IP-COM

User Guide

Wireless Access Point

Copyright Statement

Disclaimer

Pictures, images and product specifications herein are for references only. To improve internal design, operational function, and/or reliability, IP-COM reserves the right to make changes to the products described in this document without obligation to notify any person or organization of such revisions or changes. IP-COM does not assume any liability that may occur due to the use or application of the product or circuit layout(s) described herein. Every effort has been made in the preparation of this document to ensure accuracy of the contents, but all statements, information and recommendations in this document do not constitute the warranty of any kind, express or implied.

Conventions

Thank you for choosing IP-COM! Please read this user guide before you start. This user guide instructs you to install and configure the AP.

Typographical conventions in this User Guide:

Item	Presentation	Example
Button	Bold	“Click the Save button” can be simplified as “Click **Save**”.
Menu	Bold	“The menu Basic” can be simplified as **Basic**.
Continuous Steps	>	Click **Wireless > Basic**

Symbols in this User Guide:

Item	Meaning
Note	This format is used to highlight information of importance or special interest. Ignoring this type of note may result in ineffective configurations, loss of data or damage to device.
Tip	This format is used to highlight a procedure that will save time or resources.

Technical Support

Tel: (86755) 2765 3089

Email: info@ip-com.com.cn

Website: http://www.ip-com.com.cn

Contents

1 Product Overview 1

Package Contents 1
Hardware Description 2
Front View 2
Rear View 3
Label 4

2 Quick Installation Guide 5

Step 1: Connect an Ethernet Cable to the AP 5
Step 2: Mount the AP 5
Step 3: Connect the AP 6
Step 4: Configure Your AP 7
AP Mode 7
WDS Mode 9
AP Client Mode 13

3 More Features 16

Status 16
System Status 16
Wireless Status 17
Traffic Statistics 17
Wireless Clients 18
Quick Setup 18
Network 18
LAN Setup 19
DHCP Server 21
Wireless 23
Basic 23
Radio 31
Channel Scan 32
Advanced 33
Access Control 35
QVLAN 36
SNMP 39
Deployment 40
Tools 42
Maintenance 42
Time & Date 43
Logs 46
Configuration 49
User Name & Password 51
Diagnostics 52

Reboot 52
LED 55
Uplink Detection 56

Appendix 57

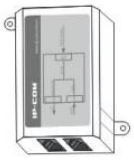
1 Configure PC 57
Windows 8 57
Windows 7 59
Windows XP 61
2 Factory Defaults 63
3 FAQs 64
4 Safety and Emission Statement 65

1 Product Overview

IP-COM AP515, with its external power amplifier and 7dBi directional antennas, offers bandwidth of up to 300Mbps on 2.4GHz band. Its waterproof housing and flexible mounting design makes it suitable for different harsh environments such as high/low temperature, humidity, rainfall, dust, frost, etc. It is compatible with standard IEEE 802.3at and can be managed by IP-COM ACs. It provides optimal outdoor WiFi coverage for hospitals, campuses, commercial streets, stadiums and other areas.

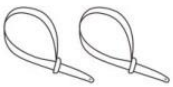
Package Contents

Wireless Access Point * 1

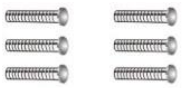


PoE Injector*1

Install Guide*1



Plastic strap*2



Screw*6

Screw Bolt*6

Power Adapter*1

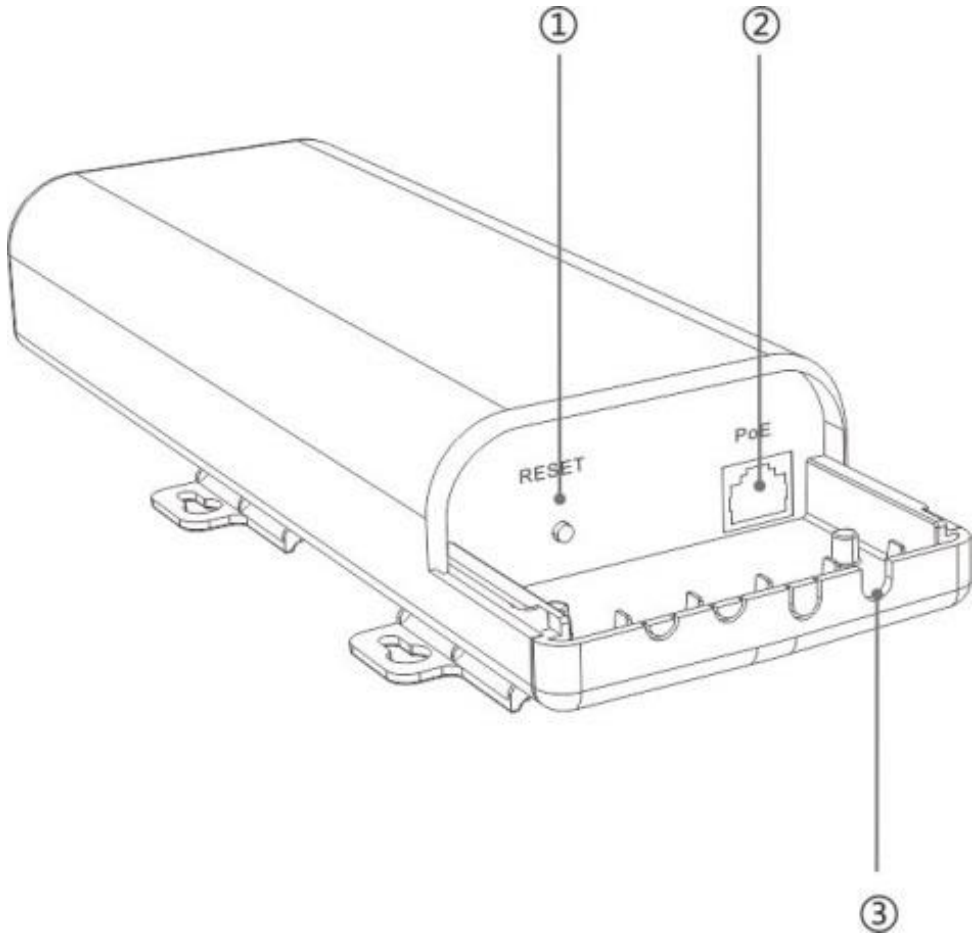
Power Cord*1

Ethernet Cable*1

If any item is incorrect, missing, or damaged, please contact your dealer for immediate replacement.

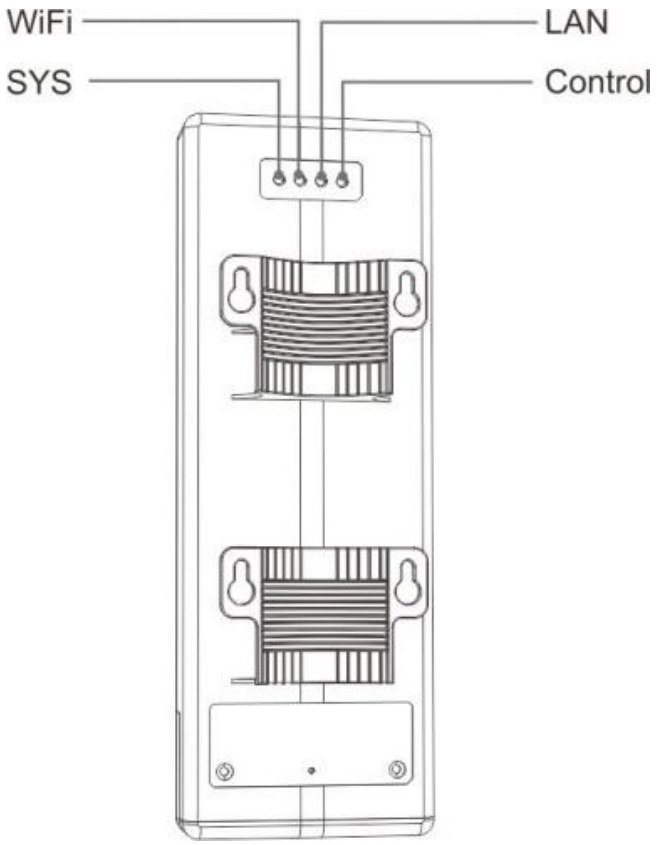
Hardware Description

Front View



Item	Port/Button	Description
1	RESET	Pressing and holding the reset button for over 7 seconds restores this device to factory defaults.
2	PoE	This port provides power over an Ethernet connection via the PoE injector or an IEEE802.3at-compliant PoE device. And it also works as a 10/100/1000Mbps LAN port.
3	/	Cable access hole cut-outs

Rear View



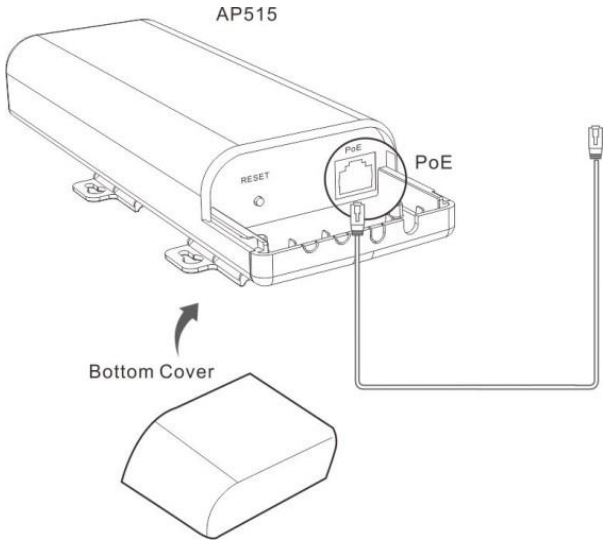
LED	Status	Description
SYS	Blinking	The device is working properly.
	Off	Malfunction occurs or the device is not powered on.
	Solid	Malfunction occurs.
WiFi	Blinking	Data transmission is occurring.
	Off	WiFi is disabled.
	Solid	WiFi is enabled.
LAN	Blinking	Data transmission is occurring on the LAN port.
	Off	There is no device linked to this port.
	Solid	There is a device linked to this port but no data transmission.
Control	Solid	The device is managed by an AC successfully.
	Off	The device isn’t managed by an AC.

Label

1. **Model:** Product model of the AP.
2. **IP Address:** Default login IP address (management IP) of this AP.
3. **Username/Password:** Default login user name and password.

2 Quick Installation Guide

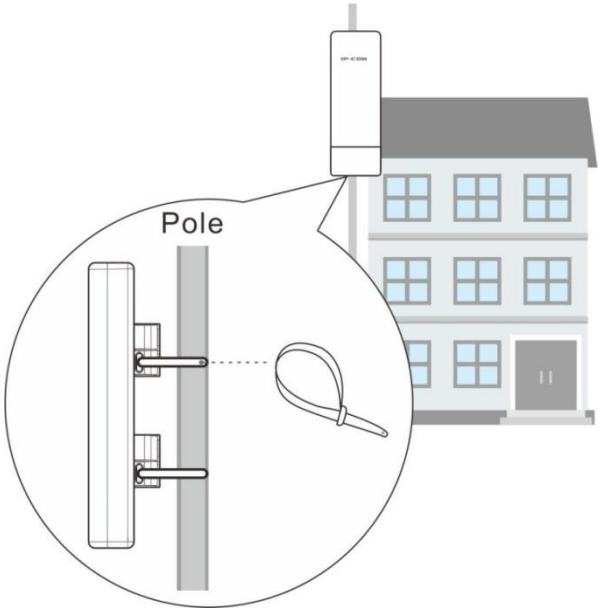
Step 1: Connect an Ethernet Cable to the AP



1. Slide the bottom cover of the AP down to expose the port.
2. Connect an Ethernet cable (≤ 60m), which will be connected to the PoE injector or a PoE switch, to the **PoE** port of your AP.
3. Gently replace the cover by sliding it up until it clicks into place.

Step 2: Mount the AP

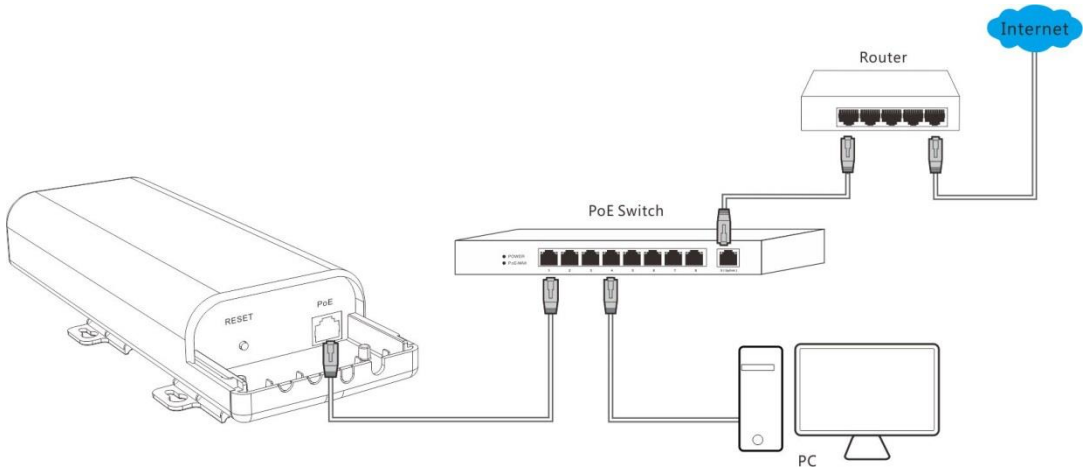
Set up the AP in an outdoor location, usually on the roof, and thread plastic wraps through grooves underneath the brackets. Then attach the device firmly to a solid pole.



Step 3: Connect the AP

As you can connect your AP to a PoE switch or with the included PoE injector for power supply, two methods are available here to connect your AP. Select the proper method according to your needs.

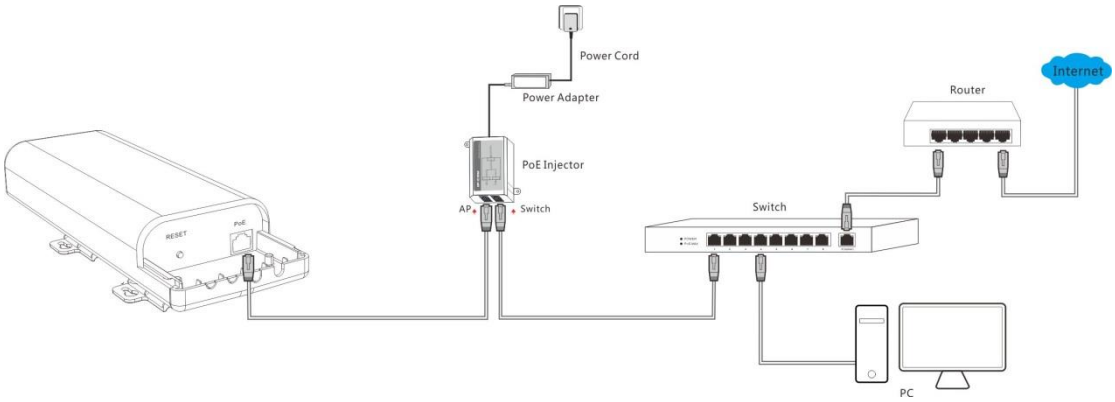
◆ **With a PoE switch for power supply**



1 Connect the Ethernet cable, which has been connected to the AP in **Step 1**, to a PoE switch.

2 Connect your PC or other Ethernet devices to the PoE switch with Ethernet cables.

◆ **With the included PoE injector for power supply**



1 Connect the Ethernet cable, which has been connected to the AP in **Step 1**, to the **AP** port of the PoE injector.

2 Connect a switch to the **Switch** port of the PoE injector with an Ethernet cable.

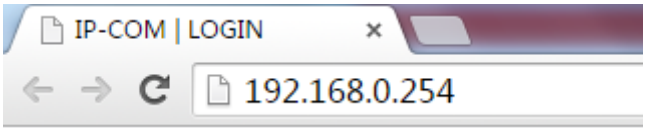
3 Connect the included power adapter to the PoE injector, connect the power adapter to the included power cord and plug the power cord into an outlet for power supply.

4 Connect your PC or other Ethernet devices to the switch with Ethernet cables.

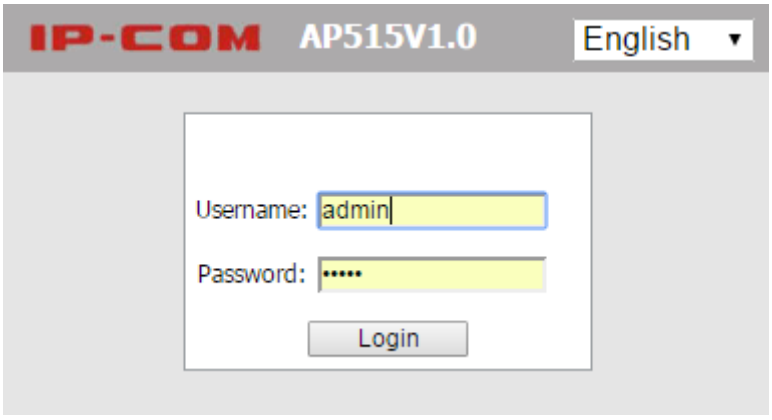
Step 4: Configure Your AP

1. Set your PC to **Use the following IP address**: IP address: 192.168.0.x (2~253); subnet mask: 255.255.255.0. For specific steps, see Appendix 1 Configure PC.

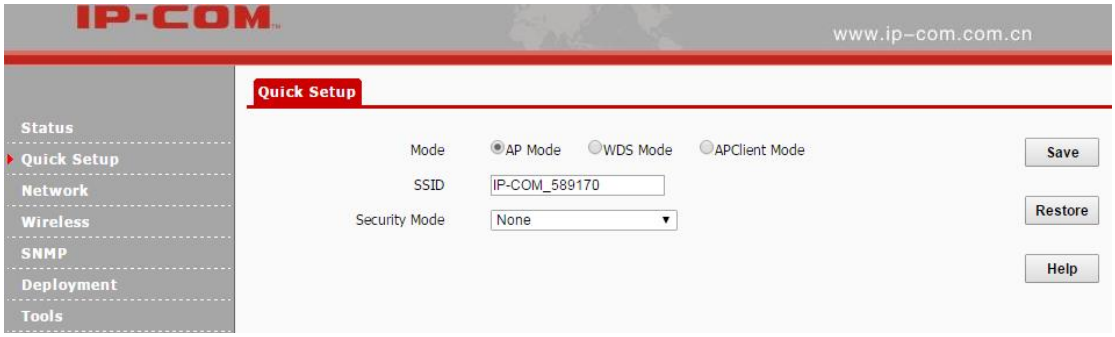
2. Input **192.168.0.254** in a web browser's address bar, and then press **Enter** or **Return** on your keyboard (If the following page does not appear, see FAQ 1).



3. Enter the default username and password (**admin** for both defaults) and click **Login**.



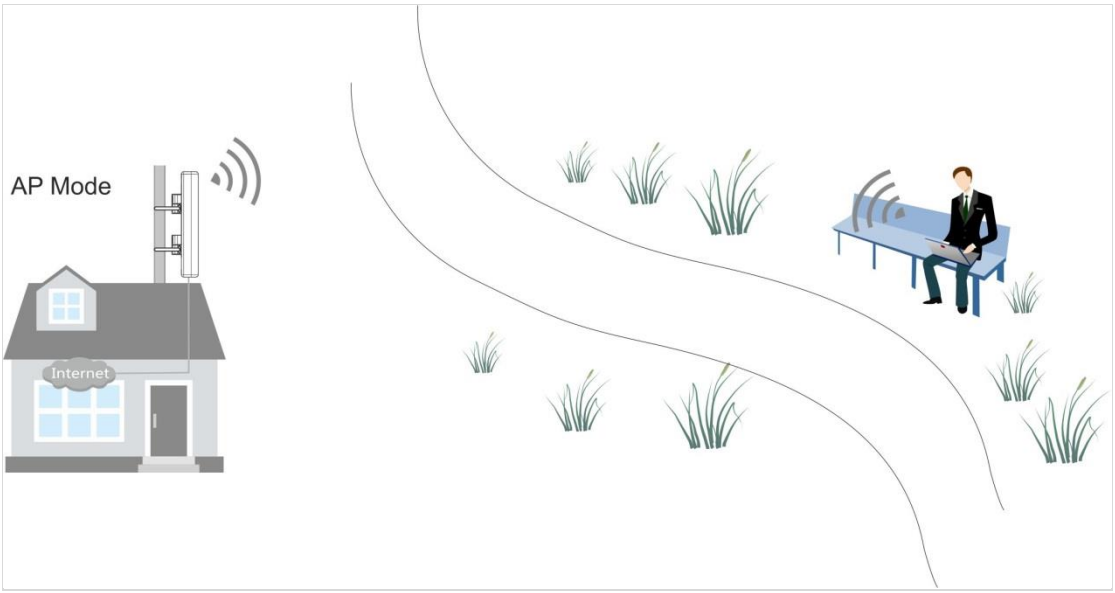
4. Then you will be successfully directed to the web UI of the AP. Click **Quick Setup** to select the proper operating mode and complete corresponding mode settings. 3 operating modes are supported on this AP: AP mode, WDS mode and AP Client mode.



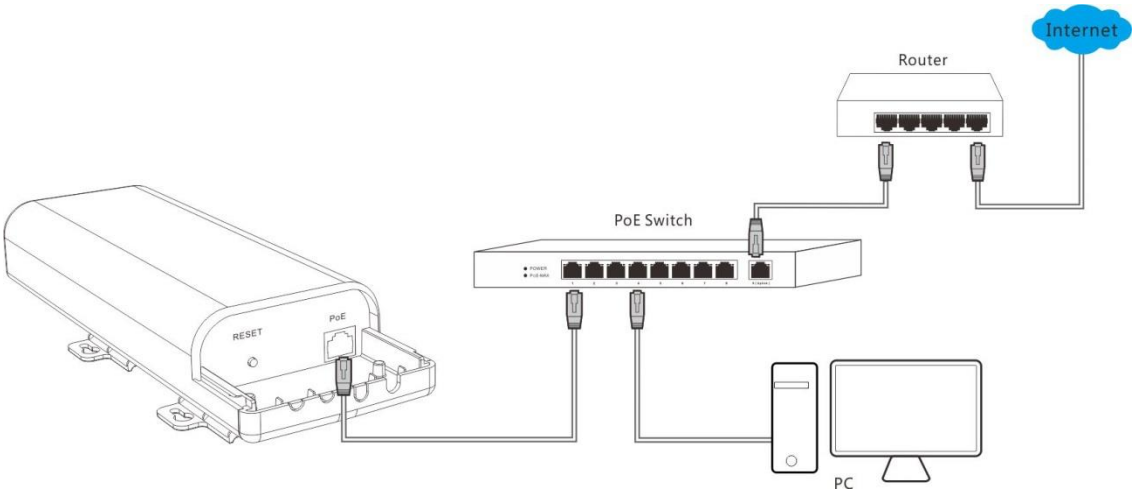
AP Mode

In this mode, the device can be connected to a wired network and transform the wired access into wireless that multiple devices can share together.

Application Scenario:

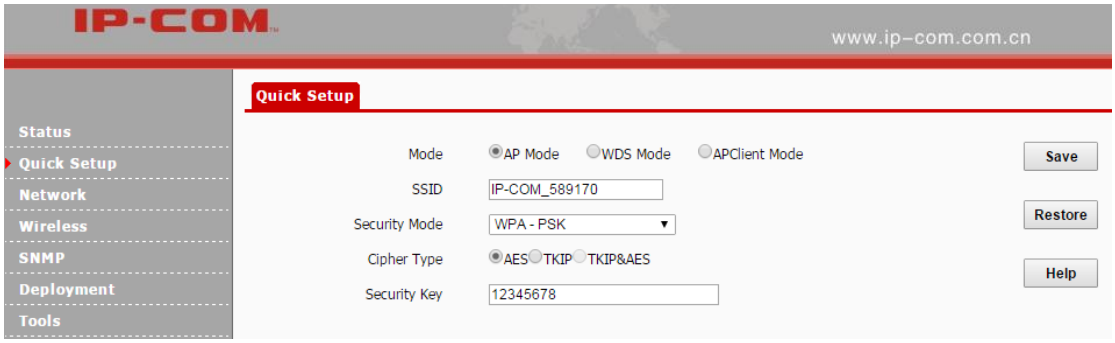


Network Topology:



Configuration Steps: (In this example, WPA -PSK and AES are taken for illustration. For other security modes, see Basic.)

1. Select **AP Mode**.
2. Customize your SSID (WiFi name). This is optional.
3. Set the security mode, say **WPA-PSK**.
4. Select **AES** as its cypher type.
5. Set a security key (WiFi password), which you'll need when you're connecting to your SSID.
6. Click **Save** to apply your settings.



WDS Mode

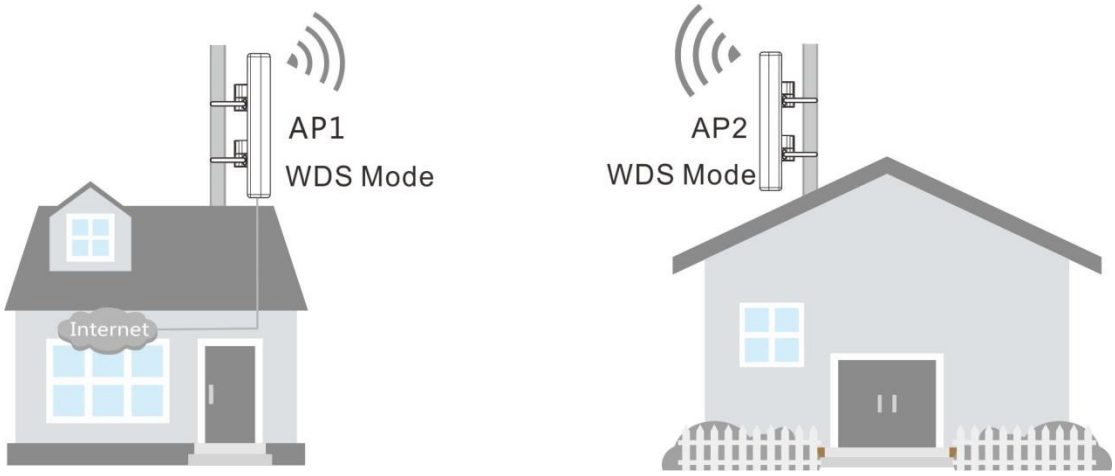
In this mode, the AP is used for building a wireless distribution system for WiFi coverage and WiFi extension.

Note:

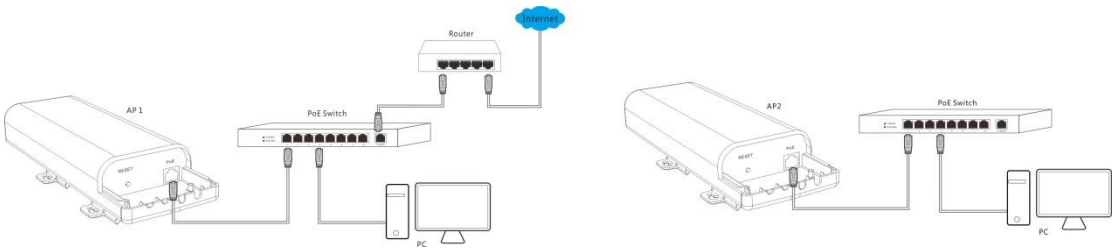
- In the WDS mode, both the AP and the remote device should support WDS feature.
- As for IP addresses, they should not be the same but on the same network segment.
- This AP's and the remote device's SSIDs, channels, security modes and security keys should be kept the same.

↘ One-to-one WDS

Application Scenario:



Network Topology:



Configuration Steps:

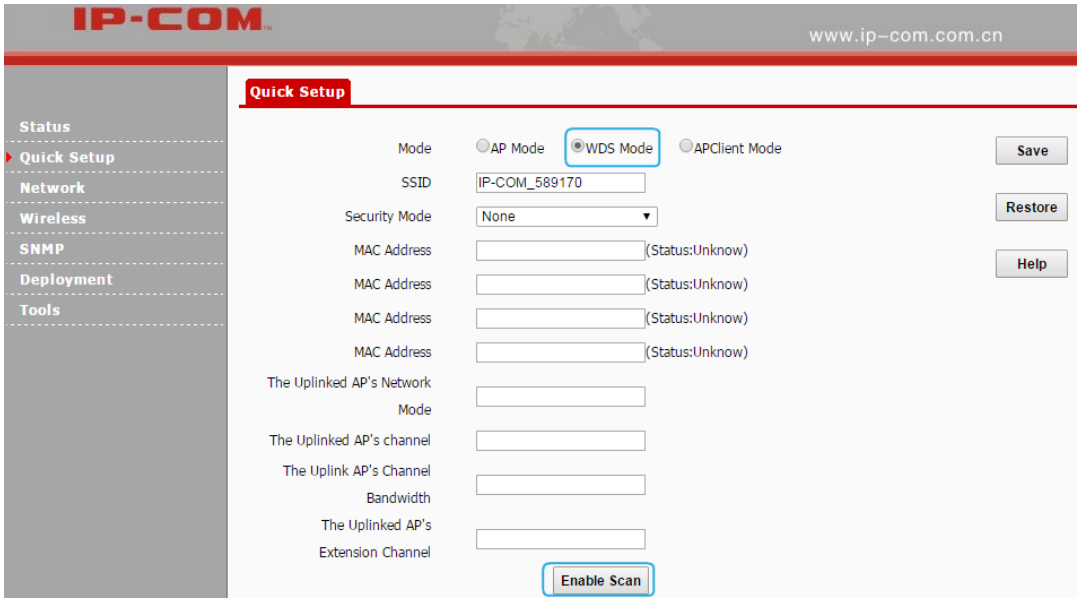
Step 1: Log in to the web UI of AP1 and note down the basic info of AP1 as shown below:

IP Address: 192.168.0.254	SSID: IP-COM_021212
Security Mode: WPA-PSK	Security Key (WiFi Password): 86754321

Step 2: Log in to the web UI of AP2 and change its LAN IP address to one that is different from that of AP2 but on the same network segment, such as 192.168.0.253. For details, see LAN Setup.

Step 3: Configure WDS settings on AP2.

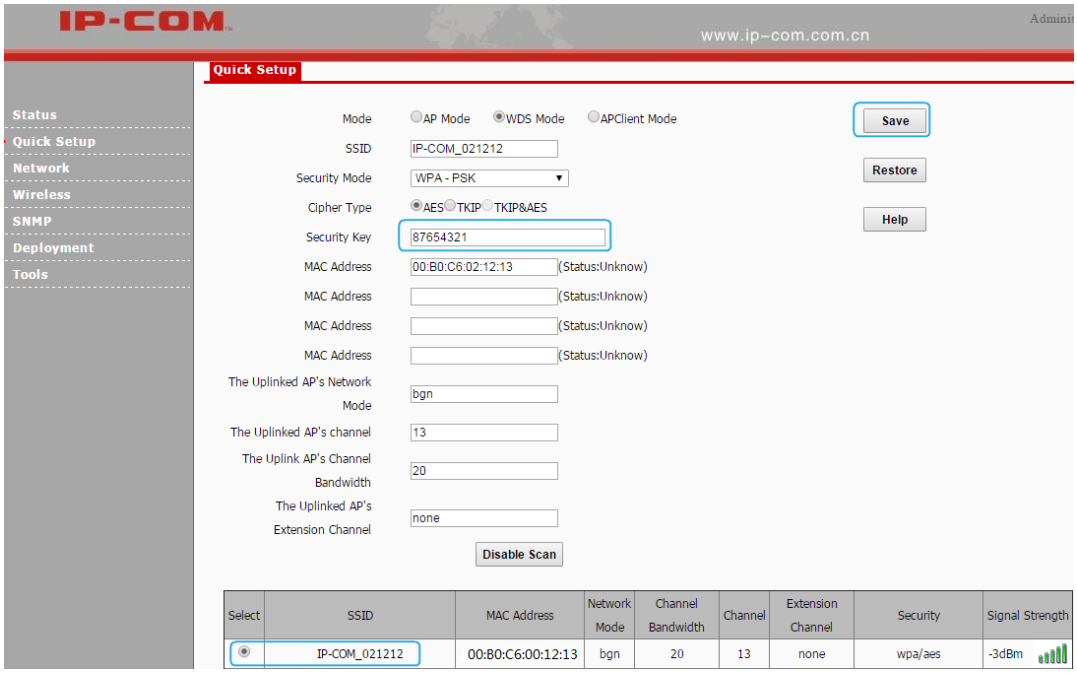
1 Click **Quick Setup**, select **WDS Mode** and click **Enable Scan**.



2 Select the SSID of AP1 from the list, say, IP-COM_021212.

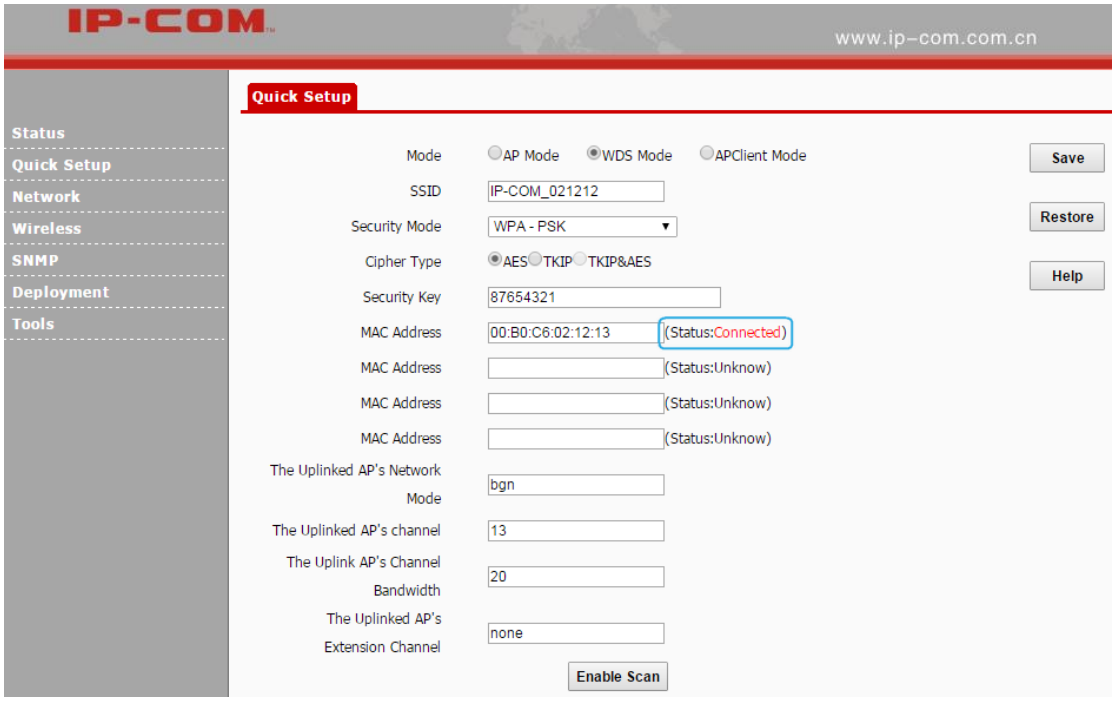
3 Enter the security key (WiFi password) of AP1 in the **Security Key** field. Here we say 87654321.

4 Click **Save** to apply your changes. Then the SSID of AP2 will be kept the same as that of AP1 automatically.



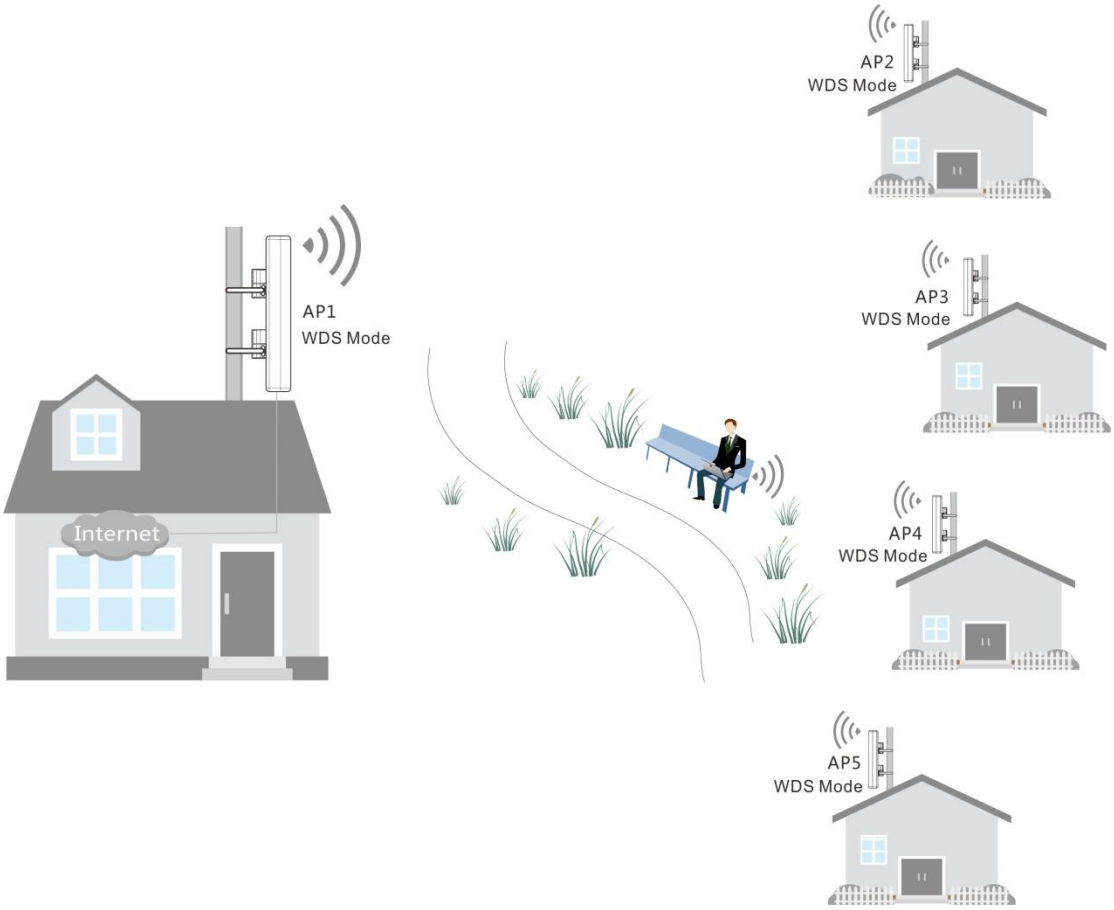
Step 4: Login to the web manager of AP1, refer to ❶~❹ of **Step 3** to configure WDS settings on AP1.

When the status of the MAC address displays **Connected**, they have been bridged successfully.



➘ One-to-many (≤4) WDS

The typical application scenario is shown as below. As for its network topology, refer to Network topology in one-to-one WDS mode.



Configuration Steps:

Step 1: Log in to the web UI of AP1 and note down its basic information as shown below:

IP Address: 192.168.0.254	SSID: IP-COM_021212
Security Mode: WPA-PSK	Security Key (WiFi password): 87654321

Tip

IP addresses of AP2, AP3, AP4 and AP5 should be different from that of AP1 but on the same network segment. For example, you can set them to 192.168.0.2, 192.168.0.3, 192.168.0.4 and 192.168.0.5 respectively.

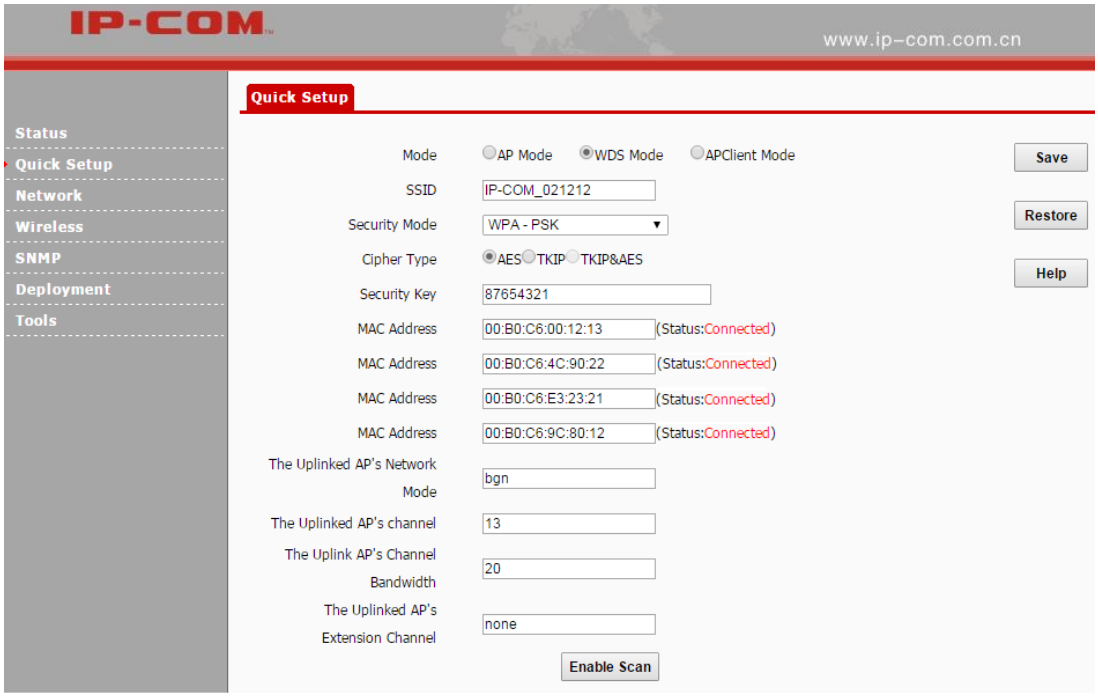
Step 2: Log in to the web UI of AP2, AP3, AP4 and AP5 respectively, change their LAN IP addresses (AP2: 192.168.0.2, AP3: 192.168.0.3, AP4: 192.168.0.4, AP5: 192.168.0.5) and keep their security info and channels the same as that of AP1.

Step 3: Log in to web UI of AP2, AP3, AP4 and AP5 respectively and refer to Step 3 in One-to-One WDS part to bridge them with AP1.

Step 4: Log in to the web UI of AP1 and configure WDS settings to bridge itself with AP2, AP3, AP4 and AP5 respectively.

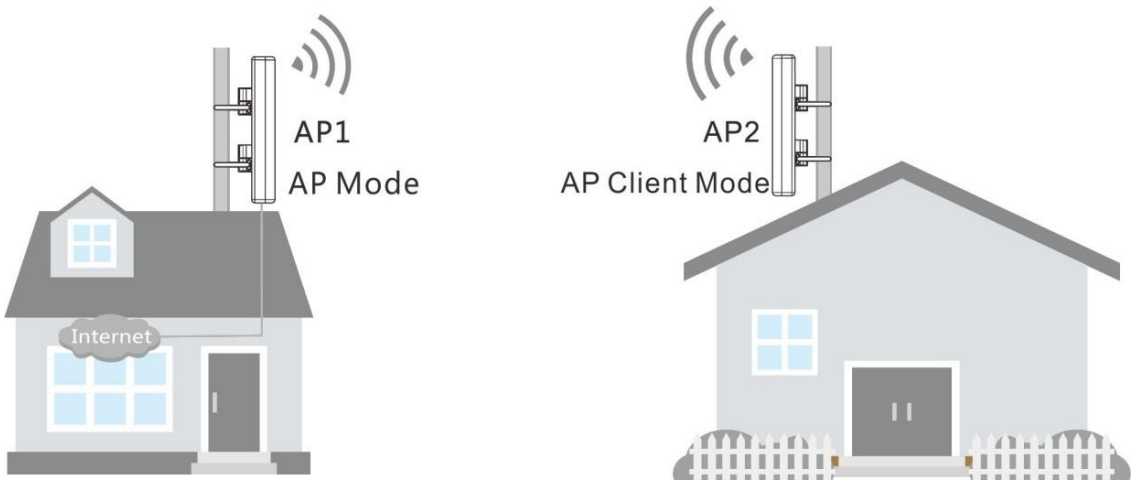
1. Click **Quick Setup**, select **WDS Mode** and click **Enable Scan**.
2. Locate SSIDs of AP2, AP3, AP4 and AP5 in the list, and then select them one by one (At this time, SSIDs of AP2, AP3, AP4 and AP5 have been changed into the SSID of AP1, i.e. IP-COM_021212).
3. Enter the security key (WiFi password) of AP1 in the Security Key field, say 87654321.
4. Click **Save** to complete your settings.

When status of corresponding MAC addresses displays **Connected**, they've bridged successfully.



AP Client Mode

In this mode, the device extends the wireless coverage of another wireless AP or router. The advantage of the AP client mode is that the remote device does not need to have WDS function and may not need to be the same brand. Therefore, it can work with almost any wireless device. Its typical application scenario is shown as below. As for its network topology, refer to Neowork topology in one-to-one WDS mode.



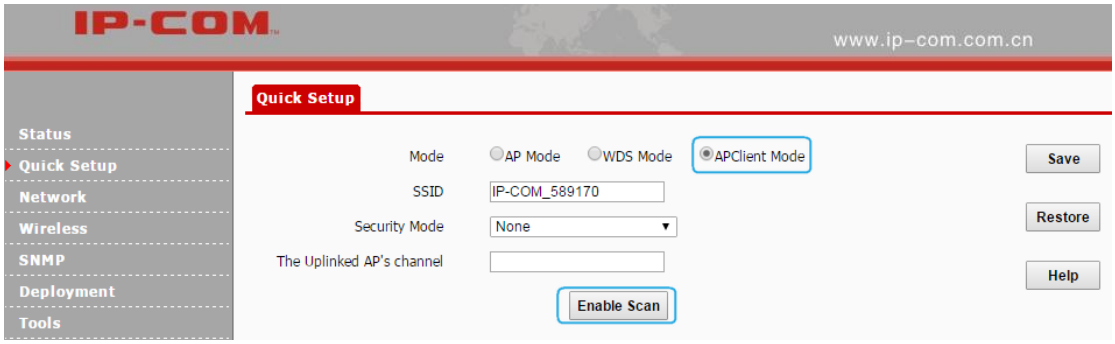
Configuration Steps:

1. Log in to the web UI of AP1 and note down its basic information as shown below:

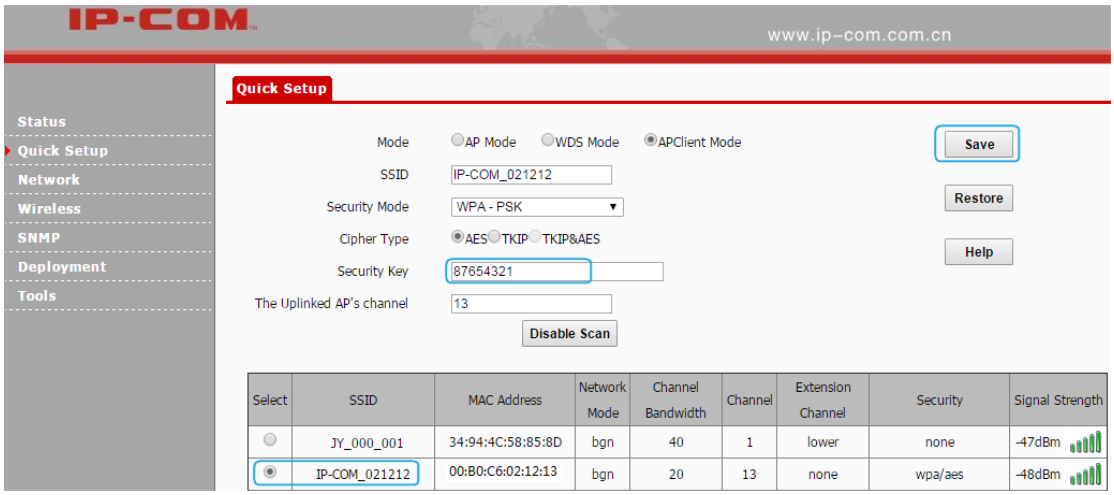
IP Address: 192.168.0.254	SSID: IP-COM_021212
Security Mode: WPA-PSK	Security Key (WiFi Password): 87654321

2. Log in to the web UI of AP2 and change its LAN IP address to one that is different from that of AP1 but on the same network segment, say 192.168.0.253. For details, see LAN Setup.

3. Click **Quick Setup**, select **APClient Mode** and click **Enable Scan**.



4. Locate and select the SSID of AP1 from the list, say IP-COM_021212.
5. Enter the security key (WiFi password) of AP1 in the Security Key field.
6. Click **Save** to apply your settings.



When AP2 and AP1 are bridged successfully, wireless devices, like smart phones, can connect to the WiFi of AP2 for Internet access.

3 More Features

Status

This section gives you an overview of device status and basic information. The following parts are included:

System Status: Display the AP's current system status and LAN information.

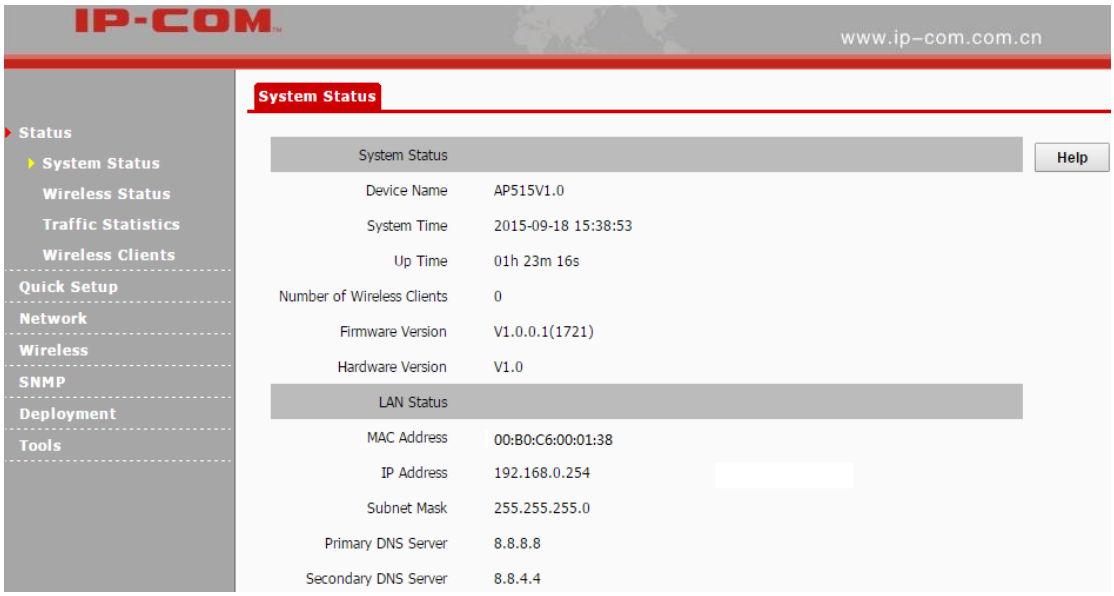
Wireless Status: Display connected devices' radio status and SSID status information.

Traffic Statistics: Display traffic statistics of all SSIDs.

Wireless Clients: Display information of connected devices.

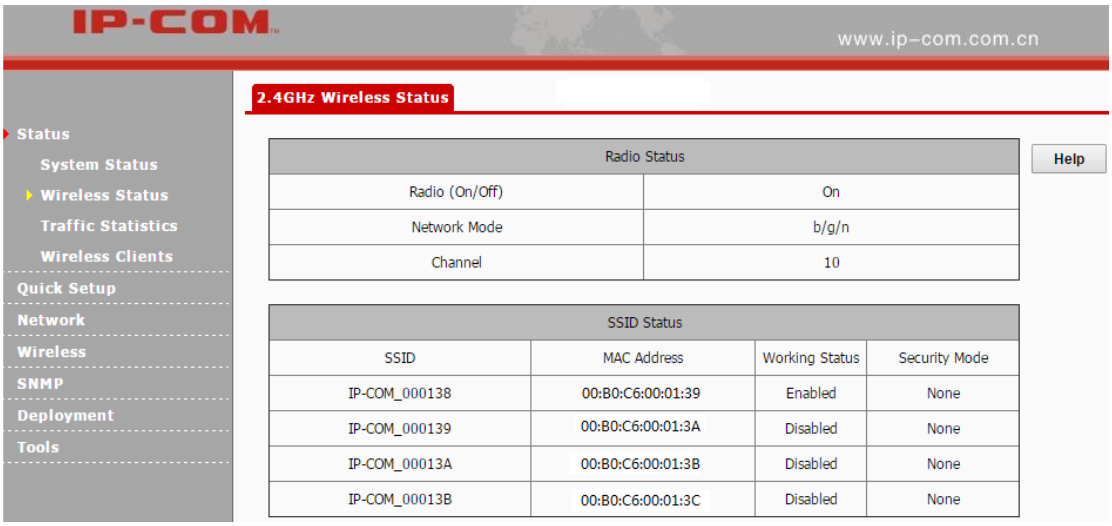
System Status

This page displays system status information and LAN information of this AP, including device name, system time, up time, number of wireless clients, firmware version, hardware version, MAC address, IP address, etc.



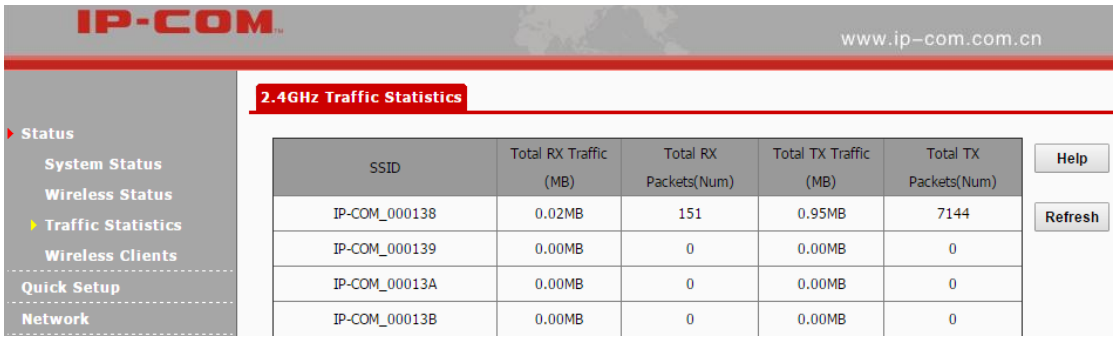
Wireless Status

This page displays 2.4GHz radio status, SSID status and WDS status of this device. Click **Status** > **Wireless Status** to enter page below:



Traffic Statistics

This page displays traffic statistics of corresponding SSIDs. Click **Status** > **Traffic Statistics** to enter page below:

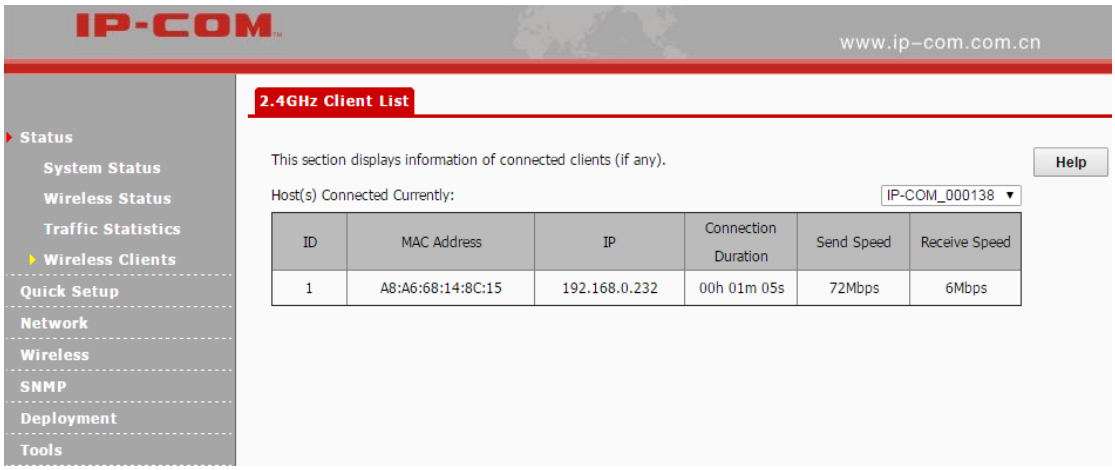


Parameters on this page are described below:

- **SSID:** WiFi name.
- **Total RX Traffic:** Total traffic which the corresponding SSID has received.
- **Total RX Packets:** Total packets which the corresponding SSID has received.
- **Total TX Traffic:** Total traffic which the corresponding SSID has transmitted.
- **Total TX Packets:** Total packets the corresponding SSID has transmitted.

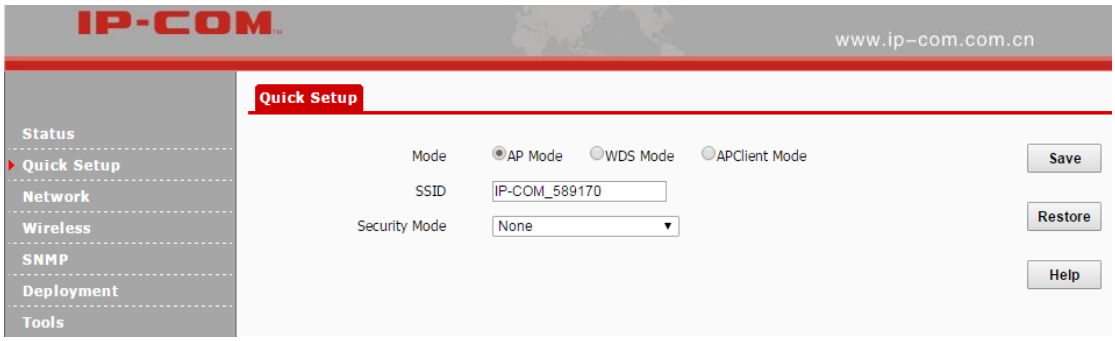
Wireless Clients

This page displays information, like MAC address, IP, connection duration and link speed of connected clients. Click **Status** > **Wireless Clients** to enter page below:



Quick Setup

This section mainly walks you through operating modes of the AP. Click **Quick Setup** to enter page below and you can select the proper operating mode in terms of your network environment. For specific configuration steps and application scenarios of different operating modes, see Step 4: Configure Your AP.



Network

Two parts are included for this section:

LAN Setup: Display the AP's MAC address and configure its device name and IP info.

DHCP Server: Include DHCP server and DHCP client list.

LAN Setup

You can choose whether the AP gets its IP address manually (static IP) or automatically (DHCP).

Click **Network > LAN Setup** to enter page below:

Parameters on this page are described below:

- **MAC Address:** LAN MAC address of the device.
- **Address Mode:** Static IP: The default address mode of your device. You can modify the LAN IP address manually. Once the LAN IP address of the device is changed, you need to use the new IP address to re-log in to its web page. Dynamic IP: Your device obtains IP address information automatically.
- **IP Address:** The default LAN IP address of the device is 192.168.0.254. You can modify it here.
- **Subnet Mask:** Subnet mask of the device. The default one is 255.255.255.0.
- **Gateway:** Gateway of the device. Usually, it is advisable to enter the LAN IP address of the remote device.
- **Primary DNS Server:** Enter the necessary DNS address provided by your ISP (This field cannot be blank). Consult your ISP if you are not clear.
- **Secondary DNS Server:** Enter the other DNS address if your ISP offers you two DNS addresses (This field is optional).
- **Device Name:** Modify the device name.

- **Duplex Mode:** Transmission distance of its RJ45 port. The default value is 100M/1000M full-duplex. The faster the auto-negotiation speed is, the shorter the transmission distance will be. When the AP can't communicate with its remote device, it is advisable to select 10M half-duplex mode.

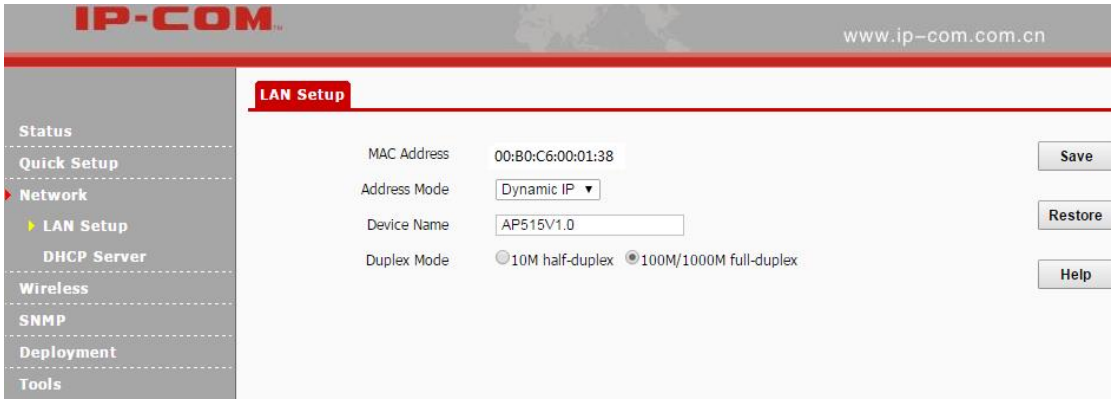
To set your AP's IP address in Static IP mode:

1. **Address Mode:** Select **Static IP**.
2. **IP Address:** Enter a unique IP address that will be used to login to this AP's web UI.
3. **Subnet Mask:** Enter the subnet mask of your network.
4. **Gateway:** Enter the IP address of the default gateway for your network.
5. **Primary DNS Server:** Specify the IP address of the preferred DNS (Domain Name System) server.
6. **Secondary DNS Server:** Specify the IP address of the alternate DNS server. This entry is optional and used only if the primary DNS server is not responding.
7. Click **Save** to apply your changes.

Note:

In static IP address mode, once you've changed your LAN IP address, you need to use the new IP address to login to its web UI.

To set your AP's IP address in DHCP mode:



1 **Address Mode:** Select **Dynamic IP**.

2 Click **Save** to apply your changes.

Note:

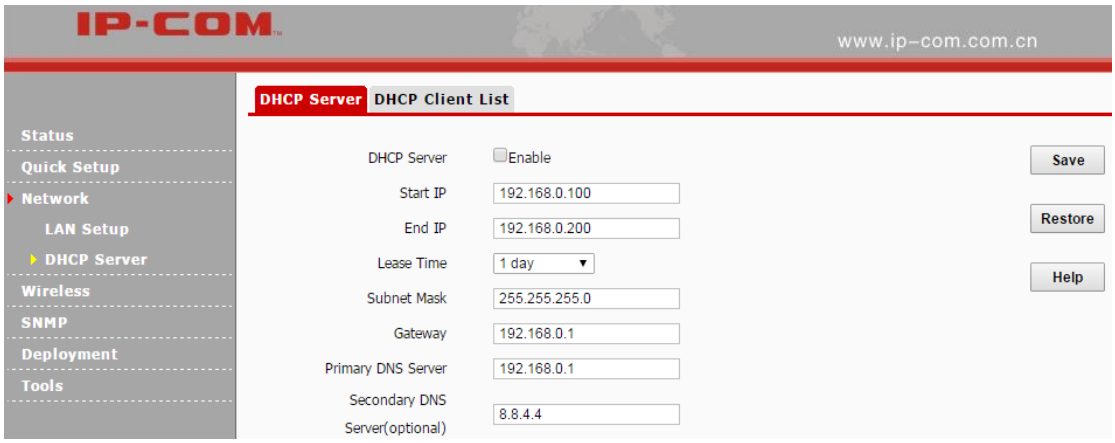
In DHCP mode, your LAN IP address is assigned by the DHCP server of your uplink device. Thus, to know your LAN IP address, you need to check it on the DHCP client list of the uplink device.

DHCP Server

DHCP Server

If you enable the built-in DHCP server on the device, it will automatically configure the TCP/IP settings for all your LAN computers (including IP address, subnet mask, gateway and DNS etc.), eliminating the need of manual intervention. Just be sure to set all computers on your LAN to be DHCP clients by selecting **Obtain an IP Address Automatically** respectively on each PC. When turned on, these PCs will automatically load IP information from the DHCP server. By default, the DHCP server on this device is disabled. The first time you connected to the AP, you need to set your PC to **Use the following IP address**. For more details, see Appendix 1 Configure PC.

Click **Network > DHCP Server** to enter page below:

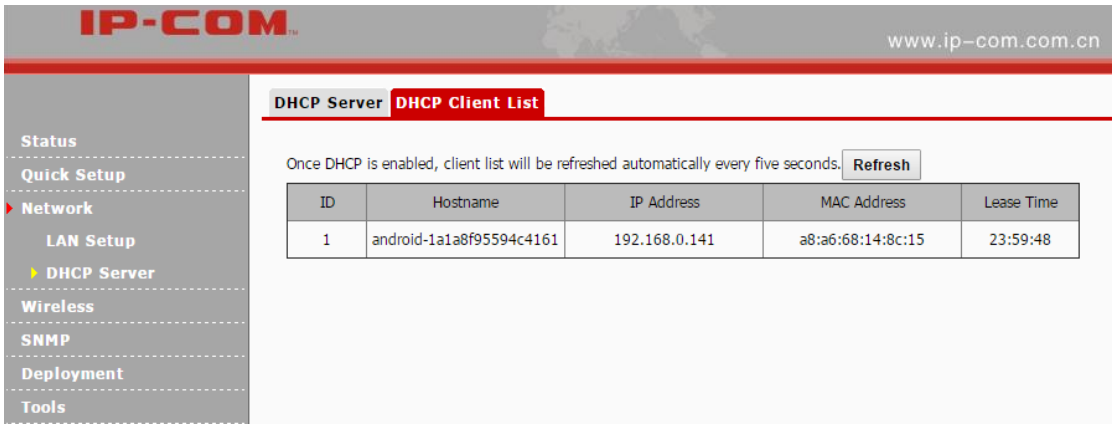


Some parameters are described below:

- **DHCP Server:** Check/Uncheck it to enable/disable the DHCP server.
- **Start IP:** The start IP address that the DHCP server has automatically assigned.
- **End IP:** The end IP address that the DHCP server has automatically assigned.
- **Lease Time:** How long the IP address can be used by the client device.
- **Primary DNS Server:** Primary DNS server address.
- **Secondary DNS Server:** Secondary DNS server address.

DHCP Client List

Click **Network > DHCP Server > DHCP Client List** to view DHCP clients information.



Wireless

This section allows you to configure WLAN settings for your AP. Six parts are included:

Basic: Configure basic information for your AP, including SSID (WiFi name), clients, encryption information, etc.

Radio: Configure wireless radio information for your AP, including Enable/Disable WiFi, network mode, channel, etc.

Channel Scan: Scan wireless signals nearby.

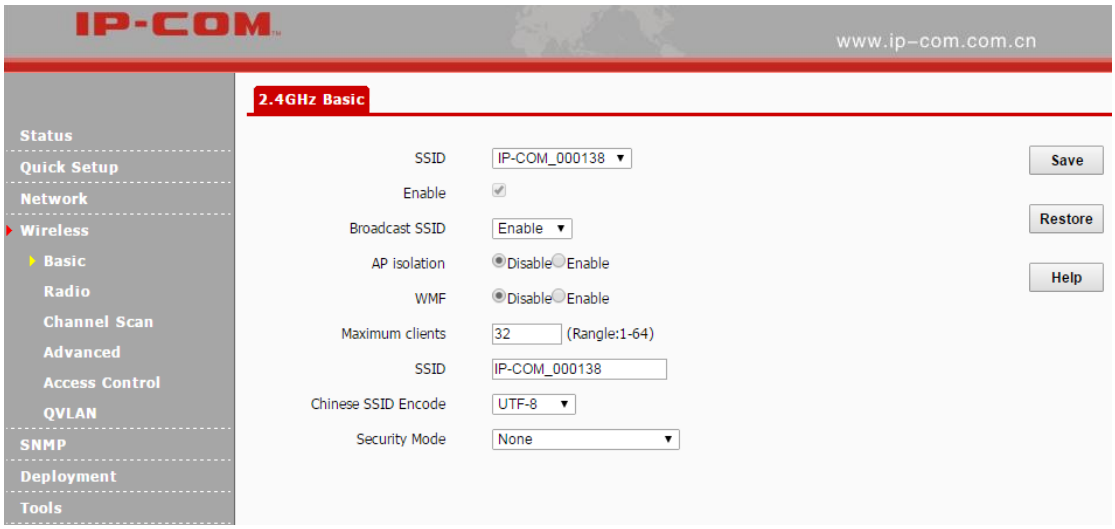
Advanced: Adjust wireless performance for your device (For professional staff).

Access Control: Configure a list of devices to allow or disallow a connection to your WiFi via the device's MAC addresses.

QVLAN: Configure QVLAN settings to secure your WiFi.

Basic

Click **Wireless** to configure basic wireless settings. It is advisable to configure the SSID, security mode and security key, and leave other settings unchanged.



Parameters on this page are described below:

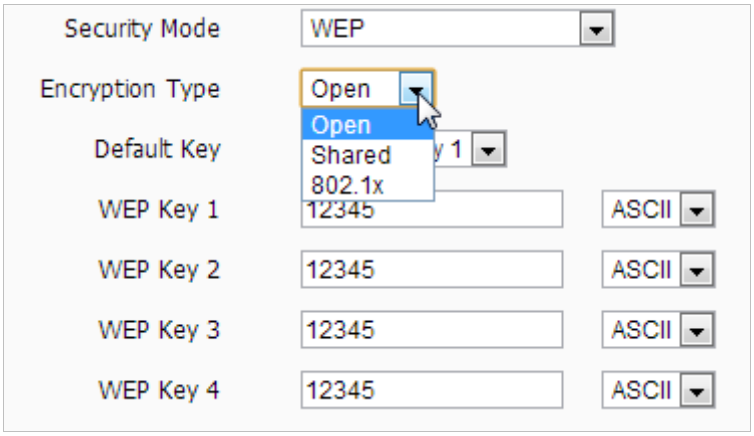
- **SSID:** Up to 4 SSIDs at the 2.4G radio can be supported on this device.
- **Enable:** When you check it, Wi-Fi will be allowed for the selected SSID.

- **Broadcast SSID:** When it is enabled, wireless clients are able to scan the SSID; when it is disabled, wireless clients are unable to scan the SSID. At this time, if you want to connect to it wirelessly, you have to type in the SSID and select the encryption mode manually.
- **AP Isolation:** When this function is enabled, wireless clients connected to the SSID won't be able to communicate with each other, which can enhance wireless network security. When this function is disabled, Wireless clients connected to the SSID are able to communicate with each other.
- **WMF:** Wireless Multicast Forwarding. Enabling this function will improve quality of multicast data flow that wireless hosts have received.
- **Maximum Clients:** The maximum number of wireless clients which can connect to the SSID.
- **SSID:** WiFi name. Different SSIDs can have different configurations.
- **Chinese SSID Encode:** Select Chinese SSID encodes to match wireless clients with different code formats in a better way. It is UTF-8 by default. If two or more SSIDs are enabled on this AP, it is advisable to set some SSIDs to UTF-8 and set others to GB2312 so that any client can recognize and connect to it.
- **Security Mode:** Display wireless encryption information of the current SSID. Available security modes are: None, WEP, WPA-PSK, WPA2-PSK, Mixed WPA/WPA2-PSK, WPA, and WPA2.

WEP

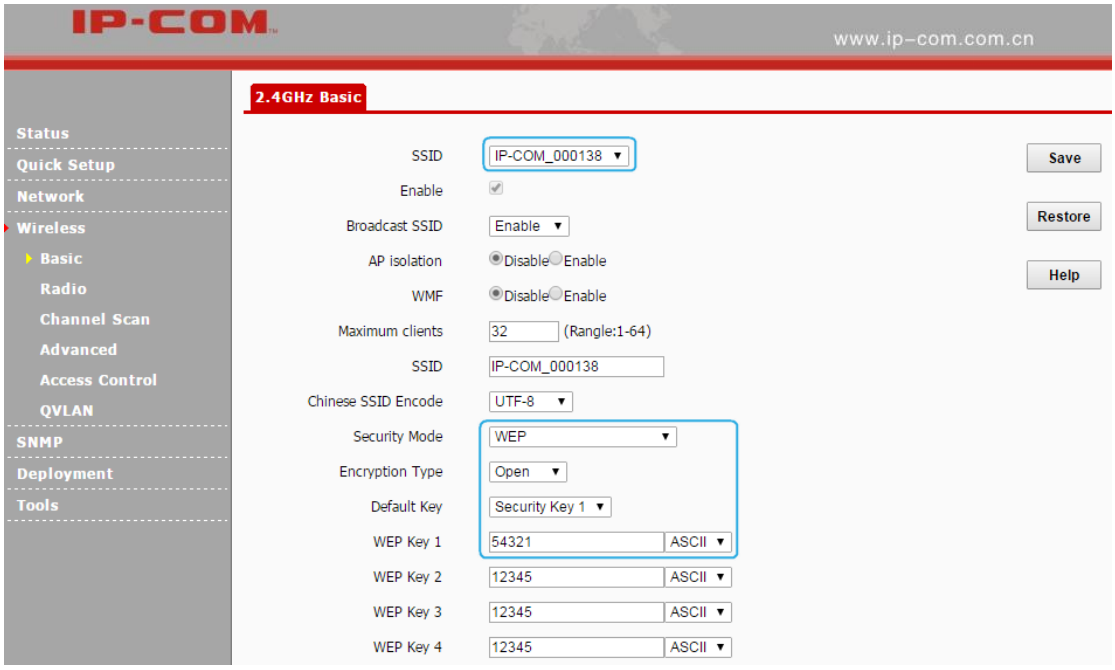
WEP (Wired Equivalent Privacy): WEP is a security mode for data which is delivered between two devices to protect wireless network from illegal users. Wireless speed can reach up to 54Mbps if WEP is used.

Three encryption types are supported for WEP: Open, Shared and 802.1x.



Configuration steps for Open or Shared: (In the example, the default key is Security Key 1 and the WEP key 1 is 54321 and ASCII)

1. Select the SSID you wish to encrypt, say, IP-COM_000138.
2. **Security Mode:** Select **WEP**.
3. **Encryption Type:** Select **Shared** or **Open**.
4. Select **Security Key 1** as the default key.
5. Set WEP key 1 to **54321**.
6. Click **Save** to apply your changes.

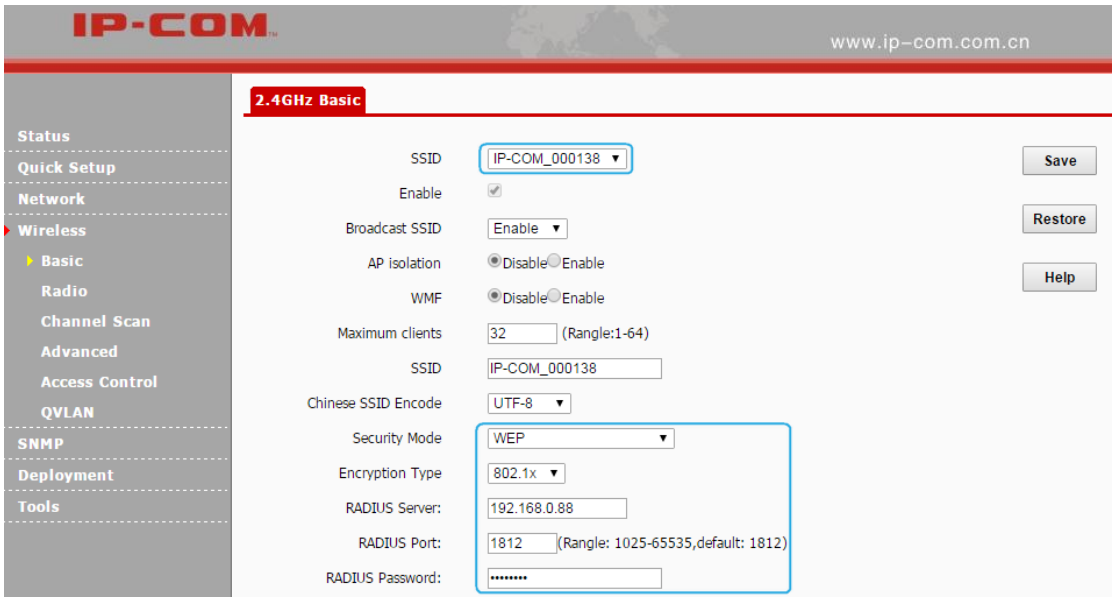


Tip

Most smart phones can only use WEP key 1 to connect to the WEP-encrypted (Open or Shared) WiFi. When the security mode is WEP, and the encryption type is Open or Shared, to verify that your smart phone can connect to the AP's WiFi, you'd better select WEP Key 1 as the default key.

Configuration Steps for 802.1x: (In the example, the RADIUS server is 192.168.0.88, the RADIUS port is 1812 and its password is 12345678)

1. Select the SSID you wish to encrypt, say IP-COM_000138.
2. Select **WEP** as its security mode.
3. Select **802.1x** as its encryption type,
4. **RADIUS Server:** Enter 192.168.0.88.
5. **RADIUS Port:** Enter 1812.
6. **RADIUS Password:** Enter 12345678.
7. Click **Save** to apply your changes.



Some parameters are described below:

- **Encryption Type:** Select the encryption type for WEP: Open, Shared or 802.1x. The only difference among them is the authentication type.

- **Open:** Use "no authentication" + WEP Encryption. Wireless clients can associate with the device without going through authentication. Only data in transmission is encrypted with WEP encryption.
- **Shared:** Use shared key authentication + WEP Encryption. A WEP key that is mutually agreed in advance is required from both sides while wireless clients try to associate with the device. Association is established only if the two sides provide the same WEP key.
- **802.1x:** Use 802.1x authentication + WEP encryption. When this option is selected, only authenticated users can access the wireless network.
- **Default Key:** Used for specifying the current WEP key (Open and Shared). If the default key is WEP Key 2, wireless clients need to use WEP Key 2 to connect to the AP.
- **ASCII:** 5~13 ASCII characters are supported.
- **Hex:** 10 or 26 HEX characters (0~9, a~f, A~F) are supported.
- **RADIUS Server:** The IP address of the RADIUS server for authentication in the LAN.
- **RADIUS Port:** Port for RADIUS authentication.
- **RADIUS Password:** Password for accessing the RADIUS server.

WPA-PSK, WPA2-PSK, Mixed WPA/WPA2-PSK

Wi-Fi Protected Access (WPA) and Wi-Fi Protected Access II (WPA2) are two security protocols and security certification programs developed by the Wi-Fi Alliance to secure wireless computer networks. Only authorized network users can access the wireless network. WPA-PSK adopts enhanced encryption algorithm over WEP.

Configuration Steps for WPA-PSK, WPA2-PSK and Mixed WPA/WPA2-PSK: (In the example, the cipher type is AES and its key is 87654321.)

1. Select the SSID you wish to encrypt, say IP-COM_000138.
2. Select the security mode, say Mixed WPA/WPA2-PSK.
3. Select **AES** as its cipher type.
4. Enter its key: 87654321.
5. Click **Save** to apply your changes.

Parameters for WPA-PSK, WPA2-PSK and Mixed WPA/WPA2-PSK are illustrated below:

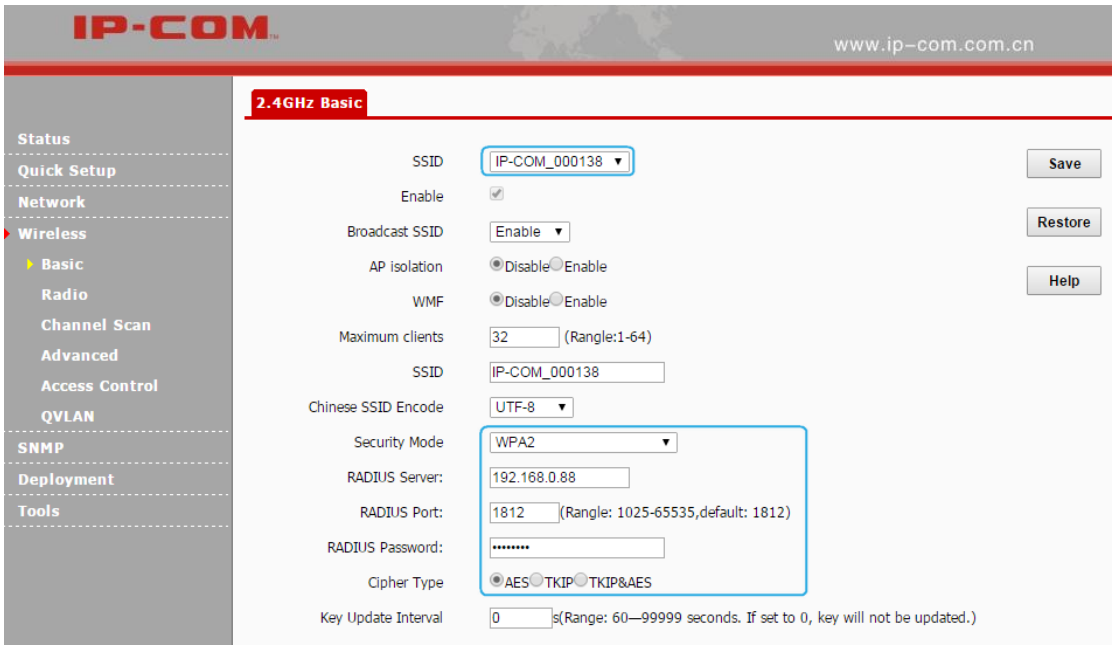
- **Security Mode:** Select the security mode: WPA-PSK, WPA2-PSK or Mixed WPA/WPA2-PSK.
- **WPA-PSK:** Support AES and TKIP.
- **WPA2-PSK:** Support AES, TKIP and TKIP&AES.
- **Mixed WPA/WPA2-PSK:** This is the mixed mode compliant with both WPA-PSK and WPA2-PSK.
- **Cipher Type:** Select the cipher type. WPA-PSK: AES and TKIP. WPA2-PSK and Mixed WPA/WPA2-PSK: AES, TKIP and TKIP&AES.
- **AES:** Advanced Encryption Standard. If selected, wireless speed can reach up to 300Mbps.
- **TKIP:** Temporal Key Integrity Protocol. If selected, wireless speed can reach up to 54Mbps.
- **TKIP&AES:** If selected, both AES and TKIP enabled wireless clients can join your wireless network.
- **Key:** Specify the security key you wish to configure (8~63 ASCII characters or 8~64 HEX characters).
- **Key Update Interval:** Configure the key update interval for encrypting WPA data. Theoretically, the shorter the key update interval is, the more secure the WPA data will be. It is advisable to leave the default value unchanged.

WPA, WPA2

The WPA protocol implements the majority of the IEEE 802.11i standard. It enhances data encryption through the Temporal Key Integrity Protocol (TKIP) which is a 128-bit per-packet key, meaning that it dynamically generates a new key for each packet. WPA also includes a message integrity check feature to prevent data packets from being hampered with. Only authorized network users can access the wireless network. The later WPA2 protocol features compliance with the full IEEE 802.11i standard and uses Advanced Encryption Standard (AES) in addition to TKIP encryption protocol to guarantee better security than that provided by WEP or WPA.

Configuration Steps for WPA, WPA2: (In the example, the RADIUS server is 192.168.0.88, the RADIUS port is 1812, the RADIUS password is 12345678, and the cipher type is AES)

1. Select the SSID you wish to encrypt, say IP-COM_002070.
2. Select **WPA** or **WPA2** as its security mode.
3. **RADIUS Server:** Enter 192.168.0.88.
4. **RADIUS Port:** Enter 1812.
5. **RADIUS Password:** Enter 12345678.
6. Select **AES** as its cipher type.
7. Click **Save** to apply your changes.

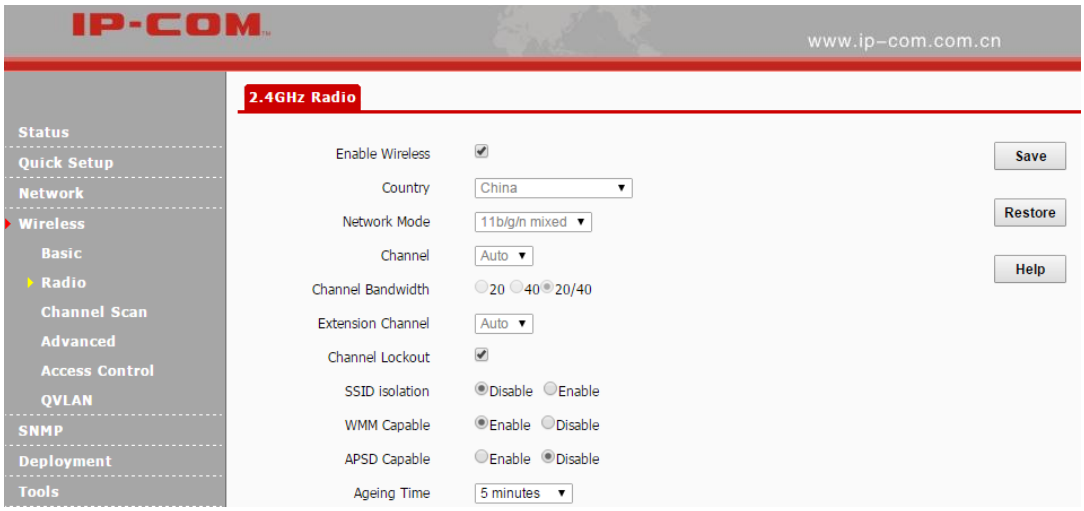


Parameters for WPA, WPA2 are illustrated below:

- **Security Mode:** Select the security mode, WPA or WPA2.
- **WPA:** Support AES and TKIP.
- **WPA2:** Support AES, TKIP and TKIP&AES.
- **RADIUS Server:** The IP address of the RADIUS server for authentication in the LAN.
- **RADIUS Port:** Port for RADIUS authentication.
- **RADIUS Password:** Password for accessing the RADIUS server.
- **Cipher Type:** Support AES, TKIP and TKIP&AES.
- **AES:** Advanced Encryption Standard. If selected, wireless speed can reach up to 300Mbps.
- **TKIP:** Temporal Key Integrity Protocol. If selected, wireless speed can reach up to 54Mbps.
- **TKIP&AES:** If selected, both AES and TKIP enabled wireless clients can join your wireless network.
- **Key Update Interval:** Configure the key update interval for encrypting WPA data. Theoretically, the shorter the key update interval is, the more secure the WPA data will be.

Radio

Click **Wireless > Radio** to configure radio settings. In the AP Client mode and WDS mode, radio settings are not configurable.



Parameters on this page are described below:

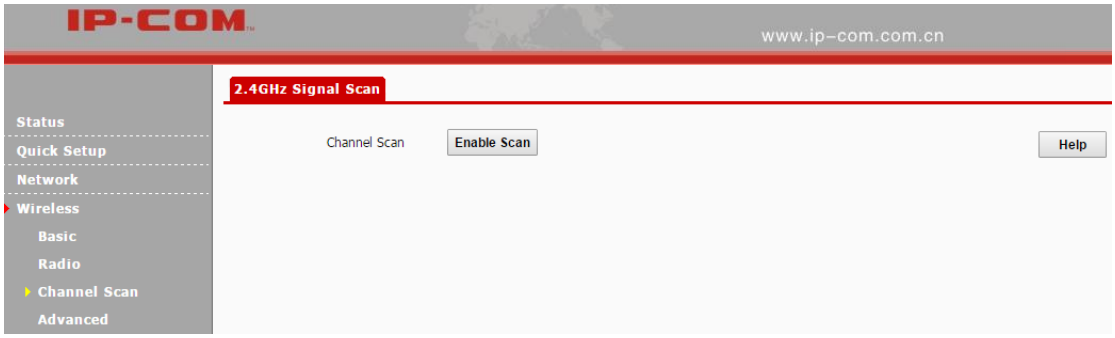
- **Enable Wireless:** Check/Uncheck it to enable/disable WiFi function.
- **Country:** Select the country where your device works to match channels in different regions.
- **Network Mode:** Select a proper network mode for your device. The default mode is 11b/g/n mixed. 11b: Select it if you have only 11b wireless devices in your wireless network. Up to 11Mbps wireless rate is supported in this mode. 11g: Select it if you have only 11g wireless devices in your wireless network. Up to 54Mbps wireless rate is supported in this mode. 11b/g: Select it if you have 11b and 11g wireless devices in your wireless network. Up to 54Mbps wireless rate is supported in this mode. 11b/g/n mixed: Select it if you have 11b, 11g and 11n wireless devices in your wireless network. Up to 300Mbps wireless rate is supported in this mode.
- **Channel:** Select a proper channel for your wireless network.
- **Channel Bandwidth:** Select a proper channel bandwidth to enhance wireless performance. This option is available only in 802.11b/g/n. Wireless speed in the channel bandwidth of 20/40 is 2 times in 20.
- **Extension Channel:** This is used to ensure radio frequency for 802.11n devices on the

network. This option is available in 11b/g/n mixed mode with channel bandwidth of 20/40.

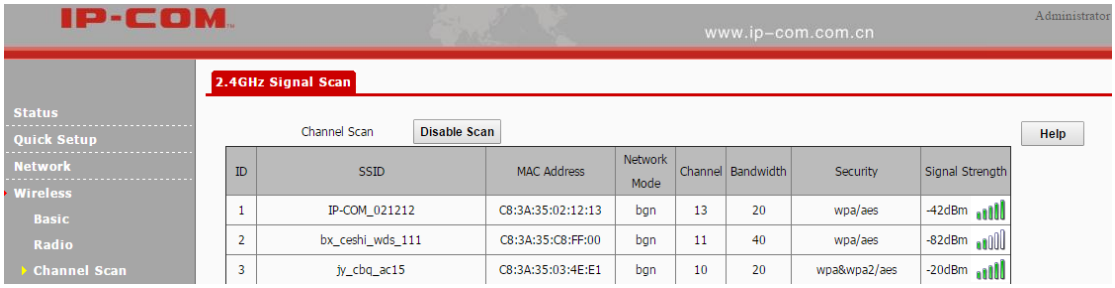
- **Channel Lockout:** Once this option is enabled, you can't modify the country, channel, channel bandwidth and extension channel manually.
- **SSID Isolation:** Configure the AP's different SSIDs' isolation status. Once disabled, clients connect to different SSIDs can't communicate with each other. This will enhance your network security. Once enabled, clients connect to different SSIDs can communicate with each other.
- **WMM Capable:** WMM is QoS for your wireless network. Enabling this option may ensure better online stream wireless multimedia data such as video or audio (recommended).
- **APSD Capable:** Automatic power save delivery. This function will be activated only when WMM Capable is enabled. It is advisable to keep the default value unchanged.
- **Ageing Time:** When the client connects to the AP successfully, and if there's no data transmission between the client and the AP within the set ageing time, the client will be disconnected. If there's data transmission within the set ageing time, the ageing time stops.

Channel Scan

Click **Wireless > Channel Scan** to enter page below:



Click **Enable Scan** to view wireless signals nearby. And then you can select a channel which is the least used by neighboring networks (i.e. the channel with least interference) for your device for better network performance.

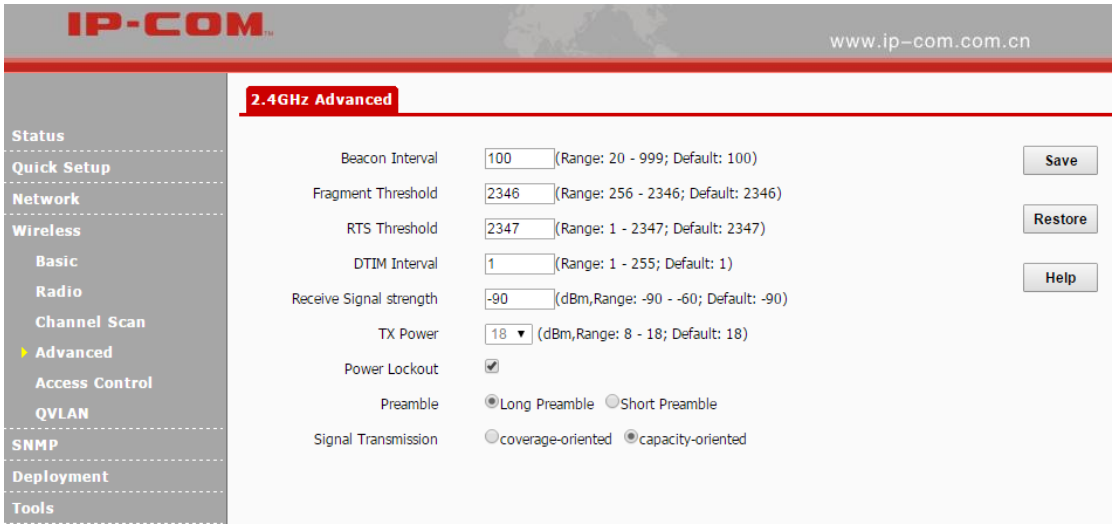


Advanced

Click **Wireless > Advanced** to configure advanced wireless settings.

Note:

If you are new to networking and have never configured these settings before, we recommend you to leave the default settings unchanged.



Parameters on this page are described below:

- **Beacon Interval:** This is a time interval between any two consecutive Beacon packets sent by an Access Point to synchronize a wireless network. Specify a valid value between 20 and 999. The default setting is 100. Generally, the smaller the value is, the faster the client will connect to the AP; the larger the value is, the faster the wireless data will be transmitted. It is advisable to leave the default value unchanged.
- **Fragment Threshold:** Specify a valid Fragment Threshold value between 256 and 2346. The default is 2346. Any wireless packet exceeding the preset value will be divided into several

fragments before transmission. When the error rate is relatively high, you can lower the fragment threshold. In this way, if transmission failure occurs, only packets that are not sent successfully needs re-sending, which will improve the transmission throughput. With no interference, you can improve the fragment threshold to reduce times to acknowledge frames, also improving the transmission throughput.

- **RTS Threshold:** Specify a valid value between 1 and 2347. The default is 2347. If a packet exceeds the preset value, RTS/CTS scheme will be used to reduce collisions. Set it to a smaller value provided that there are distant clients and interference. If the RTS threshold value is relatively small, the wireless access point uses the Carrier Sense Multiple Access with Collision Detection (CSMA/CD) mechanism, and the data frame is transmitted immediately after the silence period. The faster the frame is sent, the faster the wireless network will recover from collisions. As the collision detection mechanism will occupy some bandwidths, when the packet size is less than the RTS threshold, it is not advisable to enable this mechanism.
- **DTIM Interval:** A DTIM (Delivery Traffic Indication Message) Interval is a countdown informing clients of the next window for listening to broadcast and multicast messages. When such packets arrive in the router's buffer, the router will send DTIM (delivery traffic indication message) and DTIM interval to alert clients of the receiving packets. Specify a valid value between 1 and 255. The default is 1. Fox example, when the DTIM is 1, it means that the AP will send all cached packets every other Beacon interval.
- **Receive Signal Strength:** Configure signal strength for connected clients. When the wireless client's signal strength is lower than the setting value, the wireless client will not be allowed to connect to the AP so that the wireless client can connect to a stronger WiFi.
- **TX Power:** Configure wireless transmission power. You can change the value (8~18) according to your actual network environment. The higher the TX power is, the wider the AP's WiFi coverage will be. However, reducing the TX power to some extent will be helpful for your wireless performance and network security.
- **Power Lockout:** Once this option is enabled, you can't modify power manually.
- **Preamble:** Mainly used for preamble synchronization. There are two types of preambles:

long preamble and short preamble. The longer the preamble is, the shorter valid data will be. The short preamble can help to enhance wireless transmission efficiency. For IEEE 802.1b, the short preamble is optional. But for IEEE 802.11g, it is a must.

- **Signal Transmission:** When coverage-oriented is selected, the AP's WiFi coverage will be wider. When you deploy many APs in your network, capacity-oriented option is recommended.

Access Control

Click **Wireless > Access Control** to enter page below. This page allows you to specify a list of devices to allow or disallow a connection to your wireless network via the device's MAC addresses. To deactivate this feature, select "Disable"; to activate it, select "Allow" or "Deny". On this page, you can also view wireless clients currently connected to the selected SSID so that you can quickly add the MAC address you wish to configure access control settings.

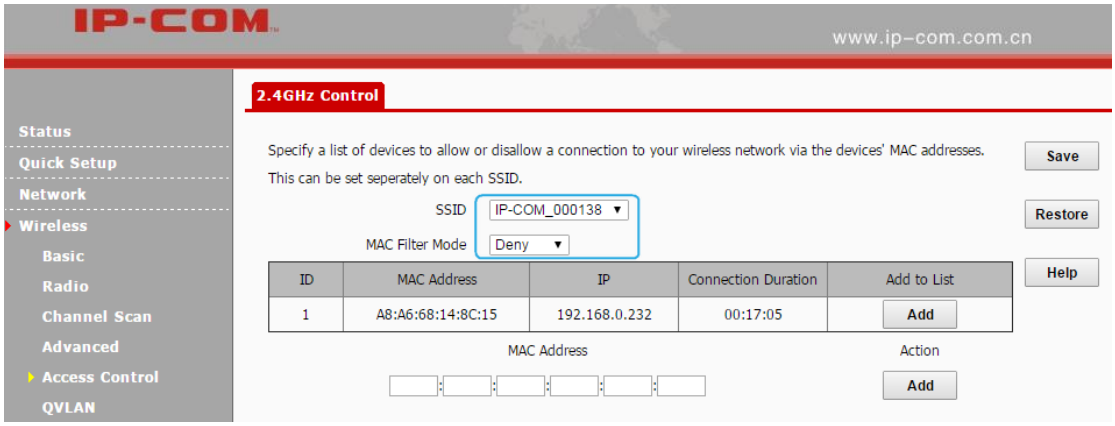
Parameters on this page are described below:

- **SSID:** Select the SSID you wish to configure access control settings.
- **MAC Filter Mode:** Configure the MAC filter mode. Disable: Disable the Access Control function. Allow: Only MAC addresses in the access control list are allowed to connect to the SSID. Deny: Only MAC addresses in the access control list are not allowed to connect to the SSID.

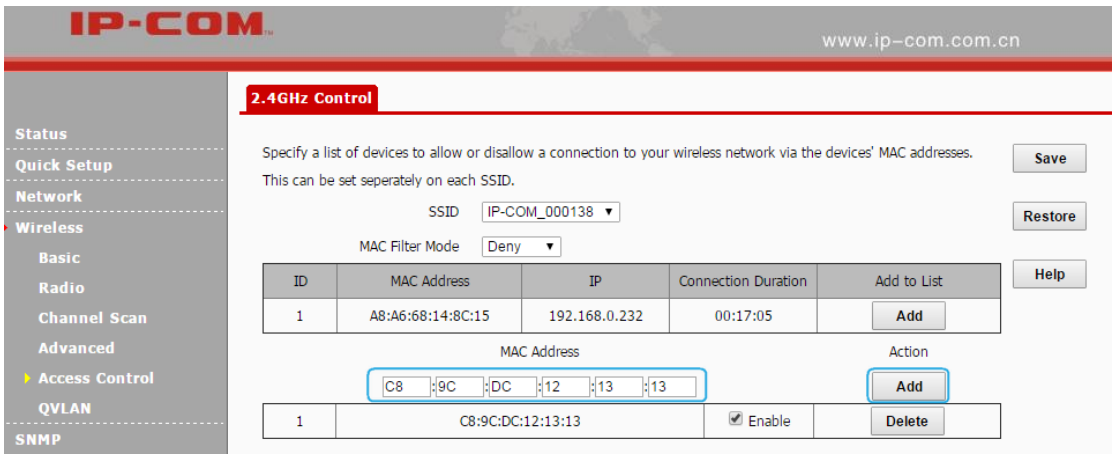
To only deny the computer at the MAC address of the C8:9C:DC:12:13:13 to join your SSID IP-COM_000138:

Configuration Steps:

1. Select the SSID **IP-COM_000138** and set the MAC filter mode to **Deny**.



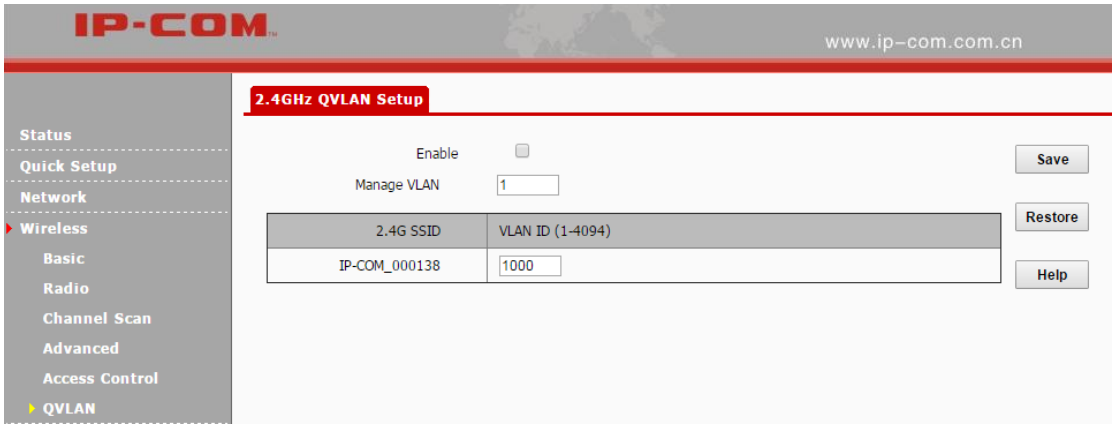
2. Enter C8:9C:DC:12:13:13 in the MAC Address field and click **Add**.



3. Click **Save** to apply your changes.

QVLAN

QVLAN enables this AP to broadcast up to 4 wireless networks with different names. When using this feature, users could also assign different VLAN IDs to different wireless networks, which makes it possible to get it work with switches which as VLAN assigned for different access levels and authorities. Click **Wireless > QVLAN** to enter page below:



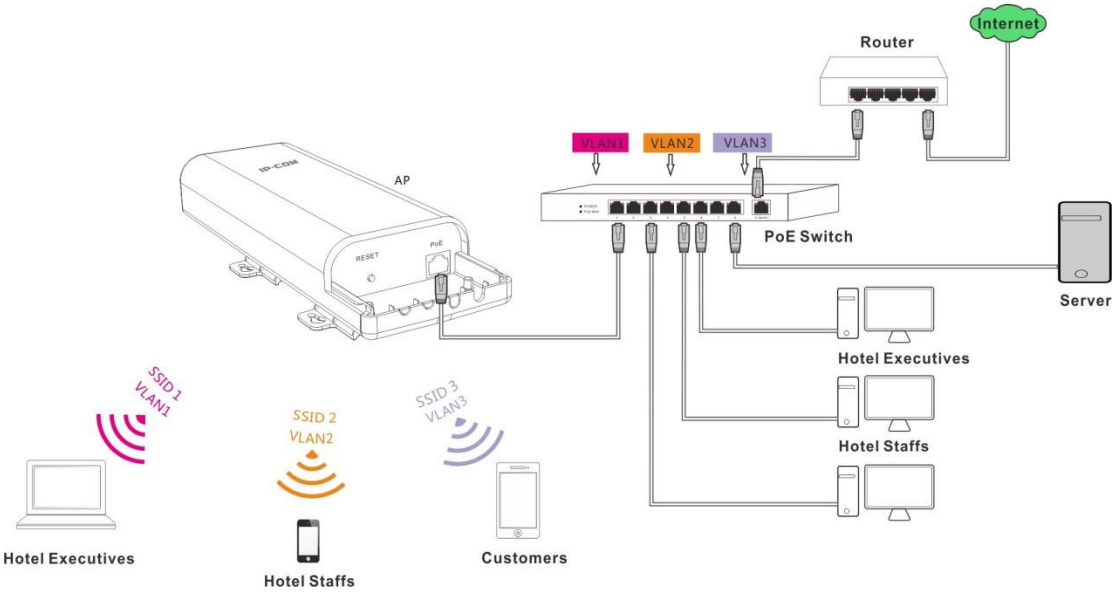
Parameters on this page are illustrated below:

- **Enable:** Check it to enable the QVLAN function. It is disabled by default. Once QVLAN is enabled, to manage the AP wirelessly, you need to connect to the corresponding SSID of the manage VLAN.
- **Manage VLAN:** 802.1Q manage VLAN ID of the AP. The default value is 1. Once the manage VLAN is changed, you need to re-connect to the new manage VLAN to manage the AP.
- **2.4G SSID:** Display SSIDs which have been enabled on the AP.
- **VLAN ID:** Configure the corresponding SSID's VLAN ID. It is 1000 by default. You can specify a value between 1 and 4094.

Application Scenario:

People in a hotel are generally classified into three kinds: hotel executives, hotel staffs and customers.

1. Hotel executives can access both the Internet and internal network in the hotel.
2. Hotel staffs can only have the access to internal network in the hotel,
3. Customers can only access the Internet. The network diagram is shown below:



As shown in the network topology, AP515 should work with a switch that has VLAN assigned. People in a hotel are generally classified into three kinds: hotel executives, hotel staffs and customers. They belong to different VLAN networks to have different authorities (hotel executives-VLAN1, hotel staffs-VLAN2 and customers-VLAN3).

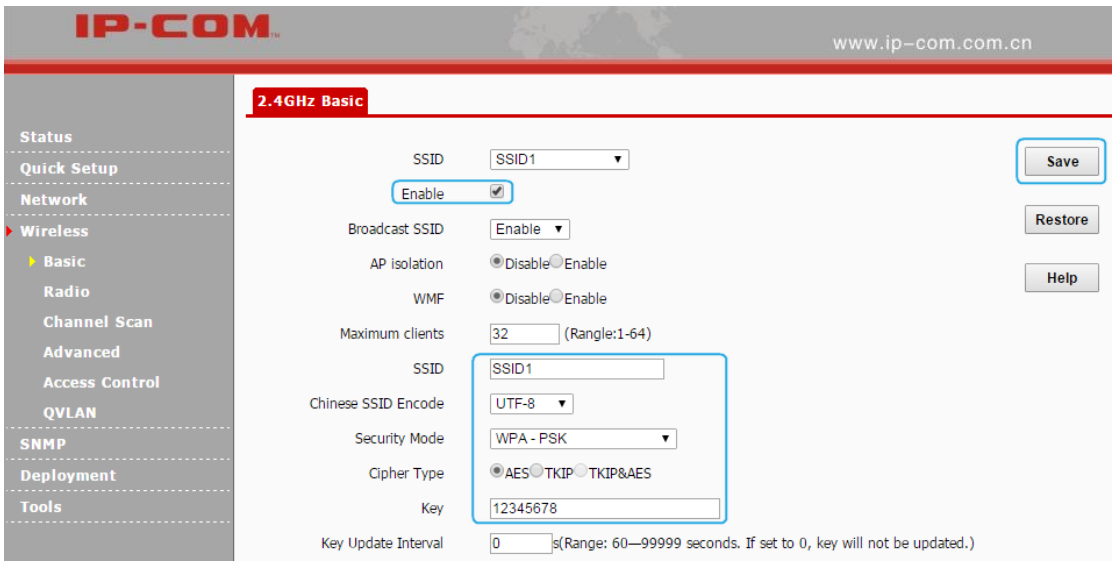
Configuration Steps:

Configurations on the Switch (Configurations may vary on different switches):

- Configure the port on the switch connected to the AP as the Trunk port, PVID=100 and all VLANs allowed;
- Configure the port on the switch connected to the server in the hotel as the Trunk port, PVID=100 and VLAN1, VLAN2 allowed;
- Configure the port on the switch connected to the router as the Trunk port, PVID=100 and VLAN1, VLAN3 allowed.

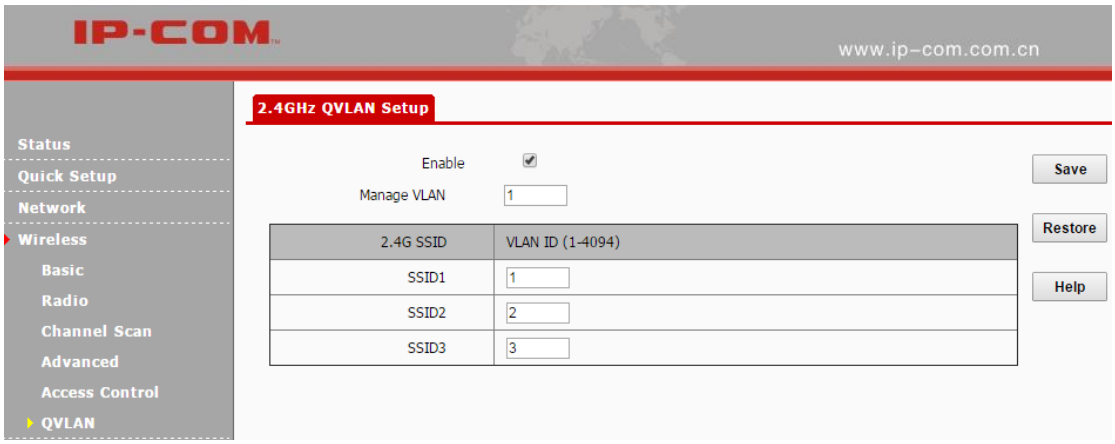
Configurations on the AP:

1. Click **Wireless > Basic** to enable 3 SSIDs: SSID1, SSID2 and SSID3, encrypt your SSIDs and click **Save**.



2 Click **Wireless > QVLAN** and select the **Enable** option to enable the QVLAN function.

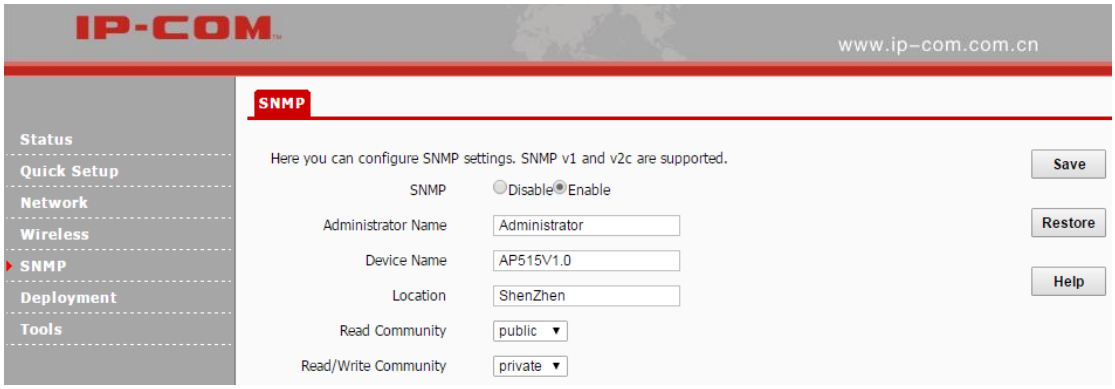
3 Set SSID1 with VLAN ID 1, SSID2 with VLAN ID 2 and SSID3 with VLAN ID 3, and then click **Save** to apply your changes.



SNMP

If you want to manage your AP via SNMP, click **SNMP** to enter page below:

By default, SNMP is disabled. If you want to enable it, select **Enable**.

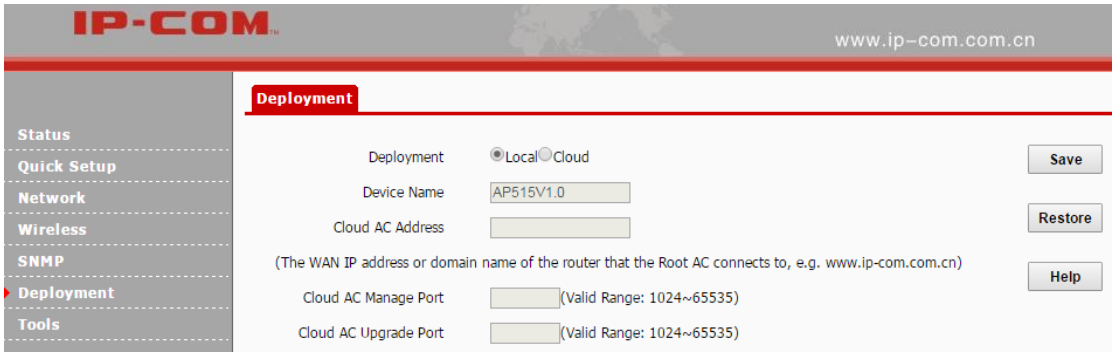


Parameters on this page are illustrated below:

- **SNMP:** Disable/Enable the SNMP function. It is disabled by default.
- **Administrator Name:** Administrator name of the AP. It is Administrator by default.
- **Device Name:** Device name of the AP. The default name is AP515V1.0.
- **Location:** Where the AP is located. The default is Shenzhen.
- **Read Community:** Indicate the community string for read access to permit reading this AP's SNMP information. The default is public.
- **Read/Write Community:** Indicate the community string for write/read access to permit reading and writing this AP's SNMP information. The default is private.

Deployment

This page allows you to manage APs via different deployment modes: local and cloud. Click **Deployment** to enter page below:



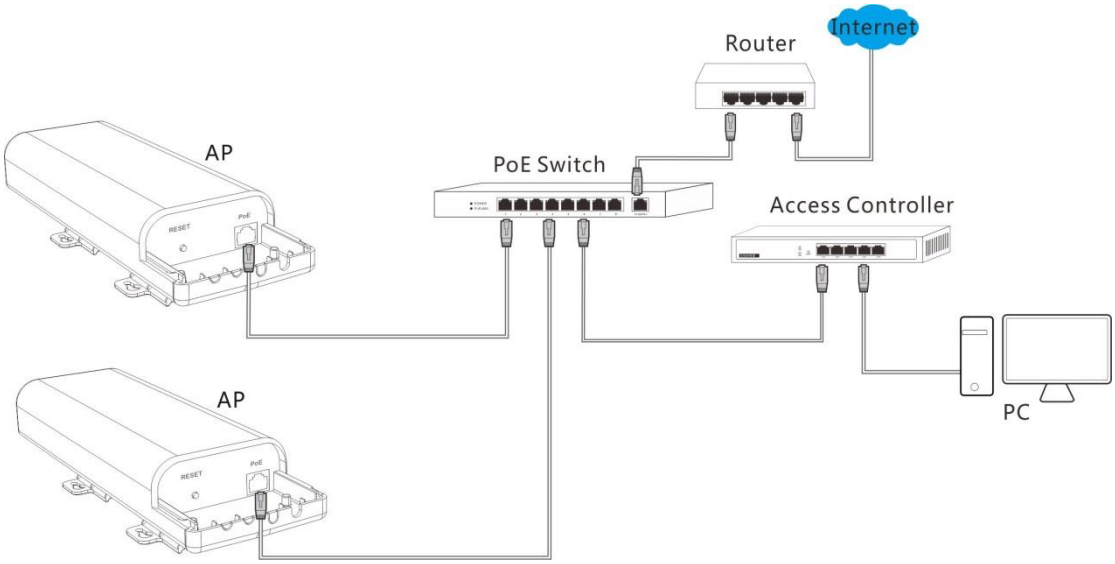
Parameters on this page are illustrated below:

- **Deployment:** Two deployment modes are supported. Local: When this option is selected, all

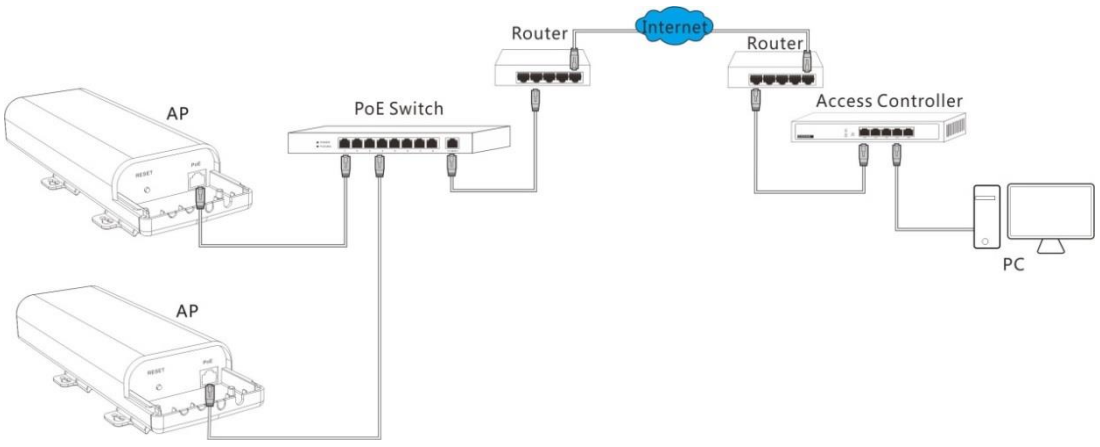
current APs can only be managed by the local AC. Cloud: When this option is selected, all current APs can only be managed by the cloud AC or a cloud server.

- **Device Name:** This option is only available in Cloud mode. Note information of the AP.
- **Cloud AC Address:** The WAN IP address or domain of the router that the cloud AC connects to, such as www.ip-com.com.cn. This option is only available in Cloud deployment mode.
- **Cloud AC Manage Port:** The port of the router that the cloud AC connects to and that is used for managing APs (Range: 1024~65535). This option is only available in Cloud deployment mode.
- **Cloud AC Upgrade Port:** The port of the router that the cloud AC connects to and that is used for upgrading APs (Range: 1024~65535). This option is only available in Cloud deployment mode.

Network topology for local deployment:



Network topology for cloud deployment:



Tools

The following nine parts are included in Tools section.

Maintenance: Upgrade the AP's system software.

Time & Date: Configure system time and web idle timeout for the AP.

Logs: View and manage system logs of the AP.

Configuration: Backup and restore your configurations, and reset your AP to its factory defaults.

User Name & Password: Modify login username and password to prevent unauthorized accesses.

Diagnostics: Troubleshoot your AP to quickly find out where the problem is.

Reboot: Restart your AP.

LED: Turn on/off the LED of the AP.

Uplink Detection: Used for uplink detection.

Maintenance

If your device is in normal operation, it is not advisable to upgrade your device. If you want to acquire the latest software version or better value-added functions for your device, you can access our official website www.ip-com.com.cn to download the latest software for upgrading. Click **Tools > Maintenance** to enter page below:

Upgrading Steps:

1. Launch a web browser and go to http://www.ip-com.com.cn to download the latest firmware.
2. Direct to the **Firmware Upgrade** page.
3. Click **Choose File** (in Google browser) to locate and select the upgrade file in the corresponding directory on your hard disk.
4. Click **Upgrade**.

When the upgrading completes, view the current firmware version to judge that whether you've upgraded your AP successfully or not.

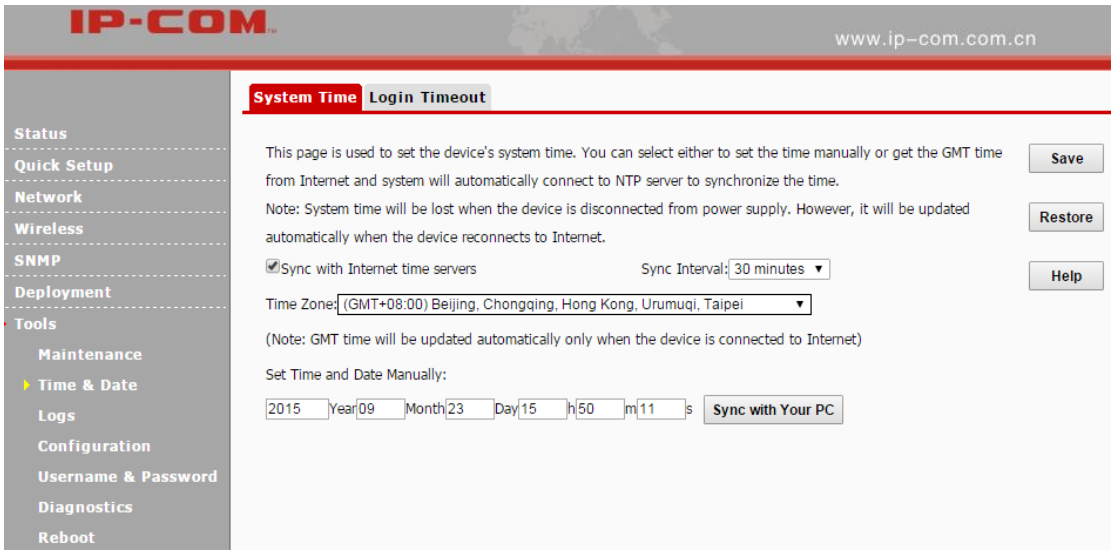
Note:

Do not disconnect power supply of the AP. If the power supply is interrupted, the upload may fail and you need to re-upgrade it. If you are unable to log in to its web UI after cutting off its power supply during the upgrading, cousult our technical stuff for assitance.

Time & Date

System Time

Click **Tools > Time & Date > System Time** to enter page below. This page is used to set the device's system time.



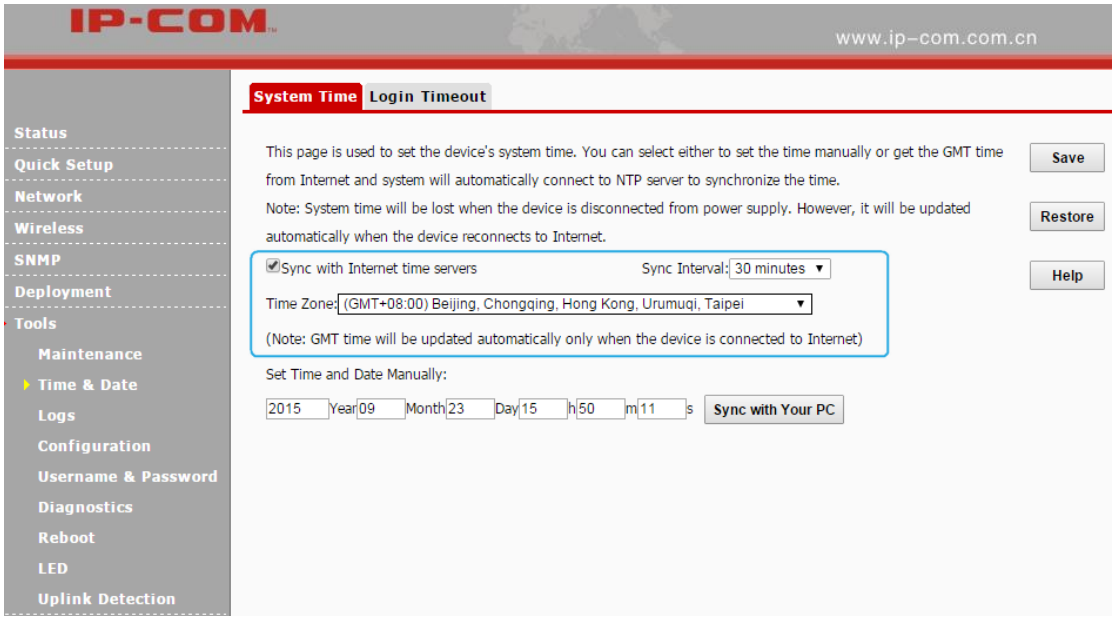
System time can be configured using the following 2 methods:

➘ **Sync with Internet time servers**

If enabled, system automatically connects to NTP server on the Internet to synchronize the time.

Configuration Steps:

1. Check the **Sync with Internet time servers** box.
2. Select the sync interval, say, 30 minutes.
3. Select your time zone.
4. Click **Save** to apply your changes.



Note:

To enable this function, please verify that your AP has connected to the Internet successfully.

Method: go to **LAN Setup** page to configure its IP info.

➘ **Set Time and Date Manually**

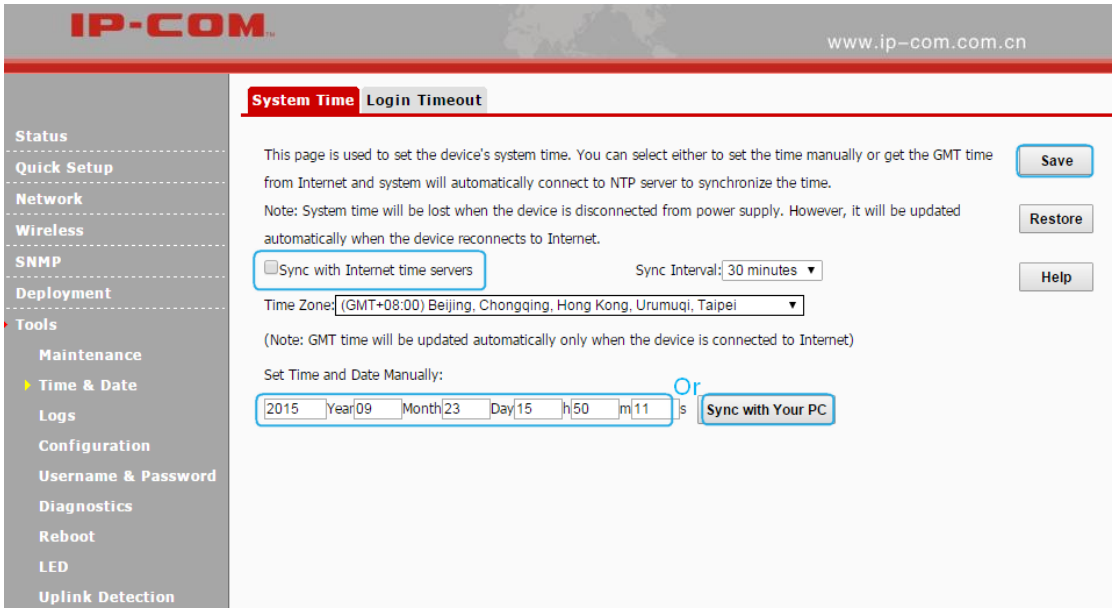
Specify the time and date manually or click **Sync with Your PC** to automatically copy your current PC's time to the device.

Configuration Steps:

1. Uncheck the **Sync with Internet time servers** box.

2. Click **Sync with your PC** or enter the correct date and time in the input fields.

3. Click **Save** to apply your changes.

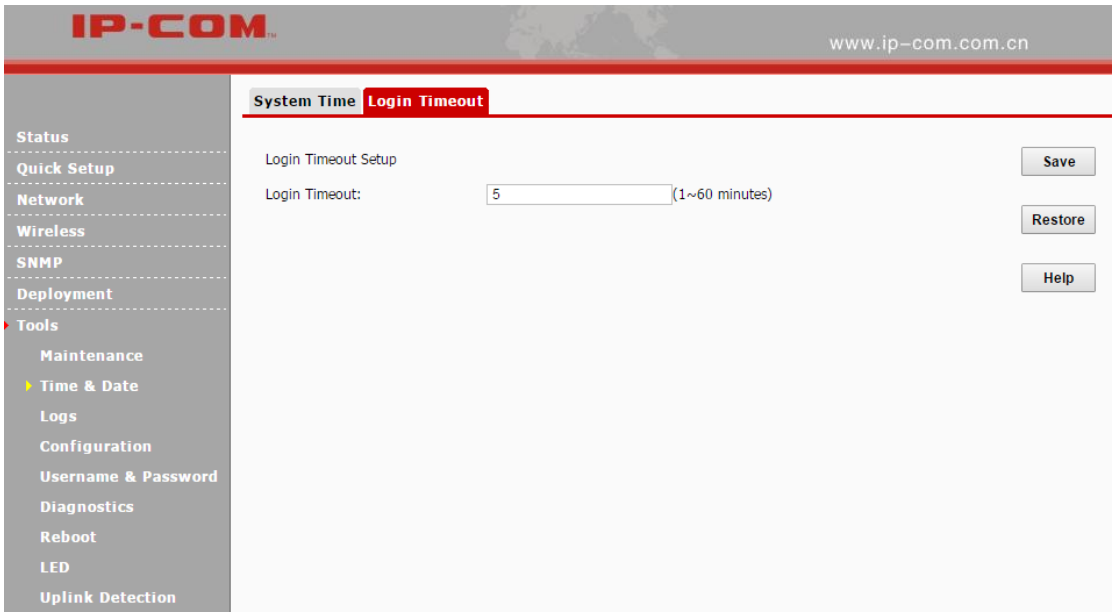


Tip

Once power is not delivered on this device, the time settings will be lost. By default, **Sync with Internet time servers** is enabled. When the device is able to access the Internet, it will automatically connect to the NTP server on the Internet to synchronize the time.

Login Timeout

You are automatically logged out of the web UI after a period of inactivity. You can set the length of the inactive period. The default login timeout is 5 minutes. To change the login timeout, click **Tools > Time & Date > Login Timeout** to enter page below:



Logs

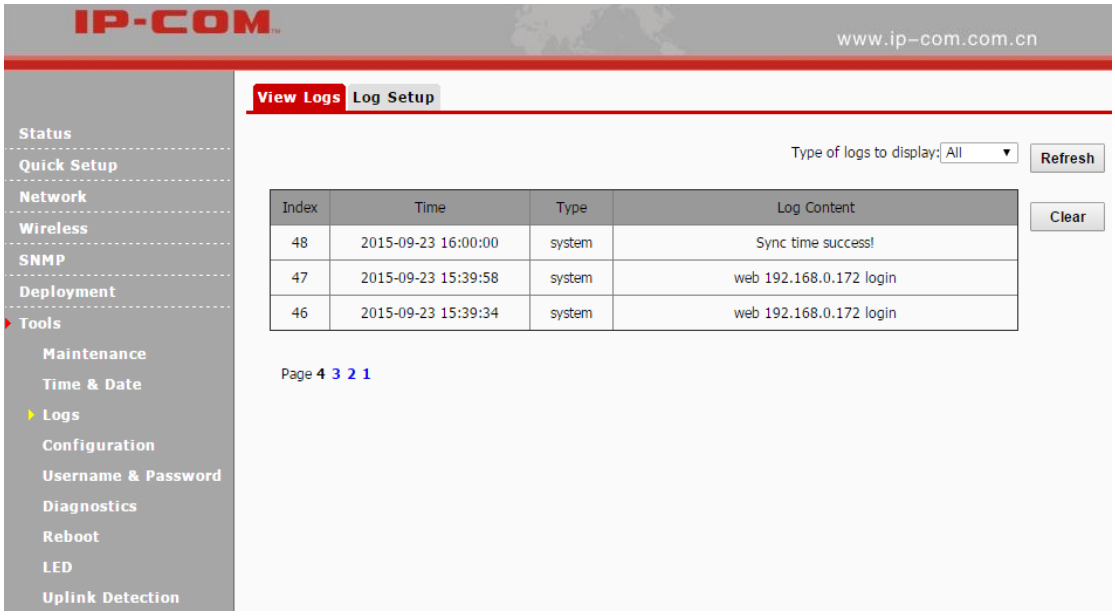
The following two parts are included:

View Logs: View system logs since the latest reboot.

Log Setup: Configure log server and how many logs can be displayed on each page.

View Logs

Click **Tools > Logs > View Logs** to enter page below. Here you can view the history of the device's actions. Two types of logs are supported on this device: All and System. You can select any one of them from the drop-down list. Click **Refresh** to update current log info or click **Clear** to clear all logs.

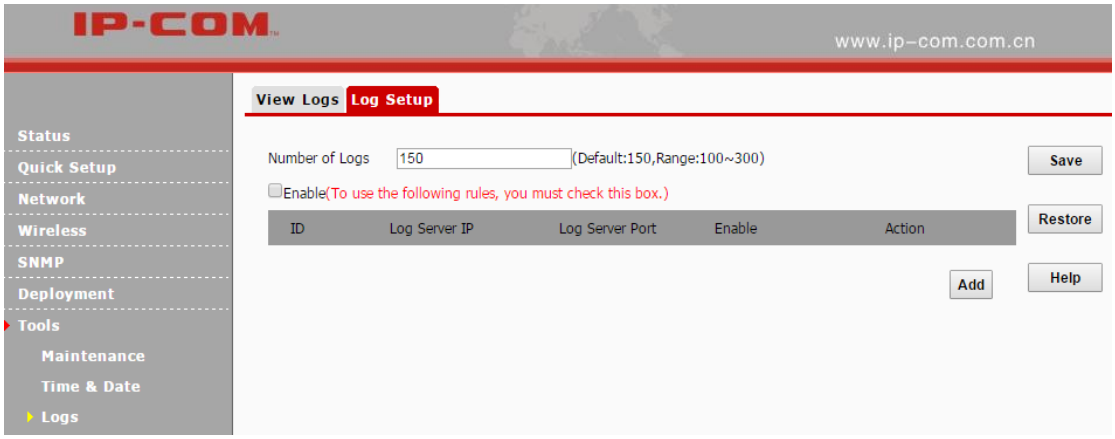


Note:

- Rebooting your AP will clear all your system logs.
- Configuring QVLAN settings, powering off your AP, backing up and restoring configurations, resetting and upgrading your AP will reboot your AP.
- To verify that the logs are correctly recorded, go to **Tools > Time & Date** to make your system time correct.

Log Setup

Click **Tools > Logs > Log Setup** to configure system logs. Here you can set up the number of logs and rules of log settings.



➘ Number of Logs

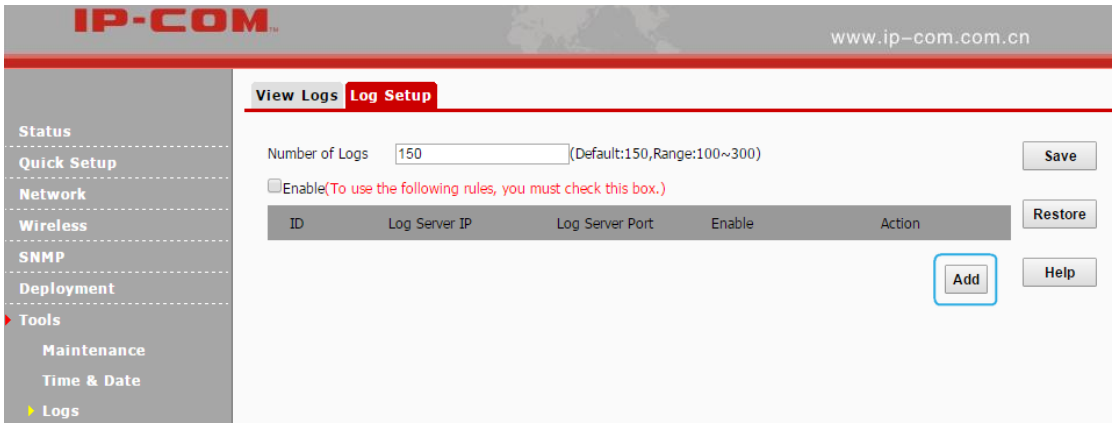
Up to 300 entries can be logged. The default is 150.

➘ Log Server

If configured successfully, the system will begin to log events and simultaneously send them to the specified log server in your LAN. You can view all logs there.

Configuration Steps:

1. Click **Add**.

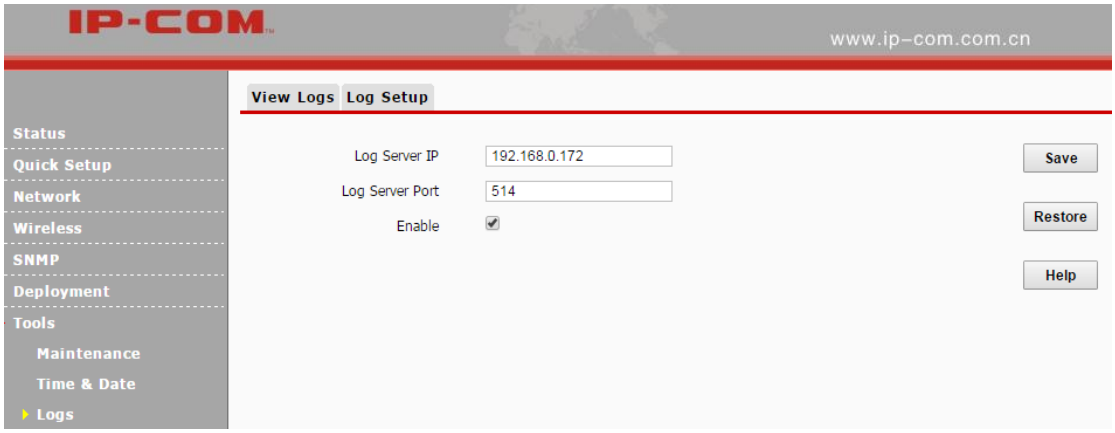


2. **Log Server IP:** Specify the IP address of the syslog server in your LAN.

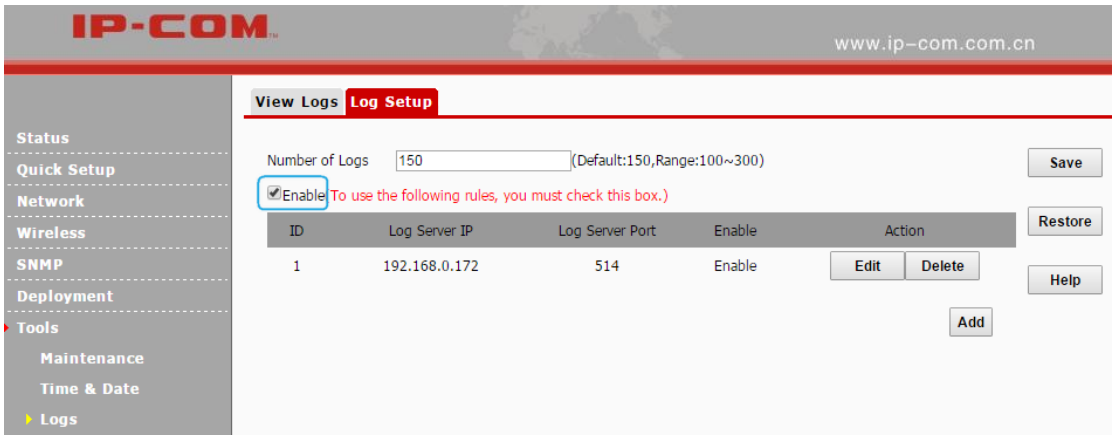
3. **Log Server Port:** Specify the port of the syslog server in your LAN (If not allowed to configure a port on your server, enter the default value 514).

4. Check the **Enable** box to enable the log server.

5. Click **Save**.



❻ Check the "To use the following rules, you must check this box." Option to activate your settings.



Tip

To make sure that system logs can be sent to the server successfully, you need to go to **Network > LAN Setup** to set your AP's IP address, subnet mask and gateway so that the route between the AP and the log serve is reachable.

Configuration

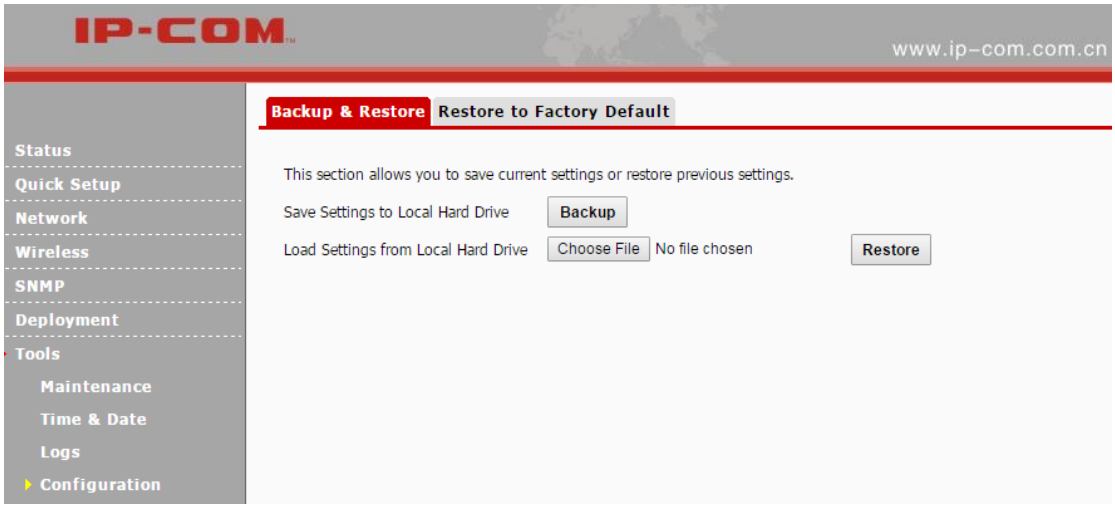
The following two parts are included:

Backup & Restore: Backup current configurations to your local PC and restore previous configurations to your AP.

Restore to Factory Default: Restore your AP to its factory defaults.

Backup & Restore

Click **Tools > Configuration** to enter page below:



➘ Backup

If you configure many settings on this device, which will make this device work in good status and suitable environment, it's suggested to backup settings for this device, which will be convenient for troubleshooting and saving time for next time's configuration.

Method: Click **Backup** and then follow onscreen prompts.

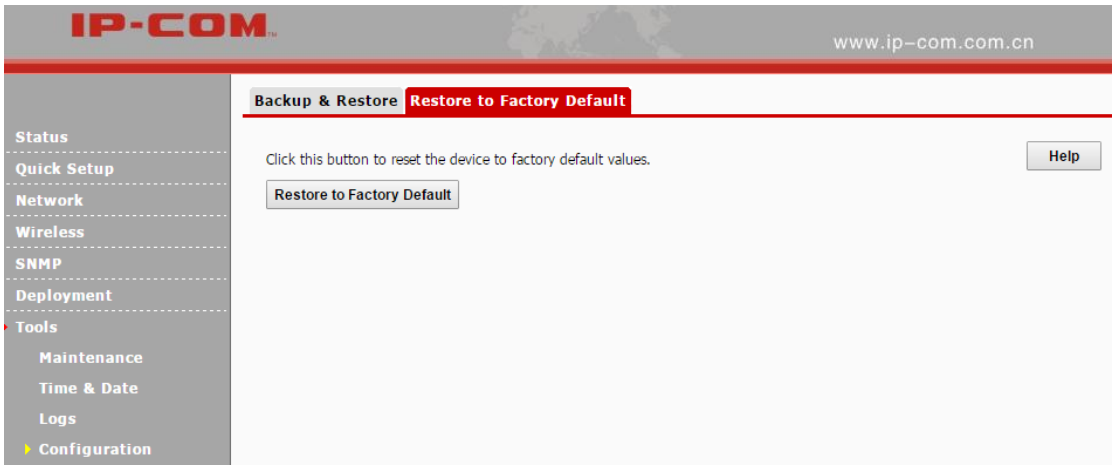
➘ Restore

If you need to configure the same settings for multiple APs, or if your AP works improperly, you can restore your AP to its previous configurations which you've backed up.

Method: Click **Choose File** (in Google browser) to download your previous configurations, click **Restore** and then follow onscreen prompts.

Restore to Factory Default

If the device or client connected to the device fails to access the Internet due to incorrect configurations and you cannot solve the problem, click **Tools > Configuration > Restore to Factory Default** to reset the device and then reconfigure it.



If you forgot the login info of the AP, like login IP address or login username, you can use the **RESET** button to reset your AP.

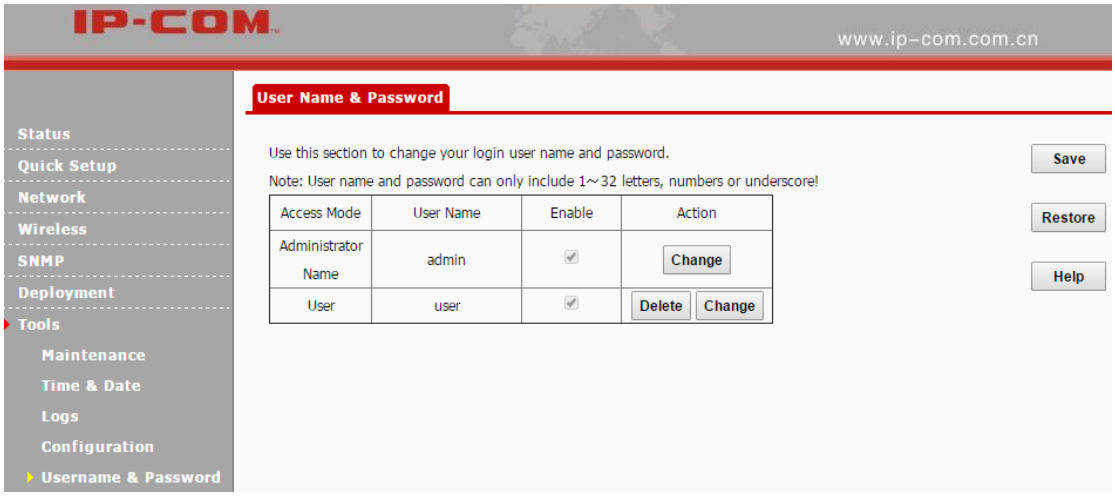
1. When the AP is powered on, press and hold the **RESET** button with something like a needle for at least 7 seconds to reset your AP.
2. Wait until the AP restarts.

Tip

After resetting your AP, the login IP address of the AP is 192.168.0.254, and the login username and password are admin for both. For other default settings, see Appendix 2 Factory Defaults.

User Name & Password

Click **Tools > User Name & Password** to enter page below. Here you can change the user name and password for web login. We suggest that you change this password to a more secure one.



By default, two accounts are supported: administrator and user. The administrator can manage your AP, while the user can only view the AP's relevant information. Both the user name and password for the administrator are **admin**. Both the user name and password for the user are **user**.

Diagnostics

This page allows you to test your network connection. If your network is malfunctioning, click **Tools > Diagnostics** to use the ping utility to test your network and find out where the problem is.

Reboot

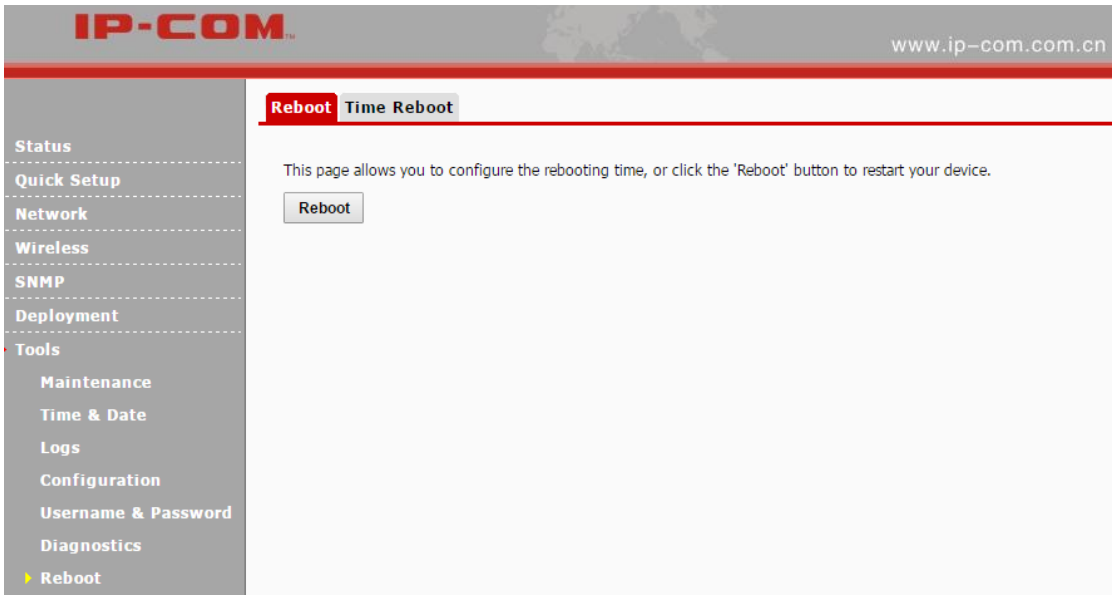
When some settings you have configured cannot be activated or your device is functioning improperly, please reboot your device. The following two parts are included:

Reboot: Reboot your AP manually.

Time Reboot: Reboot your AP at the specified time.

Reboot

Click **Tools > Reboot** to reboot your AP manually.

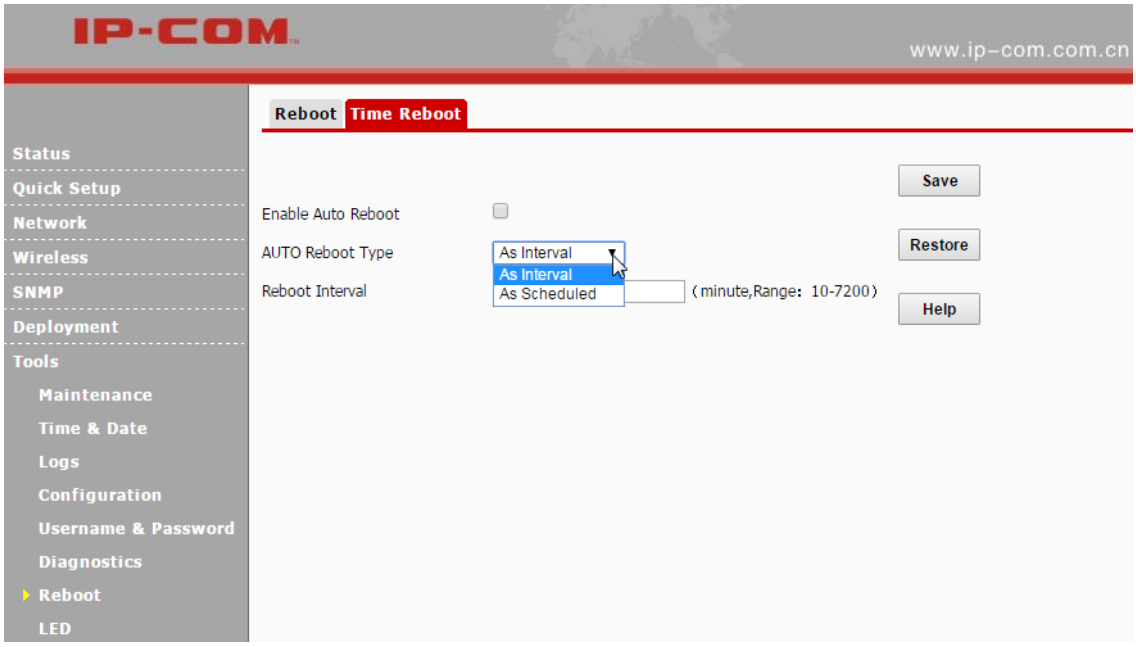


Tip

While rebooting your AP, all your WiFi connections will be disconnected. Thus, please reboot your AP when the network is not busy.

Time Reboot

Click **Tools > Reboot > Time Reboot** to enter page below. Here you can reboot your device at the specified time. Once this function is enabled, please make sure that your device is synchronized with the Internet time server.

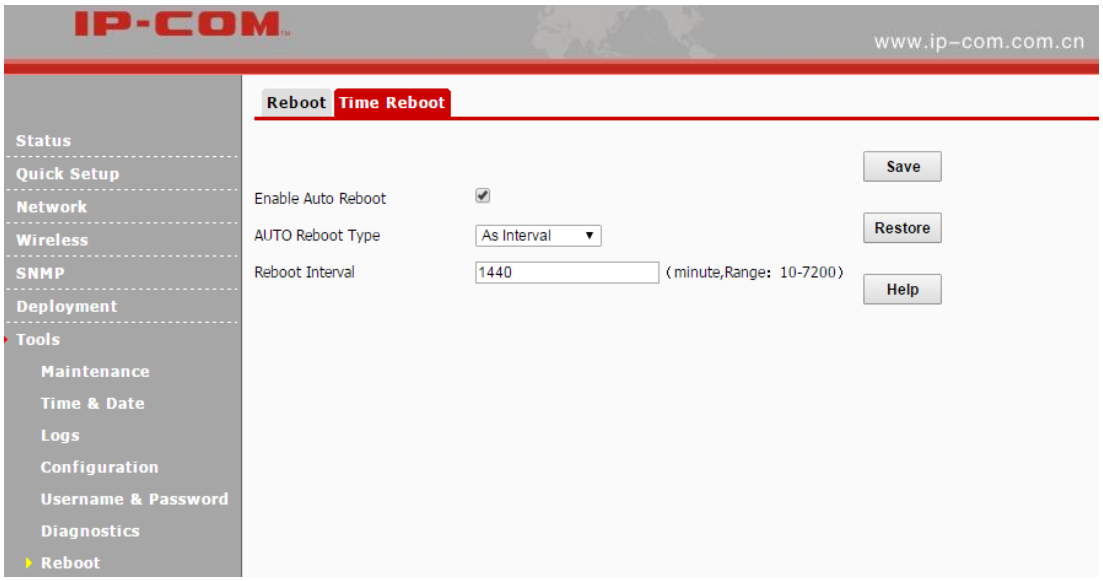


Two methods for time reboot are available: As Interval and As Scheduled.

➘ As Interval

The device will reboot automatically at intervals according to the interval you've configured.

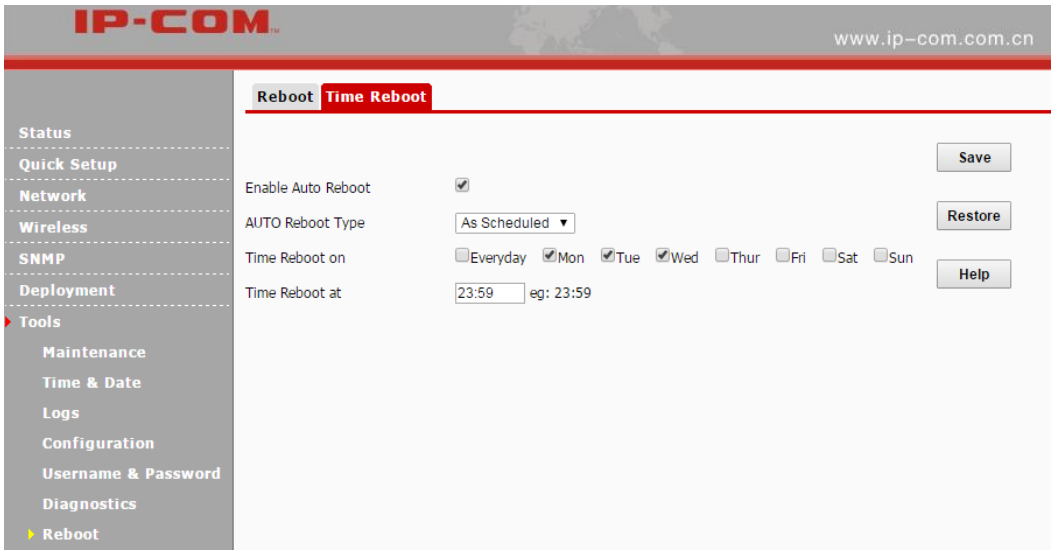
1. Check the **Enable Auto Reboot** Box.
2. Select **As Interval** from the drop-down list.
3. Specify the reboot interval (Recommended: 1440 minutes)
4. Click **Save** to apply your changes.



➘ As Scheduled

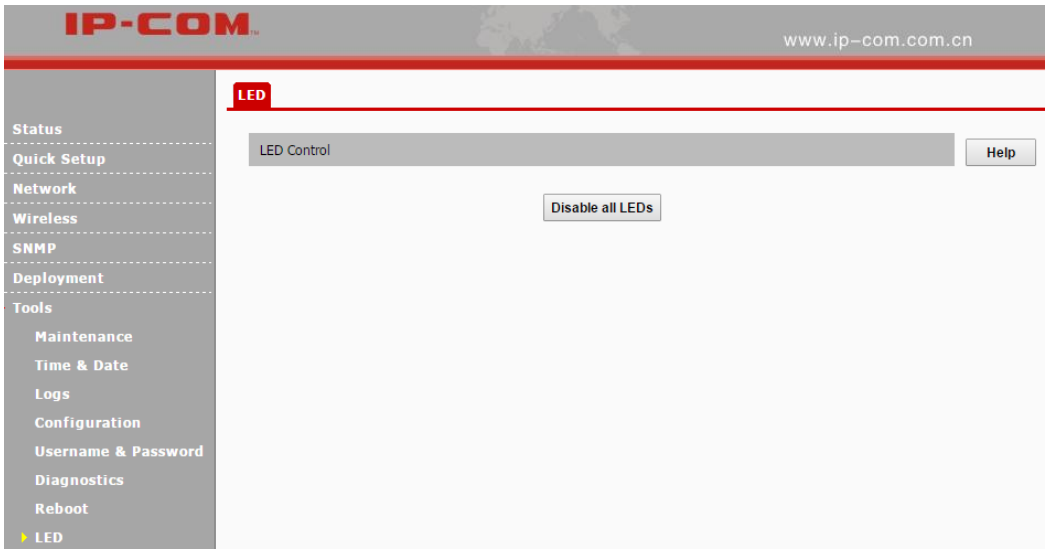
The device will reboot regularly according to the time you've configured.

1. Check the **Enable Auto Reboot** box.
2. Select **As Scheduled** from the drop-down list.
3. Check corresponding dates from Mon (Monday) to Sun (Sunday) to specify the reboot date.
4. Specify the reboot time.
5. Click **Save** to apply your changes.



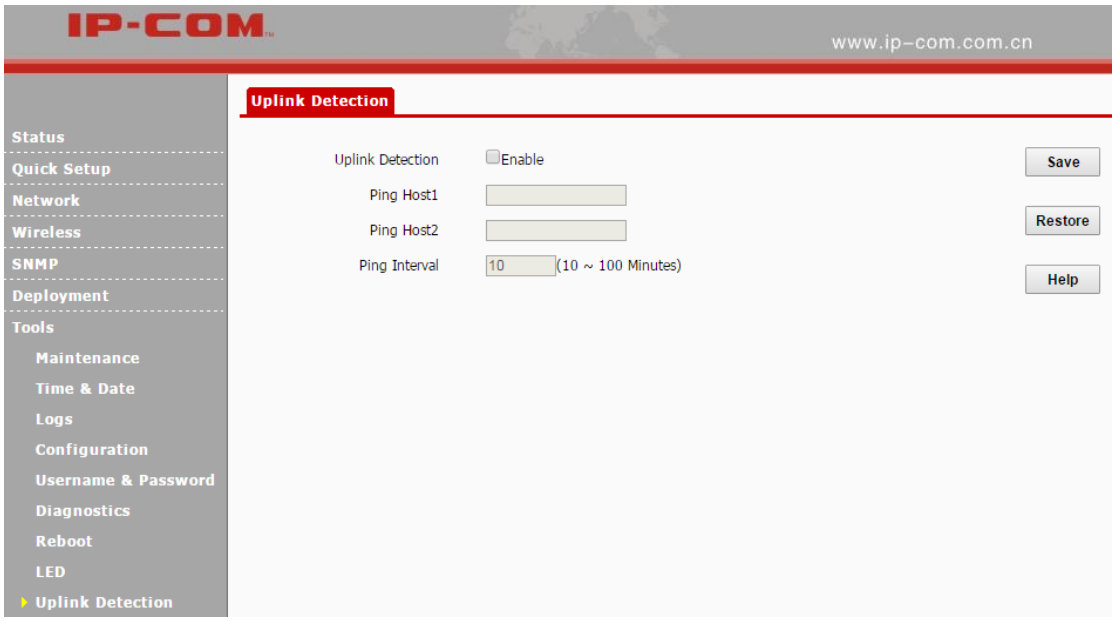
LED

Click **Tools** > **LED** to turn off/on all LEDs.



Uplink Detection

This function allows you to test the link between the AP and its uplink device. It is disabled by default. Click **Tools > Uplink Detection** to enter page below:



Configuration Steps:

1. Check the **Enable** box to enable the uplink detection function.
2. **Ping Host1/Host2:** Enter the IP address of uplink device (s).
3. **Ping Interval:** Specify the ping interval. Leave the default value unchanged if not necessary.
4. Click **Save**.

When complete settings configured above, the AP will Ping the configured host within the set Ping interval. If the configured host is unreachable, the WiFi feature of the AP will be disabled.

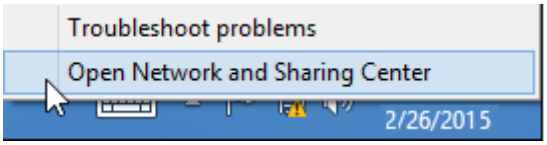
Appendix

1 Configure PC

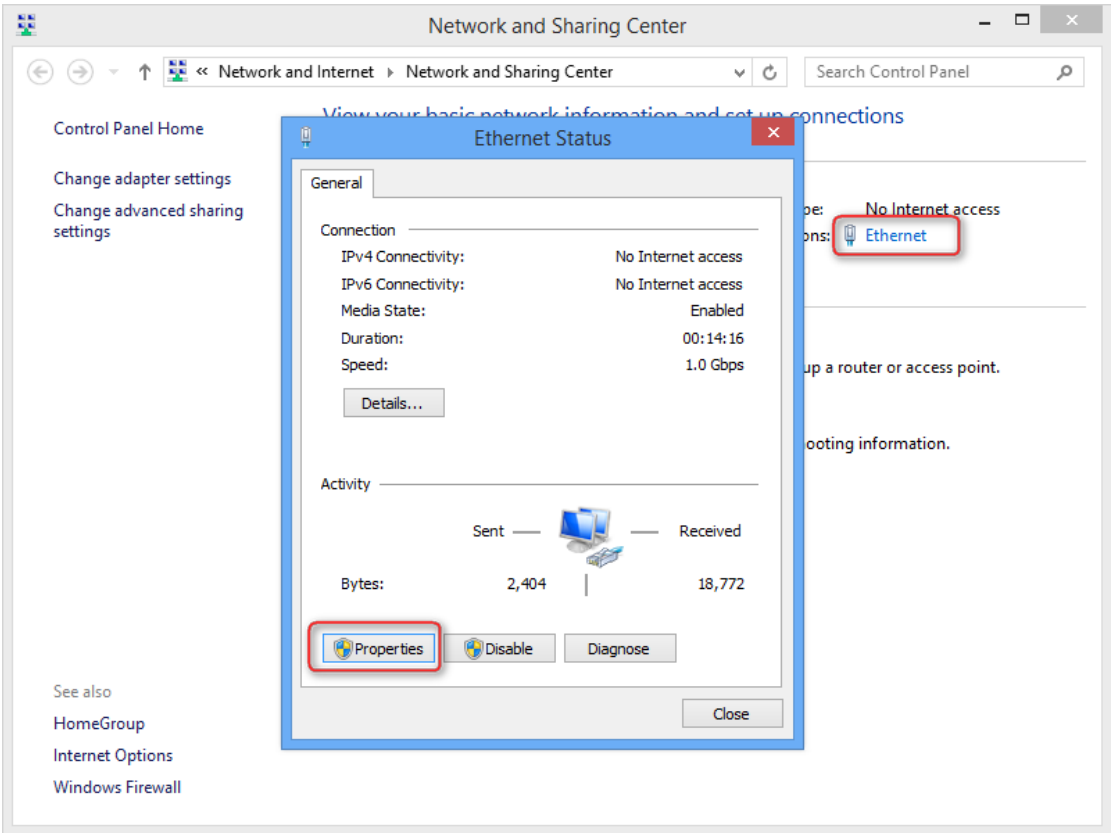
Windows 8

1 Right click the icon  on the bottom right corner of your desktop.

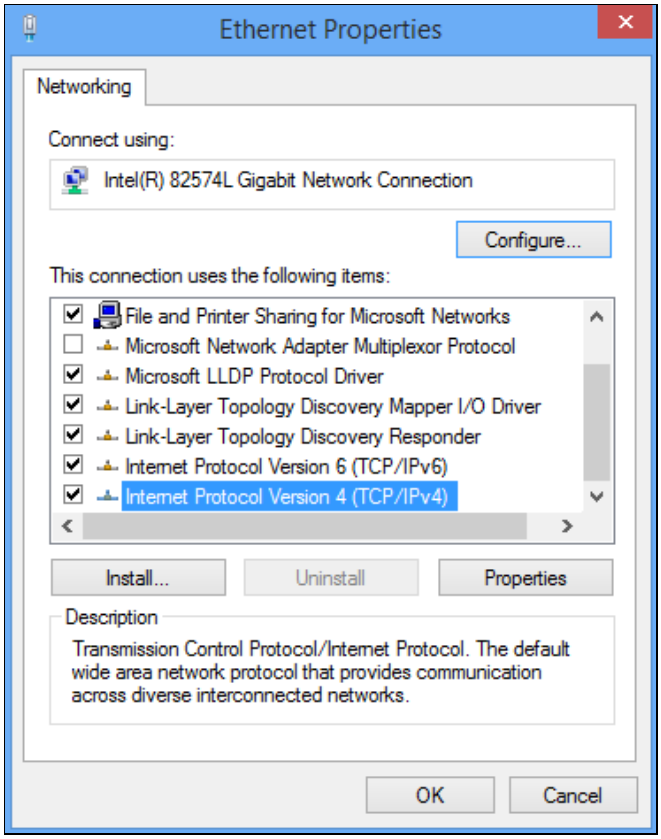
2 Click **Open Network and Sharing Center**.



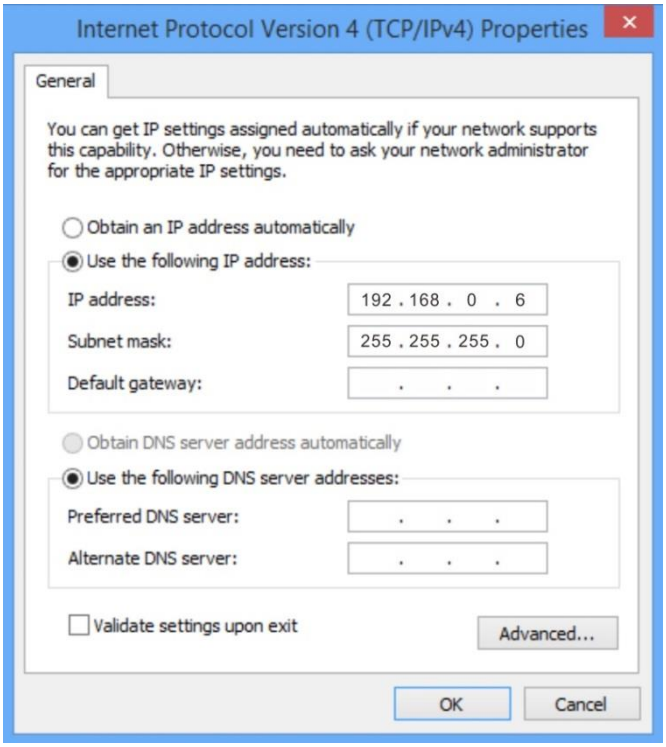
3 Click **Ethernet > Properties**.



4 Find and double click **Internet Protocol Version 4(TCP/IPv4)**.



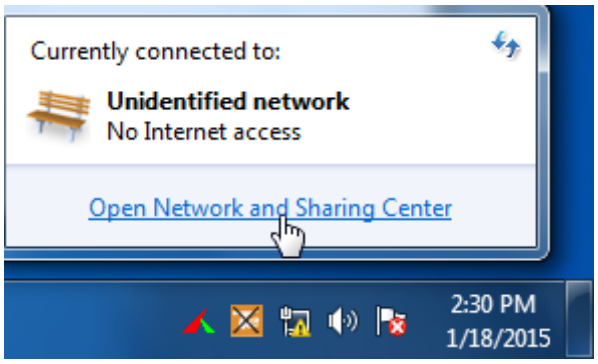
5 Select **Use the following IP address**, type in the IP address: **192.168.0.x** (2~253), Subnet mask: **255.255.255.0** and click **OK**.



6 Click **OK** on the **Ethernet Properties** window.

Windows 7

1. Click the icon  on the bottom right corner of your desktop.
2. Click **Open Network and Sharing Center**.

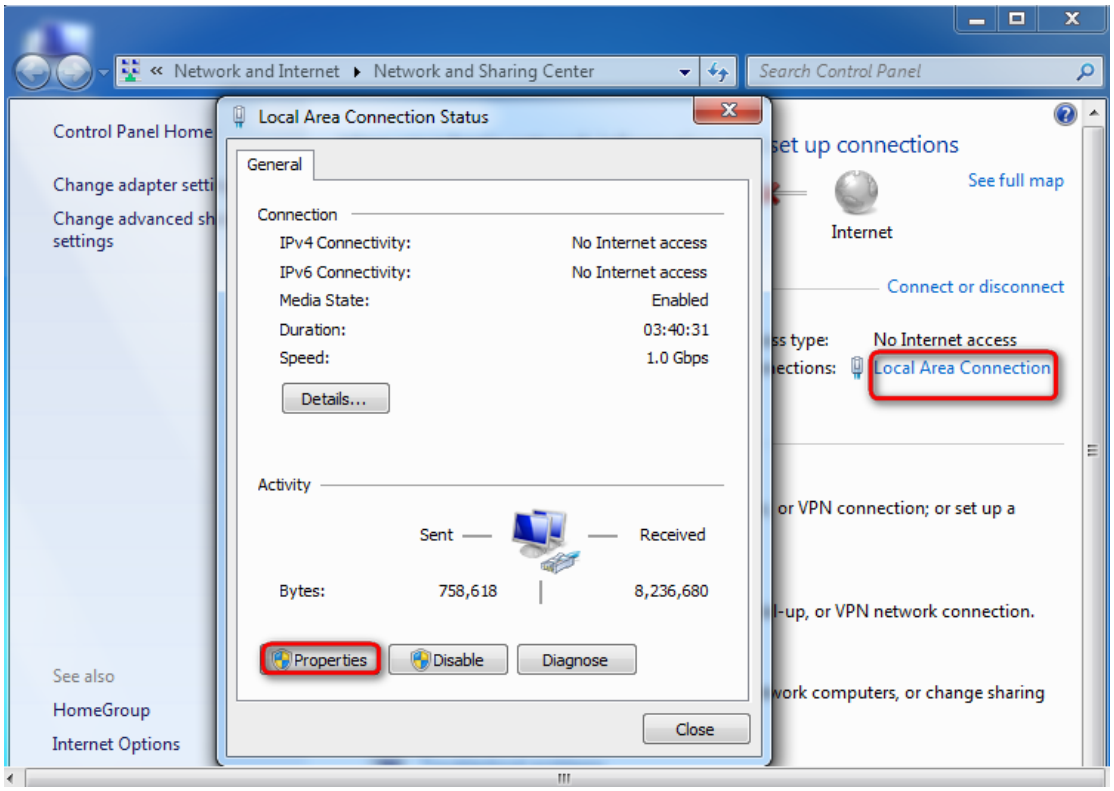


Tip

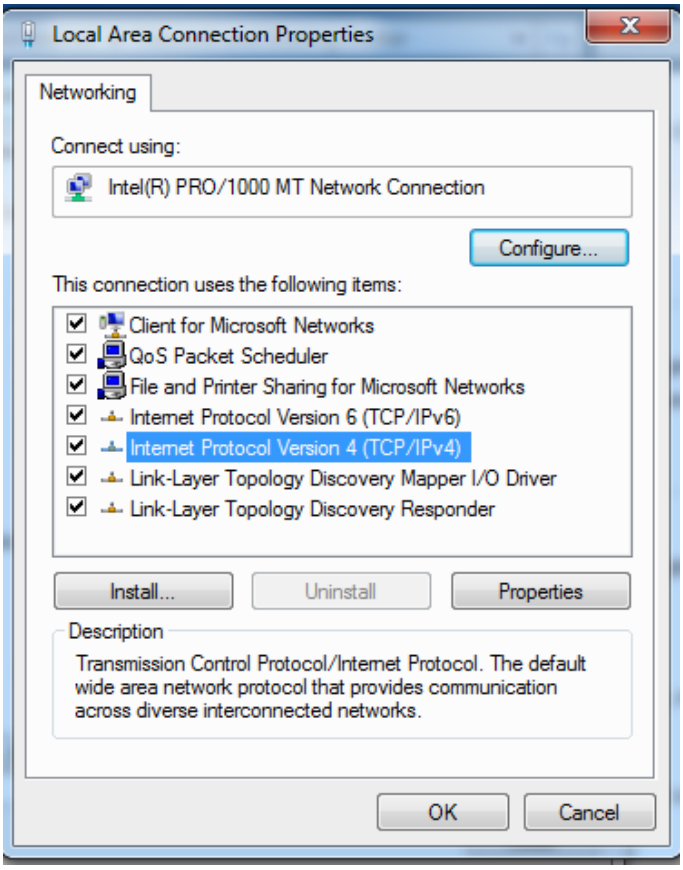
If you cannot find the icon  on the bottom right corner of your desktop, follow steps below:

Click **Start**  **> Control Panel > Network and Internet > Network and Sharing Center**.

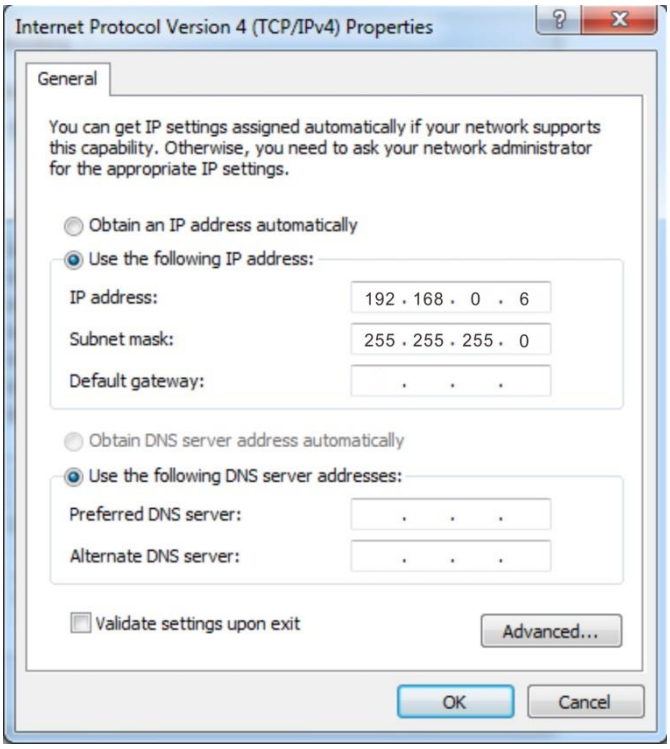
3. Click **Local Area Connection > Properties**.



4 Find and double click **Internet Protocol Version 4(TCP/IPv4)**.



5 Select **Use the following IP address**, type in the IP address: **192.168.0.x** (2~253), Subnet mask: **255.255.255.0** and click **OK**.

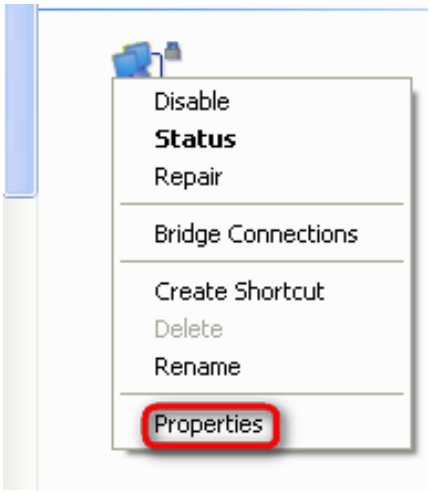


6 Click **OK** on the **Local Area Connection Properties** window.

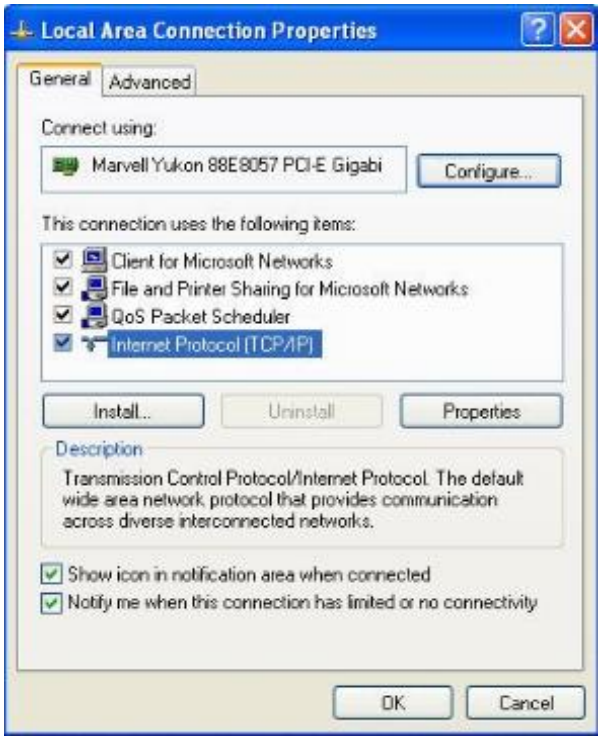
Windows XP

1. Right click **My Network Places** on your desktop and select **Properties**.

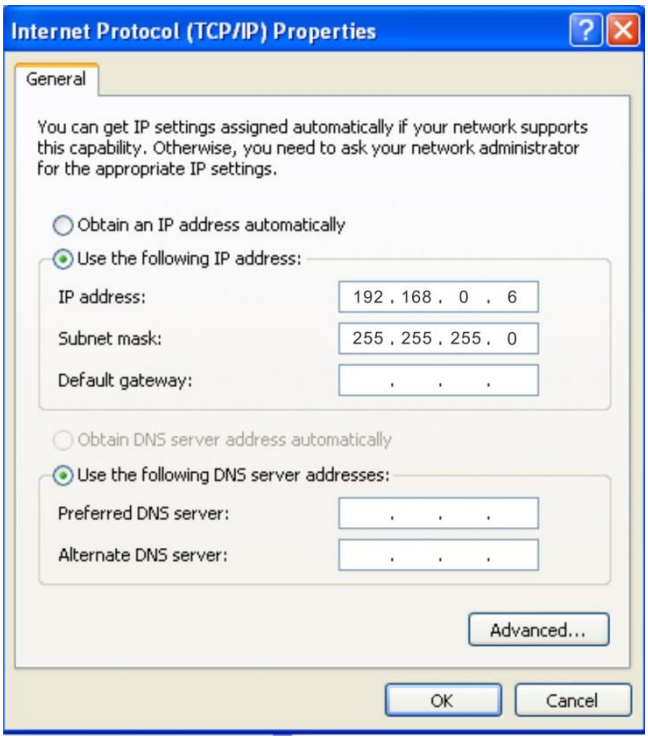
2. Right click **Local Area Connection** and select **Properties**.



3. Scroll down to find and double click **Internet Protocol (TCP/IP)**.



4 Select **Use the following IP address**, type in the IP address: **192.168.0.x** (2~253), Subnet mask: **255.255.255.0** and click **OK**.



5 Click **OK** on the **Local Area Connection Properties** window.

2 Factory Defaults

Parameter			Default Setting
Login	IP		192.168.0.254
	User Name | Password	Administrator	admin|admin
		Guest	user|user
LAN Setup	Address Mode		Static IP
	IP Address (Management IP)		192.168.0.254
	Subnet Mask		255.255.255.0
	Gateway		192.168.0.1
	Primary DNS Server		192.168.0.1
	Device Name		AP515V1.0
DHCP Server			Disabled
SNMP	SNMP		Disabled
	SNMP Parameters	Administrator Name	Administrator
		Device Name	AP515V1.0
		Location	Shenzhen
		Read Community	public
		Read/Write Community	private
Tools	Time & Date	Sync with Internet Time Servers	Enabled
		Time Zone	（GMT+08:00) Beijing, Chongqing, Hong Kong, Urumqi, Taipei
	WEB Login Timeout		5 minutes
	Number of Logs		150
	Time Reboot		Disabled
	LED		Turn on all LED lights

3 FAQs

Q1: I enter the device's LAN IP address in the web browser but cannot access this device's web UI. What should I do?

1) Verify that the IP address of computer should be a different one but on the same network segment as the LAN IP address of this device. The default LAN IP address of AP is 192.168.0.254 and you need to set your PC to a static IP address within the following range: 192.168.0.X (2~253);

2) Clear the browser cookies or try another web browser;

3) Close the firewall of your computer or try another computer;

If you are still unable to login, please restore the device to factory default settings and follow this Install Guide to configure your settings again.

Q2: How do I restore my AP to its factory default settings?

Method 1: Via the **RESET** button

With the AP powered on, slide the bottom cover of the AP down to expose the **RESET** button, press and hold it for over **7** seconds to restore the AP to its factory defaults. Note that once your AP is reset, all your current settings will be lost and you need to reconfigure your AP.

Method 2: Via the Web UI

Log in to this device's web UI, click **Tools > Configuration > Restore to Factory Default** to reset the AP to its factory defaults.

4 Safety and Emission Statement

CE Mark Warning

This is a Class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures. This device complies with EU 1999/5/EC.

NOTE: (1) The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. (2) To avoid unnecessary radiation interference, it is recommended to use a shielded RJ45 cable.

FCC Statement

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, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the 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 of the following measures:

— Reorient or relocate the receiving antenna.

— Increase the separation between the equipment and receiver.

— Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

— Consult the dealer or an experienced radio/TV technician for help.

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

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment.

Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

NOTE: (1) The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. (2) To avoid unnecessary radiation interference, it is recommended to use a shielded RJ45 cable.