PLANET
Networking & Communication

Wireless LAN

User's Manual

WNAP-C3220

300Mbps 802.11n Wireless Ceiling Mount AP / Range Extender

Copyright

CE mark Warning

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

Energy Saving Note of the Device

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

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.

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's Manual for PLANET 802.11n Wireless Ceiling Mount AP
Model: WNAP-C3220
Rev: 1.0 (April. 2011)

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Chapter 1. Product Introduction

1.1 Package Contents

The following items should be contained in the package:

- WNAP-C3220 Wireless Ceiling Mount AP
- Power Adapter
- Ethernet Cable
- Mounting Kit (Screw & Plastic wall-plug)
- Quick Installation Guide
- CD-ROM (User's Manual included)

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

1.2 Product Description

The WNAP-C3220 features 802.11n-compliant radio in 2 x 2 (TX / RX) configuration offering breakthrough performance and enhances coverage to its Wi-Fi network. The Ceiling Mountable of 300Mbps Wireless Range Extender delivers exceptional range and speed, which can fully meet the need of Small Office/Home Office (SOHO) networks and the users demanding higher networking performance, flexible installation.

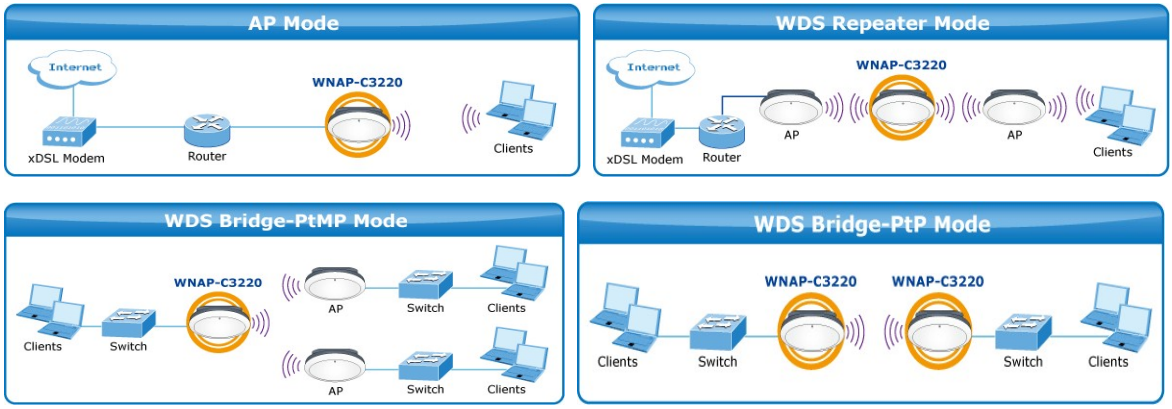
Faster Speed and Widely Range

Adopting IEEE 802.11n advanced MIMO technology; it provides reliable wireless network coverage, and incredible improvement in the wireless performance, even in the office with several partitions.

As an IEEE 802.11b/g/n compliant wireless device, the WNAP-C3220 is able to give stable and efficient wireless performance, while designed with IEEE 802.11b/g/n standard and 2T2R MIMO technology makes it possible to deliver several times faster data rate up to 300Mbps than normal wireless device and higher coverage for home and SOHO applications.

Multiple Operating Modes

It supports multiple wireless communication connectivity (AP / Repeater / WDS PtP and PtMP), allowing for various application requirements that gives user more comprehensive experience when using WNAP-C3220. It also helps user easily to build wireless network and extend the wireless range of existed wireless network.



Advanced Wireless Security

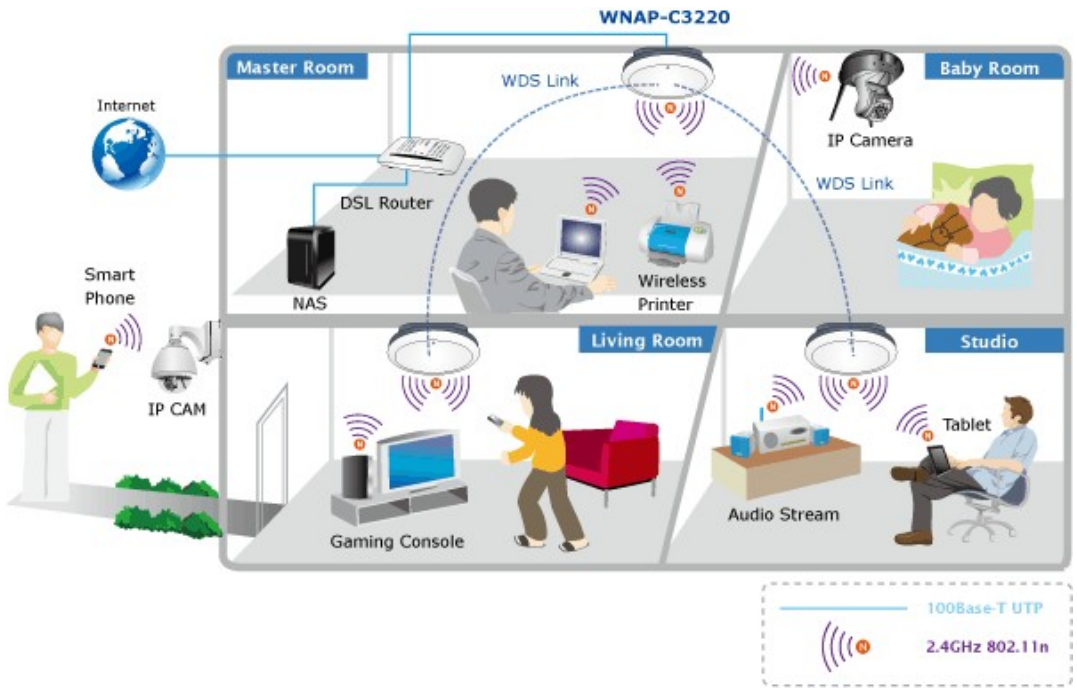
In aspect of security, besides 64/128- bit WEP encryption, the WNAP-C3220 integrates WPA / WPA2, WPA-PSK / WPA2-PSK and 802.1x authority to secure and protect your wireless LAN. The wireless MAC filtering and SSID broadcast control to consolidate the wireless network security and prevent unauthorized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

Easy Installation & Management

With User-friendly Web UI and step by step wizard, it is easier to install, even through a user who never experiencing setup a wireless network. Its SNMP feature allows system administrator remote monitoring and controlling network devices more efficiency.

Unique & Ceiling Mountable Design

Featuring attractive Ceiling design and a flying saucer appearance. Its unique ceiling design can be installed by simply firmly adsorbed on the ceiling, client-side installation easy and convenient, streamlined body effects on the surrounding environment more embellishment.



1.3 Product Features

- **Compliance with Industrial Standard**
  - Compliant with IEEE 802.11n wireless technology capable of up to 300Mbps data rate
  - Backward compatible with 802.11b/g standard
  - Gigabit Auto-negotiation LAN port, Compliant with IEEE 802.3/802.3u standards
  - Support 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)
    - IEEE 802.1x Network Access Control
  - Support MAC Address Filtering Access Control to limit the connected wireless clients
- **Multiple Operating Modes, Multiple Mounting Options**
  - Multiple operating modes including AP, Repeater, WDS Point to Point, WDS Point to Multiple Point
  - Ceiling mountable characterizes can reach better coverage to reduce dead spot
- **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

1.4 Product Specification

Product	**WNAP-C3220** 300Mbps 802.11n Wireless Ceiling Mount Access Point
Hardware Specification	
Standard support	IEEE 802.11b/g IEEE 802.11n IEEE 802.3 10Base-T IEEE 802.3u 100Base-TX IEEE 802.3ab 1000Base-T IEEE 802.3x Flow Control IEEE 802.3af Power over Ethernet
PoE	802.3af PoE
Interface	Wireless IEEE 802.11b/g/n LAN: 1x 10/100/1000Base-T, Auto-MDI/MDIX, 802.3af PoE compliant
Antenna	Built-in 2T2R, 2dbi Printed Antenna
LED	Wireless / Power LED

<table>
<tr><td>Button</td><td>Reset</td></tr>
<tr><td>Power Requirements</td><td>Power Supply: DC 12V, 1A
Power over Ethernet: IEEE 802.3af PoE, DC 48V, 0.35A</td></tr>
<tr><td>Power Consumption</td><td>≦ 6W</td></tr>
<tr><td colspan="2">Wireless Interface Specification</td></tr>
<tr><td>Frequency Band</td><td>2.4~2.4835GHz</td></tr>
<tr><td>Modulation</td><td>Transmission/Emission Type: DSSS / OFDM
Data modulation type: OFDM: BPSK, QPSK, 16-QAM, 64-QAM, DBPSK, DQPSK, CCK</td></tr>
<tr><td>Opt. Channel</td><td>America/ FCC: 2.412~2.462GHz (1~11 Channels)
Europe/ ETSI: 2.412~2.472GHz (1~13 Channels)
Japan/ TELEC: 2.412~2.484GHz (1~14 Channels)</td></tr>
<tr><td>RF Output Power</td><td>20dBm (Max.)</td></tr>
<tr><td>Receiver Sensitivity</td><td>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%</td></tr>
<tr><td>TX Power</td><td>User defined (Range 1~100, default 100)</td></tr>
<tr><td>Data Rate</td><td>IEEE 802.11b: 1/ 2/ 5.5/ 11Mbps
IEEE 802.11g: 6/ 9/ 12/ 18/ 24/ 36/ 48/ 54Mbps
IEEE 802.11n:
<table>
<tr><td rowspan="2">MCS</td><td colspan="2">Guard Interval 800ns</td><td colspan="2">Guard Interval 400ns</td></tr>
<tr><td>20MHz(Mbps)</td><td>40MHz(Mbps)</td><td>20MHz(Mbps)</td><td>40MHz(Mbps)</td></tr>
<tr><td>0</td><td>6.5</td><td>13.5</td><td>7.2</td><td>15</td></tr>
<tr><td>1</td><td>13</td><td>27</td><td>14.4</td><td>30</td></tr>
<tr><td>2</td><td>19.5</td><td>40.5</td><td>21.7</td><td>45</td></tr>
<tr><td>3</td><td>26</td><td>54</td><td>28.9</td><td>60</td></tr>
<tr><td>4</td><td>39</td><td>81</td><td>43.3</td><td>90</td></tr>
<tr><td>5</td><td>52</td><td>108</td><td>57.8</td><td>120</td></tr>
<tr><td>6</td><td>58.5</td><td>121.5</td><td>65</td><td>135</td></tr>
<tr><td>7</td><td>65</td><td>135</td><td>72.2</td><td>157.5</td></tr>
<tr><td>8</td><td>13</td><td>27</td><td>14.4</td><td>30</td></tr>
<tr><td>9</td><td>26</td><td>54</td><td>28.9</td><td>60</td></tr>
<tr><td>10</td><td>39</td><td>81</td><td>43.3</td><td>90</td></tr>
<tr><td>11</td><td>52</td><td>108</td><td>57.8</td><td>120</td></tr>
<tr><td>12</td><td>78</td><td>162</td><td>86.7</td><td>180</td></tr>
<tr><td>13</td><td>104</td><td>216</td><td>115.6</td><td>240</td></tr>
<tr><td>14</td><td>117</td><td>243</td><td>130</td><td>270</td></tr>
<tr><td>15</td><td>130</td><td>270</td><td>144.4</td><td>300</td></tr>
</table></td></tr>
<tr><td colspan="2">Wireless Management Features</td></tr>
</table>

Operating Mode	■ AP ■ Repeater ■ WDS PtP ■ WDS PtMP
Encryption Security	64/128-bits WEP WPA, WPA-PSK WPA2, WPA2-PSK 802.1X
Wireless Isolation	Enable it to isolate each connected wireless clients, to let them cannot access mutually.
Wireless Security	Wireless MAC address filtering (up to 50 entries)
	SSID broadcast and Hide
Wireless Client Max.	20 (default 10)
WMM	Wi-Fi Multimedia for better data transmission of Video or on-line demand
BG Protection Mode	A protection mechanism prevents collisions among 802.11b/g modes
APSD	For auto power-saved service
Max. WDS AP	4
Max. Wired Client	Unlimited
Management	
LAN	Static IP, Dynamic IP
Management Interface	Web UI SNMPv1/v2c
SNMP MIB	MIB I MIB II (RFC-1213)
Diagnostic tool	System Log
Environment & Certification	
Operation Temp.	Temp.: 0~40°c, Humidity: 10%~90% non-condensing
Storage Temp.	Temp.: -40~70°c, Humidity: 5%~90% non-condensing
Regulatory	CE/RoHS

Table 1 WNAP-C3220 Specification Summary

Chapter 2. Hardware Overview

2.1 Hardware Description

2.1.1 The Front Panel

Front Panel

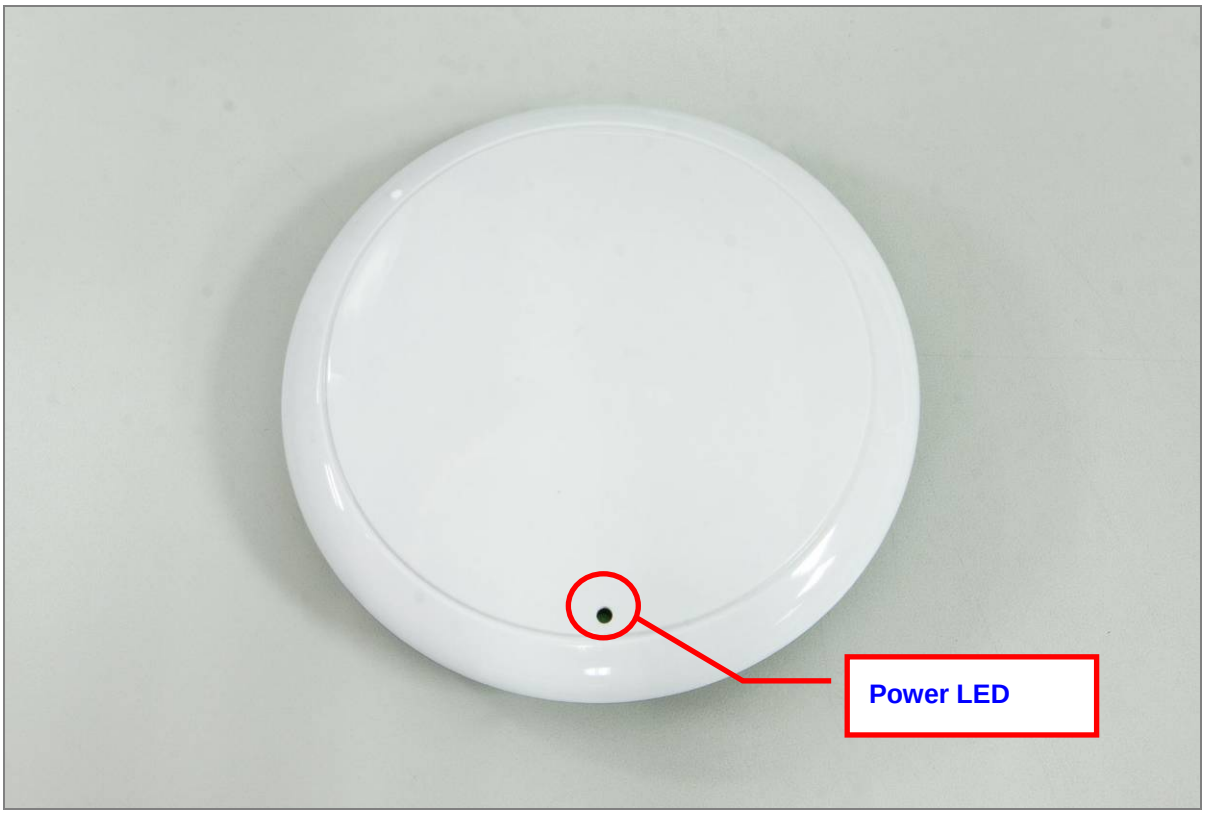


Figure 1 WNAP-C3220 Front Panel

2.1.2 LED Indications

LED Definition

LED	Color	Status	Function
Power	Green	On	System On
	Green	Off	System Off
	Green	Flashing	Device Initial

Table 2 The LED indication

2.1.3 The Rear Panel

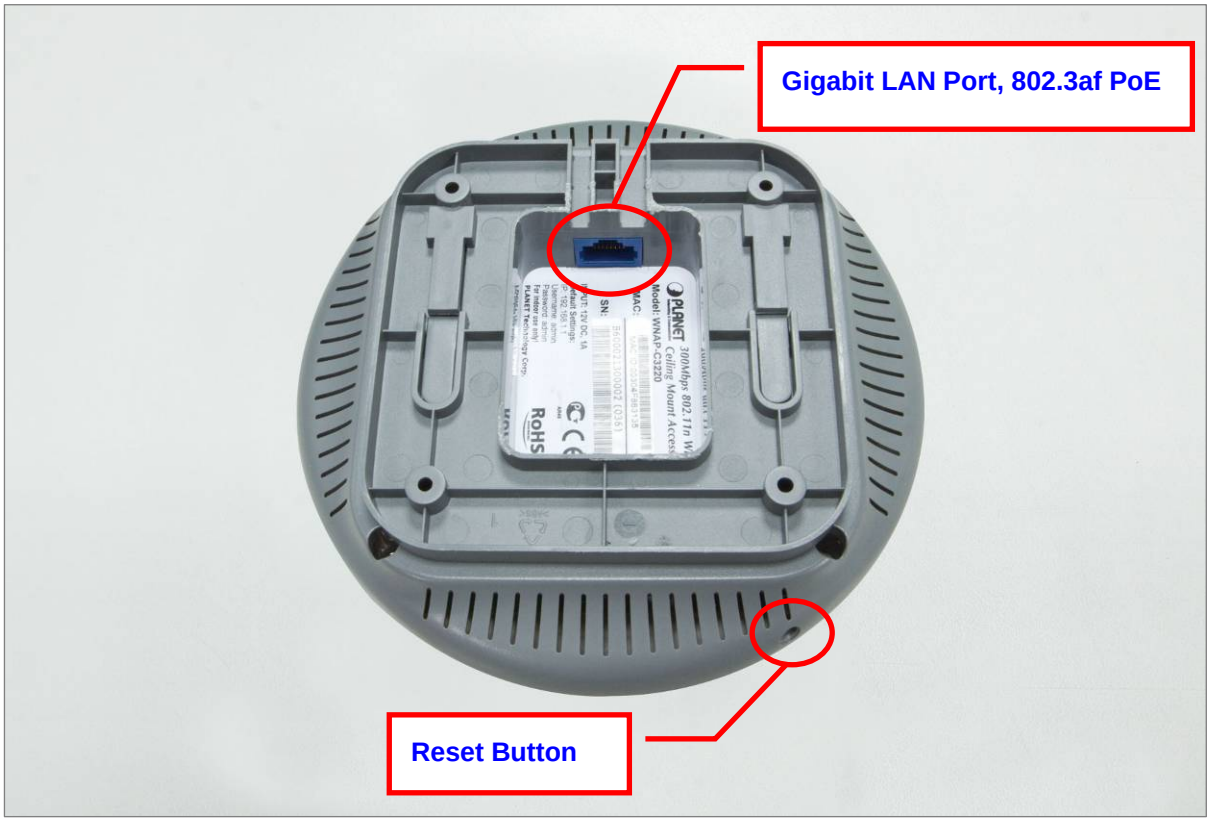


Figure 2 Rear Panel - 1

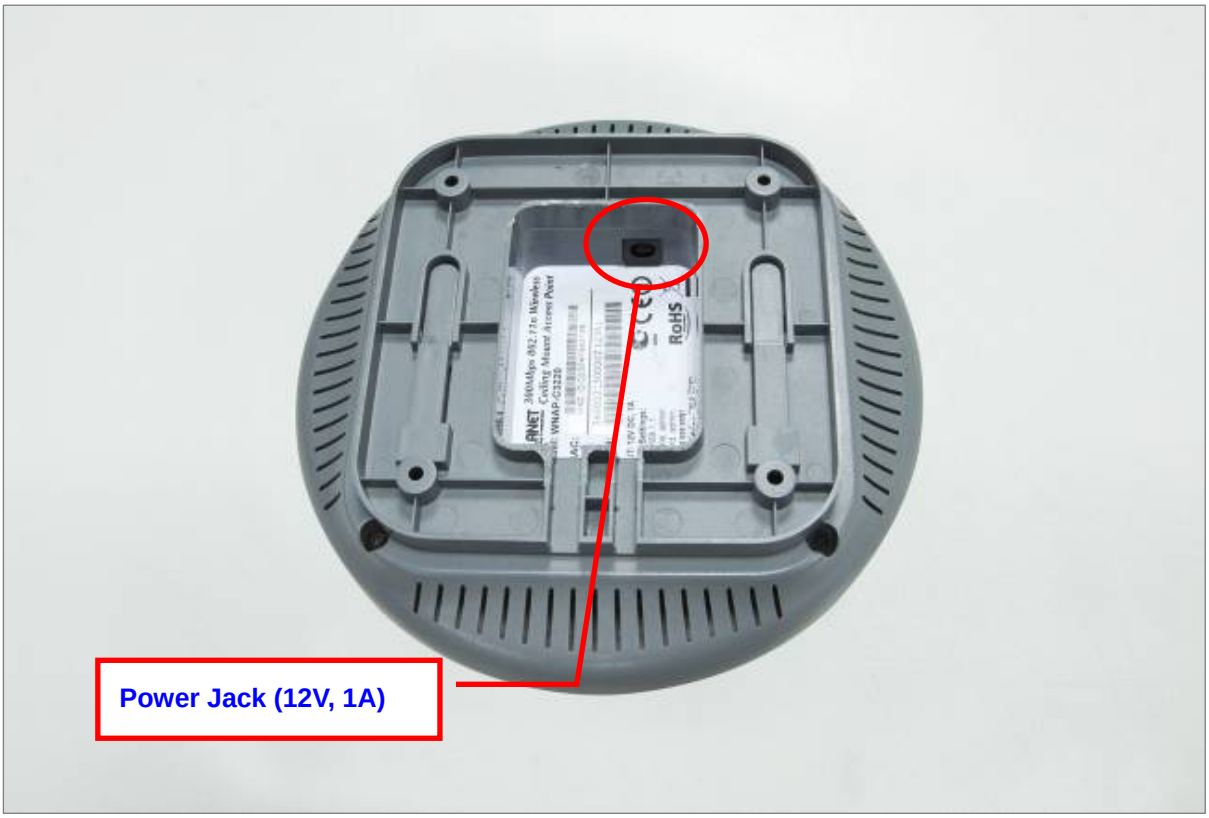


Figure 3 Rear Panel - 2

Reset Button

ACTIVE	Function
Reset	Press and hold the button more than **6 seconds** to the factory default setting

Table 3 Button

Interface

Interface	Function
POWER	The Power socket is where you will connect the power adapter. Please use the power adapter provided with WNAP-C3220.
LAN	The LAN Port is where you will connect the RJ-45 Ethernet cable. The LAN Port also support 802.3af PoE.

Table 4 Interface

Power Notice:

1. For the power supply of WNAP-C3220, you could use either IEEE 802.3af PSE device or 12VDC Adapter.
2. Please do not use 12V adapter and PSE devices at the same time. It may damage the WNAP-C3220 itself.

ONLY use the power adapter supplied with WNAP-C3220. Otherwise, the product may be damaged.

Chapter 3. Installation

3.1 Mounting Options

The following types of surfaces that is suitable to mount WNAP-C3220:

- Ceiling
- Solid surface wall
- Tabletop

If you plan to install an AP on a partial wall or other vertical surface, orient the top of the access point (white cover) toward the intended coverage area. The radio antennas transmit through the top of the access point but not through the bottom (where the bracket is).

3.2 Ceiling or Wall Installation

Step 1. Remove the mounting bracket from the WNAP-C3220.

Step 2. Attach the bracket to the wall or ceiling.

Step 3. Mark each point in the bracket for the screws.

Step 4. Remove the bracket to drill the points and insert the plastic wall-mounts.

Step 5. Use screws to lock the bracket by a screw driver, shown in Figure 4.

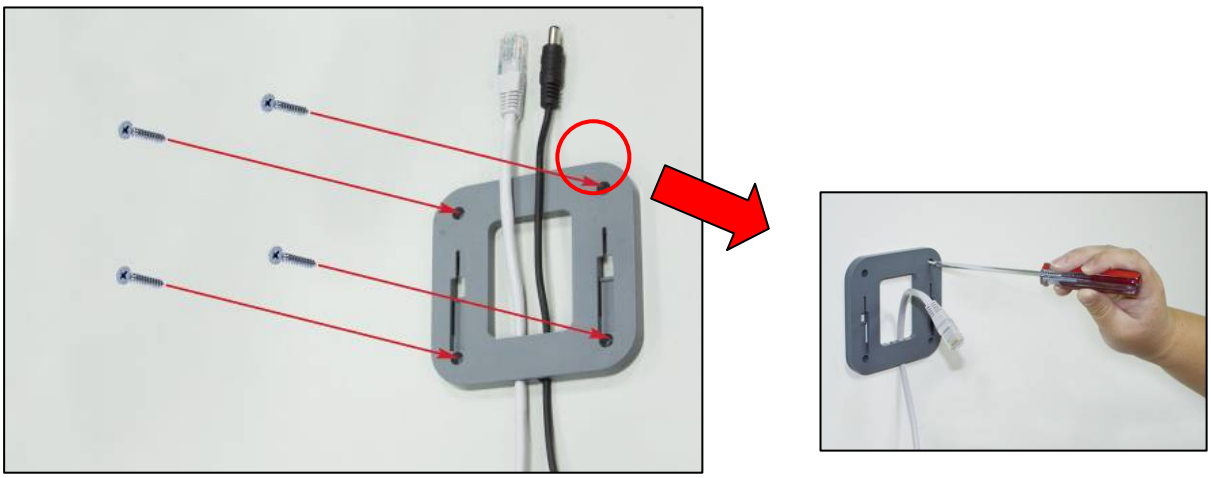


Figure 4 Mounting the bracket

Step 6. Plug the RJ-45 Ethernet cable into the WNAP-C3220, shown in Figure 3-2.

Figure 5 Connect the RJ-45 Cable

Step 7. Plug the power adapter into the WNAP-C3220. If WNAP-C3220 is connected to an 802.3af PoE switch, you don't have to plug the power adapter.

Figure 6 Connect the Power Adapter

Step 8. Attach the WNAP-C3220 to the mounting bracket.

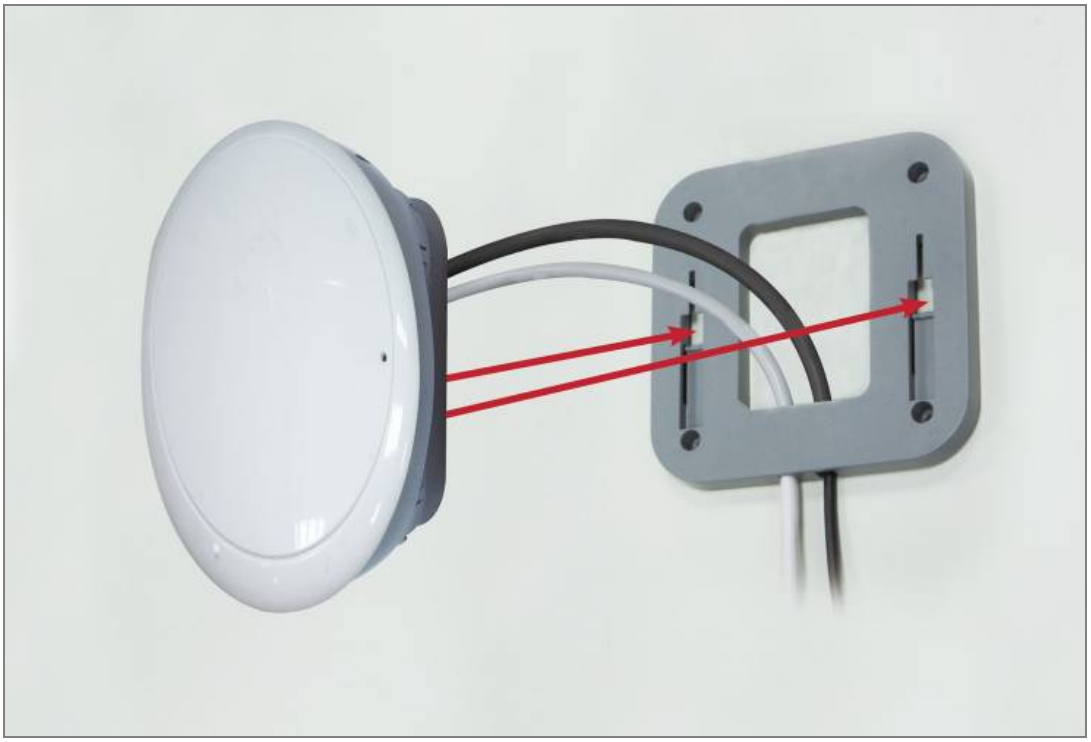


Figure 7 Attach WNAP-C3220 to the bracket

Step 9. Successful installation.

Figure 8 Ceiling Mounting

Chapter 4. Configuring the AP

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

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

4.1 System Requirements

- PCs with a working Ethernet Adapter and an Ethernet cable with RJ-45 connectors
- PC of subscribers running Windows 98/ME, NT4.0, 2000/XP, Windows Vista / Win 7, MAC OS 9 or later, Linux, UNIX or other platform compatible with **TCP/IP** protocols
- Above PC installed with WEB Browser

It is recommended to use Internet Explore 7.0 or above to access the Router.

4.2 Manual Network Setup - TCP/IP Configuration

The default IP address of the WNAP-C3220 is **192.168.1.1**. 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 local PC to the LAN ports of the AP. And then you can configure the IP address for your PC.

In the following sections, we'll introduce how to install and configure the TCP/IP correctly in **Windows XP**. First, make sure your Ethernet Adapter is working, and refer to the Ethernet adapter's manual if needed.

Summary:

- Set up the TCP/IP Protocol for your PC.
- Configure the network parameters. The IP address is 192.168.1.xxx ("xxx" is any number from 2 to 254), Subnet Mask is 255.255.255.0.

1 Select **Use the following IP address** radio button.

2 If the AP's LAN IP address is 192.168.1.1, enter IP address 192.168.1.x (x is from 2 to 254), and **Subnet mask** 255.255.255.0.

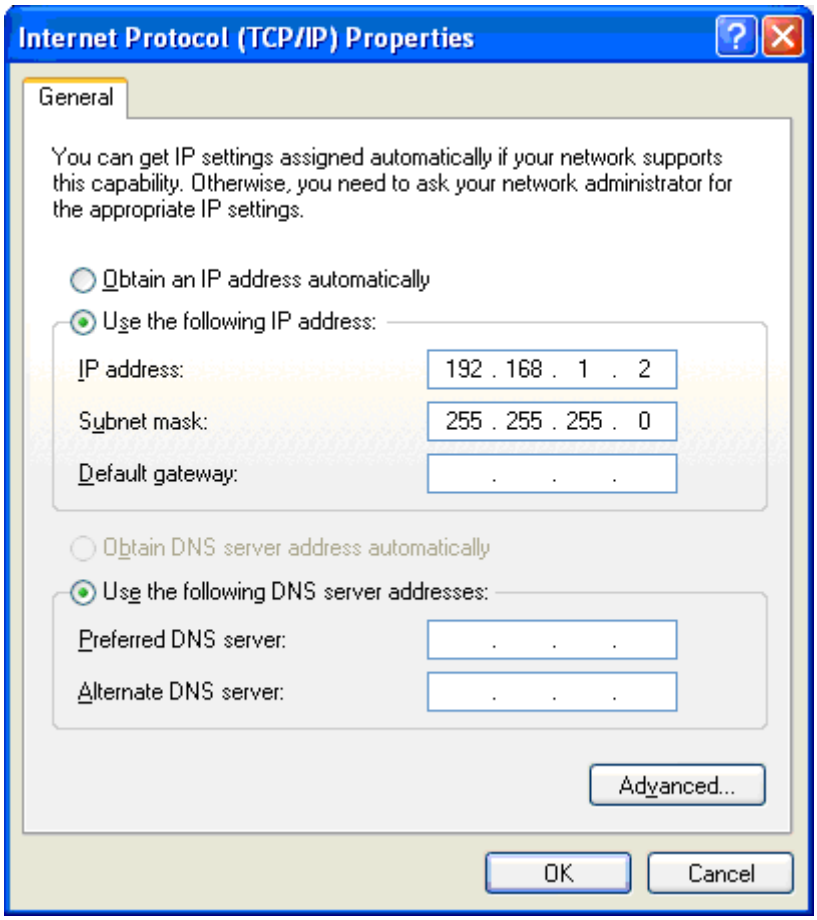


Figure 9 Manually assign IP to PC

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 XP** OS. Please follow the steps below:

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

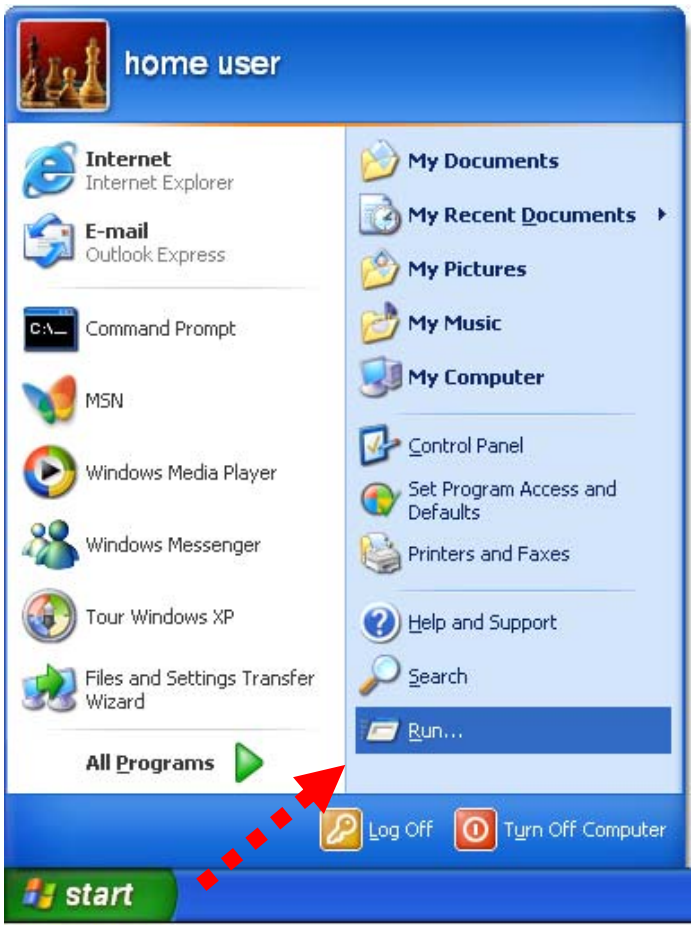


Figure 10 Open Run window

2. In the run box type "**cmd**" and click OK. (Windows Vista users type cmd in the Start .Search box.)At the prompt.

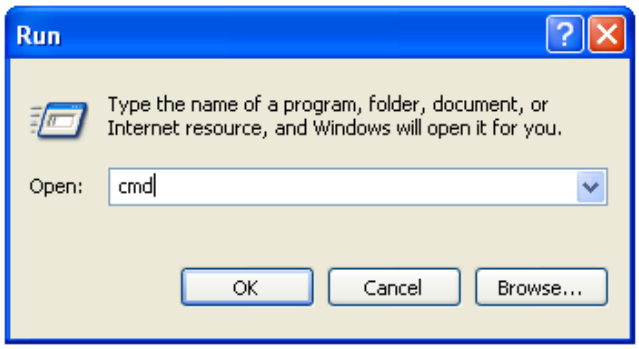


Figure 11 Open cmd tool

Open a command prompt, and type ***ping 192.168.1.1***, and then press **Enter**.

- If the result displayed is similar to the figure below, it means the connection between your PC and the AP has been established well.

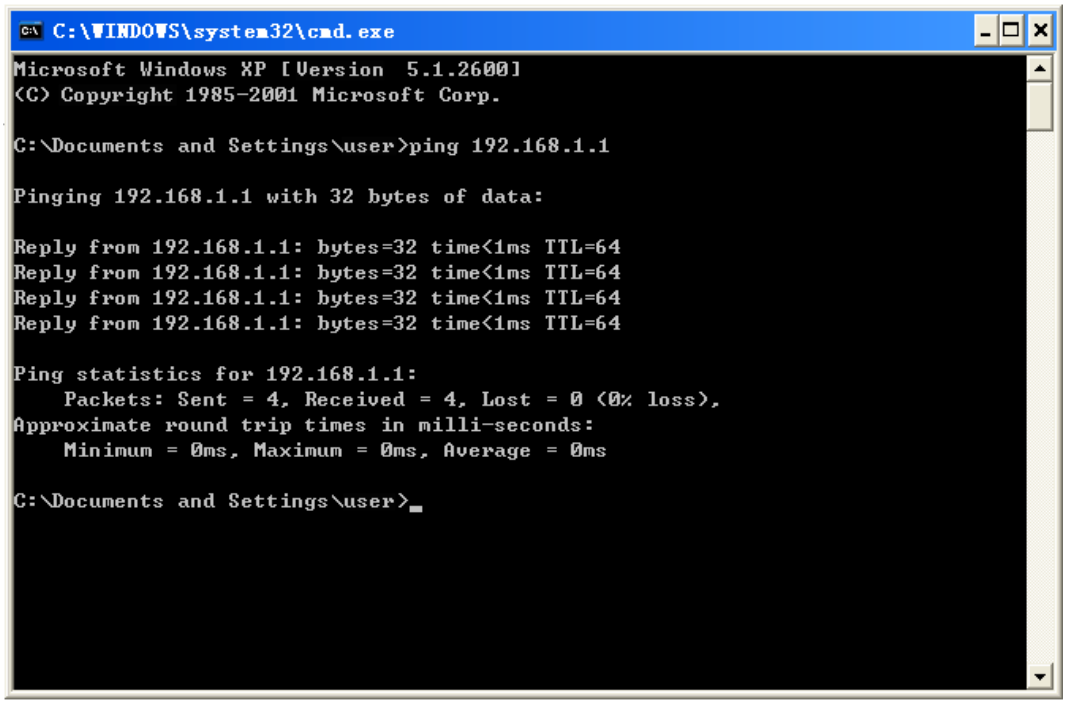


Figure 12 Success result of Ping command

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

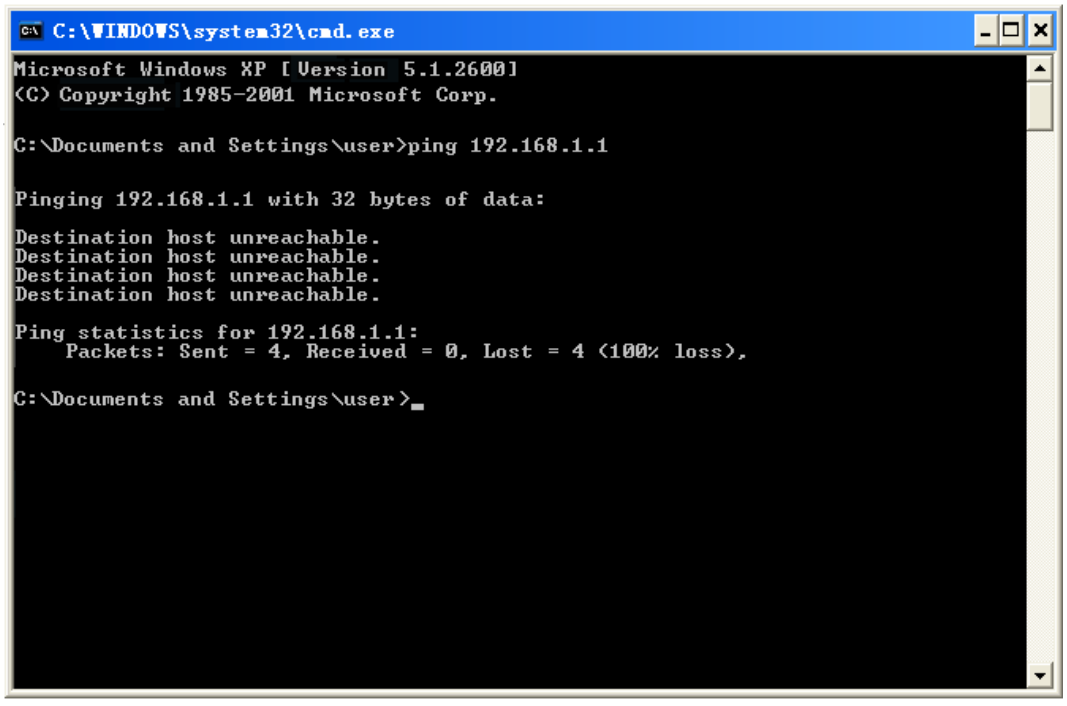


Figure 13 Failure result of Ping command

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.

1. If the AP's IP address is 192.168.1.1, your PC's IP address must be within the range of 192.168.1.2 ~ 192.168.1.254.

4.3 Login Web UI

It is easy to configure and manage the WNAP-C3220 with web browser.

Step 1. To access the configuration utility, open a web-browser and enter the default IP address http://192.168.1.1 in the address field of the browser.

Figure 14 Login the AP

After a moment, a login window will appear as Figure below.

Step 2. Enter **admin** for the User Name and Password, both in lower case letters. Then click the **OK** button or press the **Enter** key.

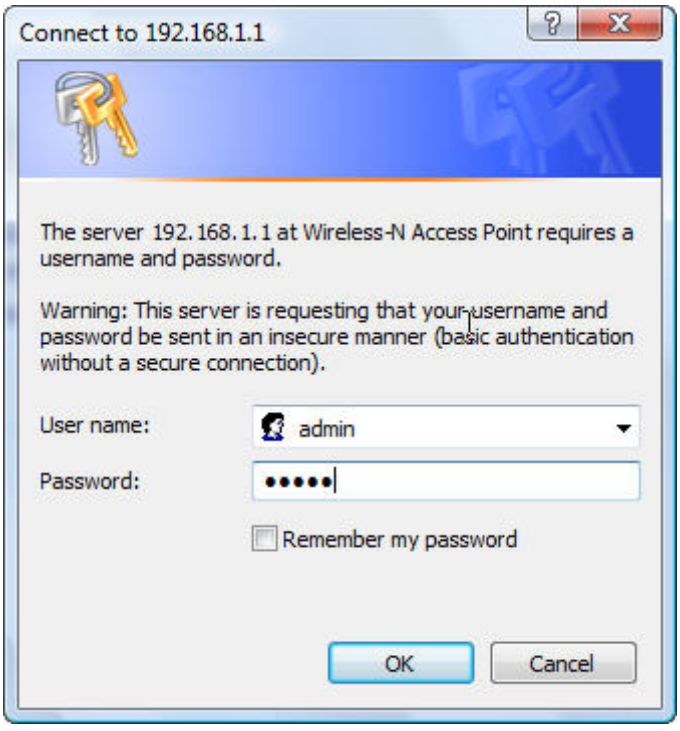


Figure 15 Login Window

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, in the screen that appears, cancel the Using Proxy checkbox, and click OK to finish it.

After entering the username and password, the main screen appears as Figure below.

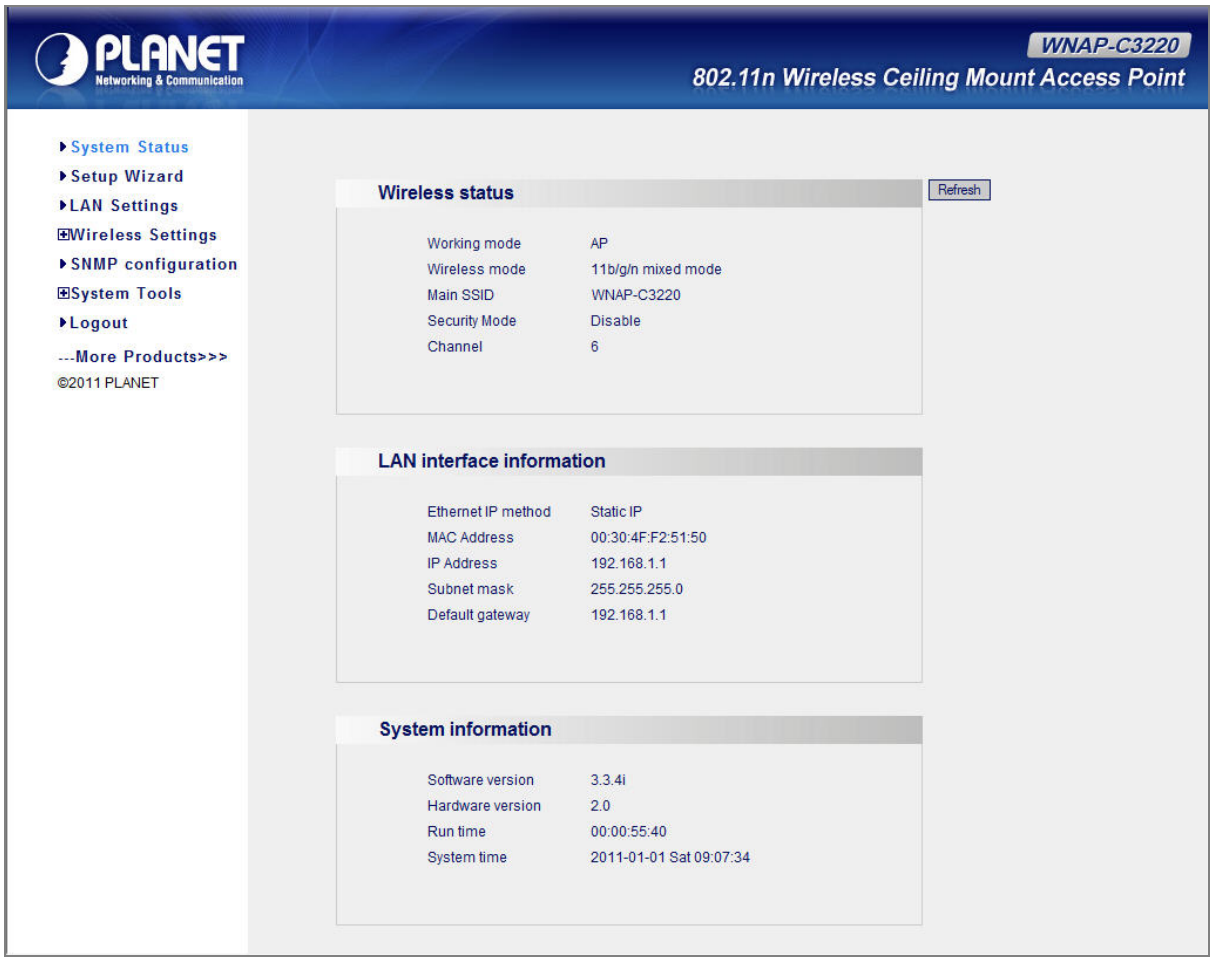


Figure 16 Web UI Screenshot

4.4 Setup Wizard

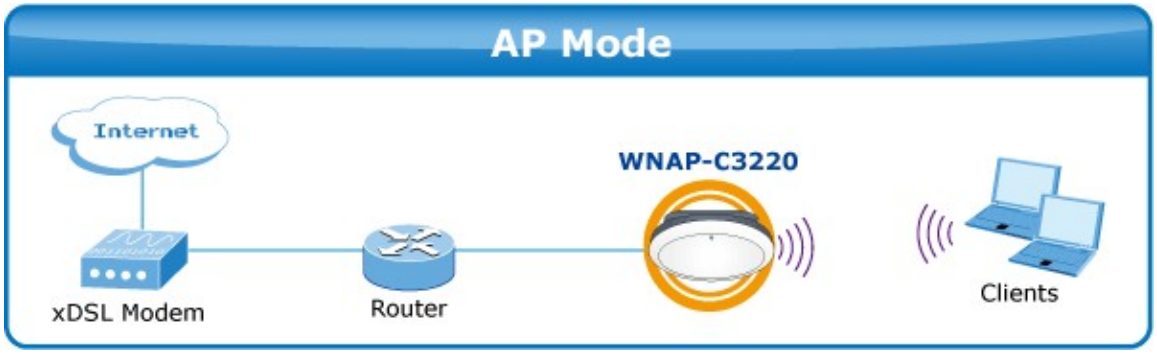
The Setup Wizard can help user to configure the device step by step.

The WNAP-C3220 supported multiple operating modes:

- **Wireless AP (AP)**: The device works as a wireless HUB in this mode, making communications between wireless and wireless, wireless and wired, wireless and WAN.
- **Bridge (WDS)**: Two or more wired LANs can be connected by wireless method in Bridge mode to share resources and extend wired network. You can select "**Point to Point Bridge (WDS P2P)**", "**Point to Multipoint Bridge (WDS P2MP)**" or "**Wireless Repeater (WDS AP Repeater)**" mode.

4.4.1 Setup – Wireless AP (AP)

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.



Step 1. Click the **Setup Wizard** to quickly configure your WNAP-C3220 to act as AP.

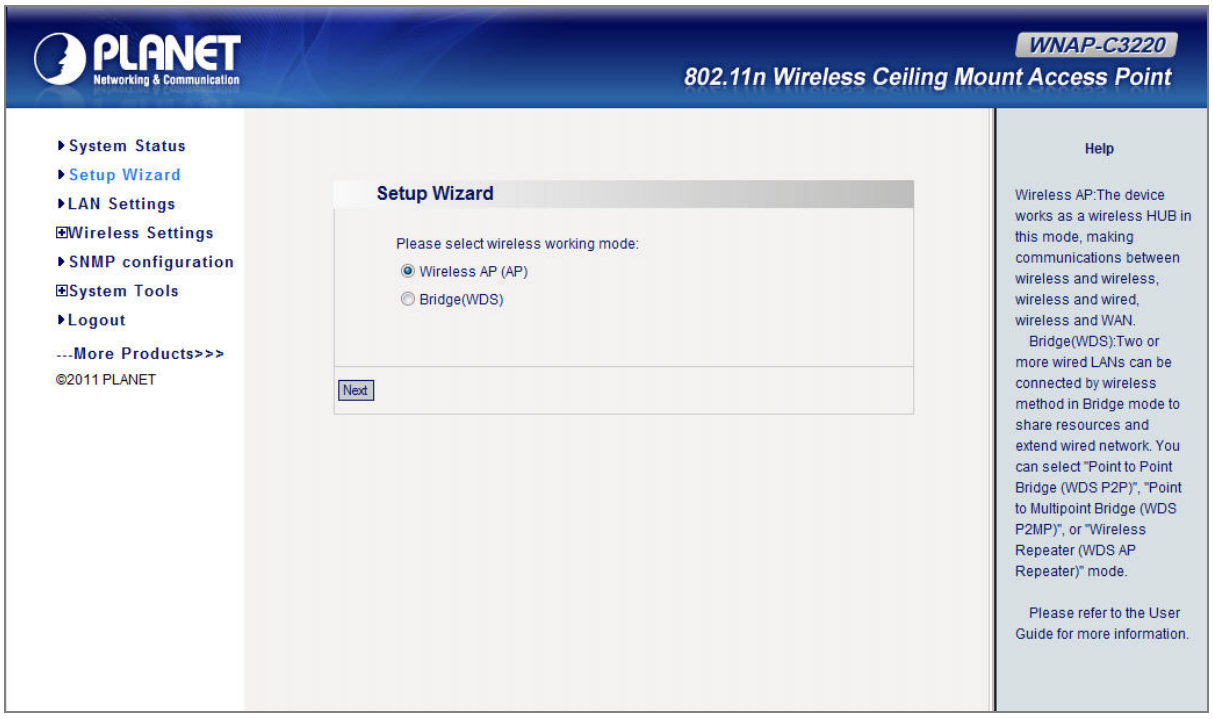


Figure 17 Setup Wizard - AP

Step 2. Select **Wireless AP (AP)**, and then click **Next** to enter the **Basic Settings** page, shown in Figure below.

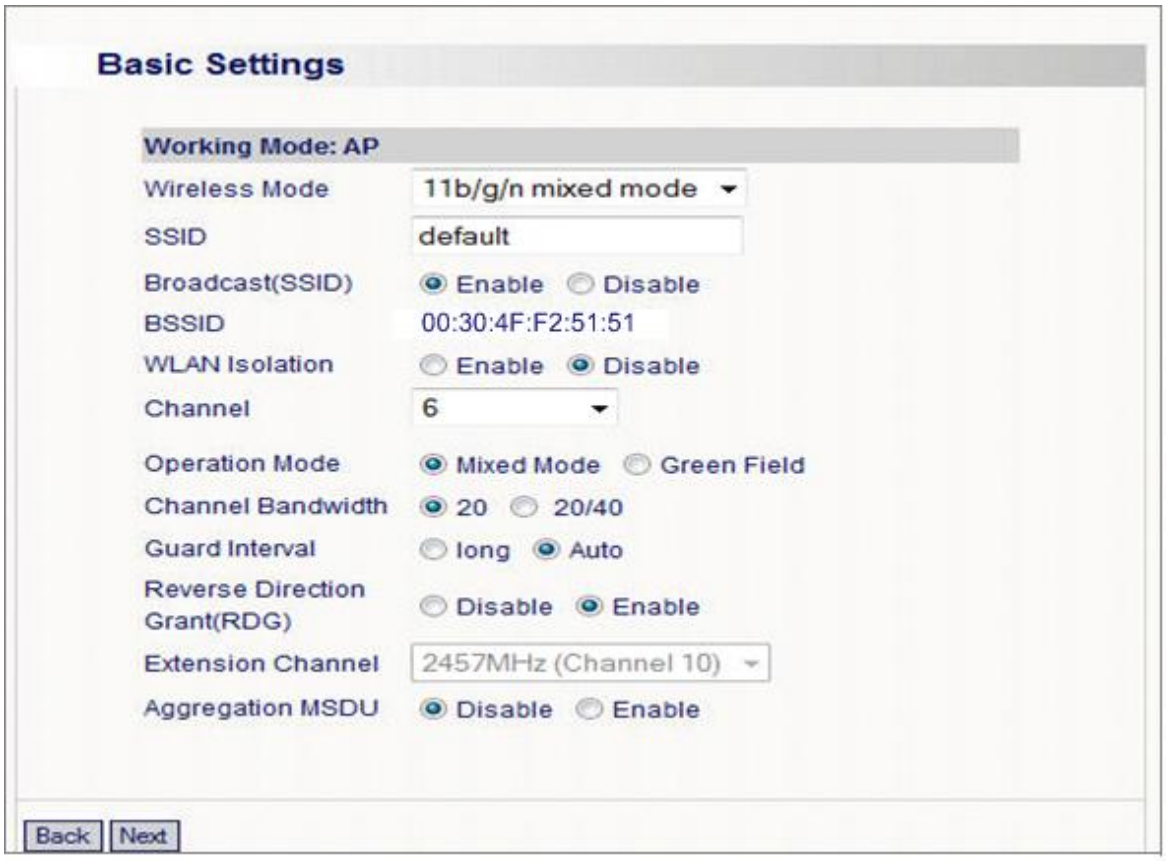


Figure 18 Setup Wizard – Basic Settings of AP

- Fill in the following items according to the reminder information.

SSID: Set the SSID of the device. The default SSID is "**default**".

Channel: Select the wireless communication channel. The default is channel **6**.

Step 3. After finish the setting, click **Next** to enter **Security Settings** page, shown in Figure below.

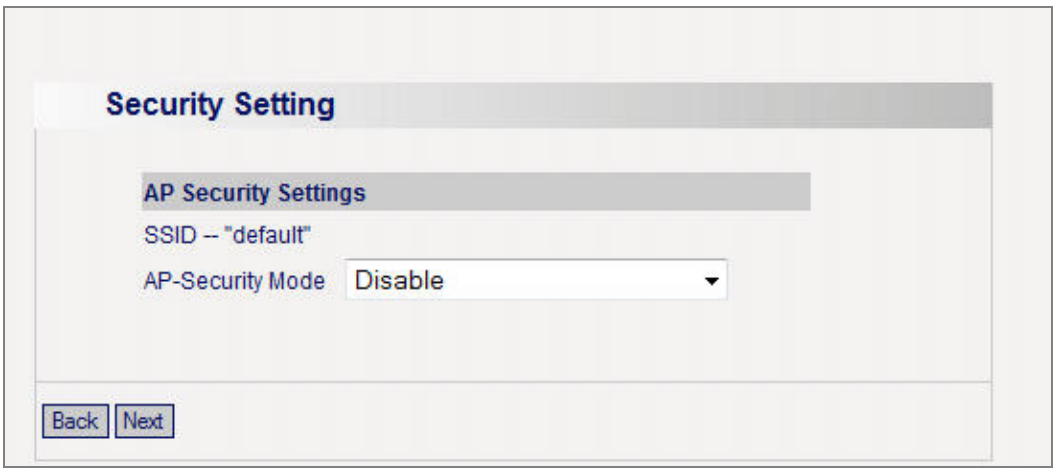


Figure 19 Setup Wizard – Security Setting of AP

- The Security Setting page is used to configure the AP network's security.
- There are following encryption types in AP-Security Mode.

Object		Description
AP-Security Mode	**Disable**	The wireless security function can be enabled or disabled. If disabled, the wireless stations will be able to connect to the AP without encryption. It is recommended strongly that you choose one of following options to enable security.
	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.
	Open Mode	It allows any device to join the network without performing any security check.
	Shared Mode	Data encryption and key are required for wireless authentication.
	WEP Mixed Mode	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.
	WPA-Enterprise	With warrant (username, password and etc.) offered by user, this kind of authentication can be realized with specific RADIUS server. This is the common way to be adopted in large enterprise network.
	WPA2-Enterprise	You can use a RADIUS server to authenticate wireless stations and provide the session key to encrypt data during communication. It uses TKIP or CCMP (AES) to change the encryption key frequently.
	Mixed	It provides options of WPA (TKIP) or WPA2 (AES) for the client. If it is selected, the data encryption type must be

	WPA/WPA2-Enterprise	TKIP + AES and the RADIUS server must be set.
	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 802.11x 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.

We strongly recommend you enable wireless security on your network!

Only setting the same Authentication, Data Encryption and Key in the WNAP-C3220 and other associated wireless devices, can the communication be established!

Step 4. After finish the setting, click **Next** to finish the Setup as shown in Figure below.

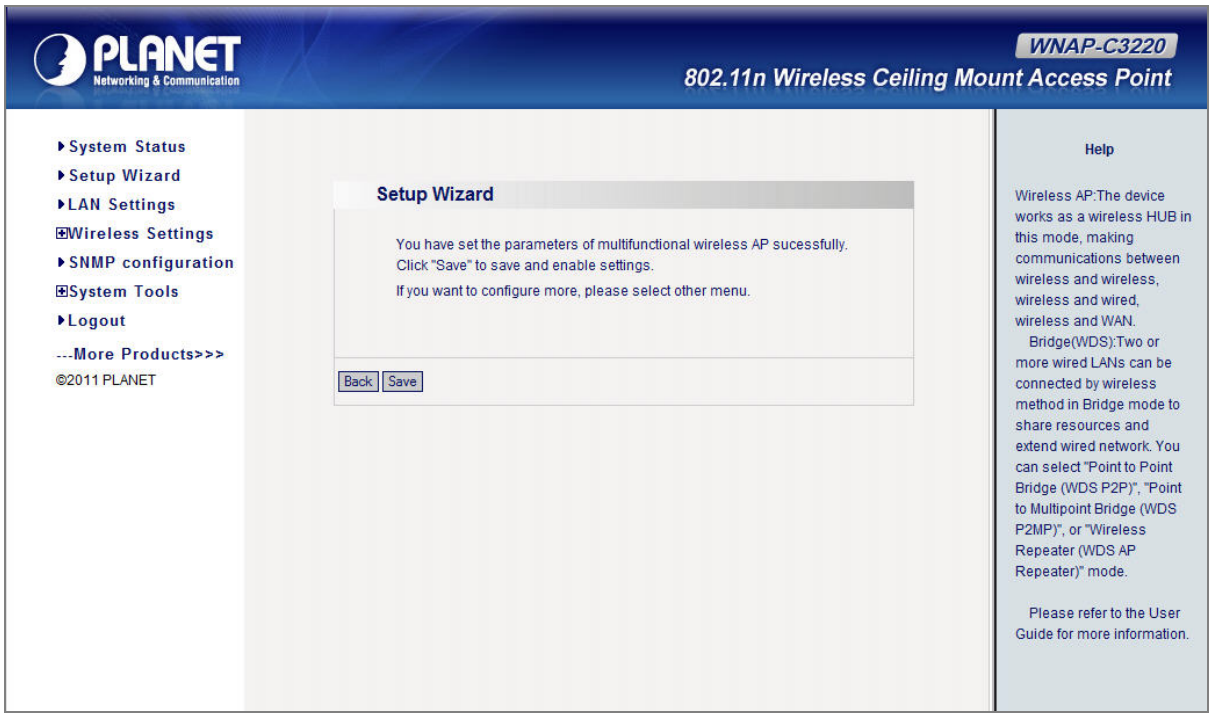


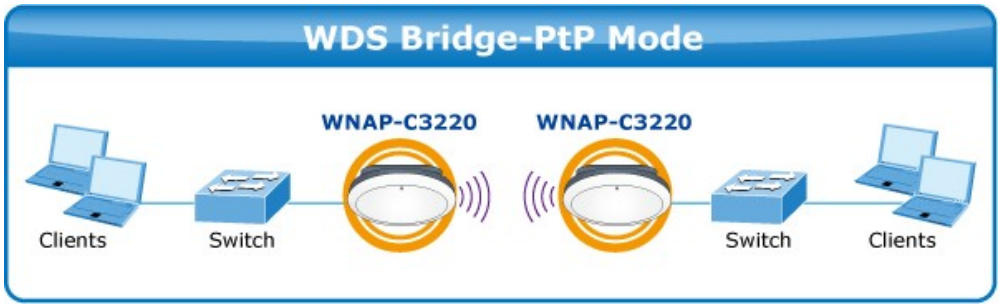
Figure 20 Setup Wizard – Finish settings of AP

Step 5. Click **Save** to save the configuration.

4.4.2 Setup – Bridge (WDS)

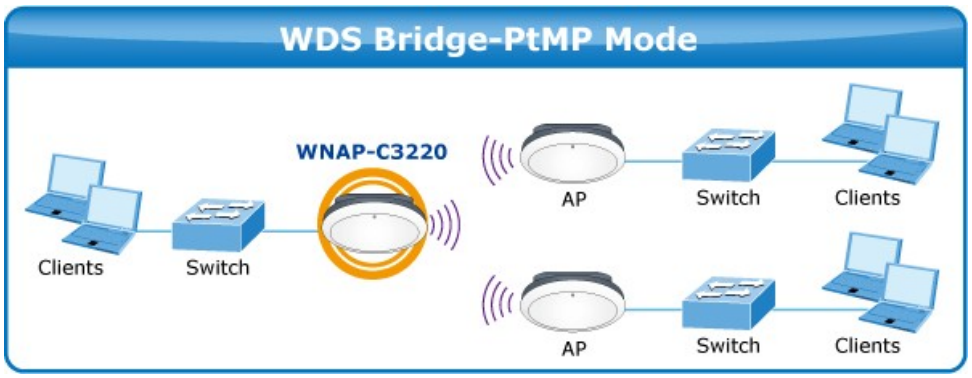
Bridge (WDS) mode includes **P2P**, **P2MP**, and **Wireless Repeater**.

P2P: P2P 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 P2P topology shows below:



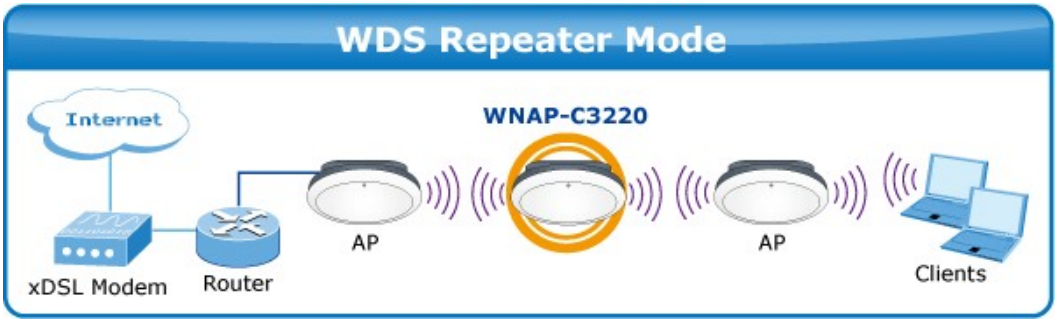
P2P / PtP: Point to Point Mode

P2MP: The P2MP Bridge Mode which connects scattered wired network together is more complicated than P2P Bridge mode. P2MP usually transmit wireless signals from one access point, and other access points are in charge of receiving signals so as to share network resource. Support up to **4 remote access point** connection. In this mode, wireless clients are not allowed to connect. P2MP Bridge mode can connect multiple wireless access point together without cabling. If "Root AP" is configured as P2MP bridge mode, other (less than 4) remote access points should select P2P bridge modes. The topology shows below:



P2MP / PtMP: Point to Multiple Point Mode

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 LAN's transmission distance is over the wireless device's maximum transmission value, or there is much block among devices, you can use the Repeater mode to deal with these problems by adding MAC addresses. The topology shows below:



WDS Repeater Mode

Step 1. Click the **Setup Wizard** to quickly configure your WNAP-C3220 to act as Bridge.

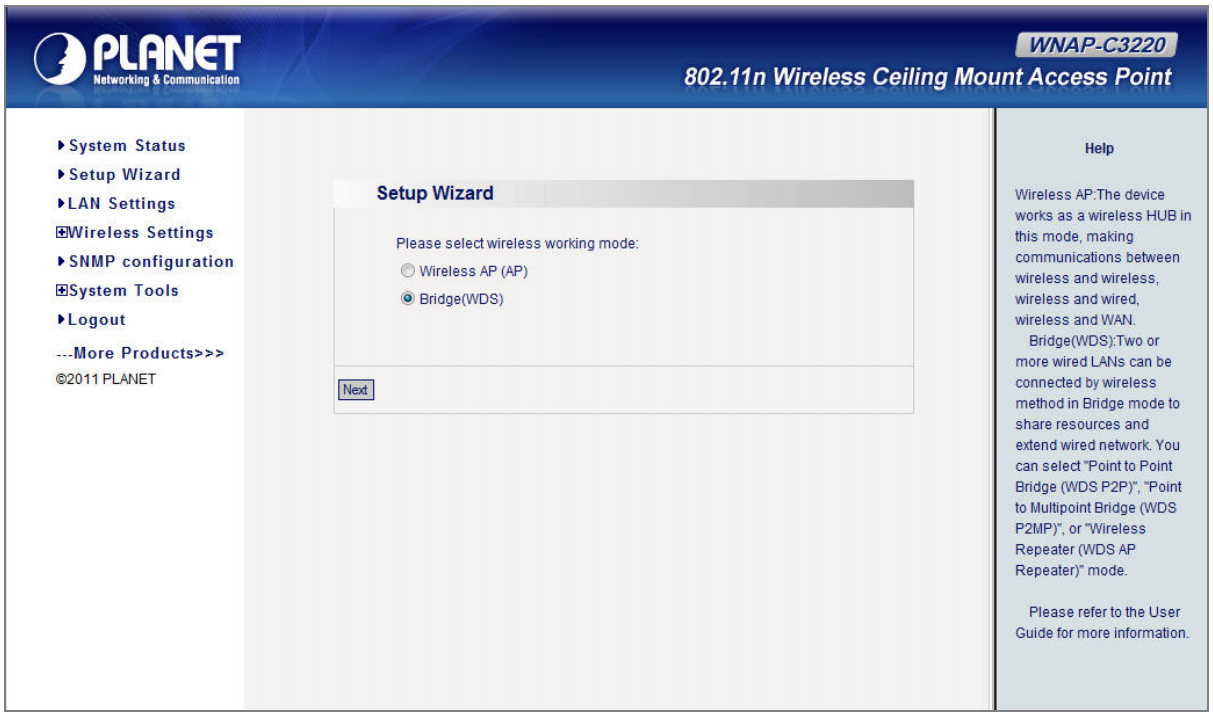


Figure 21 Setup Wizard – WDS

Step 2. Select **Bridge (WDS)**, and then click **Next** to enter the **Basic Settings** page, shown in Figure below.

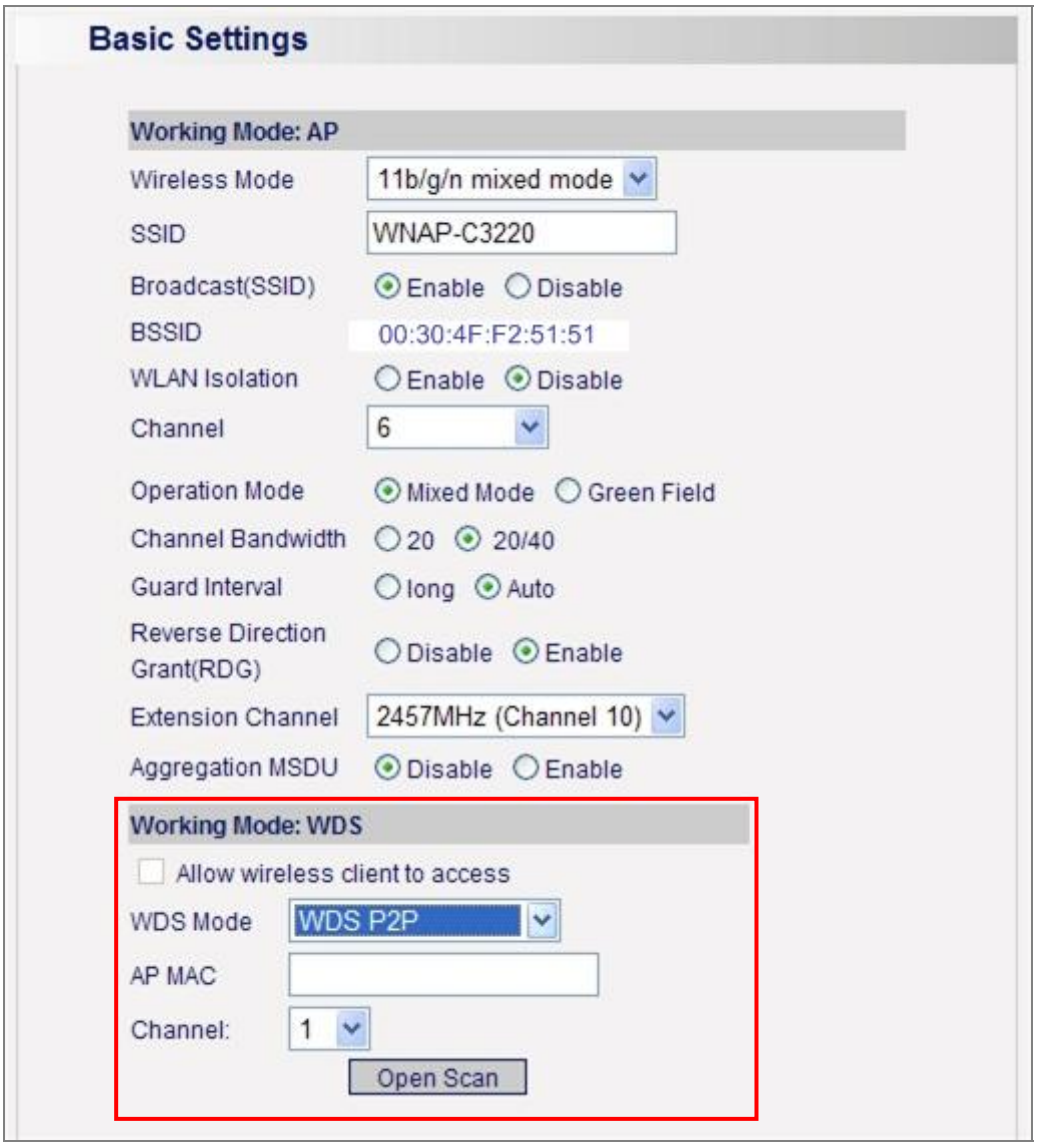


Figure 22 Setup Wizard - Basic Settings of WDS

◆ Configure the following fields before enter to the Next page.

Object	Description
WDS Mode	Bridge (WDS) mode includes **WDS P2P**, **WDS P2MP**, and **WDS AP Repeater**
AP MAC	Enter the interconnection equipment's MAC address.
Channel	Select the channel according to interconnection equipment's; the devices on the two ends must be at the same channel.
Open Scan	Click this button, the AP will scan the nearby wireless devices automatically and display the information in the table. Select the device which need to bridge, the AP will add the device's MAC address automatically and select the corresponding channel.

Step 3. After finish the setting, click **Next** to enter **Security Settings** page, shown in Figure 23.

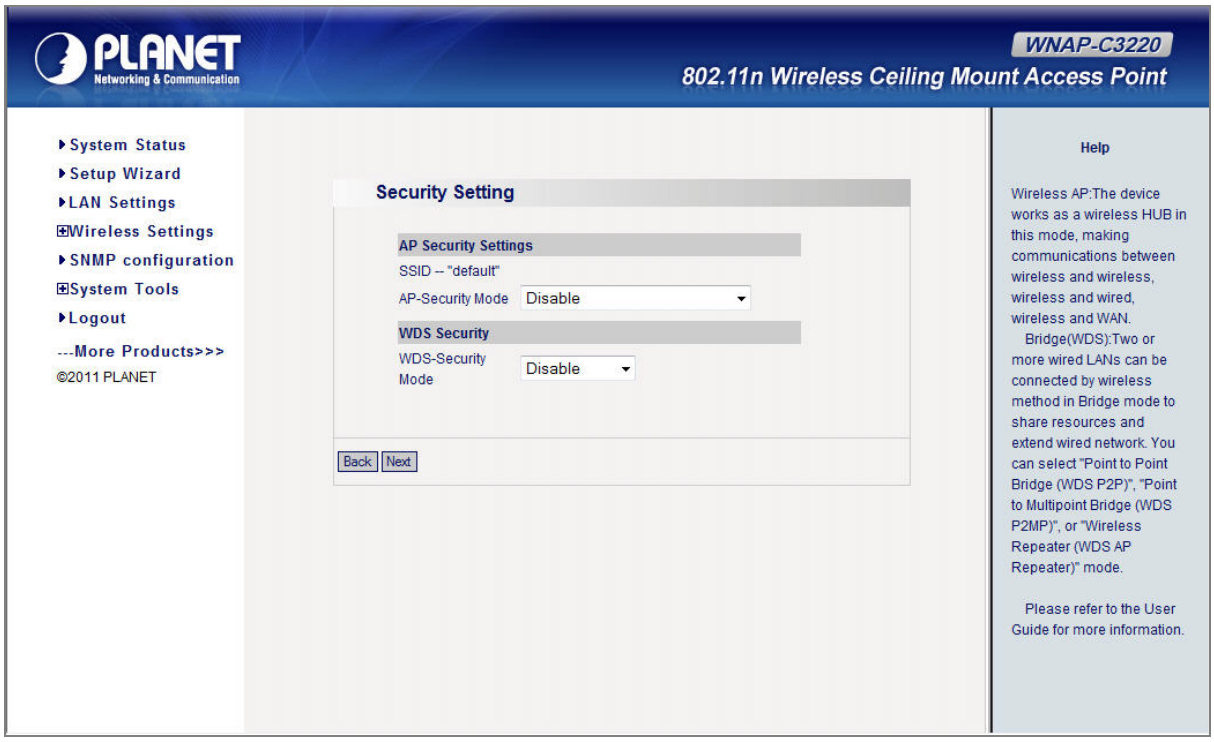


Figure 23 Setup Wizard – Security Setting of WDS

- This page includes AP Security Settings and WDS Security Settings. Select one of the encryption methods for the WDS connection.
- WDS security setting provides three encryption modes: WEP encryption, TKIP encryption and AES encryption.

Object		Description
WDS-Security Mode	**Disable**	The wireless security function can be enabled or disabled. If disabled, the wireless stations will be able to connect to the AP without encryption. It is recommended strongly that you choose one of following options to enable security.
	WEP	It is based on the IEEE 802.11 standard. You can set the WEP key in ASCII code or Hexadecimal code. ***Key:*** You can choose ASCII code (5 or 13 ASCII codes, illegal characters like "/" are forbidden) or Hexadecimal characters (10 or 26 Hexadecimal characters).
	TKIP	Temporal Key Integrity Protocol, which is a kind of dynamic encryption, is co-used with WPA-PSK, etc.
	AES	Advanced Encryption Standard, it is usually co-used with WPA2-PSK, WPA, WPA2, etc.

We strongly recommend you enable wireless security on your network!

Only setting the same Authentication, Data Encryption and Key in the WNAP-C3220 and other associated wireless devices, can the communication be established!

Step 4. After finish the setting, click Next to finish the Setup as shown in Figure below.

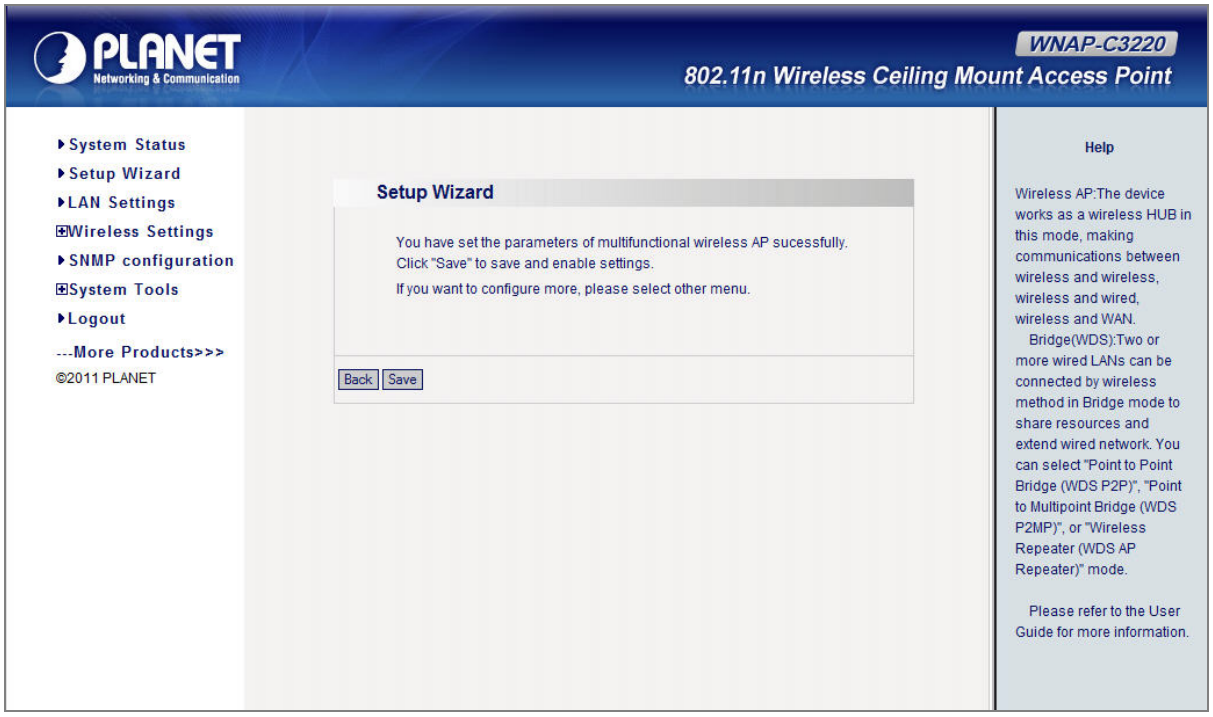


Figure 24 Setup Wizard – Finish settings of WDS

Step 5. Click **Save** to save the configuration.

Chapter 5. Advanced Settings

This chapter will show you how to configure the advanced functions of your Wireless AP.

5.1 LAN Settings

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

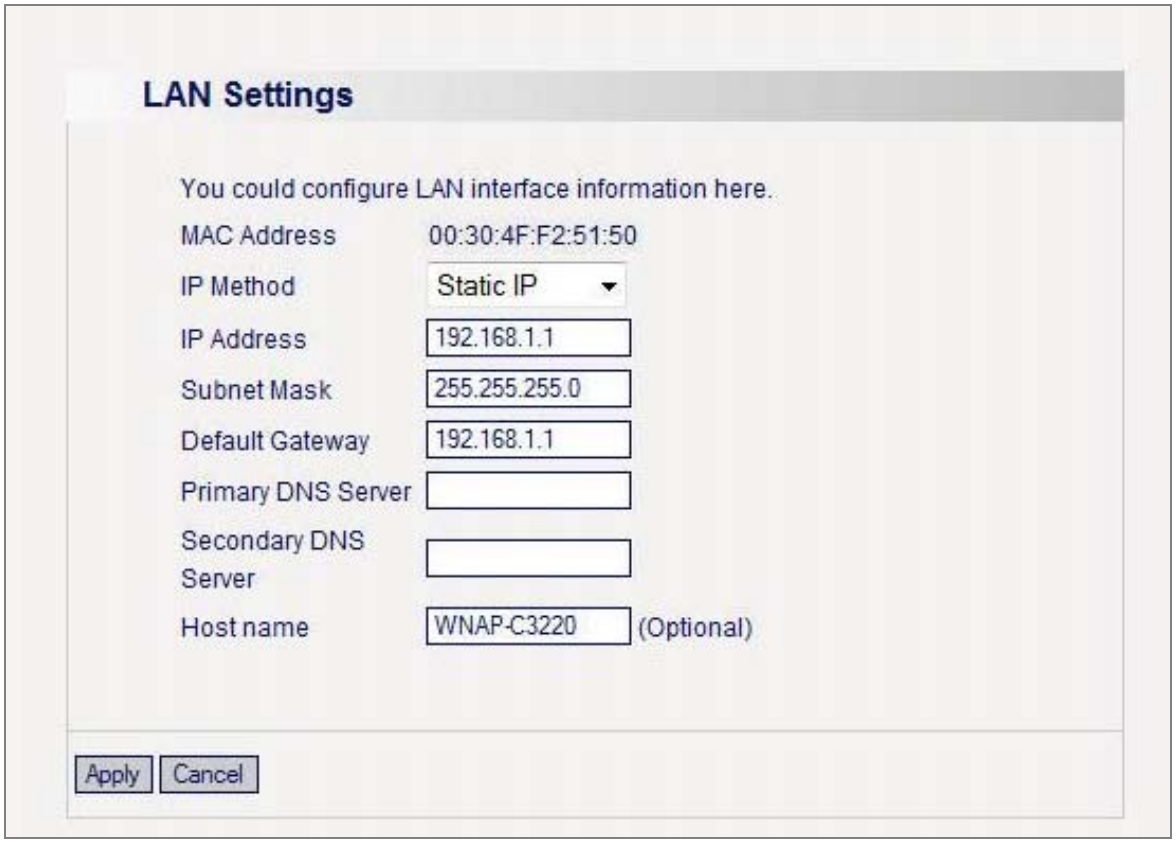


Figure 25 LAN Settings

The page includes the following fields:

Object	Description	
MAC Address	The physical address of the Router, as seen from the LAN. The value can't be changed.	
IP Method	**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, thus the WNAP-C3220 is able to obtain IP settings automatically from that DHCP server.
IP Address	Enter the IP address of your Router or reset it in dotted-decimal notation (factory default: 192.168.1.1).	
Subnet Mask	An address code that determines the size of the network. Normally use 255.255.255.0 as the subnet mask.	
Default 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	(Optional.) Input the DNS IP address provided by your ISP. Or consult your ISP.	
Secondary DNS Server	(Optional.) Input the IP address of another DNS server if your ISP provides two DNS servers.	
Host name	(Optional.) This option specifies the Host Name of the AP.	

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.

5.2 Wireless Basic Settings

You can configure the basic settings for the wireless network on this page.

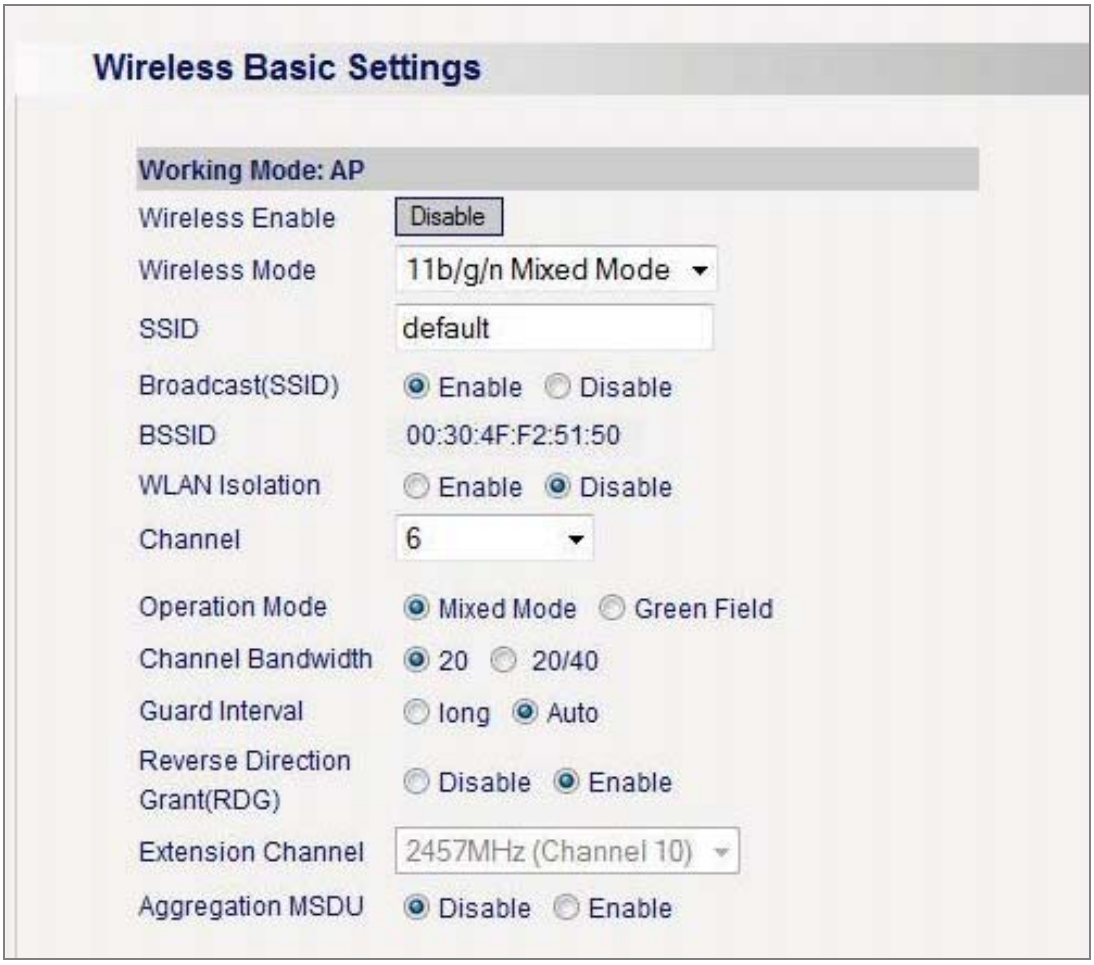


Figure 26 Wireless Basic Settings

The page includes the following fields:

Object	Description	
Wireless Enable	Click "Disable" to shut all the wireless feature of this AP; click "Enable" to open the wireless feature.	
Wireless Mode	**11b/g Mi**xed 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.
SSID	SSID (Service Set Identifier) is the unique name of the wireless network. It is recommended to modify this name for wireless client to recognize wireless signals.	
Broadcast(SSID)	When you select "Disable SSID broadcast", AP will not broadcast its own SSID number. If there is a wireless connection request, you need to input SSID number manually.	
BSSID	Basic Service Set Identifier of wireless network. In IEEE802.11, BSSID is the MAC address of wireless access point.	
WLAN Isolation	The access control feature 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 different AP.	
Channel	Specify the effective channel (from 1 to 13\Auto) of the wireless network.	
Operation Mode	Choose this according to the wireless mode(s) used in your network. **Mixed Mode** - Select this if the wireless clients in your network use different wireless modes (for example, IEEE 802.11b/g and IEEE 802.1n modes) **Green Mode** - Select this if the wireless clients in your network uses only one type of wireless mode (for example, IEEEE 802.11 n only)	
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.	
Guard Interval	This function is recommended for it will increase the data capacity by reducing the guard interval time.	
Reverse Direction Grant(RDG)	Disable or enable reserve direction grant. Default is enabled.	
Extension Channel	To increase data throughput of wireless network, the extension channel range is used in 11n mode.	
Aggregation MSDU	The data rate of your AP except wireless client mode, could be enhanced greatly with this option enabled; however, if your wireless clients don't support MSDU aggregation, it is not recommended to enable it.	

5.3 Wireless Security Settings

You can configure the security settings for the wireless network on this page.

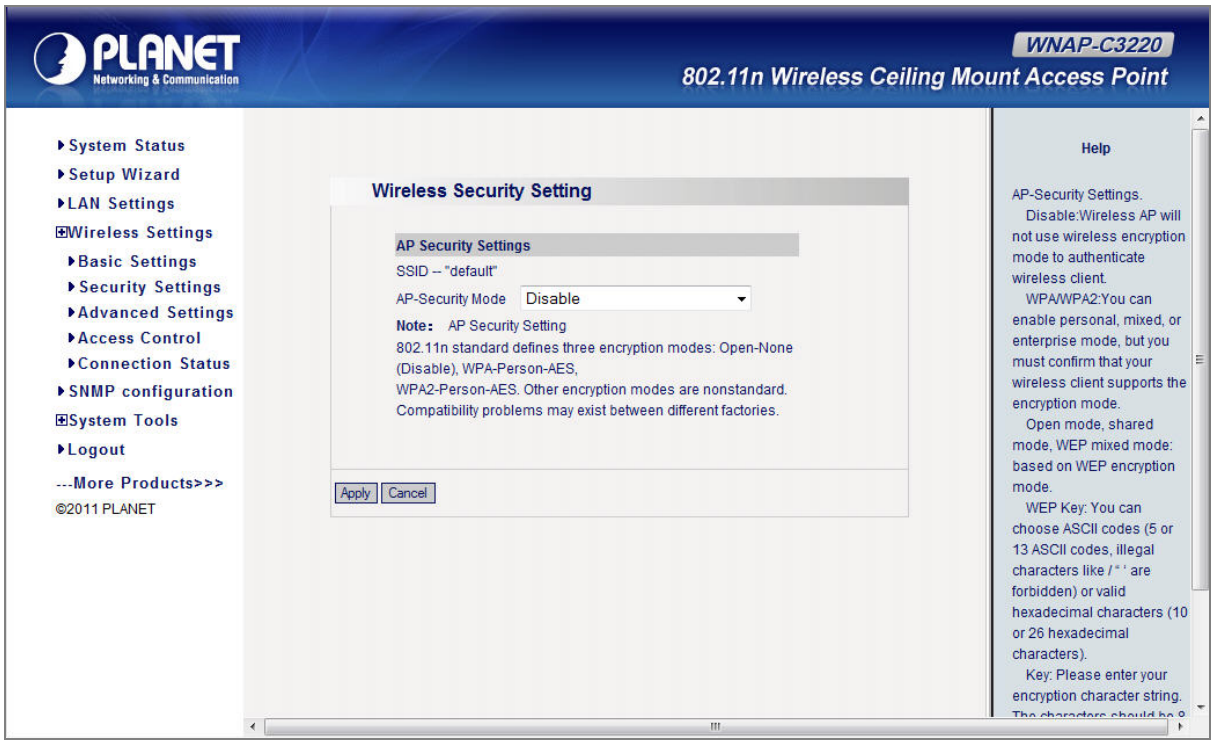


Figure 27 Wireless Security Setting

- This page includes AP Security Settings and WDS Security Settings. If you have configured the wireless working mode to AP in Setup Wizard, then this page will start from AP Security Settings.
- If you have configured the wireless working mode to WDS in Setup Wizard, then this page will start from WDS Security Settings. Select one of the encryption methods for your wireless connection.

5.3.1 AP Security Settings

Figure 28 Wireless Security Setting – AP

There are following encryption types in AP-Security Mode.

Object		Description
AP-Security Mode	**Disable**	The wireless security function can be enabled or disabled. If disabled, the wireless stations will be able to connect to the AP without encryption. It is recommended strongly that you choose one of following options to enable security.
	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.

	Open Mode	It allows any device to join the network without performing any security check.
	Shared Mode	Data encryption and key are required for wireless authentication.
	WEP Mixed Mode	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.
	WPA-Enterprise	With warrant (username, password and etc.) offered by user, this kind of authentication can be realized with specific RADIUS server. This is the common way to be adopted in large enterprise network.
	WPA2-Enterprise	You can use a RADIUS server to authenticate wireless stations and provide the session key to encrypt data during communication. It uses TKIP or CCMP (AES) to change the encryption key frequently.
	Mixed WPA/WPA2-Enterprise	It provides options of WPA (TKIP) or WPA2 (AES) for the client. If it is selected, the data encryption type must be TKIP + AES and the RADIUS server must be set.
	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.

We strongly recommend you enable wireless security on your network!

Only setting the same Authentication, Data Encryption and Key in the WNAP-C3220 and other associated wireless devices, can the communication be established!

5.3.2 WDS Security Settings

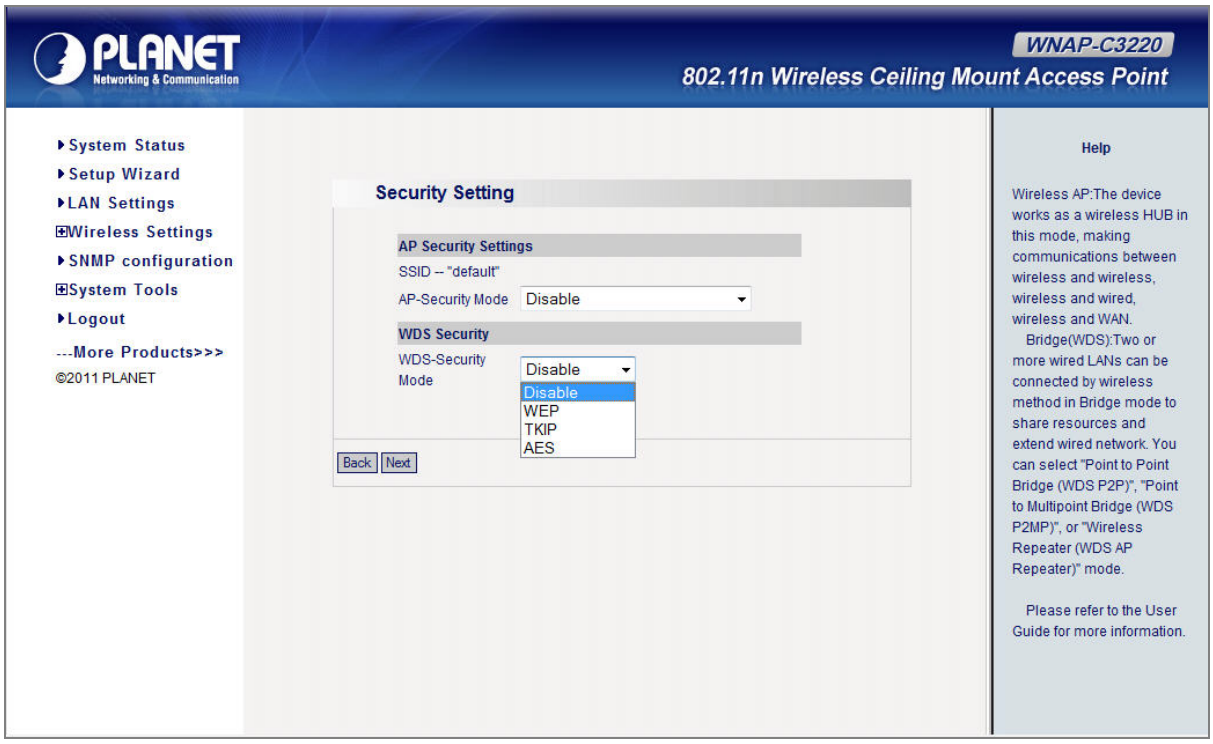


Figure 29 Wireless Security Setting – WDS

WDS security setting provides three encryption modes: WEP encryption, TKIP encryption and AES encryption.

Object		Description
WDS-Security Mode	**Disable**	The wireless security function can be enabled or disabled. If disabled, the wireless stations will be able to connect to the AP without encryption. It is recommended strongly that you choose one of following options to enable security.
	WEP	It is based on the IEEE 802.11 standard. You can set the WEP key in ASCII code or Hexadecimal code. ***Key:*** You can choose ASCII code (5 or 13 ASCII codes, illegal characters like "/" are forbidden) or Hexadecimal characters (10 or 26 Hexadecimal characters).
	TKIP	Temporal Key Integrity Protocol, which is a kind of dynamic encryption, is co-used with WPA-PSK, etc.
	AES	Advanced Encryption Standard, it is usually co-used with WPA2-PSK, WPA, WPA2, etc.

Note

We strongly recommend you enable wireless security on your network!

Only setting the same Authentication, Data Encryption and Key in the WNAP-C3220 and other associated wireless devices, can the communication be established!

5.4 Advanced Wireless Settings

You can configure advanced wireless parameters on this page.

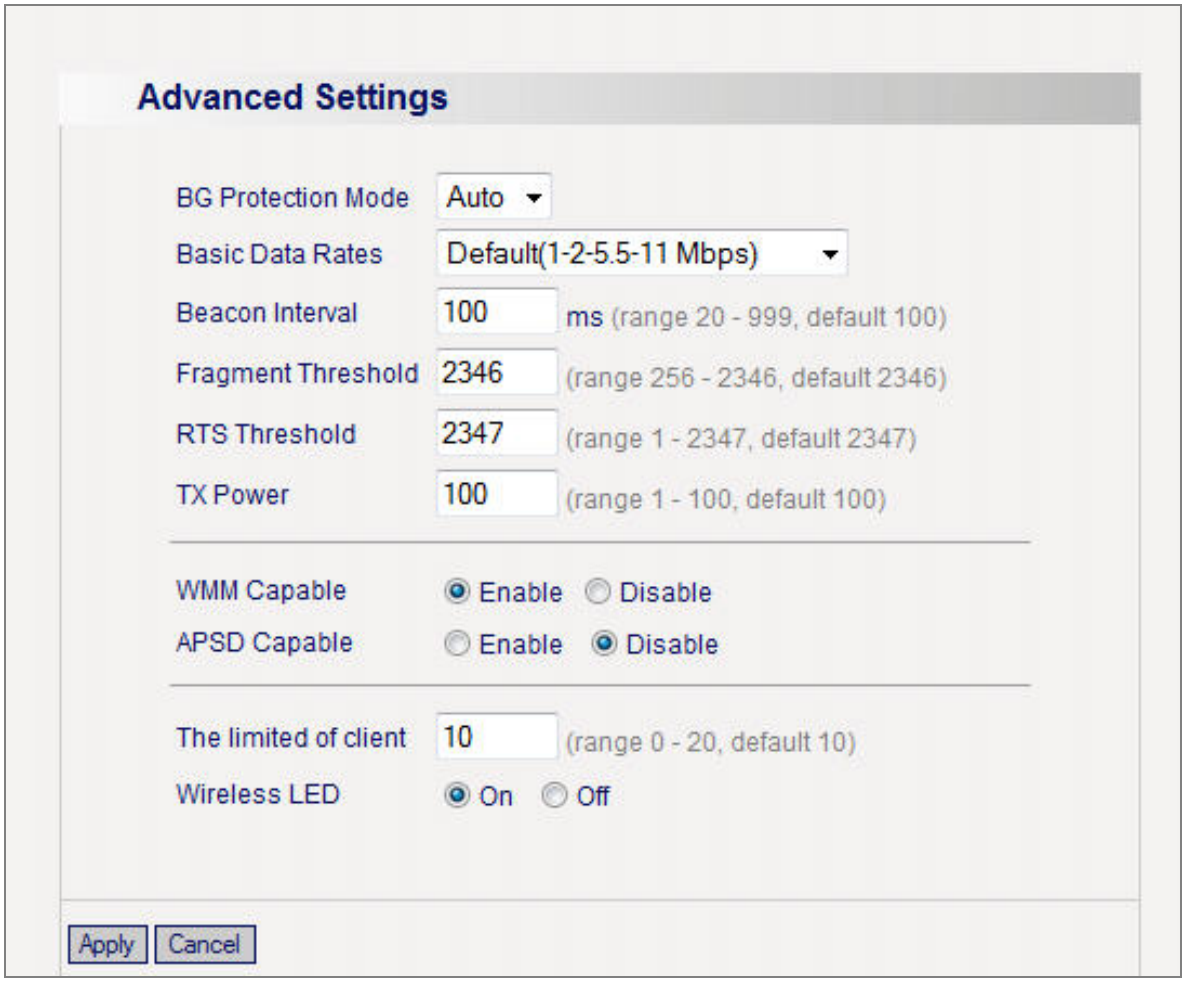


Figure 30 Advanced Settings

The page includes the following fields:

Object	Description
BG Protection Mode	For 11b/g wireless client, it is easier to connect with 11n wireless device. The default is "**Auto**".
Basic Data Rates	In term of different requirements, you can select one of the suitable

	Basic Data Rates from the drop-down menu. Here, default value is (1-2-5.5-11Mbps…). It is recommended not to modify the default value.
Beacon Interval	The frequency interval of the beacon, which is a packet broadcast by an AP to synchronize a wireless network. The default value is **100 ms**.
Fragment Threshold	The fragmentation threshold defines the maximum transmission packet size in bytes. The packet will be fragmented if the arrival is bigger than the threshold setting. The default size is **2346 bytes**.
RTS Threshold	RTS stands for "Request to send". This parameter controls what size data packet the frequency protocol issues to RTS packet. If the device works in SOHO, do not modify the default value.
TX Power	Set the wireless output power level. The default value is **100**.
WMM Capable	To enhance wireless multimedia transfer performance (0n-line video and voice). If you are not clear about this, enable it.
APSD Capable	It is used for auto power-saved service. The default is **disabled**.
The limited of client	Limit the total number of the wireless client. The maximum is 20, and the default value is **10**.
Wireless LED	Turn on or turn off the Wireless LED. The default is **On**.

5.5 Connection Status

This page will display the current wireless connection status as shown below:

Figure 31 Wireless Connection Status

- **MAC Address:** Shows current connecting host's MAC address.
- **Bandwidth:** Shows current connecting host's (wireless client) bandwidth (20MHz or 40MHz).

5.6 SNMP Configuration

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.

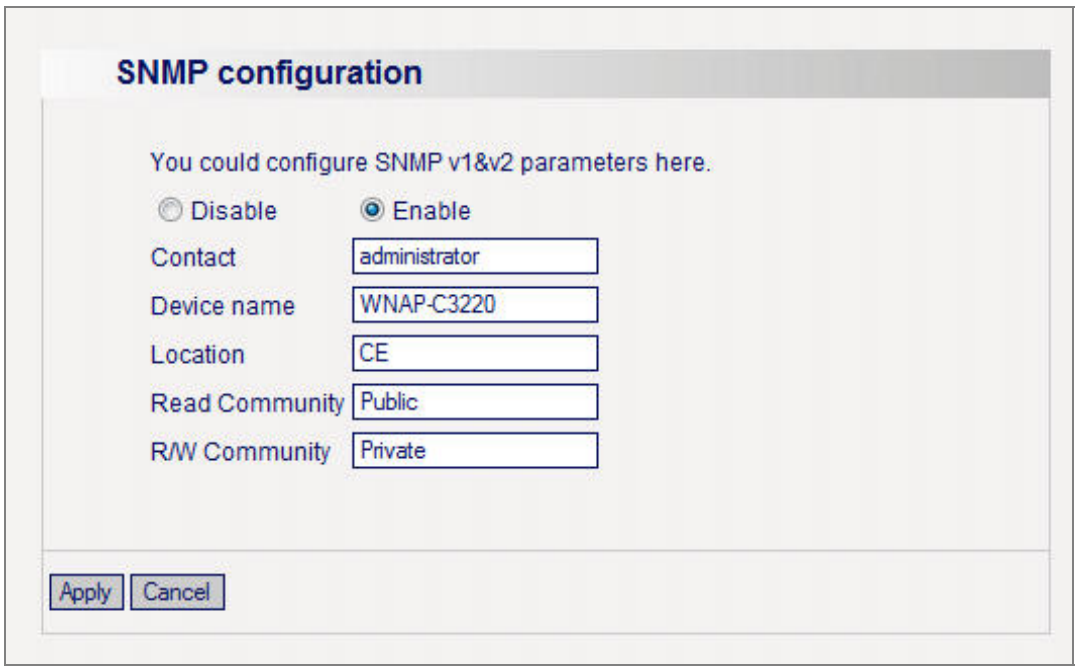


Figure 32 SNMP Configuration

This device supports SNMP v1 and SNMP v2c. Please click "**SNMP Setting**" in the left page to enter this page.
Click "**Enable**" or "**Disable**" to enable and disable SNMP management.

The page includes the following fields:

Object	Description
Contact	Set the name to access the AP. Usually set the administrator's name.
Device Name	Set the AP's name, such as "**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**.
Read/Write Community	Indicates the community read/write access string to permit reading and re-writing this AP's SNMP information. The default is **Private**.

5.7 System Tools

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

5.7.1 Change Password

This section is to set a new user name and password to better secure your device and network. Click "Apply" to finish changing password.

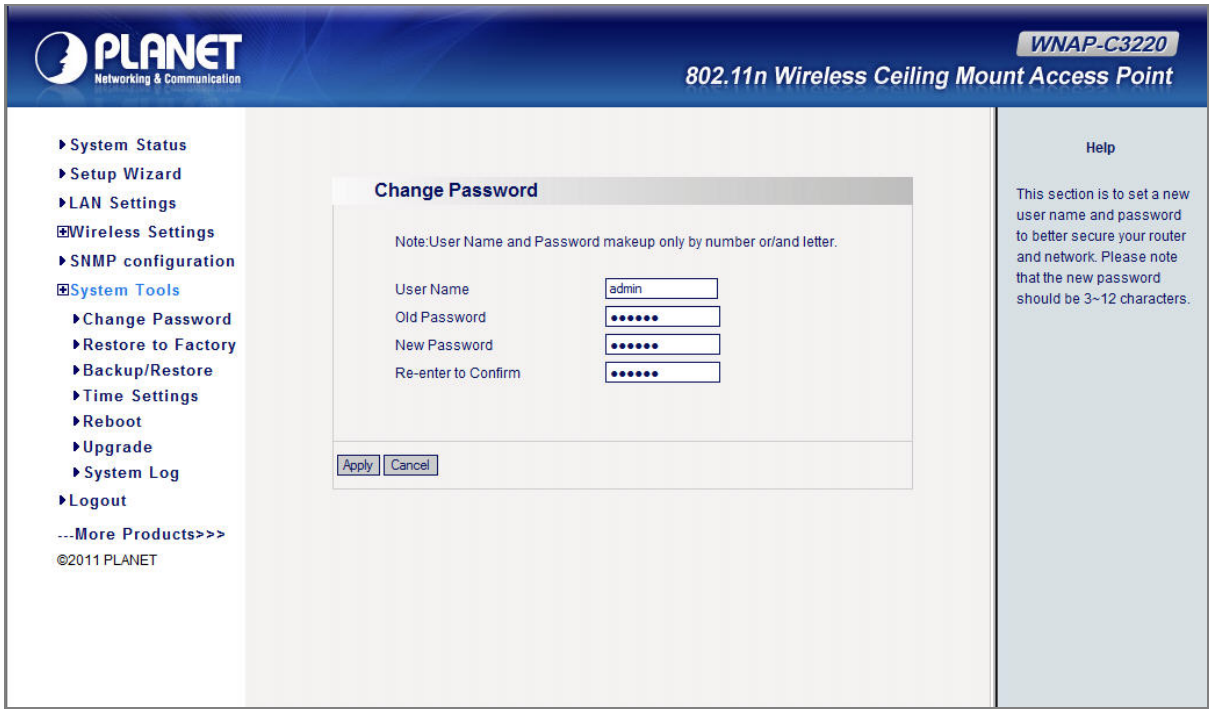


Figure 33 Change Password

- **User Name:** Enter a new user name for the device.
- **Old Password:** Enter the old password.

- **New Password:** Enter a new password.
- **Re-enter to Confirm:** Re-enter to confirm the new password.

It is highly recommended to change the password to secure your network and the device.

5.7.2 Restore to Factory

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

Figure 34 Restore to Factory Default Settings

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

User name: **admin**

Password: **admin**

IP Address: **192.168.1.1**

Subnet Mask: **255.255.255.0**

5.7.3 Backup / Restore

The device provides backup/restore settings, so you need set a directory to keep these settings.

Figure 35 Backup/Restore

- **Backup:** Click this button to back up the device's configurations.
- **Browse:** Click this button to browse the directory where you backup or save the device's settings.
- **Restore:** Click this button to restore the device's configurations.

5.7.4 Time Settings

This section is to select the time zone for your location. You can select your own time or obtain the standard GMT time from Internet.

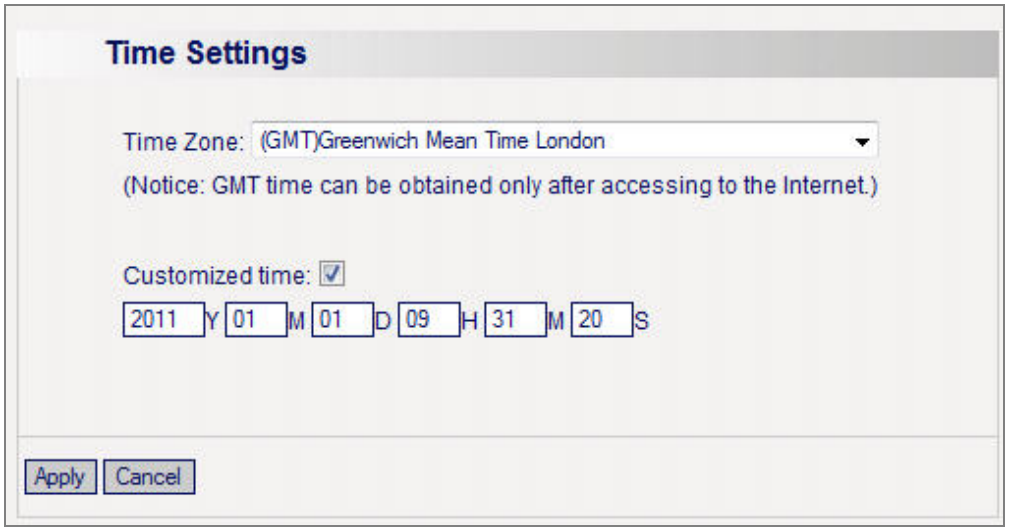


Figure 36 Time Settings

- **Time Zone:** Select your time zone from the drop-down menu.
- **Customized time:** Enter the time you customize.

5.7.5 Reboot

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

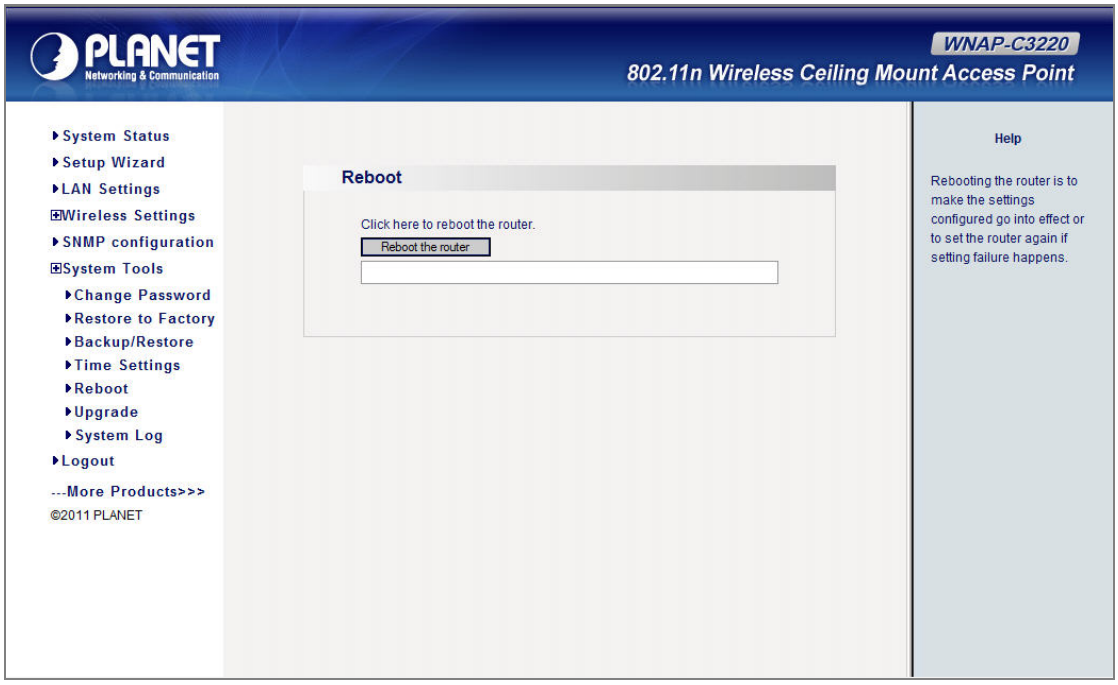


Figure 36 Reboot

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

5.7.6 Upgrade

The device provides the firmware upgrade by clicking the "Upgrade" after browsing for the firmware upgrade packet which you can download from www.planet.com.tw. After the upgrade is completed, the device will reboot automatically.

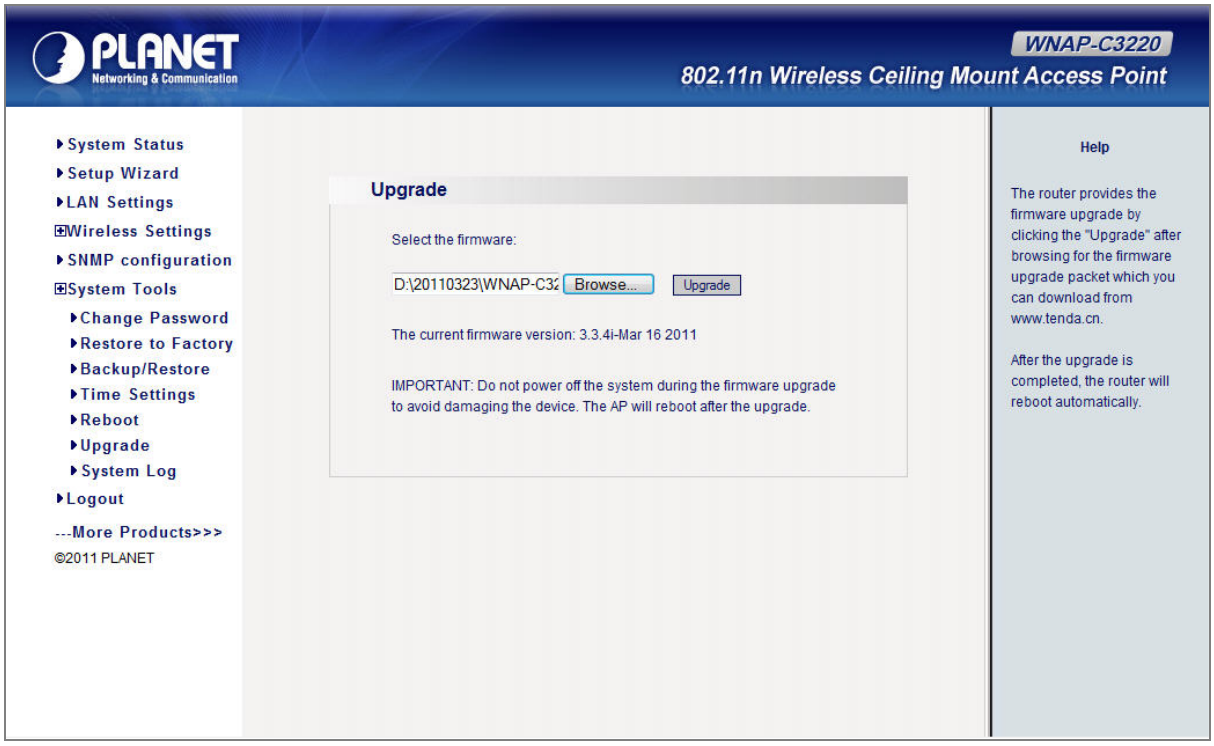


Figure 37 Upgrade

Upgrade Steps：

Step 1. Download the latest firmware version from our website: www.planet.com.tw.

Step 2. Extract the firmware file on your computer.

Step 3. On the Firmware Upgrade screen, enter the location directory of the firmware file in the field provided, or click the Browse button and find the file.

Step 4. Click Upgrade button, and follow the on-screen instructions.

Step 5. After the upgrade is completed, the device will reboot automatically.

Do not powers off the system during the firmware upgrade to avoid damaging the device.

5.7.7 System Log

The section is to view the system log. Click the "Refresh" to update the log. Click "Clear" to clear all shown information. If the log is over 150 records, it will clear them automatically.

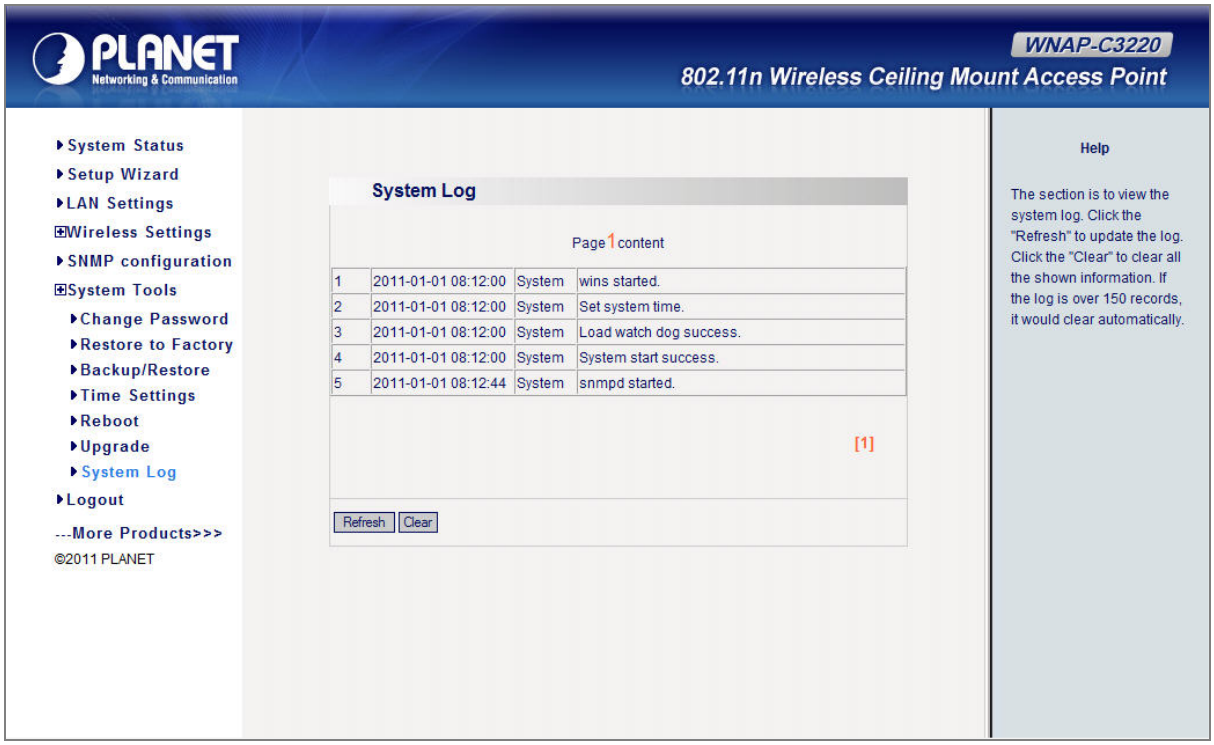


Figure 38 System Log

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

5.8 Logout

Select "**Logout**" in the left menu if you would like to stop configuring the settings and exit the Web UI of WNAP-C3220.

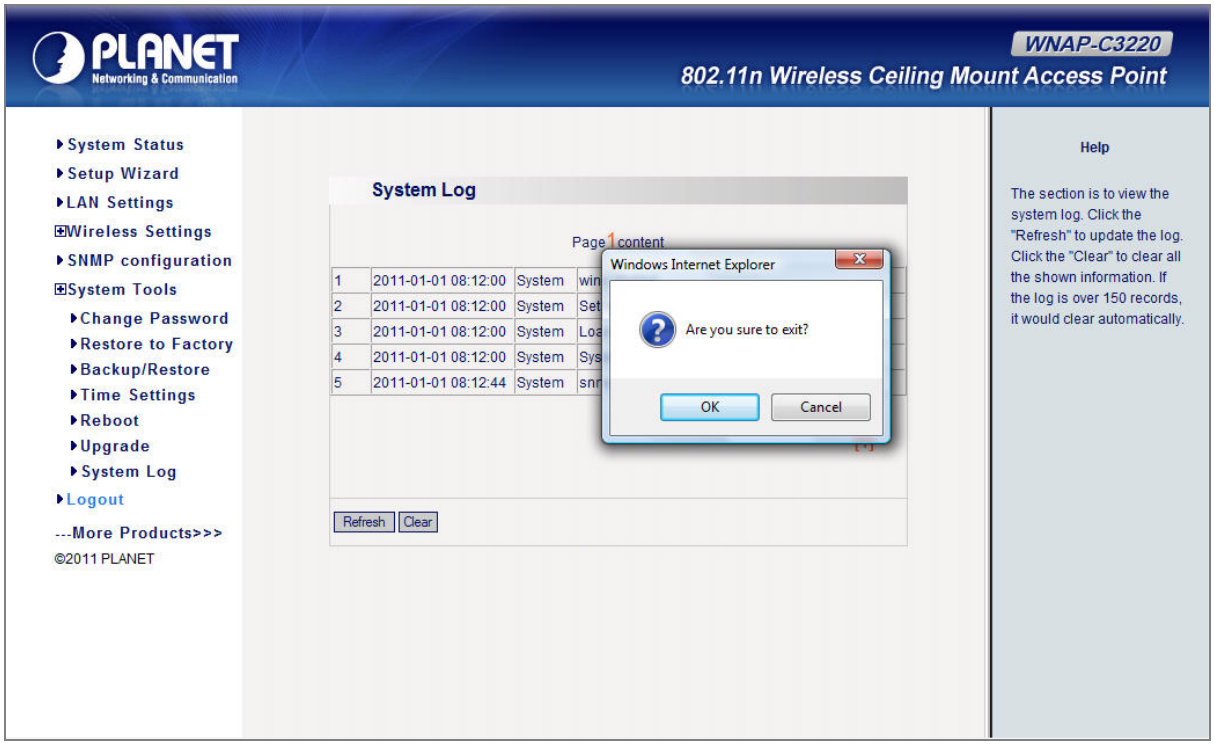


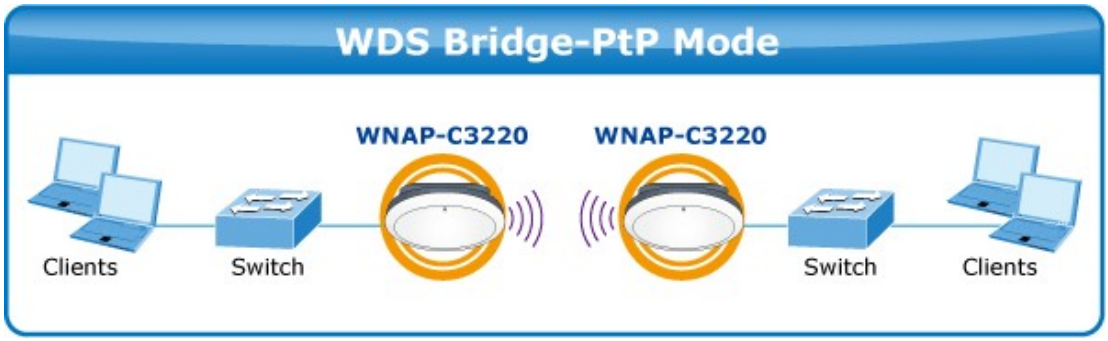
Figure 39 Logout

APPENDIX I: WDS Operation Mode Configuration

Bridge (WDS) mode includes **P2P**, **P2MP**, and **Wireless Repeater**.

P2P: Point to Point Mode

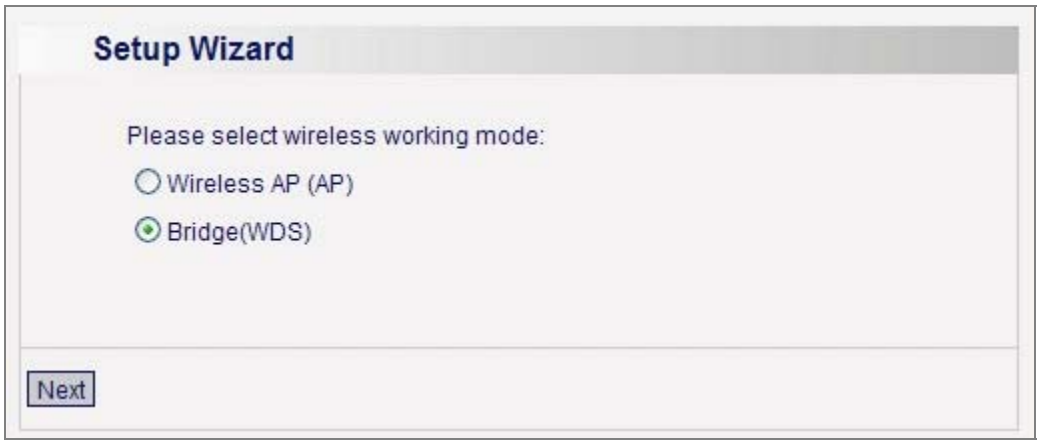
P2P bridge mode can connect with two wired network via wireless access points, which communicate by wireless signals and not by cables. This mode can be free from the cable trouble. The P2P topology shows below:



P2P / PtP: Point to Point Mode

Step 1. Click the **Setup Wizard** to configure your WNAP-C3220 to act as Bridge(WDS).

Step 2. Select **Bridge (WDS)**, and then click **Next** to enter the **Basic Settings** page.



Step 3. Select **WDS P2P** mode in drop-down list of WDS mode as the picture below:

This page includes the AP and WDS parameter setting. AP parameter setting can change SSID and enable/ disable wireless feature.

Object	Description
AP MAC	Enter the interconnection equipment's **MAC address**.
Channel	Select the channel according to interconnection equipment's; the devices on the two ends must be at the same channel.
Open Scan	Click this button, the AP will scan the nearby wireless devices automatically and display the information in the table. Select the device which need to bridge, the AP will add the device's MAC address automatically and select the corresponding channel.

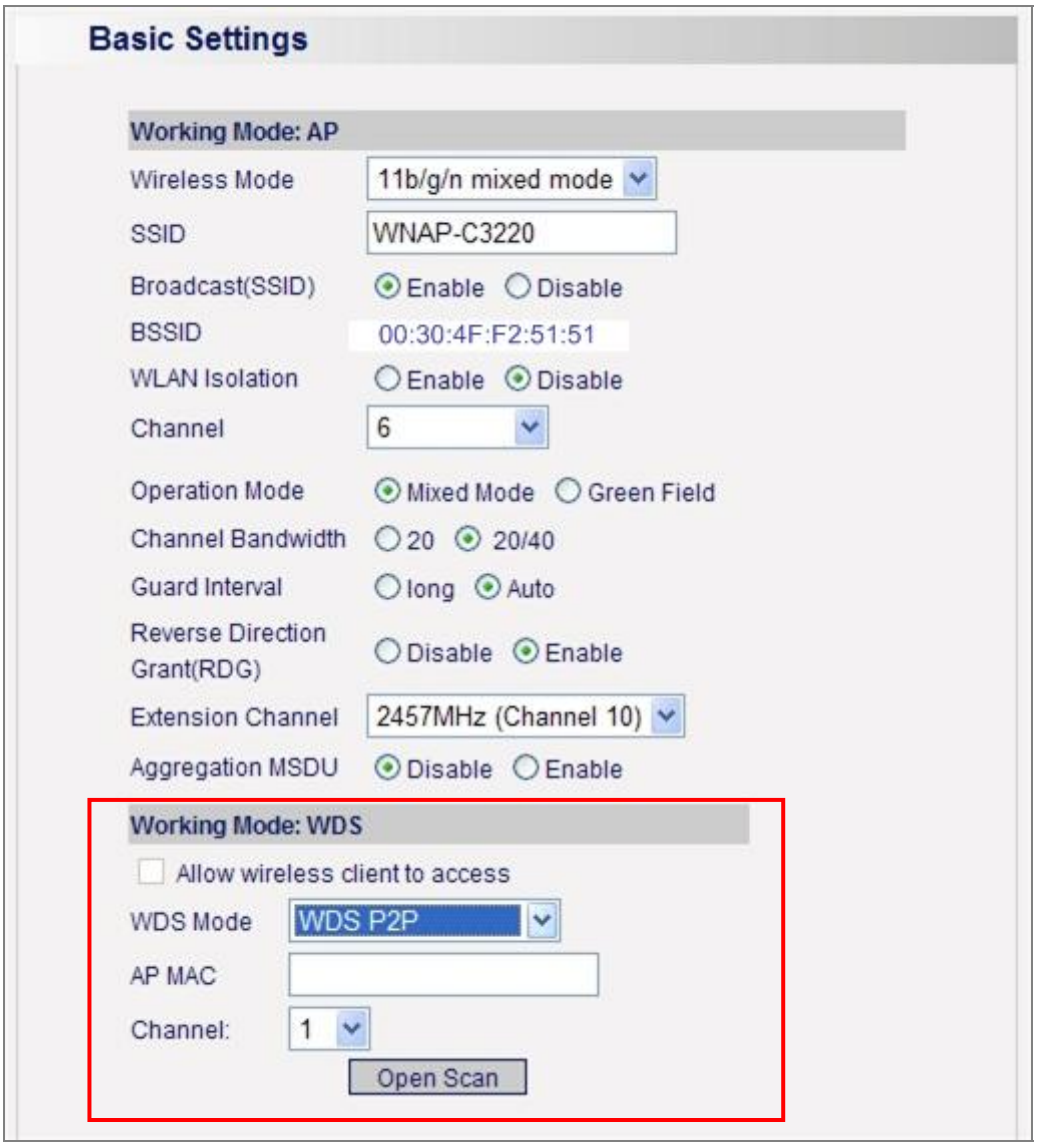
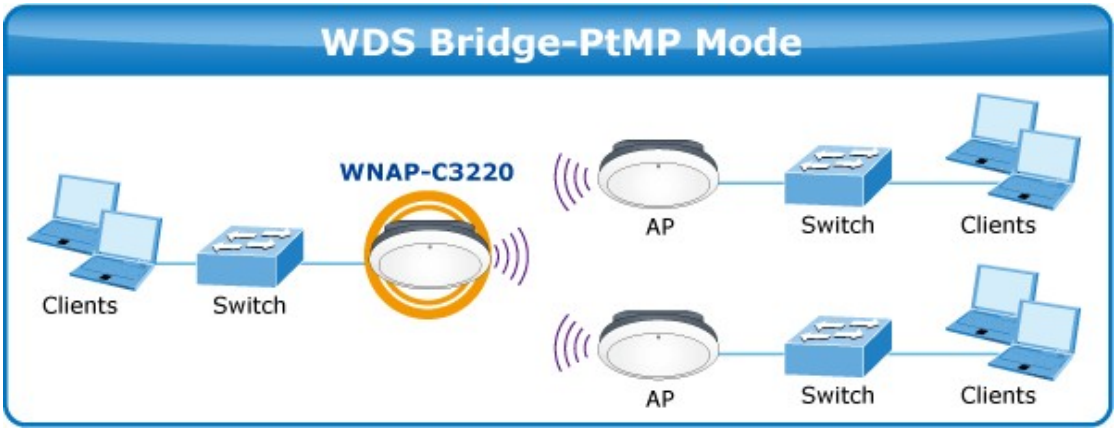


Figure 4040 WDS-P2P mode

Step 4. After finish the setting, click **Next** to enter **Security Settings** page, shown in Chapter 5.3.1

P2MP: Point to Multiple Point Mode

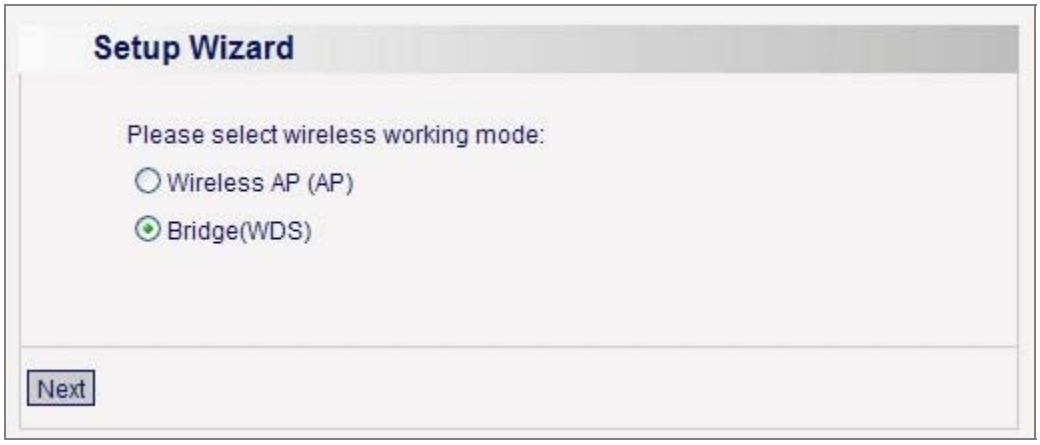
The P2MP Bridge Mode which connects scattered wired network together is more complicated than P2P Bridge mode. P2MP usually transmit wireless signals from one access point, and other access points are in charge of receiving signals so as to share network resource. Support up to **4 remote access point** connection. In this mode, wireless clients are not allowed to connect. P2MP Bridge mode can connect multiple wireless access point together without cabling. If "Root AP" is configured as P2MP bridge mode, other (less than 4) remote access points should select P2P bridge modes. The topology shows below:



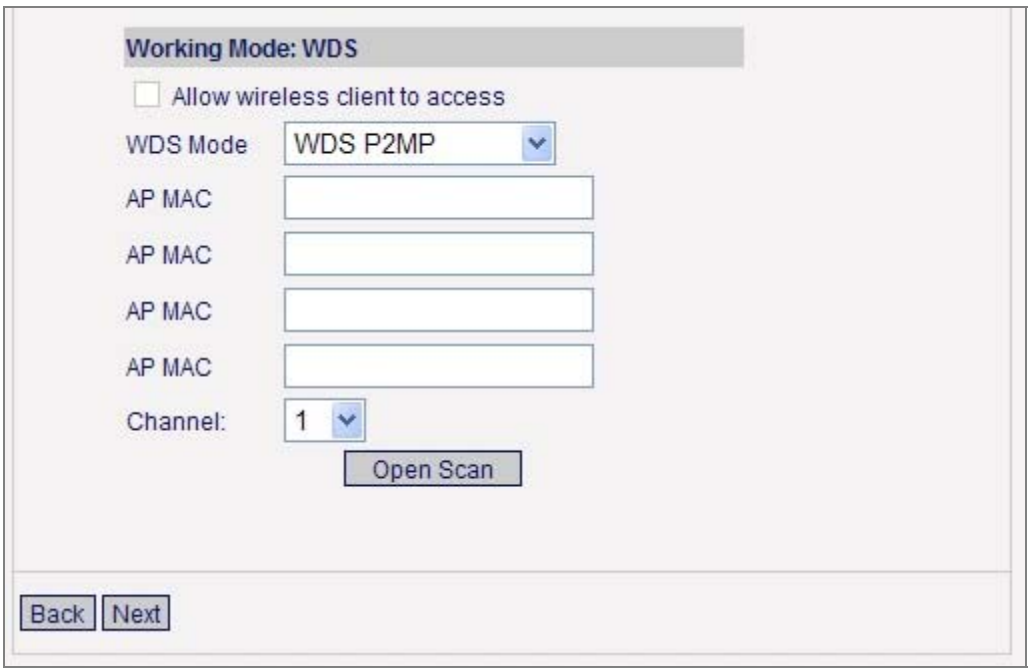
P2MP / PtMP: Point to Multiple Point Mode

Step 1. Click the **Setup Wizard** to configure your WNAP-C3220 to act as Bridge(WDS).

Step 2. Select **Bridge (WDS)**, and then click **Next** to enter the **Basic Settings** page.



Step 3. Select **WDS P2MP** mode in the drop-down box of WDS mode as the picture below.



Configure the following fields before enter to the Next page.

Object	Description
AP MAC Address	Input the remote AP's MAC address. (No more than 4)
Channel	Select the channel which bridge needs to use. (All APs in the bridge must be at the same channel.)
Enable Scan	**1.** Click this button, the AP will scan the nearby wireless devices automatically and display the information in the table. **2.** Select the device which need to bridge, the AP will add the device's MAC address automatically and select the corresponding channel. **3.** When multiple devices are added, AP will select the channel of the last added device as the bridge used channel. (You can also change the channel according to your need. All the devices must at the same channel, thus the bridge can be established.)

Step 4. After finish the setting, click **Next** to enter **Security Settings** page, shown in Chapter 5.3.1.

Repeater Mode:

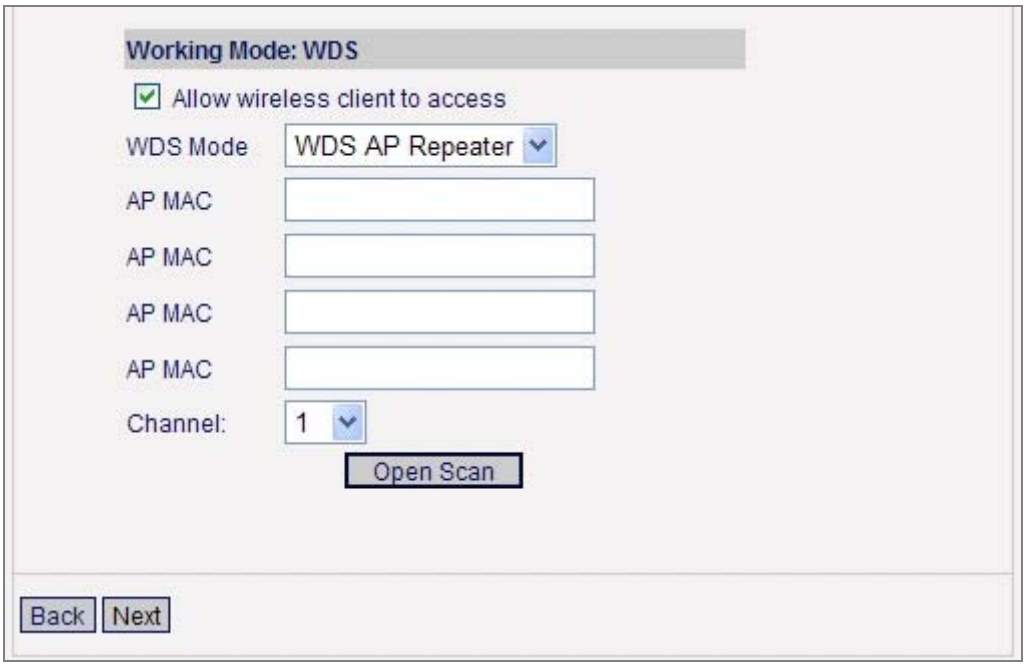
Repeater Mode can repeat and amplify wireless signals to extend wireless network coverage. In this mode, wireless clients are allowed to connect. When two LAN's transmission distance is over the wireless device's maximum transmission value, or there is much block among devices, you can use the Repeater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

WDS Repeater Mode

Step 1. Click the **Setup Wizard** to configure your WNAP-C3220 to act as Bridge(WDS).

Step 2. Select **Bridge (WDS)**, and then click **Next** to enter the **Basic Settings** page.

Step 3. Select **WDS AP Repeater** on the drop-down box of WDS mode and the page will show as below.



Step 4. When the users select "**Allow wireless client to access**", AP can also be used as "**Wireless Access Point**" to allow the access of wireless client when it is used as a wireless bridge.

The basic settings of wireless repeater are divided into two parts:

- One part is the basic setting in AP mode (See 4.1.1.2)
- Another part is the basic setting in WDS mode (See 4.1.2.2)

Step 5. After finish the setting, click **Next** to enter **Security Settings** page, shown in Chapter 5.3.1.

APPENDIX II：Product Specification

<table>
<tr><td>Product</td><td>WNAP-C3220
300Mbps 802.11n Wireless Ceiling Mount Access Point</td></tr>
<tr><td colspan="2">Hardware Specification</td></tr>
<tr><td>Standard support</td><td>IEEE 802.11b/g
IEEE 802.11n
IEEE 802.3 10Base-T
IEEE 802.3u 100Base-TX
IEEE 802.3ab 1000Base-T
IEEE 802.3x Flow Control
IEEE 802.3af Power over Ethernet</td></tr>
<tr><td>PoE</td><td>802.3af PoE</td></tr>
<tr><td>Interface</td><td>Wireless IEEE 802.11b/g/n
LAN: 1x 10/100/1000Base-T, Auto-MDI/MDIX, 802.3af PoE compliant</td></tr>
<tr><td>Antenna</td><td>Built-in 2T2R, 2dbi Printed Antenna</td></tr>
<tr><td>LED</td><td>Wireless / Power LED</td></tr>
<tr><td>Button</td><td>Reset</td></tr>
<tr><td>Power Requirements</td><td>Power Supply: DC 12V, 1A
Power over Ethernet: IEEE 802.3af PoE, DC 48V, 0.35A</td></tr>
<tr><td>Power Consumption</td><td>≦ 6W</td></tr>
<tr><td colspan="2">Wireless Interface Specification</td></tr>
<tr><td>Frequency Band</td><td>2.4~2.4835GHz</td></tr>
<tr><td>Modulation</td><td>Transmission/Emission Type: DSSS / OFDM
Data modulation type: OFDM: BPSK, QPSK, 16-QAM, 64-QAM, DBPSK, DQPSK, CCK</td></tr>
<tr><td>Opt. Channel</td><td>America/ FCC: 2.412~2.462GHz (1~11 Channels)
Europe/ ETSI: 2.412~2.472GHz (1~13 Channels)
Japan/ TELEC: 2.412~2.484GHz (1~14 Channels)</td></tr>
<tr><td>RF Output Power</td><td>20dBm (Max.)</td></tr>
<tr><td>Receiver Sensitivity</td><td>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%</td></tr>
<tr><td>TX Power</td><td>User defined (Range 1~100, default 100)</td></tr>
<tr><td>Data Rate</td><td>IEEE 802.11b: 1/ 2/ 5.5/ 11Mbps
IEEE 802.11g: 6/ 9/ 12/ 18/ 24/ 36/ 48/ 54Mbps
IEEE 802.11n:
<table>
<tr><td rowspan="2">MCS</td><td colspan="2">Guard Interval 800ns</td><td colspan="2">Guard Interval 400ns</td></tr>
<tr><td>20MHz(Mbps)</td><td>40MHz(Mbps)</td><td>20MHz(Mbps)</td><td>40MHz(Mbps)</td></tr>
<tr><td>0</td><td>6.5</td><td>13.5</td><td>7.2</td><td>15</td></tr>
<tr><td>1</td><td>13</td><td>27</td><td>14.4</td><td>30</td></tr>
</table></td></tr>
</table>

	2	19.5	40.5	21.7	45
	3	26	54	28.9	60
	4	39	81	43.3	90
	5	52	108	57.8	120
	6	58.5	121.5	65	135
	7	65	135	72.2	157.5
	8	13	27	14.4	30
	9	26	54	28.9	60
	10	39	81	43.3	90
	11	52	108	57.8	120
	12	78	162	86.7	180
	13	104	216	115.6	240
	14	117	243	130	270
	15	130	270	144.4	300

Wireless Management Features	
Operating Mode	■ AP ■ Repeater ■ WDS PtP ■ WDS PtMP
Encryption Security	64/128-bits WEP WPA, WPA-PSK WPA2, WPA2-PSK 802.1X
Wireless Isolation	Enable it to isolate each connected wireless clients, to let them cannot access mutually.
Wireless Security	Wireless MAC address filtering (up to 50 entries)
	SSID broadcast and Hide
Wireless Client Max.	20 (default 10)
WMM	Wi-Fi Multimedia for better data transmission of Video or on-line demand
BG Protection Mode	A protection mechanism prevents collisions among 802.11b/g modes
APSD	For auto power-saved service
Max. WDS AP	4
Max. Wired Client	Unlimited
Management	
LAN	Static IP, Dynamic IP
Management Interface	Web UI SNMPv1/v2c
SNMP MIB	MIB I MIB II (RFC-1213)
Diagnostic tool	System Log
Environment & Certification	
Operation Temp.	Temp.: 0~40°c, Humidity: 10%~90% non-condensing

Storage Temp.	Temp.: -40~70°c, Humidity: 5%~90% non-condensing
Regulatory	CE/RoHS

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 *Place*

15 April, 2011 *Date*

Legal Signature

PLANET TECHNOLOGY CORPORATION

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