PLANET
Networking & Communication

User's Manual

300Mbps 802.11n Wireless Ceiling Mount AP / Range Extender

► **WNAP-C3220**

www.PLANET.com.tw

Copyright

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.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Federal Communication Commission (FCC) Radiation Exposure Statement

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

R&TTE Compliance Statement

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

Safety

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

National Restrictions

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

Country	Restriction	Reasons/remarks
Bulgaria	None	General authorization required for outdoor use and public service
France	Outdoor use; limited to 10 mW e.i.r.p. within the band 2454-2483.5 MHz	Military Radiolocation use. 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 for PLANET 300Mbps 802.11n Wireless Ceiling Mount AP/ Range Extender

Model: WNAP-C3220

Rev: 2.0 (July, 2014)

Part No. EM-WNAP-C3220v2_v2.0 (**2081-E10400-003**)

CONTENTS

FIGURE

Chapter 1. Product Introduction

1.1 Package Contents

Thank you for choosing PLANET WNAP-C3220. Before installing the AP, please verify the contents inside the package box.

WNAP-C3220

Quick Installation Guide

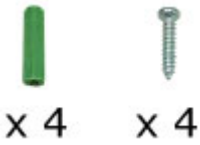
CD-ROM

(User Manual included)

Ethernet Cable

Power Adapter

Mounting Kit



Note

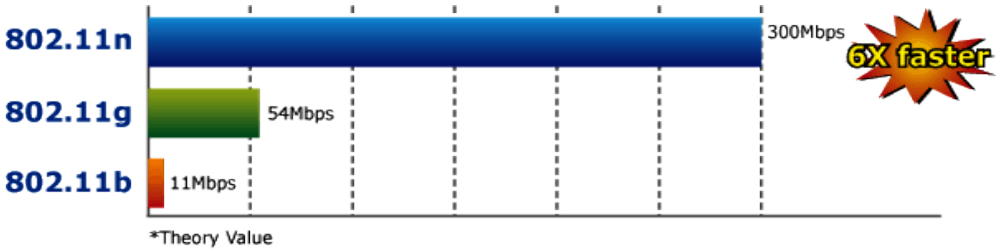
If there is any item missing or damaged, please contact the seller immediately.

1.2 Product Description

PLANET WNAP-C3220 is a stylish PoE Wireless Access Point featuring the latest wireless technology and unique ceiling-mount artistic design. It offers **300Mbps 802.11n wireless** speed, **multiple operation modes** and **802.3af Power over Ethernet** features to increase client mobility and speed within a network. **Sleek styling housing** and **ceiling mountable** design make the WNAP-C3220 blend unobtrusively into any ceiling or wall for various environments. This perfect product also creates a secure, cost-effective and highly-scalable wireless LAN infrastructure. It is ideal for enterprises, hotels, hospitals and home users to extend wireless network coverage.

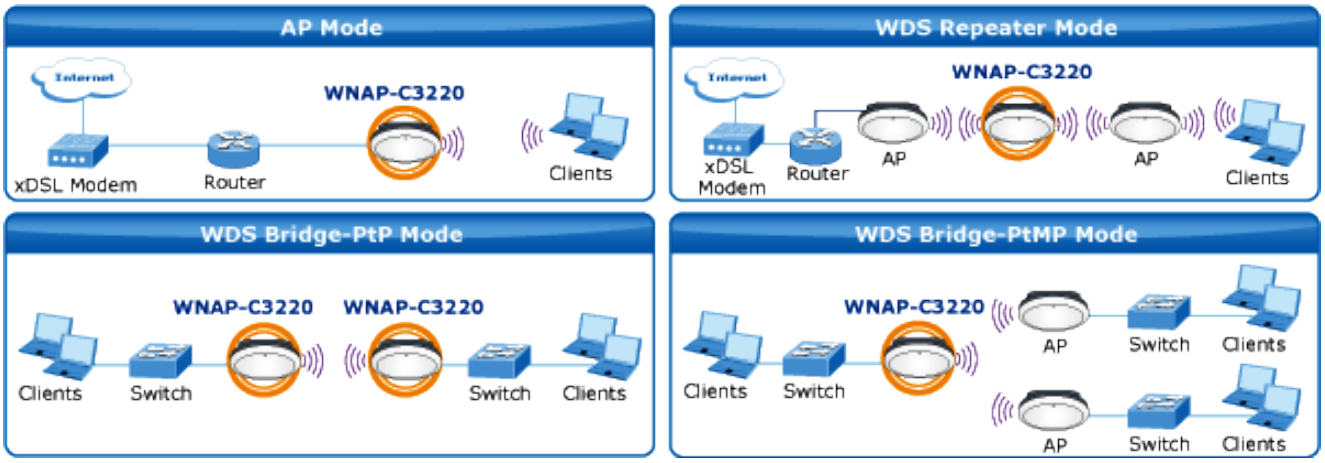
Ultra High-speed 802.11n Wireless Type

The WNAP-C3220 features the latest IEEE 802.11n radio with 2T2R MIMO antenna technology to provide improved wireless speed and coverage with up to 300Mbps upload and download data rate. The incredibly wireless speed makes it ideal for handling multiple HD movie streams, high-resolution on-line game, stereo music, and VoIP and data streams at the same time stably and smoothly. It is also backward compliant with 802.11g and 802.11b standards and thus it is no need to change the existing network for convenient maintenance. Just connect to the WNAP-C3220 and you can immediately enjoy the high-speed wireless sharing.



Multiple Operating Modes

The WNAP-C3220 supports multiple devices in a wireless communication connectivity: wireless **AP**, wireless **Repeater**, and **WDS Point-to-Point (PtP)** and **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.



Advanced Wireless Security

In aspect of security, besides 64/128-bit WEP encryption, the WNAP-C3220 integrates WPA/WPA2, WPA-PSK/WPA2-PSK and 802.1x authority to secure and protect your wireless LAN. It provides the wireless MAC filtering and SSID broadcast control to consolidate the wireless network security and prevent unauthorized wireless connection.

Unique Ceiling-mountable Design

Featuring attractive flying saucer appearance and ceiling-mountable design, the WNAP-C3220 can be firmly adsorbed on the ceiling or the wall, which is easy and convenient for client-side installation. Its streamlined body without protruding antennas also gives effects of embellishment on the surroundings.

Wireless Range Extender for Home

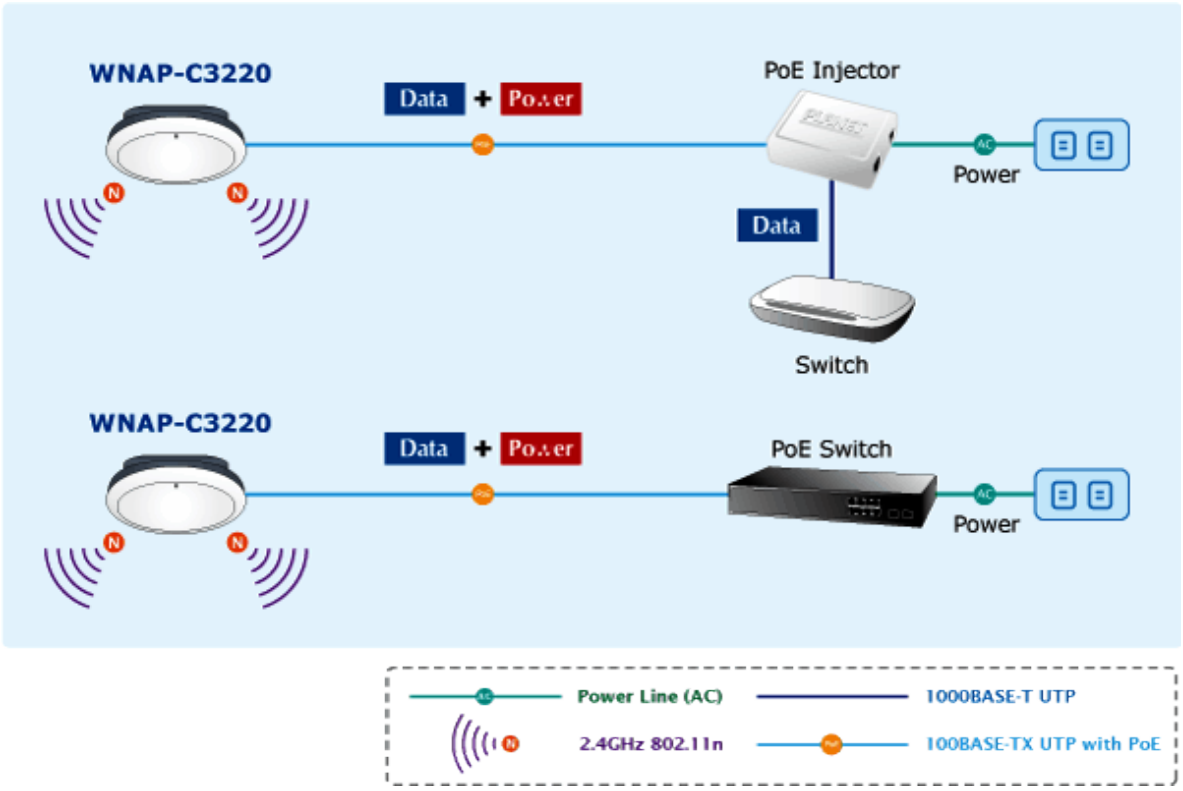
The WNAP-C3220 is the characterization of ceiling mounting design and advanced MIMO technology which reduces the effect of dead spot, so that it can get a better coverage of the existing wireless network. The WDS and repeater modes by the WNAP-C3220 minimize installation and cabling costs.

Easy Installation and Management

With user-friendly Web UI and step by step wizard of the WNAP-C3220, it is easy for users to install the device, even for a user who never experiences in setting up a wireless network. Its SNMP feature allows the system administrator to remotely monitor and control the network devices more efficiently.

Flexible Deployment with PoE Feature

Compliant with IEEE 802.3af Power over Ethernet standard, the WNAP-C3220 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 frees you from worry about the power outlet locations.


WNAP-C3220
Data + Power
PoE Injector
Power
Data
Switch
WNAP-C3220
Data + Power
PoE Switch
Power
Power Line (AC)
1000BASE-T UTP
2.4GHz 802.11n
100BASE-TX UTP with PoE

1.3 Product Features

- **Standard Compliant Hardware Interface**
  - Complies with IEEE 802.11b/g/n Wireless LAN speed up to 300Mbps
  - 1 x 10/100BASE-TX Port with 1-port PoE (PD, Powered Device)
  - Supports 802.3af standard-based PoE or local AC power
- **Secure Network Connection**
  - Advanced security: 64/128-bit WEP, WPA/WPA2, WPA-PSK/WPA2-PSK (TKIP/AES encryption) and Radius Authentication
  - Supports MAC address Filtering to limit the connected wireless clients
  - Supports Multiple SSIDs to allow users to access different networks through a single AP
- **Multiple Operating Modes, Multiple Mounting Options**
  - Multiple operating modes including AP, Repeater, WDS Point to Point and WDS Point to Multiple Point
  - Stylish and ceiling mountable design
- **Easy Installation & Management**
  - Step by Step configuration with Intelligent Setup Wizard
  - User-friendly Web and SNMP-based management interface
  - System status monitoring includes Associated Client List, System Log
  - Centralized Management Utility allows administrator to monitor and configure

1.4 Product Specifications

Product	**WNAP-C3220** **300Mbps 802.11n Wireless Ceiling Mount Range Extender**	
Hardware Specifications		
Interface	LAN:	1x 10/100BASE-TX, Auto-MDI/MDIX, 802.3af PoE compliant
	Wireless:	IEEE 802.11b/g/n
PoE	IEEE 802.3af PoE	
Antenna	Built-in 3dBi antenna x2	
Reset Button	Reset button on rear panel Press over 7 seconds to reset the device to factory default	
LED Indicators	PWR/SYS LED x1	
Material	Plastic	
Dimensions (Φ x H)	144 x 33mm	
Weight	165g	
Power Requirements	Power Supply: DC 12V, 1A Power over Ethernet: IEEE 802.3af PoE, DC 48V, 0.35A	
Power Consumption	11.26W (max.)	
Wireless Interface Specifications		
Modulation Type	Transmission / Emission Type: DSSS / OFDM Data modulation type: OFDM: BPSK, QPSK, 16-QAM, 64-QAM, DBPSK, DQPSK, CCK	
Frequency Band	2.412~2.484GHz	
Operating Channel	America/ FCC: 2.412~2.462GHz (11 Channels) Europe/ ETSI: 2.412~2.472GHz (13 Channels)	
Channel Width	20 or 20/40MHz	
Data Rate	IEEE 802.11b: 1/ 2/ 5.5/ 11Mbps IEEE 802.11g: 6/ 9/ 12/ 18/ 24/ 36/ 48/ 54Mbps IEEE 802.11n: 300 Mbps in 40MHz mode / 150Mbps in 20MHz mode	
Receiver Sensitivity	IEEE 802.11b: -92dBm @ 1Mbps; -85dBm @ 11Mbps, PER < 8% IEEE 802.11g: -88dBm @ 6Mbps; -73dBm @ 54Mbps, PER <10% IEEE 802.11n: -90dBm @ MCS8; -70dBm @ MCS15, PER <10%	
RF Power (Intentional Radiator)	20dBm (max.)	
Transmission Distance	Indoor up to 100m Outdoor up to 300m (it is limited to the environment)	
Wireless Management Features		
Wireless Modes	Access Point, WDS PtP, WDS PtMP, Universal Repeater	
Multiple-SSIDs	Up to 4	
WDS Remote Peers	Up to 4	

Encryption Security	WEP (64/128-bit) WPA-PSK (TKIP) / WPA2-PSK (AES) WPA (TKIP) / WPA2 (AES) 802.1x Authentication	
Wireless Security	Enable/Disable SSID Broadcast	
	Wireless LAN ACL (Access Control List) MAC filtering	
Wireless Advanced	AP Isolation: Enable it to isolate each connected wireless client	
	Supports 802.11e WMM (Wi-Fi Multimedia)	
Max. Supported Clients	Wired	253
	Wireless	40
System Management	Web-based (HTTP) management interface	
	Supports SNMP V1 and V2C	
	Supports Planet Smart Discovery & Centralized Management Utility	
	System Log	
Standards Conformance		
IEEE Standards	IEEE 802.11n IEEE 802.11g IEEE 802.11b IEEE 802.11i IEEE 802.3 10Base-T IEEE 802.3u 100Base-TX	
Others Protocols and Standards	CSMA/CA, CSMA/CD, TCP/IP, DHCP, ICMP, SNTP	
Environment & Certification		
Temperature	Operating: -10 ~ 45 degrees C Storage: -30 ~ 70 degrees C	
Humidity	Operating: 10 ~ 90% (non-condensing) Storage: 10 ~ 90% (non-condensing)	
Regulatory	CE, RoHS, WEEE	

Chapter 2. Hardware Installation

Please follow the instructions below to connect the WNAP-C3220 to the existing network devices and your computers.

2.1 Product Outlook

- **Dimensions**: 144 x 33mm (Φ x H)
- **Diagram :**

Front View – LED Display	Side View – Reset Button
	
Rear View – DC Jack Port	**Rear View – LAN Port**
	

Figure 2-1 WNAP-C3220 Product Outlook

2.1.1 Panel Layout

The front and rear panel provide a simple interface monitoring the AP. Figure 2-2 and Figure 2-3 show the hardware interface of the WNAP-C3220.

Front Panel - LED

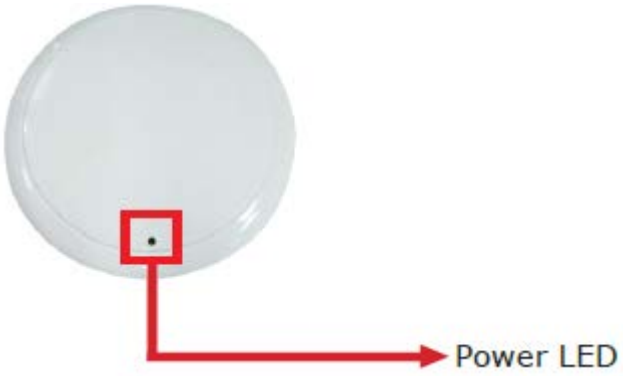


Figure 2-2 WNAP-C3220 Front Panel Layout

Rear Panel – Port & Button

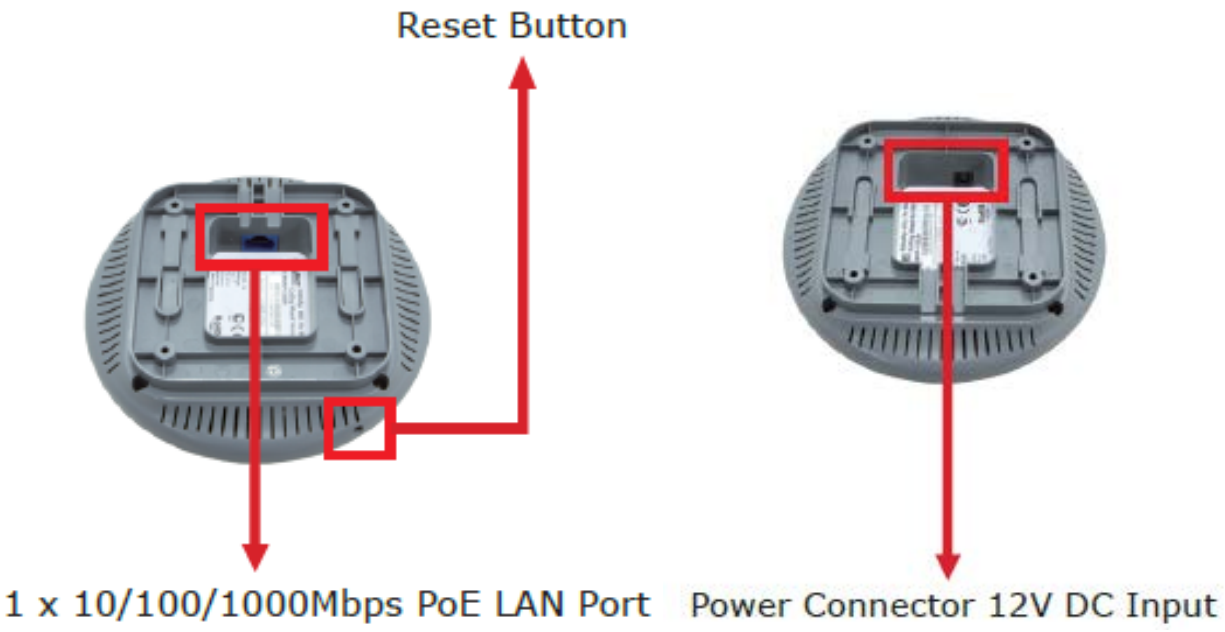


Figure 2-3 WNAP-C3220 Rear Panel Layout

2.1.2 Hardware Description

LED definition

Object	Color	State	Description
PWR	Green	On	Power on
		Flashing	The system is initializing
		Off	LED enabled: Neither Power nor the device is malfunctioned LED disabled: the device power off or the LED is switched to off

Button definition

Object	Description
Reset	Press the Reset button over 7 seconds and then release it. The system restores to the factory default settings.

H/W Interface definition

Object	Description
PoE Port (802.3af PoE)	10/100Mbps RJ45 port , Auto MDI/ MDI-X Connect PoE port to the IEEE 802.3af PoE switch to power on the device.
Power Connector	Connect this port to the 12V DC power adapter to power on the device.

Chapter 3. Connecting to the AP

3.1 System Requirements

- Broadband Internet Access Service (Cable/xDSL/Ethernet connection)
- One PoE switch (supply power to the WNAP-C3220)
- PC with a working Ethernet adapter and an Ethernet cable with RJ45 connectors
- PC 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.
- The above PC is installed with Web browser.

Note

1. The AP in the following instructions means PLANET WNAP-C3220.
2. It is recommended to use Internet Explore 7.0 or above 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. After that, 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. Attach the bracket to 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 with a screw driver.

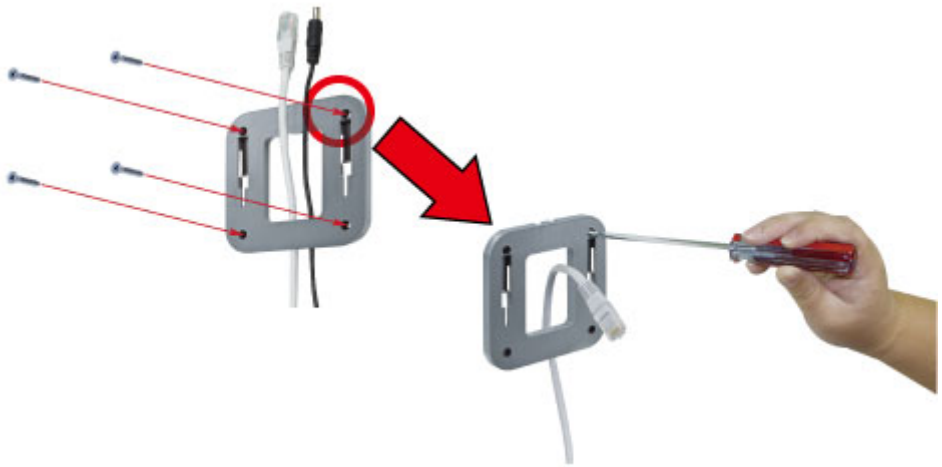


Figure 3-1 WNAP-C3220 Installation Diagram 1

Step 2. Plug the RJ45 Ethernet cable into the WNAP-C3220.

Figure 3-2 WNAP-C3220 Installation Diagram 2

Step 3. Plug the power adapter into the WNAP-C3220. If the WNAP-C3220 is connected to an 802.3af PoE switch in Step 2, you don't have to plug the power adapter.

Figure 3-3 WNAP-C3220 Installation Diagram 3

Step 4. Attach the WNAP-C3220 to the mounting bracket.

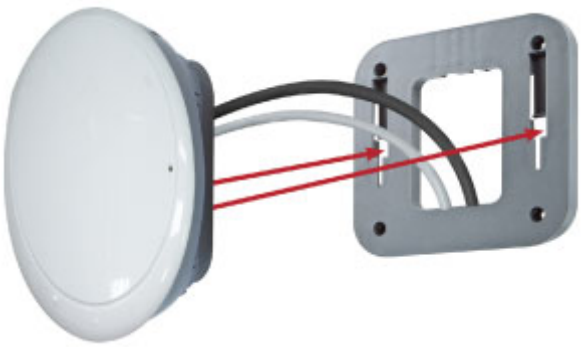


Figure 3-4 WNAP-C3220 Installation Diagram 4

Step 5. Installation is successfully completed.

Figure 3-5 WNAP-C3220 Installation Diagram 5

Note

1. ONLY use the power adapter supplied with the WNAP-C3220. Otherwise, the product may be damaged.
2. For the power supply of the WNAP-C3220, you could use either IEEE 802.3af PSE device or 12V DC adapter. Please do not use 12V adapter and PSE device at the same time. It may damage the WNAP-C3220 itself.

Chapter 4. Quick Installation Guide

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

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

4.1 Manual Network Setup - TCP/IP Configuration

The default IP address of the WNAP-C3220 is **192.168.1.253**. And the default Subnet Mask is 255.255.255.0. These values can be changed as you desire. In this guide, we use all the default values for description.

Connect the WNAP-C3220 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-C3220 by PoE from PoE switch.

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

4.1.1 Configuring the IP Address Manually

Summary:

- Set up the TCP/IP Protocol for your PC.
- Configure the network parameters. The IP address is 192.168.1.xxx (if the default IP address of the WNAP-C3220 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), Subnet Mask is 255.255.255.0.

1 Select **Use the following IP address** radio button to configure the IP address of the PC.

2 For example, as the default IP address of the WNAP-C3220 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.

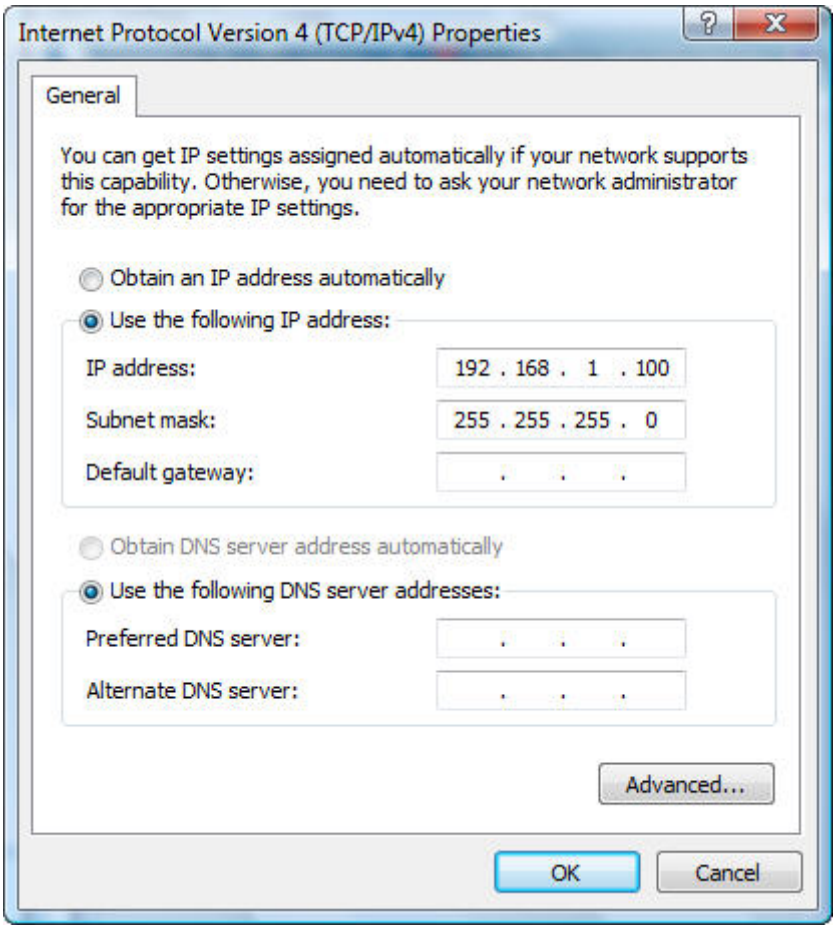


Figure 4-1 TCP/IP Setting

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 on **Windows 7** OS. Please follow the steps below:

1. Click on **Start > Run**.
2. Type "**cmd**" in the Search box.

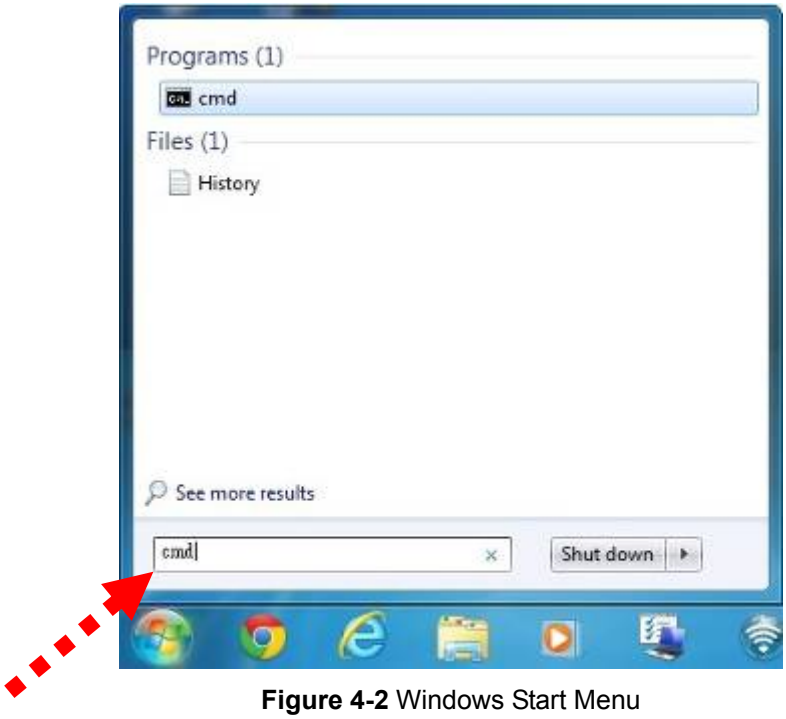


Figure 4-2 Windows Start Menu

3. Open a command prompt and 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 successfully.

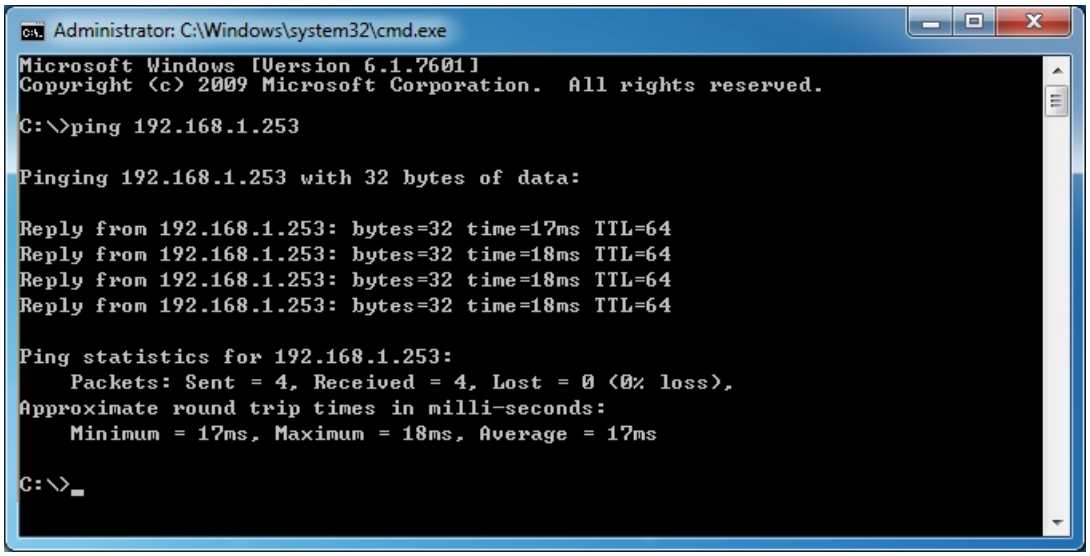


Figure 4-3 Successful result of Ping command

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

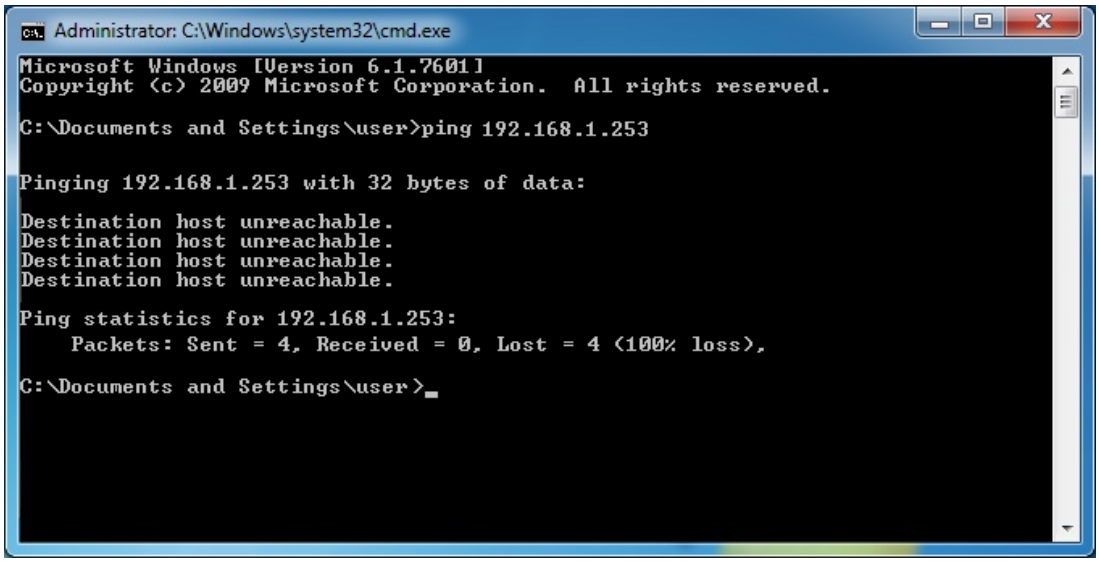


Figure 4-4 Failed result of Ping command

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.

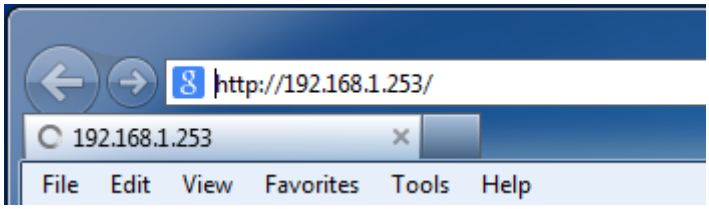


Figure 4-5 Login by default IP address

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

Figure 4-6 Login Window

Default IP Address: **192.168.1.253**

Default User Name: **admin**

Default Password: **admin**

Note

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

Chapter 5. Configuring the AP

This chapter delivers a detailed presentation of AP's functionalities and features under 7 main menus below, allowing you to manage the AP with ease.

Figure 5-1 Main Menu

During operation, if you are not clear about a certain feature, you can simply click the "Help" button to read all the related helpful info.

5.1 Status

On this page, you can view information about the current running status of WNAP-C3220, including LAN interface, wireless interface settings and status, and firmware version information.

■ System Status

This section displays system status.

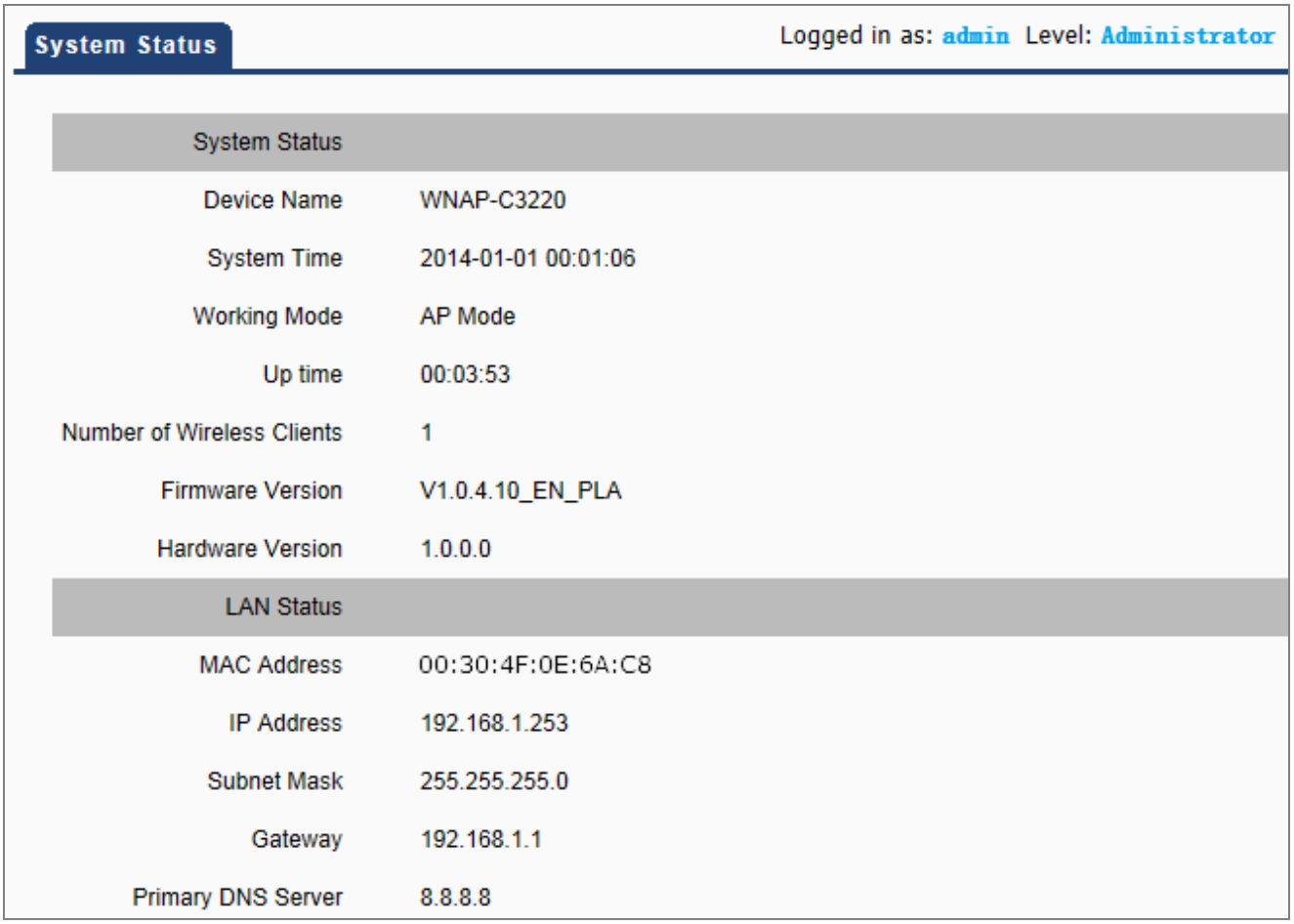


Figure 5-2 System Status

This section allows you to view the AP's LAN info listed below:

Object	Description
• **Device Name:**	Displays the model of device.
• **System Time:**	Displays system time.
• **Working Mode:**	Displays working mode.
• **Uptime:**	Displays the working time of the WNAP-C3220.
• **Number of Wireless Clients**	Displays the number of wireless clients.
• **Firmware Version:**	Displays AP's firmware version.
• **Hardware Version:**	Displays AP's hardware version.
• **MAC Address:**	Displays AP's LAN MAC address.
• **IP Address:**	Displays LAN IP address.
• **Subnet Mask:**	Displays LAN subnet mask.
• **Gateway:**	Displays Gateway IP address.

• **Primary DNS Server:**	Displays the Primary DNS Server.

■ Wireless Status

This section allows you to view the wireless info listed below:

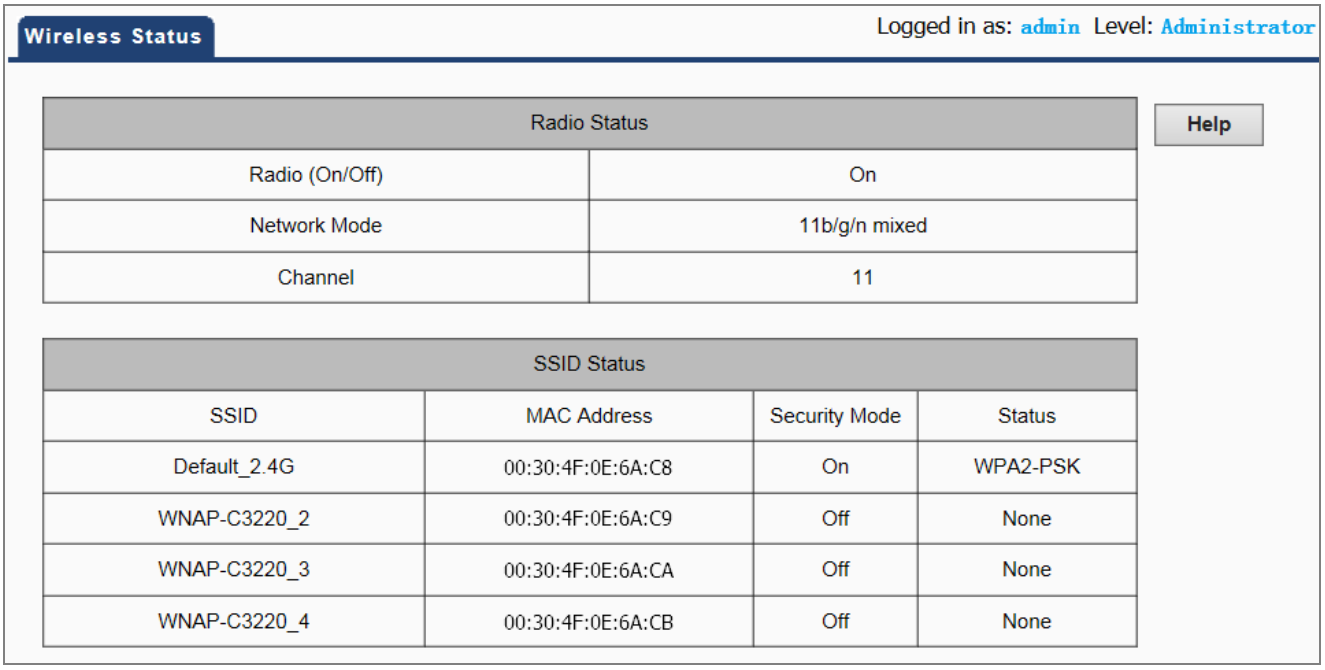


Figure 5-3 Wireless Status

The page includes the following fields:

Object	Description
• **Radio:**	Displays whether wireless is On or Off.
• **Network Mode:**	Displays currently active network mode.
• **Channel:**	Displays current channel.
• **SSID:**	Displays current SSID.
• **MAC Address:**	Displays MAC address of the AP's wireless interface
• **Security Mode:**	Displays current security mode.
• **Status:**	Displays whether the client is on or off.

■ Traffic Statistics

This section displays statistics information.

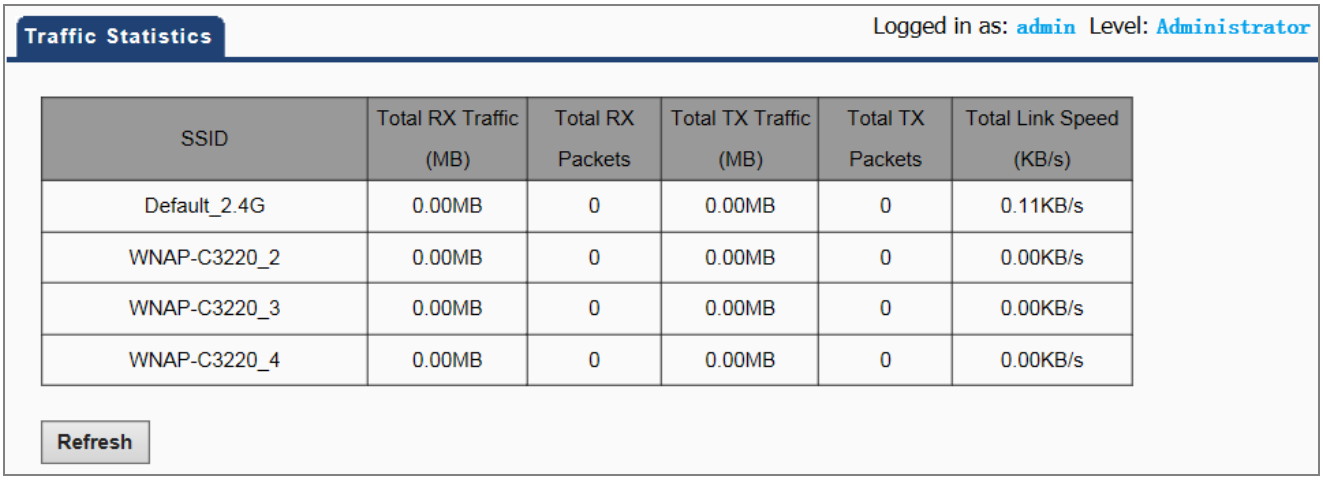


Figure 5-4 Traffic Statistics

The page includes the following fields:

Object	Description
• **SSID:**	Displays the traffic of the SSID
• **Total RX Traffic:**	Displays MB of RX Traffic.
• **Total RX Packets:**	Displays packets of RX.
• **Total TX Traffic:**	Displays MB of TX Traffic.
• **Total TX Packets:**	Displays packets of TX.
• **Total Link Speed:**	Displays the total link speed.

■ Wireless Clients

This section displays the information of wireless clients.

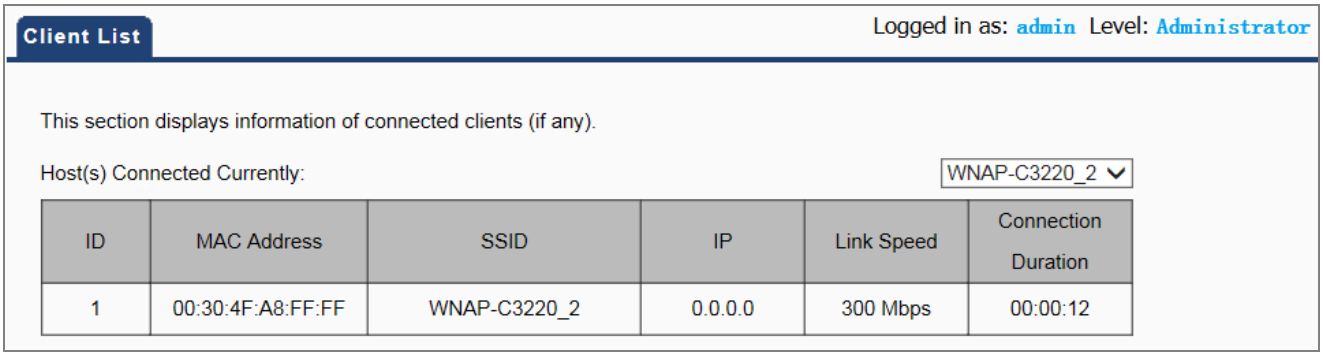


Figure 5-5 Wireless Clients

The page includes the following fields:

Object	Description

• **ID:**	Displays the number of wireless client.
• **MAC Address:**	Displays MAC address of wireless client.
• **SSID:**	Displays SSID of wireless client.
• **IP:**	Displays IP of wireless client.
• **Link Speed:**	Displays link speed of wireless client.
• **Connection Duration:**	Displays the total connection time.

5.2 Quick Setup

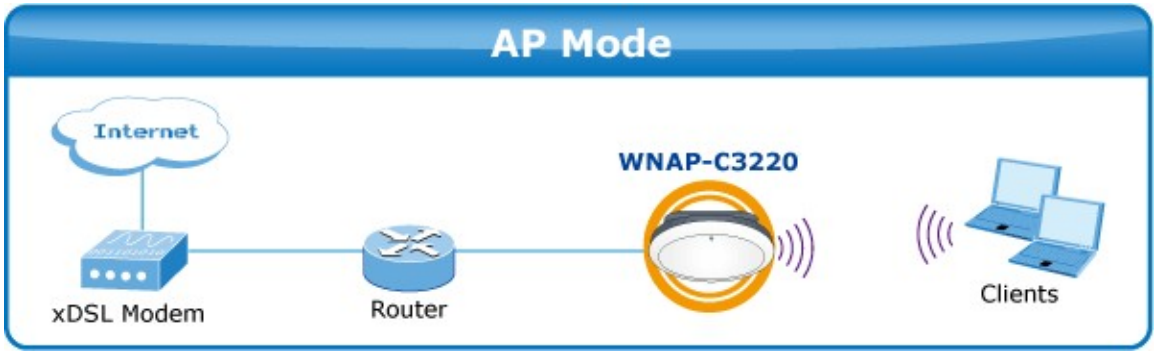
The Quick Setup can help user to configure the device to the required operation mode step by step.

The WNAP-C3220 supports multiple operating modes:

- **AP Mode**: The device works as a wireless HUB in this mode, making communications between wireless and wireless, wireless and wired, wireless and WAN.
- **WDS Mode (WDS PtP, WDS PtMP, WDS Repeater)**: Two or more wired LANs can be connected by wireless method in Bridge mode to share resources and extend wired network. In the WDS mode configuration, you can configure it to "**Point to Point Bridge (WDS PtP)**", "**Point to Multipoint Bridge (WDS PtMP)**" or "**WDS Repeater (WDS+AP)**" mode.
- **AP Client Mode (Universal Repeater):** This mode allows you to extend the range of your wireless network. When the AP is configured to repeater mode, it will repeat the wireless signal from wireless client to access point. Thus, the wireless connection distance can be extended. However, the performance will become half of normal performance when client connects to a Repeater.

5.2.1 AP Mode

The AP mode can convert the wired transmission into wireless signals. If you have one wired cable connecting to Internet, and want to access the Internet via wireless signals connecting to your notebook computer, this mode fits perfectly.



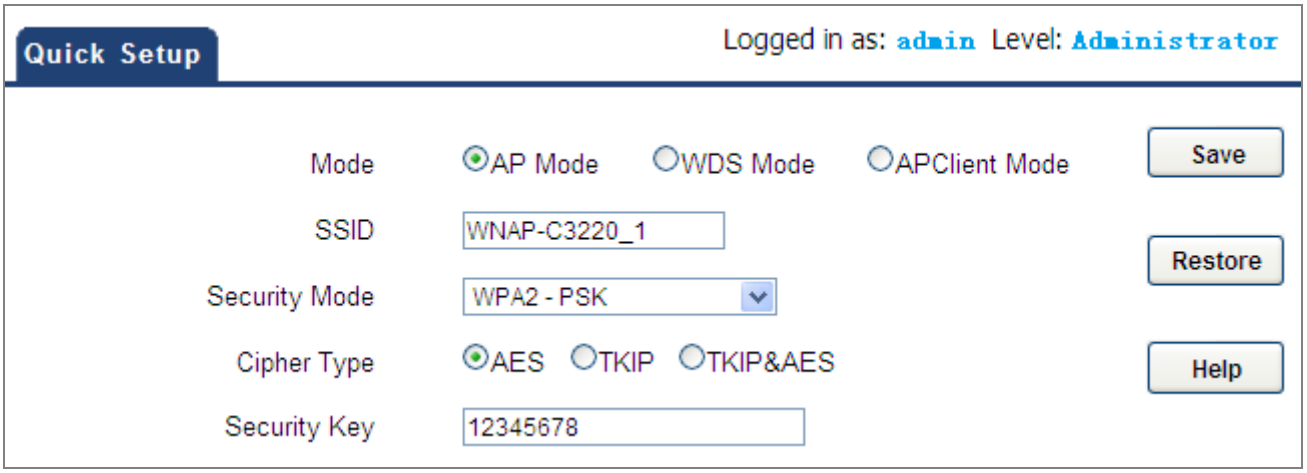


Figure 5-6 Quick Setup - AP Mode

The page includes the following fields:

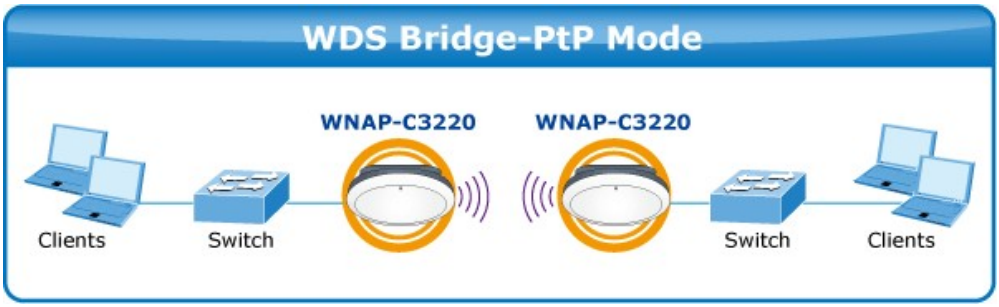
Object	Description
• **SSID:**	Displays the primary SSID's name.
• **Security Mode:**	Displays primary SSID's security mode.
• **Cipher Type:**	Select one cipher type for the security mode.
• **Security Key:**	Enter a security key for the AP.

5.2.2 WDS Mode

The **WDS (Wireless Distribution System)** feature can be used to extend your existing wireless network coverage. Here we present you how to configure WDS modes including **PtP**, **PtMP**, and **Wireless Repeater**.

■ **WDS Bridge - PtP Mode**

PtP bridge mode can connect with two wired network via wireless access points, which communicate by wireless signals and not by cables. This mode can be free from the cable trouble. The PtP topology shows below:



P2P / PtP: Point to Point Mode

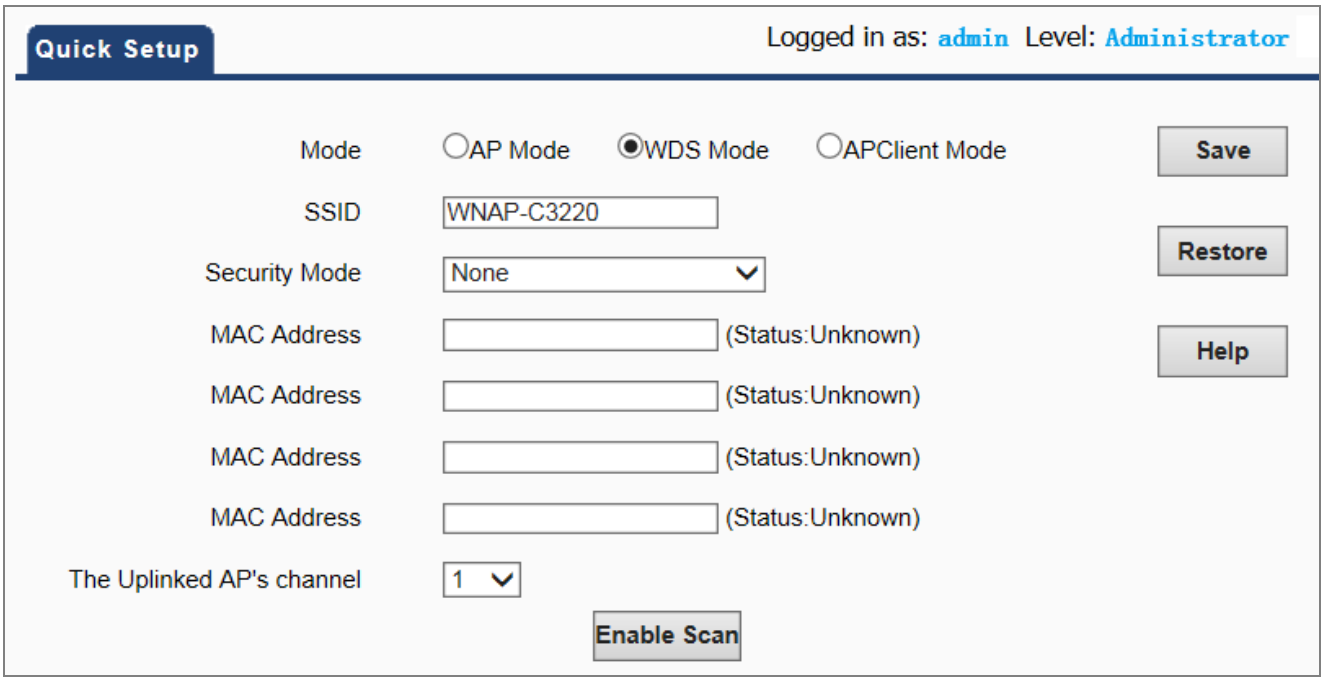


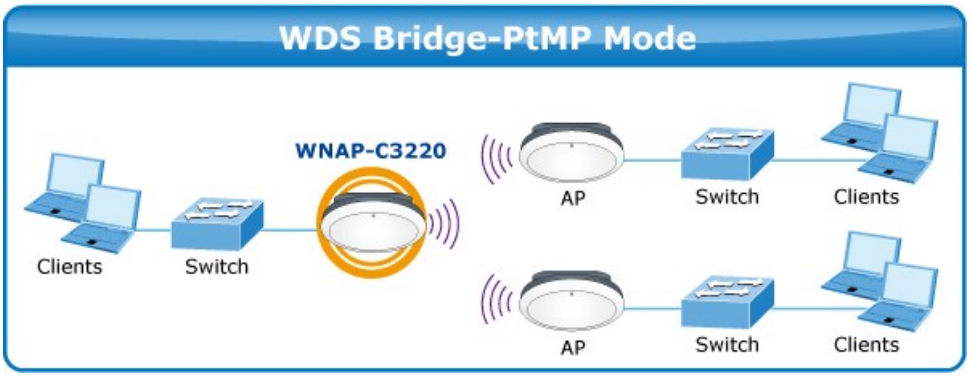
Figure 5-7 Quick Setup - WDS Mode

The page includes the following fields:

Object	Description
• **SSID:**	Displays the primary SSID's name.
• **Security Mode:**	Displays primary SSID's security mode.
• **MAC Address:**	The MAC address of the remote peers. The WNAP-C3220 supports a maximum of 4 remote WDS peers.
• **The Uplinked AP's channel:**	Displays the uplinked AP's channel that you want to bridge to.

■ WDS Bridge - PtMP Mode

The PtMP Bridge mode which connects scattered wired network together is more complicated than PtP Bridge mode. PtMP usually transmits wireless signals from one access point, and other access points are in charge of receiving signals so as to share network resource. It supports a connection of up to **4 remote access points**. In this mode, wireless clients are not allowed to connect. PtMP Bridge mode can connect multiple wireless access points together without cabling. If "Root AP" is configured as PtMP bridge mode, other (less than 4) remote access points should select PtP bridge modes. The topology shows below:



P2MP / PtMP: Point to Multiple Point Mode

➢ Example of a quick setup of **WDS Mode**:

Step 1. Select "WDS Mode" and click the **Enable Scan** to site-survey the remote AP.

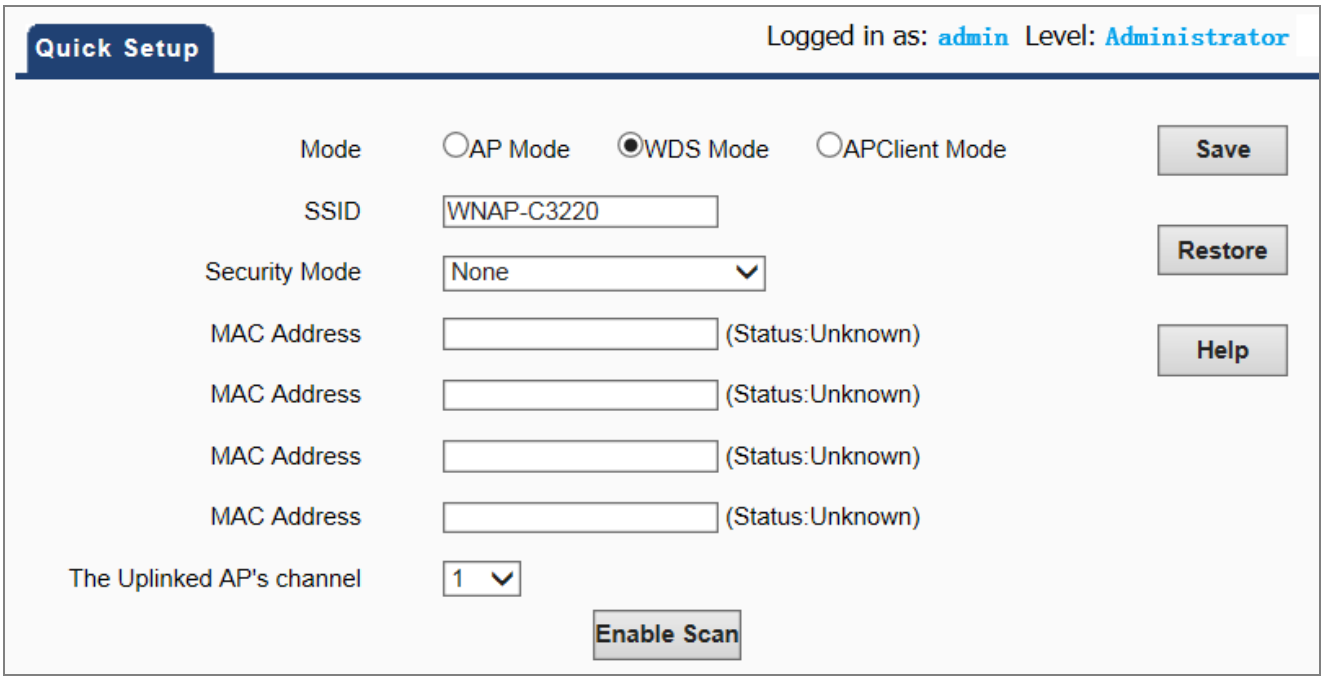


Figure 5-8 WDS -1

Step 2. Select the remote AP that you want to connect and then click **Save**.

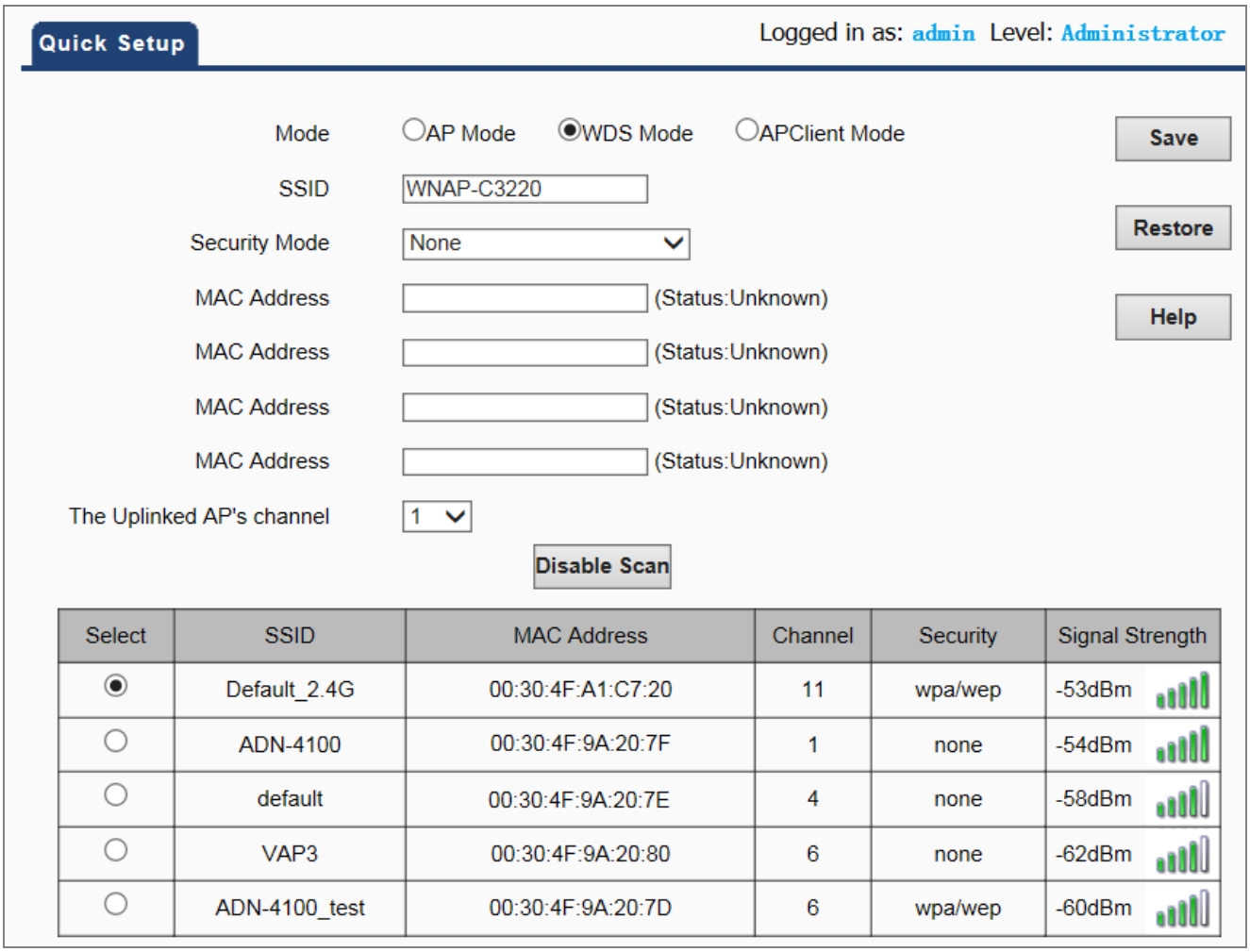


Figure 5-9 WDS -2

Step 3. Then, you can see the remote AP's MAC address that has been filled in to the first MAC address field.

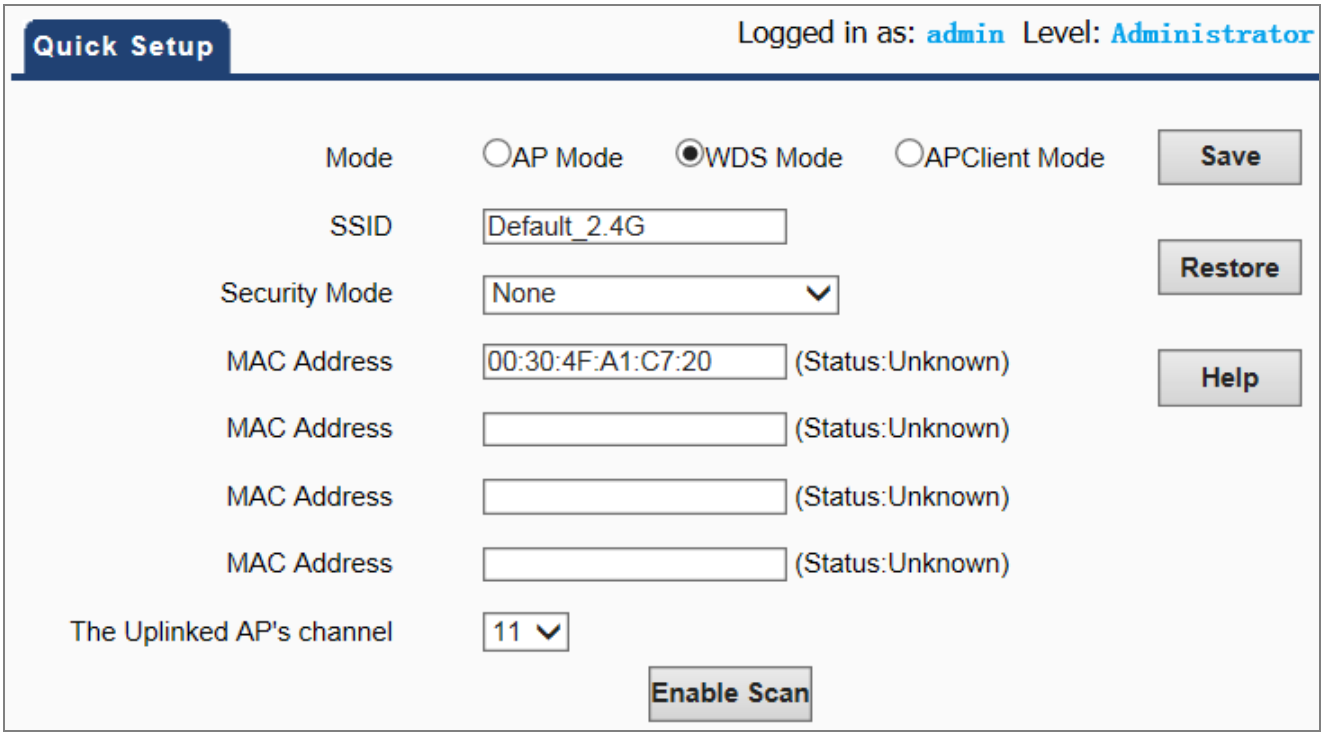


Figure 5-10 WDS -3

Step 4. Configure the security mode and security key for the WDS connection. Ensure the channel is the same as the remote AP's channel.

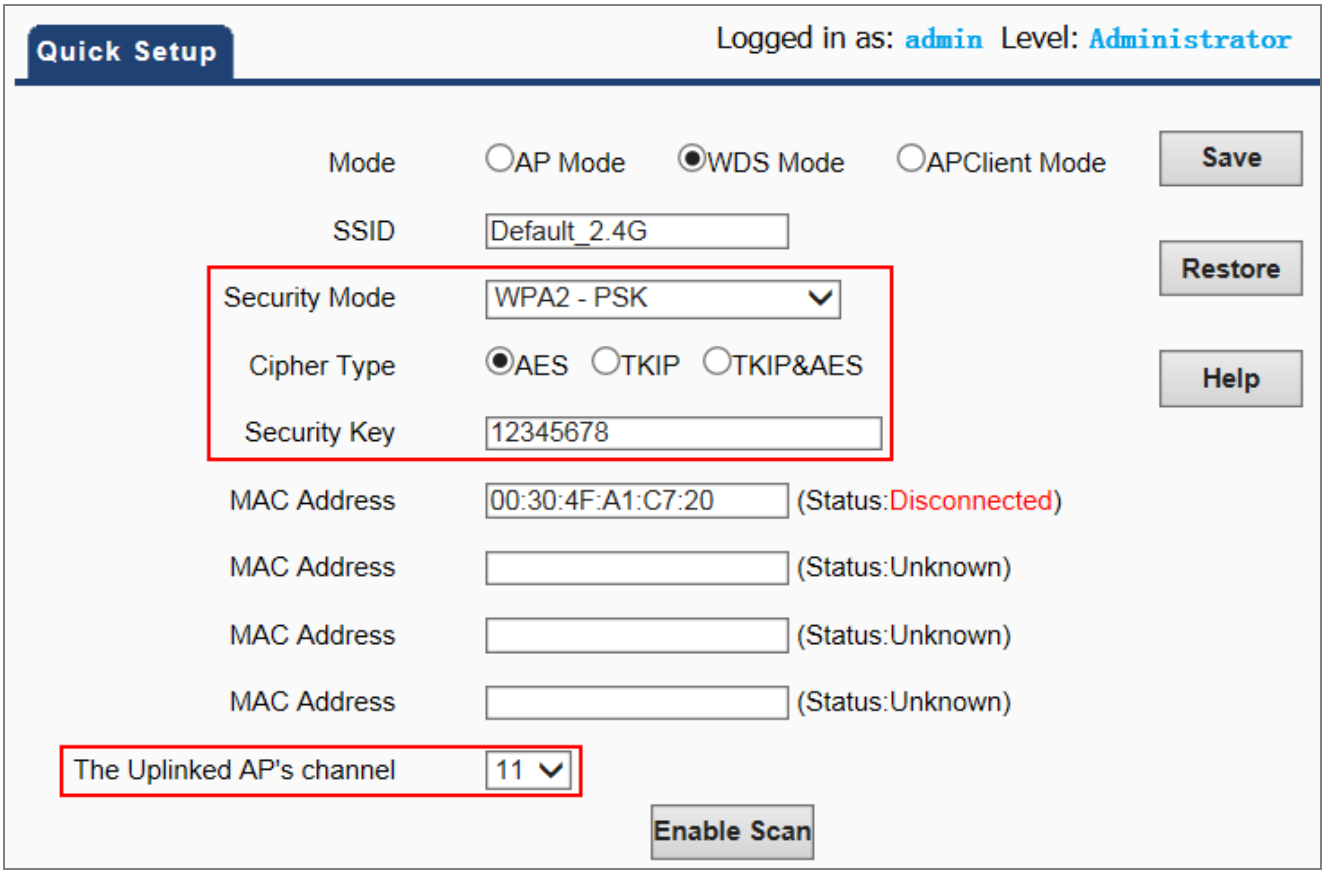
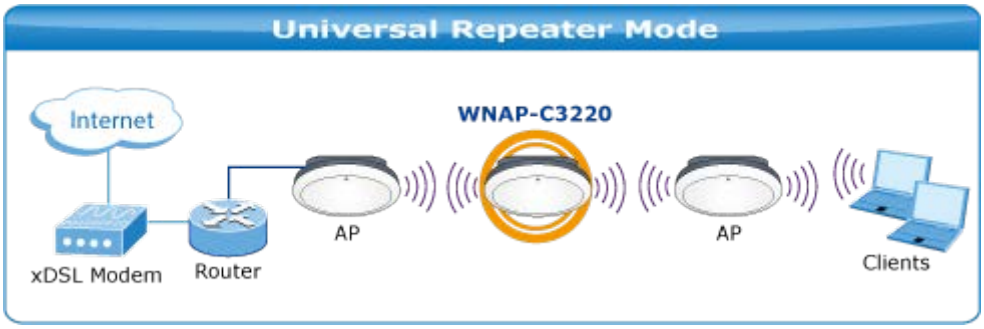


Figure 5-11 WDS -4

Step 5. If your application is only peer to peer (WDS PtP), then, the connection has been established successfully. If your application is WDS PtMP, please repeat the Steps 1~4 in the master AP. Each slave AP in the WDS PtMP topology is only required to configure the master AP's MAC address.

5.2.3 AP Client Mode (Universal Repeater)

Repeater Mode can repeat and amplify wireless signals to extend wireless network coverage. In this mode, wireless clients are allowed to connect. When two LANs' transmission distances are over the wireless device's maximum transmission value, or there is much block among the devices, you can use the Repeater mode to deal with these problems by adding MAC addresses. The topology shows below:



Universal Repeater Mode

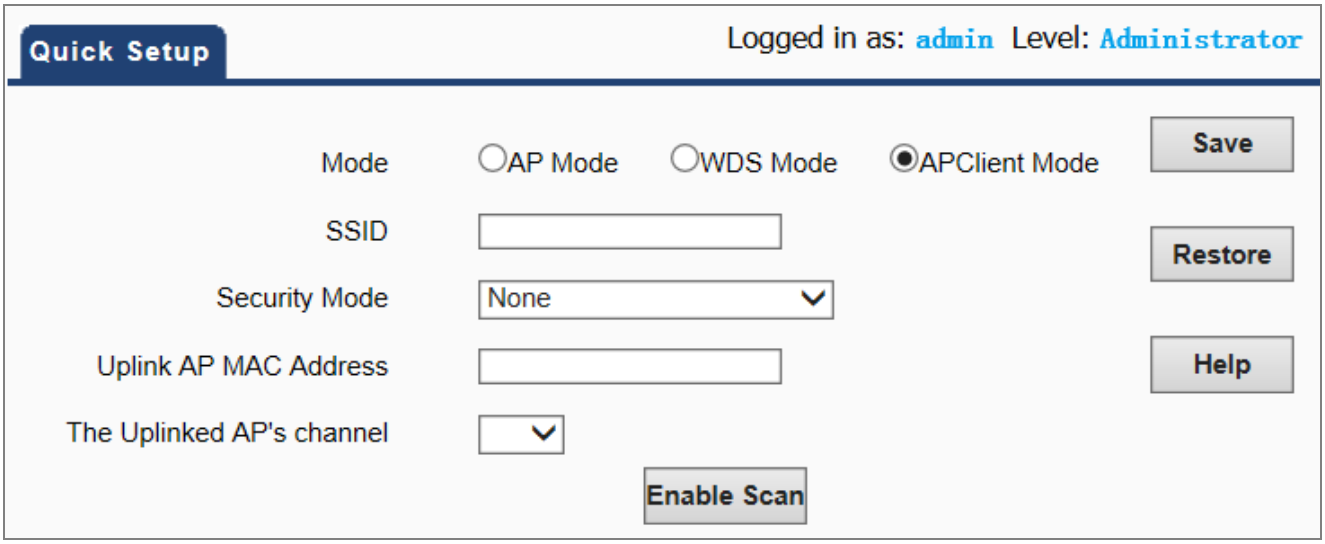


Figure 5-12 Quick Setup - Universal Repeater Mode

The page includes the following fields:

Object	Description
• **SSID:**	Displays the primary SSID's name.
• **Security Mode:**	Displays primary SSID's security mode.

• **Uplink AP MAC Address:**	Displays the MAC address of the uplink AP.
• **The Uplinked AP's channel:**	Displays the uplinked AP's channel.

➢ Example of a quick setup of **AP Client Mode**:

Step 1. Select the "APClient Mode" and click the **Enable Scan** to site-survey the root AP.

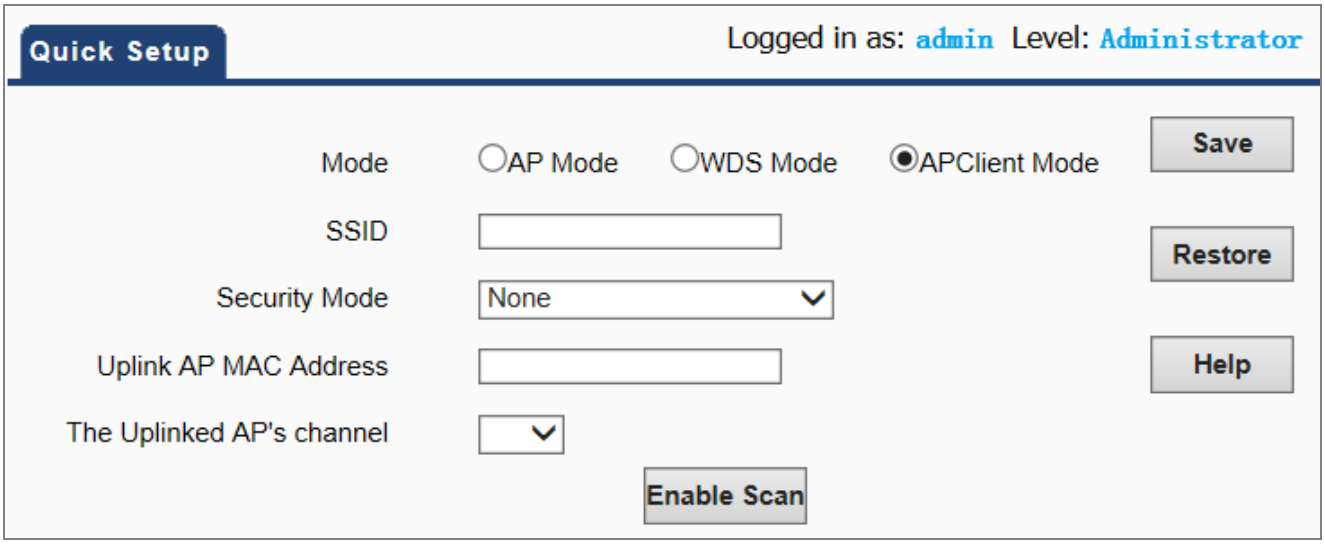


Figure 5-13 AP Client -1

Step 2. Select the remote AP that you want to connect and then click **Save**.

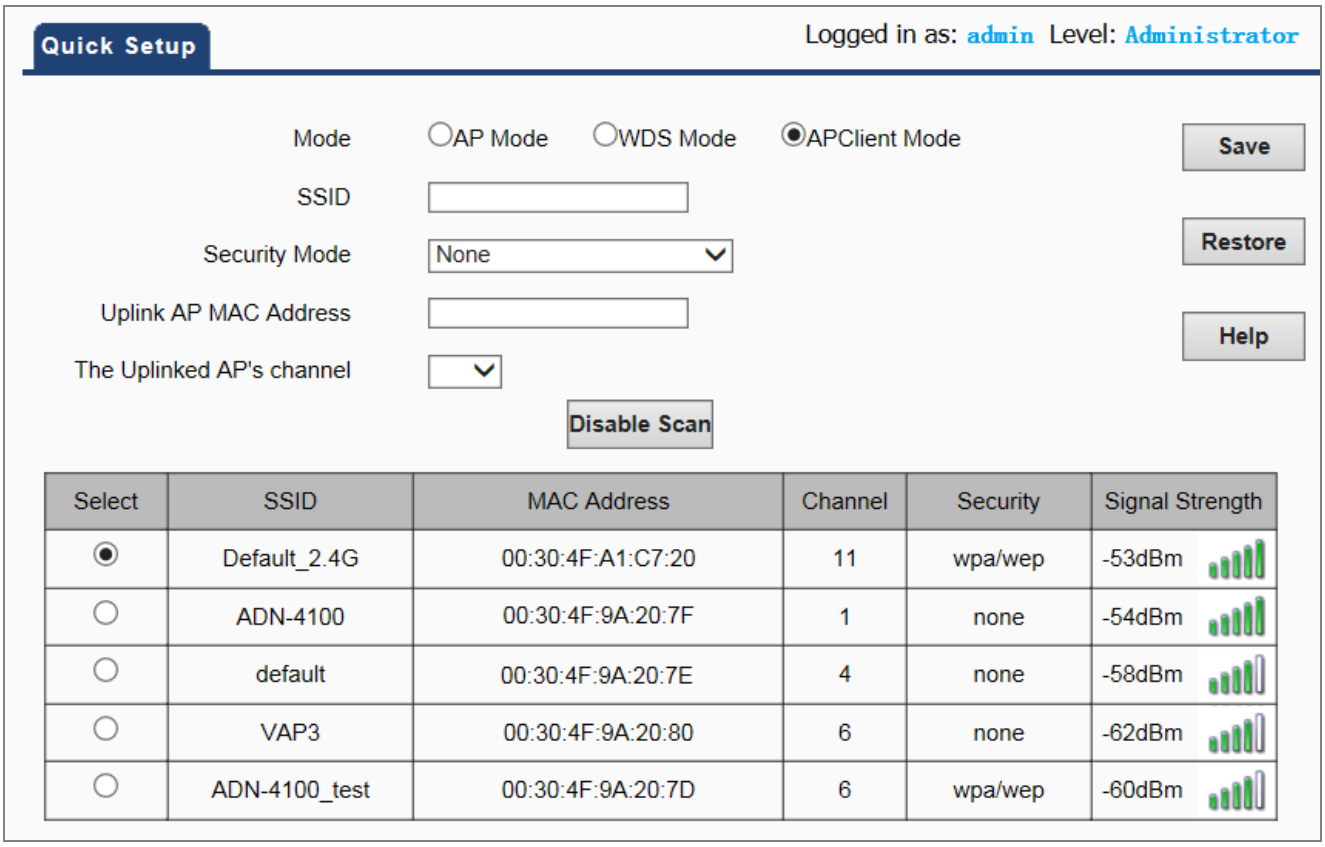


Figure 5-14 AP Client -2

Step 3. Then, you can see the remote AP's MAC address that has been filled in to the MAC Address field.

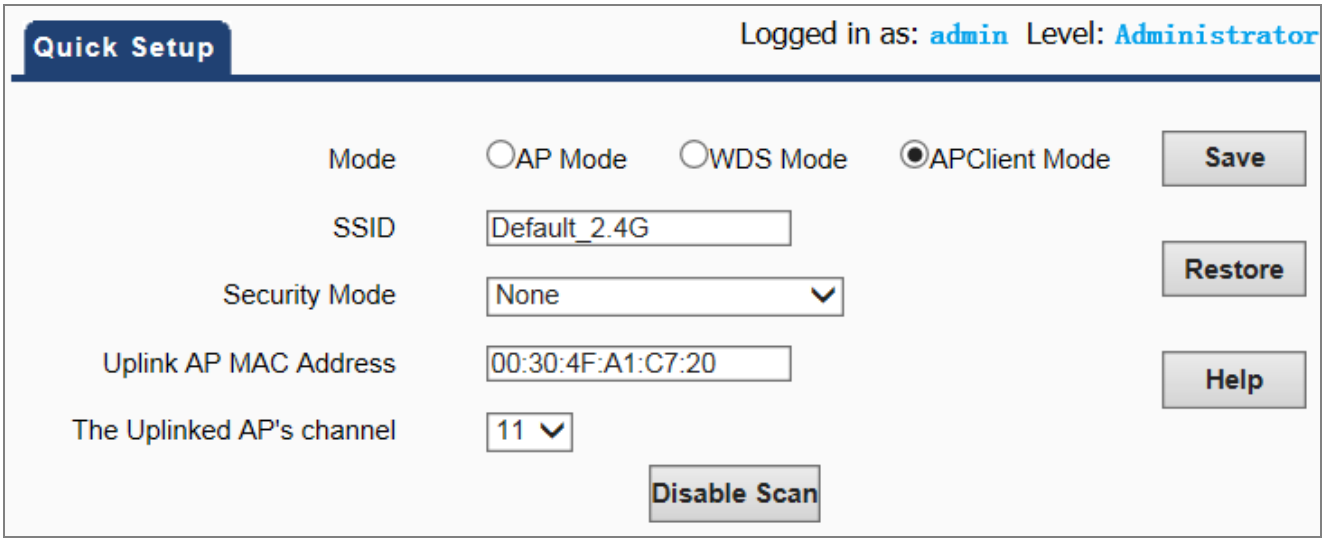


Figure 5-15 AP Client -3

Step 4. Configure the security mode and security key for the AP Client connection. Ensure the channel is the same as the remote AP's channel.

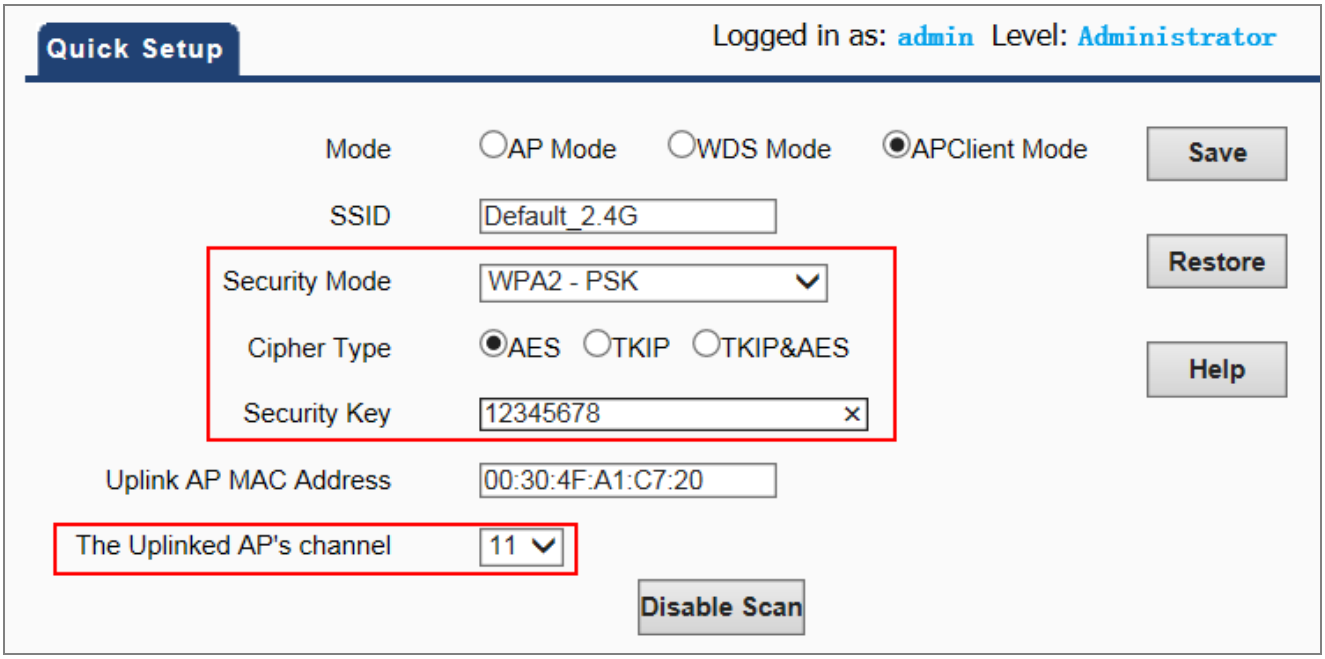


Figure 5-16 AP Client -4

Step 5. Now, you can use a wireless client including laptops, iPhone, iPad, or smart phones to connect to the root AP/router for the Internet access through the WNAP-C3220.

5.3 LAN Setup

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

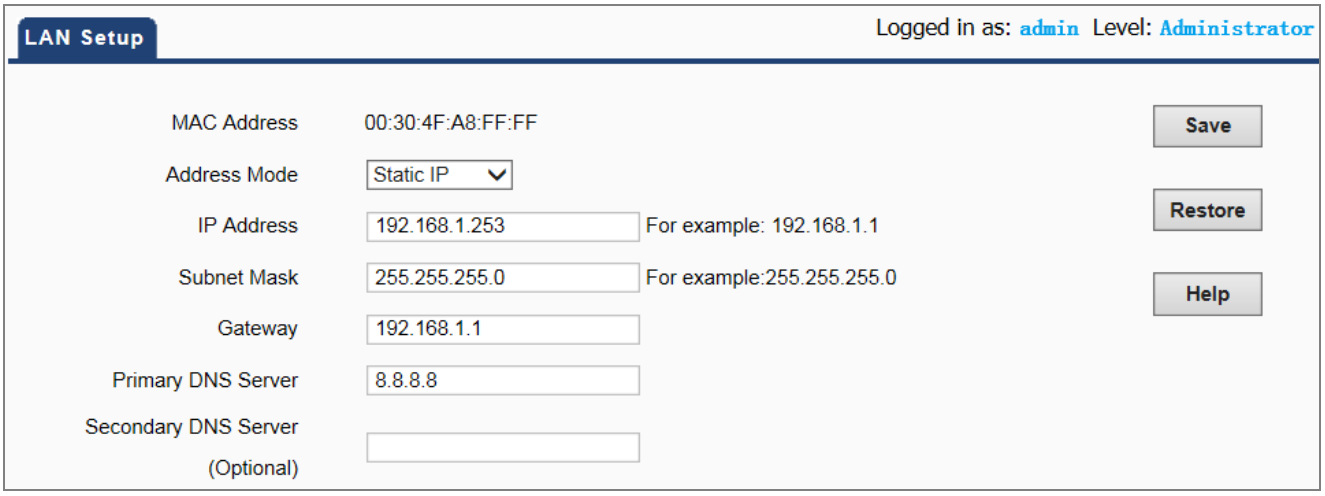


Figure 5-17 LAN Setup

The page includes the following fields:

Object	Description
• **MAC address:**	Displays MAC address of the AP's LAN interface

• **Address Mode:**	**Static IP**	Specify a static IP address, subnet mask, default gateway and DNS server for WNAP-C3220 manually. Make sure the specified IP address is unique on your network in order to prevent IP conflict.
	Dynamic	If a DHCP server exists in your network, you can select this option, and thus the WNAP-C3220 is able to obtain IP settings automatically from that DHCP server.
• **IP Address:**	Enter the IP address of your AP or reset it in dotted-decimal notation (factory default: **192.168.1.253**).	
• **Subnet Mask:**	An address code that determines the size of the network. Normally use 255.255.255.0 as the subnet mask.	
• **Gateway:**	(Optional.) Suggest to input the IP address of the LAN port of the Router, default value is 192.168.1.1	
• **Primary DNS Server:**	Enter the necessary DNS address provided by your ISP.	
• **Secondary DNS Server:**	Enter the other DNS address if your ISP provides you with 2 such addresses, and it is optional.	

1. If you change the IP address of LAN, you must use the new IP address to login the AP.
2. When the IP address of the WNAP-C3220 is changed, the clients on the network often need to wait for a while or even reboot before they can access the new IP address. For an immediate access to the AP, please flush the netbios cache on the client computer by running the “nbtstat –r” command before using the device name of the WNAP-C3220 to access its Web Management page.

5.4 DHCP Server

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

5.4.1 DHCP Server

Choose menu “**DHCP Server**” to configure the settings for DHCP server on this page. After the configuration is done, please click the “Save” button to save the settings.

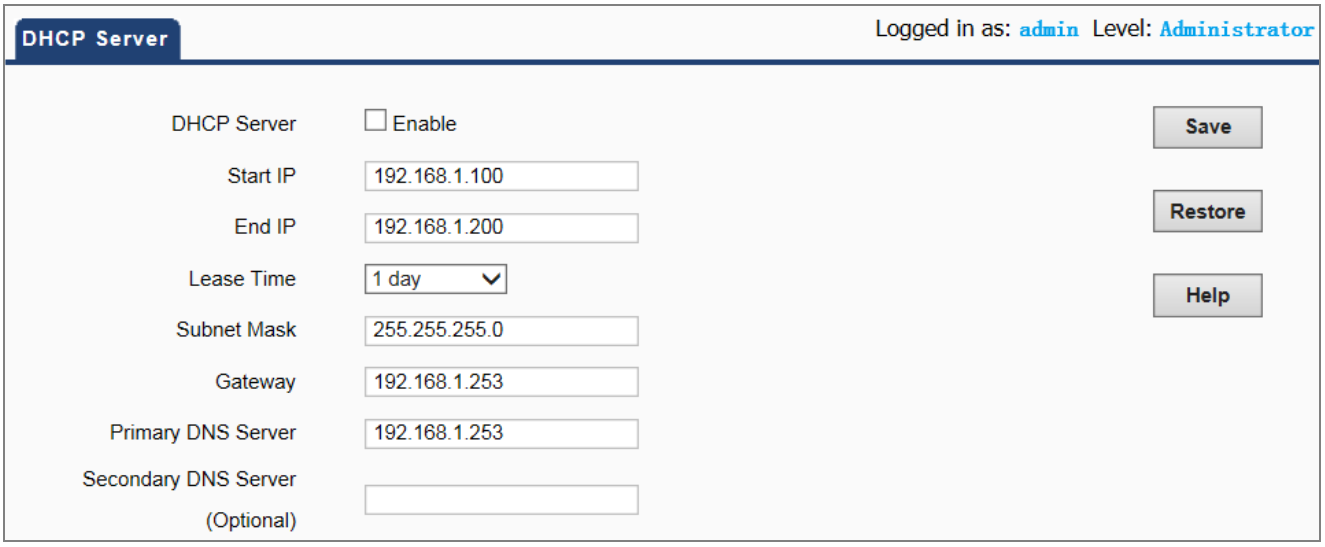


Figure 5-18 DHCP Server

The page includes the following fields:

Object	Description
• **DHCP Server:**	Click “Enable” to enable the DHCP function.
• **Start IP:**	The start IP address of all the available successive IPs.
• **End IP:**	The end IP address of all the available successive IPs.
• **Lease Time:**	Select the time for using one assigned IP from the dropdown list. After the lease time, the AP automatically assigns new IP
• **Subnet Mask:**	AP’s LAN subnet mask.
• **Gateway:**	Suggest to input the IP address of the LAN port of the router; default value is 192.168.1.253
• **Primary DNS Server:**	Enter the necessary DNS address.
• **Secondary DNS Server:**	Enter the other DNS address which is optional.

5.4.2 DHCP Client List

This section displays the information of DHCP clients.

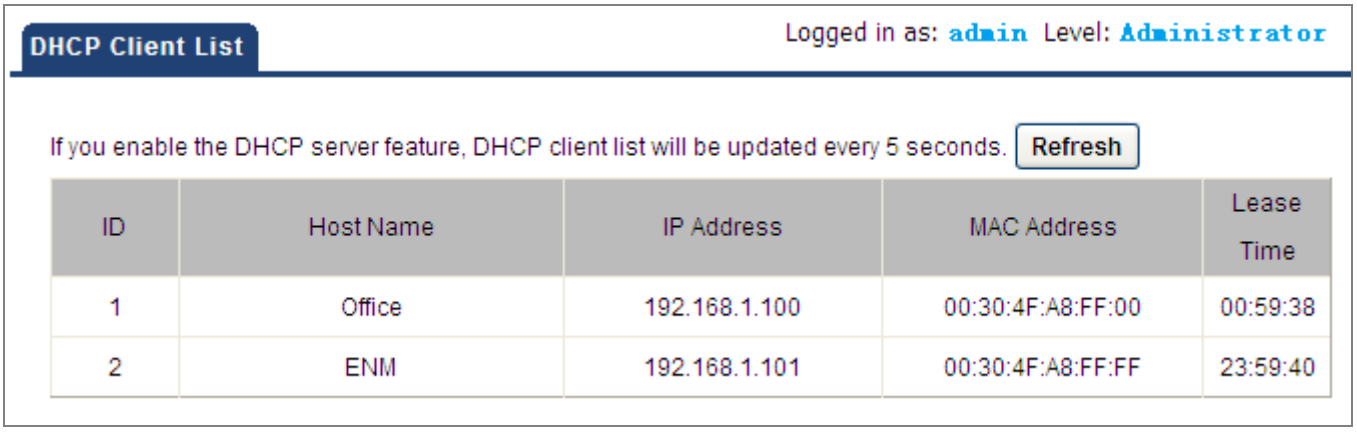


Figure 5-19 DHCP Client List

The page includes the following fields:

Object	Description
• **ID:**	Displays the number of DHCP client.
• **Host Name:**	Displays the name of DHCP client.
• **IP Address:**	Displays IP of DHCP client.
• **MAC Address:**	Displays MAC address of DHCP client.
• **Lease Time:**	Displays the total connection time.

5.5 Wireless

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

5.5.1 Basic

Choose menu "**Wireless → Basic**" to configure the security settings for the wireless network on this page. After the configuration is done, please click the "Save" button to save the settings.

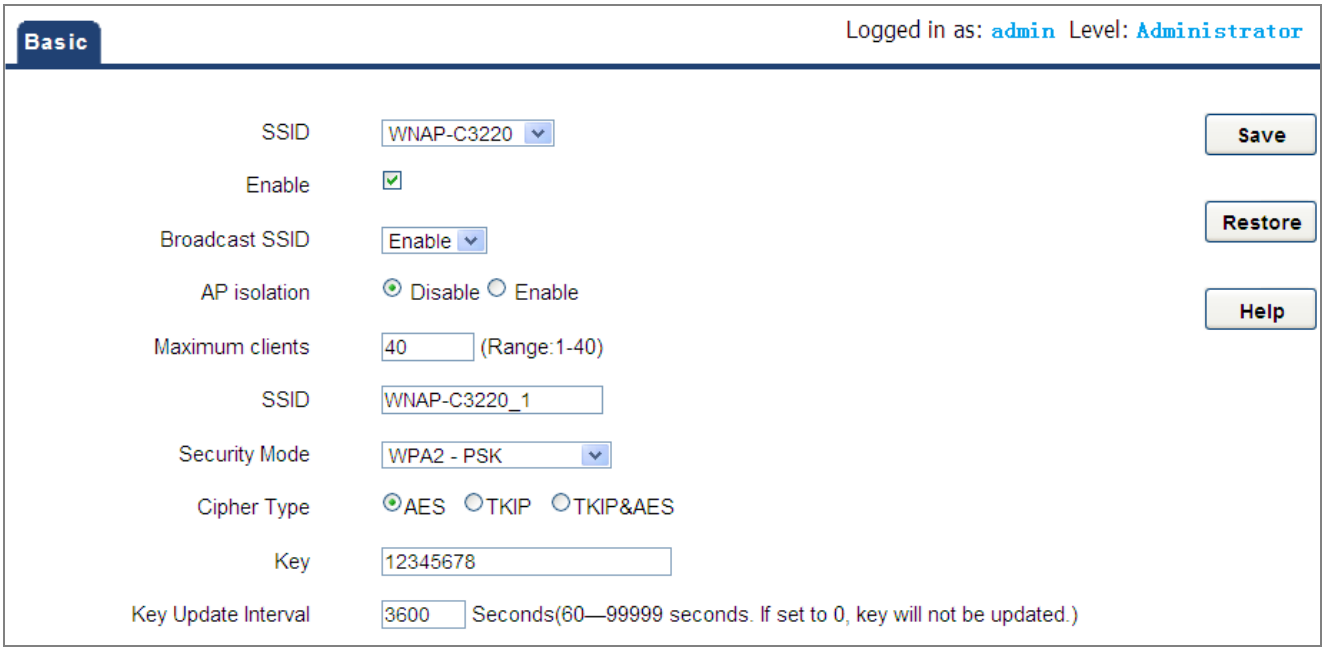


Figure 5-20 Wireless Basic

The page includes the following fields:

Object	Description
• **SSID:**	Display the current SSID.
• **Enable:**	Click "Enable" to enable the wireless signal.
• **Broadcast SSID:**	When you select "Disable SSID broadcast", AP will not broadcast its own SSID. If there is a wireless connection request, you need to input SSID manually.
• **AP Isolation:**	The access control feature is based on wireless MAC address. When this feature is enabled, each of your wireless clients will be in its own virtual network and will not be able to communicate with each other. This feature is to isolate the communication of wireless clients connected with a different AP.
• **Maximum Clients:**	Enter the clients you want to allow connect to the WNAP-C3220 in the

	field. The maximum supported clients are 40.	
• **SSID**	A SSID (Service Set Identifier) is the unique name of a wireless network. The WNAP-C3220 supported maximum 4 SSIDs.	
• **Security Mode:**	**None**	It allows any device to join the network without performing any security check.
	WEP	WEP (Wired Equivalent Privacy), a basic encryption method, usually encrypts wireless data using a series of digital keys (64 bits or 128 bits in length). By using the same keys on each of your wireless network devices, you can prevent unauthorized wireless devices from monitoring your transmissions or using your wireless resources. WEP is based on RSA algorithm from RC4. It is the original and weak encryption method, so it is recommended not to use this method.
	Shared Mode	Data encryption and key are required for wireless authentication.
	802.1X	This security mode is used when a RADIUS server is connected to the device. 802.1x, a kind of Port-based authentication protocol, is an authentication type and strategy for users. The port can be either a physic port or logic port (such as VLAN). For wireless LAN users, a port is just a channel. The final purpose of 802.1x authentication is to check if the port can be used. If the port is authenticated successfully, you can open this port which allows all the messages to pass. If the port isn't authenticated successfully, you can keep this port "disable" which just allows 802.1x authentication protocol message to pass.
	WPA-PSK	It is a simplified WPA mode with no need for specific authentication server. In this so-called WPA Pre-Shared Key, all you have to do is just pre-enter a key in each WLAN node and this is the common way to be adopted in large and middle enterprise as well as residential network.
	WPA2-PSK	As a new version of WPA, only all the clients support WPA2, can it be available. If it is selected, the data encryption can only be AES and the passphrase is required.
	Mixed WPA/WPA2-PSK	It provides options of WPA (TKIP) or WPA2

		(AES) encryption for the client. If it is selected, the data encryption can only be TKIP + AES and the passphrase is required.
	WPA	WPA is a medium level encryption and is supported by most wireless devices and operating systems.
	WPA2	WPA2 is a high level encryption and is supported by most wireless devices and operating systems.
• **Cipher Type:**	**AES**	AES is a specification for the encryption of electronic data. We strongly recommend choosing AES as your default setting.
	TKIP	TKIP is a security protocol used in the IEEE 802.11 wireless networking standard.
• **Key:**	Enter the security key you want to set up.	
• **Key Update Interval:**	It represents the time interval where the encryption key is automatically changed for added security. The default value is often 3600.	

5.5.2 Radio

Choose menu "**Wireless → Radio**" to configure the basic settings for the wireless network on this page. After the configuration is done, please click the "Save" button to save the settings.

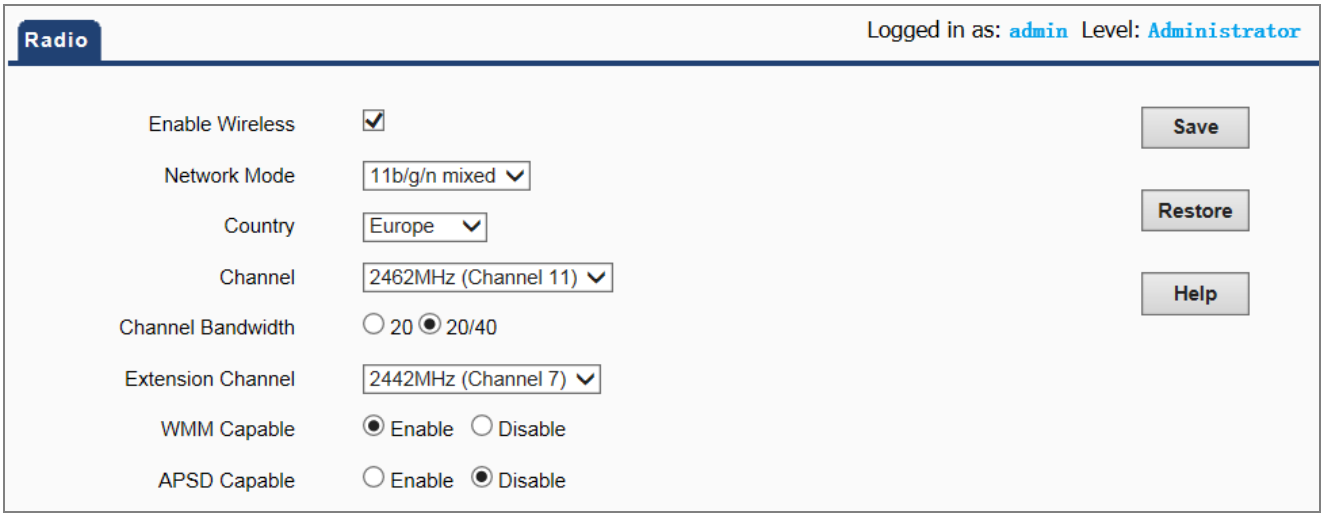


Figure 5-21 Wireless Radio

The page includes the following fields:

Object	Description
• **Enable Wireless:**	Click "Enable" to enable the wireless signal.

• **Network Mode:**	**11b/g Mixed Mode**	Allow the 11b/g-compliant client device to connect with the AP with auto-negotiation speed, and 11n wireless client to connect the device with 11g speed.
	11b Mode	Allow the wireless client to connect with the device in 11b mode at the maximum speed of 11Mbps.
	11g Mode	Allow the 11g/11n-compliant client device to connect with the AP at the maximum speed of 54Mbps.
	11b/g/n Mixed Mode	Allow 11b/g/n-compliant client device to connect with the AP with auto-negotiation speed. The maximum speed is 300Mbps.
• **Country:**	Select your country or a neighboring country.	
• **Channel:**	Specify the effective channel (from 1 to 13 or set to Auto) of the wireless network.	
• **Channel Bandwidth:**	Select the proper channel bandwidth to improve the wireless performance. 20M bandwidth can improve the anti-jamming ability of the wireless device. 40M bandwidth can improve the flux of 11N client.	
• **Extension Channel:**	To increase data throughput of wireless network, the extension channel range is used in 11n mode.	
• **WMM Capability:**	To enhance wireless multimedia transfer performance (on-line video and voice). If you are not clear about this, enable it.	
• **APSD Capability:**	It is used for auto power-saved service. The default is disabled.	

5.5.3 Advanced

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

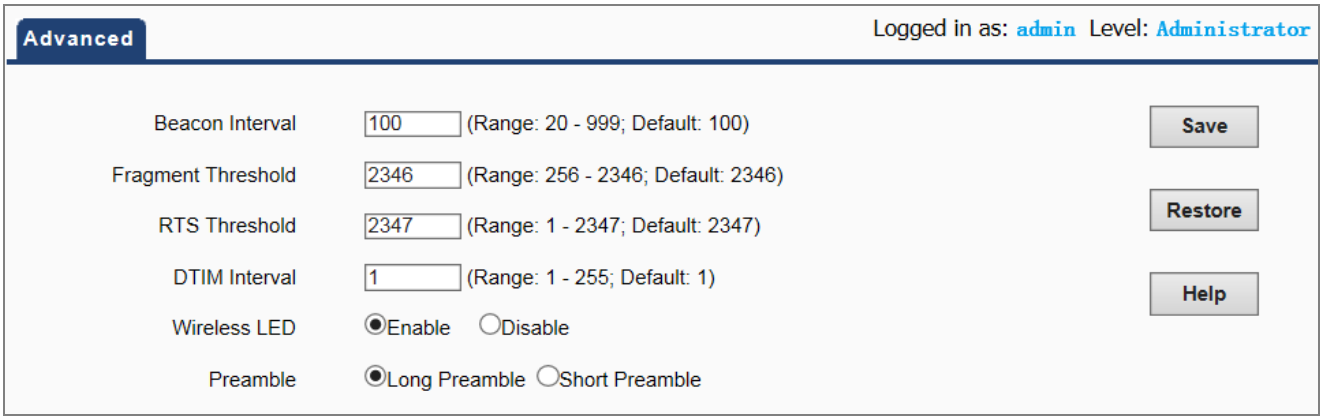


Figure 5-22 Wireless Advanced

The page includes the following fields:

Object	Description
• **Beacon Interval:**	The interval of time that this access point broadcast a beacon. Beacon is used to synchronize the wireless network. Default is “100”.
• **Fragment Threshold:**	You can specify the maximum size of packet during the fragmentation of data to be transmitted. If you set this value too low, it will result in bad performance. Default is “2346”.
• **RTS Threshold:**	When the packet size is smaller than the RTS threshold, the access point will not use the RTS/CTS mechanism to send this packet. Default is “2347”.
• **DTIM Interval:**	DTIM is a kind of traffic indication map (TIM) which informs the clients about the presence of buffered multicast/broadcast data on the access point. It is generated within the periodic beacon at a frequency specified by the DTIM Interval. The higher the DTIM period, the longer a client device may sleep and therefore the more power that particular client device may potentially save. Default is “1”.
• **Wireless LED:**	Select “Enable” or “Disable” Wireless LED to turn on or turn off the LED display.
• **Preamble:**	There are two types of preambles: long preamble and short preamble. By default, the device transmits data using the short preamble.

5.5.4 Wireless Access Control

Choose menu “**Wireless → Wireless Access Control**” to allow or deny the computer of specified MAC address to wirelessly connect with the WNAP-C3220 on this page. After the configuration is done, please click the “Save” button to save the settings.

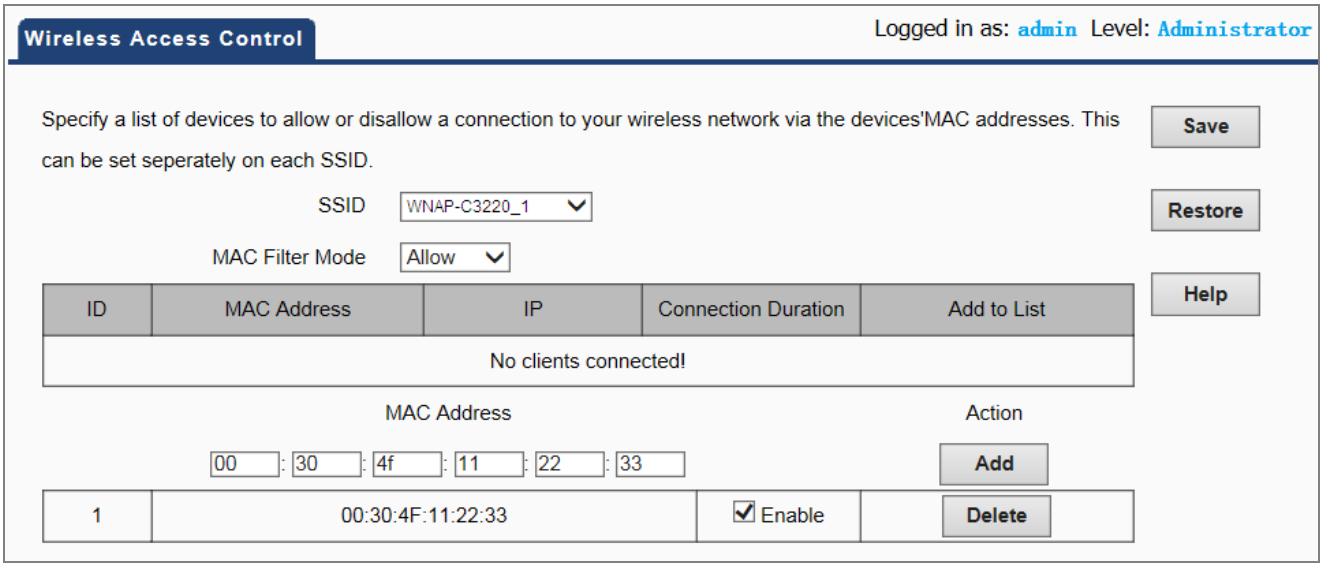


Figure 5-23 Wireless Access Control

The page includes the following fields:

Object	Description
• **SSID:**	Displays the current SSID.
• **MAC Filter Mode:**	You can choose to set to Allow or Deny, or disable this function.
• **MAC Address:**	Enter the MAC address you want to allow or deny to connect to the WNAP-C3220 in the field. Then, click “Add” to add the MAC address to the control list.
• **Current Access Control List:**	You can select some MAC address, and click the “Delete” button to delete it.

5.5.5 QVLAN

Choose menu “**Wireless → QVLAN**” to configure the 802.1QVLAN function. After the configuration is done, please click the “Save” button to save the settings.

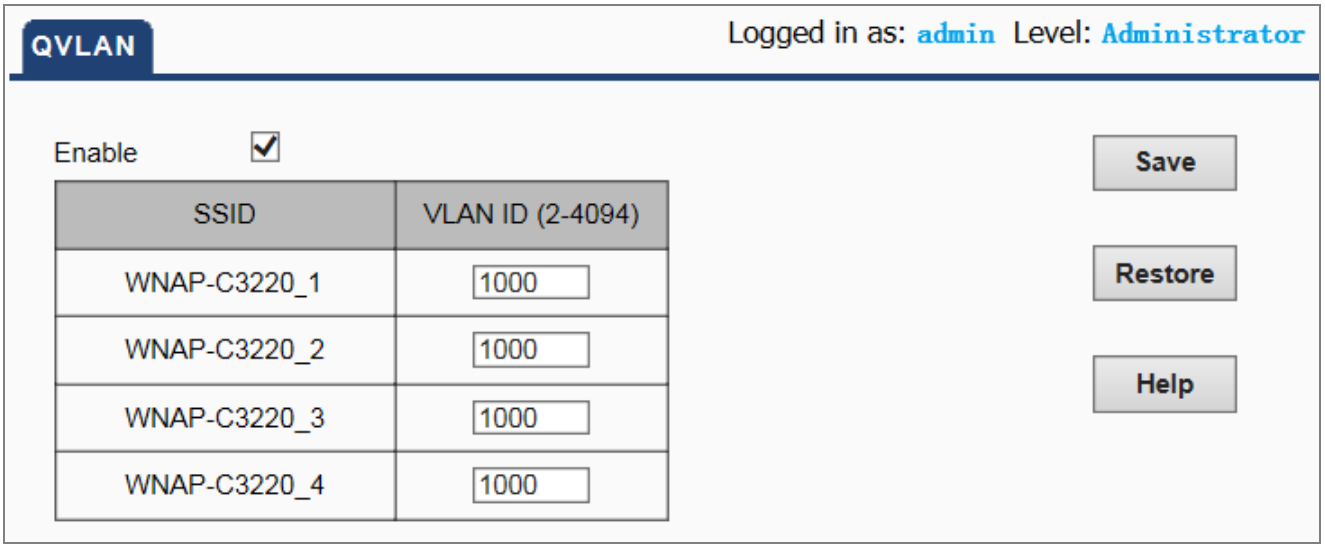


Figure 5-24 Wireless QVLAN

The page includes the following fields:

Object	Description
• **VLAN Enable:**	Click “Enable” to enable the 802.1Q VLAN function.
• **VLAN ID:**	You can specify a VLAN ID for each SSID here. The default is 1000.

5.6 SNMP

Simple Network Management Protocol (SNMP) is a popular protocol for network management. It is widely used in local area networks (LAN) for collecting information, and managing and monitoring network devices, such as servers, printers, hubs, switches, and routers from a management host.

Managed devices that support SNMP including software are referred to as an SNMP agent, which usually interacts with third-party SNMP management software to enable the sharing of network status information between monitored devices and applications and the SNMP management system.

A defined collection of variables (managed objects) are maintained by the SNMP agent and used to manage the device. These objects are defined in a **Management Information Base (MIB)**, which provides a standard presentation of the information controlled by the on-board SNMP agent. SNMP defines both the format of the MIB specifications and the protocol used to access this information over the network.

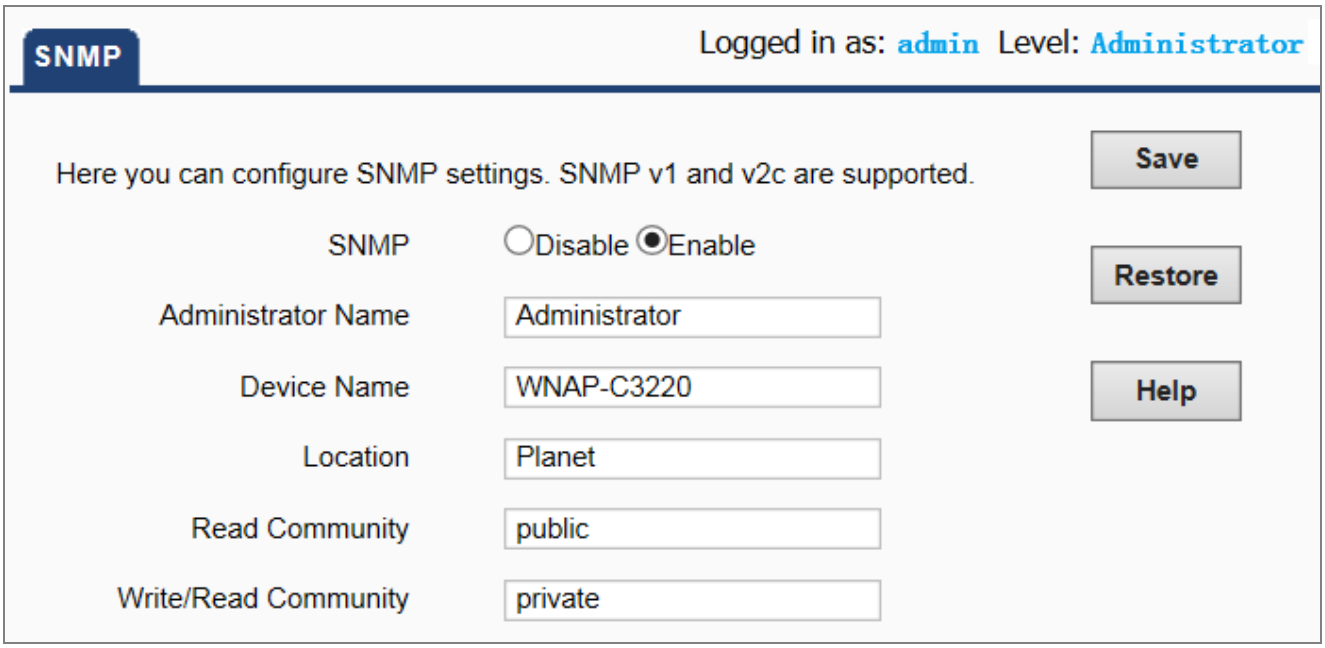


Figure 5-25 SNMP

This device supports SNMP v1 and SNMP v2c. Please click "**SNMP**" in the Menu to enter this page. Click "**Enable**" to enable the SNMP management.

The page includes the following fields:

Object	Description
• **Administrator Name:**	Set the name to access the AP. Default is "Administrator".
• **Device Name:**	Set the AP's name. Default is "WNAP-C3220".
• **Location:**	Set the AP's network location.
• **Read Community:**	Indicates the community read access string to permit reading this AP's SNMP information. The default is **Public**.
• **Write/Read Community:**	Indicates the community write access string to permit reading and re-writing this AP's SNMP information. The default is **Private**.

5.7 Tools

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

5.7.1 Maintenance

■ Firmware Update

Firmware upgrade is released periodically to improve the functionality of your device and also to add new features. If you run into a problem with a specific feature of the device, log on to our website www.planet.com.tw to download the latest firmware to update your device.

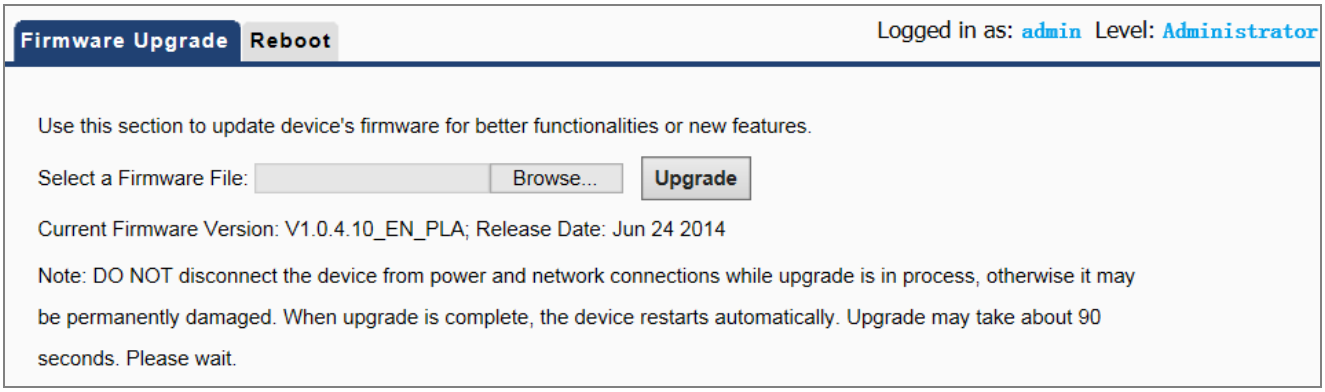


Figure 5-26 Firmware Upgrade

To update firmware, do as follows:

1. Click "**Browse…**" to locate the firmware and "**Upgrade**" to upgrade.
2. AP will reboot automatically when upgrade completes.

Note

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

■ Reboot

This page is used to reboot wireless access point. Rebooting the device makes the settings configured go into effect.

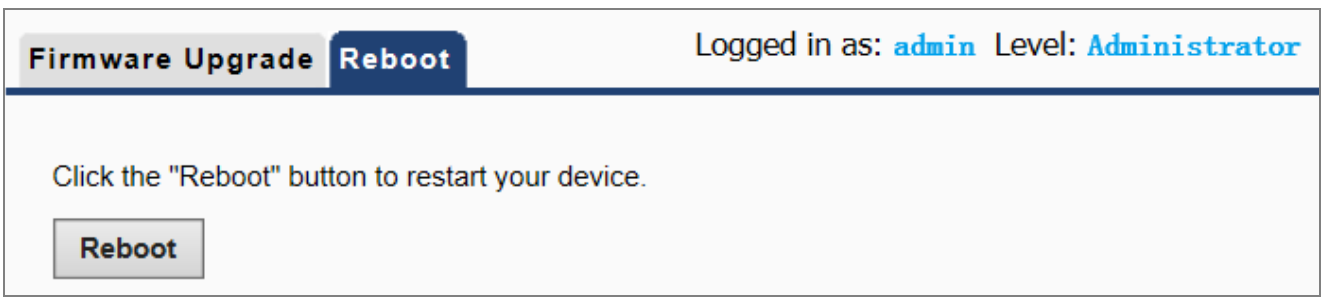


Figure 5-27 Reboot

- **Reboot**: Click this button to reboot the device.

5.7.2 Time

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

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

■ System Time

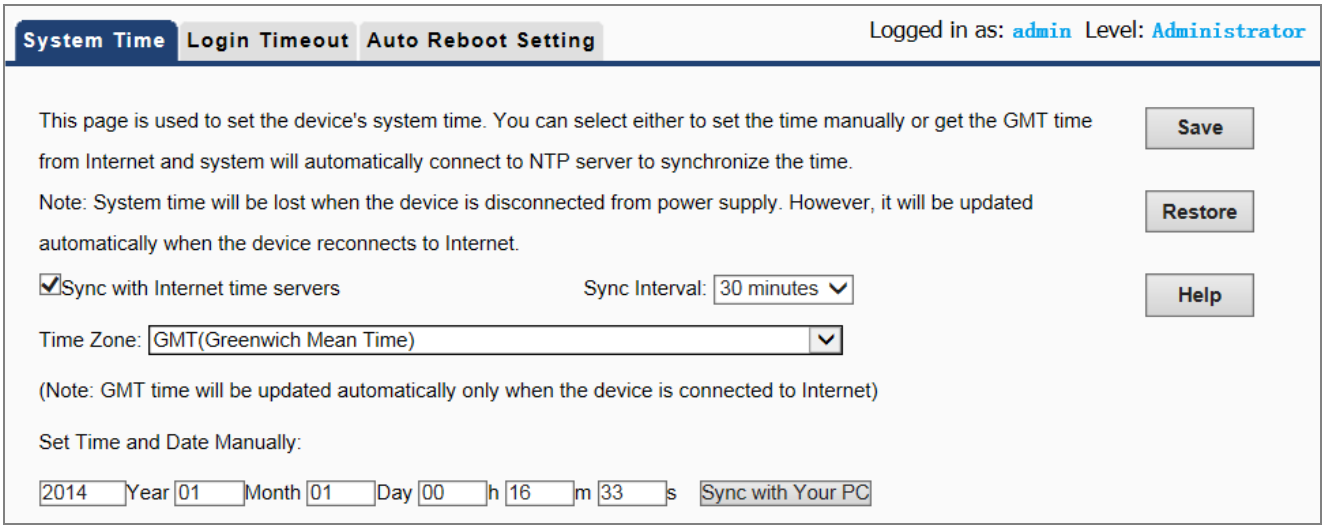


Figure 5-28 System Time

The page includes the following fields:

Object	Description
• **Sync with Internet Time Servers:**	Select it to update the system time by synchronizing with a public time server over the Internet.
• **Sync Interval:**	Configure the interval of synchronizing time.
• **Time Zone:**	Select the time zone of the country you are currently in. The router will set its time based on your selection.
• **Set Time & Date Manually:**	Input current time manually.
• **Sync with Your PC:**	Synchronize local time to the AP.

Note

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

■ Login Timeout

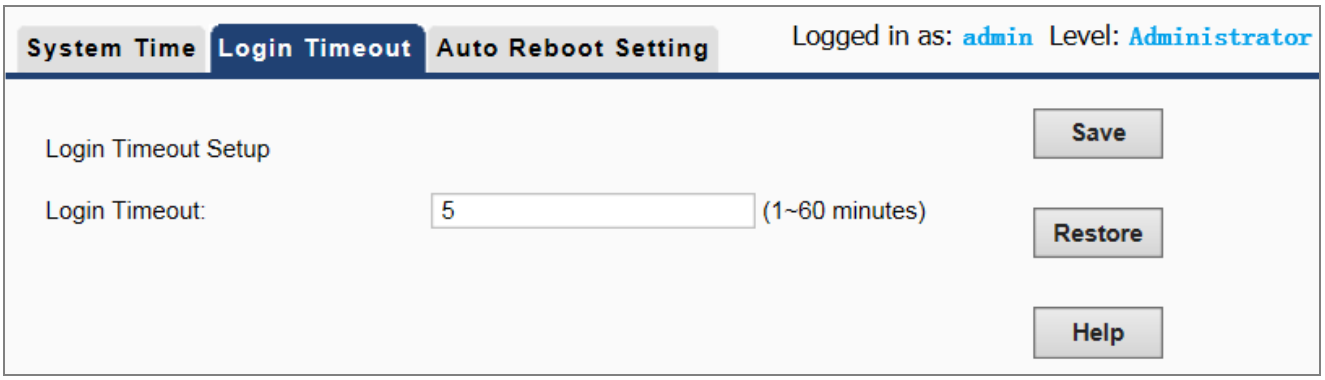


Figure 5-29 Login Timeout

- **Login Timeout**: You can configure the web login timeout (1-60 minutes). The default is 5 minutes.

■ Auto Reboot Setting

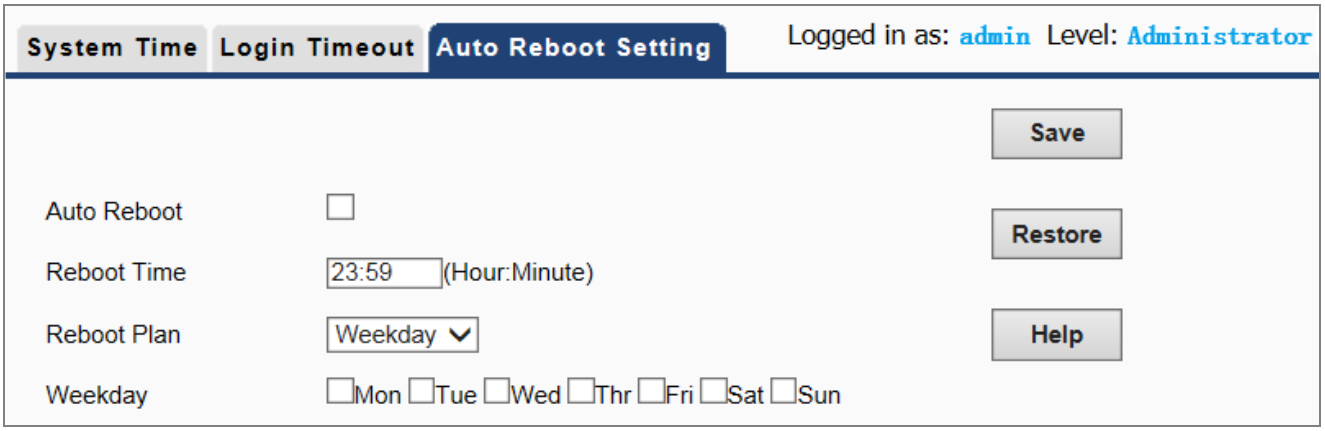


Figure 5-30 Auto Reboot Setting

The page includes the following fields:

Object	Description
• **Auto Reboot:**	Click it to enable auto reboot function.
• **Reboot Time:**	Enter the Reboot Time (24-hour format) to enable this function to take effect. For example, if you want this function to work at 18:00 every Sunday, you need to choose "Weekday" in the **Reboot Plan** field, and select the "Sun" checkbox in the Weekday field.
• **Reboot Plan:**	Select “Weekday” for multi-time reboot schedule or “Once” for only one

	day reboot time.
• **Weekday:**	Select the day you need to reboot.

5.7.3 Logs

■ View Logs

The section is to view the system log. Click the “Refresh” to update the log. Click “Clear” to clear all shown information.

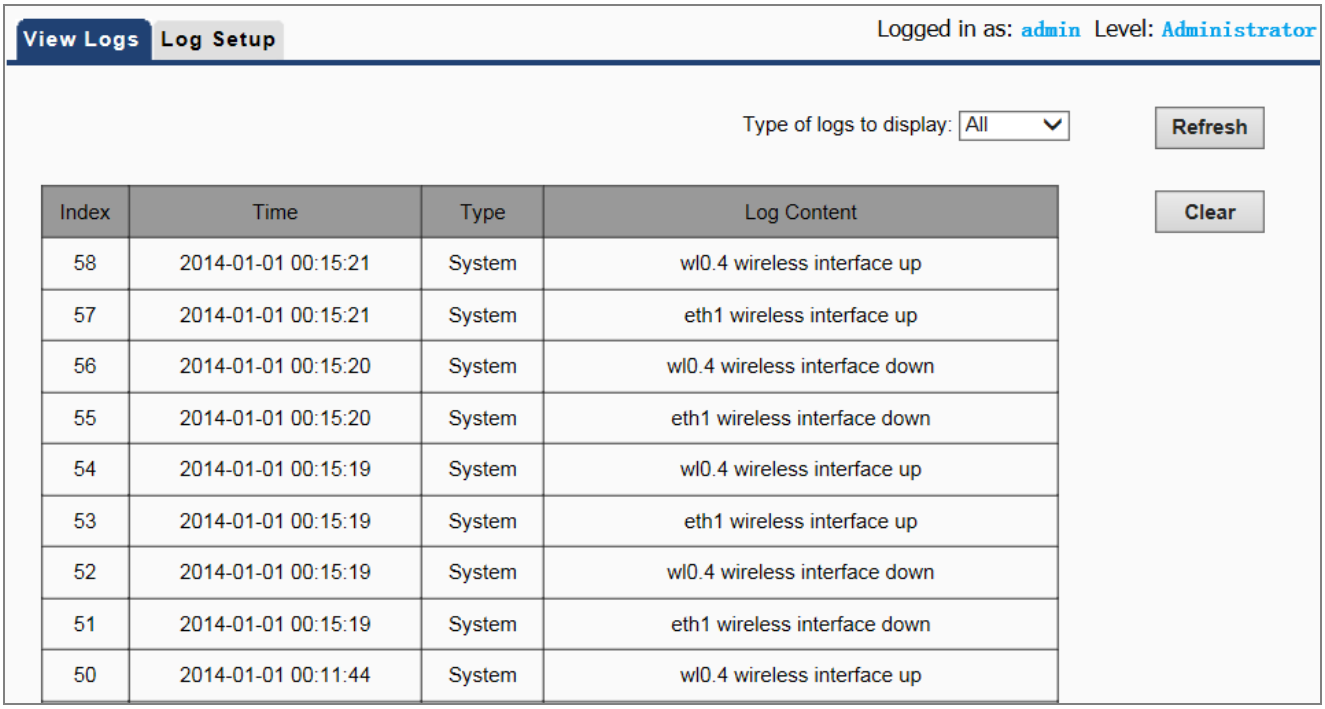


Figure 5-31 View Logs

- **Refresh:** Click this button to update the log.
- **Clear:** Click this button to clear the current log.

■ Log Setup

You set up the number of logs and log server.

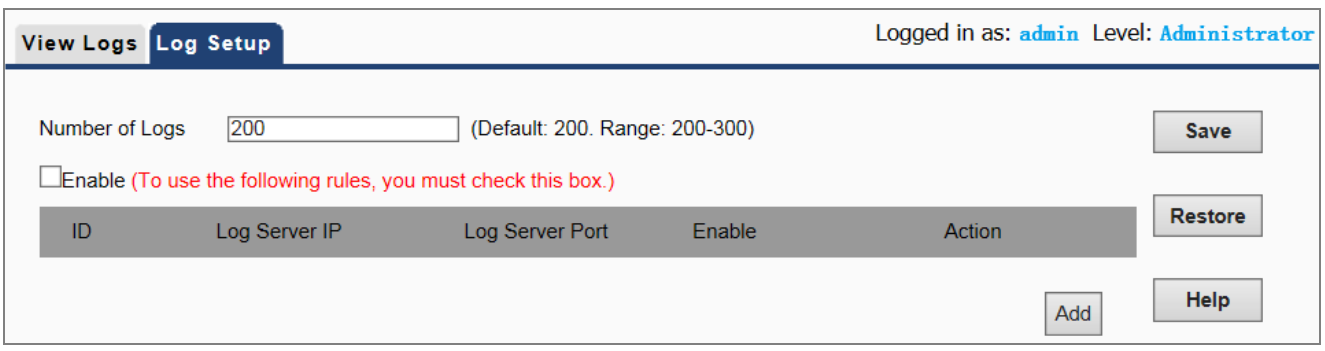


Figure 5-32 Log Setup

Click “Add” to setup a Log Server.

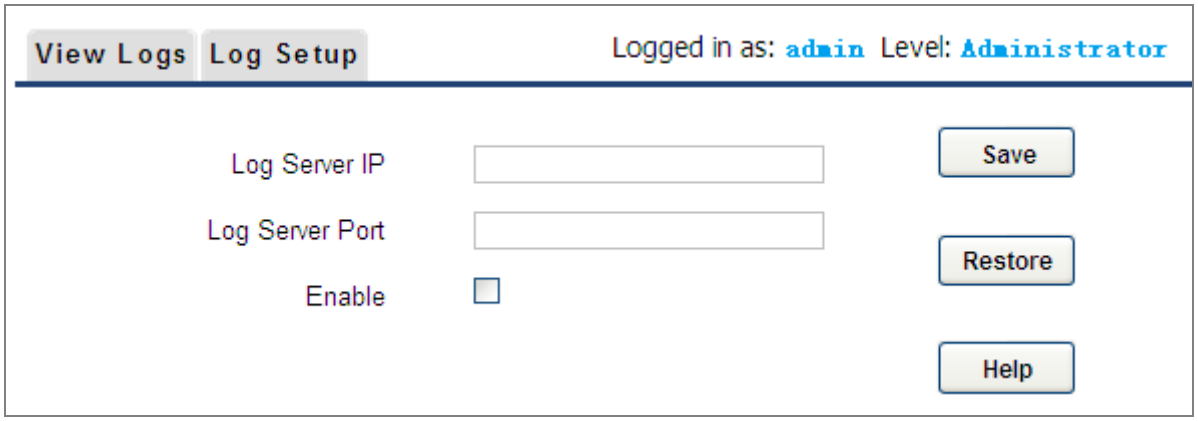


Figure 5-33 Add Log Server

The page includes the following fields:

Object	Description
• **Number of Logs:**	Set the number of logs. Default is 200.
• **Log Server IP:**	Enter the log server IP.
• **Log Server Port:**	Enter the log server port.

5.7.4 Backup Settings

This section allows you to backup the current settings or to restore the previous settings configured on the device.

Choose menu “**Tools→ Backup Settings**” to back up or restore the configuration of the WNAP-C3220.

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

■ **Backup & Restore**

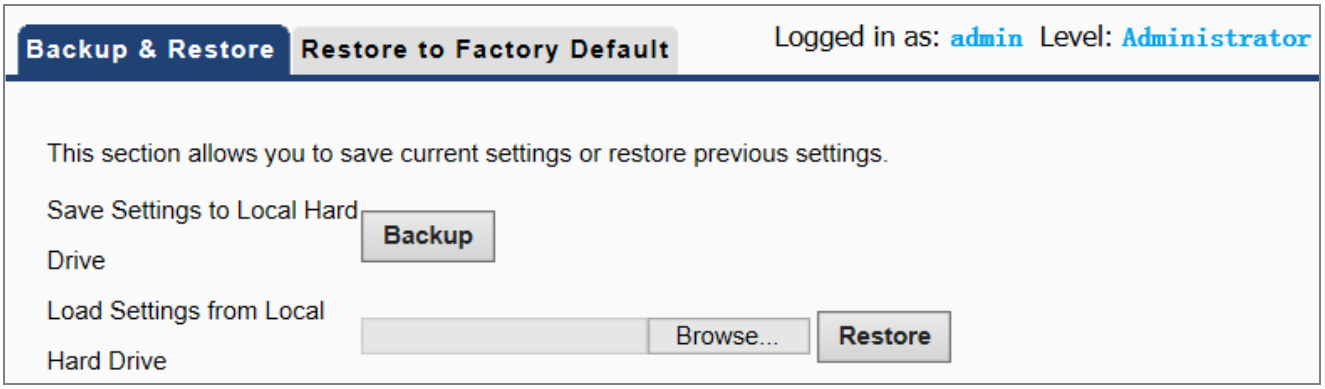


Figure 5-34 Backup & Restore

The page includes the following fields:

Object	Description
Backup:	Once you have configured the device the way you want it, you can save these settings to a configuration file on your local hard drive that can later be imported to your device in case that the device is restored to factory default settings. To do this, click the "**Backup**" button and specify a directory to save settings on your local hardware.
Restore:	Click the "**Browse…**" button to locate and select a configuration file that is saved previously to your local hard drive. And then click the "Restore" button to reset your device to previous settings.

■ Restore to Factory Default

This section is to reset all configurations to the default values. It means the device will lose all the settings you have set.

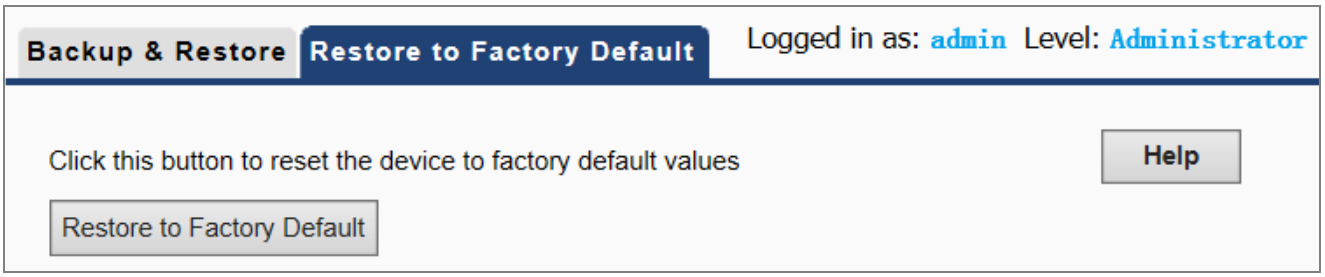


Figure 5-35 Restore to Factory Default

- **Restore**: Click this button to restore to default settings.
- **Factory Default Settings:**

  User Name: admin

  Password: admin

  IP Address: 192.168.1.253

  Subnet Mask: 255.255.255.0

  SSID: WNAP-C3220

  Wireless Encryption Type: None

5.7.5 Set Password

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

Choose menu "**Tools→ Set Password**" to change the user name and password which is inputted to access the web UI of the WNAP-C3220.

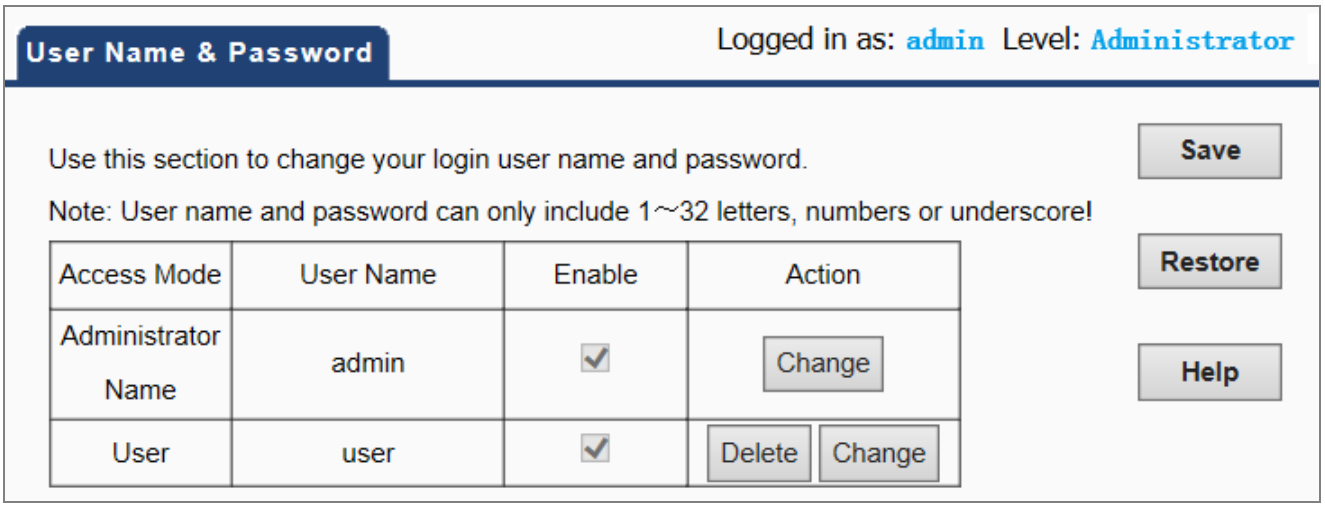


Figure 5-36 User Name & Password

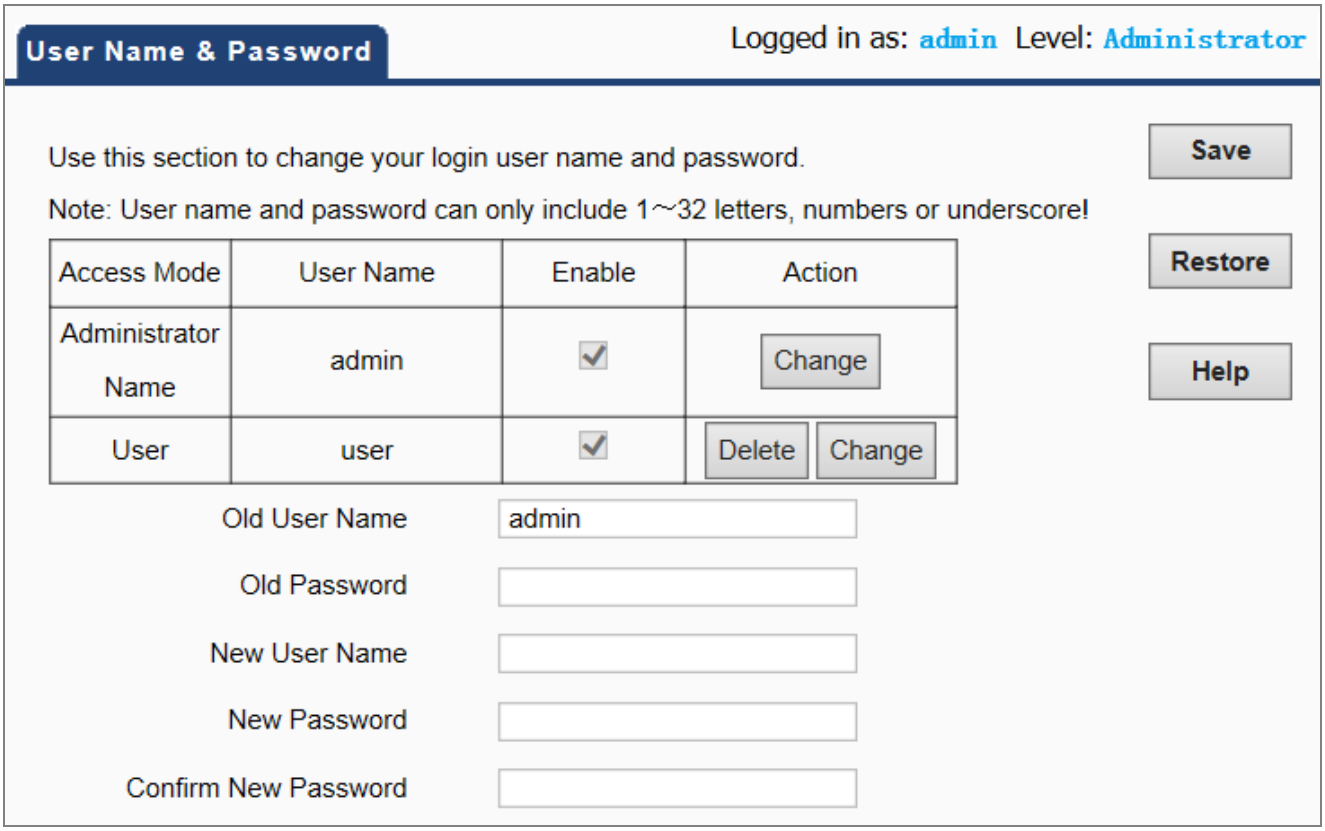


Figure 5-37 Setting Login Password

The page includes the following fields:

Object	Description
• **Old User Name:**	Enter the old user name.

• **Old Password:**	Enter the old password.
• **New User Name:**	Enter the new user name.
• **New Password:**	Enter the new password.
• **Confirm New Password:**	Confirm the new password again.

Note

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

5.7.6 Diagnostics

This section is used to ping an IP address or domain name.

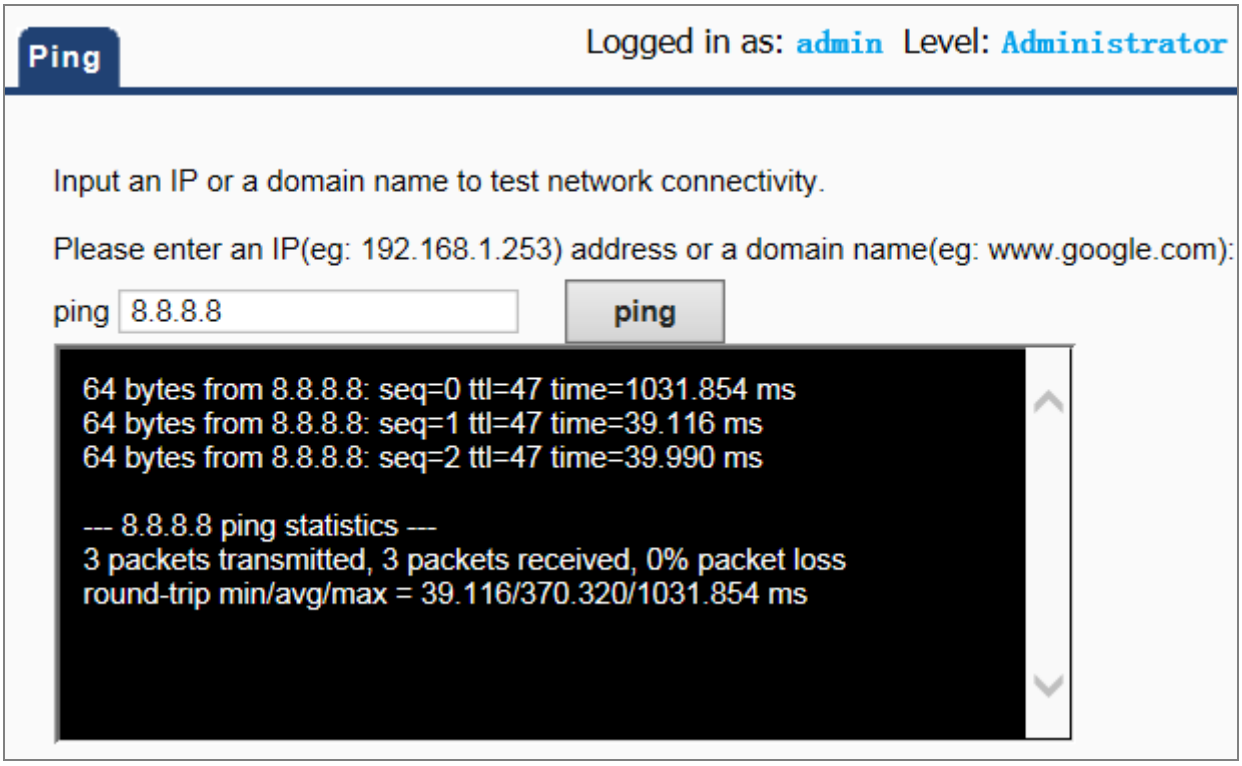


Figure 5-38 Diagnostics

Chapter 6. Quick Connection to a Wireless Network

In the following sections, the **default SSID** of the WNAP-C3220 is configured to "**default**".

6.1 Windows XP (Wireless Zero Configuration)

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

Figure 6-1 System Tray – Wireless Network Icon

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

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

(1) Select SSID [default]

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

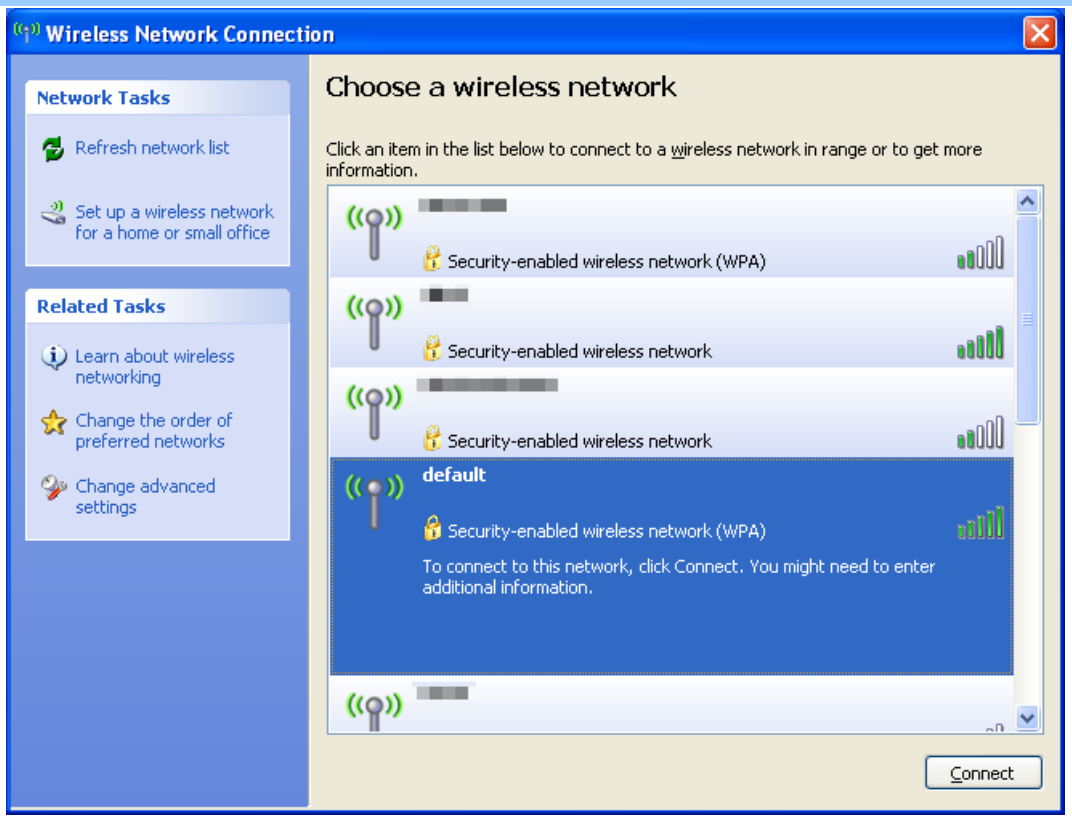


Figure 6-2 Choose a wireless network

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

(1) The Wireless Network Connection box will appear

(2) Enter the encryption key

(3) Click the [Connect] button

Figure 6-3 Enter the network key

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

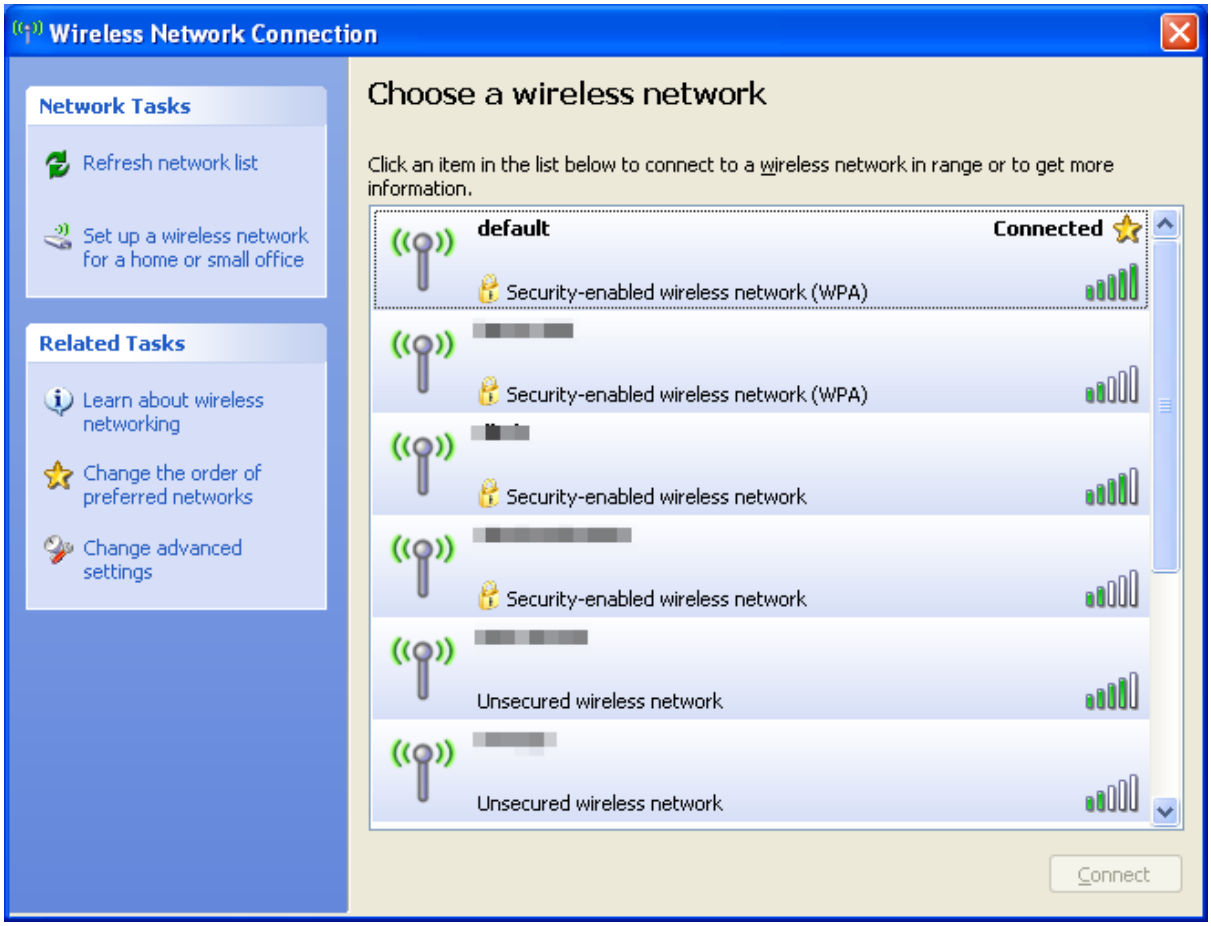


Figure 6-4 Choose a wireless network -- Connected

Note

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

6.2 Windows 7 (WLAN AutoConfig)

WLAN AutoConfig service is built-in on 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

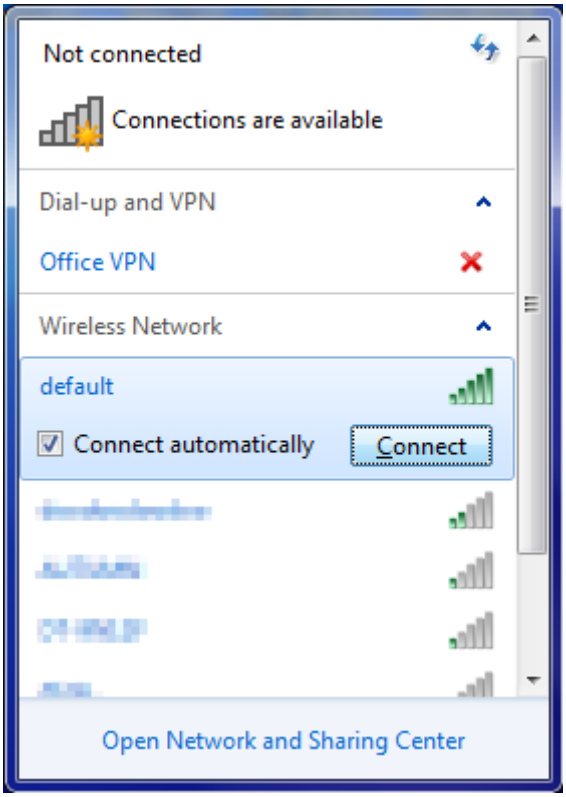


Figure 6-6 WLAN AutoConfig

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

(3) Click the [OK] button

Figure 6-7 Type the network key

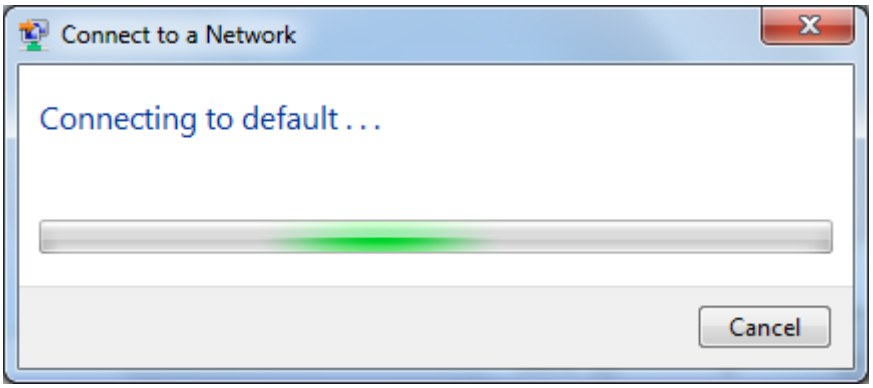


Figure 6-8 Connecting to a Network

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

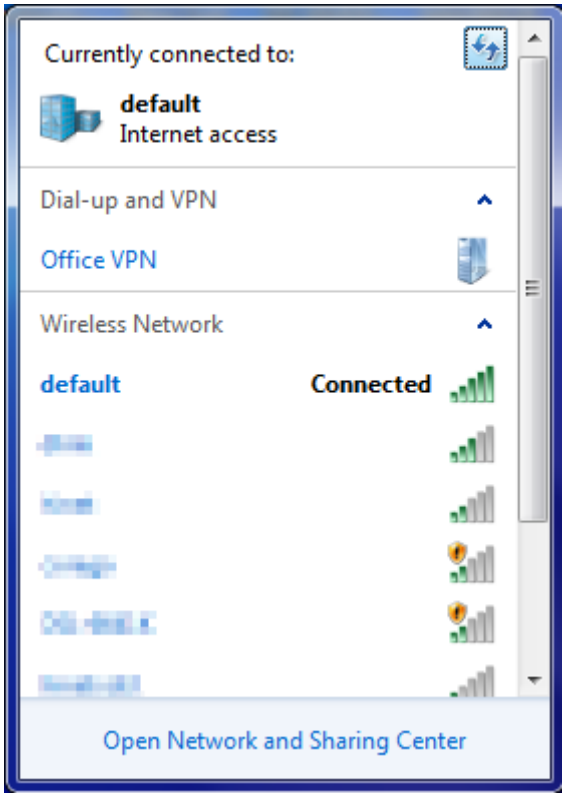


Figure 6-9 Connected to a Network

6.3 Mac OS X 10.x

In the following sections, the default SSID of the WNAP-C3220 is configured to “default”.

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

The AirPort Network Connection menu will appear

Figure 6-10 Mac OS – Network icon

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

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

(2) Double-click on the selected SSID

Figure 6-11 Highlight and select the wireless network

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

(1) Enter the encryption key

(2) Click the [OK] button

Figure 6-12 Enter the Password

Note

If you will be connecting 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 Preferences** or **Applications**

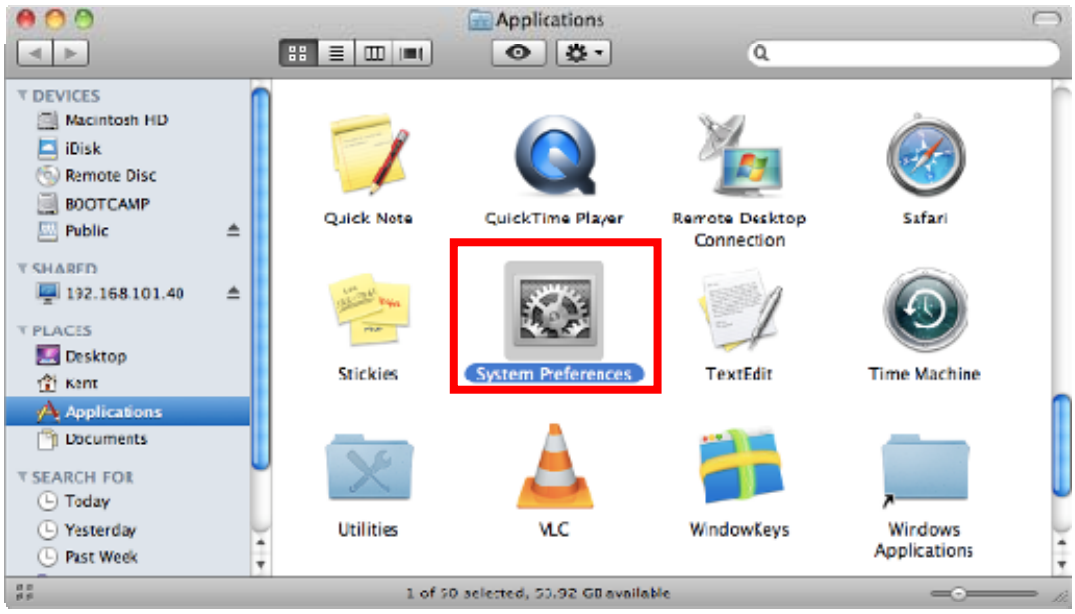


Figure 6-14 System Preferences

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

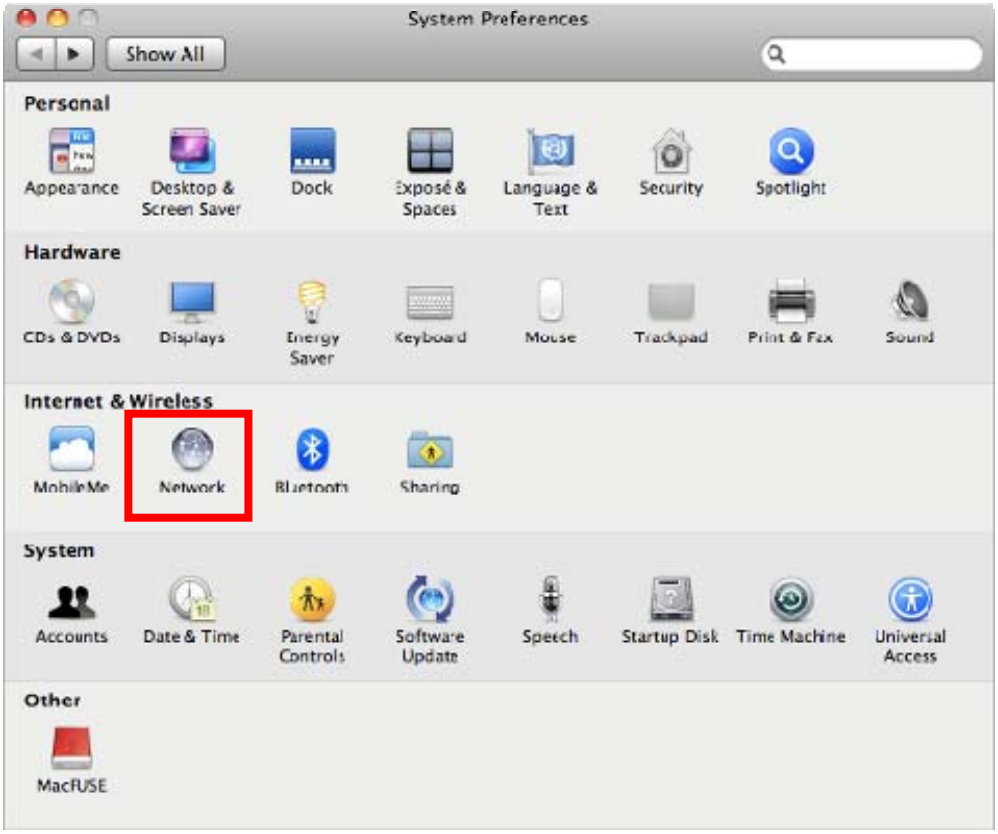


Figure 6-15 System Preferences -- Network

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”.

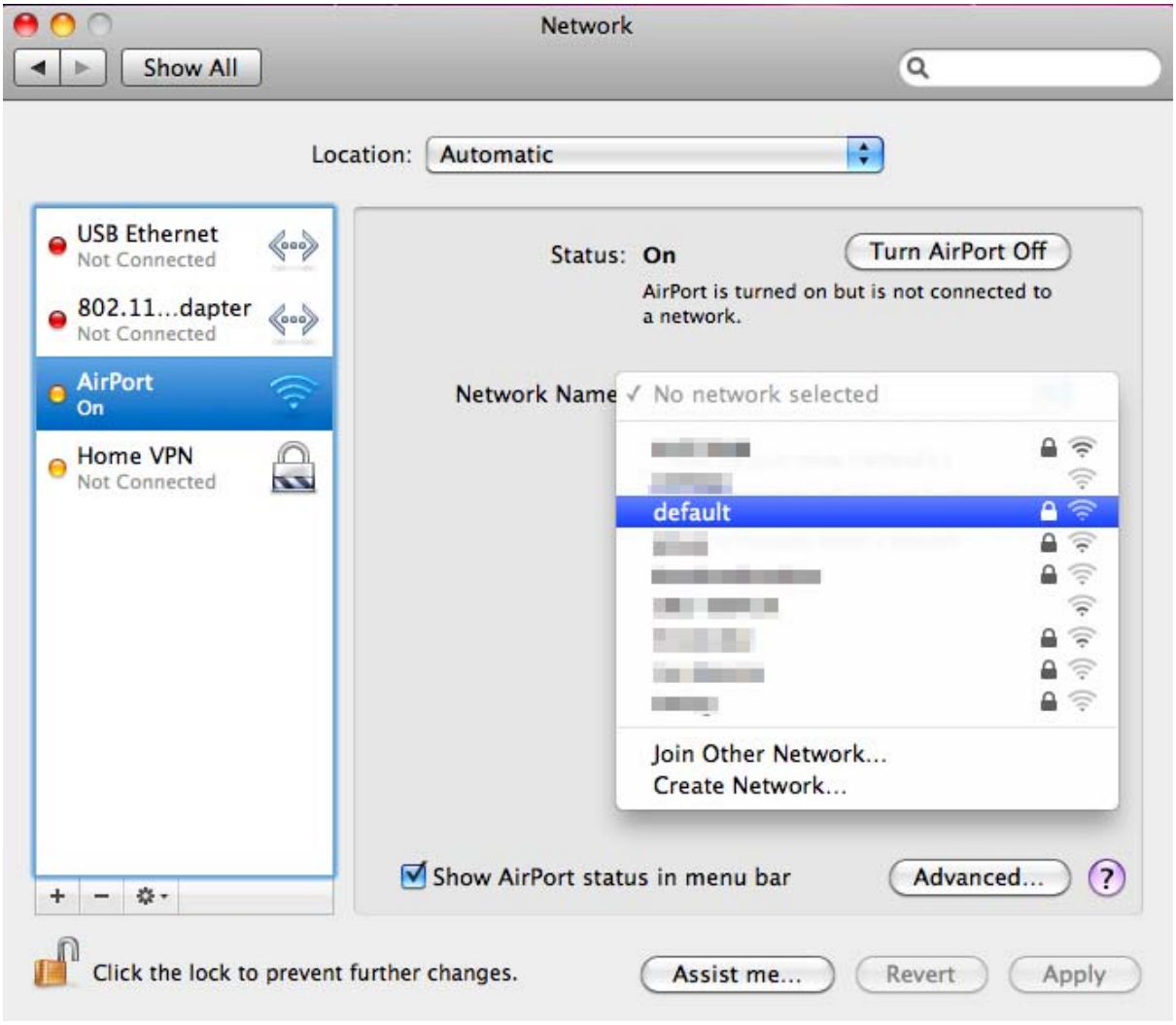


Figure 6-16 Select the Wireless Network

6.4 iPhone / iPod Touch / iPad

In the following sections, the **default SSID** of the WNAP-C3220 is configured to "**default**".

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

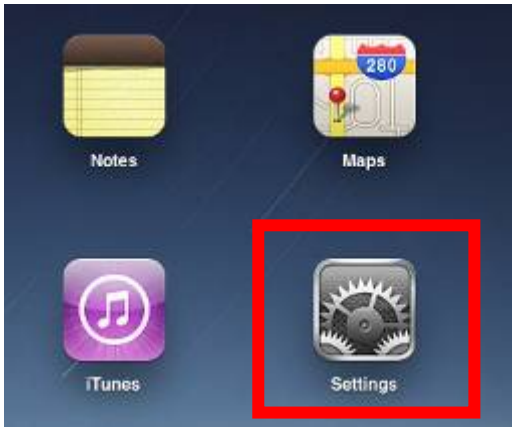


Figure 6-17 iPhone – Settings icon

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

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

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

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

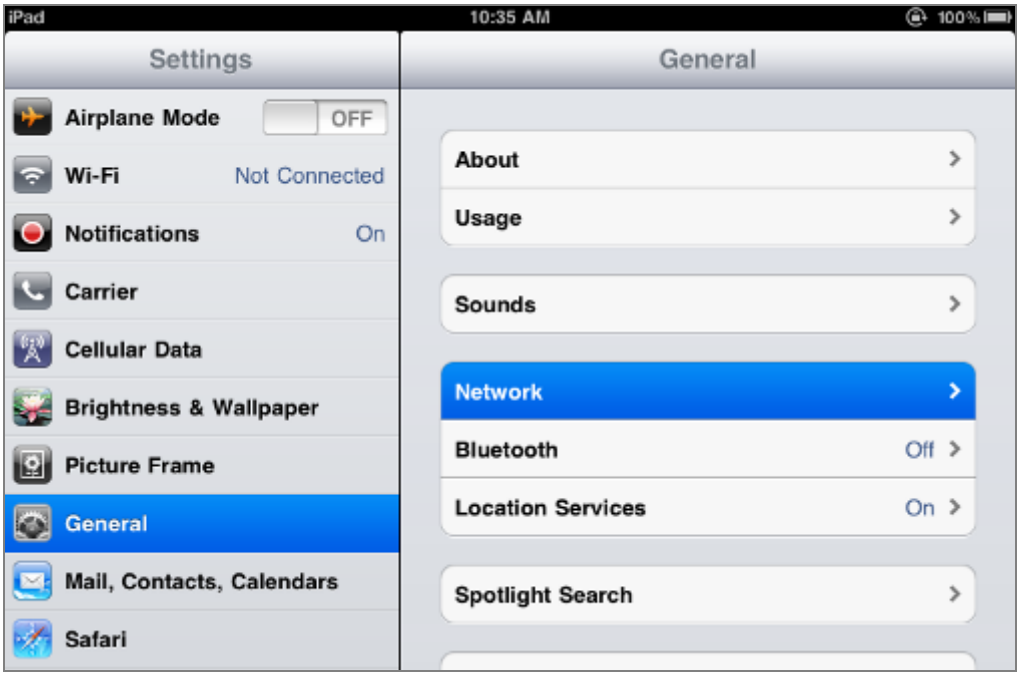


Figure 6-18 Wi-Fi setting

Figure 6-19 Wi-Fi setting – Not Connected

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

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

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

Figure 6-20 Turn on Wi-Fi

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

(1) The password input screen will be displayed

(2) Enter the encryption key

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

Figure 6-21 iPhone -- Enter the Password

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

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

Figure 6-22 iPhone -- Connected to the Network

Appendix A: Planet Smart Discovery Utility

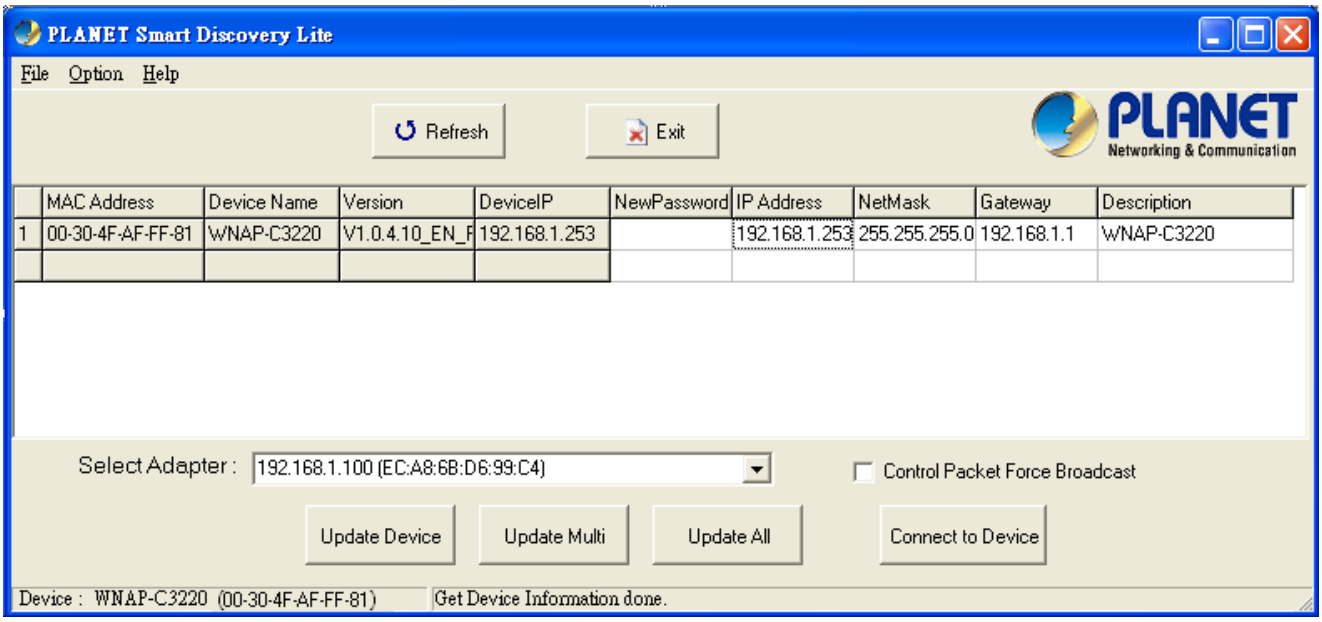
To easily list the WNAP-C3220 in your Ethernet environment, the Planet Smart Discovery Utility from user's manual CD-ROM is an ideal solution.

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



Step 3: Press the **"Connect to Device"** button 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 the "**Update Device**" button.

Appendix B: Troubleshooting

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

Scenario	Solution
The AP is not responding to me when I want to access it by web browser.	a. Please check the connection of the power cord and the Ethernet cable of this AP. All cords and cables should be correctly and firmly inserted to the AP. b. If all 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 (pressing 'reset' button for over 10 seconds). e. Set your computer to obtain an IP address automatically (DHCP), and see if your computer can get an IP address. 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, and check Internet connection status. b. Please be patient, sometimes Internet is just that slow. c. If you connect 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 again. e. Call your Internet service provide and check if there's something wrong with their service. f. If you just can't connect to one or more website, but you can still use other internet services, please check URL/Keyword filter. g. Try to reset the AP and try again later. h. Reset the device provided by your Internet service provider too. i. Try to use IP address instead of host name. If you can

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

Appendix C: Specifications

Product	**WNAP-C3220** **300Mbps 802.11n Wireless Ceiling Mount Range Extender**	
Hardware Specifications		
Interface	LAN:	1x 10/100BASE-TX, Auto-MDI/MDIX, 802.3af PoE compliant
	Wireless:	IEEE 802.11b/g/n
PoE	IEEE 802.3af PoE	
Antenna	Built-in 3dBi antenna x2	
Reset Button	Reset button on rear panel Press over 7 seconds to reset the device to factory default	
LED Indicators	PWR/SYS LED x1	
Material	Plastic	
Dimensions (Φ x H)	144 x 33mm	
Weight	165g	
Power Requirements	Power Supply: DC 12V, 1A Power over Ethernet: IEEE 802.3af PoE, DC 48V, 0.35A	
Power Consumption	11.26W (max.)	
Wireless Interface Specifications		
Modulation Type	Transmission / Emission Type: DSSS / OFDM Data modulation type: OFDM: BPSK, QPSK, 16-QAM, 64-QAM, DBPSK, DQPSK, CCK	
Frequency Band	2.412~2.484GHz	
Operating Channel	America/ FCC: 2.412~2.462GHz (11 Channels) Europe/ ETSI: 2.412~2.472GHz (13 Channels)	
Channel Width	20 or 20/40MHz	
Data Rate	IEEE 802.11b: 1/ 2/ 5.5/ 11Mbps IEEE 802.11g: 6/ 9/ 12/ 18/ 24/ 36/ 48/ 54Mbps IEEE 802.11n: 300 Mbps in 40MHz mode / 150Mbps in 20MHz mode	
Receiver Sensitivity	IEEE 802.11b: -92dBm @ 1Mbps; -85dBm @ 11Mbps, PER < 8% IEEE 802.11g: -88dBm @ 6Mbps; -73dBm @ 54Mbps, PER <10% IEEE 802.11n: -90dBm @ MCS8; -70dBm @ MCS15, PER <10%	
RF Power (Intentional Radiator)	20dBm (Max.)	
Transmission Distance	Indoor up to 100m Outdoor up to 300m (it is limited to the environment)	
Wireless Management Features		
Wireless Modes	Access Point, WDS PtP, WDS PtMP, Universal Repeater	
Multiple-SSID	Up to 4	
WDS Remote Peers	Up to 4	

Encryption Security	WEP (64/128-bit) WPA-PSK (TKIP) / WPA2-PSK (AES) WPA (TKIP) / WPA2 (AES) 802.1x Authentication	
Wireless Security	Enable/Disable SSID Broadcast	
	Wireless LAN ACL (Access Control List) MAC filtering	
Wireless Advanced	AP Isolation: Enable it to isolate each connected wireless clients	
	Supports 802.11e WMM (Wi-Fi Multimedia)	
Max. Supported Clients	Wire	253
	Wireless	40
System Management	Web-based (HTTP) management interface	
	Supports SNMP V1& V2C	
	Supports Planet Smart Discovery & Centralized Management Utility	
	System Log	
Standards Conformance		
IEEE Standards	IEEE 802.11n IEEE 802.11g IEEE 802.11b IEEE 802.11i IEEE 802.3 10Base-T IEEE 802.3u 100Base-TX	
Others Protocols and Standards	CSMA/CA, CSMA/CD, TCP/IP, DHCP, ICMP, SNTP	
Environment & Certification		
Temperature	Operating: -10 ~ 45 degrees C Storage: -30 ~ 70 degrees C	
Humidity	Operating: 10 ~ 90% (non-condensing) Storage: 10 ~ 90% (non-condensing)	
Regulatory	CE, RoHS, WEEE	

Appendix D: Glossary

- **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.
- **802.11b -** 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 54Mbps using direct-sequence spread-spectrum (DSSS) technology, using OFDM modulation and operating in the unlicensed radio spectrum at 2.4GHz. It features 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 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.
- **ISP** (**I**nternet **S**ervice **P**rovider) **-** A company that provides access to the Internet.
- **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

For the following equipment:

*Type of Product: 802.11n Wireless Ceiling Mount Access Point
*Model Number: WNAP-C3220

* Produced by:
Manufacturer's Name : **Planet Technology Corp.**
Manufacturer's Address: 10F., No.96, Minquan Rd., Xindian Dist.,
New Taipei City 231, Taiwan (R.O.C.)

is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to 1999/5/EC R&TTE.
For the evaluation regarding the R&TTE the following standards were applied:

EN 300 328 V1.7.1	(2006-10)
EN 301 489-17 V2.1.1	(2009-05)
EN 301 489-1 V1.8.1	(2008-04)
EN 50385	(2002)
EN 60950-1	(2006 + A11 : 2009)

Responsible for marking this declaration if the:

☒ **Manufacturer** ☐ **Authorized representative established within the EU**

Authorized representative established within the EU (if applicable):

Company Name: **Planet Technology Corp.**

Company Address: **10F., No.96, Minquan Rd., Xindian Dist., New Taipei City 231, Taiwan (R.O.C.)**

Person responsible for making this declaration

Name, Surname **Kent Kang**

Position / Title : **Product Manager**

Taiwan	**15 April, 2011**	
Place	*Date*	*Legal Signature*

PLANET TECHNOLOGY CORPORATION

e-mail: sales@planet.com.tw http://www.planet.com.tw
10F., No.96, Minquan Rd., Xindian Dist., New Taipei City, Taiwan, R.O.C.
Tel:886-2-2219-9518 Fax:886-2-2219-9528

EC Declaration of Conformity

English	Hereby, **PLANET Technology Corporation,** declares that this **802.11n Wireless AP** is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.	**Lietuviškai**	Šiuo **PLANET Technology Corporation,**, skelbia, kad **802.11n Wireless AP** tenkina visus svarbiausius 1999/5/EC direktyvos reikalavimus ir kitas svarbias nuostatas.
Česky	Společnost **PLANET Technology Corporation,** tímto prohlašuje, že tato **802.11n Wireless AP** splňuje základní požadavky a další příslušná ustanovení směrnice 1999/5/EC.	**Magyar**	A gyártó **PLANET Technology Corporation**, kijelenti, hogy ez a **802.11n Wireless AP** megfelel az 1999/5/EK irányelv alapkövetelményeinek és a kapcsolódó rendelkezéseknek.
Dansk	**PLANET Technology Corporation,** erklærer herved, at følgende udstyr **802.11n Wireless AP** overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF	**Malti**	Hawnhekk, **PLANET Technology Corporation,** jiddikjara li dan **802.11n Wireless AP** jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 1999/5/EC
Deutsch	Hiermit erklärt **PLANET Technology Corporation,** dass sich dieses Gerät **802.11n Wireless AP** in Übereinstimmung mit den grundlegenden Anforderungen und den anderen relevanten Vorschriften der Richtlinie 1999/5/EG befindet". (BMWi)	**Nederlands**	Hierbij verklaart , **PLANET Technology orporation,** dat **802.11n Wireless AP** in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG
Eestikeeles	Käesolevaga kinnitab **PLANET Technology Corporation,** et see **802.11n Wireless AP** vastab Euroopa Nõukogu direktiivi 1999/5/EC põhinõuetele ja muudele olulistele tingimustele.	**Polski**	Niniejszym firma **PLANET Technology Corporation,** oświadcza, że **802.11n Wireless AP** spełnia wszystkie istotne wymogi i klauzule zawarte w dokumencie „Directive 1999/5/EC".
Ελληνικά	*ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ* , **PLANET Technology Corporation,** *ΔΗΛΩΝΕΙ ΟΤΙ ΑΥΤΟ* **802.11n Wireless AP***ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ*	**Português**	**PLANET Technology Corporation**, declara que este **802.11n Wireless AP** está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
Español	Por medio de la presente, **PLANET Technology Corporation,** declara que **802.11n Wireless AP** cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE	**Slovensky**	Výrobca **PLANET Technology Corporation,** týmto deklaruje, že táto **802.11n Wireless AP** je v súlade so základnými požiadavkami a ďalšími relevantnými predpismi smernice 1999/5/EC.
Français	Par la présente, **PLANET Technology Corporation,** déclare que les appareils du **802.11n Wireless AP** sont conformes aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE	**Slovensko**	**PLANET Technology Corporation**, **s tem potrjuje,** da je ta **802.11n Wireless AP** skladen/a z osnovnimi zahtevami in ustreznimi določili Direktive 1999/5/EC.
Italiano	Con la presente , **PLANET Technology Corporation,** dichiara che questo **802.11n Wireless AP** è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.	**Suomi**	**PLANET Technology Corporation,** vakuuttaa täten että **802.11n Wireless AP** tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Latviski	Ar šo **PLANET Technology Corporation,** apliecina, ka šī **802.11n Wireless AP** atbilst Direktīvas 1999/5/EK pamatprasībām un citiem atbilstošiem noteikumiem.	**Svenska**	Härmed intygar, **PLANET Technology Corporation,** att denna **802.11n Wireless AP** står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.