EnGenius®

Business Solutions

User Manual

EWS850AP

version 1.0

WiFi 6 AX1800 2x2 Dual Band Outdoor Wireless Access Point

IMPORTANT

To install this Access Point please refer to the
Quick Installation Guide included in the product packaging.

Table of Contents

Chapter 1

Product Overview

Overview

Key Features

- Dual concurrent 802.11ax architecture and backward compatible with ac wave2/ac/a/b/g/n client devices.
- Advanced 1024-QAM allows Access Points to carry more packets one time could work for delivering high speed rate than the legacy 11AC Access Points
- Bi-Directional (DL/UL) OFDMA utilizes air resource for Access Points and client devices efficiency.
- Bi-Directional (DL/UL) MU-MIMO will reduce usage of airtime for each transmission between Access Point and client devices.
- 360° Dipole-directional antennas to achieve comprehensive coverage for networking client devices under a pervasive environment.
- Power source is complianced with 802.3at PoE Input for flexible installation and implementing remotely reset/reboot over 100 meters (328 feet).
- Robust housing with IP67 enclosure rated to deploy at extremely weather .
- Systemic and distributed management over EnGenius ezMaster, Skykey controller, and EWS Management switch without licensing or subscription fee.

EWS850AP

Introduction

EnGenius Wireless Long Access Point solution EWS850AP is designed for deploying on the versatile indoor and outdoor application. To meet today's requirement on varied networking environment, EnGenius would like to provide the solution as flexible, robust and effective as the organization they desire. The state-of-the-art OFDMA

and MU-MIMO technology brings revolutionary connecting speed and bandwidth for diversity of multimedia applications. EWS850AP 11ax solution engineers with powerful RF interfaces that support maximum 2x2 spatial streams with 1201 Mbps in 5GHz frequency band and 574 Mbps in 2.4GHz frequency band. With robust IP67 certified casing, these access points is designed to withstand harsh environment conditions including serve and prolonged exposure to sunlight, extreme cold, frost, snow, rainfall, hail and humidity.

DL/UL MU-MIMO with OFDMA via Beamforming

Be a prior AX solution, EnGenius EWS850AP is not only built in powerful RF interfaces, but it also features advanced Multi-Users Multiple input Multiple output (MU-MIMO) on both download side and upload side, which enhances a dramatic breakthrough in the performance and flexible transmission between Access Points and wireless client devices.

MU-MIMO allows multiple spatial streams to be allocated to different clients simultaneously, increasing totally throughput, reduce latency, capacity of the WLAN system and increase spectral efficiency on download side. Compared to download side, MU-MIMO upload side will manage varied client devices to contest air resource within a channel under a pervasive environment. The MU-MIMO upload side coordinates with OFDMA upload side to arrange different types of traffic for using a proper bandwidth within a channel. The intelligent technology will carry multimedia content and web browsing data easily without consuming more time on round-trip between AP and client devices. The smoothly transmission will reduce collision times and enhance capacity of air resource, as well as optimize users experience.

Beamforming is a standard in 11ax which allows Access Points to focus energy of multiple antennas to transmit to a particular client device in that direction of that client. The innovative technology significantly enhances the higher signal-tonoise ratio and greater throughput of that client higher signal-to-noise ratio and greater throughput of that client.EnGenius

Enhance Capacity and Efficiency

Compared to 11ac solution, 11ax solution could carry 4x symbol OFDM symbol which can be significantly enhanced efficiency and transmitting PHY rate, as well as extend coverage on both indoor and outdoor application easily. To carry more data at the same time, modulation has been expanded from 11ac 256-QAM to 1024-QAM which can

be enhanced 25% capacity of bit and reduce error margin during delivering data. The other breakthrough innovation of 11ax is to introduced BSS coloring technology for marking different colors on each data which will allows client devices to stop

receiving a frame and return to sleep mode as soon as they recognize these frames are not of interest to them. The benefit of BSS coloring also reduces channel interference and channel collision of an access point, as well as improve to transmit signal easily.

System Requirements

The following are the Minimum System Requirements in order to configure the device.

- Computer with an Ethernet interface or wireless network capability
- Windows OS (XP, Vista, 7, 8, 10), Mac OS, or Linux-based operating systems
- Web-Browsing Application (i.e.: Internet Explorer, Firefox, Safari, or another similar browser application)

Package Contents

The package of EWS850AP contains the following items:*

- EWS850AP
- Detachable Antennas - 2.4GHz*2/ 5GHz*2
- PoE Adapter (EPA5006GR)
- Power Cord
- Pole Mount Strap*2
- Mountng Screw Set*2
- Mountng Bracket
- Ground Wire and Screw Set
- Quick Installation Guide

*(all items must be in package to issue a refund):

Technical Specifications

Standard

IEEE802.11architecture and backward compatible with ac wave2/ ac/a/b/g/n client devices.

Antenna

External 2.4GHz*5dBi*2 and 5GHz*5dBi*2 detachable antenna

Physical Interface

1 x 2.5 Gigabit ethernet port supports 802.3at PoE Input

LED Indicator

Power
LAN
2.4GHz
5GHz

Power Requirements

EWS850AP Include 802.3at PoE Adapter

Operation Modes

Access Point
Mesh
WDS AP
WDS Bridge
WDS Station

Advance RF Management

OFDMA-UL/DL
BSS Coloring
Distance Control (Ack Timeout)
Multicast Supported
Data Rate Selection
Auto Channel Selection
Auto Tx Power Selection
Site Survey
Fast Roaming (802.11k/v)
Band Steering
RSSI Threshold
MU-MIMO-UL/DL
Tx Beamforming-UL/DL

Easily Management

VLAN Tag / VLAN Pass-through
Guest Network
QoS: Complaint with IEEE 802.11e /WMM
RADIUS Accounting
Wireless STA (Client) connection list
Traffic Shaping (Per SSID/User)
Multi SSID
Management VLAN
VLAN per SSID
E-mail Alerts
WiFi Scheduler

Intuitive Tools

SNMP v1/v2c/v3 support
MIB I/II, Private MIB
Save Configuration as Default
CLI Support
WiFi-Scheduler/Auto Reboot
E-mail Alert

Reinforcement Security

WPA3/WPA2 Personal/Enterprise
802.1x Authentication
Hide SSID in beacons
MAC address filtering, up to 32 MACs per SSID
Wireless STA (Client) connection list
Https Support
SSH Support

Optimal Performance

QoS-Complaint with IEEE 802.11e standard
Power Save Mode (UPASD)
Pre-Authentication
PMK Caching
Fast Roaming (802.11r)
Multicast to Unicast
1024-QAM both on 2.4GHz/5GHz

Physical/Environment Conditions

Operating:

- Temperature: -20 °C to 60 °C (-4 °F to 140 °F)
- Humidity (non-condensing): 90% or less

Storage:

- Temperature: -30 °C to 80 °C (-22 °F to 176 °F)
- Humidity (non-condensing): 90% or less

Physical Interface - EWS850AP

Mechanical & Environment

Length: 190 mm (7.48")
Width: 124 mm (4.88")
Depth: 47 mm (1.85")
Weight: 720g
*Above information is device Only
Proection Level: IP67
Surge Protection: 1KV
ESD Protection: Contact 4KV / Air 8KV

1 **2.4GHz Antennas** Detachable 5.17dBi 5GHz Dipole-directional Antennas

2 **5GHz Antennas** Detachable 5.17dBi 2.4GHz Dipole-directional Antennas

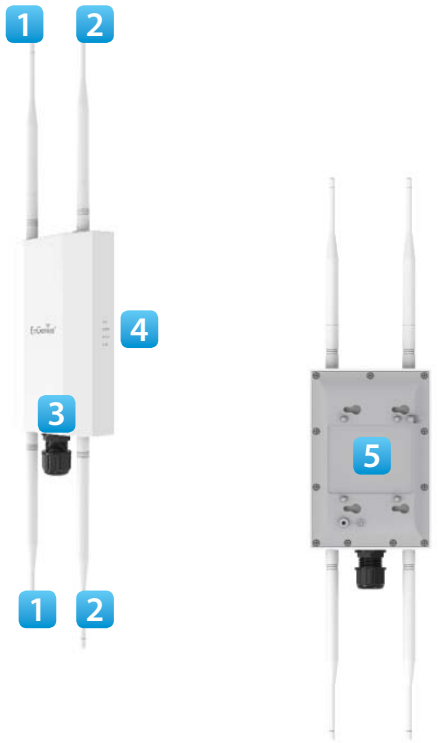
3 **LAN Port (802.3af/at PoE)**: Ethernet port for RJ-45 cable.

4 **LED Indicators:** LED lights for Power, LAN Port , 2.4 GHz Connection and 5 GHz Connection. The color of LED light and active behavior is as below.

5 **Mounting Holes:** Using the provided hardware, the AP can be attached to a wall or pole.

*The installation angle of antenna must be vertical to the ground.

*This equipment i not suitable for use in locations where children are likely to be present.



Chapter 2

Before You Begin

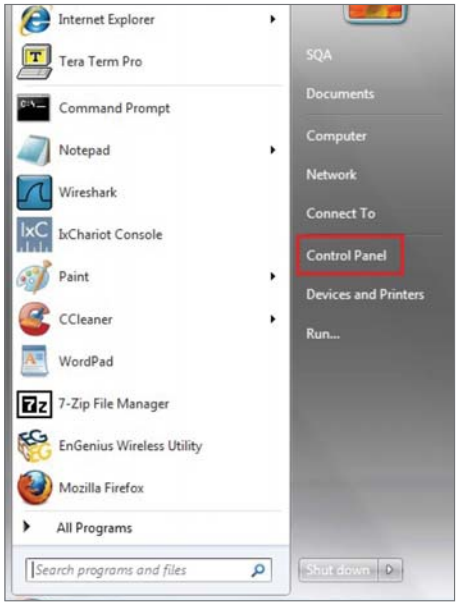
Computer Settings

Windows XP/Windows 7/Windows 8/Windows 10

In order to use the Access Point, you must first configure the TCP/IPv4 connection of your Windows OS computer system.

1a. Click the **Start** button and open the **Control Panel**

Windows XP

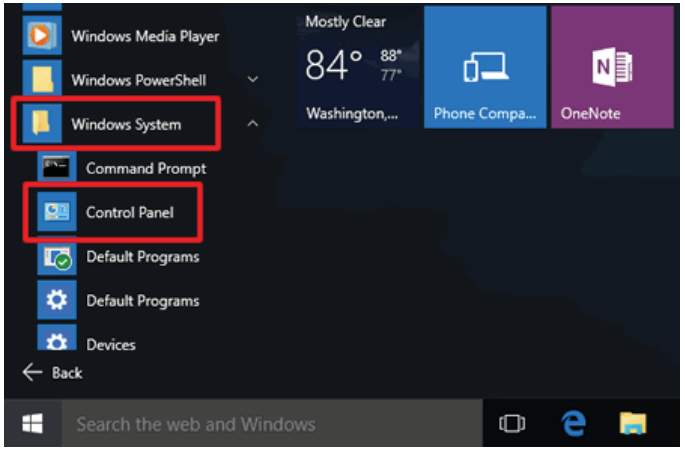


Windows 7

1b. Move your mouse to the lower right hot corner to display the Charms Bar and select the **Control Panel** in Windows 8 OS.

Windows 8

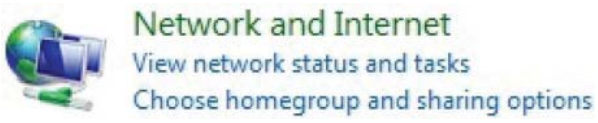
1c. In **Windows 10,** click **Start** to select **All APPs** to enter the folder of **Windows system** for selecting **Control Panel.**



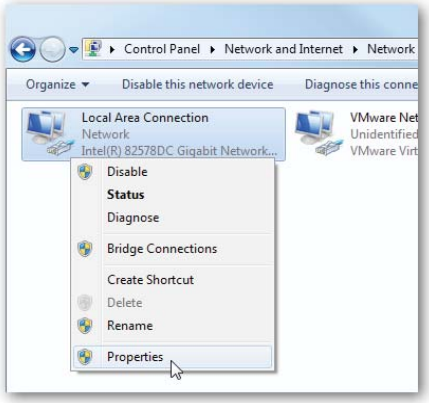
Windows 10

2a. In **Windows XP,** click **Network Connections.**

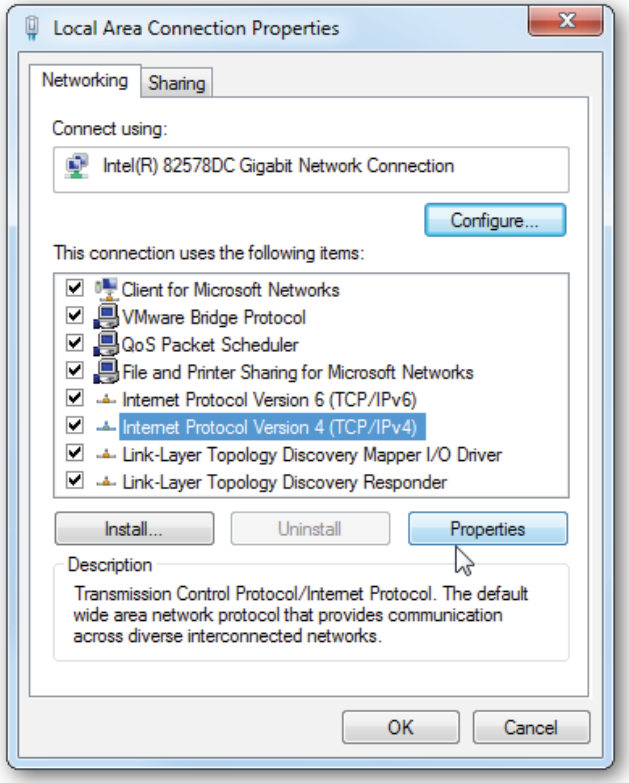
2b. In **Windows 7/Windows 8/Windows 10**, click **View Network Status and Tasks** in the **Network and Internet** section, then select **Change adapter settings.**



3. Right click on **Local Area Connection** and select **Properties.**



4. Select **Internet Protocol Version 4 (TCP/IPv4)** and then select **Properties**.



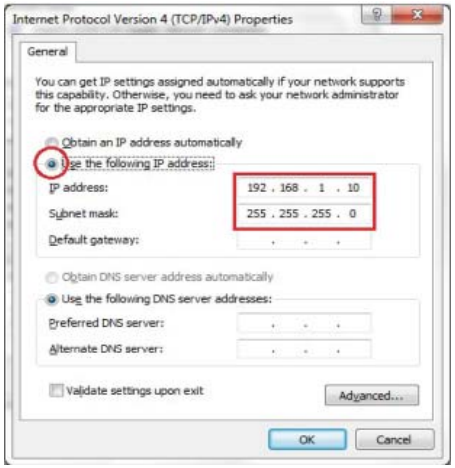
5. Select **Use the following IP address** and enter an IP address that is different from the Access Point and Subnet mask, then click **OK**.

Note: Ensure that the IP address and Subnet mask are on the same subnet as the device.

For example: EWS850AP IP address: 192.168.1.1

PC IP address: 192.168.1.2 - 192.168.1.255

PC Subnet mask: 255.255.255.0



Apple Mac OS X

1. Go to **System Preferences** (Which can be opened in the Applications folder or selecting it in the Apple Menu).
2. Select **Network** in the **Internet & Network** section.

3. Highlight **Ethernet.**
4. In **Configure IPv4**, select **Manually.**
5. Enter an IP address that is different from the Access Point and Subnet mask then press **OK.**

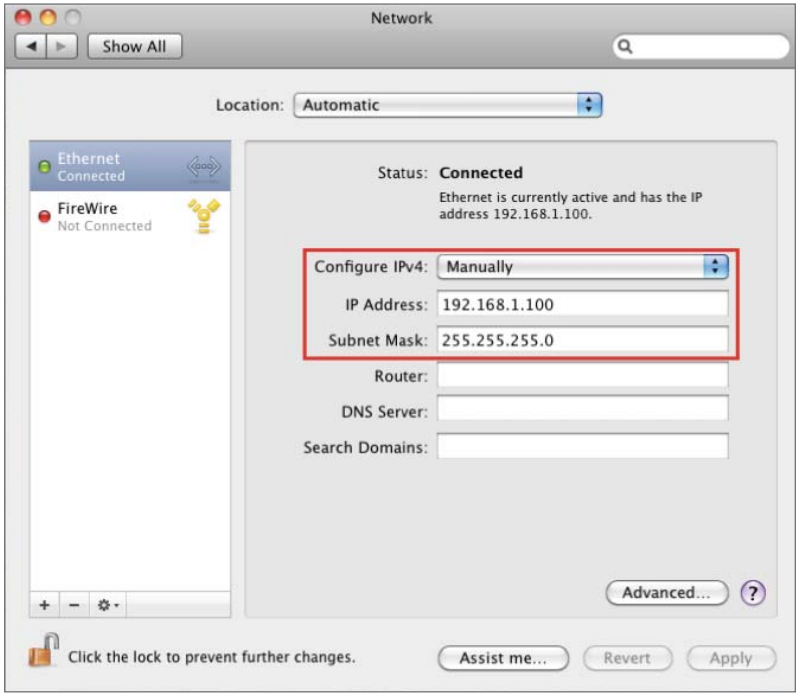
   Note: Ensure that the IP address and Subnet mask are on the same subnet as the device.

   For example: EWS850AP IP address: 192.168.1.1

   PC IP address: 192.168.1.2 - 192.168.1.255

   PC Subnet mask: 255.255.255.0

. Click **Apply** when done.

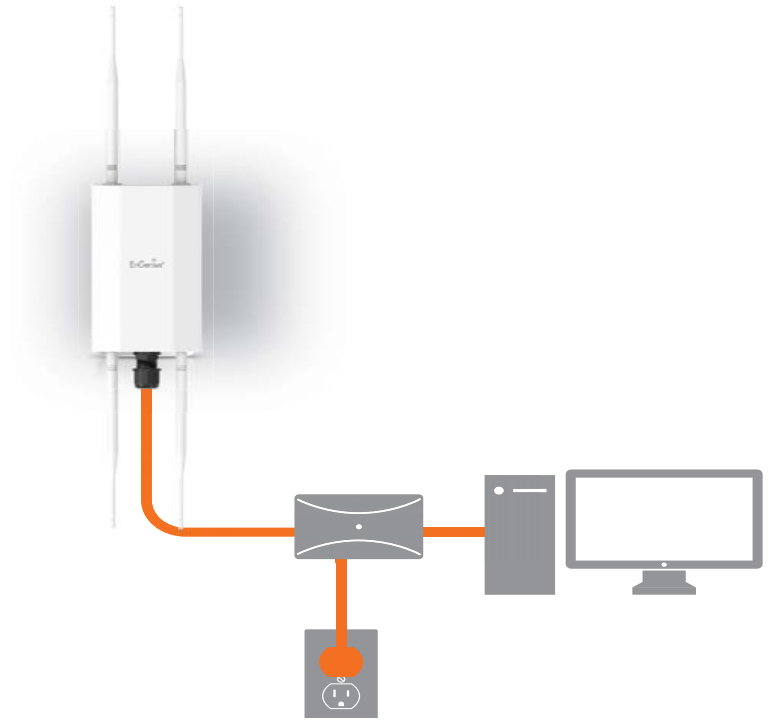


Hardware Installation
EWS850AP

1. Connect one end of the Ethernet cable into the LAN port (PoE) of the AP and the other end to the PoE port on the PoE adapter.
2. Connect the Power cord with the PoE Adapter and plug the other end into an electrical outlet.
3. Connect the second Ethernet cable into the LAN port of the PoE adapter and the other end to the Ethernet port on the computer.
4. Screw on the provided antennas to the top of this device
5. When all the process is completed, the LED light will be active as below.

LED	State	Description
PWR (ORANGE)	OFF	No power connection.
	On Steady	When the device is connected to a power source.
LAN (PoE) (Green/Amber)	OFF	No Ethernet connection.
	On Steady	An active Ethernet connection is made to the LAN (PoE) port.
	Blink	Data is being Transmitting/Receiving. The LED color indicates the Ethernet connection speed. Amber for 2.5Gbps and Green for 1Gbps or 100Mbps.
2.4GHz (Green)	On Steady	Ready for data Transmitting/Receiving.
	Blink	Data is being Transmitting/Receiving.
5GHz (Green)	On Steady	Ready for data Transmitting/Receiving.
	Blink	Data is being Transmitting/Receiving.

Note: The AP should ONLY be powered via Ethernet cable connected to the included PoE Adapter EPA5006GR. You can convert the device to factory default or users default via the reset button on EPA5006GR.



This diagram depicts the hardware configuration.

Mounting the EWS850AP

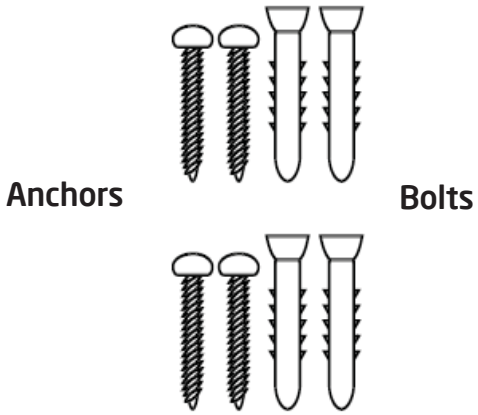
Using the provided hardware, the device can be attached to a wall or a pole. The height should not exceed 2 meter.

1. Wall Mounting Kit

Screw Set 1

-Anchors: Φ6.6*16 mm

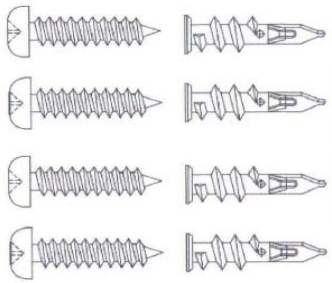
-Bolts: Φ8*25mm



Screw Set 2

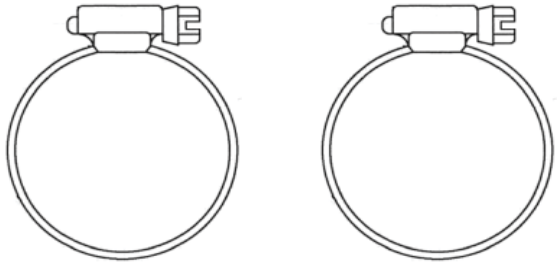
-Screw - X type: Φ13*42 mm

-Screw - P type: Φ5.8*32 mm



2. Pole Mounting Strap*2

-Φ66*12.6 mm



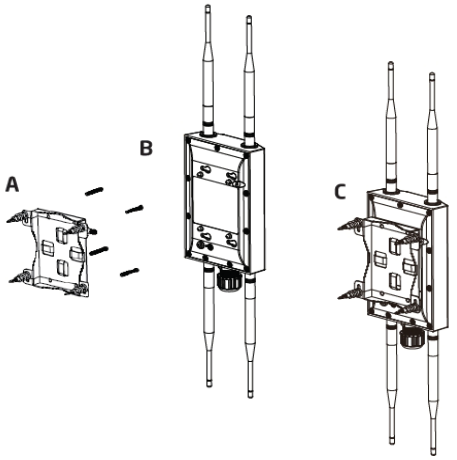
Wall mounting the EWS850AP

A. Determine where the Access Point to be placed and mark location on the surface for the four mounting holes of wall mount base.

B. Use the appropriate drill bit to drill two 8.1mm diagram and 26mm depth holes in the markings and hammer the bolts into the openings. Screw the anhors into the holes until they are flush with the wall.

C. Screw the included screws into the anchors.

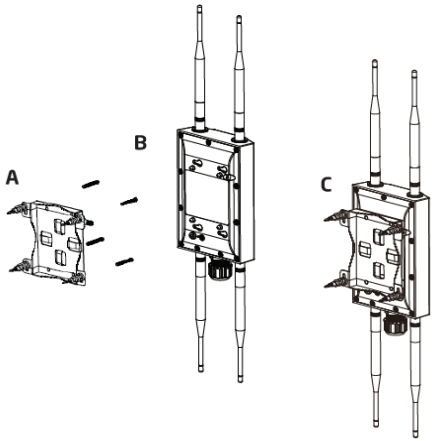
D. Slide the mount bracket into the slot of the Access Point.



Pole mounting the EWS850AP

A. Thread the open end of the Pole Strap through the two tabs on the Pole Mount Bracket.

B.Lock and tighten Pole Strap to secure Pole Mount Bracket to the pole.



*The installation angle of antenna must be vertical to the ground.

Chapter 3

Configuring Your Access Point

Configuring Your Access Point

This section will show you how to configure the device by using the web-based configuration interface or EnGenius EnWiFi App, which is a management tool to enable easy deployment on outdoor APs/CPEs. In conjunction with the EnWifi App, outdoor APs/CPEs can perform configuration changes en-masse, monitoring, firmware upgrades, and data backups from a smart phone or tablet.

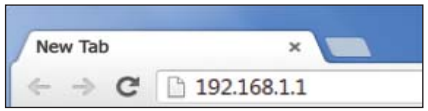
Web Interface Configuration

Default Setting

Please use your Ethernet port or wireless network adapter to connect the Access Point.

IP Address	192.168.1.1
Username / Password	admin / admin

1. Open a web browser (Internet Explorer/Firefox/Safari/Chrome) and enter the IP Address **http://192.168.1.1**



Note: If you have changed the default LAN IP Address of the Access Point, ensure you enter the correct IP Address.

2. The default username and password are **admin**. Once you have entered the correct username and password, click the **Login** button to open the web-base configuration page.

* The model name will be varied by different models

3. If successful, you will be logged in and see the device's User Interface.

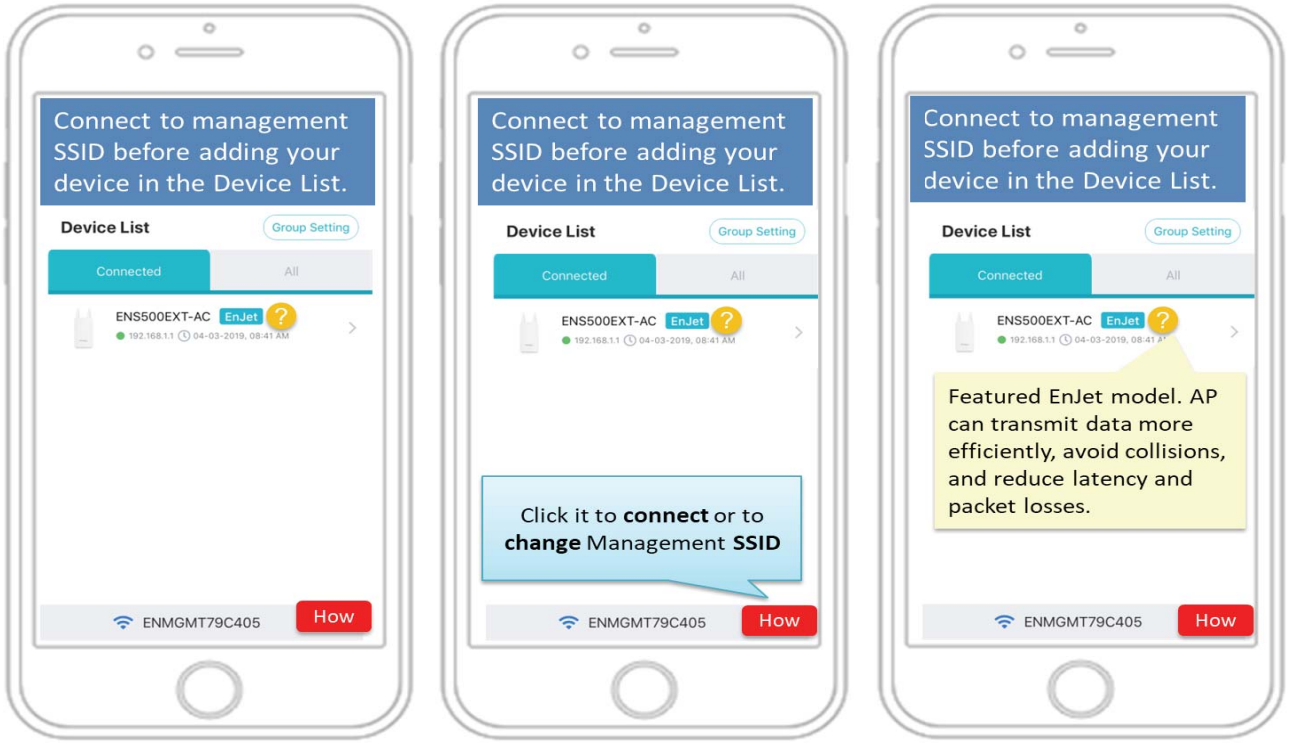
EnWiFi App Configuration

Download EnWiFi App

1.Please download and install EnWiFi App from Google Play or iOS App Market .

Android iOS

2. Before access to device, you need to find Management SSID and connect to it first. Then you can see your device in the Device List.



3. For more details of how to configure and management device via EnWiFi App, please see Chpater 9 EnWiFi App.

Chapter 4

Building a Wireless Network

Before Starting

Before starting to configure this Access Point, you may realize the used scenario under varied operating modes. EWS850AP, built in the latest WiFi 6 (11ax) technology, can be configured as an: Access Point, Mesh or WDS (AP/Bridge/Station). This chapter describes purpose of different operating modes for the best deployment.

Access Point Mode

In Access Point Mode, device behaves likes a central connection for stations or clients that support IEEE 802.11ax networks and is backward competible. The stations and clients must be configured to use the same SSID (Service Set Identifier) and security password to associate with EWS850AP. The device supports up to eight (8) SSIDs per band at the same time for secure access.

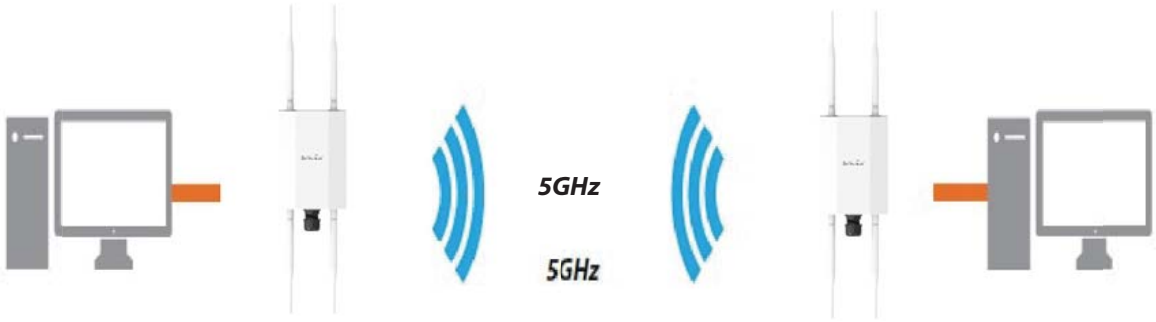
WDS AP Mode

The device also supports WDS AP mode. This operating mode allows wireless connect to the other device via using WDS technology. In this mode, configure the MAC addresses in both Access Points to enlarge the wireless area by enabling WDS Link settings. WDS supports up to four (4) AP MAC addresses.

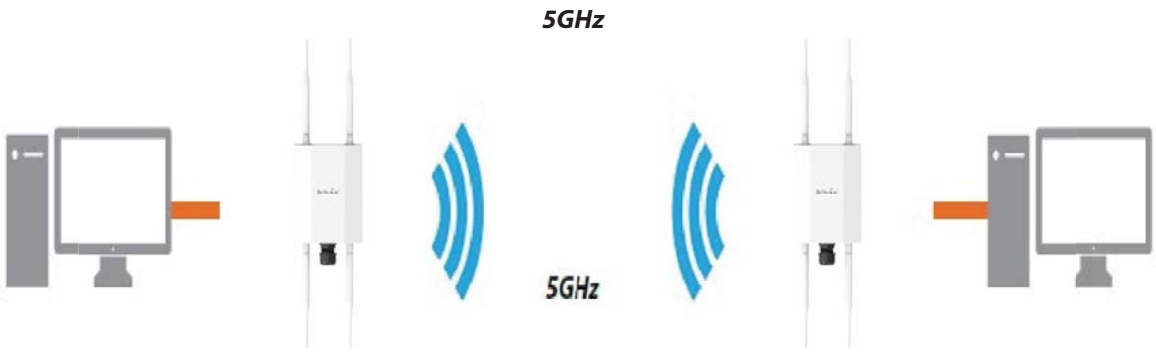
WDS Bridge Mode

In WDS Bridge Mode, the device can wirelessly connect different LANs by configuring the MAC address and security settings of each device. Use this mode when two wired LANs located a small distance apart want to communicate with each other. The best solution is to use the device to wirelessly connect two wired LANs, as shown in the following diagram. WDS Bridge Mode can establish up to four WDS links, creating a star-like network.

Note: WDS Bridge Mode does not act as an Access Point. Access Points linked by WDS are using the same frequency channel. More Access Points connected together may lower throughput.



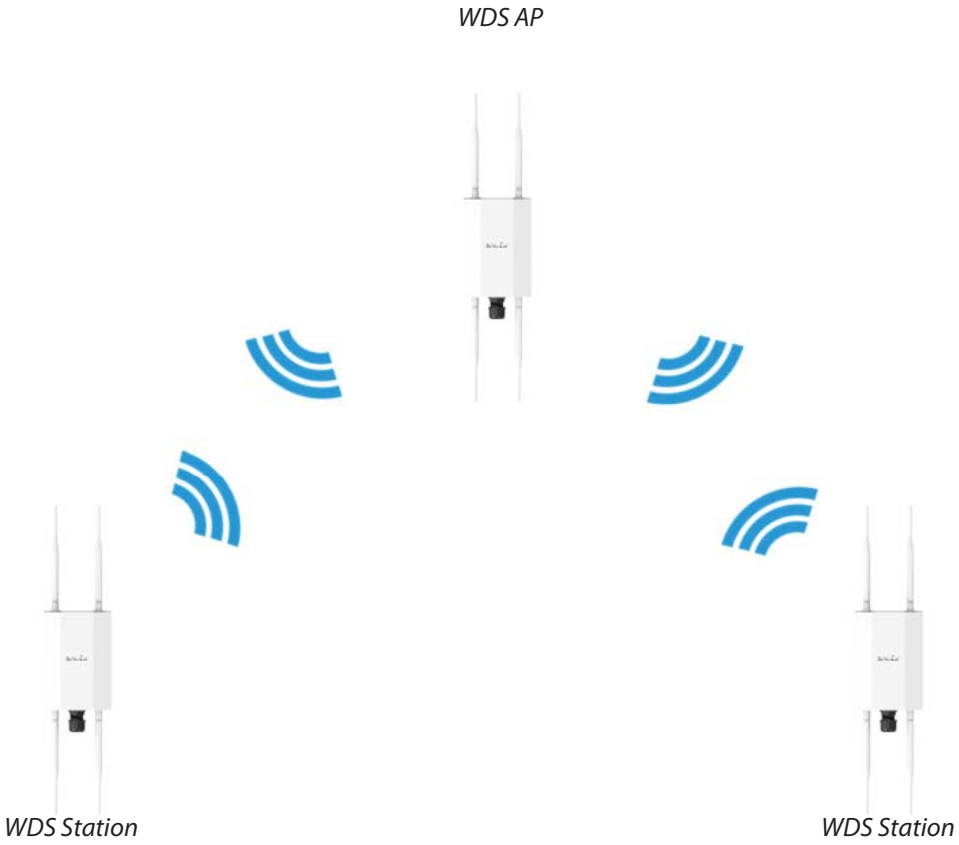
AP Mode *AP Mode*



WDS AP *WDS Bridge*

WDS Station Mode

Station mode expands the WDS by receiving a wireless signal/service and sharing it through the Ethernet port.



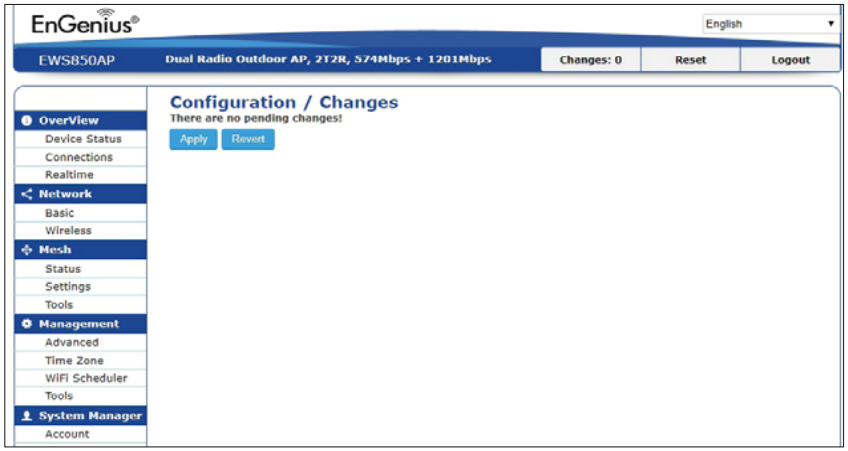
Chapter 5

Overview Status

Main Status

Save Changes

This page lets you save and apply the settings shown under **Unsaved changes list**, or cancel the unsaved changes and revert to the previous settings that were in effect.



*The model name will be varied by different models.

Device Status

Clicking the **Device Status** link under the **Overview** menu shows the status information about the current operating mode.

- The **Device Information** section shows general system information such as Device Name, MAC Address, Current Time, Firmware Version, and Management VLAN ID

  Note: VLAN ID information is only applicable in Access Point or WDS AP mode.

Device Information

Device Name	EWS850AP
Serial Number	204242466
MAC Address	
- LAN	88:DC:96:88:7B:CC
- Wireless LAN - 2.4GHz	88:DC:96:88:7B:CD
- Wireless LAN - 5GHz	88:DC:96:88:7B:CE
Country	USA
Current Local Time	Thu Apr 23 10:21:41 2020
Uptime	0h 39m 54s
Firmware Version	v3.8.0_c1.9.51
Device Version	1.0
Management VLAN ID	Untagged
Registration Check Code	6f7e95c9

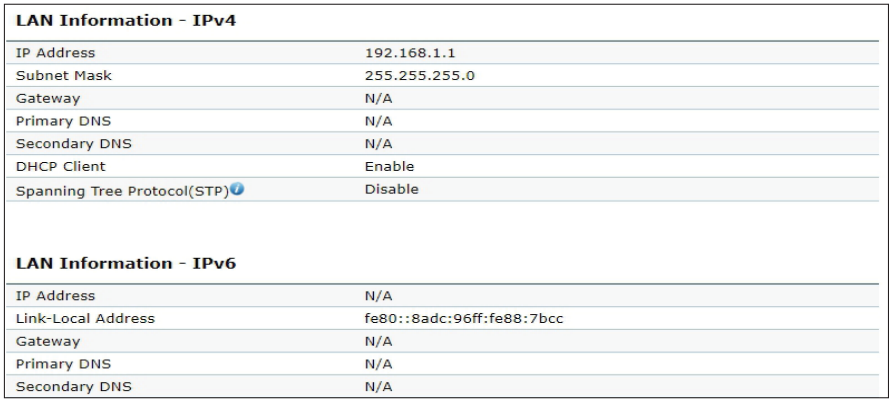
*The model name will be varied by different models.

- The **Memory Information** section shows usage of memory such as Total Available, Free, Cached, Buffered

Memory Information

Total Available	702564 kB / 910188 kB (77%)
Free	642436 kB / 910188 kB (70%)
Cached	45800 kB / 910188 kB (5%)
Buffered	14328 kB / 910188 kB (1%)

- The **LAN Information** section shows the Local Area Network settings such as the LAN IP Address, Subnet mask, and DNS Address.

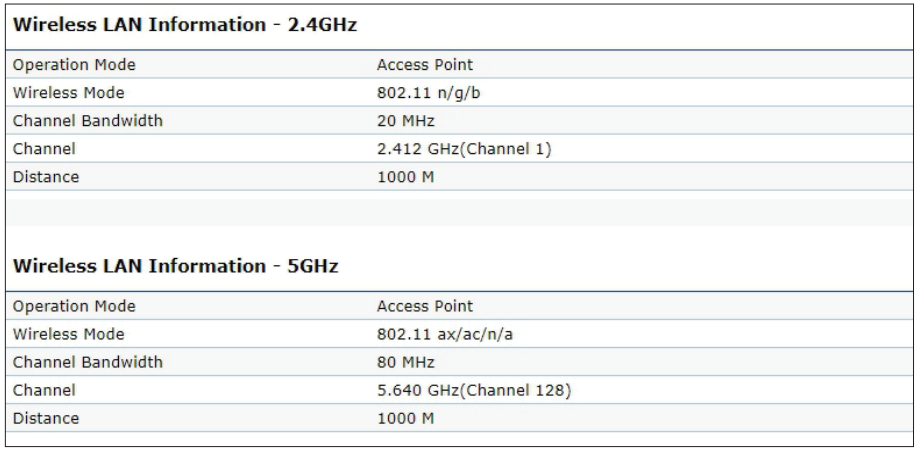


LAN Information - IPv4	
IP Address	192.168.1.1
Subnet Mask	255.255.255.0
Gateway	N/A
Primary DNS	N/A
Secondary DNS	N/A
DHCP Client	Enable
Spanning Tree Protocol(STP)	Disable

LAN Information - IPv6	
IP Address	N/A
Link-Local Address	fe80::8adc:96ff:fe88:7bcc
Gateway	N/A
Primary DNS	N/A
Secondary DNS	N/A

- The **Wireless LAN Information 2.4GHz/5GHz** section shows wireless information such as Operating Mode, Frequency, and Channel. Since the AP supports multiple-SSIDs, information about each SSID, the ESSID, and security settings, are displayed

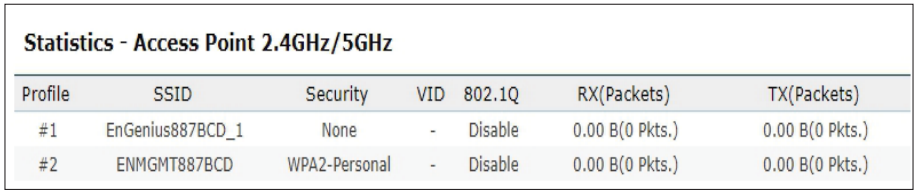
  Note: Profile Settings are only applicable in Access Point and WDS AP modes.



Wireless LAN Information - 2.4GHz	
Operation Mode	Access Point
Wireless Mode	802.11 n/g/b
Channel Bandwidth	20 MHz
Channel	2.412 GHz(Channel 1)
Distance	1000 M

Wireless LAN Information - 5GHz	
Operation Mode	Access Point
Wireless Mode	802.11 ax/ac/n/a
Channel Bandwidth	80 MHz
Channel	5.640 GHz(Channel 128)
Distance	1000 M

- The **Statistics** section shows Mac information such as SSID, MAC address, RX and TX.



Statistics - Access Point 2.4GHz/5GHz

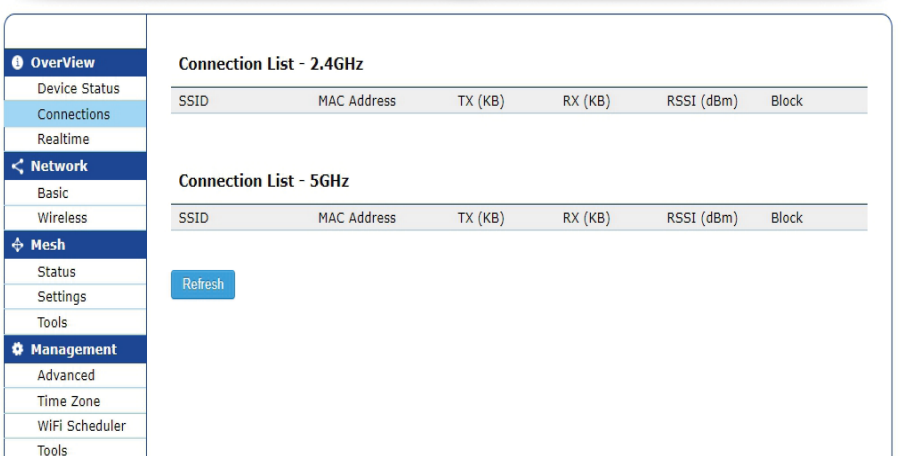
Profile	SSID	Security	VID	802.1Q	RX(Packets)	TX(Packets)
#1	EnGenius887BCD_1	None	-	Disable	0.00 B(0 Pkts.)	0.00 B(0 Pkts.)
#2	ENMGMT887BCD	WPA2-Personal	-	Disable	0.00 B(0 Pkts.)	0.00 B(0 Pkts.)

Connection

2.4GHz/ 5GHz Connection List

Click the connection link under the Overview menu displays the connection list of clients associated to the AP/CPE's 5 GHz, along with the MAC addresses and signal strength for each client. Clicking **Refresh** updates the client list.

Note: Only applicable in Access Point and WDS AP modes.



WDS Link List

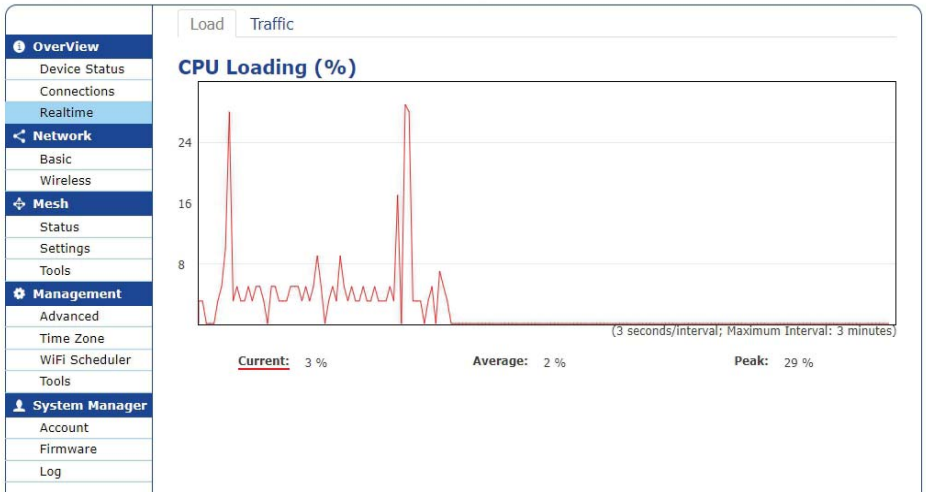
Click the connection link under the Overview menu. This page displays the current status of the WDS link, including WDS Link ID, MAC Address, Link Status and RSSI.

Note: Only applicable in WDS AP and WDS Bridge modes.

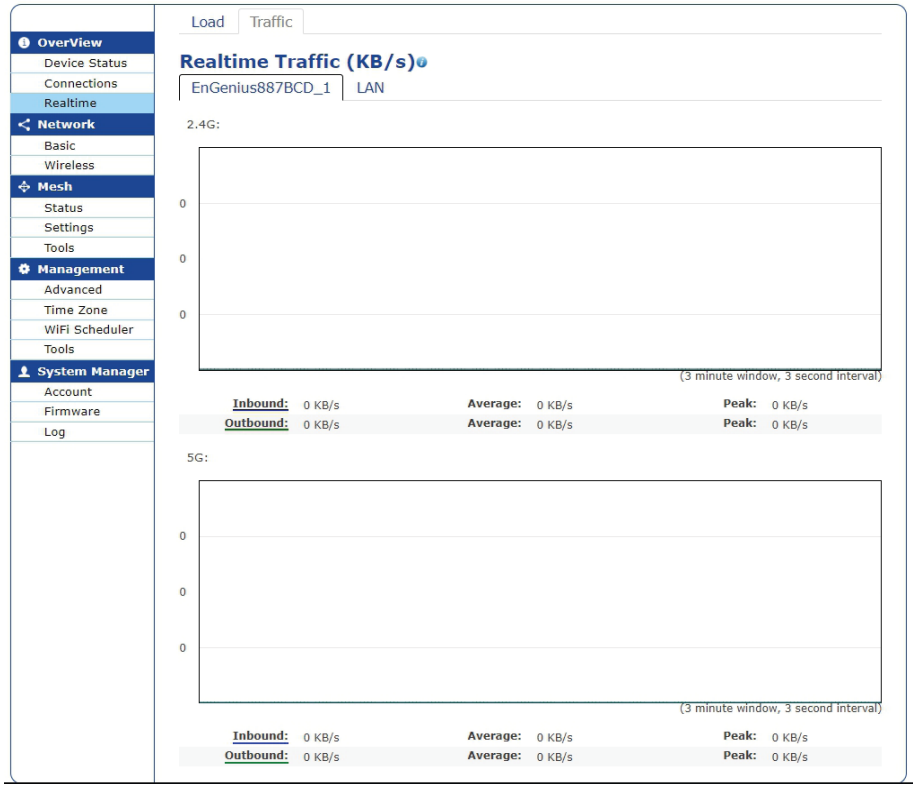
Realtime

The Realtime section contains the following options:

CPU Loading: 3 minutes CPU loading percentage information, it displays current loading, average loading and peak loading status. Left bar is loading percentage; button is time tracing. The interval is every 3 seconds.



Traffic Loading: 2.4GHz/5GHz and Ethernet port inbound and outbound traffic by current, average and peak time.

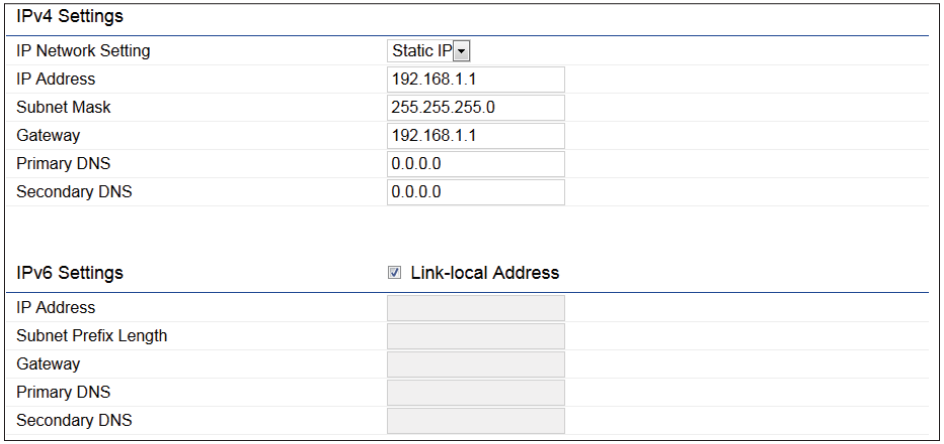


Chapter 6
Network

Basic IP Settings

IPv4/IPv6 Settings

This page allows you to modify the device's IP settings under Network->Basic.



IP Network Settings: Select whether the device IP address will use a static IP address specified in the IP address field or be obtained automatically when the device connects to a DHCP server.

IP Address: The IP address of this device.

Subnet Mask: The IP Subnet mask of this device.

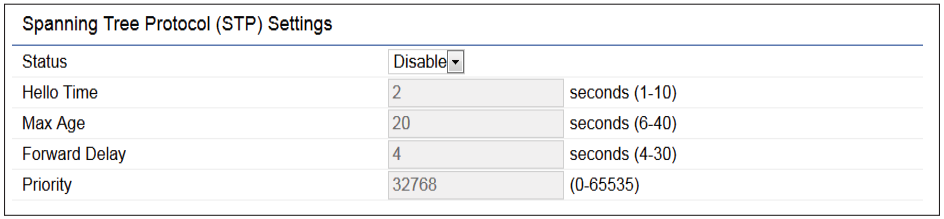
Gateway: The Default Gateway of this device. Leave it blank if you are unsure of this setting.

Primary/Secondary DNS: The primary/secondary DNS address for this device.

Save: Click **Save** to confirm the changes.

Spanning Tree Protocol (STP) Settings

This page allows you to modify the Spanning Tree settings. Enabling the Spanning Tree protocol will prevent network loops in your LAN network.



Spanning Tree Status: Enables or disables the Spanning Tree function.

Hello Time: Specifies Bridge Hello Time in seconds. This value determines how often the device sends handshake packets to communicate information about the topology throughout the entire Bridged Local Area Network.

Max Age: Specifies Bridge Max Age in seconds. If another bridge in the spanning tree does not send a hello packet for a long period of time, it is assumed to be inactive.

Forward Delay: Specifies Bridge Forward Delay in seconds. Forwarding delay time is the time spent in each of the Listening and Learning states before the Forwarding state

is entered. This delay is provided so that when a new bridge comes onto a busy network, it analyzes data traffic before participating in the network.

Priority: Specifies the Priority Number. A smaller number has a greater priority than a larger number.

Save: Click **Save** to confirm the changes.

Wireless

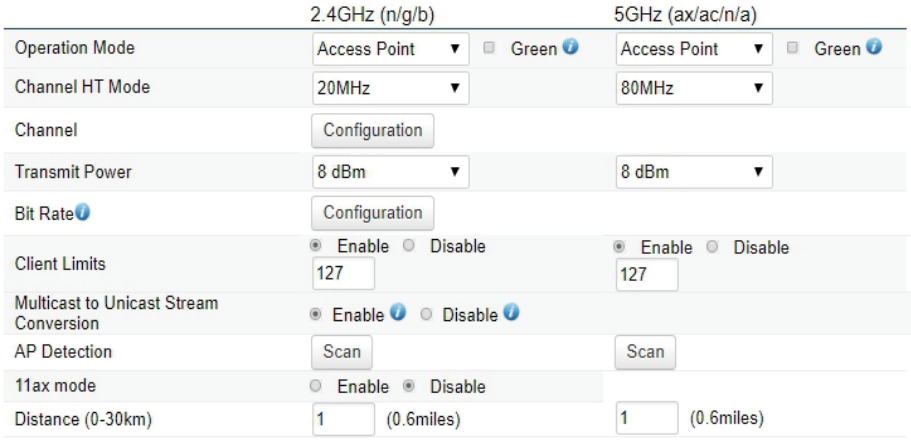
Wireless Settings

*The model name will be varied by different models.

Device Name: Enter a name for the device. The name you type appears in SNMP management. This name is not the SSID and is not broadcast to other devices.

Save: Click **Save** to confirm the changes.

This page displays the current status of the Wireless settings of the AP.



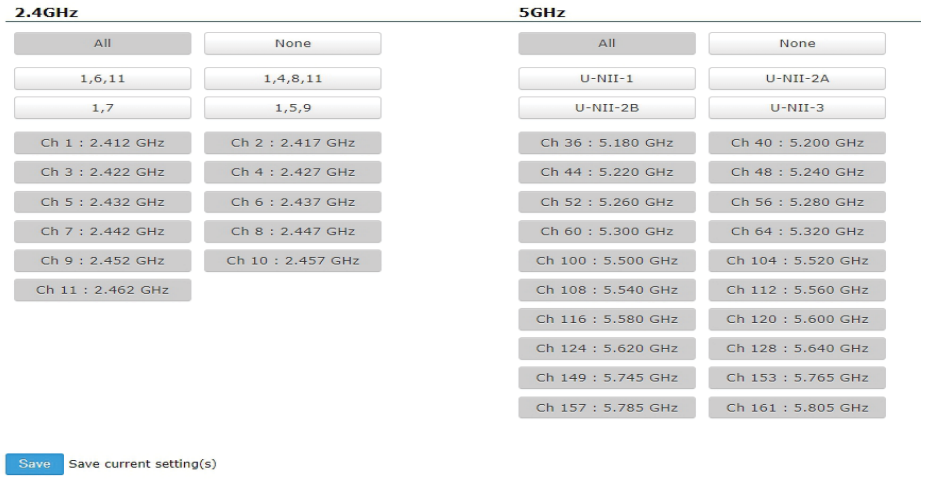
Wireless Network

EWS850AP supports 802.11ax/ac/n/a mixed mode in 5 GHz and 802.11n/g/b mixed mode in 2.4GHz. 802.11ax mode in 2.4GHz is optional and can be enabled/disabled. .

Operation Mode: Select **Operation Mode** from Access Point or WDS (AP, Bridge ,Station) base on the application scenario.

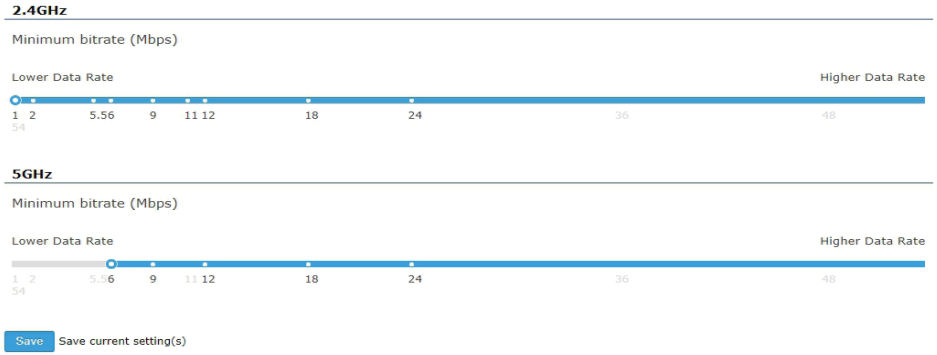
Channel HT Mode: The default channel bandwidth is 20 MHz in 2.4GHz and 80MHz in 5GHz. The larger the channel, the greater the transmission quality and speed.

Channel: Click Configuration button to open a new windows to configure channels for performing wireless service.



Transmit Power: Set the power output of the wireless signal.

Bit Rate: 2.4GHz and 5GHz can be controled by BAR via scroll from 6Mbps to 54Mbps.

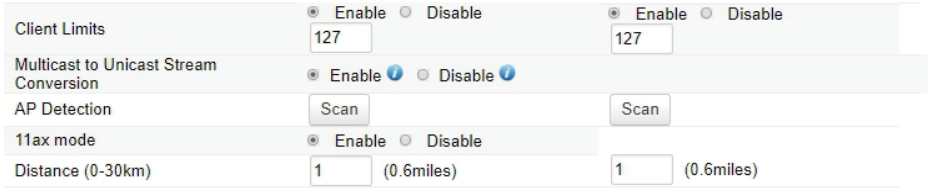


Client Limits: If you set the limitation of client numbers , the maximum assocaited client devices will be restricted at this number. The client limits is default in127.

AP Detection: AP Detection can select the best channel to use by scanning nearby areas for Access Points.

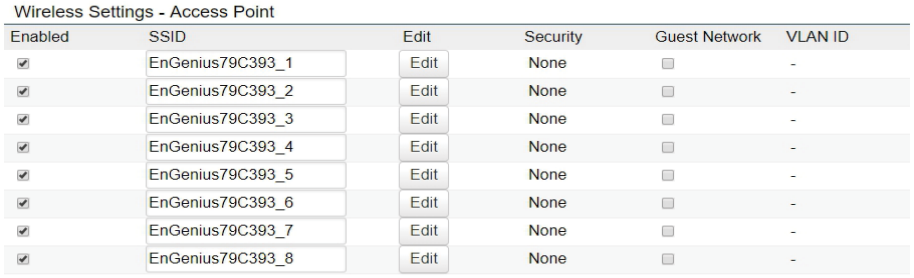
11ax mode: This mode is optionnal for 2.4GHz, you can select Enable or Disale base on the application scenario.

Distance: Specifies the distance between Access Points and client devices. The proper setting for this parameter may assist Access Points to avoid the improper operation when transmitting data under a filed application.



SSID Profile

Current Profile: You can configure up to eight(8)different SSIDs. If multiple client devices will be accessing the network, you can arrange the devices into SSID groups. Click **Edit** to configure the profile and check whether you want to enable extra SSID.



The first SSID is default enabled and you can click Edit to specify the detail setting, including:

Enable: Click the check box to enable specific SSID interface. The first SSID is default enabled.

SSID: Specifies the SSID name for the current profile.

Hidden SSID: Check this option to hide the SSID from clients. If checked, the SSID will not appear in the site survey.

Client Isolation: Block the communication between the accociated clients under the same WLAN.

VLAN Isolation: When this function is checked with specified VLAN ID in a SSID profile, the traffic from this SSID will be tagged with this VLAN ID upon entering LAN bridge.

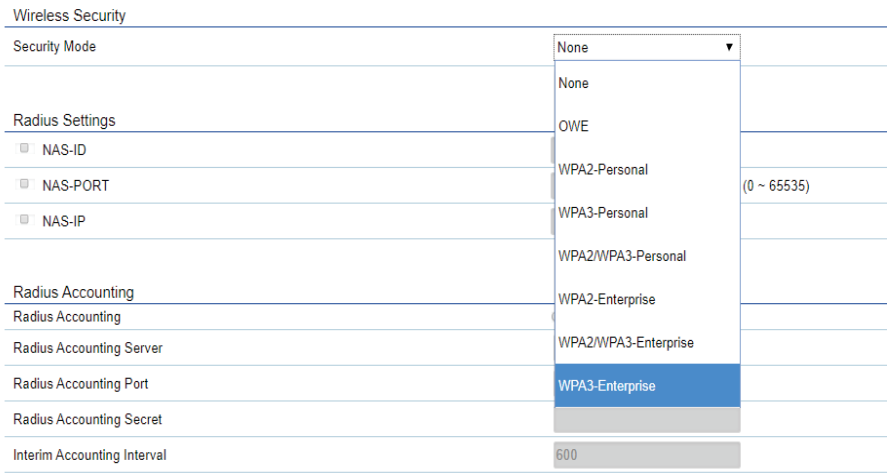
VLAN ID: Specifies the VLAN tag for each profile. If your netowrk includes VLANs, you can specify a VLAN ID for packets pass through the Access Point with a tag.

L2 Isolation: Enable this function prevenet client devices t

Band Steering: Enable this function to facilitate effective spectrum usage. 5GHz-capable clients can associate with AP's 5GHz radio and offloading air utilization in 2.4GHz

Wireless Security

The Wireless Security section lets you configure the AP's security modes

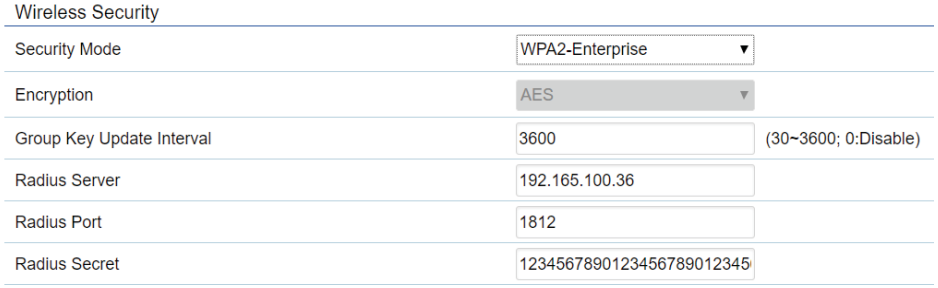


Securirty Mode: Including OWE, WPA2-Personal, WPA3-Personal, WPA2/WPA3-Personal, WPA2-Enterprise, WPA3-Enterprise, WPA2/WPA3-Enterprise. The following is an example for WPA2-Enterprise (Pre-Shared Key).

Encryption: Default is AES. Please ensure that your wireless clients use the same settings.

> **Note:** 802.11n does not allow WPA2-PSK TKIP security mode.

Group Key Update Interval: Specifies how often, in seconds, the Group Key changes. The default value is 3600.

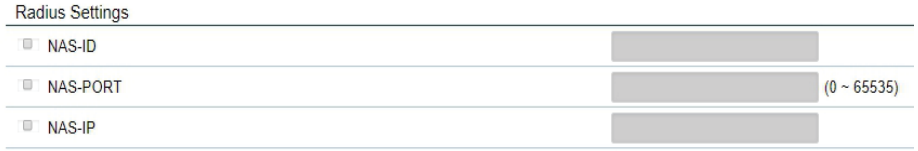


Radius Settings

NAS-IP: Configure you NAS server address to assign traffic to the destination.

NAS-Ports: Configure your port No. if you would like to enable Network Address Servecie (NAS) under a SSID.

NAS-ID: Configure a NAS ID which is mapped with the SSID. The traffic will be forwarded via the different SSIDs if these SSIDs configured as different ID.



Radius Accounting

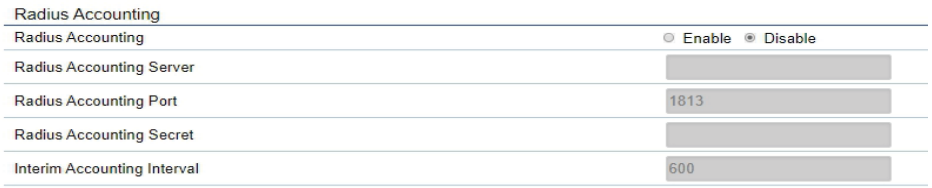
Radius Accounting: Choose to enable or disable accounting feature.

Radius Accounting Server: Enter the IP address of the Radius accounting server.

Radius Accounting Port Enter the port number used for connections to the Radius accounting server.

Radius Accounting Secret: Enter the secret required to connect to the Radius accounting server.

Interim Accounting Interval: Specifies how often, in seconds, the accounting data sends.



Fast Roaming

Enable the function to serve mobile client devices that roam from Access Point to Access Point. Some applications running on Client devices require fast re-association when they roam to a different Access Point

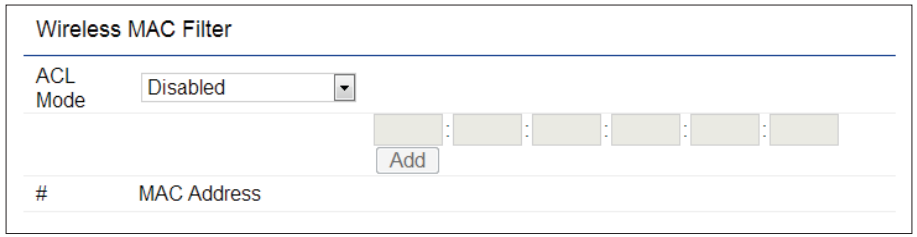
Please enter the settings of the SSID and initialize the Security mode to WPA2 or WPA3 enterprise, as well as to set the Radius Server firstly. Then users can enable the Fast Roaming and implement the advanced search.

Please also set the same enterprise Encryption under the same SSID on other Access Points and enable the Fast Roaming. When the configuration is realized on different Access Point, the mobile client devices can run the voice service and require seamless roaming to prevent delay in conversation from Access Point to Access Point.

Wireless MAC Filtering

Wireless MAC Filtering is used to allow or deny network access to wireless clients (computers, tablet PCs, NAS, smartphones, etc.) according to their MAC addresses. You can manually add a MAC address to restrict permission to access the AP. The default setting is: **Disable Wireless MAC Filter**.

> **Note:** Only applicable in Access Point and WDS AP modes.



ACL Mode: Determines whether network access is granted or denied to clients whose MAC addresses appear in the MAC address table on this page. There are three optoin: Disabled / Allow MAC in the list / Deny MAC in the list.

MAC Address: Enter the MAC address of the wireless client.

Add: Click **Add** to add the MAC address to the MAC address table.

Wireless Traffic Shaping

Traffic shaping regulates the flow of packets leaving an interface to deliver improved Quality of Service(QoS). The function will allow administrators to restrict the wireless bandwidth per SSID or per user.

Status: Check this option to enable Wireless Traffic Shaping.

Download Limit: Specifies the wireless transmission bandwidth used for downloading.

Upload Limit: Specifies the wireless transmission bandwidth used for uploading.

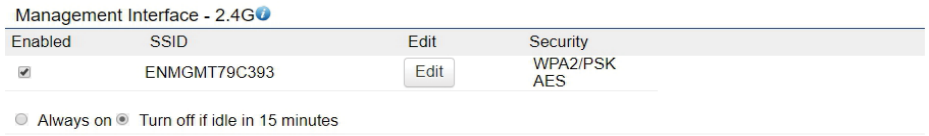
This limitation can be specified per user.

After filling in those settings, click **Save** to confirm then back to the main page of wireless setting.

Management Interface-2.4G

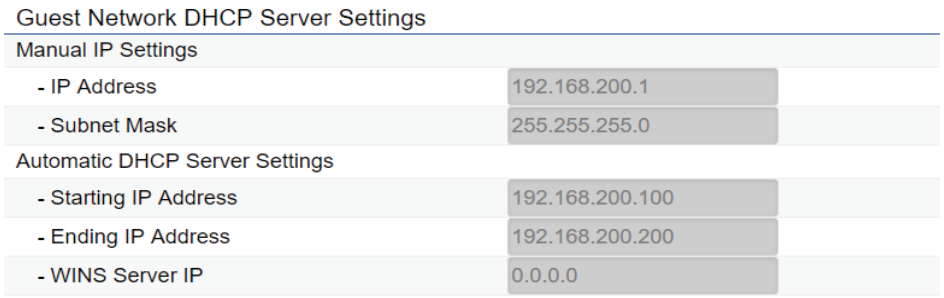
This Management interface make you can change the configuration via EnWiFi App instead of using the GUI. Management SSID will be turned off in this two situation. (1)When the device is powered up in the first time and there is no connection in 30 minutes. (2)When the setting is done and idle in 15 minutes. If you need to turn on management SSID please reboot the device.You can set to always on or turn off if idle in 15 minutes.

For security, we strongly recommend to change the default passphrase via entering the Edit page.



Guest Network Settings

You can add a guest network which allows visitors to use the Internet without providing your office or company wireless security key. You can checked the guest network in specified SSID and proceed the detail setting here.



IP Address: The IP Address of this device.

Subnet Mask: The IP Subnet mask of this device.

Automatic DHCP Server Settings

Starting IP Address: The first IP Address in the range of the addresses by the DHCP server.

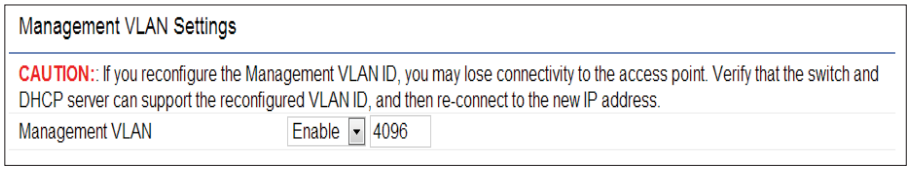
Ending IP Address: The last IP Address in the range of addresses assigned by the DHCP server.

WINS server IP: Address for the WINS server.

Management VLAN Settings

This page allows you to assign a VLAN tag to packets sent over the network. A VLAN is a group of computers on a network whose software has been configured so that they behave as if they were on a separate Local Area Network (LAN). Computers on VLAN do not have to be physically located next to one another on the LAN.

Note: Only applicable in Access Point and WDS AP modes.



Management VLAN: If your network includes VLANs, you can enable **Management VLAN ID** for packets passing through the Access Point with a tag.

Save: Click **Save** to confirm the changes or **Cancel** to cancel and return to previous settings.

Note: If you reconfigure the Management VLAN ID, you may lose your connection to the EnStationAC. Verify that the DHCP server supports the reconfigured VLAN ID and then reconnect to the EnStationAC using the new IP address.

Chapter 7
Mesh

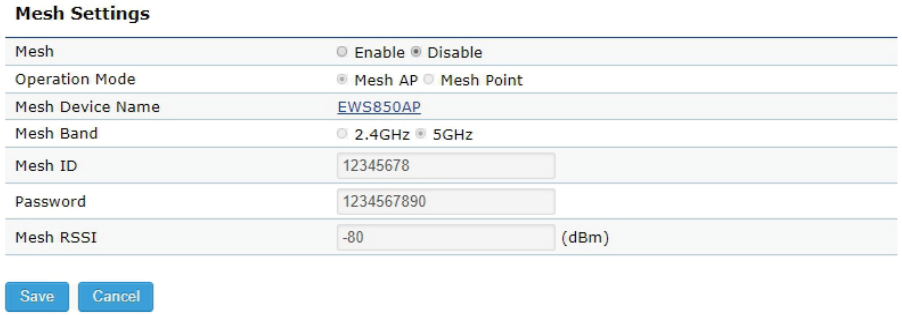
Mesh

Mesh Status

This page allows you to review the status of the mesh network.

Mesh Settings

This page allows you to build up a mesh connection in the wireless network.



Mesh: Choose to enable or disable.

Operation Mode: Base on the role of this device to make it as Mesh AP or Mesh Point.

Mesh Device Name: The modle name of this Mesh device.

Mesh ID: To create a mesh network, please enter the ID number of this device for including into Mesh.

Password: Set up a password for this Mesh ID.

Mesh RSSI: The RF level in the mesh network.

Save/Cancel: To instore or remove the setings you have done.

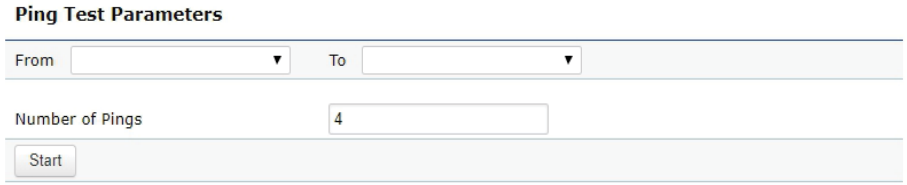
Tools

Node List: Devices list in this Mesh network.

Link Status: This page allows you to review the linking status (RSSI) of each Mesh nodes.

Ping

This page allows you to analyze the connection quality of the device in the network.



From/To: Choose the IP address you would like to ping in this Mesh network.

Number of Pings: Enter the number of times you wish to ping.

Start: Click start to proceed ping test.

Traceroute

This page allows you to trace the routing table to a target in the network.

From/To: Choose the IP address you would like to trace.

Start: Click start to proceed traceroute test.

Throughput Test

Chroose the target device you would like to test the throughput performance.

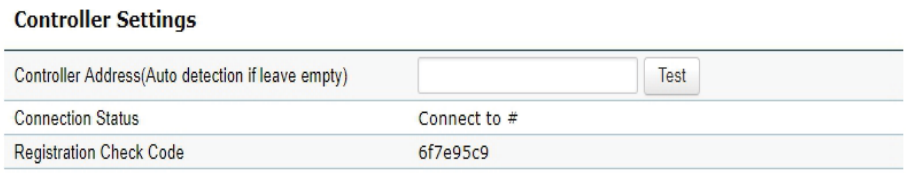
Chapter 8

Management

Advanced Settings

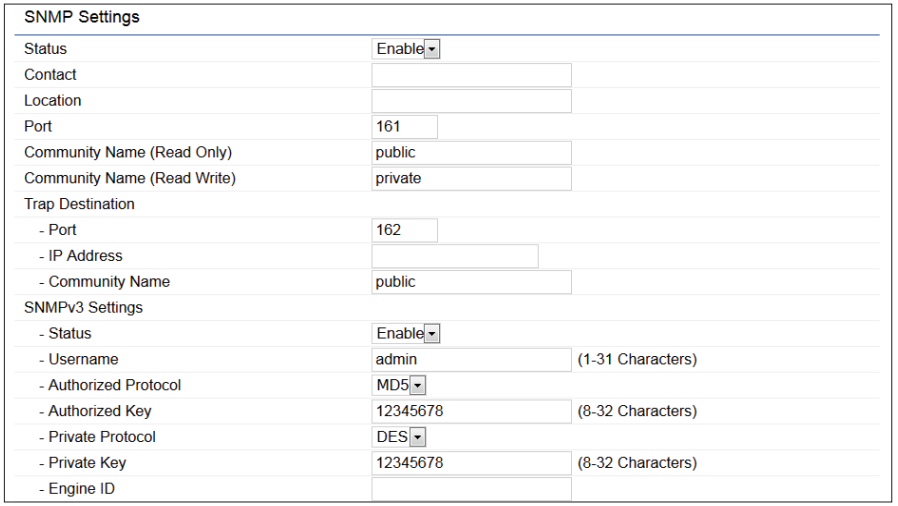
Controller Settings

Controller Address (Auto detection if leave empty):
If the device is managing by controller, it will show the address.



SNMP Settings

This page allows you to assign the Contact Details, Location, Community Name, and Trap Settings for a Simple Network Management Protocol (SNMP). SNMP is a networking management protocol used to monitor network attached devices. SNMP allows messages (called protocol data units) to be sent to various parts of the network. Upon receiving these messages, SNMP compatible devices (called agents) returns the data stored in their Management Information Bases.



Status: Enables or disables the SNMP feature.

Contact: Specifies the contact details of the device.
Location: Specifies the location of the device.

Community Name (Read Only): Specifies the password for the SNMP community for read only access.

Community Name (Read/Write): Specifies the password for the SNMP community with read/write access.

Trap Destination Address: Specifies the IP address of the computer that will receive the SNMP traps.

Trap Destination Community Name: Specifies the password for the SNMP trap community.

SNMPv3: Enables or disables the SNMPv3 feature.

User Name: Specifies the username for SNMPv3.

Auth Protocol: Selects the authentication protocol type: MDS or SHA.

SAuth Key: Specifies the authentication key.

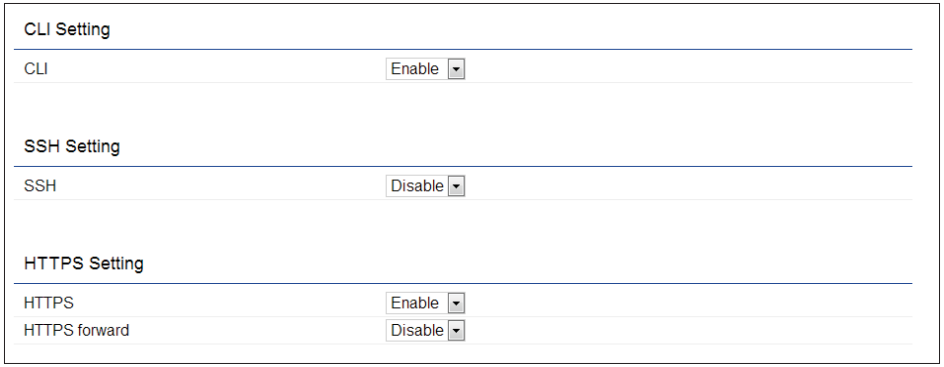
Priv Protocol: Selects the privacy protocol type: DES.

Priv Key: Specifies the privacy key for privacy.

Engine ID: Specifies the engine ID for SNMPv3.

Apply Save: Click **Apply Save** to apply the changes.

CLI Settings



CLI: The Command Line Interface (CLI) allows you to type commands instead of choosing them from a menu or selecting an icon.

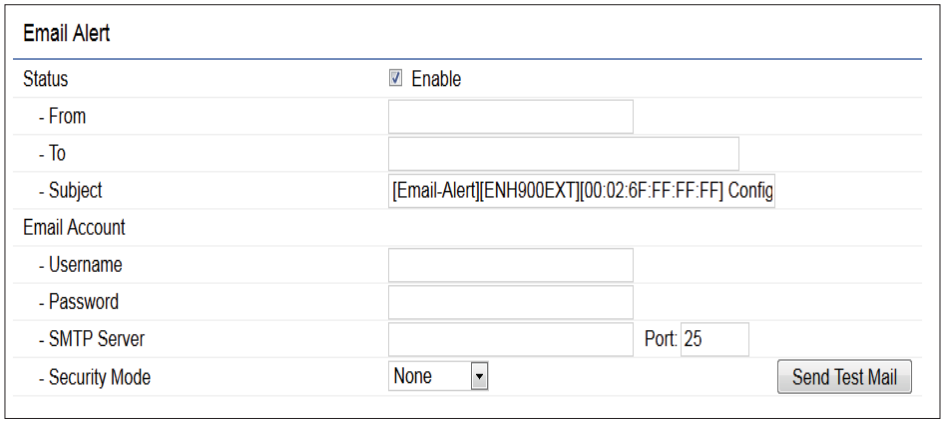
SSH: Enable Secure Shell (SSH) to make secure, encrypted connections in the network. Secure Shell is a network protocol that allows data to be exchanged using a secure channel between two network devices.

HTTPS: Enable HTTPS to transfer and display web content securely. The Hypertext Transfer Protocol over SSL (Secure Socket Layer) is a TCP/IP protocol used by web servers to transfer and display web content securely.

Email Alert

You can use the Email Alert feature to send messages to the configured email address when particular system events occur.

Note: Do **NOT** use your personal email address as it can unnecessarily expose your personal email login credentials. Use a separate email account made for this feature instead



From: Enter the email address to show the sender of the email.

To: Enter the address that you wish to send emails to.

Subject: Enter the text that you wish to appear in the email's subject line.

Username: Enter the username for the email account that will be used to send emails.

Password: Enter the password for the email account that will be used to send emails.

SMTP Server: Enter the IP address or hostname of the outgoing SMTP server.

Port: Enter the SMTP port number to use for outbound emails.

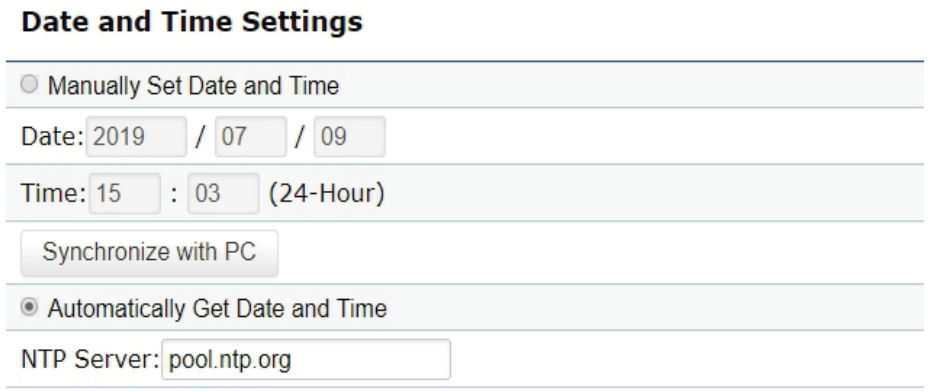
Security Mode: Selects the security mode: SSL/TLS or STARTTLS or None.

Apply: To save setting and take effect.

Time Zone

Date and Time Setting

This page allows you to set the internal clock of the device.



Manually Set Date and Time: Manually specify the date and time.

Automatically Get Date and Time: Select and check whether you wish to enter the IP address of an NTP server or use the default NTP server to have the internal clock set automatically.

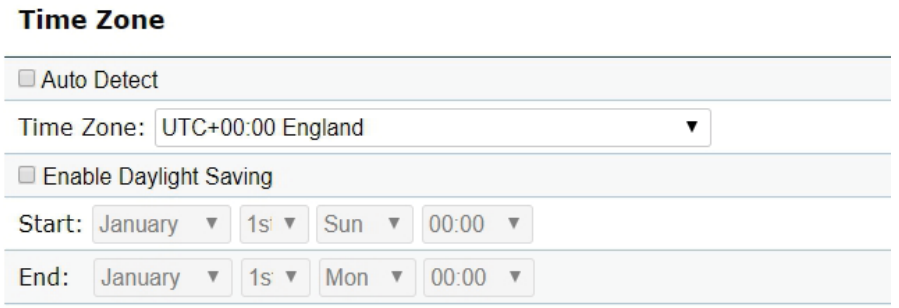
Time Zone

You can click Auto Detect or select Time Zone from the menu.

Enable Daylight Saving: Check whether daylight savings applies to your area.

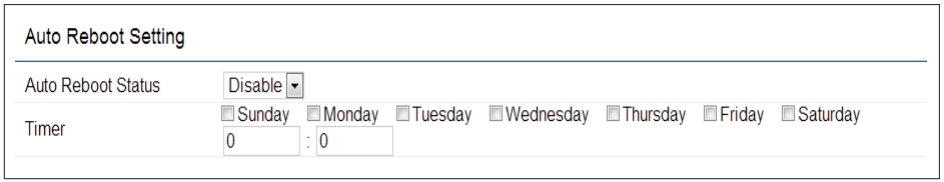
Start: Select the day, month, and time when daylight savings time starts.

End: Select the day, month, and time when daylight savings times ends.



Auto Reboot Settings

You can specify how often you wish to reboot the device.



Auto Reboot Setting: Enables or disables the Auto Reboot function.

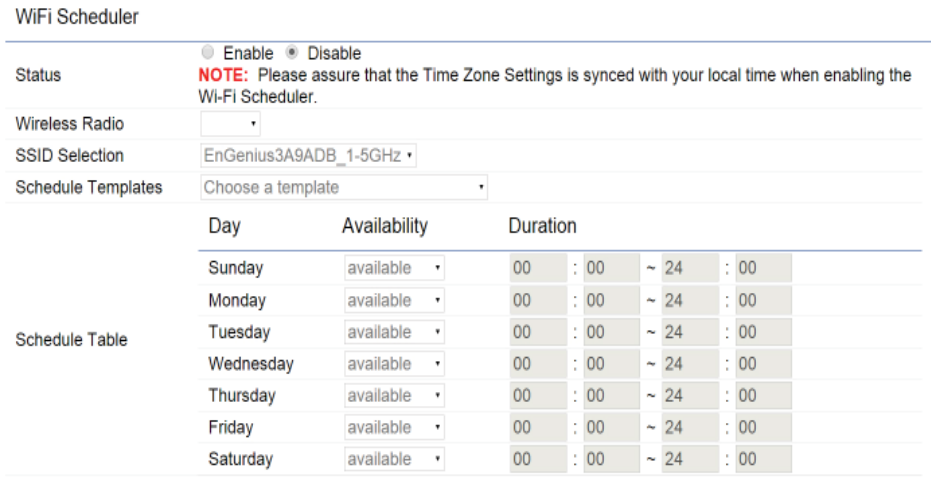
Frequency of Auto Reboot: Specifies how often you wish to reboot the EnStationAC by Min, Hour, Day or Week.

Timer: Select the day and enter the time you would like to reboot automatically.

Save: Click **Save** to apply the changes.

Wi-Fi Scheduler

The Wi-Fi Scheduler can be created for use in enforcing rules. For example, if you wish to restrict web access to Mon-Fri from 3pm to 8pm, you could create a schedule selecting Mon, Tue, Wed, Thu and Fri while entering a Start time of 3pm and End Time of 8pm to limit access to these times.



Status: Enables or disables the Wi-Fi scheduler function.

Wireless Radio: Select 2.4 GHz or 5 GHz from the drop-down list for the preferred band type.

SSID Selection: Select a SSID from the drop-down list.

Schedule Templates: Select a schedule template from the drop-down list.

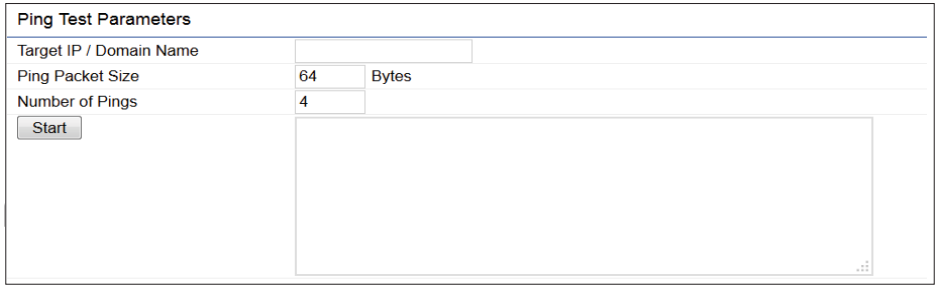
Day(s): Place a checkmark in the boxes for the desired days or select the **All Week** radio button to select all seven days of the week.

Duration: The Start Time is entered in two fields. The first box is for hours and the second box is for minutes. The End Time is entered in the same format as the Start time.

Tools

Ping Test

This page allows you to analyze the connection quality of the device and trace the routing table to a target in the network.



Target IP: Enter the IP address you would like to search.

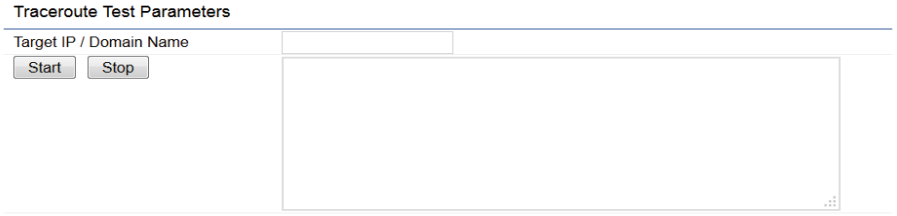
Ping Packet Size: Enter the packet size of each ping.

Number of Pings: Enter the number of times you wish to ping.

Start: Click start to proceed ping test.

Traceroute Test

Target IP/ Domain Name: Enter the IP address or domain name you would like to trace



Nslookup Test

Target IP/ Domain Name: Enter the IP address or domain name you would like to do Nslookup test.

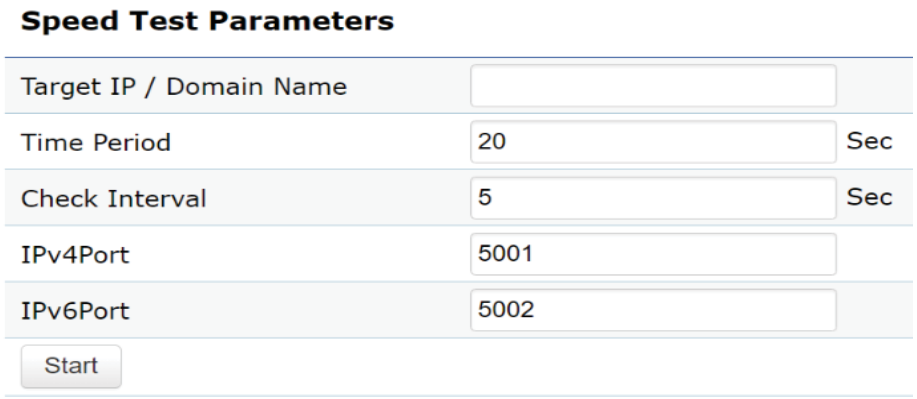
Speed Test

Target IP / Domain Name: Enter an IP address or domain name you wish to impelement a speed test for realizing the variance on wireless speed.

Time Period: Enter the time in seconds that you would like the test to implement for and in how many intervals.

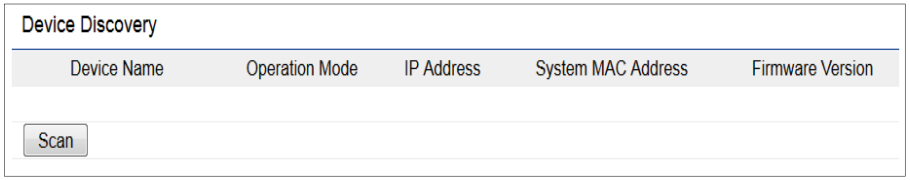
IPv4/IPv6 Port: This Access Points uses IPv4 5001 and IPv6 60001 port for the speed test.

Start: Click start to implement speed test.



Device Discovery

This page allows you to discover devices from network for Operation Mode, IP Address, System MAC Address and Firmware version.



Chapter 9

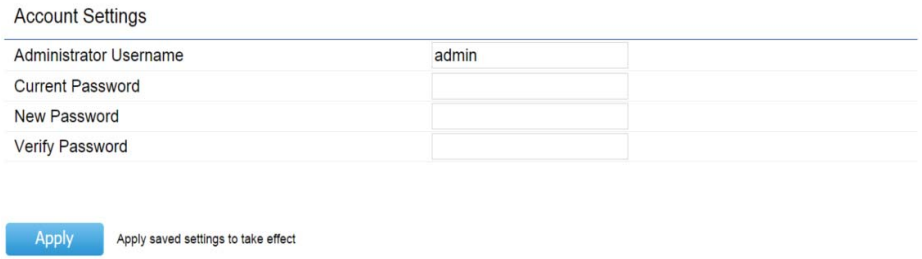
System Management

System Manager

Account

This page allows you to change the device username and password. By default, the username is: **admin** and the password is: **admin**. The password can contain from 0 to 12 alphanumeric characters and is case sensitive.After this changes applies, you need to login again.

Account Settings



Administrator Username: Enter a new username for logging in to the New Name entry box.

Current Password: Enter the old password for logging in to the Old Password entry box.

New Password: Enter the new password for logging in to the New Password entry box.

Verify Password: Re-enter the new password in the Confirm Password entry box for confirmation.

Apply: Click **Apply** to apply the changes.

Firmware

Firmware Upgrade

This page allows you to upgrade the firmware of the device.

To Perform the Firmware Upgrade:

1. Click the **Choose File** button and navigate the OS file system to the location of the upgrade file.
2. Select the upgrade file. The name of the file will appear in the Upgrade File field.
3. Click the **Upload** button to commence the firmware upgrade.

   Note: The device is unavailable during the Firmware upgrade process and must restart when the upgrade is completed. Any connections to or through the device will be lost.

Backup/Restore

This page allows you to save the current device configurations. When you save your configurations, you also can reload the saved configurations into the device through the Restore Saved Settings from a file section. If extreme problems occur, or if you have set the AP incorrectly, you can use the **Reset** button in the Revert to Factory Default Settings section to restore all the configurations of the AP to the original default settings.

Factory Setting

Backup Setting: Click **Export** to save the current configured settings.

Restore New Setting: To restore settings that have been previously backed up, click **Browse**, select the file, and click **Restore**.

Restore to Default: Click **Reset** button to restore the AP to its factory default settings.

User Setting

The function allows you to backup the current device configurations into the EnStationAC as the default value. If extreme problems occur, or if you have set the EnStationAC incorrectly, you can push the Reset button to revert all the configurations of the EnStationAC to the user default.

Back Up Setting as Default: Click **Backup** to backup the user settings you would like to the device's memory for the default settings.

Restore to User Default: Click **Restore** to restore user settings to the factory standard settings.

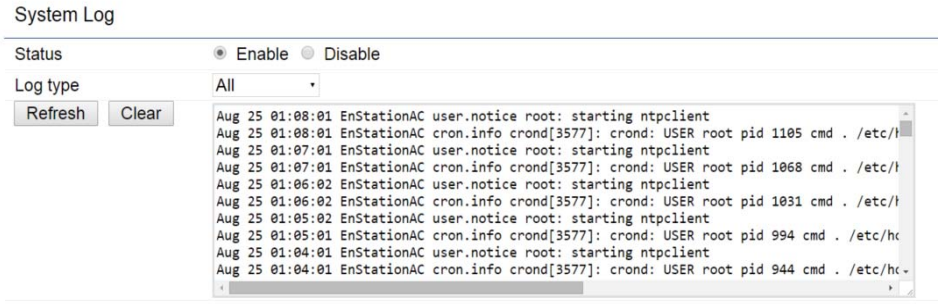
Note1: After setting the current settings as the default, you should click the **Restore to Default** on the web interface for reverting the settings into the factory default instead of pushing the reset button.

Note2: Please **write down** your account and password before saving. The user settings will now become the new default settings at the next successful login.

Log

System Log

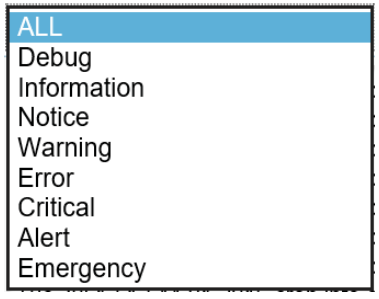
The EnStationAC automatically logs (records) events of possible interest in its internal memory. To view the logged information, click the **Log** link under the System Manager menu. If there is not enough internal memory to log all events, older events are deleted from the log. When powered down or rebooted, the log will be cleared.



Status: Enable/Disable this function.

Trafic Log: Enable/Disable this function.

Log type: You may choose one of log types to display logs in the following window. The default log types is All.



Remote Log

This page allows you to setup the Remote Log functions for the AP/CPE.

Syslog: Enables or disables the syslog function.

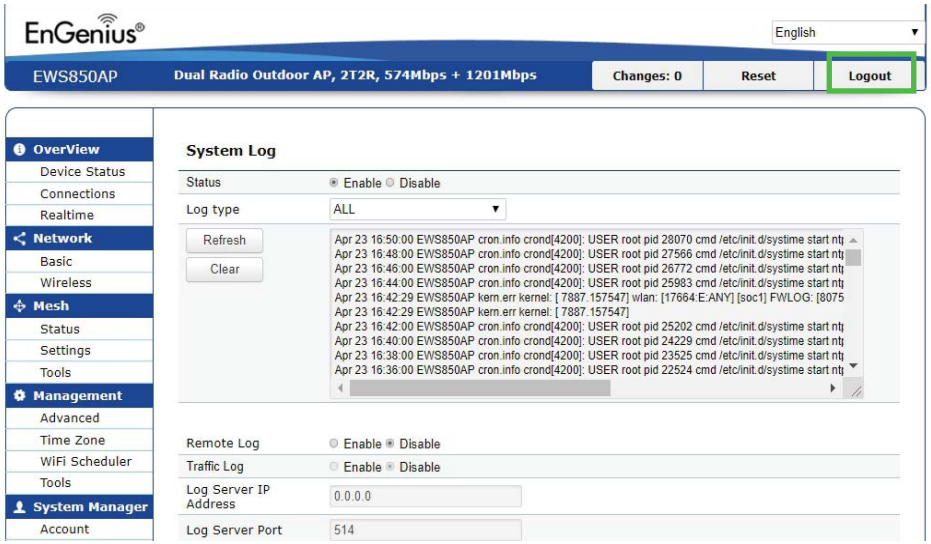
Log Server IP Address: Enter the IP address of the log server.

Remote Log: Enable or disable the remote log service.

Apply: Click **Apply** to apply the changes.

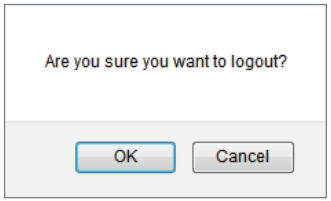
Logout

Click **Logout** in Management menu if you want to logout from the device.



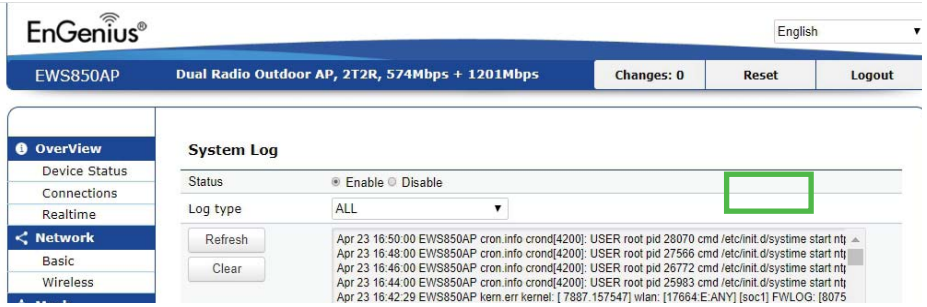
*The model name will be varied by different models.

Please confirm again to logout the system or not.



Reset

In some circumstances, it may be required to force the device to reboot. Click on **Reset** to reboot or to reset the device.



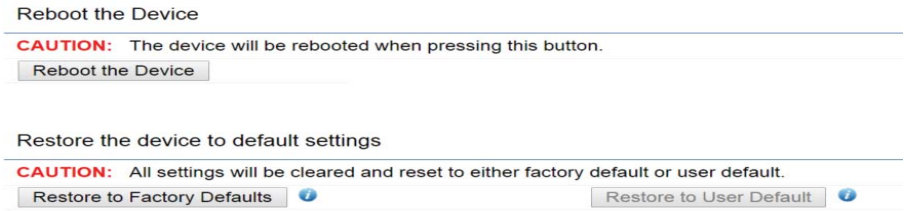
*The model name will be varied by different models.

Once you click reset button, you will see the options for reboot or restore this AP.

Reboot the device: Click it to reboot this device.

Restore to Factory Default: Click it to reset this device to factory default setting.

Restore to User Default: Click it to reset this device to user default settings.



Chapter 10

EnWiFi App

About EnWiFi App

EnWiFi is a convenient Wi-Fi management tool for EnGenius-brand outdoor and indoor Wi-Fi devices. Configure and monitor EnGenius Wi-Fi device from a smartphone or tablet. EnWifi offers single or group device configuration and updates on your network's latest status. You can access to EnGenius devices anytime via EnWiFi.

Features

Single Configuration

Proceed single device configuration throughout EnWiFi App. The Configuration could be assisted users to fulfill settings on Wireless, Network and Systems.

Group Configuration

Users can create a group configuration for multiple wireless access points and change between Client Bridge, WDS AP, WDS Bridge, WDS Station modes and EnGenius ERP easily.

Device Management

Realize status of an Access Point on RF information and real time throughput on Tx and Rx ways to make maximum PtP connecting performance or remove device with weak signal.

Discover Device

Discover EnGenius Device nearby and access to it to do management quickly.

Connected Status Monitor

Monitor connected devices on signal level (RSSI), transmit / receive performance, and firmware version. Users can enhance device settings base on these connected information.

Backup and Restore

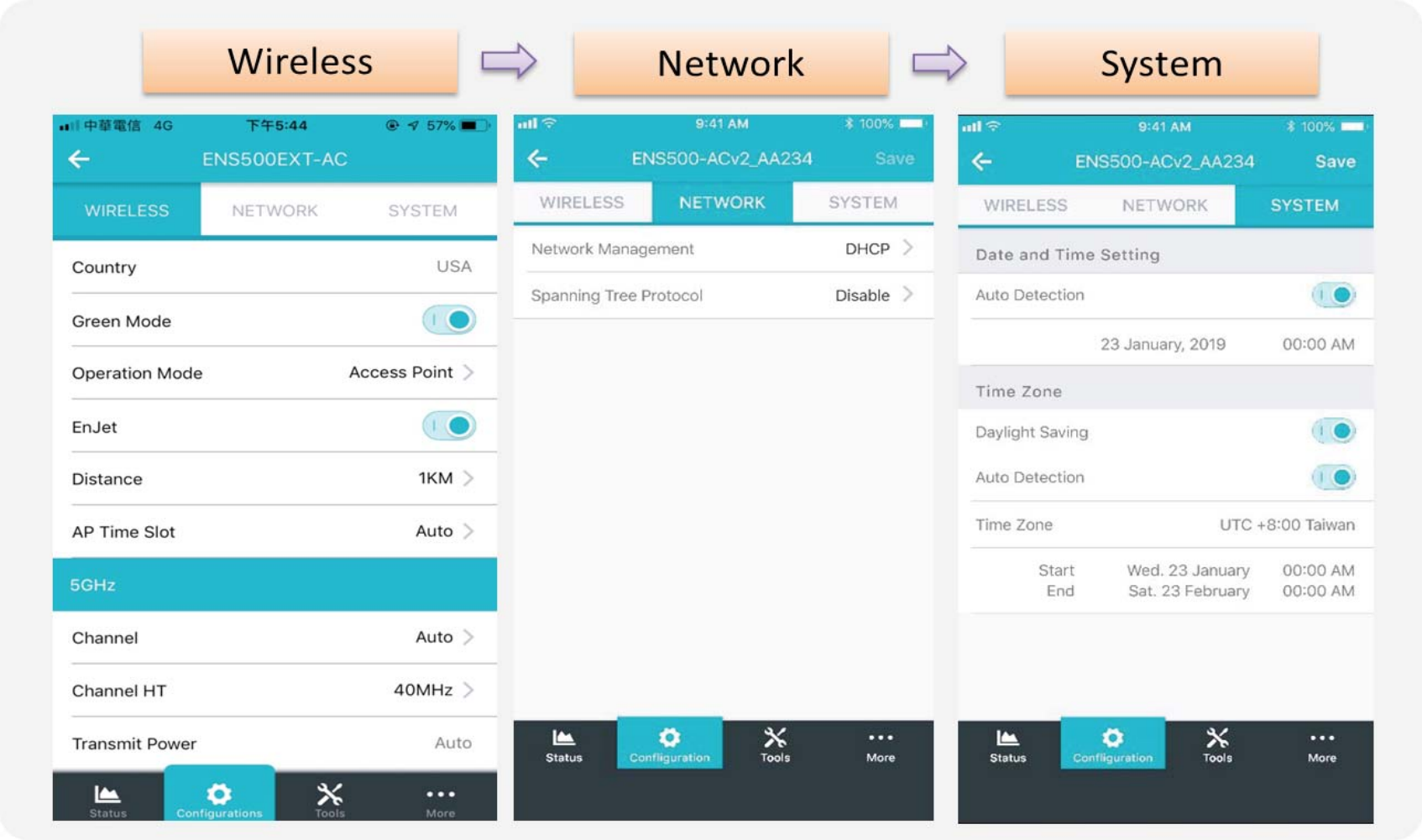
Backup current configuring file and restore to other devices quickly.

Configuring Device in EnWiFi App

Before access to device, you need to find Management SSID and connect to it first. Then you can see your device in the Device List.

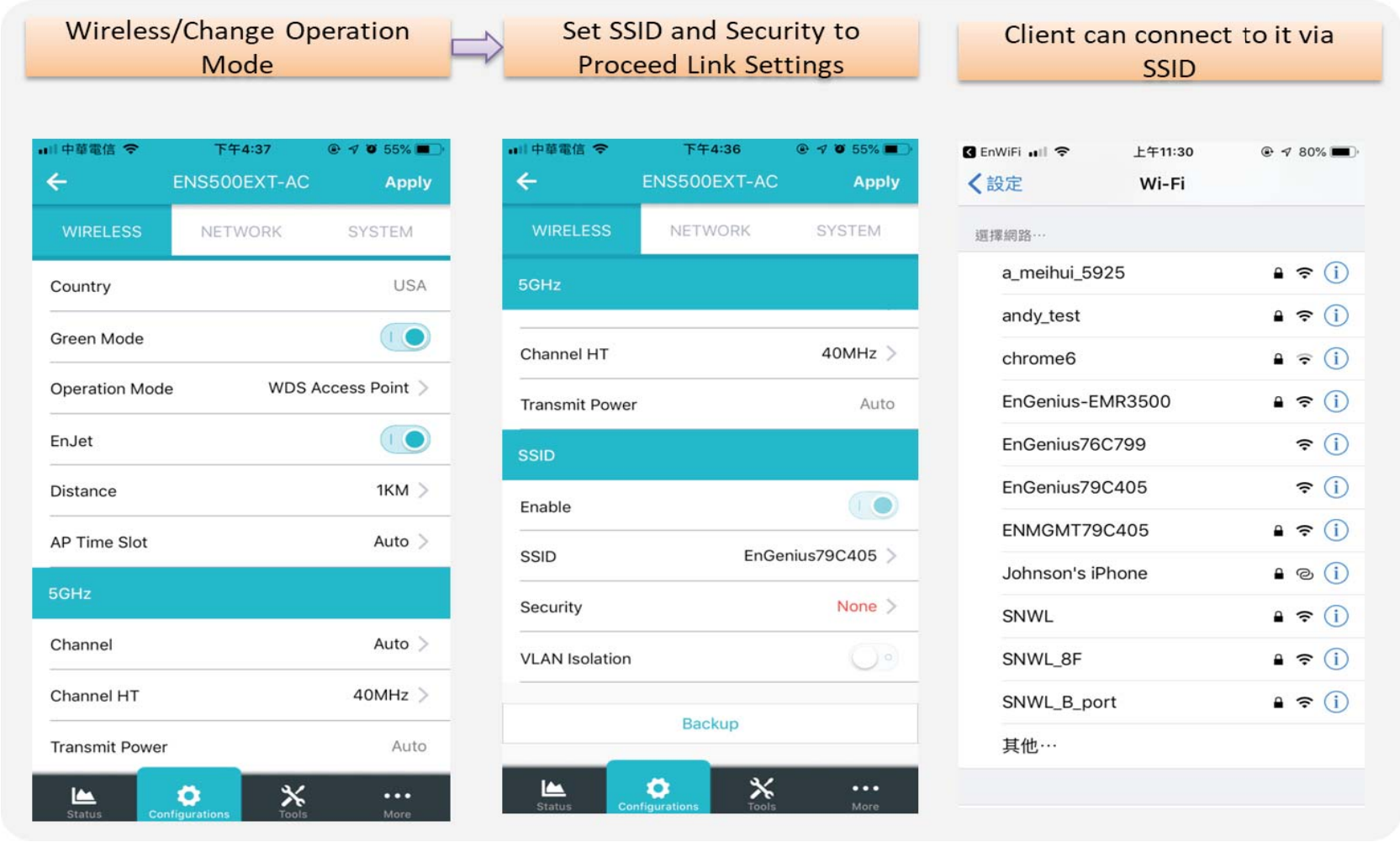
Single Configuration

Proceed Wireless Settings, Network and System Configuration to setup value on RF parameters, DHCP/Spanning Tree, and time zone for a device.



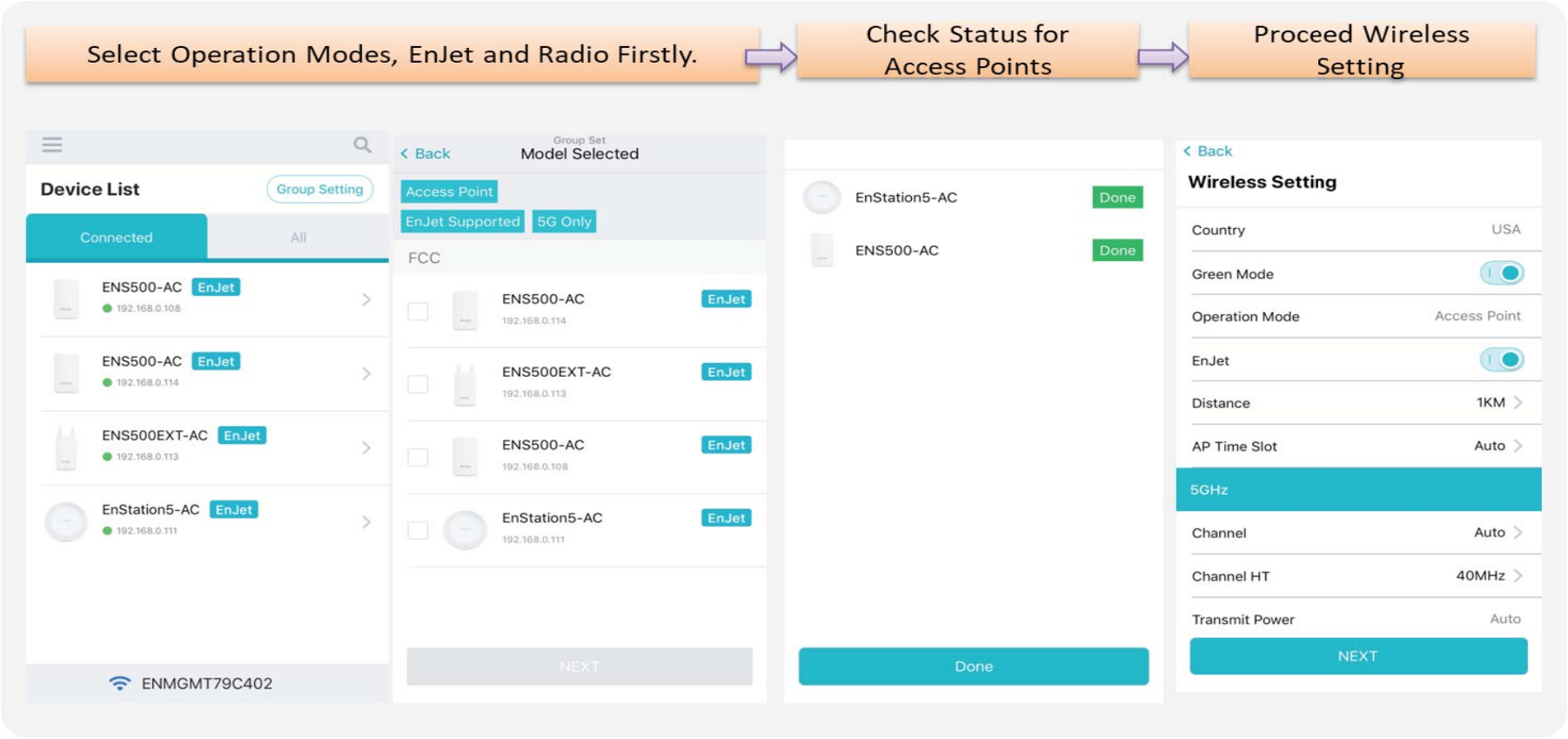
WDS Link

Setting WDS links will assist users to setup peer-to-peer connection easily.



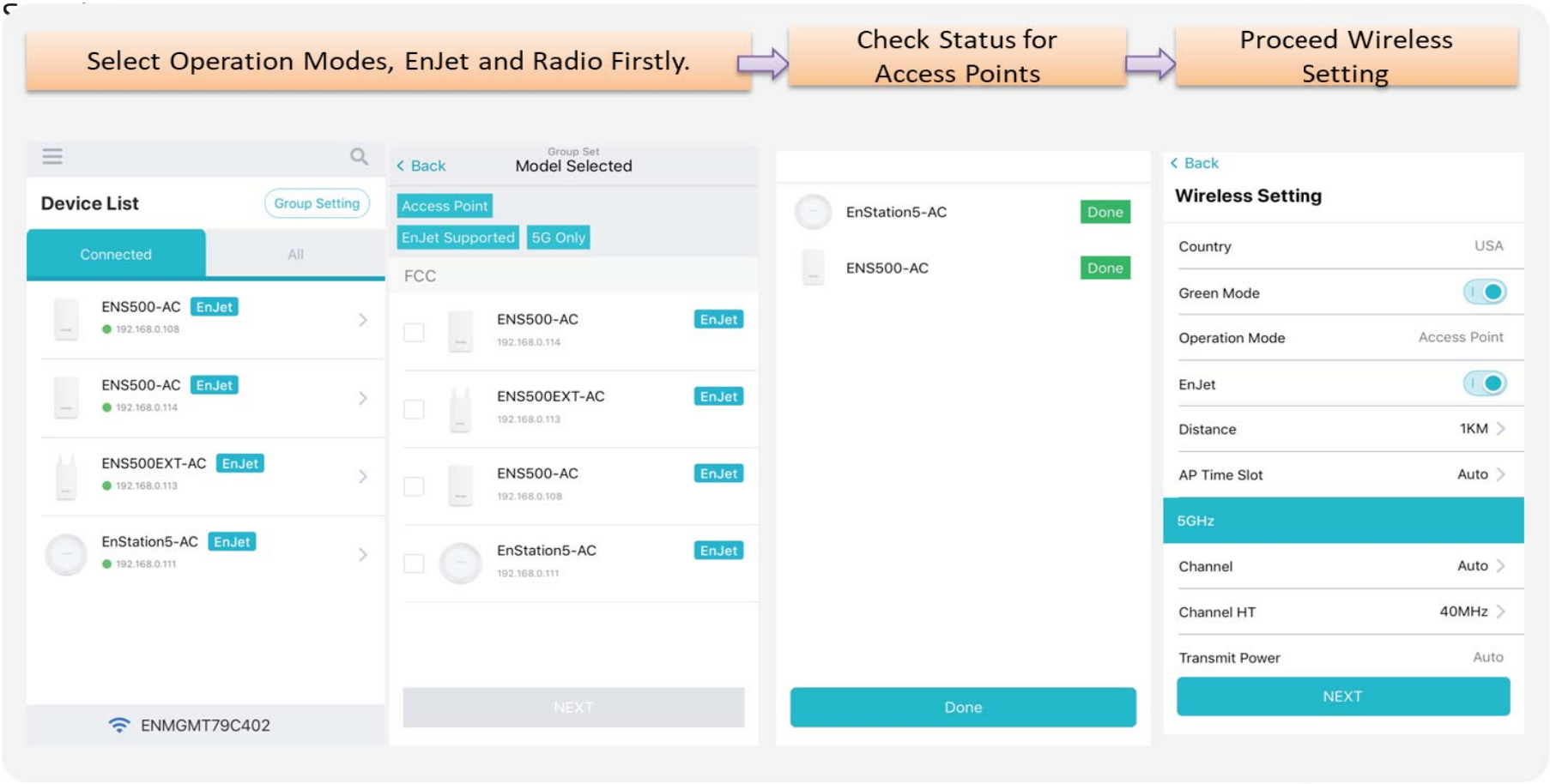
Group Configuration

Proceed Wireless Settings including EnJet, Operation mode, distance and time slot, channel used, channel HT, Tx power and Security

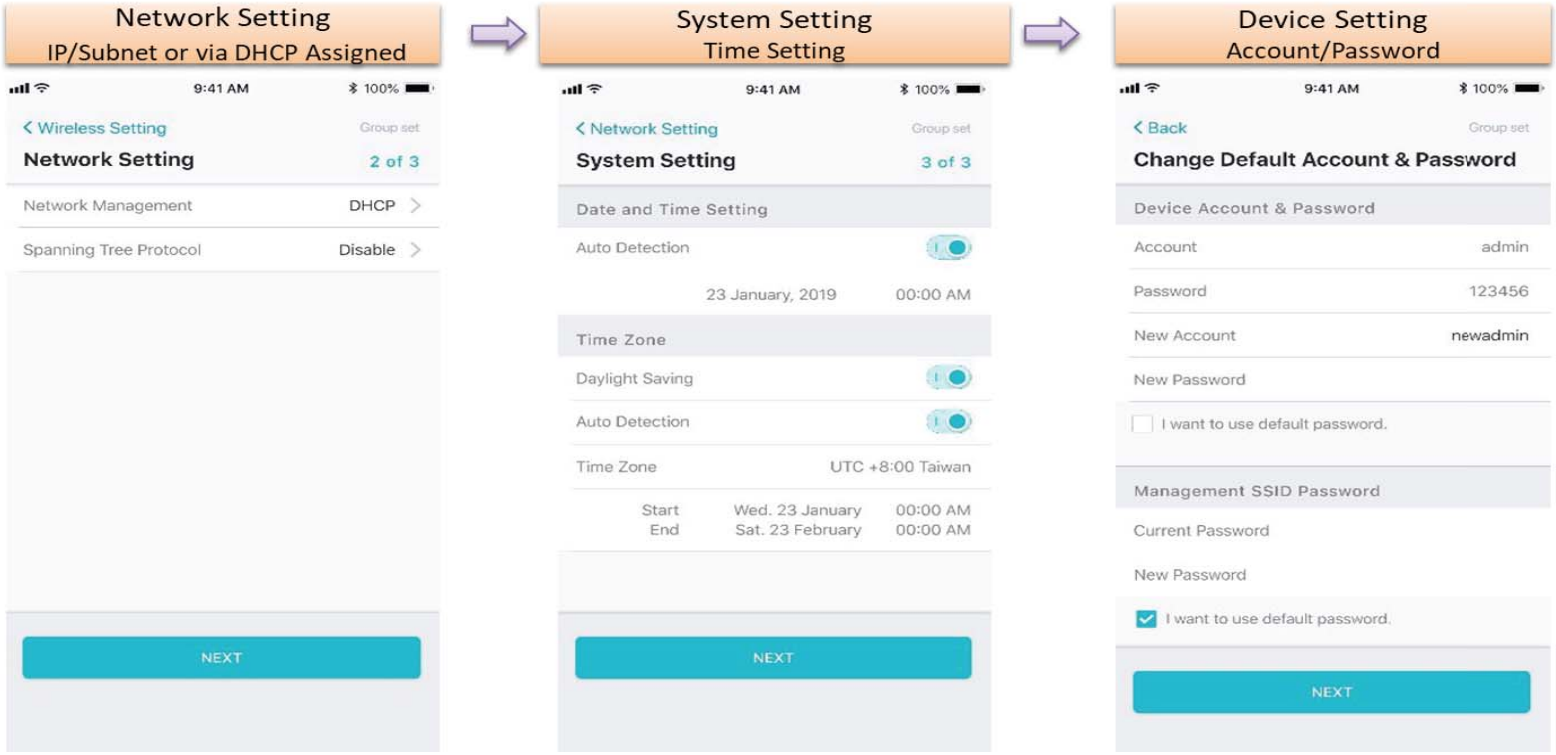


Group Configuration

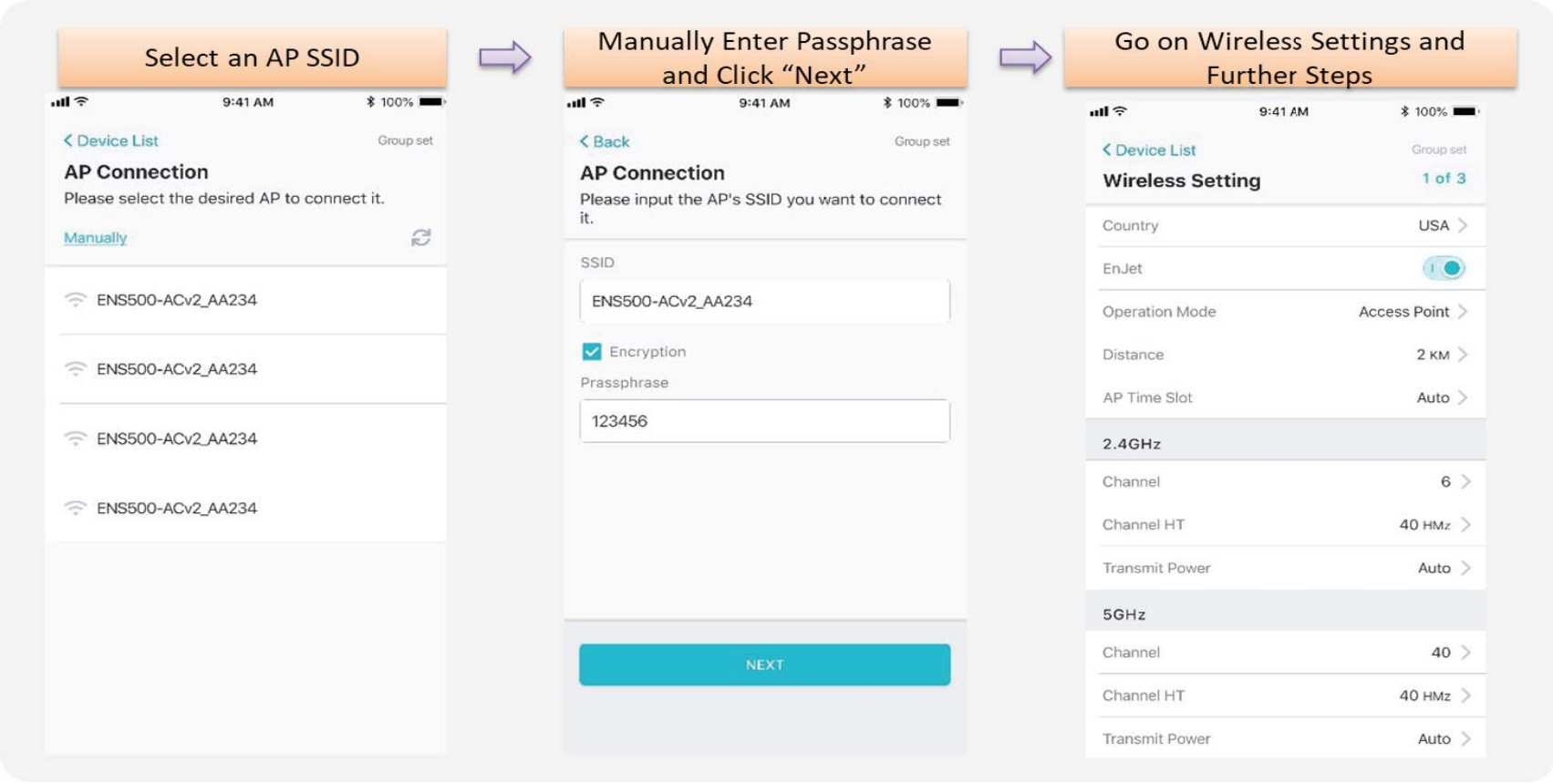
Proceed Wireless Settings including EnJet, Operation mode, distance and time slot, channel used, channel HT, Tx power and



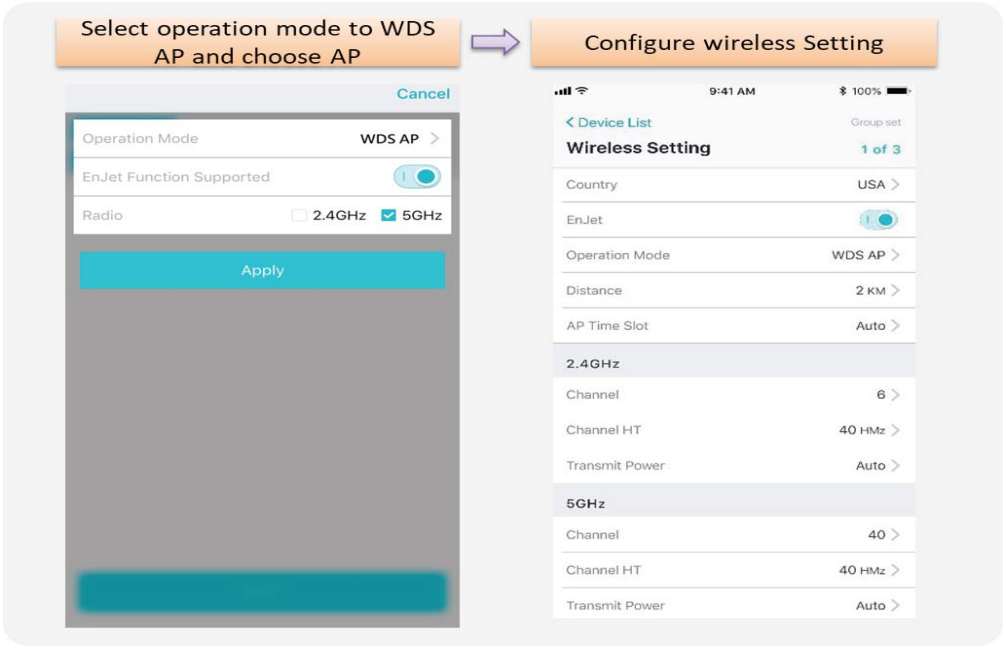
Proceed configuration on IP/Subnet, time Setting, and account/password under a group.

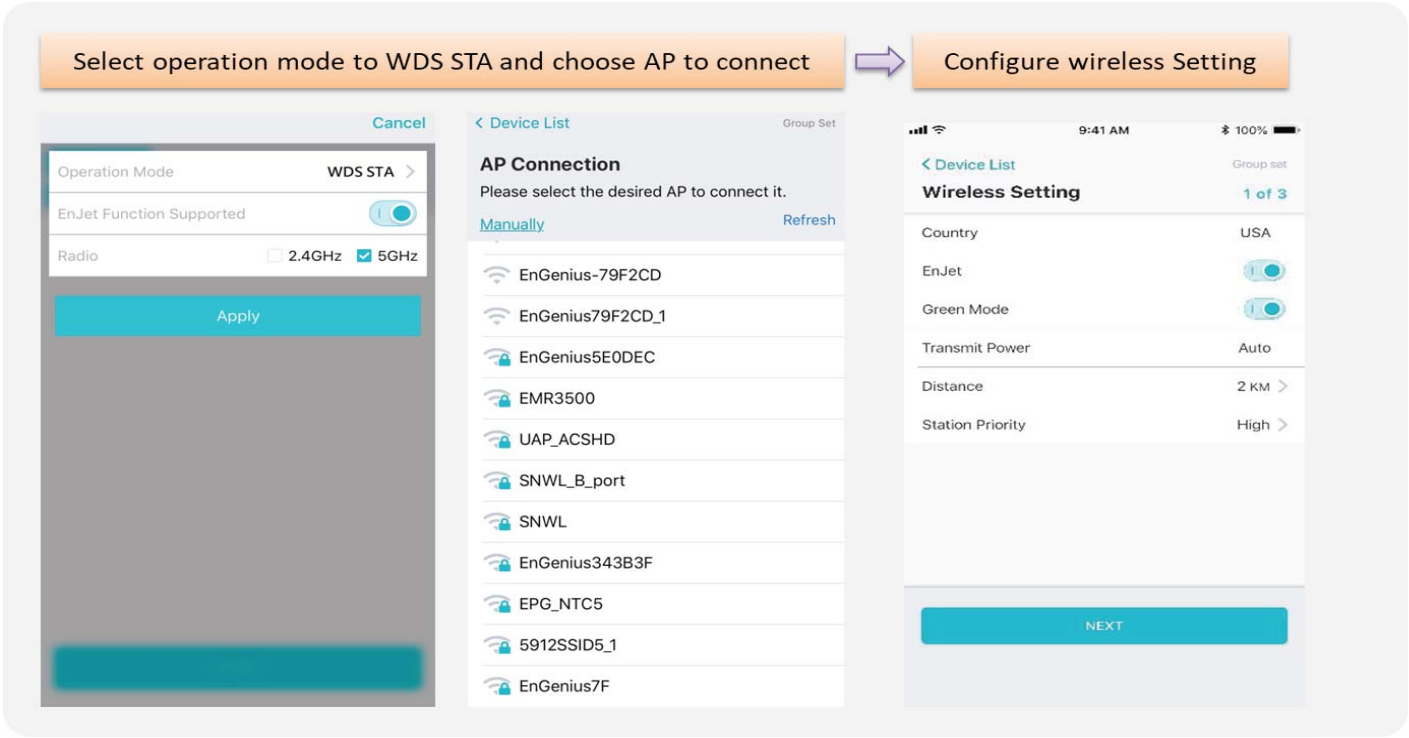


You also can use EnWiFi App to proceed connection from Client Bridge mode devices to an Access Point mode device.



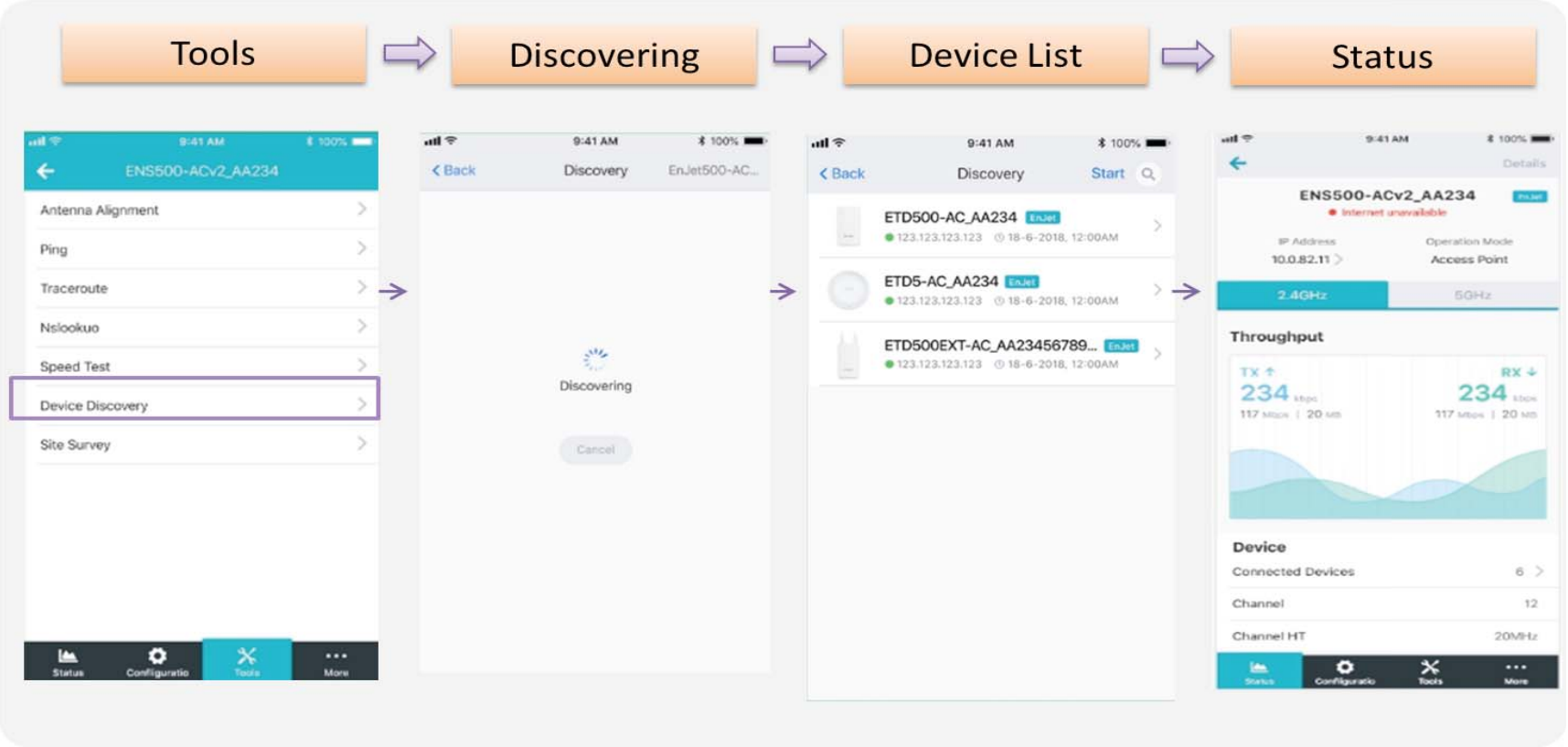
You also can set Operation mode to WDS AP mode and let WDS STA devices connect to this WDS AP mode device.





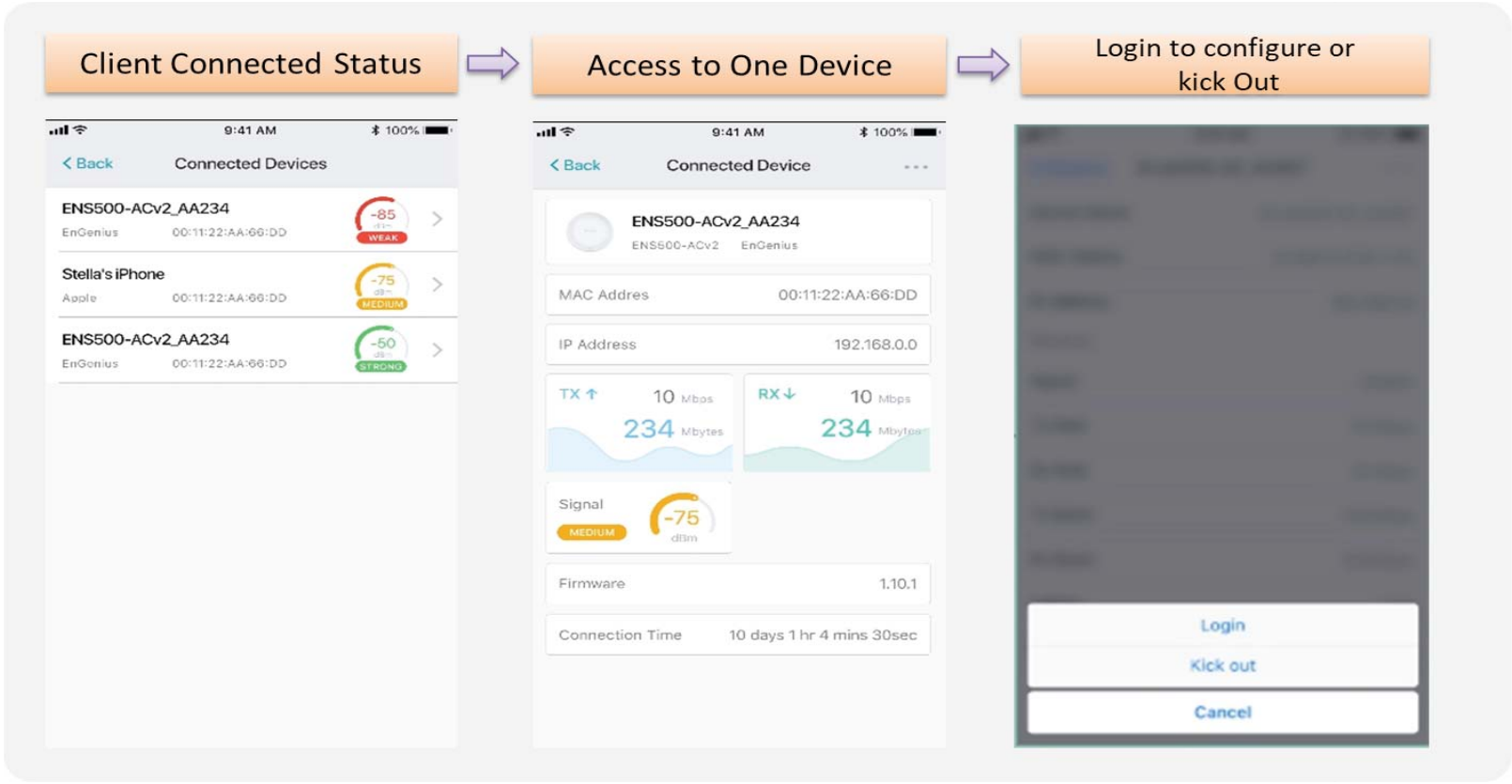
Discover Device

Discover and Access to other EnGenius devices to manage their status.



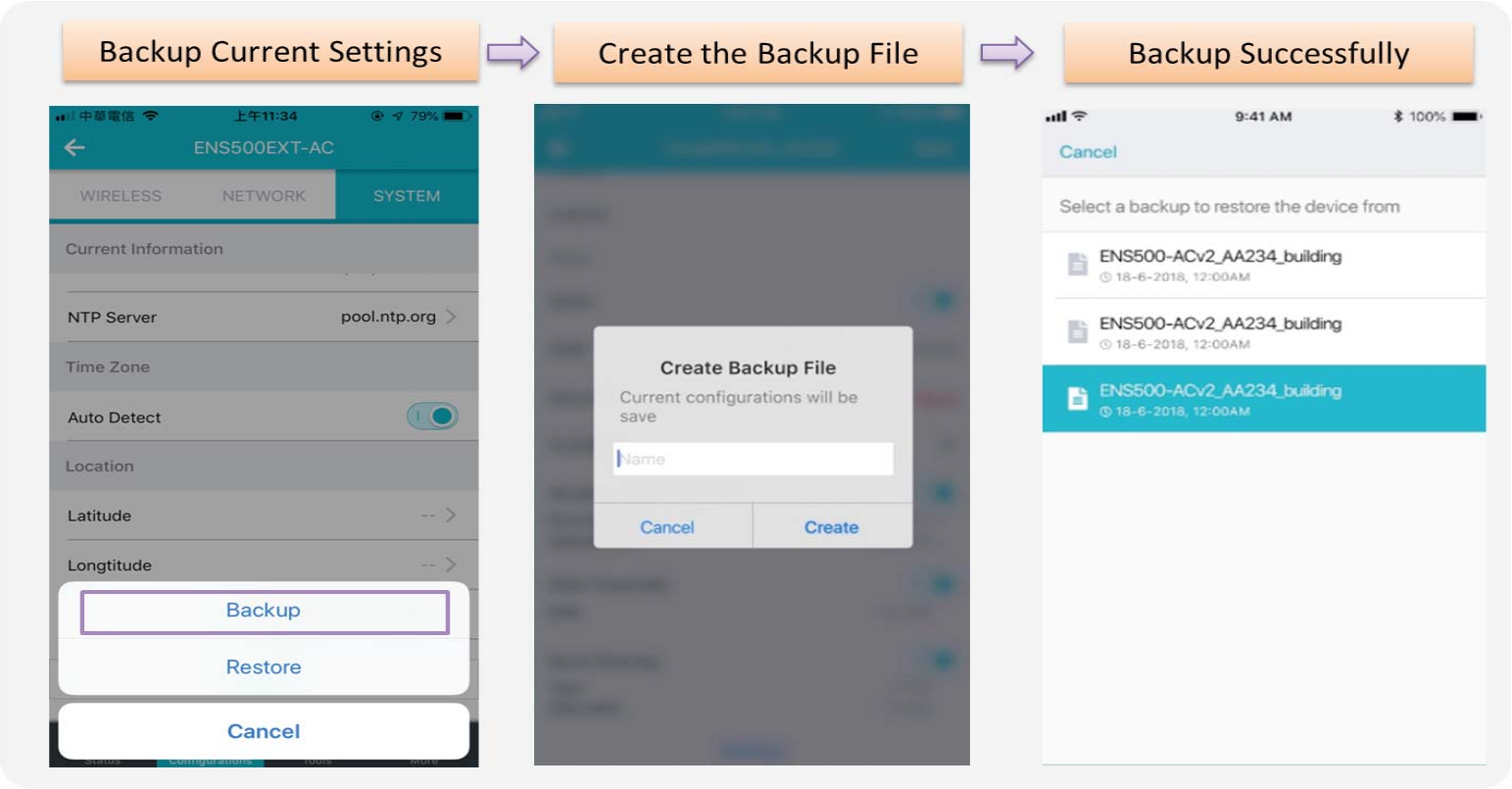
Monitor & Management

Monitor clients connected status. Base on this information to adjust configuration or press kick out to remove device if the signal is weak .



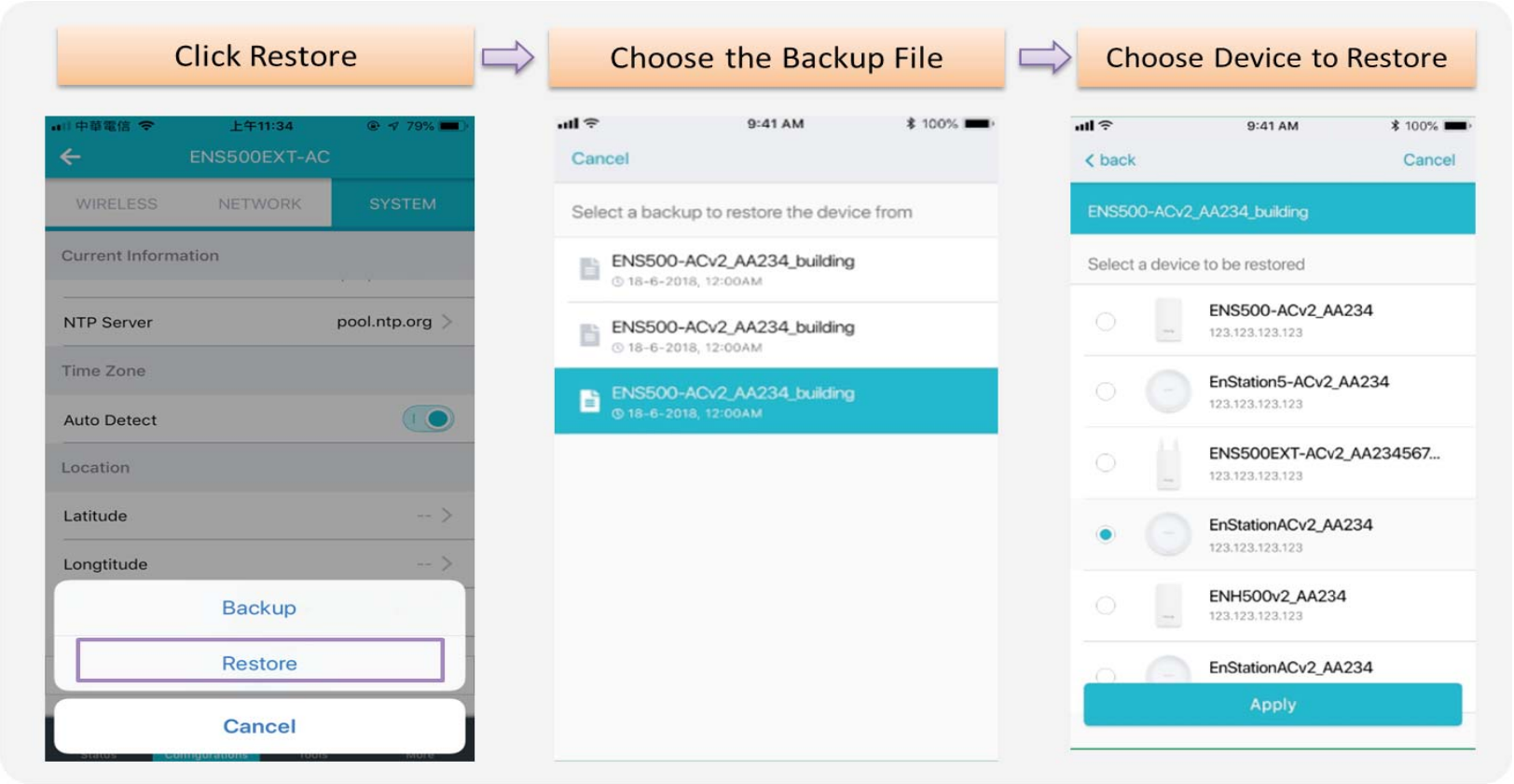
Backup

Backup current settings as a configuration file to apply to other devices quickly.



Restore

Choose backup file to restore other devices so that they can have the same configuration quickly.



Appendix

Appendix A - FCC Interference Statement

Federal Communication Commission Interference Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.For product available in the USA/Canada market, only channel 1~11 can be operated. Selection of other channels is not possible.Section 15.204(b) states that an approved "transmission system" must always be marketed as a complete system including the antenna.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help

FCC Caution:

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

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

IMPORTANT NOTE:
Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 26 cm between the radiator & your body.

Appendix B - Professional Installation Instruction (FCC)

Installation Personal

This product is designed for specific application and needs to be installed by a qualified personal who has RF and related rule knowledge. The general user shall not attempt to install or change the setting.

Installation Location

The product shall be installed at a location where the radiating antenna can be kept 26 cm from nearby person in normal operation condition to meet regulatory RF exposure requirement.

External Antenna

Use only the antennas which have been approved by the applicant. The non-approved antenna(s) may produce unwanted spurious or excessive RF transmitting power which may lead to the violation of FCC limit and is prohibited.

Installation Procedure

Please refer to user's manual for the detail.

Warning:

In order to make sure that the final output power does not exceed the limit set force in relevant rules, please carefully select the installation position and the installation angle of antenna must be vertical to the ground. The violation of the rule could lead to serious federal penalty.

Appendix C - IC Interference Statement

Industry Canada statement

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d' ISED applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

Caution:

where applicable, antenna type(s), antenna models(s), and worst-case tilt angle(s) necessary to remain compliant with the e.i.r.p. elevation mask requirement set forth in section 6.2.2.3 shall be clearly indicated.

Avertissement:

lorsqu'il y a lieu, les types d'antennes (s'il y en a plusieurs), les numéros de modèle de l'antenne et les pires angles d'inclinaison nécessaires pour rester conforme à l'exigence de la p.i.r.e. applicable au masque d'élévation, énoncée à la section 6.2.2.3, doivent être clairement indiqués.

IMPORTANT NOTE:
Radiation Exposure Statement

This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 26cm between the radiator & your body.

Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements ISED établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 26 cm de distance entre la source de rayonnement et votre corps.

DETACHABLE ANTENNA USAGE

This radio transmitter (IC: 10103A-EWS850AP) has been approved by ISED to operate with the antenna type listed below with maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Le présent émetteur radio (IC: 10103A-EWS850AP) a été approuvé par ISED pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Approved antenna(s) list

EWS850AP

Type	Gain	Brand	Manufacturer
2.4GHz Dipole	5.17dBi	Master Wave Technology	Master Wave Technology
5 GHz Dipole	5.17dBi	Master Wave Technology	Master Wave Technology

Appendix D
Professional installation instruction (IC)

1. Installation personal

This product is designed for specific application and needs to be installed by a qualified personal who has RF and related rule knowledge. The general user shall not attempt to install or change the setting.

2. Installation location

The product shall be installed at a location where the radiating antenna can be kept 26cm from nearby person in normal operation condition to meet regulatory RF exposure requirement.

3. External antenna

Use only the antennas which have been approved by the applicant. The non-approved antenna(s) may produce unwanted spurious or excessive RF transmitting power which may lead to the violation of FCC/ISED limit and is prohibited.

4. Installation procedure

Please refer to user's manual for the detail.

5. Warning

Please carefully select the installation position and make sure that the final output power does not exceed the limit set force in relevant rules. The violation of the rule could lead to serious federal penalty.

Instructions d'installation professionnelle

1. Installation
Ce produit est destine a un usage specifique et doit etre installe par un personnel qualifie maitrisant les radiofrequences et les regles s'y rapportant. L'installation et les reglages ne doivent pas etre modifies par l'utilisateur final.

2. Emplacement d'installation
En usage normal, afin de respecter les exigences reglementaires concernant l'exposition aux radiofrequences, ce produit doit etre installe de facon a respecter une distance de 26cm entre l'antenne emettrice et les personnes.

3. Antenn externe.
Utiliser uniiquement les antennes approuvees par le fabricant. L'utilisation d'autres antennes peut conduire a un niveau de rayonnement essentiel ou non essentiel depassant les niveaux limites definis par FCC/ISED, ce qui est interdit.

4. Procedure d'installation
Consulter le manuel d'utilisation.

5. Avertissement
Choisir avec soin la position d'installation et s'assurer que la puissance de sortie ne depasse pas les limites en vigueur. La violation de cette regle peut conduire a de serieuses penalites federales.