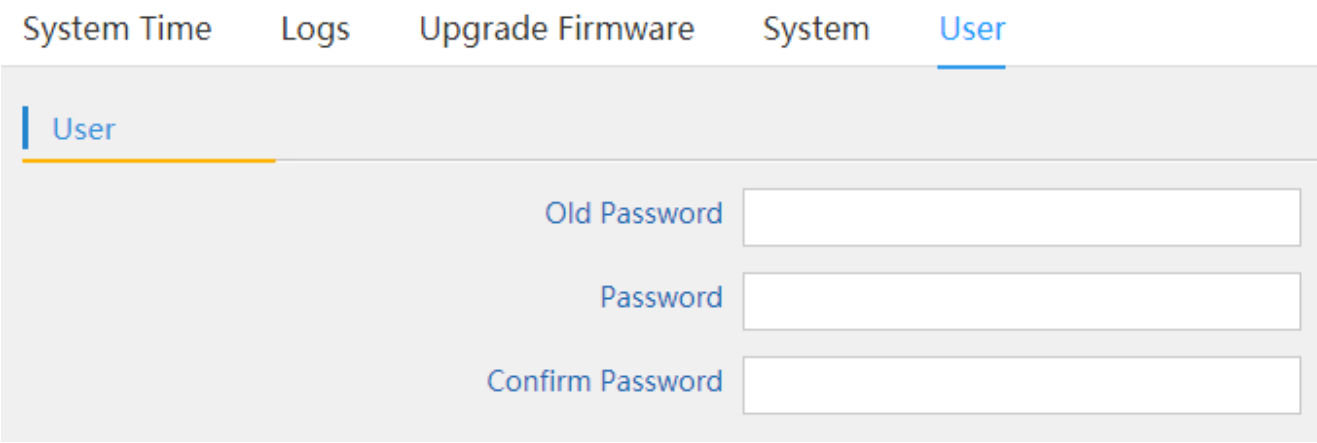


Figure 5-32 User

The page includes the following fields:

Object	Description
Old Password	Enter the old password
Password	Enter the new password
Confirm Password	Enter the new password again

Chapter 6. Quick Connection to a Wireless Network

In the following sections, the **default SSID** of the WNAP-C3220E 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

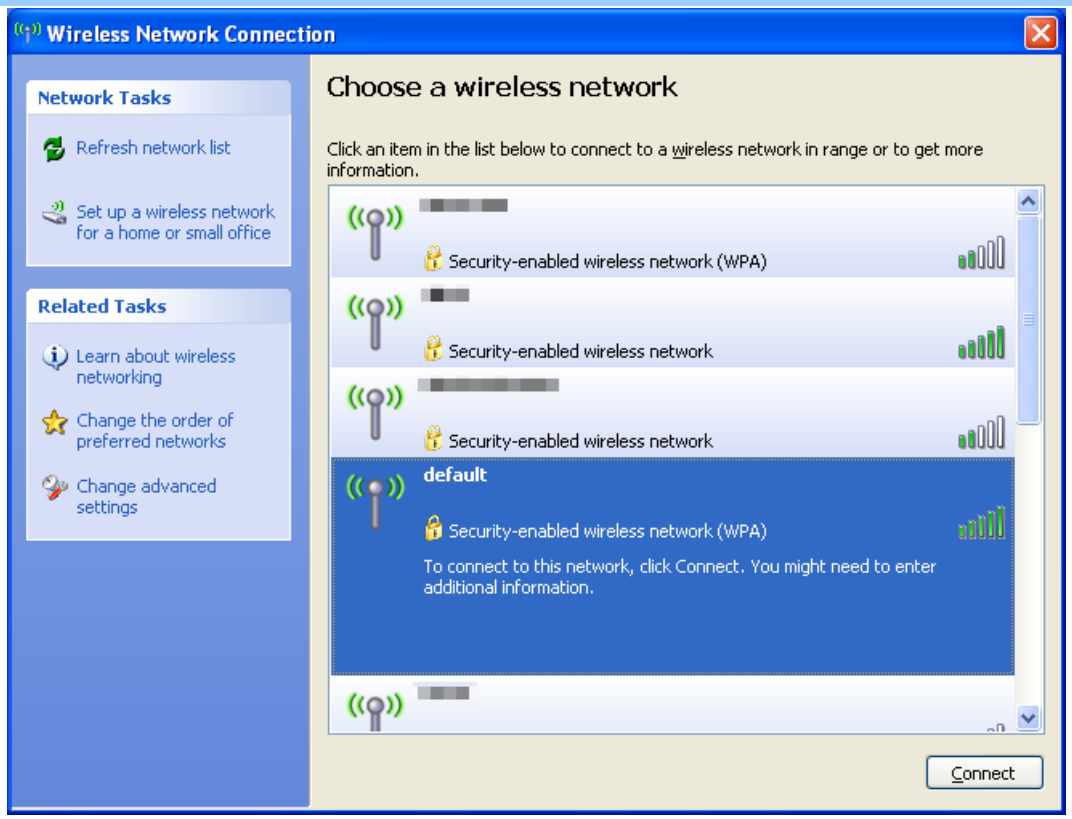


Figure 6-2 Choosing a Wireless Network

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 5.7.2.1

(3) Click the [Connect] button

Figure 6-3 Entering the Network Key

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

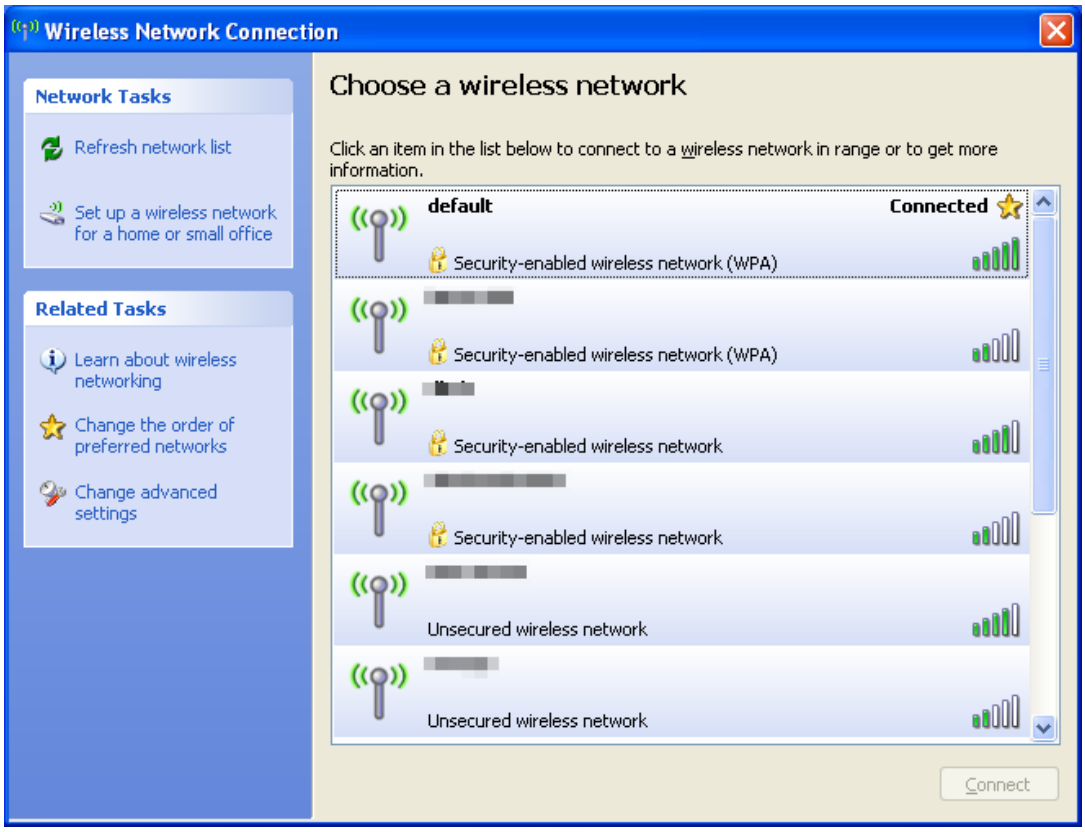


Figure 6-4 Choosing a Wireless Network -- Connected

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

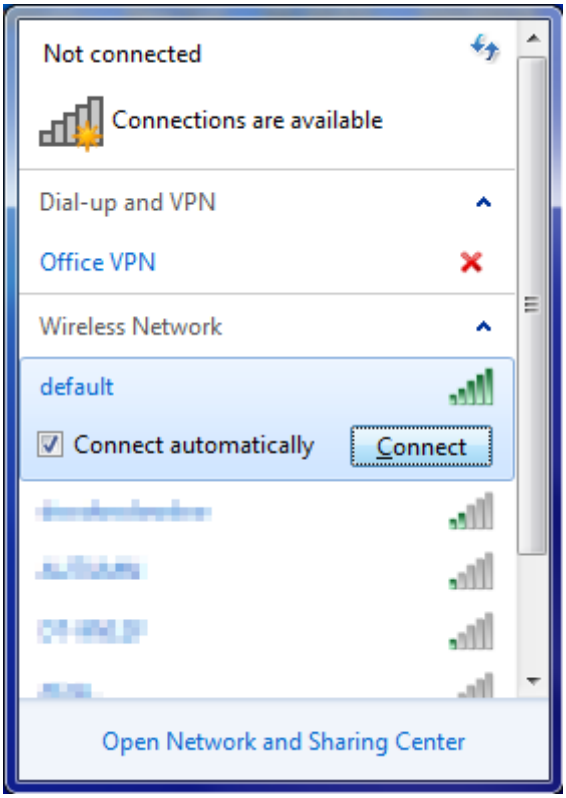


Figure 6-6 WLAN AutoConfig

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 5.7.2.1

(3) Click the [OK] button.

Figure 6-7 Typing the Network Key

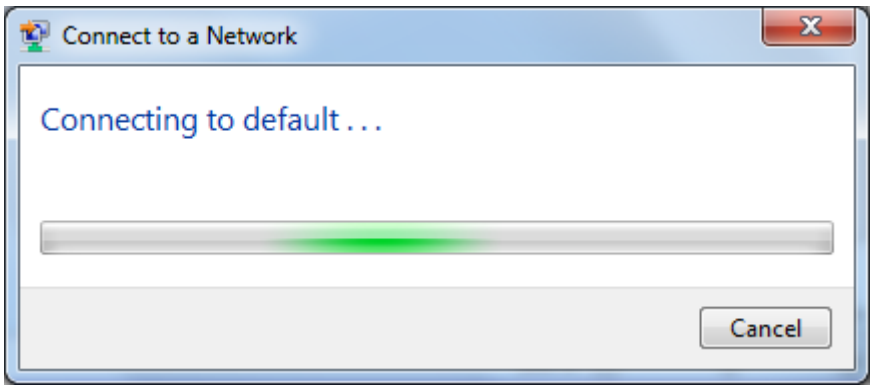


Figure 6-8 Connecting to a Network

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

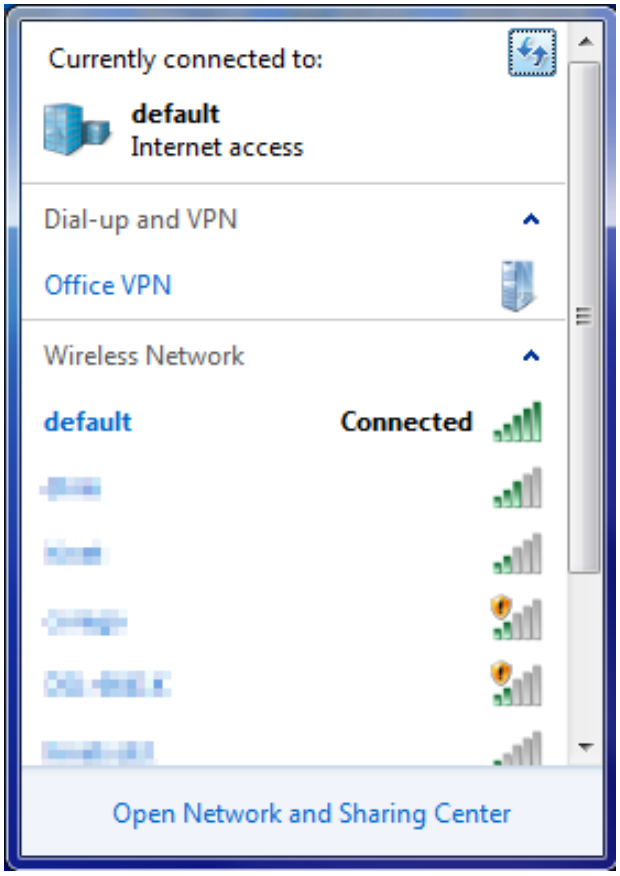


Figure 6-9 Connected to a Network

6.3 Mac OS X 10.x

In the following sections, the default SSID of the WNAP-C3220E is configured to “default”.

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

The AirPort Network Connection menu will appear.

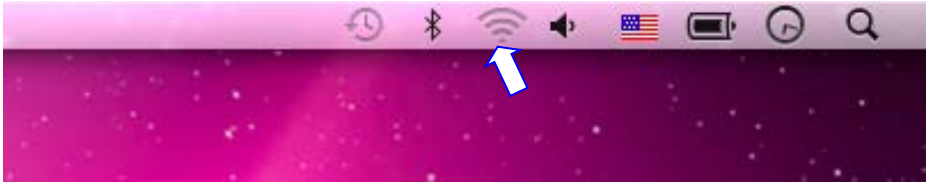


Figure 6-10 Mac OS – Network Icon

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 Highlighting and Selecting the Wireless Network

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

(1) Enter the encryption key that is configured in section 5.7.2.1

(2) Click the [OK] button.

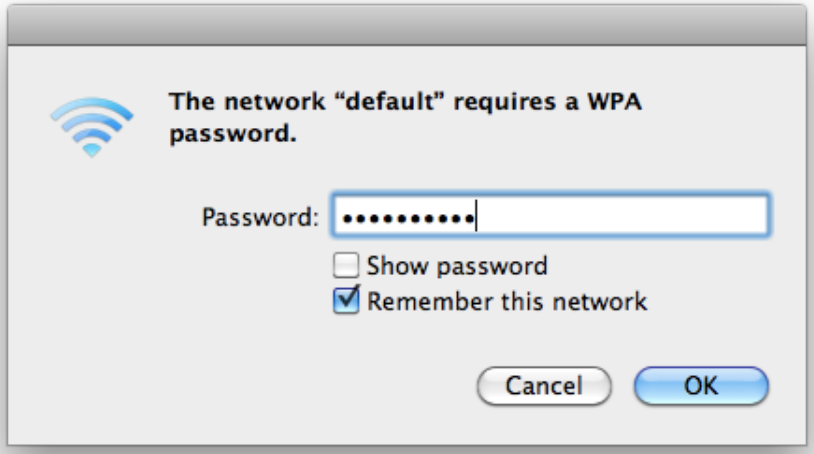


Figure 6-12 Enter the Password

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 front of the SSID.

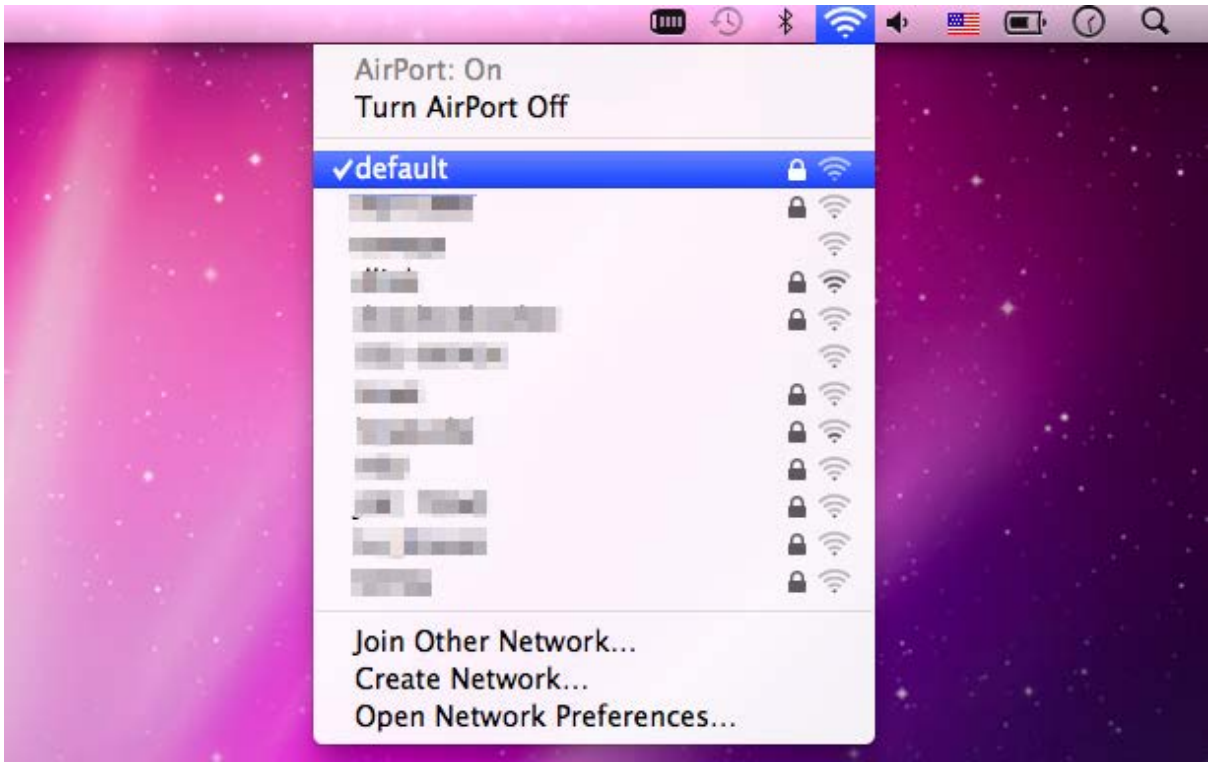


Figure 6-13 Connected to the Network

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**

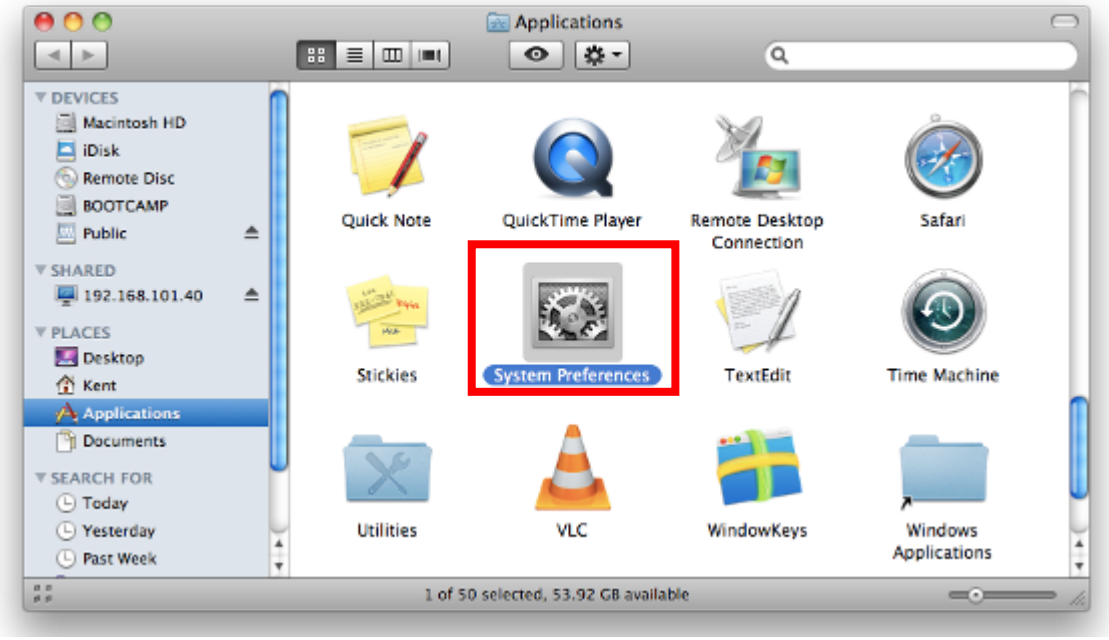


Figure 6-14 System Preferences

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

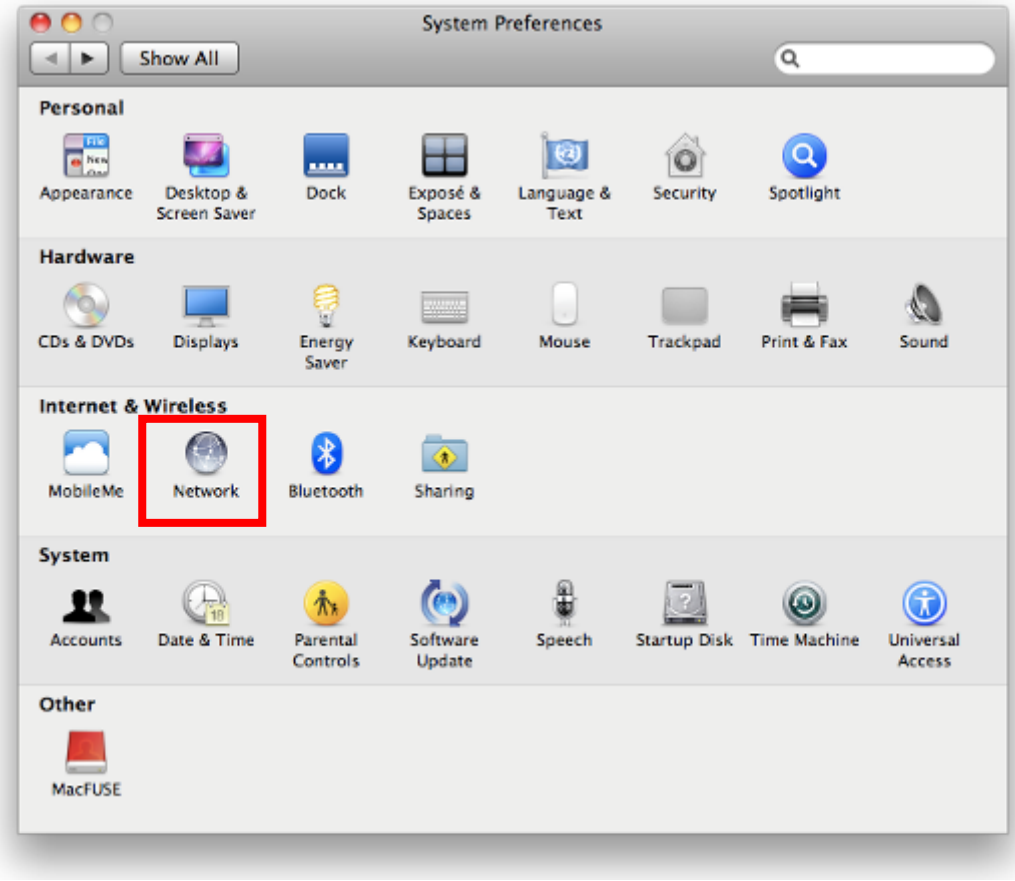


Figure 6-15 System Preferences -- Network

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 “No network selected”.

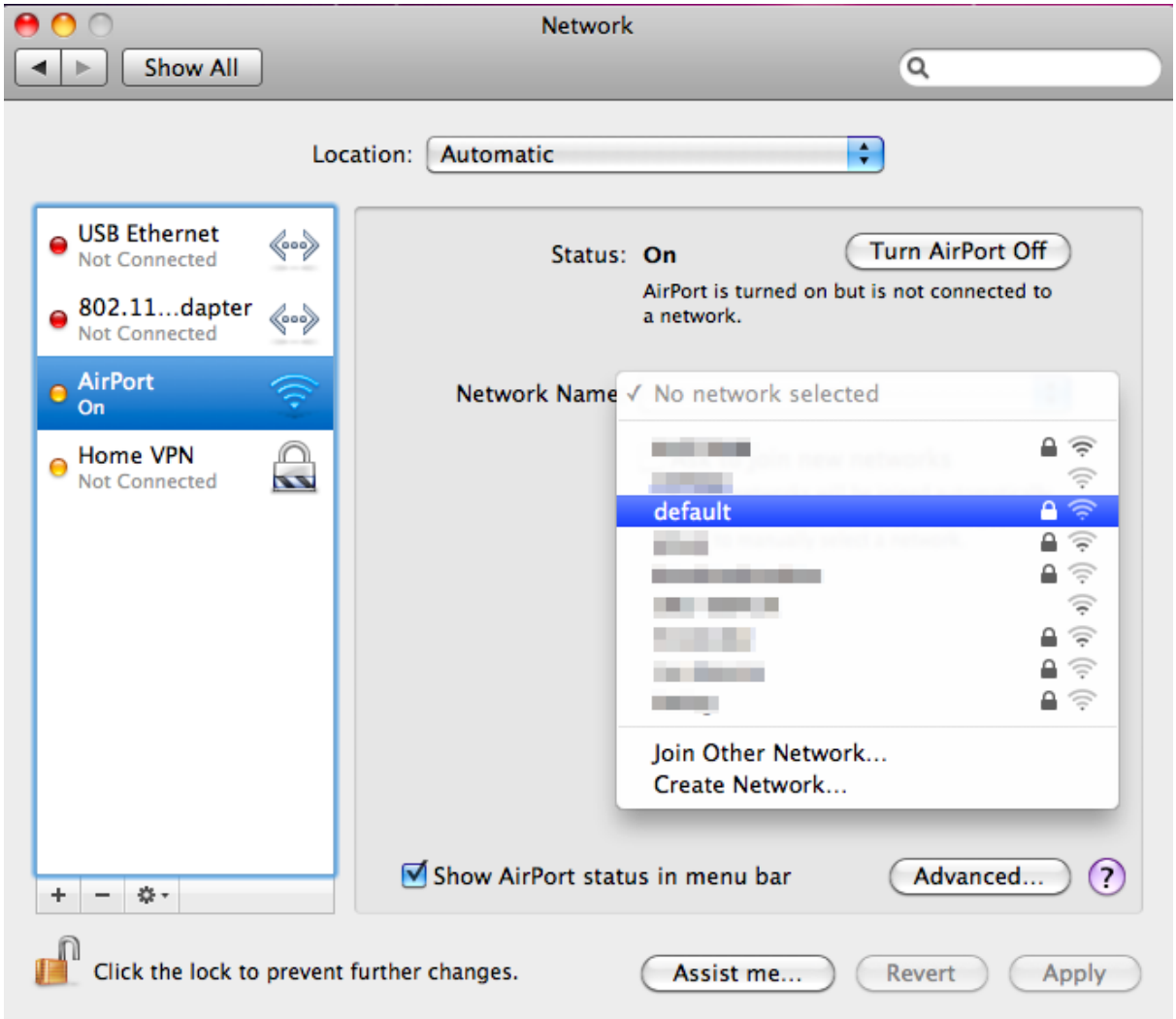


Figure 6-16 Selecting the Wireless Network

6.4 iPhone/iPod Touch/iPad

In the following sections, the **default SSID** of the WNAP-C3220E is configured to "**default**".

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

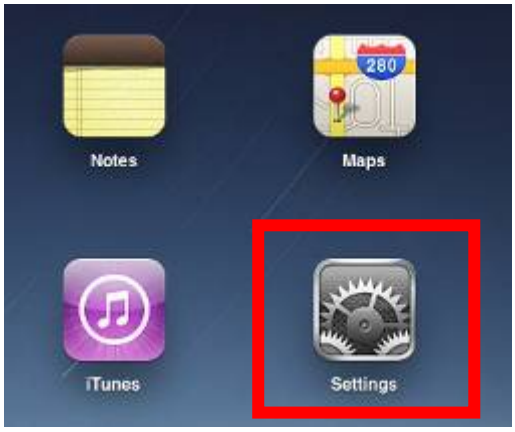


Figure 6-17 iPhone – Settings icon

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

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

(2) 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

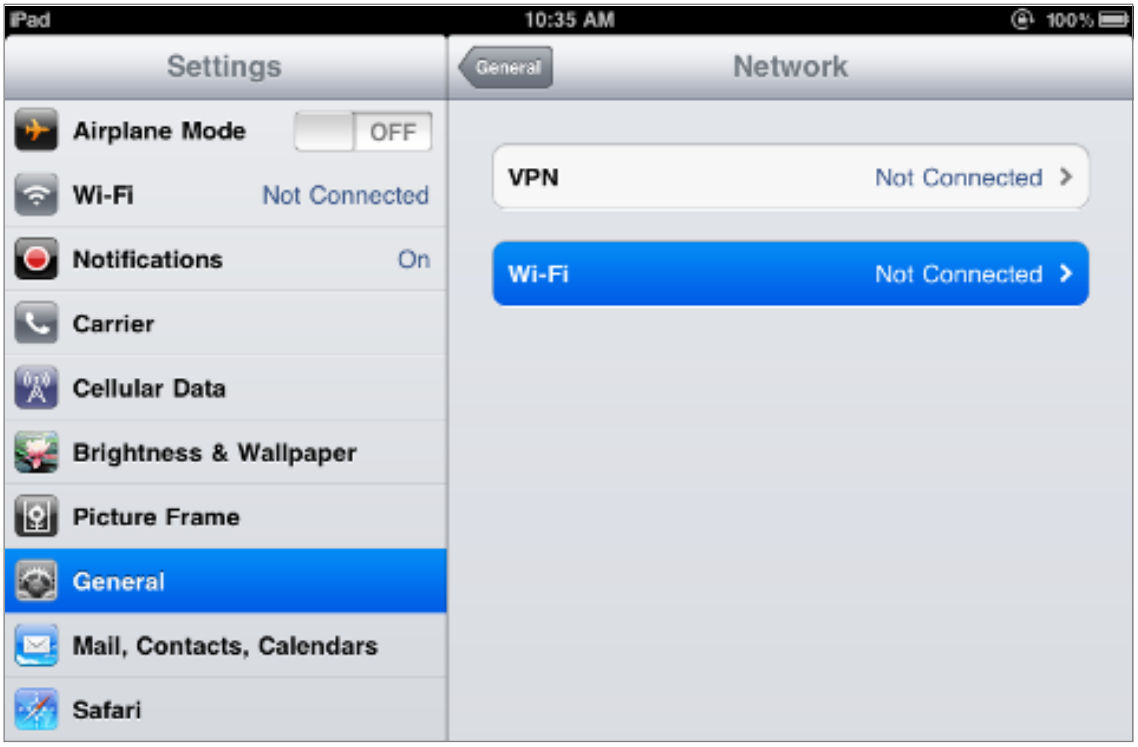


Figure 6-19 Wi-Fi Setting – Not Connected

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 Turning 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 5.7.2.1

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

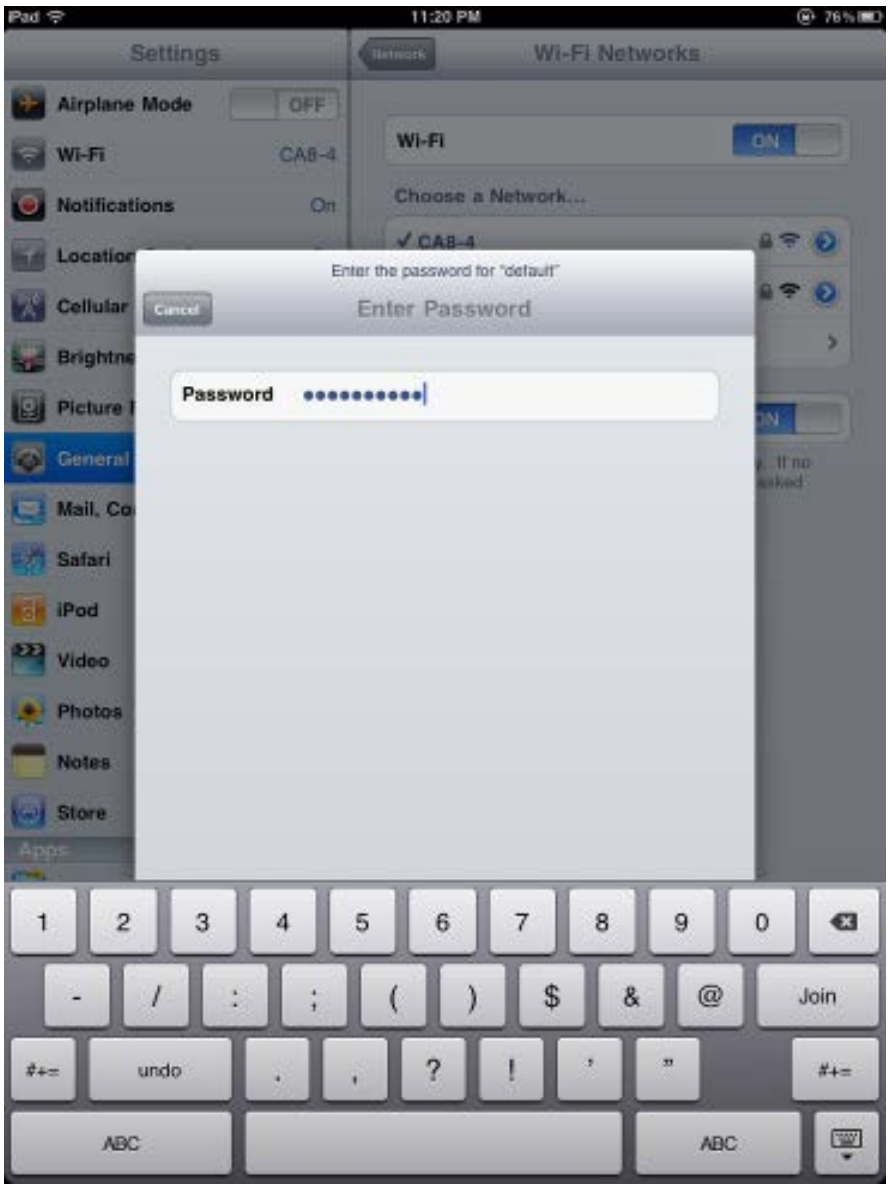


Figure 6-21 iPhone -- Entering the Password

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

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

Figure 6-22 iPhone -- Connected to the Network

Appendix A: Planet Smart Discovery Utility

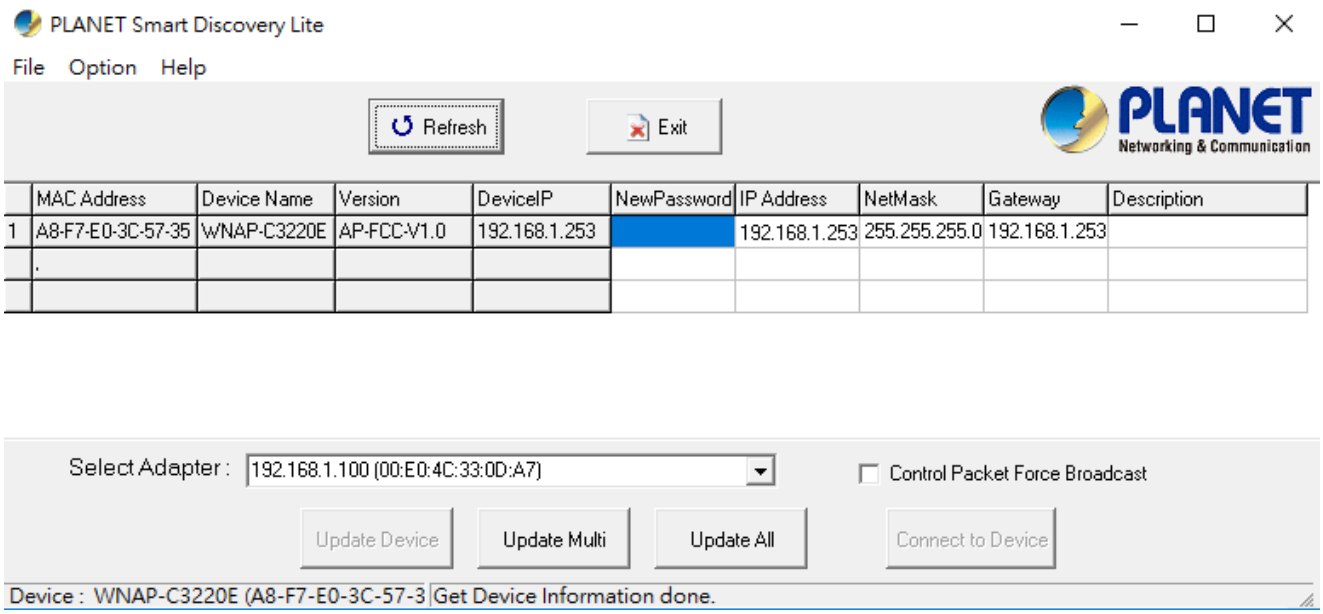
To easily list the WNAP-C3220E in your Ethernet environment, the Planet Smart Discovery Utility is an ideal solution.

The following installation instructions guide you to running the Planet Smart Discovery Utility.

Step 1: Deposit the **Planet Smart Discovery Utility** in administrator PC.

Step 2: Run this utility and the following screen appears.

Step 3: Press **"Refresh"** for the current connected devices in the discovery list as shown in the following screen:



Step 3: Press **"Connect to Device"** and then the Web login screen appears.

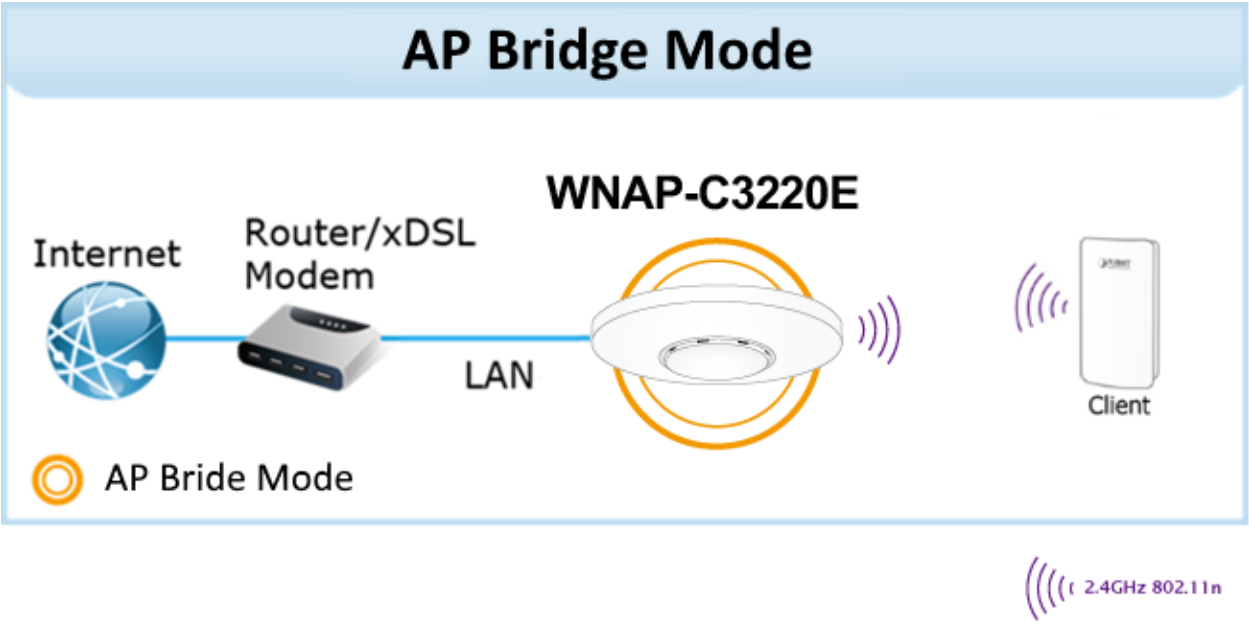
Note

The fields in white background can be modified directly and then you can apply the new setting by clicking "**Update Device**".

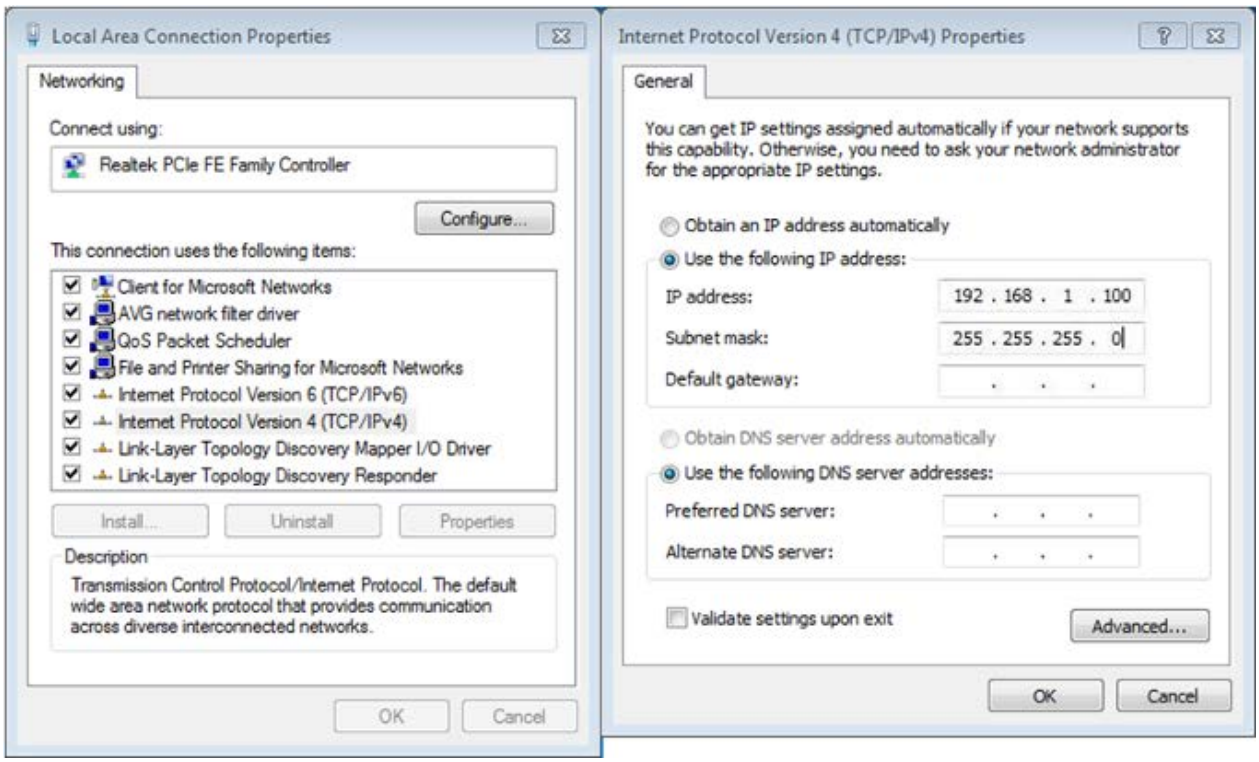
Appendix B: FAQs

Q1: How to Set Up the AP Client Connection

Topology:



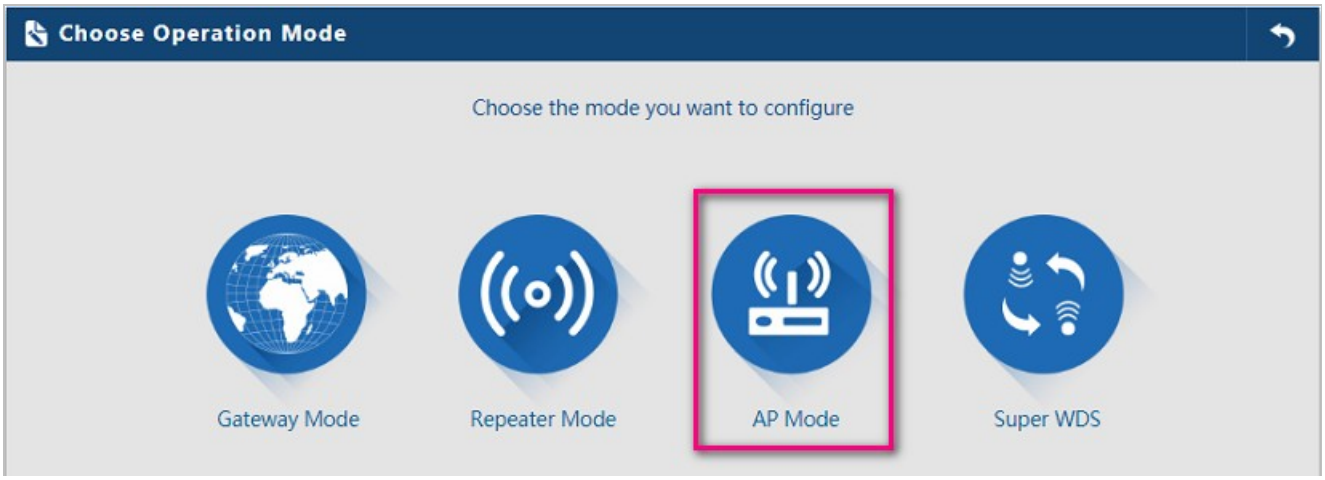
Step 1. Use static IP in the PCs that are connected with AP-1(Site-1) and AP-2 (Site-2). In this case, Site-1 is "**192.168.1.100**", and Site-2 is "**192.168.1.200**".



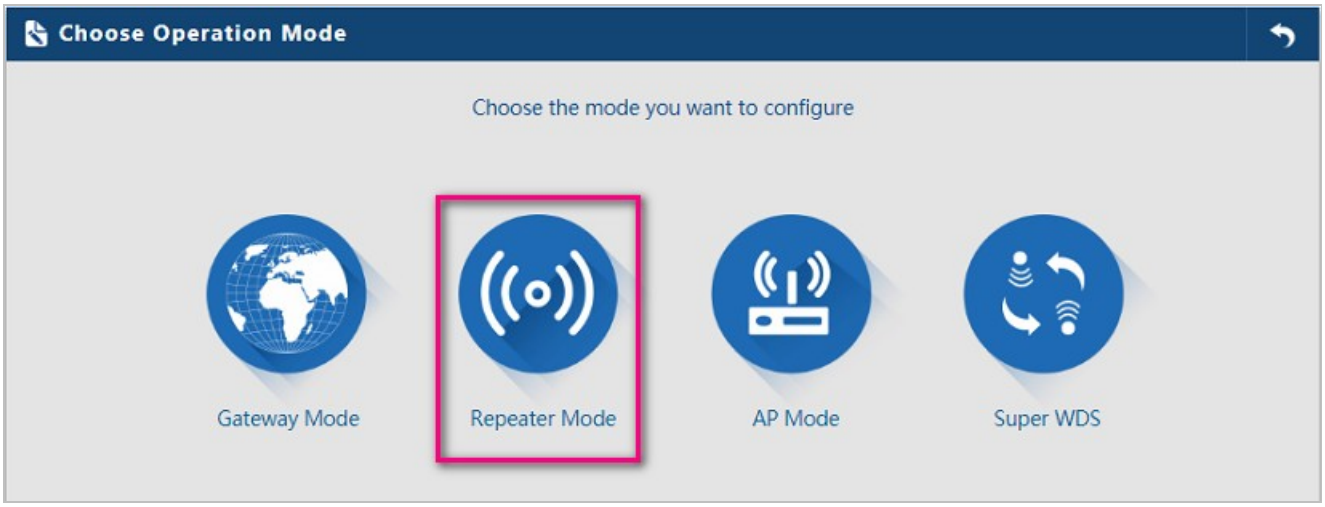
Step 2. In AP-2, change the default IP to the same IP range but different from AP-1. In this case, the IP is changed to **192.168.1.252**.

Step 3. In AP-1, go to "**Wizard**" to configure it to **AP Mode**. In AP-2, configure it to **Repeater Mode**.

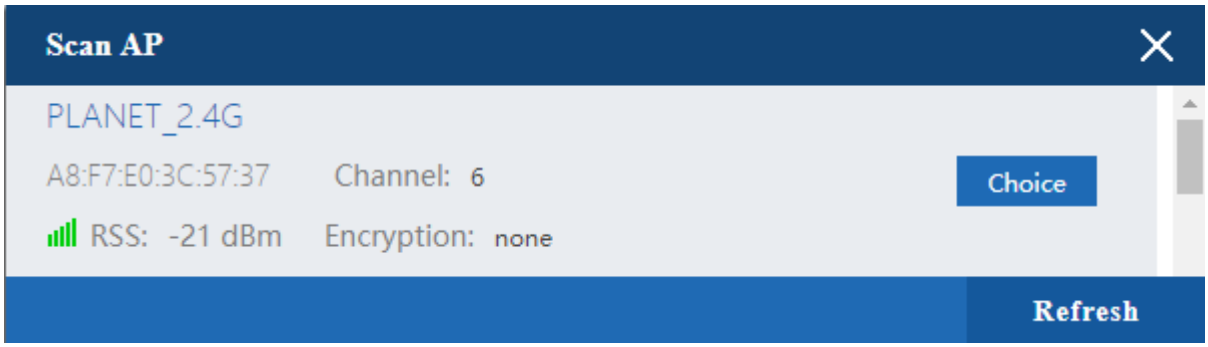
AP-1

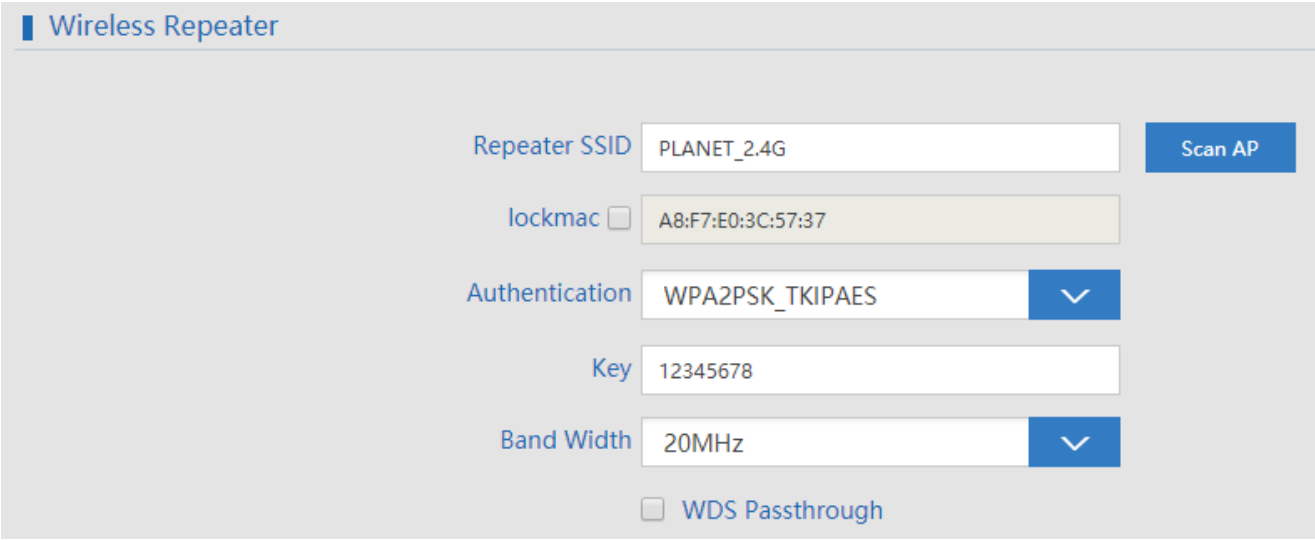


AP-2



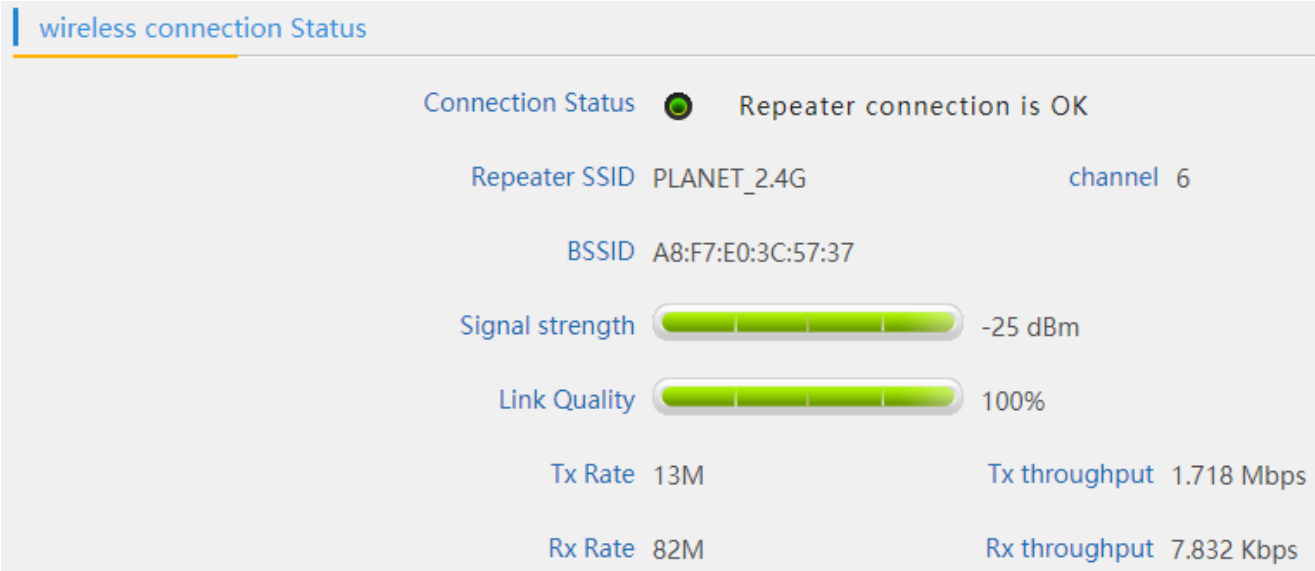
Step 4. In AP-2, press **Scan AP** to search the AP-1. You can also enter the MAC address, SSID, encryption and bandwidth if you know what they are.





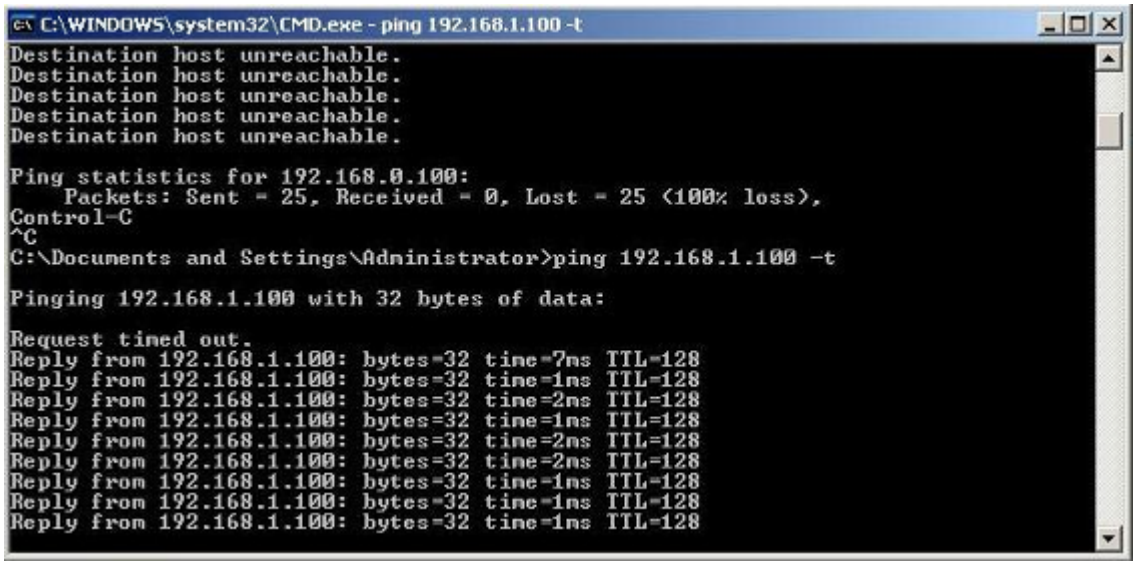
Step 5. Click "**Next**" to finish the setting.

Step 6. Click "**Device Status**" to check connection status.

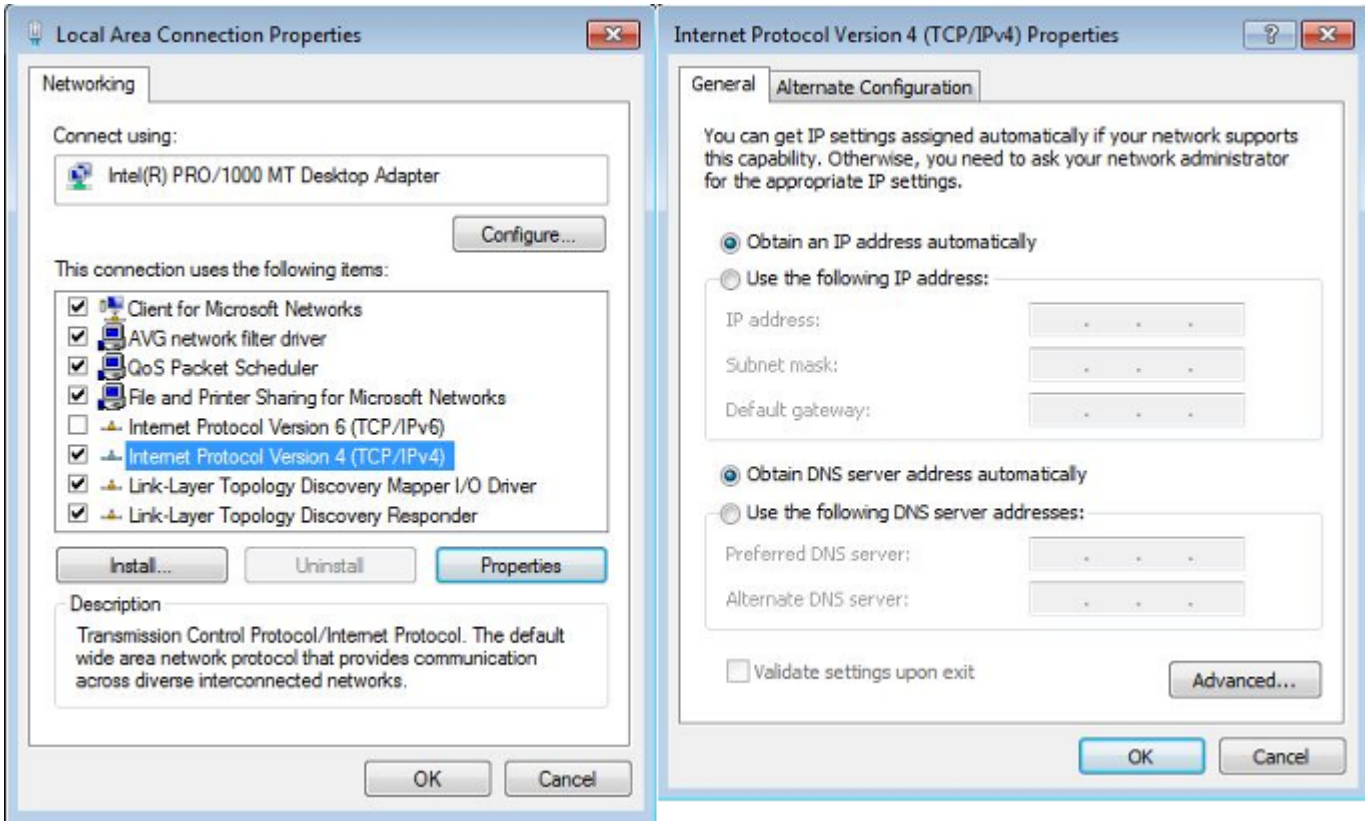


Step 7. Use command line tool to ping each other to ensure the link is successfully established.

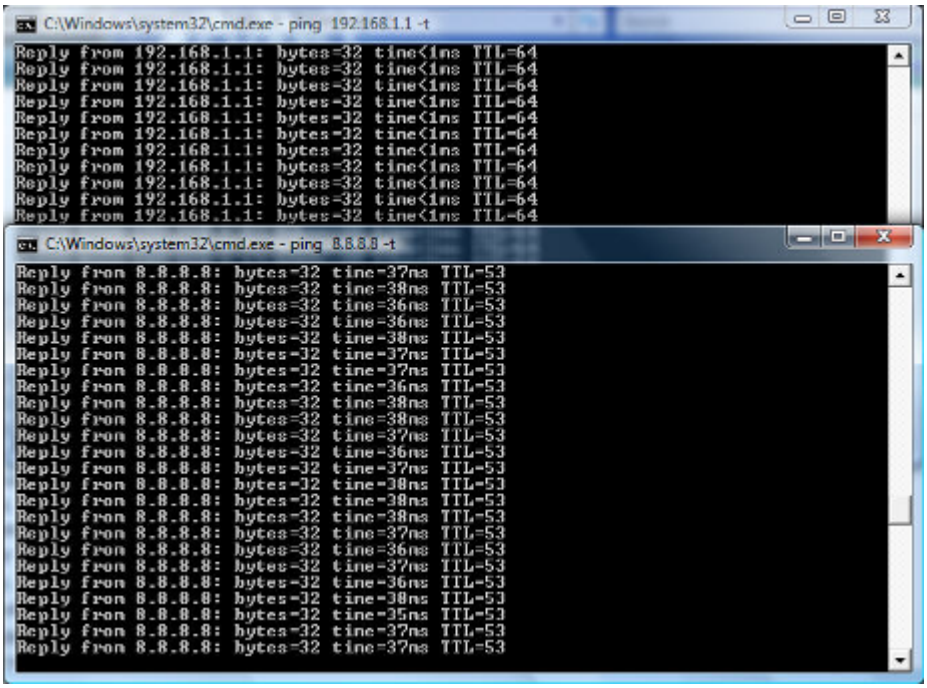
From Site-1, ping 192.168.1.200; and in Site-2, ping 192.168.1.100.



Step 8. Configure the TCP/IP settings of Site-2 to "**Obtain an IP address automatically**".



Step 9. Use command line tool to ping the DNS (e.g., Google) to ensure Site-2 can access internet through the wireless connection.



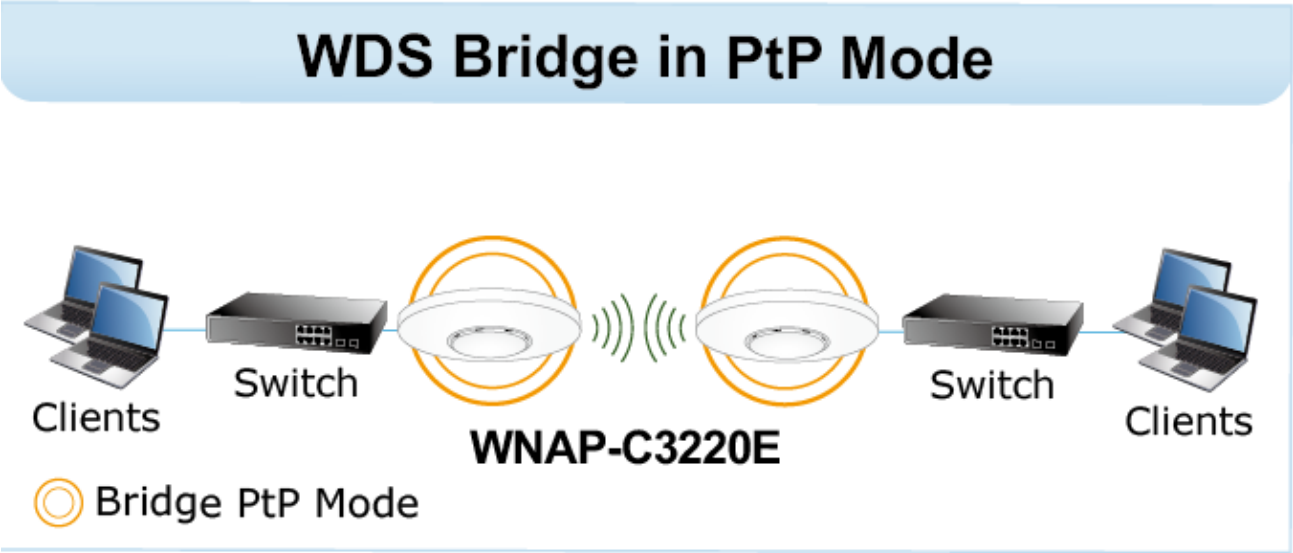
Note

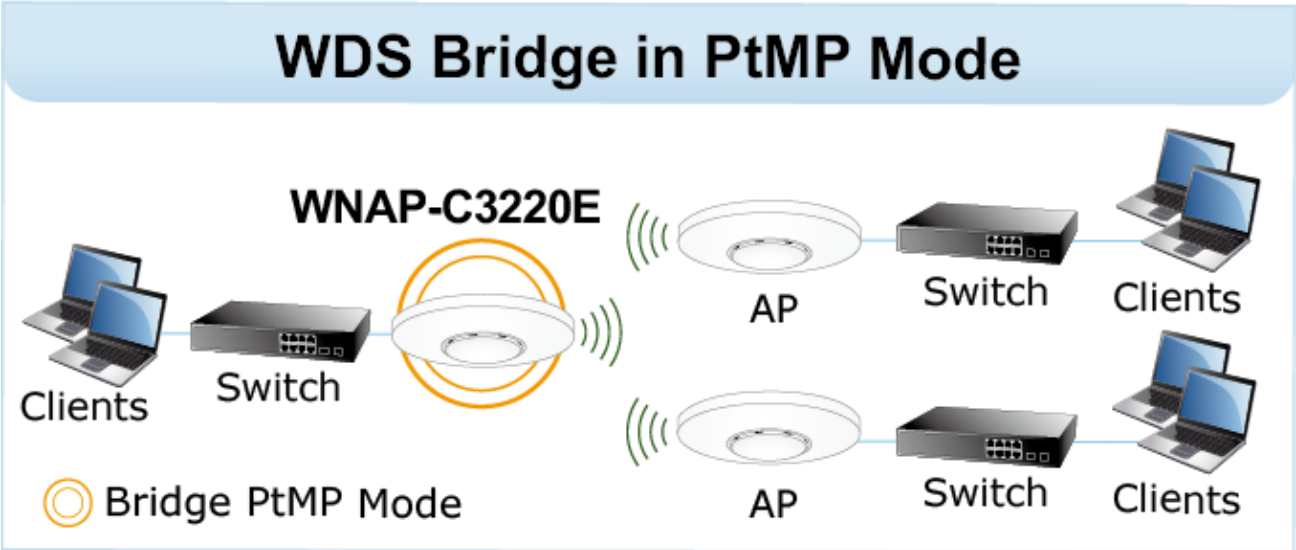
The following hints should be noted:

1) The encryption method must be the same as that of both sites if configured.
2) Both sites should be Line-of-Sight.

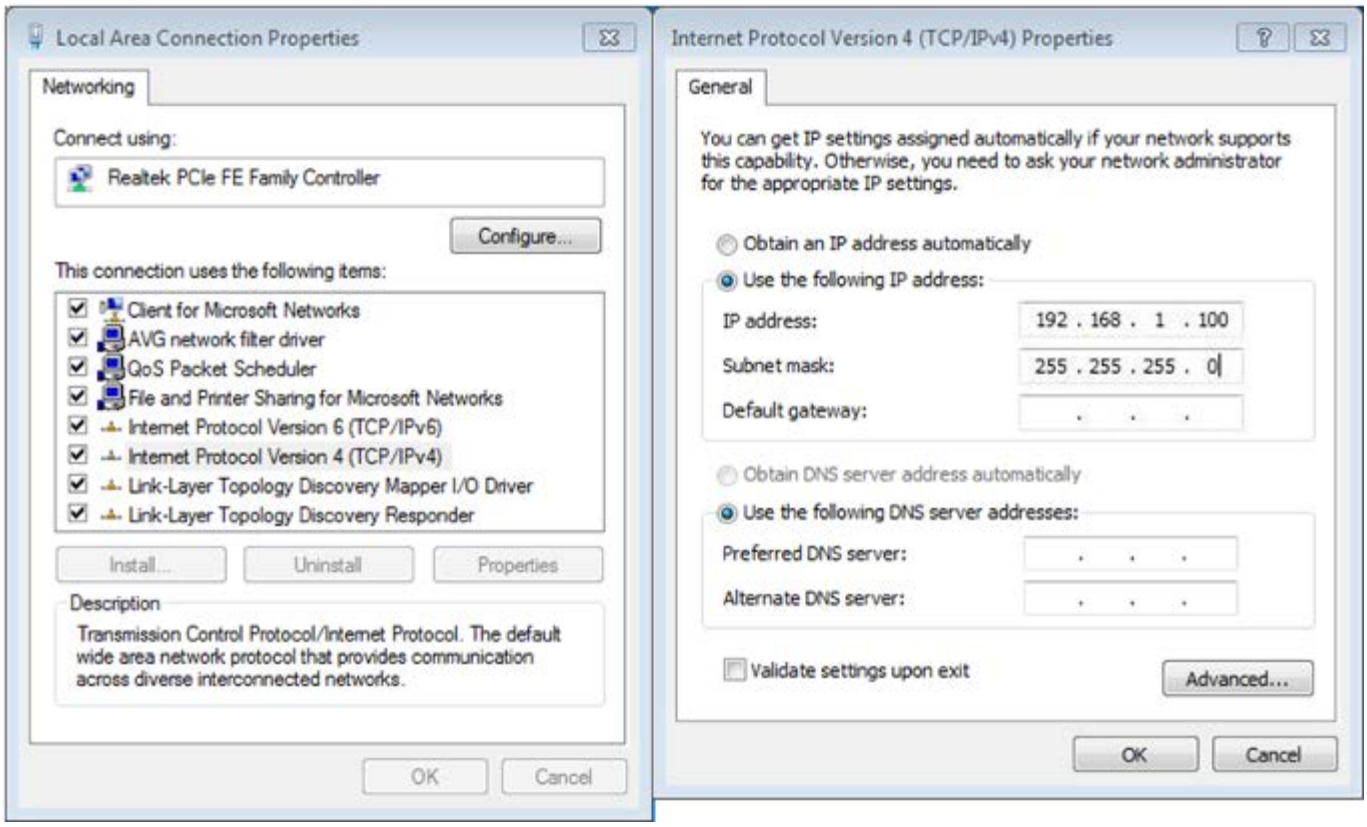
Q2: How to Set Up the WDS Connection

Topology:



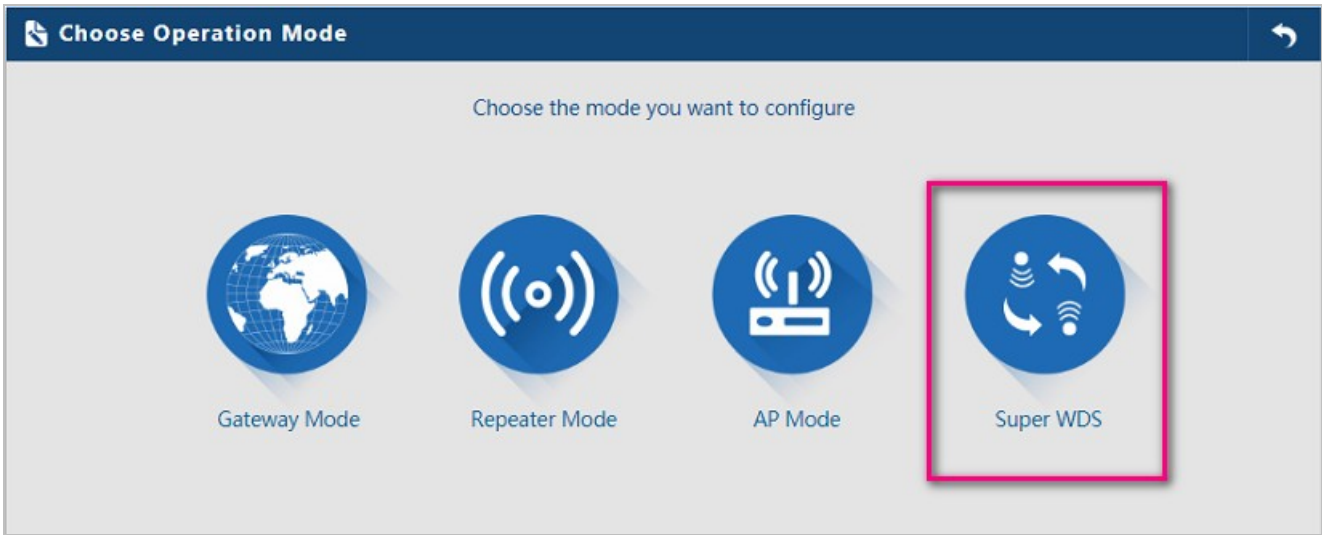


Step 1. Use static IP in the PCs that are connected with WNAP-C3220E-1 (Site-1) and WNAP-C3220E-2 (Site-2). In this case, Site-1 is "**192.168.1.100**", and Site-2 is "**192.168.1.200**".

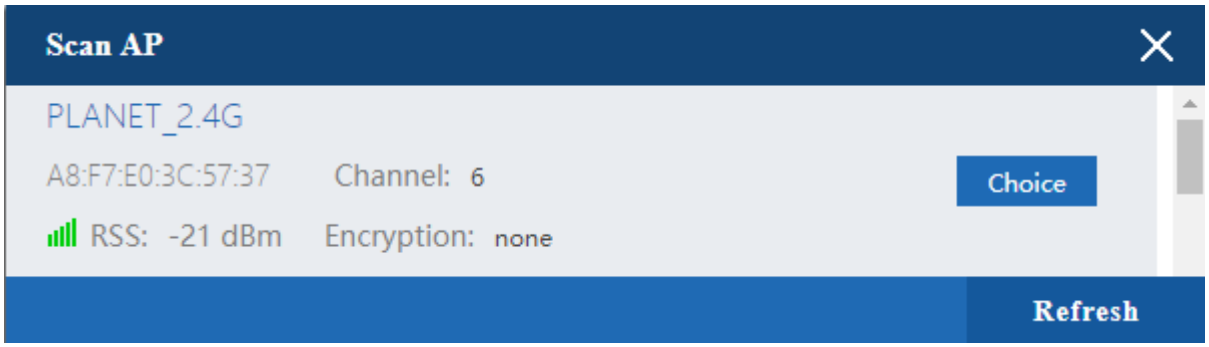


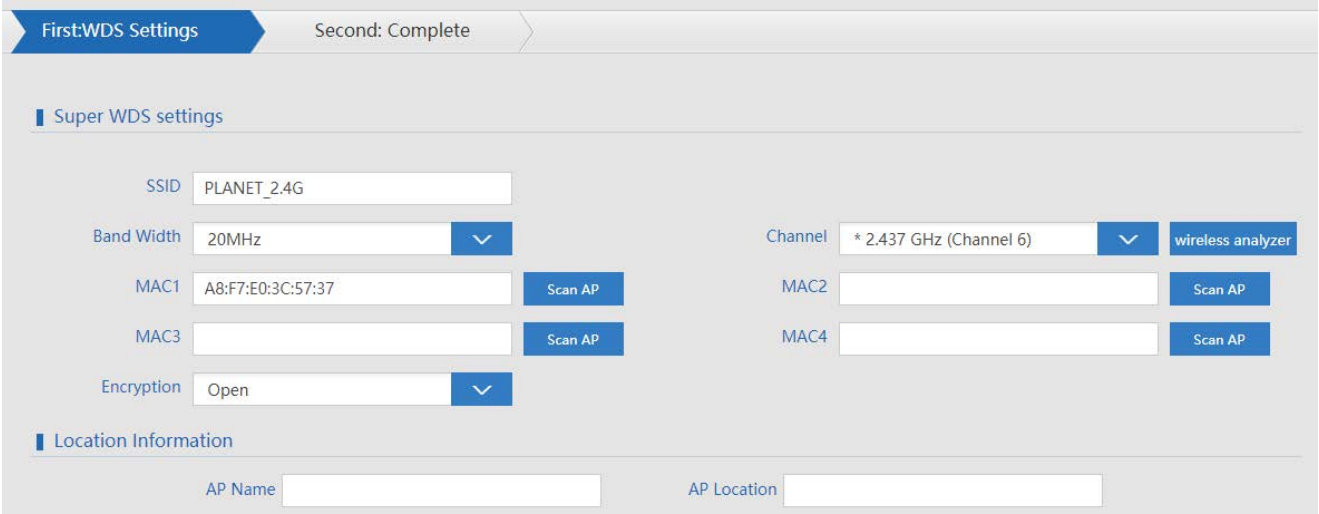
Step 2. In AP-2, change the default IP to the same IP range but different from AP-1. In this case, the IP is changed to **192.168.1.252**.

Step 3. In both APs, go to "**Wizard**" to configure it in **Super WDS** Mode.



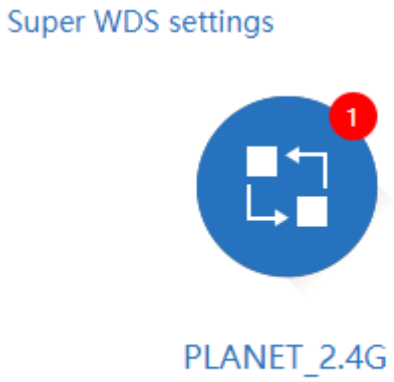
Step 4. Go to "**Wireless**" and press **Scan AP** to search the other AP. You can also enter the MAC address and SSID if you know what they are.





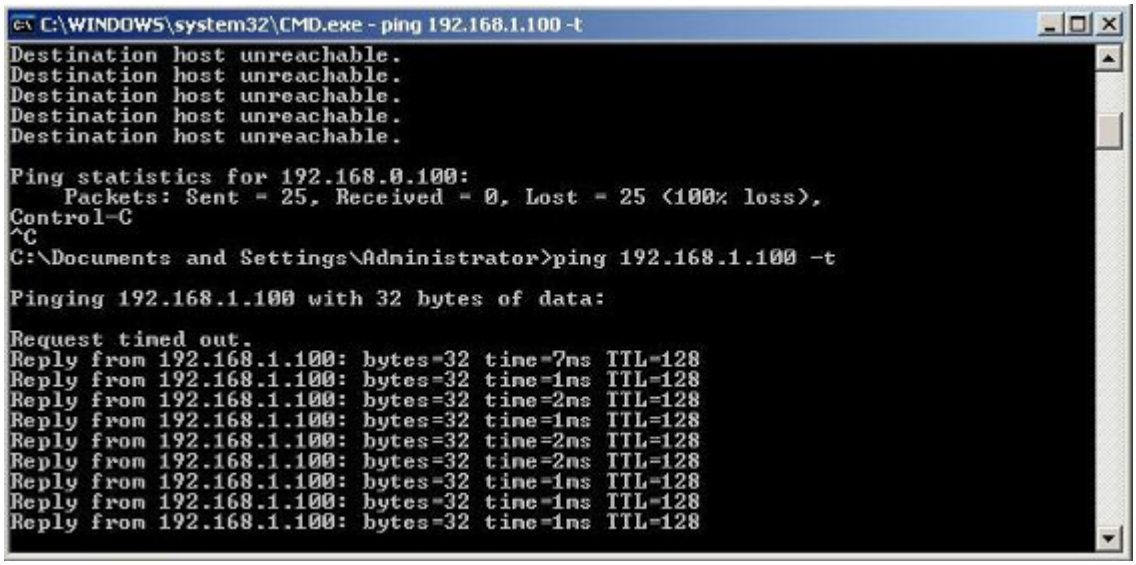
Step 5. Click "**Apply**" to finish the setting.

Step 6. Click "**Return home**" to check WDS status.



Step 7. 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.



Note

The following hints should be noted:

1) The encryption method must be the same as that of both sites if configured.
2) Both sites should be Line-of-Sight.

Appendix C: 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 into the AP. b. If all LEDs on this AP are 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 by pressing the 'reset' button for over 7 seconds. e. Use the Smart Discovery Tool to see if you can find the AP or not. f. If you did a firmware upgrade and this happens, contact your dealer of purchase for help. g. 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.

Scenario	Solution
	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. Internet is slow sometimes. Please be patient. b. Try to reset the AP and see if it's better after that. c. Try to know what computers do on your local network. If someone's transferring big files, other people will think Internet is really slow. d. 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 D: Glossary

- **802.11ac** - 802.11ac is a wireless networking standard in the 802.11 family (which is marketed under the brand name Wi-Fi), developed in the IEEE Standards Association process, providing high-throughput wireless local area networks (WLANs) on the 5 GHz band.
- **802.11n -** 802.11n builds upon previous 802.11 standards by adding MIMO (multiple-input multiple-output). MIMO uses multiple transmitter and receiver antennas to allow for increased data throughput via spatial multiplexing and increased range by exploiting the spatial diversity, perhaps through coding schemes like Alamouti coding. The Enhanced Wireless Consortium (EWC) [3] was formed to help accelerate the IEEE 802.11n development process and promote a technology specification for interoperability of next-generation wireless local area networking (WLAN) products.
- **802.11a** - 802.11a was an amendment to the IEEE 802.11 wireless local network specifications that defined requirements for an orthogonal frequency division multiplexing (OFDM) communication system. It was originally designed to support wireless communication in the unlicensed national information infrastructure (U-NII) bands (in the 5–6 GHz frequency range) as regulated in the United States by the Code of Federal Regulations, Title 47, Section 15.407.
- **802.11b -** The 802.11b standard specifies a wireless networking at 11 Mbps using direct-sequence spread-spectrum (DSSS) technology and operating in the unlicensed radio spectrum at 2.4GHz, and WEP encryption for security. 802.11b networks are also referred to as Wi-Fi networks.
- **802.11g -** specification for wireless networking at 54 Mbps using direct-sequence spread-spectrum (DSSS) technology, using OFDM modulation and operating in the unlicensed radio spectrum at 2.4GHz, and backward compatibility with IEEE 802.11b devices, and WEP encryption for security.
- **DDNS** (**D**ynamic **D**omain **N**ame **S**ystem) **-** The capability of assigning a fixed host and domain name to a dynamic Internet IP Address.
- **DHCP** (**D**ynamic **H**ost **C**onfiguration **P**rotocol) **-** A protocol that automatically configure the TCP/IP parameters for the all the PC(s) that are connected to a DHCP server.
- **DMZ** (**De**militarized **Z**one) **-** A Demilitarized Zone allows one local host to be exposed to the Internet for a special-purpose service such as Internet gaming or videoconferencing.
- **DNS** (**D**omain **N**ame **S**ystem) **-** An Internet Service that translates the names of websites into IP addresses.
- **Domain Name -** A descriptive name for an address or group of addresses on the Internet.
- **DSL** (**D**igital **S**ubscriber **L**ine) **-** A technology that allows data to be sent or received over existing traditional phone lines.
- **MTU** (**Maximum Transmission Unit**) **-** The size in bytes of the largest packet that can be transmitted.

- **NAT** (**N**etwork **A**ddress **T**ranslation) **-** NAT technology translates IP addresses of a local area network to a different IP address for the Internet.
- **PPPoE** (**P**oint to **P**oint **P**rotocol **o**ver **E**thernet) **-** PPPoE is a protocol for connecting remote hosts to the Internet over an always-on connection by simulating a dial-up connection.
- **SSID -** A **S**ervice **S**et **Id**entification is a thirty-two character (maximum) alphanumeric key identifying a wireless local area network. For the wireless devices in a network to communicate with each other, all devices must be configured with the same SSID. This is typically the configuration parameter for a wireless PC card. It corresponds to the ESSID in the wireless Access Point and to the wireless network name.
- **WEP** (**W**ired **E**quivalent **P**rivacy) **-** A data privacy mechanism based on a 64-bit or 128-bit or 152-bit shared key algorithm, as described in the IEEE 802.11 standard.
- **Wi-Fi -** A trade name for the 802.11b wireless networking standard, given by the Wireless Ethernet Compatibility Alliance (WECA, see http://www.wi-fi.net), an industry standards group promoting interoperability among 802.11b devices.
- **WLAN** (**W**ireless **L**ocal **A**rea **N**etwork) **-** A group of computers and associated devices communicate with each other wirelessly, which network serving users are limited in a local area.

EC Declaration of Conformity

English	Hereby, **PLANET Technology Corporation,** declares that this **11n Wireless AP** is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU	**Lietuviškai**	Šiuo **PLANET Technology Corporation,**, skelbia, kad **11n Wireless AP** tenkina visus svarbiausius 2014/53/EU direktyvos reikalavimus ir kitas svarbias nuostatas.
Česky	Společnost **PLANET Technology Corporation,** tímto prohlašuje, že tato **11n Wireless AP** splňuje základní požadavky a další příslušná ustanovení směrnice 2014/53/EU.	**Magyar**	A gyártó **PLANET Technology Corporation**, kijelenti, hogy ez a **11n Wireless AP** megfelel az 2014/53/EU irányelv alapkövetelményeinek és a kapcsolódó rendelkezéseknek.
Dansk	**PLANET Technology Corporation,** erklærer herved, at følgende udstyr **11n Wireless AP** overholder de væsentlige krav og øvrige relevante krav i direktiv 2014/53/EU	**Malti**	Hawnhekk, **PLANET Technology Corporation,** jiddikjara li dan **11n Wireless AP** jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 2014/53/EU
Deutsch	Hiermit erklärt **PLANET Technology Corporation,** dass sich dieses Gerät **11n Wireless AP** in Übereinstimmung mit den grundlegenden Anforderungen und den anderen relevanten Vorschriften der Richtlinie 2014/53/EU befindet". (BMWi)	**Nederlands**	Hierbij verklaart , **PLANET Technology orporation,** dat **11n Wireless AP** in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn **2014/53/EU**
Eestikeeles	Käesolevaga kinnitab **PLANET Technology Corporation,** et see **11n Wireless AP** vastab Euroopa Nõukogu direktiivi 2014/53/EU põhinõuetele ja muudele olulistele tingimustele.	**Polski**	Niniejszym firma **PLANET Technology Corporation,** oświadcza, że **11n Wireless AP** spełnia wszystkie istotne wymogi i klauzule zawarte w dokumencie „Directive **2014/53/EU**.
Ελληνικά	*ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ* , **PLANET Technology Corporation,** *ΔΗΛΩΝΕΙ ΟΤΙ ΑΥΤΟ* **11n Wireless AP***ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ* ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ2014/53/EU	**Português**	**PLANET Technology Corporation**, declara que este **11n Wireless AP** está conforme com os requisitos essenciais e outras disposições da Directiva **2014/53/EU**.
Español	Por medio de la presente, **PLANET Technology Corporation,** declara que **11n Wireless AP** cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 2014/53/EU	**Slovensky**	Výrobca **PLANET Technology Corporation,** týmto deklaruje, že táto **11n Wireless AP** je v súlade so základnými požiadavkami a ďalšími relevantnými predpismi smernice 2014/53/EU.
Français	Par la présente, **PLANET Technology Corporation,** déclare que les appareils du **11n Wireless AP** sont conformes aux exigences essentielles et aux autres dispositions pertinentes de la directive 2014/53/EU	**Slovensko**	**PLANET Technology Corporation**, **s tem potrjuje,** da je ta **11n Wireless AP** skladen/a z osnovnimi zahtevami in ustreznimi določili Direktive **2014/53/EU**
Italiano	Con la presente , **PLANET Technology Corporation,** dichiara che questo **11n Wireless AP** è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 2014/53/EU.	**Suomi**	**PLANET Technology Corporation,** vakuuttaa täten että **11n Wireless AP** tyyppinen laite on direktiivin 2014/53/EU oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Latviski	Ar šo **PLANET Technology Corporation,** apliecina, ka šī **11n Wireless AP** atbilst Direktīvas 2014/53/EU pamatprasībām un citiem atbilstošiem noteikumiem.	**Svenska**	Härmed intygar, **PLANET Technology Corporation,** att denna **11n Wireless AP** står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv **2014/53/EU**.