



# ***PHAROS***

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## **User Guide**

For TP-Link Pharos Series Products

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# CONTENTS

About this User Guide.....	1
Overview .....	2
<b>1 Operation Modes.....</b>	<b>3</b>
1.1 Access Point.....	4
1.2 Client.....	5
1.3 AP Client Router (WISP Client) .....	6
1.4 AP Router .....	6
1.5 Repeater.....	7
1.6 Bridge.....	7
<b>2 Quick Start.....</b>	<b>8</b>
2.1 Check the System Requirements .....	9
2.2 Log In to the Device .....	9
2.3 Set Up the Wireless Network.....	10
Access Point.....	11
Client.....	15
Repeater .....	20
Bridge.....	25
AP Router .....	30
AP Client Router (WISP Client) .....	36
<b>3 Monitor the Network .....</b>	<b>43</b>
3.1 View the Device Information.....	44
3.2 View the Wireless Settings.....	44
3.3 View Wireless Signal Quality.....	45
3.4 View Radio Status .....	46
3.5 View the LAN Settings.....	48
3.6 View the WAN Settings.....	49

3.7	Monitor Throughput.....	50
3.8	Monitor Stations.....	50
3.9	Monitor Interfaces .....	53
3.10	Monitor ARP Table .....	53
3.11	Monitor Routes .....	54
3.12	Monitor DHCP Clients.....	55
3.13	Monitor Dynamic WAN.....	55
<b>4</b>	<b>Configure the Network.....</b>	<b>58</b>
4.1	Configure WAN Parameters.....	59
4.2	Configure LAN Parameters .....	69
	Access Point/Client/Repeater/Bridge Mode .....	69
	AP Router/AP Client Router Mode.....	74
4.3	Configure Management VLAN .....	76
4.4	Configure the Forwarding Feature .....	77
4.5	Configure the Security Feature .....	81
4.6	Configure Access Control .....	84
4.7	Configure Static Routing.....	85
4.8	Configure Bandwidth Control.....	86
4.9	Configure IP & MAC Binding.....	88
<b>5</b>	<b>Configure the Wireless Parameters.....</b>	<b>90</b>
5.1	Configure Basic Wireless Parameters .....	91
5.2	Configure Wireless Client Parameters .....	94
5.3	Configure Wireless AP Parameters.....	98
5.4	Configure Multi-SSID.....	104
5.5	Configure Wireless MAC Filtering .....	106
5.6	Configure Advanced Wireless Parameters.....	107
<b>6</b>	<b>Manage the Device .....</b>	<b>110</b>
6.1	Manage System Logs .....	111

6.2	Specify the Miscellaneous Parameters .....	112
6.3	Configure Ping Watch Dog .....	113
6.4	Configure Dynamic DNS .....	114
6.5	Configure Web Server .....	115
6.6	Configure SNMP Agent .....	116
6.7	Configure SSH Server .....	118
6.8	Configure RSSI LED Thresholds .....	119
<b>7</b>	<b>Configure the System .....</b>	<b>120</b>
7.1	Configure Device Information .....	121
7.2	Configure Location Information .....	121
7.3	Configure User Account .....	121
7.4	Configure Time Settings .....	122
7.5	Update Firmware .....	124
7.6	Configure Other Settings .....	125
<b>8</b>	<b>Use the System Tools .....</b>	<b>126</b>
8.1	Configure Ping .....	127
8.2	Configure Traceroute .....	127
8.3	Test Speed .....	128
8.4	Survey .....	129
8.5	Analyze Spectrum .....	131
8.6	Antenna Alignment .....	132

# About this User Guide

This User Guide contains information for setup and management of TP-Link Pharos series products. Read this guide carefully before operation.

When using this guide, notice that features available in Pharos series products may vary by model and software version. Availability of Pharos series products 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 products.

## Convention

Unless otherwise noted, the introduction in this guide takes CPE510 as an example.

## More Info

The latest software, management app and utility can be found at Download Center at <https://www.tp-link.com/support>.

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

The authentication information can be found where you find this guide.

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

Our Technical Support contact information can be found at the Contact Technical Support page at <https://www.tp-link.com/support>.

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.

# Overview

**PHAROS** is TP-Link's next generation outdoor product series dedicated to long-distance outdoor wireless networking solutions.

**PHAROS** is a powerful Web-based operating system, which is integrated into all Pharos series products.

New features of Pharos series products are listed as follows:

- Provides User-friendly UI design.
- TP-Link Pharos MAXtream (Time-Division-Multiple-Access) technology improves product performance in throughput, capacity and latency, which is ideal for point-to-multipoint applications.
- Supports multiple operation modes: Access Point, Client, Repeater, Bridge, AP Router and AP Client Router (WISP Client).
- Provides system-level optimization for long-distance wireless transmission.
- Supports selectable bandwidth options.
- Supports easy antenna alignment with Wireless Signal Indicators on Web interface.
- Provides Throughput Monitor, Spectrum Analyzer, Speed Test and Ping tools.
- Supports discovery and management via Pharos Control application.



**Note:**

- MAXtream is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.
  - Repeater mode or Bridge mode is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.
-

# 1 Operation Modes

The Pharos series products support multiple operation modes to satisfy user's diverse network requirements. This chapter introduces typical usage scenarios of different modes. For more information, refer to [Common Applications for Pharos Products](#).

1.1 Access Point

1.2 Client

1.3 AP Client Router (WISP Client)

1.4 AP Router

1.5 Repeater

1.6 Bridge



**Note:**

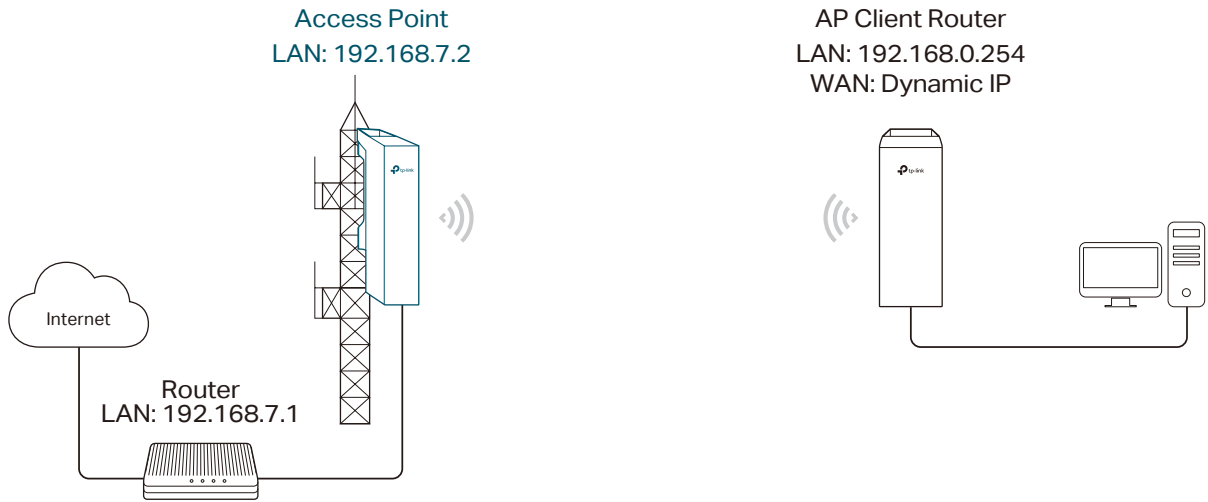
Repeater mode or Bridge mode is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.

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# 1.1 Access Point

In Access Point (AP) Mode, the device acts as a central hub and provides wireless access point for wireless clients, thus the AP Mode is applicable to the following three scenarios. Meanwhile, Multi-SSID function can be enabled in this mode, providing up to four wireless networks with different SSIDs and passwords.

## ■ Scenario 1

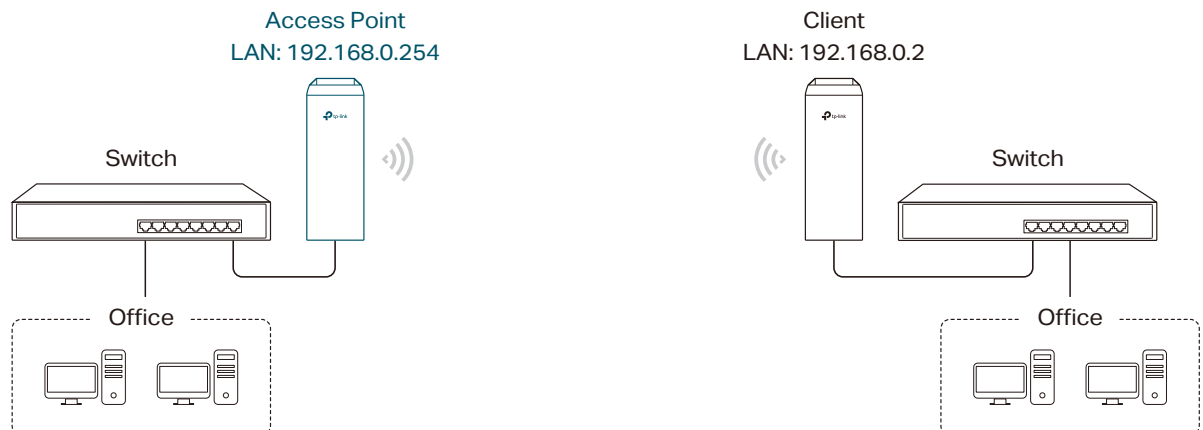


**Network requirements:** Establish the network coverage in the remote areas without long-distance cabling.

**The device in the network:** In the adjacent town covered by wired network, ISP (Internet Service Provider) can put up a device in AP Mode to access the internet and transform wired signal into wireless one. In the remote area, users can put up a device in AP Client Router Mode to access the wireless network.

**Advantages:** Transmit data wirelessly across a long distance and reduce the cabling cost.

## ■ Scenario 2





**Network requirements:** Combine two separate office networks into one.

**The device in the network:** The device in AP Mode connects to one office network and creates a wireless network. The device in Client Mode connects to the other office network and the wireless network.

**Advantages:** Establish a point-to-point WLAN across a long distance to achieve the connectivity between two networks and avoid the cabling trouble.

### ■ Scenario 3



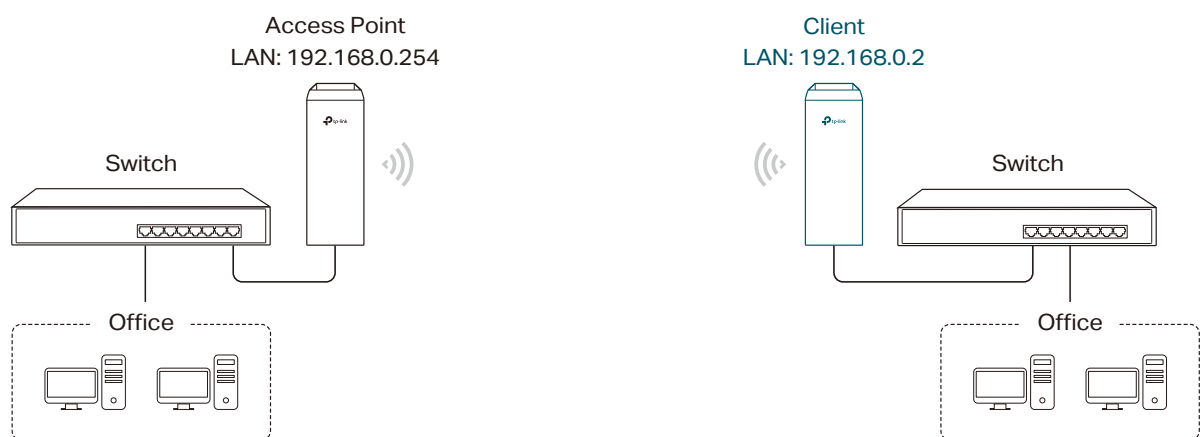
**Network requirements:** Establish wireless network coverage in the campus, community, industrial park or public place to provide wireless access for users.

**The device in the network:** With the access to campus wired network or other wired local area networks, the device in AP Mode provides the wireless access for wireless clients, such as smart phones, laptops and tablets to connect to the network.

**Advantages:** Enrich the access ways of local area network and extend the network coverage.

## 1.2 Client

For the device in Client Mode, the most common usage scenario is point-to-point networking. The device is used to transform wireless signal into wired one.

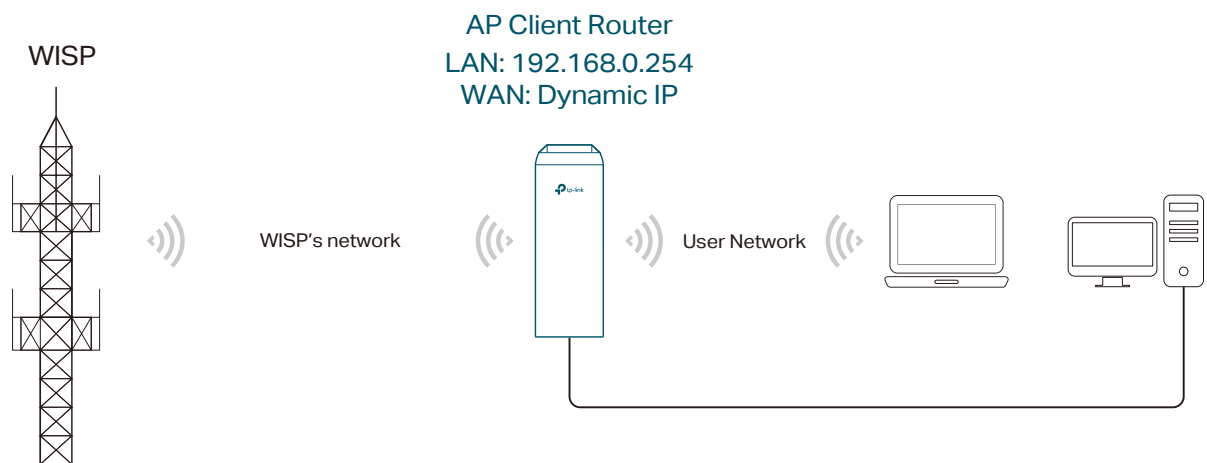


**Network requirements:** Help the wired devices to connect to the wireless network.

**The device in the network:** In Client Mode, the device actually serves as a wireless adapter to receive the wireless signal from root AP or Station. In this case, wired devices can access the wireless network by connecting to the device in Client Mode.

## 1.3 AP Client Router (WISP Client)

In AP Client Router Mode, the device access the internet provided by WISP (Wireless Internet Service Provider) through wireless connection. For the downstream clients, the device serves as a normal home wireless router. It can provide wired connection and wireless connection simultaneously.



**Network requirements:** Get internet service from WISP.

**The device in the network:** The device in Client Router Mode connects to WISP wirelessly for internet service. It provides both wired access and wireless access for the clients.

## 1.4 AP Router

The device in AP Router Mode serves as a normal home wireless router but provides a wider wireless network range.



**Network requirements:** Establish the wireless network coverage in the campus, community, industrial park or other public places and so on.

**The device in the network:** The device in AP Router Mode connects to root ADSL/Cable Modem for internet access. Meanwhile, it creates a wireless network for the wireless clients to connect to the internet.

**Note:**

In this mode, the device cannot be managed directly through the port connected to ADSL/Cable Modem. To manage the device, connect the management host to the device wirelessly or via the other LAN port.

## 1.5 Repeater

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**Note:**

Repeater mode is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.

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The device in Repeater Mode can extend wireless coverage of an existing wireless network. The SSID and encryption type of the device should be the same as those of the root AP.

## 1.6 Bridge

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**Note:**

Bridge mode is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.

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The device in Bridge Mode can extend wireless coverage of an existing wireless network. The SSID and encryption type of the device can be different from those of the root AP.

# 2 Quick Start

This chapter introduces how to quickly build a wireless network in different operation modes. Follow the steps below:

*2.1 Check the System Requirements*

*2.2 Log In to the Device*

*2.3 Set Up the Wireless Network*

## 2.1 Check the System Requirements

- **Operating System:**

Microsoft Windows XP, Windows Vista, Windows 7, Windows 8, Windows 10, Linux, or Mac OS X.

- **Web Browser**

Google Chrome, Safari, Firefox, and Apple Safari. IE browsers are not recommended.

## 2.2 Log In to the Device

Before configuring the device, you need to access the PharOS configuration interface. Follow the steps below:

1. Connect your PC to the device.
2. Set the IP address of your PC as static IP address on 192.168.0.X subnet (X ranges from 2 to 253, e.g.192.168.0.10).

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

Obtain an IP address automatically

Use the following IP address:

IP address: 192 . 168 . 0 . 10

Subnet mask: 255 . 255 . 255 . 0

Default gateway: . . . .

Obtain DNS server address automatically

Use the following DNS server addresses

Preferred DNS server: . . . .

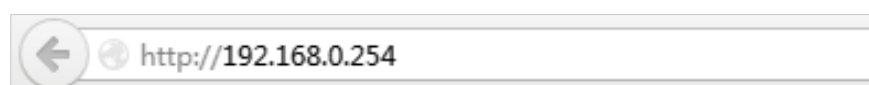
Alternate DNS server: . . . .

Validate settings upon exit

Advanced...

OK Cancel

3. Launch a web browser on and enter **the management IP address of the device (192.168.0.254 by default)** in the address bar to load the login page of the PharOS configuration interface.



4. Use **admin** for both of *User Name* and *Password*. Specify the region where you use the device. Available channels and maximum Transmit Power will be determined by the selected region according to the local laws and regulations. Select the appropriate language from the Language drop-down list. Read and agree the terms of use, then click *Login*.

tp-link

User Name: admin

Password: .....

Region: Please Select a Region

Language: English

TERMS OF USE

This TP-Link wireless device must be installed by a certified professional. Properly installed shielded Ethernet cable and earth grounding must be used in compliance with this product's warranty. Installers must abide by local rules and regulations in terms of legal frequency channels, output power, and Dynamic Frequency Selection (DFS) requirements. The End User accepts responsibility for maintaining the product in accordance with these rules and regulations. For further information, please visit [www.tp-link.com](http://www.tp-link.com).

I agree to these terms of use

Login Clear

5. Create a new username and password for network security. Click *Finish* to log in to the PharOS.

tp-link

New User Name:

New Password:

Confirm Password:

TERMS OF USE

It is recommended to change the device user name and password from its default settings.

Finish Clear

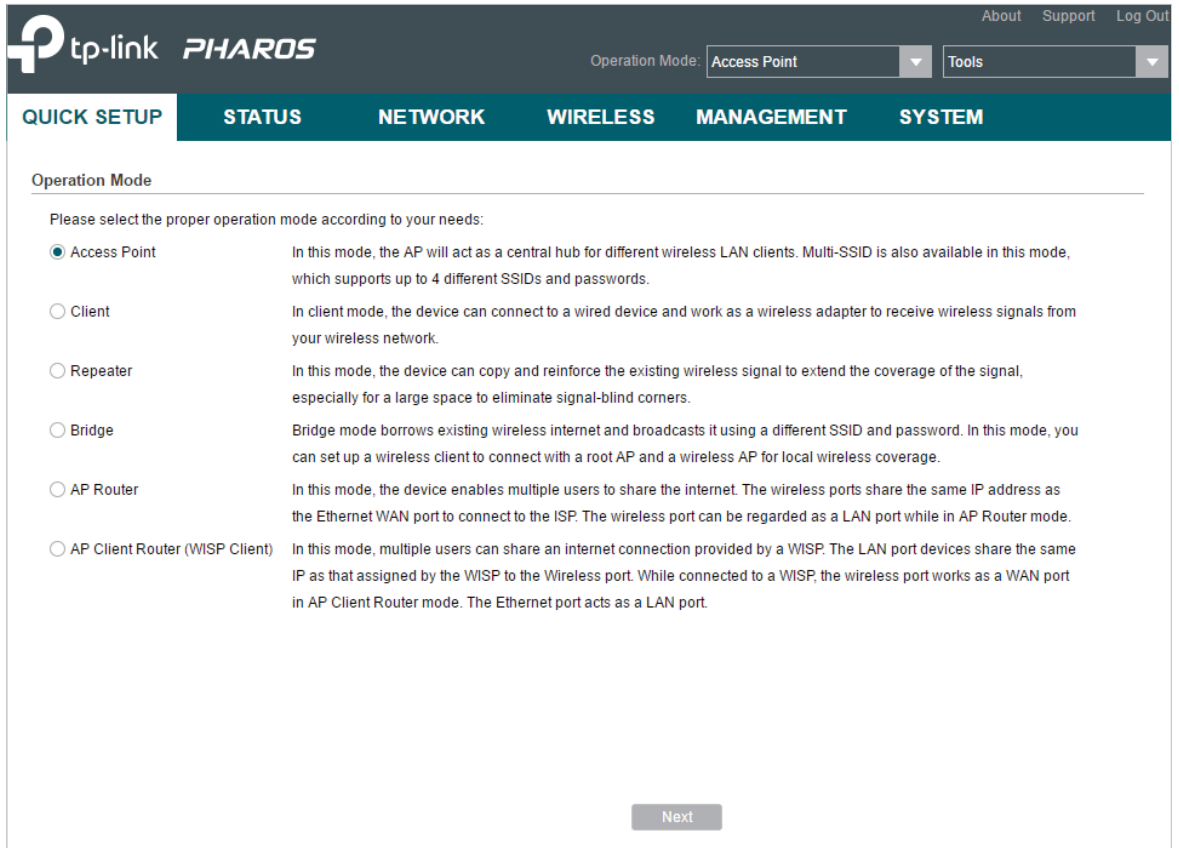
## 2.3 Set Up the Wireless Network

Use the Quick Setup wizard to quickly configure your device step by step. Choose the suitable operation mode according to your network environment and follow the step-by-step instructions.

## Access Point

Follow the steps below to configure the device as Access Point Mode:

1. Go to the **QUICK SETUP** page, select *Access Point* and click *Next*.



The screenshot shows the TP-Link PHAROS web interface. At the top, there is a navigation bar with the TP-Link logo, the brand name 'PHAROS', and links for 'About', 'Support', and 'Log Out'. Below the navigation bar, there is a header with 'Operation Mode: Access Point' and a 'Tools' dropdown menu. The main content area is titled 'QUICK SETUP' and has a sub-header 'Operation Mode'. Below this, there is a prompt: 'Please select the proper operation mode according to your needs:'. There are six radio button options, each with a description:

- Access Point**: In this mode, the AP will act as a central hub for different wireless LAN clients. Multi-SSID is also available in this mode, which supports up to 4 different SSIDs and passwords.
- Client**: In client mode, the device can connect to a wired device and work as a wireless adapter to receive wireless signals from your wireless network.
- Repeater**: In this mode, the device can copy and reinforce the existing wireless signal to extend the coverage of the signal, especially for a large space to eliminate signal-blind corners.
- Bridge**: Bridge mode borrows existing wireless internet and broadcasts it using a different SSID and password. In this mode, you can set up a wireless client to connect with a root AP and a wireless AP for local wireless coverage.
- AP Router**: In this mode, the device enables multiple users to share the internet. The wireless ports share the same IP address as the Ethernet WAN port to connect to the ISP. The wireless port can be regarded as a LAN port while in AP Router mode.
- AP Client Router (WISP Client)**: In this mode, multiple users can share an internet connection provided by a WISP. The LAN port devices share the same IP as that assigned by the WISP to the Wireless port. While connected to a WISP, the wireless port works as a WAN port in AP Client Router mode. The Ethernet port acts as a LAN port.

At the bottom right of the form, there is a 'Next' button.

2. In the **LAN Settings** section, specify the LAN IP address and the Subnet Mask for the device. Then, click **Next**.

The screenshot shows a web interface for configuring a network device. At the top, there is a dark teal navigation bar with the following tabs: **QUICK SETUP**, **STATUS**, **NETWORK**, **WIRELESS**, **MANAGEMENT**, and **SYSTEM**. The **QUICK SETUP** tab is currently selected. Below the navigation bar, the page title is **LAN Settings**. The main content area contains two input fields: "IP Address:" with the value "192.168.0.254" and "Subnet Mask:" with the value "255.255.255.0". At the bottom of the page, there are two buttons: "Back" and "Next".



3. In the **Wireless AP Settings** section, specify the basic wireless parameters to create a wireless network. Click Next.



**Note:**

- It is recommended to specify *Security* as **WPA-PSK/WPA2-PSK** for the network security.
- You can keep the default settings or specify the parameters according to your need. For details, refer to [5. Configure the Wireless Parameters](#).

QUICK SETUP	STATUS	NETWORK	WIRELESS	MANAGEMENT	SYSTEM
<b>Wireless AP Settings</b>					
SSID: <input type="text" value="TP-LINK_Outdoor_BD205C"/>					
Region: <input type="text" value="United States"/>					
Mode: <input type="text" value="802.11a/n"/>					
Channel Width: <input type="text" value="20/40MHz"/>					
Channel/Frequency: <input type="text" value="Auto"/>					
Security: <input type="text" value="None"/>					
PSK Password: <input type="text"/> <input type="checkbox"/> Show					
We do not recommend using WEP encryption. You can go to WIRELESS page to configure the encryption mode.					
Distance Setting: <input type="text" value="0"/> (0-27.9)km					
MAXtream: <input type="checkbox"/> Enable					
<input type="button" value="Back"/> <input type="button" value="Next"/>					

4. In the **Finish** section, review the configurations and click *Finish* to complete the quick setup.

The screenshot shows a web interface with a dark teal navigation bar at the top containing the following tabs: QUICK SETUP, STATUS, NETWORK, WIRELESS, MANAGEMENT, and SYSTEM. The 'QUICK SETUP' tab is active. Below the navigation bar, the page title is 'Finish'. The main content area displays the following configuration details:

- Operation Mode: Access Point
- IP Address: 192.168.0.254
- Subnet Mask: 255.255.255.0
- SSID: TP-LINK\_Outdoor\_BD205C
- Region: United States
- Mode: 802.11a/n
- Channel Width: 20/40MHz
- Channel/Frequency: Auto
- Security: None
- Distance Setting: 0 km
- MAXtream: Disable

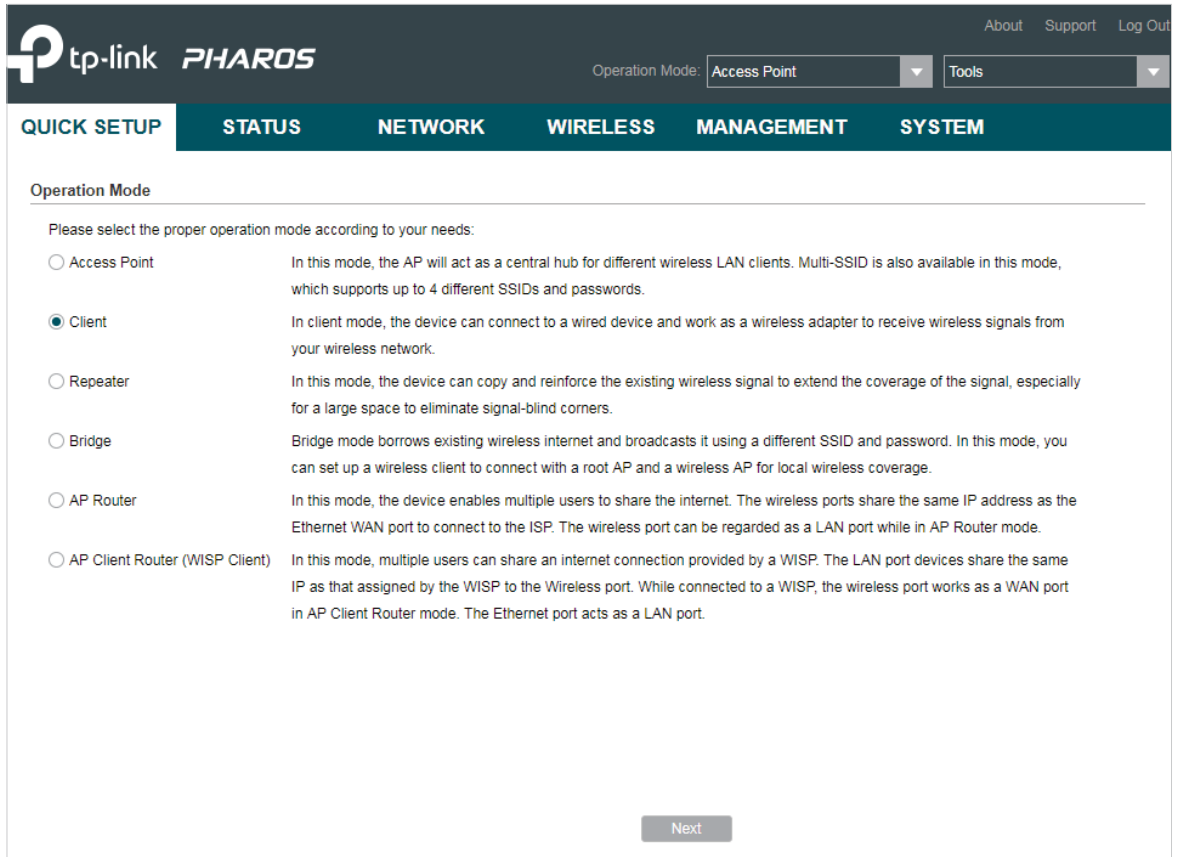
At the bottom of the configuration area, there are two buttons: 'Back' and 'Finish'.

5. Connect the device according to your network topology and use it normally.

## Client

Follow the steps below to configure the device as Client Mode:

1. Go to the **QUICK SETUP** page, select *Client* and click *Next*.



The screenshot shows the TP-Link PHAROS web interface. At the top, there is a navigation bar with the TP-Link logo, the model name 'PHAROS', and links for 'About', 'Support', and 'Log Out'. Below the navigation bar, there is a header with tabs for 'QUICK SETUP', 'STATUS', 'NETWORK', 'WIRELESS', 'MANAGEMENT', and 'SYSTEM'. The 'QUICK SETUP' tab is active. Underneath, the 'Operation Mode' section is displayed. It contains a heading 'Operation Mode' and a sub-heading 'Please select the proper operation mode according to your needs:'. There are six radio button options, each with a description:

- Access Point: In this mode, the AP will act as a central hub for different wireless LAN clients. Multi-SSID is also available in this mode, which supports up to 4 different SSIDs and passwords.
- Client: In client mode, the device can connect to a wired device and work as a wireless adapter to receive wireless signals from your wireless network.
- Repeater: In this mode, the device can copy and reinforce the existing wireless signal to extend the coverage of the signal, especially for a large space to eliminate signal-blind corners.
- Bridge: Bridge mode borrows existing wireless internet and broadcasts it using a different SSID and password. In this mode, you can set up a wireless client to connect with a root AP and a wireless AP for local wireless coverage.
- AP Router: In this mode, the device enables multiple users to share the internet. The wireless ports share the same IP address as the Ethernet WAN port to connect to the ISP. The wireless port can be regarded as a LAN port while in AP Router mode.
- AP Client Router (WISP Client): In this mode, multiple users can share an internet connection provided by a WISP. The LAN port devices share the same IP as that assigned by the WISP to the Wireless port. While connected to a WISP, the wireless port works as a WAN port in AP Client Router mode. The Ethernet port acts as a LAN port.

At the bottom right of the form, there is a 'Next' button.

2. In the **LAN Settings** section, specify the LAN IP Address and the Subnet Mask for the device. Then, click **Next**.

The screenshot shows a web interface with a dark teal navigation bar at the top containing the following tabs: QUICK SETUP, STATUS, NETWORK, WIRELESS, MANAGEMENT, and SYSTEM. The 'QUICK SETUP' tab is active. Below the navigation bar, the page title is 'LAN Settings'. The main content area contains two input fields: 'IP Address' with the value '192.168.0.254' and 'Subnet Mask' with the value '255.255.255.0'. At the bottom of the page, there are two buttons: 'Back' and 'Next'.

3. In the **Wireless Client Settings** section, click **Survey** to search for the upstream wireless network.

The screenshot shows a web interface with a dark teal navigation bar at the top containing the following tabs: QUICK SETUP, STATUS, NETWORK, WIRELESS, MANAGEMENT, and SYSTEM. The 'WIRELESS' tab is active. Below the navigation bar, the page title is 'Wireless Client Settings'. The main content area contains several configuration options: 'SSID of Remote AP' with an empty input field and a 'Survey' button; 'MAC of Remote AP' with an empty input field and a 'Lock to AP' checkbox; 'Region' set to 'United States'; 'Mode' set to '802.11a/n'; 'WDS' set to 'Auto'; 'Channel Width' set to '20/40MHz'; 'Security' set to 'None'; 'PSK Password' with an empty input field and a 'Show' checkbox; a note stating 'We do not recommend using WEP encryption. You can go to WIRELESS page to configure the encryption mode.'; and 'Distance Setting' set to '0' with a range of '(0-27.9)km'. At the bottom of the page, there are two buttons: 'Back' and 'Next'.

4. Select the desired wireless network and click **Connect**.



**Note:**

There may be two or more networks with the same SSID in the AP list. Click **Lock to AP** to select the SSID and AP simultaneously, which can make the device connect to the specific AP next time.

QUICK SETUP    STATUS    NETWORK    WIRELESS    MANAGEMENT    SYSTEM

Wireless Client Settings

<input type="checkbox"/>	BSSID	SSID	MAXtream	Device Name	SNR (dB)	Signal / Noise (dBm)	Channel	Security
<input type="checkbox"/>	18-A6-F7-41-26-46	daisy 3	No		42	-53/-95	5180 (36)	WPA2-PSK
<input type="checkbox"/>	50-C7-BF-27-7F-6E	SR20_5G	No		50	-45/-95	5220 (44)	WPA2-PSK
<input type="checkbox"/>	50-C7-BF-17-A6-E3	EAP-Show	No		14	-81/-95	5180 (36)	WPA2-PSK
<input type="checkbox"/>	D4-61-FE-5A-2A-00	das	No		11	-85/-96	5180 (36)	WPA-PSK/WPA2-PSK
<input type="checkbox"/>	50-C7-BF-48-54-DB	deco	No		35	-61/-96	5200 (40)	WPA2-PSK
<input type="checkbox"/>	50-C7-BF-48-57-1F	deco	No		30	-66/-96	5200 (40)	WPA2-PSK
<input type="checkbox"/>	50-C7-BF-48-57-74	deco	No		47	-49/-96	5200 (40)	WPA2-PSK
<input type="checkbox"/>	56-C7-BF-48-54-DB		No		37	-59/-96	5200 (40)	WPA2-PSK
<input type="checkbox"/>	56-C7-BF-48-57-1F		No		31	-65/-96	5200 (40)	WPA2-PSK
<input type="checkbox"/>	56-C7-BF-48-57-74		No		47	-49/-96	5200 (40)	WPA2-PSK

WPA-PSK/WPA2

Back    Refresh    Connect    Lock to AP

5. In the **Wireless Client Settings** section, specify the wireless parameters to connect to the specified wireless network. Click **Next**.



**Note:**

Make sure that *Security* and *PSK Password* are the same as the upstream wireless network's. Other parameters set in this page and those of the upstream wireless network should be compatible with each other. For details, refer to [5. Configure the Wireless Parameters](#)

QUICK SETUP	STATUS	NETWORK	WIRELESS	MANAGEMENT	SYSTEM
<b>Wireless Client Settings</b>					
SSID of Remote AP:	<input type="text" value="7200_5G"/>	<input type="button" value="Survey"/>			
MAC of Remote AP:	<input type="text" value="50-C7-BF-01-88-1F"/>	<input type="checkbox"/> Lock to AP			
Region:	<input type="text" value="United States"/>				
Mode:	<input type="text" value="802.11a/n"/>				
WDS:	<input type="text" value="Auto"/>				
Channel Width:	<input type="text" value="20/40MHz"/>				
Security:	<input type="text" value="WPA-PSK / WPA2-PSK"/>				
PSK Password:	<input type="text" value="*****"/>	<input type="checkbox"/> Show			
We do not recommend using WEP encryption. You can go to WIRELESS page to configure the encryption mode.					
Distance Setting:	<input type="text" value="0"/>	(0-27.9)km			
<input type="button" value="Back"/> <input type="button" value="Next"/>					

6. In the **Finish** section, review the configurations and click *Finish* to complete the quick setup.

**QUICK SETUP** STATUS NETWORK WIRELESS MANAGEMENT SYSTEM

Finish

Operation Mode: Client

LAN IP Address: 192.168.0.254

LAN Subnet Mask: 255.255.255.0

SSID of Remote AP: TP-LINK DC91 5G

Region: United States

Mode: 802.11a/n

WDS: Auto

Channel Width: 20/40MHz

Security: WPA-PSK / WPA2-PSK

Distance Setting: 0 km

Back Finish

7. Connect the device according to your network topology and use it normally.

# Repeater



## Note:

Repeater mode is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.

Follow the steps below to configure the device as Repeater Mode:

1. Go to the **QUICK SETUP** page, select *Repeater* and click **Next**.

The screenshot shows the TP-Link PHAROS web interface. At the top, there is a navigation bar with the TP-Link logo and 'PHAROS' text. On the right, there are links for 'About', 'Support', and 'Log Out'. Below the navigation bar, there is a menu with tabs: 'QUICK SETUP', 'STATUS', 'NETWORK', 'WIRELESS', 'MANAGEMENT', and 'SYSTEM'. The 'QUICK SETUP' tab is active. Underneath, there is a section titled 'Operation Mode' with the instruction: 'Please select the proper operation mode according to your needs:'. There are six radio button options, each with a description: 'Access Point', 'Client', 'Repeater' (which is selected), 'Bridge', 'AP Router', and 'AP Client Router (WISP Client)'. At the bottom right of the section, there is a 'Next' button.

Operation Mode	Description
<input type="radio"/> Access Point	In this mode, the AP will act as a central hub for different wireless LAN clients. Multi-SSID is also available in this mode, which supports up to 4 different SSIDs and passwords.
<input type="radio"/> Client	In client mode, the device can connect to a wired device and work as a wireless adapter to receive wireless signals from your wireless network.
<input checked="" type="radio"/> Repeater	In this mode, the device can copy and reinforce the existing wireless signal to extend the coverage of the signal, especially for a large space to eliminate signal-blind corners.
<input type="radio"/> Bridge	Bridge mode borrows existing wireless internet and broadcasts it using a different SSID and password. In this mode, you can set up a wireless client to connect with a root AP and a wireless AP for local wireless coverage.
<input type="radio"/> AP Router	In this mode, the device enables multiple users to share the internet. The wireless ports share the same IP address as the Ethernet WAN port to connect to the ISP. The wireless port can be regarded as a LAN port while in AP Router mode.
<input type="radio"/> AP Client Router (WISP Client)	In this mode, multiple users can share an internet connection provided by a WISP. The LAN port devices share the same IP as that assigned by the WISP to the Wireless port. While connected to a WISP, the wireless port works as a WAN port in AP Client Router mode. The Ethernet port acts as a LAN port.



2. In the **LAN Settings** section, specify the LAN IP address and the Subnet Mask for the device. Then, click **Next**.

The screenshot shows the 'LAN Settings' configuration page. At the top, there is a navigation bar with tabs: 'QUICK SETUP', 'STATUS', 'NETWORK', 'WIRELESS', 'MANAGEMENT', and 'SYSTEM'. The 'QUICK SETUP' tab is active. Below the navigation bar, the page title is 'LAN Settings'. There are two input fields: 'IP Address' with the value '192.168.0.254' and 'Subnet Mask' with the value '255.255.255.0'. At the bottom of the page, there are two buttons: 'Back' and 'Next'.

3. In the **Wireless Client Settings** section, click **Survey** to search for the upstream wireless network.

The screenshot shows the 'Wireless Client Settings' configuration page. At the top, there is a navigation bar with tabs: 'QUICK SETUP', 'STATUS', 'NETWORK', 'WIRELESS', 'MANAGEMENT', and 'SYSTEM'. The 'QUICK SETUP' tab is active. Below the navigation bar, the page title is 'Wireless Client Settings'. There are several input fields and a button: 'SSID of Remote AP' with an empty field and a 'Survey' button; 'MAC of Remote AP' with an empty field and a 'Lock to AP' checkbox; 'Region' with a dropdown menu set to 'United States'; 'Mode' with a dropdown menu set to '802.11a/n'; 'WDS' with a dropdown menu set to 'Auto'; 'Channel Width' with a dropdown menu set to '20/40MHz'; 'Security' with a dropdown menu set to 'None'; 'PSK Password' with an empty field and a 'Show' checkbox. Below these fields, there is a note: 'We do not recommend using WEP encryption. You can go to WIRELESS page to configure the encryption mode.' At the bottom, there is a 'Distance Setting' field with the value '0' and a range '(0-27.9)km'. At the bottom of the page, there are two buttons: 'Back' and 'Next'.

4. Select the desired wireless network and click **Connect**.



**Note:**

There may be two or more networks with the same SSID in the AP list. Click **Lock to AP** to select the SSID and AP simultaneously, which can make the device connect to the specific AP next time.

QUICK SETUP    STATUS    NETWORK    WIRELESS    MANAGEMENT    SYSTEM

Wireless Client Settings

<input type="checkbox"/>	BSSID	SSID	MAXtream	Device Name	SNR (dB)	Signal / Noise (dBm)	Channel	Security
<input type="checkbox"/>	18-A6-F7-41-26-46	daisy 3	No		42	-53/-95	5180 (36)	WPA2-PSK
<input type="checkbox"/>	50-C7-BF-27-7F-6E	SR20_5G	No		50	-45/-95	5220 (44)	WPA2-PSK
<input type="checkbox"/>	50-C7-BF-17-A6-E3	EAP-Show	No		14	-81/-95	5180 (36)	WPA2-PSK
<input type="checkbox"/>	D4-61-FE-5A-2A-00	das	No		11	-85/-96	5180 (36)	WPA-PSK/WPA2-PSK
<input type="checkbox"/>	50-C7-BF-48-54-DB	deco	No		35	-61/-96	5200 (40)	WPA2-PSK
<input type="checkbox"/>	50-C7-BF-48-57-1F	deco	No		30	-66/-96	5200 (40)	WPA2-PSK
<input type="checkbox"/>	50-C7-BF-48-57-74	deco	No		47	-49/-96	5200 (40)	WPA2-PSK
<input type="checkbox"/>	56-C7-BF-48-54-DB		No		37	-59/-96	5200 (40)	WPA2-PSK
<input type="checkbox"/>	56-C7-BF-48-57-1F		No		31	-65/-96	5200 (40)	WPA2-PSK
<input type="checkbox"/>	56-C7-BF-48-57-74		No		47	-49/-96	5200 (40)	WPA2-PSK

WPA-PSK/WPA2

Back    Refresh    Connect    Lock to AP

5. In the **Wireless Client Settings** section, specify the wireless parameters to connect to the specified wireless network. Click **Next**.



**Note:**

Make sure that *Security* and *PSK Password* are the same as the upstream wireless network's. Other parameters set in this page and those of the upstream wireless network should be compatible with each other. For details, refer to [5. Configure the Wireless Parameters](#).

QUICK SETUP	STATUS	NETWORK	WIRELESS	MANAGEMENT	SYSTEM
<b>Wireless Client Settings</b>					
SSID of Remote AP:	<input type="text" value="7200_5G"/>	<input type="button" value="Survey"/>			
MAC of Remote AP:	<input type="text" value="50-C7-BF-01-88-1F"/>	<input type="checkbox"/> Lock to AP			
Region:	<input type="text" value="United States"/>				
Mode:	<input type="text" value="802.11a/n"/>				
WDS:	<input type="text" value="Auto"/>				
Channel Width:	<input type="text" value="20/40MHz"/>				
Security:	<input type="text" value="WPA-PSK / WPA2-PSK"/>				
PSK Password:	<input type="text" value="*****"/>	<input type="checkbox"/> Show			
We do not recommend using WEP encryption. You can go to WIRELESS page to configure the encryption mode.					
Distance Setting:	<input type="text" value="0"/>	(0-27.9)km			
<input type="button" value="Back"/> <input type="button" value="Next"/>					

6. In the **Finish** section, review the configurations and click *Finish* to complete the quick setup.

The screenshot displays the 'Finish' configuration page for a network device. The page has a dark teal header with navigation tabs: 'QUICK SETUP', 'STATUS', 'NETWORK', 'WIRELESS', 'MANAGEMENT', and 'SYSTEM'. The 'QUICK SETUP' tab is active. Below the header, the word 'Finish' is underlined. The main content area lists the following configuration details:

- Operation Mode: Repeater
- IP Address: 192.168.0.254
- Subnet Mask: 255.255.255.0
- SSID of Remote AP: 7200\_5G
- Region: United States
- Mode: 802.11a/n
- WDS: Disable
- Channel Width: 20/40MHz
- Security: WPA-PSK / WPA2-PSK
- Distance Setting: 0 km

At the bottom of the page, there are two buttons: 'Back' and 'Finish'.

7. Connect the device according to your network topology and use it normally.

## Bridge



### Note:

Bridge mode is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.

Follow the steps below to configure the device as Bridge Mode:

1. Go to the **QUICK SETUP** page, select *Bridge* and click **Next**.

The screenshot shows the TP-Link PHAROS web interface. At the top, there is a navigation bar with the TP-Link logo, the product name 'PHAROS', and links for 'About', 'Support', and 'Log Out'. Below the navigation bar, there is a header with 'Operation Mode: AP Client Router' and a 'Tools' dropdown menu. The main content area is titled 'QUICK SETUP' and has several tabs: 'STATUS', 'NETWORK', 'WIRELESS', 'MANAGEMENT', and 'SYSTEM'. The 'QUICK SETUP' tab is active, and the 'Operation Mode' section is displayed. It contains a heading 'Operation Mode' and a sub-heading 'Please select the proper operation mode according to your needs:'. There are six radio button options, each with a description:

- Access Point: In this mode, the AP will act as a central hub for different wireless LAN clients. Multi-SSID is also available in this mode, which supports up to 4 different SSIDs and passwords.
- Client: In client mode, the device can connect to a wired device and work as a wireless adapter to receive wireless signals from your wireless network.
- Repeater: In this mode, the device can copy and reinforce the existing wireless signal to extend the coverage of the signal, especially for a large space to eliminate signal-blind corners.
- Bridge: Bridge mode borrows existing wireless internet and broadcasts it using a different SSID and password. In this mode, you can set up a wireless client to connect with a root AP and a wireless AP for local wireless coverage.
- AP Router: In this mode, the device enables multiple users to share the internet. The wireless ports share the same IP address as the Ethernet WAN port to connect to the ISP. The wireless port can be regarded as a LAN port while in AP Router mode.
- AP Client Router (WISP Client): In this mode, multiple users can share an internet connection provided by a WISP. The LAN port devices share the same IP as that assigned by the WISP to the Wireless port. While connected to a WISP, the wireless port works as a WAN port in AP Client Router mode. The Ethernet port acts as a LAN port.

At the bottom of the form, there is a 'Next' button.

2. In the **LAN Settings** section, specify the LAN IP address and the Subnet Mask for the device. Then, click **Next**.

The screenshot shows a web interface with a dark teal navigation bar at the top containing the following tabs: QUICK SETUP, STATUS, NETWORK, WIRELESS, MANAGEMENT, and SYSTEM. The 'QUICK SETUP' tab is selected. Below the navigation bar, the page title is 'LAN Settings'. The main content area contains two input fields: 'IP Address' with the value '192.168.0.254' and 'Subnet Mask' with the value '255.255.255.0'. At the bottom of the page, there are two buttons: 'Back' and 'Next'.

3. In the **Wireless Client Settings** section, click **Survey** to search for the upstream wireless network.

The screenshot shows a web interface with a dark teal navigation bar at the top containing the following tabs: QUICK SETUP, STATUS, NETWORK, WIRELESS, MANAGEMENT, and SYSTEM. The 'WIRELESS' tab is selected. Below the navigation bar, the page title is 'Wireless Client Settings'. The main content area contains several configuration options: 'SSID of Remote AP:' with an empty input field and a 'Survey' button; 'MAC of Remote AP:' with an empty input field and a 'Lock to AP' checkbox; 'Region:' with a dropdown menu set to 'United States'; 'Mode:' with a dropdown menu set to '802.11a/n'; 'WDS:' with a dropdown menu set to 'Auto'; 'Channel Width:' with a dropdown menu set to '20/40MHz'; 'Security:' with a dropdown menu set to 'None'; 'PSK Password:' with an empty input field and a 'Show' checkbox; and 'Distance Setting:' with an input field containing '0' and a range '(0-27.9)km'. A note below the PSK Password field reads: 'We do not recommend using WEP encryption. You can go to WIRELESS page to configure the encryption mode.' At the bottom of the page, there are two buttons: 'Back' and 'Next'.

4. Select the desired wireless network and click **Connect**.



**Note:**

There may be two or more networks with the same SSID in the AP list. Click **Lock to AP** to select the SSID and AP simultaneously, which can make the device connect to the specific AP next time.

QUICK SETUP    STATUS    NETWORK    WIRELESS    MANAGEMENT    SYSTEM

Wireless Client Settings

<input type="checkbox"/>	BSSID	SSID	MAXtream	Device Name	SNR (dB)	Signal / Noise (dBm)	Channel	Security
<input type="checkbox"/>	18-A6-F7-41-26-46	daisy 3	No		42	-53/-95	5180 (36)	WPA2-PSK
<input type="checkbox"/>	50-C7-BF-27-7F-6E	SR20_5G	No		50	-45/-95	5220 (44)	WPA2-PSK
<input type="checkbox"/>	50-C7-BF-17-A6-E3	EAP-Show	No		14	-81/-95	5180 (36)	WPA2-PSK
<input type="checkbox"/>	D4-61-FE-5A-2A-00	das	No		11	-85/-96	5180 (36)	WPA-PSK/WPA2-PSK
<input type="checkbox"/>	50-C7-BF-48-54-DB	deco	No		35	-61/-96	5200 (40)	WPA2-PSK
<input type="checkbox"/>	50-C7-BF-48-57-1F	deco	No		30	-66/-96	5200 (40)	WPA2-PSK
<input type="checkbox"/>	50-C7-BF-48-57-74	deco	No		47	-49/-96	5200 (40)	WPA2-PSK
<input type="checkbox"/>	56-C7-BF-48-54-DB		No		37	-59/-96	5200 (40)	WPA2-PSK
<input type="checkbox"/>	56-C7-BF-48-57-1F		No		31	-65/-96	5200 (40)	WPA2-PSK
<input type="checkbox"/>	56-C7-BF-48-57-74		No		47	-49/-96	5200 (40)	WPA2-PSK

WPA-PSK/WPA2

Back    Refresh    Connect    Lock to AP

5. In the **Wireless Client Settings** section, specify the wireless parameters to connect to the specified wireless network. Click **Next**.



**Note:**

Make sure that the *Security* and *PSK Password* are the same as the upstream wireless network's. Other parameters set in this page and those of the upstream wireless network should be compatible with each other. For details, refer to [5. Configure the Wireless Parameters](#).

QUICK SETUP	STATUS	NETWORK	WIRELESS	MANAGEMENT	SYSTEM
<b>Wireless Client Settings</b>					
SSID of Remote AP:	<input type="text" value="7200_5G"/>	<input type="button" value="Survey"/>			
MAC of Remote AP:	<input type="text" value="50-C7-BF-01-88-1F"/>	<input type="checkbox"/> Lock to AP			
Region:	<input type="text" value="United States"/>				
Mode:	<input type="text" value="802.11a/n"/>				
WDS:	<input type="text" value="Auto"/>				
Channel Width:	<input type="text" value="20/40MHz"/>				
Security:	<input type="text" value="WPA-PSK / WPA2-PSK"/>				
PSK Password:	<input type="text" value="*****"/>	<input type="checkbox"/> Show			
We do not recommend using WEP encryption. You can go to WIRELESS page to configure the encryption mode.					
Distance Setting:	<input type="text" value="0"/>	(0-27.9)km			
<input type="button" value="Back"/> <input type="button" value="Next"/>					



6. In the **Wireless AP Settings** section, specify the parameters to create a new wireless network for the downstream clients. Click *Next*.

The screenshot shows the 'Wireless AP Settings' page in a web interface. At the top, there is a navigation bar with tabs: QUICK SETUP (selected), STATUS, NETWORK, WIRELESS, MANAGEMENT, and SYSTEM. Below the navigation bar, the page title is 'Wireless AP Settings'. The configuration options are as follows:

- Wireless Radio:  Enable
- SSID: TP-LINK\_Outdoor\_BD205C
- Security: WPA-PSK / WPA2-PSK (dropdown menu)
- PSK Password: [masked with dots]  Show

Below the password field, there is a note: "We do not recommend using WEP encryption. You can go to WIRELESS page to configure the encryption mode." At the bottom of the page, there are two buttons: 'Back' and 'Next'.

7. In the **Finish** section, review the configurations and click *Finish* to complete the quick setup.

The screenshot shows the 'Finish' page in the web interface. At the top, there is a navigation bar with tabs: QUICK SETUP (selected), STATUS, NETWORK, WIRELESS, MANAGEMENT, and SYSTEM. Below the navigation bar, the page title is 'Finish'. The configuration summary is as follows:

- Operation Mode: Bridge
- IP Address: 192.168.0.254
- Subnet Mask: 255.255.255.0
- SSID of Remote AP: 7200\_5G
- Region: United States
- Mode: 802.11a/n
- WDS: Disable
- Channel Width: 20/40MHz
- Security: WPA-PSK / WPA2-PSK
- Distance Setting: 0 km
- Wireless Radio: Enable
- SSID: TP-LINK\_Outdoor\_BD205C
- Security: WPA-PSK / WPA2-PSK

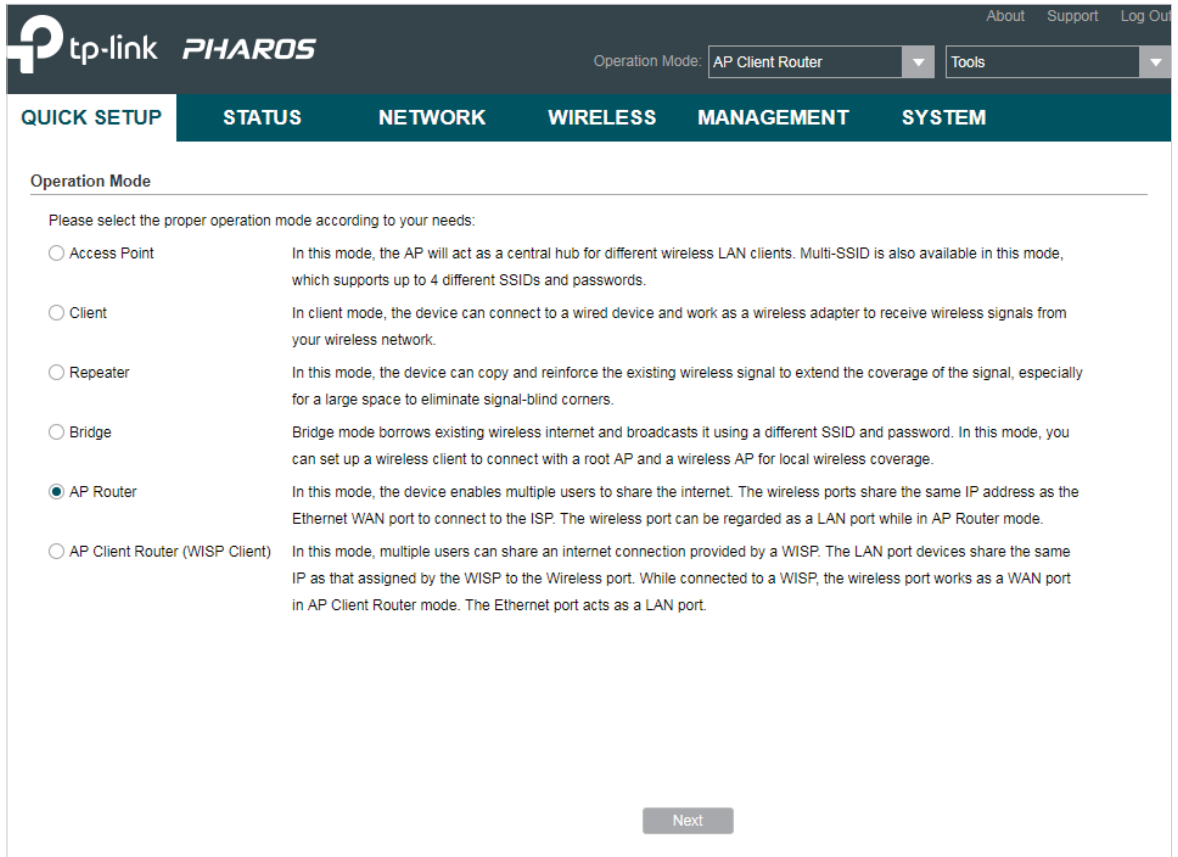
At the bottom of the page, there are two buttons: 'Back' and 'Finish'.

8. Connect the device according to your network topology and use it normally.

## AP Router

Follow the steps below to configure the device as AP Router Mode:

1. Go to the **QUICK SETUP** page, select **AP Router** and click **Next**.



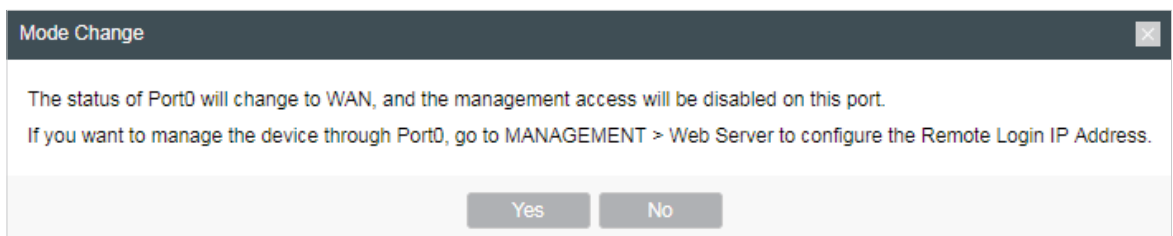
The screenshot shows the TP-Link PHAROS web interface. At the top, there is a navigation bar with the TP-Link logo and 'PHAROS' text. To the right, there are links for 'About', 'Support', and 'Log Out'. Below the navigation bar, there is a header with tabs: 'QUICK SETUP', 'STATUS', 'NETWORK', 'WIRELESS', 'MANAGEMENT', and 'SYSTEM'. The 'QUICK SETUP' tab is active. Underneath, there is a section titled 'Operation Mode'. It contains a heading 'Please select the proper operation mode according to your needs:' followed by six radio button options, each with a description:

- Access Point: In this mode, the AP will act as a central hub for different wireless LAN clients. Multi-SSID is also available in this mode, which supports up to 4 different SSIDs and passwords.
- Client: In client mode, the device can connect to a wired device and work as a wireless adapter to receive wireless signals from your wireless network.
- Repeater: In this mode, the device can copy and reinforce the existing wireless signal to extend the coverage of the signal, especially for a large space to eliminate signal-blind corners.
- Bridge: Bridge mode borrows existing wireless internet and broadcasts it using a different SSID and password. In this mode, you can set up a wireless client to connect with a root AP and a wireless AP for local wireless coverage.
- AP Router: In this mode, the device enables multiple users to share the internet. The wireless ports share the same IP address as the Ethernet WAN port to connect to the ISP. The wireless port can be regarded as a LAN port while in AP Router mode.
- AP Client Router (WISP Client): In this mode, multiple users can share an internet connection provided by a WISP. The LAN port devices share the same IP as that assigned by the WISP to the Wireless port. While connected to a WISP, the wireless port works as a WAN port in AP Client Router mode. The Ethernet port acts as a LAN port.

At the bottom right of the form, there is a 'Next' button.

The following window will pop up. Click Yes.

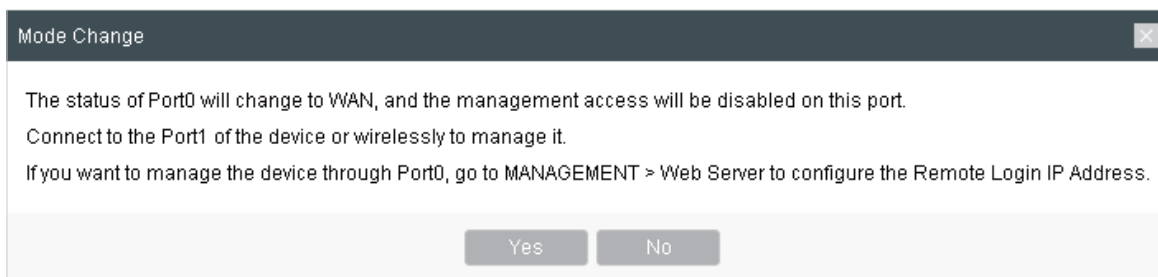
- For devices with one Ethernet port.



The screenshot shows a 'Mode Change' dialog box. It has a title bar with a close button. The main text reads: 'The status of Port0 will change to WAN, and the management access will be disabled on this port. If you want to manage the device through Port0, go to MANAGEMENT > Web Server to configure the Remote Login IP Address.' At the bottom, there are two buttons: 'Yes' and 'No'.

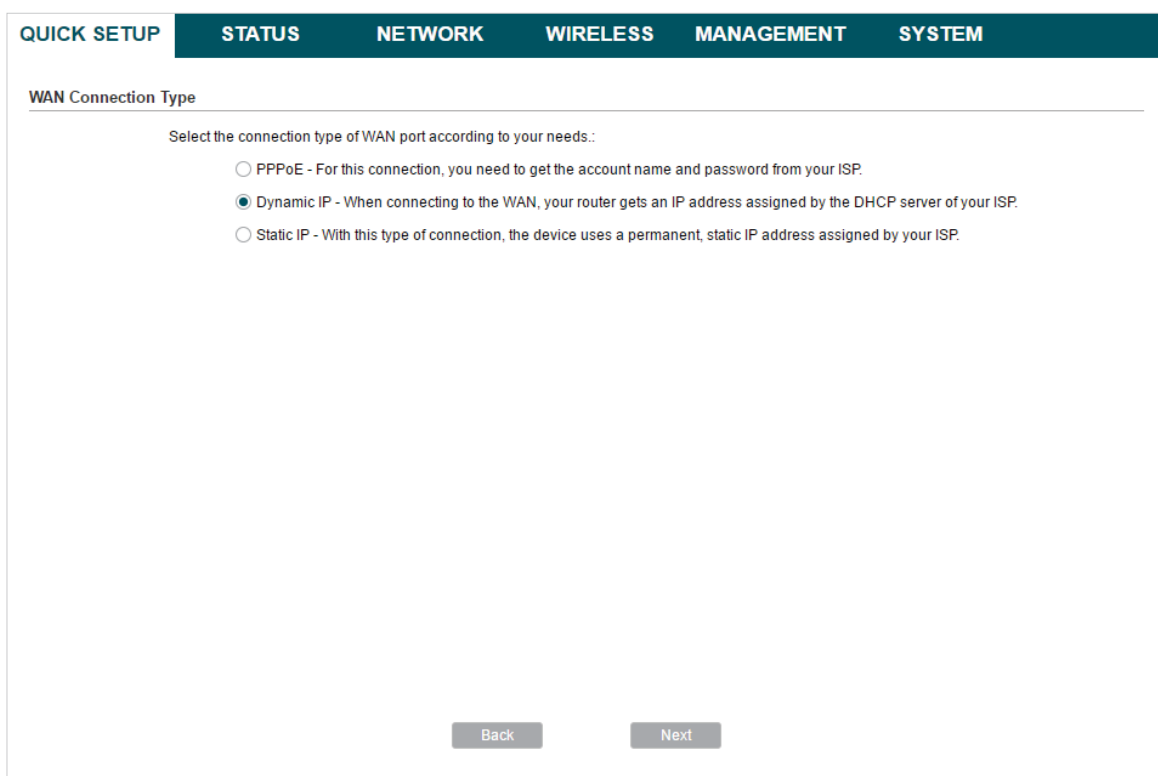
Note that if you select AP Router as the operation mode, the status of Port0 will change to WAN, and the management access will be disabled on this port after the process of quick setup. If you want to manage the device through Port0, configure the Remote Login IP Address. For details, refer to [6.5. Configure Web Server](#).

- For devices with two Ethernet ports.



Note that if you select AP Router as the operation mode, the status of Port0 will change to WAN, and the management access will be disabled on this port after the process of quick setup. You can connect to the Port1 of the device or wirelessly to manage it. If your want to manage the device through Port0, configure the Remote Login IP Address. For details, refer to [6.5. Configure Web Server](#).

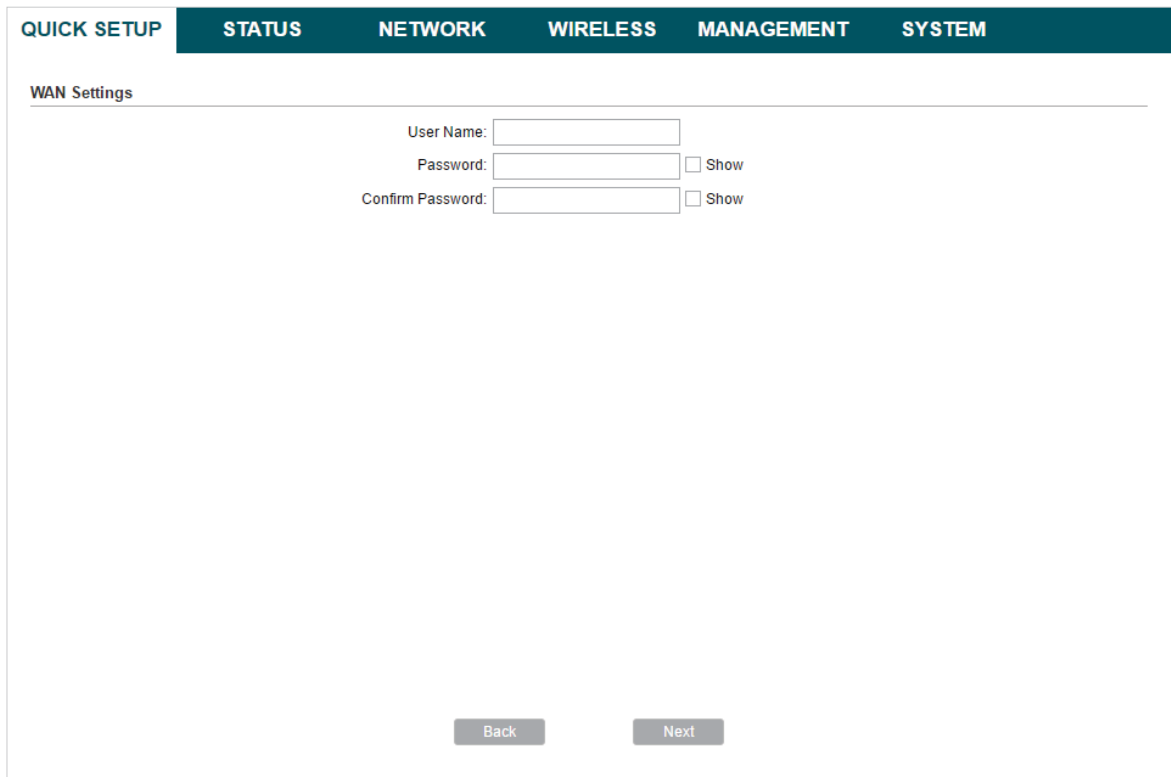
2. In the **WAN Connection Type** section, specify the connection type according to your need and click **Next**.



The device supports three types of the WAN connection, including *PPPoE*, *Dynamic IP* and *Static IP*. Contact your ISP to confirm your WAN connection type.

## ■ PPPoE

Select *PPPoE* and click *Next*, then the following page will appear. In the **WAN Settings** section, specify the parameters that are provided by your ISP and click *Next*.



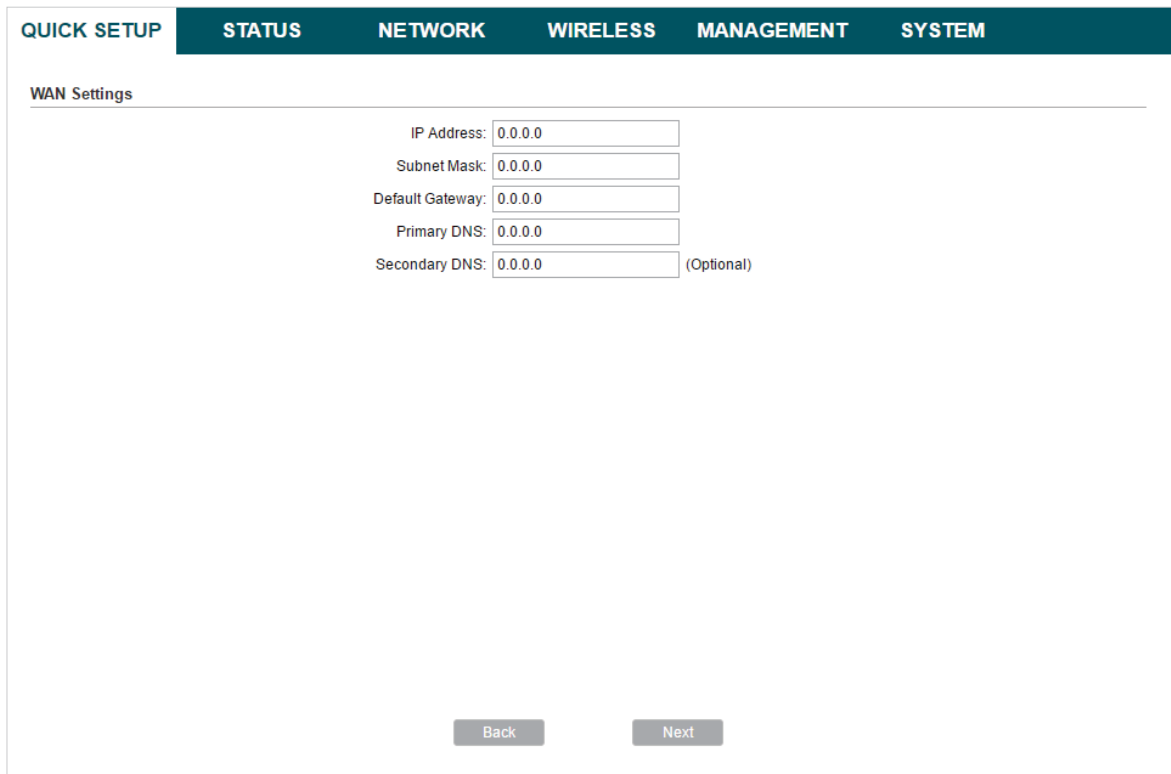
The screenshot shows a web-based configuration interface with a dark teal header. The header contains several tabs: **QUICK SETUP**, **STATUS**, **NETWORK**, **WIRELESS**, **MANAGEMENT**, and **SYSTEM**. The **QUICK SETUP** tab is currently selected. Below the header, the page is titled **WAN Settings**. The main content area contains three input fields: **User Name:** followed by a text box; **Password:** followed by a text box and a  **Show** checkbox; and **Confirm Password:** followed by a text box and a  **Show** checkbox. At the bottom of the page, there are two buttons: **Back** and **Next**.

## ■ Dynamic IP

Select *Dynamic IP* and click *Next*. In this type, the device will obtain a WAN connection automatically without any WAN configurations.

## ■ Static IP

Select *Static IP* and click *Next*, then the following page will appear. In the **WAN Settings** section, specify the parameters that are provided by your ISP and click *Next*.



The screenshot shows a network configuration interface with a dark teal header bar containing the following tabs: QUICK SETUP, STATUS, NETWORK, WIRELESS, MANAGEMENT, and SYSTEM. The 'QUICK SETUP' tab is currently selected. Below the header, the 'WAN Settings' section is visible, containing five input fields for network parameters, each with the value '0.0.0.0' entered. The fields are: IP Address, Subnet Mask, Default Gateway, Primary DNS, and Secondary DNS. The Secondary DNS field is followed by the text '(Optional)'. At the bottom of the page, there are two buttons: 'Back' and 'Next'.

Parameter	Value
IP Address:	0.0.0.0
Subnet Mask:	0.0.0.0
Default Gateway:	0.0.0.0
Primary DNS:	0.0.0.0
Secondary DNS:	0.0.0.0 (Optional)

Back Next

3. In the **Wireless AP Settings** section, specify the basic wireless parameters to create a wireless network. Click Next.



**Note:**

- It is recommended to specify *Security* as **WPA-PSK/WPA2-PSK** for the network security.
- You can keep the default settings or specify the parameters according to your need. For details, refer to [5. Configure the Wireless Parameters](#).

QUICK SETUP	STATUS	NETWORK	WIRELESS	MANAGEMENT	SYSTEM
<b>Wireless AP Settings</b>					
SSID: <input type="text" value="TP-LINK_Outdoor_BD205C"/>					
Region: <input type="text" value="United States"/>					
Mode: <input type="text" value="802.11a/n"/>					
Channel Width: <input type="text" value="20/40MHz"/>					
Channel/Frequency: <input type="text" value="Auto"/>					
Security: <input type="text" value="None"/>					
PSK Password: <input type="text"/> <input type="checkbox"/> Show					
We do not recommend using WEP encryption. You can go to WIRELESS page to configure the encryption mode.					
Distance Setting: <input type="text" value="0"/> (0-27.9)km					
MAXtream: <input type="checkbox"/> Enable					
<input type="button" value="Back"/>			<input type="button" value="Next"/>		

4. In the **Finish** section, review the configurations and click *Finish* to complete the quick setup.

**QUICK SETUP**   **STATUS**   **NETWORK**   **WIRELESS**   **MANAGEMENT**   **SYSTEM**

**Finish**

Operation Mode: AP Router

WAN Connection Type: Static IP

IP Address: 192.168.2.10

Subnet Mask: 255.255.255.0

Default Gateway: 192.168.2.1

Primary DNS: 192.168.0.3

Secondary DNS: 192.168.1.3

SSID: TP-LINK\_Outdoor\_BD205C

Region: United States

Mode: 802.11a/n

Channel Width: 20/40MHz

Security: None

Distance Setting: 0 km

MAXtream: Disable

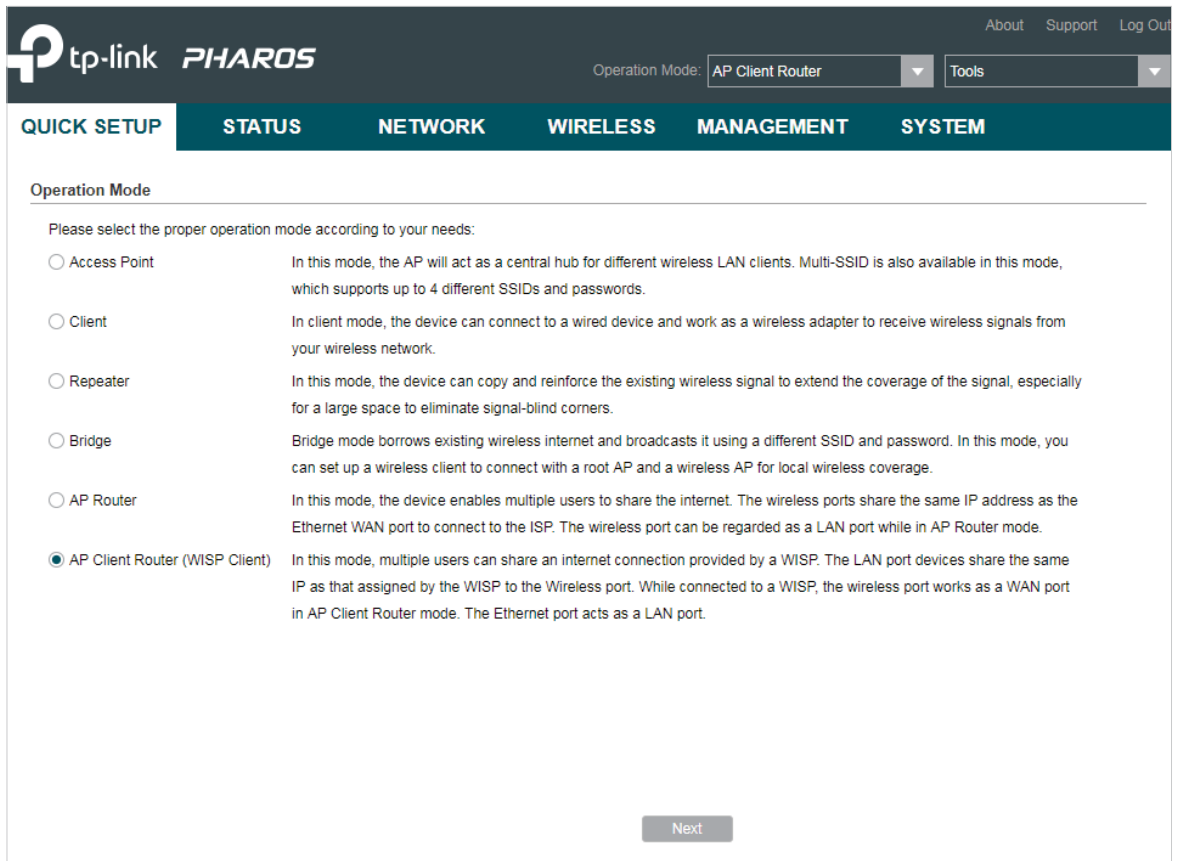
[Back](#)   [Finish](#)

5. Connect the device according to your network topology and use it normally.

## AP Client Router (WISP Client)

Follow the steps below to configure the device as AP Client Router (WISP Client) Mode:

1. Go to the **QUICK SETUP** page, select *AP Client Router (WISP Client)* and click **Next**.

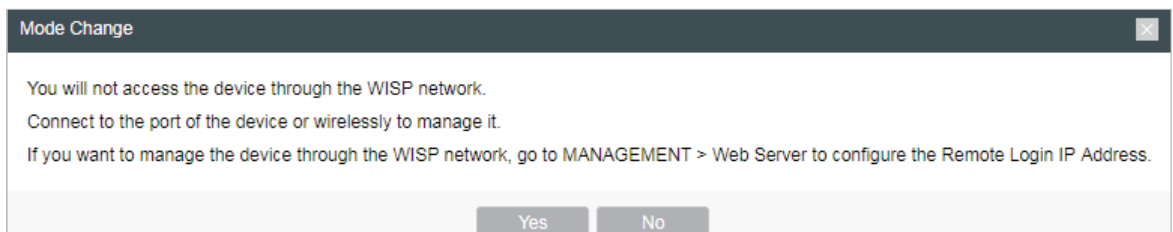


The screenshot shows the TP-Link PHAROS web interface. At the top, there is a navigation bar with the TP-Link logo, the word "PHAROS", and links for "About", "Support", and "Log Out". Below the navigation bar, there is a header with "Operation Mode: AP Client Router" and a "Tools" dropdown menu. The main content area is titled "QUICK SETUP" and has a sub-header "Operation Mode". Below this, there is a list of operation modes with radio buttons and descriptions:

- Access Point: In this mode, the AP will act as a central hub for different wireless LAN clients. Multi-SSID is also available in this mode, which supports up to 4 different SSIDs and passwords.
- Client: In client mode, the device can connect to a wired device and work as a wireless adapter to receive wireless signals from your wireless network.
- Repeater: In this mode, the device can copy and reinforce the existing wireless signal to extend the coverage of the signal, especially for a large space to eliminate signal-blind corners.
- Bridge: Bridge mode borrows existing wireless internet and broadcasts it using a different SSID and password. In this mode, you can set up a wireless client to connect with a root AP and a wireless AP for local wireless coverage.
- AP Router: In this mode, the device enables multiple users to share the internet. The wireless ports share the same IP address as the Ethernet WAN port to connect to the ISP. The wireless port can be regarded as a LAN port while in AP Router mode.
- AP Client Router (WISP Client): In this mode, multiple users can share an internet connection provided by a WISP. The LAN port devices share the same IP as that assigned by the WISP to the Wireless port. While connected to a WISP, the wireless port works as a WAN port in AP Client Router mode. The Ethernet port acts as a LAN port.

At the bottom right of the form, there is a "Next" button.

The following window will pop up. Click Yes.



The screenshot shows a "Mode Change" dialog box with a close button in the top right corner. The text inside the dialog box reads:

You will not access the device through the WISP network.  
Connect to the port of the device or wirelessly to manage it.  
If you want to manage the device through the WISP network, go to **MANAGEMENT > Web Server** to configure the Remote Login IP Address.

At the bottom of the dialog box, there are two buttons: "Yes" and "No".

Note that if you select AP Client Router (WISP Client) as the operation mode, you will not access the device through the WISP network after the process of quick setup. You can connect to the port of the device or wirelessly to manage it. If you want to manage the device through the WISP network, configure the Remote Login IP Address. For details, refer to [6.5. Configure Web Server](#).



2. In the **WAN Connection Type** section, choose the connection type according to your need and click *Next*.

The screenshot shows a web interface with a dark teal navigation bar at the top containing the following tabs: QUICK SETUP, STATUS, NETWORK, WIRELESS, MANAGEMENT, and SYSTEM. The 'QUICK SETUP' tab is active. Below the navigation bar, the page title is 'WAN Connection Type'. The main content area contains the following text and options:

Select the connection type of WAN port according to your needs.:

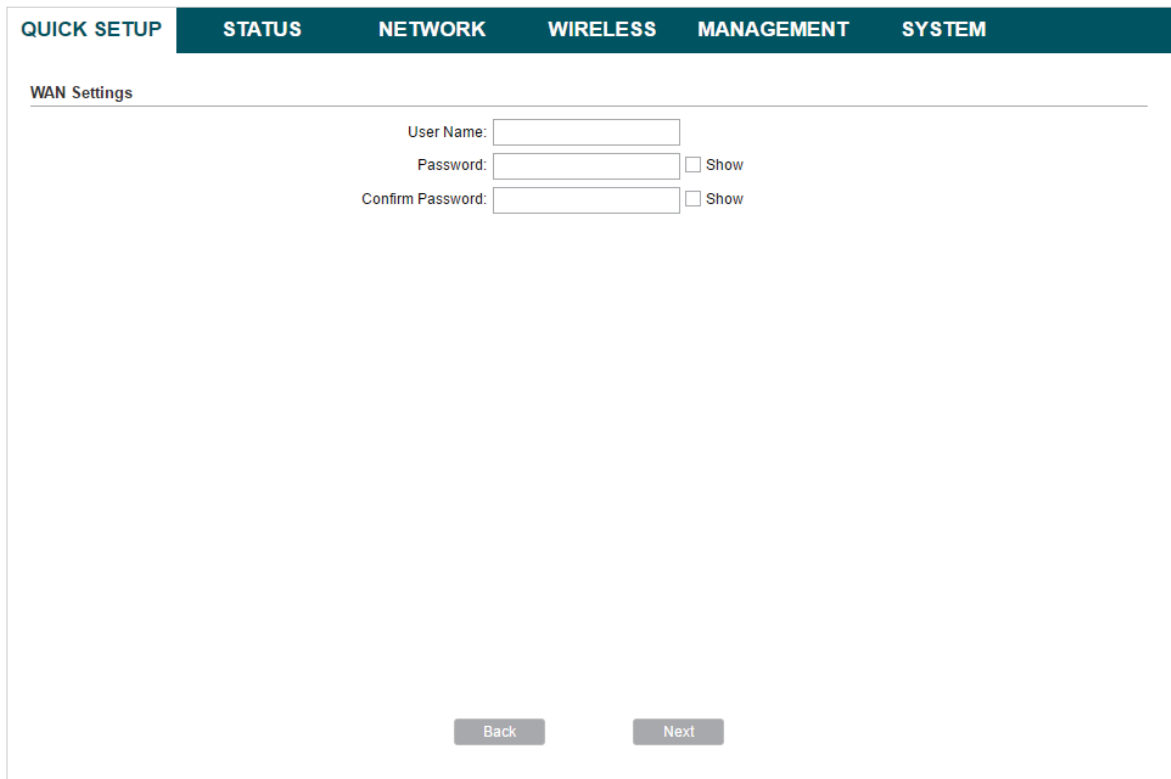
- PPPoE - For this connection, you need to get the account name and password from your ISP.
- Dynamic IP - When connecting to the WAN, your router gets an IP address assigned by the DHCP server of your ISP.
- Static IP - With this type of connection, the device uses a permanent, static IP address assigned by your ISP.

At the bottom of the page, there are two buttons: 'Back' and 'Next'.

The device supports *PPPoE*, *Dynamic IP* and *Static IP* for the WAN connection. Contact your ISP to confirm your WAN connection type.

## ■ PPPoE

Select *PPPoE* and click *Next*, then the following page will appear. In the **WAN Settings** section, specify the parameters that are provided by your ISP and click *Next*.



The screenshot shows a web-based configuration interface with a dark teal header. The header contains several tabs: **QUICK SETUP**, **STATUS**, **NETWORK**, **WIRELESS**, **MANAGEMENT**, and **SYSTEM**. Below the header, the **WAN Settings** section is visible. It contains three input fields: **User Name:** with a text box, **Password:** with a text box and a  **Show** checkbox, and **Confirm Password:** with a text box and a  **Show** checkbox. At the bottom of the page, there are two buttons: **Back** and **Next**.

## ■ Dynamic IP

Select *Dynamic IP* and click *Next*. In this type, the device will obtain a WAN connection automatically without any WAN configurations.

## ■ Static IP

Select *Static IP* and click *Next*, then the following page will appear. In the **WAN Settings** section, specify the parameters that are provided by your ISP and click *Next*.

The screenshot shows the 'WAN Settings' page in a network router's configuration utility. At the top, there is a navigation bar with tabs: QUICK SETUP (selected), STATUS, NETWORK, WIRELESS, MANAGEMENT, and SYSTEM. Below the navigation bar, the 'WAN Settings' section is visible. It contains several input fields for network parameters, all of which are currently set to '0.0.0.0':

- IP Address: 0.0.0.0
- Subnet Mask: 0.0.0.0
- Default Gateway: 0.0.0.0
- Primary DNS: 0.0.0.0
- Secondary DNS: 0.0.0.0 (Optional)

At the bottom of the page, there are two buttons: 'Back' and 'Next'.

3. In the **Wireless Client Settings** section, click *Survey* to search for the upstream wireless network.

The screenshot shows the 'Wireless Client Settings' page in a network router's configuration utility. At the top, there is a navigation bar with tabs: QUICK SETUP, STATUS, NETWORK, WIRELESS (selected), MANAGEMENT, and SYSTEM. Below the navigation bar, the 'Wireless Client Settings' section is visible. It contains several configuration options:

- SSID of Remote AP: [Input field] [Survey button]
- MAC of Remote AP: [Input field]  Lock to AP
- Region: United States (dropdown menu)
- Mode: 802.11a/n (dropdown menu)
- WDS: Auto (dropdown menu)
- Channel Width: 20/40MHz (dropdown menu)
- Security: None (dropdown menu)
- PSK Password: [Input field]  Show
- Distance Setting: 0 (0-27.9)km

Below the configuration options, there is a note: "We do not recommend using WEP encryption. You can go to WIRELESS page to configure the encryption mode." At the bottom of the page, there are two buttons: 'Back' and 'Next'.

4. Select the desired wireless network and click **Connect**.



**Note:**

There may be two or more networks with the same SSID in the AP list. Click **Lock to AP** to select the SSID and AP simultaneously, which can make the device connect to the specific AP next time.

QUICK SETUP    STATUS    NETWORK    WIRELESS    MANAGEMENT    SYSTEM

Wireless Client Settings

<input type="checkbox"/>	BSSID	SSID	MAXtream	Device Name	SNR (dB)	Signal / Noise (dBm)	Channel	Security
<input type="checkbox"/>	18-A6-F7-41-26-46	daisy 3	No		42	-53/-95	5180 (36)	WPA2-PSK
<input type="checkbox"/>	50-C7-BF-27-7F-6E	SR20_5G	No		50	-45/-95	5220 (44)	WPA2-PSK
<input type="checkbox"/>	50-C7-BF-17-A6-E3	EAP-Show	No		14	-81/-95	5180 (36)	WPA2-PSK
<input type="checkbox"/>	D4-61-FE-5A-2A-00	das	No		11	-85/-96	5180 (36)	WPA-PSK/WPA2-PSK
<input type="checkbox"/>	50-C7-BF-48-54-DB	deco	No		35	-61/-96	5200 (40)	WPA2-PSK
<input type="checkbox"/>	50-C7-BF-48-57-1F	deco	No		30	-66/-96	5200 (40)	WPA2-PSK
<input type="checkbox"/>	50-C7-BF-48-57-74	deco	No		47	-49/-96	5200 (40)	WPA2-PSK
<input type="checkbox"/>	56-C7-BF-48-54-DB		No		37	-59/-96	5200 (40)	WPA2-PSK
<input type="checkbox"/>	56-C7-BF-48-57-1F		No		31	-65/-96	5200 (40)	WPA2-PSK
<input type="checkbox"/>	56-C7-BF-48-57-74		No		47	-49/-96	5200 (40)	WPA2-PSK
								WPA-PSK/WPA2

Back    Refresh    Connect    Lock to AP

5. In the **Wireless Client Settings** section, specify the wireless parameters to connect to the specified wireless network. Click Next.



**Note:**

Make sure that *Security* and *PSK Password* are the same as the upstream wireless network's. Other parameters set in this page and those of the upstream wireless network should be compatible with each other. For details, refer to [5. Configure the Wireless Parameters](#).

QUICK SETUP	STATUS	NETWORK	WIRELESS	MANAGEMENT	SYSTEM
<b>Wireless Client Settings</b>					
SSID of Remote AP:	<input type="text" value="7200_5G"/>	<input type="button" value="Survey"/>			
MAC of Remote AP:	<input type="text" value="50-C7-BF-01-88-1F"/>	<input type="checkbox"/> Lock to AP			
Region:	<input type="text" value="United States"/>				
Mode:	<input type="text" value="802.11a/n"/>				
WDS:	<input type="text" value="Auto"/>				
Channel Width:	<input type="text" value="20/40MHz"/>				
Security:	<input type="text" value="WPA-PSK / WPA2-PSK"/>				
PSK Password:	<input type="text" value="*****"/>	<input type="checkbox"/> Show			
We do not recommend using WEP encryption. You can go to WIRELESS page to configure the encryption mode.					
Distance Setting:	<input type="text" value="0"/>	(0-27.9)km			
<input type="button" value="Back"/> <input type="button" value="Next"/>					

6. In the **Wireless AP Settings** section, specify the parameters to create a new wireless network for the downstream clients. Click *Next*.

The screenshot shows the 'Wireless AP Settings' page in a web interface. At the top, there is a navigation bar with tabs: QUICK SETUP (selected), STATUS, NETWORK, WIRELESS, MANAGEMENT, and SYSTEM. Below the navigation bar, the page title is 'Wireless AP Settings'. The configuration options are as follows:

- Wireless Radio:  Enable
- SSID: TP-LINK\_Outdoor\_BD205C
- Security: WPA-PSK / WPA2-PSK (dropdown menu)
- PSK Password: [masked with dots]  Show

Below the password field, there is a note: "We do not recommend using WEP encryption. You can go to WIRELESS page to configure the encryption mode." At the bottom of the page, there are two buttons: 'Back' and 'Next'.

7. In the **Finish** section, review the configurations and click *Finish* to complete the quick setup.

The screenshot shows the 'Finish' page in the web interface. At the top, there is a navigation bar with tabs: QUICK SETUP (selected), STATUS, NETWORK, WIRELESS, MANAGEMENT, and SYSTEM. Below the navigation bar, the page title is 'Finish'. The configuration summary is as follows:

- Operation Mode: AP Client Router (WISP Client)
- WAN Connection Type: Static IP
  - IP Address: 192.168.2.10
  - Subnet Mask: 255.255.255.0
  - Default Gateway: 192.168.2.1
  - Primary DNS: 192.168.0.1
  - Secondary DNS: 192.168.1.2
- SSID of Remote AP: 7200\_5G
  - Region: United States
  - Mode: 802.11a/n
  - WDS: Disable
  - Channel Width: 20/40MHz
  - Security: WPA-PSK / WPA2-PSK
- Distance Setting: 0 km
- Wireless Radio: Enable
  - SSID: TP-LINK\_Outdoor\_BD205C
  - Security: WPA-PSK / WPA2-PSK

At the bottom of the page, there are two buttons: 'Back' and 'Finish'.

8. Connect the device according to your network topology and use it normally.

# 3

## Monitor the Network

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

*3.1 View the Device Information*

*3.2 View the Wireless Settings*

*3.3 View Wireless Signal Quality*

*3.4 View Radio Status*

*3.5 View the LAN Settings*

*3.6 View the WAN Settings*

*3.7 Monitor Throughput*

*3.8 Monitor Stations*

*3.9 Monitor Interfaces*

*3.10 Monitor ARP Table*

*3.11 Monitor Routes*

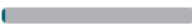

*3.12 Monitor DHCP Clients*

*3.13 Monitor Dynamic WAN*

## 3.1 View the Device Information

Go to the **STATUS** page. In the **Device Information** section, view the basic information of the device. To configure the device information, refer to [7. Configure the System](#).

**Device Information**

Device Name: CPE 510  
Device Model: CPE510 v3.0  
Firmware Version: 2.0.0 Build 20160908 Rel. 36610 (5553)  
System Time: 2015-01-01 04:37:41  
Uptime: 0 days 04:37:43  
CPU:  1%  
Memory:  53%

Device Name	Displays the name of the device. By default, it is the product model.
Device Model	Displays the product model and the hardware version of the device.
Firmware Version	Displays the current firmware version of the device.
System Time	Displays the current system time.
Uptime	Displays the running time of the device.
CPU	Displays the CPU occupancy.
Memory	Displays the memory occupancy.

## 3.2 View the Wireless Settings

Go to the **STATUS** page. In the **Wireless Settings** section, view the parameters of the wireless network created by the device. To configure the parameters, refer to [5. Configure the Wireless Parameters](#).

**Wireless Settings**

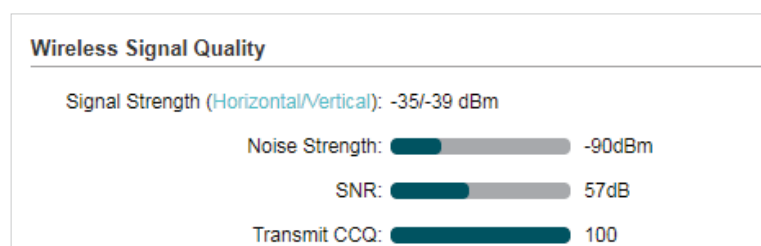
MAXtream: OFF  
Region: United States  
Channel/Frequency: 44 / 5220MHz  
Channel Width: 20/40MHz  
IEEE802.11 Mode: A/N Mixed  
Max TX Rate: 300.0Mbps  
Antenna: Feed Only - 7dBi  
Transmit Power: 3dBm  
Distance: 0.0km



MAXtream	<p><b>Note:</b></p> <ul style="list-style-type: none"> <li>MAXtream is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.</li> <li>MAXtream Technology is only compatible with Pharos series products. Working with products from other manufacturer will cause network fault.</li> </ul> <p>Displays the status of the MAXtream function. This function is only available in Access Point Mode and AP Router Mode. MAXtream is a TP-Link proprietary technology. It is based on TDMA (Time Division Multiple Access) so that data streams are transmitted in their own time slots. MAXtream aims to maximize throughput and minimize latency. "Hidden nodes" problem can also be eliminated with MAXtream enabled.</p>
Region	Displays the region where you use the device. Available channels and maximum Transmit Power will be determined by the selected region according to the local laws and regulations.
Channel/ Frequency	Displays the channel and frequency which are currently used by the device.
Channel Width	Displays the channel width which is currently used by the device.
IEEE802.11 Mode	Displays the IEEE802.11 protocol currently used by the device.
Max TX Rate	Displays the maximum data rate of the device during the sending of the wireless packets.
Antenna	Displays the antenna that you use.
Transmit Power	Displays the transmit power which is currently used by the device.
Distance	Displays the wireless coverage distance. In the coverage of the device, the clients can be placed to get good wireless performance.

### 3.3 View Wireless Signal Quality

Go to the **STATUS** page. In the **Wireless Signal Quality** section, view the current signal quality of the upstream wireless network. It is only applicable for the Client, Repeater, Bridge and AP Client Router (WISP Client) Modes.



<b>Signal Strength</b>	Displays the received wireless signal strength of the root AP. There are two display modes. Values of the two chains are displayed separately in Horizontal/Vertical Mode, and together in Combined Mode. You can switch between display modes by clicking on it.
<b>Noise Strength</b>	Displays the received environmental noise from wireless interference on the operating frequency.
<b>SNR</b>	Displays the Signal to Noise Ratio (SNR) of the device. SNR refers to the power ratio between the received wireless signal strength and the environmental noise strength. The larger SNR value is, the better network performance the device can provide.
<b>Transmit CCQ</b>	Displays the wireless Client Connection Quality (CCQ). CCQ refers to the ratio of effective transmission bandwidth and the actual total bandwidth. It reflects the quality of the actual link. A larger value means a better utilization of the bandwidth.

## 3.4 View Radio Status

Go to the **STATUS** page. In the **Radio Status** section, view the radio status of the device.

<b>Radio Status</b>
AP: Enabled
MAC Address: 98-DE-D0-88-6C-84
SSID: TP-LINK_Outdoor_886C84
Security Mode: None
Connected Stations: 0
Client: Disabled
MAC Address: N/A
Security Mode: N/A
WDS: N/A
Root AP BSSID: N/A
Root AP SSID: N/A
TX Rate: N/A
RX Rate: N/A
Connection Time: N/A

- AP Status.

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AP	Displays the status of the wireless AP function. With this enabled, the device can provide a wireless network for the clients. By default, it is enabled in Access Point, Repeater, Bridge, AP Router and AP Client Router Modes and disabled in Client Mode.
MAC Address	Displays the MAC address of the wireless interface connected to the clients.
SSID	Displays the wireless network name (SSID) created by the device.
Security Mode	<b>Note:</b> WEP is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.  Displays the security mode you've selected for your wireless network. There are three security modes: WPA-PSK, WPA and WEP. None means that no security mode is selected and all the hosts are allowed to access the wireless network directly. The security mode which is set on the clients should be the same as that on this device.
Connected Stations	Displays the number of the connected stations.

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- Client Status.

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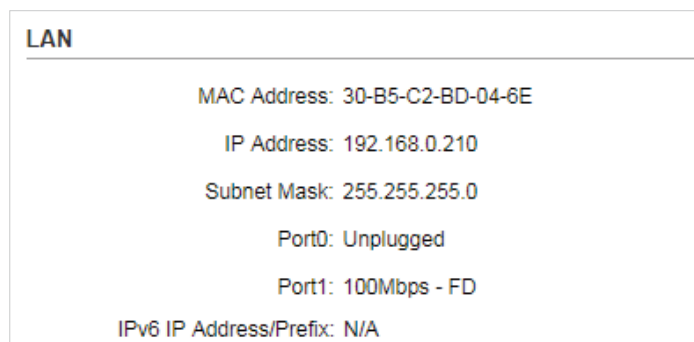
Client	Displays the status of the wireless client function. With this function enabled, the device can connect to the root AP through wireless connection. By default, it is enabled in Client, Repeater, Bridge and AP Client Router Modes and disabled in Access Point and AP Router Modes.
MAC Address	Displays the MAC address of the wireless interface connected to the root AP.
Security Mode	<b>Note:</b> WEP is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.  Displays the security mode you've selected for your wireless network. There are three security modes: WPA-PSK, WPA and WEP. None means that no security mode is selected and all the hosts are allowed to access the wireless network directly. The security mode which is set on the device should be the same as that on the root AP.

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<b>WDS</b>	<p>Displays the status of the WDS (Wireless Distribution System) function. WDS is a communication system among multiple wireless networks . It is established between APs through wireless connection. WDS is used during the connection process between the device and the root AP.</p> <p><b>Enable:</b> Forward data frames using four address fields.</p> <p><b>Disable:</b> Forward data frames using three address fields.</p> <p><b>Auto:</b> The device automatically negotiates the wireless data frame structure (three or four address fields) with the root AP. The selection of Auto is recommended.</p>
<b>Root AP BSSID</b>	<p>Displays the BSSID (Basic Service Set ID) of the root AP. BSSID is used to identify a BSS. Each BSS has its own BSSID. The BSSID is decided by the manufacturers, and it is usually related to the device's MAC address.</p>
<b>Root AP SSID</b>	<p>Displays the wireless network name of the root AP.</p>
<b>TX Rate</b>	<p>Displays the data rate of the device during the sending of the wireless packets.</p>
<b>RX Rate</b>	<p>Displays the data rate of the device during the receiving of the wireless packets.</p>
<b>Connection Time</b>	<p>Displays the amount of time the device has been connected to the root AP.</p>

### 3.5 View the LAN Settings

Go to the **STATUS** page. In the **LAN** section, view the LAN information of the device. To configure the LAN settings, refer to [4. Configure the Network](#).



<b>MAC Address</b>	<p>Displays the LAN port MAC address of the device.</p>
<b>IP Address</b>	<p>Displays the LAN port IP address of the device.</p>
<b>Subnet Mask</b>	<p>Displays the subnet mask of the LAN.</p>

Port	Displays the current status of the LAN Ethernet port connections and the Maximum transmission rate of the plugged port.
IPv6 IP Address/Prefix	Displays the LAN port IPv6 address and prefix of the device.

## 3.6 View the WAN Settings

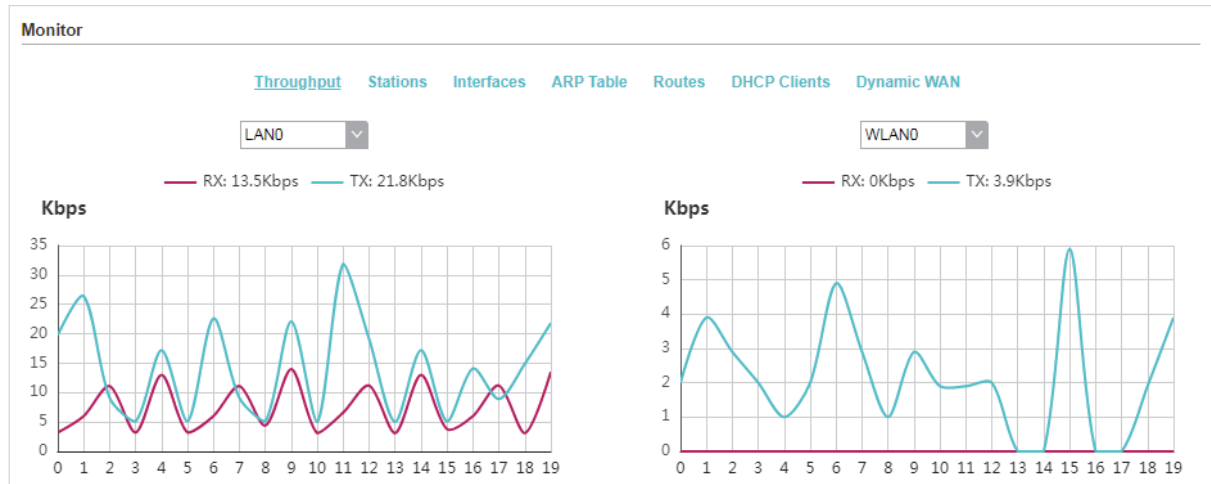
Go to the **STATUS** page. In the **WAN** section, view the WAN information of the device. To configure the WAN settings, refer to [4. Configure the Network](#).

WAN
Connection Type: Dynamic
MAC Address: 30-B5-C2-BD-04-6F
IP Address: 0.0.0.0
Subnet Mask: 0.0.0.0
Default Gateway: 0.0.0.0
DNS Server: 0.0.0.0
IPv6 IP Address/Prefix: N/A
IPv6 Gateway: N/A
IPv6 DNS: N/A

Connection Type	Displays the connection type of the device.
MAC Address	Displays the MAC address of the wireless interface connected to the root AP.
IP Address	Displays the IP address of the wireless interface connected to the root AP.
Subnet Mask	Displays the subnet mask of the wireless interface connected to the root AP.
Default Gateway	Displays the default gateway.
DNS Server	Displays the DNS server.
IPv6 IP Address/Prefix	Displays the WAN port IPv6 address and prefix of the device.
IPv6 Gateway	Displays the default IPv6 gateway.
IPv6 DNS	Displays the IPv6 DNS server.

## 3.7 Monitor Throughput

Go to the **STATUS** page. In the **Monitor** section, select *Throughput* and monitor the current data traffic of specified interfaces including LAN, WAN, WLAN, WWAN and BRIDGE. Note that the interfaces which you can monitor are different among different operation modes.



## 3.8 Monitor Stations

Go to the **STATUS** page. In the **Monitor** section, select *Stations* and monitor the information of all the stations that are connected to the device.

The screenshot shows the 'Monitor' section with the 'Stations' tab selected. It displays a table with the following data:

MAC Address	Device Name	Associated SSID	Signal / Noise(dBm) Chain0/Chain1	CCQ (%)	Negotiated Rate (Mbps)	Data TX / RX (kbps)	Distance (km)	IP Address	Connection Time
E4-B2-FB-7B-02-7F	CPE510	TP-Link_Outdoor_EF44BC	-44/-34,-90/-90	93	300.0	169/3962	0.00	192.168.0.100	0 days 00:04:01

At the bottom right of the table area, there is a checkbox labeled 'Auto Refresh' which is checked.

**MAC Address** Displays the MAC address of the station.

**Device Name** Displays the device name of the station.

**Associated SSID** Displays the SSID that the station is connected to.

**Signal/Noise (dBm)** Displays the signal strength and the noise strength of the wireless network. There are two display modes. Values of the two chains are displayed separately in Chain0/Chain1 Mode, and together in Combined Mode. You can switch between display modes by clicking on it.

CCQ (%)	Displays the wireless Client Connection Quality (CCQ). CCQ refers to the ratio of effective transmission bandwidth and the actual total bandwidth. It reflects the quality of the actual link. A larger value means a better utilization of the bandwidth.
Negotiated Rate (Mbps)	Displays the negotiated rates of the packets which the device transmits to the station.
Data TX/RX (kbps)	Displays the data rates of the last transmitted and received packets. TX means that the device transmits data to the station, while RX means that the device receives data from the station.
Distance (km)	Displays the distance between the device and the station.
IP Address	Displays the IP address of the station.
Connection Time	Displays the connection duration.
Auto Refresh	Enable or disable Auto Refresh. With this feature enabled, the table will refresh automatically.

Click the MAC Address of a station to view the detailed information.

Station: E4-B2-FB-7B-02-7F

Device Name:	Negotiated Rate	Last Signal, dBm
Product:	6.0Mbps	N/A
Firmware:	9.0Mbps	N/A
Connection Time: 00:10:30	12.0Mbps	N/A
RX Signal: -33 dBm	18.0Mbps	N/A
Noise Floor: -90 dBm	24.0Mbps	-33
CCQ: 100%	36.0Mbps	N/A
Last IP: <a href="#">192.168.0.101</a>	48.0Mbps	N/A
TX/RX Rate: 300.0Mbps / 24.0Mbps	54.0Mbps	N/A
TX/RX Bit Rate: 0.00kbps / 0.00kbps		
TX/RX Packets: 553 / 2241		
TX/RX Packets Rate,pps: 0 / 0		
Bytes Transmitted: 87653 (85.60kBytes)		
Bytes Received: 169733 (165.75kBytes)		

Device Name	Displays the device name of the station.
Product	Displays the product name of the station.
Firmware	Displays the firmware version of the station.
Connection Time	Displays the connection duration.

RX Signal	Displays the signal strength of the wireless network.
Noise Floor	Displays the noise strength of the wireless network.
CCQ	Displays the wireless Client Connection Quality (CCQ). CCQ refers to the ratio of effective transmission bandwidth and the actual total bandwidth. It reflects the quality of the actual link. A larger value means a better utilization of the bandwidth.
Last IP	Displays the IP address of the station.
TX/RX Rate	Displays the negotiated rates of the transmitted and received packets. TX means that the device transmits data to the station, while RX means that the device receives data from the station.
TX/RX Bit Rate	Displays the data rates of the last transmitted and received packets. TX means that the device transmits data to the station, while RX means that the device receives data from the station.
TX/RX Packets	Displays the total number of the transmitted and received packets. TX means that the device transmits data to the station, while RX means that the device receives data from the station.
TX/RX Packets Rate, pps	Displays the packet rates of the transmitted and received packets. TX means that the device transmits data to the station, while RX means that the device receives data from the station.
Bytes Transmitted	Displays the total amount of data which the device transmits to the station.
Bytes Received	Displays the total amount of data which the device receives from the station.
Negotiated Rate	Displays the possible negotiated rates of the packets which the device receives from the station.
Last Signal, dBm	Displays the signal strength of the last packet which the device receives from the station at the corresponding negotiated rate.

Click the IP Address of a station to access the web management page of the station.



## 3.9 Monitor Interfaces

Go to the **STATUS** page. In the **Monitor** section, select *Interfaces* and monitor the relevant information of the interfaces.

		<a href="#">Throughput</a>	<a href="#">Stations</a>	<a href="#">Interfaces</a>	<a href="#">ARP Table</a>	<a href="#">Routes</a>	<a href="#">DHCP Clients</a>		
Interface	MAC	IP Address		MTU	RX Packets	RX Bytes	TX packets	TX Bytes	
LAN0	30-B5-C2-BD-20-CC	0.0.0.0		1500	0	0	0	0	
LAN1	30-B5-C2-BD-20-CC	0.0.0.0 fe80::203:7fff:feff:ffe/64		1500	40336	5M	13691	4M	
BRIDGE	30-B5-C2-BD-20-CC	192.168.0.251 fe80::32b5:c2ff:febd:20cc/64		1500	40245	4M	13697	3M	
WLAN0	30-B5-C2-BD-20-CC	0.0.0.0 fe80::32b5:c2ff:febd:20cc/64		1500	0	0	0	0	

Auto Refresh

<b>Interface</b>	Displays the interface of the device.
<b>MAC</b>	Displays the MAC address of the interface.
<b>IP Address</b>	Displays the IP address and IPv6 address of the interface.
<b>MTU</b>	Displays the Maximum Transmission Unit (MTU) of the interface. It is the maximum packet size (in bytes) that the interface can transmit.
<b>RX packets</b>	Displays the total amount of packets received by the interface after the device is powered on.
<b>RX Bytes</b>	Displays the total amount of data (in bytes) received by the interface after the device is powered on.
<b>TX packets</b>	Displays the total amount of packets sent by the interface after the device is powered on.
<b>TX Bytes</b>	Displays the total amount of data (in bytes) sent by the interface after the device is powered on.
<b>Auto Refresh</b>	Enable or disable Auto Refresh. With this feature enabled, the table will refresh automatically.

## 3.10 Monitor ARP Table

Go to the **STATUS** page. In the **Monitor** section, select *ARP Table* and monitor the ARP (Address Resolution Protocol) information recorded by the device.

ARP is used to associate each IP address to the unique hardware MAC address of each device on the network.

Monitor

Throughput Stations Interfaces ARP Table Routes DHCP Clients

IP Address	MAC	Interface
192.168.0.200	00-19-66-35-E1-B0	BRIDGE
192.168.0.16	00-0A-EB-13-23-7B	BRIDGE
192.168.0.61	F4-F2-6D-C3-28-62	BRIDGE
169.254.60.119	DC-9B-9C-D3-17-61	BRIDGE

Auto Refresh

**IP Address** Displays the IP address of the corresponding ARP entry.

**MAC** Displays the MAC address of the corresponding ARP entry.

**Interface** Displays the interface connected to the device.

**Auto Refresh** Enable or disable Auto Refresh. With this feature enabled, the table will refresh automatically.

## 3.11 Monitor Routes

Go to the **STATUS** page. In the **Monitor** section, select *Routes* and monitor the routing entries recorded by the device in the Routing table. Routing table is used for the device to decide the interface to forward the packets. You can enable or disable *Auto Refresh*. With this feature enabled, the table will refresh automatically.

Monitor

Throughput Stations Interfaces ARP Table Routes DHCP Clients

IPv4 Routes

Destination	Gateway	SubnetMask	Interface
192.168.0.0	0.0.0.0	255.255.255.0	BRIDGE

IPv6 Routes

Destination	Gateway	Interface
fe80::	::	LAN0

Auto Refresh

- IPv4 Routes

**Destination** Displays the IP address of the destination device or destination network.

**Gateway** Displays the IP address of the appropriate gateway.

**SubnetMask** Displays the Subnet Mask of the destination network.

Interface	Displays the interface that the destination device is on.
• IPv6 Routes	
Destination	Displays the IPv6 address of the destination device or destination network.
Gateway	Displays the IPv6 address of the appropriate gateway.
Interface	Displays the interface that the destination device is on.

## 3.12 Monitor DHCP Clients

Go to the **STATUS** page. In the **Monitor** section, select *DHCP Clients* and monitor the information of all the DHCP clients.

Client Name	MAC Address	Assigned IP	Lease Time
Jim	00-0A-EB-21-01-10	192.168.0.102	0 days 01:57:57

Auto Refresh

Client Name	Displays the device name of the client.
MAC Address	Displays the MAC address of the client.
Assigned IP	Displays the IP address that the device assigned to the client.
Lease Time	Displays the time that the client leased. When the time expires, the clients will request to renew the lease automatically.
Auto Refresh	Enable or disable Auto Refresh. With this feature enabled, the table will refresh automatically.

## 3.13 Monitor Dynamic WAN



### Note:

Dynamic WAN submenu is only available in AP Router Mode and AP Client Router (WISP Client) Mode when the WAN connection type is PPPoE, PPTP, L2TP or Dynamic.

Go to the **STATUS** page. In the **Monitor** section, select *Dynamic WAN* and monitor the WAN connection status of the device. You can enable or disable Auto Refresh. With this feature enabled, the table will refresh automatically.

The screenshot shows the 'Dynamic WAN' status page with the following details:

- Navigation:** Throughput, Stations, Interfaces, ARP Table, Routes, DHCP Clients, **Dynamic WAN**
- DHCP Status:**
  - Status: Disconnected
  - IP Address: 0.0.0.0
  - Subnet Mask: 0.0.0.0
  - Gateway IP: 0.0.0.0
  - Primary DNS: 0.0.0.0
  - Secondary DNS: 0.0.0.0
  - Connection Uptime: 0 days 00:00:00
  - Buttons: Obtain, Release
- DHCPv6 Status:**
  - Status: Connected
  - IP Address:
  - Subnet Mask:
  - Gateway IP:
  - Primary DNS:
  - Secondary DNS:
  - Connection Uptime: 0 days 00:00:00
  - Buttons: Obtain, Release
- Auto Refresh:**  Auto Refresh

- DHCP Status

Status	Displays the status of the WAN connection.
IP Address	Displays the IP address of the WAN.
Subnet Mask	Displays the subnet mask of the WAN.
Gateway IP	Displays the gateway address of the device.
Primary DNS	Displays the primary DNS of the device.
Secondary DNS	Displays the secondary DNS of the device.
Connection Uptime	Displays the time that the latest WAN connection lasts.
Obtain	Click <i>Obtain</i> to obtain the WAN IP address from the upstream device.
Release	Click <i>Release</i> to release the WAN IP address.

- DHCPv6 Status

Status	Displays the status of the WAN connection.
IP Address	Displays the IPv6 address of the WAN.
Subnet Mask	Displays the subnet mask of the WAN.
Gateway IP	Displays the gateway address of the device.

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Primary DNS	Displays the primary DNS of the device.
Secondary DNS	Displays the secondary DNS of the device.
Connection Uptime	Displays the time that the latest WAN connection lasts.
Obtain	Click <i>Obtain</i> to obtain the WAN IPv6 address from the upstream device.
Release	Click <i>Release</i> to release the WAN IPv6 address.

---

# 4

## Configure the Network

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

*4.1 Configure WAN Parameters*

*4.2 Configure LAN Parameters*

*4.3 Configure Management VLAN*

*4.4 Configure the Forwarding Feature*

*4.5 Configure the Security Feature*

*4.6 Configure Access Control*

*4.7 Configure Static Routing*

*4.8 Configure Bandwidth Control*

*4.9 Configure IP & MAC Binding*

## 4.1 Configure WAN Parameters



### Note:

WAN submenu is only available in AP Router Mode and AP Client Router (WISP Client) Mode.

WAN submenu is used to create the WAN connection and configure the related advanced parameters.

Go to the **Network** page. In the **WAN** section, configure the WAN parameters of the device.

The screenshot shows the WAN configuration interface. At the top, the title is "WAN". Below it, "Connection Type" is set to "Dynamic". There is an "IPv6" checkbox which is unchecked, with a question mark icon next to it. An "Advanced Settings" section is expanded, showing "MTU Size" set to "1500", "Use These DNS Servers" checkbox unchecked, "WAN MAC Address" set to "70-4F-57-EF-44-BD" with a "Restore to Factory MAC" button, and "Your PC's MAC Address" set to "50-E5-49-1D-5D-9C" with a "Clone PC's MAC" button.

Follow the steps below to configure the WAN parameters:

1. Select the connection type according to your need. The device supports five types: Static, Dynamic, PPPoE, L2TP, and PPTP.



### Note:

L2TP or PPTP is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.

### ■ Static

This connection type uses a permanent, fixed (static) IP address that is assigned by your ISP. In this type, you should fill in the IP address, Netmask, Gateway IP, and DNS IP address manually, which are assigned by your ISP.

The screenshot shows the WAN configuration interface with "Connection Type" set to "Static". Below it, "IP Address", "Netmask", "Gateway IP", "Primary DNS", and "Secondary DNS" are all set to "0.0.0.0". The "IPv6" checkbox is unchecked with a question mark icon. The "Advanced Settings" section is expanded, showing "MTU Size" set to "1500", "WAN MAC Address" set to "30-B5-C2-BD-20-5D" with a "Restore to Factory MAC" button, and "Your PC's MAC Address" set to "00-19-66-35-E1-B0" with a "Clone PC's MAC" button.

IP address	Enter the IP address provided by your ISP.
Netmask	Enter the netmask provided by your ISP. Normally use 255.255.255.0.
Gateway IP	Enter the gateway IP address provided by your ISP.
Primary DNS	Enter the DNS IP address provided by your ISP.
Secondary DNS	Enter alternative DNS IP address if your ISP provides it.

**IPv6** Enable or disable the IPv6 function. If the IPv6 function is enabled, the device will obtain a WAN IPv6 address. Select a method for the device to obtain the WAN IPv6 address according to the information provided by your ISP.

- **Static**

Select static and enter the WAN IPv6 address, IPv6 netmask, IPv6 gateway, primary DNS and secondary DNS provided by your ISP.

IPv6:  Enable ?

IPv6 Address:  Static  SLAAC  DHCPv6 ?

IPv6 Address:

IPv6 Netmask:

IPv6 Gateway:

Primary DNS:

Secondary DNS:

- **SLAAC**

Select SLAAC and the device will obtain the WAN IPv6 address automatically.

IPv6:  Enable ?

IPv6 Address:  Static  SLAAC  DHCPv6 ?

- **DHCPv6**

Select DHCPv6 and the device will obtain the WAN IPv6 address automatically.

IPv6:  Enable ?

IPv6 Address:  Static  SLAAC  DHCPv6 ?

<b>MTU Size</b>	The normal MTU (Maximum Transmission Unit) value for most Ethernet networks is 1500 Bytes. For some ISPs you need to modify the MTU. But this is rarely required, and should not be done unless you are sure it is necessary for your ISP connection. This number should be an integer between 576 and 2026.
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### WAN MAC Address

Specify the MAC address of WAN interface. This field displays the current MAC address of the WAN port. If your ISP requires that you register the MAC address, enter the correct MAC address into this field. The format for the MAC Address is XX-XX-XX-XX-XX-XX (X is any hexadecimal digit). Click *Restore Factory MAC* to restore the MAC address of WAN port to the factory default value.

### Your PC's MAC Address

Displays the MAC address of the PC that is managing the device. Some ISPs require that you should register the MAC address of your PC. If the MAC address is required, click *Clone PC's MAC* to set the WAN MAC address the same as your management PC's MAC address.

## ■ Dynamic

For this connection, your ISP uses a DHCP server to assign your router an IP address for connecting to the internet. You don't need to configure any parameters.

The screenshot shows the WAN configuration page. At the top, the title is "WAN". Below it, the "Connection Type" is set to "Dynamic". There is an "IPv6" checkbox which is unchecked, followed by the word "Enable" and a question mark icon. Below this is an "Advanced Settings" section, which is expanded. Inside this section, there are several fields: "MTU Size" is set to "1500"; "Use These DNS Servers" is checked with "Enable"; "Primary DNS" is set to "0.0.0.0"; "Secondary DNS" is set to "0.0.0.0"; "WAN MAC Address" is set to "30-B5-C2-BD-02-2F" with a "Restore to Factory MAC" button to its right; and "Your PC's MAC Address" is set to "00-19-66-35-E1-B0" with a "Clone PC's MAC" button to its right.

## IPv6

Enable or disable the IPv6 function. If the IPv6 function is enabled, the device will obtain a WAN IPv6 address. Select a method for the device to obtain the WAN IPv6 address according to the information provided by your ISP.

- **Static**

Select static and enter the WAN IPv6 address, IPv6 netmask, IPv6 gateway, primary DNS and secondary DNS provided by your ISP.

IPv6:  Enable ?

IPv6 Address:  Static  SLAAC  DHCPv6 ?

IPv6 Address:

IPv6 Netmask:

IPv6 Gateway:

Primary DNS:

Secondary DNS:

- **SLAAC**

Select SLAAC and the device will obtain the WAN IPv6 address automatically.

IPv6:  Enable ?

IPv6 Address:  Static  SLAAC  DHCPv6 ?

- **DHCPv6**

Select DHCPv6 and the device will obtain the WAN IPv6 address automatically.

IPv6:  Enable ?

IPv6 Address:  Static  SLAAC  DHCPv6 ?

---

## MTU Size

Specify the MTU size. The normal MTU (Maximum Transmission Unit) value for most Ethernet networks is 1500 Bytes. For some ISPs you need to modify the MTU. But this is rarely required, and should not be done unless you are sure it is necessary for your ISP connection. This number should be an integer between 576 and 2026.

---

## Use These DNS Servers

If your ISP gives you one or two DNS IP addresses, select Use These DNS Servers and enter the Primary DNS and Secondary DNS into the correct fields. Otherwise, the DNS servers will be assigned from ISP dynamically.

---

## Primary DNS

Enter the DNS IP address provided by your ISP.

---

## Secondary DNS

Enter another DNS IP address provided by your ISP.

---

### WAN MAC Address

Specify the WAN MAC address. This field displays the current MAC address of the WAN port. If your ISP binds the MAC address of your previous computer/router, enter the correct MAC address into this field. The format for the MAC Address is XX-XX-XX-XX-XX-XX (X is any hexadecimal digit). Click *Restore Factory MAC* to restore the MAC address of WAN port to the factory default value.

### Your PC's MAC Address

Displays the MAC address of the PC that is managing the device. Some ISPs require that you should register the MAC address of your PC. If the MAC address is required, click *Clone PC's MAC* to set the WAN MAC address the same as your management PC's MAC address.

## ■ PPPoE

If your ISP delivers internet through phone line and provides you with username and password, you should choose this type. Under this condition, you should fill in both User Name and Password that the ISP supplied. Note that these fields are case-sensitive.

The screenshot shows the WAN configuration page with the following settings:

- Connection Type: PPPoE (dropdown menu)
- User Name: (empty text field)
- Password: (empty text field with a "Show" checkbox)
- Connection Mode: Automatic (dropdown menu)
- Second Connection: disabled (dropdown menu)
- IPv6:  Enable (checkbox with a help icon)
- Advanced Settings (expanded):
  - MTU Size: 1480 (text field)
  - Service Name: (empty text field)
  - AC Name: (empty text field)
  - Detect Interval: 0 (text field) seconds
  - Use ISP-Specified IP:  Enable
  - ISP-Specified IP: 0.0.0.0 (text field)
  - Use These DNS Servers:  Enable
  - Primary DNS: 0.0.0.0 (text field)
  - Secondary DNS: 0.0.0.0 (text field)
  - WAN MAC Address: 30-B5-C2-BD-02-2F (text field) with a "Restore to Factory MAC" button
  - Your PC's MAC Address: 00-19-66-35-E1-B0 (text field) with a "Clone PC's MAC" button

Specify the parameters below and click *Connect*:

### User Name

Enter the User Name that is provided by your ISP.

### Password

Enter the Password that is provided by your ISP.

---

## Connection Mode

Select the Connection Mode.

- **On Demand**

Configure the device to disconnect your internet connection after a specified period of inactivity (Idle Time). If your internet connection has been terminated due to inactivity, Connection on Demand enables the device to automatically re-establish your connection when you attempt to access the internet again. The default Idle Time is 15 minutes. If your internet connection is expected to remain active all the time, enter 0 in the Idle Time field. If you pay by time for your internet access, choose this mode to save your internet-access fee.

Connection Mode:	On Demand	minutes
Idle Time:	15	minutes

- **Automatic**

Connect automatically after the device is disconnected. If you are charged a flat monthly fee, choose this mode.

- **Time-based**

Configure the device to make it connect or disconnect based on time. Enter the start time in From (HH:MM) for connecting and end time in To (HH:MM) for disconnecting. If you need to control the time period of internet access, choose this mode.

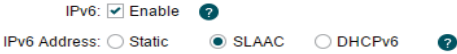
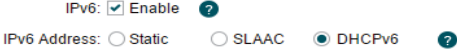
Connection Mode:	Time-based
From(HH:MM):	00:00
To(HH:MM):	23:59

- **Manual**

Configure the device to make it connect or disconnect manually. After a specified period of inactivity (Idle Time), the device will disconnect your internet connection, and you must click *Connect* manually to access the internet again. If your internet connection is expected to remain active all the times, enter 0 in the Idle Time field. Otherwise, enter the desired Idle Time in minutes you wish to use. If you pay by time for your internet access, choose this mode to save your internet-access fee.

Connection Mode:	Manual	minutes
Idle Time:	15	minutes

---

Second Connection	<p><b>Note:</b></p> <p>Second Connection is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.</p> <p>If your ISP provides an extra Connection type such as Dynamic/Static IP to connect to a local area network, activate this secondary connection.</p> <p><b>Disable:</b> The Secondary Connection is disabled by default, so there is PPPoE connection only. This is recommended.</p> <p><b>Dynamic IP:</b> Use dynamic IP address to connect to the local area network provided by ISP.</p> <p><b>Static IP:</b> Use static IP address to connect to the local area network provided by ISP.</p>
IPv6	<p>Enable or disable the IPv6 function. If the IPv6 function is enabled, the device will obtain a WAN IPv6 address. Select a method for the device to obtain the WAN IPv6 address according to the information provided by your ISP.</p> <ul style="list-style-type: none"> <li>• <b>SLAAC</b> Select SLAAC and the device will obtain the WAN IPv6 address automatically.</li> </ul>  <ul style="list-style-type: none"> <li>• <b>DHCPv6</b> Select DHCPv6 and the device will obtain the WAN IPv6 address automatically.</li> </ul> 
MTU Size	<p>Specify the MTU size. The default MTU (Maximum Transmission Unit) size is 1480 bytes, which is usually appropriate. For some ISPs, you need modify the MTU. This should not be done unless your ISP told you to. This number should be an integer between 576 and 2026.</p>
Service Name	<p>Specify the Service Name provided by your ISP. Keep it empty if your ISP doesn't provide the name.</p>
AC Name	<p>Specify the AC Name provided by your ISP. Keep it empty if your ISP doesn't provide the name.</p>
Detect Internal	<p>Specify the Detect Interval. The default value is 0. Input the value between 0 and 120. The device will detect Access Concentrator online every interval seconds. If the value is 0, it means not detecting.</p>

<b>Use ISP-specified IP</b>	If your service provider provides you with an IP address along with the user name and password, Enable "Use ISP-specified IP" and enter the IP address.
<b>Use These DNS Servers</b>	If the ISP provides a DNS server IP address for you, Enable Use These DNS Server, and fill the Primary DNS and Secondary DNS fields below. Otherwise, the DNS servers will obtain automatically from ISP.
<b>WAN MAC Address</b>	Specify the WAN MAC address. This field displays the current MAC address of the WAN port. If your ISP binds the MAC address of your previous computer/router, enter the correct MAC address into this field. The format for the MAC Address is XX-XX-XX-XX-XX-XX (X is any hexadecimal digit). Click <i>Restore Factory MAC</i> to restore the MAC address of WAN port to the factory default value.
<b>Your PC's MAC Address</b>	Displays the MAC address of the PC that is managing the device. Click <i>Clone PC's MAC</i> to set the WAN MAC address the same as your management PC's MAC address.
<b>Restore to Factory MAC</b>	Click this button to restore the WAN MAC address as factory MAC address.
<b>Clone PC's MAC</b>	Click this button to set the WAN MAC address as PC's MAC address.

## ■ L2TP/PPTP



### Note:

L2TP or PPTP is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.

If your ISP supplies internet access through L2TP or PPTP, it will provide the following parameters. The configurations of L2TP and PPTP are the same, and the following introduction takes L2TP as an example.

**WAN** ⌵

Connection Type: L2TP ⌵ Connect Disconnect

Server IP/Name:

User Name:

Password:   Show

Connection Mode: Automatic ⌵

Second Connection: Dynamic ⌵

IPv6:  Enable ?

---

⌵ Advanced Settings

MTU Size:

WAN MAC Address:  Restore to Factory MAC

Your PC's MAC Address:  Clone PC's MAC

Specify the parameters below and click *Connect*:

Server IP/Name	Enter the server IP address or the domain name provided by your ISP.
User Name	Enter the User Name provided by your ISP. This field is case-sensitive.
Password	Enter the Password provided by your ISP. This field is case-sensitive.

**Connection Mode** Select the Connection Mode.

- On Demand**  
 Configure the device to disconnect your internet connection after a specified period of inactivity (Idle Time). If your internet connection has been terminated due to inactivity, Connection on Demand enables the device to automatically re-establish your connection when you attempt to access the internet again. The default Idle Time is 15 minutes. If your internet connection is expected to remain active all the time, enter 0 in the Idle Time field. If you pay by time for your internet access, choose this mode to save your internet-access fee.

Connection Mode: On Demand  
Idle Time: 15 minutes

- Automatic**  
 Connect automatically after the device is disconnected. If you are charged a flat monthly fee, choose this mode.

- Manual**  
 Configure the device to make it connect or disconnect manually. After a specified period of inactivity (Idle Time), the device will disconnect your internet connection, and you must click *Connect* manually to access the internet again. If your internet connection is expected to remain active all the times, enter 0 in the Idle Time field. Otherwise, enter the desired Idle Time in minutes you wish to use. If you pay by time for your internet access, choose this mode to save your internet-access fee.

Connection Mode: Manual  
Idle Time: 15 minutes

**Second Connection** If your ISP provides a Connection type such as Dynamic/Static IP to connect to a local area network, activate this secondary connection.

**Dynamic IP:** Use dynamic IP address to connect to the local area network provided by ISP.

**Static IP:** Use static IP address to connect to the local area network provided by ISP.

## IPv6

Enable or disable the IPv6 function. If the IPv6 function is enabled, the device will obtain a WAN IPv6 address. Select a method for the device to obtain the WAN IPv6 address according to the information provided by your ISP.

- **Static**

Select static and enter the WAN IPv6 address, IPv6 netmask, IPv6 gateway, primary DNS and secondary DNS provided by your ISP.

IPv6:  Enable ?

IPv6 Address:  Static  SLAAC  DHCPv6 ?

IPv6 Address:

IPv6 Netmask:

IPv6 Gateway:

Primary DNS:

Secondary DNS:

- **SLAAC**

Select SLAAC and the device will obtain the WAN IPv6 address automatically.

IPv6:  Enable ?

IPv6 Address:  Static  SLAAC  DHCPv6 ?

- **DHCPv6**

Select DHCPv6 and the device will obtain the WAN IPv6 address automatically.

IPv6:  Enable ?

IPv6 Address:  Static  SLAAC  DHCPv6 ?

## MTU Size

Specify the MTU size. The normal MTU (Maximum Transmission Unit) value for most Ethernet networks is 1500 Bytes. For some ISPs you need to modify the MTU. But this is rarely required, and should not be done unless you are sure it is necessary for your ISP connection. This number should be an integer between 576 and 2026.

## WAN MAC Address

Specify the WAN MAC address. This field displays the current MAC address of the WAN port. If your ISP requires that you register the MAC address, enter the correct MAC address into this field. The format for the MAC Address is XX-XX-XX-XX-XX-XX (X is any hexadecimal digit). Click *Restore Factory MAC* to restore the MAC address of WAN port to the factory default value.

## Your PC's MAC Address

Displays the MAC address of the PC that is managing the device. Some ISPs require that you should register the MAC address of your PC. If the MAC address is required, click *Clone PC's MAC* to set the WAN MAC address the same as your management PC's MAC.

3. Click *Apply*, then click *Save*.

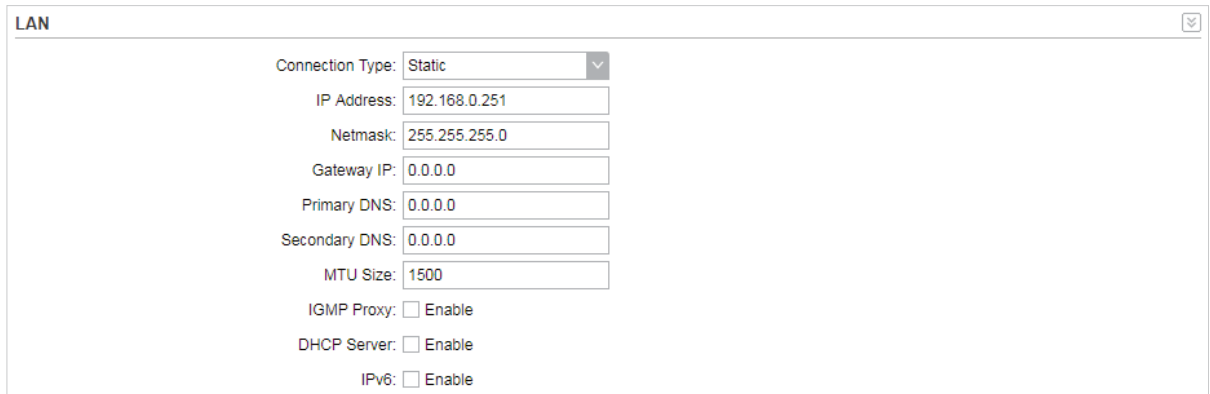


## 4.2 Configure LAN Parameters

LAN submenu is used to configure the LAN parameters for the device and the clients.

### Access Point/Client/Repeater/Bridge Mode

Go to the **Network** page. In the **LAN** section, configure the following parameters.



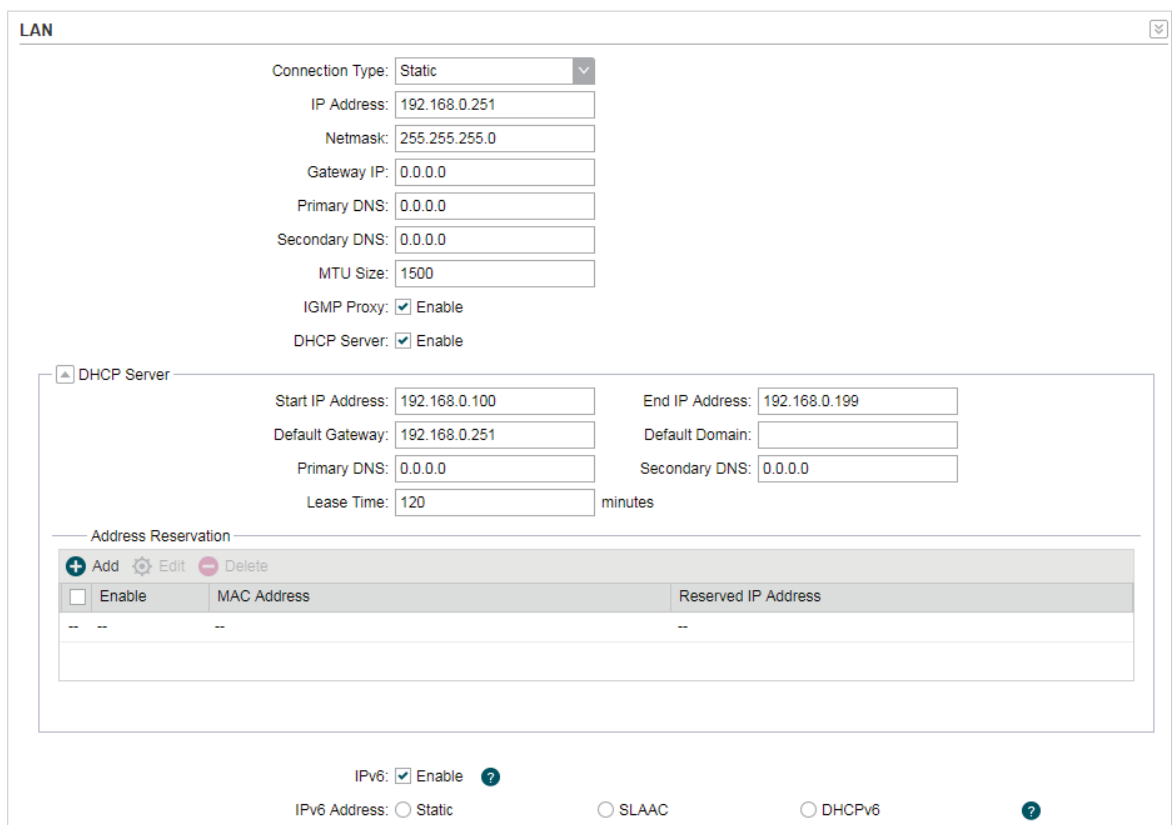
The screenshot shows the LAN configuration interface with the following fields and values:

- Connection Type: Static
- IP Address: 192.168.0.251
- Netmask: 255.255.255.0
- Gateway IP: 0.0.0.0
- Primary DNS: 0.0.0.0
- Secondary DNS: 0.0.0.0
- MTU Size: 1500
- IGMP Proxy:  Enable
- DHCP Server:  Enable
- IPv6:  Enable

Follow the steps below to configure the LAN parameters:

1. Select the connection type according to your need. The device supports two types: Static and Dynamic.

#### ■ Static



The screenshot shows the LAN configuration interface with the following fields and values:

- Connection Type: Static
- IP Address: 192.168.0.251
- Netmask: 255.255.255.0
- Gateway IP: 0.0.0.0
- Primary DNS: 0.0.0.0
- Secondary DNS: 0.0.0.0
- MTU Size: 1500
- IGMP Proxy:  Enable
- DHCP Server:  Enable

**DHCP Server**

- Start IP Address: 192.168.0.100
- End IP Address: 192.168.0.199
- Default Gateway: 192.168.0.251
- Default Domain:
- Primary DNS: 0.0.0.0
- Secondary DNS: 0.0.0.0
- Lease Time: 120 minutes

**Address Reservation**

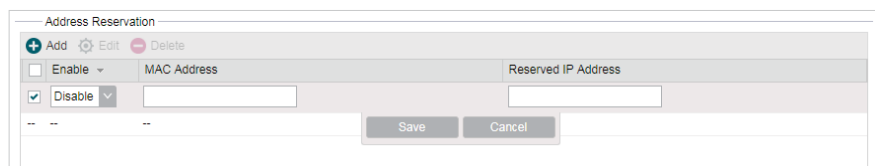
Enable	MAC Address	Reserved IP Address
--	--	--

IPv6:  Enable ?

IPv6 Address:  Static  SLAAC  DHCPv6 ?

IP address	Enter the LAN IP address of your device. By default, it is 192.168.0.254.  <b>Note:</b> When you change the LAN IP address in the <b>Network</b> tab, you should log in with the new IP address and save the settings for the configuration change to take effect. Otherwise the configuration will be lost after the reboot.
Netmask	Enter the Netmask provided by your ISP. Normally use 255.255.255.0.
Gateway IP	Enter the gateway IP address for your device.
Primary DNS	Enter the primary DNS IP address provided by your ISP. Consult your ISP if you don't know the DNS value. The factory default setting is 0.0.0.0, which means no primary DNS is assigned.
Secondary DNS	Enter the secondary DNS IP address of alternative DNS server if your ISP has two DNS servers. The factory default setting is 0.0.0.0, which means no secondary DNS is assigned.
MTU Size	Specify the MTU size. The normal MTU (Maximum Transmission Unit) value for most Ethernet networks is 1500 Bytes. For some ISPs you need to modify the MTU. But this is rarely required, and should not be done unless you are sure it is necessary for your ISP connection. This number should be an integer between 576 and 2026.
IGMP Proxy	Enable or disable IGMP (Internet Group Management Protocol) Proxy. IGMP proxy is used to process the multicast stream in the network. It normally works for IPTV service.
DHCP Server	Enable or disable the DHCP server function. With this function enabled, the build-in DHCP server will assign IP address to the clients connected to the device.
Start IP Address	Specify the first IP address of the IP address pool. By default, it is 192.168.0.100.
End IP Address	Specify the last IP address of the IP address pool. By default, it is 192.168.0.199.
Default Gateway	Specify the gateway IP address for the LAN network. By default, it is 192.168.0.254.
Default Domain	(Optional) Specify the domain name for the DHCP server.
Primary DNS	Enter the DNS IP address for the LAN. By default, it is 0.0.0.0, which means no primary DNS is assigned.

<b>Secondary DNS</b>	Enter the IP address of alternative DNS server if there are two DNS servers. By default, it is 0.0.0.0, which means no secondary DNS is assigned.
<b>Lease Time</b>	Enter the amount time of the leased IP address assigned by the DHCP server. When the time expires, the clients will request to renew the lease automatically.
<b>Address Reservation</b>	Enable Address Reservation and specify a reserved IP address for a PC on the local area network, so the PC will always obtain the same IP address each time when it starts up. Reserved IP addresses could be assigned to servers that require permanent IP settings.



To configure Address Reservation:

Click *Add*, specify the MAC address and the IP address. Enable this entry, then click *Save*.

<b>IPv6</b>	Enable or disable the IPv6 function. If the IPv6 function is enabled, the device will obtain a LAN IPv6 address. Select a method for the device to obtain the LAN IPv6 address according to the information provided by your ISP.
-------------	---

- **Static**

Select static and enter the LAN IPv6 address and IPv6 netmask.

IPv6:  Enable ?

IPv6 Address:  Static     SLAAC     DHCPv6 ?

IPv6 Address:

IPv6 Netmask:

- **SLAAC**

Select SLAAC and the device will obtain the LAN IPv6 address automatically.

IPv6:  Enable ?

IPv6 Address:  Static     SLAAC     DHCPv6 ?

- **DHCPv6**

Select DHCPv6 and the device will obtain the LAN IPv6 address automatically.

IPv6:  Enable ?

IPv6 Address:  Static     SLAAC     DHCPv6 ?

## ■ Dynamic

**LAN** ⌵

Connection Type: Dynamic

Fallback IP:  Enable

DHCP Fallback IP:

DHCP Fallback Mask:

Primary DNS:

Secondary DNS:

MTU Size:

IGMP Proxy:  Enable

IPv6:  Enable ?

IPv6 Address:  Static  SLAAC  DHCPv6 ?

IPv6 Address:

IPv6 Netmask:

<b>Fallback IP</b>	Enable or disable the Fallback IP. When the device fails to find the DHCP server, it will use the fallback IP as the LAN IP address.
<b>DHCP Fallback IP</b>	Specify the fallback IP for the device. By default, it is 192.168.0.254.
<b>DHCP Fallback Mask</b>	Specify the fallback netmask for the device.
<b>Primary DNS</b>	Enter the DNS IP address for the LAN. By default, it is 0.0.0.0, which means no primary DNS is assigned.
<b>Secondary DNS</b>	Enter the IP address of alternative DNS server if there are two DNS servers. By default, it is 0.0.0.0, which means no secondary DNS is assigned.
<b>MTU Size</b>	Specify the MTU size. The normal MTU (Maximum Transmission Unit) value for most Ethernet networks is 1500 Bytes. For some ISPs you need to modify the MTU. But this is rarely required, and should not be done unless you are sure it is necessary for your ISP connection. This number should be an integer between 576 and 2026.
<b>IGMP Proxy</b>	Enable or disable IGMP (Internet Group Management Protocol) Proxy. IGMP proxy is used to process the multicast stream in the network. It normally works for IPTV service.

---

## IPv6

Enable or disable the IPv6 function. If the IPv6 function is enabled, the device will obtain a LAN IPv6 address. Select a method for the device to obtain the LAN IPv6 address according to the information provided by your ISP.

- **Static**

Select static and enter the LAN IPv6 address and IPv6 netmask.

IPv6:  Enable ?  
IPv6 Address:  Static  SLAAC  DHCPv6 ?  
IPv6 Address:   
IPv6 Netmask:

- **SLAAC**

Select SLAAC and the device will obtain the LAN IPv6 address automatically.

IPv6:  Enable ?  
IPv6 Address:  Static  SLAAC  DHCPv6 ?

- **DHCPv6**

Select DHCPv6 and the device will obtain the LAN IPv6 address automatically.

IPv6:  Enable ?  
IPv6 Address:  Static  SLAAC  DHCPv6 ?

---

2. Click *Apply*, then click *Save*.

## AP Router/AP Client Router Mode

Go to the **Network** page. In the **LAN** section, configure the following parameters.

LAN

Connection Type:

IP Address:

Netmask:

MTU Size:

IGMP Proxy:  Enable

DHCP Server:  Enable

**DHCP Server**

Start IP Address:  End IP Address:

Default Gateway:  Default Domain:

Primary DNS:  Secondary DNS:

Lease Time:  minutes

**Address Reservation**

+ Add Edit Delete

<input type="checkbox"/> Enable	MAC Address	Reserved IP Address
--	--	--

IPv6:  Enable ?

IPv6 Address:  Static  Prefix Delegation ?

IPv6 Address:

IPv6 Netmask:

IPv6 DHCP Server:  Disabled  Stateless  Stateful ?

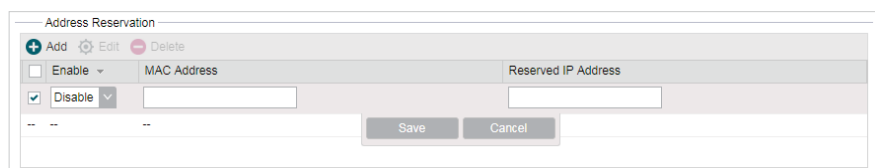
DNS Proxy:  Enable ?

Preferred DNS:

1. For LAN connection type, the device only supports Static.

<b>IP address</b>	Enter the LAN IP address of your device. By default, it is 192.168.0.254. <b>Note:</b> When you change the LAN IP address in the <b>Network</b> tab, you should log in with the new IP address and save the settings for the configuration change to take effect. Otherwise the configuration will be lost after the reboot.
<b>Netmask</b>	Enter the Netmask provided by your ISP. Normally use 255.255.255.0.
<b>MTU Size</b>	Specify the MTU size. The normal MTU (Maximum Transmission Unit) value for most Ethernet networks is 1500 Bytes. For some ISPs you need to modify the MTU. But this is rarely required, and should not be done unless you are sure it is necessary for your ISP connection. This number should be an integer between 576 and 2026.

IGMP Proxy	Enable or disable IGMP (Internet Group Management Protocol) Proxy. IGMP proxy is used to process the multicast stream in the network. It normally works for IPTV service.
DHCP Server	Enable or disable the DHCP server function. With this function enabled, the build-in DHCP server will assign IP address to the clients connected to the device.
Start IP Address	Specify the first IP address of the IP address pool. By default, it is 192.168.0.100.
End IP Address	Specify the last IP address of the IP address pool. By default, it is 192.168.0.199.
Default Gateway	Specify the gateway IP address for the LAN network. By default, it is 192.168.0.254.
Default Domain	(Optional) Specify the domain name for the DHCP server.
Primary DNS	Enter the DNS IP address for the LAN. By default, it is 0.0.0.0, which means no primary DNS is assigned.
Secondary DNS	Enter the IP address of alternative DNS server if there are two DNS servers. By default, it is 0.0.0.0, which means no secondary DNS is assigned.
Lease Time	Enter the amount time of the leased IP address assigned by the DHCP server. When the time expires, the clients will request to renew the lease automatically.
Address Reservation	Enable Address Reservation and specify a reserved IP address for a PC on the local area network, so the PC will always obtain the same IP address each time when it starts up. Reserved IP addresses could be assigned to servers that require permanent IP settings.



To configure Address Reservation:

Click *Add*, specify the MAC address and the IP address. Enable this entry, then click *Save*.

## IPv6

Enable or disable the IPv6 function. If the IPv6 function is enabled, the device will obtain a LAN IPv6 address. Select a method for the device to obtain the LAN IPv6 address according to the information provided by your ISP.

- **Static**

Select static and enter the LAN IPv6 address and IPv6 netmask.

---

IPv6:  Enable ?

IPv6 Address:  Static  Prefix Delegation ?

IPv6 Address:

IPv6 Netmask:

- **Prefix Delegation**

Select Prefix Delegation and the device will obtain the LAN IPv6 address automatically.

---

IPv6:  Enable ?

IPv6 Address:  Static  Prefix Delegation ?

## IPv6 DHCP Server

Enable or disable the IPv6 DHCP server function. With IPv6 DHCP server enabled, the clients will obtain the IPv6 address from the DHCP server.

- **Disabled**

Select Disabled to disable the IPv6 DHCP server function

---

IPv6 DHCP Server:  Disabled  Stateless  Stateful ?

- **Stateless/Stateful**

Select Stateless or Stateful, and the clients will obtain the IPv6 address from the IPv6 DHCP server automatically. Enable or disable the DNS proxy. With this feature enabled, the device will obtain the DNS server automatically. With this feature disabled, you should specify the DNS address manually.

---

IPv6 DHCP Server:  Disabled  Stateless  Stateful ?

DNS Proxy:  Enable ?

Preferred DNS:

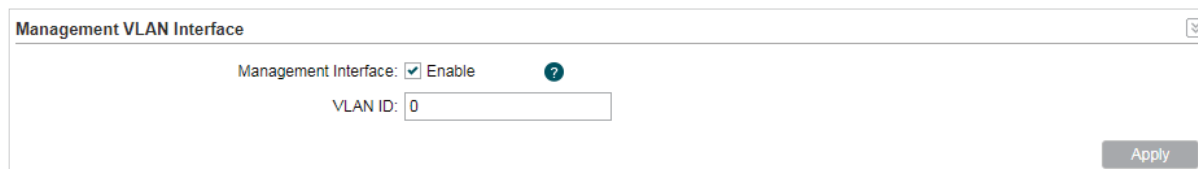
2. Click *Apply*, then click *Save*.

## 4.3 Configure Management VLAN

Management VLAN provides a safer way for you to manage the device. With Management VLAN enabled, only the hosts in the management VLAN can manage the device. Since most hosts cannot process VLAN tags, connect the management host to the network via a switch, and set up correct VLAN settings to ensure the communication between the host and the device in the management VLAN.



Go to the **Network** page. In the **Management VLAN Interfaces** section, enable the Management VLAN function, specify *VLAN ID* and click *Apply*. Then click *Save*.



**Management VLAN** Enable or disable the Management VLAN function. By default, it is disabled.

**VLAN ID** Specify the Management VLAN ID. The valid values are from 2 to 4094.

## 4.4 Configure the Forwarding Feature



### Note:

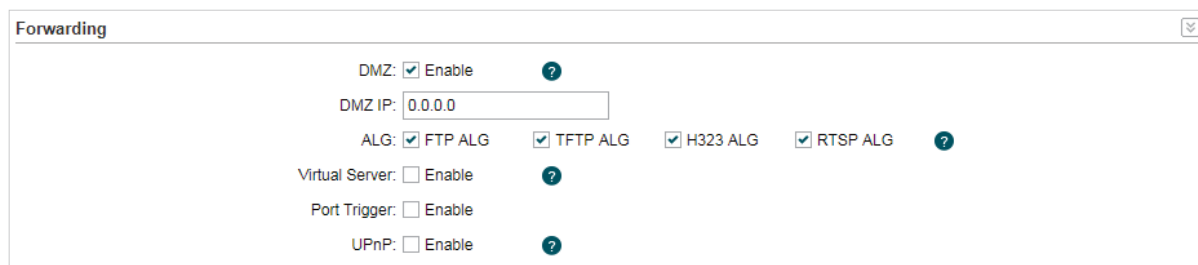
Forwarding submenu is only available in AP Router Mode and AP Client Router (WISP Client) Mode.

The IP address used on the internet is public IP address, while IP address used on local area network is private IP address. The hosts using private IP addresses cannot access the internet directly and vice versa.

The hosts using private IP addresses visit internet through NAT (Network Address Translation) technology. NAT can transfer private IP addresses into public IP addresses to realize the communication from internal hosts to external hosts.

If the hosts on the internet want to visit the hosts on local area network, the forwarding function should be used, including DMZ, Virtual server, Port triggering and UPnP.

Go to the **Network** page. In the **Forwarding** section, configure the following parameters and click *Apply*. Then click *Save*.



---

DMZ	Enable or disable the DMZ function. DMZ (Demilitarized Zone) specifically allows one computer/device behind NAT to become "demilitarized", so all packets from the external network are forwarded to this computer/device. The demilitarized host is exposed to the wide area network, which can realize the unlimited bidirectional communication between internal hosts and external hosts.
DMZ IP	Specify the IP address of the local host network device. The DMZ host device will be completely exposed to the external network. Any PC that was used for a DMZ must have a static or reserved IP Address because its IP Address may change when using the DHCP function.
ALG	<p>Select the type of ALG to enable the corresponding feature. Common NAT only translates the address of packets at network layer and the port number at transport layer but cannot deal with the packets with embedded source/destination information in the application layer. Application layer gateway (ALG) can deal with protocols with embedded source/destination information in the application payload. Some protocols such as FTP, TFTP, H323 and RTSP require ALG (Application Layer Gateway) support to pass through NAT.</p> <p><b>FTP ALG:</b> Allows FTP clients and servers to transfer data across NAT.</p> <p><b>TFTP ALG:</b> Allows TFTP clients and servers to transfer data across NAT.</p> <p><b>H323 ALG:</b> Allows Microsoft NetMeeting clients to communicate across NAT.</p> <p><b>RTSP ALG:</b> Allows some media player clients to communicate with some streaming media servers across NAT.</p>

---

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## Virtual Server

Enable or disable Virtual Server. Virtual servers can be used for setting up public services on your local area network, such as DNS, Email and FTP. A virtual server is defined as a service port, and all requests from the internet to this service port will be redirected to the LAN server. Virtual Server function not only makes the users from internet visit the local area network, but also keeps network security within the intranet as other services are still invisible from internet. The LAN server must have a static or reserved IP Address because its IP Address may change when using the DHCP function.

Enable	IP	Internal Port	Service Port	Protocol
<input checked="" type="checkbox"/>	Enable			TCP/UDP
--	--	--	--	--

To configure Virtual Server:

Click **Add**, specify the following parameters and **Enable** the entry. Click **Save**.

**IP:** Enter the IP Address of the PC providing the service application.

**Internal Port:** Enter the Internal Port number of the PC running the service application. You can leave it blank if the Internal Port is the same as the Service Port, or enter a specific port number.

**Service Port:** Enter the numbers of external Service Port. You can type a service port or a range of service ports (the format is XXX – YYY, XXX is the start port, YYY is the end port). Internet users send request to the port for services.

**Protocol:** Choose the one of the protocols used for this application: TCP, UDP, or TCP/UDP.

---

---

## Port Trigger

Enable or disable port trigger. Due to the existence of the firewall, some applications such as online games, video conferences, VoIPs and P2P downloads need the device to configure the forwarding to work properly, and these applications require multiple ports connection, for single-port virtual server cannot meet the demand. Port trigger function comes at this time. When an application initiates a connection to the trigger port, all the incoming ports will open for subsequent connections.

Enable	Incoming Port	Trigger Port	Protocol
<input checked="" type="checkbox"/>			TCP/UDP
--	--	--	--

To configure port trigger:

Click *Add*, specify the following parameters and *Enable* the entry. Click *Save*.

**Incoming Port:** Enter the incoming port for incoming traffic. The port or port range is used by the remote system when it responds to the outgoing request. A response to one of these ports will be forwarded to the PC that triggered this rule. You can input at most 5 groups of ports (or port section). Every group of ports must be set apart with ",". For example, 2000-2038, 2050-2051, 2085, 3010-3030.

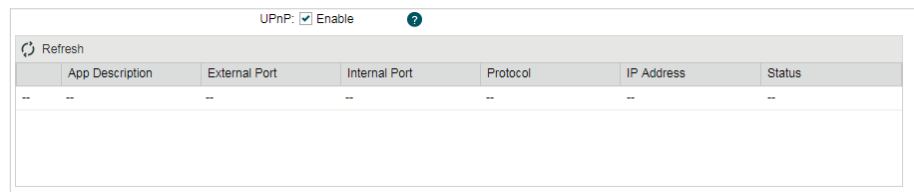
**Trigger Port:** Enter the trigger port for outgoing traffic. An outgoing connection using this port will "Trigger" this rule.

**Protocol:** Choose the one of the protocols used for this application: TCP, UDP, or TCP/UDP.

---

## UPnP

Enable or disable UPnP. If you use applications such as multiplayer gaming, peer-to-peer connections, or real-time communications such as instant messaging or remote assistance (a feature in Windows XP), you should enable the UPnP function. The Universal Plug and Play (UPnP) function allows the devices, such as internet computers, to access the local host resources or devices as needed. Host in the local area network can automatically open the corresponding ports on a router, and make the application of external host access the resources of the internal host through the opened ports. Therefore, the functions limited to the NAT can work properly. Compared to virtual server and port triggering, the application of UPnP doesn't need manual settings. It is more convenient for some applications required unfixed ports.



UPnP: <input checked="" type="checkbox"/> Enable					
Refresh					
App Description	External Port	Internal Port	Protocol	IP Address	Status
--	--	--	--	--	--

**App Description:** Displays the description provided by the application in the UPnP request.

**External Port:** Displays the external port number that the router opened for the service application.

**Internal Port:** Displays the internal service port number of the local host running the service application.

**Protocol:** Displays which type of protocol is opened.

**IP Address:** Displays the IP address of the local host which initiates the UPnP request.

**Status:** Enabled means that port is still active. Otherwise, the port is inactive.

## 4.5 Configure the Security Feature



### Note:

Security submenu is only available in AP Router Mode and AP Client Router (WISP Client) Mode.

Stateful Packet Inspection (SPI) is a firewall that keeps track of the state of network connections (such as TCP streams, UDP communication) traveling across it. The firewall is programmed to distinguish legitimate packets for different types of connections. Only packets matching a known active connection will be allowed to pass through by the firewall and others will be rejected. SPI Firewall is enabled by factory default.

1. Go to the **Network** page. In the **Security > Basic** section, configure the following parameters and click *Apply*.

Security

Basic

Firewall:  SPI Firewall ?

Ping:  WAN Ping Forbidden  LAN Ping Forbidden

VPN:  PPTP Passthrough  L2TP Passthrough  IPSec Passthrough

---

### SPI Firewall

Check the Enable box to use the SPI Firewall function. If forwarding rules are enabled at the same time, the device will give priority to meet forwarding rules.

---

### Ping

Select and enable the ping forbidden function.

**WAN Ping Forbidden:** Enable or disable this function. With this option enabled, the device will not reply the ping request originates from internet. By default, it is disabled.

**LAN Ping Forbidden:** Enable or disable this function. With this option enabled, the device will not reply the ping request originates from local network.

---

### VPN

Select and enable the VPN function.

A VPN is created by establishing a virtual point-to-point connection through the use of dedicated connections, virtual tunneling protocols, or traffic encryptions. Through VPN you can access your private network over internet. A virtual private network connection across the internet is similar to a wide area network (WAN) link between sites. From a user perspective, the extended network resources are accessed in the same way as resources available within the private network. When hosts in the local area network want to visit the remote virtual private network using virtual tunneling protocols, the corresponding VPN protocol should be enabled.

**PPTP Passthrough:** PPTP (Point-to-Point Tunneling Protocol) allows the Point-to-Point Protocol (PPP) to be tunneled through an IP (Internet Protocol) network. Check the box to allow PPTP tunnels to pass through the Device.

**L2TP Passthrough:** L2TP (Layer Two Tunneling Protocol) is the method used to enable Point-to-Point connections via the internet on the Layer Two level. Check the box to allow L2TP tunnels to pass through the Device.

**IPSec Passthrough:** IPSec (Internet Protocol Security) is a suite of protocols for ensuring private, secure communications over IP (Internet Protocol) networks, through the use of cryptographic security services. Check the box to allow IPSec tunnels to pass through the Device.

---

2. In the **Security > Advanced Settings** section, configure the following parameters and click **Apply**.

Advanced Settings

DoS Protection:  Enable

Packets Statistics Interval:  seconds

ICMP\_FLOOD Attack Filter  packets/second

UDP\_FLOOD Attack Filter  packets/second

TCP\_SYN\_FLOOD Attack Filter  packets/second

**DoS Protection** Enable the DoS Protection and specify the parameters.

DoS (Denial of Service) Attack is to occupy the network bandwidth maliciously by the network attackers or the evil programs sending a lot of service requests to the Host, which incurs an abnormal service or even breakdown of the network. With DoS Protection function enabled, the device can analyze the specific fields of the IP packets and distinguish the malicious DoS attack packets. Upon detecting the packets, the device will discard the illegal packets directly and limit the transmission rate of the legal packets if the over legal packets may incur a breakdown of the network. The hosts sending these packets will be added into the *Blocked DoS Host List*. The device can defend a few types of DoS attack such as ICMP\_FLOOD, UDP\_FLOOD and TCP\_SYN\_FLOOD.

**Packets Statistics Interval:** Select a value between 5 and 60 seconds from the drop-down list. The default value is 10. The value indicates the time interval of the packets statistics. The result of the statistic is used for analysis by ICMP-Flood, UDP Flood and TCP-SYN Flood.

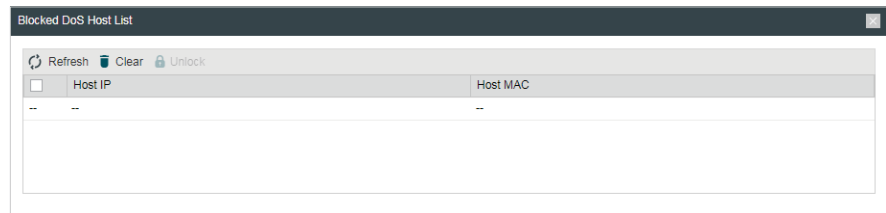
**ICMP\_FLOOD Attack Filter:** Enter a value between 5 and 3600. The default value is 50. When the current ICMP-FLOOD Packets number is beyond the set value, the device will start up the blocking function immediately.

**UDP\_FLOOD Attack Filter:** Enter a value between 5 and 3600. The default value is 500. When the current UPD-FLOOD Packets number is beyond the set value, the device will start up the blocking function immediately.

**TCP\_SYN\_FLOOD Attack Filter:** Enter a value between 5 and 3600. The default value is 50. When the current TCP-SYN-FLOOD Packets numbers is beyond the set value, the Device will start up the blocking function immediately.

## Blocked DoS Host List

Click *Blocked DoS Host List* to display the blocked DoS host table including host IP and host MAC. Click *Refresh* to renewal the table list. Click *Clear* to release all the blocked hosts. If you want to release one or some of the blocked hosts, select them and Click *Unlock*.



3. Click Save.

## 4.6 Configure Access Control



### Note:

Access Control submenu is only available in AP Router Mode and AP Client Router (WISP Client) Mode.

The function can be used to control the internet activities of hosts in the local area network. For example, the online time limit and the specified web stations to visit can be controlled by the filtering policy.

1. Go to the **Network** page. In the **Access Control** section, enable Access Control and select the Filtering Policy.



### Access Control

Enable or disable Access Control.

### Filtering Policy

Select the filtering policy according to your need.

**Allow the packets specified by any enabled access control policy to pass through the Device:** The hosts listed below are allowed to access the internet under the rules. While others are forbidden to access.

**Deny the packets specified by any enabled access control policy to pass through the Device:** The hosts listed below are forbidden to access the internet under the rules. While others are allowed to access.



2. Click *Add* and create the filtering entries.

Enable	Protocol	Host IP	Target IP	Target Port	Days of a week	Time
<input checked="" type="checkbox"/>	TCF				Sun, Mon, Tue, Wed, Th	00:00-24:00

Enable	Enable or disable the desired entry.
Protocol	Choose one of the protocols from the drop-down list used for the target, any of IP, TCP, UDP, or ICMP.
Host IP	Enter the IP address or address range of the hosts that you need to control, for example 192.168.0.12-192.168.0.25.
Target IP	Enter the IP address or address range of the targets that you need to control, for example 192.168.3.12-192.168.3.25.
Target Port	Specify the port or port range for the target when protocol is TCP or UDP.
Days of a week	Specify the days in which the rules take effect.
Time	Enter the time rule in HH:MM-HH:MM format, the default value is 00:00-24:00.

3. Click *Save* and click *Apply*, then click *Save*.

## 4.7 Configure Static Routing



### Note:

Static Routing submenu is only available in AP Router Mode and AP Client Router (WISP Client) Mode.

A static route is a pre-determined path that network information must travel to reach a specific host or network. If static route is used properly in the network, it can decrease the network overhead and improve the speed of forwarding packets.

Static routing is generally suitable for simple network environment, in which users clearly understand the topology of the network so as to set the routing information correctly. When the network topology is complicated and users are not so familiar with the topology structure, this function should be used with caution or under the guidance of the experienced administrator.

1. Go to the **Network** page. In the **Static Routing** section, click *Add* and specify the following parameters.

Static Routing

Static Routing:  Enable

+ Add Edit - Delete

Enable	Target Network IP	Netmask	Gateway IP
<input checked="" type="checkbox"/>	<input type="text"/>	255.255.255.255	<input type="text"/>
--	--	--	--

Save Cancel

<b>Enable</b>	Enable or disable the desired entry.
<b>Target Network IP</b>	Enter the Target Network IP, the address of the network or host to be visited. The IP address cannot be on the same network segment with the device's WAN or LAN port.
<b>Netmask</b>	Specify the netmask for the desired entry.
<b>Gateway IP</b>	Enter the Gateway IP, the address of the gateway that allows for contact between the Device and the network or host

2. Click *Save* and click *Apply*, then click *Save*.

## 4.8 Configure Bandwidth Control



### Note:

Bandwidth Control submenu is only available in AP Router Mode and AP Client Router (WISP Client) Mode.

Bandwidth control function is used to control the internet bandwidth in the local area network. In the case of insufficient bandwidth resources, enable the function to make the device allocate reasonable bandwidth to the clients and achieve the purpose of efficient use of the existing bandwidth. Via IP bandwidth control function, set the upper and lower limit in the bandwidth of the computer network and guarantee a smooth sharing network.

1. Go to the **Network** page. In the **Bandwidth Control** section, enable the Bandwidth Control function.

**Total Ingress Bandwidth** Specify the upper bandwidth for receiving packets from the WAN port. The maximum value is 100,000kbps.

**Total Egress Bandwidth** Specify the upper bandwidth for sending packets from the WAN port. The maximum value is 100,000kbps.

2. Click **Add** and specify the following parameters.

**Enable** Enable or disable the desired entry.

**IP Range** Enter the IP Range of the target hosts which need to be controlled of bandwidth, for example 192.168.0.12-192.168.0.25.

**Port Range** Enter the Port Range through which the target hosts visit external server, for example 1-63258.

**Protocol** Choose one of the protocols used for this application: TCP, UDP, or TCP/UDP.

**Ingress Min (kbps)** Specify the minimum ingress bandwidth for the desired entry.

**Ingress Max (kbps)** Specify the maximum ingress bandwidth for the desired entry.

**Egress Min (kbps)** Specify the minimum egress bandwidth for the desired entry.

---

Egress Max  
(kbps)

Specify the maximum egress bandwidth for the desired entry.

---

3. Click *Save* and click *Apply*, then click *Save*.

## 4.9 Configure IP & MAC Binding

We can effectively prevent ARP attack and IP embezzlement by enabling the IP&MAC binding. Within the local network, the device transmits IP packets to the certain target identified by the MAC address. Therefore, the IP and MAC address should be one-to-one correspondence and their corresponding relations are maintained by the ARP table. ARP attack can use forged information to renew the ARP table, and destroy the corresponding relations between IP and MAC addresses, which would prevent the communication between the device and the corresponding host. When the IP&MAC Binding function is enabled, the IP and MAC relations in the ARP table won't be expired and renewed automatically, which effectively prevents the ARP attack.

Some functions such as access control and bandwidth control, are based on the IP addresses to identify the access clients. The network administrator can allocate every client a static IP, according to which he makes the access and bandwidth rules to control the clients' online behavior and the bandwidth they've used. Some illegal users may change the IP address in order to get higher internet access. Enabling IP & MAC binding function can effectively prevent the IP embezzlement.



**Note:**

After IP & MAC binding function is enabled, the IP bound to the MAC cannot be used by other MACs. However this MAC can use other IPs within the same segment, which are not bounded by other MACs, to access the network.

---

1. Go to the **Network** page. In the **IP & MAC Binding** section, click *Add* and specify the IP address and MAC address.



**Note:**

Click *Import* to quick import the entries in ARP table to IP & MAC Binding table. The imported entries are disabled by default. Select the desired entries and click *Edit* to enable it.

The screenshot shows the 'IP & MAC Binding' configuration window. At the top, there is a title bar with a dropdown arrow. Below the title bar, the text 'IP & MAC Binding:  Enable' is displayed. A toolbar contains four icons: a plus sign for 'Add', a gear for 'Edit', a minus sign for 'Delete', and a circular arrow for 'Import'. Below the toolbar is a table with three columns: 'Enable', 'IP', and 'MAC'. The first row has a checked checkbox in the 'Enable' column, an empty text box in the 'IP' column, and another empty text box in the 'MAC' column. Below the table, there are 'Save' and 'Cancel' buttons. At the bottom right of the window, there is an 'Apply' button.

**IP** Enter the IP address that you want to bind with the MAC address.

**MAC** Enter the MAC address that you want to bind with the IP address.

2. Enable the desired entry and click *Save*. Click *Apply*, then click *Save*.

# 5

## **Configure the Wireless Parameters**

This chapter introduces how to configure the parameters of the wireless network, including:

*5.1 Configure Basic Wireless Parameters*

*5.2 Configure Wireless Client Parameters*

*5.3 Configure Wireless AP Parameters*

*5.4 Configure Multi-SSID*

*5.5 Configure Wireless MAC Filtering*

*5.6 Configure Advanced Wireless Parameters*

## 5.1 Configure Basic Wireless Parameters

This section allows you to configure wireless basic parameters, such as 802.11 mode, Transmit Power, and data rates.

Go to the **Wireless Page**. In the **Basic Wireless Settings** section, configure the basic wireless settings and click **Apply**. Then click **Save**.

The screenshot shows the 'Basic Wireless Settings' interface. It includes several dropdown menus for Region (United States), Mode (802.11a/n), Channel Width (20/40MHz), Max TX Rate (MCS15 - 270/300 Mbps), Channel/Frequency (Auto), and Antenna (Feed Only - 7dBi). There are also checkboxes for EIRP Limit (checked) and MAXtream (checked). A slider for Transmit Power is set to 25 dBm. A 'Spectrum Analysis' button is visible next to the Channel/Frequency dropdown.

---

**Region** Specify the region where you use the device. Available channels and maximum Transmit Power will be determined by the selected region according to the local laws and regulations.

---


**Mode** Select the protocol standard used in the wireless network. To check what protocol standards your device supports, refer to the actual web interface.

Certain devices have a frequency band of 2.4GHz, supporting 802.11b, 802.11g, 802.11n, 802.11b/g, and 802.11b/g/n modes. We recommend that you set the mode as 802.11b/g/n, allowing all 802.11b, 802.11g and 802.11n wireless stations to access the device.

Certain devices have a frequency band of 5GHz, supporting 802.11a, 802.11n, and 802.11a/n modes. We recommend that you set the mode as 802.11a/n, allowing both 802.11a and 802.11n wireless stations to access the device.

Certain devices have a frequency band of 5GHz, supporting 802.11ac, 802.11n/ac, and 802.11a/n/ac modes. We recommend that you set the mode as 802.11a/n/ac, allowing all 802.11a, 802.11n, and 802.11ac wireless stations to access the device.

---

Channel Width	<p>Select the channel width of this device. To check what channel width your device supports, refer to the actual web interface.</p> <p>For certain devices, options include 5 MHz, 10 MHz, 20 MHz, 40 MHz and 20/40 MHz (the device automatically selects 40 MHz, and 20 MHz will be used if 40 MHz is not available).</p> <p>For certain devices, options include 20 MHz, 40 MHz, 80 MHz and 20/40/80 MHz (the device automatically selects 80 MHz, and 40 MHz will be used if 80 MHz is not available, and so on).</p> <p>According to IEEE 802.11n standard, using a wider channel can increase wireless throughput. However, you may need to choose lower bandwidth due to the following reasons:</p> <ul style="list-style-type: none"> <li>• To increase the available number of channels within the limited total bandwidth.</li> <li>• To avoid interference from overlapping channels occupied by other devices in the environment.</li> <li>• Lower bandwidth can concentrate higher transmit power, increasing stability of wireless links over long distances.</li> <li>• In Client / AP Client Router / Repeater / Bridge Mode, the device should have the same channel width as the root AP.</li> <li>• In Access Point / AP Router / Repeater / Bridge Mode, select the channel width which your clients support.</li> </ul>
Max TX Rate	Set the maximum transmit data rate.
Channel/ Frequency	<p>Select appropriate channel used by this device to improve wireless performance. 1/2412 MHz refers to Channel 1 and the frequency is 2412 MHz. This setting is only available in Access Point Mode and AP Router Mode. We highly recommend that you use the <i>Spectrum Analysis</i> tool to select a proper channel.</p>
Antenna	Select your antenna from the list.
Antenna Gain	<p>Antenna Gain is only available in WBS products. Enter the antenna gain value according to the antennas and the value ranges from 0 to 30dBi. It can work together with the transmit power to improve the transmit signal quality.</p>
	
EIRP Limit	<p>This option should remain enabled. With EIRP Limit enabled, the transmit power is restricted so that the EIRP (Effective Isotropic Radiated Power) of the device is kept below the amount which is allowed in the selected region.</p>



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## Channel Shifting

### **Note:**

Channel Shifting is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.

Enable or disable the Channel Shifting function. This function is only available when MAXtream is enabled in Access Point Mode and AP Router Mode. Channel Shifting is a TP-Link proprietary technology. With Channel Shifting enabled, the AP will use non-standard channels by adding a frequency offset to the standard 802.11 b/g/n channels.

Your network can then only be detected by the wireless devices with Channel Shifting enabled and so is less likely to be detected by other wireless networks, which benefits network security.

---

## Transmit Power

### **Note:**

In most scenarios, it is unnecessary to select the maximum transmit power. Selecting larger transmit power than your need may cause interference to neighborhood. Also it consumes more power and will reduce longevity of the device. Select appropriate transmit power to achieve the best performance. Use the *Speed Test* tool to find the best performance.

Specify the transmit power of the device. Use the slider or manually enter the transmit power value. For Outdoor Wireless Base Stations, the maximum transmit power varies according to the antenna gain value.

---

## MAXtream

### **Note:**

- MAXtream is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.
- MAXtream Technology is only compatible with Pharos series products. Working with products from other manufacturer will cause network fault.

Enable or disable the MAXtream function. This function is only available in Access Point Mode and AP Router Mode. MAXtream is a TP-Link proprietary technology. It is based on TDMA (Time Division Multiple Access) so that data streams are transmitted in their own time slots. MAXtream aims to maximize throughput and minimize latency. "Hidden nodes" problem can also be eliminated with MAXtream enabled.

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## MAXtream Station Mode

### Note:

MAXtream is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.

MAXtream Station Mode is available in Client Mode, Bridge Mode and AP Client Router Mode with the wireless AP settings disabled.

**Auto Adjust:** The device will choose the MAXtream Station Mode automatically.

**Latency First:** Set the MAXtream Station Mode as Latency First and the time sensitive stream such as VoIP will take precedence in MAXtream system.

**Throughput First:** Set the MAXtream Station Mode as Throughput First and the stream that needs high throughput such as online games will take precedence in MAXtream system.

## 5.2 Configure Wireless Client Parameters



### Note:

Wireless Client Settings submenu is only available in Client, Repeater, Bridge and AP Client Router (WISP Client) Mode.

In this section, configure wireless client parameters used for the connection with the root AP.

Wireless Client Settings

SSID of AP:

MAC of AP:   Lock to AP

WDS:

Security Mode:

1. Go to the **Wireless Page**. In the **Wireless Client Settings** section, configure the following parameters.

### SSID of AP

Specify the SSID of the root AP. You can enter the SSID of the specific AP manually, or directly survey all the APs around by clicking **Survey** and select one.

### MAC of AP

Displays the MAC address of the root AP. It's possible that two or more networks use the same SSID in the AP list. Enable **Lock to AP** to select SSID and AP simultaneously, which can make the device connect to the specific AP you had connected before the next time.

## WDS

Displays the status of the WDS (Wireless distribution System) function. WDS is a communication system among multiple wireless networks . It is established between APs through wireless connection. WDS is used to during the connection between the device and the root AP.

**Enable:** Forward data frames to use four address fields.

**Disable:** Forward data frames to use three address fields.

**Auto:** The device automatically negotiates the wireless data frame structure (three or four address fields) with the root AP. The selection of Auto is recommended.

2. Specify the security mode. Make sure the security mode and the related parameters are the same as the upstream wireless network's.

### ■ None

Select this option if the root AP has no encryption. When connecting to the root AP, it's no need to enter a password to access the wireless network.

### ■ WEP



#### Note:

- WEP is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.
- 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 device may work at a low transmission rate.

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 is rarely used in normal wireless network. Select this option if the security mode of the root AP is WEP.

Security Mode:	WEP	▼
Auth Type:	Auto	▼
Key Format:	Hex	▼
Key Selected:	WEP Key:	Key Type:
Key 1: <input checked="" type="radio"/>	<input type="text"/>	Disabled ▼
Key 2: <input type="radio"/>	<input type="text"/>	Disabled ▼
Key 3: <input type="radio"/>	<input type="text"/>	Disabled ▼
Key 4: <input type="radio"/>	<input type="text"/>	Disabled ▼

<b>Auth Type</b>	<p>Select the authentication type for WEP.</p> <p><b>Auto:</b> The device can select Open System or Shared Key automatically according to the wireless network of the root AP.</p> <p><b>Open System:</b> The device can pass the authentication and associate with the root wireless network without password. However, correct password is necessary for data transmission.</p> <p><b>Shared Key:</b> The device needs the correct password to pass the authentication, otherwise the device cannot associate with the root wireless network or transmit data.</p>
<b>Key Format</b>	<p>Select ASCII or Hex as the WEP key format.</p> <p><b>ASCII:</b> With this format selected, the WEP key can be any combination of keyboard characters of the specified length.</p> <p><b>Hex:</b> With this format selected, the WEP key can be any combination of hexadecimal digits (0-9, a-f, A-F) with the specified length.</p>
<b>Key Selected</b>	Select one key to specify. You can configure four keys at most.
<b>WEP Key</b>	Enter the WEP keys. The length and valid characters are determined by the key format and key type.
<b>Key Type</b>	<p>Select the WEP key length for encryption.</p> <p><b>64Bit:</b> Enter 10 hexadecimal digits or 5 ASCII characters.</p> <p><b>128Bit:</b> Enter 26 hexadecimal digits or 13 ASCII characters.</p> <p><b>152Bit:</b> Enter 32 hexadecimal digits or 16 ASCII characters.</p>

## ■ WPA

WPA (Wi-Fi Protected Access) is a safer encryption method compared with WEP and WAP-PSK. It requires a RADIUS server to authenticate the clients via 802.1X and EAP (Extensible Authentication Protocol). WPA 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.

Security Mode:	WPA	▼
Version:	Auto	▼
Encryption:	Auto	▼
Authentication:	EAP-TTLS	▼
Phase 2 Auth:	MSCHAPV2	▼
WPA User Name:	<input type="text"/>	
WPA User Password:	<input type="password"/>	<input type="checkbox"/> Show

Version	<p>Select the version of WPA.</p> <p><b>Auto:</b> The device will automatically choose the version used by the root AP.</p> <p><b>WPA/WPA2:</b> 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.</p>
Encryption	<p><b>Note:</b></p> <p>TKIP is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.</p> <p>Select the Encryption type.</p> <p><b>Auto:</b> The default setting is Auto and the device will select TKIP or AES automatically according to the wireless network of root AP.</p> <p><b>TKIP:</b> 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 device may not be able to access the root 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.</p> <p><b>AES:</b> Advanced Encryption Standard. It is securer than TKIP.</p>
Authentication	Select the type of the authentication.
Phase 2 Auth	Select the type of Phase 2 Auth. The device only supports MSCHAPV2 currently.
WPA User Name	Specify the WPA User Name used in the connection with the root AP.
WPA User Password	Specify the WPA User Password used in the connection with the root AP.

### ■ 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 screenshot shows a configuration interface for WPA-PSK. It contains four rows of settings:

- Security Mode:** A dropdown menu with "WPA-PSK" selected.
- Version:** A dropdown menu with "Auto" selected.
- Encryption:** A dropdown menu with "Auto" selected.
- PSK Password:** A text input field that is currently empty, followed by a "Show" checkbox.

Version	<p><b>Note:</b></p> <p>WPA-PSK/WPA2-PSK is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.</p> <p>Select the version of WPA-PSK.</p> <p>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.</p> <p><b>Auto:</b> The device will automatically choose the version used by the root AP.</p> <p><b>WPA/WPA2:</b> They're two versions of WPA-PSK security mode normally called WPA-PSK/WPA2-PSK. WPA2-PSK is an update of WPA-PSK. Compared with WPA-PSK, theoretically, WPA2-PSK is securer than WPA-PSK.</p>
Encryption	<p><b>Note:</b></p> <p>TKIP is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.</p> <p>Select the Encryption type.</p> <p><b>Auto:</b> The default setting is Auto and the device will select TKIP or AES automatically according to the wireless network of root AP.</p> <p><b>TKIP:</b> 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 device may not be able to access the root 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.</p> <p><b>AES:</b> Advanced Encryption Standard. It is securer than TKIP.</p>
PSK Password	Specify the PSK password used in the connection with the root AP.

3. Click *Apply*, then click *Save*.

## 5.3 Configure Wireless AP Parameters



**Note:**

Wireless AP Settings submenu is only available in Access Point, Bridge, AP Router and AP Client Router (WISP Client) Mode.

In this section, configure wireless AP parameters used for the connection with the clients.

Wireless AP Settings

Wireless Radio:  Enable

SSID: TP-Link\_Outdoor\_BD046E  Enable SSID Broadcast

Security Mode: None

RADIUS MAC Authentication:  Enable ?

Authentication Server IP: 0.0.0.0

Authentication Server Port: 1812

Authentication Server Key:   Show

Accounting Server:  Enable ?

Apply

1. Go to the **Wireless** Page. In the **Wireless AP Settings** section, specify the SSID.

**Enable SSID Broadcast**

Enable or disable SSID broadcast. With this function enabled, the device will broadcast the SSID periodically.

2. Specify the security mode used for the clients to access the wireless network.

■ **None**

Select **None** when you want an open network without wireless security. In this mode, network data is not encrypted, but you can still authenticate clients by enabling the RADIUS MAC Authentication function.



**Note:**

RADIUS MAC Authentication is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.

RADIUS MAC Authentication:  Enable ?

Authentication Server IP: 0.0.0.0

Authentication Server Port: 1812

Authentication Server Key:   Show

Accounting Server:  Enable ?

Accounting Server IP: 0.0.0.0

Accounting Server Port: 1813

Accounting Server Key:   Show

RADIUS MAC Authentication	<p>Enable or disable the Radius MAC authentication. With this feature enabled, you can authenticate clients using their MAC addresses on your RADIUS authentication server.</p> <p>Remember to log into your RADIUS authentication server and create authentication entries whose username and password are both the access-enabled clients' MAC address (for MAC address 11-22-33-AA-BB-CC, create an authentication entry whose username and password are both 112233aabbcc on the RADIUS server).</p>
Authentication Server IP	Enter the IP address of the RADIUS authentication server.
Authentication Server Port	Enter the UDP port of the RADIUS authentication server. The most commonly used port is the default, 1812, but this may vary depending on the RADIUS authentication server you are using.
Authentication Server Key	<p>Enter the shared key used between this device and the authentication server. The shared key is a case-sensitive text string used to validate communication between this device and the RADIUS authentication server.</p> <p>Check the <b>Show</b> box to view the shared key characters.</p>
Accounting Server	Enable or disable Accounting Server. With this feature enabled, you can keep accounts on users using a RADIUS accounting server.
Accounting Server IP	Enter the IP address of the RADIUS accounting server.
Accounting Server Port	Enter the UDP port of the RADIUS accounting server. The most commonly used port is 1813, but this may vary depending on the RADIUS accounting server you are using.
Accounting Server Key	<p>Enter the password used between this device and the RADIUS accounting server. The shared key is a case-sensitive text string used to validate communication between this device and the RADIUS accounting server.</p> <p>Check the <b>Show</b> box to view the shared key characters.</p>



## ■ WEP



### Note:

- WEP is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.
- 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 device may work at a low transmission rate.

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.

Security Mode:	WEP	▼
Auth Type:	Auto	▼
Key Format:	Hex	▼
Key Selected:	WEP Key:	Key Type:
Key 1: <input checked="" type="radio"/>	<input type="text"/>	Disabled ▼
Key 2: <input type="radio"/>	<input type="text"/>	Disabled ▼
Key 3: <input type="radio"/>	<input type="text"/>	Disabled ▼
Key 4: <input type="radio"/>	<input type="text"/>	Disabled ▼

### Auth Type

Select the authentication type for WEP.

**Auto:** The device 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 Format

Select ASCII or Hex as the WEP key format.

**ASCII:** With this format selected, the WEP key can be any combination of keyboard characters of the specified length.

**Hex:** 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 Selected

Select one key to specify. You can configure four keys at most.

WEP Key	Enter the WEP keys. The length and valid characters are determined by the key format and key type.
Key Type	Select the WEP key length for encryption. <b>64Bit:</b> Enter 10 hexadecimal digits or 5 ASCII characters. <b>128Bit:</b> Enter 26 hexadecimal digits or 13 ASCII characters. <b>152Bit:</b> Enter 32 hexadecimal digits or 16 ASCII characters.

## ■ WPA

WPA (Wi-Fi Protected Access) is a safer encryption method compared with WEP and WAP-PSK. It requires a RADIUS server to authenticate the clients via 802.1X and EAP (Extensible Authentication Protocol). WPA 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.



### Note:

Accounting Server is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.

Security Mode:  ▼

Version:  ▼

Encryption:  ▼

Authentication Server IP:

Authentication Server Port:

Authentication Server Key:   Show

Group Key Update Period:  seconds. (0 means no update.)

Accounting Server:  Enable ?

Accounting Server IP:

Accounting Server Port:

Accounting Server Key:   Show

Version	Select the version of WPA. <b>Auto:</b> The device will automatically choose the version used by each client device. <b>WPA/WPA2:</b> 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.
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Encryption	<p><b>Note:</b></p> <p>TKIP is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.</p> <p>Select the Encryption type.</p> <p><b>Auto:</b> The default setting is Auto and the device will select TKIP or AES automatically based on the client device's request.</p> <p><b>TKIP:</b> 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 device may not be able to access the root 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.</p> <p><b>AES:</b> Advanced Encryption Standard. It is securer than TKIP.</p>
Authentication Server IP	Enter the IP address of the Radius Authentication Server.
Authentication Server Port	Enter the UDP port of the RADIUS authentication server. The most commonly used port is 1812, but this may vary depending on the RADIUS authentication server you are using.
Authentication Server Key	<p>Enter the shared key used between this device and the authentication server. The shared key is a case-sensitive text string used to validate communication between this device and the RADIUS authentication server.</p> <p>Check the <b>Show</b> box to view the shared key characters.</p>
Group Key Update Period	Specify an update period of the encryption key. The update period instructs how often the device should change the encryption key. 0 means that the encryption key does not change at anytime.
Accounting Server	Enable or disable Accounting Server. With this feature enabled, you can keep accounts on users using a RADIUS accounting server.
Accounting Server IP	Enter the IP address of the RADIUS accounting server.
Accounting Server Port	Enter the UDP port of the RADIUS accounting server. The most commonly used port is 1813, but this may vary depending on the RADIUS accounting server you are using.
Accounting Server Key	<p>Enter the password used between this device and the RADIUS accounting server. The shared key is a case-sensitive text string used to validate communication between this device and the RADIUS accounting server.</p> <p>Check the <b>Show</b> box to view the shared key characters.</p>

## ■ 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.

Security Mode:	WPA-PSK	▼
Version:	Auto	▼
Encryption:	Auto	▼
PSK Password:	<input type="password"/>	<input type="checkbox"/> Show
Group Key Update Period:	0	seconds. (0 means no update.)

---

### Version

#### Note:

WPA-PSK/WPA2-PSK is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.

Select the version of WPA-PSK.

**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.

**Auto:** The device will automatically choose the version used by the root AP.

**WPA/WPA2:** They're two versions of WPA-PSK security mode normally called WPA-PSK/WPA2-PSK. WPA2-PSK is an update of WPA-PSK. Compared with WPA-PSK, theoretically, WPA2-PSK is securer than WPA-PSK.

---

### Encryption

#### Note:

TKIP is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.

Select the Encryption type.

**Auto:** The default setting is Auto and the device will select TKIP or AES automatically according to the wireless network of root AP.

**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 device may not be able to access the root 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.

---

### PSK Password

Specify the PSK password used in the connection with the clients.

---

Group Key  
Update Period

Specify an update period of the encryption key. The update period instructs how often the device should change the encryption key. 0 means that the encryption key does not change at anytime.

3. Click **Apply**, then click **Save**.

## 5.4 Configure Multi-SSID



### Note:

Multi-SSID submenu is only available in Access Point Mode.

The device can build up to four virtual wireless networks for users to access. When the Multi-SSID function is enabled, the VLAN function is enabled at the same time. It can work together with switches supporting 802.1 Q VLAN and supports maximum four VLANs. The device adds different VLAN tag to the clients which connect to the corresponding wireless network. The clients in different VLANs cannot directly communicate with each other.

The wired client can communicate with all the wireless clients despite the VLAN settings.

1. Go to the **Wireless** page. In the **Multi-SSID** section, Enable Multi-SSID. Click **Add** and create a new wireless network.

Enable	SSID	VLAN	SSID Broadcast	AP Isolation
<input type="checkbox"/>	TP-Link_Outdoor_BD046E	1	Enable	Disable

**SSID** Specify the SSID of the wireless network.

**VLAN** Specify the VLAN to which the new wireless network belongs. The valid value ranges from 1 to 4094.

**SSID Broadcast** Enable or disable SSID broadcast . With this feature enabled, the device will broadcast the SSID.

**AP Isolation** Enable or disable AP Isolation. With this feature enabled, all the hosts cannot communicate with each other.

## 2. Select the desired SSID and specify the Security Mode.

Security Settings

SSID:

Security Mode:

Version:

Encryption:

PSK Password:   Show

Group Key Update Period:  seconds. (0 means no update.)

<b>SSID</b>	Select the desired SSID to specify the security settings.
<b>Security Mode</b>	Specify the security mode for the desired SSID. The device only supports WPA-PSK.
<b>Version</b>	<p><b>Note:</b></p> <p>WPA-PSK/WPA2-PSK is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.</p> <p>Select the version of WPA-PSK.</p> <p><b>WPA-PSK/WPA2-PSK:</b> 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.</p> <p><b>Auto:</b> The device will automatically choose the version used by the root AP.</p> <p><b>WPA/WPA2:</b> They're two versions of WPA-PSK security mode normally called WPA-PSK/WPA2-PSK. WPA2-PSK is an update of WPA-PSK. Compared with WPA-PSK, theoretically, WPA2-PSK is securer than WPA-PSK.</p>
<b>Encryption</b>	<p><b>Note:</b></p> <p>TKIP is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.</p> <p>Select the Encryption type.</p> <p><b>Auto:</b> The default setting is Auto and the device will select TKIP or AES automatically according to the wireless network of root AP.</p> <p><b>TKIP:</b> 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 device may not be able to access the root 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.</p> <p><b>AES:</b> Advanced Encryption Standard. It is securer than TKIP.</p>
<b>PSK Password</b>	Specify the PSK password used in the connection with the clients.

Group Key  
Update Period

Specify an update period of the encryption key. The update period instructs how often the device should change the encryption key. 0 means that the encryption key does not change at anytime.

3. Click **Apply**, then click **Save**.

## 5.5 Configure Wireless MAC Filtering

Wireless MAC Filtering function uses MAC addresses to determine whether one host can access the wireless network or not. Thereby it can effectively control the user access in the wireless network. This function is available in all modes except the Client Mode.

1. Go to the **Wireless** page. In the **Wireless MAC Filtering** section, enable this feature and specify the filtering rule.

**Wireless MAC Filtering**

Wireless MAC Filtering:  Enable

Filtering Rules:

Deny the stations specified by any enabled entries in the list to access the network.

Allow the stations specified by any enabled entries in the list to access the network.

+	+	+	+	+
Enable	SSID	MAC	Comment	
--	--	--	--	

Wireless MAC  
Filtering

Enable or disable the Wireless MAC Filtering function.

Filtering Rules

Specify the filtering rules.

**Allow the stations specified by any enabled entries in the list to access the network:** The stations listed in the table are allowed to access the wireless network under the rules. While others are forbidden to access.

**Deny the stations specified by any enabled entries in the list to access the network:** The stations listed in the table are forbidden to access the wireless network under the rules. While others are allowed to access.

2. Click **Add** and specify the following parameters.

+ Add Edit Delete

Enable	SSID	MAC	Comment
<input checked="" type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Save Cancel

Enable

Enable or disable the desired entry.

SSID	Select te SSID to which the filtering rules apply. In AP Mode, if Multi-SSID is enabled, you should set different filtering rules for each SSID.
MAC	Enter the MAC address of the wireless host that you need to filter.
Comment	Enter the description information for the filtering rule

3. Click Save and click Apply. Then click Save.

## 5.6 Configure Advanced Wireless Parameters

This section is used to specify the advanced wireless parameters, such as Beacon Interval, RTS threshold and DTIM Interval.

Go to the **Wireless** page. In the **Advanced Wireless Settings** section, specify the following parameters and click **Apply**. Then click **Save**.

**Advanced Wireless Settings** ⌵

Distance Setting:  (0-200) km  Auto (Only works within 0-27.9km) ?

Long Range PTP:  ?

Beacon Interval:  (40-1000)

RTS Threshold:  (1-2346)

Fragmentation Threshold:  (256-2346)

DTIM Interval:  (1-255)

AP Isolation:  Enable

Short GI:  Enable

Wi-Fi MultiMedia (WMM):  Enable

QoS:  Enable

### Distance Setting

Specify the distance between AP and Station. If this device serves as a client, the value is the distance between this device and the root AP. If this device serves as an AP, the value is the distance between the farthest client and this AP.

You can manually enter the value or enable the Auto option.

**Manual:** Enter the distance manually in the input box. The value is limited to 0-200km, and we recommend you set the value to 110% of the real distance.

**Auto (Only works within 0-xx km):** Check the Auto option, then the system will dynamically detect the distance. This function is available only when the distance is less than xx kilometers. The value xx varies according to the channel width you set. CPE210 does not support this option.

The distance value will be converted to a corresponding ACK timeout value, and the ACK timeout value will influence the throughput performance to a large extent.



---

Long Range PtP	<p><b>Note:</b></p> <p>Long Range PtP is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.</p> <p>Long Range PtP is only available when MAXstream function is enabled. With this function enabled, it is allowed to specify a larger distance which can be helpful in the following situations:</p> <ul style="list-style-type: none"><li>• The AP is connected to a single client or AP.</li><li>• The distance between the two devices exceeds the distance allowed by the AP's hardware specifications.</li></ul> <p>The distance is used to calculate the Acknowledge timeout (ACK timeout). Long Range PtP allows the AP to get a larger ACK timeout and reduce unnecessary retransmission in the situations above.</p>
Beacon Interval	<p>Specify the beacon interval for the device. Beacons are transmitted periodically by the device to announce the presence of a wireless network for the clients. Beacon Interval value determines the time interval of the beacons sent by the device. Specify a value from 40 to 1,000. The default value is 100.</p>
RTS Threshold	<p>Specify the RTS threshold for the device.</p> <p>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.</p> <p>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 device to request data transmitting. And then the device will send CTS packet to inform other clients to delay their data transmitting. In this way, packet collisions can be avoided.</p> <p>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.</p>
Fragmentation Threshold	<p>Specify the fragmentation threshold for packets.</p> <p>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.</p> <p>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.</p>

---

DTIM Interval	<p>Specify the DTIM (Delivery Traffic Indication Message) Interval for the device.</p> <p>The DTIM is contained in some Beacon frames. It indicates whether the device has buffered data for client devices. The <b>DTIM Period</b> indicates how often the clients served by this device should check for buffered data still on the device awaiting pickup.</p> <p>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.</p>
AP Isolation	<p>Enable or disable AP Isolation. With this feature enabled, the clients can not communicate with each other directly.</p> <p><b>Note:</b></p> <p>AP Isolation is not available in Client Mode.</p>
Short GI	<p>Enable or disable Short GI.</p> <p>Propagation delays often occurs in data transmission process and influence the capability of the wireless network. It can result from multiple factors, such as multipath effect. GI (Guard Interval) is intended to solve the problem based on delays, and Short GI is used to improve the throughput of the wireless network based on the GI in the environment with small delays.</p> <p>When the delays are small. When Short GI is enabled, the guard interval will be set as 400ns and this function will boost the performance about 11%. In the with serious multipath time delay. Short GI function will reduce the throughput instead of improving it.</p>
Wi-Fi Multimedia (WMM)	<p>Enable or disable WMM. With WMM enabled, the system will prioritize traffic according to the data type when forwarding data. Time-dependent traffic, such as video or audio packets, gets a higher priority than normal traffic.</p> <p>We recommend you enable this function when you are running the video or audio application.</p>
QoS	<p>Enable or disable QoS. The QoS function improves the transmission performance of video or audio traffic by optimizing the scheduling policy between the AP and the clients.</p>

# 6

## Manage the Device

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

*6.1 Manage System Logs*

*6.2 Specify the Miscellaneous Parameters*

*6.3 Configure Ping Watch Dog*

*6.4 Configure Dynamic DNS*

*6.5 Configure Web Server*

*6.6 Configure SNMP Agent*

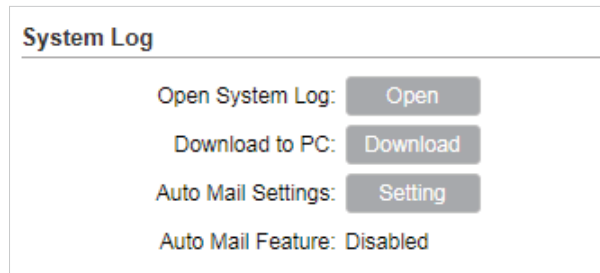
*6.7 Configure SSH Server*

*6.8 Configure RSSI LED Thresholds*

## 6.1 Manage System Logs

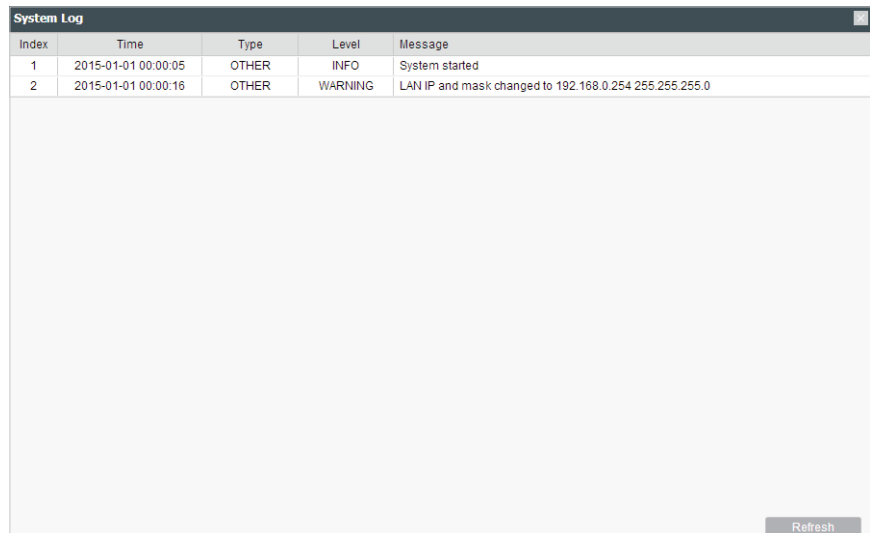
System logs record the events and activities while the device is running. If a failure happens on the device, System logs can help to diagnose the issue.

1. Go to the **Management** page. In the **System Log** section, perform the following operations.



### Open System Log

Click the *Open* button to view the system log.



The screenshot shows a table titled 'System Log' with the following data:

Index	Time	Type	Level	Message
1	2015-01-01 00:00:05	OTHER	INFO	System started
2	2015-01-01 00:00:16	OTHER	WARNING	LAN IP and mask changed to 192.168.0.254 255.255.255.0

A 'Refresh' button is located at the bottom right of the table.

This page displays detailed system logs that can be sorted on columns by ascending or descending order. Columns can be chosen from Time, Type, Level, and Message.

### Download to PC

Click the *Download* button to download the system logs to your PC.

2. Click the *Setting* button to specify the Auto Mail Settings.

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.
Authentication	Enable or disable the authentication function. If the sender's mailbox is configured, check the box to enable mail server authentication. Enter the sender's username and password.
Auto Mail Feature	Enable or disable Auto Mail Feature. With this feature enabled, specify the way for the device to send the system log.

## 6.2 Specify the Miscellaneous Parameters

This section is used to specify miscellaneous parameters.

1. Go to the **Management** Page. In the **Miscellaneous** section, configure the following features and click *Apply*.

Discovery	Enable or disable Discovery. With this feature enabled, TP-Link Pharos Control software can discover the device. Pharos Control is a network management software developed independently by TP-Link and it currently supports Pharos series products. It can centralize monitoring and managing network devices in the network platform
CDP	Enable or disable CDP. With this function enabled, this device can share its information with the neighboring devices that support CDP (Cisco Discovery Protocol, a device discovery protocol developed by Cisco).

2. Click Save.

## 6.3 Configure Ping Watch Dog

Ping Watch Dog sets the device to continuously ping a user-defined IP address (it can be the internet gateway, for example) to check the network connectivity. If there is a connection failure then the device will automatically reboot.

Ping Watch Dog is dedicated to continuously monitoring the connectivity to a specific host using the Ping tool. The Ping tool sends ICMP echo request packets to the target host and listens for ICMP echo response. If the defined number of replies is not received, the tool reboots the device.

1. Go to the **Management Page**. In the **Ping Watch Dog** section, Enable this feature and configure the following features. Click *Apply*.

**Ping Watch Dog**

Ping Watch Dog:  Enable

IP Address To Ping:

Ping Interval:  (10-300) seconds

Startup Delay:  (60-300) seconds

Fail Count To Reboot:  (1-65535)

Ping Watch Dog	Enable or disable Ping Watch Dog.
IP Address To Ping	Specify the IP address of the target host to which the device will send ping packets.
Ping Interval	Enter the time interval between two ping packets. The default value is 300 seconds.

---

Startup Delay	Enter the initial time delay from device startup to the first ICMP echo requests sent by Ping Watch Dog. The default value is 300 seconds.  The Startup Delay value should be at least 60 seconds taking the device's initialization time in account.
Fail Count To Reboot	Enter the fail count of ICMP echo request. If the device sends the specified count of ICMP echo requests to the host and none of the corresponding ICMP echo response packets is received, Ping Watch Dog will reboot the device. The default value is 3.

---

2. Click Save.

## 6.4 Configure Dynamic DNS

---



### Note:

The Dynamic DNS function is only available in AP Router and AP Client Router (WISP Client) Mode.

---

The main function of Dynamic DNS (DDNS) is mapping the fixed domain name to dynamic IP address.

When a device connects to the internet through PPPoE or Dynamic IP, the WAN IP address it gets is not fixed, which is inconvenient for the internet users to access the servers in the local area network through IP address. With Dynamic DNS function enabled, users can access servers using a fixed domain name.

The DDNS server will establish a mapping table about the dynamic IP address and the fixed domain name. When the WAN IP address of the device changes, it will make an update request to the specified DDNS server, and then the DDNS server will update the mapping relation between the IP address and the domain name. Therefore, whenever the WAN IP address changes, users on the internet can still access the servers in the local area network using a fixed, easy-to-remember domain name.

The DDNS function that serves as the client of DDNS service must work with DDNS server. Register an account to DDNS service provider (NO-IP, DynDNS or Comexe) first.

1. Go to the **Management** page. In the **Dynamic DNS** section, configure the following parameters and click *Login*.

**Dynamic DNS**

Service Provider:  ▼

Dynamic DNS:  Enable

User Name:

Password:   Show

Domain Name:

Connection Status: Not launching.

Service Provider	Select the service provider.
Dynamic DNS	Enable or disable the Dynamic DNS feature.
User Name	Enter the user name of your DDNS account.
Password	Enter the password of your DDNS account.
Domain Name	Specify the domain name that you registered with your DDNS service provider.
Connection Status	Displays the connection status of the DDNS service.

2. Click *Apply*, then click *Save*.

## 6.5 Configure Web Server

This function is used to configure the related parameters of Web server. Users can log in to the web management page to manage this device remotely over the internet through Web Server.



1. Go to the **Management** page. In the **Web Server** section, configure the following parameters and click *Apply*.

**Web Server**

---

Secure Connection (HTTPS):  Enable

Secure Server Port:

Server Port:

Remote Login IP Address:  ?

Session Timeout:  minutes

MAC Authentication:  Enable

MAC1:

MAC2:

MAC3:

MAC4:  Add PC's MAC

<b>Secure Connection (HTTPS)</b>	Enable or disable the HTTPS feature. HTTPS function is based on the SSL or TLS protocol working in transport layer. It supports a security access via a web browser.
<b>Secure Server Port</b>	Specify the server port number used in HTTPS. The default value is 443.
<b>Server Port</b>	Specify the server port number used in HTTP. The default value is 80.
<b>Remote Login IP Address</b>	Specify the IP address of the remote host. With this configured, the remote host can access the management interface remotely using the WAN IP of this device.
<b>Session Timeout</b>	Specify the session timeout time. The system will automatically release the connection when the time is up.
<b>MAC Authentication</b>	<p>Enable or disable MAC Authentication. When it is enabled, you can specify up to four MAC address for authentication.</p> <p>With this function enabled, only the device whose MAC address is in the MAC list can access the management interface to configure the device.</p> <p>Click <i>Add PC's MAC</i> to quickly add your PC's MAC address to the MAC list.</p>

2. Click *Apply*, then click *Save*.

## 6.6 Configure SNMP Agent

Get the traffic information and transmit condition by using the SNMP Agent function.

Simple Network Management Protocol (SNMP) is an application layer protocol that facilitates the exchange of management information between network devices. Main functions of SNMP include monitoring network performance, detecting and analyzing network error, configuring network devices, and so on.

Configure the device as SNMP Agent, and it can receive and process the management message from the NMS (Network Management System).

1. Go to the **Management** page. In the **SNMP Agent** section, configure the following parameters and click *Apply*.

**SNMP Agent**

SNMP Agent:  Enable

SysContact:

SysName:

SysLocation:

Get Community:

Get Source:

Set Community:

Set Source:

<b>SNMP Agent</b>	Enable or disable the SNMP Agent function.
<b>SysContact</b>	Enter the textual identification of the contact person for this device, for example, contact number or e-mail address.
<b>SysName</b>	Enter a name for the device.
<b>Syslocation</b>	Enter the location of the device. For example, the name can be composed of the building, floor number, and room location.
<b>Get Community</b>	Specify the community that has read-only access to the device's SNMP information.
<b>Get Source</b>	Enter the IP address of the NMS that can serve as Get Community to read the SNMP information of this device. By default, it is 0.0.0.0, which means an NMS of any IP address is available.
<b>Set Community</b>	Specify the community who has the read-and-write right of the device's SNMP information.
<b>Set Source</b>	Enter the IP address of the NMS that can serve as Set Community to read and write the SNMP information of this device. By default, it is 0.0.0.0, which means an NMS of any IP address is available.

2. Click *Apply*, then 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 safety, we suggest modifying 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.

## 6.7 Configure SSH Server

The SSH Server function is used for the users to log in and manage the device through SSH connection on the SSH client software.

SSH (Secure Shell) is a security protocol established on application and transport layers. SSH-encrypted-connection is similar to a telnet connection, but essentially the old telnet remote management method is not safe, because the password and data transmitted with plain-text can be easily intercepted. SSH can provide information security and powerful authentication when you log in this device remotely through an insecure network environment. It can encrypt all the transmission data and prevent the information in remote management from being leaked.

1. Go to the **Management** page. In the **SSH Server** section, configure the following parameters and click *Apply*.

**SSH Server**

---

Server Port:

SSH Login:  Enable

Remote Management:  Enable ?

Server Port	Enter the TCP/IP port of the SSH Server. The default port is 22.
SSH Login	Enable or disable SSH function.
Remote Management	Enable or disable Remote Management. With this function enabled, TP-Link Pharos Control software can manage the device remotely.

2. Click *Save*.

## 6.8 Configure RSSI LED Thresholds



### Note:

RSSI LED Thresholds is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.

Configure the LEDs on the device to light up when received signal levels reach the values defined in the following fields. This function can help a technician to easily deploy a Pharos series product without logging into the device (for example, for antenna alignment operation).

1. Go to the **Management** page. In the **RSSI LED Thresholds** section, configure the following parameters and click *Apply*.

	LED1	LED2	LED3	LED4
Thresholds (dBm):	-94	-80	-73	-65

Apply

LED1/LED2/  
LED3/LED4

Displays the LED number.

Thresholds

Specify the threshold for the desired LED. The specified LED will light up if the signal strength reaches the values in the field. The default values are set according to the verified optimum values. We recommend you keep it by default.

The default LED threshold values may vary among different product models in terms of radio features.

2. Click *Apply*, then click *Save*.

# 7

## Configure the System

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

*7.1 Configure Device Information*

*7.2 Configure Location Information*

*7.3 Configure User Account*

*7.4 Configure Time Settings*

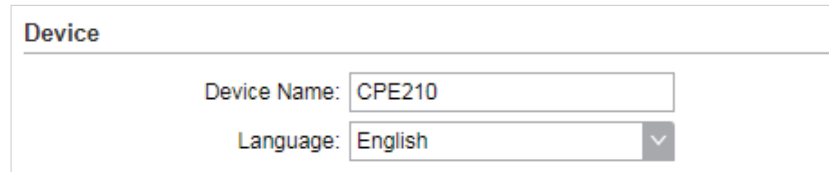
*7.5 Update Firmware*

*7.6 Configure Other Settings*

## 7.1 Configure Device Information

In this section, configure the device name and the system language.

1. Go to the **System** page. In the **Device** section, configure the following parameters and click **Apply**.



The screenshot shows a configuration form titled "Device". It contains two fields: "Device Name" with the value "CPE210" and "Language" with a dropdown menu set to "English".

---

Device Name	Specify the device name.
Language	Specify the system language used in the management interface.

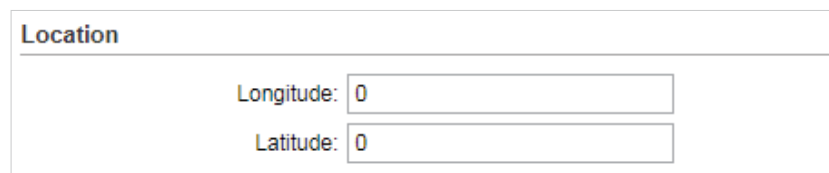
---

2. Click **Save**.

## 7.2 Configure Location Information

In this section, configure the location for the device.

1. Go to the **System** page. In the **Location** section, configure the following parameters and click **Apply**.



The screenshot shows a configuration form titled "Location". It contains two fields: "Longitude" with the value "0" and "Latitude" with the value "0".

---

Longitude	Enter the longitude of the device's location in decimal degree. The positive number indicates the east longitude while the negative number indicates the west longitude.
Latitude	Enter the latitude of the device's location in decimal degree. The positive number indicates the north latitude while the negative number indicates the south latitude.

---

2. Click **Save**.

## 7.3 Configure User Account

This section is used to configure user account.

1. Go to the **System** page. In the **User Account** section, configure the following parameters and click *Apply*.

**User Account**

---

Current User Name:

Current Password:   Show

New User Name:

New Password:   Show

Confirm New Password:

Current User Name	Displays the current user name.
Current Password	Enter the current password for the user account. Check the <i>Show</i> box to display what you've entered.
New User Name	Enter a new user name for the user account.
New Password	Enter a new password for the user account. Check the <i>Show</i> box to display what you've entered.
Confirm New Password	Confirm the new password.

2. Click *Save*.

## 7.4 Configure Time Settings

In this section, configure the system time and the daylight saving time.

1. Go to the **System** page. In the **Time Settings** section, configure the system time.

**Time Setting**

---

Time Zone:  ▼

Date:

Time:  ▼

NTP Server 1:

NTP Server 2:

Daylight Saving Time:

## ■ Manually

Configure the System time manually.

Time Zone	Select your local time zone.
Date	Click the calendar button to choose the date or enter the date in the format: YYYY/MM/DD.
Time	Select the time from the drop-down list or enter the time in the format HH:MM:SS.

## ■ Automatically

- Specify the NTP Server, then click the *Get GMT* button to get the system time from the NTP server

NTP Server 1	Specify the primary NTP server used to get time automatically.
NTP Server 2	Specify the alternate NTP server used to get time automatically.

- Click *Synchronize with PC's Clock* to synchronize the system time with the PC's time.

2. Click the *Setting* button to specify the daylight saving time.

Daylight Saving Time

DST Status:  Enable

Predefined Mode

USA  European  Australia  New Zealand

Recurring Mode

Time Offset: 60 minutes

Start Time: Last in March at 01 : 00

End Time: Last in October at 01 : 00

Date Mode

Time Offset: 60 minutes

Start Time: 2000 - March - 1 at 01 : 00

End Time: 2000 - October - 1 at 01 : 00

Apply

## ■ Predefined Mode

Select Predefined Mode and select the predefined daylight saving time schedule for the device.

USA	The daylight saving time of USA is from Second Sunday in March, 02:00 to First Sunday in November, 02:00.
European	The daylight saving time of European is from Last Sunday in March, 01:00 to Last Sunday in October, 01:00.



Australia	The daylight saving time of Australia is from First Sunday in October, 02:00 to First Sunday in April, 03:00.
New Zealand	The daylight saving time of New Zealand is from Last Sunday in September, 02:00 to First Sunday in April, 03:00.

### ■ Recurring Mode

Select Recurring Mode and configure the related parameters for the device. This configuration will be used every year.

Offset	Specify the time to set the clock forward by.
Start Time	Specify the start time of Daylight Saving Time.
End Time	Specify the end time of Daylight Saving Time.

### ■ Date Mode



#### Note:

Date Mode is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface.

Select Date Mode and configure the related parameters for the device. This configuration will be used only one time.

Offset	Specify the time to set the clock forward by.
Start Time	Specify the start time of Daylight Saving Time.
End Time	Specify the end time of Daylight Saving Time.

3. Click *Apply*, then click *Save*.

## 7.5 Update Firmware

This section is used to view the current firmware and update the firmware of the device.

Go to the **System** page. In the **Firmware Update** section, click *Browser* to select a firmware file then click *Upload*.

**Firmware Update**

---

Firmware Version: 2.1.6 Build 20170908 Rel. 45233 (0000)

Upload Firmware:

Firmware  
Version

Displays the current firmware version of the device.



**Note:**

- We recommend that you back up current system configuration before updating the firmware.
- Select the proper software version that matches your hardware to upgrade. Visit TP-Link website to download the latest firmware.
- To avoid damage, do not power off the device while upgrading.
- After upgrading, the device will reboot automatically.

## 7.6 Configure Other Settings

This section is used to back up or upload the configuration file, reset the device and reboot the device.

Go to the System Page. In the Configuration section, perform the following operations.

Configuration	
Backup Configuration:	<input type="button" value="Backup"/>
Upload Configuration:	<input type="text"/> <input type="button" value="Browse"/> <input type="button" value="Upload"/>
Reset to Factory Defaults:	<input type="button" value="Reset"/>
Reboot Device:	<input type="button" value="Reboot"/>

Backup  
Configuration

Click *Backup* to back up the current configuration to your PC.

Upload  
Configuration

Click *Browser* to select the desired configuration file in your PC. Then click *Upload* to upload the configuration file to your device. We recommend that you back up your current system configuration before uploading the new configuration.

Reset to  
Factory  
Defaults

Click *Reset* to restore the device to its factory defaults. It's recommended to back up your current system configuration before restoring the device to its defaults.

Reboot Device

Click *Reboot* to reboot the device. Note that any changes that have not been saved will be lost.



**Note:**

- After backup, the device will reboot automatically.
- To avoid damage, DO NOT turn off the device while uploading.

# 8

## **Use the System Tools**

This chapter introduces how to configure the system tools:

*8.1 Configure Ping*

*8.2 Configure Traceroute*

*8.3 Test Speed*

*8.4 Survey*

*8.5 Analyze Spectrum*

*8.6 Antenna Alignment*

## 8.1 Configure Ping

Ping test function is used to test the connectivity and reachability between the device and the target host so as to locate the network malfunctions.

1. Click *Ping* from the drop-down list on the upper-right corner and specify the following parameters.

The screenshot shows a 'Ping' configuration window. At the top, there are four input fields: 'Destination IP/Domain' (empty), 'Packet Count' (4, with a range of 1-50), 'Ping Timeout' (800, with a range of 100-2000 milliseconds), and 'Packet Size' (64, with a range of 4-1472 bytes). Below these fields is a 'Ping Results' section. It has a sub-header 'Ping Results' and an 'Enable' checkbox. The main area of the 'Ping Results' section is a large empty text box. At the bottom right of the window is a 'Start' button.

---

### Destination IP/ Domain

Enter the IP address of the destination node for Ping test. The device will send Ping packets to test the network connectivity and reachability of the host and the results will be displayed in the Ping Result.

---

### Packet Count

Enter the number of packets to be sent during the testing. It can be 1 to 50 and the default is 4.

---

### Ping Timeout

Enter a time value to wait for a response. If the device doesn't receive any response during the timeout time, the connection will be considered to be failed. It can be 100-2000 milliseconds. The default value is 800 milliseconds.

---

### Packet Size

Enter the number of data bytes to be sent. It can be 4-1472 bytes and the default is 64.

---

2. Click *Start*.

## 8.2 Configure Traceroute

Traceroute function is used to track the route packets taken from source on their way to a given target host. When malfunctions occur in the network, troubleshoot with traceroute utility.

1. Click *Traceroute* from the drop-down list on the upper-right corner and specify the following parameters.

The screenshot shows a 'Traceroute' configuration window. At the top, there are two input fields: 'Destination IP/Domain:' and 'Traceroute MAX TTL:'. The 'Traceroute MAX TTL' field contains the number '5' and '(1-30)' to its right. Below these fields is a large text area with a dropdown menu. The dropdown menu is open, showing 'Enable' and '--'. A 'Start' button is located at the bottom right of the window.

---

**Destination IP/  
Domain**

Enter the IP address of the destination node for Traceroute test. The device will send Traceroute packets to test the network connectivity and reachability of the host and the results will be displayed in the Traceroute.

---

**Traceroute Max  
TTL**

Specify the traceroute max TTL (Time To Live) during the traceroute process. It is the maximum number of the route hops the test packets can pass through.

---

2. Click *Start*.

## 8.3 Test Speed

Speed Test tool is used for testing the throughput between two Pharos products in the same network. The test requires one of the two devices to be set as a server and the other as a client. The client launches the test request to the server and the server respond to it. The test result will display on the page of the client.

1. Click *Speed Test* from the drop-down list on the upper-right corner and specify the following parameters.

Speed Test

RX: TX: Total:

Client  Server

Server IP:

Direction: unidirectional (RX) ▼

Testing:

Start

Speed Test	Displays the data streams that the device is transmitting (TX), receiving (RX) and both of them (Total).
Server	Select Server and the device will passively accept the test request from the clients in the speed test process.
Client	Select Client and the device will launch the test request to the server in speed test process.
Server IP	Specify the server IP for speed test.
Direction	Select the direction of the speed test including unidirectional (RX), unidirectional (TX) and bidirectional.
Testing	Displays the process of the test.

2. Click *Start*.

## 8.4 Survey

The survey tool is used to survey the wireless network around the device.

Click Survey from the drop-down list on the upper-right corner and the following page will appear.

Survey									
Index	BSSID	SSID	MAXtream	Device Name	SNR(dB)	Signal / Noise(dBm)	Channel	Security	
1	50-C7-BF-04-BF-26	TP-LINK_BF28_5G	No		38	-63/-101	5805 (161)	WPA2-PSK	▲
2	60-E3-27-D0-E2-2A	jjj5	No		34	-61/-95	5220 (44)	WPA2-PSK	
3	50-C7-BF-08-5D-86	TP-LINK_Cui5	No		38	-57/-95	5220 (44)	WPA2-PSK	
4	18-A6-F7-F3-47-1A	TP-LINK_Cui5re	No		41	-54/-95	5220 (44)	WPA-PSK/WPA2-PSK	
5	18-A6-F7-20-02-E1	EAP225 5g	No		38	-61/-99	5765 (153)	WPA2-PSK	
6	18-A6-F7-F3-71-BA	hubiao2.5	No		33	-62/-95	5180 (36)	WPA-PSK/WPA2-PSK	
7	EC-08-6B-00-F4-3A	TP-LINK_F43A	No		20	-75/-95	5180 (36)	WPA-PSK/WPA2-PSK	
8	50-C7-BF-01-88-1F	7200_5G	No		45	-50/-95	5180 (36)	WPA-PSK/WPA2-PSK	
9	C4-E9-84-ED-08-C3	ap3200_5G_1	No		28	-67/-95	5180 (36)	WPA2-PSK	
10	18-A6-F7-2D-CA-77	EAP_TEST	No		35	-60/-95	5180 (36)	WPA2-PSK	
11	50-C7-BF-01-0B-FA	C9test-5	No		34	-61/-95	5180 (36)	WPA-PSK/WPA2-PSK	
12	50-C7-BF-06-A8-BD	TP-LINK_A8BE_5G	No		38	-57/-95	5200 (40)	WPA-PSK/WPA2-PSK	
13	18-A6-F7-F3-4D-42	jjj5re	No		36	-59/-95	5220 (44)	WPA-PSK/WPA2-PSK	
14	F4-F2-6D-EF-69-53	ARC2_5G	No		30	-65/-95	5220 (44)	WPA2-PSK	
15	50-C7-BF-0B-BE-01	eap_fuck000_5G	No		29	-66/-95	5240 (48)	WPA2-PSK	
16	F4-F2-6D-D2-8F-7D	TP-LINK_8F7C_5G	No		29	-66/-95	5240 (48)	WPA-PSK/WPA2-PSK	
17	F4-F2-6D-B6-AC-5D	TP-LINK_AC5E_5G	No		45	-53/-98	5745 (149)	WPA-PSK/WPA2-PSK	
18	D0-EE-07-1C-89-54	autoss	No		7	-91/-98	5745 (149)	WPA-PSK/WPA2-PSK	
19	00-0A-EB-13-7A-FE	TP-LINK_7AFE_5G	No		44	-42/-86	5765 (153)	WPA-PSK/WPA2-PSK	
20	90-F6-52-C3-B0-B8	TestingRoom	No		32	-67/-99	5765 (153)	WPA-PSK/WPA2-PSK	
21	EC-08-6B-9F-BD-2A	Smart Home5G	No		47	-52/-99	5765 (153)	WPA-PSK/WPA2-PSK	
22	F6-F2-6D-2F-A3-24	onhub	No		42	-57/-99	5765 (153)	WPA2-PSK	▼

AP Count: 26 Refresh

- BSSID**                      Displays the BSSID of other APs surveyed by this device.

---

- SSID**                         Displays the SSID of other APs surveyed by this device.

---

- MAXtream**                 Displays the MAXtream capability of other APs surveyed by this device.

---

- Device Name**             Displays the names of other APs surveyed by this device.

---

- SNR(dB)**                  Displays the Signal Noise Ratio (Unit: dB) of other APs surveyed by this device.

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- Signal/Noise (dBm)**     Displays the signal and noise value (Unit: dBm) of other APs surveyed by this device.

---

- Channel**                    Displays the channels of other APs surveyed by this device.

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- Security**                    Displays the security mode of APs surveyed by this device.

---

- AP Count**                 Displays the number of other APs surveyed by this device.

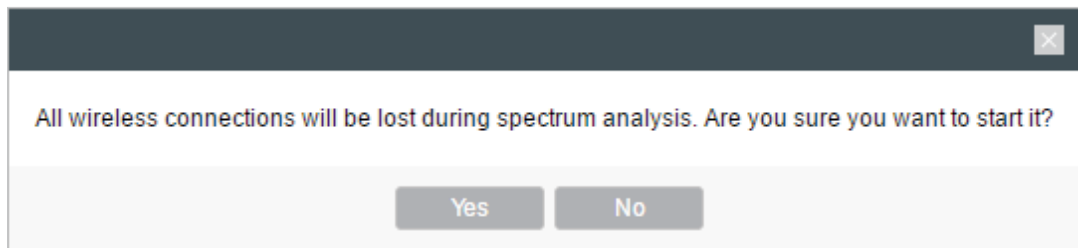
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- Refresh**                    Click *Refresh* to refresh this page.

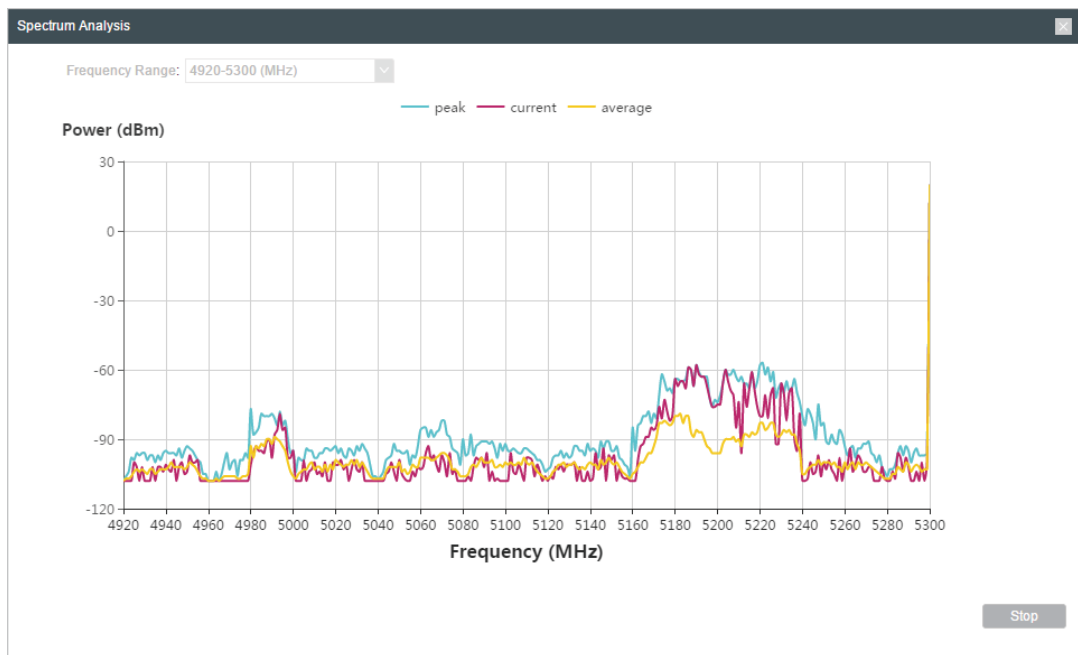
## 8.5 Analyze Spectrum

Spectrum Analysis can help you choose the proper channel/frequency. Through the spectrum analysis, learn the distribution of the radio noise and intelligently select the channel/frequency in low noise.

1. Click *Spectrum Analysis* from the drop-down list on the upper-right corner and click Yes on the pop-up window.



2. Click *Start*. Observe the curves for a period of time, and then click *Stop*. The relatively low and continuous part of the average curve indicates less radio noise. Here we take the figure below as an example.



### Note:

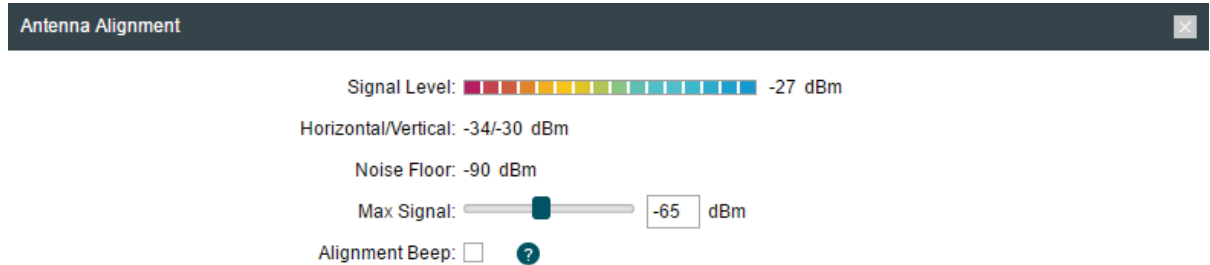
The select box of Frequency Range is only available on certain devices. To check whether your device supports this feature, refer to the actual web interface. Select the required range and then click *Start*.

3. When choosing Channel/Frequency, try to avoid the spectrum with large radio noise.




## 8.6 Antenna Alignment

Antenna alignment can help you to optimize the antenna. Click *Antenna Alignment* from the drop-down list on the upper-right corner. Adjust your antenna according to the following parameters. Point the antenna in the direction of maximum signal and minimum noise.



Signal Level	Displays the signal strength of the last received packet. The signal strength is the combined value of the two chains.
Horizontal/Vertical	Displays the signal strength of the last received packet. The signal strength of the two chains is displayed separately.
Noise Floor	Displays the noise strength of the wireless network.
Max Signal	Specify the maximum value of the Signal Level indicator. Adjust the sensitivity of the Signal Level indicator by changing this value.
Alignment Beep	Enable the beep sound during the device antenna alignment. This function can help users to align the antenna easily without looking at the management interface. When received signal levels reach the defined levels, the different beep sound will be played. The lower the sound frequency, the stronger the signal strength.

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