AP699E8.1U10-4

AP Router User manual

Ver: 1.0

Contents

Chapter 1 Introduction

The AP699E8.1U10-4, a Wireless Area Network(WLAN) Access Point supporting 802.11 b/g/n, bringing high-speed wireless Internet connection to a home or office, can provide the transmission of broadband data service. It is suitable for using in a wide range of both residential (in-home) and commercial (offices, apartments, hotels, warehouses) network applications. It gives you a blazing fast connection to the internet, far fast and more convenient. The AP699E8.1U10-4 Access Point is a high-performance wireless gateway and can support downstream up to 300Mbps and upstream up to 300Mbps.

AP699E8.1U10-4 has a megabit wide area network(WAN) port connecting external internet network. Using 802.11 b/g/n wireless technology, Wi-Fi enabled computers and devices can wirelessly connect to the AP699E8.1U10-4 and share a single incoming Internet connection. With four additional local Ethernet LAN ports, you can connect four different PCs sharing Internet connection.

A Web-based user interface allows you to easily modify settings to connect to your Internet Service Provider (ISP). This Web interface also provides traffic statistics, connection speed, and other detailed information.

The AP699E8.1U10-4 supports DHCP client, DHCP server, as well as NAT/NAPT functions. As a DHCP client, AP699E8.1U10-4 can dynamicly acquire external internet IP address. As a DHCP client, AP699E8.1U10-4 can dynamicly alloc local IP addresses to the associated wireless stations and wired LAN port PCs. NAT/NAPT implements local IP address and external IP address conversion.

The AP699E8.1U10-4 supports static IP, Dynamic IP, as well as PPPoE connections, and works with applications such as online gaming and VPN transparent connections with no additional configuration.

The AP699E8.1U10-4 is easily upgradeable, making it future-proof for both end-users and service providers. Whether it's for a home user who wants to share wireless high-speed Internet access or for a small office that needs Internet access for conducting essential business activities, the AP699E8.1U10-4 is the ideal wireless broadband solution.

Product Outline

Product topology
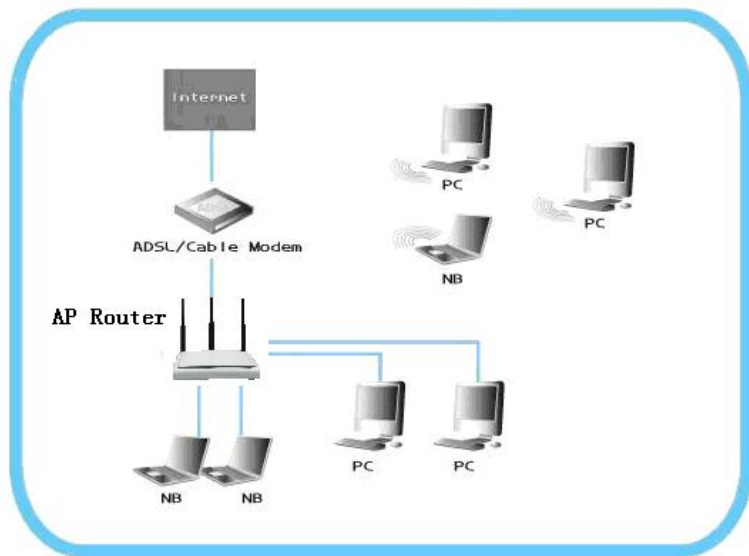
Applications

- Home and SOHO wireless gateway
- The small enterprise Applications
- TV over IP (IPTV)
- Voice over IP (VoIP)
- Higher data rate broadband sharing
- Shared broadband internet access
- Audio and video streaming and transfer
- PC file and application sharing
- Network and online gaming

Compliance Certificates

- Wi-Fi Certification
- FCC Class B
- CE Mark

Feature

- IEEE802.11 compatible b/g/n draft 2.0 access ponit
- Antenna configurations: 2T3R Modes
- Support 64/128-bit WEP, 802.1x, WPA, and WPA2 for wireless security
- Support 802.11e wireless multimedia Qos
- Support 802.11f inter AP handover
- Support mutiple SSID
- SSID hide
- Support VLAN
- MAC address access control list
- MAC addresses self-learning
- Support transparent bridging
- VPN Pass Through on L2TP, PPTP, IPSec
- DHCP Server and Client
- Support static IP routing
- Support NAT、NAPT
- Support DMZ
- Support IP QoS

- telnet, HTTP Web Management, TFTP for Firmware Upgrade
- wireless signal rates: 54, 48, 36, 24, 18, 12, 9, 6 Mb/s for 802.11g; 11, 5.5, 2, 1 Mb/s for 802.11b; 11n (20MHz): MCS0-15 with Short Guard Interval Support (up to 144Mbps)11n (40MHz): MCS0-15 with Short Guard Interval Support (up to 300Mbps).
- UDP throughput: up to 128Mbps
- Support UpnP
- 100M   wide area network(WAN)   port x1

   10M/100M local area network(LAN) port x4
- Support RTS/CTS, Fragmentation and Defragmentation function
- Support   WMM , WMM-PS
- Block Ack
- Reverse Direction Data Flow
- Link Adaptation
- Roaming
- Seamlessly roam and handover within mesh network
- Adaptive mesh network routing establish and update
- Wireless Frequency Range, 2.4 ~ 2.4835GHz ISM   Band,
- Radio and Modulation Type. IEEE 802.11b: DQPSK, DBPSK, DSSS, and CCK ; IEEE 802.11 g: BPSK, QPSK, 16QAM, 64QAM ; IEEE 802.11n: MCS0~MCS15;
- Transimission distance. 300 meters Outdoors, 100 meters Indoors coverage area(It's limited in an environment.)
- Antenna   5dBi
- Transimission power. 802.11b: Typ. 18 dBm @Normal Temp Range; 802.11g: Typ. 15 dBm @ Normal Temp Range ; 802.11n: Typ. 15 dBm @ Normal Temp Range

External Connectors

- 4   10/100M   local Ethernet Ports (RJ-45)
- 1   100M   WAN port

Security Support

- Three level login including local admin, local user and remote technical support access
- Service access control based on incoming interface: WAN or LAN
- Service access control based on source IP addresses
- Protect DOS attacks from WAN/LAN: SYN flooding, IP surfing, ping of Death, fragile, - UDP ECHO (port 7), teardrop, land.
- PAP (RFC1334), CHAP (RFC1994), MSCHAP for PPP session.
- IP filter, Parental control.

Environment

- Operating temperature: 0℃ to 40℃
- Storage temperature: -20℃ to 70℃
- Operating Humidity: 10%~95% no freezing
- Storage humidity: 5%~95% no freezing

Chapter 2   Hardware Installation

This chapter contains the information you need to install and set up the Wireless 2880AP. It covers the following topics:
- Decide where to place the AP
- Connecting the Access Point
- Checking the LED indicators
- Attaching an External Antenna

Decide where to place the AP

Place the AP in a dry, clean location near the hub, switch, computer or printer that will be connected to the AP. The location must have a power source and be within the following distance of a Wi-Fi compliant wireless LAN access point or wireless access point.

The key to maximizing the wireless range is to follow these basic guidelines:

- Keep your product away (at least 3-6 feet or 1-2 meters) from electrical devices or appliances that generate RF noise. The location should be away from transformers, heavy-duty motors, fluorescent lights, microwave ovens, refrigerators.
- Keep the number of walls and ceilings between the AP and other network devices to a minimum – each wall or ceiling can reduce your AP's range from 3-90 feet (1-30 meters.) Position your devices so that the number of walls or ceilings is minimized.
- Be a ware of the direct line between network devices. A wall that is 1.5 feet thick (0.5 meters), at a 45-degree angle appears to be almost 3 feet (1 meter) thick. At a 2-degree angle it looks over 42 feet (14 meters) thick! Position devices so that the signal will travel straight through a wall or ceiling (instead of at an angle) for better reception.
- Building materials can impede the wireless signal – a solid metal door or aluminum studs may have a negative effect on range. Try to position wireless devices and computers with wireless adapters so that the signal passes through drywall or open doorways and not other materials.

Checking the LED Indicators

When the AP is connected to power, LEDs indicate activity as follows:
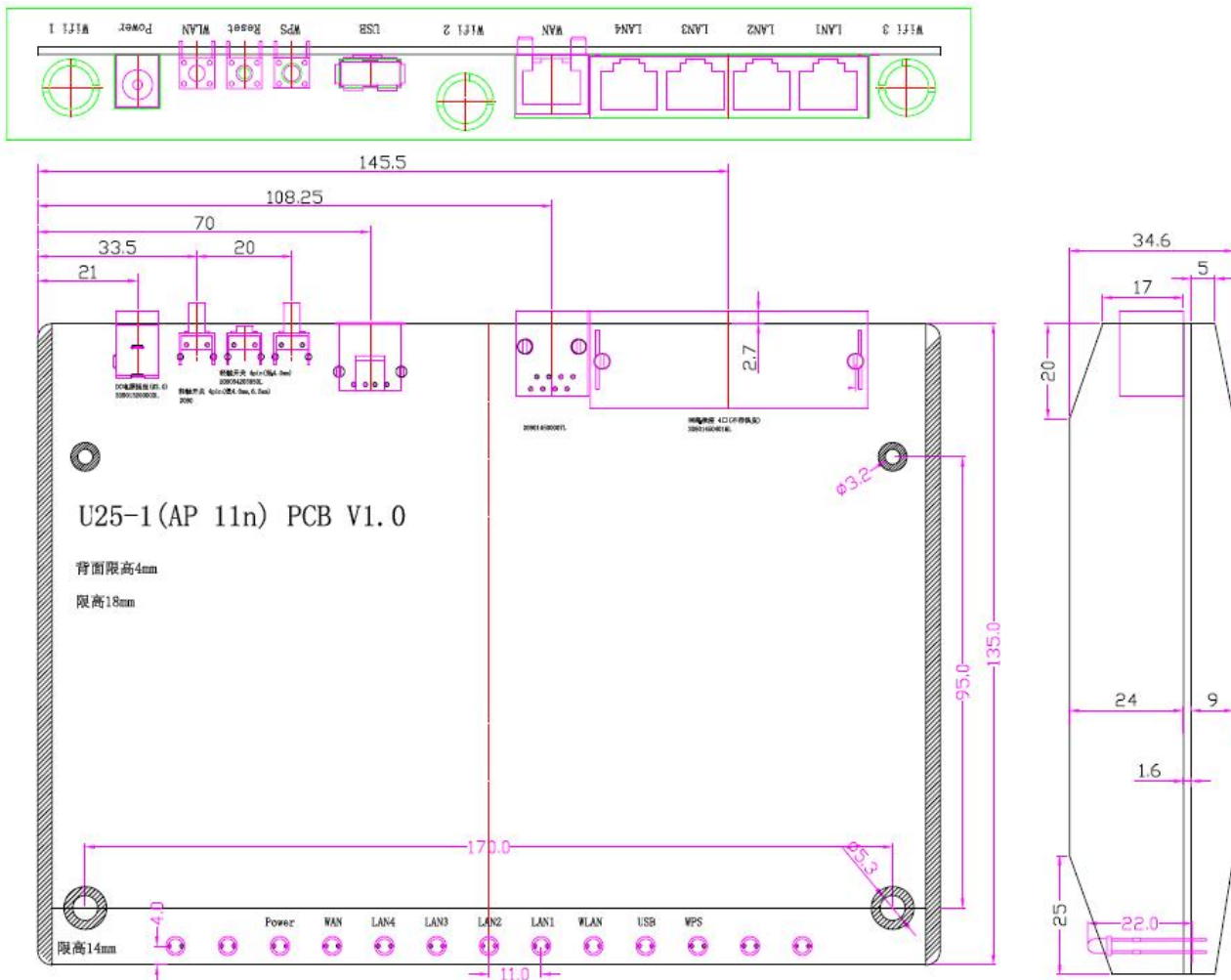
LED	Color	Activity
Power	Green	On: Power On Off:Power Off
WLAN	Green	On: WLAN On

		Blinking: sending/receiving data from wireless LAN Off: Transmitter is off
LAN	Green	On: Good Link Blink ing: sending/receiving data from LAN Port Off: No link
WPS	Green	On:WPS Start' Off:WPS Close
Security	Green	On:Security Start Off:Security Close

Attaching an External Antenna

This AP comes with an antenna. It is external removable monopole signal-band 2.4 GHz antenna. It can be rotated over 90 degrees and is omni-directional with a gain of less than 2 dBi. You can change a 5dBi high gain antenna for creates a superior far-reaching wireless network

Charpter 3　　CONFIGURING THE WIRELESS AP

If the default AP configuration does not meet your network requirements, or if you want to customize the settings for your own network, you can directly connect to the device through it's Ethernet port or wireless to change the configuration. There are two typical applications:
1. Networks with a DHCP Server
If your network has a DHCP server, an IP address is automatic ally assigned to the AP. It takes between one and two minutes for the Access Point to determine if there is a DHCP server on the network. After you determine the AP's IP address, you can enter that IP address into a web browser on a computer on the same subnet to view the Access Point's system status or change its configuration
2. Networks without a DHCP Server
If your network does not have a DHCP server, the Access Point uses a factory assigned IP address (10.10.10.254). You can use that IP address to configure the Access Point, or you can assign a new IP address to the Access Point.
To verify that the Access Point is using the default IP address assigned at the factory: Connect a computer directly to the Access Point using the supplied standard Category 5 UTP Ethernet cable. Enter the Access Point's default IP address (10.10.10.254) into the computer's web browser. If the Configuration Management System starts, the Access Point is using the factory assigned IP address. You can configure the Access Point with the Web interface:
Username, type admin (case sensitive)
Password, type admin
Click ok.
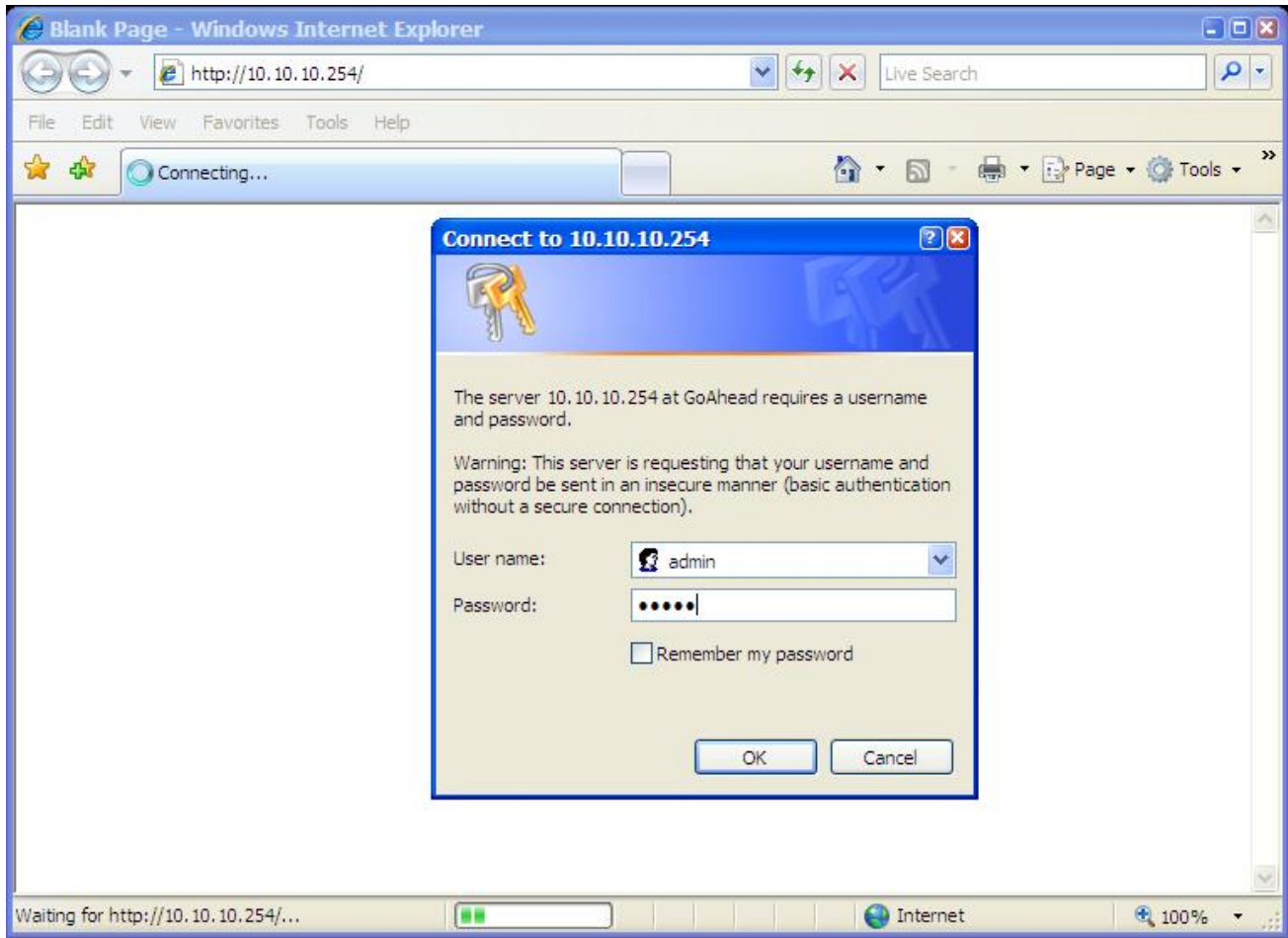
In the following, you will learn how to configure the basic functionsof your wireless AP.

Language Configuration

The 2880AP support multi-language.After login on the web UI ,You can click open all to choose the Language English or Traditional Chinese from the drop list.And you can choose Status and Statics to view information about the AP.
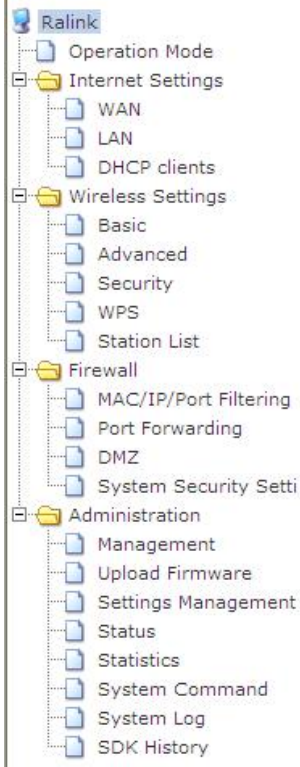
Operation Mode

You may configure the operation mode suitable for you environment.If you select Bridge mode,all ethernet and wireless interfaces are bridged into a single bridge interface.If you select Gateway mode, The first ethernet port is treated as WAN port. The other ethernet ports and the wireless interface are bridged together and are treated as LAN ports.And here, you can set whether NAT enabled.

Click Cancel to close without saving, click Apply to save the settings.

Internet Settings

WAN

You may choose different connection type suitable for your environment. Besides, you may also configure parameters according to the selected connection type.

Click Cancel to close without saving, click Apply to save the settings.

LAN

You may enable/disable networking functions and configure their parameters as your wish.

Click Cancel to close without saving, click Apply to save the settings.

DHCP Client

You could monitor DHCP clients here

Wireless Settings

Basic Wireless Settings

You could configure the minimum number of Wireless settings for communication, such as Network Name (SSID) and Channel. The Access Point can be set simply with only the minimum setting items.

Network Mode
The 2880AP supports 11a, 11b, 11g, 11a/n mixed mode, 11b/11g mixed mode, 11b/g/n mixed mode.You can configure the suitable network mode.
SSID
Service Set Identifier. This is the assigned name for a wireless Wi-Fi network. Stations must use this unique identifier to communicate with an Access Point. The SSID can be any alphanumeric entry up to a maximum of 32 characters.
MSSID

The Wireless AP supports Multiple SSID which allows it to act as multiple AP appearing in a Wireless LAN network. You can configure up to 7 SSID on the device.

BSSID

Basic Service Set Identifier. This is the assigned MAC address of the station in the access point. This unique identifier is in Hex format and can only be edited when Multi BSSID is enabled in the previous screen.

SSID Broadcast

If you want to disable the broadcast of your SSID, you should check the Disable box. It also calls Hide SSID.

Channel / Frequency

Select the channel for your wireless LAN in Channel/Frequency block. The default setting is Smart Select it selects the channel which provides the best transmission quality. The frequencies available vary depending which wireless mode you select.

Wireless Distribution System(WDS)	
WDS Mode	Repeater Mode
Phy Mode	CCK
EncrypType	NONE
AP MAC Address	00:0C:43:28:60:E8
AP MAC Addres	
AP MAC Address	
AP MAC Address	

WDS Link Settings

WDS (Wireless Distribution System) allows access points to communicate with one another wirelessly in a standardized way. It can also simplify the network infrastructure by reducing the amount of cabling required. Basically the access points will act as a client and an access point at the same time.

WDS is incompatible with WPA. Both features cannot be used at the same time. A WDS link is bi-directional, so the AP must know the MAC address of the other AP, and the other AP must have aWDS link back to the AP.

Dynamically assigned and rotated encryption key are not supported in a WDS connection. This means that WPA and other dynamic key assignment technologies may not be used. Only Static WEP keys may be used in a WDS connection, including any STAs that are associated with a WDS repeating AP.

Enter the MAC address of the other APs you want to link to and click enable.

Supports up to 8 point to multipoint WDS links, check Enable WDS and then enable on the MAC addresses.

Example of a WDS topology:

AP1 <-- WDS --> Master AP (our AP) <-- WDS --> AP3<-- WDS --> AP4

HT Physical Mode	
Operating Mode	⦿ Mixed Mode ○ Green Field
Channel BandWidth	○ 20 ⦿ 20/40
Guard Interval	○ Long ⦿ Auto
MCS	Auto ▾
Reverse Direction Grant(RDG)	○ Disable ⦿ Enable
Extension Channel	2457MHz (Channel 10) ▾
Aggregation MSDU(A-MSDU)	⦿ Disable ○ Enable
Auto Block ACK	○ Disable ⦿ Enable
Decline BA Request	⦿ Disable ○ Enable
Other	
HT TxStream	2 ▾
HT RxStream	2 ▾

[Apply]   [Cancel]

HT Physical Mode
Click Cancel to clear the settings, click Apply to save the settings.

Advaced Wireless Settings

Use the Advanced Setup page to make detailed settings for the Wireless. Advanced Setup includes items that are not available from the Basic Setup page, such as Beacon Interval, Control Tx Rates and Basic Data Rates.

Basic Data Rate
Choose between the following data rates 1, 2, 5.5, 11, 6, 9 , 12, 18, 24, 36, 48,54 and auto. Default is auto.
Beacon Interval
The interval time between 20ms and 500ms for each beacon transmission. The default is 100ms.
Data Beacon Rate (DTIM)
The Delivery Traffic Indication Message. Specify the data beacon rate between 1 and 255. Default is 1.
Fragment Length
The maximum packet size is used for fragmentation. Packets larger than the size programmed in this field will be fragmented. The Fragment Threshold value must be larger than the RTS Threshold value. The default is 2346.
RTS Threshold
Request to send threshold. The packet size that is used to determine if it should use the CSMA/CA mechanism or the CSMA/CD mechanism
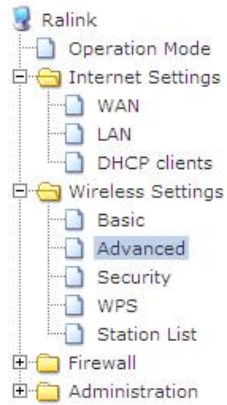
Advanced Wireless Settings

Use the Advanced Setup page to make detailed settings for the Wireless. Advanced Setup includes items that are not available from the Basic Setup page, such as Beacon Interval, Control Tx Rates and Basic Data Rates.

- Ralink
  - Operation Mode
  - Internet Settings
    - WAN
    - LAN
    - DHCP clients
  - Wireless Settings
    - Basic
    - Advanced
    - Security
    - WPS
    - Station List
  - Firewall
  - Administration

Advanced Wireless

BG Protection Mode	Auto
Basic Data Rates	Default(1-2-5.5-11 Mbps)
Beacon Interval	100 ms (range 20 - 999, default 100)
Data Beacon Rate (DTIM)	1 ms (range 1 - 255, default 1)
Fragment Threshold	2346 (range 256 - 2346, default 2346)
RTS Threshold	2347 (range 1 - 2347, default 2347)
TX Power	100 (range 1 - 100, default 100)
Short Preamble	○ Enable ⊙ Disable
Short Slot	⊙ Enable ○ Disable
Tx Burst	⊙ Enable ○ Disable
Pkt_Aggregate	⊙ Enable ○ Disable
IEEE 802.11H Support	○ Enable ⊙ Disable(only in A band)
Country Code	None

Wi-Fi Multimedia

WMM Capable	⊙ Enable ○ Disable
APSD Capable	○ Enable ⊙ Disable
WMM Parameters	WMM Configuration

Apply   Cancel

Click Cancel to close without saving, click Apply to save the settings.

Security

- Ralink
  - Operation Mode
  - Internet Settings
    - WAN
    - LAN
    - DHCP clients
  - Wireless Settings
    - Basic
    - Advanced
    - Security
    - WPS
    - Station List
  - Firewall
  - Administration
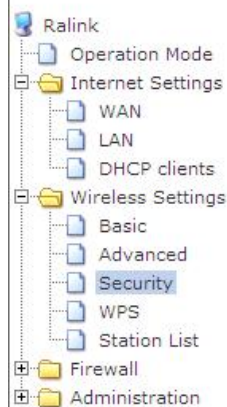
Select SSID

SSID choice	WQJ_AP

Security Policy -- "WQJ_AP"

Security Mode	Disable

Disable
OPEN
SHARED
WEPAUTO
WPA
WPA-PSK
WPA2
WPA2-PSK
WPAPSKWPA2PSK
WPA1WPA2
802.1X

Access Policy

Capable	
New:	

Apply

For example, when you select Security mode, you should config the Radius Sever inforamtion.

15

Click Cancel to close without saving, click Apply to save the settings.

WPS

You could setup security easily by choosing PIN or PBC method to do Wi-Fi Protected Setup.

Click Apply to save the settings.
If you enable WPS, you can view WPS status.

Station list

Through this page, you can easily identify the adjacent wireless stations. It will automatically observe the adjacent wireless station's ID (if specified), MAC address, SSID and current status.
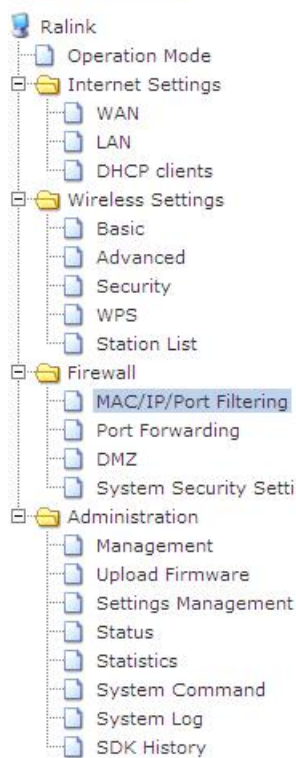

Firewall

This section mainly introduce some ways to proctect youself through the following configuration.

MAC/IP/Port Filtering

You may setup firewall rules to protect your network from virus,worm and malicious activity on the Internet.

open all | close all

Ralink
- Operation Mode
- Internet Settings
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  - LAN
  - DHCP clients
- Wireless Settings
  - Basic
  - Advanced
  - Security
  - WPS
  - Station List
- Firewall
  - MAC/IP/Port Filtering
  - Port Forwarding
  - DMZ
  - System Security Setti
- Administration
  - Management
  - Upload Firmware
  - Settings Management
  - Status
  - Statistics
  - System Command
  - System Log
  - SDK History

Basic Settings

MAC/IP/Port Filtering	Enable
Default Policy -- The packet that don't match with any rules would be:	Dropped.

Apply   Reset

MAC/IP/Port Filter Settings

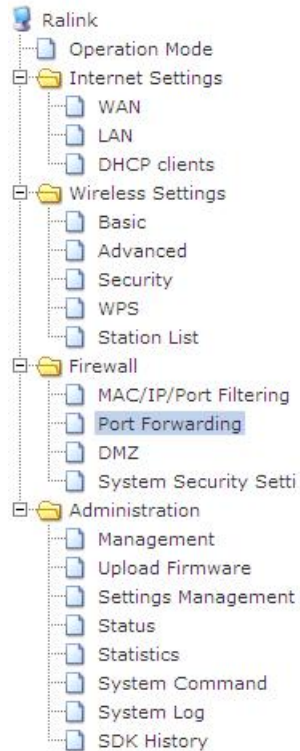| MAC address	00:0C:43:28:60:64
Dest IP Address	10.10.10.100
Source IP Address	10.10.10.254
Protocol	TCP
Dest Port Range	1 - 100
Source Port Range	1 - 1024
Action	Accept
Comment	Usb Dongle Mac Add

Apply   Reset

Current MAC/IP/Port filtering rules in system:

No.	MAC address	Dest IP Address	Source IP Address	Protocol	Dest Port Range	Source Port Range	Action	Comment	Pkt Cnt
1	00:0C:43:28:60:64	10.10.10.100	10.10.10.254	TCP	1 - 1024	1 - 1024	Accept	Usb Dongle Mac	
			Others would be dropped						-

Delete Selected   Reset

Select MAC/IP/Port Filtering Enable, click Apply, then you start this function.you may define some rules for the MAC/IP/Port Filtering Settings and apply.It is also very convenient for you to delete these Settings.

Port Forwarding

This page enables you setup Virtual Servers to provide services on Internet.

Virtual Server Settings

You may setup Virtual Servers to provide services on Internet.

Ralink
- Operation Mode
- Internet Settings
  - WAN
  - LAN
  - DHCP clients
- Wireless Settings
  - Basic
  - Advanced
  - Security
  - WPS
  - Station List
- Firewall
  - MAC/IP/Port Filtering
  - Port Forwarding
  - DMZ
  - System Security Setti
- Administration
  - Management
  - Upload Firmware
  - Settings Management
  - Status
  - Statistics
  - System Command
  - System Log
  - SDK History

Virtual Server Settings	
Virtual Server Settings	Enable
IP Address	202.113.16.6
Port Range	1 - 100
Protocol	TCP&UDP
Comment	Virtual Server

[Apply] [Reset]

Current Virtual Servers in system:				
No.	IP Address	Port Range	Protocol	Comment
1 ☐	202.113.16.6	1 - 100	TCP + UDP	Virtual Server

[Delete Selected] [Reset]

Select Virtual Server Settings Enable form drop list, set the IP Address, Port Range, Protocol and comment, click Apple to save the settings, click Reset to clear the data you input and you can easily delete these rules from the Current Virtual Servers list.

DMZ

This page enables you to setup a De-militarized Zone(DMZ) to separate internal network and Internet.
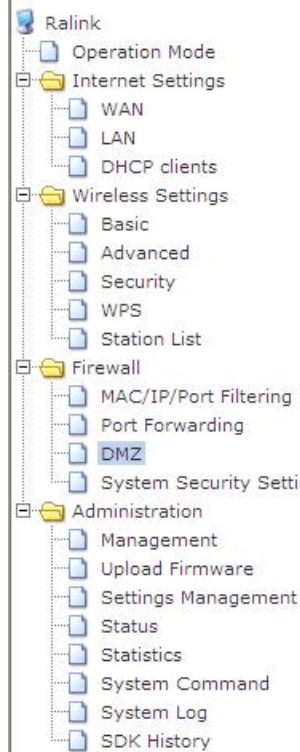
DMZ Settings

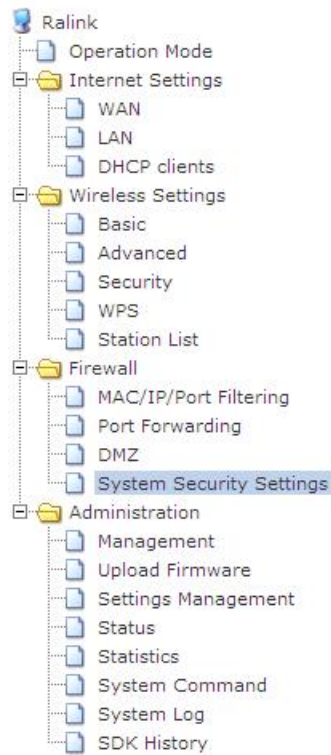You may setup a De-militarized Zone(DMZ) to separate internal network and Internet.

Ralink
- Operation Mode
- Internet Settings
  - WAN
  - LAN
  - DHCP clients
- Wireless Settings
  - Basic
  - Advanced
  - Security
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  - System Security Setti
- Administration
  - Management
  - Upload Firmware
  - Settings Management
  - Status
  - Statistics
  - System Command
  - System Log
  - SDK History

DMZ Settings	
DMZ Settings	Enable
DMZ IP Address	

[Apply] [Reset]

System Security Settings

This page enables you to configure the system firewall to protect AP/Router itself from attacking.

Select Allow from drop down list, click Apply to save the setting , click Reset to select Deny.

Administration

Management

You may configure administrator account and password, NTP settings, and Dynamic DNS settings here.

Click Cancel to cancel the settings, click Apply to save the settings.

Upgrade Firmware

Upgrade the RT2880 firmware to obtain new functionality. It takes about 1 minute to upload upgrade flash and be patient please. Caution! A corrupted image will hang up the system.

Click Reset to clear the firmware, click Apply to upgrade the firmware.

Settings Management

You might save system settings by exporting them to a configuration file, restore them by importing the file, or reset them to factory default.

Click Export to export the configuration file and click Import to import the configuration file and click Load Default to reset the settings to factory default.

Status

The Web interface has been designed to enable you to easily perform advanced configuration tasks and view information about the AP.

Statics

The Statics page shows all the statics information about your AP.

Statistic

Take a look at the RT2880 statistics

Memory	
Memory total:	11904 kB
Memory left:	4132 kB
WAN/LAN	
WAN Rx packets:	0
WAN Rx bytes:	0
WAN Tx packets:	38
WAN Tx bytes:	20000
LAN Rx packets:	326
LAN Rx bytes:	35182
LAN Tx packets:	371
LAN Tx bytes:	237535
All interfaces	
Name	lo
Rx Packet	0
Rx Byte	0
Tx Packet	0
Tx Byte	0
Name	eth2
Rx Packet	334
Rx Byte	42023
Tx Packet	417
Tx Byte	259619
Name	ra0
Rx Packet	0
Rx Byte	0
Tx Packet	-1
Tx Byte	-1
Name	sit0
Rx Packet	0
Rx Byte	0
Name	eth2.1
Rx Packet	333
Rx Byte	37251
Tx Packet	374
Tx Byte	239241
Name	eth2.2
Rx Packet	0
Rx Byte	0
Tx Packet	38
Tx Byte	20000
Name	br0
Rx Packet	326
Rx Byte	35182
Tx Packet	371
Tx Byte	237535

System **Command**

This page enable you to run a system command as root

Click Apply to run the command you put, click cancel to clear the command you put.

System Log

This page enables you to look and clear the system log.

Click Refresh to refresh the log, click Clear to clear the log.

FCC Notice:

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

NOTE: THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY

UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY

TO OPERATE THE EQUIPMENT.

Federal Communications Commission (FCC) Requirements, Part 15

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

---Reorient or relocate the receiving antenna.

---Increase the separation between the equipment and receiver.

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

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

Regulatory information / Disclaimers

Installation and use of this Wireless LAN device must be in strict accordance with the instructions included in the user documentation provided with the product. Any changes or modifications (including the antennas) made to this device that are not expressly approved by the manufacturer may void the user's authority to operate the

equipment. The manufacturer is not responsible for any radio or television interference caused by unauthorized modification of this device, or the substitution of the connecting cables and equipment other than manufacturer specified. It is the responsibility of the user to correct any interference caused by such unauthorized modification, substitution or attachment. Manufacturer and its authorized resellers or distributors will assume no liability for any damage or violation of government

```
CAUTION: To maintain compliance with FCC's RF exposure guidelines, this equipment should be installed and operated
with minimum distance 20cm between the radiator and your body. Use on the supplied antenna. Unauthorized antenna,
         modification, or attachments could damage the transmitter and may violate FCC regulations.
```

MPE Statement (Safety Information)

Your device contains a low power transmitter. When device is transmitted it sends out Radio Frequency (RF) signal.

Safety Information

In order to maintain compliance with the FCC RF exposure guidelines, this equipment should be installed and operated with minimum distance 20cm between the radiator and your body. Use only with supplied antenna. Unauthorized antenna, modification, or attachments could damage the transmitter and may violate FCC regulations.