User Guide

For TP-Link Omada Access Points

EAP110 / EAP115 / EAP225 / EAP245 / EAP110-Outdoor
EAP225-Outdoor / EAP115-Wall / EAP225-Wall / EAP230-Wall / EAP235-Wall

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About This User Guide

When using this guide, notice that features available in the EAP may vary by model and software version. Availability of the EAP may also vary by region or ISP. All images, steps, and descriptions in this guide are only examples and may not reflect your actual experience.

Some models featured in this guide may be unavailable in your country or region. For local sales information, visit *https://www.tp-link.com*.

The information in this document is subject to change without notice. Every effort has been made in the preparation of this document to ensure the accuracy of the contents, but all statements, information, and recommendations in this document do not constitute the warranty of any kind, express or implied. Users must take full responsibility for their application of any product.

Conventions

Unless otherwise noted, the introduction in this guide takes EAP245 as an example.

Wireless Speed, Range and Connected Devices Disclaimer

Maximum wireless transmission rates are the physical rates derived from IEEE Standard 802.11 specifications. Range and coverage specifications along with the number of connected devices were defined according to test results under normal usage conditions. Actual wireless transmission rate, wireless coverage, and number of connected devices are not guaranteed, and will vary as a result of 1) environmental factors, including building materials, physical objects and obstacles, 2) network conditions, including local interference, volume and density of traffic, product location, network complexity, and network overhead and 3) client limitations, including rated performance, location, connection quality, and client condition.

MU-MIMO Disclaimer (for EAP225/EAP245/EAP225-Wall/EAP230-Wall/EAP235-Wall/EAP225-Outdoor)

MU-MIMO capability requires client devices that also support MU-MIMO.

Seamless Roaming Disclaimer (for EAP225/EAP245/EAP225-Outdoor)

Seamless roaming requires both the access point and client devices to support 802.11k and 802.11v protocols.

Lightning and Electro-Static Discharge Protection Disclaimer (for EAP110-Outdoor/EAP225-Outdoor)

Protection against lightning and electro-static discharge may be achieved through proper product setup, grounding and cable shielding. Refer to the instruction manual and consult an IT professional to assist with setting up this product.

More Info

Some models featured in this guide may be unavailable in your country or region. For local sales information, visit *https://www.tp-link.com*.

For technical support, latest software, and management app, visit *https://www.tp-link.com/support*.

The Quick Installation Guide can be found where you find this guide or inside the package of the EAP.

Specifications can be found on the product page at *https://www.tp-link.com*.

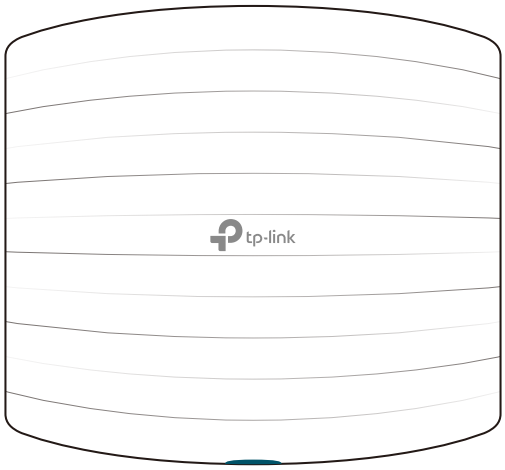
To ask questions, find answers, and communicate with TP-Link users or engineers, please visit *https://community.tp-link.com* to join TP-Link Community.

If you have any suggestions or needs on the product guides, welcome to email *techwriter@tp-link.com.cn*.

Overview

Omada series products provide wireless coverage solutions for small-medium business and households. They can either work independently as standalone APs or be centrally managed by Omada Software Controller or Omada Cloud Controller (OC200), providing a flexible, richly-functional but easily configured wireless network for small and medium business and households.

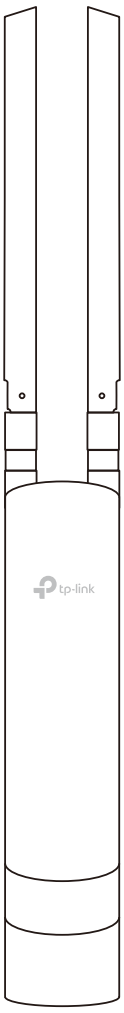
The following figure shows the top view of EAP110/EAP115/EAP225/EAP245:



The following figure shows the front view of EAP115-Wall/EAP230-Wall:

The following figure shows the front view of EAP225-Wall/EAP235-Wall:

The following figure shows the front view of EAP110-Outdoor/EAP225-Outdoor:



1 Quick Start

This chapter introduces how to build a wireless network using the EAPs and how to complete the basic settings. Follow the steps below:

1. Determine the Management Method

2. Build the Network Topology

3. Log In to the EAP

4. Configure and Manage the EAP

1.1 Determine the Management Method

Before building the wireless network, choose a proper method to manage the EAP based on your actual network situation. Omada EAP supports two configuration option: Controller Mode or Standalone Mode.

- **Controller Mode**

If you want to establish a large-scale wireless network and have mass EAPs to be managed, Controller Mode is recommended. In Controller Mode, all EAPs can be centrally configured and monitored via Omada Software Controller or Omada Cloud Controller (OC200).

For detailed instructions about the network topology in such situation and how to use Omada Software Controller or an OC200, refer to the User Guide of Omada Controller or OC200. To download Omada Software Controller and its User Guide, go to *https://www.tp-link.com/download/EAP-Controller.html*. And the User Guide of OC200 can be downloaded at *https://www.tp-link.com/en/download/OC200.html*.

- **Standalone Mode**

If you have a relatively small-sized wireless network and only one or just a small number of EAPs need to be managed, Standalone Mode is recommended. In Standalone Mode, each EAP can be configured singly by the Omada app or the web browser on its own management web page.

Omada app is a mobile application designed for conveniently managing Omada series EAP products. For detailed instructions about how to use Omada app to manage your network, please refer to the appendix of this User Guide: *Appendix: Omada App*.

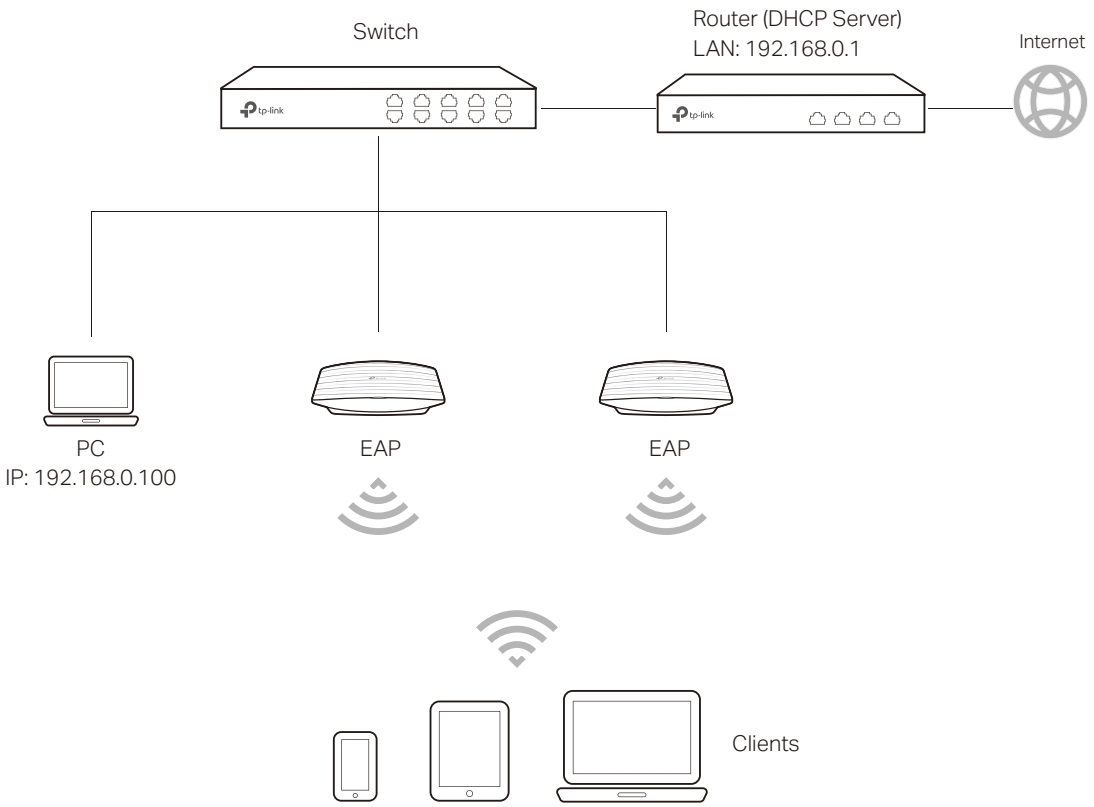
This User Guide introduces how to configure the Standalone EAP on its web page.

Note:

The web page of an EAP is inaccessible while it is managed by the Omada controller. To turn the EAP back to Standalone Mode and access its web page, you can Forget the EAP on the Omada controller to reset the EAP or simply close the controller.

1.2 Build the Network Topology

To manage the EAPs in Standalone mode, refer to the following topology.



- The router is the gateway of the network, and devices in the LAN surf the internet via the router. At the same time, the router acts as a DHCP server to assign dynamic IP addresses to the EAPs and clients.
- The Layer 2 switch is connected to the LAN interface of the router.
- The PC and the EAPs are all connected to the Layer 2 switch. Since the PC and the EAPs are in the same network segment, the PC can log in to the web pages of the EAPs and manage them.

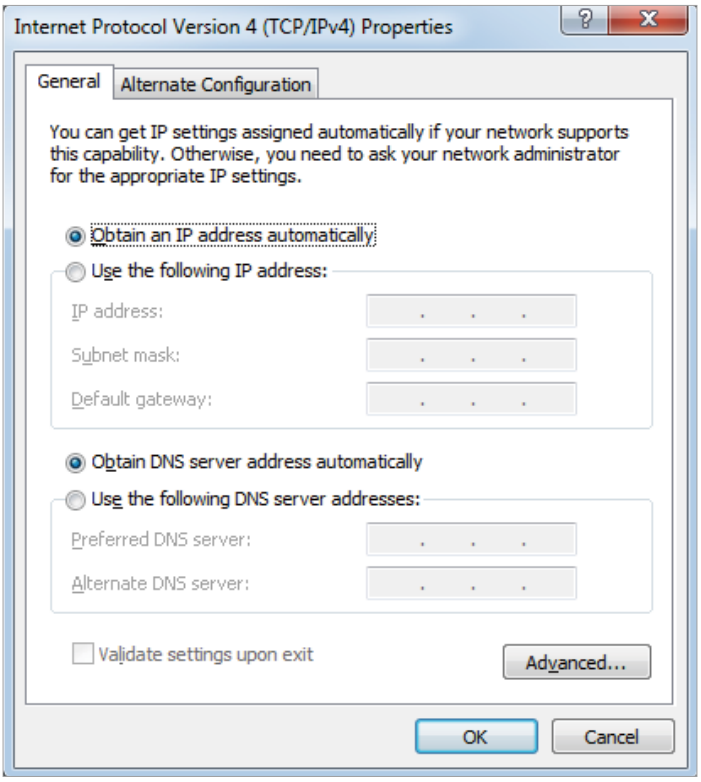
1.3 Log In to the EAP

The following sections introduce how to log in to the EAP via a wireless connection and a wired connection.

1.3.1 Log In via a Wireless Connection

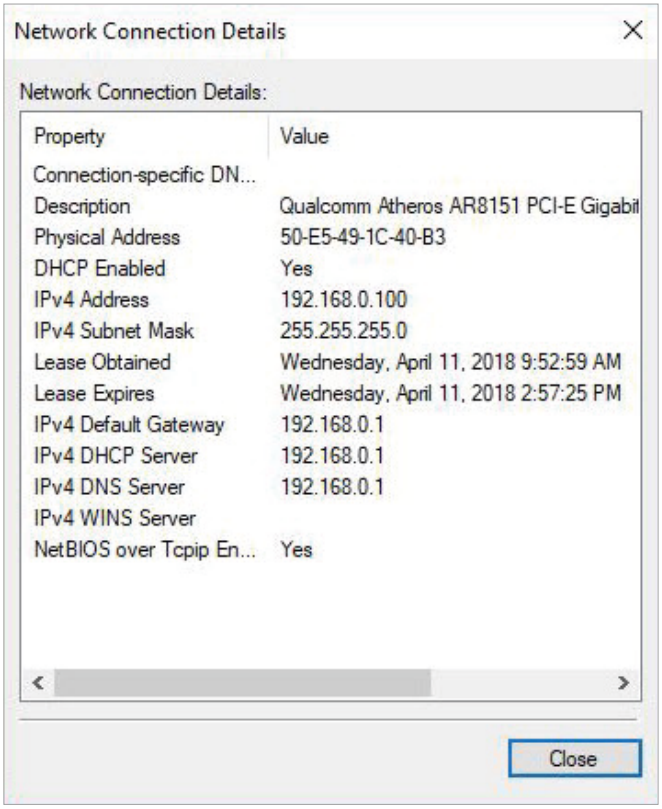
To access the management web page via a wireless connection, you can use either the domain name or the IP address of the EAP. We recommend you to log in using the domain name for a wireless connection. In this method, you needn't know the IP address of the EAP, but you need to prepare a wireless client device, such as a wireless laptop. Follow the steps below to log in to the EAP via domain name:

1. Set the wireless client device to get IP settings assigned automatically.

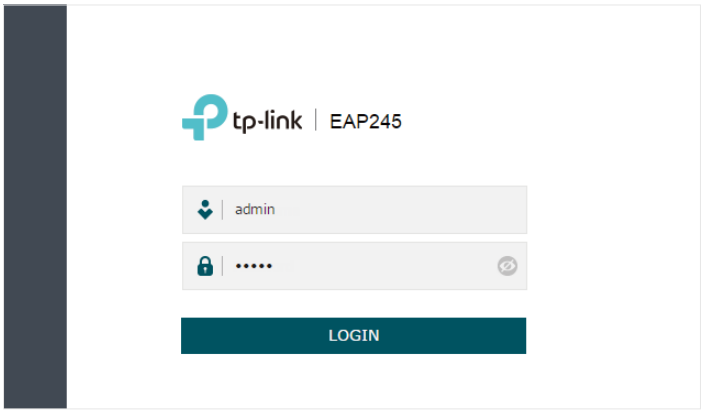


2. Search the default SSID (Network name) using your wireless client device and connect to the wireless network of the EAP. The default SSID of the EAP is printed on the product label at the bottom of the device. The dual-band EAP has two default SSIDs named **TP-Link_2.4GHz_XXXXXX** and **TP-Link_5GHz_XXXXXX** on the 2.4GHz band and 5GHz band, and the single-band EAP has a default SSID named **TP-Link_2.4GHz_XXXXXX** on the 2.4GHz band.

3. Make sure that the wireless client has been assigned the IP address and has got the IP address of the DNS server and the gateway.



4. Launch a web browser on the client device and enter **http://tplinkeap.net** in the address bar to load the login page of the EAP. Use **admin** for both of the username and password to log in.



Tips:

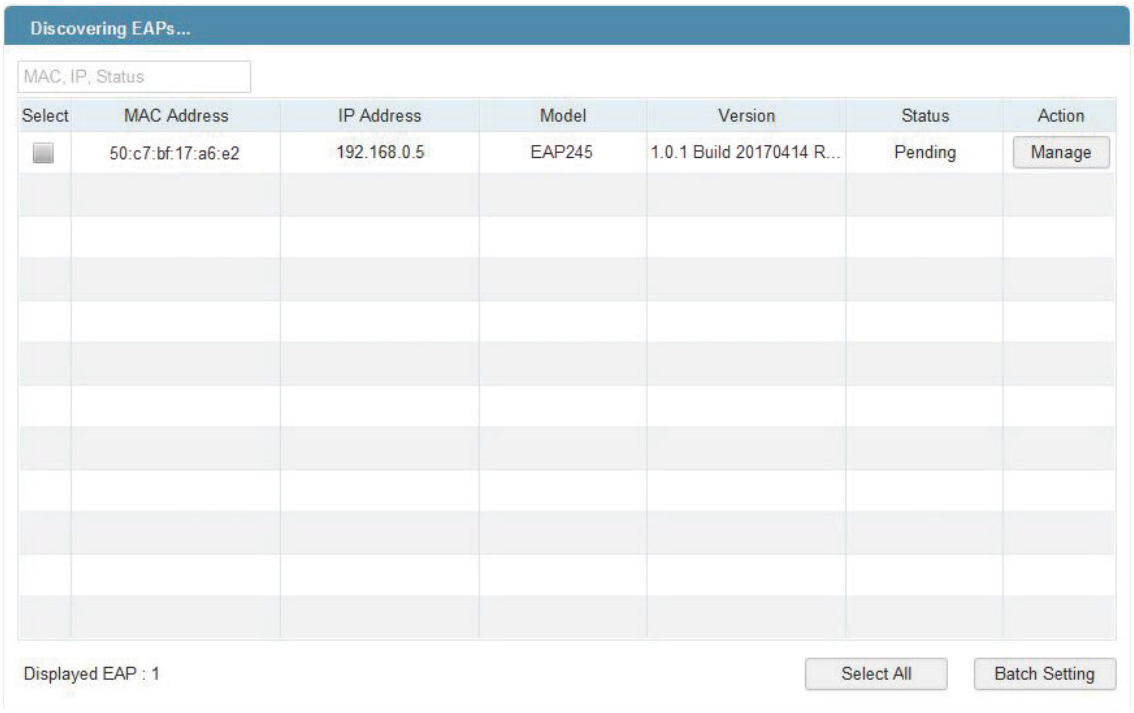
To facilitate access to the EAP via a wired device, you can set a static IP address for the EAP and remember it well or write it down. But make sure that this IP address is not being used in the same LAN. For detailed instructions about how to set a static IP address for the EAP, refer to *Manage the IP Address of the EAP*.

1.3.2 Log In via a Wired Connection

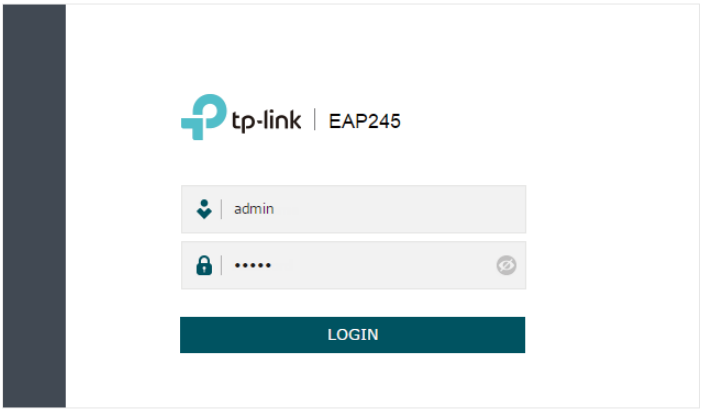
For a wired connection, you can only log in to the EAP via its IP address. In this method, you need to know the IP address of the EAP first. Follow the steps below to log in via the IP address of the EAP with a wired client. The method of log in via the IP address wirelessly is similar.

1. Get the IP address of the EAP. There are two methods.

   - Log in to the router which acts as the DHCP server. In the DHCP client list, find the IP address of your EAP according to its MAC address. The MAC address can be found at the bottom of the EAP.
   - Go to *http://www.tp-link.com/download/EAP-Controller.html#EAP_Discovery_Tool* to download EAP Discovery Utility. EAP Discovery Utility is a software that can scan all EAPs in the same network segment. Install and launch EAP Discovery Utility on the PC, and find the IP address of the EAP. In the following figure, the IP address of the EAP is **192.168.0.5**.



2. Launch a web browser and enter **192.168.0.5** in the address bar to load the login page of the EAP. Use **admin** for both of the username and password to log in.



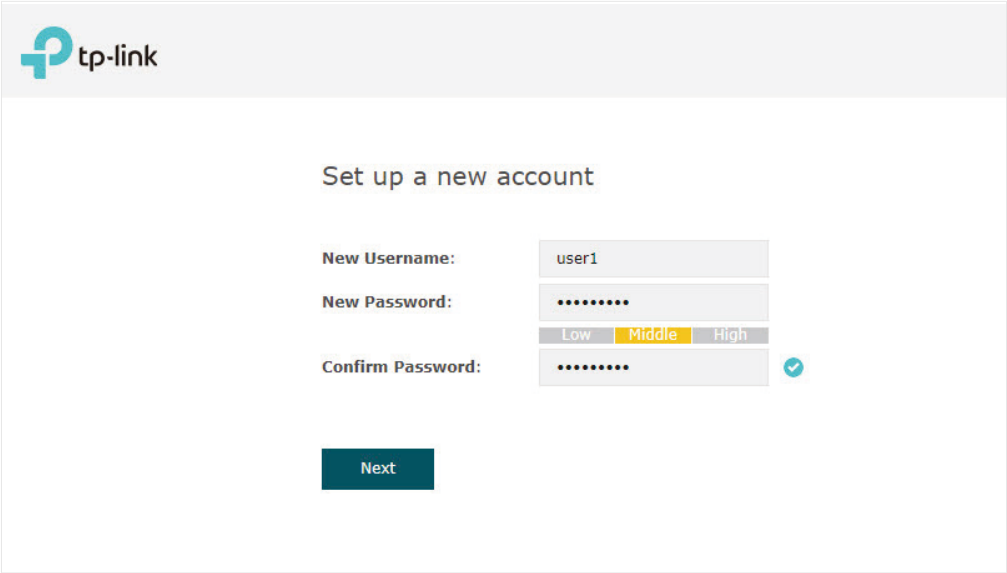
Tips:

- To facilitate access to the EAP via a wired device, you can set a static IP address for the EAP and remember it well or write it down. But make sure that this IP address is not being used in the same LAN. For detailed instructions about how to set a static IP address for the EAP, refer to *Manage the IP Address of the EAP*.
- The DHCP fallback IP address is 192.168.0.254 by default, which you can use to log in to its web management page when the DHCP server is not available in your network. Follow the steps below:
  1. Connect the EAP to your computer with an Ethernet Cable.
  2. Assign a static IP address 192.168.0.X (X ranges between 2 and 253) together with the subnet mask 255.255.255.0 to your computer.
  3. Open a web browser and enter 192.168.0.254 in the address bar to load the login page of the EAP.

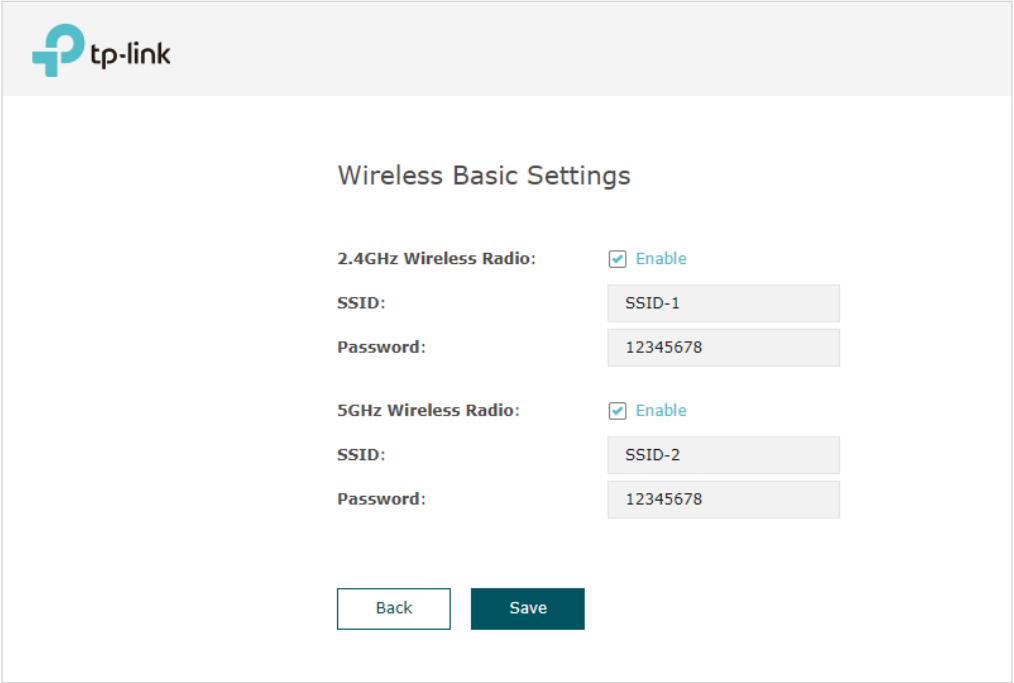
1.4 Do the Basic Configurations

After Logging in to EAP, follow the step-by-step instructions to complete the basic configurations.

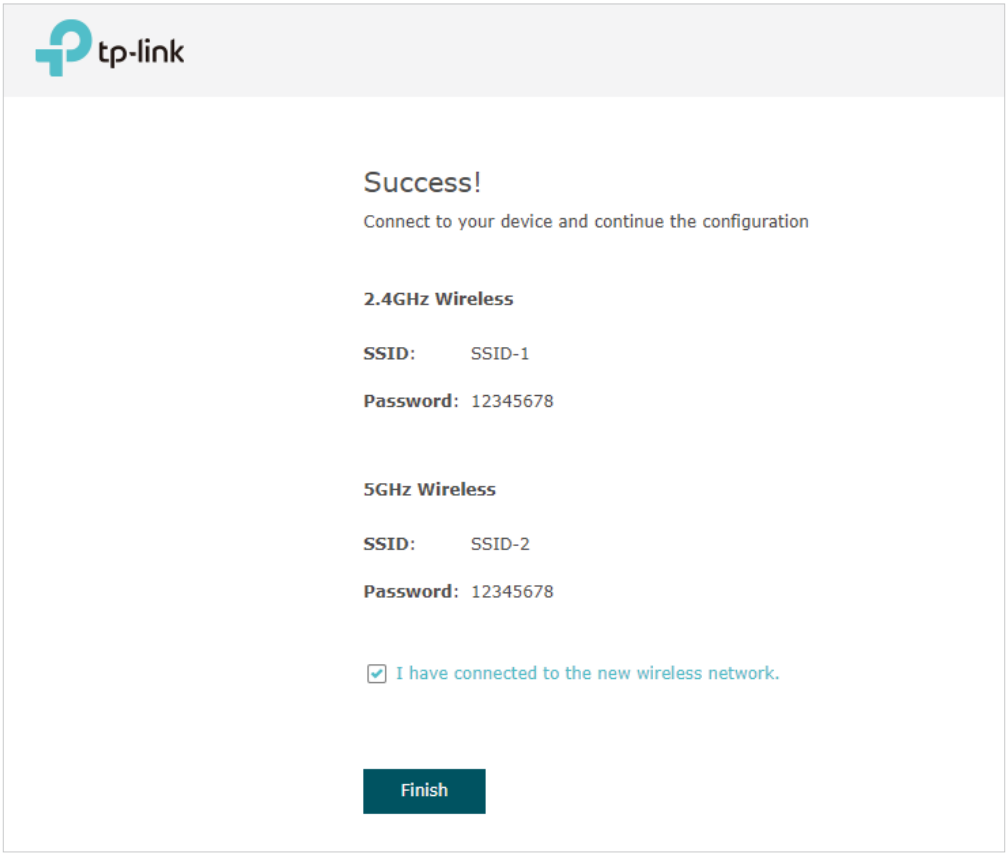
1. In the pop-up window, configure a new username and a new password for your user account, then click **Next**.



2. For the dual-band EAP, select at least one radio band between 2.4GHz and 5GHz to configure the SSID and password. For the single-band EAP, configure the SSID and password on the 2.4GHz band. Click **Save**.



3. The following page will appear. Make sure that your device has connected to the new wireless network and tick the checkbox. Then click **Finish**.

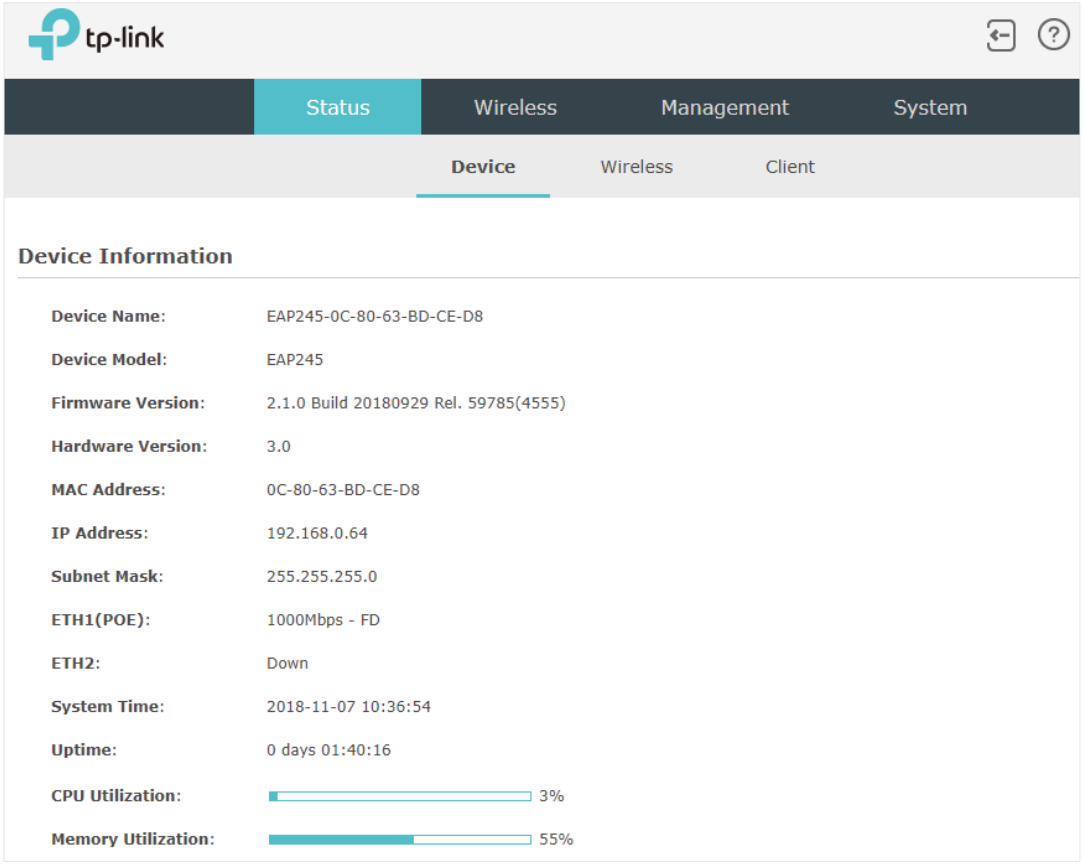


Tips:

If needed, you can also create more new SSIDs. For detailed instructions about how to create new SSIDs, refer to *Configure SSIDs*.

1.5 Configure and Manage the EAP

After all the steps above are completed, the legal wireless clients can enjoy the internet via the EAP. Additionally, you can configure the advanced functions of the EAP according to your need, and manage it conveniently on the web page.



On the top of the page, you can click to log out and click to open the technical support website.

There are four tabs: **Status, Wireless, Management** and **System**. The following table introduces what you can configure under each tab.

Status	You can view the information of the EAP, wireless traffic and clients.
Wireless	You can configure the wireless parameters and the advanced features, such as Portal, VLAN, MAC Filtering, Scheduler, Band Steering, QoS and Rogue AP Detection.
Management	You can manage the EAP using the management features, such as System Logs, Web Server, Management Access, LED Control, SSH and SNMP.
System	You can configure the system parameters, including the login account and the system time. In addition, you can reboot and reset the EAP, backup and restore the configuration, and upgrade the EAP using the new firmware file.

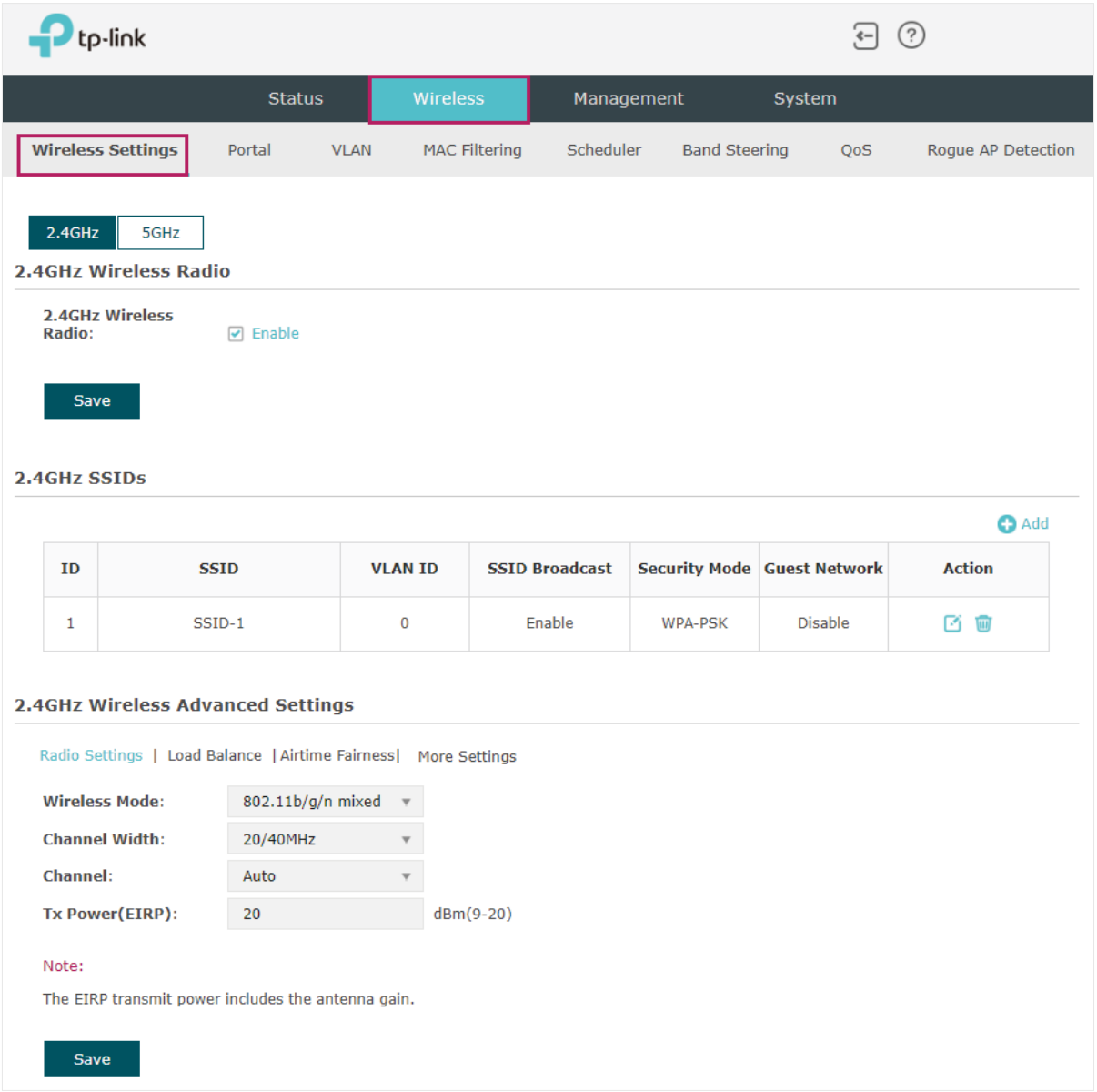
2 Configure the Network

This chapter introduces how to configure the network parameters and the advanced features of the EAP, including:

- *Configure the Wireless Parameters*
- *Configure Portal Authentication*
- *Configure VLAN*
- *Configure MAC Filtering*
- *Configure Scheduler*
- *Configure Band Steering*
- *Configure QoS*
- *Configure Rogue AP Detection*

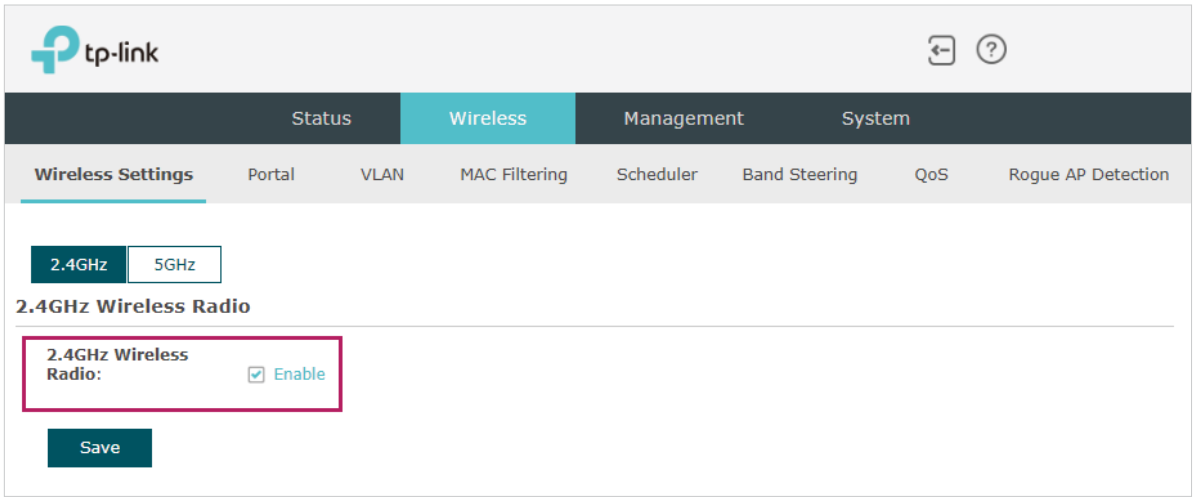
2.1 Configure the Wireless Parameters

To configure the wireless parameters, go to the **Wireless > Wireless Settings** page.



For a dual-band EAP, there are two bands: 2.4GHz and 5GHz. The wireless parameters are separately set on each band. You can click  to select a band and configure the wireless parameters on this band.

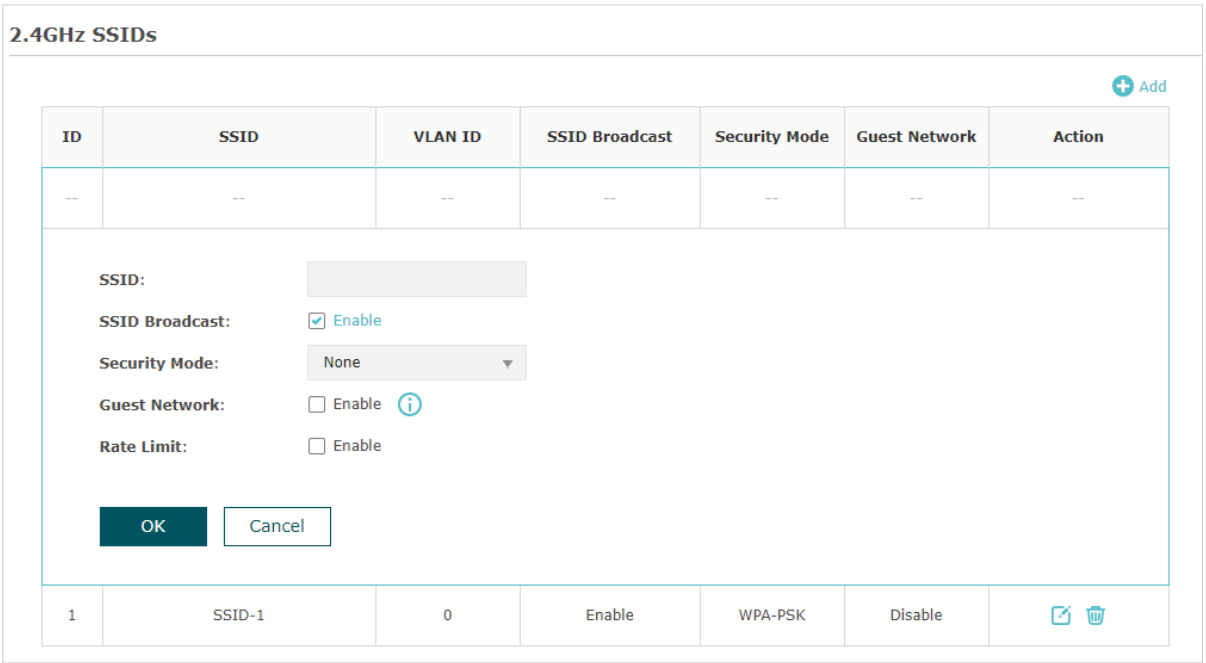
Before configuring the wireless parameters on each band, check the box to enable 2.4GHz or 5GHz Wireless Radio. Only when this option is enabled will the wireless radio on 2.4GHz or 5GHz band works.



Demonstrated with 2.4GHz, the following sections introduce these contents: *Configure SSIDs* and *Configure Wireless Advanced Settings*.

2.1.1 Configure SSIDs

SSID (Service Set Identifier) is used as an identifier for a wireless LAN, and is commonly called as the "network name". Clients can find and access the wireless network through the SSID. For one EAP, you can build up to eight SSIDs per frequency band.



Follow the steps below to create an SSID on the EAP:

1. If your EAP is a dual-band device, click 

to choose a frequency band on which the new SSID will be created.

2. Click 

to add a new SSID on the chosen band.

Tips:

You can also click  to edit the specific SSID which already exists in the list. And you can click  to delete the SSID in the list.

3. Configure the following required parameters for this SSID:

SSID	Specify a name for the wireless network.
SSID Broadcast	With the option enabled, EAP will broadcast the SSID to the nearby hosts, so that those hosts can find the wireless network identified by this SSID. If this option is disabled, users must enter the SSID manually to connect to the EAP.
Security Mode	Select the security mode of the wireless network. There are four options: **None:** Clients can access the wireless network without authentication. *WEP*/*WPA-Enterprise*/*WPA-PSK*: Clients need to pass the authentication before accessing the wireless network. For network security, we recommend that you encrypt your wireless network. The following sections will introduce how to configure these security modes.
Guest Network	With this option enabled, guest network will block clients from reaching any private IP subnet.
Rate Limit	With this option enabled, the download and upload rate of each client which connects to the SSID will be limited to balance bandwidth usage. You can limit the download and upload rate for some specific clients by configuring rate limit in client list, refer to *View Client Information* to get more details. Note that the download and upload rate will be limited to the smaller value if you set the limit value both in SSID and client configuration.

4. Click **OK** to create the SSID.

Following is the detailed instructions about how to configure *WEP*, *WPA-Enterprise* and *WPA-PSK*.

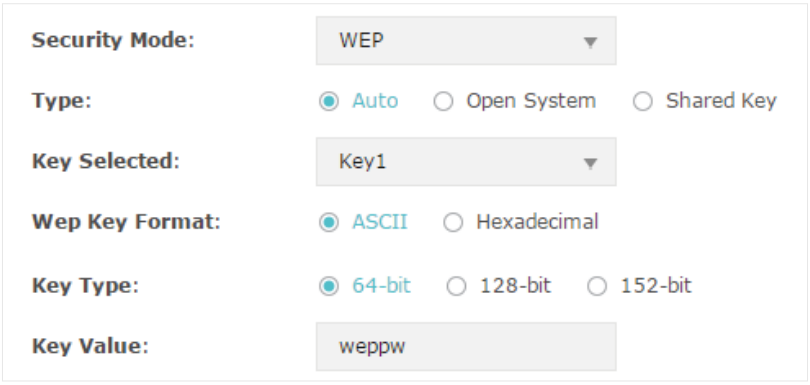
- **WEP**

WEP (Wired Equivalent Privacy) is a traditional encryption method. It has been proved that WEP has security flaws and can easily be cracked, so WEP cannot provide effective

protection for wireless networks. Since WPA-PSK and WPA-Enterprise are much safer than WEP, we recommend that you choose WPA-PSK or WPA-Enterprise if your clients also support them.

Note:

WEP is not supported in 802.11n mode or 802.11ac mode. If WEP is applied in 802.11n, 802.11 ac or 802.11n/ac mixed mode, the clients may not be able to access the wireless network. If WEP is applied in 802.11b/g/n mode (2.4GHz) or 802.11a/n (5GHz), the EAP may work at a low transmission rate.



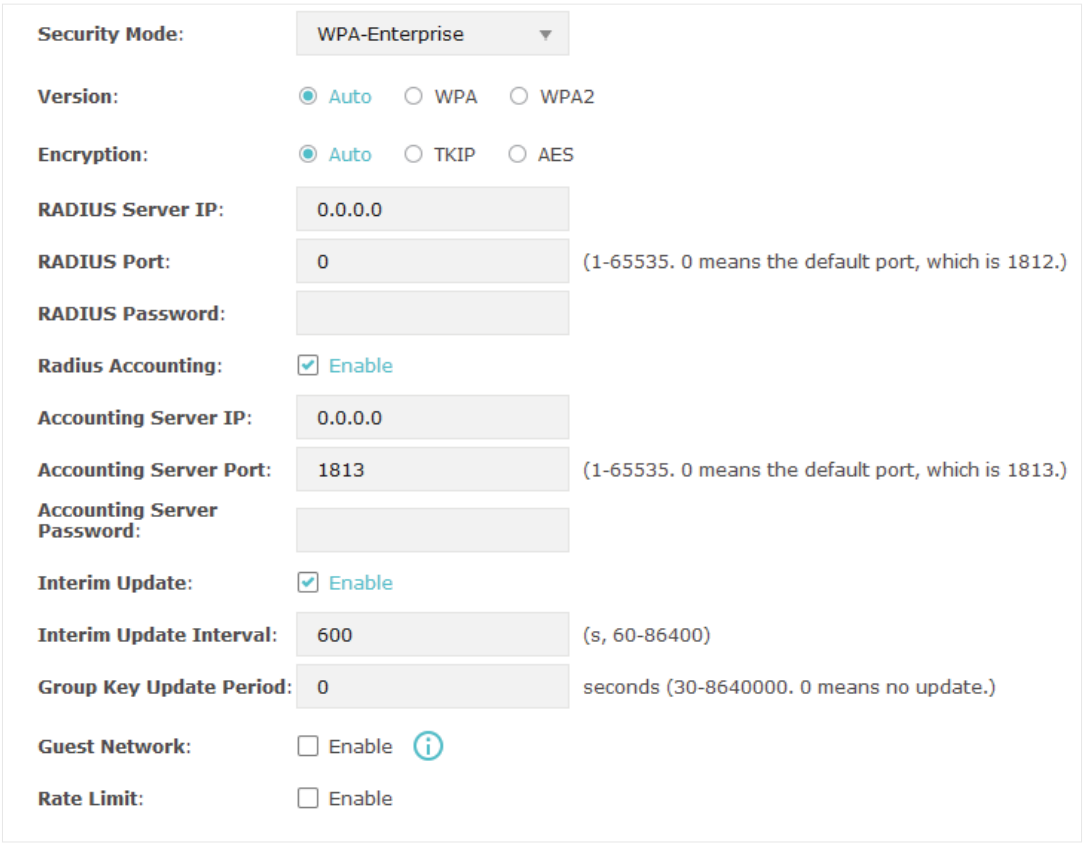
The following table detailedly introduces how to configure each item:

Type	Select the authentication type for WEP. **Auto:** The EAP can select Open System or Shared Key automatically based on the wireless capability and request of the clients. **Open System:** Clients can pass the authentication and associate with the wireless network without password. However, correct password is necessary for data transmission. **Shared Key:** Clients have to input the correct password to pass the authentication, otherwise the clients cannot associate with the wireless network or transmit data.
Key Selected	Select one key to specify. You can configure four keys at most.
WEP Key Format	Select ASCII or Hexadecimal as the WEP key format. **ASCII:** With this format selected, the WEP key can be any combination of keyboard characters of the specified length. **Hexadecimal:** With this format selected, the WEP key can be any combination of hexadecimal digits (0-9, a-f, A-F) with the specified length.
Key Type	Select the WEP key length for encryption. **64Bit:** Enter 10 hexadecimal digits or 5 ASCII characters. **128Bit:** Enter 26 hexadecimal digits or 13 ASCII characters. **152Bit:** Enter 32 hexadecimal digits or 16 ASCII characters.

Key Value	Enter the WEP keys. The length and valid characters are determined by the key format and key type.

- **WPA-Enterprise**

WPA-Enterprise (Wi-Fi Protected Access-Enterprise) is a safer encryption method compared with WEP and WPA-PSK. It requires a RADIUS server to authenticate the clients via 802.1X and EAP (Extensible Authentication Protocol). WPA-Enterprise can generate different passwords for different clients, which ensures higher network security. But it also costs more to maintain the network, so it is more suitable for business networks.



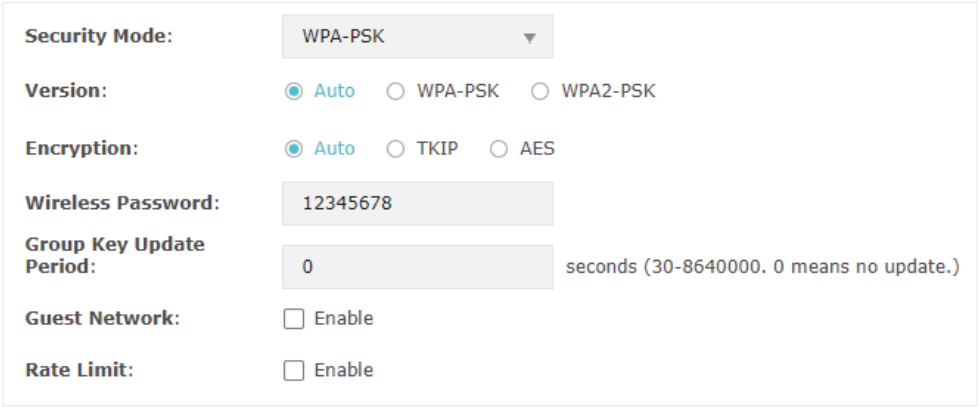
The following table introduces how to configure each item:

Version	Select the version of WPA-Enterprise. **Auto:** The EAP will automatically choose the version used by each client device. **WPA/WPA2:** They're two versions of WPA security mode. WPA2 is an update of WPA. Compared with WPA, WPA2 introduces AES algorithm and CCMP encryption. Theoretically, WPA2 is securer than WPA.

Encryption	Select the Encryption type. **Auto:** The default setting is Auto and the EAP will select TKIP or AES automatically based on the client device's request. **TKIP:** Temporal Key Integrity Protocol. TKIP is not supported in 802.11n mode, 802.11ac mode or 802.11n/ac mixed mode. If TKIP is applied in 802.11n, 802.11 ac or 802.11n/ac mixed mode, the clients may not be able to access the wireless network. If TKIP is applied in 11b/g/n mode (2.4GHz) or 11a/n mode(5GHz), the device may work at a low transmission rate. **AES:** Advanced Encryption Standard. It is securer than TKIP.
RADIUS Server IP	Enter the IP address of the RADIUS Server.
RADIUS Port	Enter the port number of the RADIUS Server.
RADIUS Password	Enter the shared secret key of the RADIUS server.
RADIUS Accounting	Enable or disable RADIUS accounting feature.
Accounting Server IP	Enter the IP address of the accounting server.
Accounting Server Port	Enter the port number of the accounting server.
Accounting Server Password	Enter the shared secret key of the accounting server.
Interim Update	With this option enabled, you can specify the duration between accounting information updates. By default, the function is disabled. Enter the appropriate duration between updates for EAPs in **Interim Update Interval**.
Interim Update Interval	With Interim Update enabled, specify the appropriate duration between updates for EAPs. The default duration is 600 seconds.
Group Key Update Period	Specify an update period of the encryption key. The update period instructs how often the EAP should change the encryption key. 0 means that the encryption key does not change at anytime.

- **WPA-PSK**

WPA-PSK (Wi-Fi Protected Access-PSK) is based on a pre-shared key. It is characterized by high safety and simple settings, so it is mostly used by common households and small businesses.



The following table introduces how to configure each item:

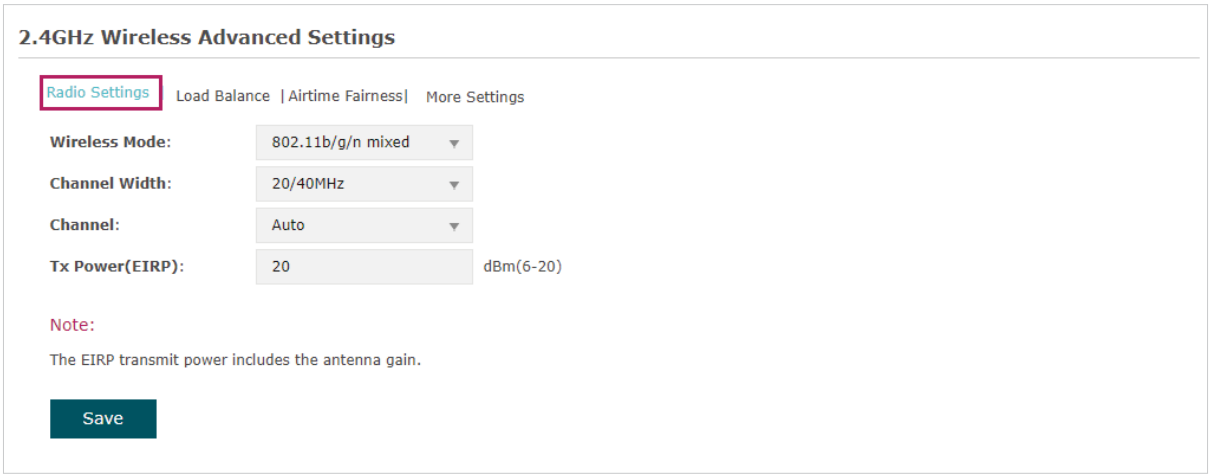
Version	Select the version of WPA-Enterprise. **Auto:** The EAP will automatically choose the version used by each client device. **WPA-PSK/WPA2-PSK:** They're two versions of WPA-PSK security mode. WPA2-PSK is an update of WPA-PSK. Compared with WPA, Theoretically, WPA2 is securer than WPA.
Encryption	Select the Encryption type. **Auto:** The default setting is Auto and the EAP will select TKIP or AES automatically based on the client device's request. **TKIP:** Temporal Key Integrity Protocol. TKIP is not supported in 802.11n mode, 802.11ac mode or 802.11n/ac mixed mode. If TKIP is applied in 802.11n, 802.11 ac or 802.11n/ac mixed mode, the clients may not be able to access the wireless network. If TKIP is applied in 11b/g/n mode (2.4GHz) or 11a/n mode(5GHz), the device may work at a low transmission rate. **AES:** Advanced Encryption Standard. It is securer than TKIP.
Wireless Password	Configure the wireless password with ASCII or Hexadecimal characters. • For ASCII, the length should be between 8 and 63 and the valid characters contain numbers, letters (case-sensitive) and common punctuations. • For Hexadecimal, the length should be between 8 and 64, and the valid characters contain: 0-9, a-f, A-F.
Group Key Update Period	Specify an update period of the encryption key. The update period instructs how often the EAP should change the encryption key. 0 means that the encryption key does not change at anytime.

2.1.2 Configure Wireless Advanced Settings

Proper wireless parameters can improve the performance of your wireless network. This section introduces how to configure the advanced wireless parameters of the EAP, including *Radio Setting*, *Load Balance*, *Airtime Fairness* and *More Settings*.

Radio Setting

Radio settings directly control the behavior of the radio in the EAP and its interaction with the physical medium; that is, how and what type of signal the EAP emits.



Select the frequency band (2.4GHz/5GHz) and configure the following parameters.

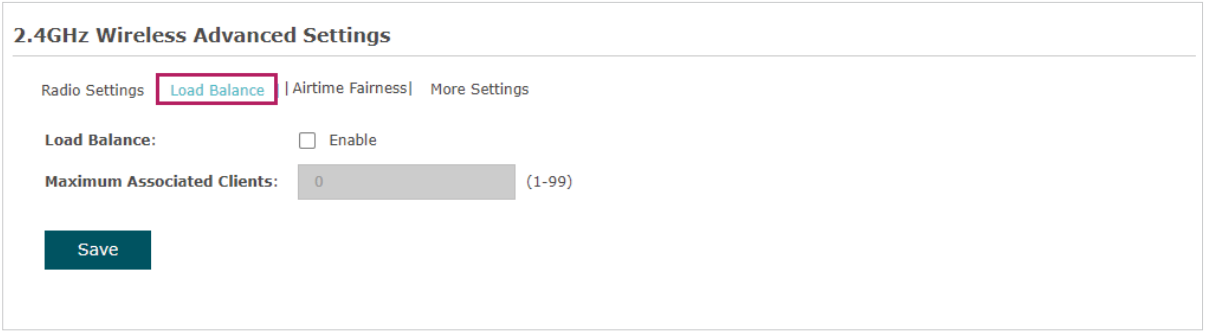
Wireless Mode	Select the IEEE 802.11 mode the radio uses. When the frequency of 2.4GHz is selected, 802.11b/g/n mixed, 802.11b/g mixed, and 802.11n only modes are available: **802.11b/g/n mixed**: All of 802.11b, 802.11g, and 802.11n clients operating in the 2.4GHz frequency can connect to the EAP. We recommend you select the 802.11b/g/n mixed mode. **802.11b/g mixed**: Both 802.11b and 802.11g clients can connect to the EAP. **802.11n only**: Only 802.11n clients can connect to the EAP. When the frequency of 5GHz is selected, 802.11 a/n/ac mixed, 802.11n/ac mixed and 802.11 ac only are available: **802.11a/n/ac mixed**: All of 802.11a, 802.11n clients and 802.11ac clients operating in the 5GHz frequency can connect to the EAP. **802.11n/ac mixed**: Both 802.11n clients and 802.11ac clients operating in the 5GHz frequency can connect to the EAP. **802.11ac only**: Only 802.11ac clients can connect to the EAP.

Channel Width	Select the channel width of the EAP. The available options differ among different EAPs. For some EAPs, available options include **20MHz**, **40MHz** and **20/40MHz**. For other EAPs, available options include **20MHz**, **40MHz**, **80MHz** and **20/40/80MHz**. When the radio mode includes 802.11n, we recommend you set the channel bandwidth to 20/40 MHz or 20/40/80MHz to improve the transmission speed. However, you may choose a lower bandwidth due to the following reasons: • To increase the available number of channels within the limited total bandwidth. • To avoid interference from overlapping channels occupied by other devices in the environment. • Lower bandwidth can concentrate higher transmit power, increasing stability of wireless links over long distances.
Channel Limit	Check the box to enable the Channel Limit function. With this function enabled, the wireless frequency 5150MHz~5350MHz will be disabled. This function can influence the available options in Channel. This feature is only available for 5GHz wireless configuration of EAP225-Outdoor.
Channel	Select the channel used by the EAP. For example, 1/2412MHz means that the channel is 1 and the frequency is 2412MHz. By default, the channel is automatically selected, and we recommend that you keep the default setting.

Tx Power (EIRP)	Specify the transmit power value. If this value is set to be larger than the maximum transmit power that is allowed by the local regulation, the regulated maximum transmit power will be applied in the actual situation. ***Note:*** In most cases, it is unnecessary to use the maximum transmit power. Specifying a larger transmit power than needed may cause interference to the neighborhood. Also it consumes more power and reduces longevity of the device.

Load Balance

With the Load Balance feature, you can limit the maximum number of clients who can access the EAP. In this way, you can achieve rational use of network resources.



Follow the steps below to configure Load Balance:

1. Click 2.4GHz 5GHz to choose a frequency band on which the load balance feature will take effect.
2. Check the box to enable Load Balance.
3. Specify the maximum number of clients who can connect to the EAP at the same time. While the number of connected clients has reached the limit and there are more clients requesting to access the network, the EAP will disconnect those with weaker signals.
4. Click **Save**.

Airtime Fairness

Note:

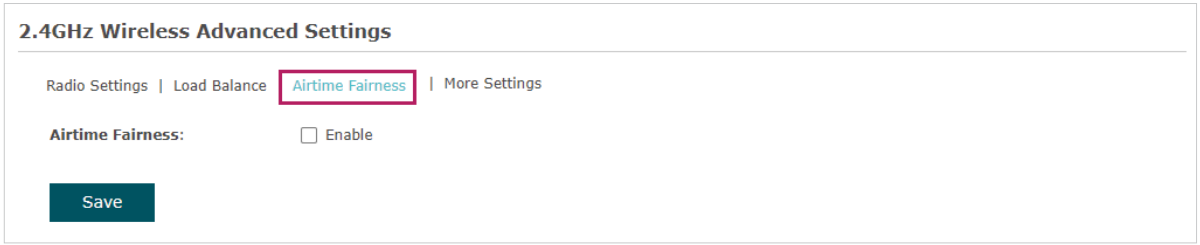
EAP225_V3, EAP225-Outdoor_V1, EAP245_V3 support this feature.

With Airtime Fairness enabled, each client connected to the EAP can get the same amount of time to transmit data, avoiding low-data-rate clients to occupy too much network bandwidth.

Compared with the relatively new client devices, some legacy client devices support slower wireless rate. If they communicate with the same EAP, the slower clients take more time to transmit and receive data compared with the faster clients. As a result, the overall wireless throughput of the network decreases.

Therefore we recommend you check the box to enable this function under multi-rate wireless networks. In this way, the faster clients can get more time for the data transmission and the network overall throughput can be improved.

Note that 50 wireless clients at most can connect to the EAP in 2.4GHz band when this function enabled on EAP245_V3, EAP225_V3 and EAP225-Outdoor_V1.



More Settings

Proper wireless parameters can improve the network's stability, reliability and communication efficiency. The advanced wireless parameters consist of Fast Roaming, Beacon Interval, DTIM Period, RTS Threshold, and Fragmentation Threshold.

The following table introduces how to configure each item:

Beacon Interval	Beacons are transmitted periodically by the EAP to announce the presence of a wireless network for the clients. **Beacon Interval** determines the time interval of the beacons sent by the EAP. You can specify a value between 40 and 100ms. The default is 100ms.

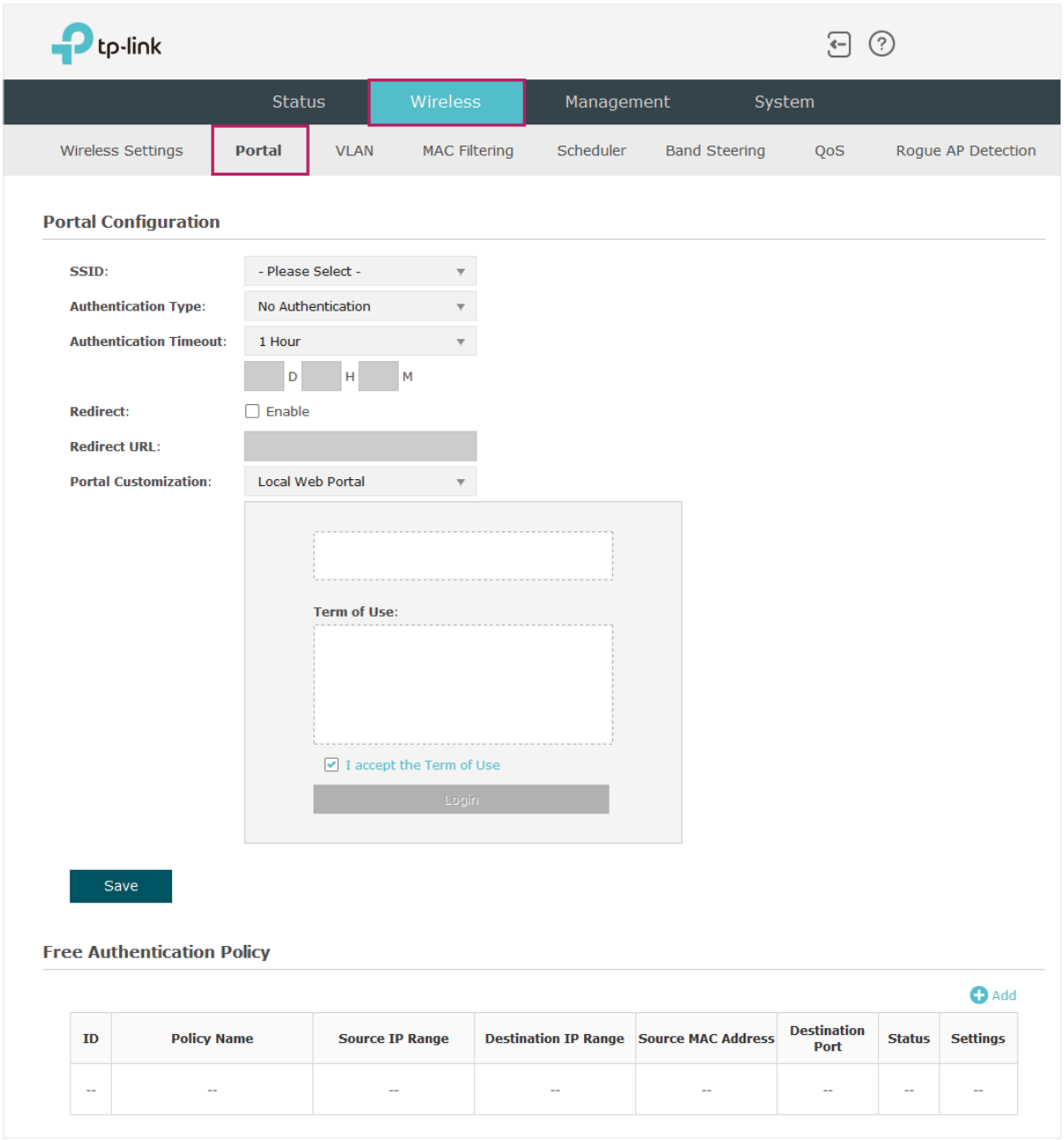
DTIM Period	The DTIM (Delivery Traffic Indication Message) is contained in some Beacon frames. It indicates whether the EAP has buffered data for client devices. The **DTIM Period** indicates how often the clients served by this EAP should check for buffered data still on the EAP awaiting pickup. You can specify the value between 1-255 Beacon Intervals. The default value is 1, indicating that clients check for buffered data at every beacon. An excessive DTIM interval may reduce the performance of multicast applications, so we recommend you keep the default value.
RTS Threshold	RTS/CTS (Request to Send/Clear to Send) is used to improve the data transmission efficiency of the network with hidden nodes, especially when there are lots of large packets to be transmitted. When the size of a data packet is larger than the **RTS Threshold**, the RTS/CTS mechanism will be activated. With this mechanism activated, before sending a data packet, the client will send an RTS packet to the EAP to request data transmitting. And then the EAP will send CTS packet to inform other clients to delay their data transmitting. In this way, packet collisions can be avoided. For a busy network with hidden nodes, a low threshold value will help reduce interference and packet collisions. But for a not-so-busy network, a too low threshold value will cause bandwidth wasting and reduce the data throughput. The recommended and default value is 2347 bytes.
Fragmentation Threshold	The fragmentation function can limit the size of packets transmitted over the network. If the size of a packet exceeds the **Fragmentation Threshold**, the fragmentation function is activated and the packet will be fragmented into several packets. Fragmentation helps improve network performance if properly configured. However, a too low fragmentation threshold may result in poor wireless performance caused by the extra work of dividing up and reassembling of frames and increased message traffic. The recommended and default value is 2346 bytes.

2.2 Configure Portal Authentication

Portal authentication provides authentication service to the clients that only need temporary access to the wireless network, such as the customers in a restaurant or in a supermarket. To access the network, these clients need to enter the authentication login page and use the correct login information to pass the authentication. In addition, you can customize the authentication login page and specify a URL which the authenticated clients will be redirected to.

In this module, you can also configure Free Authentication Policy, which allows the specific clients to access the specific network resources without authentication.

To configure portal authentication, go to the **Wireless > Portal** page.

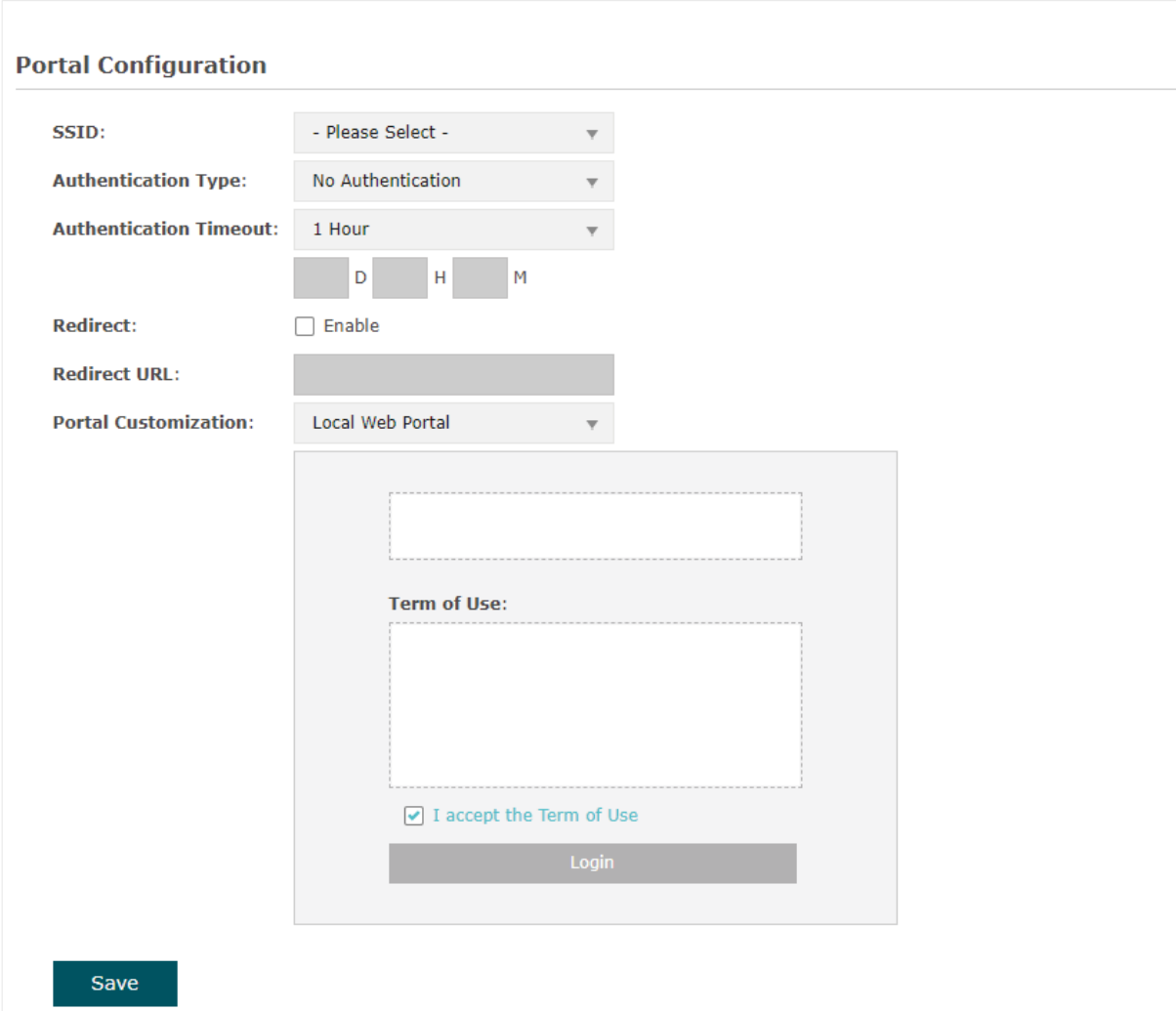


Configure Portal

Three portal authentication types are available: *No Authentication*, *Local Password* and *External RADIUS Server*. The following sections introduce how to configure each authentication type.

- **No Authentication**

With this authentication type configured, clients can pass the authentication and access the network without providing any login information. They only need to accept the term of use on the authentication page.



Follow the steps below to configure No Authentication as the portal authentication type:

1. Select the SSID on which the portal will take effect.
2. Select **No Authentication** as the authentication type.
3. Configure the relevant parameters as the following table shows:

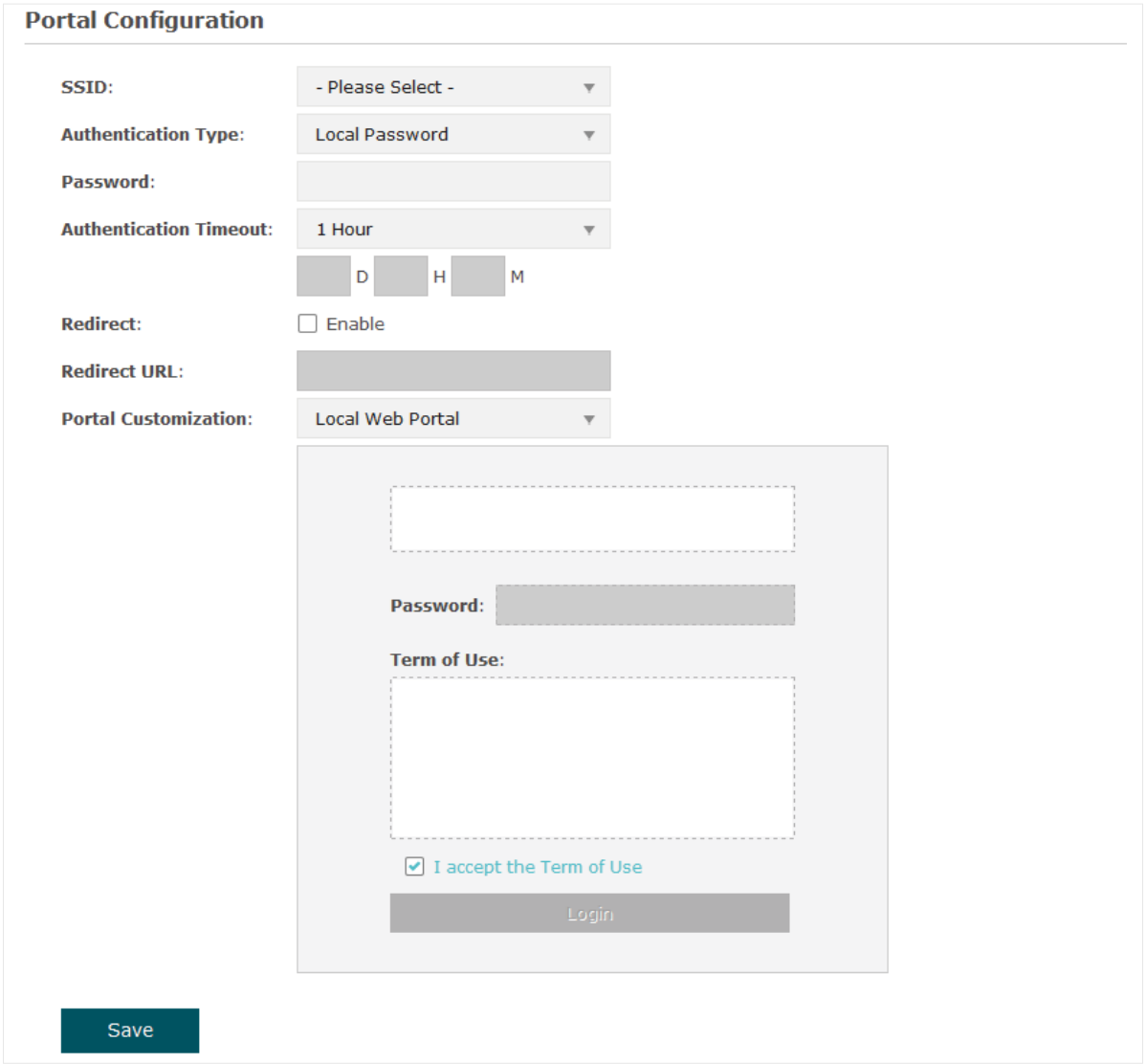
Authentication Timeout	Specify the value of authentication timeout. A client's authentication will expire after the authentication timeout and the client needs to log in to the authentication page again to access the network. Options include **1 Hour, 8 Hours, 24 Hours, 7 Days,** and **Custom**. With **Custom** selected, you can customize the time in days, hours, and minutes.

Redirect	With this function configured, the newly authenticated client will be redirected to the specific URL.
Redirect URL	With **Redirect** enabled, you also need to enter the URL in this field. The newly authenticated client will be redirected to this URL.
Portal Customization	Configure the authentication page. **Local Web Portal** is the only available option in this authentication type. Enter the title and term of use in the two boxes. The EAP uses its built-in web server to provide this authentication page for clients. To pass the authentication, clients only need to check the box of **I accept the Term of Use** and click the **Login** button.

4. Click **Save**.

- **Local Password**

With this authentication type configured, clients are required to provide the correct password to pass the authentication.



Follow the steps below to configure Local Password as the portal authentication type:

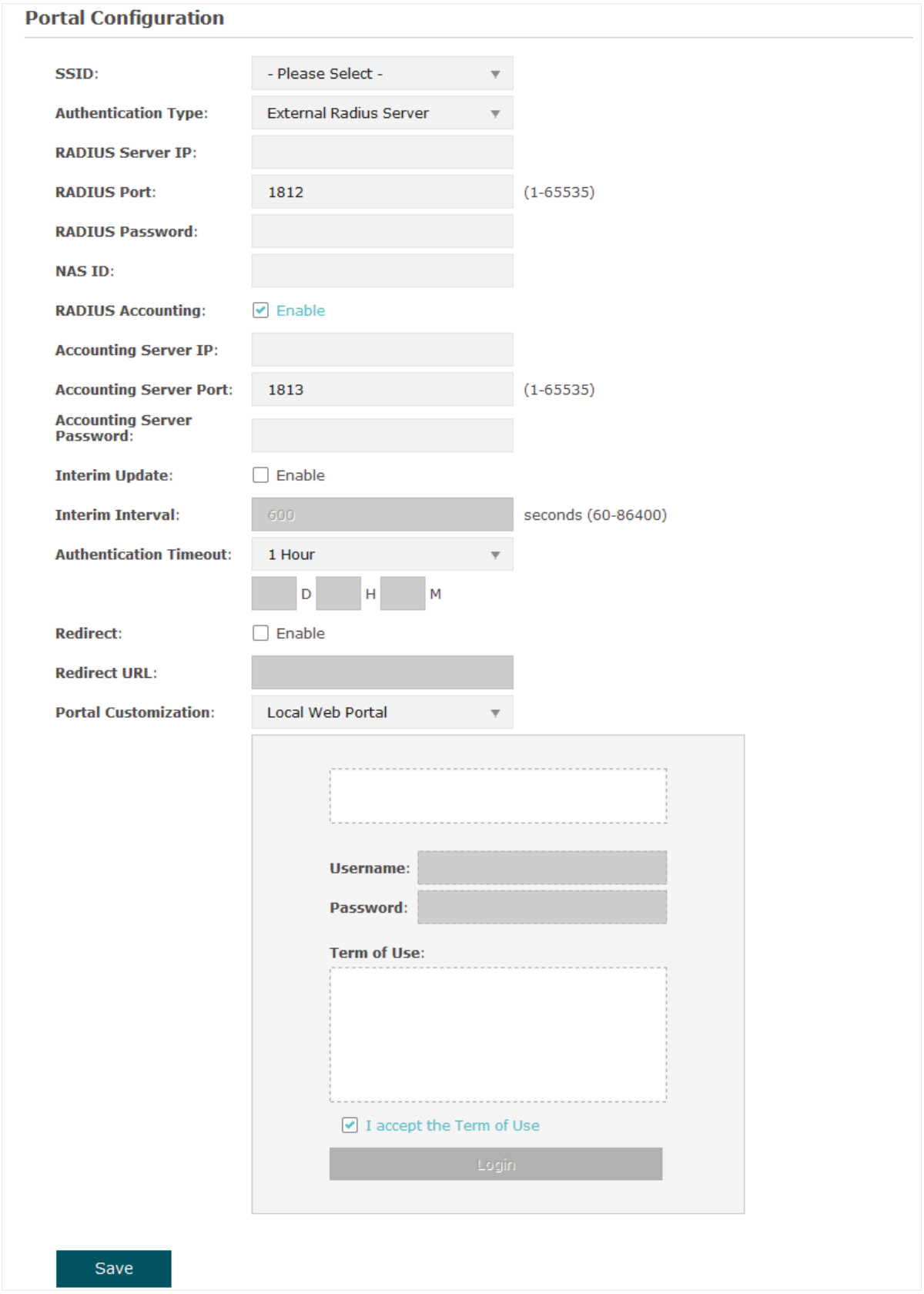
1. Select the SSID on which the portal will take effect.
2. Select **Local Password** as the authentication type.
3. Configure the relevant parameters as the following table shows:

Password	Specify a password for authentication.
Authentication Timeout	Specify the value of authentication timeout. A client's authentication will expire after the authentication timeout and the client needs to log in to the authentication page again to access the network. Options include **1 Hour, 8 Hours, 24 Hours, 7 Days,** and **Custom**. With **Custom** selected, you can customize the time in days, hours, and minutes.
Redirect	With this function configured, the newly authenticated client will be redirected to the specific URL.
Redirect URL	With **Redirect** enabled, you also need to enter the URL in this field. The newly authenticated client will be redirected to this URL.
Portal Customization	Configure the authentication page. **Local Web Portal** is the only available option is this authentication type. Enter the title and term of use in the two boxes. The EAP uses its built-in web server to provide this authentication page for clients. To pass the authentication, clients need to provide the correct password in the **Password** field, check the box of **I accept the Term of Use** and click the **Login** button.

4. Click **Save**.

- **External RADIUS Server**

If you have a RADIUS server on the network to authenticate the clients, you can select **External Radius Server**. Clients need to provide the correct login information to pass the authentication.

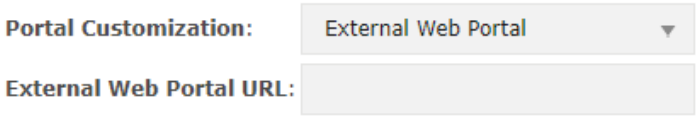


Follow the steps below to configure External Radius Server as the portal authentication type:

1. Select the SSID on which the portal will take effect.
2. Build a RADIUS server on the network and make sure that it is reachable by the EAP.
3. Go to the **Portal** configuration page on the EAP. Select **External Radius Server** as the authentication type.

3. Configure the relevant parameters as the following table shows:

RADIUS Server IP	Enter the IP address of RADIUS server.
RADIUS Port	Enter the port of the RADIUS server.
RADIUS Password	Enter the password of the RADIUS server.
NAS ID	Configure a Network Access Server Identifier (NAS ID) using 1 to 64 characters on the portal. The NAS ID is sent to the RADIUS server by the EAP through an authentication request packet. With the NAS ID which classifies users to different groups, the RADIUS server can send a customized authentication response.
RADIUS Accounting	Enable or disable RADIUS accounting feature.
Accounting Server IP	Enter the IP address of the accounting server.
Accounting Server Port	Enter the port number of the accounting server.
Accounting Server Passsword	Enter the shared secret key of the accounting server.
Interim Update	With this option enabled, you can specify the duration between accounting information updates. By default, the function is disabled. Enter the appropriate duration between updates for EAPs in **Interim Update Interval**.
Interim Interval	With Interim Update enabled, specify the appropriate duration between updates for EAPs. The default duration is 600 seconds.
Authentication Timeout	Specify the value of authentication timeout. A client's authentication will expire after the authentication timeout and the client needs to log in to the authentication page again to access the network. Options include **1 Hour, 8 Hours, 24 Hours, 7 Days,** and **Custom**. With **Custom** selected, you can customize the time in days, hours, and minutes.

Redirect	With this function configured, the newly authenticated client will be redirected to the specific URL.
Redirect URL	With **Redirect** enabled, you also need to enter the URL in this field. The newly authenticated client will be redirected to this URL.
Portal Customization	Configure the authentication page. There are two options: **Local Web Portal** and **External Web Portal**. • Local Web Portal Enter the title and term of use in the two boxes. The EAP uses its built-in web server to provide this authentication page for clients. To pass the authentication, clients need to provide the correct username and password in the **Username** and **Password** fields, check the box of **I accept the Term of Use** and click the **Login** button. • External Web Portal With External Web Portal configured, the authentication page will be provided by the web portal server built on the network. To configure External Web Portal, you need to complete the following configurations: 1. Build an external web portal server on your network and make sure that it is reachable by the EAP. 2. On this configuration page, enter the URL of the authentication page provided by the external portal server.  3. Add the external web portal server to the **Free Authentication Policy** list. In this way, clients can access the web portal server before authenticated. For details about how to configure Free Authentication Policy, refer to *Configure Free Authentication Policy*.

4. Click **Save**.

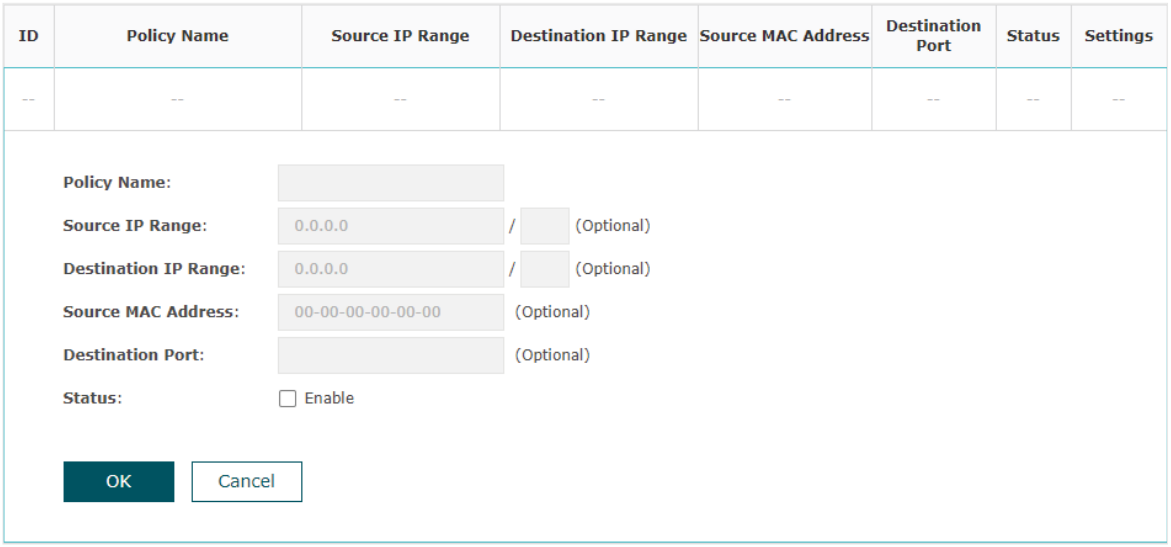
Configure Free Authentication Policy

Free Authentication Policy allows some specific clients to access the specific network resources without authentication. For example, you can set a free authentication policy to allow clients to visit the external web portal server before authenticated. In this way,

the clients can visit the login page provided by the web portal server and then pass the subsequent authentication process.

Follow the steps below to add free authentication policy.

1. In the **Free Authentication Policy** section, click Add to load the following page.



2. Configure the following parameters. When all the configured conditions are met, the client can access the network without authentication.

Policy Name	Specify a name for the policy.
Source IP Range	Specify an IP range with the subnet and mask length. The clients in this IP range can access the network without authentication. Leaving the field empty means that clients with any IP address can access the specific resources.
Destination IP Range	Specify an IP range with the subnet and mask length. The devices in this IP range can be accessed by the clients without authentication. Leaving the field empty means that all devices in the LAN can be accessed by the specific clients.
Source MAC Address	Specify the MAC address of the client, who can access the specific resources without authentication. Leaving the field empty means that clients with any MAC address can access the specific resources.

Destination Port	Specify the port number of the service. When using this service, the clients can access the specific resources without authentication. Leaving the field empty means that clients can access the specific resources no matter what service they are using.
Status	Check the box to enable the policy.

Tips:

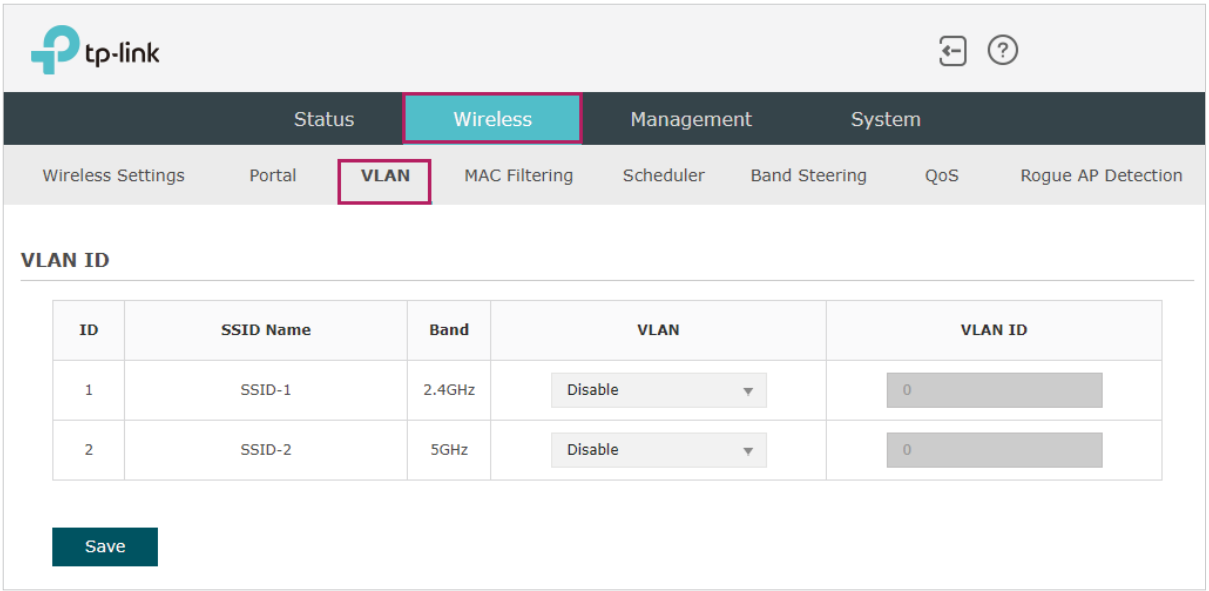
When External Web Portal is configured in the portal configuration, you should set the IP address and subnet mask of the external web server as the **Destination IP Range**. As for **Source IP Range**, **Source MAC Address** and **Destination Port**, you can simply keep them as empty or configure them according to your actual needs.

3. Click **OK** to add the policy.

2.3 Configure VLAN

Wireless VLAN is used to set VLANs for the wireless networks. With this feature, the EAP can work together with the switches supporting 802.1Q VLAN. Traffic from the clients in different wireless networks is added with different VLAN tags according to the VLAN settings of the wireless networks. Then the wireless clients in different VLANs cannot directly communicate with each other. Note that the traffic from the wired clients will not be added with VLAN tags.

To configure VLAN for the wireless network, go to the **Wireless > VLAN** page.



Follow the steps below to configure VLAN on this page.

1. Select the specific SSID in the list to configure the VLAN.
2. In the **VLAN** column and select **Enable** to enable the VLAN function on the SSID.

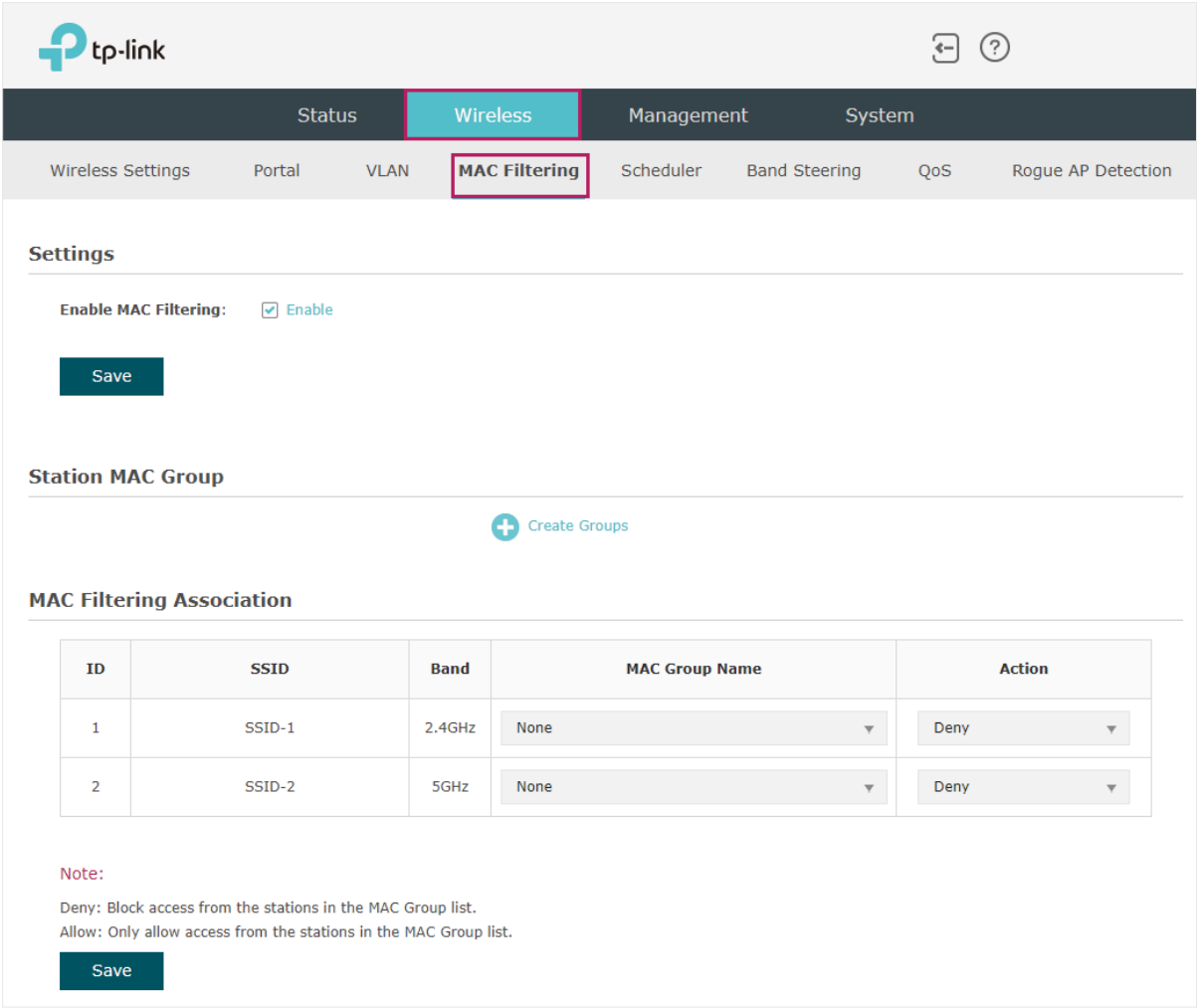
3. Specify the VLAN ID for the wireless network in the **VLAN ID** column. Every VLAN ID represents a different VLAN. It supports maximum 8 VLANs per frequency band. The VLAN ID range is 0 to 4094. 0 is used to disable VLAN tagging.

4. Click **Save**.

2.4 Configure MAC Filtering

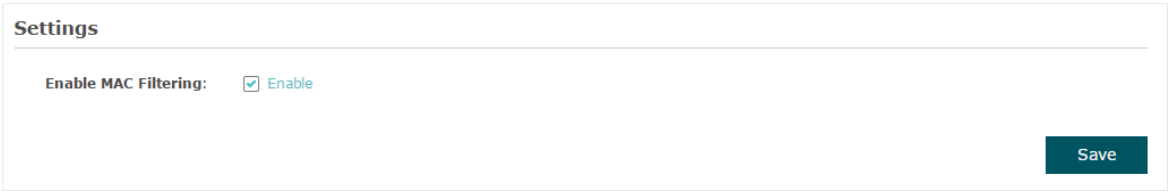
MAC Filtering is used to allow or block the clients with specific MAC addresses to access the network. With this feature you can effectively control clients' access to the wireless network according to your needs.

To configure MAC Filtering, go to the **Wireless > MAC Filtering** page.

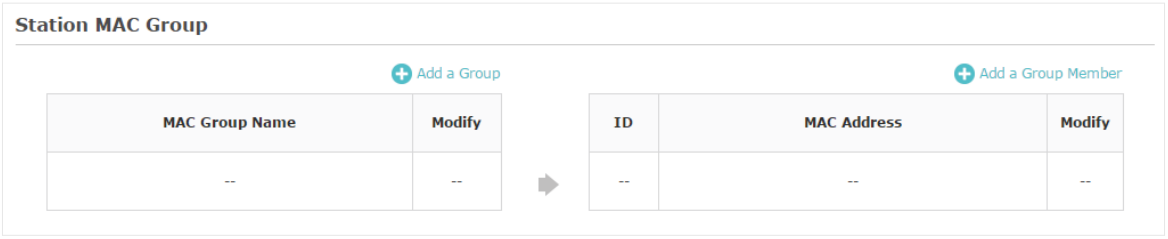


Follow the steps below to configure MAC Filtering on this page:

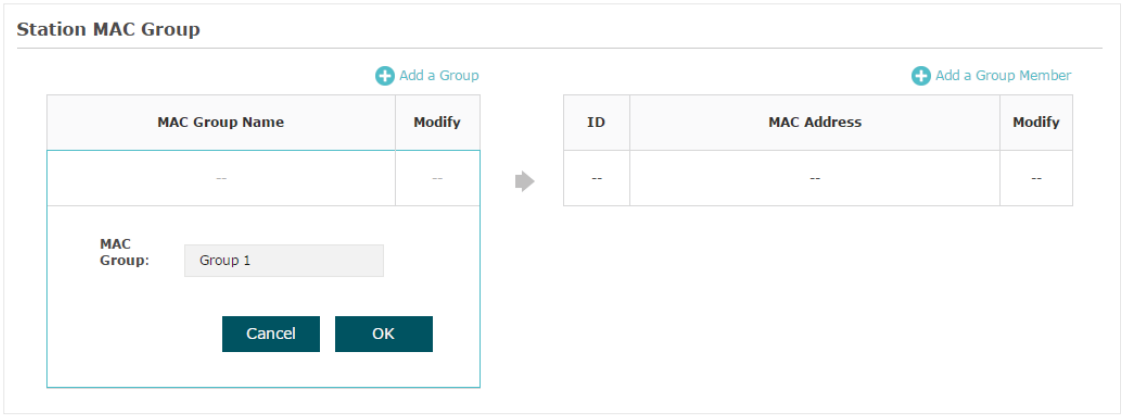
1. In the **Settings** section, check the box to enable **MAC Filtering**, and click **Save**.



2. In the **Station MAC Group** section, click Create Groups and the following page will appear.

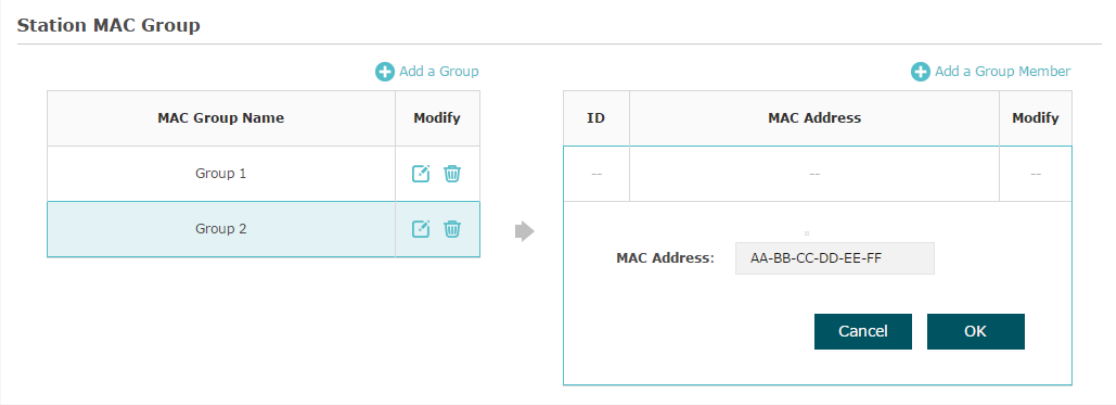


1) Click Add a Group and specify a name for the MAC group to be created. Click **OK**. You can create up to eight MAC groups.



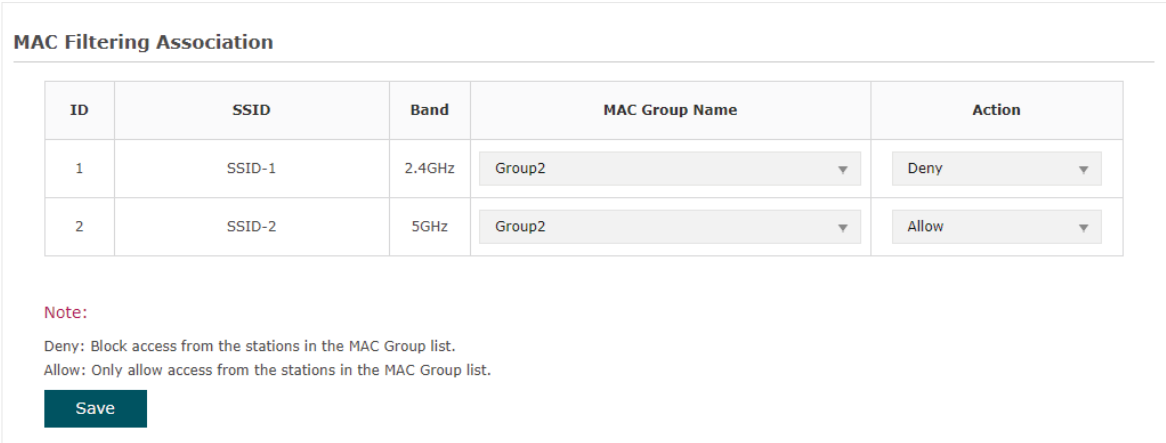
2) Select a MAC group in the group list (the color of the selected one will change to blue). Click Add a Group Member to add group members to the MAC group. Specify

the MAC address of the host and click **OK**. In the same way, you can add more MAC addresses to the selected MAC group.



3. In the **MAC Filtering Association** section, configure the filtering rule. For each SSID, you can select a MAC group in the **MAC Group Name** column and select the filtering rule **(Allow/Deny)** in the **Action** column. Click **Save**.

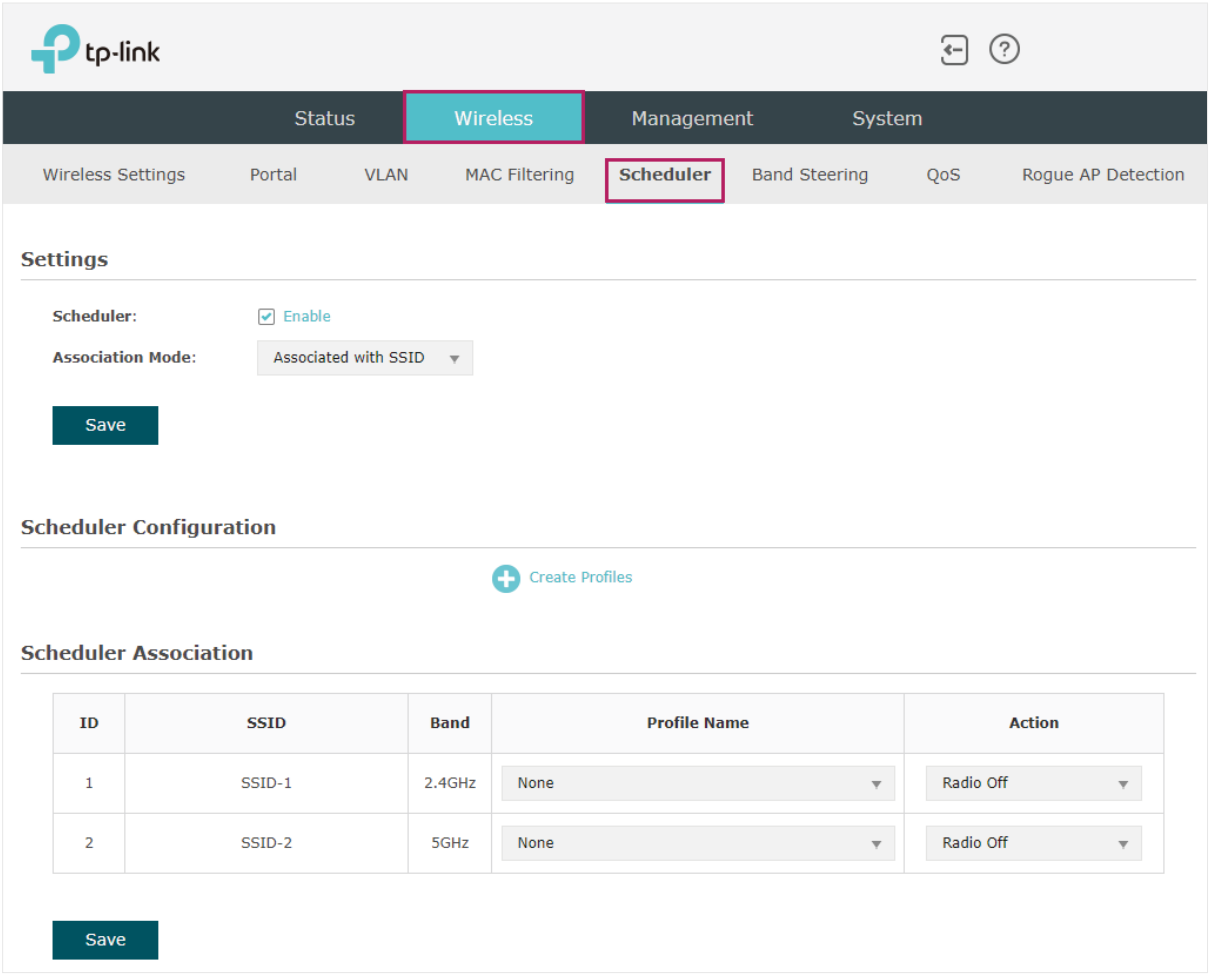
   For example, the following configuration means that the hosts in Group 2 are denied to access the SSID **SSID-1** on the 2.4GHz band and allowed to access the SSID **SSID-2** on the 5GHz band.



2.5 Configure Scheduler

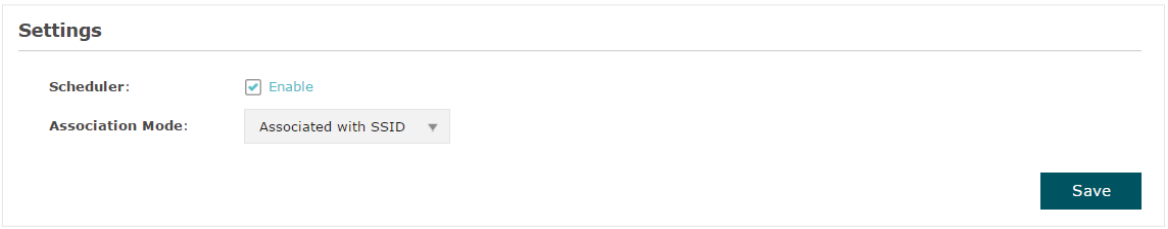
With the Scheduler feature, the EAP or its wireless network can automatically turn on or off at the time you set. For example, you can schedule the radio to operate only during the office working time to reduce power consumption.

To configure Scheduler, go to the **Wireless > Scheduler** page.

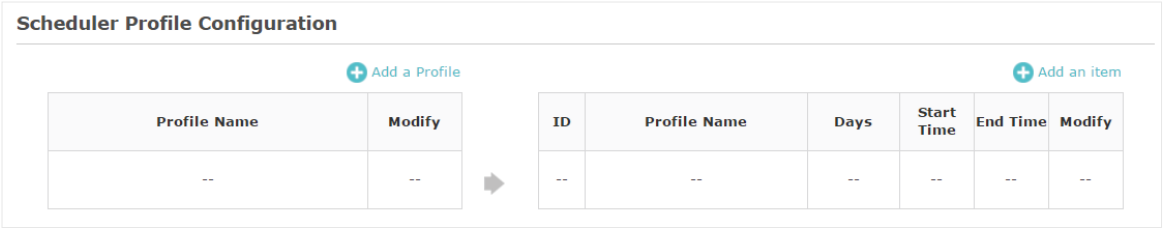


Follow the steps below to configure Scheduler on this page:

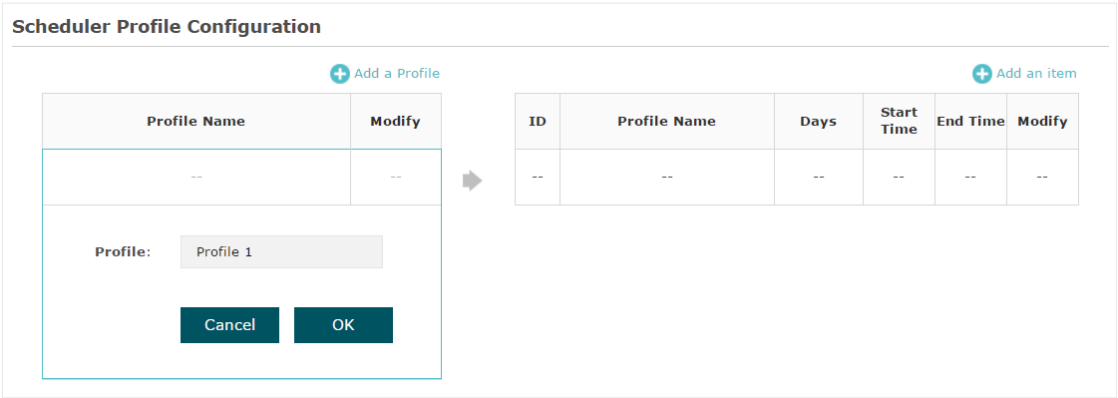
1. In the **Settings** section, check the box to enable **Scheduler** and select the **Association Mode**. There are two modes: **Associated with SSID** (the scheduler profile will be applied to the specific SSID) and **Associated with AP** (the profile will be applied to all SSIDs on the EAP). Then click **Save**.



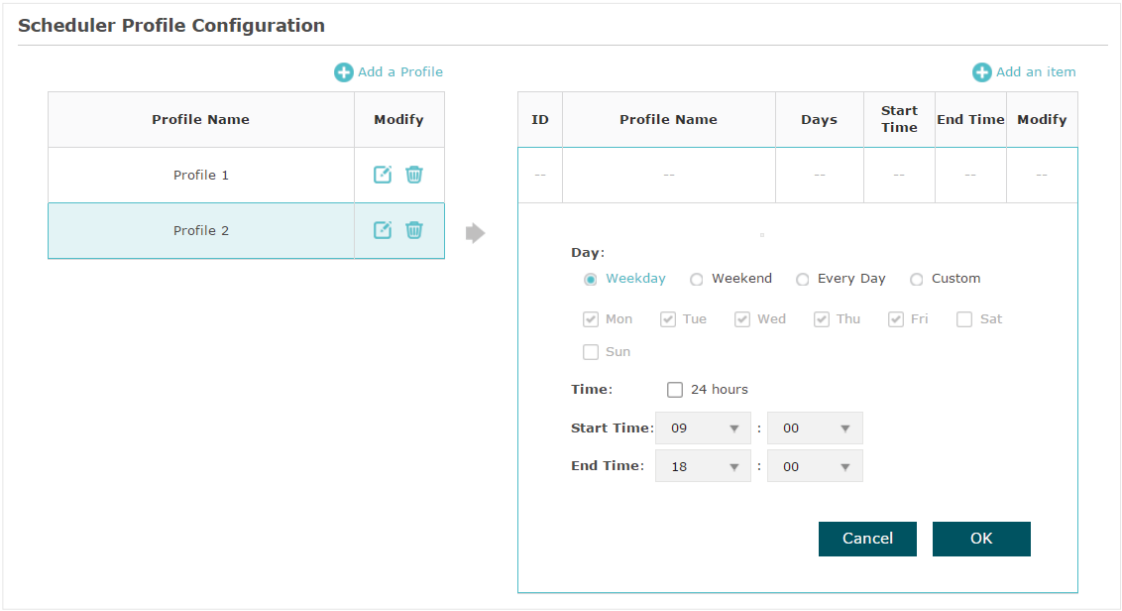
2. In the **Scheduler Profile Configuration** section, click Create Profiles and the following page will appear.



1) Click Add a Profile and specify a name for the profile to be created. Click **OK**. You can create up to eight profiles.



2) Select a profile in the list (the color of the selected one will change to blue). Click Add an item to add time range items to the profile. Specify the **Day, Start Time** and **End Time** of the time range, and click **OK**.



Tips:

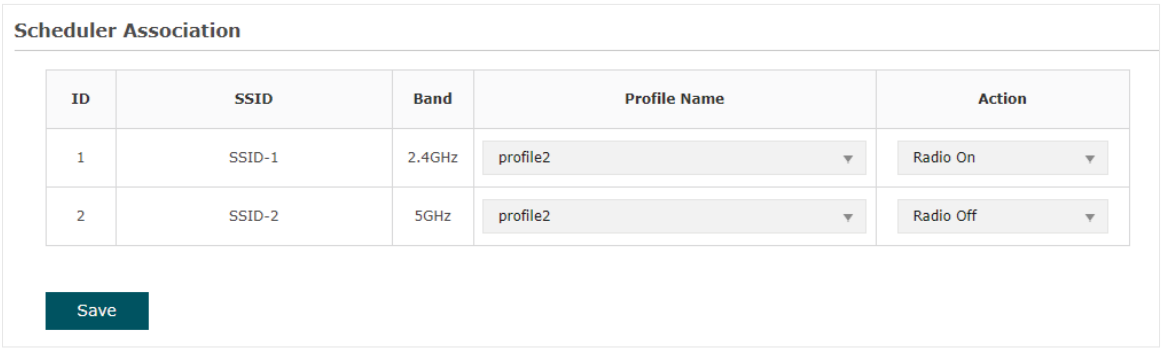
You can add up to eight time range items for one profile. If there are several time range items in one profile, the time range of this profile is the sum of all of these time ranges.

3. In the **Scheduler Association** section, configure the scheduler rule. There are two association modes: *Association with SSID* and *Association with AP*. The following sections introduce how to configure each mode.

■ **Association with SSID**

If you select **Association with SSID** in step 1, the Scheduler Association table will display all the SSIDs on the EAP. For each SSID, you can select a profile in the **Profile Name** column and select the scheduler rule **(Radio On/Radio Off)** in the **Action** column. Then click **Save**.

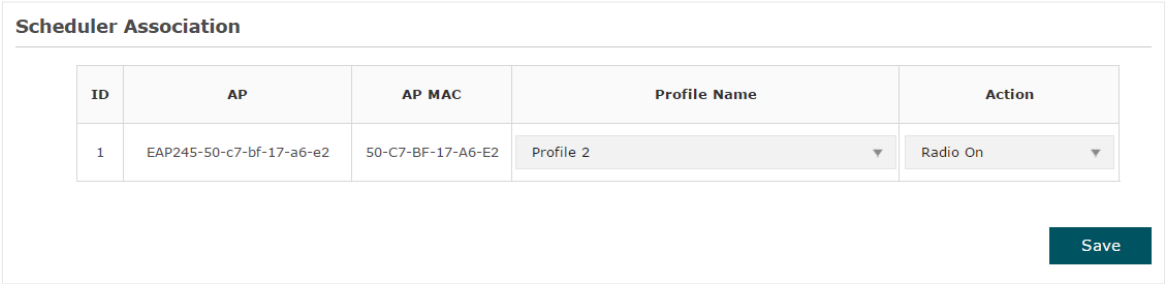
For example, the following configuration means that during the time range defined in Profile2, the radio of SSID **SSID-1** is on and the radio of SSID **SSID-2** is off.



■ **Association with AP**

If you select **Association with AP** in step 1, the Scheduler Association table will display the name and MAC address of the EAP. Select a profile in the **Profile Name** column and select the scheduler rule **(Radio On/Radio Off)** in the **Action** column. Then click **Save**.

For example, the following configuration means that during the time range defined in Profile2, the radio of all SSIDs on the EAP is on.



2.6 Configure Band Steering

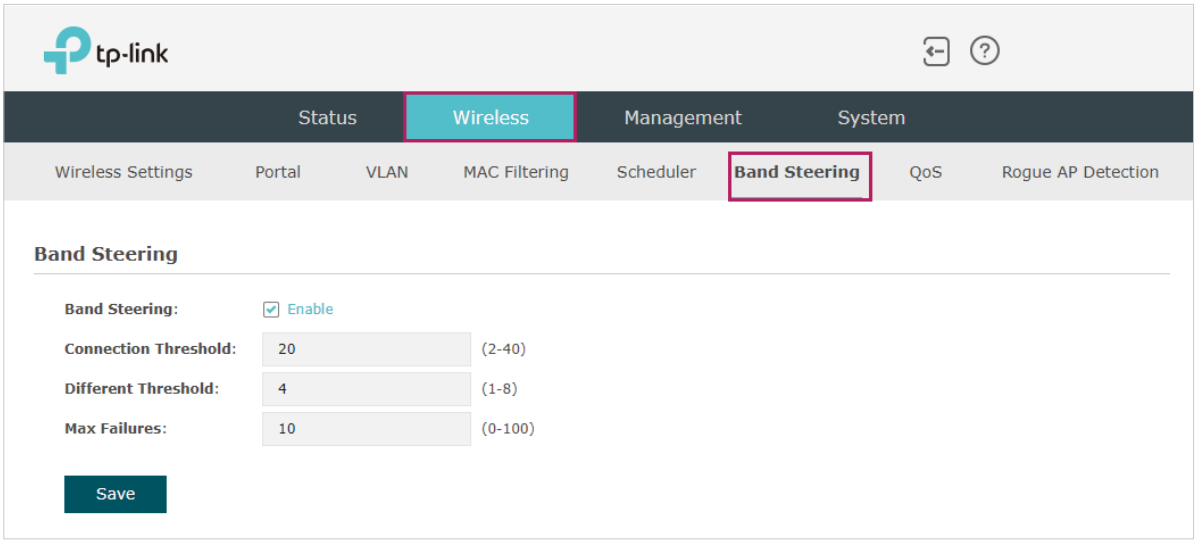
A client device that is capable of communicating on both the 2.4GHz and 5GHz frequency bands will typically connect to the 2.4GHz band. However, if too many client devices are connected to an EAP on the 2.4GHz band, the efficiency of communication will be

diminished. Band Steering can steer dual-band clients to the 5GHz frequency band which supports higher transmission rates and more client devices, and thus to greatly improve the network quality.

Note:

Only the dual-band EAP products support Band Steering.

To configure Band Steering, go to the **Wireless > Band Steering** page.



Follow the steps below to configure Band Steering on this page:

1. Check the box to enable Band Steering function.
2. Configure the following parameters to balance the clients on both frequency bands:

Connection Threshold/Difference Threshold	**Connection Threshold** defines the maximum number of clients connected to the 5GHz band. The value of **Connection Threshold** is from 2 to 40, and the default is 20. **Difference Threshold** defines the maximum difference between the number of clients on the 5GHz band and 2.4GHz band. The value of **Difference Threshold** is from 1 to 8, and the default is 4. When the following two conditions are both met, the EAP prefer to refuse the connection request on 5GHz band and no longer steer other clients to the 5GHz band: 1.The number of clients on the 5GHz band reaches the **Connection Threshold** value. 2.The difference between the number of clients on the 2.4GHz band and 5GHz band reaches the **Difference Threshold** value.
Max Failures	If a client repeatedly attempts to associate with the EAP on the 5GHz band and the number of rejections reaches the value of **Max Failures**, the EAP will accept the request. The value is from 0 to 100, and the default is 10.

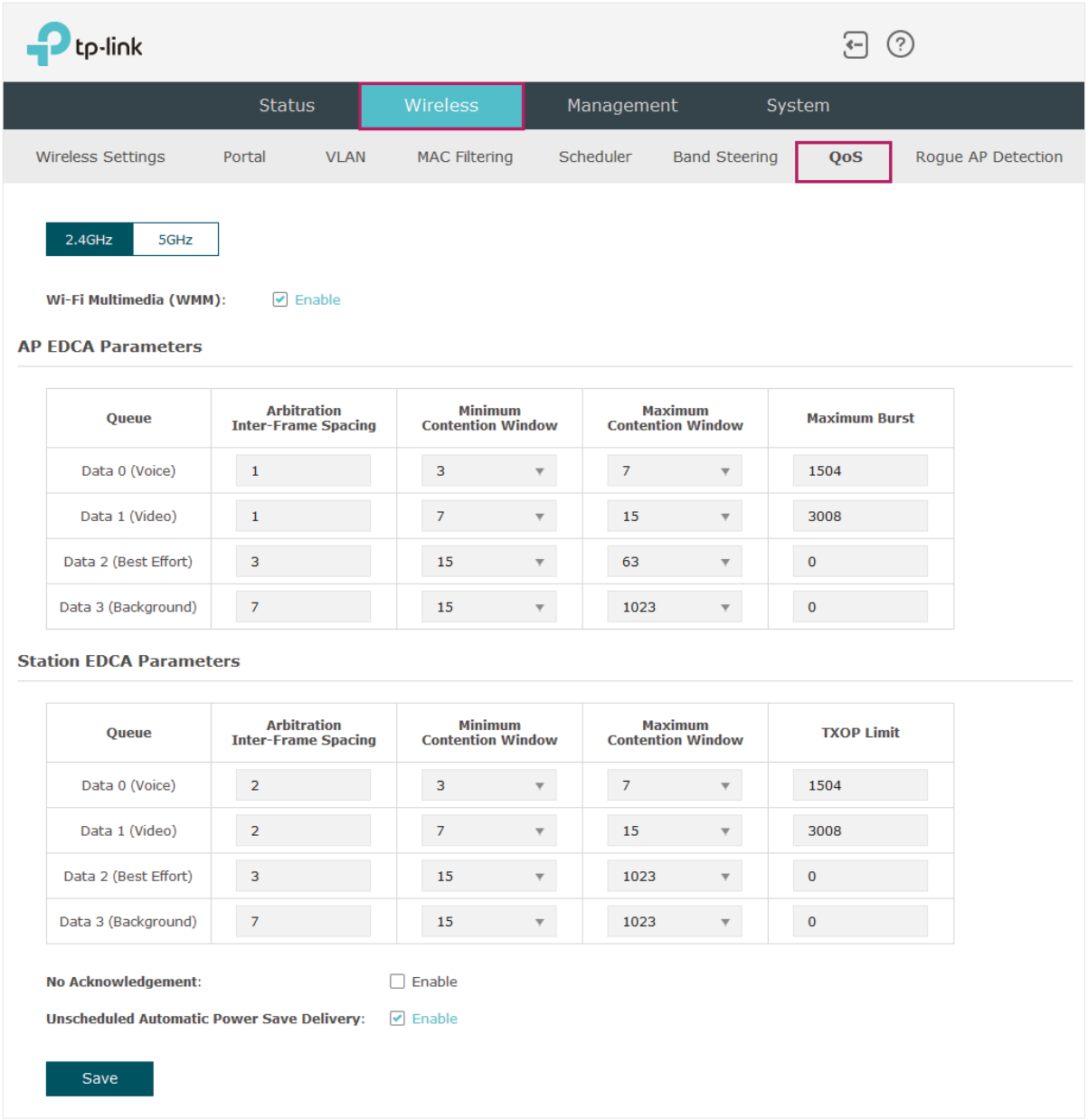
3. Click **Save**.

2.7 Configure QoS

Quality of service (QoS) is used to optimize the throughput and performance of the EAP when handling differentiated wireless traffic, such as Voice-over-IP (VoIP), other types of audio, video, streaming media, and traditional IP data.

In QoS configuration, you should set parameters on the transmission queues for different types of wireless traffic and specify minimum and maximum wait time for data transmission. In normal use, we recommend that you keep the default values.

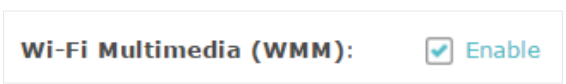
To configure QoS, go to the **Wireless > QoS** page.



Follow the steps below to configure QoS on this page:

1. Click  to choose a frequency band to be configured.

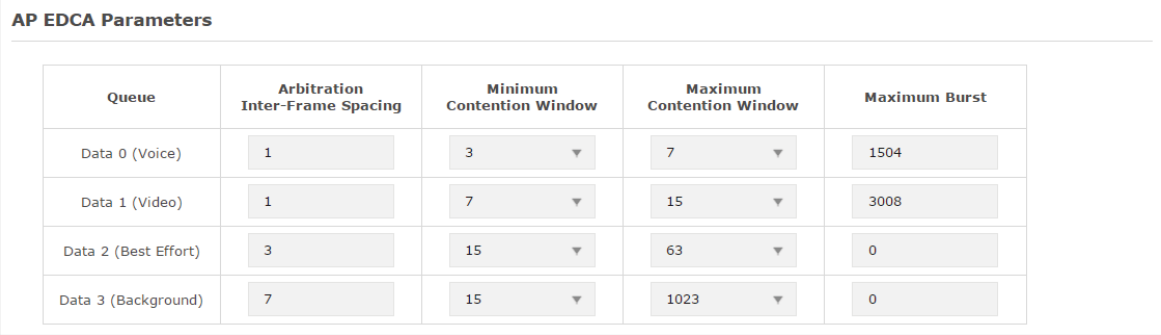
2. Check the box to enable **Wi-Fi Multimedia (WMM)**. With WMM enabled, the EAP uses the QoS function to guarantee the high priority of the transmission of audio and video packets.



Note:

If **802.11n only** mode is selected in 2.4GHz (or **802.11n only, 802.11ac only,** or **802.11 n/ac mixed** mode selected in 5GHz), the WMM should be enabled. If WMM is disabled, the **802.11n only** mode cannot be selected in 2.4GHz (or **802.11n only, 802.11ac only,** or **802.11 n/ac mixed** mode in 5GHz).

3. In the **AP EDCA Parameters** section, configure the AP EDCA ((Enhanced Distributed Channel Access) parameters. AP EDCA parameters affect traffic flowing from the EAP to the client station. The following table detailedly explains these parameters.

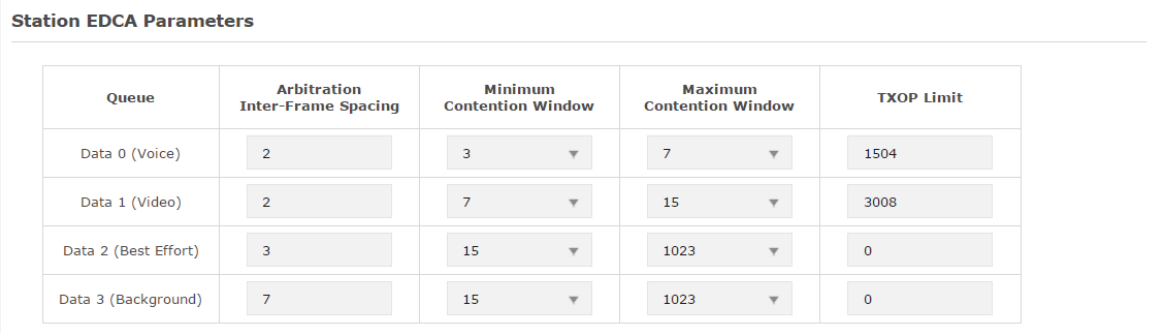


The following table detailedly explains these parameters:

Queue	Displays the transmission queue. By default, the priority from high to low is Data 0, Data 1, Data 2, and Data 3. The priority may be changed if you reset the EDCA parameters. **Data 0 (Voice):** Highest priority queue, minimum delay. Timesensitive data such as VoIP and streaming media are automatically sent to this queue. **Data 1 (Video):** High priority queue, minimum delay. Time-sensitive video data is automatically sent to this queue. **Data 2 (Best Effort):** Medium priority queue, medium throughput and delay. Most traditional IP data is sent to this queue. **Data 3 (Background):** Lowest priority queue, high throughput. Bulk data that requires maximum throughput and is not time-sensitive is sent to this queue (FTP data, for example).
Arbitration Inter-Frame Space	A wait time for data frames. The wait time is measured in slots. Valid values are from 0 to 15.
Minimum Contention Window	A list to the algorithm that determines the initial random backoff wait time (window) for retry of a transmission. This value cannot be higher than the value of Maximum Contention Window.

Maximum Contention Window	The upper limit (in milliseconds) for the doubling of the random backoff value. This doubling continues until either the data frame is sent or the Maximum Contention Window size is reached. This value must be higher than the value of Minimum Contention Window.
Maximum Burst	Maximum Burst specifies the maximum burst length allowed for packet bursts on the wireless network. A packet burst is a collection of multiple frames transmitted without header information. The decreased overhead results in higher throughput and better performance.

4. In the **Station EDCA Parameters** section, configure the station EDCA (Enhanced Distributed Channel Access) parameters. Station EDCA parameters affect traffic flowing from the client station to the EAP.

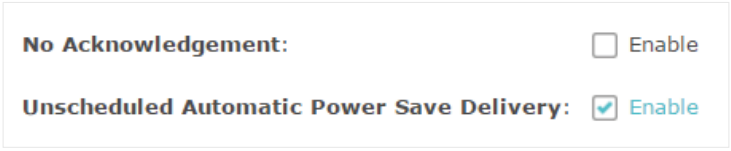


The following table detailedly explains these parameters:

Queue	Displays the transmission queue. By default, the priority from high to low is Data 0, Data 1, Data 2, and Data 3. The priority may be changed if you reset the EDCA parameters. **Data 0 (Voice):** Highest priority queue, minimum delay. Timesensitive data such as VoIP and streaming media are automatically sent to this queue. **Data 1 (Video):** High priority queue, minimum delay. Time-sensitive video data is automatically sent to this queue. **Data 2 (Best Effort):** Medium priority queue, medium throughput and delay. Most traditional IP data is sent to this queue. **Data 3 (Background):** Lowest priority queue, high throughput. Bulk data that requires maximum throughput and is not time-sensitive is sent to this queue (FTP data, for example).
Arbitration Inter-Frame Space	A wait time for data frames. The wait time is measured in slots. Valid values are from 0 to 15.

Minimum Contention Window	A list to the algorithm that determines the initial random backoff wait time (window) for retry of a transmission. This value cannot be higher than the value of Maximum Contention Window.
Maximum Contention Window	The upper limit (in milliseconds) for the doubling of the random backoff value. This doubling continues until either the data frame is sent or the Maximum Contention Window size is reached. This value must be higher than the value of Minimum Contention Window.
TXOP Limit	The TXOP Limit is a station EDCA parameter and only applies to traffic flowing from the client station to the EAP. The Transmission Opportunity (TXOP) is an interval of time, in milliseconds, when a WME (Wireless Multimedia Extensions) client station has the right to initiate transmissions onto the wireless medium (WM) towards the EAP. The valid values are multiples of 32 between 0 and 8192.

5. Choose whether to enable the following two options according to your need.



The following table detailedly explains these options:

No Acknowledgment	With this option enabled, the EAP would not acknowledge frames with QosNoAck. No Acknowledgment is recommended if VoIP phones access the network through the EAP.
Unscheduled Automatic Power Save Delivery	As a power management method, it can greatly improve the energy-saving capacity of clients.

6. Click **Save**.

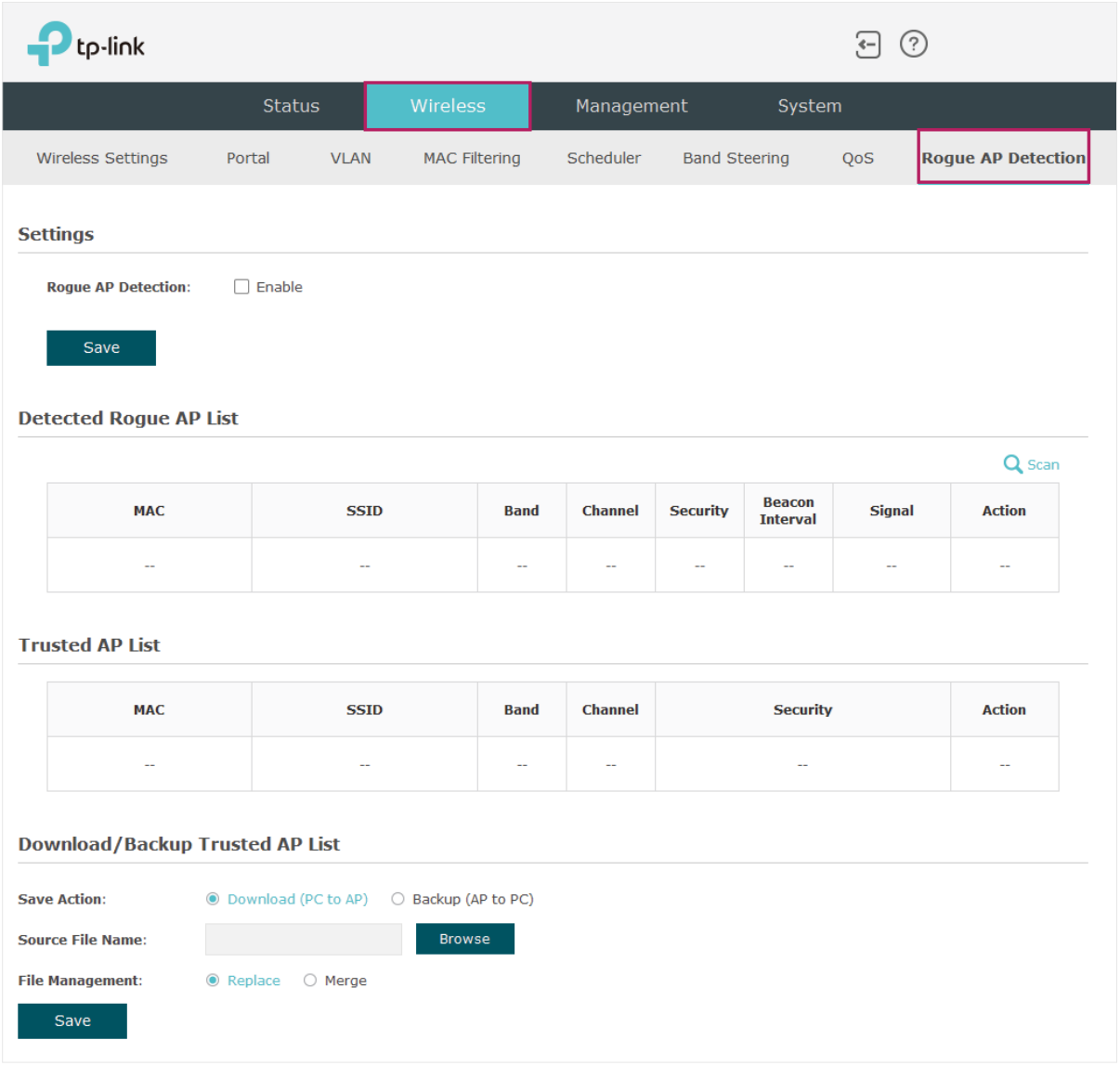
2.8 Configure Rogue AP Detection

A Rogue AP is an access point that is installed on a secure network without explicit authorization from the network administrator. With Rogue AP Detection, the EAP can scan all channels to detect the nearby APs and display the detected APs in the Detected Rogue AP list. If the specific AP is known as safe, you can move it to the Trusted APs list. Also, you can backup and import the Trusted AP list as needed.

Note:

The Rogue AP Detection feature is only used for collecting information of the nearby wireless network and does not impact the detected APs, no matter what operations you have executed in this feature.

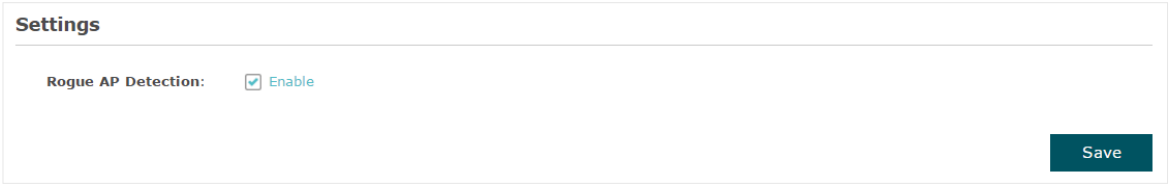
To configure Rogue AP Detection, go to the **Wireless > Rogue AP Detection** page.



Detect Rogue APs and Move the Rogue APs to the Trusted AP List

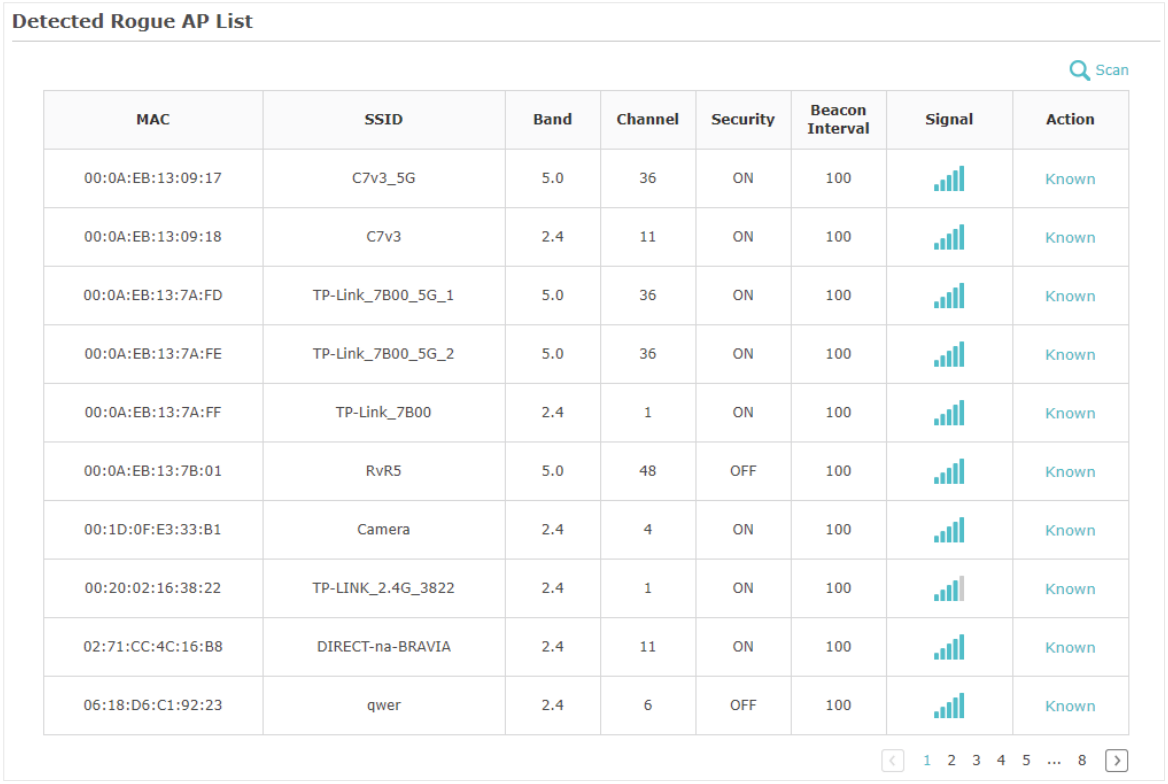
Follow the steps below to detect the nearby APs and move the trusted ones to the Trusted AP list.

1. In the **Settings** section, check the box to enable **Rogue AP Detection**. Click **Save**.



2. In the **Detected Rogue AP List** section, click Scan.

3. Wait for a few seconds without any operation. After detection is finished, the detected APs will be displayed in the list.



Detected Rogue AP List

Scan

MAC	SSID	Band	Channel	Security	Beacon Interval	Signal	Action
00:0A:EB:13:09:17	C7v3_5G	5.0	36	ON	100		Known
00:0A:EB:13:09:18	C7v3	2.4	11	ON	100		Known
00:0A:EB:13:7A:FD	TP-Link_7B00_5G_1	5.0	36	ON	100		Known
00:0A:EB:13:7A:FE	TP-Link_7B00_5G_2	5.0	36	ON	100		Known
00:0A:EB:13:7A:FF	TP-Link_7B00	2.4	1	ON	100		Known
00:0A:EB:13:7B:01	RvR5	5.0	48	OFF	100		Known
00:1D:0F:E3:33:B1	Camera	2.4	4	ON	100		Known
00:20:02:16:38:22	TP-LINK_2.4G_3822	2.4	1	ON	100		Known
02:71:CC:4C:16:B8	DIRECT-na-BRAVIA	2.4	11	ON	100		Known
06:18:D6:C1:92:23	qwer	2.4	6	OFF	100		Known

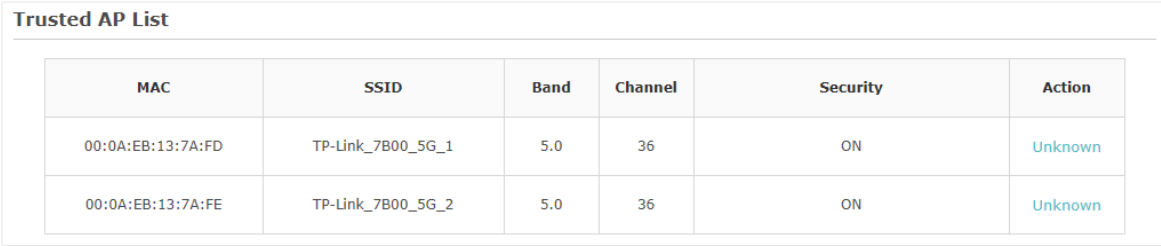
1 2 3 4 5 ... 8

The following table introduces the displayed information of the APs:

MAC	Displays the MAC address of the AP.
SSID	Displays the SSID of the AP.
Band	Displays the frequency band the AP is working on.
Channel	Displays the channel the AP is using.
Security	Displays whether the security mode is enabled on the AP.
Beacon Interval	Displays the Beacon Interval value of the EAP. Beacon frames are sent periodically by the AP to announce to the stations the presence of a wireless network. Beacon Interval determines the time interval of the beacon frames sent by the AP device.
Signal	Displays the signal strength of the AP.

4. To move the specific AP to the Trusted AP list, click Known in the **Action** column. For example, we move the first two APs in the above Detected Rogue AP list to the Trusted AP list.

5. View the trusted APs in the **Trusted AP List** section. To move the specific AP back to the Rogue AP list, you can click Unknown in the **Action** column.

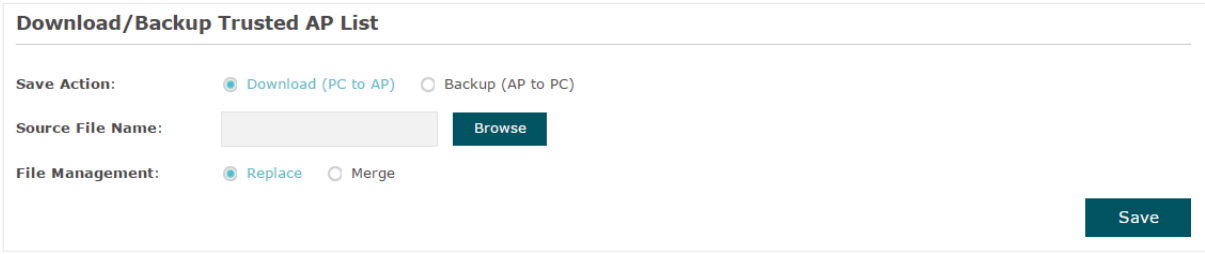


Manage the Trusted AP List

You can download the trusted AP list from your local host to the EAP or backup the current Trusted AP list to your local host.

- **Download the Trusted AP List From the Host**

You can import a trusted AP list which records the MAC addresses of the trusted APs. The AP whose MAC address is in the list will not be detected as a rogue AP.



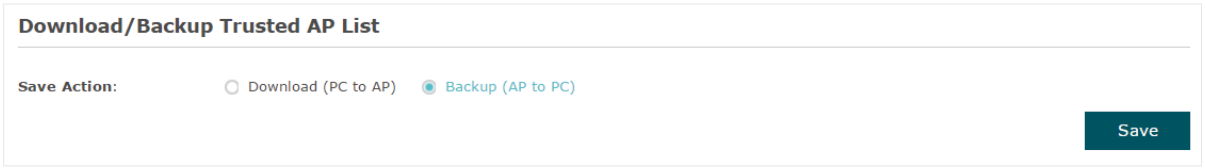
Follow the steps below to import a trusted AP list to the EAP:

1. Acquire the trusted AP list. There are two ways:
   - Backup the list from a EAP. For details, refer to *Backup the Trusted AP List to the Host*.
   - Manually create a trusted AP list. Create a txt. file, input the MAC addresses of the trusted APs in the format XX:XX:XX:XX:XX:XX and use the Space key to separate each MAC address. Save the file as a **cfg** file.
2. On this page, check the box to choose **Download (PC to AP)**.
3. Click Browse and select the trusted AP list from your local host.
4. Select the file management mode. Two modes are available: **Replace** and **Merge**. Replace means that the current trusted AP list will be replaced by the one you import. Merge means that the APs in the imported list will be added to the current list with the original APs remained.

5. Click **Save** to import the trusted AP list.

- ## Backup the Trusted AP List to the Host

You can backup the current trusted AP list and save the backup file to the local host.



Follow the steps below to backup the current trusted AP list:

1. On this page, check the box to choose **Backup (AP to PC)**.
2. Click **Save** and the current trusted AP list will be downloaded to your local host as a **cfg** file.

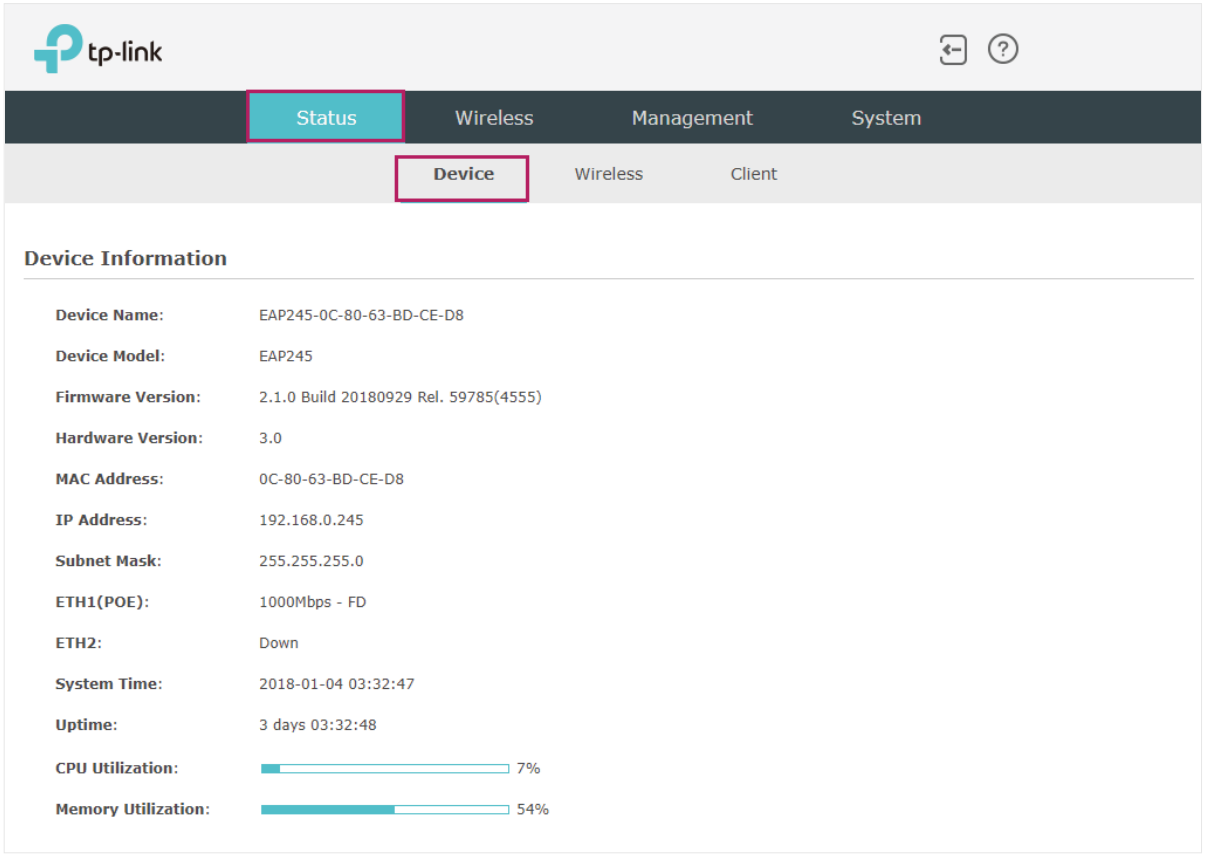
3 Monitor the Network

This chapter introduces how to monitor the running status and statistics of the wireless network, including:

- *Monitor the EAP*
- *Monitor the Wireless Parameters*
- *Monitor the Clients*

3.1 Monitor the EAP

To monitor the EAP information, go to the **Status** > **Device** page.



The following device information is displayed:

Device Name	Displays the name of the EAP. The name consists of the product model followed with the MAC address of the EAP by default.
Device Model	Displays the product model of the EAP.
Firmware Version	Displays the current firmware version the EAP. To update the firmware, you can refer to *Update the Firmware*.
Hardware Version	Displays the hardware version the EAP.
MAC Address	Displays the MAC address of the EAP.
IP Address	Displays the IP address of the EAP.
Subnet Mask	Displays the subnet mask of the EAP.
System Time	Displays the current system time. To configure the system time, you can refer to *Configure the System Time*.
Uptime	Displays how long the EAP has been working since it starts up.

CPU Utilization	Displays the CPU occupancy. If this value is too high, the EAP may work abnormally.
Memory Utilization	Displays the memory occupancy.

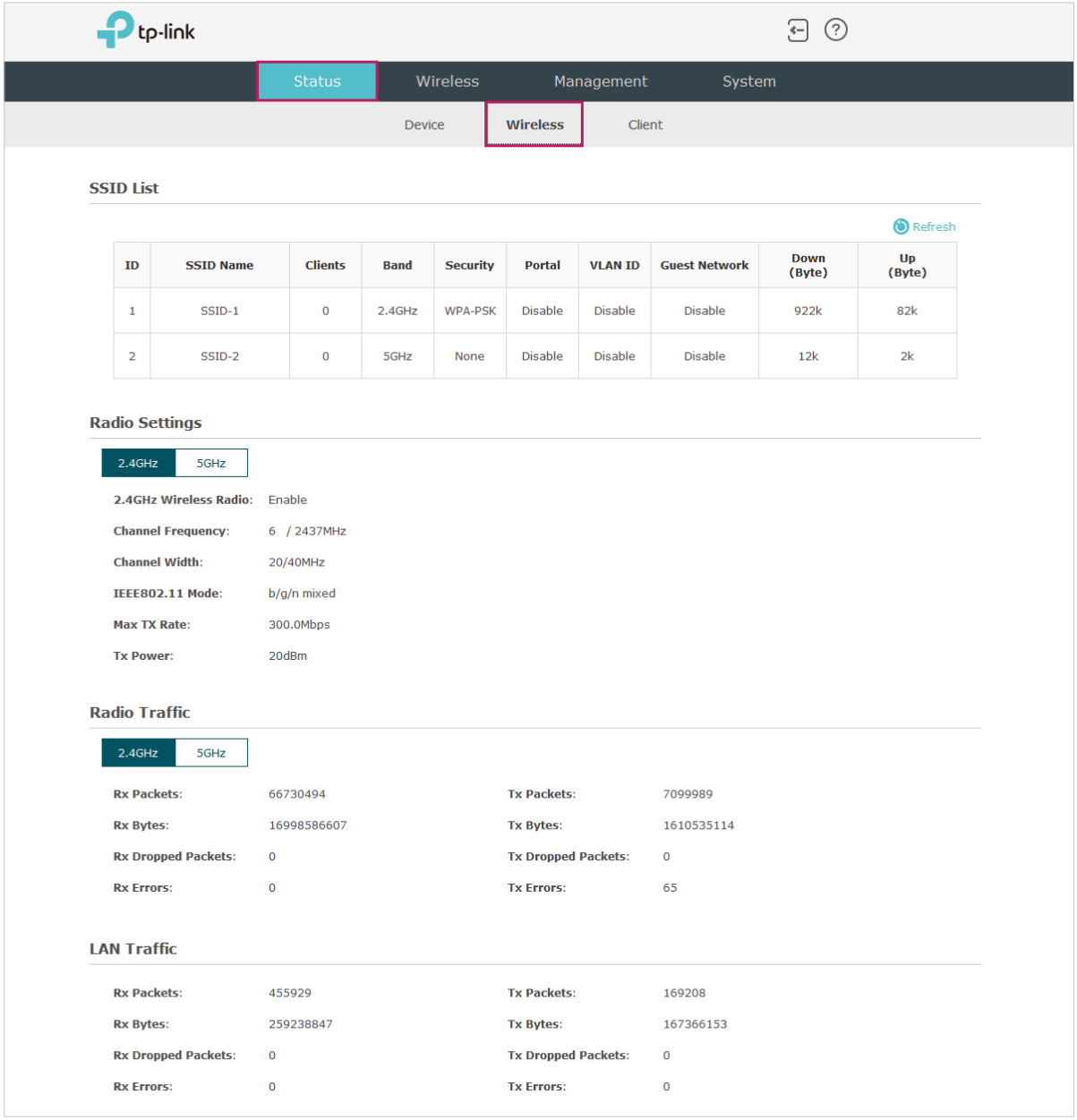
3.2 Monitor the Wireless Parameters

You can view the wireless parameters of the EAP, including SSID lists, radio settings, radio traffic and LAN traffic.

Tips:

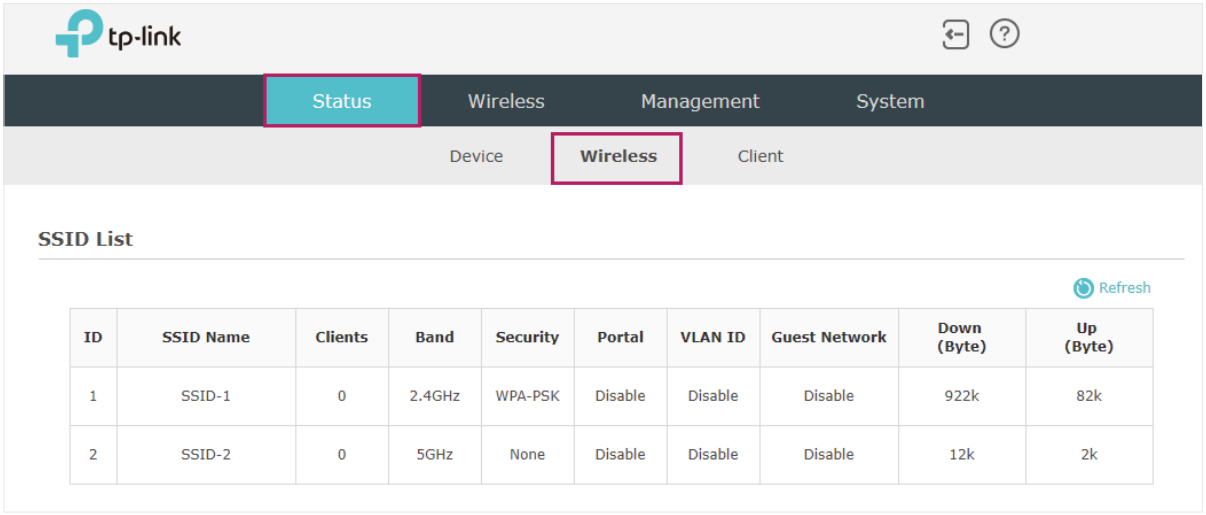
To change the wireless parameters, you can refer to *Configure the Wireless Parameters*.

To monitor the wireless parameters, go to the **Status** > **Wireless** page.



Monitor the SSIDs

You can monitor the SSID information of the EAP.

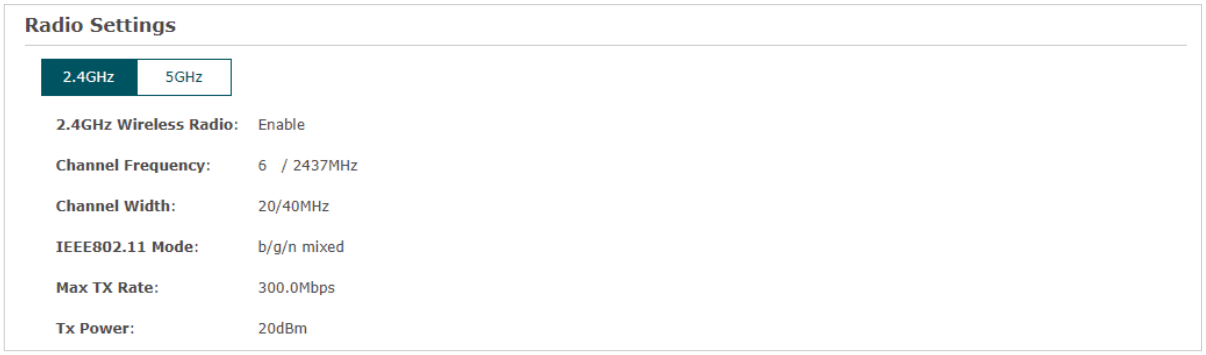


The following table introduces the displayed information of the SSID:

SSID Name	Displays the SSID name.
Clients	Displays the number of clients currently connected to the SSID.
Band	Displays the frequency band the SSID is currently using.
Security	Displays the security mode of the SSID.
Portal	Displays whether portal function is enabled on the SSID.
VLAN ID	Displays the VLAN ID of the SSID.
Guest Network	Display guest network is enabled on the SSID.
Down (Byte)	Displays the total download traffic since the SSID starts working.
Up (Byte)	Displays the total upload traffic since the SSID starts working.

Monitor the Radio Settings

You can monitor the radio settings of the EAP. For a dual-band EAP, there are two bands: 2.4GHz and 5GHz. You can click to select a band to view. The following figure posted in the introduction takes 2.4GHz as an example.

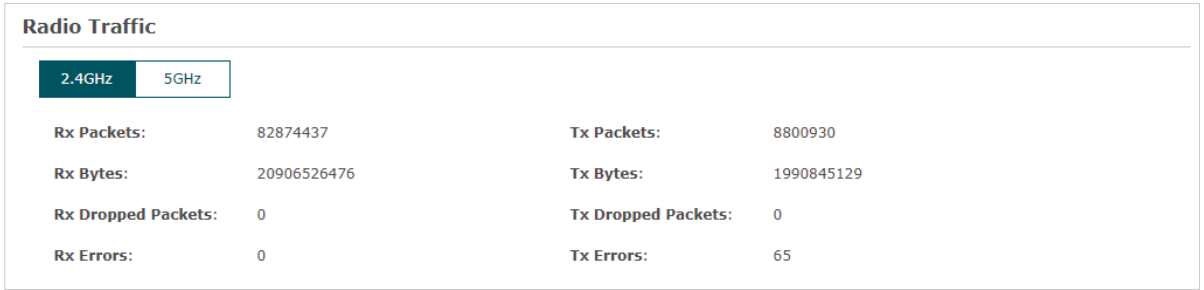


The following table introduces the displayed information of the EAP.

2.4GHz/5GHz Wireless Radio	Displays whether wireless function is enabled on the radio band.
Channel Frequency	Displays the channel and frequency which are currently used by the EAP.
Channel Width	Displays the channel width which is currently used by the EAP.
IEEE802.11 Mode	Displays the IEEE802.11 protocol currently used by the EAP.
Max TX Rate	Displays the maximum physical rate of the EAP.
Tx Power	Displays the transmit power of the EAP.

Monitor Radio Traffic

You can monitor the radio traffic of the EAP. For a dual-band EAP, there are two bands: 2.4GHz and 5GHz. You can click to select a band to view. The following figure posted in the introduction takes 2.4GHz as an example.

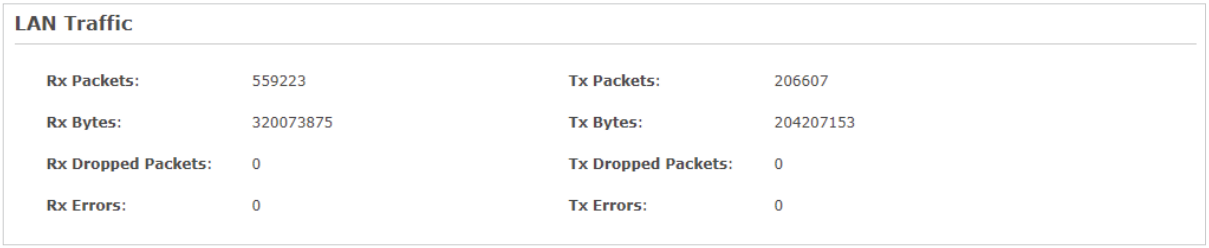


The following traffic information of the radio is displayed:

Rx Packets	Displays the total number of the received packets on the 2.4GHz/5GHz band since the EAP starts up.
Tx Packets	Displays the total number of the sent packets on the 2.4GHz/5GHz band since the EAP starts up.
Rx Bytes	Displays the total received traffic on the 2.4GHz/5GHz band since the EAP starts up.
Tx Bytes	Displays the total sent traffic on the 2.4GHz/5GHz band since the EAP starts up.
Rx Dropped Packets	Displays the total number of the dropped packets which are received on the 2.4GHz/5GHz band since the EAP starts up.
Tx Dropped Packets	Displays the total number of the dropped packets which are sent on the 2.4GHz/5GHz band since the EAP starts up.
Rx Errors	Displays the total number of error packets which are received on the 2.4GHz/5GHz band since the EAP starts up.
Tx Errors	Displays the total number of error packets which are sent on the 2.4GHz/5GHz band since the EAP starts up.

Monitor LAN Traffic

You can view the LAN traffic of EAP.



The following traffic information of the LAN is displayed:

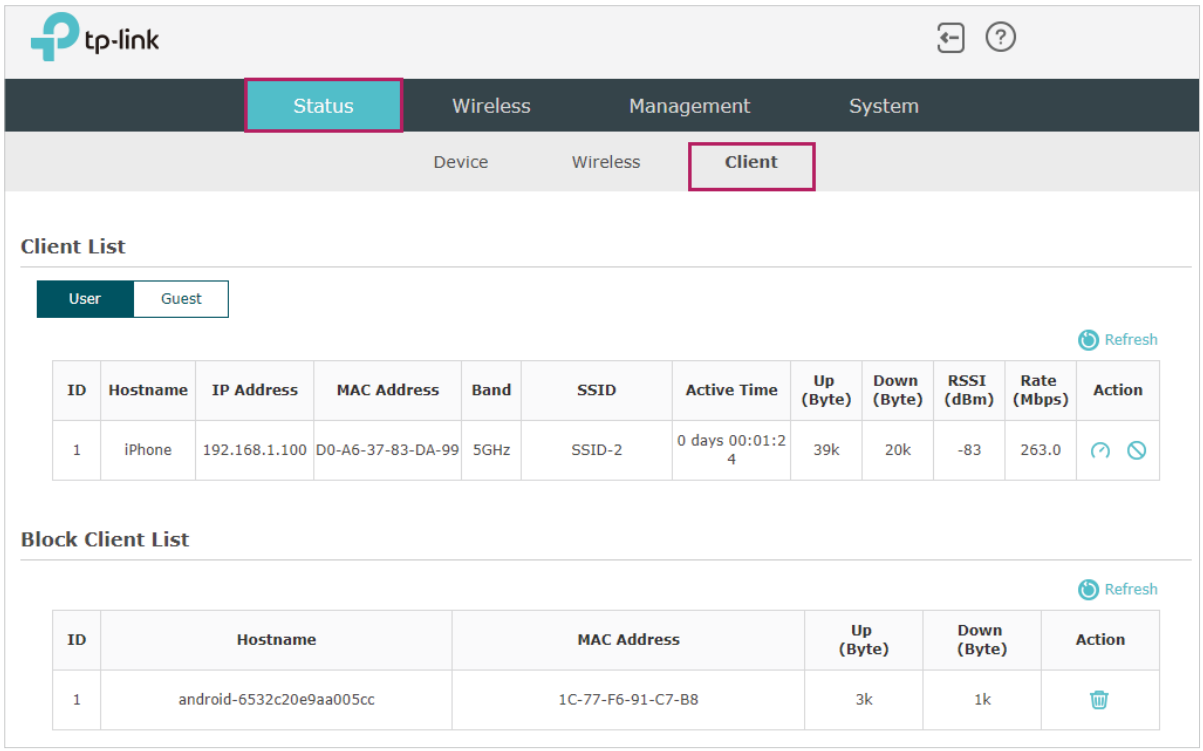
Rx Packets	Displays the total number of received packets in the LAN since the EAP starts up.
Tx Packets	Displays the total number of sent packets in the LAN since the EAP starts up.
Rx Bytes	Displays the total received traffic in the LAN since the EAP starts up.
Tx Bytes	Displays the total sent traffic in the LAN since the EAP starts up.

Rx Dropped Packets	Displays the total number of the dropped packets which are received by the EAP since it starts up.
Tx Dropped Packets	Displays the total number of the dropped packets which are sent by the EAP since it starts up.
Rx Errors	Displays the total number of the received error packets since the EAP starts up.
Tx Errors	Displays the total number of the sent error packets since the EAP starts up.

3.3 Monitor the Clients

You can monitor the information of the clients connected to the EAP.

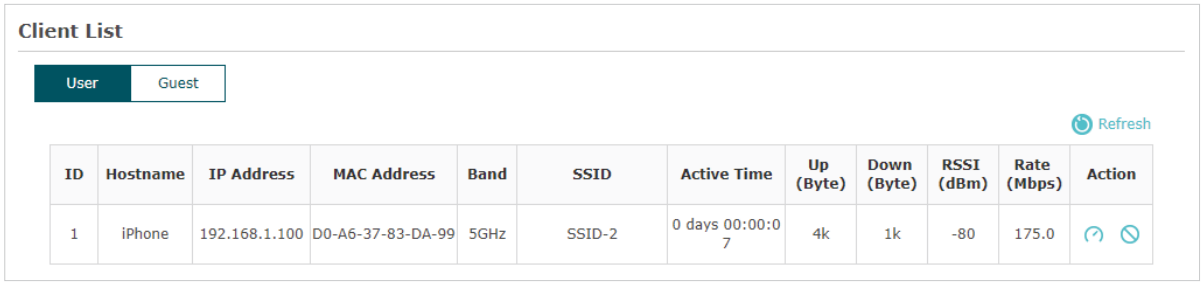
To monitor the client information, go to the **Status** > **Client** page.



View Client Information

There are two types of clients: users and portal authenticated guests. Users are the clients that connect to the SSID with portal authentication disabled. Guests are the clients that connect to the SSID with portal authentication enabled.

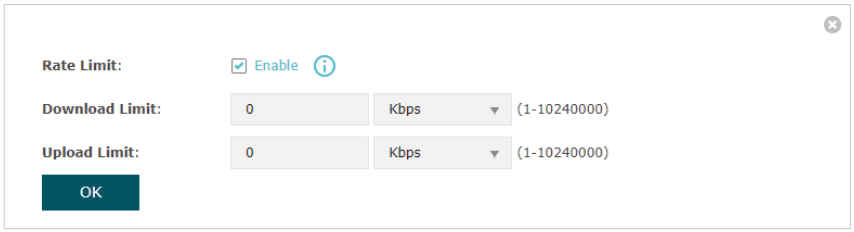
Click the User Guest to select the client types to view the information of the EAP. The following figure posted in the introduction takes user as an example.



The following client information is displayed:

Hostname	Displays the hostname of the user.
IP Address	Displays the IP address of the user.
MAC Address	Displays the MAC address of the user.
Band	Displays the frequency band the user is working on.
SSID	Displays the SSID the user is connecting to.
Active Time	Displays how long the user has been connected to the SSID.
Up (Byte)	Displays the user's total uploaded traffic to the EAP since the last connection.
Down (Byte)	Displays the user's total downloaded traffic from the EAP since the last connection.
RSSI (dBm)	Displays the RSSI(Received Signal Strength Indication) of the user.
Rate (Mbps)	Displays the wireless transmission rate of the user.

You can execute the corresponding operation to the EAP by clicking an icon in the Action column.

	Click the icon to configure the rate limit of the client to balance bandwidth usage. Enter the download limit and upload limit and click **OK**. You can limit the download and upload rate for each clients by which connect to specific SSIDs when configuring SSIDs, refer to *Configure SSIDs* to get more details. Note that the download and upload rate will be limited to the smaller value if you set the limit value both in SSID and client configuration. 
	Click the icon to block the access of the client to the network.

View Block Client Information

You can view the information of the clients that have been blocked and resume the client's access.

The following information of the blocked client is displayed:

Hostname	Displays the hostname of the user.
MAC Address	Displays the MAC address of the user.
Up (Byte)	Displays the user's total uploaded traffic to the EAP since the last connection.
Down (Byte)	Displays the user's total downloaded traffic from the EAP since the last connection.
Action	You can click the to resume the client's access to the internet.

4 Manage the EAP

The EAP provides powerful functions of device management and maintenance. This chapter introduces how to manage the EAP, including:

- *Manage the IP Address of the EAP*
- *Manage System Logs*
- *Configure Web Server*
- *Configure Management Access*
- *Configure LED*
- *Configure Wi-Fi Control (For EAP115-Wall and EAP230-Wall)*
- *Configure PoE (For EAP225-Wall and EAP235-Wall)*
- *Configure SSH*
- *Configure SNMP*

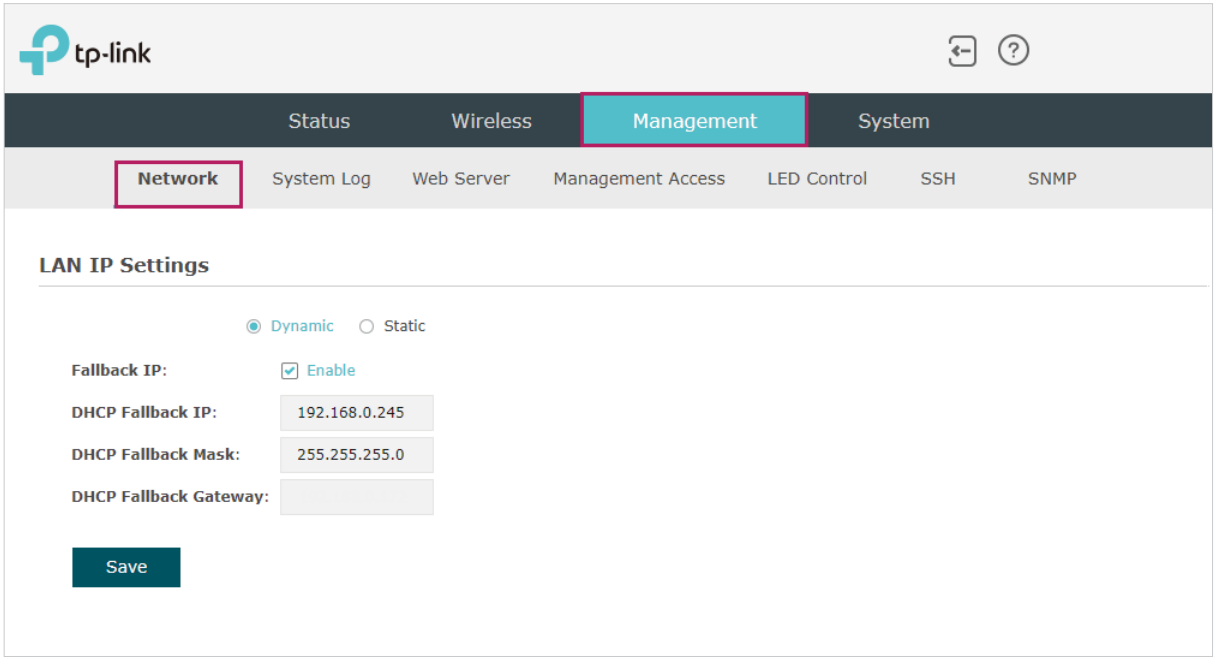
4.1 Manage the IP Address of the EAP

The IP address of the EAP can be a dynamic IP address assigned by the DHCP server or a static IP address manually specified by yourself. By default, the EAP gets a dynamic IP address from the DHCP server. You can also specify a static IP address according to your needs.

Tips:

For detailed introduction about how to find the dynamic IP address of the EAP, refer to *Log In via a Wired Connection*.

To configure the IP address of the EAP, go to the **Management** > **Network** page.

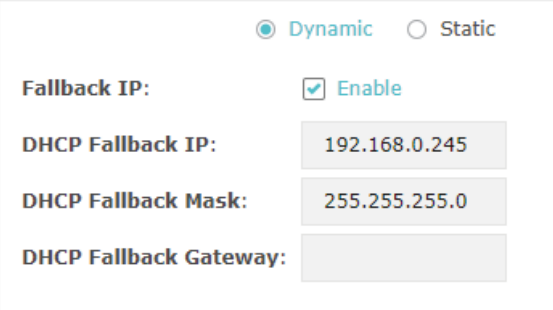


Follow the steps below to configure the IP address of the EAP:

1. Choose your desired IP address mode: **Dynamic** or **Static**.
2. Configure the related parameters according to your selection.

- **Dynamic**

If you choose Dynamic as the IP address mode, make sure that there is a reachable DHCP server on your network and the DHCP sever is properly configured to assign IP address and the other network parameters to the EAP.

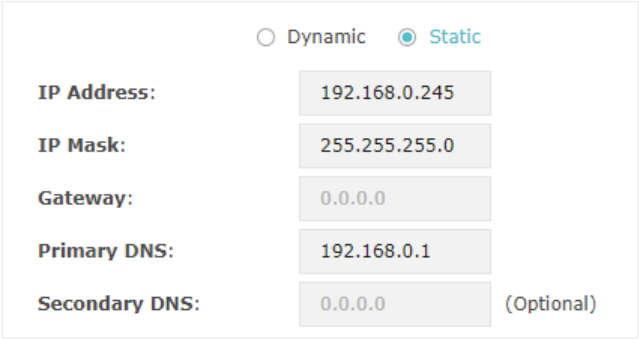


For network stability, you can also configure the fallback IP parameters for the EAP:

Fallback IP	With the fallback IP configured, if the EAP fails to get an IP address from a DHCP server within 10 seconds, the fallback IP will work as the IP address of the EAP. After that, however, the EAP will keep trying to obtain an IP address from the DHCP server until it succeeds.
DHCP Fallback IP	Specify a fallback IP address for the EAP. Make sure that this IP address is not being used by any other device in the same LAN. The default DHCP fallback IP is 192.168.0.254.
DHCP Fallback IP MASK	Specify the network mask of the fallback IP. The default DHCP fallback IP mask is 255.255.255.0.
DHCP Fallback Gateway	Specify the network gateway.

- **Static**

If you choose Static as the IP address mode, you need to manually specify an IP address and the related network parameters for the EAP. Make sure that the specified IP address is not being used by any other device in the same LAN.



Configure the IP address and network parameters as the following table shows:

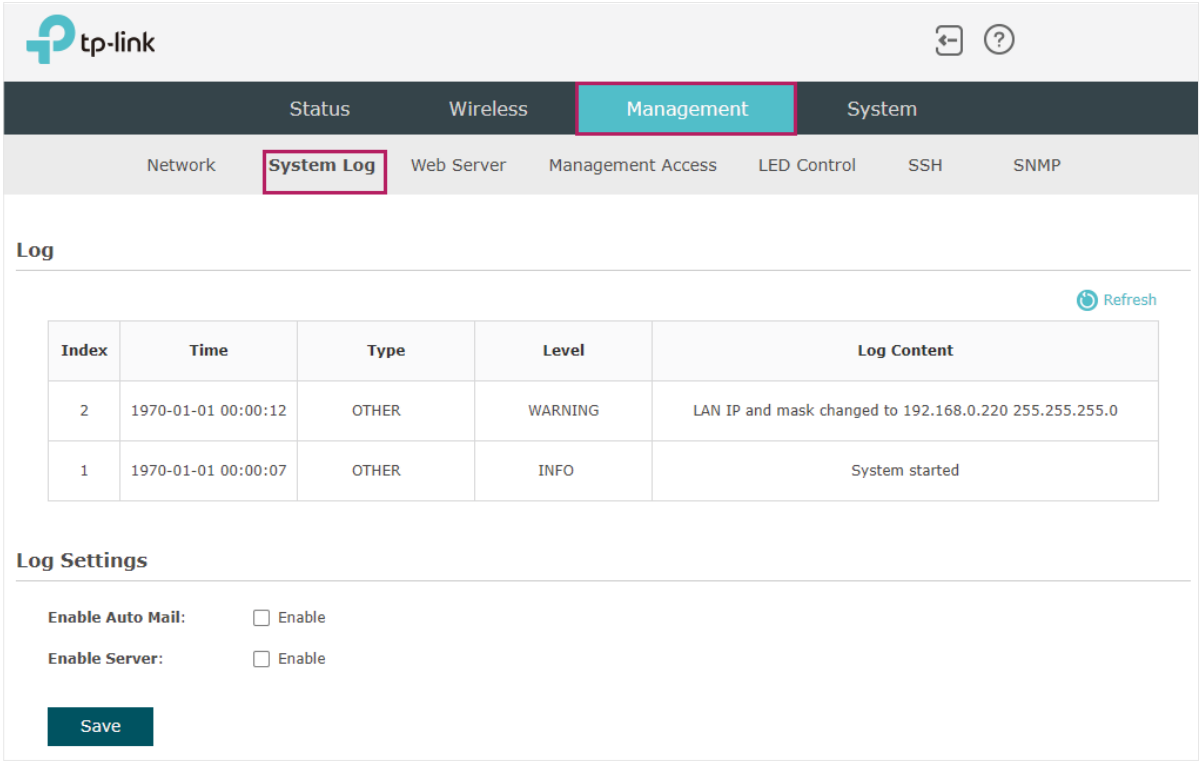
IP Address	Specify a static IP address for the EAP.
IP Mask	Specify the network mask.
Gateway	Specify the network gateway.
Primary DNS	Specify the primary DNS server.
Secondary DNS	Specify the secondary DNS server. (Optional)

3. Click **Save**.

4.2 Manage System Logs

System logs record information about hardware, software as well as system issues and monitors system events. With the help of system log, you can get informed of system running status and detect the reasons for failure.

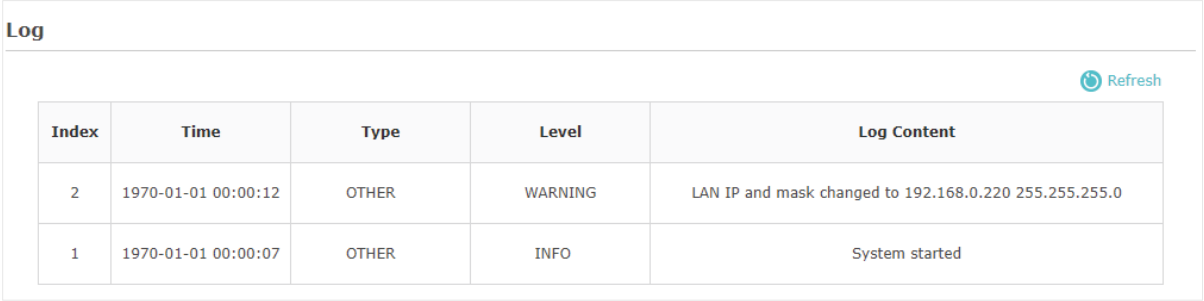
To manage system logs, go to the **Management > System Log** page.



On this page, you can view the system logs and configure the way of receiving system logs.

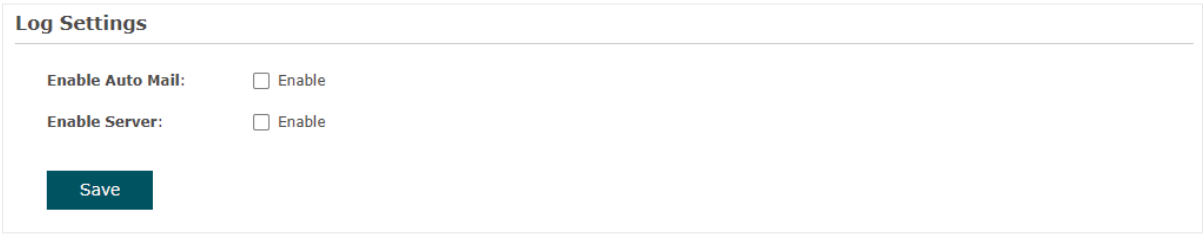
View System Logs

In the **Log** section, you can click Refresh to refresh the logs and view them in the table.



Configure the Way of Receiving Logs

In the **Log Settings** section, you can configure the ways of receiving system logs.



Follow the steps below to configure this feature:

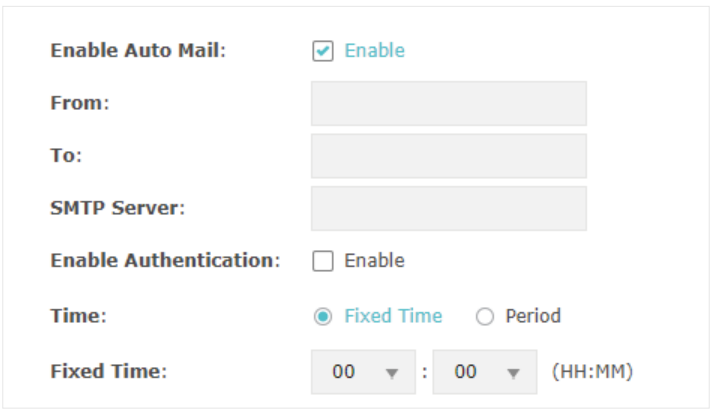
1. Check the corresponding box to enable one or more ways of receiving system logs, and configure the related parameters. Two ways are available: *Auto Mail* and *Server*.

   ■ Auto Mail

   If Auto Mail is configured, system logs will be sent to a specified mailbox. Check the box to enable the feature and configure the related parameters.

Note:

SSL encryption is not currently supported.



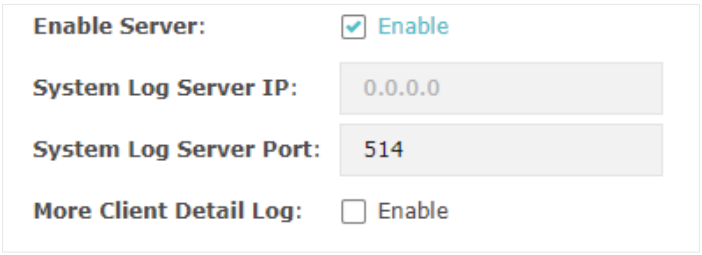
The following table introduces how to configure these parameters:

From	Enter the sender's E-mail address.
To	Enter the receiver's E-mail address.
SMTP Server	Enter the IP address of the sender's SMTP server. ***Note:*** At present, the domain name of SMTP server is not supported in this field.
Enable Authentication	If the sender's mailbox is configured with You can check the box to enable mail server authentication. Enter the sender's username and password.
Time Mode	Select Time Mode: **Fixed Time** or **Period Time**. Fixed Time means that the system logs will be sent at the specific time every day. Period Time means that the system logs will be sent at the specific time interval.
Fixed Time	If you select **Fixed Time**, specify a fixed time to send the system log mails. For example, 08:30 indicates that the mail will be sent at 8:30 am everyday.
Period Time	If you select **Period Time**, specify a period time to regularly send the system log mail. For example, 6 indicates that the mail will be sent every six hours.

■ **Server**

If Server is configured, system logs will be sent to the specified system log server, and you can use the syslog software to view the logs on the server.

Enable this feature and enter the IP address and port of the system log server.



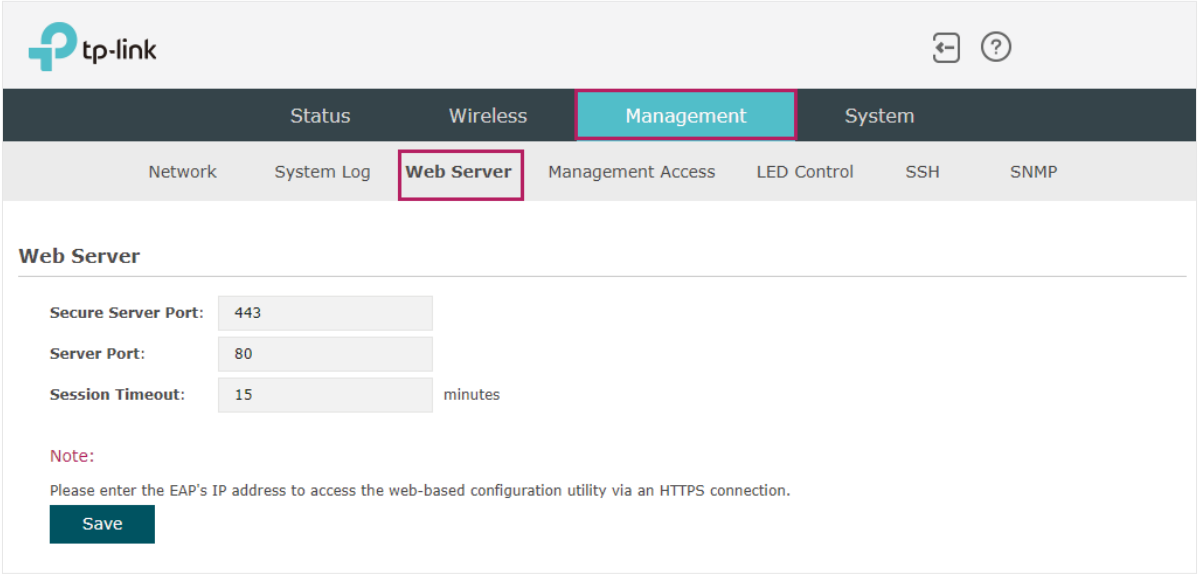
System Log Server IP	Enter the IP address of the server.
System Log Server Port	Enter the port of the server.
More Client Detail Log	With the option enabled, the logs of clients will be sent to the server.

2. Click **Save**.

4.3 Configure Web Server

With the web server, you can log in to the management web page of the EAP. You can configure the web server parameters of the EAP according to your needs.

To configure Web Server, go to the **Management > Web Server** page.



Follow the steps below to configure Web Server:

1. Refer to the following table to configure the parameters:

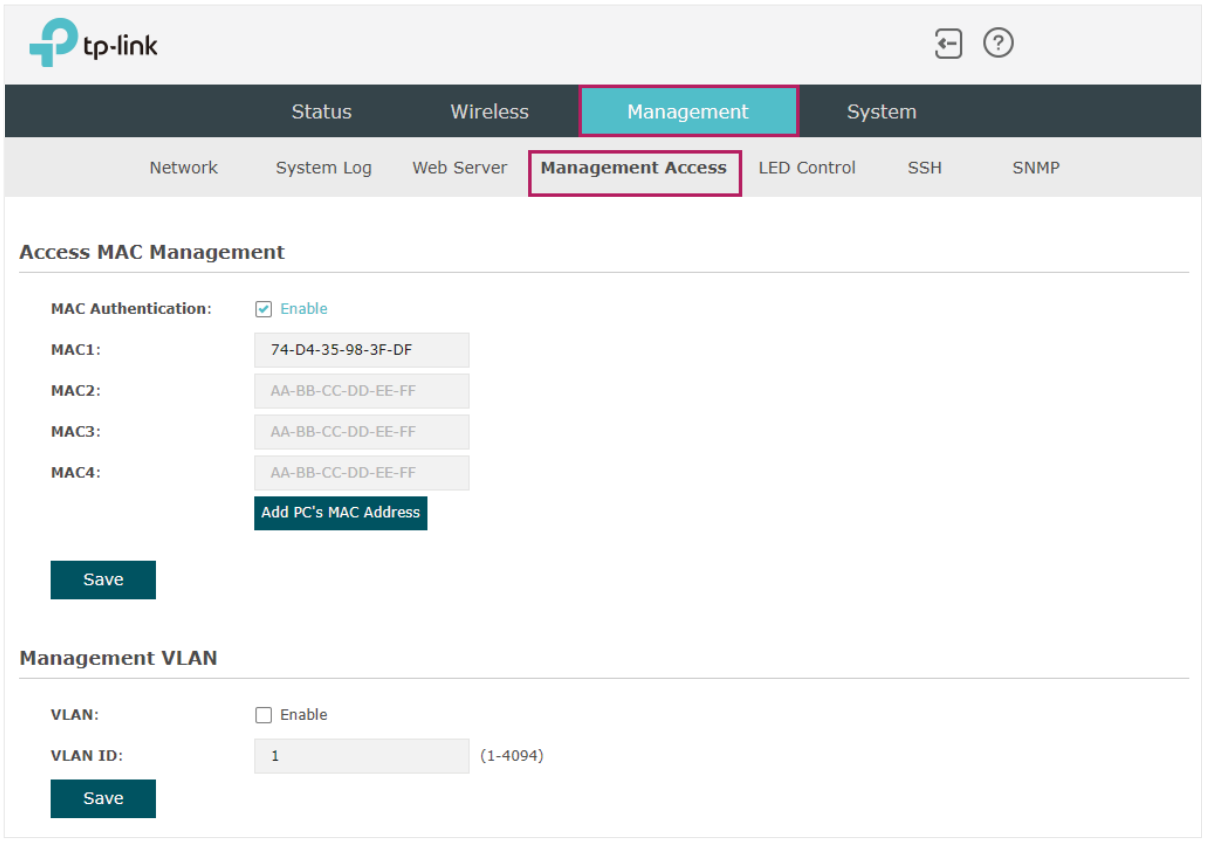
Secure Server Port	Designate a secure server port for web server in HTTPS mode. By default the port is 443.
Server Port	Designate a server port for web server in HTTP mode. By default the port is 80.
Session Timeout	Set the session timeout. If you do nothing with the web page within the timeout, the system will log out automatically. You can log in again if you want to go back to web page.

2. Click **Save**.

4.4 Configure Management Access

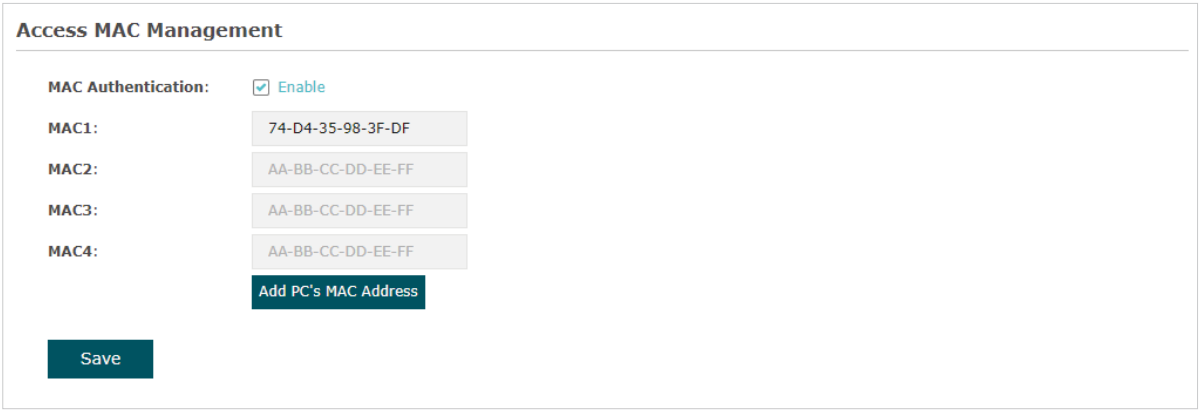
By default, all hosts in the LAN can log in to the management web page of the EAP with the correct username and password. To control the hosts' access to the web page of the EAP, you can specify the MAC addresses and management VLAN of the hosts that are allowed to access the web page.

To configure Management Access, go to the **Management > Management Access** page.



Configure Access MAC Management

Only the hosts with the specific MAC addresses are allowed to access the web page, and other hosts without MAC addresses specified are not allowed to access the web page.



Follow the steps below to configure Management Access on this page:

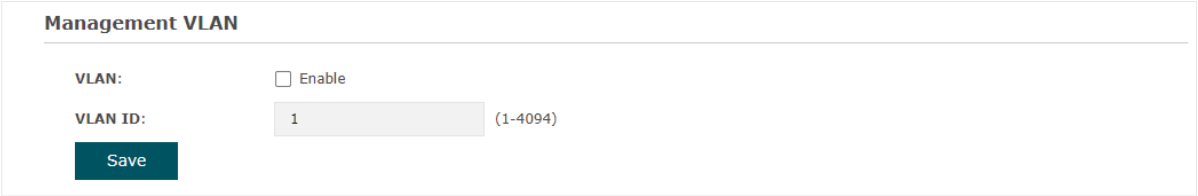
1. Check the box to enable **MAC Authentication**.
2. Specify one or more MAC addresses in the **MAC1/MAC2/MAC3/MAC4** fields. Up to four MAC addresses can be added.
3. Click **Save**.

Tips:

- You can click Add PC's MAC Address to quickly add the MAC address of your current logged-in host, .
- Verify the MAC addresses carefully. Once the settings are saved, only the hosts in the MAC address list can access the web page of the EAP.
- If you cannot log in to the web page after saving the wrong configuration, you can reset the EAP to the factory defaults and use the default username and password (both admin) to log in.

Configure Management VLAN

Management VLAN provides a safer method to manage the EAP. With Management VLAN enabled, only the hosts in the Management VLAN can access the web page of the EAP. Since most hosts cannot process VLAN TAGs, you can connect the management host to the network via a switch, and set up correct VLAN settings for the switches on the network to ensure the communication between the host and the EAP in the Management VLAN.



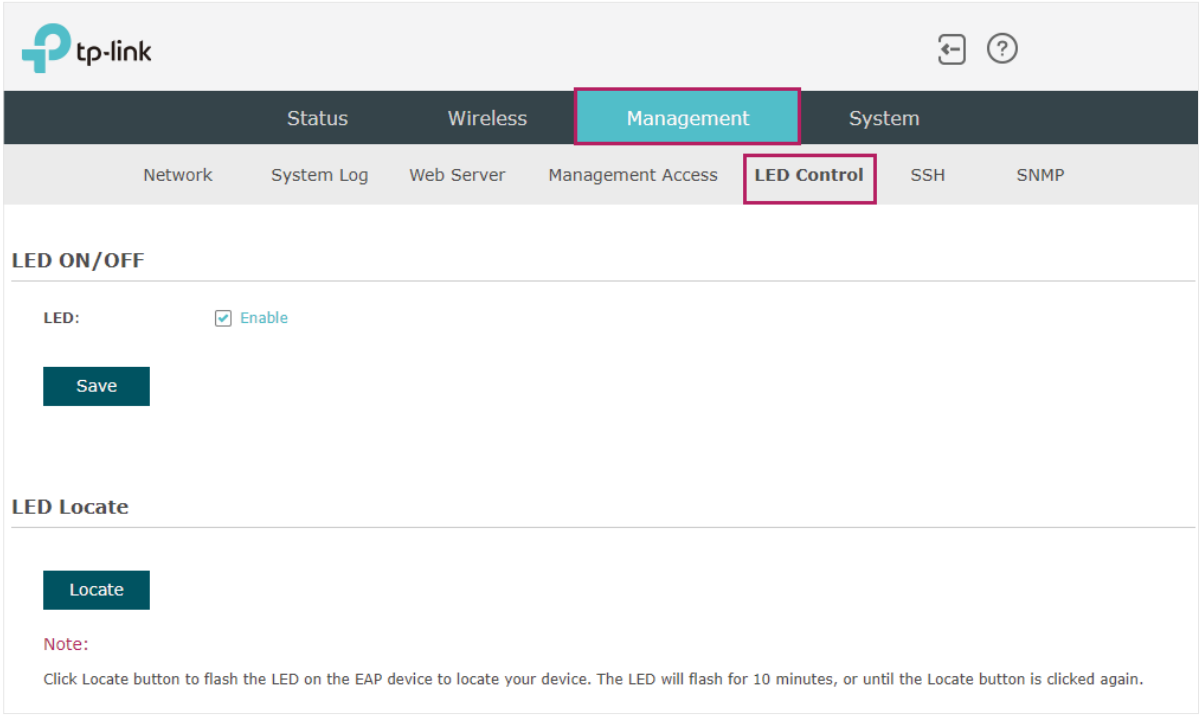
Follow the steps below to configure Management VLAN on this page:

1. Check the box to enable **Management VLAN**.
2. Specify the VLAN ID of the management VLAN. Only the hosts in the Management VLAN can log in to the EAP via the Ethernet port.
3. Click **Save**.

4.5 Configure LED

You can turn on or off the LED light of the EAP and flash the LED to locate your device.

To configure LED, go to the **Management > LED Control** page.

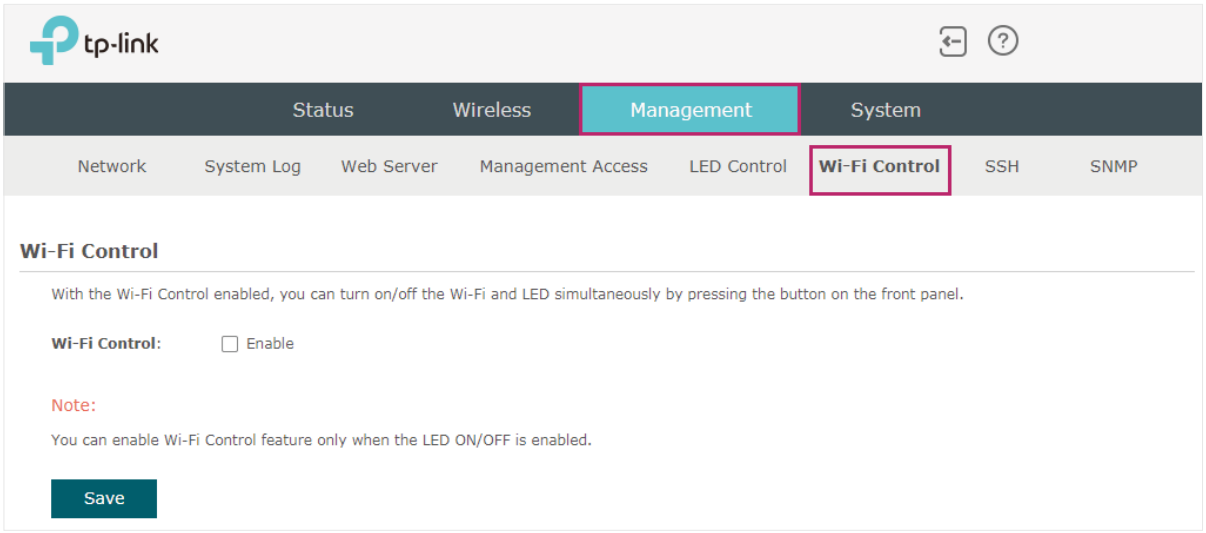


Check the box to turn on or turn off the LED light of the EAP, and click **Save**. To flash the LED, click **Locate**. Then the LED will flash for 10 minutes or until the locate button is clicked again.

4.6 Configure Wi-Fi Control (For EAP115-Wall and EAP230-Wall)

Both EAP115-Wall and EAP230-Wall have an LED/Wi-Fi button on the front panel. With Wi-Fi Control enabled, you can press the button to turn on or off both of the Wi-Fi and LED at the same time.

To configure Wi-Fi Control, go to the **Management > Wi-Fi Control** page.



Check the box to enable Wi-Fi Control and click **Save**.

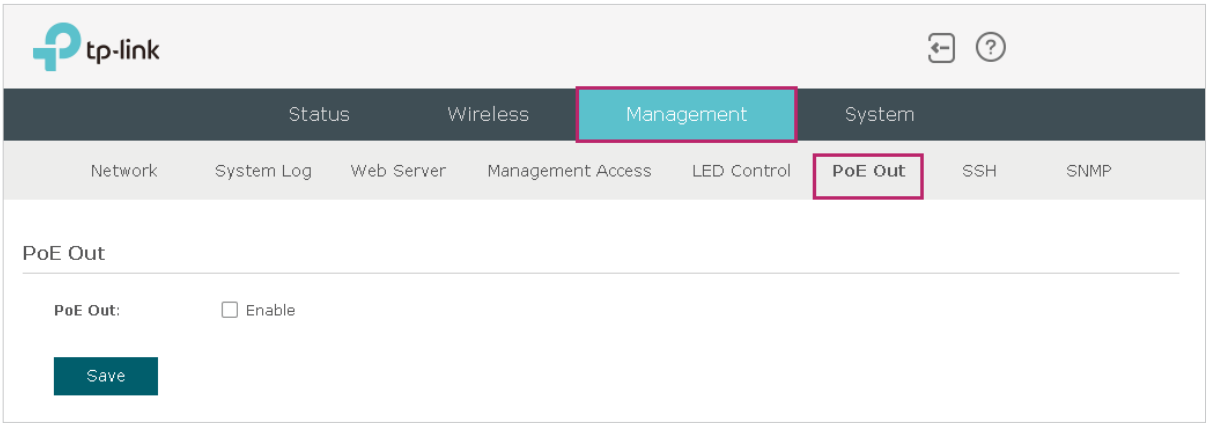
Note:

You can enable Wi-Fi Control only when the option **LED ON/OFF** is enabled.

4.7 Configure PoE (For EAP225-Wall and EAP235-Wall)

Both EAP225-Wall and EAP235-Wall have a PoE OUT port that can transmit data and supply power to the client simultaneously. You can also disable the PoE feature to make the port transmit data only.

To configure PoE, go to the **Management > PoE Out** page.

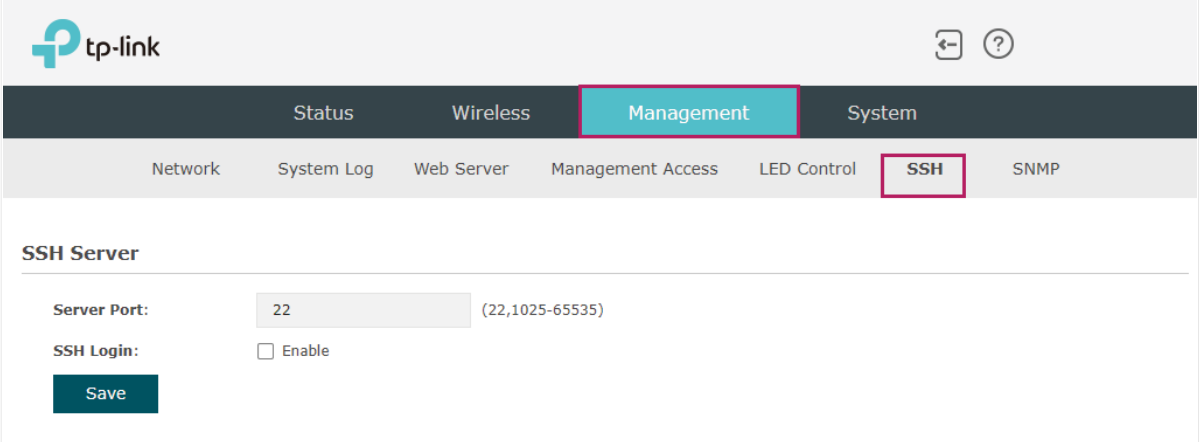


Check the box to enable the PoE feature and click **Save**.

4.8 Configure SSH

If you want to remotely log in to the EAP via SSH, you can deploy an SSH server on your network and configure the SSH feature on the EAP.

To configure SSH, go to the **Management > SSH** page.



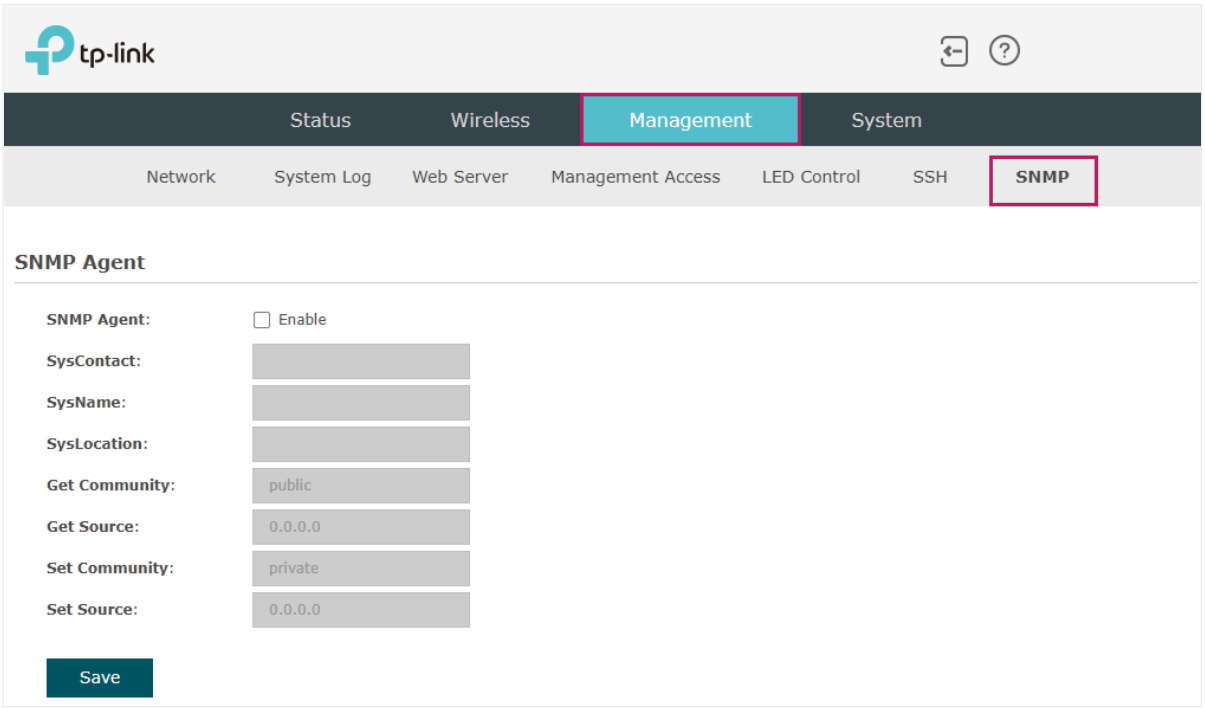
Follow the steps below to configure SSH on this page:

1. Enter the port number of the SSH server.
2. Check the box to enable **SSH Login**. By default, it is disabled.
3. Click **Save**.

4.9 Configure SNMP

The EAP can be configured as an SNMP agent and work together with the SNMP manager. Once the EAP has become an SNMP agent, it is able to receive and process request messages from the SNMP manager. At present, the EAP supports SNMP v1 and v2c.

To configure the EAP as an SNMP agent, go to the **Management > SNMP** page.



Follow the steps below to complete the configuration on this page:

1. Check the box to enable **SNMP Agent**.
2. Refer to the following table to configure the required parameters:

SysContact	Enter the textual identification of the contact person for this managed node.
SysName	Enter an administratively-assigned name for this managed node.
SysLocation	Enter the physical location of this managed node.
Get Community	Community refers to a host group aiming at network management. Get Community only has the read-only right of the device's SNMP information. The community name can be considered a group password. The default setting is public.
Get Source	Defines the IP address (for example, 10.10.10.1) for management systems that can serve as Get Community to read the SNMP information of this device. The default is 0.0.0.0, which means all hosts can read the SNMP information of this device.

Set Community	Set Community has the read and write right of the device's SNMP information. Enter the community name that allows read/write access to the device's SNMP information. The community name can be considered a group password. The default setting is private.
Set Source	Defines the IP address (for example, 10.10.10.1) for management systems that can serve as Set Community to read and write the SNMP information of this device. The default is 0.0.0.0, which means all hosts can read and write the SNMP information of this device.

3. Click **Save**.

Note:

Defining community can allow management systems in the same community to communicate with the SNMP Agent. The community name can be seen as the shared password of the network hosts group. Thus, for the security, we recommend that modify the default community name before enabling the SNMP Agent service. If the field of community is blank, the SNMP Agent will not respond to any community name.

5 Configure the System

This chapter introduces how to configure the system of the EAP, including:

- *Configure the User Account*
- *Configure the System Time*
- *Reboot and Reset the EAP*
- *Backup and Restore the Configuration*
- *Update the Firmware*

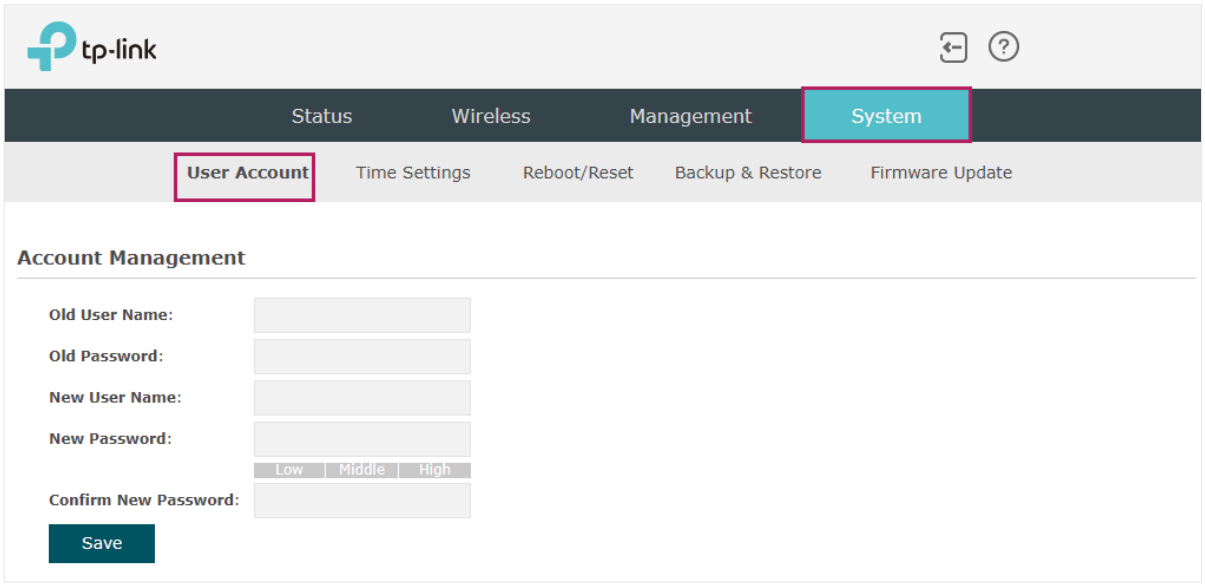
5.1 Configure the User Account

Every EAP has a user account, which is used to log in to the management page of the EAP. When you start the EAP at the first time, the username and password of the user account are both admin. After the first login, the system will require you to set a new username and a new password for the user account. And then you can use the new user account to log in to the EAP. Also, you can change your user account as needed.

Tips:

Please remember your user account well. If you forget it, reset the EAP to the factory defaults and log in with the default user account (username and password are both admin).

To configure the user account, go to **System > User Account** page.



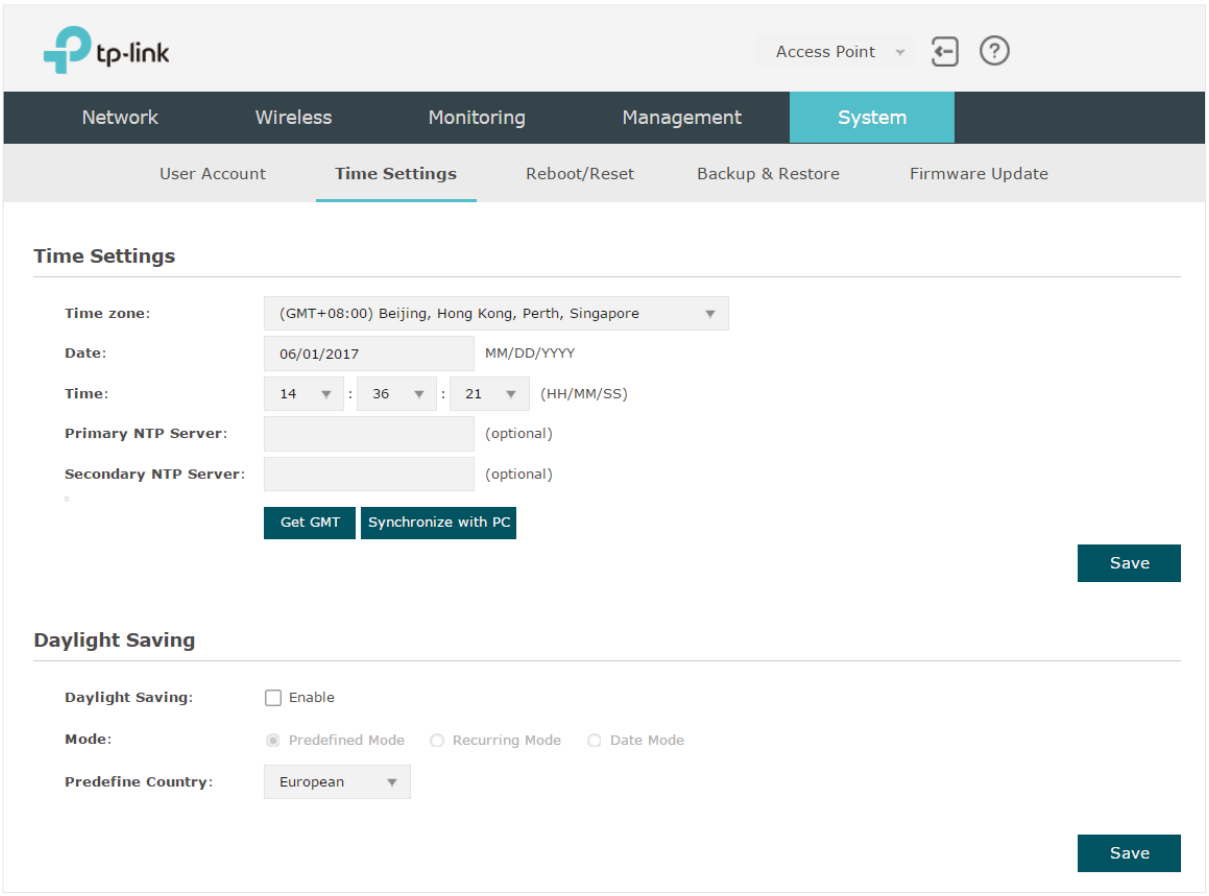
Follow the steps below to change your user account on this page:

1. Enter the old username and old password of your user account.
2. Specify a new username and a new password for your user account. The system will automatically detect the strength of your entered password. For security, we recommend that you set a password with high strength.
3. Retype the new password.
4. Click **Save**.

5.2 Configure the System Time

System time is the standard time for Scheduler and other time-based functions. The EAP supports the basic system time settings and the Daylight Saving Time (DST) feature.

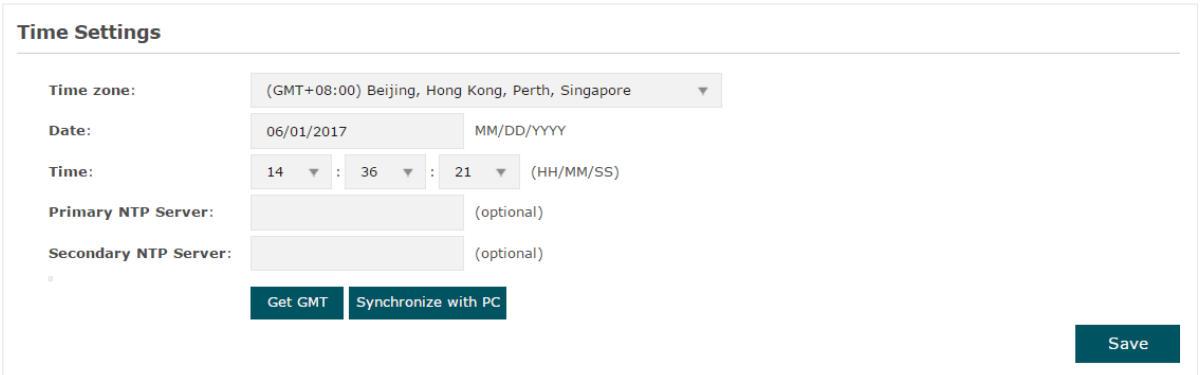
To configure the system time, go to the **System > Time Settings** page.



The following two sections introduce how to configure the basic system time settings and the Daylight Saving Time feature.

Configure the System Time

In the **Time Settings** section, you can configure the system time. There are three methods to set the system time: *Set the System Time Manually*, *Acquire the System Time From an NTP Server*, and *Synchronize the System Time with PC's Clock*.



Determine the way of setting the system time and follow the steps below to complete the configurations:

- **Set the System Time Manually**

To set the system time manually, follow the steps below:

1. Configure the following three options on the page: **Time Zone, Date** and **Time**.

Time Zone	Select your time zone from the drop-down list. Here GMT means Greenwich Mean Time.
Date	Specify the current date in the format MM/DD/YYYY. MM means month, DD means day and YYYY means year. For example: 06/01/2017.
Time	Specify the current time in the format HH/MM/SS. HH means hour, MM means minute and SS means second. It uses 24-hour system time. For example: 14:36:21.

2. Click **Save**.

Note:

The system time set manually will be lost after the EAP is rebooted.

- **Acquire the System Time From an NTP Server**

To get the system time from an NTP server, follow the steps below:

1. Build an NTP server on your network and make sure that it is reachable by the EAP. Or you can simply find an NTP server on the internet and get its IP address.

Note:

If you use an NTP server on the internet, make sure that the gateway address is set correctly on the EAP. Otherwise, the EAP cannot get the system time from the NTP server successfully. To set the gateway address, refer to *Configure the Wireless Parameters*.

2. Specify the NTP server for the EAP. If you have two NTP servers, you can set one of them as the primary NTP server, and the other as the secondary NTP server. Once the primary NTP server is down, the EAP can get the system time from the secondary NTP server.

Primary NTP Server	Enter the IP address of the primary NTP server. ***Note:*** If you have only one NTP server on your network, enter the IP address of the NTP server in this field.
Secondary NTP Server	Enter the IP address of the secondary NTP server.

3. Click the button Get GMT and the acquired system time will be displayed in the **Date** and **Time** fields.

4. Click **Save**.

- **Synchronize the System Time with PC's Clock**

To synchronize the system time with the clock of your currently logged-in host, follow the steps below:

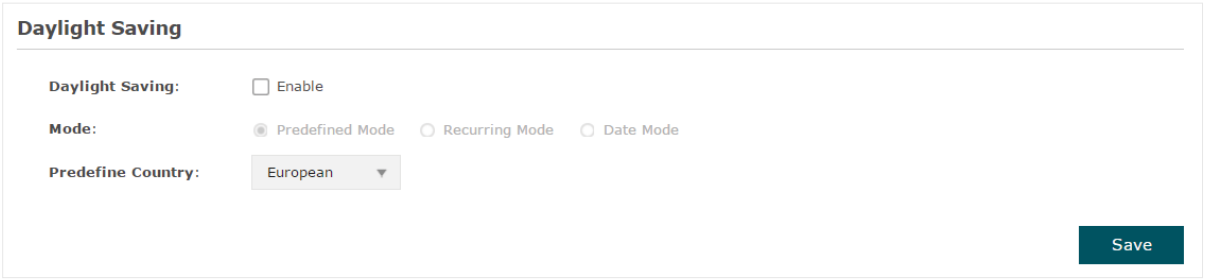
1. Click the button **Synchronize with PC** and the synchronized system time will be displayed in the **Date** and **Time** fields.
2. Click **Save**.

Note:

The system time synchronized with PC's clock will be lost after the EAP is rebooted.

Configure Daylight Saving Time

Daylight saving time is the practice of advancing clocks during summer months so that evening daylight lasts longer, while sacrificing normal sunrise times. The EAP provides daylight saving time configuration.

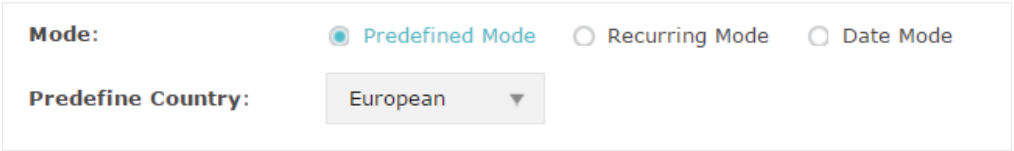


Follow the steps below to configure daylight saving time:

1. Check the box to enable **Daylight Saving.**
2. Select the mode of daylight saving time. Three modes are available: **Predefined Mode, Recurring Mode** and **Date Mode**.
3. Configure the related parameters of the selected mode.

■ **Predefined Mode**

If you select Predefined Mode, choose your region from the drop-down list and the EAP will use the predefined daylight saving time of the selected region.

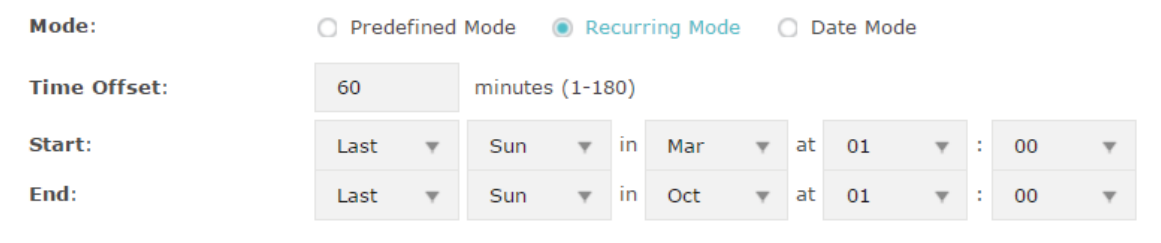


There are four regions provided: **USA, European, Austrilia** and **New Zealand**. The following table introduces the predefined daylight saving time of each region.

USA	From 2: 00 a.m. on the Second Sunday in March to 2:00 a.m. on the First Sunday in November.
European	From 1: 00 a.m. on the Last Sunday in March to 1:00 a.m. on the Last Sunday in October.
Australia	From 2:00 a.m. on the First Sunday in October to 3:00 a.m. on the First Sunday in April.
New Zealand	From 2: 00 a.m. on the Last Sunday in September to 3:00 a.m. on the First Sunday in April.

■ Recurring Mode

If you select Recurring Mode, manually specify a cycle time range for the daylight saving time of the EAP. This configuration will be used every year.

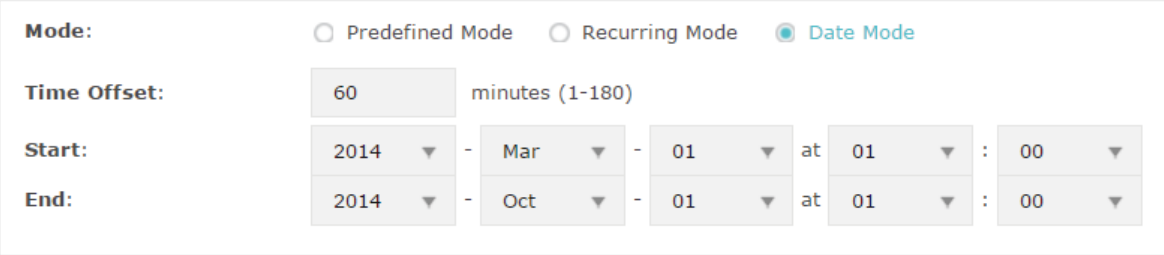


The following table introduces how to configure the cycle time range.

Time Offset	Specify the time to set the clock forward by.
Start	Specify the start time of daylight saving time. The interval between the start time and end time should be more than 1 day and less than 1 year (365 days).
End	Specify the end time of daylight saving time. The interval between the start time and end time should be more than 1 day and less than 1 year (365 days).

■ Date Mode

If you select Date Mode, manually specify an absolute time range for the daylight saving time of the EAP. This configuration will be used only once.



The following table introduces how to configure the absolute time range.

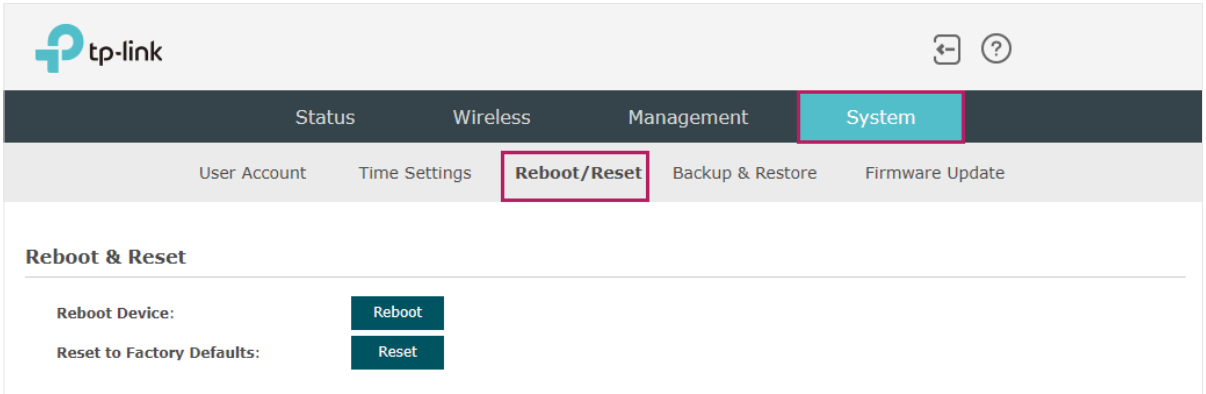
Time Offset	Specify the time to set the clock forward by.
Start	Specify the start time of daylight saving time. The interval between the start time and end time should be more than 1 day and less than 1 year (365 days).
End	Specify the end time of daylight saving time. The interval between the start time and end time should be more than 1 day and less than 1 year (365 days).

4. Click **Save**.

5.3 Reboot and Reset the EAP

You can reboot and reset the EAP according to your need.

To reboot and reset the EAP, go to the **System > Reboot&Reset** page.



- To reboot the EAP, click the Reboot button , and the EAP will be rebooted automatically. Please wait without any operation.

- To reset the EAP, click the **Reset** button , and the EAP will be reset to the factory defaults automatically. Please wait without any operation.

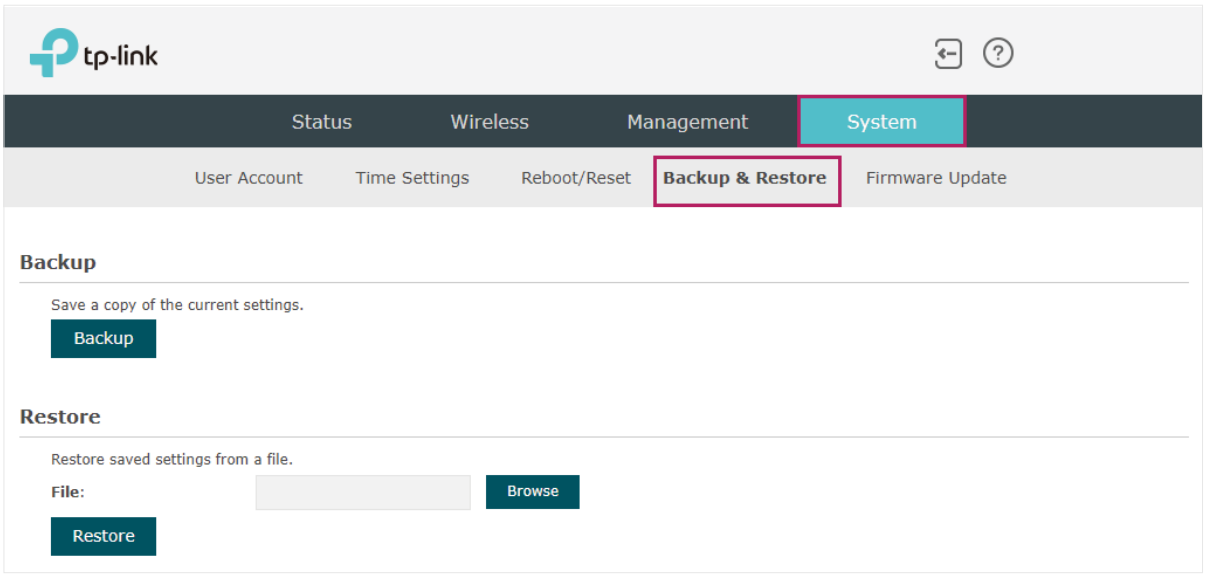
Note:

After reset, all the current configuration of the EAP will be lost. We recommend that you check whether you have any configuration that needs to be backed up before resetting the EAP.

5.4 Backup and Restore the Configuration

You can save the current configuration of the EAP as a backup file and save the file to your host. And if needed, you can use the backup file to restore the configuration. We recommend that you backup the configuration before resetting or upgrading the EAP.

To backup and restore the configuration, go to the **System > Backup&Restore** page.

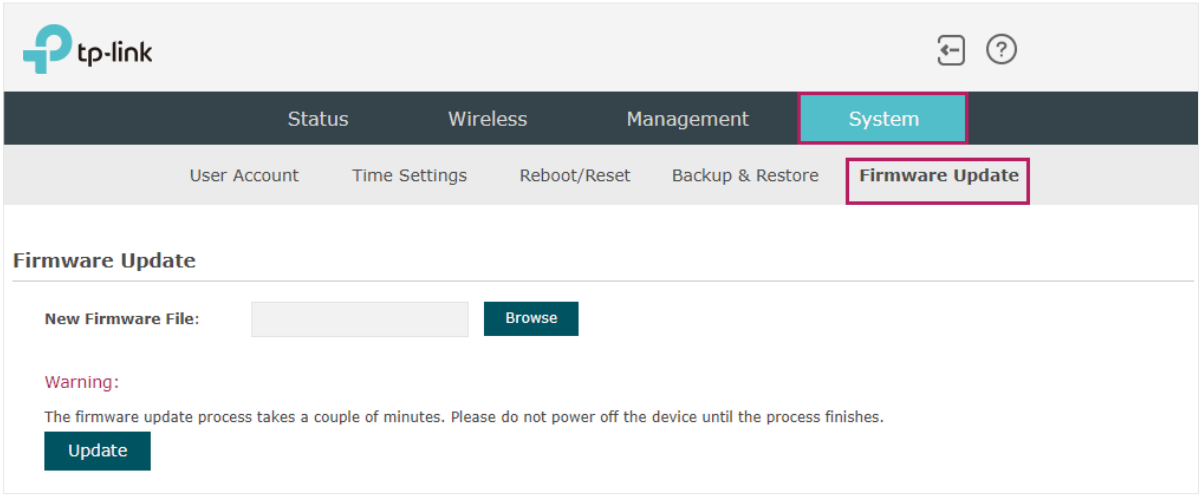


- To backup the configuration, click the button **Backup** in the Backup section, and the backup file will be saved to the host automatically.
- To restore the configuration, click the button **Browse** in the Restore section and choose the backup file from the host. Then click the button **Restore** to restore the configuration.

5.5 Update the Firmware

We occasionally provide the firmware update files for the EAP products on our official website. To get new functions of the EAP, you can check our official website and download the update files to update the firmware of your EAP.

To update the firmware, go to the **System > Firmware Update** page.



Follow the steps below to update the firmware of your EAP:

1. Go to our website *https://www.tp-link.com* and search your EAP model. Download the proper firmware file on the support page of the EAP.
2. Click the button **Browse**, locate and choose the correct firmware file from your host.
3. Click the button **Update** to update the firmware of the EAP. After updated, the EAP will be rebooted automatically.

Note:

The update process takes several minutes. To avoid damage to the EAP, please wait without any operation until the update is finished.

6 Application Example

This chapter provides an application example about how to establish and manage a EAP wireless network:

A restaurant wants to provide the wireless internet access for the employees and guests. The restaurant now has a router, a switch, a dual-band EAP and a computer. Follow the steps below to establish the wireless network:

1. Determine the Network Requirements

2. Build the Network Topology

3. Log in to the EAP

4. Configure the EAP

5. Test the Network

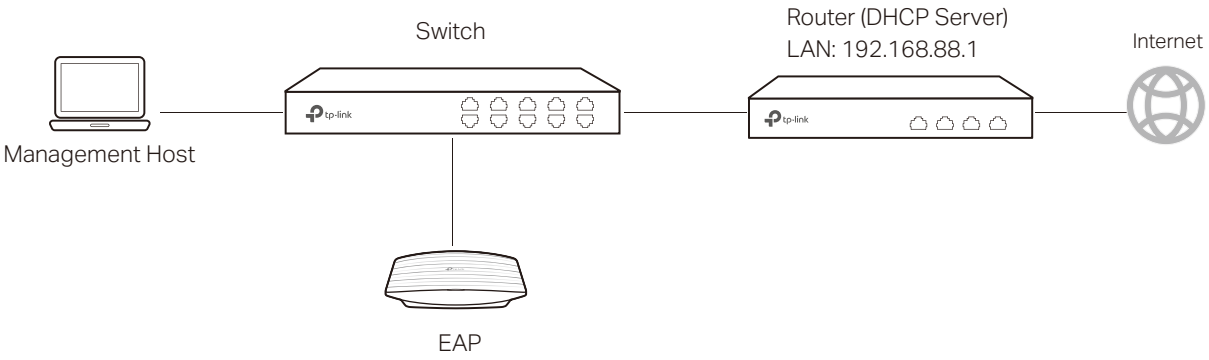
6.1 Determine the Network Requirements

Before starting to build the network, we need to first analyze and determine the network requirements. In this restaurant example, the network requirements are as follows:

- On both 2.4GHz and 5GHz bands, there are two SSIDs needed: one for the restaurant employees and one for the guests.
- In order to advertise the restaurant, the Portal feature needs to be configured on the SSIDs for the guests. In this way, the guests who have passed the portal authentication will be redirected to the restaurant's official website **http://www.restaurant1.com**.
- The employees of the restaurant can use the correct password to access the internet and do not need to pass the portal authentication. For security, the SSIDs for the employees should be encrypted with WPA2-PSK.
- To reduce power consumption, the Scheduler feature needs to be configured. The radio should operate only during the working time (9:00 am to 22:00 pm).

6.2 Build the Network Topology

Build the network topology as the following figure shows.



- The router is the gateway of the network and acts as a DHCP server to assign dynamic IP addresses to the management host, EAP and clients. The LAN IP of the router is 192.168.88.1/24.
- Connect the switch to the LAN port of the router.
- Connect the management host and the EAP to the switch. The IP address mode of the management host and EAP is dynamic, which means that they will get dynamic IP addresses from the router.

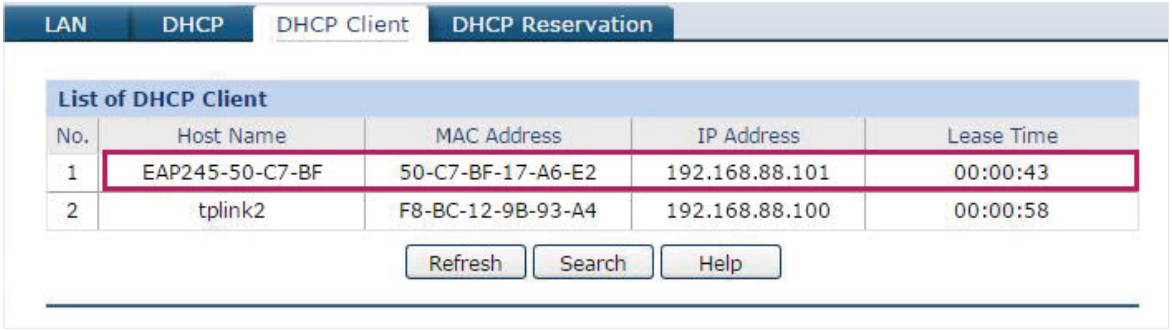
Tips:

If the router has more than one LAN port, we can also respectively connect the management host and the EAP to the LAN ports of the router.

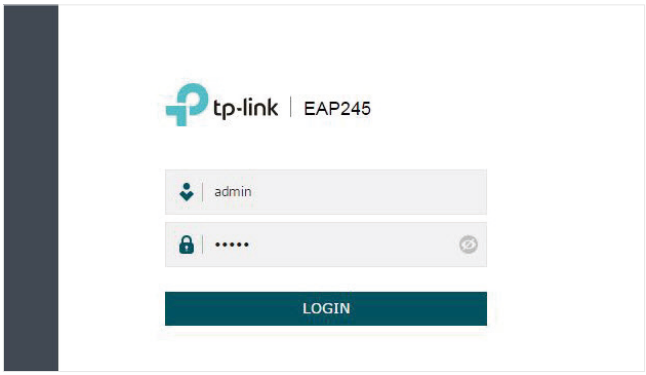
6.3 Log in to the EAP

After building the network topology, follow the steps below to log in to the web page of the EAP:

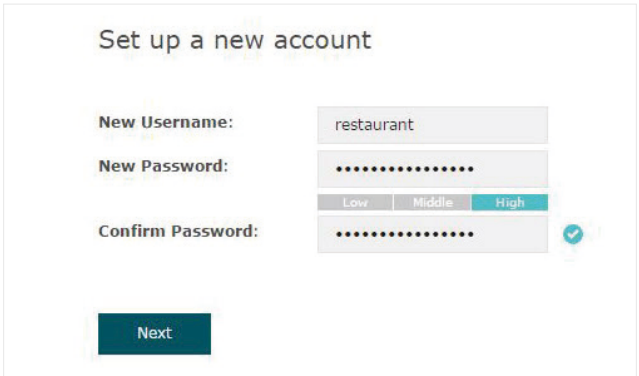
1. On the management host, launch the web browser and enter "192.168.88.1" in the address bar. Then log in to the router and find the IP address of the EAP. As the following figure shows, the IP address of the EAP is 192.168.88.101.



2. Enter "192.168.88.101" in the address bar to load the login page of the EAP. Type the default username and password (both admin) in the two fields and click **LOGIN**.



3. In the pop-up window, specify a new username and a new password for the user account. Click **Next**.

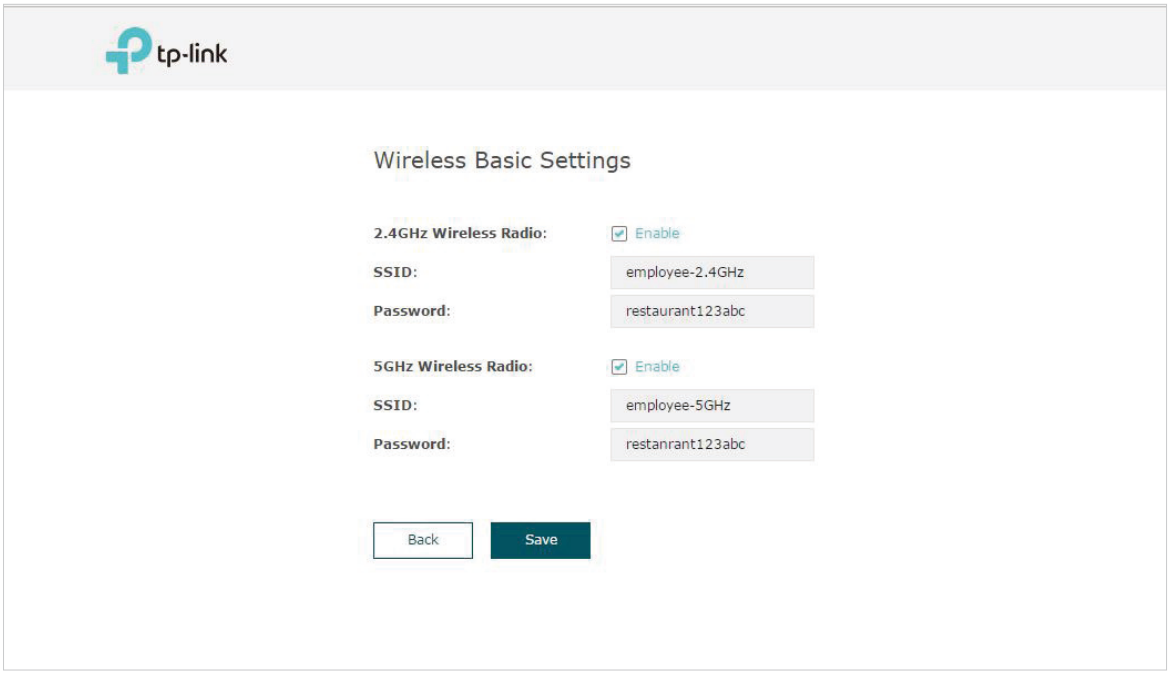


6.4 Configure the EAP

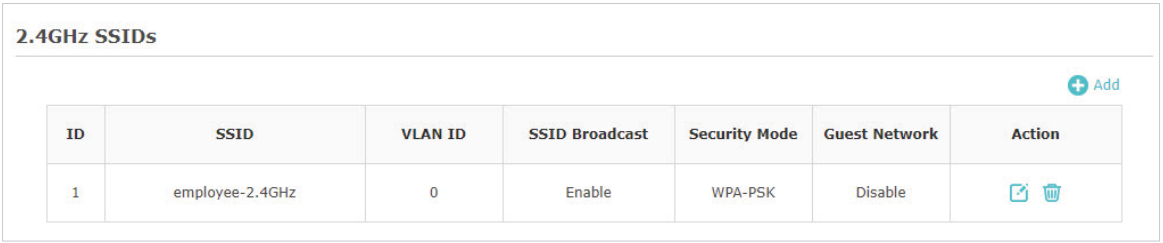
To achieve the network requirements in this application example, we need to *Configure SSIDs*, *Configure Portal Authentication* and *Configure Scheduler*.

Configure SSIDs

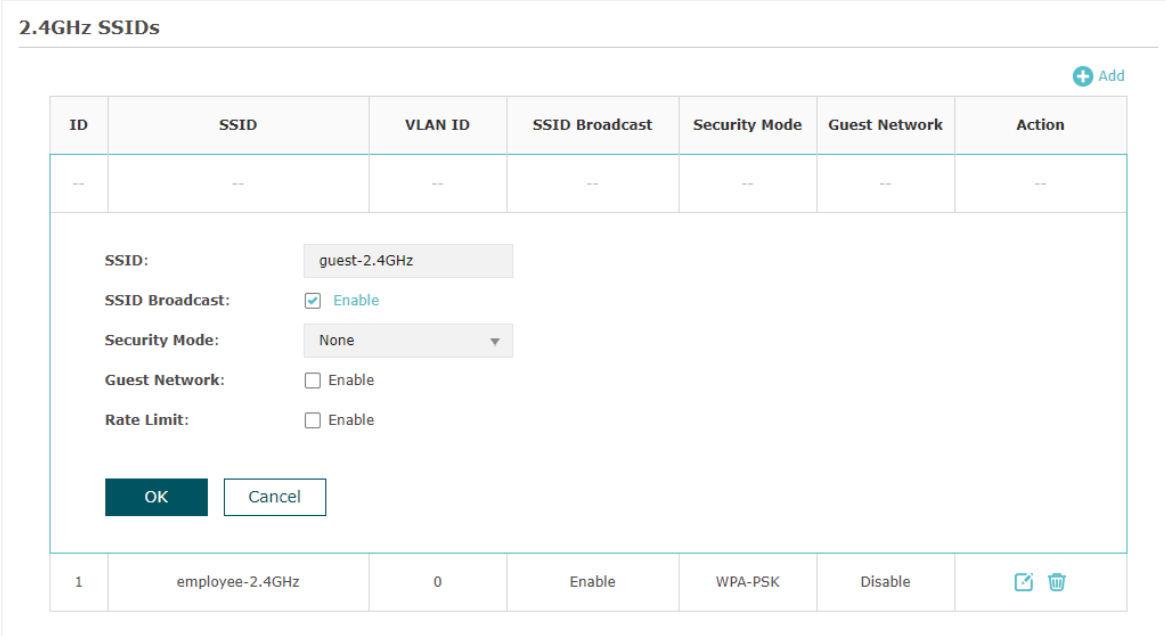
1. After Logging in to EAP, follow the step-by-step instructions to complete the basic configurations of creating SSIDs. Configure the **SSID** as "employee_2.4GHz" and "employee_5GHz", specify the **Password** as "restaurant123abc". Click **Save**.



2. Go to the **Wireless > Wireless Settings** page. Create SSIDs for guests on 2.4GHz. Click Add to add a new SSID.



3. The following page will appear. Configure this SSID as "guest_2.4GHz", keep the **Security Mode** as "None" and check the box to enable the **Portal** feature for this SSID. Click **OK**.



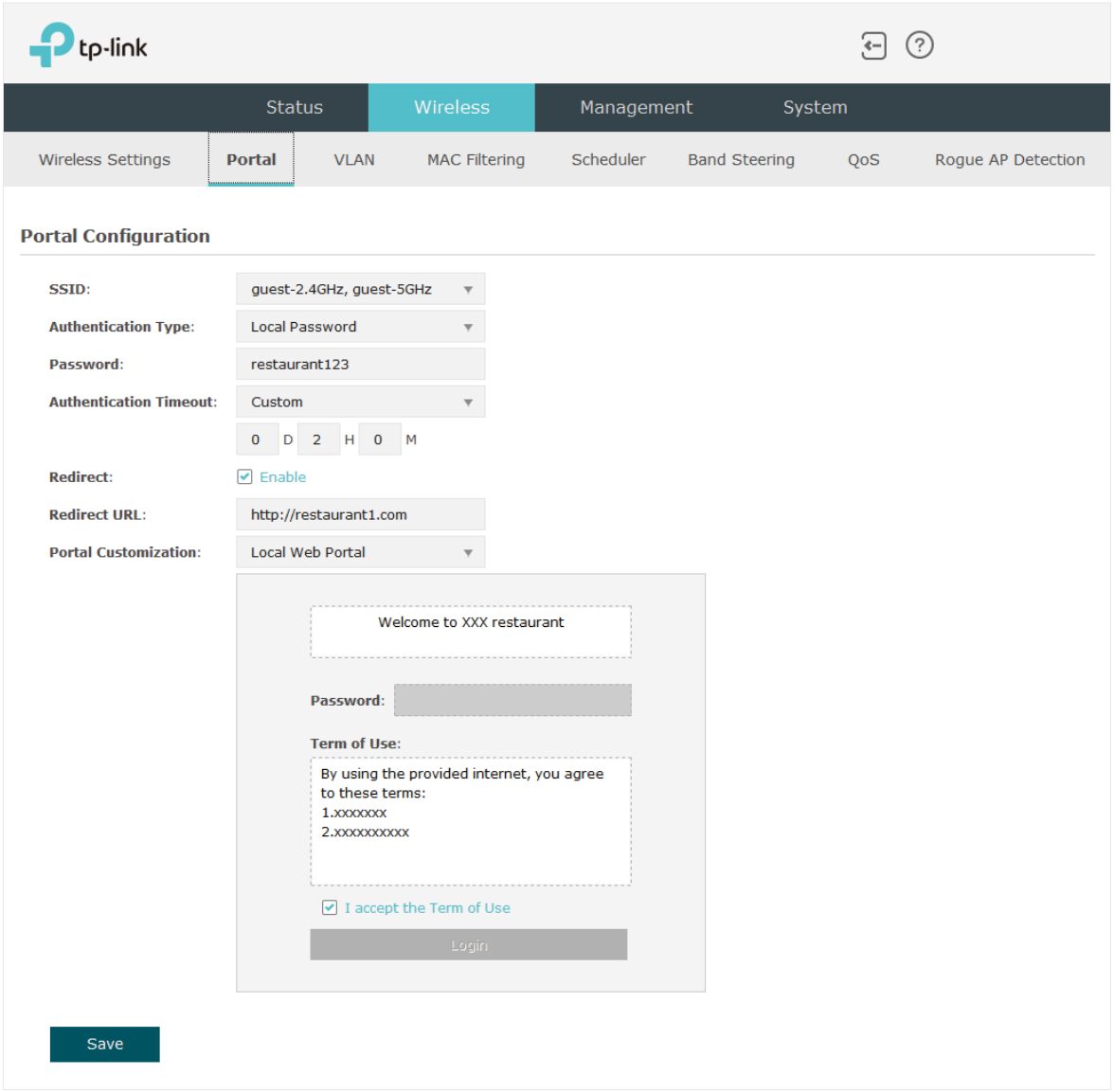
4. Click 2.4GHz 5GHz to enter the configuration page for the 5GHz band. Similarly to the configurations for the 2.4GHz band, configure another SSID for the guests on the 5GHz band.

Configure Portal Authentication

Follow the steps below to configure portal authentication:

1. Go to the **Wireless > Portal** page.

2. Configure the portal feature as the following figure shows.



1) Select the SSIDs for the guests on which the portal will take effect.

2) Select the **Authentication Type** as "Local Password" and specify the **Password** as "restaurant123".

3) Configure **Authentication Timeout**. Here we customize the timeout as 2 hours. It means that guests will be logged out after they have been authenticated for 2 hours. To continue to use the internet service, these guests need to enter the password to pass the portal authentication once again.

4) Check the box to enable **Redirect**, and enter the website of the restaurant: **http://www.restaurant1.com**.

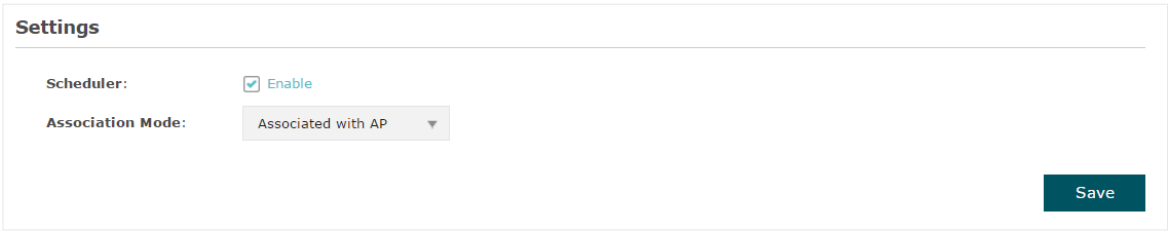
5) Configure the authentication page. Specify the title and the term of use. To access the internet, guests need to enter the correct password in the **Password** field, accept the **Term of Use**, and click the **Login** button.

3. Click **Save**.

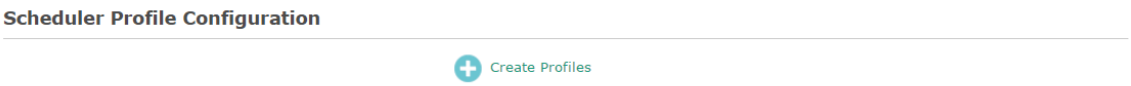
Configure Scheduler

Follow the steps below to schedule the radio to operate only during the working time (9:00 am to 22:00 pm).

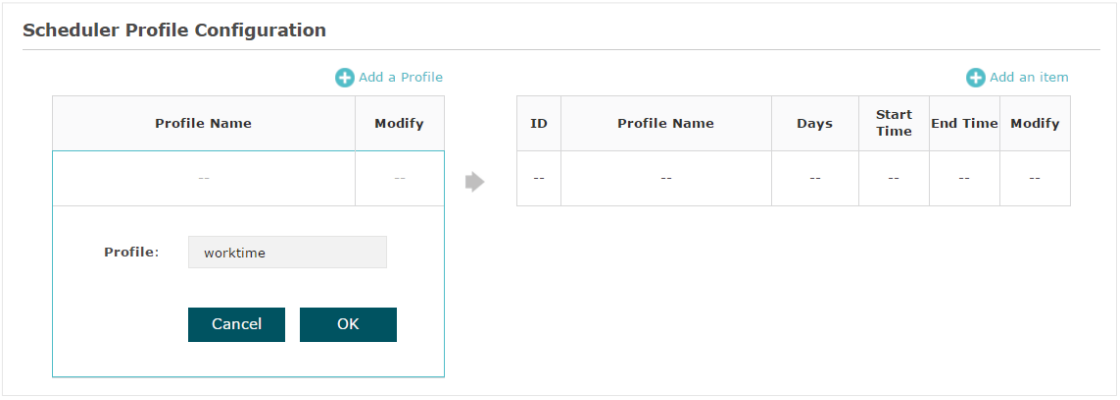
1. Go to the **Wireless > Scheduler** page.
2. In the **Settings** section, check the box to enable **Scheduler**, and select the **Association Mode** as "Associated with AP". Click **Save**.



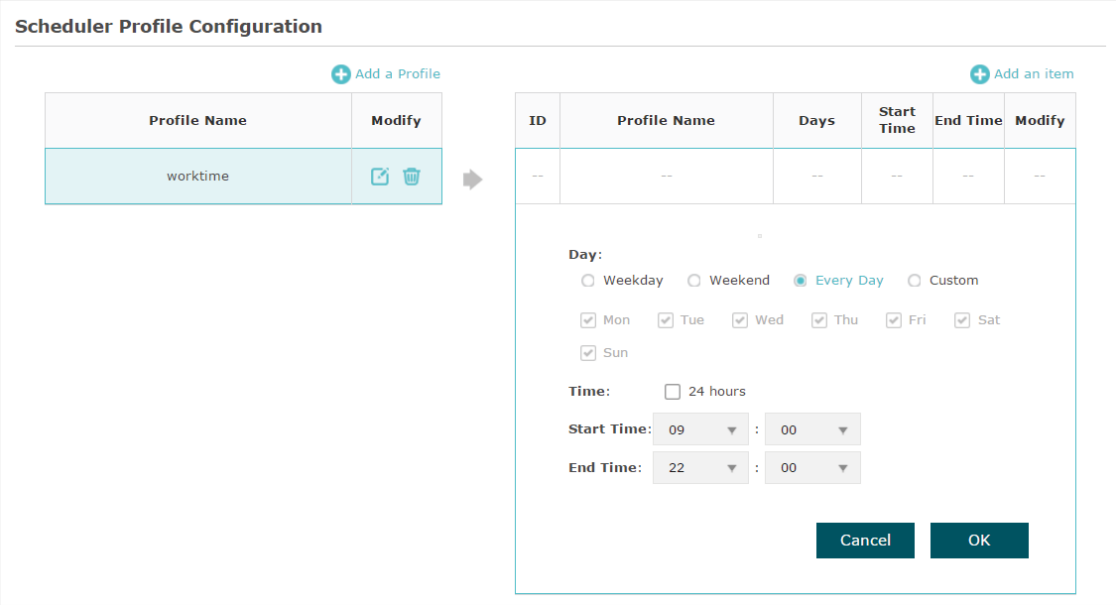
3. In the **Scheduler Profile Configuration** section, click Create Profiles .



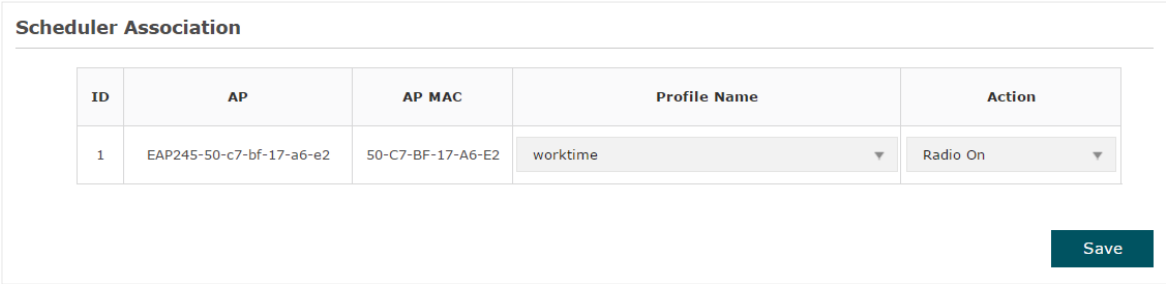
1) The following page will appear. Click Add a Profile and specify the profile name as "worktime". Click **OK**.



2) Choose the newly added profile “worktime”, and click Add an item. Then the item configuraiton page will appear. Specify the time range as everyday 9:00 to 22:00. Click **OK**.



4. In the **Scheduler Association** section, select “worktime“ in the **Profile Name** column and select “Radio On” in the **Action** column. Click **Save**.



6.5 Test the Network

To ensure that the employees and guests can surf the internet via the wireless network, we can use a client device, such as a telephone, to test whether the SSIDs are working normally.

- To test the SSIDs for the employees, follow the steps below:

  1) Enable the Wi-Fi feature of the client device.

  2) Choose the SSID “employee_2.4GHz“ or “employee_5GHz“ among the detected SSIDs.

  3) Enter the password “restaurant123abc“ to join the wireless network.

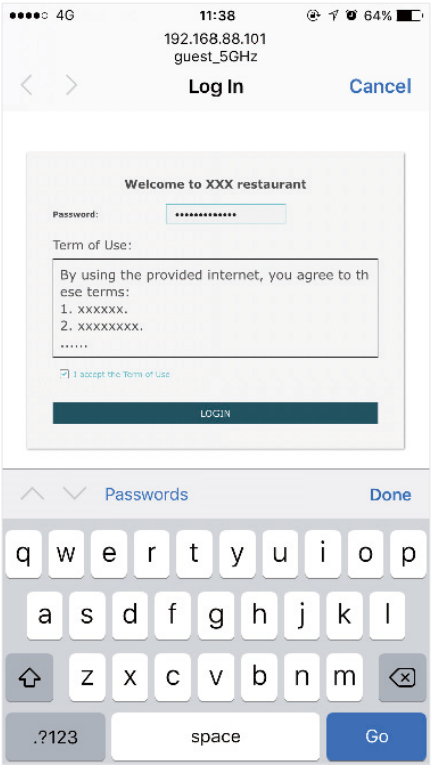
  4) Check whether internet websites can be visited successfully.

- To test the SSIDs for the guests, follow the steps below:

  1) Enable the Wi-Fi feature of the client device.

  2) Choose the SSID “guest_2.4GHz“ or “guest_5GHz“ among the detected SSIDs.

  3) The default web browser on the device will pop up and the authentication page will appear. Enter the password “restaurant123”, check the box to accept the term of use, and click the **LOGIN** button.



Tips:

Generally, the web browser pops up automatically. But if the web browser does not pop up, we can manually launch the web browser and visit any http website. Then the authentication page will appear.

4) If the network is working normally, we will be redirected to the website of the restaurant: **http://www.restaurant1.com**.

Appendix: Omada App

Omada app is a mobile application designed for Omada series EAP products. It allows you to conveniently manage and monitor your network.

This appendix introduces how to use Omada app to manage your network and includes the following sections:

- *Install Omada App on the Mobile Device*
- *Manage and Monitor your EAP Device*

1 Install Omada App on the Mobile Device

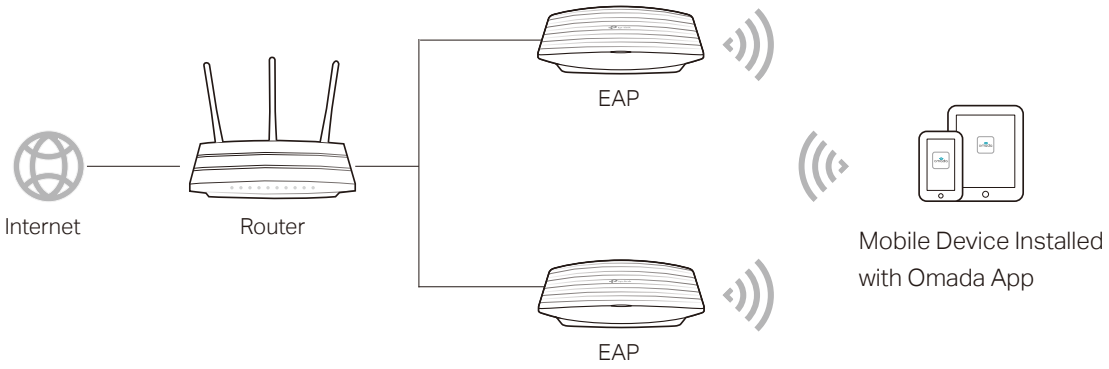
Omada app runs on iOS and Android devices, such as smart phones and tablets. Launch the Apple App Store (iOS) or Google Play store (Android) and search "TP-Link Omada" or simply scan the QR code to download and install the app.

2 Manage and Monitor your EAP Device

For a relatively small-scale network which has a few EAPs (usually less than three) and only basic functions are required, managing your EAPs via Omada app is recommended. You can use a mobile device to configure each EAP individually for basic functionality.

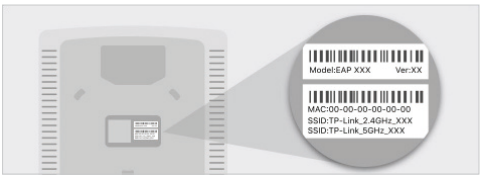
Refer to the topology below, make sure that the following requirements have been met:

- An Ethernet connection from your Omada EAP to the LAN with DHCP service.
- The supported firmware version of the EAP. EAP110, EAP115, EAP225, EAP245, EAP110-Outdoor, EAP225-Outdoor, EAP115-Wall, EAP225-Wall, EAP230-Wall and EAP235-Wall are currently supported. To check the firmware versions of the supported EAPs, please refer to *https://www.tp-link.com/omada_compatibility_list*.
- A compatible iOS or Android device with Omada app.

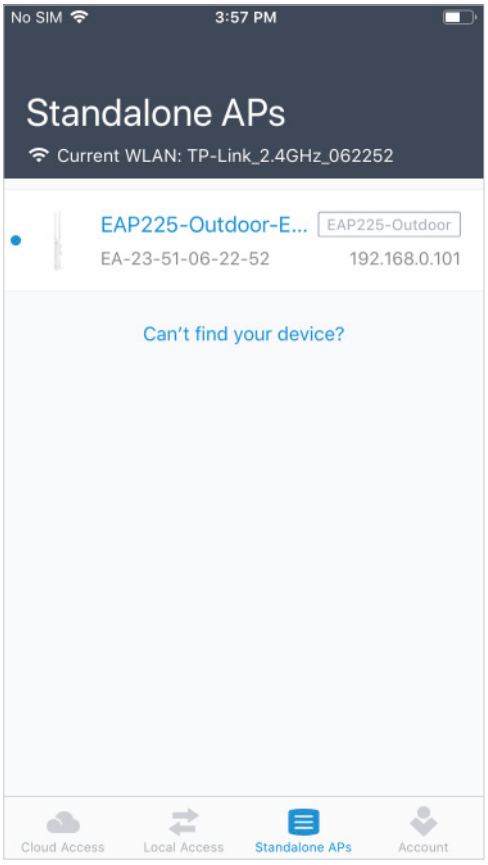


Follow the steps below to manage your network via Omada app in standalone mode. The following page is exampled with the iOS version of the app. The Android version is similar.

1. Connect your mobile device to the EAP by using the default SSID (format: **TP-Link 2.4GHz/5GHz_XXXXXX**) printed on the label.



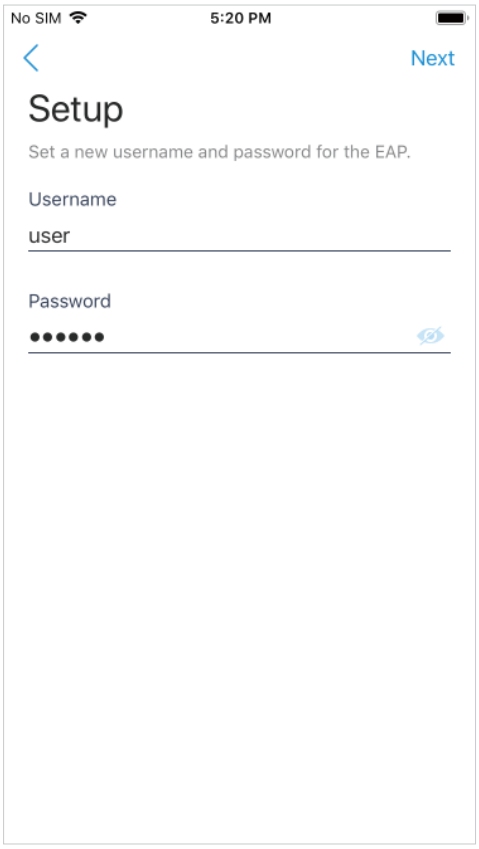
2. Launch the Omada app, tap **Standalone APs** and wait for the EAP to be discovered.



Tips:

All the EAPs in the same subnet will be discovered by Omada app and shown on the page. You can tap the discovered EAP to configure directly.

3. Tap on the EAP appearing on the page. Set a new username and password for your login account of the EAP.

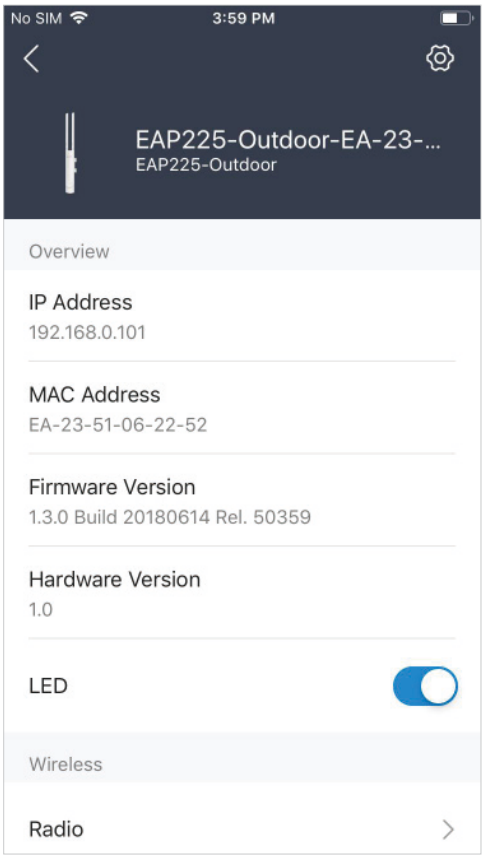


4. Edit the SSID and password to keep your wireless network secure. Tap **Next**.

Note:

The settings will take effect after several minutes. For operation system differences, the wireless network connection will be different. Generally the mobile device will join the new wireless network automatically when the SSID of the EAP is changed. If it doesn't, connect the mobile device to the new SSID manually.

5. You can view the name of the EAP and other information including wireless parameters and clients. And you can tap ⚙ to change the settings of radio, SSID and device account.



Tips:

- Omada app is designed to help you quickly configure some basic settings. For advanced functions, you can configure them on the web page of the EAP.
- In standalone mode, only one user is allowed to log in to the management page of the EAP at the same time. Thus the management web page of the EAP cannot be logged in to when using the Omada app and vice versa. Also only one user can log in to the EAP via Omada app.

FCC Compliance Information Statement

Product Name: Omada EAP

Model Number: EAP115 / EAP225 / EAP245 / EAP115-Wall / EAP225-Wall / EAP230-Wall / EAP235-Wall/EAP225-Outdoor

Component Name	Model
I.T.E. Power Supply	T090060-2B1(For EAP115) T120150-2B1(For EAP245) TL-POE2412G(For EAP225/EAP225-Outdoor)
SWITCHING POWER SUPPLY	S030ABU1200250

Responsible party:

TP-Link USA Corporation, d/b/a TP-Link North America, Inc.

Address: 145 South State College Blvd. Suite 400, Brea, CA 92821

Website: http://www.tp-link.com/us/

Tel: +1 626 333 0234

Fax: +1 909 527 6803

E-mail: sales.usa@tp-link.com

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 or more 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.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1) This device may not cause harmful interference.

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

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

Note: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

FCC RF Radiation Exposure Statement:

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

"To comply with FCC RF exposure compliance requirements, this grant is applicable to only Mobile Configurations. The antennas used for this transmitter must be installed to provide a separation distance of at least 20cm from all persons and must not be colocated or operating in conjunction with any other antenna or transmitter."

We, **TP-Link USA Corporation**, has determined that the equipment shown as above has been shown to comply with the applicable technical standards, FCC part 15. There is no unauthorized change is made in the equipment and the equipment is properly maintained and operated.

Issue Date:2019-11-20

FCC Compliance Information Statement

Product Name: Omada EAP

Model Number: EAP110 / EAP110-Outdoor

Component Name	Model
I.T.E. Power Supply	TL-POE2406(For EAP110/EAP110-Outdoor)
SWITCHING POWER SUPPLY	S030ABU1200250

Responsible party:

TP-Link USA Corporation, d/b/a TP-Link North America, Inc.

Address: 145 South State College Blvd. Suite 400, Brea, CA 92821

Website: http://www.tp-link.com/us/

Tel: +1 626 333 0234

Fax: +1 909 527 6803

E-mail: sales.usa@tp-link.com

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1) This device may not cause harmful interference.

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

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

Note: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

FCC RF Radiation Exposure Statement:

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

"To comply with FCC RF exposure compliance requirements, this grant is applicable to only Mobile Configurations. The antennas used for this transmitter must be installed to provide a separation distance of at least 20cm from all persons and must not be colocated or operating in conjunction with any other antenna or transmitter."

We, **TP-Link USA Corporation**, has determined that the equipment shown as above has been shown to comply with the applicable technical standards, FCC part 15. There is no unauthorized change is made in the equipment and the equipment is properly maintained and operated.

Issue Date:2019-11-20

FCC Compliance Information Statement

Product Name: I.T.E. Power Supply

Model Number: T090060-2B1, T120150-2B1, TL-POE2412G, TL-POE2406

Product Name: SWITCHING POWER SUPPLY

Model Number: S030ABU1200250

Responsible party:

TP-Link USA Corporation, d/b/a TP-Link North America, Inc.

Address: 145 South State College Blvd. Suite 400, Brea, CA 92821

Website: http://www.tp-link.com/us/

Tel: +1 626 333 0234

Fax: +1 909 527 6803

E-mail: sales.usa@tp-link.com

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 or more 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.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1) This device may not cause harmful interference.

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

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

We, **TP-Link USA Corporation**, has determined that the equipment shown as above has been shown to comply with the applicable technical standards, FCC part 15. There is no unauthorized change is made in the equipment and the equipment is properly maintained and operated.

Issue Date:2019-11-20

CE Mark Warning

CE

For EAP115 / EAP225 / EAP245 / EAP115-Wall / EAP225-Wall / EAP230-Wall / EAP235-Wall / EAP225-Outdoor:

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.

For EAP110 / EAP110-Outdoor:

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

Industry Canada Statement

CAN ICES-3 (B)/NMB-3(B) (For EAP115 / EAP225 / EAP245 / EAP115-Wall / EAP225-Wall / EAP230-Wall / EAP235-Wall / EAP225-Outdoor)

CAN ICES-3 (A)/NMB-3(A) (For EAP110 / EAP110-Outdoor)

OPERATING FREQUENCY(the maximum transmitted power)

For EAP110/EAP115/EAP110-Outdoor/EAP115-Wall:

2412MHz—2472MHz(20dBm)

For EAP225/EAP245/EAP225-Wall/EAP230-Wall/ERAP235-Wall:

2412MHz—2472MHz(20dBm)

5180MHz—5240MHz(23dBm)

For EAP225-Outdoor:

2412MHz—2472MHz(20dBm)

5180MHz—5240MHz(23dBm)

5260MHz—5320MHz(23dBm)

5500MHz—5700MHz(30dBm)

EU declaration of conformity

TP-Link hereby declares that the device is in compliance with the essential requirements and other relevant provisions of directives 2014/53/EU, 2009/125/EC, 2011/65/EU and (EU)2015/863.

The original EU declaration of conformity may be found at http://www.tp-link.com/en/ce.

RF Exposure Information

This device meets the EU requirements (2014/53/EU Article 3.1a) on the limitation of exposure of the general public to electromagnetic fields by way of health protection.

The device complies with RF specifications when the device used at 20 cm from your body.

National Restrictions (EAP225/EAP245/EAP225-Wall/EAP230-Wall/EAP235-Wall)

Attention: In EU member states and EFTA countries, the operation in the frequency range 5150MHz - 5350MHz is only permitted indoors.

AT	BE	BG	CH	CY	CZ	DE	DK
EE	EL	ES	FI	FR	HR	HU	IE
IS	IT	LI	LT	LU	LV	MT	NL
NO	PL	PT	RO	SE	SI	SK	UK

Canadian Compliance Statement

This device complies with Industry Canada license-exempt RSSs. Operation is subject to the following two conditions:

1) This device may not cause interference, and

2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1) l'appareil ne doit pas produire de brouillage;

2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, meme si le brouillage est susceptible d'en compromettre le fonctionnement.

For EAP110-Outdoor:

This radio transmitter (IC: 8853A-EAP110OD / Model: EAP110-Outdoor) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list below, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Le présent émetteur radio (IC: 8853A-EAP110OD / Model: EAP110-Outdoor) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste ci-dessous et dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Antenna	**Two 2.4GHz 3dBi external omnidirectional antennas**

For EAP225-Outdoor:

This radio transmitter (IC: 8853A-EAP225OD / Model: EAP225-Outdoor) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list below, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Le présent émetteur radio (IC: 8853A-EAP225OD / Model: EAP225-Outdoor) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste ci-dessous et dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Antenna	**Two 2.4GHz 3dBi external omnidirectional antennas** **Two 5GHz 4dBi external omnidirectional antennas**

Caution (EAP225/EAP245/EAP225-Outdoor/EAP225-Wall/EAP230-Wall/EAP235-Wall)

1) The device for operation in the band 5150–5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;

2) For devices with detachable antenna(s), the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall be such that the equipment still complies with the e.i.r.p. limit; (For EAP225-Outdoor only)

DFS (Dynamic Frequency Selection) products that operate in the bands 5250- 5350 MHz, 5470-5600MHz, and 5650-5725MHz. (For EAP245 and EAP225-Outdoor).

Avertissement

1) Le dispositif fonctionnant dans la bande 5150-5250 MHz est réservé uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;

2) Le gain maximal d'antenne permis pour les dispositifs avec antenne(s) amovible(s) utilisant les bandes 5250-5350 MHz et 5470-5725 MHz doit se conformer à la limitation P.I.R.E.; (For EAP225-Outdoor Only)

Les produits utilisant la technique d'atténuation DFS (sélection dynamique des fréquences) sur les bandes 5250- 5350 MHz, 5470-5600MHz et 5650-5725MHz.

Radiation Exposure Statement

This equipment complies with ISEDC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance (20 cm for EAP110/EAP115/EAP225/EAP245/EAP110-Outdoor/EAP225-Outdoor/EAP115-Wall/EAP225-Wall/EAP230-Wall/EAP235-Wall) between the radiator & your body.

Déclaration d'exposition aux radiations

Cet équipement est conforme aux limites ISEDC d'exposition aux rayonnements établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé à une distance minimale (entre la source de rayonnement et votre corps) indiquée ci-après :

Modèle	Distance
EAP110/EAP115/EAP225/EAP245/EAP115-Wall/EAP225-Wall/EAP230-Wall/EAP235-Wall/EAP110-Outdoor/EAP225-Outdoor	20 cm

Korea Warning Statements

당해 무선설비는 운용중 전파혼신 가능성이 있음.

Продукт сертифіковано згідно с правилами системи УкрСЕПРО на відповідність вимогам нормативних документів та вимогам, що передбачені чинними законодавчими актами України.

EAC

Safety Information

When product has power button, the power button is one of the way to shut off the product; When there is no power button, the only way to completely shut off power is to disconnect the product or the power adapter from the power source.

- Keep the device away from water, fire, humidity or hot environments.
- Do not attempt to disassemble, repair, or modify the device.
- Do not use damaged charger or USB cable to charge the device.
- Do not use any other chargers than those recommended.
- Do not use the device where wireless devices are not allowed.
- Adapter shall be installed near the equipment and shall be easily accessible.

For EAP110/EAP225/EAP245/EAP110-Outdoor/EAP225-Outdoor:

Use only power supplies which are provided by manufacturer and in the original packing of this product. If you have any questions, please don't hesitate to contact us.

NCC Notice

注意!

依據 低功率電波輻射性電機管理辦法

第十二條 經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變

更頻率、加大功率或變更原設計之特性或功能。

第十四條 低功率射頻電機之使用不得影響飛航安全及干擾合法通行；經發現有干擾現象時，

應立即停用，並改善至無干擾時方得繼續使用。前項合法通信，指依電信規定作業之無線電信。

低功率射頻電機需忍受合法通信或工業、科學以及醫療用電波輻射性電機設備之干擾。

針對EAP225/EAP245/EAP225-Outdoor/EAP225-Wall/EAP230-Wall/EAP235-Wall:

4.7.9.1應避免影響附近雷達系統之操作。

4.7.9.2高增益指向性天線只得應用於固定式點對點系統。

BSMI Notice

安全諮詢及注意事項

·請使用原裝電源供應器或只能按照本產品注明的電源類型使用本產品。

·清潔本產品之前請先拔掉電源線。請勿使用液體、噴霧清潔劑或濕布進行清潔。

·注意防潮，請勿將水或其他液體潑灑到本產品上。

·插槽與開口供通風使用，以確保本產品的操作可靠並防止過熱，請勿堵塞或覆蓋開口。

·請勿將本產品置放於靠近熱源的地方。除非有正常的通風，否則不可放在密閉位置中。

·請不要私自打開機殼，不要嘗試自行維修本產品，請由授權的專業人士進行此項工作。

此為甲類資訊技術設備，于居住環境中使用時，可能會造成射頻擾動，在此種情況下，使用者會被要求採取某些適當的對策。(針對EAP110/EAP110-Outdoor)

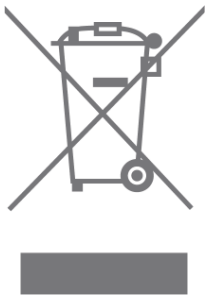
限用物質含有情況標示聲明書

產品元件名稱	限用物質及其化學符號					
	鉛 Pb	鎘 Cd	汞 Hg	六價鉻 CrVI	多溴聯苯 PBB	多溴二苯醚 PBDE
PCB	○	○	○	○	○	○
外殼	○	○	○	○	○	○
電源供應器 (Exclude EAP115-Wall/ EAP225-Wall/ EAP230-Wall/ EAP235-Wall)	—	○	○	○	○	○
備考1. "超出0.1 wt %" 及 "超出0.01 wt %" 系指限用物質之百分比含量超出百分比含量基準值。 備考2. "○"系指該項限用物質之百分比含量未超出百分比含量基準值。 備考3. "—" 系指該項限用物質為排除項目。						

Explanation of the symbols on the product label

Note: The product label can be found at the bottom of the product and its I.T.E. power supply.

Symbol	Explanation
	DC voltage

Symbol	Explanation
	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 a new electrical or electronic equipment.
	Indoor use only
	Polarity of output terminals
	Energy efficiency marking (Level VI)
	Class II equipment

この装置は、クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。 VCCI-A

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