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User Guide

Wireless Access Point AP255_US

IP-COM

World Wide Wireless

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Preface

Conventions

If not specifically indicated, “the device”or “the AP” mentioned in this document stands for the Wireless Access Point AP255_US.

Typographical conventions in this document:

Item	Presentation	Example
Menu	**Bold**	The menu "System Tool" will be simplified as **System Tool**.
Continuous Menus	>	Go to **System Tool > Diagnosis Tool**.

Symbols in this document:

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.

How to download documents

Besides this document, other documents are updated on our website. To download them, please do as follows:

1. Go to our website http://www.ip-com.com.cn.
2. Search for the appropriate product model.
3. Download the correct documents.

Technical support

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01 Get to know the device

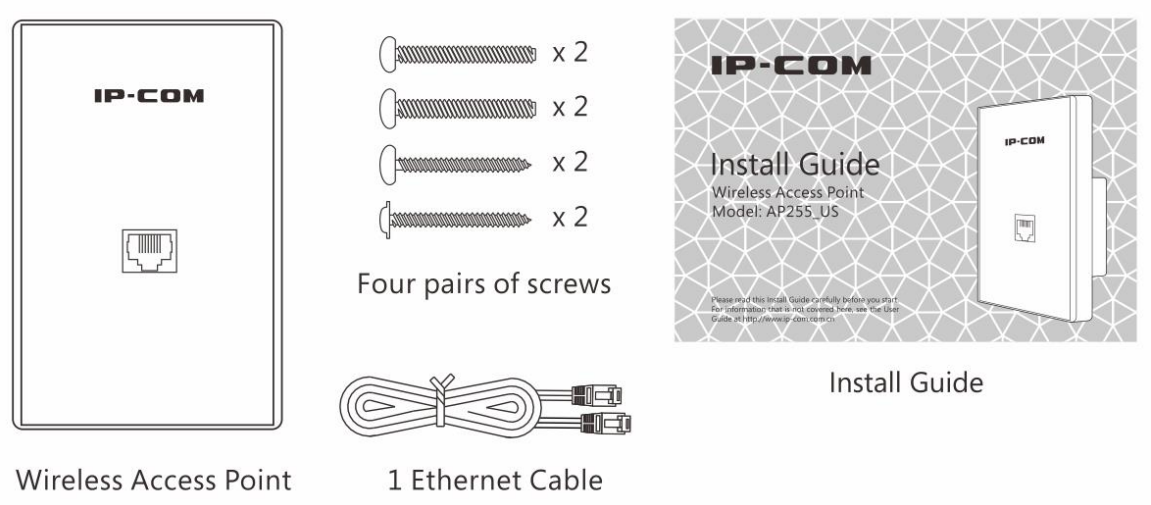
AP255_US is the latest generation wall plate access point which can be installed in any 120mm US Type wall jack without breaking the existing decorations. It is well suited to provide wifi coverage for villa,university dormitories, hospital wards, hotel rooms and other sites with densely divided rooms.

1.1 Main Features

- 2.4GHz 300Mbps
- 120mm US Type Wall Jack Design
- Compliant with PoE 802.3af
- Two 10/100Mbps LAN port
- Centralized managed by M3

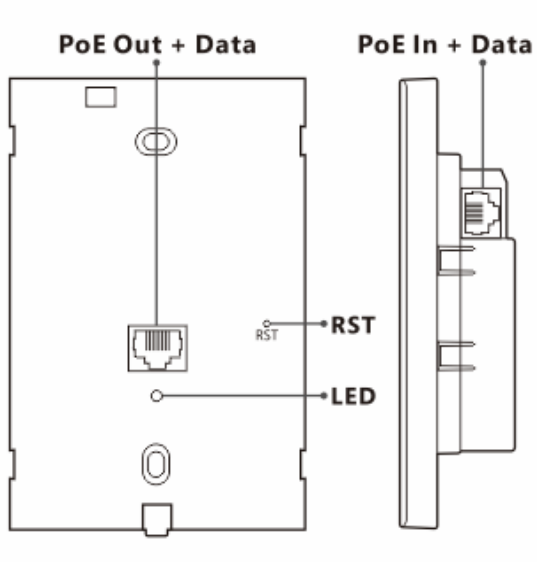
1.2 Package contents

Unpack the package. Your box should contain the following items:



If any item is incorrect, missing or damaged, please keep the original package and contact the vendor for replacement immediately.

1.3 Hardware descriptions



Interfaces

PoE Out + Data: 100Mbps LAN Port. Connect it to a computer, etc. Only support PoE af class 2 or lower power consumption device.

PoE In + Data: 100Mbps PoE/LAN Port (Supported PoE power supply). Connect this port to a PoE switch.

Button

RST: Press it for over 7 seconds until the LED indicator turns to be solid to restore the device to factory defaults.

LED

Blinking: The AP works properly.

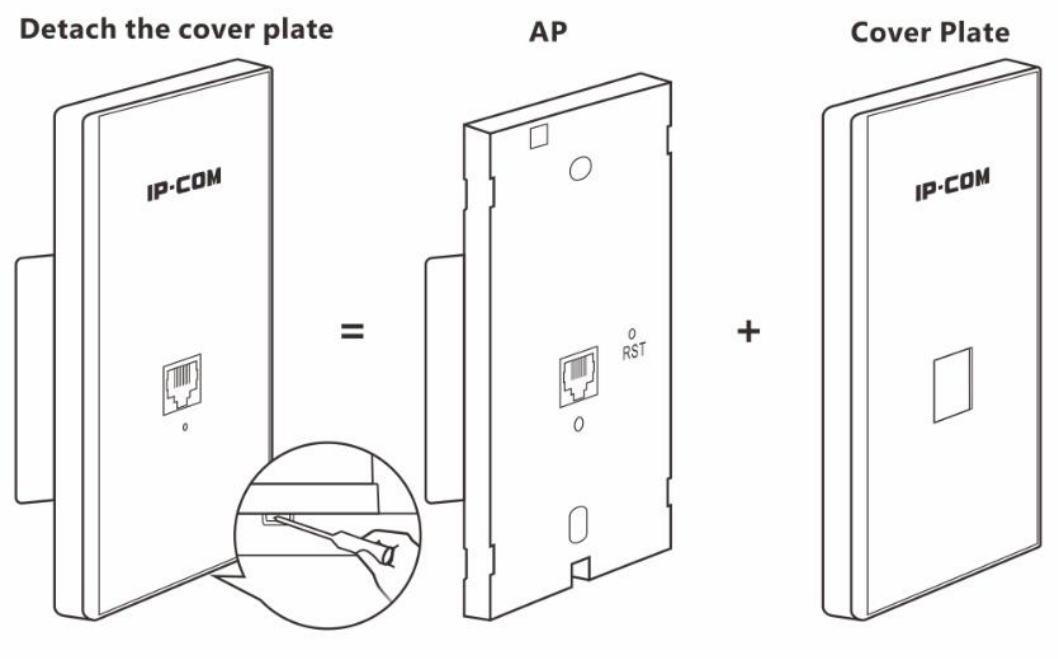
Off: The AP is not powered on, malfunctions occur or LED is disabled manually.

02 Device installation

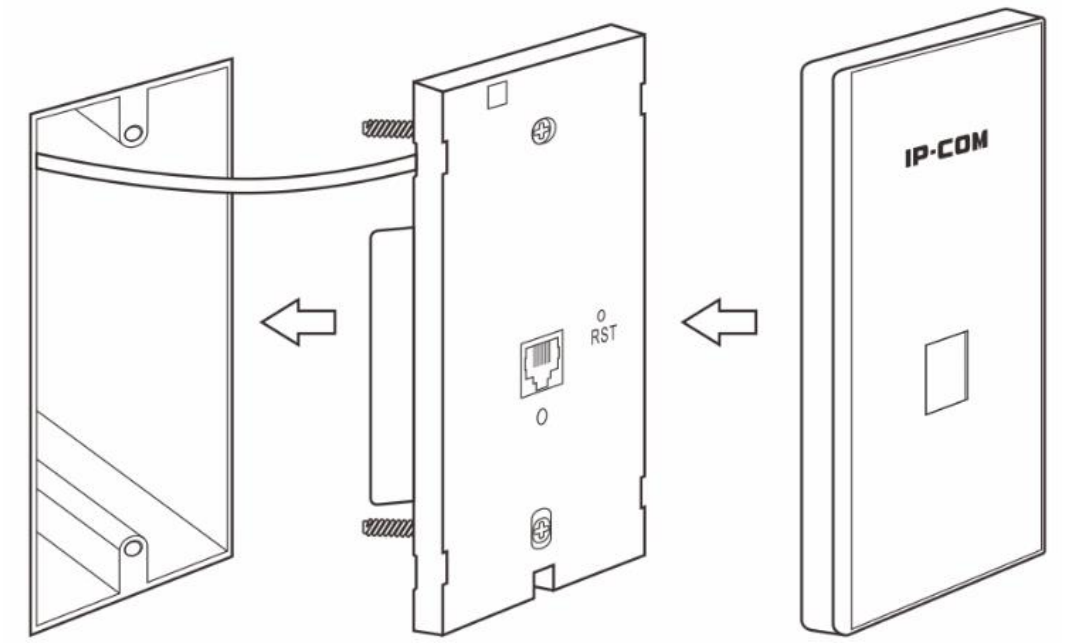
2.1 Install your device to a wall box

Before you install the device, make sure that an electrical wall box is installed and there's an Ethernet cable through the box.

1. Detach the device's cover plate using a screw-driver.



2. Connect the Ethernet cable in the wall box to the LAN port on the rear panel of the device.
3. Install the device in the wall box and verity that the Ethernet cable is positioned properly.
4. Fasten the device with the included screws. Adjust the screws to ensure that the device is flush with the wall for proper fitting of the cover plate.
5. Attach the cover plate to the device.

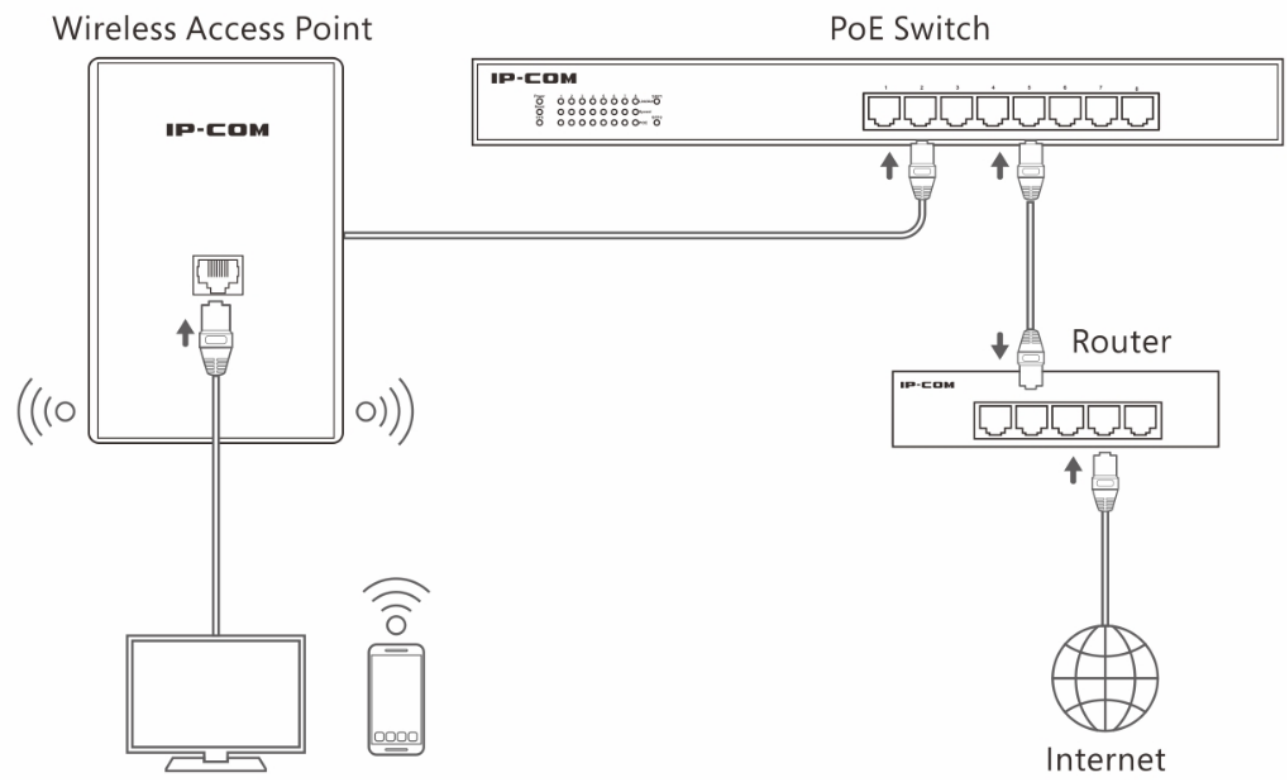


2.2 Connect your device to a network

1. Connect the other end of the Ethernet cable in the wall box to a PoE switch that is connected to the internet.

   One end of the Ethernet cable in the wall box is connected to the device, see Install your device to a wall box.

2. Connect a computer to the LAN port on the front panel of the device.



03 Web UI login

3.1 Web UI login

When using the device for the first time, or when you restore the device to factory default, you can log in to its web UI via a browser with default login information. The default login information includes:

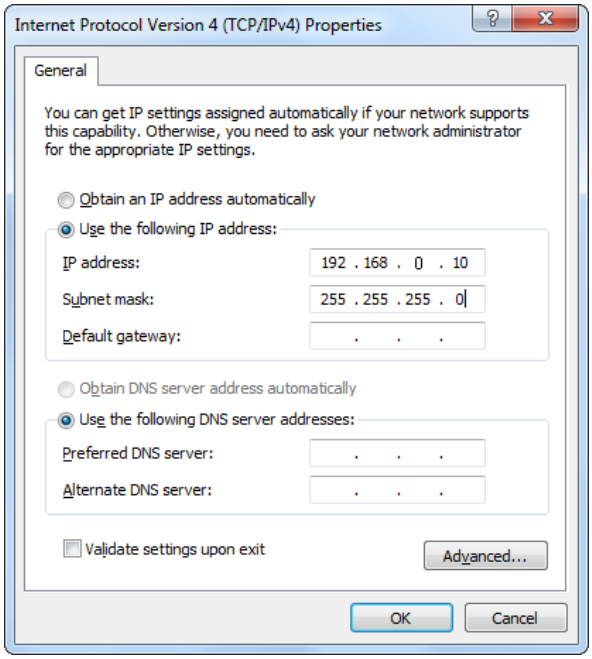
Item	Default Setting
IP Address	192.168.0.254
Username and Password	admin

To log in to this device:

(Assume that the device is in factory default state and ensure that your PC is connected to the device.)

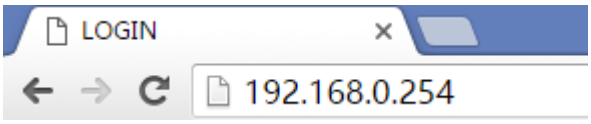
1. Manually set up your PC's IP address to 192.168.0.X (2~253), with a subnet mask of 255.255.255.0. (If the switch and AP are in the same IP segment, make sure that the switch, AP and PC have different IP addresses).

   For detailed steps, see Appendix Configure your computer.



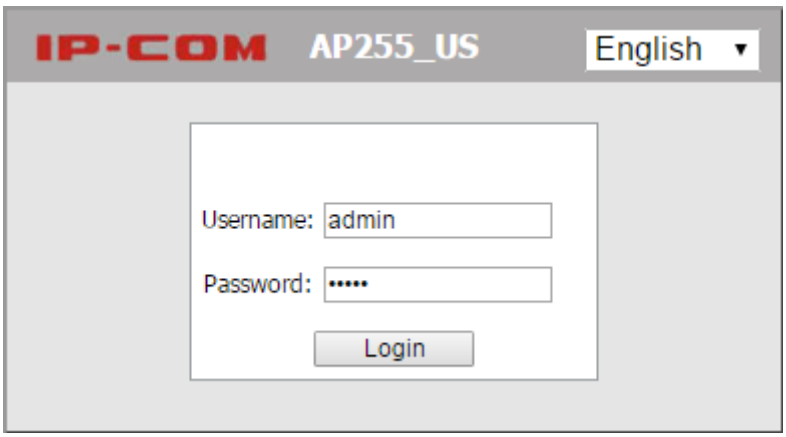
2. Launch a browser, enter the device's default IP address **192.168.0.254** in the address bar, and press **Enter**.

   We recommend that you use the browser of IE8 (or higher) or Google Chrome.

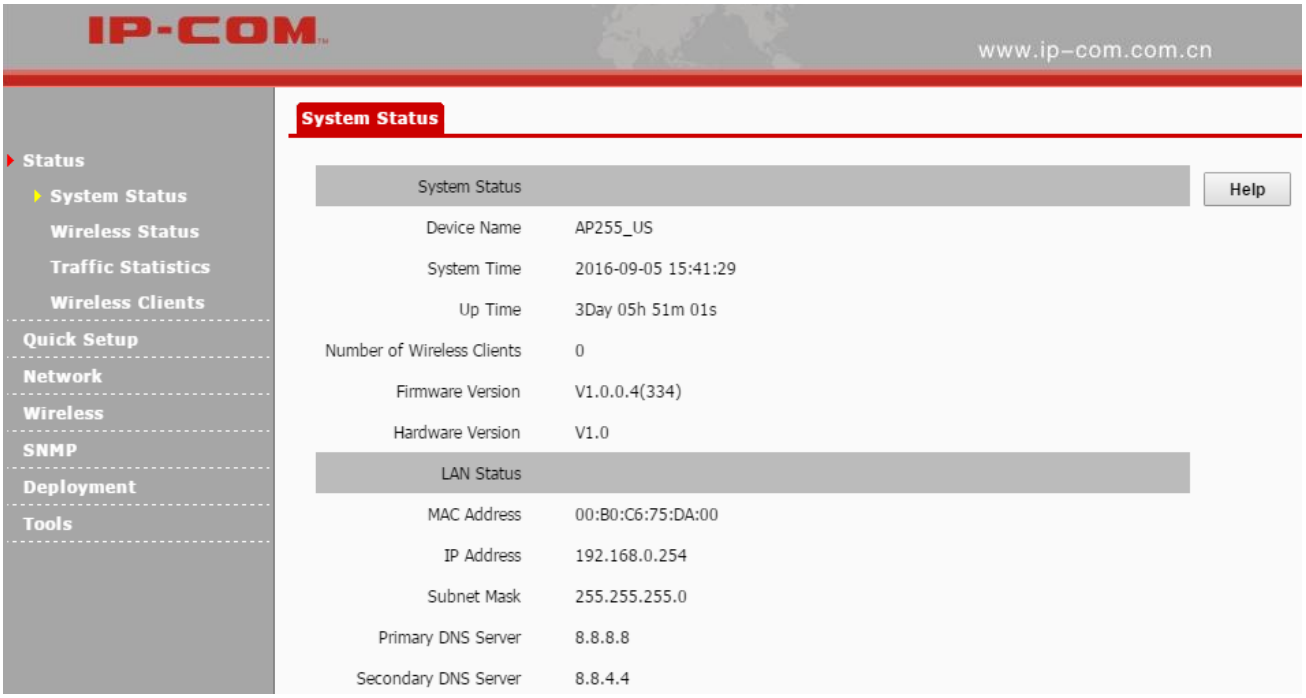


3. In the login page, enter **admin** (case sensitive) in both "Username" and "Password" box.

4. Click **Login**.

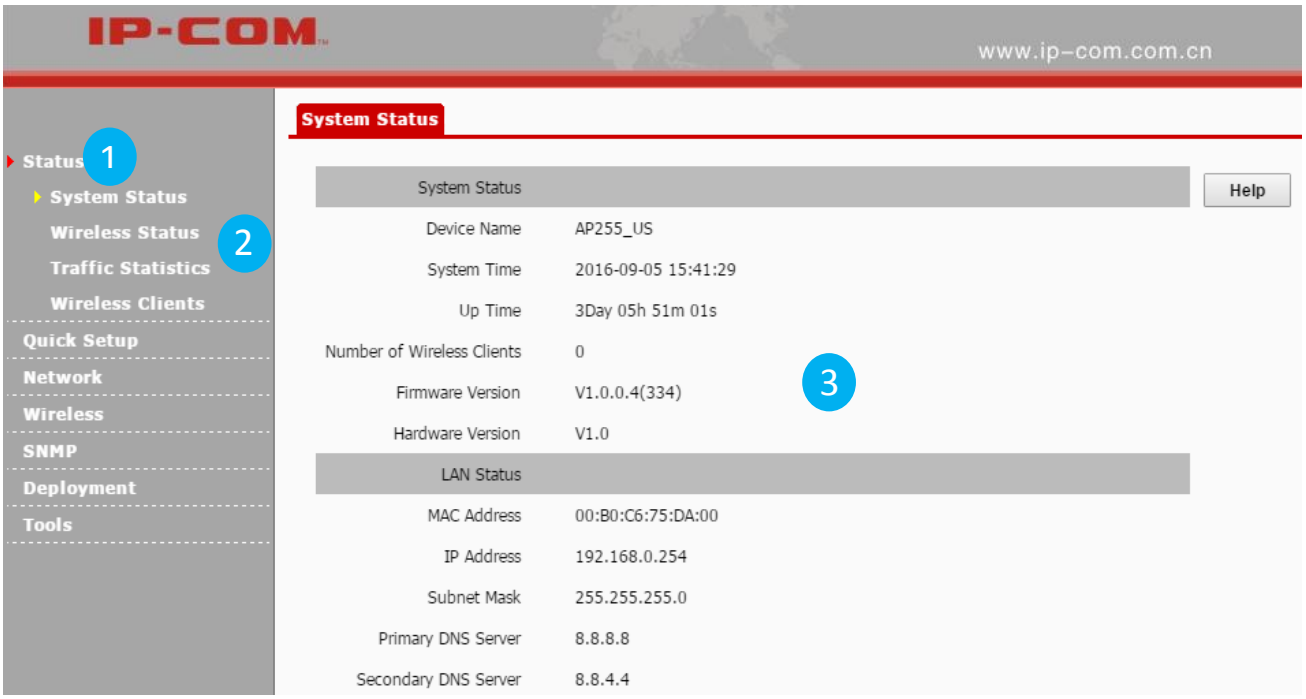


Then you come to the management page and can begin to configure the device.



3.2 Web UI layout

This web UI is divided into three parts: primary navigation bar, secondary navigation bar and configuration area, described as follows.



Item	Name	Description
1	Primary Navigation bar	The navigation bar organizes the device's menu of all functions in the form of a navigation tree. You can choose the function menu from the navigation bar with selection result shown in the configuration area.
2	Secondary Navigation bar	
3	Configuration area	The area is used to configure and view settings.

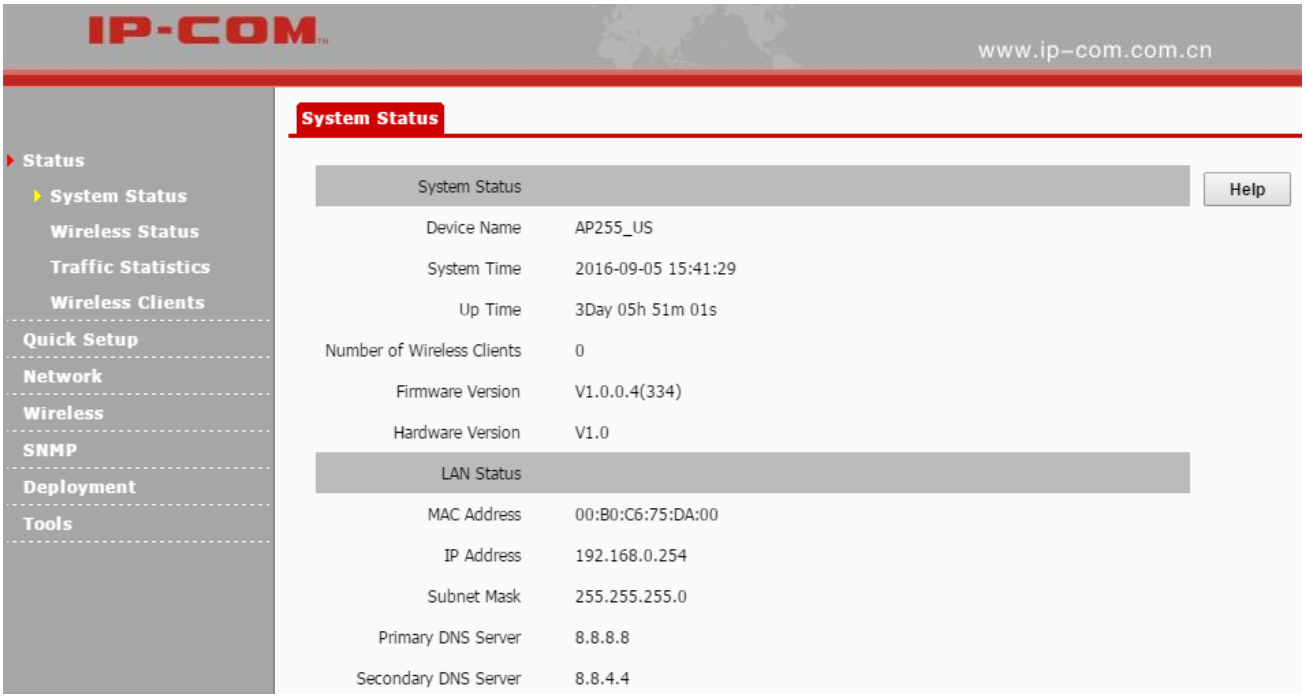
The following table shows the commonly used buttons of the web UI.

Item	Description
Help	Click the button to view the help info if you meet any problems during the setup.
Save	Click the button to apply your settings.
Restore	Click the button to clear the settings you are editing.

04 Web UI functions

4.1 Status

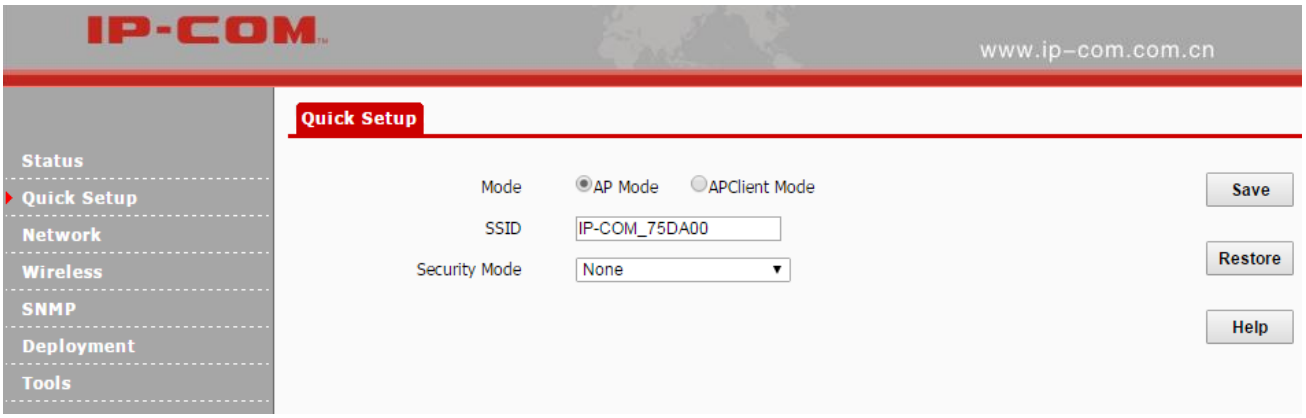
This part displays: System Status, Wireless Status, Traffic Statistics and Client List. If you have questions about some parameters, click Help on the upper right corner of each page.



4.2 Quick Setup

This device supports the following operation modes and the default operation mode is **AP** mode.

- AP mode
- APClient mode



Operation mode description:

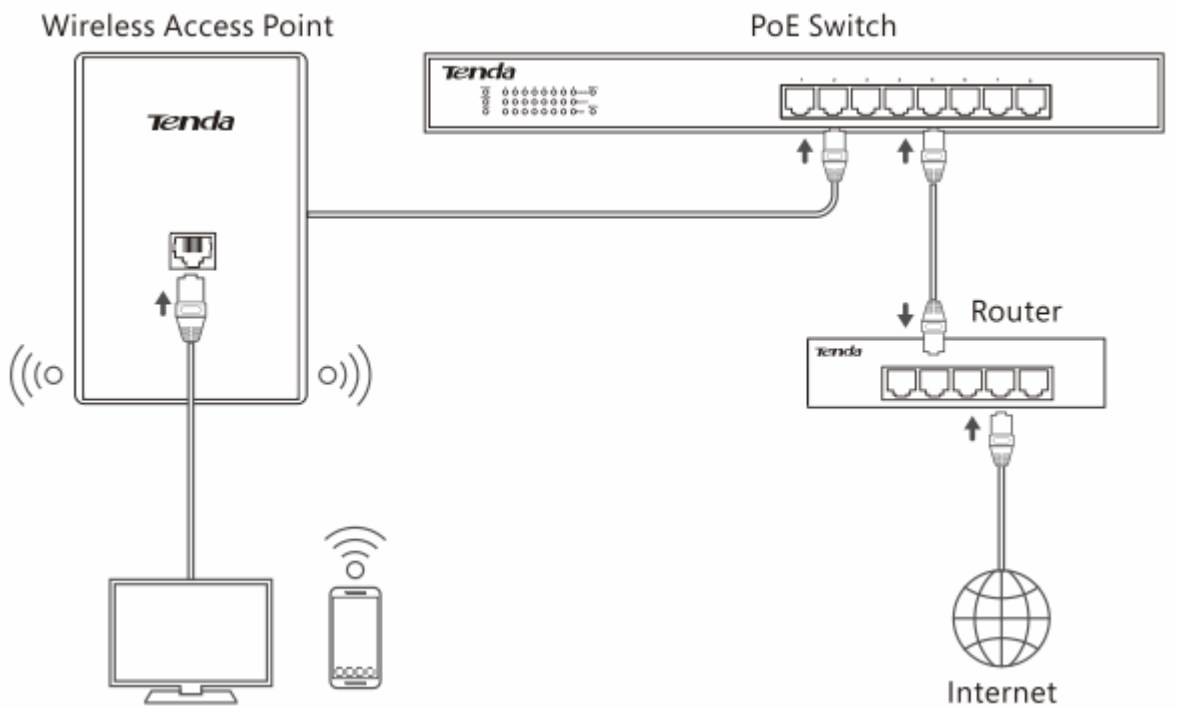
Work Mode	Description
AP mode	In this mode, the device connects to a network, such as the internet, using an Ethernet cable, and transmits wireless signals. As a result, the device's wireless clients can access the remote network.
APClient mode	In this mode, the device can wirelessly connect to a remote device, such as an AP, to extend the remote wireless network, and transmits wireless signals. As a result, the device's wireless clients can access the remote network.

4.2.1 AP mode

In this mode, the device connects to a network, such as the internet, using an Ethernet cable, and transmits wireless signals. As a result, the device's wireless clients can access the remote network.

Application scenario

In the following application, the device connects to the internet using an Ethernet cable and transmits wireless signals for wireless clients.



Configure AP mode

To configure AP mode:

1. Log in to the device's web UI.
2. Go to **Quick Setup**, select AP Mode and set up the parameters.

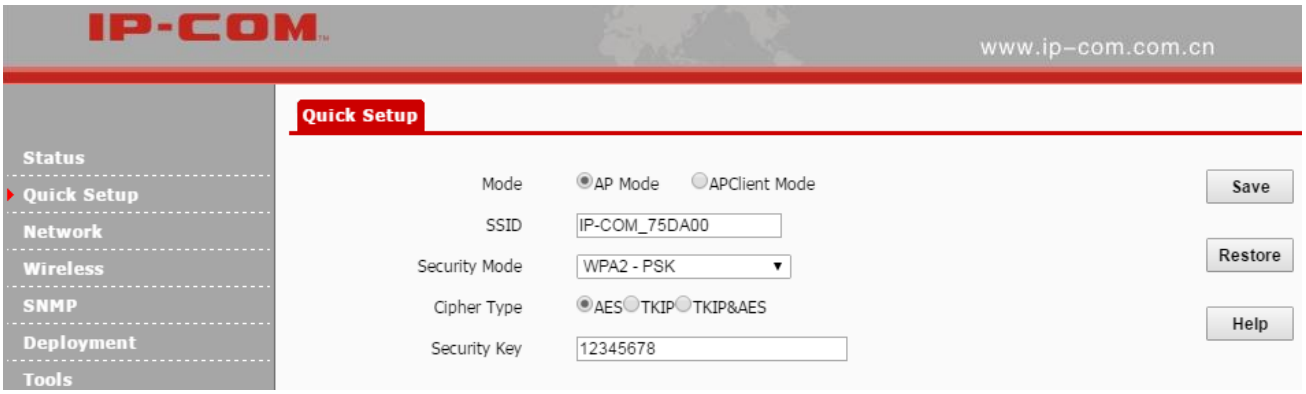
1) SSID: Set up a wireless network name, such as *IP-COM_75DA00*.

   This name is used for wireless clients to connect to the device.

2) Security Mode, Encryption Type: We recommend that you select *WPA2-PSK, AES*.

3) Security Key: Set up your WiFi password, such as *12345678*.

3. Click **Save** to make these settings take effect.

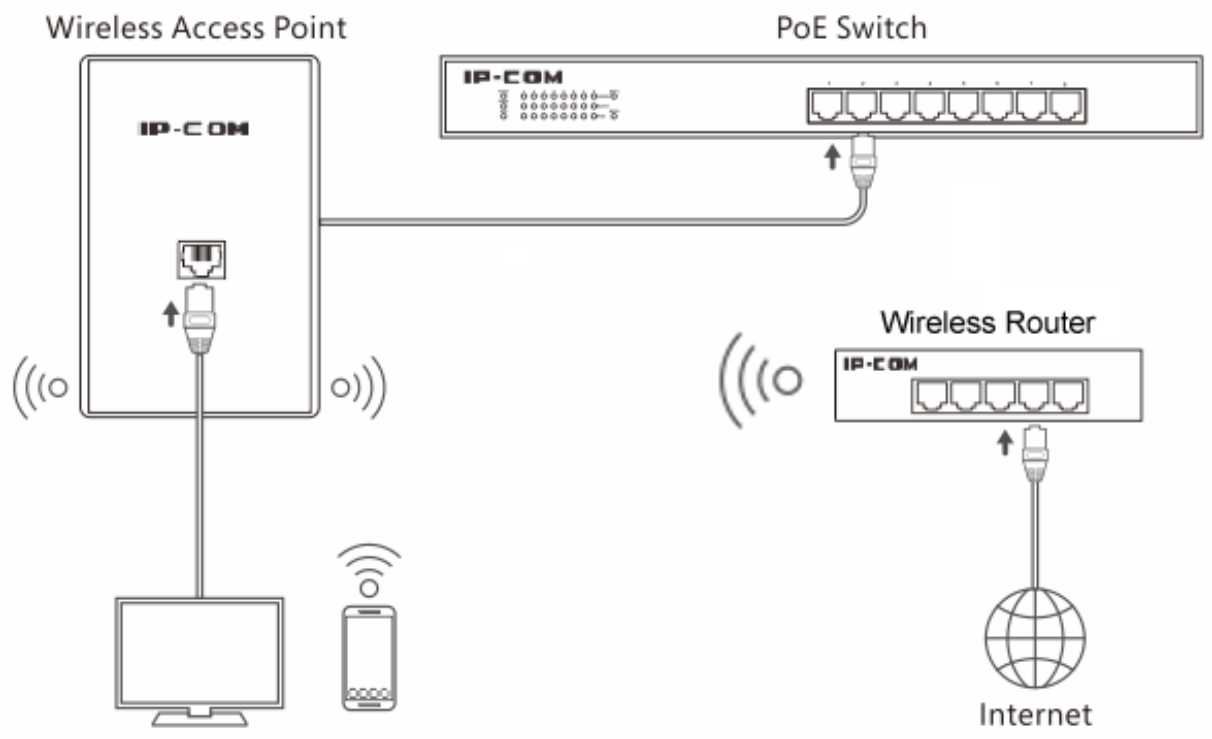


4.2.2 APClient mode

In this mode, the device can wirelessly connect to a remote device, such as an AP, to extend the remote wireless network, and transmits wireless signals. As a result, the device's wireless clients can access the remote network.

Application scenario

In the following application, the device can't connect to the wireless router using an Ethernet cable, but the device needs to access the internet through the wireless router. In this case, you can configure your device to work in APClient mode.



Assume that the wireless router's info is as follows:

SSID	IP-COM_610220
WiFi Password	87654321

Configure APClient mode

To configure APClient mode:

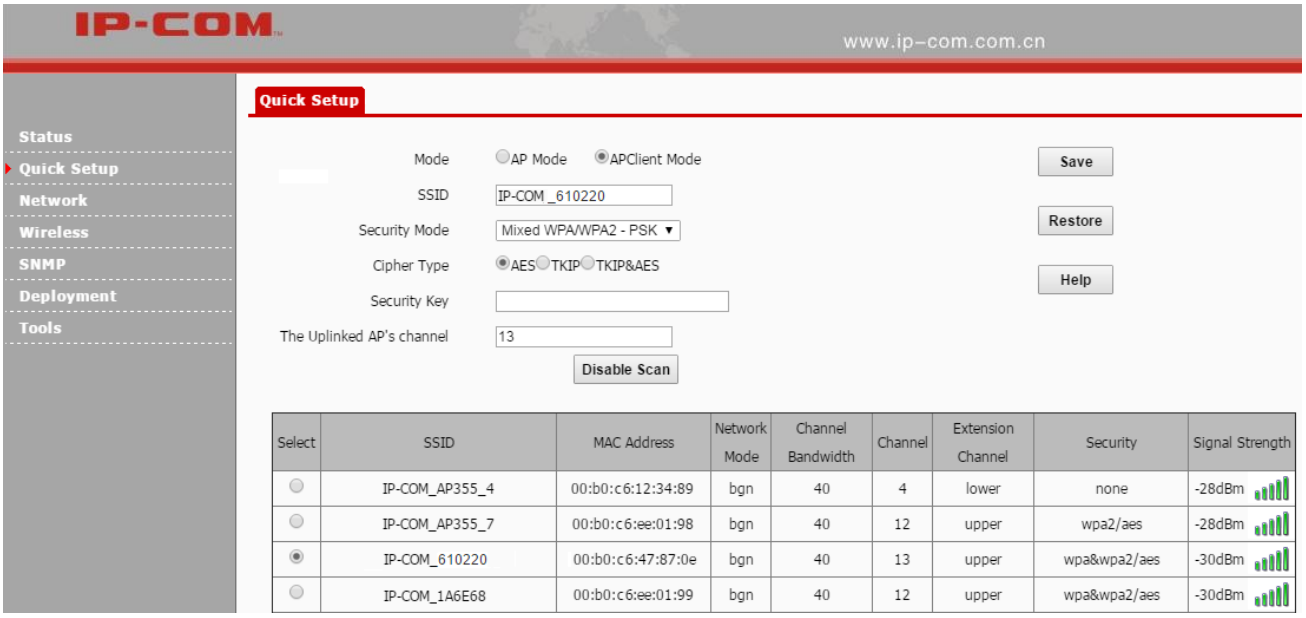
1. Log in to the device's web UI.
2. Go to **Quick Setup**, select APClient Mode and set up the parameters.

   1) Click Enable Scan.

   2) In the scanned list, select *IP-COM_610220*.

      The SSID, Security Mode, Cipher Type and channel will be filled automatically.

   3) In the Security Key field, enter *87654321*.
3. Click **Save** to make these settings take effect.



4.3 Network

Network settings contain the following:

- LAN Setup: On this page, you can set up LAN IP address, which is used to log in to the web UI and to communicate with the local network.
- DHCP Server: On this page, you can enable/disable and set up DHCP server parameters for the device's clients.
- DHCP Client List: On this page, you can check how many DHCP clients are connected and each client's IP address, MAC address and lease time.

4.3.1 LAN Setup

On this page, you can set up LAN IP address, which is used to log in to the web UI and to communicate with the local network. This device supports two methods to set up your LAN IP address:

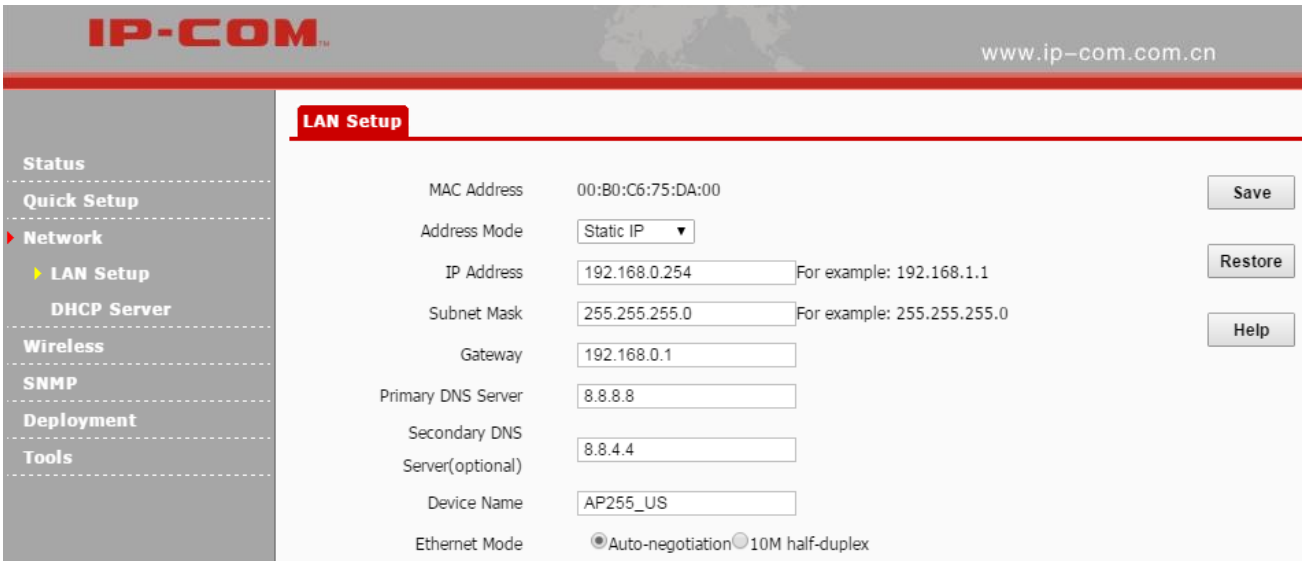
- Static IP: Set up LAN IP address manually

  In this method, you need to manually set up LAN IP address. If you modified LAN IP address, when you log in to the device's web UI, please use the new IP address. If you change LAN IP segment, please change your computer's IP segment to the new one as well.

- DHCP: Obtain LAN IP address from another DHCP server

  In this method, the device can obtain LAN IP address from another DHCP server. In this way, it reduces IP conflict and the cost of configuring IP address manually. If your device obtains LAN IP address from a DHCP server of an uplink router and you don't know the IP address, you can log in to the uplink router's web UI to check the obtained IP address.

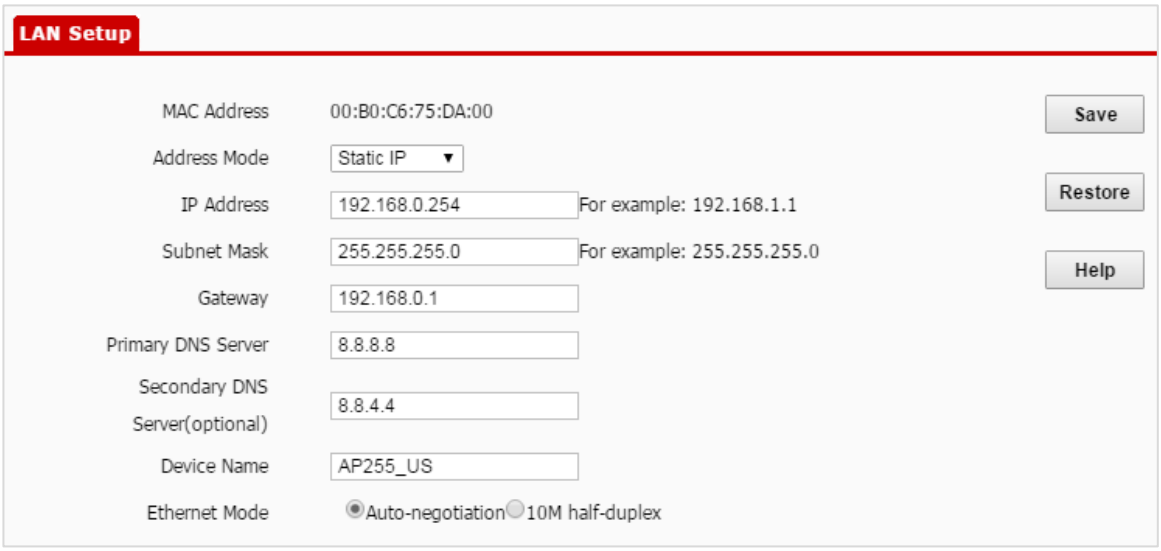
Parameter description



Parameter	Description
MAC Address	This device's MAC address of LAN port.
Address Mode	Select a method to set up the LAN IP address. The default method is **Static IP**. • **Static IP:** In this method, you need to manually set up LAN IP address. If you modified LAN IP address, when you log in to the device's web UI, please use the new IP address. If you change LAN IP segment, please change your computer's IP segment to the new one as well. • **Dynamic IP:** In this method, the device can obtain LAN IP address from another DHCP server. In this way, it reduces IP conflict and the cost of configuring IP address manually. If your device obtains LAN IP address from a DHCP server of an uplink router and you don't know the IP address, you can log in to the uplink router's web UI to check the obtained IP address.
IP Address	It is used to log in to the device's web UI and communicate with the local network. The default one is 192.168.0.254.
Subnet Mask	It is used to determine IP segment of the IP address. The default one is 255.255.255.0
Gateway	It helps the device find a network route to connect to the internet or other networks.
Primary DNS Server	Domain names, such as *www.google.com*, are easier to remember than IP addresses, such as *93.46.8.89*. A correct DNS server allows you to access websites using their domain names instead of IP addresses.
Secondary DNS Server	It is a backup DNS server address.
Device Name	Enter a distinct name for your device so that the administrator can manage the device from a remote spot if necessary.
Ethernet Mode	• Auto-negotiation: In this mode, it will transmit in a shorter distance with higher speed. In general, it is recommended to select this option. • 10M half-duplex: In this mode, it can transmit for a longer distance with lower speed. When the distance between this device and the remote device are more than 100 meters, please select this option and ensure that the remote device works in auto negotiation mode, or else the device's LAN port can't send and receive data.

Static IP: Set up LAN IP address manually

In this method, you need to manually set up LAN IP address. If you modified LAN IP address, when you log in to the device's web UI, please use the new IP address. If you change LAN IP segment, please change your computer's IP segment to the new one as well.



To set up LAN IP address manually:

1. Log in to the device's web UI.
2. Go to **Network > LAN Setup**.
3. Set up LAN IP parameters.
   1) Address Mode: Click the dropdown list and select **Static IP**.
   2) IP Address: Enter a new IP address, such as *192.168.0.2*.
   3) Subnet Mask: Enter a subnet mask for the IP address, such as *255.255.255.0*.
   4) Gateway: Enter a gateway for the device so that the device can find a network route to connect to the internet or other networks. Usually it's the uplink router's LAN IP address.
   5) Primary DNS Server: Enter the primary DNS server address. If there is another backup DNS server, enter it into Secondary DNS Server field.

      A correct DNS server allows you to access websites using their domain names instead of IP addresses.
   6) Device Name: Enter a distinct name for your device so that the administrator can manage the device from a remote spot if necessary.
4. Click **Save** to make these settings take effect.

Dynamic IP: Obtain LAN IP address from another DHCP server

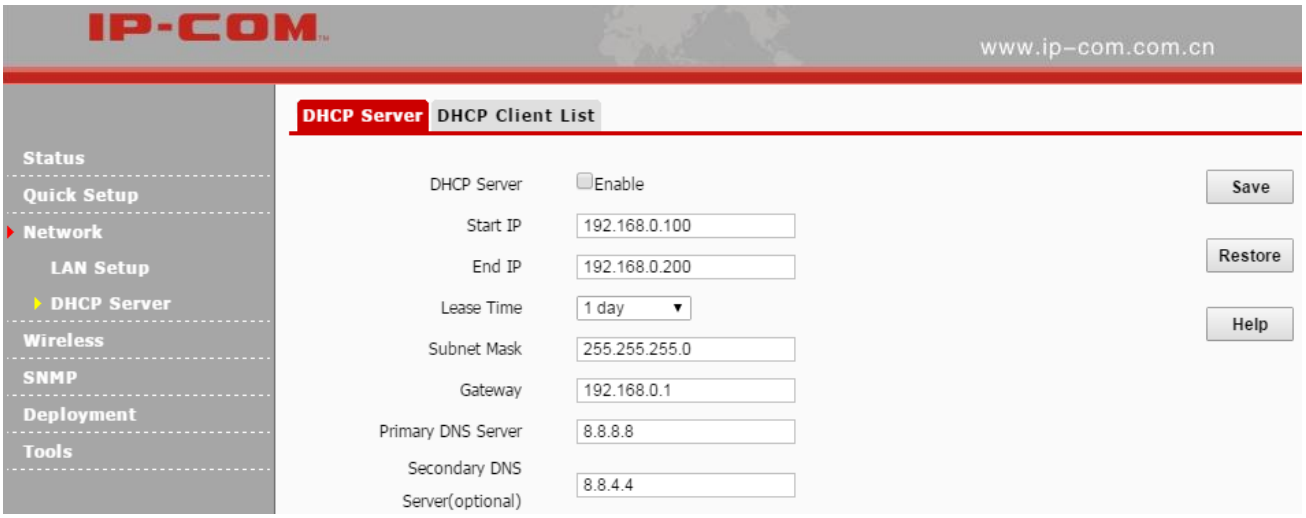
In this method, the device can obtain LAN IP address from another DHCP server. In this way, it reduces IP conflict and the cost of configuring IP address manually. If your device obtains LAN IP address from a DHCP server of an uplink router and you don't know the IP address, you can log in to the uplink router's web UI to check the obtained IP address.

To obtain LAN IP address from another DHCP server:

1. Log in to the device's web UI.
2. Go to **Network > LAN Setup**.
3. Address Mode: Click the dropdown list and select **Dynamic IP**.
4. Click **Save** to make these settings take effect.

4.3.2 DHCP Server

On this page, you can enable/disable and set up DHCP server parameters for the device's clients.



Parameter description

Parameter	Description
DHCP Server	Enable/disable the device's DHCP server. By default, it is enabled.
Start IP	The first IP address that can be assigned to a DHCP client. By default, it is 192.168.0.25400.
End IP	The last IP address that can be assigned to a DHCP client. By default, it is 192.168.2.200.
Subnet Mask	It is used to determine the IP segment of the DHCP server. By default, it is 255.255.255.0.
Gateway	It is assigned to DHCP clients so that they can find a network path to access the internet or other networks. By default, it is 192.168.2.254.
Primary DNS Server	Domain names, such as *www.google.com*, are easier to remember than IP addresses, such as *93.46.8.89*. A correct DNS server allows you to access websites using their domain names instead of IP addresses.
Secondary DNS Server	It is a backup DNS server address.
Lease Time	When a DHCP client obtains IP address, the DHCP server will assign a certain lease time to the client's IP address. If a DHCP client wants to use the IP address continuously, when the lease time goes to 50%, the DHCP client will transmit a unicast DHCP request to the DHCP server. If the DHCP client gets no response from the DHCP server, it will continue to transmit a unicast DHCP request to the DHCP server when the lease time goes to 7/8. If it fails again, when the lease time goes to 100%, the IP address will be released and might be used by other DHCP clients.

Configure DHCP server

Note

If more than one DHCP server exists in the same network, to avoid IP conflict, make sure the IP pool of each DHCP server doesn't overlap.

To configure DHCP server:

1. Log in to the device's web UI.
2. Go to **Network > DHCP Server**.
3. Set up DHCP server parameters.
    1) DHCP Server: Check the box of **Enable**.

2) Start IP/End IP: Enter the first and last IP address of the DHCP IP pool.

3) Subnet Mask: Enter a subnet mask for the DHCP server.

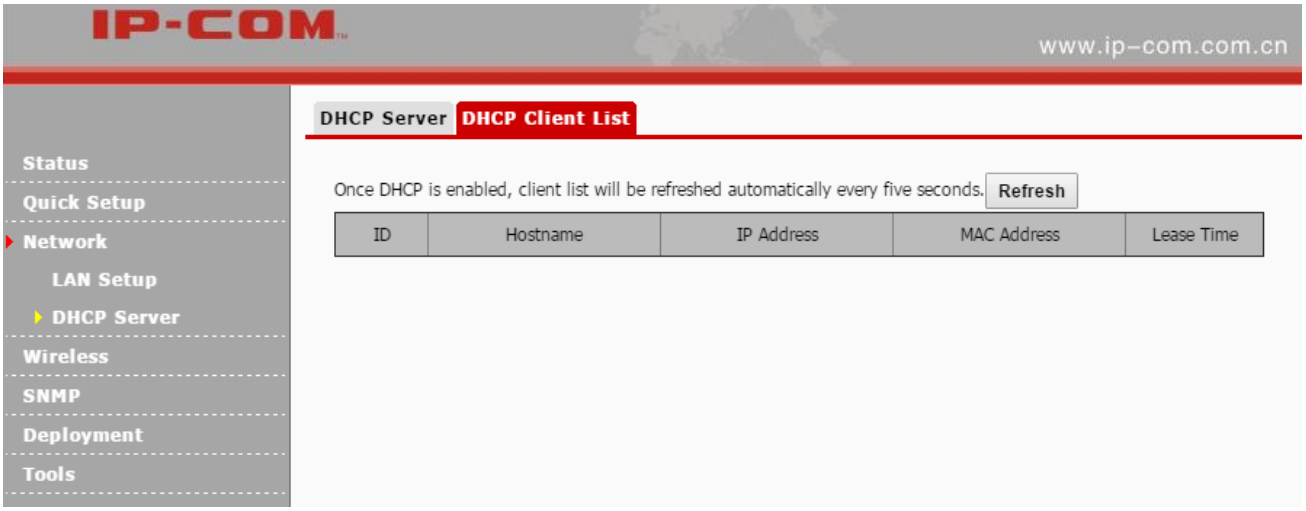
4) Gateway: Enter a gateway which is assigned to DHCP clients.

5) Primary/Secondary DNS Server: Enter a primary DNS server address for DHCP clients. If there is another DNS server, please enter it into the Secondary DNS Server field.

4. Click **Save** to make these settings take effect.

4.3.3 DHCP Client List

On this page, you can check how many DHCP clients are connected and each client's IP address, MAC address and lease time.



To enter DHCP Client page:

1. Log in to the device's web UI.
2. Go to **Network > DHCP Server > DHCP Client**.

4.4 Wireless

Wireless settings contain the following:

- Basic: On this page, you can set up basic wireless parameters of this device, such as SSID, broadcast SSID, encryption type, and so on.
- Radio: On this page, you can set up radio parameters of the device, such as country, network mode, channel, and so on.
- **Channel Scan**: On this page, you can scan wireless signals surrounding the area and see some of their information, such as SSID, channel. According to the information, you can select a channel that is less used for your device.
- Advanced: On this page, you can set up advanced wireless parameters of this device. You can keep the default value if you're not familiar with these parameters.
- Access Control: On this page, you can set up rules to forbid or permit specified wireless clients to connect to this device. The rules are based on MAC address.

- QVLAN: On this page, you can enable/disable and set up VLAN parameters. With this device and a switch with QVLAN function, you can manage different wireless network.

4.4.1 Basic

On this page, you can set up basic wireless parameters of this device, such as SSID, broadcast SSID, encryption type, and so on.

Parameter description

As the device provides lots of wireless parameters, to help you understand these parameters, we devide them into several parts, shown as below.

- Commonly used parameters description
- Parameter description of WEP
- Parameter description of WPA-PSK, WPA2-PSK and mixed WPA/WPA2-PSK
- Parameter description of WPA and WPA2

Commonly used parameters description

Parameter	Description
SSID	Select a SSID to be modified. This device supports two SSIDs.
Enable	Enable or disable the selected SSID.
Broadcast SSID	Enable or disable broadcast SSID function. • Enable: the device broadcasts its SSID and the SSID is displayed in the network list of clients that support 5G. • Disable: the device does not broadcast its SSID and the SSID is not displayed in the network list of clients that support 5G. When a client want to connect to the device, the client needs to manually enter the correct SSID name.
AP Isolation	• Enable: Wireless clients that connect to the SSID can't communicate with each other. • Disable: Wireless clients that connect to the SSID can communicate with each other.
WMF	It is used to optimize multicast situation. After you enable this function, only the actual receivers can obtain corresponding packets. It saves wireless bandwidth and provides a more secure and reliable network.
Client limit	Set up the maximum number of wireless clients allowed to connect to the SSID. When the amount of wireless clients reaches this value, any new client can’t connect to the SSID unless some connected clients disconnect from the SSID.

SSID	The wireless name of the device. To better recognize your wireless network, we recommend that you modify the SSID name.
Chinese SSID Encode	UTF-8 is an international encoding standard. GB2312 is a Chinese encoding standard.
Security Mode	Set up the wireless security mode. None means allowing any client to connect to the device. This device supports WEP, WPA-PSK, WPA2-PSK, Mixed WPA/WPA2-PSK, WPA and WPA2, for details, refer to ● Parameter description of WEP ● Parameter description of WPA-PSK, WPA2-PSK and mixed WPA/WPA2-PSK ● Parameter description of WPA and WPA2

Security mode description:

Parameter description of WEP

WEP (Wired Equivalent Privacy). A static key is used to encrypt all data, providing a security level equal to wired LAN encryption. The wireless rate can be up to 54Mbps.

Parameter	Description
Encryption Type	This device supports the following types. • **Open**: In Open System authentication, the WLAN client need not provide its credentials to the Access Point during authentication. Any client can authenticate with the Access Point and then attempt to associate. In effect, no authentication occurs. Subsequently WEP keys can be used for encrypting data frames. At this point, the client must have the correct keys. • **Shared**: In a shared authentication, the WLAN client needs to provide its credentials to the Access Point during authentication. • **802.1x**: In 802.1x authentication, the device needs to negotiate with the radius server first, then the device's wireless clients need to use the radius username and password to finish 802.1x authentication.
Default Key	Once you select a certain key, such as key 1, wireless clients must use the same key, key 1, to connect to your device. For WEB security mode, most smart phones only support key 1, so we recommend that you select key 1 of this device.
ASCII	Enter a WEP key. The length of the character string is a 5 or 13.
HEX	Enter a WEP key. The length of the character string is 10 or 26.
RADIUS Server	Enter the radius server IP address for authentication.

RADIUS Port	Enter the authentication port of the radius server.
RADIUS Password	Enter the shared key of the radius server.

Parameter description of WPA-PSK, WPA2-PSK and mixed WPA/WPA2-PSK

It is designed for home and small office networks and doesn't require an authentication server. Each WLAN network device encrypts the network traffic using a 256 bit key. This key may be entered either as a string of 64 hexadecimal digits, or as a passphrase of 8 to 63 printable ASCII characters. If ASCII characters are used, the 256 bit key is calculated by applying the PBKDF2 key derivation function to the passphrase, using the SSID as the salt and 4096 iterations of HMAC-SHA1.

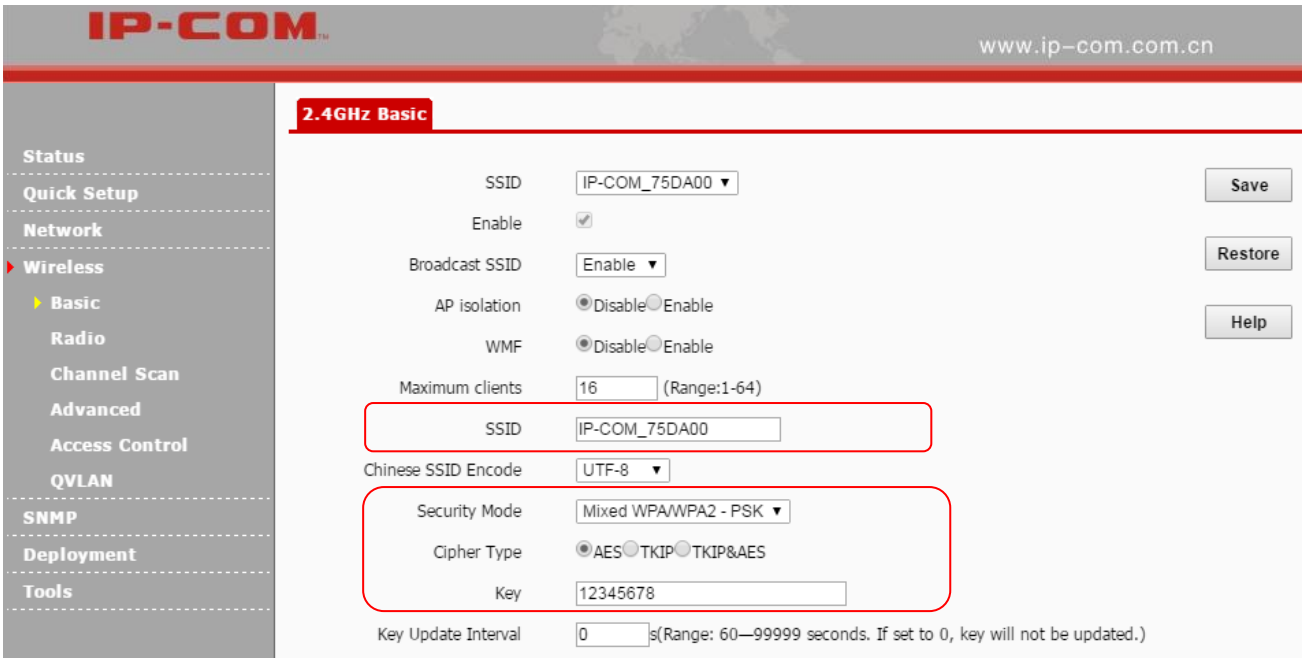
Parameters	Description
Cipher Type	Select WPA encryption type. • AES: AES is short for Advanced Encryption Standard. This encryption algorithm ensures a higher wireless rate. • TKIP: TKIP is short for Timing Key Integrity Protocol. Wireless rate can only reach 54Mbps with this algorithm. • TKIP&AES: Compatible with TKIP and AES. The wireless client can use either AES or TKIP algorithm to connect to the WiFi.
Key	Enter a security key that is either 8 - 63 ASCII characters or 8 - 64 Hex characters.
Key Update Interval	You can configure security key's update interval here within the range from 60 to 99999 seconds. If set to 0, the key will not be updated.

Parameter description of WPA and WPA2

WPA is opposed to WPA-PSK and is also referred to as WPA-802.1X mode. It is designed for enterprise networks and requires a RADIUS authentication server. This requires a more complicated setup, but provides additional security (e.g. protection against dictionary attacks on short passwords). Various kinds of the Extensible Authentication Protocol (EAP) are used for authentication. WPA-Enterprise mode is available with both WPA and WPA2.

Parameters	Description
RADIUS Server	Enter the radius server IP address for authentication.
RADIUS Port	Enter the authentication port of the radius server.
RADIUS Password	Enter the shared key of the radius server.

Configure basic wireless parameters



To configure basic wireless parameters:

1. Log in to the device's web UI.
2. Go to **Wireless > Basic**.
3. Set up basic wireless parameters.
   1) SSID: Modify the device's SSID.
   2) Security Mode, Cipher Type, Key: We recommend that you select WPA2-PSK and AES and set up a WiFi password (Key). For more information, please refer to Security Method Description.
   3) Other parameters: If not specified, you can keep the default value.
4. Click **Save** to make these settings take effect.

4.4.2 Radio

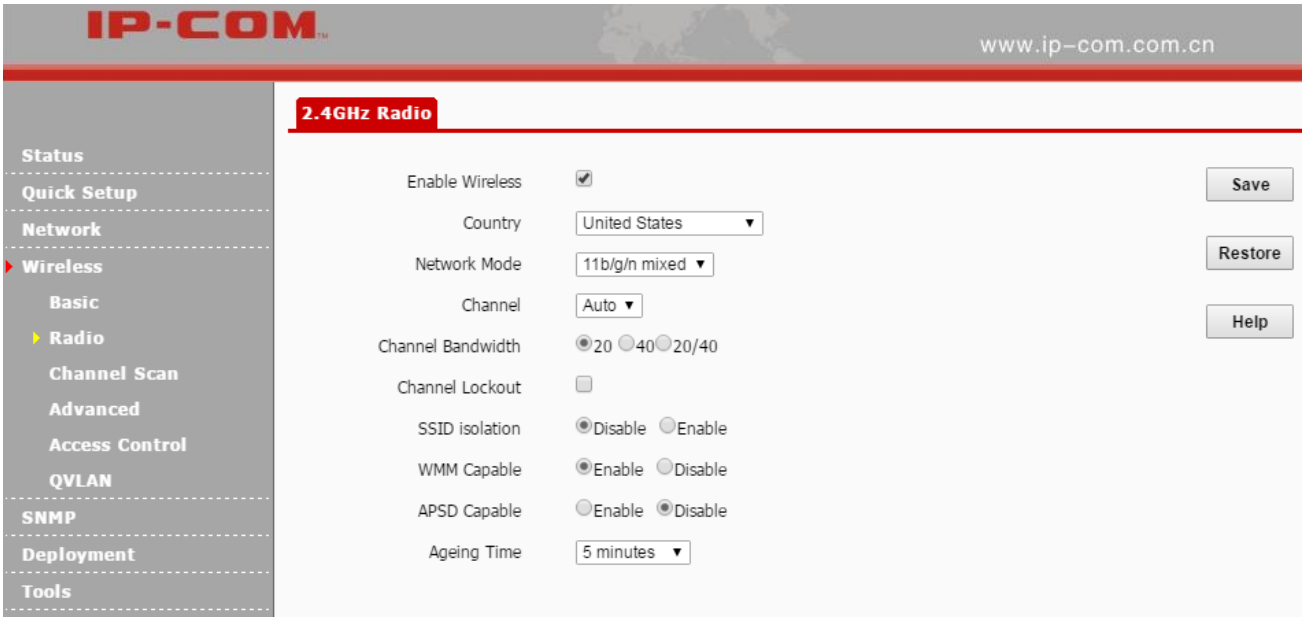
On this page, you can set up radio parameters of the device, such as country, network mode, channel, and so on.

Parameters description

Parameter	Description
Enable Wireless	Enable/Disable the device's wireless signal.
Country	Select a country that your device is operating.
Network Mode	Select an 802.11 network mode. By default the device works at 11ac mode.

	• 11a mode: Clients that support 11a network mode can connect to the device. The wireless speed can be up to 54Mbps. • 11a/n mode: Clients that support 11a or 11n network mode can connect to the device. The wireless speed can be up to 150Mbps. • 11ac mode: Clients that support 11ac network mode can connect to the device. The wireless speed can be up to 433Mbps.
Channel	Click the dropdown list and select a wireless channel. To avoid channel conflict, please select a channel that is less used in surrounding area. You can go to **Wireless > Site Survey** to check each channel's usage.
Channel Bandwidth	• 20: This device can only use 20MHz bandwidth. • 40: This device can only use 40MHz bandwidth. • 80: This device can only use 80MHz bandwidth.
Extension Channel	It is used to determine the AP's channel range when bandwidth is 40.
Channel Lockout	If you check this box, you can't modify country, network mode, channel, channel bandwidth and extension channel.
AP isolation	• Enable: Wireless clients that connect to the SSID can't communicate with each other. • Disable: Wireless clients that connect to the SSID can communicate with each other.
WMM Capable	WMM is a wireless QoS protocol designed to preferentially transmit packets with high priority, thus guaranteeing better QoS services for voice and video applications in a WLAN network.
APSD Capable	APSD (Automatic Power Save Delivery) is disabled by default.
Ageing Time	After a client connects to the device: • If there is no data transmission within the time period, the device will actively disconnect the client. • If data transmission is detected within the time period, the device will recalculate the time age.

Configure wireless radio parameters

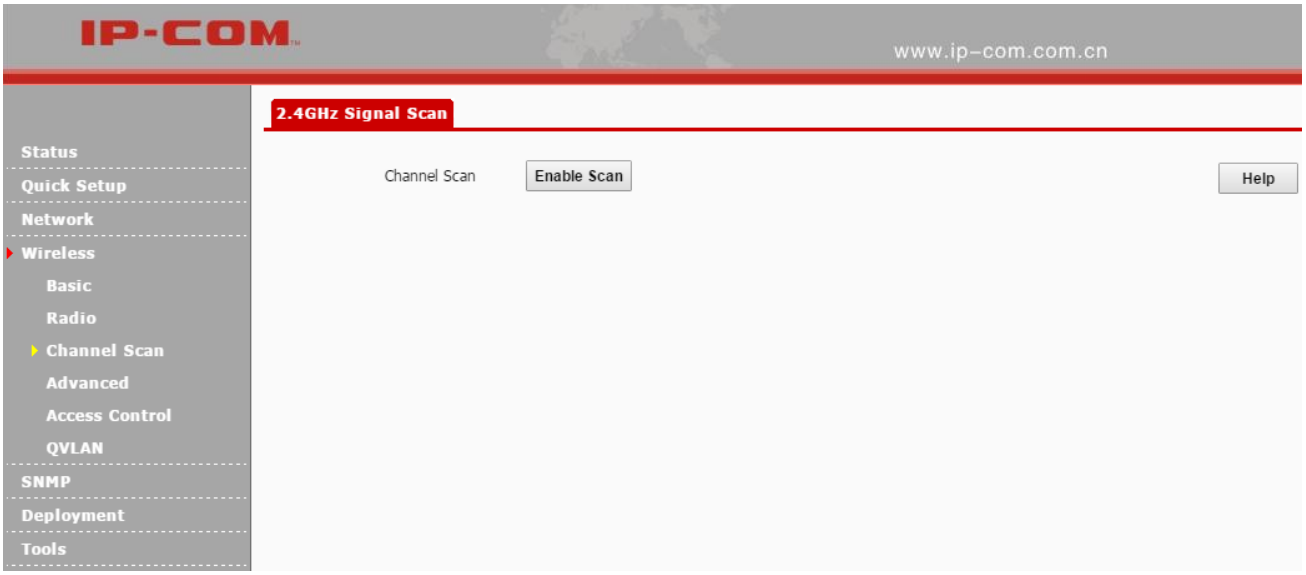


To configure wireless radio parameters:

1. Log in to the device's web UI.
2. Go to **Wireless > Radio**.
3. Set up the parameters.
    1) Channel Lockout: Uncheck the box so that you can modify the country.
    2) Country: Select a country that your device is operating.
    3) Channel Click the dropdown list and select a wireless channel. To avoid channel conflict, please select a channel that is less used in surrounding area. You can go to **Wireless > Site Survey** to check each channel's usage.
    4) Other parameters: If not specified, you can keep the default value.
4. Click **Save** to make these settings take effect.

4.4.3 Channel Scan

On this page, you can scan wireless signals surrounding the area and see some of their information, such as SSID, channel. According to the information, you can select a channel that is less used for your device.



To start scanning signals:

1. Log in to the device's web UI.
2. Go to **Wireless > Site Survey**.
3. Click Enable Scan.

Wait a moment and the results will be displayed on the page, as shown in the figure below. Drag the scroll bar to see more wireless signals.

According to the wireless signals, to reduce the channel interference, you can select a channel that is less used surrounding the area for your device.

4.4.4 Advanced

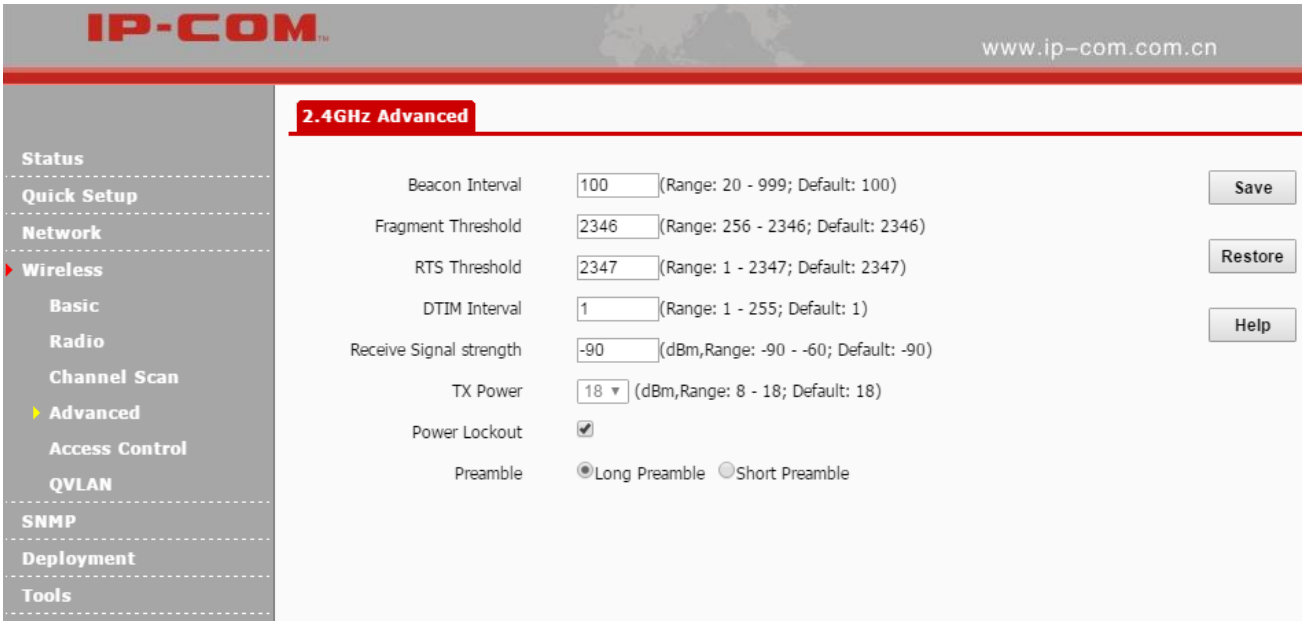
On this page, you can set up advanced wireless parameters of this device. You can keep the default value if you're not familiar with these parameters.

Parameter description

Parameter	Description
Beacon Interval	Set up an interval for sending beacon frames. The range is 20~999ms. Beacon frames are transmitted at a regular interval to allow mobile clients to join the network. Beacon frames are used for a client to identify nearby APs. In general, the smaller the value is, the quicker a wireless client can connect to the AP. the larger the value is, the higher the data transmission of the WLAN network's efficiency is.
Fragment Threshold	Set up the maximum length of frames that can be transmitted without fragmentation. The range is 256~2346 bytes. Fragmentation means to fragment a large frame into small pieces, with each piece transmitted and acknowledged separately. When the length of a frame exceeds the specified fragment threshold value, it is fragmented. • A longer frame is less likely to be successfully received. Therefore, in a WLAN where there is high error rate, you can decrease the fragment threshold to increase frame transmission reliability. • In a WLAN network with no interference, we recommend that you increase the Fragment Threshold to improve the data transmission throughput by decreasing the ACK times.
RTS Threshold	Set up the threshold length for RTS/CTS mechanism. RTS/CTS frames occupy a certain network bandwidth so that only the frames larger than RTS/CTS threshold will enable RTS/CTS mechanism to avoid data sending collisions in a WLAN network. The RTS/CTS threshold range is 1~2347 bytes. You need to set up a rational value: A small value causes RTS packets to be sent more often, thus consuming more of the available bandwidth. However, the more often RTS packets are sent, the quicker the system can recover from interference or collisions. We recommend that you set up a small value in a high-density WLAN network to decrease the probability of collision.
DTIM Interval	Set up the number of beacon intervals between Delivery Traffic Indication Message (DTIM) transmissions. The range is 1~255 Beacon interval. The AP sends buffered broadcast/multicast frames with the configured DTIM interval. For example, if you set DTIM to 2, the AP will send buffered broadcast/multicast frames every two Beacon intervals.
Receive Signal	Define the minimum client signal level accepted by the device. If a wireless client's

strength	signal is lower than this value, the client cannot connect to the device.
TX Power	Set up the device's wireless transmission power.
Power Lockout	If you check this box, you can't modify the value of TX Power.
Preamble	Mainly used for preamble synchronization. It is advisable to keep the default value unchanged.

Configure advanced wireless parameters



To configure advanced wireless parameters:

1. Log in to the device's web UI.
2. Go to **Wireless > Advanced**.
3. Set up advanced wireless parameters.

   We recommend that you keep the default value if you are not familiar with these parameters.
4. Click **Save** to make these settings take effect.

4.4.5 Access control

On this page, you can set up rules to forbid or permit specified wireless clients to connect to this device. The rules are based on MAC address.

Parameter descriptions

Parameter	Description
SSID	Select a SSID to perform this function.
Filter Mode	• Disable: Disable access control function. • Allow: The device permits wireless users that correspond to the added MAC addresses to connect to the device. Other users are not allowed to connect. • Deny: The device forbids wireless users that correspond to the added MAC addresses to connect to the device. Other users are allowed to connect.
MAC Address	Manually enter MAC addresses of wireless users that are forbidden or permitted to connect to the device.
Add	To make a MAC address effective to be forbidden or permitted, click this button to add the entered MAC address to the following list.

Configure access control function

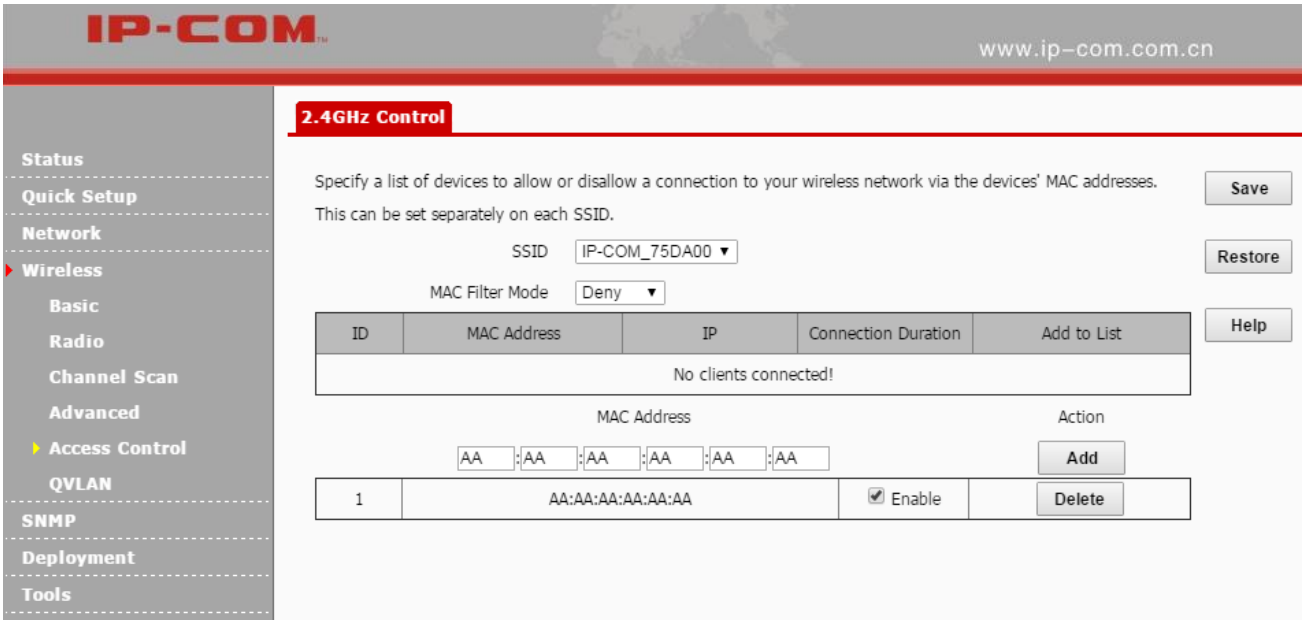
There are three commonly used situations:

- When you want to forbid or permit some wireless users that are not connected to the device
- When you want to forbid or permit some wireless users that are connected to the device
- If you want to delete a wireless user from the access control rule

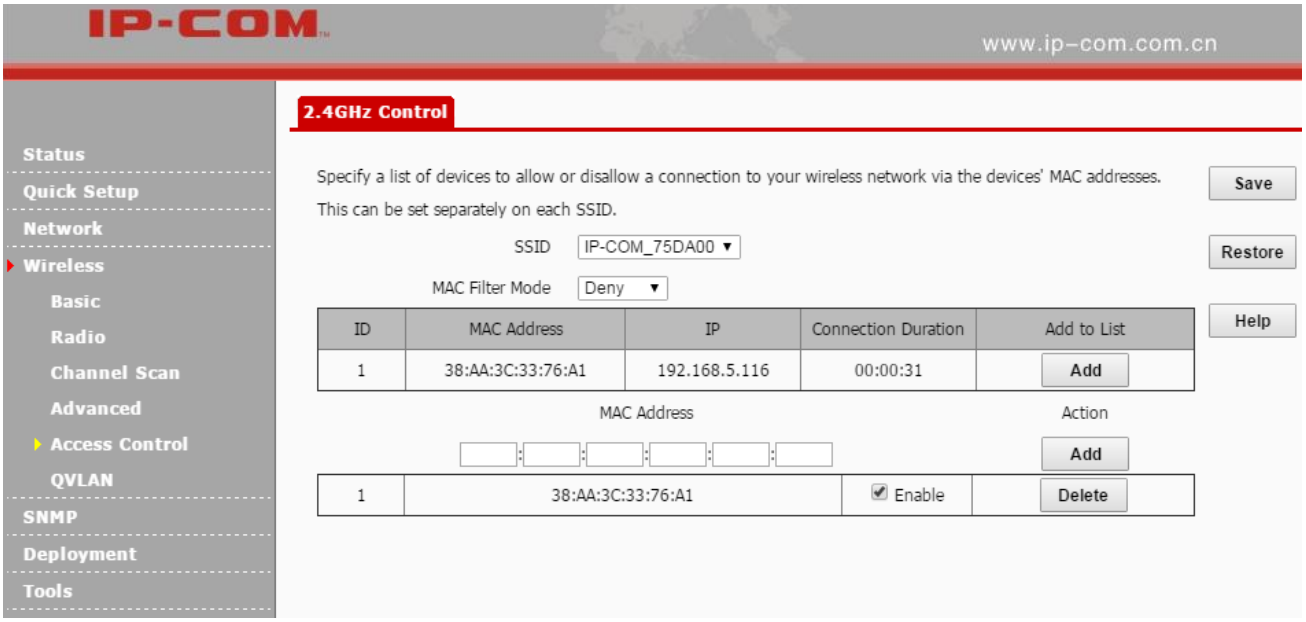
↘ When you want to forbid or permit some wireless users that are not connected to the device, do as follows:

1. Log in to the device's web UI.
2. Go to **Wireless > Access Control**.
3. Set up the access control rule.
    1) SSID: Select a SSID to perform this function.
    2) MAC Filter Mode: Select an option. For example, if you want to forbid certain wireless users to connect to this device, please select *Deny*.
    3) MAC Address: In the second table, enter a MAC address that is forbidden or permitted to connect, such as AA:AA:AA:AA:AA:AA.
    4) Click **Add**. The MAC address goes into the following list.

4. Click **Save** to make these settings take effect.



↘ When you want to forbid or permit some wireless users that are connected to the device, do as follows:



1. Log in to the device's web UI.
2. Go to **Wireless > Access Control**.
3. Set up the access control rule.
   1) SSID: Select a SSID to perform this function.
   2) MAC Filter Mode: Select an option. For example, if you want to forbid certain wireless users to connect to this device, please select *Deny*.
   3) In the first table, if you want to deny or allow a wireless client, click **Add** of the item. The wireless client's MAC address goes into the third table.
4. Click **Save** to make these settings take effect.

↘ If you want to delete a wireless user from the access control rule, click **Delete** and follow on-screen instructions.

4.4.6 QVLAN

On this page, you can enable/disable and set up VLAN parameters. With this device and a switch with QVLAN function, you can manage different wireless network.

Parameter description

Parameter	Description
Enable	Enable of disable VLAN function of the device.
PVID	It's the default VLAN ID of the trunk port. When VLAN-untagged packets arrive at the trunk port, the trunk port marks the PVID as a tag to the packets.
Management VLAN	Set up this device's management VLAN ID. By default it is 1. After the management VLAN is modified, only when the management computer is in the same VLAN can it access this device's web UI.
Trunk Port	This device's trunk port allows all VLANs to get through. Port 0 is on the rear panel and port 1 is on the front panel.
Wired LAN Port	Set up VLAN ID of the available wired LAN port(s). When a port is set to a trunk port, it is not available to be set a certain VLAN ID.
2.4G SSID	Set up VLAN ID of the listed SSIDs. By default it is 1000. The range is 1 ~ 4094. After you set up a VLAN ID for a SSID, the SSID only allows tagged packets in the same VLAN or untagged packets to get through.

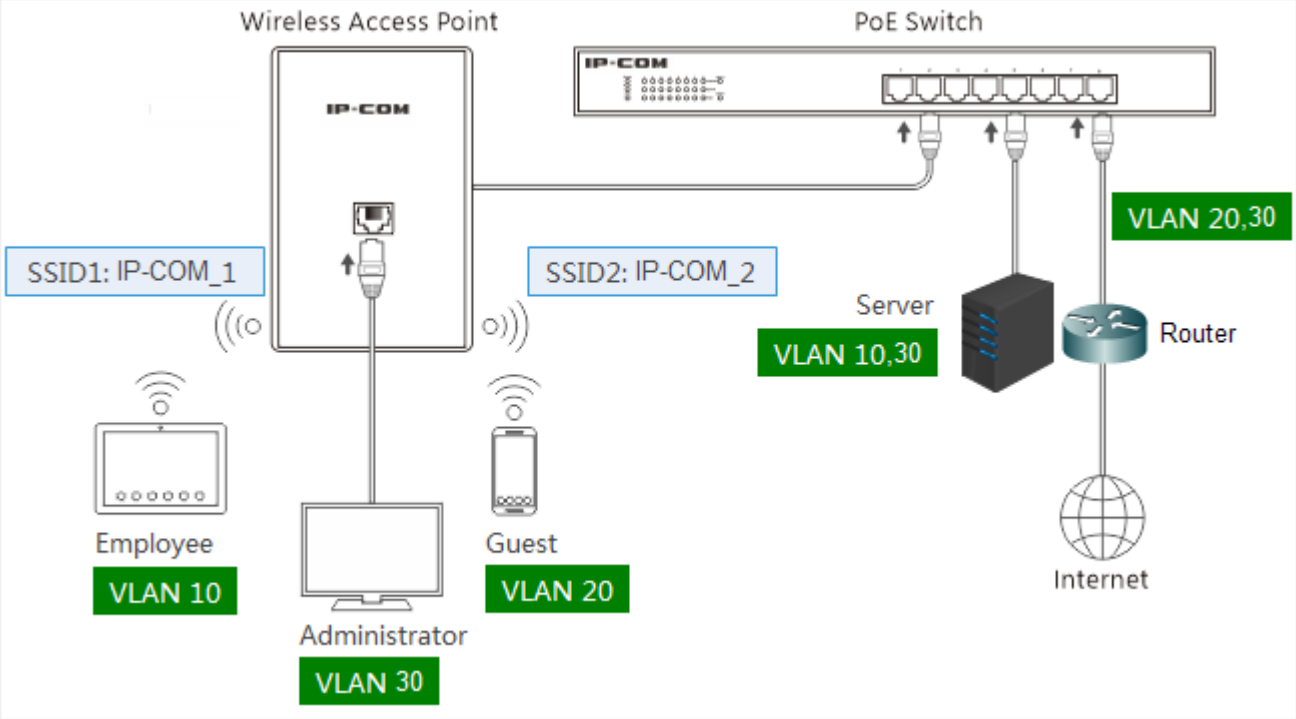
The detailed receiving and sending procedures on each type of port are described as below:

<table>
<tr><th rowspan="2">Port Type</th><th colspan="2">Procedures on receiving packets</th><th rowspan="2">Procedures on sending packets</th></tr>
<tr><th>Tagged packets</th><th>Untagged packets</th></tr>
<tr><td>Access port</td><td rowspan="2">Tagged packets are forwarded to other ports with the same VLAN ID as the tagged packets.</td><td rowspan="2">Untagged packets are forwarded to other ports with the same VLAN ID as the PVID of the receiving port.</td><td>Delete the packets' tag and send the packets to a network device that doesn't support VLAN function.</td></tr>
<tr><td>Trunk port</td><td>VLAN ID = PVID, delete tag and send.
VLAN ID ≠PVID, keep tag and send.</td></tr>
</table>

Application scenario

In the following application, employees in the hotel can only connect to SSID1 to access the server, guests of the hotel can only connect to SSID2 to access the internet, but the administrator can access both the server and the internet. In this case, we can set up VLAN 10 for SSID1 and the server, VLAN 20 for SSID2 and the router, and VLAN 30 for the administrator, the server and the router.

Note that the server and the router in this application must support QVLAN function. If not, you need to add a layer 3 switch to achieve the requirements.



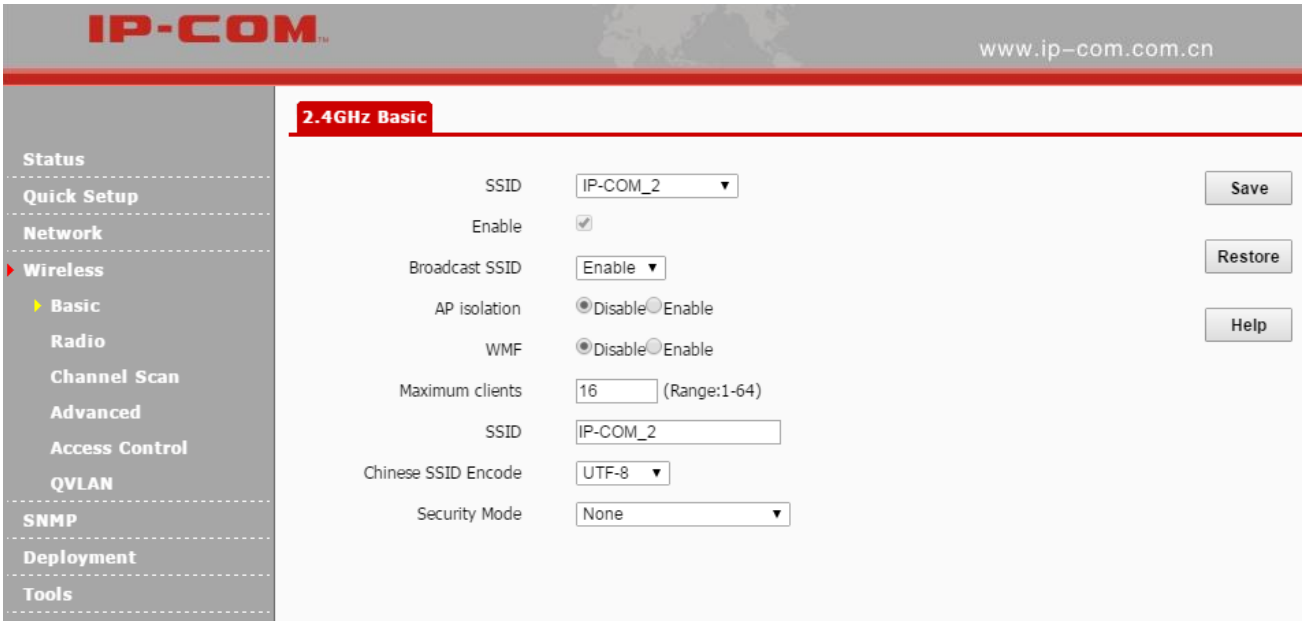
Configure VLAN function

To achieve the requirements, you need to configure the following devices.

- Configure this device
- Configure the PoE switch
- Configure the server
- Configure the router

Configure this device:

1. Log in to the device's web UI.
2. Go to **Wireless > Basic**. Enable both two SSIDs, and modify the two SSID name to *IP-COM_1* and *IP-COM_2* respectively.



3. Go to **Wireless > QVLAN**, and set up the parameters.

1) Enable: Check the box to enable QVLAN function.

2) PVID: Keep the default value *1*.

3) Management VLAN: Keep the default value *1*.

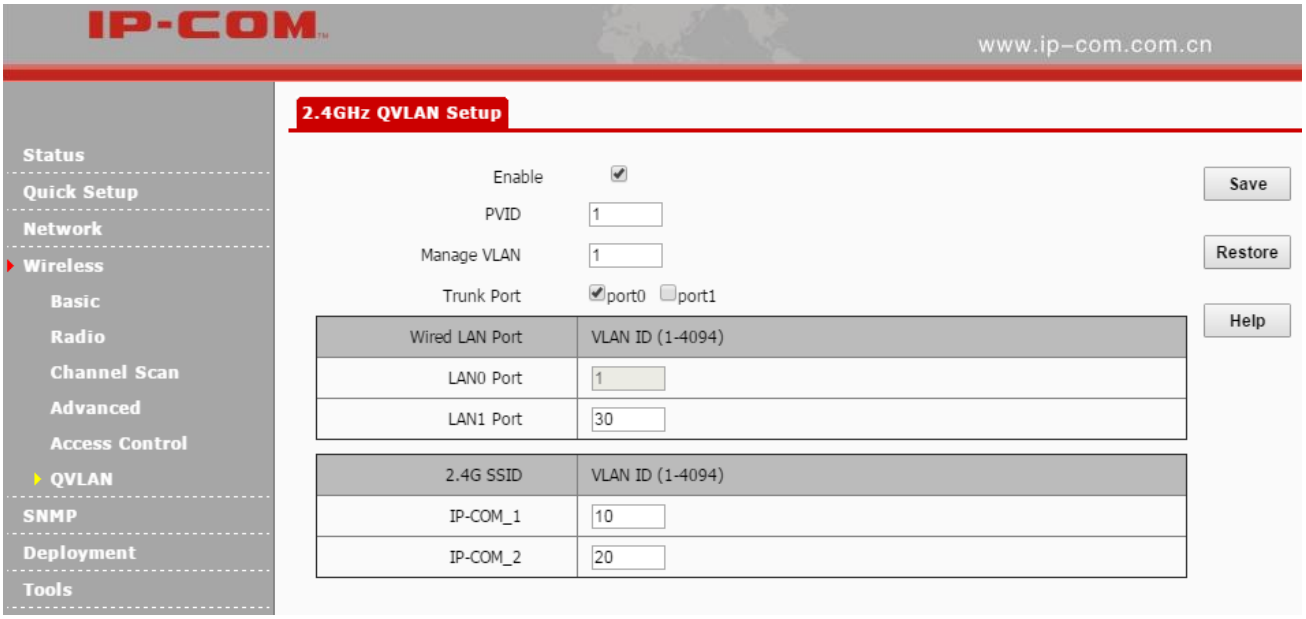
4) Trunk Port: Only select *port0*.

5) LAN1 Port: Enter *30*.

6) IP-COM_1: Enter *10*.

7) IP-COM_2: Enter *20*.

8) Click **Save** to make these settings take effect.



Configure the PoE switch:

Switch Port	Allowed VLAN ID	Port Type	PVID
Connect to this device	1, 10, 20, 30	Trunk port	1
Connect to the server	1,10, 30	Trunk port	1
Connect to the router	1,20, 30	Trunk port	1

Configure the server:

The port connecting to the PoE switch should allow VLAN 10 and VLAN 30 to get through.

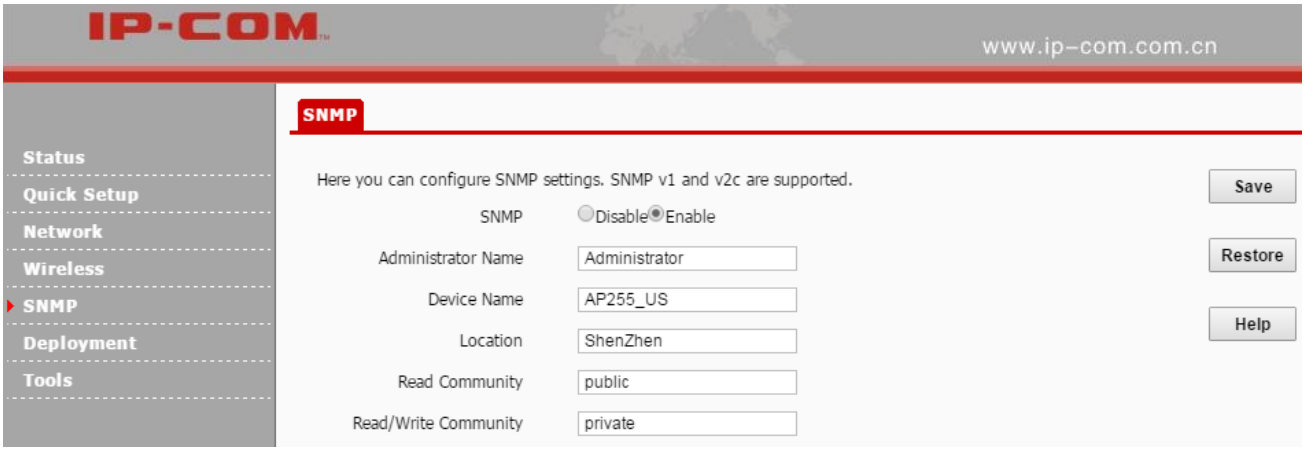
Configure the router:

The port connecting to the PoE switch should allow VLAN 20 and VLAN 30 to get through.

4.5 SNMP

SNMP (Simple Network Management Protocol) is now the most widely used network management protocol on TCP/IP network. Through SNMP, A NMS (Network Management Station) can remotely manage all SNMP agents, including monitoring network status, modifying network device, receiving network alarm events, and so on.

Regardless of different devices' physical feature, SNMP can achieve automation management of devices from different manufactories, which is especially suitable for small-scale, high-speed and low-cost network.



Parameter description:

Parameter	Description
SNMP	Enable or disable this function.
Administrator Name, Device Name, Location	For these three parameters, please enter their actual values. These parameters are only used for the SNMP host to recognize this device. When this device and the SNMP host start to negotiate, they don't need the three parameters.
Read Community	It is used to negotiate with the SNMP host, that is to say, this parameter on both the device and the SNMP host must be the same. The default is public.

Read/Write Community	It is used to negotiate with the SNMP host, that is to say, this parameter on both the device and the SNMP host must be the same. The default is private.

4.6 Tools

System tools contain the following contents:

- Firmware Upgrade: Through this function, the device obtains a higher firmware version.
- Time & Date: To make time-related function, such as Logs and Time Reboot, work properly, you must ensure that the device's system time is correct. Through this section, you can synchronize the device's time with the internet or manually set up the time. Besides, you can set up login timeout period, during which if you don't have any configuration on the web UI you need to login again.
- Logs: Through this section, you can view the device's logs, and add log servers to receive the logs.
- Configuration-Backup & Restore: On this page, you can backup and restore the existing configurations so that when your device's performance goes down because of improper configuration, or after you restore the device to factory default, you can restore your device to a previous working configuration.
- Configuration-Restore to Factory Default: When you forget the login username, password or IP address, or when you have problems of accessing the internet but can't find a solution, you can restore the device to factory default.
- Administrator: On this page, you can modify the administrator or common user's login username and password, and can delete the common user account.
- Diagnostics-Ping: Ping is a commonly used diagnosis and troubleshooting command. It can detect whether the device is reachable to a specified IP address or domain name. If it is reachable, the destination IP address returns response packets.
- Reboot: When your device has worked for a long time, we recommend that you reboot the device to make it work faster.
- Time Reboot: It is used to reboot device circularly or regularly.
- LED: If the LED light disturbs you, you can disable the LED on this page.
- Uplink Detection: On this page, you can circularly detect whether the device is reachable to the specified hosts. If the device loses its uplink connectivity, it forces the clients to re-associate with another device by disabling SSID broadcast function.

4.6.1 Firmware Upgrade

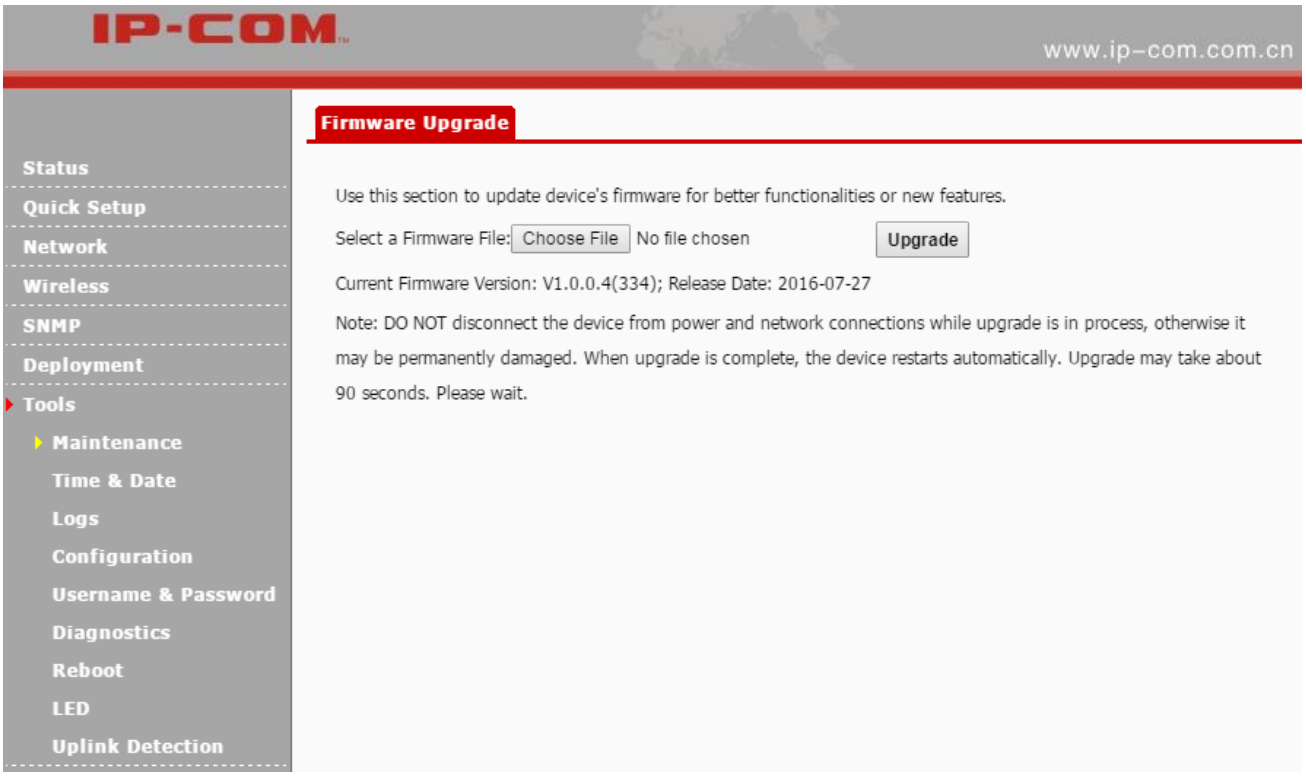
Through this function, the device obtains a higher firmware version. If the device runs normally, we don't recommend that you perform firmware upgrade.

To upgrade a firmware for the device:

Note

Do not disconnect the power supply during the upgrade process, otherwise it may cause damage to the AP! In case of sudden power failure, re-upgrade firmware. If you cannot enter the web UI after a sudden power failure, contact our technical support, see Technical support.

1. Go to http://www.ip-com.com.cn to download the latest version of the firmware of the device.
2. Decompress the downloaded file using a decompress software and place it in a corresponding directory.
3. Log in to the device's web UI.
4. Go to **Tools > Firmware Upgrade**.
5. Click **Choose File** (different characters may be displayed for different browses) to load the decompressed upgraded software.
6. Click **Upgrade** and perform operations according to the prompt on the page.



After the progress bar is over, enter this page to view the displayed Current Firmware Version, judging that the firmware is successfully upgraded.

4.6.2 Time & Date

To make time-related function, such as Logs and Time Reboot, work properly, you must ensure that the device's system time is correct. Through this section, you can synchronize the device's time with the internet or manually set up the time. Besides, you can set up login timeout period, during which if you don't have any configuration on the web UI you need to login again.

- Synchronize system time with the internet
- Manually set up system time
- Page Timeout

Note

Time information will be lost after power failure of the AP. If Synchronized with the internet is enabled, after the device is started and connected to the internet, it will resynchronize correct time from the internet.

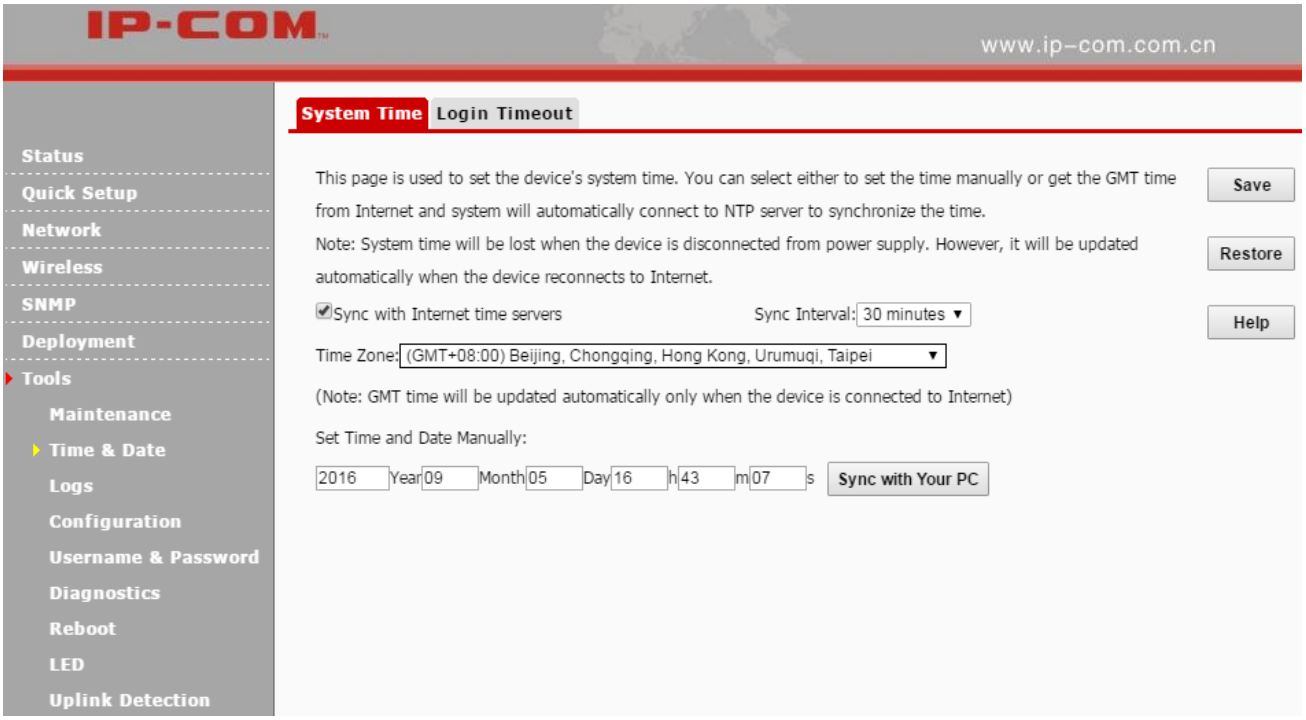
Synchronize system time with the internet

The method for getting AP system time is synchronized with the internet by default. To ensure correct system time, the AP will automatically calibrate its system time towards the time server on the internet every time slot set in Sync Interval.

To synchronize system time with the internet:

1. Log in to the device's web UI.
2. Go to **Tools > Time & Date**.
3. Check the box of *Sync with Internet time servers*.
4. Sync Interval: Select a time interval. You can keep the default value.
5. Time Zone: Select a time zone in your region.
6. Click **Save** to finish settings.

After the device is successfully connected to the internet, the system will get standard GMT time from the internet.

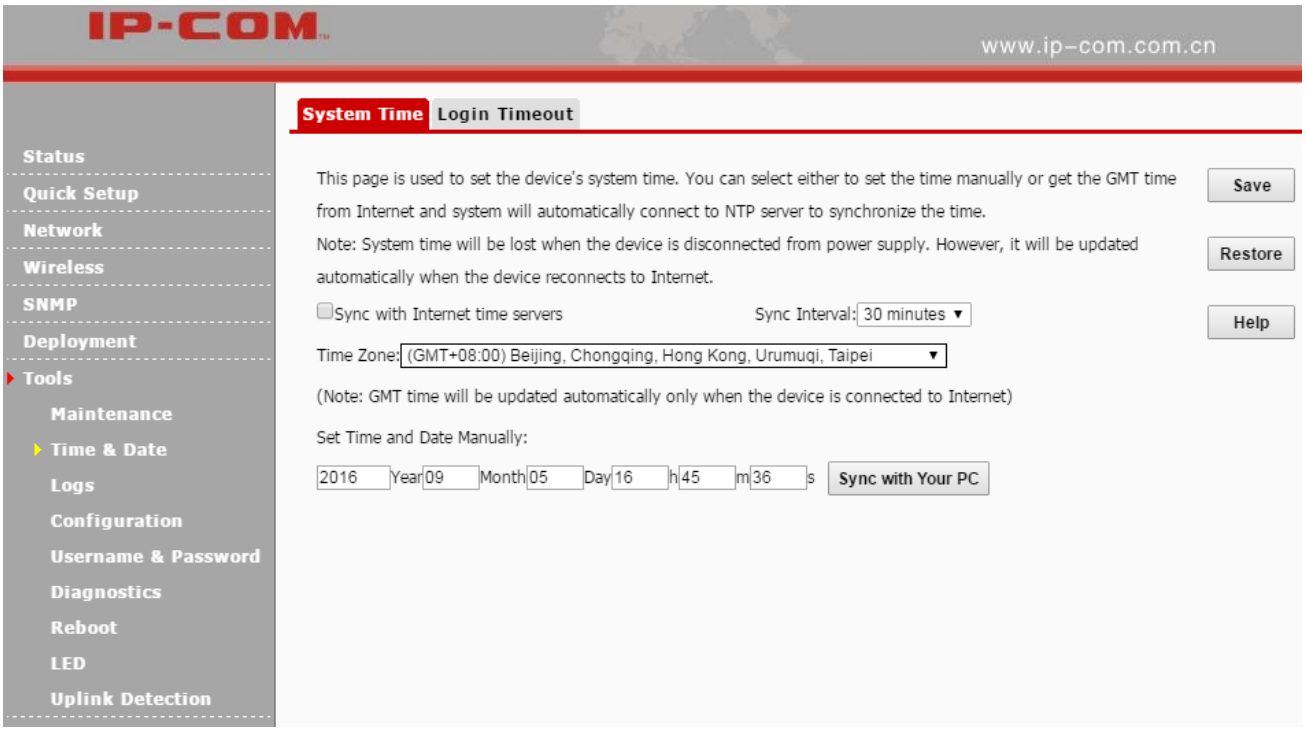


Manually set up system time

If your device is not connected to the internet, you can use this method. Make sure your PC's time is correct.

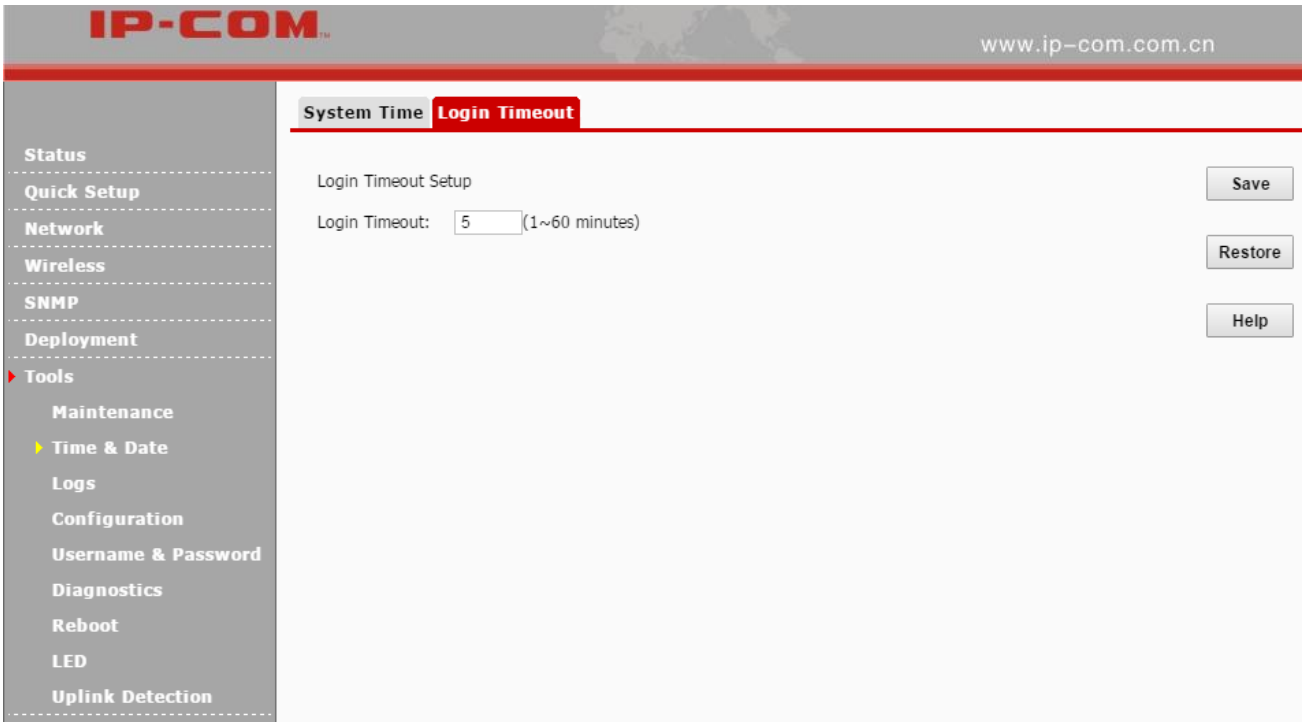
To manually set up system time:

1. Log in to the device's web UI.
2. Go to **Tools > Time & Date**.
3. Uncheck the box of *Sync with Internet time servers*.
4. Click *Sync with Your PC*.
5. Click **Save** to finish settings.



Page Timeout

On this page, you can set up login timeout period, during which if you don't have any configuration on the web UI you need to login again.



4.6.3 Logs

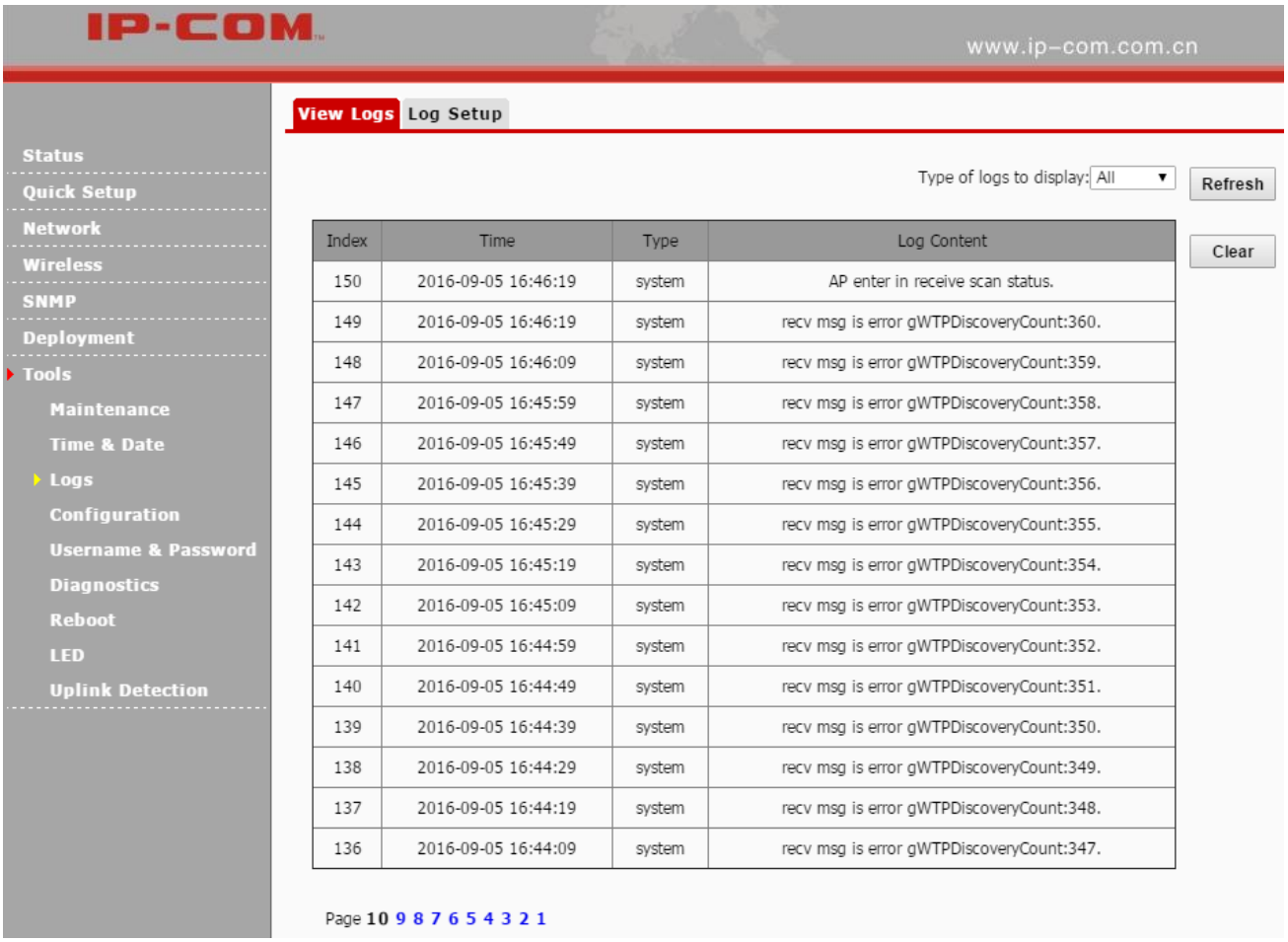
Through this section, you can view the device's logs, and add log servers to receive the logs. To make this function work properly, go to **Tools > Time & Date** to make sure your device's system time is correct.

View Logs

On this page, you can view the device's system logs.

Refresh: If you want to see the latest logs, click **Refresh**.

Clear: If you think that the logs displayed are not helpful, click **Clear**.



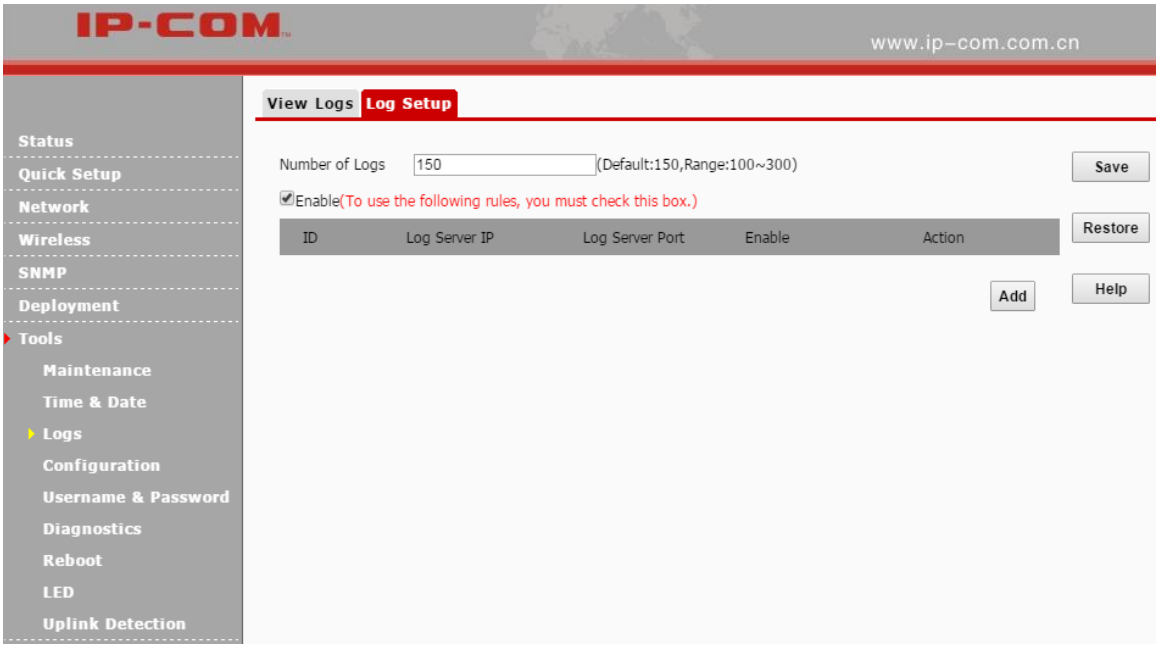
Log Setup

On this page, you can add log servers to receive the logs. In this way, you can see the logs on the log server instead of on the web UI.

Number of Logs: It is used to set up how many pieces of logs can be displayed on page **View Logs**.

To add a log server:

1. Log in to the device's web UI.
2. Go to **Tools > Logs > Log Setup**.
3. Enable: Check this box to enable log server function.
4. Click **Save**.



5. Click **Add**.

6. On the pop-up window, set up the parameters.

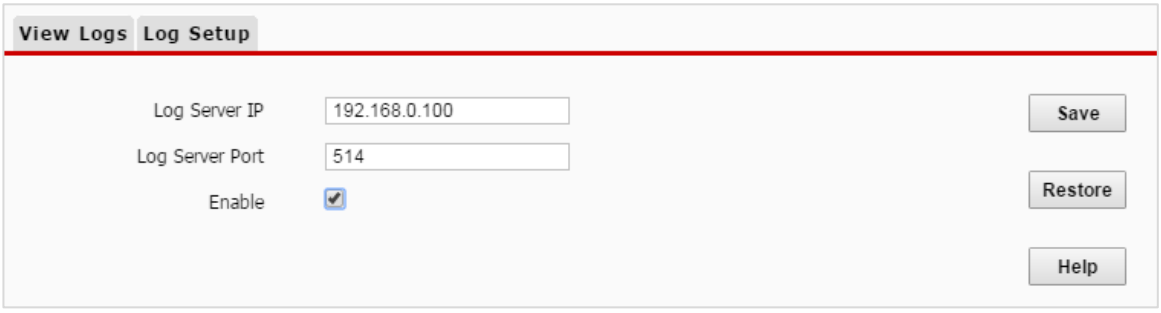
   1) Log Server IP: Enter an IP address that receives the device's logs.

   2) Log Server Port: Enter the log server's port.

      Make sure that this port on the device and the log server must be the same.

   3) Enable: Check the box to enable the added log server.

   4) Click **Save**.



4.6.4 Configuration-Backup & Restore

On this page, you can backup and restore the existing configurations so that when your device's performance goes down because of improper configuration, or after you restore the device to factory default, you can restore your device to a previous working configuration.

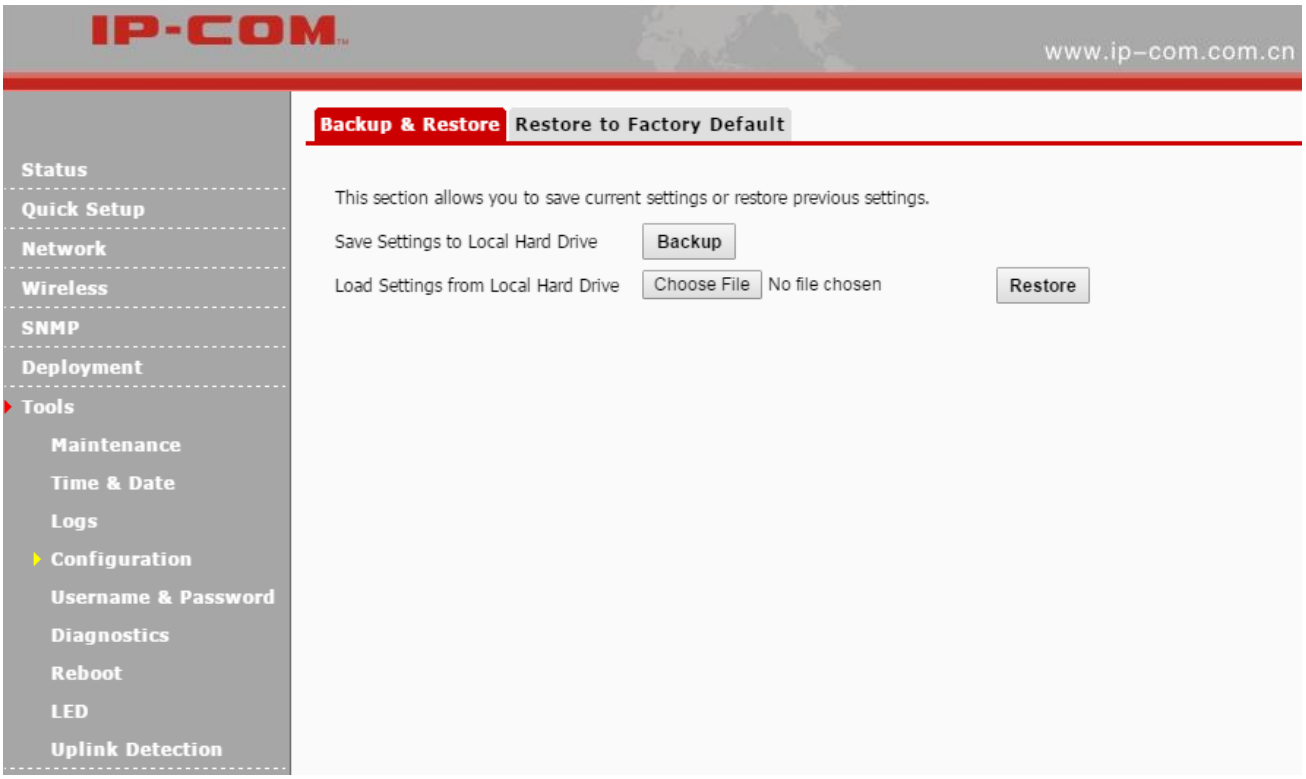
- To backup configurations
- To restore configurations

To backup configurations:

1. Log in to the device's web UI.

2. Go to **Tools > Configuration > Backup & Restore**.

3. Click **Backup**.
4. On the pop-up window, click **OK**.



To restore configurations:

1. Log in to the device's web UI.
2. Go to **Tools > Configuration > Backup & Restore**.
3. Click **Choose Flie** and choose and load the device backup file.
4. Click **Restore**, and perform operations by referring to the prompt in the computer, and wait until the progress bar is over.

4.6.5 Configuration-Restore to Factory Default

When you forget the login username, password or IP address, or when you have problems of accessing the internet but can't find a solution, you can restore the device to factory default.

Note

- Reset to Factory Defaults means that all previous settings will be lost and the AP must be reset.
- Ensure the device power supply is normal in the process of Reset to Factory Defaults.

You can restore the device to factory default by the following methods:

- Using web UI
- Using RST button

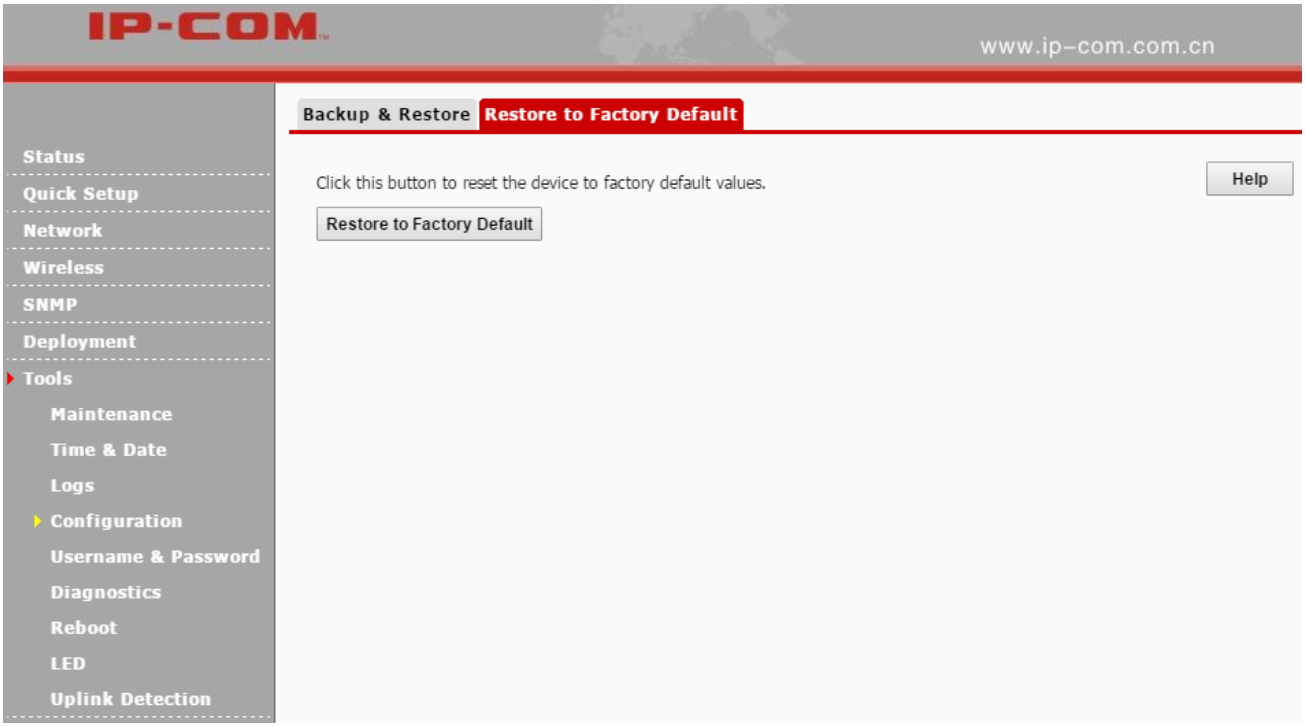
After you restore your device to factory default, you can use the following default value to log in to the web UI:

- Default login IP address: 192.168.0.254

- Default user name and password: admin

Using web UI:

1. Log in to the device's web UI.
2. Go to **Tools > Configuration > Restore to Factory Default**.
3. Click **Restore to Factory Default** and follow on-screen instructions.



Using RST button:

If you forget the login username, password or IP address, you can use **RST** button to restore your device to factory default, do as follows.

In power-up state, open the device cover, press and hold the button for 15s and then release it.

4.6.6 Username & Password

On this page, you can modify the administrator or common user's login username and password, and can delete the common user account. To prevent others from using the default login information to enter the web UI to modify configurations, we strongly recommend that you modify the login user name and password.

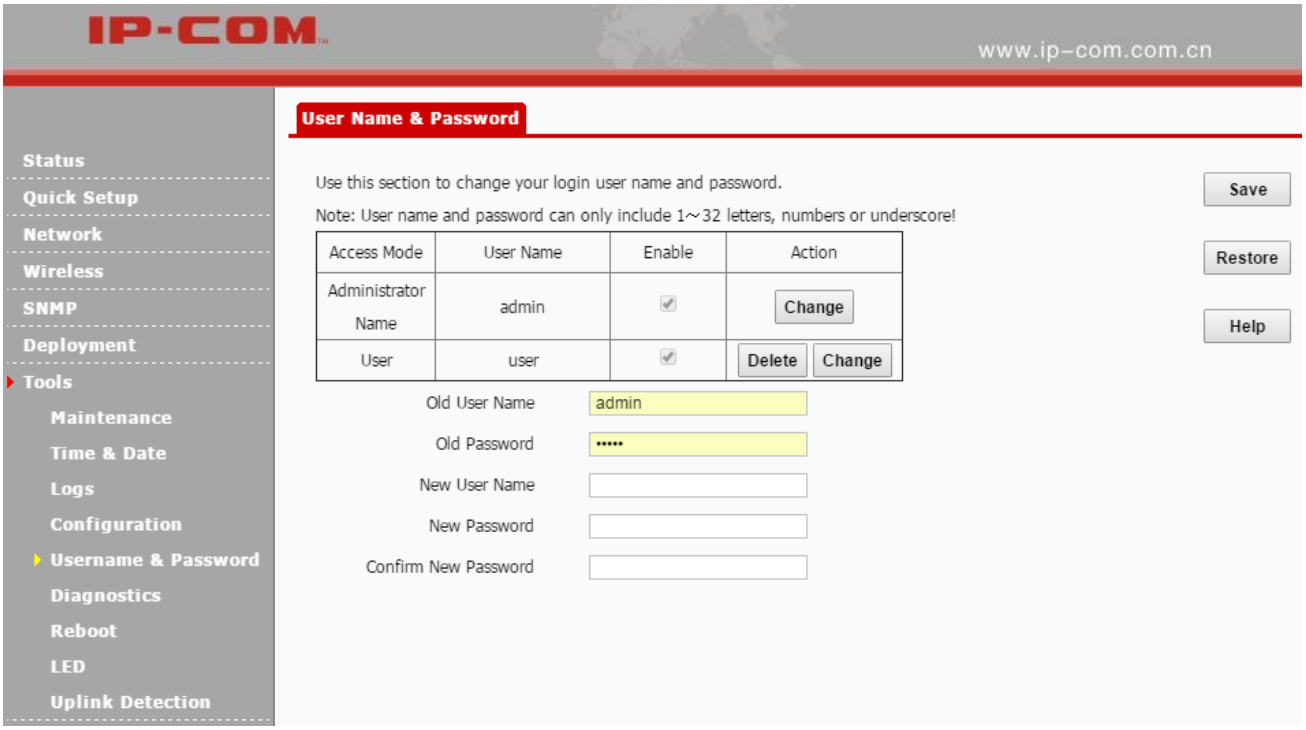
This device supports two account types: administrator and user.

- Administrator: This account has all authorities to manage the device. Both the user name and password are *admin*.
- User: This account can only view the configurations and cannot modify any configurations. Both the user name and password are *user*.

To change the administrator or the user's login information:

1. Log in to the device's web UI.
2. Go to **Tools > Administrator**.
3. On the corresponding item, click **Change**.

4. Enter the new user name and password.
5. Click **Save** to make these settings take effect.



To delete the user account, on the item of the user account, click **Delete** and click **Save**.

After you delete the user account, you can add a new user account.

4.6.7 Diagnostics-Ping

Ping is a commonly used diagnosis and troubleshooting command. It can detect whether the device is reachable to a specified IP address or domain name. If it is reachable, the destination IP address returns response packets.

To check whether an IP or domain name is reachable, do as follows:

1. Log in to the device's web UI.
2. Go to **Tools > Diagnostics**.
3. In the box, after the *ping*, enter the destination IP address or domain name, such as *www.google.com*.
4. Click **Ping.**

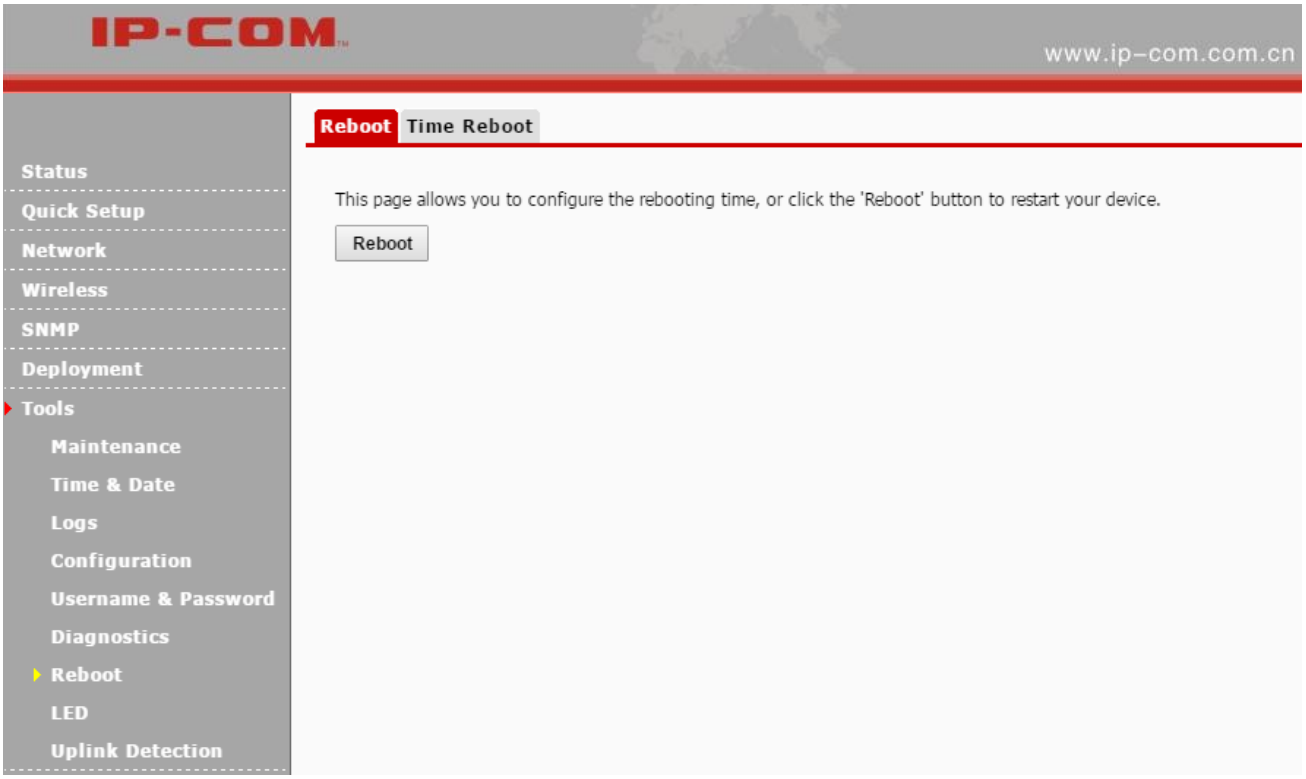
Wait a moment and the results will be displayed on the page.

4.6.8 Reboot

When your device has worked for a long time, we recommend that you reboot the device to make it work faster.

To reboot the device:

1. Log in to the device's web UI.
2. Go to **Tools > Reboot**.
3. Click **Reboot** and follow on-screen instructions.



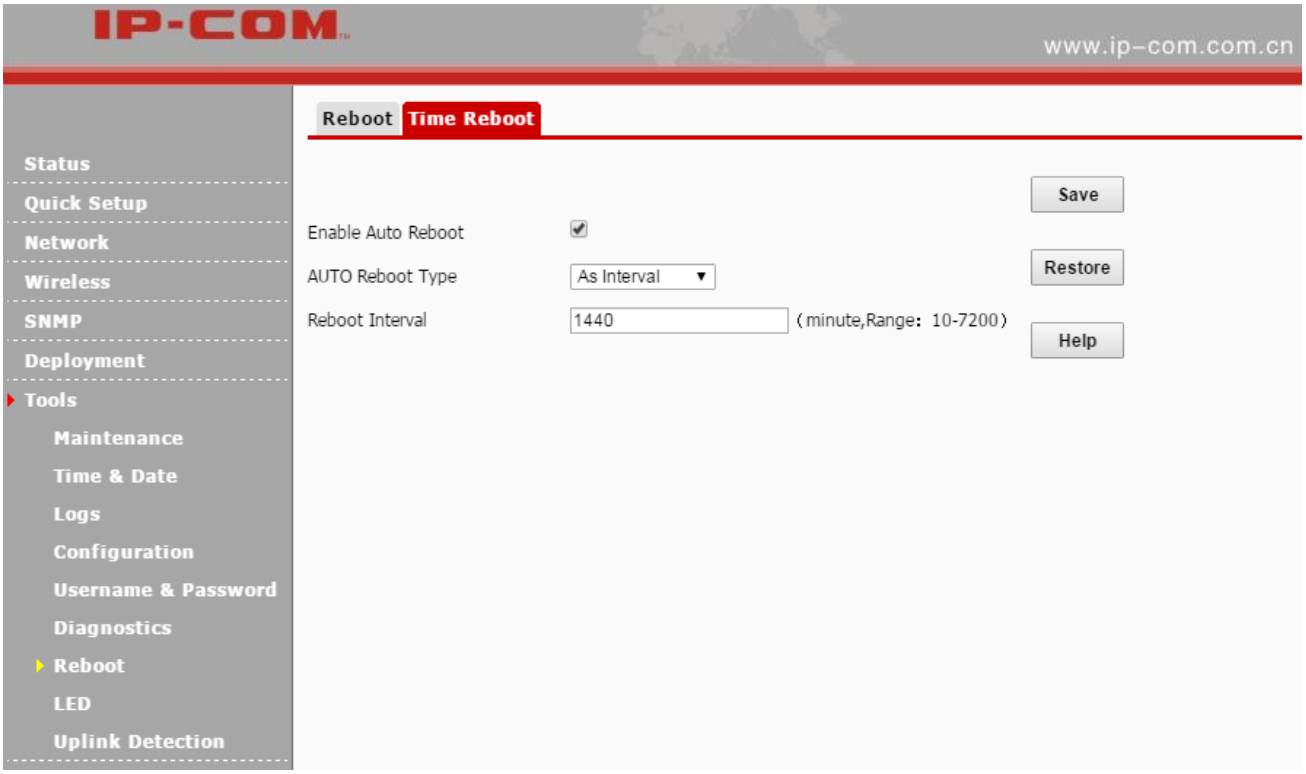
4.6.9 Time Reboot

It is used to reboot device circularly or regularly.

- To reboot the device circularly
- To reboot the device regularly

To reboot the device circularly:

1. Log in to the device's web UI.
2. Go to **Tools > Reboot > Time Reboot**.
3. Set up the parameters.
   1) Enable Auto Reboot: Check the box to enable this function.
   2) AUTO Reboot Type: Select *As Interval*.
   3) Reboot Interval: Enter an interval during which the device reboots automatically.
4. Click **Save** to make these settings take effect.



To reboot the device regularly:

1. Log in to the device's web UI.
2. Go to **Tools > Reboot > Time Reboot**.
3. Set up the parameters.
   1) Enable Auto Reboot: Check the box to enable this function.
   2) AUTO Reboot Type: Select *As Scheduled*.
   3) Day: Select some or all days to reboot the device.
   4) Time: Enter the moment that the device starts to reboot.
4. Click **Save** to make these settings take effect.

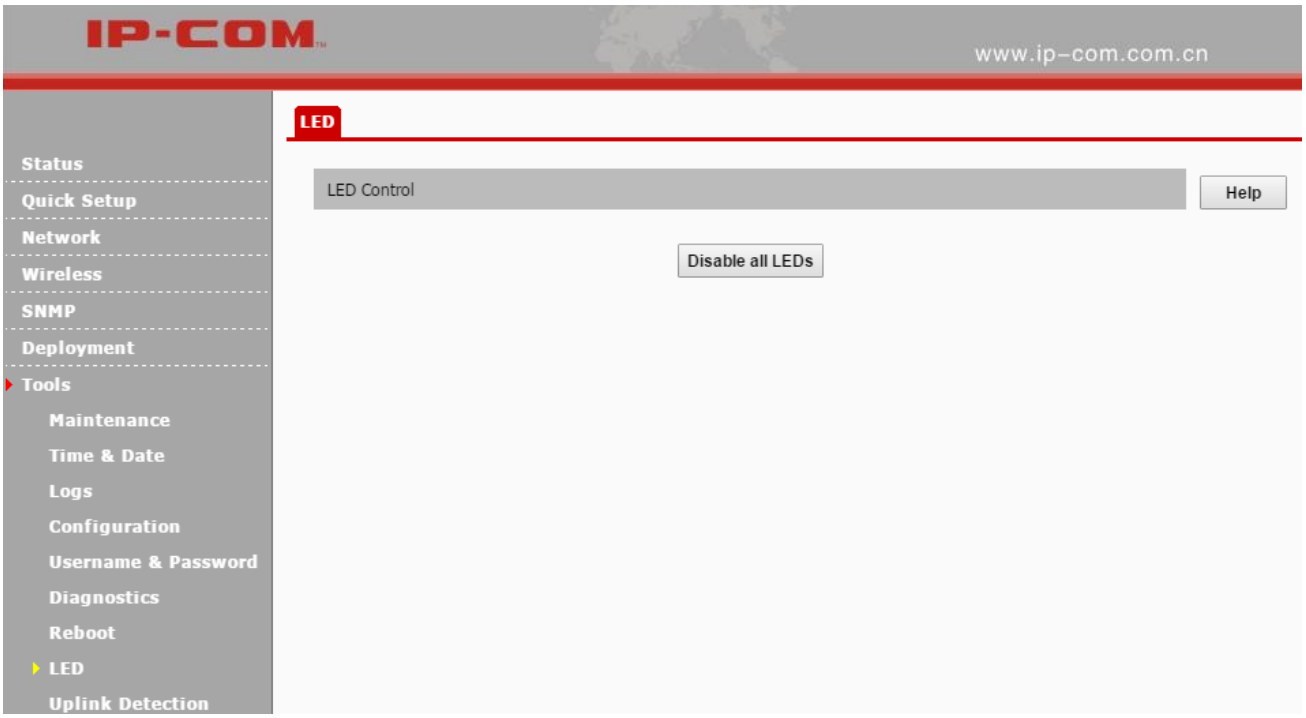
4.6.10 LED

If the LED light disturbs you, you can disable the LED on this page.

To disable the device's LED:

1. Log in to the device's web UI.
2. Go to **Tools > LED**.
3. Click **Disable all LEDs**.

After you disable the device's LED, you can enable it on this page.

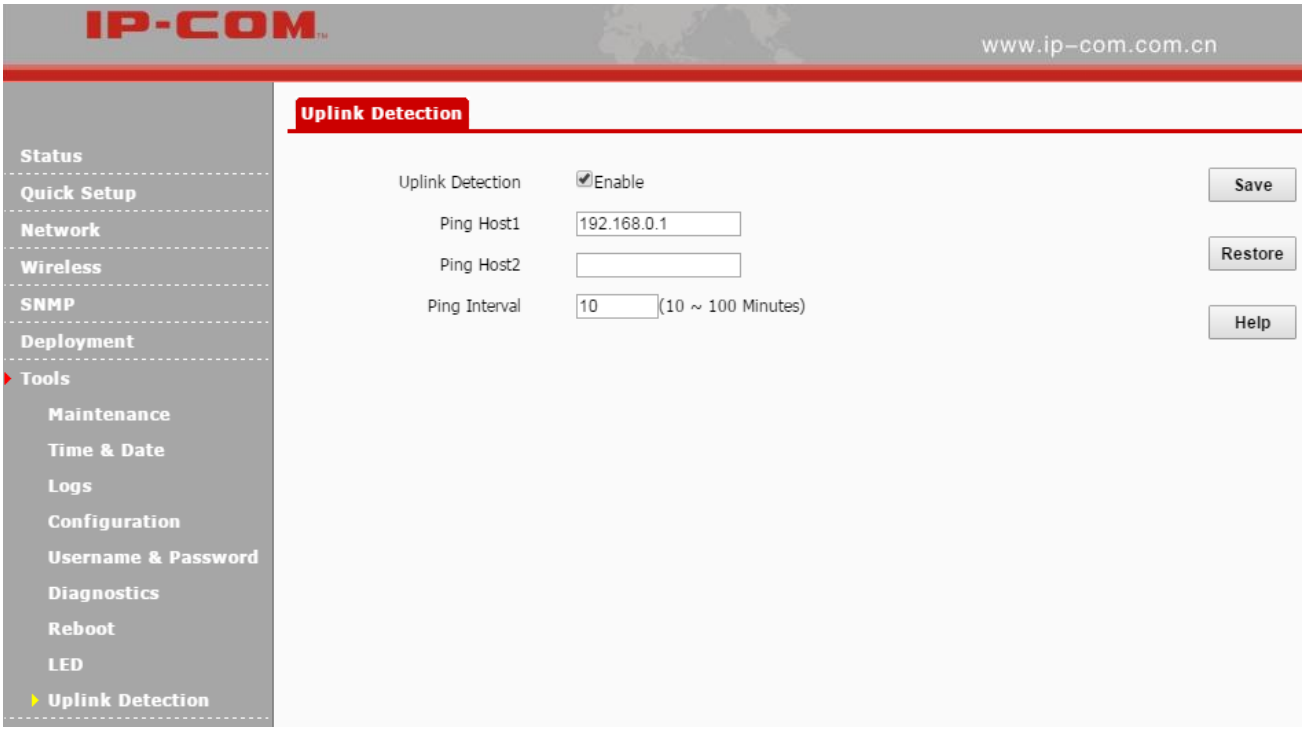


4.6.11 Uplink Detection

On this page, you can circularly detect whether the device is reachable to the specified hosts. If the device loses its uplink connectivity, it forces the clients to re-associate with another device by disabling SSID broadcast function.

To enable uplink detection:

1. Log in to the device's web UI.
2. Go to **Tools > Uplink Detection**.
3. Set up the parameters.
   1) Uplink Detection: Check the box to enable this function.
   2) Ping Host1/Host2: Enter an IP address. Usually it's the device's gateway, that is to say, the uplink router's LAN IP address.
   3) Ping Interval: Set up an interval that the device starts to ping.
4. Click **Save** to make these settings take effect.



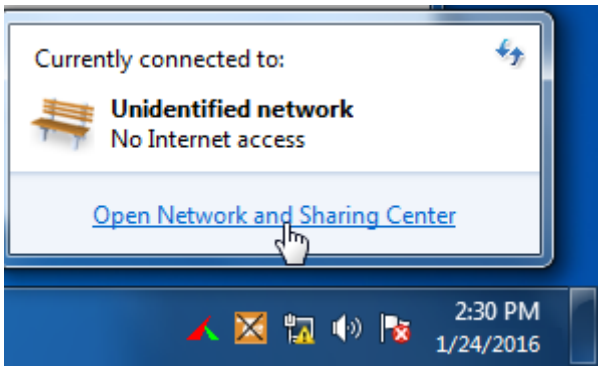
Appendix

Configure your computer

Here we take Windows 7 as an example.

Step 1: Click the icon  on the bottom right corner of your desktop.

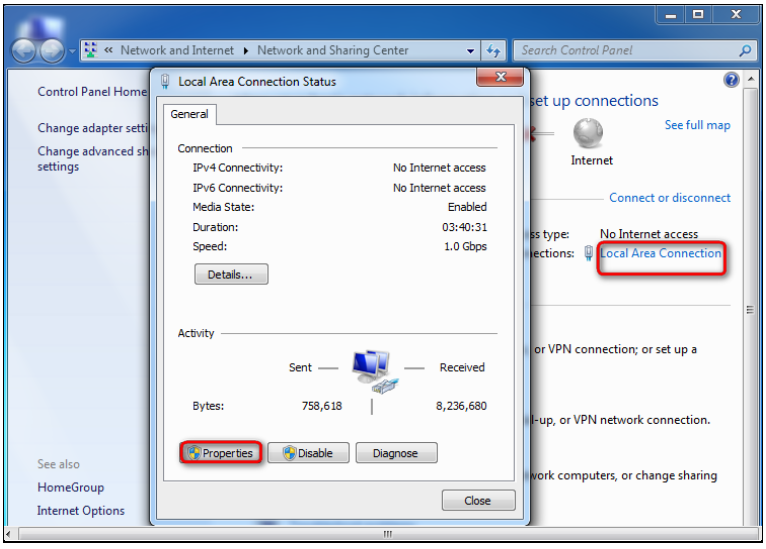
Step 2: Click **Open Network and Sharing Center**.



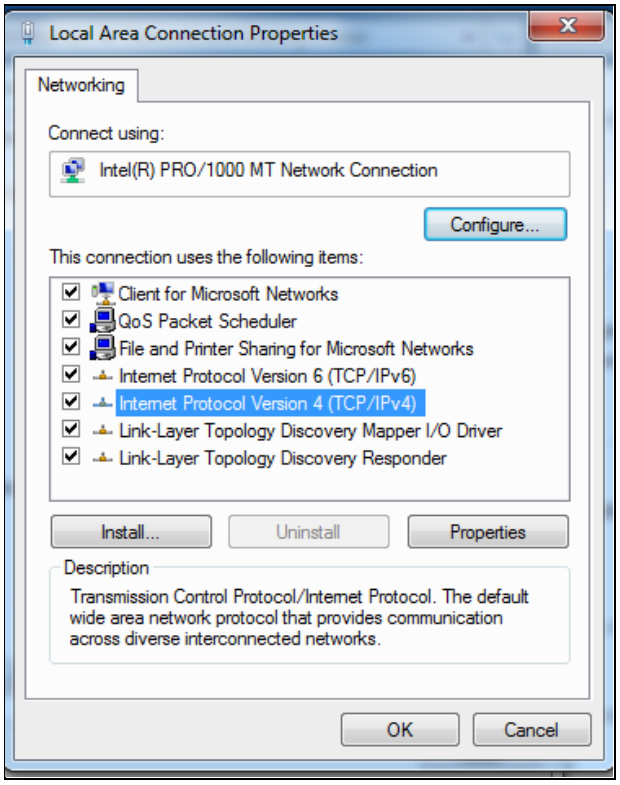
Tips

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**.

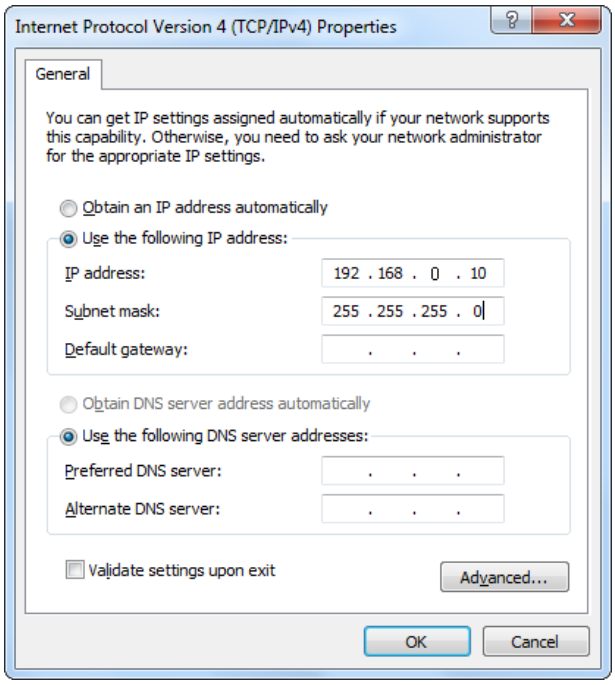
Step 3: Click **Local Area Connection > Properties**.



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



Step 5: Select **Use the following IP address**, type in the IP address: **192.168.2.x** (2~253), Subnet mask: **255.255.255.0** and click **OK**.



Step 6: Click **OK** on the **Local Area Connection Properties** window (see **Step 4** for the screenshot).

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.

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.

Declaration of Conformity

Hereby, IP-COM NETWORKS Co., LTD. declares that the radio equipment type AP255_US is in compliance with Directive 2014/53/EU.

The full text of the EU declaration of conformity is available at the following internet address: http://www.ip-com.com.cn/en/ce.html

Operate Frequency：2412-2472 MHz EIRP Power(Max.)：19.8 dBm Software Version：v1.0.0.4

RECYCLING

This product bears the selective sorting symbol for Waste electrical and electronic equipment (WEEE). This means that this product must be handled pursuant to European directive 2012/19/EU in order to be recycled or dismantled to minimize its impact on the environment.

User has the choice to give his product to a competent recycling organization or to the retailer when he buys an new electrical or electronic equipment.

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.