# CAP1300

# User Manual

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# CONTENTS

# OVERVIEW

Your device can function in five different modes.

**AP Mode** is a regular access point for use in your wireless network. This is the default mode of the access point.

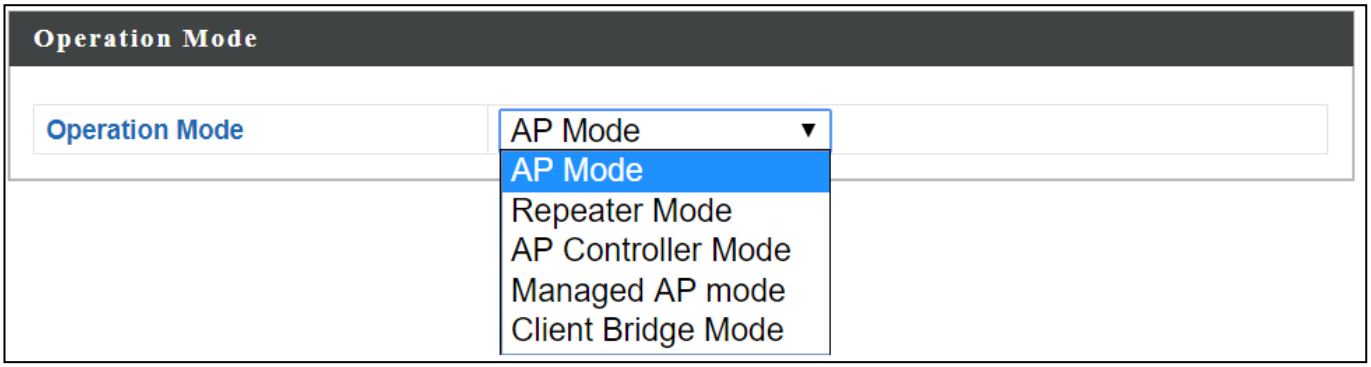
**Repeater Mode** is a wireless repeater (also called wireless range extender) that takes an existing signal from a wireless router or wireless access point and rebroadcasts it to create a second network.

**Managed AP Mode** acts as a "slave" AP within the AP array (controlled by the AP Controller "master").

**AP Controller Mode** acts as the designated master of an AP array (group of linked access points).

**Client Bridge Mode** determines the device to be a client bridge. The client bridge receives wireless signal and provides it to devices connected to the bridge via Ethernet cable.

In **AP Controller** mode the user interface will switch to **Edimax Pro NMS**.

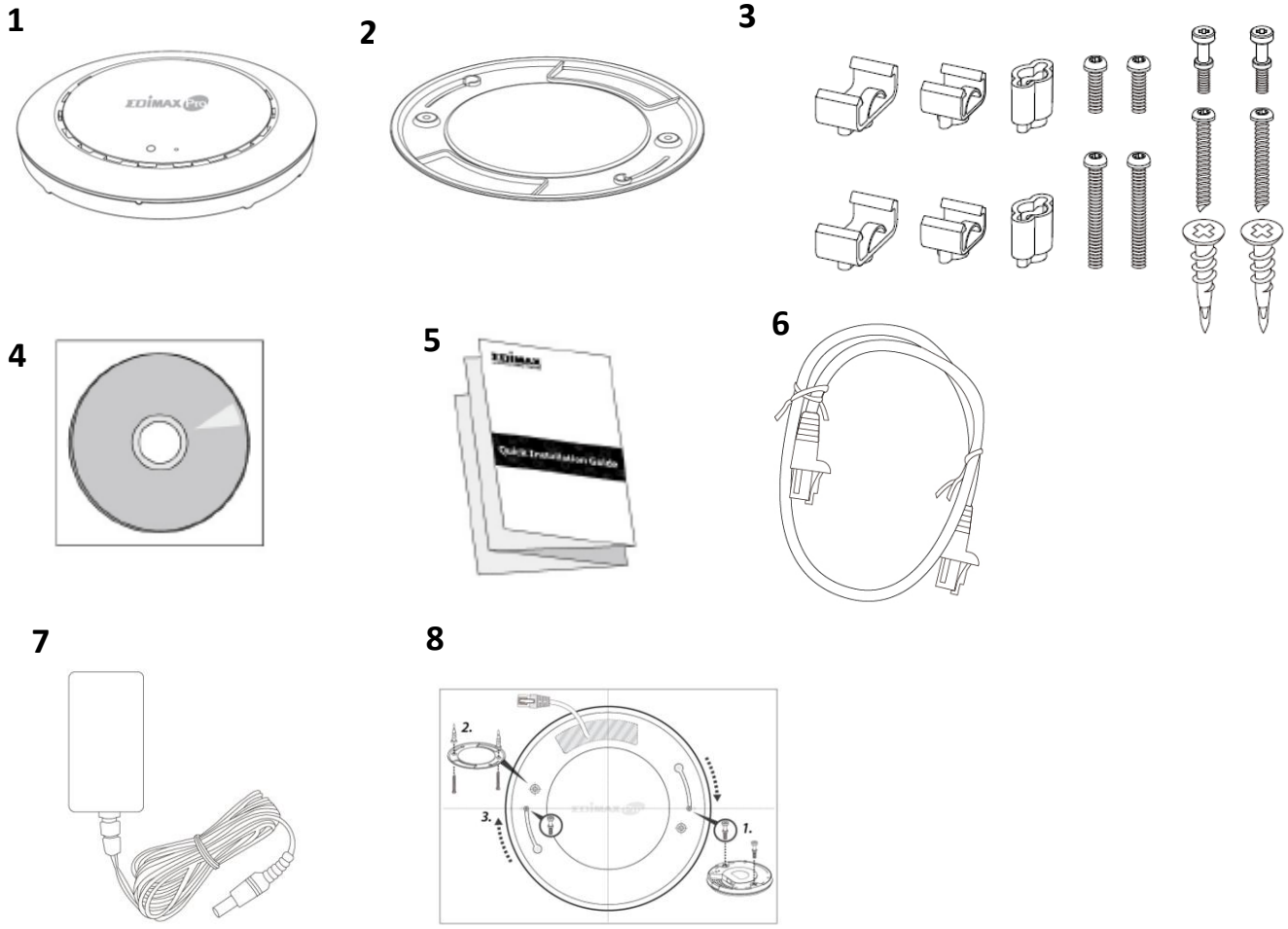



This user manual is mainly split into two parts:

- **AP Mode** (blue) – includes AP / Repeater / Managed AP / Client Bridge Mode settings
- **Edimax Pro NMS** (grey) – includes AP Controller Mode settings

# I Product Information

## I-1 Package Contents

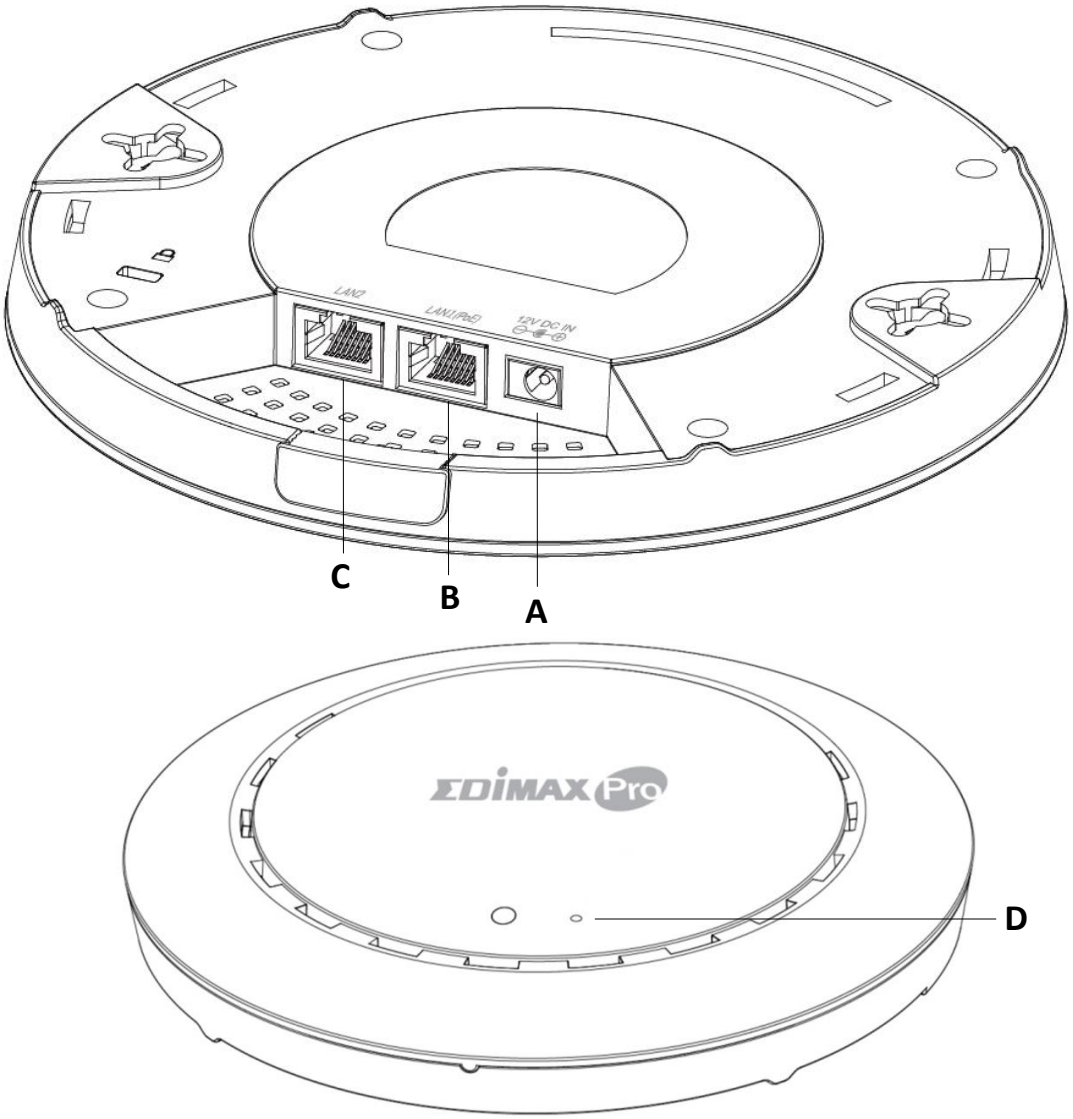



1. CAP1300 Access Point
2. Ceiling Mount Bracket
3. T-Rail Mounting Kit & Screws
4. CD
5. Quick Installation Guide
6. Ethernet Cable
7. Power Adapter
8. Ceiling Mount Screw Template

## I-2 System Requirements

- Existing cable/DSL modem & router
- Computer with web browser for access point configuration

## I-3 Hardware Overview




| | | |
|---|---|---|
| **A** | 12V DC IN | 12V DC port to connect the power adapter |
| **B** | LAN 1 (PoE) | LAN port with Power over Ethernet (PoE) IN |
| **C** | LAN 2 | LAN port |
| **D** | Reset | Reset the device to factory default settings |

## I-4 LED Status

| LED Color | LED Status | Description |
|---|---|---|
| Blue | **On** | The device is on. |
| | **Flashing Slowly** | Upgrading firmware. |
| | **Flashing Quickly** | Resetting to factory defaults. |
| Amber | **On** | Starting up. |
| | **Flashing** | Error. |
| **Off** | **Off** | The device is off. |

## I-5 Reset

If you experience problems with your device, you can reset it back to its factory settings. This resets all settings back to default.

**1.** Press and hold the reset button on the device for at least 10 seconds then release the button.

***You may need to use a pin or similar sharp object to push the reset button.***


**2.** Wait for the device to restart. The device is ready for setup when the LED is **blue**.

## I-6 Safety Information

In order to ensure the safe operation of the device and its users, please read and act in accordance with the following safety instructions.

1. The device is designed for indoor use only; do not place it outdoor.

2. Do not place the device in or near hot/humid places, such as in a kitchen or a bathroom.

3. Do not pull any connected cable with force; carefully disconnect it from the device.

4. Handle the device with care. Accidental damage will void the warranty of the device.

5. The device contains small parts which are a danger to small children under 3 years old. Please keep it out of reach of children.

6. Do not place the device on paper, cloth, or other flammable materials. The device may become hot during use.

7. There are no user-serviceable parts inside the device. If you experience problems with it, please contact your dealer of purchase and ask for help.

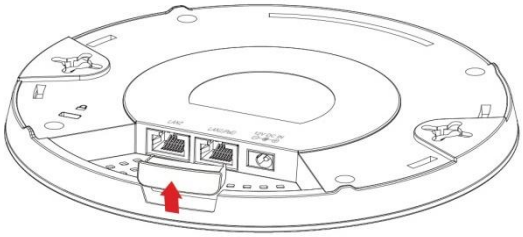
8. The device is an electrical device and as such, if it becomes wet for any reason, do not attempt to touch it without switching the power supply off. Contact an experienced electrical technician for further help.

9. If smoke is visible or an obvious burning smell is coming from the device or the power adapter, disconnect the device and power adapter immediately as far as it is safe to do so. Call your dealer of purchase for help.

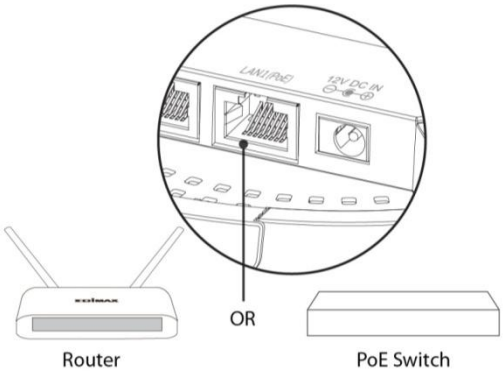
# II Hardware Installation

## II-1 Router/PoE Switch

**1.** If you need to, remove the cap from the underside of the device. This creates extra space for your cables to pass through.



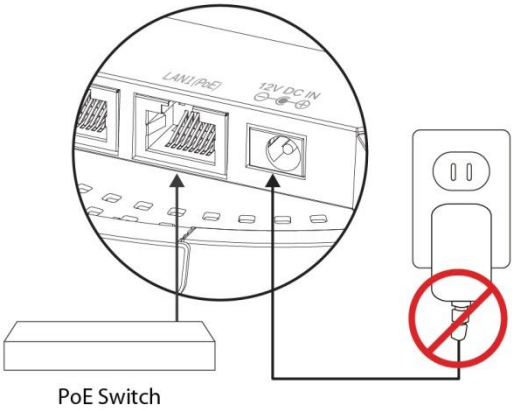
**2.** Connect a router or a PoE switch to the device's **LAN 1** port using an Ethernet cable.




**3.** Power up the device:

a) If router is used, connect the power adapter to the device's 12V DC port and plug the power adapter into a power supply; or

b) If PoE (Power over Ethernet) switch is used, make sure the Ethernet cable is connected to **LAN1** port from the switch. The device will be powered by the PoE switch.




***Do not use the power adapter if you are using a PoE switch.***

**4.** Connect a local network client or switch to the device's **LAN 2** port as required.

## II-2 Mounting

To mount the device to a ceiling, please follow the instructions below and refer to diagram **A** & **B**.

### II-2-1 Wooden Ceiling

Please refer to the figure below:

**1.** By using the holes **A** on the ceiling bracket, identify and mark correct screw positions of the desired mounting location.

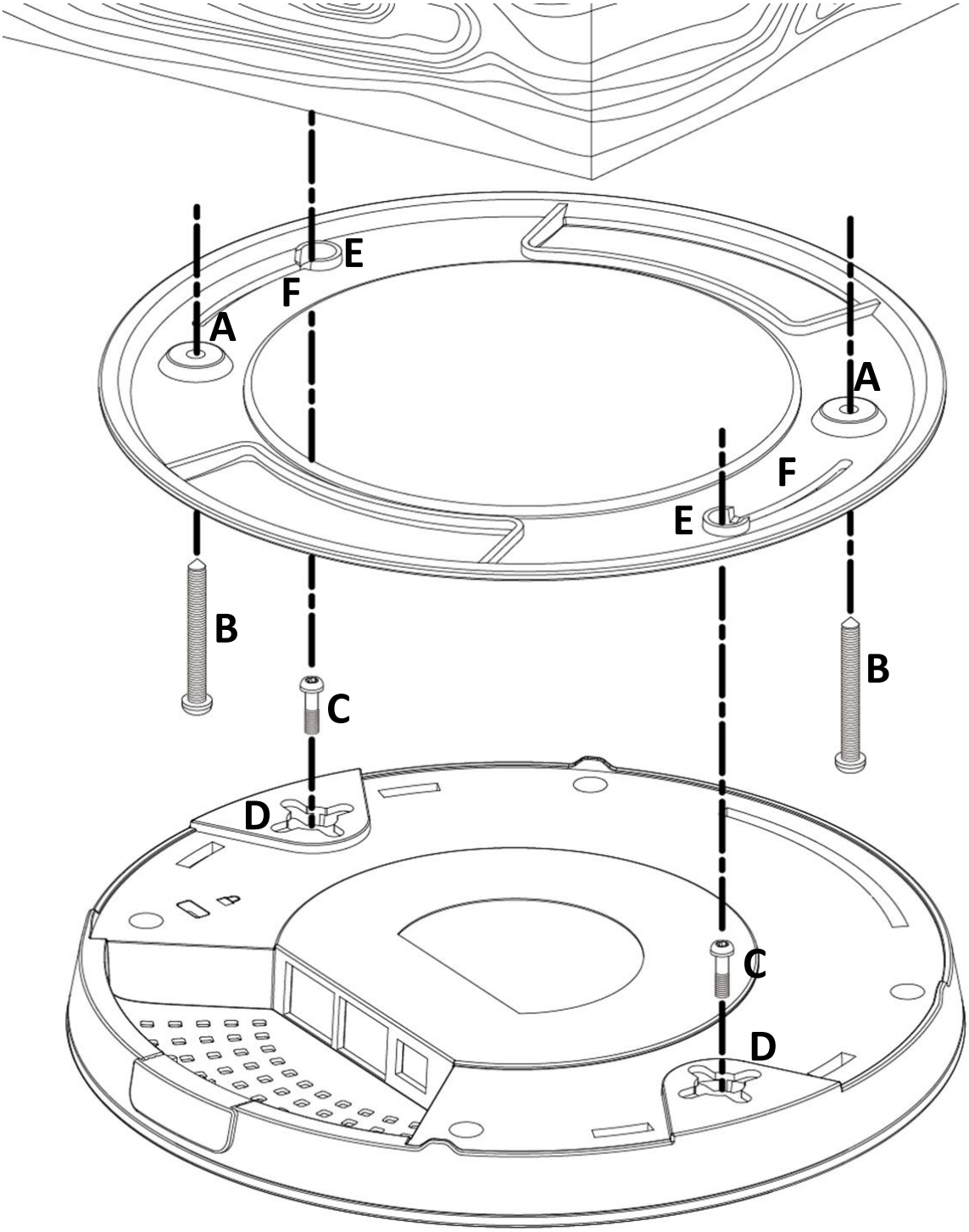
**2.** Where necessary, drill a hole (of radius smaller than the radius of the provided screws) on each of the marked screw positions.

**3.** Fix the ceiling mount bracket to the desired location by inserting the ceiling fixing screws **B** through the bracket ceiling holes **A**. Tighten the ceiling fixing screws **B** to the marked screw position using a screw driver to fix the bracket in place.

**4.** Fix the bracket rail screws **C** into the holes **D** on the device using a screw driver. The cap of the screws should be protruding outwardly from the holes **D**.

**5.** Insert the bracket rail screws **C** into the device fixing holes **E**.

**6.** Twist the device as the bracket rail screws **C** slide through the bracket rail **F**.
Twist the device all the way until you feel that it is fixed in position.


E
F
A
A
F
E
B
B
C
D
C
D

## II-2-2 Other Ceiling

Please refer to the figure below:

**1.** By using the holes **A** on the ceiling bracket, identify and mark correct screw positions of the desired mounting location.

**2.** Where necessary, drill a hole on each of the marked screw positions.

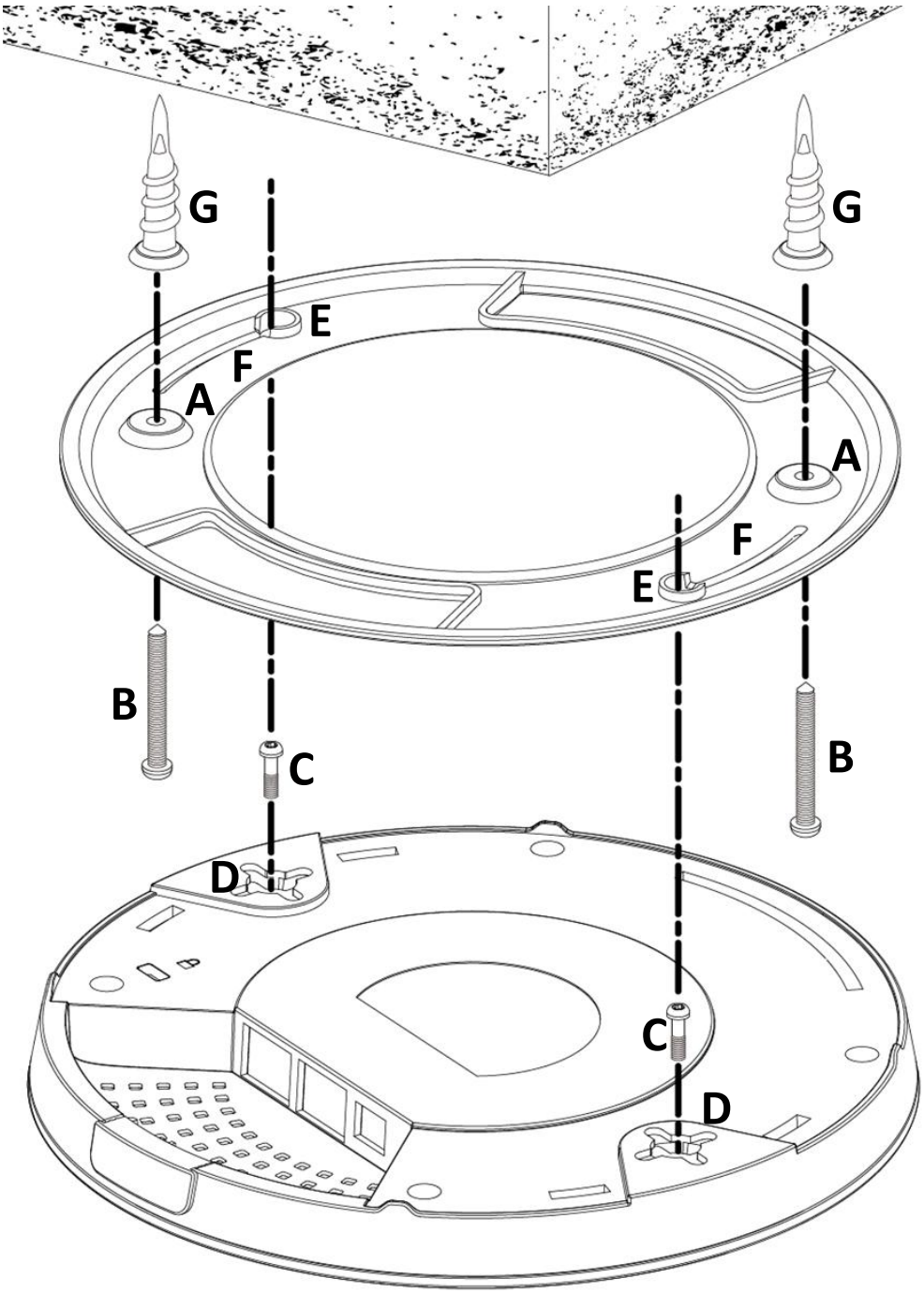
**3.** Insert the anchors **G** into the holes (use a screw driver where necessary) at the marked screw positions.

**4.** Fix the ceiling mount bracket to the desired location by inserting the ceiling fixing screws **B** through the bracket ceiling holes **A**. Tighten the ceiling fixing screws **B** onto the anchors **G** using a screw driver to fix the bracket to the ceiling.

**5.** Fix the bracket rail screws **C** into the holes **D** on the device using a screw driver. The cap of the screws should be protruding outwardly from the holes **D**.

**6.** Insert the bracket rail screws **C** into the device fixing holes **E**.

**7.** Twist the device as the bracket rail screws **C** slide through the bracket rail **F**.
Twist the device all the way until you feel that it is fixed in position.


G
G
E
F
A
A
F
E
B
C
B
D
C
D

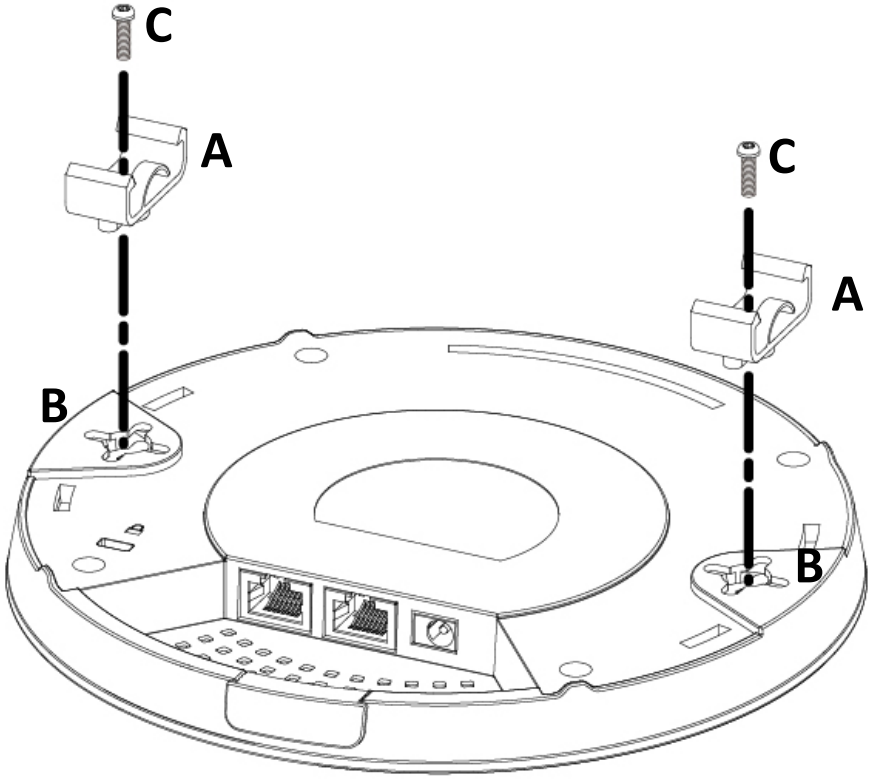
## II-2-3 T-Rail Mount

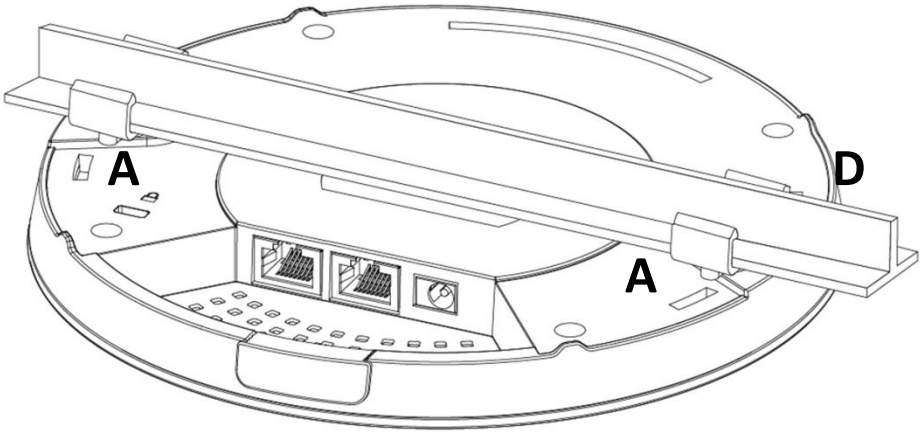
To mount the device to a T-Rail, please follow the instructions below and refer to the diagrams below.

**1.** Select the correct size T-Rail bracket included in the package contents.

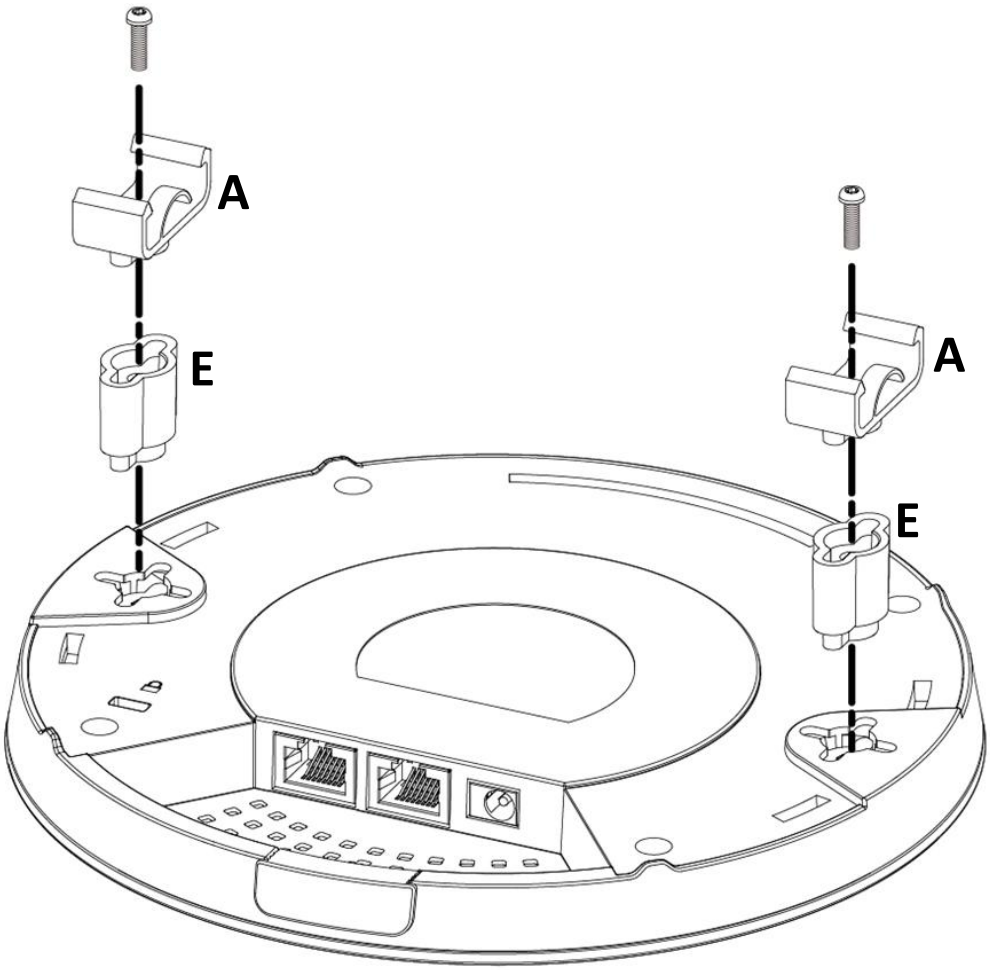
**2.** Attach the selected T-Rail brackets **A** to holes **B** using bracket fixing screws **C**.

**3.** Clip the device onto the T-Rail **D** using the now attached T-Rail brackets **A**.



***If you need more space between the device and the T-Rail, additional cushion bracket** E **can be added between T-Rail brackets** A **and holes** B **(use the longer screws included).***



# III Quick Setup & Mode Selection

The device can function as a standalone access point (**AP Mode**), as a repeater (**Repeater Mode**), as an AP controller (**AP Controller Mode**), as part of an AP array (**Managed AP Mode**), or as a client bridge (**Client Bridge Mode**).

Follow the quick setup below before selecting the desired operation mode. For *AP Controller Mode*, please refer to VIII ***Quick Setup - NMS***.

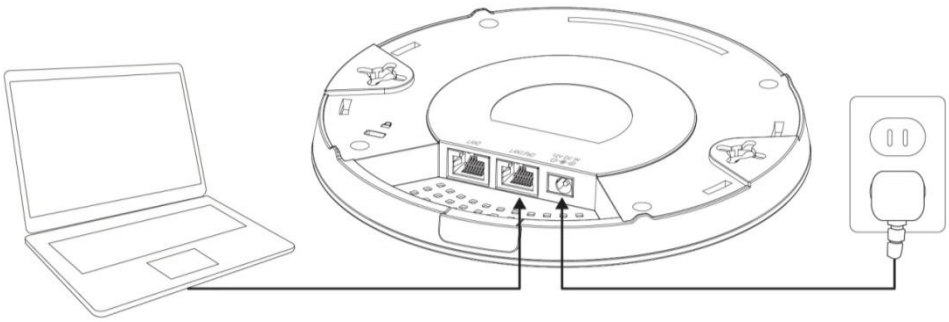
## III-1 Default Mode: Access Point Mode

**1.** Set your computer's IP address to **192.168.2.x** where **x** is a number in the range **3 – 100**. If you are unsure how to do this, please refer XI-1.

***Please ensure there are no other active network connections on your computer by disabling Wi-Fi and other Ethernet connections.***

**2.** Connect the device to a computer via Ethernet cable.

**3.** Connect the power adapter to the device's 12V DC port and plug the power adapter into a power supply.

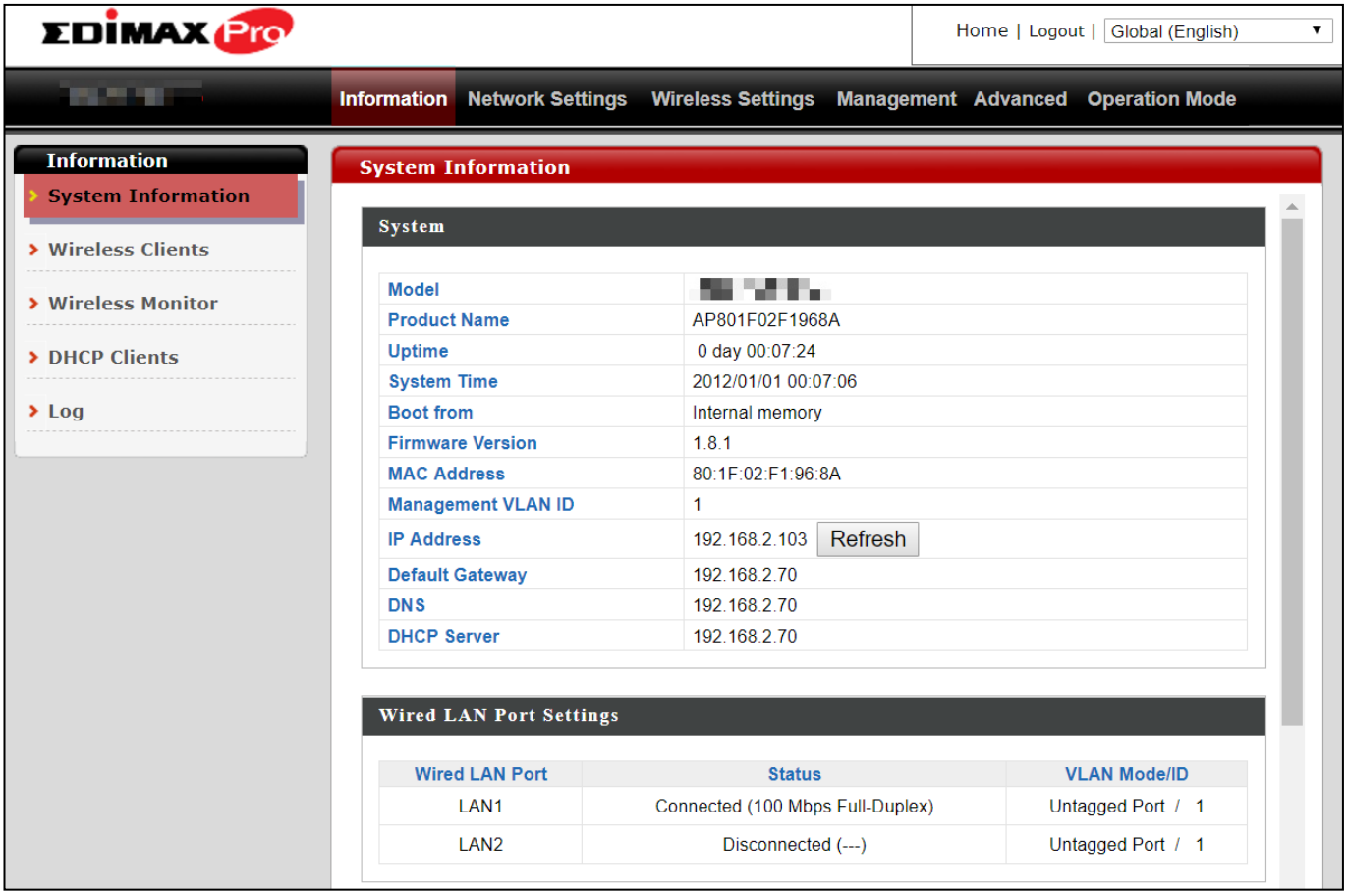


**4.** Please wait a moment for the device to start up. The device is ready when the LED is **blue**.

**5.** Enter the device's default IP address **192.168.2.2** into the URL bar of a web browser.

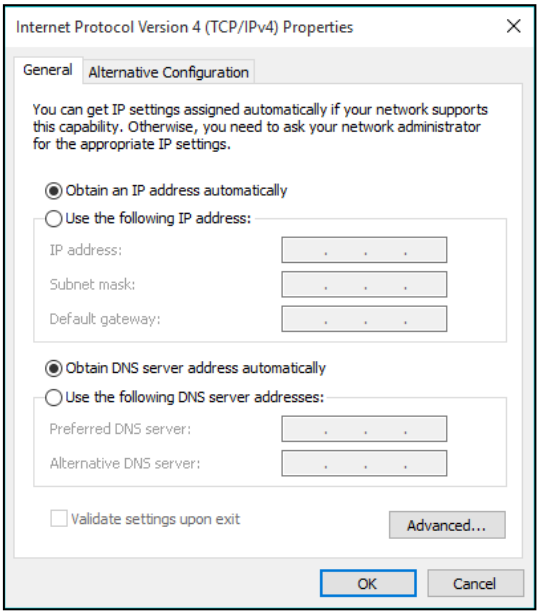
**6.** You will be prompted for a username and password. Enter the default username "**admin**" and the default password "**1234**".


**7.** "System Information" home screen will be shown:

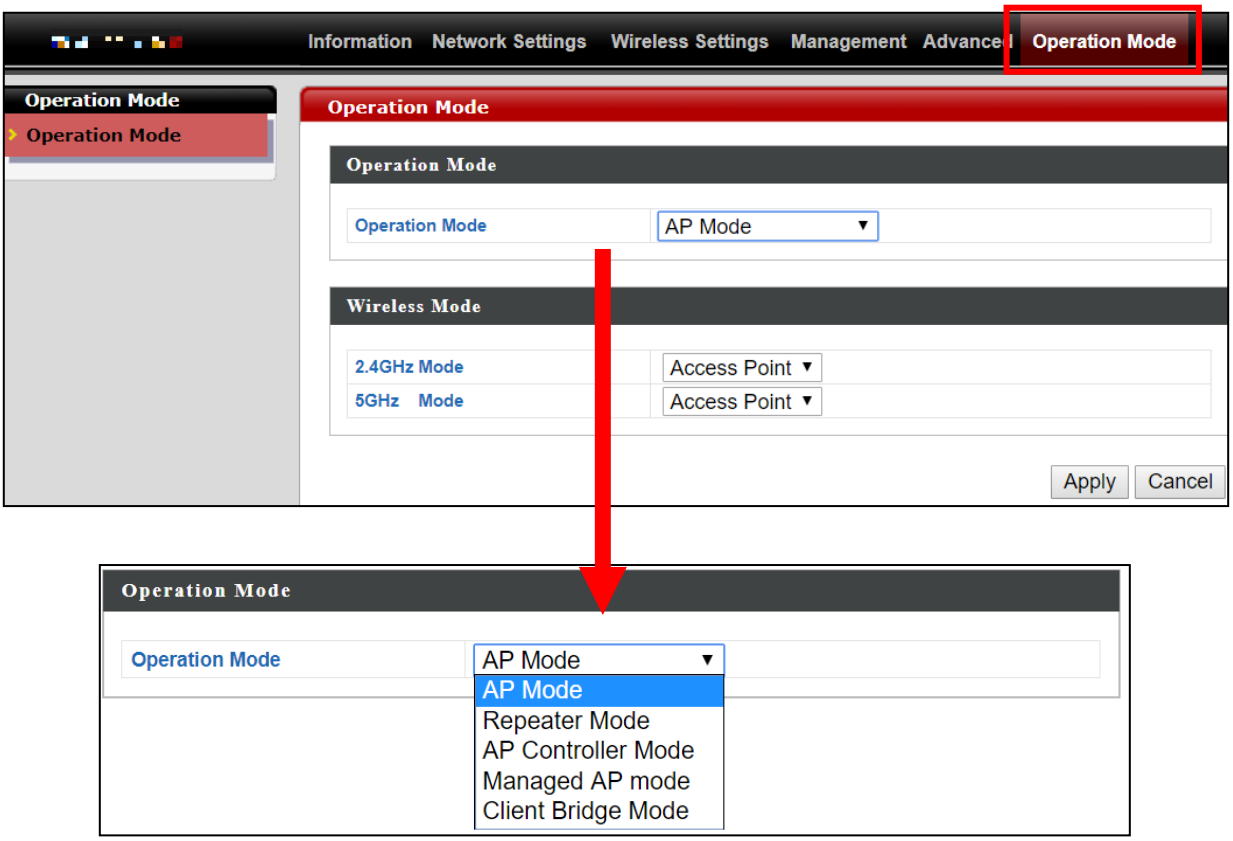


**8.** By default, the device is in **AP Mode**.

***If you do not wish to change the operation mode, switch your computer back to dynamic IP address now.***



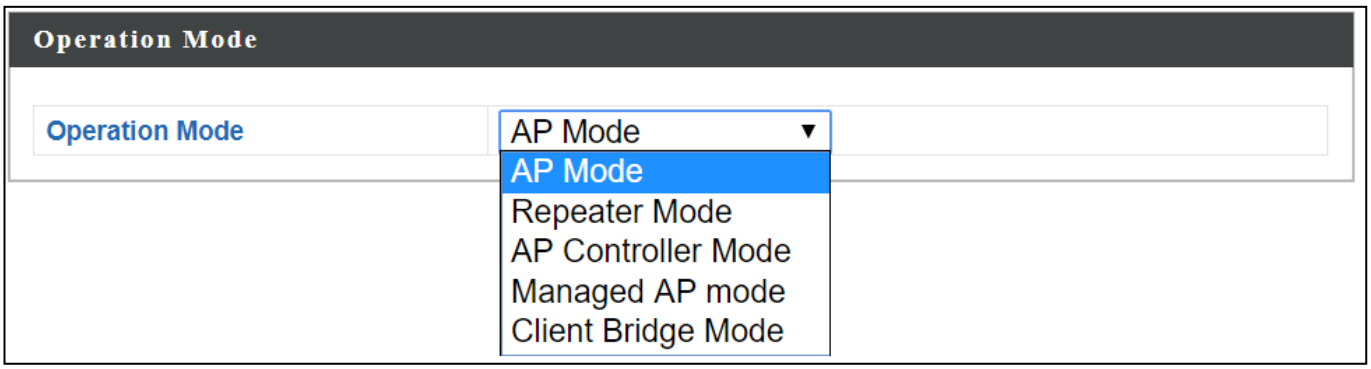

**9.** If you wish to change to a different operation mode, go to "Operation Mode" to select the desired operation mode. Follow the steps in the following sections to change the operation mode.



## III-2 Repeater Mode

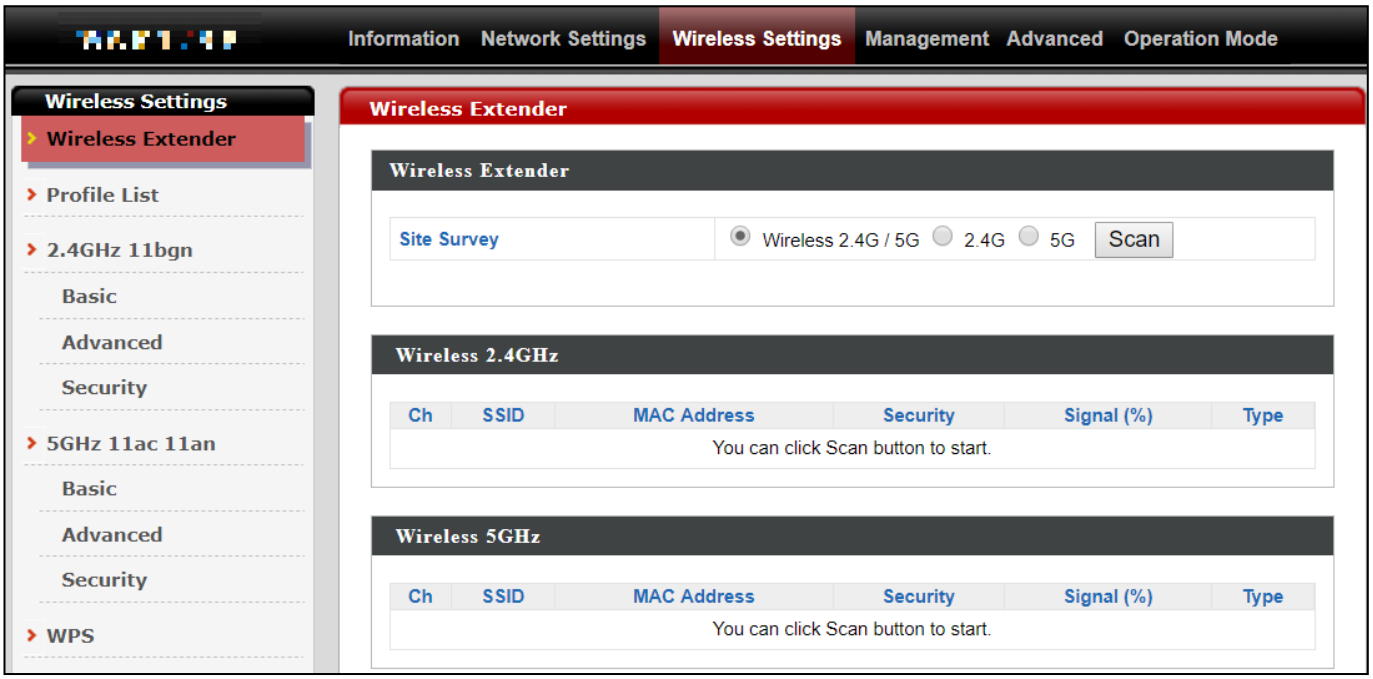
From the quick setup above,

**1.** Select **Repeater Mode** from the operation mode drop down menu:

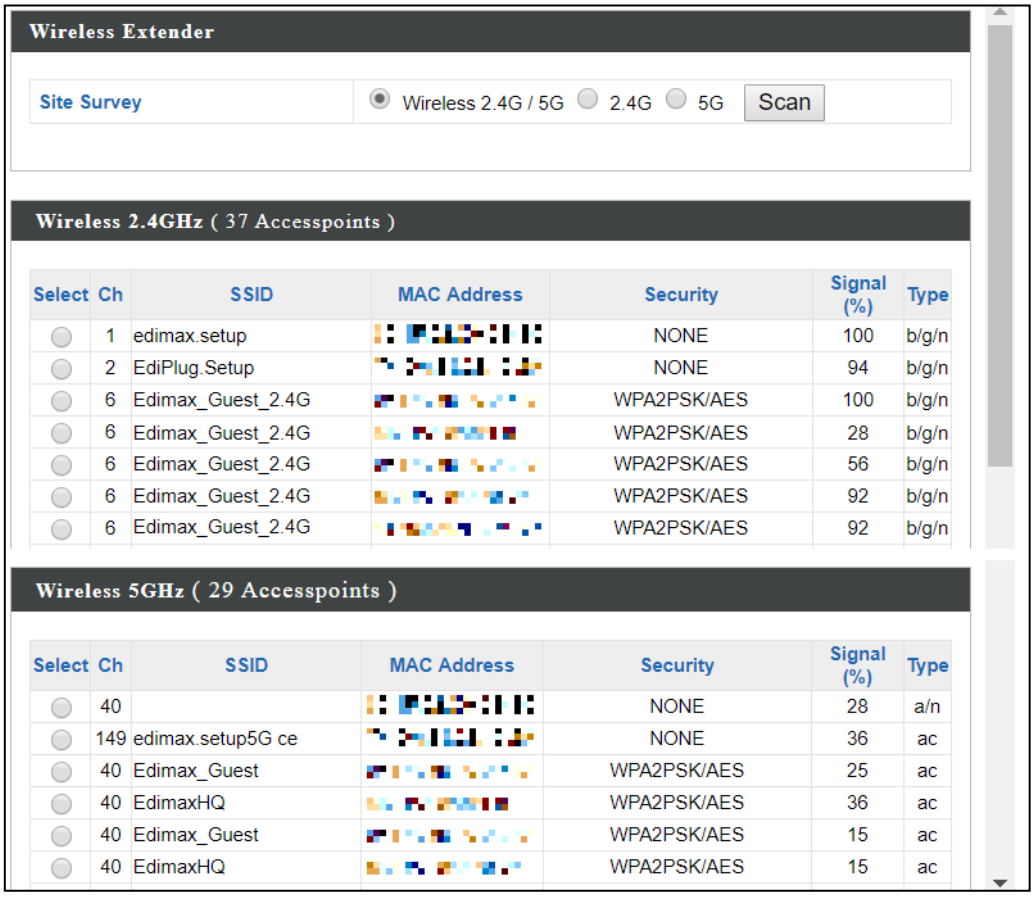



**2.** Press "Apply" and wait for the device to reboot into Repeater Mode:

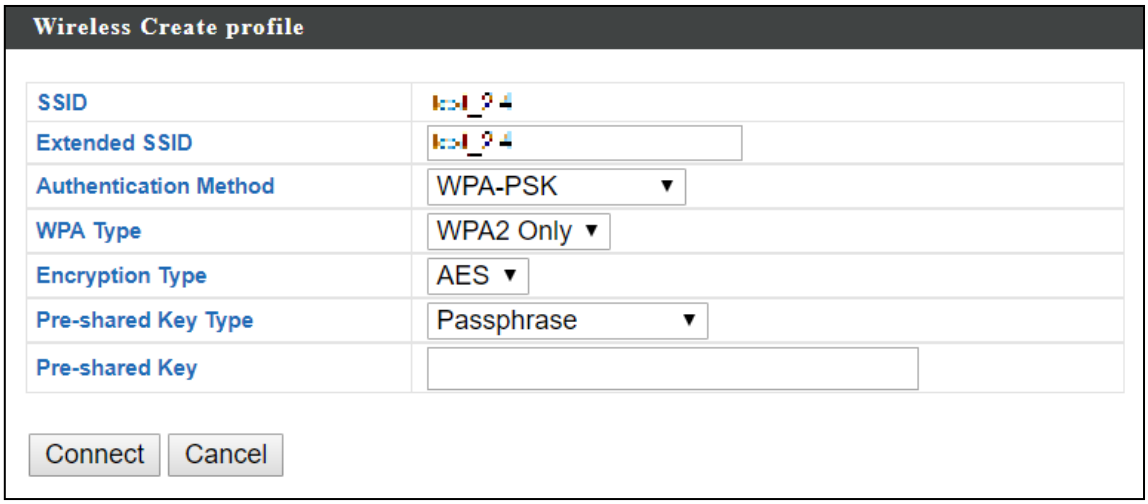

**3.** When system page is displayed, go to **Wireless Settings → Wireless Extender.**



**4.** Click **Scan** to search for and display available SSIDs

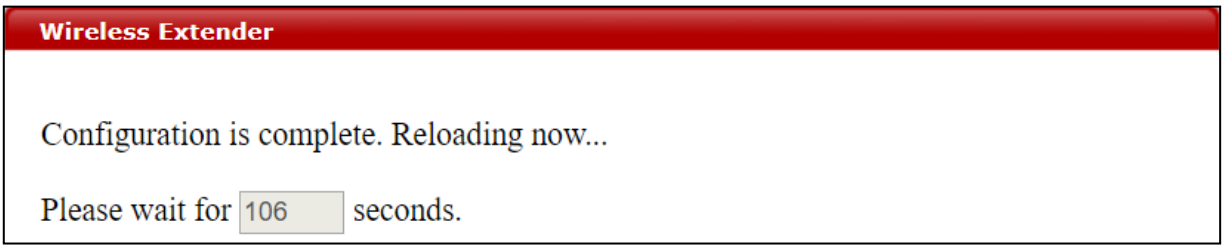



**5.** Click the circle icon to connect to an available source SSID. SSIDs can be configured independently for each frequency 2.4GHz & 5GHz.

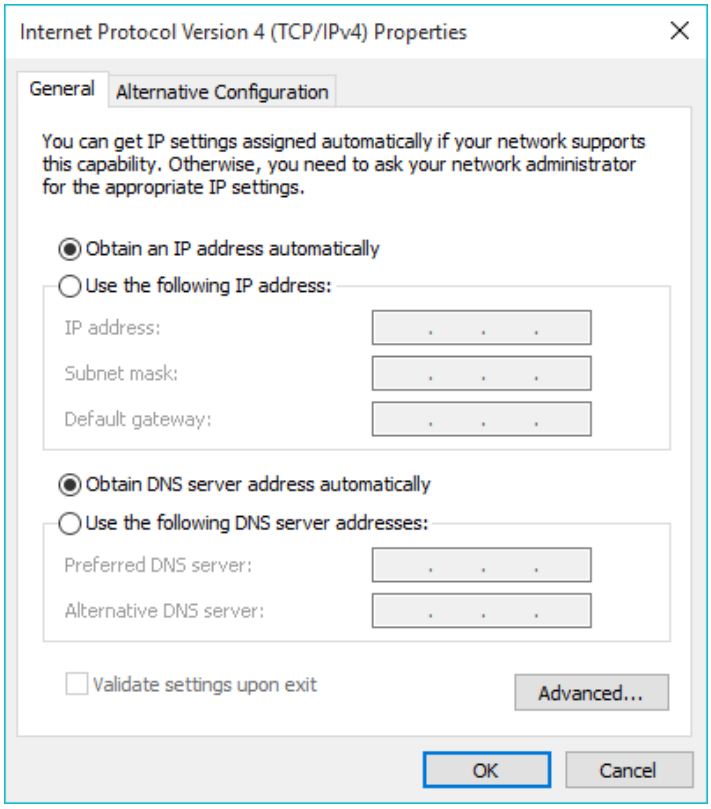



**6.** Edit the new **extended** SSID according to your preference and enter the security details for the source SSID (e.g. Pre-shared Key). Click “Connect” to proceed.

Wait for the configuration to take effect:




**7.** The device (now in Repeater Mode) will establish a connection to the source SSID and repeat the extended SSID. The device will become a DHCP client of the router/root AP. Switch your computer back to dynamic IP address.



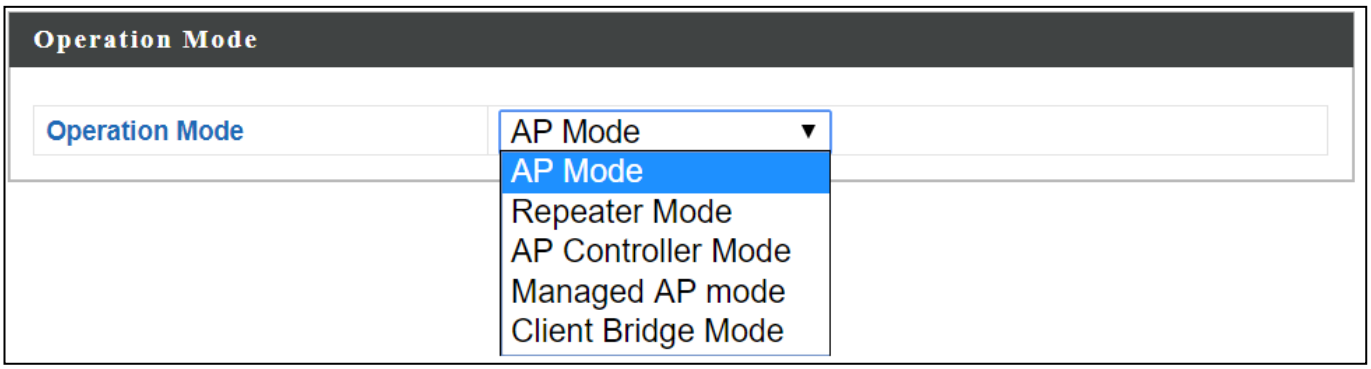

**8.** To access the web user interface, check your router/root AP's settings to determine the device's new IP address. Enter the new IP address into the browser for the web user interface.

***If you wish to switch the operation mode, please reset the device to factory default (via web user interface or hardware reset).***

## III-3 Client Bridge Mode

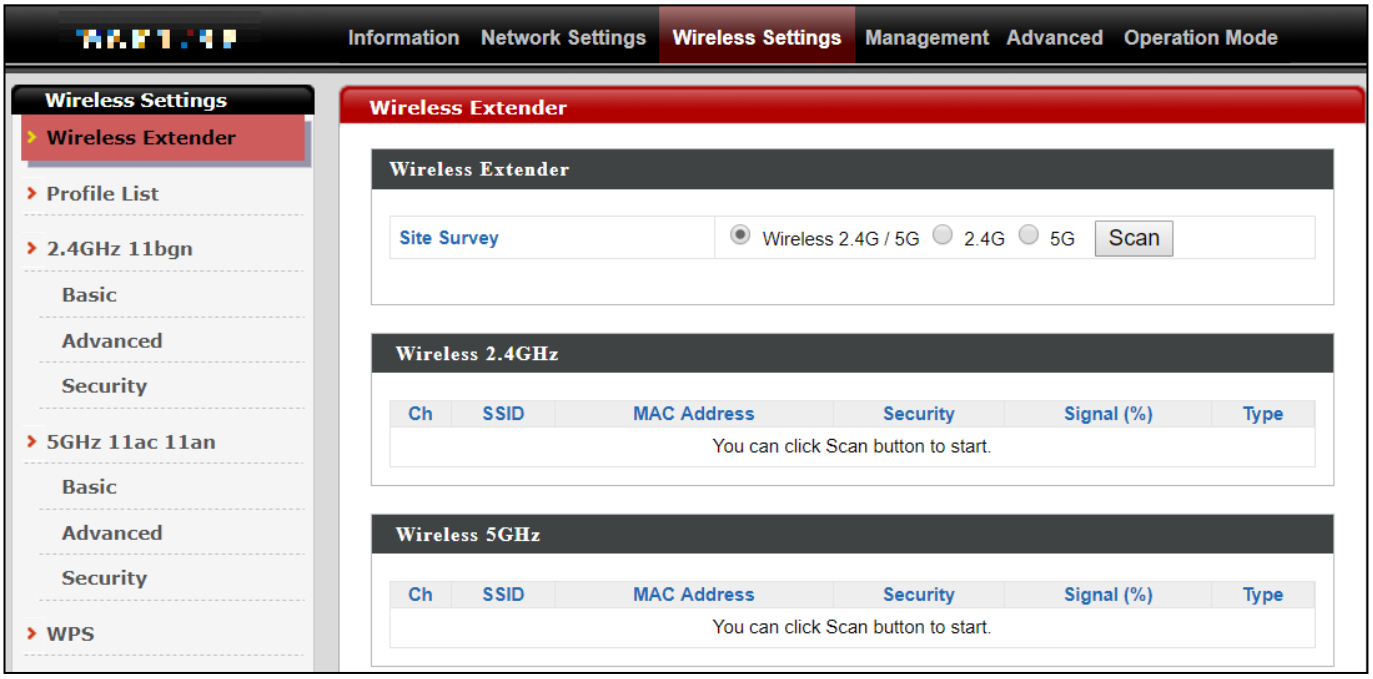
From the quick setup above,

**1.** Select **Client Bridge Mode** from the operation mode drop down menu:

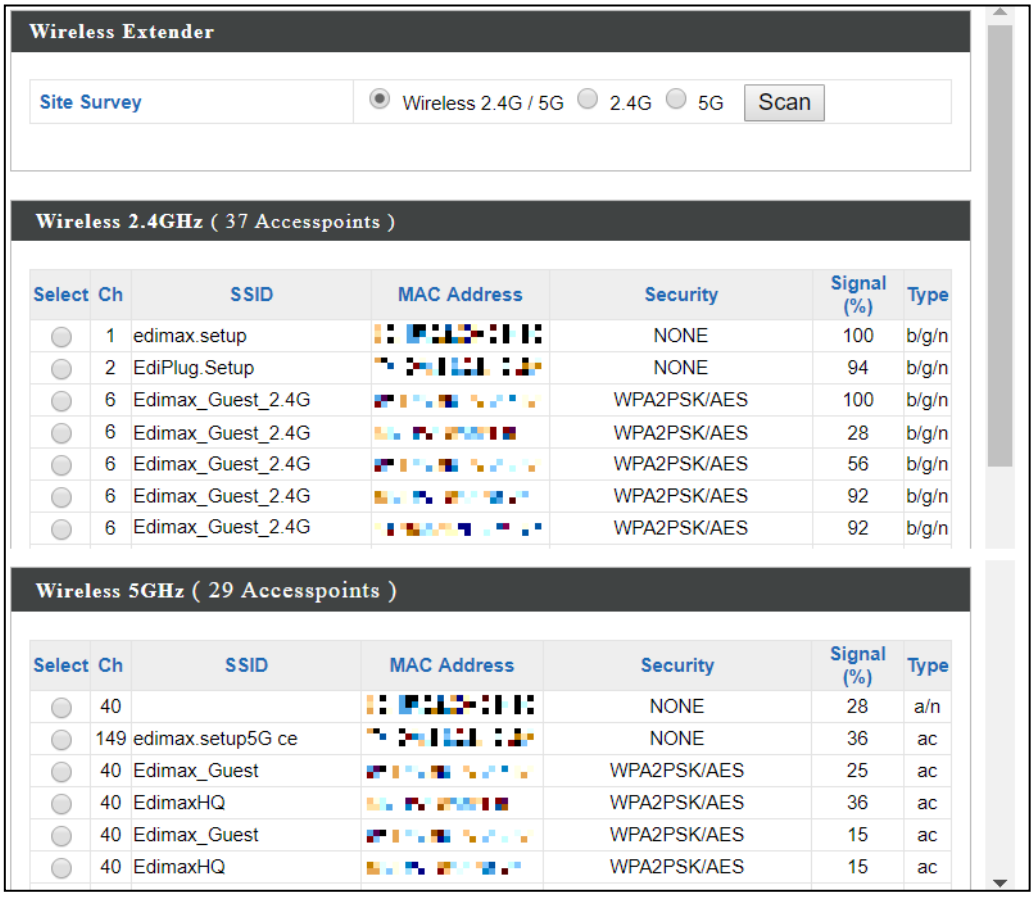



**2.** Press "Apply" and wait for the device to reboot into Client Bridge Mode:

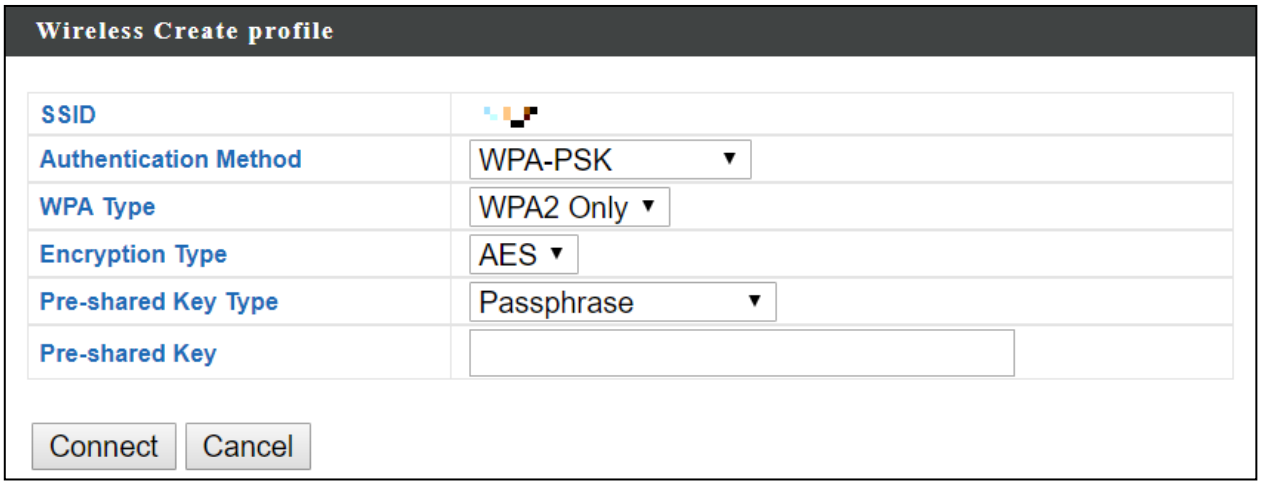

**3.** When system page is displayed, go to **Wireless Settings → Wireless Extender.**



**4.** Click **Scan** to search for and display available SSIDs

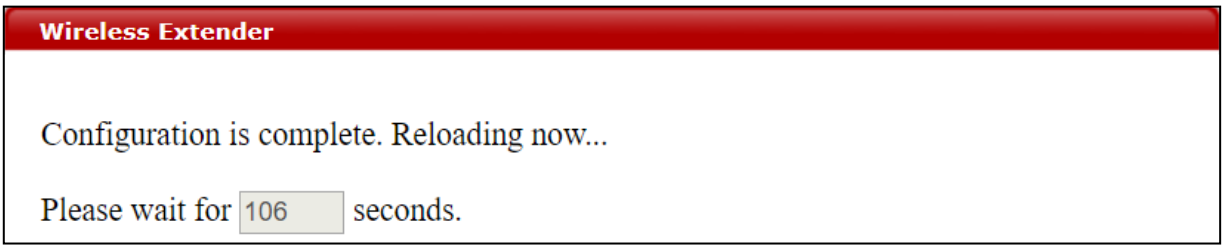



**5.** Click the circle icon to connect to an available source SSID. SSIDs can be configured independently for each frequency 2.4GHz & 5GHz.

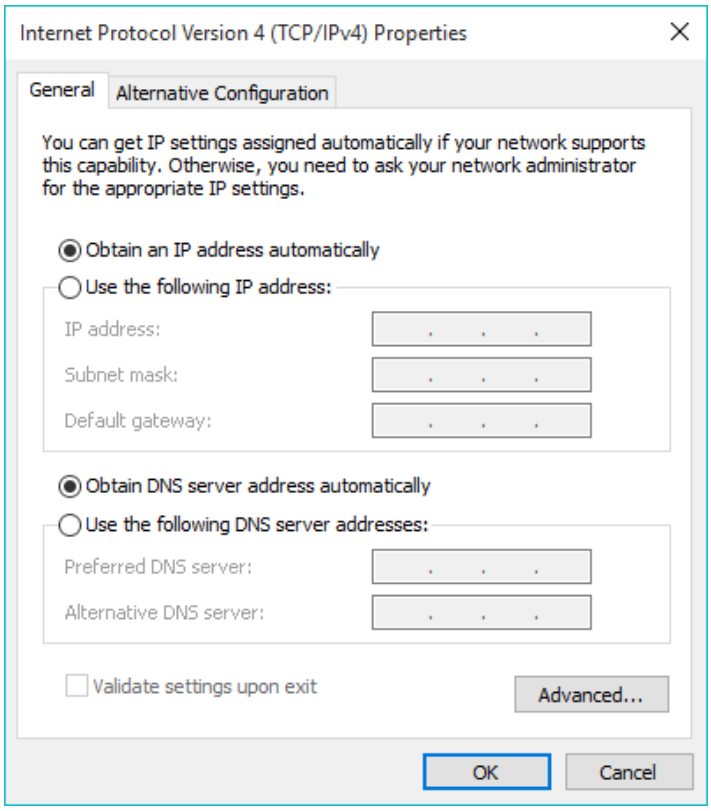



**6.** Edit according to your preference and enter the security details for the source SSID (e.g. Pre-shared Key). Click “Connect” to proceed.

Wait for the configuration to take effect:




**7.** The device (now in Client Bridge Mode) will receive wireless signal and provides it to devices connected to the bridge via Ethernet cable. The device will become a DHCP client of the router/root AP. Switch your computer back to dynamic IP address.



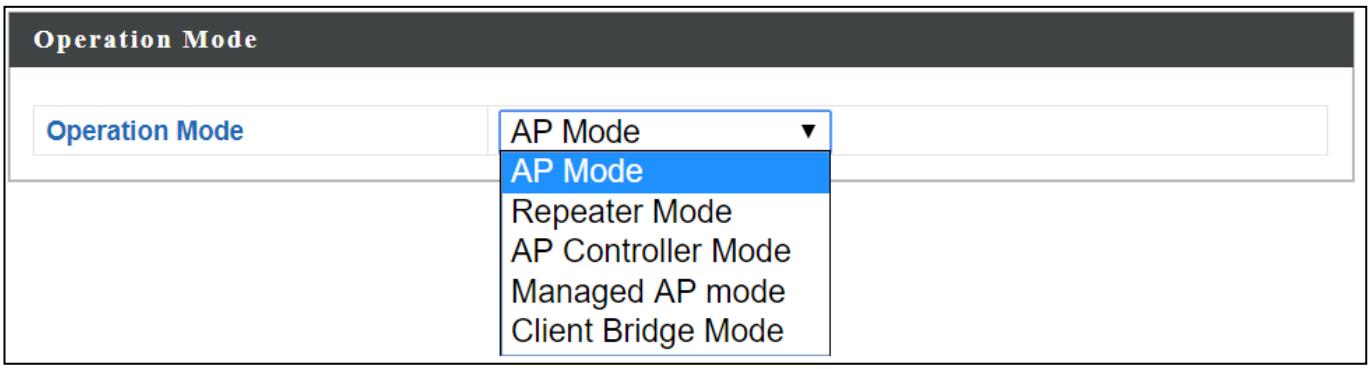

**8.** To access the web user interface, check your router/root AP's settings to determine the device's new IP address. Enter the new IP address into the browser for the web user interface.

***If you wish to switch the operation mode, please reset the device to factory default (via web user interface or hardware reset).***

## III-4 Managed AP Mode

From the quick setup above,

**1.** Select **Managed AP Mode** from the operation mode drop down menu:




**2.** Press “Apply” and wait for the device to reboot into Managed AP Mode:


For use a Managed AP in an AP array, the access point will automatically switch mode when an AP Controller is configured in the network.

# AP, Managed AP, Repeater & Client Bridge Modes

The device can function as a standalone access point (**AP Mode**), as a repeater (**Repeater Mode**), as an AP controller (**AP Controller Mode**), as part of an AP array (**Managed AP Mode**), or as a client bridge (**Client Bridge Mode**).

Please refer to ***Edimax Pro NMS*** section for AP Controller Mode setting.
For operation mode selection, please follow the quick setup in ***Quick Setup & Mode Selection***.

# IV Basic Settings

Basic settings of the access point are:

- ***LAN IP Address; and***
- ***2.4GHz & 5GHz SSID & Security; and***
- ***Administrator Name & Password; and***
- ***Time & Date***

***It is recommended that these settings are configured before using the access point.***

Whenever a new setting is applied to the access point, the webpage will reload, as shown below:

Configuration is complete. Reloading now...

Please wait for 19 seconds.

Instructions below will help you configure these settings:

<u>Changing IP Address:</u>

**1.** Go to **"Network Settings" > "LAN-side IP Address"** for the screen below:

**LAN-side IP Address**

| | |
|---|---|
| IP Address Assignment | DHCP Client ▼ |
| IP Address | 192.168.2.2 |
| Subnet Mask | 255.255.255.0 |
| Default Gateway | From DHCP ▼ |
| Primary DNS Address | From DHCP ▼ 0.0.0.0 |
| Secondary DNS Address | From DHCP ▼ 0.0.0.0 |

Apply

***If you are unable to configure any settings here, please make sure the operation mode of the Access Point is in "AP Mode". Please refer to*** VI-6 *Operation Mode* ***for more information.***

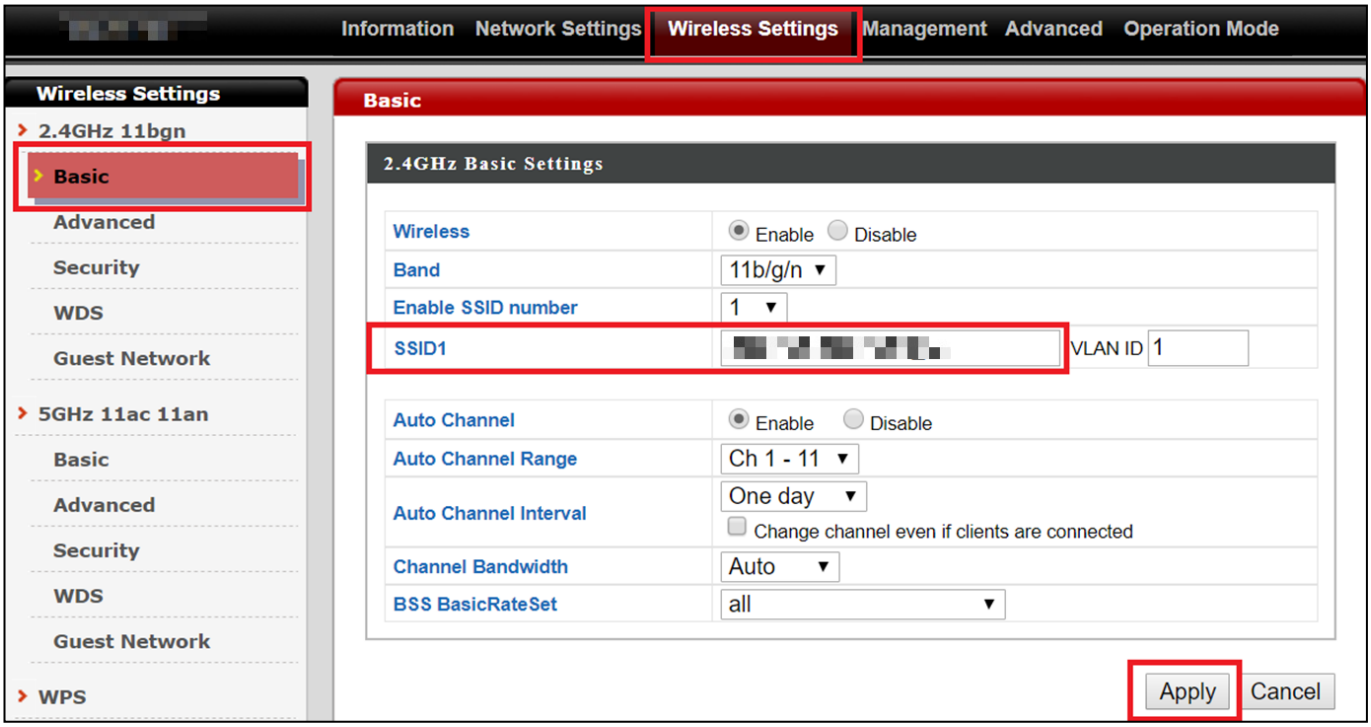
**2.** Enter the IP address settings you wish to use for your access point. You can use a dynamic (DHCP) or static IP address, depending on your network environment. Click "Apply" to save the changes and wait a few moments for the access point to reload.

***When you change your access point's IP address, you need to use the new IP address to access the browser based configuration interface instead of the default IP** 192.168.2.2.*

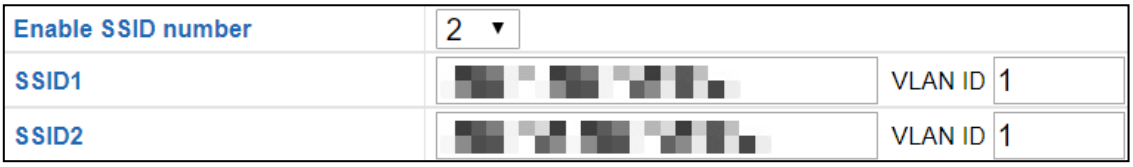
<u>Changing SSID for 2.4GHz wireless network</u>

**1.** Go to **"Wireless Settings" > "2.4GHz 11bgn" > "Basic"**.

**2.** Enter the new SSID for your 2.4GHz wireless network in the "SSID1" field and click "Apply".



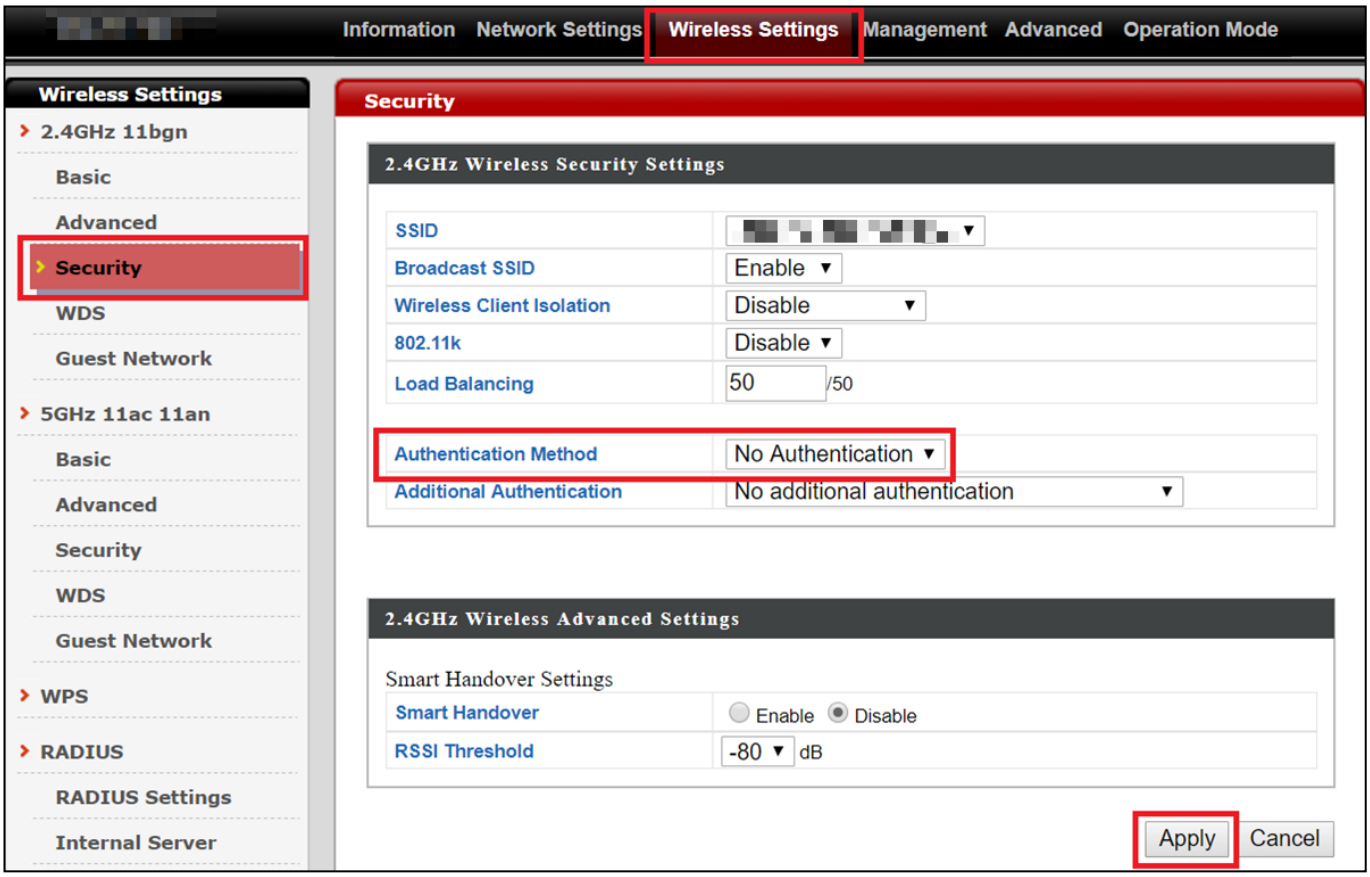

***To utilize multiple 2.4GHz SSIDs, open the drop down menu labelled** "Enable SSID number" **and select how many SSIDs you require. Then enter a new SSID in the corresponding numbered fields below, before clicking "Apply".***



## Configuring Security Settings of 2.4GHz wireless network

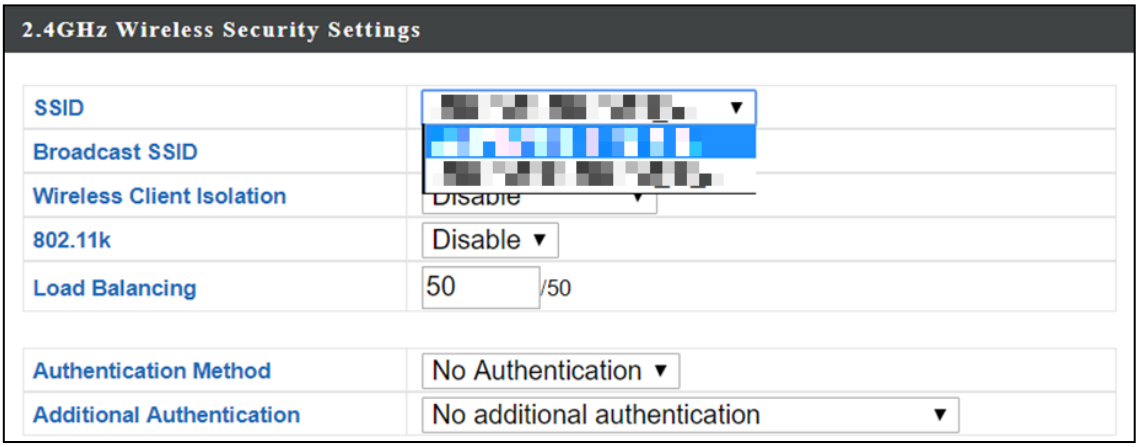
**1.** Go to **"Wireless Settings" > "2.4GHz 11bgn" > "Security"**.

**2.** Select an "Authentication Method", enter or select fields where appropriate, and click "Apply".




***For more information on authentication method, please refer to*** VI-3-3-3 ***on page 55.***

***If multiple SSIDs are used, specify which SSID to configure using the "SSID" drop down menu.***



Changing SSID and Configuring Security Setting for 5GHz wireless network

Follow the steps outlined in “Changing SSID for 2.4GHz wireless network” and “Configuring Security Setting for 2.4GHz wireless network” but choose the 5GHz option instead.

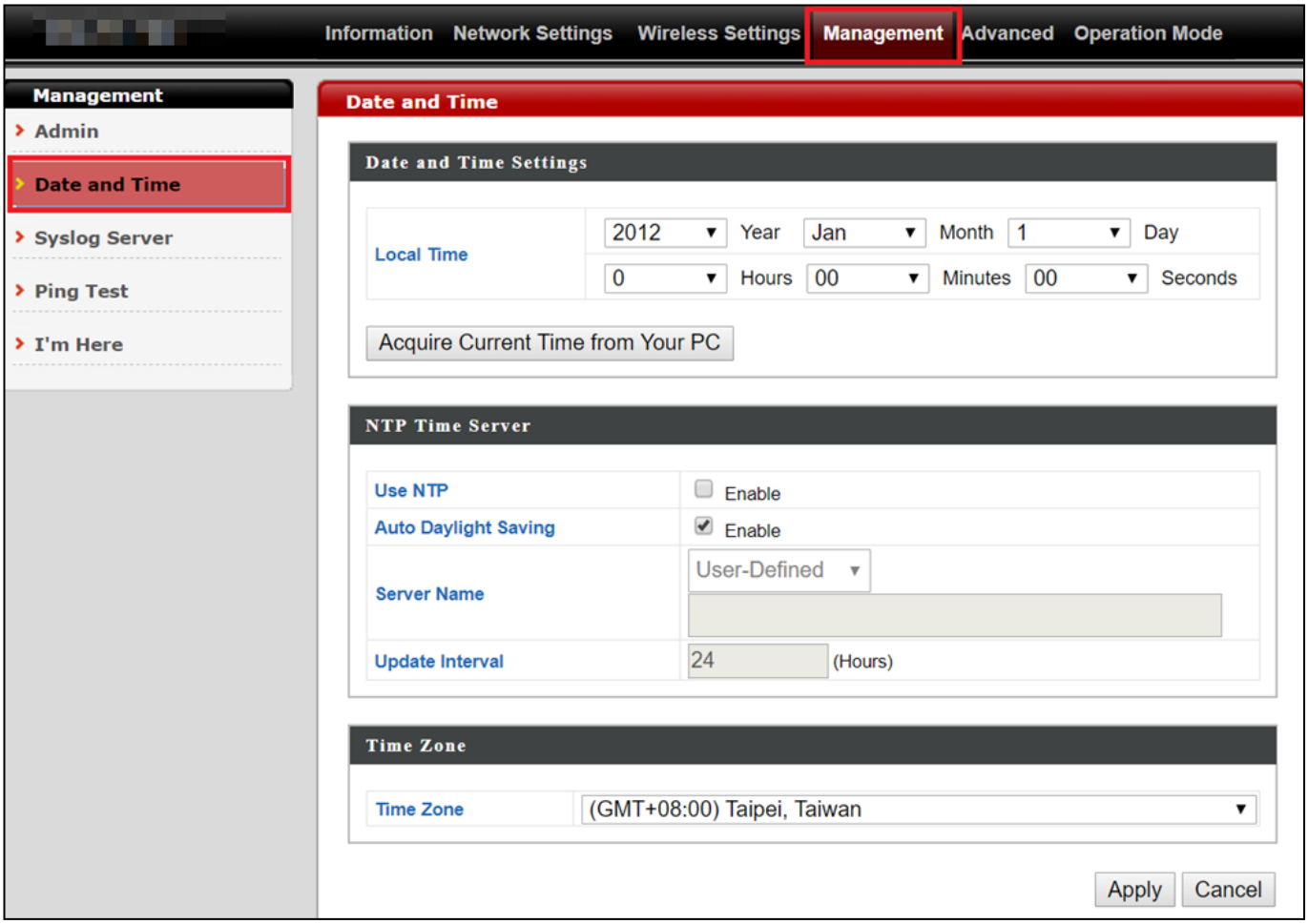
Changing Admin Name and Password

**1.** Go to **“Management” > “Admin”** as shown below:


**2.** Complete the “Administrator Name” and “Administrator Password” fields and click “Apply”.

## Changing Date and Time

**1.** Go to **"Management" > "Date and Time"**.




**2.** Set the correct time and time zone for your access point using the drop down menus. The access point also supports NTP (Network Time Protocol) so, alternatively, you can enter the host name or IP address of a time server. Click "Apply" when you are finished.

***You can use the "Acquire Current Time from your PC" button if you wish to set the device to the same time as your PC.***

The basic settings of your access point are now configured.

# *V Wi-Fi Protected Setup (WPS)*

Wi-Fi Protected Setup is a simple way to establish connections between WPS compatible devices. You can use the configuration webpage to activate the device's WPS function.

**1.** Go to **"Wireless Settings" > "WPS"** on your configuration webpage.

**2.** Check the checkbox of "Enable" and click "Apply" to turn on WPS function.

**3.** Within two minutes, activate WPS on your WPS-compatible wireless device. Please check the documentation of your wireless device for information regarding its WPS function.

**4.** The devices will establish a connection.

# VI Browser Based Configuration Interface

***Some functions of the browser based configuration interface are disabled for different mode settings, please refer to the sections applicable for your desired mode.***

***Please use Edimax Pro NMS on your Controller AP to configure your Managed AP(s).***

The browser-based configuration interface enables you to configure the device's advanced features. The CAP1300 features a range of advanced functions such as MAC filtering, MAC RADIUS authentication, VLAN configurations, up to 32 SSIDs and many more. To access the browser based configuration interface:

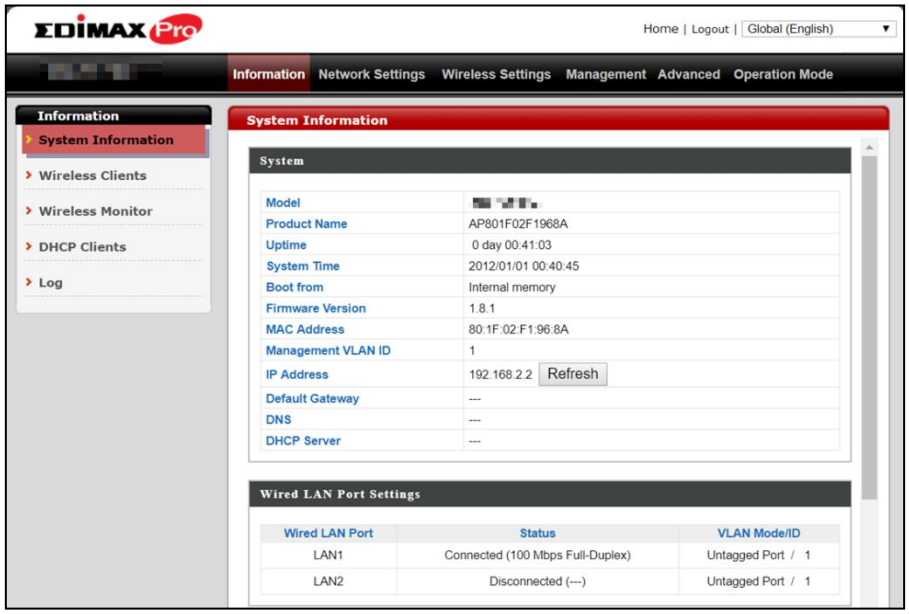
**1.** Connect a computer to your access point using an Ethernet cable.

**2.** Enter your access point's IP address in the URL bar of a web browser. The access point's default IP address is **192.168.2.2.**

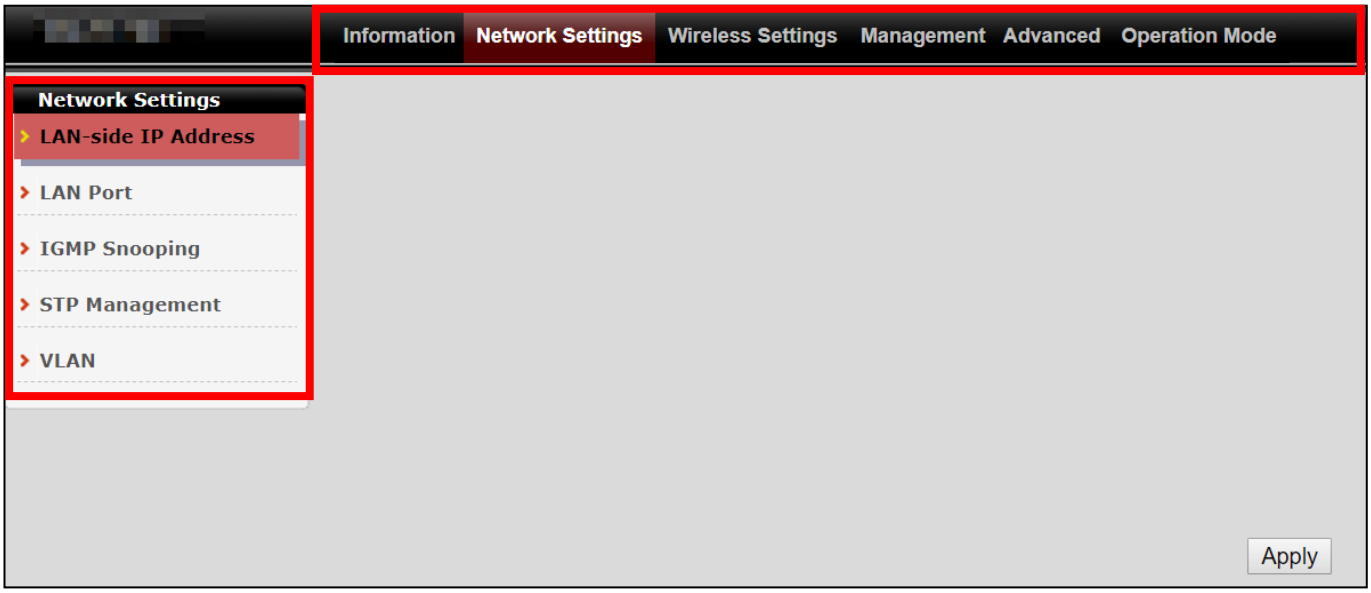
**3.** You will be prompted for a username and password. The default username is "admin" and the default password is "1234", though it was recommended that you change the password during setup (see IV ***Basic Settings***).

***If you cannot remember your password, reset the access point back to its factory default settings. Refer to*** I-5 ***Reset.***

**4.** You will arrive at the “System Information” screen shown below.




**5.** Use the menu across the top and down the left side to navigate.



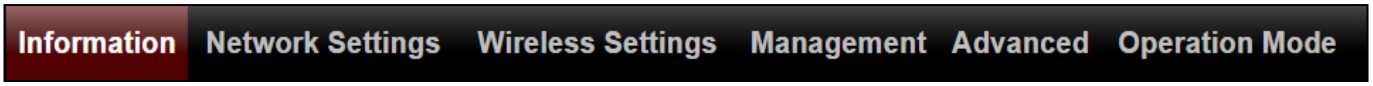

**6.** Where applicable, click “Apply” to save changes and reload the access point, or “Cancel” to cancel changes.

***Please wait a few seconds for the access point to reload after you “Apply” changes. A countdown will be shown as exemplified below.***

Configuration is complete. Reloading now... Please wait for 23 seconds.

**7.** Please refer to the following chapters for full descriptions of the browser based configuration interface.

# VI-1 Information




## VI-1-1 System Information

"System Information" page displays basic system information.

**System**

| | |
|---|---|
| Model | [redacted] |
| Product Name | AP801F02F1968A |
| Uptime | 1 day 23:51:09 |
| System Time | [redacted] /01/02 23:53:07 |
| Boot from | Internal memory |
| Firmware Version | 1.8.1 |
| MAC Address | 80:1F:02:F1:96:8A |
| Management VLAN ID | 1 |
| IP Address | 192.168.2.103 Refresh |
| Default Gateway | 192.168.2.70 |
| DNS | 192.168.2.70 |
| DHCP Server | 192.168.2.70 |

**Wired LAN Port Settings**

| Wired LAN Port | Status | VLAN Mode/ID |
|---|---|---|
| LAN1 | Connected (100 Mbps Full-Duplex) | Untagged Port / 1 |
| LAN2 | Disconnected (---) | Untagged Port / 1 |

**Wireless 2.4GHz**

| | |
|---|---|
| Status | Enabled |
| MAC Address | 80:1F:02:F1:96:8A |
| Channel | Ch 7 (Auto) |
| Transmit Power | 100% 28dbm |
| RSSI | -63/-79/-80 |

**Wireless 2.4GHz /SSID**

| SSID | Authentication Method | Encryption Type | VLAN ID | Additional Authentication | Wireless Client Isolation |
|---|---|---|---|---|---|
| [redacted] | No Authentication | No Encryption | 1 | No additional authentication | Disabled |
| [redacted] | No Authentication | No Encryption | 1 | No additional authentication | Disabled |

**Wireless 2.4GHz /WDS Disabled**

| MAC Address | Encryption Type | VLAN Mode/ID |
|---|---|---|
| | No WDS entries. | |

**Wireless 5GHz**

| | |
|---|---|
| Status | Enabled |
| MAC Address | 80:1F:02:F1:96:8B |
| Channel | Ch 36 + 40 + 44 + 48 (Auto) |
| Transmit Power | 100% 24dbm |
| RSSI | 0/0 |

**Wireless 5GHz /SSID**

| SSID | Authentication Method | Encryption Type | VLAN ID | Additional Authentication | Wireless Client Isolation |
|---|---|---|---|---|---|
| [redacted] | No Authentication | No Encryption | 1 | No additional authentication | Disabled |

**Wireless 5GHz /WDS Disabled**

| MAC Address | Encryption Type | VLAN Mode/ID |
|---|---|---|
| | No WDS entries. | |

Refresh

| System | |
|---|---|
| **Model** | Displays the model number of the access point. |
| **Product Name** | Displays the product name for reference, which consists of "AP" plus the MAC address. |
| **Uptime** | Displays the total time since the device was turned on. |
| **System Time** | Displays the system time. |
| **Boot From** | Displays information for the booted hardware, booted from internal memory. |
| **Firmware Version** | Displays the firmware version. |
| **MAC Address** | Displays the access point's MAC address. |
| **Management VLAN ID** | Displays the management VLAN ID. |
| **IP Address** | Displays the IP address of this device. Click "Refresh" to update this value. |
| **Default Gateway** | Displays the IP address of the default gateway. |
| **DNS** | IP address of DNS (Domain Name Server) |
| **DHCP Server** | IP address of DHCP Server. |

| Wired LAN Port Settings | |
|---|---|
| **Wired LAN Port** | Specifies which LAN port (1 or 2). |
| **Status** | Displays the status of the specified LAN port (connected or disconnected). |
| **VLAN Mode/ID** | Displays the VLAN mode (tagged or untagged) and VLAN ID for the specified LAN port. See VI-2-5 **VLAN**. |

| Wireless 2.4GHz (5GHz) | |
|---|---|
| **Status** | Displays the status of the 2.4GHz or 5GHz wireless (enabled or disabled). |
| **MAC Address** | Displays the access point's MAC address. |
| **Channel** | Displays the channel number the specified wireless frequency is using for broadcast. |
| **Transmit Power** | Displays the wireless radio transmit power level as a percentage. |

| | |
|---|---|
| **RSSI** | Received Signal Strength Indicator (RSSI) is a measurement of the power present in a received radio signal. |

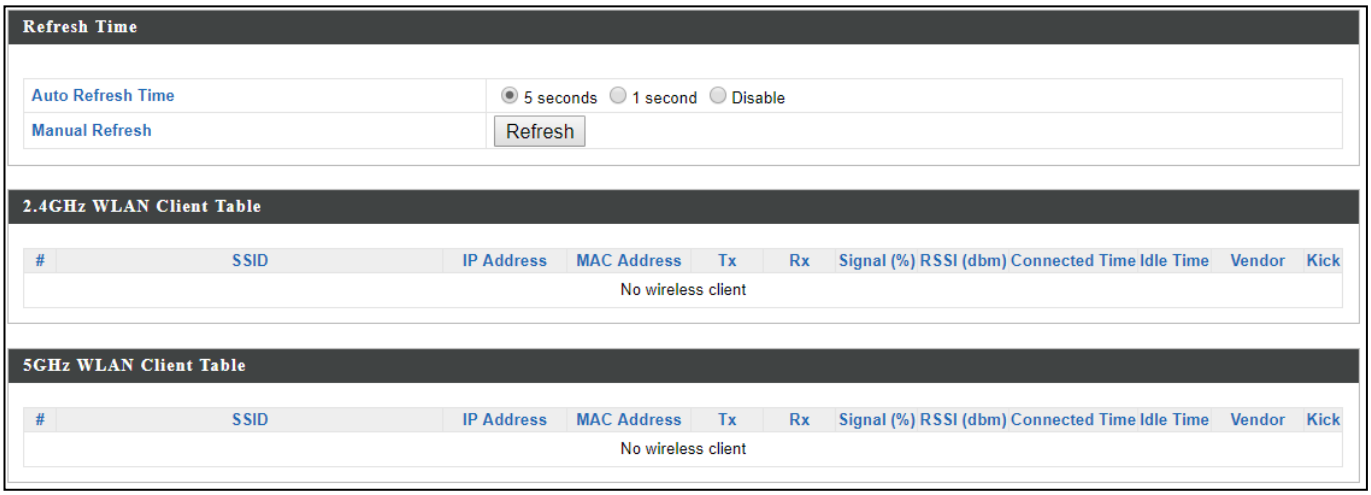
| Wireless 2.4GHZ (5GHz) / SSID | |
|---|---|
| **SSID** | Displays the SSID name(s) for the specified frequency. |
| **Authentication Method** | Displays the authentication method for the specified SSID. See VI-3 **Wireless Settings**. |
| **Encryption Type** | Displays the encryption type for the specified SSID. See VI-3 **Wireless Settings**. |
| **VLAN ID** | Displays the VLAN ID for the specified SSID. See VI-2-5 **VLAN**. |
| **Additional Authentication** | Displays the additional authentication type for the specified SSID. See VI-3 **Wireless Settings**. |
| **Wireless Client Isolation** | Displays whether wireless client isolation is in use for the specified SSID. See VI-2-5 **VLAN**. |

| Wireless 2.4GHZ (5GHz) / WDS Status | |
|---|---|
| **MAC Address** | Displays the peer access point's MAC address. |
| **Encryption Type** | Displays the encryption type for the specified WDS. See VI-3-3-4 **WDS**. |
| **VLAN Mode/ID** | Displays the VLAN ID for the specified WDS. See VI-3-3-4 **WDS**. |

Select "Refresh" to refresh all information.

## VI-1-2 Wireless Clients

"Wireless Clients" page displays information about all wireless clients connected to the device on the 2.4GHz or 5GHz frequency.

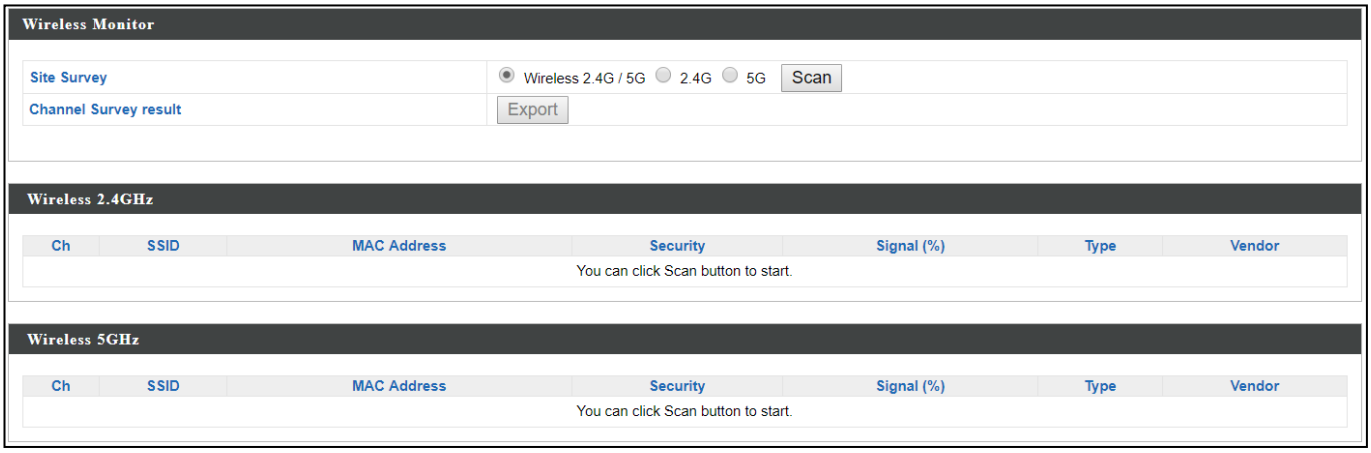



| Refresh time | |
|---|---|
| **Auto Refresh Time** | Select a time interval for the client table list to automatically refresh. |
| **Manual Refresh** | Click refresh to manually refresh the client table. |

| 2.4GHz (5GHz) WLAN Client Table | |
|---|---|
| **SSID** | Displays the SSID which the client is connected to. |
| **MAC Address** | Displays the MAC address of the client. |
| **Tx** | Displays the total data packets transmitted by the specified client. |
| **Rx** | Displays the total data packets received by the specified client. |
| **Signal (%)** | Displays the wireless signal strength for the specified client. |
| **Connected Time** | Displays the total time the wireless client has been connected to the access point. |
| **Idle Time** | Client idle time is the time for which the client has not transmitted any data packets i.e. is idle. |
| **Vendor** | The vendor of the client's wireless adapter is displayed here. |

## VI-1-3 Wireless Monitor

"Wireless Monitor" is a tool built into the device to scan and monitor the surrounding wireless environment. Select a frequency and click "Scan" to display a list of all SSIDs within range along with relevant details for each SSID.




| Wireless Monitor | |
|---|---|
| **Site Survey** | Select which frequency (or both) to scan, and click "Scan" to begin. |
| **Channel Survey Result** | After a scan is complete, click "Export" to save the results to local storage. |

| Site Survey Results | |
|---|---|
| **Ch** | Displays the channel number used by the specified SSID. |
| **SSID** | Displays the SSID identified by the scan. |
| **MAC Address** | Displays the MAC address of the wireless router/access point for the specified SSID. |
| **Security** | Displays the authentication/encryption type of the specified SSID. |
| **Signal (%)** | Displays the current signal strength of the SSID. |
| **Type** | Displays the 802.11 wireless networking standard(s) of the specified SSID. |
| **Vendor** | Displays the vendor of the wireless router/access point for the specified SSID. |

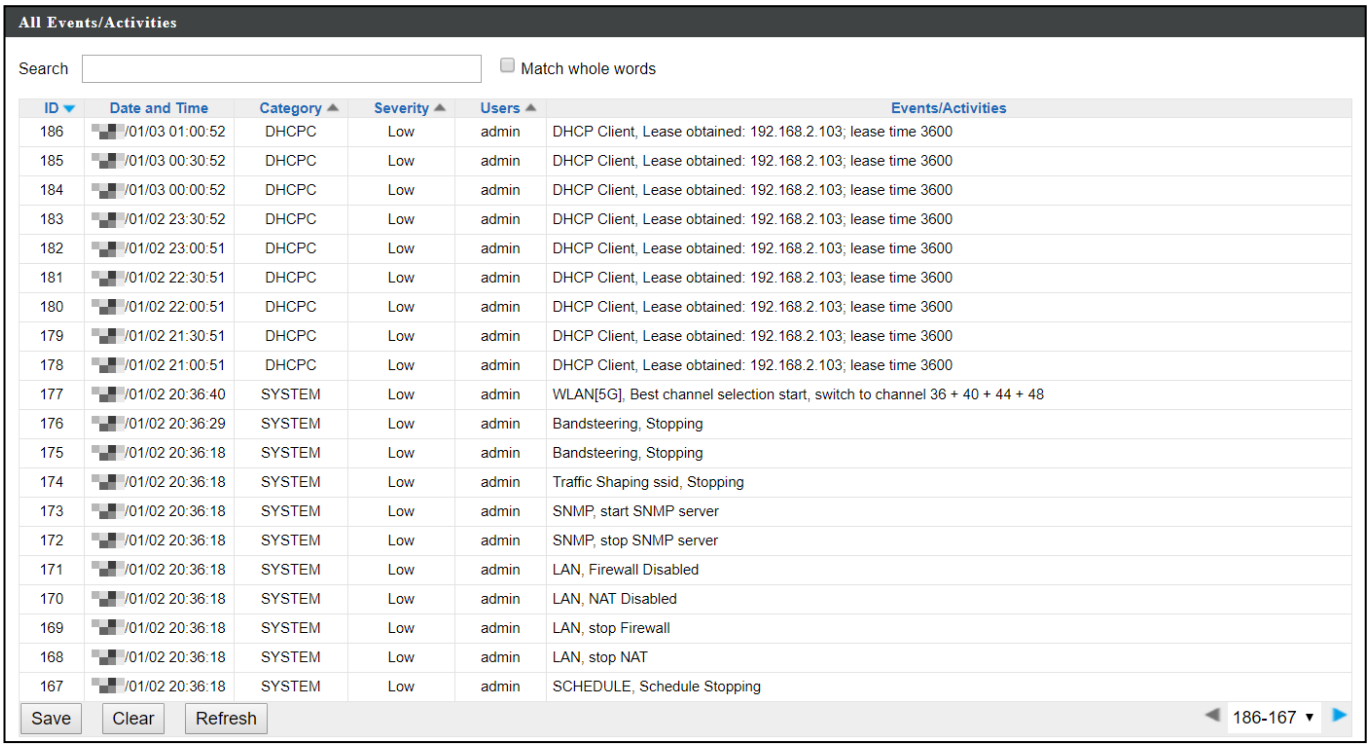
## VI-1-4 DHCP Clients

"DHCP Clients" shows information of DHCP leased clients.

## VI-1-5 Log

"System log" displays system operation information such as up time and connection processes. This information is useful for network administrators.

***Older entries will be overwritten when the log is full***



All Events/Activities

Search Match whole words

| ID | Date and Time | Category | Severity | Users | Events/Activities |
|---|---|---|---|---|---|
| 186 | /01/03 01:00:52 | DHCPC | Low | admin | DHCP Client, Lease obtained: 192.168.2.103; lease time 3600 |
| 185 | /01/03 00:30:52 | DHCPC | Low | admin | DHCP Client, Lease obtained: 192.168.2.103; lease time 3600 |
| 184 | /01/03 00:00:52 | DHCPC | Low | admin | DHCP Client, Lease obtained: 192.168.2.103; lease time 3600 |
| 183 | /01/02 23:30:52 | DHCPC | Low | admin | DHCP Client, Lease obtained: 192.168.2.103; lease time 3600 |
| 182 | /01/02 23:00:51 | DHCPC | Low | admin | DHCP Client, Lease obtained: 192.168.2.103; lease time 3600 |
| 181 | /01/02 22:30:51 | DHCPC | Low | admin | DHCP Client, Lease obtained: 192.168.2.103; lease time 3600 |
| 180 | /01/02 22:00:51 | DHCPC | Low | admin | DHCP Client, Lease obtained: 192.168.2.103; lease time 3600 |
| 179 | /01/02 21:30:51 | DHCPC | Low | admin | DHCP Client, Lease obtained: 192.168.2.103; lease time 3600 |
| 178 | /01/02 21:00:51 | DHCPC | Low | admin | DHCP Client, Lease obtained: 192.168.2.103; lease time 3600 |
| 177 | /01/02 20:36:40 | SYSTEM | Low | admin | WLAN[5G], Best channel selection start, switch to channel 36 + 40 + 44 + 48 |
| 176 | /01/02 20:36:29 | SYSTEM | Low | admin | Bandsteering, Stopping |
| 175 | /01/02 20:36:18 | SYSTEM | Low | admin | Bandsteering, Stopping |
| 174 | /01/02 20:36:18 | SYSTEM | Low | admin | Traffic Shaping ssid, Stopping |
| 173 | /01/02 20:36:18 | SYSTEM | Low | admin | SNMP, start SNMP server |
| 172 | /01/02 20:36:18 | SYSTEM | Low | admin | SNMP, stop SNMP server |
| 171 | /01/02 20:36:18 | SYSTEM | Low | admin | LAN, Firewall Disabled |
| 170 | /01/02 20:36:18 | SYSTEM | Low | admin | LAN, NAT Disabled |
| 169 | /01/02 20:36:18 | SYSTEM | Low | admin | LAN, stop Firewall |
| 168 | /01/02 20:36:18 | SYSTEM | Low | admin | LAN, stop NAT |
| 167 | /01/02 20:36:18 | SYSTEM | Low | admin | SCHEDULE, Schedule Stopping |

Save Clear Refresh 186-167

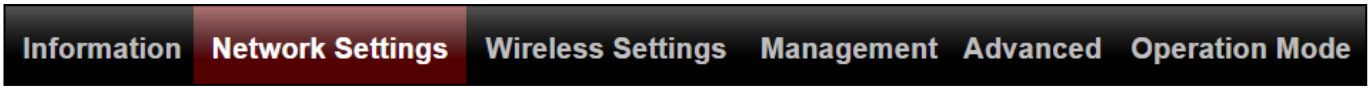
| | |
|---|---|
| **Save** | Click to save the log as a file on your local computer. |
| **Clear** | Clear all log entries. |
| **Refresh** | Refresh the current log. |

The following information/events are recorded by the log:

- **USB**
  *Mount & unmount*
- **Wireless Client**
  *Connected & disconnected*
  *Key exchange success & fail*
- **Authentication**
  *Authentication fail or successful.*
- **Association**
  *Success or fail*

- **WPS**
  *M1 - M8 messages*
  *WPS success*
- **Change Settings**
- **System Boot**
  *Displays current model name*
- **NTP Client**
- **Wired Link**
  *LAN Port link status and speed status*
- **Proxy ARP**
  *Proxy ARP module start & stop*
- **Bridge**
  *Bridge start & stop.*
- **SNMP**
  *SNMP server start & stop.*
- **HTTP**
  *HTTP start & stop.*
- **HTTPS**
  *HTTPS start & stop.*
- **SSH**
  *SSH-client server start & stop.*
- **Telnet**
  *Telnet-client server start or stop.*
- **WLAN (2.4G)**
  *WLAN (2.4G] channel status and country/region status*
- **WLAN (5G)**
  *WLAN (5G) channel status and country/region status*

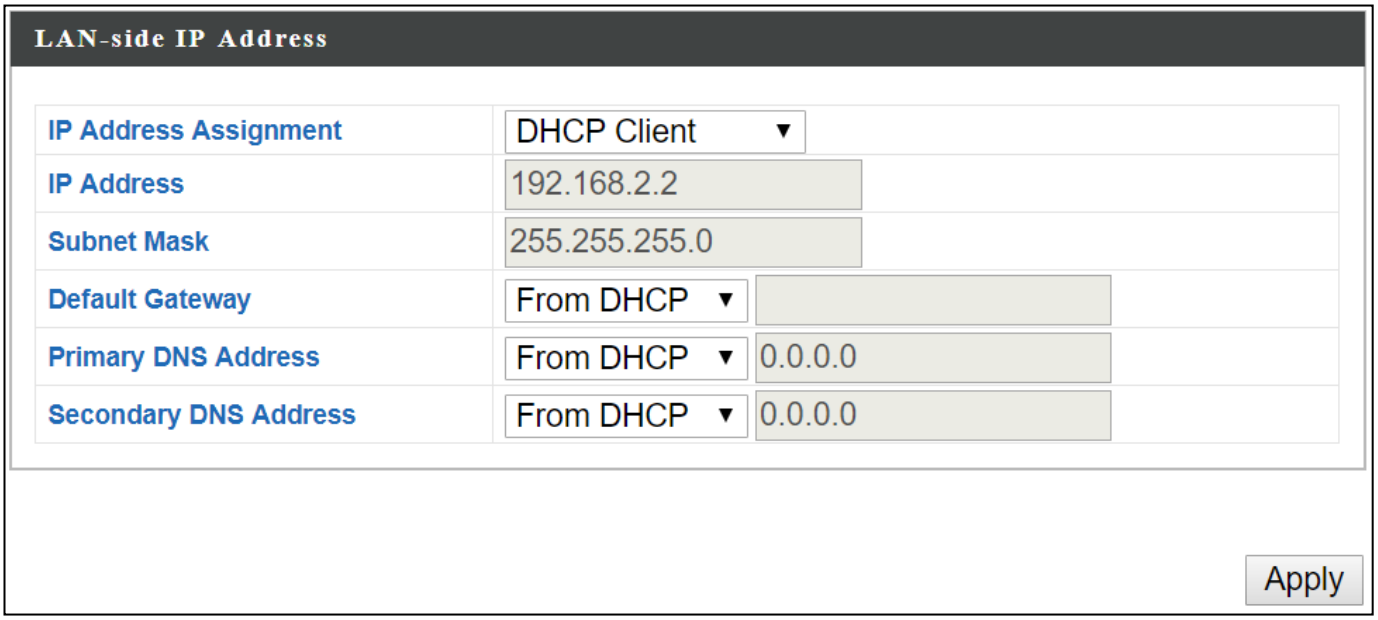
## VI-2 Network Settings




### VI-2-1 LAN-Side IP Address

"LAN-side IP address" page allows you to configure your access point on your Local Area Network (LAN). You can enable the access point to dynamically receive an IP address from your router's DHCP server or you can specify a static IP address for your access point, as well as configure DNS servers.

***The access point's default IP address is 192.168.2.2.***




| LAN-side IP Address | |
|---|---|
| **IP Address Assignment** | Select "DHCP Client" for your access point to be assigned a dynamic IP address from your router's DHCP server.<br>Select "Static IP" to manually specify a static/fixed IP address for your access point (below).<br>Select "DHCP Server" for your access point to assign a dynamic IP address to your PC. You will have to set a Primary DNS address and a Secondary DNS address. For example, Google's Primary DNS address is 8.8.4.4 and Secondary DNS |

| | |
|---|---|
| | address is 8.8.8.8.<br>DHCP Client ▼<br>Static IP Address<br>DHCP Client<br>DHCP Server |
| **IP Address** | Specify the IP address here. This IP address will be assigned to your access point and will replace the default IP address. |
| **Subnet Mask** | Specify a subnet mask. The default value is 255.255.255.0 |
| **Default Gateway** | For DHCP users, select “From DHCP” to get default gateway from your DHCP server or “User-Defined” to enter a gateway manually. For static IP users, the default value is blank.<br>From DHCP ▼<br>User-Defined<br>From DHCP |

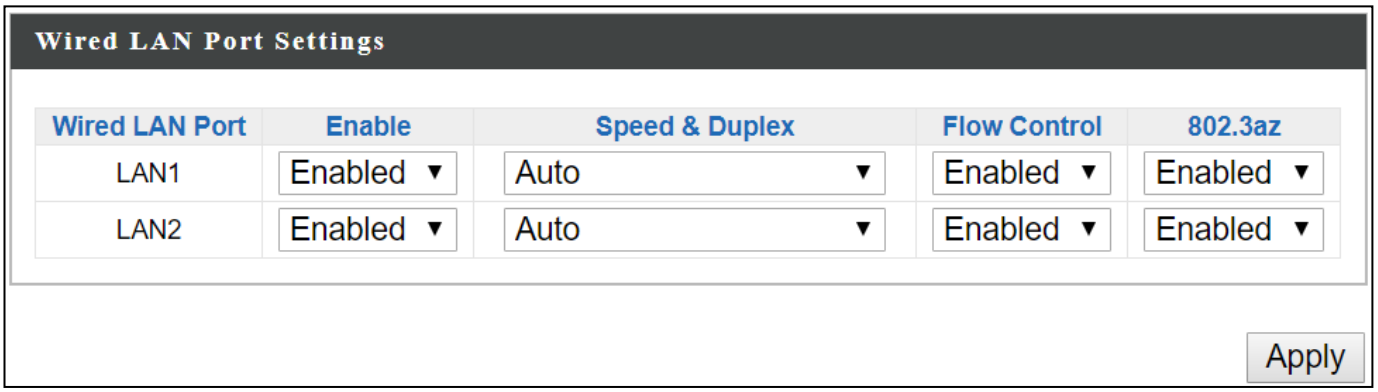
DHCP users can select to get DNS servers’ IP address from DHCP or manually enter a value. For static IP users, the default value is blank.

| | |
|---|---|
| **Primary DNS Address** | DHCP users can select “From DHCP” to get primary DNS server’s IP address from DHCP or “User-Defined” to manually enter a value. For static IP users, the default value is blank.<br>From DHCP ▼<br>User-Defined<br>From DHCP |
| **Secondary DNS Address** | Users can manually enter a value when DNS server’s primary address is set to “User-Defined”.<br>From DHCP ▼<br>User-Defined<br>From DHCP |

Press “Apply” to confirm the settings.

## VI-2-2 LAN Port

"LAN Port" page allows you to configure the settings for your access point's two wired LAN (Ethernet) ports.

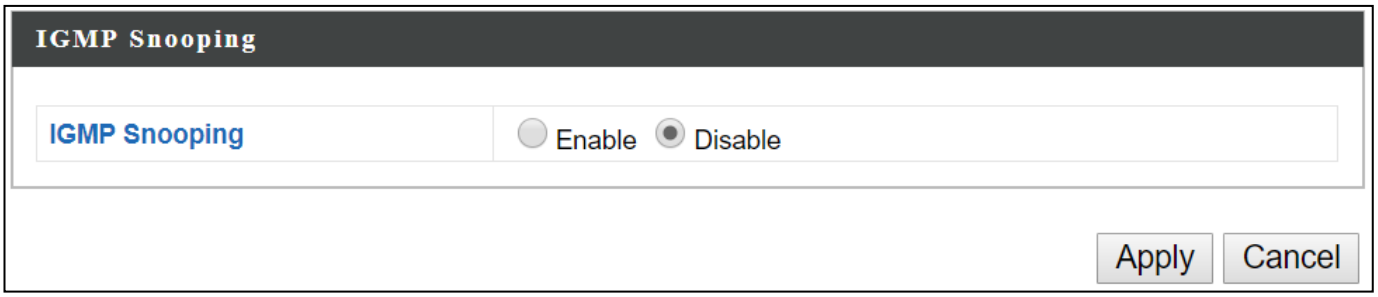



| | |
|---|---|
| **Wired LAN Port** | Identifies LAN port 1 or 2. |
| **Enable** | Enable/disable specified LAN port. |
| **Speed & Duplex** | Select a speed & duplex type for specified LAN port, or use the "Auto" value. LAN ports can operate up to 1000Mbps and full-duplex enables simultaneous data packets transfer/receive.<br>Auto ▼<br>Auto<br>10 Mbps Half-Duplex<br>10 Mbps Full-Duplex<br>100 Mbps Half-Duplex<br>100 Mbps Full-Duplex<br>1000 Mbps Full-Duplex |
| **Flow Control** | Enable/disable flow control. Flow control can pause new session request until current data processing is complete, in order to avoid device overloads under heavy traffic. |
| **802.3az** | Enable/disable 802.3az. 802.3az is an Energy Efficient Ethernet feature which disables unused interfaces to reduce power usage. |

Press "Apply" to confirm the settings.

## VI-2-3 IGMP Snooping

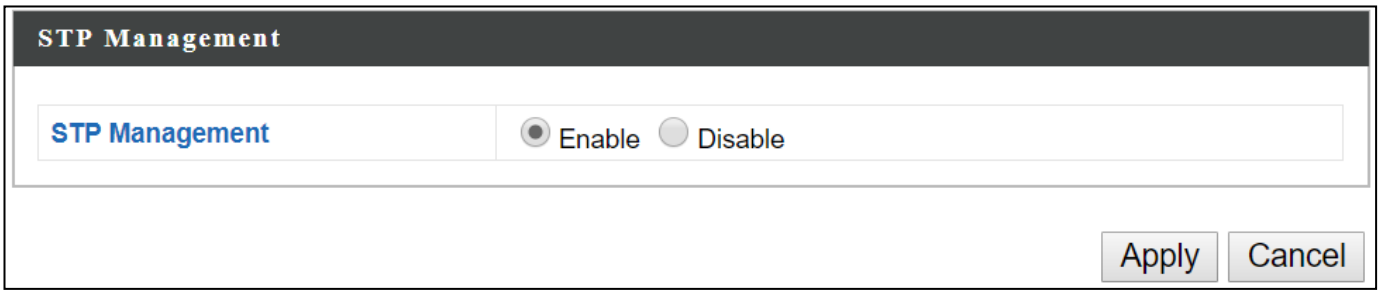
IGMP snooping is the process of listening to Internet Group Management Protocol (IGMP) network traffic. The feature allows a network switch to listen in on the IGMP conversation between hosts and routers. By listening to these conversations the switch maintains a map of which links need which IP multicast streams. Multicasts may be filtered from the links which do not need them and thus controls which ports receive specific multicast traffic. This page allows you to enable/disable this feature.




Press “Apply” to confirm the settings.

## VI-2-4 STP Management

When enabled, STP ensures that you do not create loops when you have redundant paths in your network (as loops are deadly to a network).
This page allows you to enable / disable STP management.

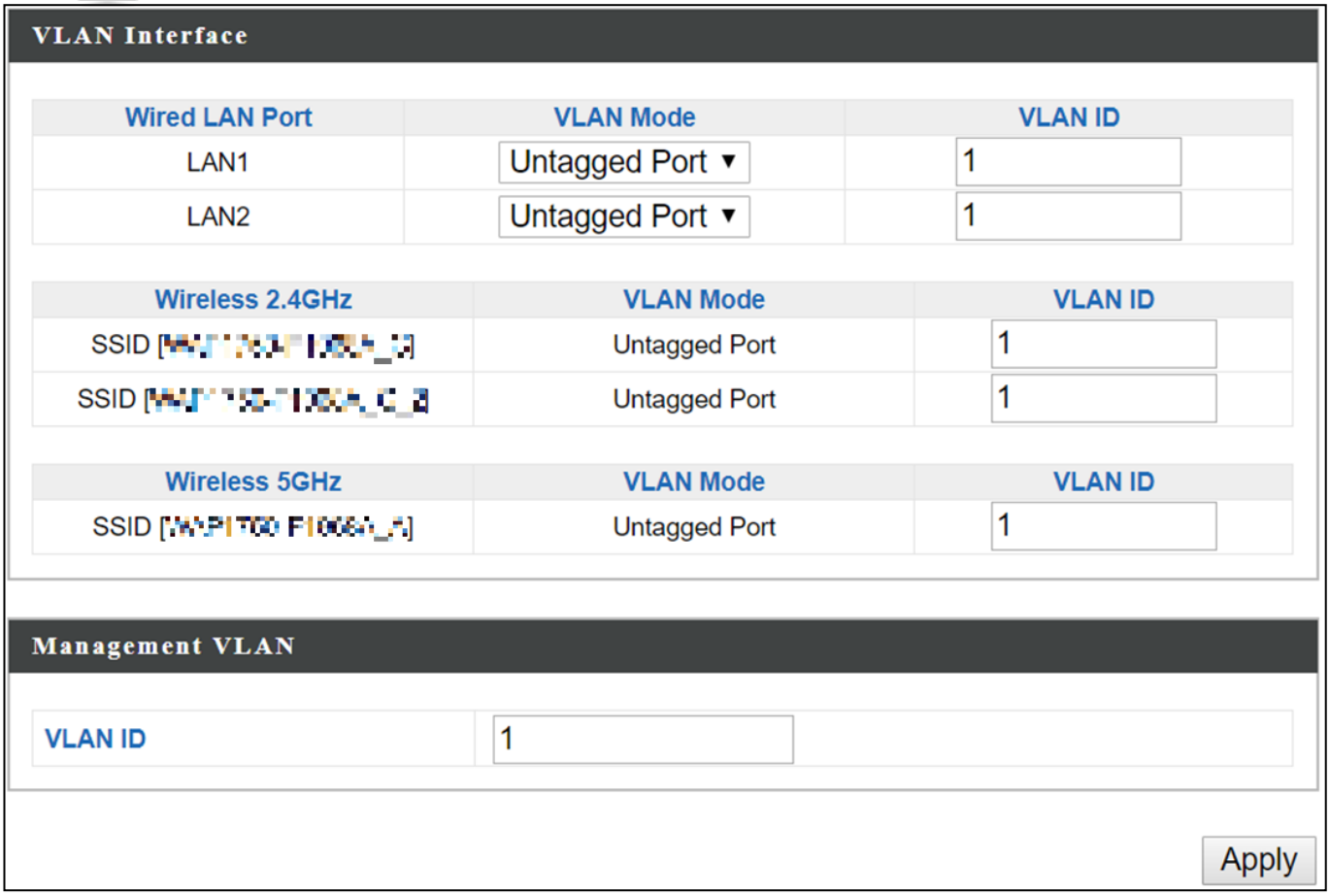



Press “Apply” to confirm the settings.

## VI-2-5 VLAN

"VLAN" (Virtual Local Area Network) enables you to configure VLAN settings. A VLAN is a local area network which maps workstations virtually instead of physically and allows you to group together or isolate users from each other.

***VLAN IDs in the range 1 – 4095 are supported.***

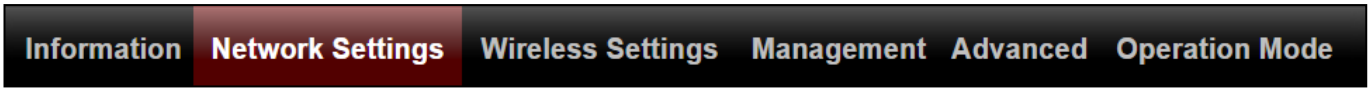



| VLAN Interface | |
|---|---|
| **Wired LAN Port/Wireless** | Identifies LAN port 1 or 2 and wireless SSIDs. |
| **VLAN Mode** | Select "Tagged Port" or "Untagged Port" for specified LAN interface. |
| **VLAN ID** | Set a VLAN ID for specified interface, if "Untagged Port" is selected. |

| Management VLAN | |
|---|---|
| **VLAN ID** | Specify the VLAN ID of the management VLAN. Only the hosts belonging to the same VLAN can manage the device. |

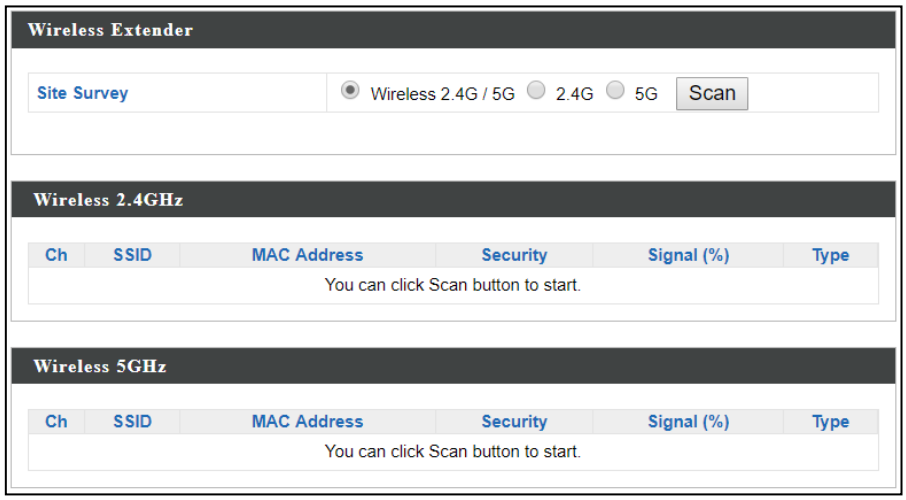
Press "Apply" to confirm the settings.

# VI-3 Wireless Settings

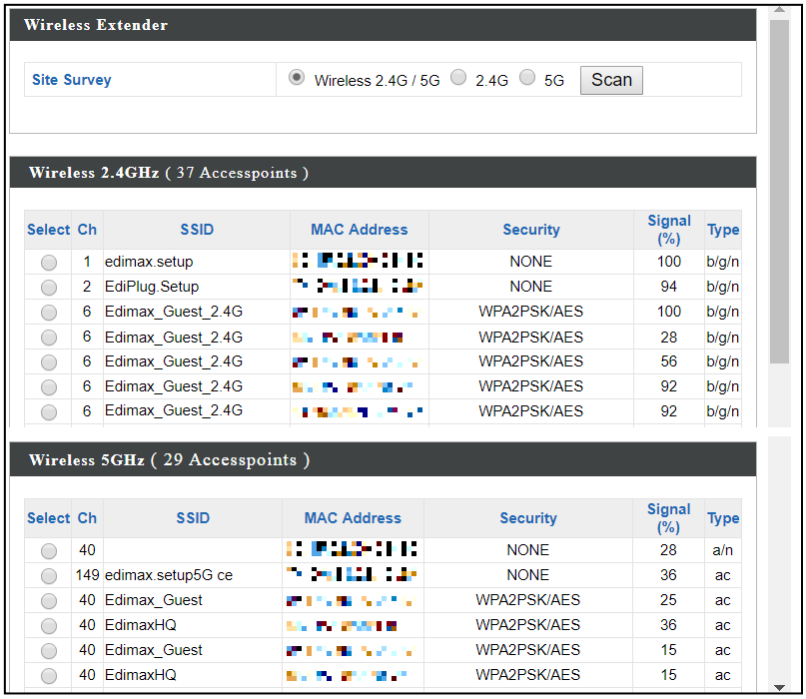



## VI-3-1 Wireless Extender

This page allows you to scan for available wireless network (both 2.4GHz and 5GHz frequencies) to connect to for repeater / client bridge modes.

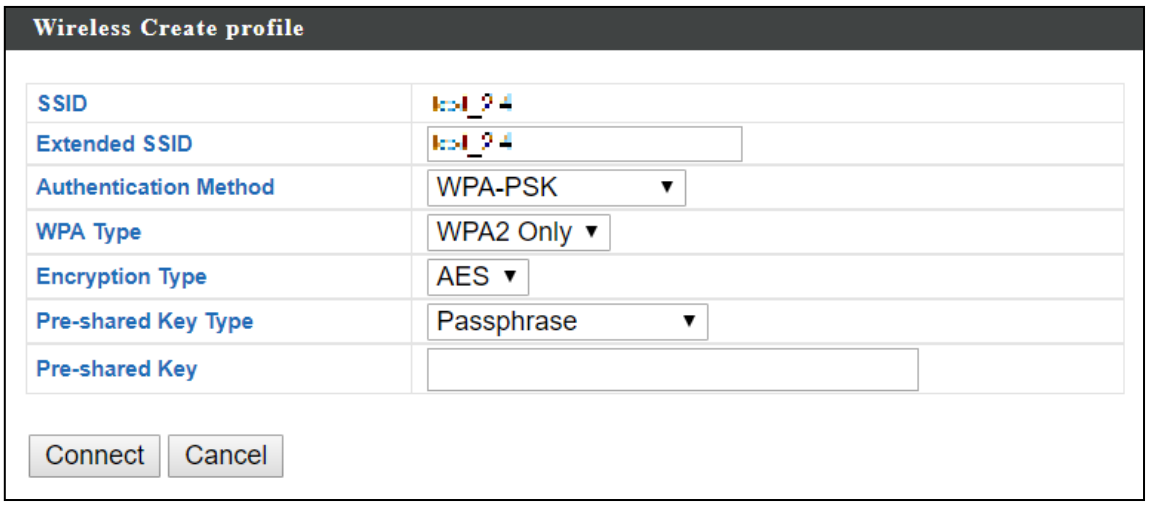



Click “Scan” to show available wireless network:

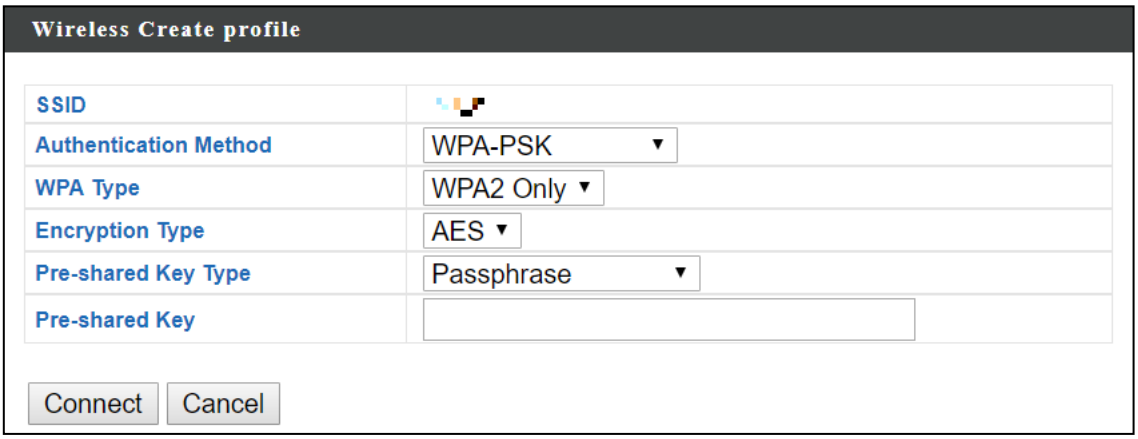


Click the circle icon to connect to an available source SSID. SSIDs can be configured independently for each frequency 2.4GHz & 5GHz.

Repeater Mode source SSID connection page:



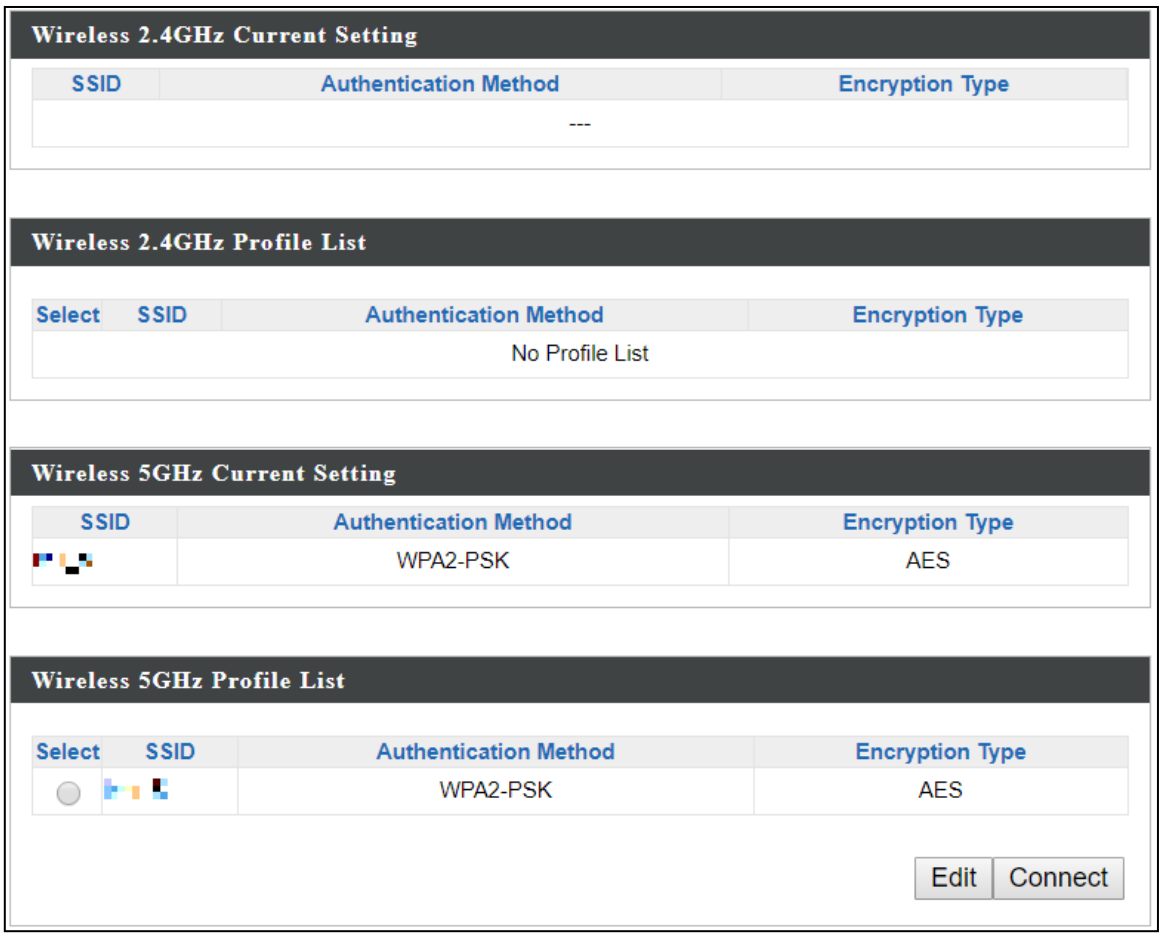

Client Bridge Mode source SSID connection page:



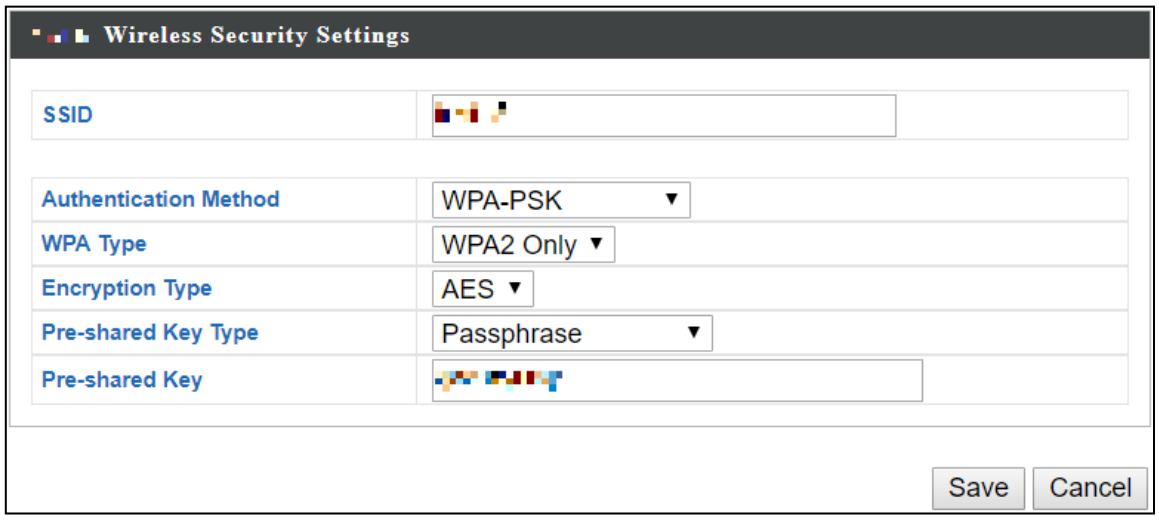

Edit the connection page according to your preference and enter the security details for the source SSID (e.g. Pre-shared Key). Click “Connect” to connect to the SSID.

For more information on setting up Repeater / Client Bridge Modes, please refer to ıı ***Quick Setup & Mode Selection***.

## VI-3-2 Profile List




To edit a connection, check the circle icon and press “Edit”. The edit page is shown below:




Press “Save” to save the configuration, or “Cancel” to forfeit the changes.

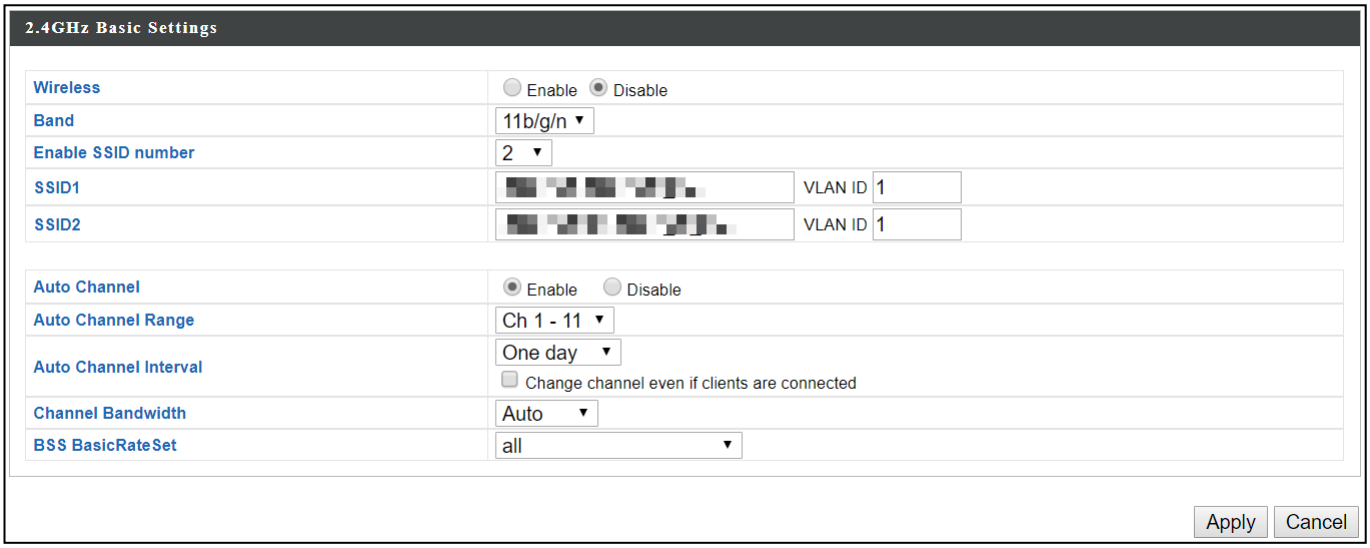
If you wish to use a different source SSID connection, check the circle icon (of the source SSID) and press “Connect”.

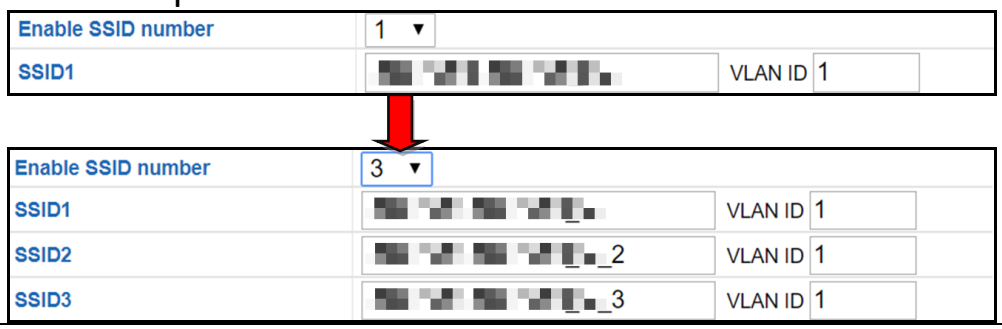
### VI-3-3 2.4GHz 11bgn

The “2.4GHz 11bgn” menu allows you to view and configure information for your access point’s 2.4GHz wireless network across five categories: Basic, Advanced, Security, WDS & Guest Network.

## VI-3-3-1 Basic

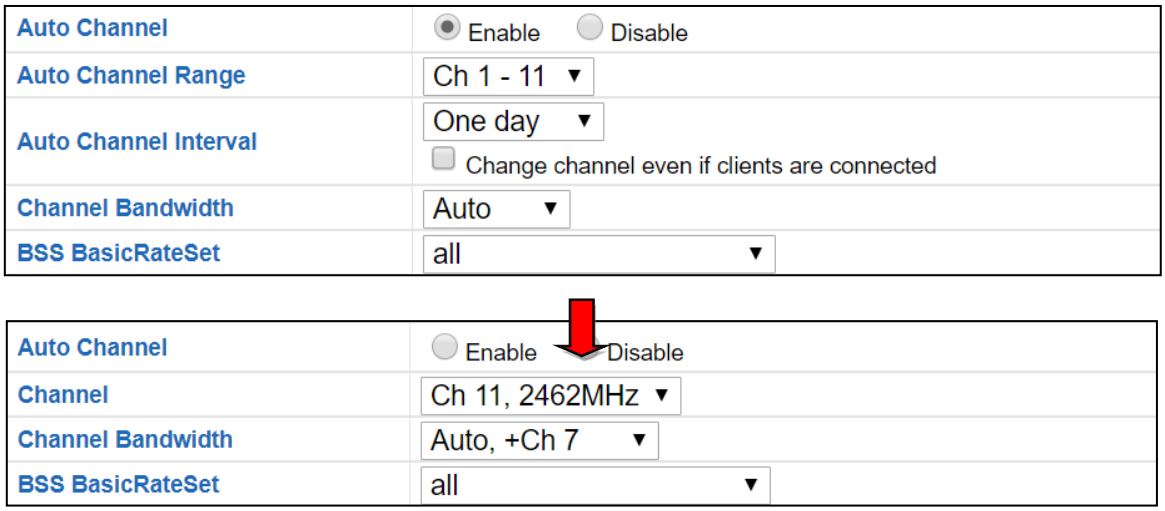
The “Basic” screen displays basic settings for your access point’s 2.4GHz Wi-Fi network (s).




| | |
|---|---|
| **Wireless** | Enable or disable the access point’s 2.4GHz wireless radio. When disabled, no 2.4GHz SSIDs will be active. |
| **Band** | Wireless standard used for the access point. Combinations of 802.11b, 802.11g & 802.11n can be selected. |
| **Enable SSID Number** | Select how many SSIDs to enable for the 2.4GHz frequency from the drop down menu. A maximum of 16 can be enabled.   |
| **SSID#** | Enter the SSID name for the specified SSID (up to 16). The SSID can consist of any combination of up to 32 alphanumeric characters. |
| **VLAN ID** | Specify a VLAN ID for each SSID. |
| **Auto Channel** | Enable/disable auto channel selection.<br>Enable: Auto channel selection will automatically set the wireless channel for the access point’s 2.4GHz frequency based on availability and potential interference.<br>Disable: Select a channel manually as shown in the next table. |

| | |
|---|---|
| **Auto Channel Range** | Select a range to which auto channel selection can choose from. |
| **Auto Channel Interval** | Select a time interval for how often the auto channel setting will check/reassign the wireless channel.<br>Check/uncheck the “Change channel even if clients are connected” box according to your preference. |
| **Channel Bandwidth** | Select the channel bandwidth:<br>20MHz (lower performance but less interference); or<br>40MHz (higher performance but potentially higher interference); or<br>Auto (automatically select based on interference level). |
| **BSS BasicRateSet** | Set a Basic Service Set (BSS) rate: this is a series of rates to control communication frames for wireless clients. |

When auto channel is disabled, configurable fields will change. Select a wireless channel manually:




| | |
|---|---|
| **Channel** | Select a wireless channel from 1 – 11. |
| **Channel Bandwidth** | Set the channel bandwidth:<br>20MHz (lower performance but less interference); or<br>40MHz (higher performance but potentially higher interference); or<br>Auto (automatically select based on interference level). |
| **BSS BasicRateSet** | Set a Basic Service Set (BSS) rate: this is a series of rates to control communication frames for wireless clients. |

Press “Apply” to apply the configuration, or “Cancel” to forfeit the changes.

## VI-3-3-2 Advanced

These settings are for experienced users only. Please do not change any of the values on this page unless you are already familiar with these functions.

***Changing these settings can adversely affect the performance of your access point.***

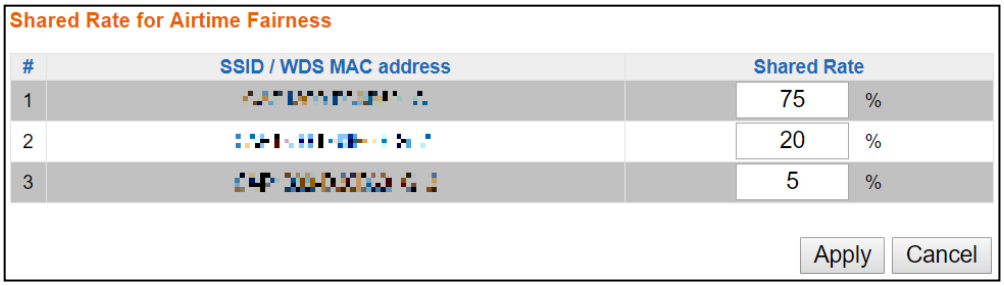
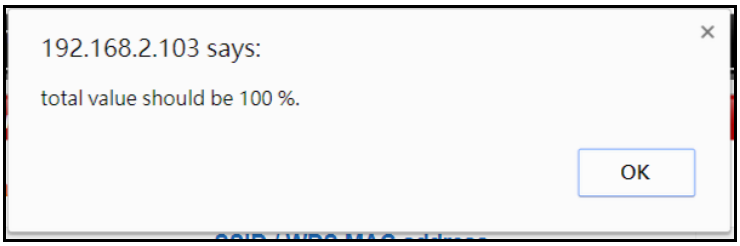
**2.4GHz Advanced Settings**

| | |
|---|---|
| Contention Slot | Short |
| Preamble Type | Short |
| Guard Interval | Short GI |
| 802.11g Protection | Enable Disable |
| 802.11n Protection | Enable Disable |
| DTIM Period | 1 (1-255) |
| RTS Threshold | 2347 (1-2347) |
| Fragment Threshold | 2346 (256–2346) |
| Multicast Rate | Auto |
| Tx Power | 100% 21dbm |
| Beacon Interval | 100 (40-1000 ms) |
| Station Idle Timeout | 60 (30-65535 seconds) |
| Airtime Fairness | Disabled Edit SSID Rate |

Apply Cancel

| | |
|---|---|
| **Contention Slot** | Select "Short" or "Long" – this value is used for contention windows in WMM (see VI-3-8 ***WMM***). |
| **Preamble Type** | Set the wireless radio preamble type. The preamble type in 802.11 based wireless communications defines the length of the CRC (Cyclic Redundancy Check) block for communication between the access point and roaming wireless adapters. The default value is "Short Preamble". |
| **Guard Interval** | Set the guard interval. A shorter interval can improve performance. |

| | |
|---|---|
| **802.11g Protection** | Enable/disable 802.11g protection, which increases reliability but reduces bandwidth (clients will send Request to Send (RTS) to access point, and access point will broadcast Clear to Send (CTS), before a packet is sent from client). |
| **802.11n Protection** | Enable/disable 802.11n protection, which increases reliability but reduces bandwidth (clients will send Request to Send (RTS) to access point, and access point will broadcast Clear to Send (CTS), before a packet is sent from client). |
| **DTIM Period** | Set the DTIM (delivery traffic indication message) period value of the wireless radio. The default value is 1. |
| **RTS Threshold** | Set the RTS threshold of the wireless radio. The default value is 2347. |
| **Fragment Threshold** | Set the fragment threshold of the wireless radio. The default value is 2346. |
| **Multicast Rate** | Set the transfer rate for multicast packets or use the “Auto” setting. The range of the transfer rate is between 1Mbps to 54Mbps |
| **Tx Power** | Set the power output of the wireless radio. You may not require 100% output power. Setting a lower power output may enhance security since access to your signal can be potentially prevented from malicious/unknown users in distant areas. |
| **Beacon Interval** | Set the beacon interval of the wireless radio. The default value is 100. |
| **Station idle timeout** | Set the interval for the access point to send keepalive messages to a wireless client to check if the station is still alive/active. |

| | |
|---|---|
| **Airtime Fairness** | Airtime Fairness gives equal amounts of air time (instead of equal number of frames) to each client regardless of its theoretical data rate.<br>Set airtime fairness to “Auto”, “Static” or “Disable”.<br>When “Auto” is selected, the share rate is automatically managed.<br>When “Static” is selected, press “Edit SSID Rate” to enter a % for each SSID’s share rate as shown below:<br>  <br><br>The % field has to add up to 100% or the system will display a message:<br>  <br><br>Airtime fairness is disabled if “Disable” is selected. |

Press “Apply” to apply the configuration, or “Cancel” to forfeit the changes.

## VI-3-3-3 Security

The access point provides various security options (wireless data encryption). When data is encrypted, information transmitted wirelessly cannot be read by anyone who does not know the correct encryption key.

***It is essential to configure wireless security in order to prevent unauthorised access to your network.***

**2.4GHz Wireless Security Settings**

| | |
|---|---|
| SSID | [redacted] |
| Broadcast SSID | Enable |
| Wireless Client Isolation | Disable |
| 802.11k | Disable |
| Load Balancing | 100 /100 |
| Authentication Method | No Authentication |
| Additional Authentication | No additional authentication |

**2.4GHz Wireless Advanced Settings**

Smart Handover Settings

| | |
|---|---|
| Smart Handover | Enable Disable |
| RSSI Threshold | -80 dB |

Apply Cancel

| | |
|---|---|
| **SSID Selection** | Select a SSID to configure its security settings. |
| **Broadcast SSID** | Enable or disable SSID broadcast.<br>Enable: the SSID will be visible to clients as an available Wi-Fi network.<br>Disable: the SSID will not be visible as an available Wi-Fi network to clients – clients must manually enter the SSID in order to connect. A hidden (disabled) SSID is typically more secure than a visible (enabled) SSID. |
| **Wireless Client Isolation** | Enable or disable wireless client isolation.<br>Wireless client isolation prevents clients connected to the access point from communicating with each other and improves security. Typically, this function is useful for corporate environments or public hot spots and can prevent brute force attacks on clients' usernames and passwords. |
| **Load Balancing** | Load balancing limits the number of wireless clients connected to an SSID. Set a load balancing value (maximum 100). |
| **Authentication Method** | Select an authentication method from the drop down menu and refer to the appropriate information below for your method. |

### VI-3-3-3-1 No Authentication / Additional Authentication

When "No Authentication" is selected in "Authentication Method", extra options are made available in the next line:

| | |
|---|---|
| **Additional Authentication** | Select an additional authentication method from the drop down menu or select "No additional authentication" for no authentication, where no password/key is required to connect to the access point.<br>For other options, refer to the information below. |

***"No additional authentication" is not recommended as anyone can connect to your device's SSID.***

Additional wireless authentication methods can be applied to all authentication methods:

***WPS must be disabled to use additional authentication. See*** VI-3-5 *WPS* ***for WPS settings.***

**MAC Address Filter**

Restrict wireless clients access based on MAC address specified in the MAC filter table.

***See*** VI-3-7 *MAC Filter* ***to configure MAC filtering.***

**MAC-RADIUS Authentication**

Restrict wireless clients access based on MAC address via a RADIUS server, or password authentication via a RADIUS server.

***See*** VI-3-6 *RADIUS* ***to configure RADIUS servers.***

***WPS must be disabled to use MAC-RADIUS authentication. See*** VI-3-5 *WPS* ***for WPS settings.***

| | |
|---|---|
| Additional Authentication | MAC RADIUS authentication ▼ |
| MAC RADIUS Password | ◉ Use MAC address<br>○ Use the following password |

**MAC Filter & MAC-RADIUS Authentication**

Restrict wireless clients access using both of the above MAC filtering & RADIUS authentication methods.

| | |
|---|---|
| Additional Authentication | MAC filter & MAC RADIUS authentication ▼ |
| MAC RADIUS Password | ◉ Use MAC address<br>○ Use the following password |

| | |
|---|---|
| **MAC RADIUS Password** | Select whether to use MAC address or password authentication via RADIUS server. If you select “Use the following password”, enter the password in the field below. The password should match the “Shared Secret” used in VI-3-6 **RADIUS**. |

### VI-3-3-3-2 WEP

WEP (Wired Equivalent Privacy) is a basic encryption type.
When selected, a notice will pop-up as exemplified below:

WPS 2.0 will be disabled if WEP is used.

Below is a figure showing the configurable fields:

| | |
|---|---|
| Authentication Method | WEP ▼ |
| Key Length | 64-bit ▼ |
| Key Type | ASCII (5Characters) ▼ |
| Default Key | Key 1 ▼ |
| Encryption Key 1 | |
| Encryption Key 2 | |
| Encryption Key 3 | |
| Encryption Key 4 | |

| | |
|---|---|
| **Key Length** | Select 64-bit or 128-bit. 128-bit is more secure than 64-bit and is recommended. |
| **Key Type** | Choose from "ASCII" (any alphanumerical character 0-9, a-z and A-Z) or "Hex" (any characters from 0-9, a-f and A-F). |
| **Default Key** | Select which encryption key (1 – 4 below) is the default key. For security purposes, you can set up to four keys (below) and change which is the default key. |
| **Encryption Key 1 – 4** | Enter your encryption key/password according to the format you selected above. |

For a higher level of security, please consider using WPA encryption.

### VI-3-3-3-3 IEEE802.1x/EAP

Below is a figure showing the configurable fields:

| | |
|---|---|
| Authentication Method | IEEE802.1x/EAP ▼ |
| Key Length | 64-bit ▼ |

| | |
|---|---|
| **Key Length** | Select 64-bit or 128-bit. 128-bit is more secure than 64-bit and is recommended. |

### VI-3-3-3-4 WPA-PSK

WPA-PSK is a secure wireless encryption type with strong data protection and user authentication, utilizing 128-bit encryption keys.

Below is a figure showing the configurable fields:

| | |
|---|---|
| Authentication Method | WPA-PSK ▼ |
| 802.11r Fast Roaming | ◉ Enable ○ Disable |
| WPA Type | WPA/WPA2 Mixed Mode-PSK ▼ |
| Encryption Type | TKIP/AES Mixed Mode ▼ |
| Key Renewal Interval | 60 minute(s) |
| Pre-shared Key Type | Passphrase ▼ |
| Pre-shared Key | |

Fast Roaming Settings will also be shown:

**802.11r Fast Transition Roaming Settings**

| | |
|---|---|
| mobility_domain | |
| Encryption Key | |
| Over the DS | ○ Enable ◉ Disable |

| | |
|---|---|
| **802.11r Fast Roaming** | When your device roams from one AP to another on the same network, 802.11r uses a feature called Fast Basic Service Set Transition (FT) to authenticate more quickly. FT works with both preshared key (PSK) and 802.1X authentication methods. |
| **WPA Type** | Select from WPA/WPA2 Mixed Mode-PSK, WPA2 or WPA only. WPA2 is safer than WPA, but is not supported by all wireless clients. Please make sure your wireless client supports your selection. |
| **Encryption** | Select “TKIP/AES Mixed Mode” or “AES” encryption type. |
| **Key Renewal Interval** | Specify a frequency for key renewal in minutes. |
| **Pre-Shared Key Type** | Choose from “Passphrase” (8 – 63 alphanumeric characters) or “Hex” (up to 64 characters from 0-9, a-f and A-F). |
| **Pre-Shared Key** | Please enter a security key/password according to the format you selected above. |

| 802.11r Fast Transition Roaming Settings | |
|---|---|
| **Mobility_domain** | Specify the mobility domain (2.4GHz or 5GHz) |
| **Encryption Key** | Specify the encryption key |
| **Over the DS** | Enable or disable this function. |

### VI-3-3-3-5 WPA-EAP

| | |
|---|---|
| Authentication Method | WPA-EAP ▼ |
| 802.11r Fast Roaming | ◉ Enable ○ Disable |
| WPA Type | WPA/WPA2 mixed mode-EAP ▼ |
| Encryption Type | TKIP/AES Mixed Mode ▼ |
| Key Renewal Interval | 60 minute(s) |

Fast Roaming Settings will also be shown:

| 802.11r Fast Transition Roaming Settings | |
|---|---|
| mobility_domain | |
| Encryption Key | |
| Over the DS | ○ Enable ◉ Disable |

| | |
|---|---|
| **WPA Type** | Select from WPA/WPA2 Mixed Mode-EAP, WPA2-EAP or WPA-EAP. |
| **Encryption Type** | Select “TKIP/AES Mixed Mode” or “AES” encryption type. |
| **Key Renewal Interval** | Specify a frequency for key renewal in minutes. |

***WPA-EAP must be disabled to use MAC-RADIUS authentication.***

| 802.11r Fast Transition Roaming Settings | |
|---|---|
| **Mobility_domain** | Specify the mobility domain (2.4GHz or 5GHz) |
| **Encryption Key** | Specify the encryption key |
| **Over the DS** | Enable or disable this function. |

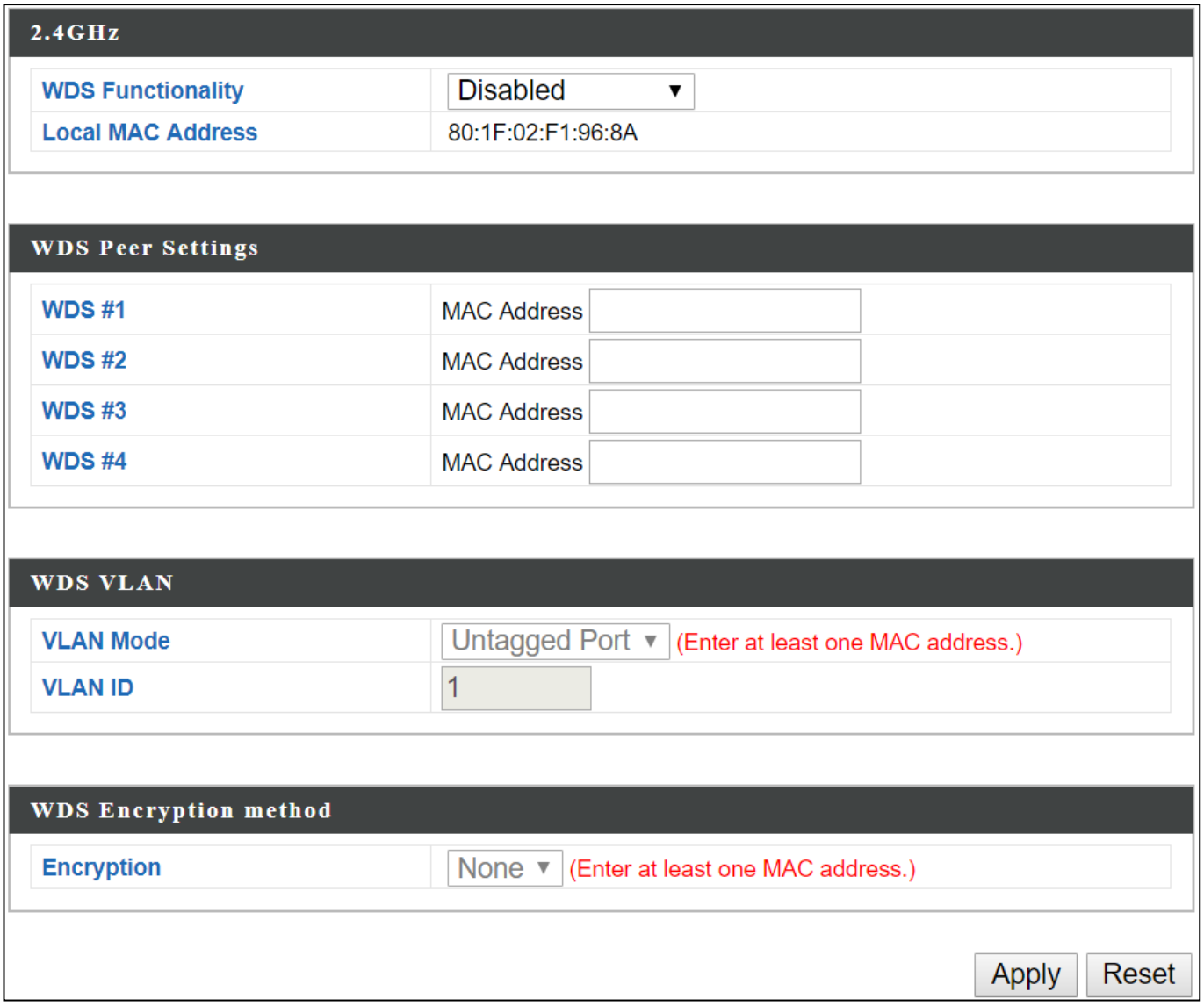
Press “Apply” to apply the configuration, or “Cancel” to forfeit the changes.

## VI-3-3-4 WDS

Wireless Distribution System (WDS) can bridge/repeat access points together in an extended network. WDS settings can be configured as shown below.

***When using WDS, configure the IP address of each access point to be in the same subnet and ensure there is only one active DHCP server among connected access points, preferably on the WAN side.***

WDS must be configured on each access point, using correct MAC addresses. All access points should use the same wireless channel and encryption method.



| 2.4GHz | |
|---|---|
| **WDS Functionality** | Select “WDS with AP” to use WDS with access point or “WDS Dedicated Mode” to use WDS and also block communication with regular wireless clients. When WDS is used, each access point should be configured with corresponding MAC addresses, wireless channel and wireless encryption method. |
| **Local MAC Address** | Displays the MAC address of your access point. |

| WDS Peer Settings | |
|---|---|
| **WDS #** | Enter the MAC address for up to four other WDS devices you wish to connect. |

| WDS VLAN | |
|---|---|
| **VLAN Mode** | Specify the WDS VLAN mode to “Untagged Port” or “Tagged Port”. |
| **VLAN ID** | Specify the WDS VLAN ID when “Untagged Port” is selected above. |

| WDS Encryption method | |
|---|---|
| **Encryption** | Select whether to use “None” or “AES” encryption and enter a pre-shared key for AES consisting of 8-63 alphanumeric characters. |

Press “Apply” to apply the configuration, or “Reset” to forfeit the changes.

## VI-3-3-5 Guest Network

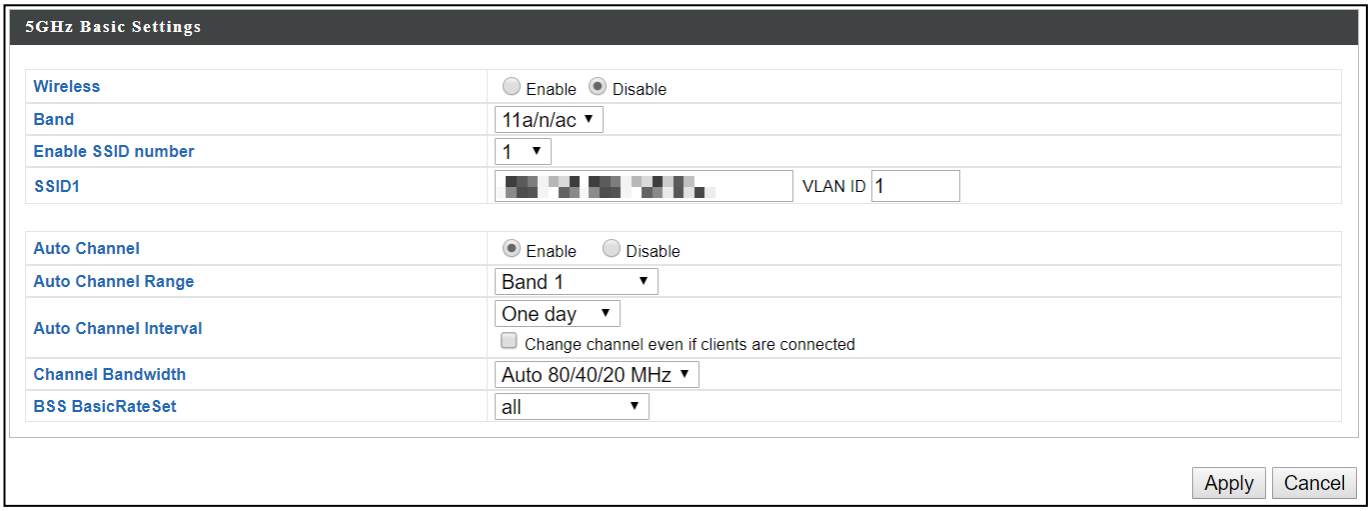
Enable / disable guest network to allow clients to connect as guests.

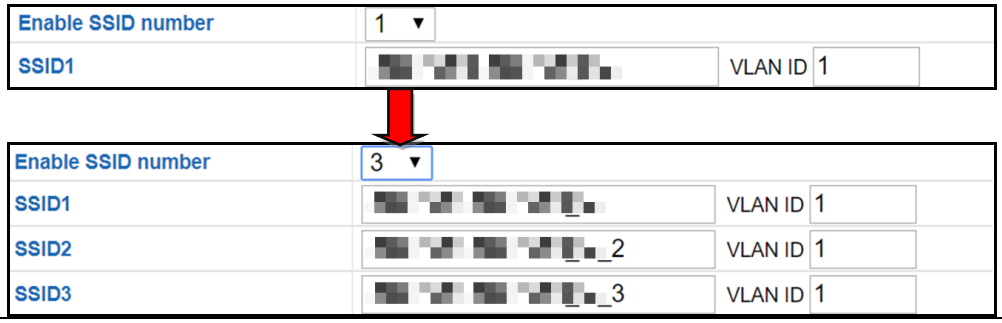
## VI-3-4 5GHz 11ac 11an

The “5GHz 11ac 11an” menu allows you to view and configure information for your access point’s 5GHz wireless network across five categories: Basic, Advanced, Security, WDS & Guest Network.

## VI-3-4-1 Basic

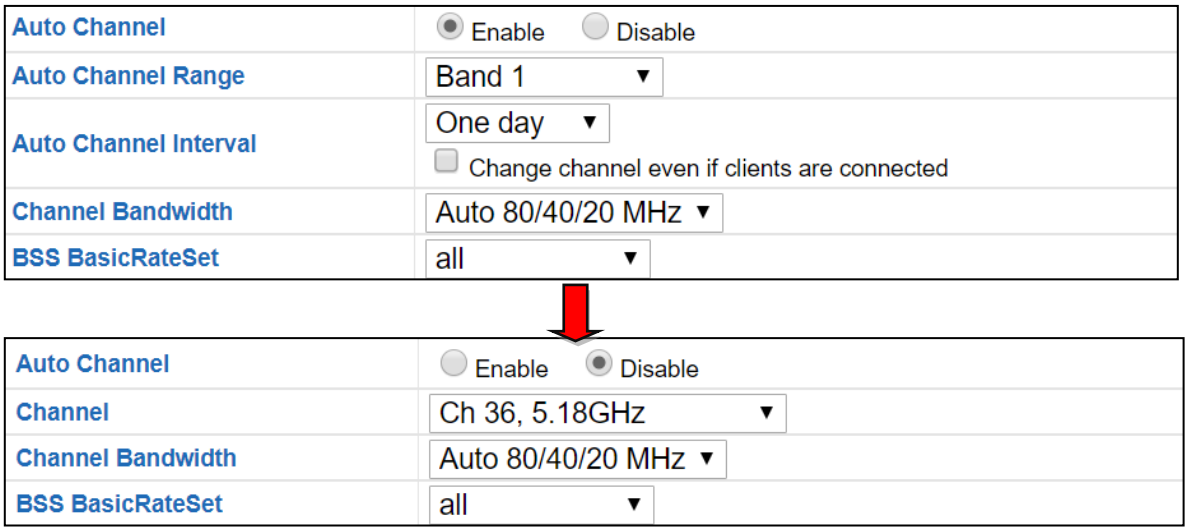
The “Basic” screen displays basic settings for your access point’s 5GHz Wi-Fi network (s).




| | |
|---|---|
| **Wireless** | Enable or disable the access point’s 5GHz wireless radio. When disabled, no 5GHz SSIDs will be active. |
| **Band** | Wireless standard used for the access point. Combinations of 802.11a, 802.11n & 802.11ac can be selected. |
| **Enable SSID Number** | Select how many SSIDs to enable for the 2.4GHz frequency from the drop down menu. A maximum of 16 can be enabled.   |
| **SSID#** | Enter the SSID name for the specified SSID (up to 16). The SSID can consist of any combination of up to 32 alphanumeric characters. |
| **VLAN ID** | Specify a VLAN ID for each SSID. |
| **Auto Channel** | Enable/disable auto channel selection. Auto channel selection will automatically set the wireless channel for the access point’s 5GHz frequency based on availability and potential interference. When disabled, configurable fields will change as shown below: |
| **Auto** | Select a range to which auto channel selection can choose |

| | |
|---|---|
| **Channel Range** | from. |
| **Auto Channel Interval** | Select a time interval for how often the auto channel setting will check/reassign the wireless channel.<br>Check/uncheck the “Change channel even if clients are connected” box according to your preference. |
| **Channel Bandwidth** | Select the channel bandwidth:<br>20MHz (lower performance but less interference); or<br>Auto 40/20 MHz; or<br>Auto 80/40/20 MHz (automatically select based on interference level). |
| **BSS BasicRateSet** | Set a Basic Service Set (BSS) rate: this is a series of rates to control communication frames for wireless clients. |

When auto channel is disabled, configurable fields will change. Select a wireless channel manually:




| | |
|---|---|
| **Channel** | Select a wireless channel. |
| **Channel Bandwidth** | Select the channel bandwidth:<br>20MHz (lower performance but less interference); or<br>Auto 40/20 MHz; or<br>Auto 80/40/20 MHz (automatically select based on interference level). |
| **BSS BasicRateSet** | Set a Basic Service Set (BSS) rate: this is a series of rates to control communication frames for wireless clients. |

Press “Apply” to apply the configuration, or “Cancel” to forfeit the changes.

## VI-3-4-2 Advanced

These settings are for experienced users only. Please do not change any of the values on this page unless you are already familiar with these functions.

***Changing these settings can adversely affect the performance of your access point.***

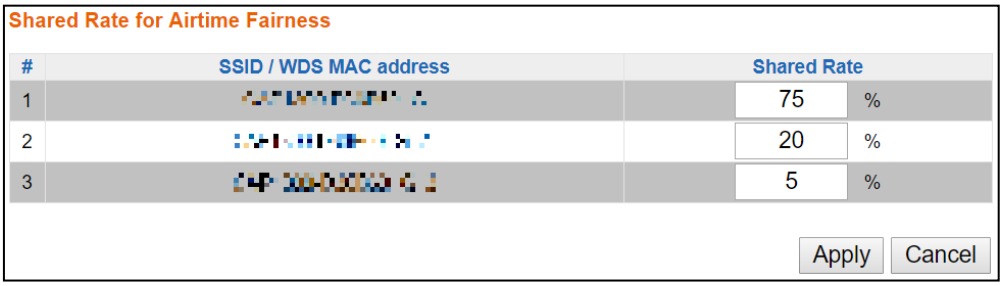
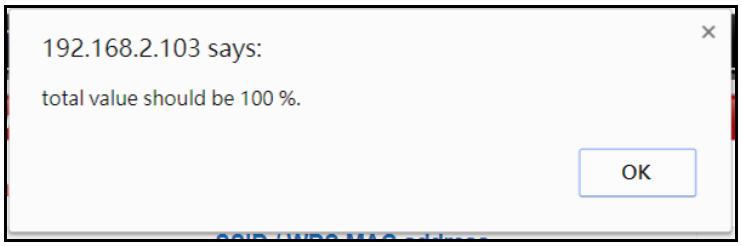
**5GHz Advanced Settings**

| | |
|---|---|
| Guard Interval | Short GI |
| 802.11n Protection | Enable Disable |
| DTIM Period | 1 (1-255) |
| RTS Threshold | 2347 (1-2347) |
| Fragment Threshold | 2346 (256–2346) |
| Multicast Rate | Auto |
| Tx Power | 100% 21dbm |
| Beacon Interval | 100 (40-1000 ms) |
| Station Idle Timeout | 60 (30-65535 seconds) |
| Beamforming | Enable Disable |
| Airtime Fairness | Disabled Edit SSID Rate |

Apply Cancel

| | |
|---|---|
| **Guard Interval** | Set the guard interval. A shorter interval can improve performance. |
| **802.11n Protection** | Enable/disable 802.11n protection, which increases reliability but reduces bandwidth (clients will send Request to Send (RTS) to access point, and access point will broadcast Clear to Send (CTS), before a packet is sent from client.) |
| **DTIM Period** | Set the DTIM (delivery traffic indication message) period value of the wireless radio. The default value is 1. |
| **RTS Threshold** | Set the RTS threshold of the wireless radio. The default value is 2347. |
| **Fragment Threshold** | Set the fragment threshold of the wireless radio. The default value is 2346. |

| | |
|---|---|
| **Multicast Rate** | Set the transfer rate for multicast packets or use the “Auto” setting. |
| **Tx Power** | Set the power output of the wireless radio. You may not require 100% output power. Setting a lower power output can enhance security since potentially malicious/unknown users in distant areas will not be able to access your signal. |
| **Beacon Interval** | Set the beacon interval of the wireless radio. The default value is 100. |
| **Station idle timeout** | Set the interval for keepalive messages from the access point to a wireless client to verify if the station is still alive/active. |
| **Beamforming** | Beamforming is a signal processing technique used in sensor arrays for directional signal transmission or reception.<br>This is achieved by combining elements in an antenna array in such a way that signals at particular angles experience constructive interference while others experience destructive interference. Beamforming can be used at both the transmitting and receiving ends in order to achieve spatial selectivity. The improvement compared with omnidirectional reception / transmission is known as the directivity of the array. |

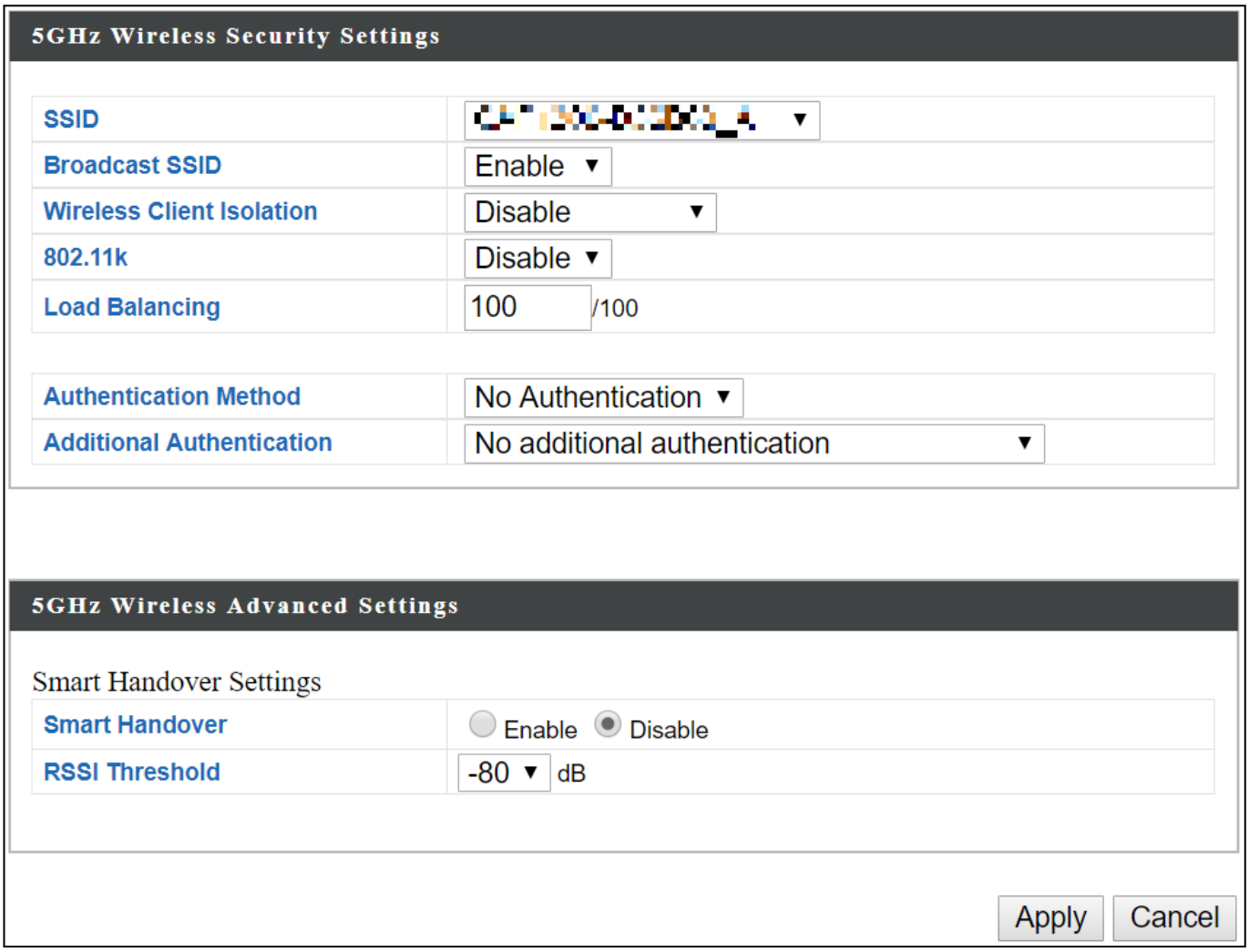
| | |
|---|---|
| **Airtime Fairness** | Airtime Fairness gives equal amounts of air time (instead of equal number of frames) to each client regardless of its theoretical data rate.<br>Set airtime fairness to “Auto”, “Static” or “Disable”.<br>When “Auto” is selected, the share rate is automatically managed.<br>When “Static” is selected, press “Edit SSID Rate” to enter a % for each SSID’s share rate as shown below:<br>  <br><br>The % field has to add up to 100% or the system will display a message:<br>  <br><br>Airtime fairness is disabled if “Disable” is selected. |

Press “Apply” to apply the configuration, or “Cancel” to forfeit the changes.

## VI-3-4-3 Security

The access point provides various security options (wireless data encryption). When data is encrypted, information transmitted wirelessly cannot be read by anyone who does not know the correct encryption key.

***It's essential to configure wireless security in order to prevent unauthorised access to your network.***




| | |
|---|---|
| **SSID Selection** | Select which SSID to configure security settings for. |
| **Broadcast SSID** | Enable or disable SSID broadcast. When enabled, the SSID will be visible to clients as an available Wi-Fi network. When disabled, the SSID will not be visible as an available Wi-Fi network to clients – clients must manually enter the SSID in order to connect. A hidden (disabled) SSID is typically more secure than a visible (enabled) SSID. |

| | |
|---|---|
| **Wireless Client Isolation** | Enable or disable wireless client isolation. Wireless client isolation prevents clients connected to the access point from communicating with each other and improves security. Typically, this function is useful for corporate environments or public hot spots and can prevent brute force attacks on clients' usernames and passwords. |
| **Load Balancing** | Load balancing limits the number of wireless clients connected to an SSID. Set a load balancing value (maximum 100). |
| **Authentication Method** | Select an authentication method from the drop down menu and refer to the appropriate information in VI-3-3-3 **Security** for your method. |

Press "Apply" to apply the configuration, or "Cancel" to forfeit the changes.

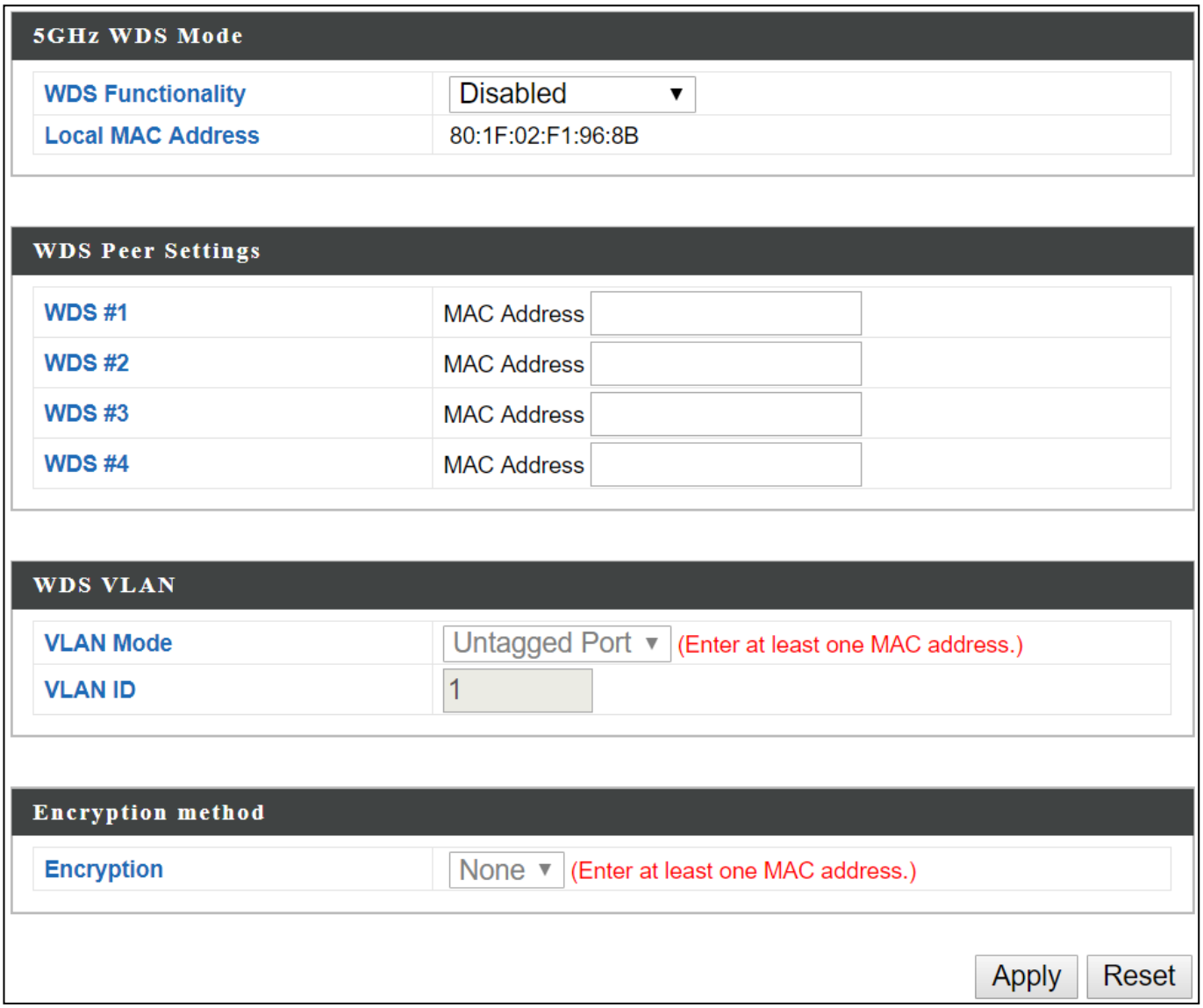
Please refer back to VI-3-3-3 **Security** for more information on authentication and additional authentication types.

## VI-3-4-4 WDS

Wireless Distribution System (WDS) can bridge/repeat access points together in an extended network. WDS settings can be configured as shown below.

***When using WDS, configure the IP address of each access point to be in the same subnet and ensure there is only one active DHCP server among connected access points, preferably on the WAN side.***

WDS must be configured on each access point, using correct MAC addresses. All access points should use the same wireless channel and encryption method.



| 5GHz WDS Mode | |
|---|---|
| **WDS Functionality** | Select “WDS with AP” to use WDS with access point or “WDS Dedicated Mode” to use WDS and also block communication with regular wireless clients. When WDS is used, each access point should be configured with corresponding MAC addresses, wireless channel and wireless encryption method. |
| **Local MAC Address** | Displays the MAC address of your access point. |

| WDS Peer Settings | |
|---|---|
| **WDS #** | Enter the MAC address for up to four other WDA devices you wish to connect. |

| WDS VLAN | |
|---|---|
| **VLAN Mode** | Specify the WDS VLAN mode to “Untagged Port” or “Tagged Port”. |
| **VLAN ID** | Specify the WDS VLAN ID when “Untagged Port” is selected above. |

| WDS Encryption | |
|---|---|
| **Encryption** | Select whether to use “None” or “AES” encryption and enter a pre-shared key for AES with 8-63 alphanumeric characters. |

Press “Apply” to apply the configuration, or “Reset” to forfeit the changes.

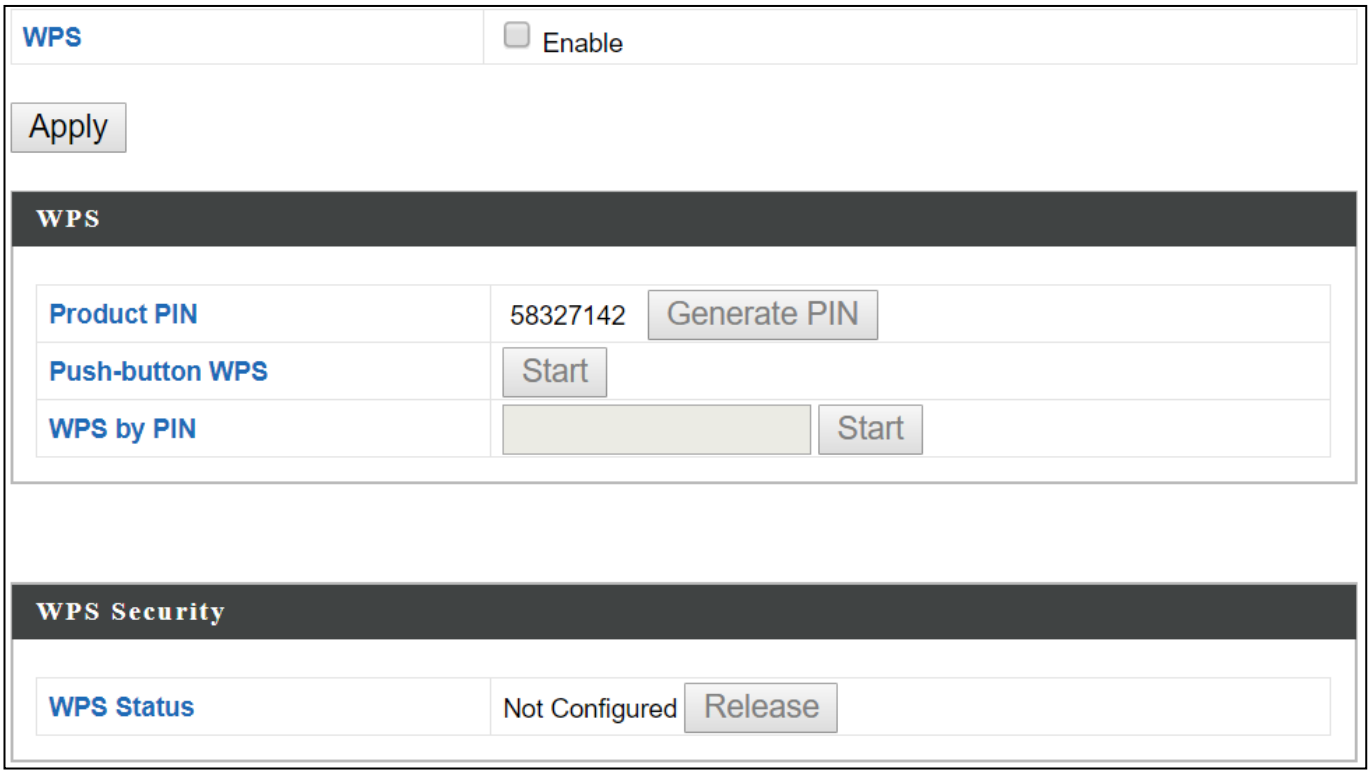
## VI-3-4-5 Guest Network

Enable / disable guest network to allow clients to connect as guests.

## VI-3-5 WPS

Wi-Fi Protected Setup is a simple way to establish connections between WPS compatible devices. WPS can be activated on compatible devices by pushing a WPS button on the compatible device or from within the compatible device's firmware / configuration interface (known as PBC or "Push Button Configuration"). When WPS is activated in the correct manner and at the correct time for two compatible devices, they will automatically connect. "PIN code WPS" is a variation of PBC which includes the additional use of a PIN code between the two devices for verification.

***Please refer to manufacturer's instructions for your other WPS device.***




| | |
|---|---|
| **WPS** | Check/uncheck this box to enable/disable WPS functionality.<br>Press "Apply" to apply the settings.<br>WPS must be disabled when using MAC-RADIUS authentication (see VI-3-6 ***RADIUS***). |

Press "Apply" to apply the configuration.

| WPS | |
|---|---|
| **Product PIN** | Displays the WPS PIN code of the device, used for PIN code WPS. You will be required to enter this PIN code into another WPS device for PIN code WPS. Click “Generate PIN” to generate a new WPS PIN code. |
| **Push-Button WPS** | Click “Start” to activate WPS on the device for approximately 2 minutes. |
| **WPS by PIN** | Enter the PIN code of another WPS device and click “Start” to attempt to establish a WPS connection. WPS function will last for approximately 2 minutes. |

| WPS Security | |
|---|---|
| **WPS Status** | WPS security status is displayed here. Click “Release” to clear the existing status. |

## VI-3-6 RADIUS

The RADIUS menu allows you to configure the device's external RADIUS server settings.

A RADIUS server provides user-based authentication to improve security and offer wireless client control – users can be authenticated before gaining access to a network.

The device can utilize a primary and a secondary (backup) external RADIUS server for each of its wireless frequencies (2.4GHz & 5GHz).

***To use RADIUS servers, go to*** *"Wireless Settings"* → *"Security"* ***and select*** *"MAC RADIUS Authentication"* → *"Additional Authentication"* ***and select*** *"MAC RADIUS Authentication"* ***(see*** VI-3-3-3 ***or*** VI-3-4-3***).***

## VI-3-6-1 RADIUS Settings

Configure the RADIUS server settings for 2.4GHz and 5GHz. Each frequency can use an internal or external RADIUS server.

**RADIUS Server (2.4GHz)**

| Primary RADIUS Server | |
|---|---|
| RADIUS Type | ○ Internal ◉ External |
| RADIUS Server | |
| Authentication Port | 1812 |
| Shared Secret | |
| Session Timeout | 3600 second(s) |
| Accounting | ◉ Enable ○ Disable |
| Accounting Port | 1813 |

| Secondary RADIUS Server | |
|---|---|
| RADIUS Type | ○ Internal ◉ External |
| RADIUS Server | |
| Authentication Port | 1812 |
| Shared Secret | |
| Session Timeout | 3600 second(s) |
| Accounting | ◉ Enable ○ Disable |
| Accounting Port | 1813 |

**RADIUS Server (5GHz)**

| Primary RADIUS Server | |
|---|---|
| RADIUS Type | ○ Internal ◉ External |
| RADIUS Server | |
| Authentication Port | 1812 |
| Shared Secret | |
| Session Timeout | 3600 second(s) |
| Accounting | ◉ Enable ○ Disable |
| Accounting Port | 1813 |

| Secondary RADIUS Server | |
|---|---|
| RADIUS Type | ○ Internal ◉ External |
| RADIUS Server | |
| Authentication Port | 1812 |
| Shared Secret | |
| Session Timeout | 3600 second(s) |
| Accounting | ◉ Enable ○ Disable |
| Accounting Port | 1813 |

Apply Cancel

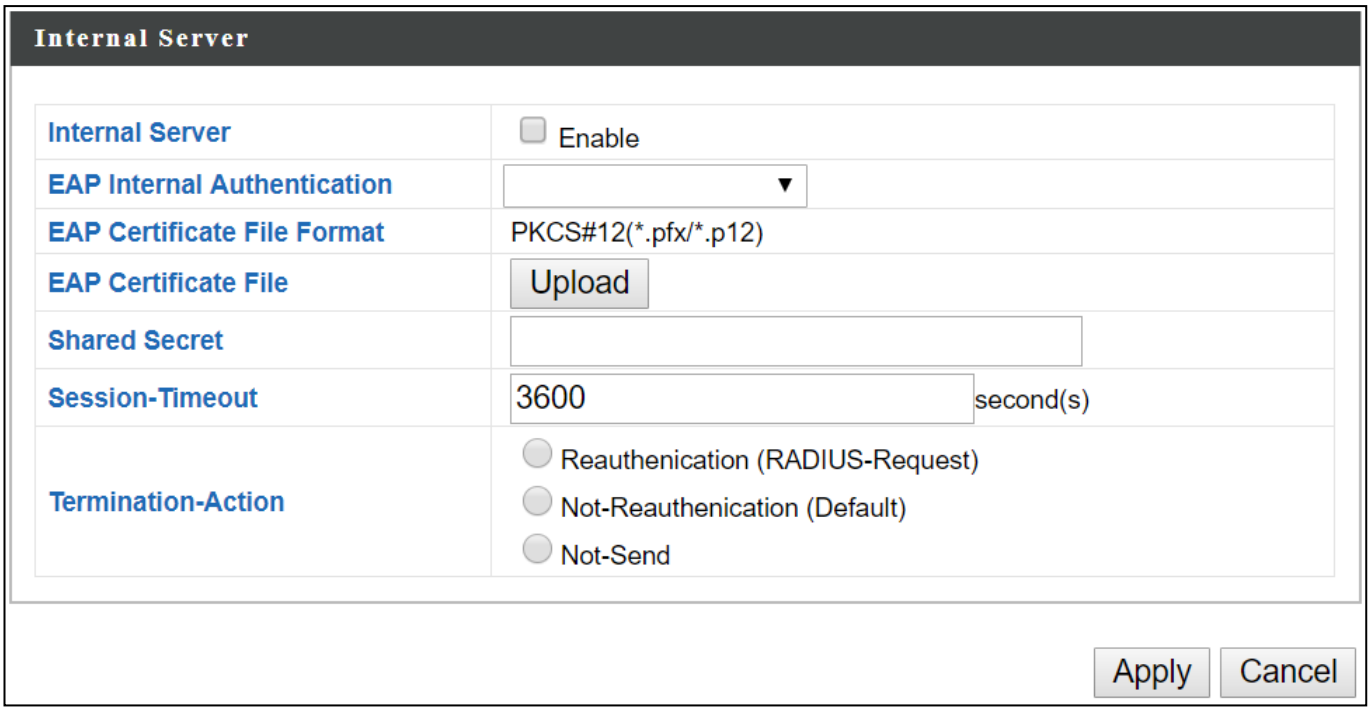
| | |
|---|---|
| **RADIUS Type** | Select “Internal” to use the access point’s built-in RADIUS server or “external” to use an external RADIUS server. |
| **RADIUS Server** | Enter the RADIUS server host IP address. |
| **Authentication Port** | Set the UDP port used in the authentication protocol of the RADIUS server. Value must be between 1 – 65535. |
| **Shared Secret** | Enter a shared secret/password between 1 – 99 characters in length. This should match the “MAC-RADIUS” password used in VI-3-3-3 or VI-3-4-3. |
| **Session Timeout** | Set a duration of session timeout in seconds between 0 – 86400. |
| **Accounting** | Enable or disable RADIUS accounting. |
| **Accounting Port** | When accounting is enabled (above), set the UDP port used in the accounting protocol of the RADIUS server. Value must be between 1 – 65535. |

Press “Apply” to apply the configuration, or “Cancel” to forfeit the changes.

## VI-3-6-2 Internal Server

The access point features a built-in RADIUS server which can be configured as shown below used when "Internal" is selected for "RADIUS Type" in the "Wireless Settings" → "RADIUS" → "RADIUS Settings" menu.

***To use RADIUS servers, go to** "Wireless Settings" → "Security" **and select** "MAC RADIUS Authentication" → "Additional Authentication" **and select** "MAC RADIUS Authentication" **(see** VI-3-3-3 **&** VI-3-4-3**).***



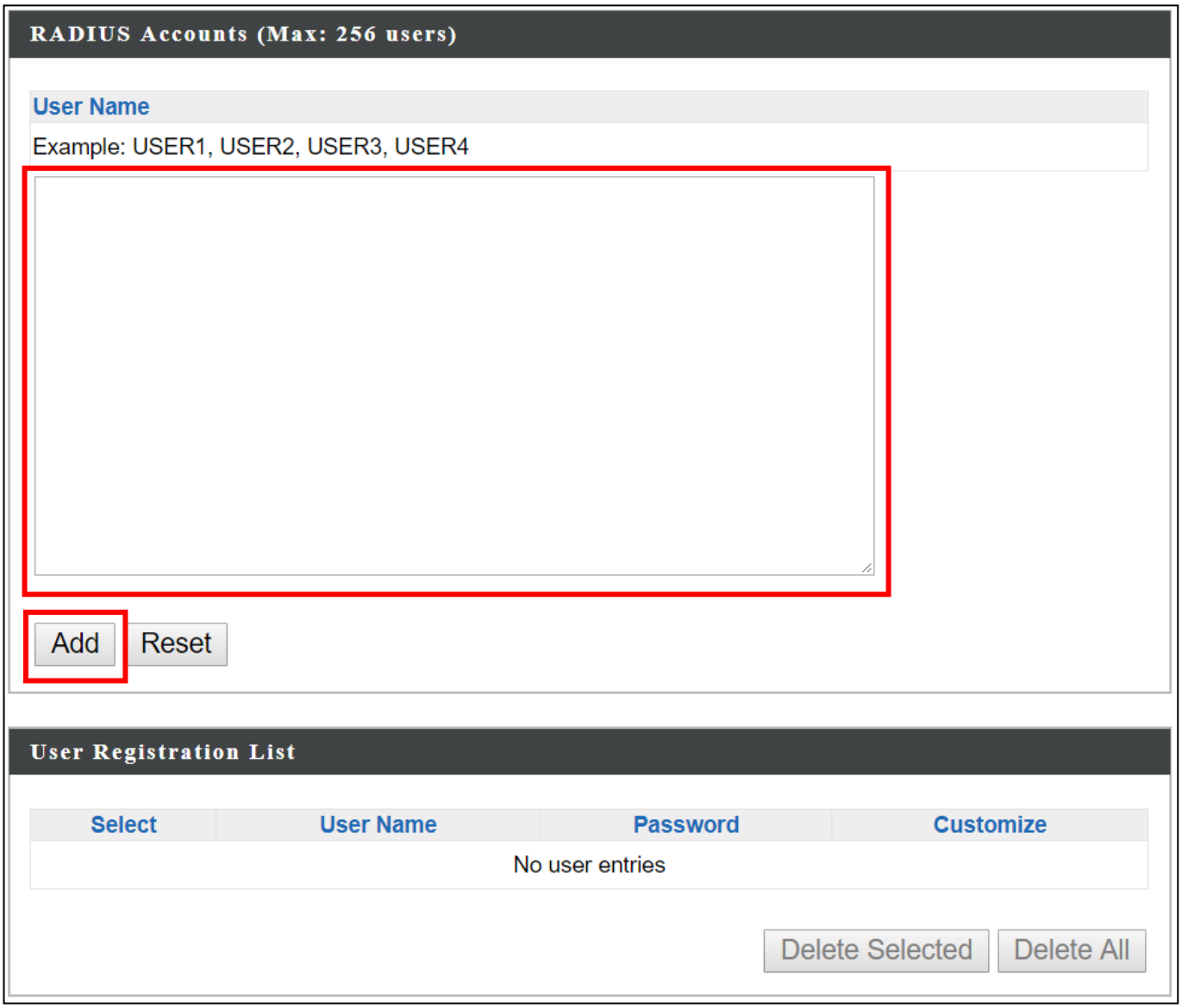

| | |
|---|---|
| **Internal Server** | Check/uncheck to enable/disable the access point's internal RADIUS server. |
| **EAP Internal Authentication** | Select EAP internal authentication type from the drop down menu. |
| **EAP Certificate File Format** | Displays the EAP certificate file format: PCK#12(*.pfx/*.p12) |
| **EAP Certificate File** | Click "Upload" to open a new window and select the location of an EAP certificate file to use. If no certificate file is uploaded, the internal RADIUS server will use a self-made certificate. |
| **Shared Secret** | Enter a shared secret/password for use between the internal RADIUS server and RADIUS client. The shared secret should be 1 – 99 characters in length. This should match the |

| | |
|---|---|
| | “MAC-RADIUS” password used in VI-3-3-3 or VI-3-4-3. |
| **Session Timeout** | Set a duration of session timeout in seconds between 0 – 86400. |
| **Termination Action** | Select a termination-action attribute:<br>Reauthentication: sends a RADIUS request to the access point; or,<br>Not-Reauthentication: sends a default termination-action attribute to the access point; or<br>Not-Send: no termination-action attribute is sent to the access point. |

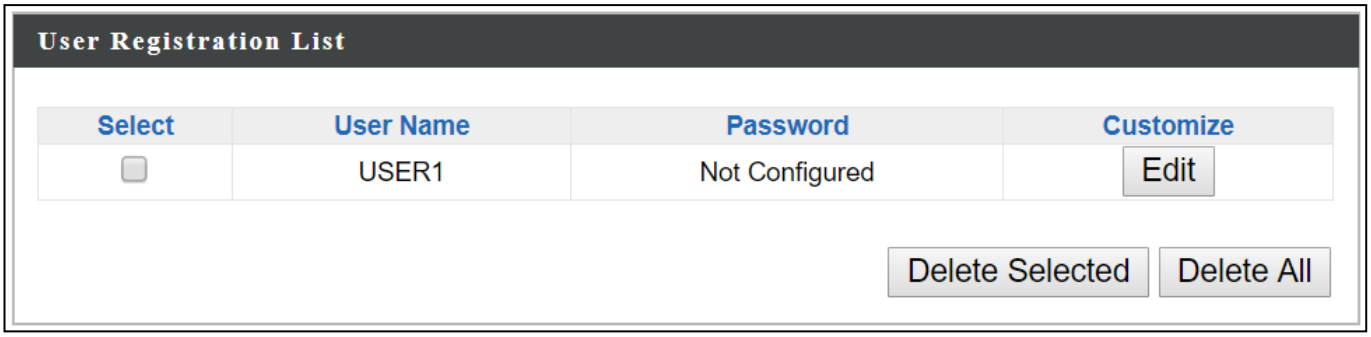
Press “Apply” to apply the configuration, or “Cancel” to forfeit the changes.

## VI-3-6-3 RADIUS Accounts

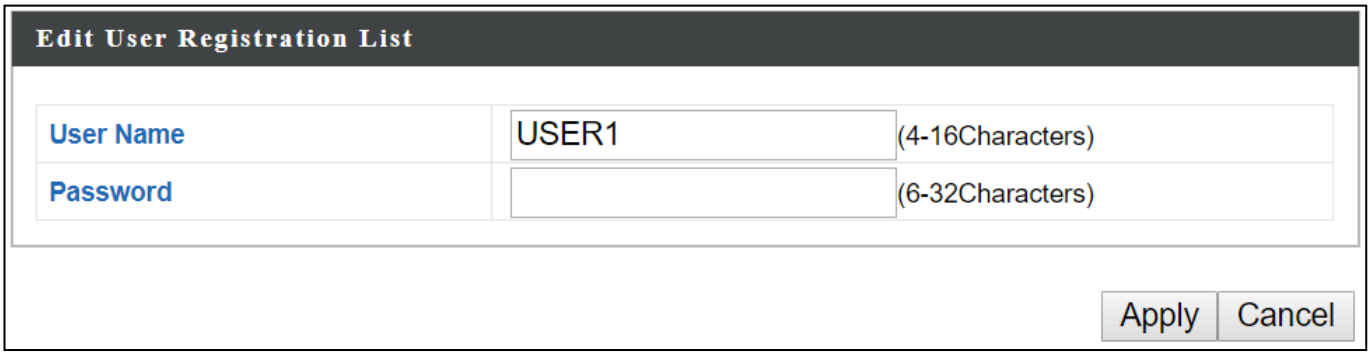
The internal RADIUS server can authenticate up to 256 user accounts. The "RADIUS Accounts" page allows you to configure and manage users.




Enter a username in the box below and click "Add" to add the username.



Select “Edit” to edit the username and password of the RADIUS account:




Press “Apply” to apply the configuration, or “Cancel” to forfeit the changes.

| | |
|---|---|
| **User Name** | Enter the user names here, separated by commas. |
| **Add** | Click “Add” to add the user to the user registration list. |
| **Reset** | Clear text from the user name box. |

| | |
|---|---|
| **Select** | Check the box to select a user. |
| **User Name** | Displays the user name. |
| **Password** | Displays if specified user name has a password (configured) or not (not configured). |
| **Customize** | Click “Edit” to open a new field to set/edit a password for the specified user name (below). |

| | |
|---|---|
| **Delete Selected** | Delete selected user from the user registration list. |
| **Delete All** | Delete all users from the user registration list. |

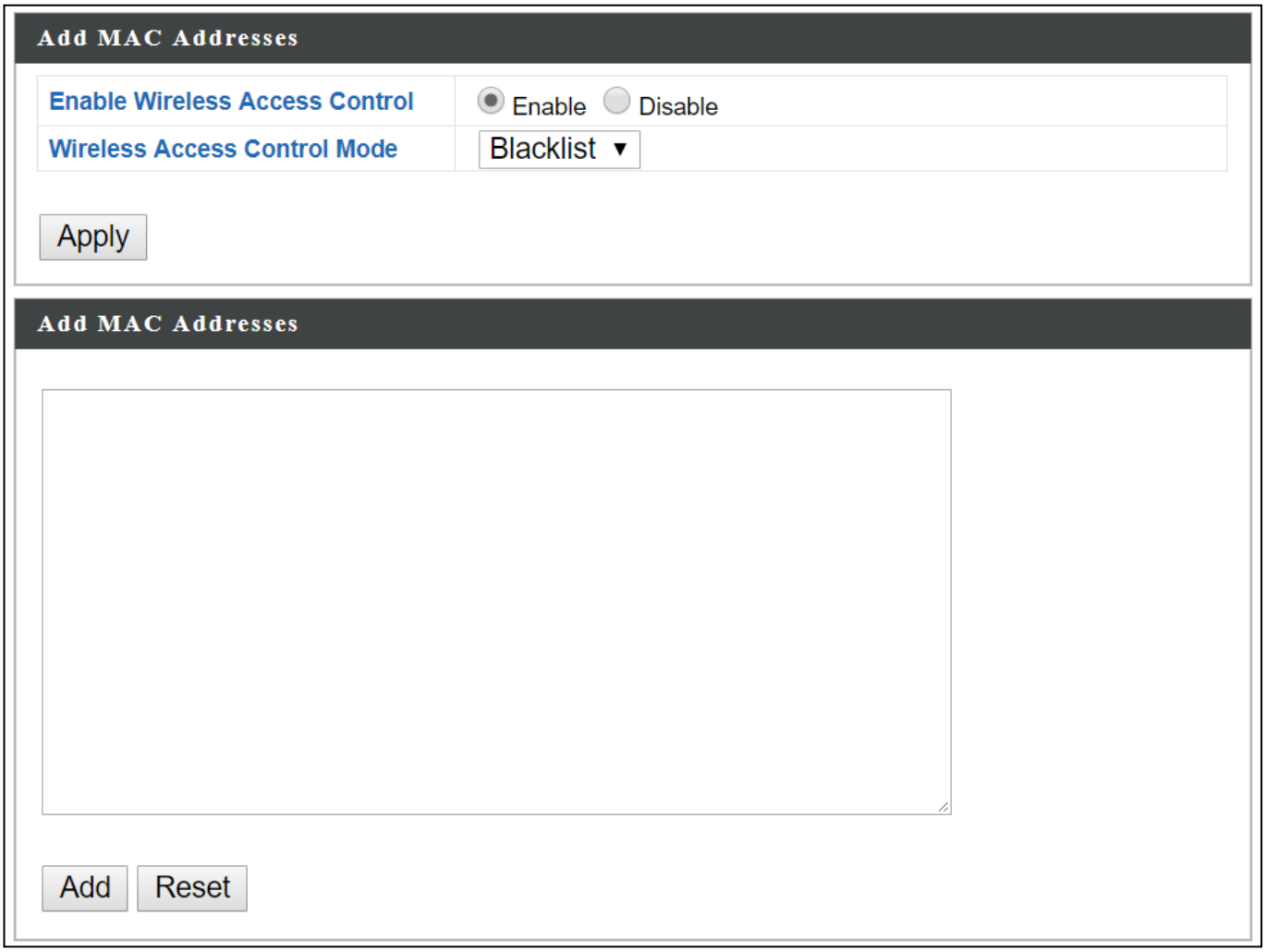
## VI-3-7 MAC Filter

MAC filtering is a security feature that can help to prevent unauthorized users from connecting to your access point.

This function allows you to define a list of network devices permitted to connect to the access point. Devices are each identified by their unique MAC address. If a device which is not on the list of permitted MAC addresses attempts to connect to the access point, it will be denied.

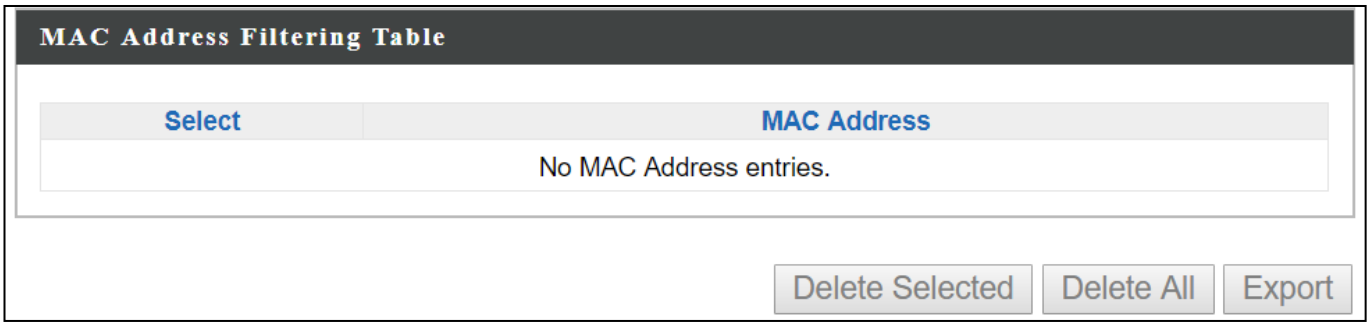
***To enable MAC filtering, go to** "Wireless Settings" → "2.4G Hz 11bgn" → "Security" → "Additional Authentication" **and select** "MAC Filter" **(see** VI-3-3-3 **or** VI-3-4-3**).***

The MAC address filtering table is displayed below:



| | |
|---|---|
| **Add MAC Address** | Enter a MAC address of computer or network device manually e.g. 'aa-bb-cc-dd-ee-ff' or enter multiple MAC addresses separated with commas, e.g. 'aa-bb-cc-dd-ee-ff,aa-bb-cc-dd-ee-gg' |
| **Add** | Click "Add" to add the MAC address to the MAC address filtering table. |
| **Reset** | Clear all fields. |

MAC address entries will be listed in the "MAC Address Filtering Table". Select an entry using the "Select" checkbox.




| | |
|---|---|
| **Select** | Delete selected or all entries from the table. |
| **MAC Address** | The MAC address is listed here. |
| **Delete Selected** | Delete the selected MAC address from the list. |
| **Delete All** | Delete all entries from the MAC address filtering table. |
| **Export** | Click "Export" to save a copy of the MAC filtering table. A new window will pop up for you to select a location to save the file. |

## VI-3-8 WMM

Wi-Fi Multimedia (WMM) is a Wi-Fi Alliance interoperability certification based on the IEEE 802.11e standard, which provides Quality of Service (QoS) features to IEE 802.11 networks. WMM prioritizes traffic according to four categories: background, best effort, video and voice.

**WMM-EDCA Settings**

| WMM Parameters of Access Point | CWMin | CWMax | AIFSN | TxOP |
|---|---|---|---|---|
| **Back Ground** | 4 | 10 | 7 | 0 |
| **Best Effort** | 4 | 6 | 3 | 0 |
| **Video** | 3 | 4 | 1 | 94 |
| **Voice** | 2 | 3 | 1 | 47 |

| WMM Parameters of Station | CWMin | CWMax | AIFSN | TxOP |
|---|---|---|---|---|
| **Back Ground** | 4 | 10 | 7 | 0 |
| **Best Effort** | 4 | 10 | 3 | 0 |
| **Video** | 3 | 4 | 2 | 94 |
| **Voice** | 2 | 3 | 2 | 47 |

Apply Cancel

Configuring WMM consists of adjusting parameters on queues for different categories of wireless traffic. Traffic is sent to the following queues:

| | | |
|---|---|---|
| **Background** | Low Priority | High throughput, non time sensitive bulk data e.g. FTP |
| **Best Effort** | Medium Priority | Traditional IP data, medium throughput and delay. |
| **Video** | High Priority | Time sensitive video data with minimum time delay. |
| **Voice** | High Priority | Time sensitive data such as VoIP and streaming media with minimum time delay. |

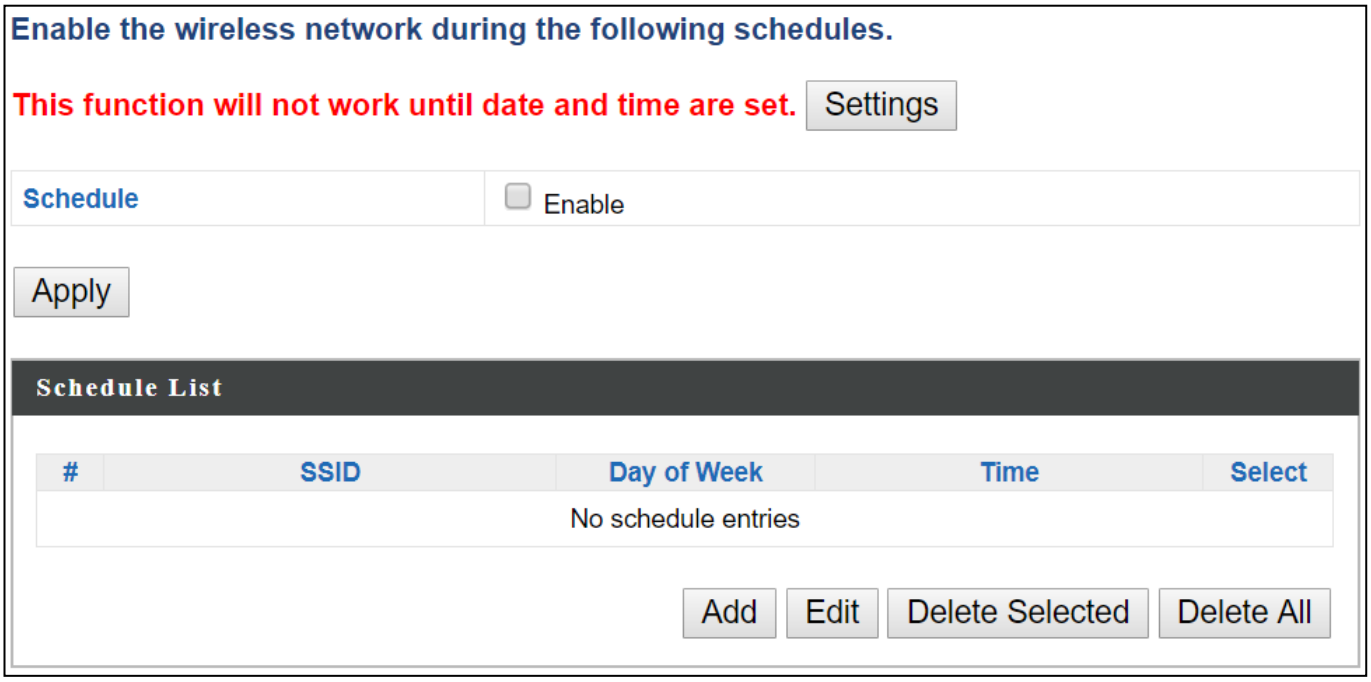
Queues automatically provide minimum transmission delays for video, voice, multimedia and critical applications. The values can be adjusted further manually:

| | |
|---|---|
| **CWMin** | Minimum Contention Window (milliseconds): This value is input to the initial random backoff wait time algorithm for retry of a data frame transmission. The backoff wait time will be generated between 0 and this value. If the frame is not sent, the random backoff value is doubled until the value reaches the number defined by CWMax (below). The CWMin value must be lower than the CWMax value. The contention window scheme helps to avoid frame collisions and determine priority of frame transmission. A shorter window has a higher probability (priority) of transmission. |
| **CWMax** | Maximum Contention Window (milliseconds): This value is the upper limit to random backoff value doubling (see above). |
| **AIFSN** | Arbitration Inter-Frame Space (milliseconds): Specifies additional time between when a channel goes idle and the AP/client sends data frames. Traffic with a lower AIFSN value has a higher priority. |
| **TxOP** | Transmission Opportunity (milliseconds): The maximum interval of time an AP/client can transmit. This makes channel access more efficiently prioritized. A value of 0 means only one frame per transmission. A greater value means higher priority. |

Press “Apply” to apply the configuration, or “Cancel” to forfeit the changes.

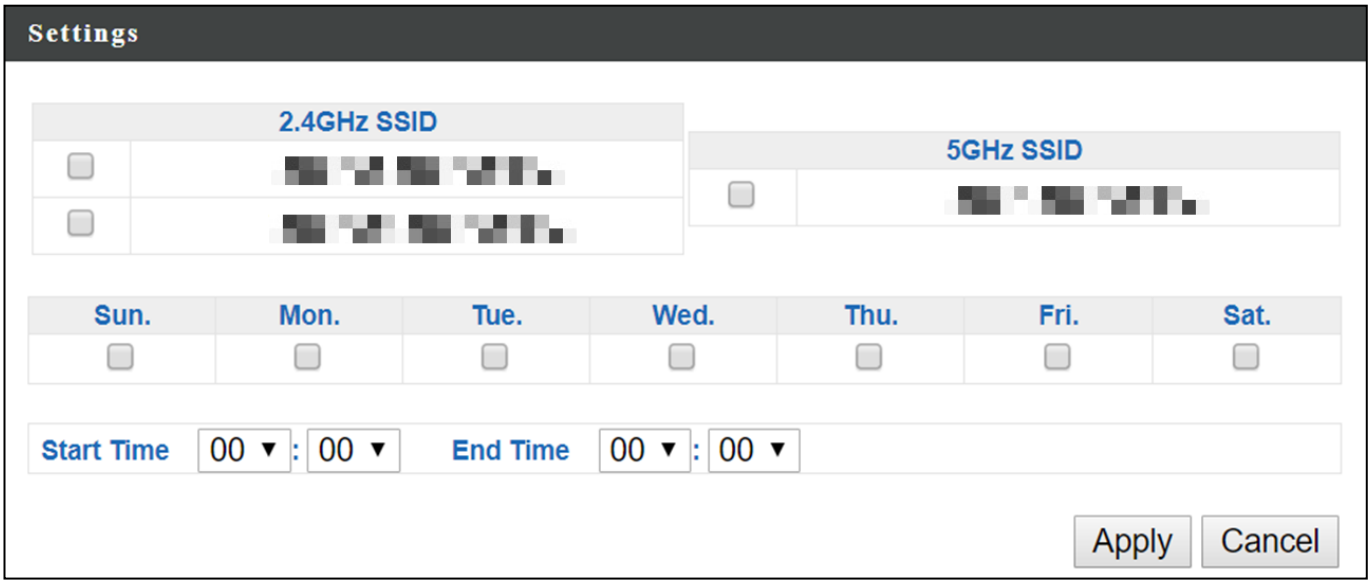
## VI-3-9 Schedule

The schedule feature allows you to automate the wireless network for the specified time ranges. Wireless scheduling can save energy and increase the security of your network.
Check/uncheck the box “Enable” and select “Apply” to enable/disable the wireless scheduling function.

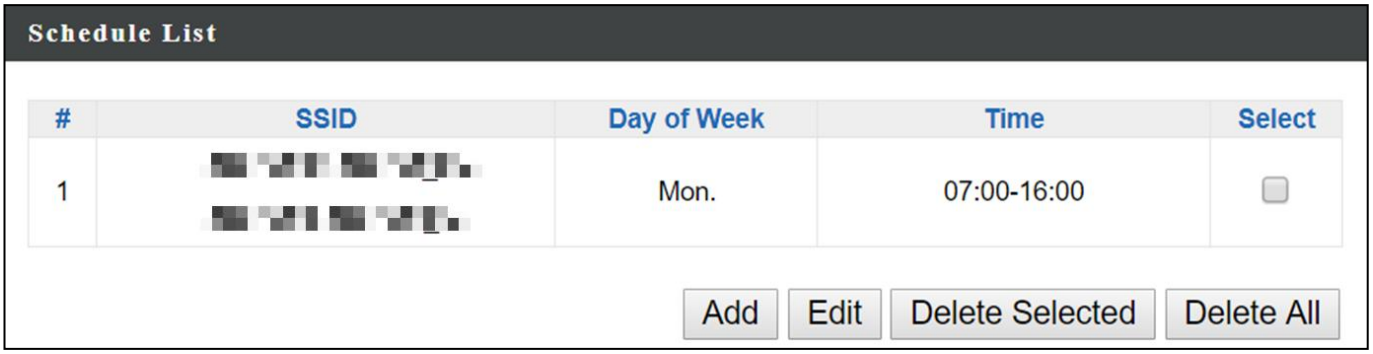


**1.** Select “Add” to add a schedule.

**2.** Settings page will be shown if “Continue” is selected:
Check/uncheck the box of the desired SSID network, day of schedule and select the Start Time and End Time (using the dropdown menu).
Select “Apply” to apply the settings, or “Cancel” to forfeit the schedule.




Schedules will be shown in the Schedule List as exemplified below:




**3.** Select “Add” to add more schedules; or
Check the box of currently available schedule, select “Edit” to edit, or select “Delete Selected” to delete; or
Select “Delete All” to delete all schedules.

## VI-3-10 Traffic Shaping

Traffic shaping is used to optimize or guarantee performance, improve latency, or increase usable bandwidth for some kinds of packets by delaying other kinds.
Check the checkbox to enable traffic shaping, specify the down link and up link values, and click “Apply” to apply the configuration, or “Cancel” to forfeit the changes.

**Traffic Shaping for ssid(2.4GHz)**

☐ Enable

Unlimited : 0 Mbps

Down Link/Up Link Maximum : 1024 Mbps

| SSID | Down Link | | Up Link | |
|---|---|---|---|---|
| -F1968A_G | 0 | Mbps | 0 | Mbps |
| F1968A_G_2 | 0 | Mbps | 0 | Mbps |
| F1968A_G_3 | 0 | Mbps | 0 | Mbps |
| F1968A_G_4 | 0 | Mbps | 0 | Mbps |
| F1968A_G_5 | 0 | Mbps | 0 | Mbps |
| F1968A_G_6 | 0 | Mbps | 0 | Mbps |
| F1968A_G_7 | 0 | Mbps | 0 | Mbps |
| F1968A_G_8 | 0 | Mbps | 0 | Mbps |
| F1968A_G_9 | 0 | Mbps | 0 | Mbps |
| F1968A_G_10 | 0 | Mbps | 0 | Mbps |
| F1968A_G_11 | 0 | Mbps | 0 | Mbps |
| F1968A_G_12 | 0 | Mbps | 0 | Mbps |
| F1968A_G_13 | 0 | Mbps | 0 | Mbps |
| F1968A_G_14 | 0 | Mbps | 0 | Mbps |
| F1968A_G_15 | 0 | Mbps | 0 | Mbps |
| F1968A_G_16 | 0 | Mbps | 0 | Mbps |

**Traffic Shaping for ssid(5GHz)**

☐ Enable

Unlimited : 0 Mbps

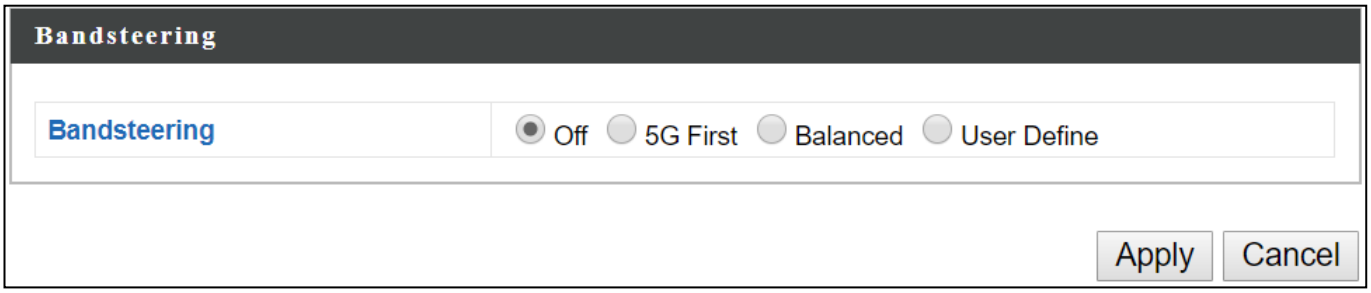
Down Link/Up Link Maximum : 1024 Mbps

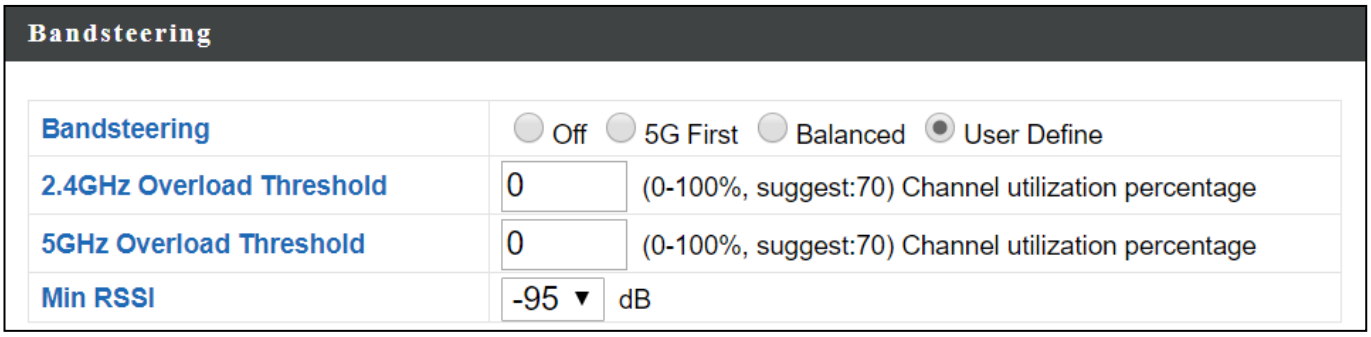
| SSID | Down Link | | Up Link | |
|---|---|---|---|---|
| F1968A_A | 0 | Mbps | 0 | Mbps |
| F1968A_A_2 | 0 | Mbps | 0 | Mbps |
| F1968A_A_3 | 0 | Mbps | 0 | Mbps |
| F1968A_A_4 | 0 | Mbps | 0 | Mbps |
| F1968A_A_5 | 0 | Mbps | 0 | Mbps |
| F1968A_A_6 | 0 | Mbps | 0 | Mbps |
| F1968A_A_7 | 0 | Mbps | 0 | Mbps |
| F1968A_A_8 | 0 | Mbps | 0 | Mbps |
| F1968A_A_9 | 0 | Mbps | 0 | Mbps |
| F1968A_A_10 | 0 | Mbps | 0 | Mbps |
| F1968A_A_11 | 0 | Mbps | 0 | Mbps |
| F1968A_A_12 | 0 | Mbps | 0 | Mbps |
| F1968A_A_13 | 0 | Mbps | 0 | Mbps |
| F1968A_A_14 | 0 | Mbps | 0 | Mbps |
| F1968A_A_15 | 0 | Mbps | 0 | Mbps |
| F1968A_A_16 | 0 | Mbps | 0 | Mbps |

Apply Cancel

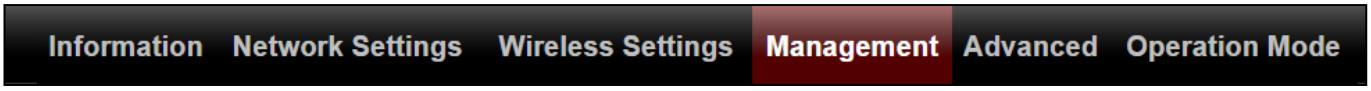
## VI-3-11 Bandsteering

Band steering detects clients capable of 5GHz operation and steers them there to make the more crowded 2.4 GHz band available for clients only capable of connecting to 2.4GHz band. This helps improve end user experience by reducing channel utilization, especially in high density environments.



## VI-4 Management

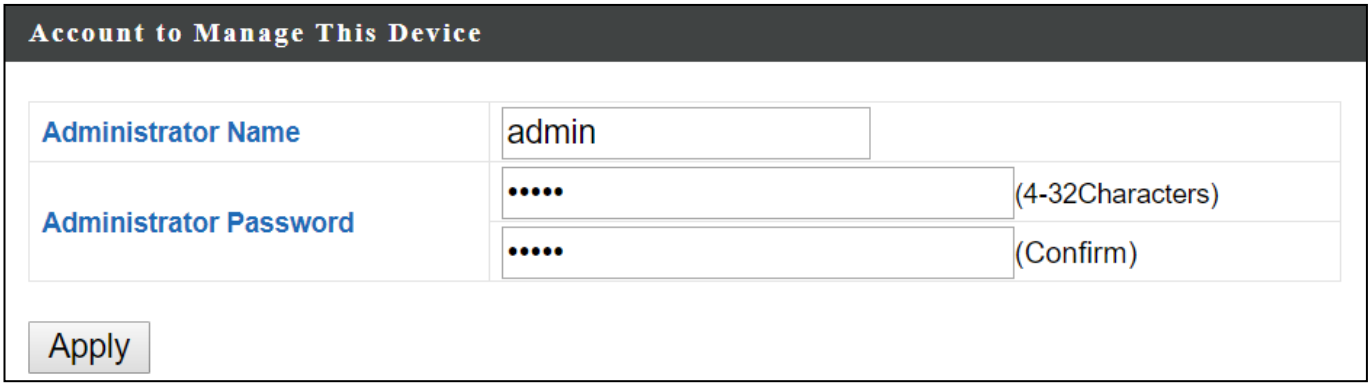



(Configurable for AP Mode only)

### VI-4-1 Admin

You can change the password used to login to the browser-based configuration interface here. It is advised to do so for security purposes.

***If you change the administrator password, please make a note of the new password. In the event that you forget this password and are unable to login to the browser based configuration interface, see*** I-5 *Reset* ***for how to reset the access point.***




| Account to Manage This Device | |
|---|---|
| **Administrator Name** | Set the access point's administrator name. This is used to log in to the browser based configuration interface and must be between 4-16 alphanumeric characters (case sensitive). |
| **Administrator Password** | Set the access point's administrator password. This is used to log in to the browser based configuration interface and must be between 4-32 alphanumeric characters (case sensitive). |

Press "Apply" to apply the configuration.

**Advanced Settings**

| | |
|---|---|
| Product Name | AP801F02F1968A |
| HTTP Port | 80 (80, 1024-65535) |
| HTTPS Port | 443 (443, 1024-65535) |
| Management Protocol | ☑ HTTP<br>☑ HTTPS<br>☑ TELNET<br>☐ SSH<br>☑ SNMP |
| Login Timeout | 5 ▾ (mins) |
| SNMP Version | v1/v2c ▾ |
| SNMP Get Community | public |
| SNMP Set Community | private |
| SNMP V3 Name | admin |
| SNMP V3 Password | •••• |
| SNMP Trap | Disabled ▾ |
| SNMP Trap Community | public |
| SNMP Trap Manager | |

Apply

| Advanced Settings | |
|---|---|
| **Product Name** | Edit the product name according to your preference consisting of 1-32 alphanumeric characters. This name is used for reference purposes. |
| **Management Protocol** | Check/uncheck the boxes to enable/disable specified management interfaces (see below). When SNMP is enabled, complete the SNMP fields below. |
| **SNMP Version** | Select SNMP version appropriate for your SNMP manager. |
| **SNMP Get Community** | Enter an SNMP Get Community name for verification with the SNMP manager for SNMP-GET requests. |
| **SNMP Set Community** | Enter an SNMP Set Community name for verification with the SNMP manager for SNMP-SET requests. |
| **SNMP Trap** | Enable or disable SNMP Trap to notify SNMP manager of network errors. |

| | |
|---|---|
| **SNMP Trap Community** | Enter an SNMP Trap Community name for verification with the SNMP manager for SNMP-TRAP requests. |
| **SNMP Trap Manager** | Specify the IP address or sever name (2-128 alphanumeric characters) of the SNMP manager. |

**HTTP**

*Internet browser HTTP protocol management interface*

**TELNET**

*Client terminal with telnet protocol management interface*

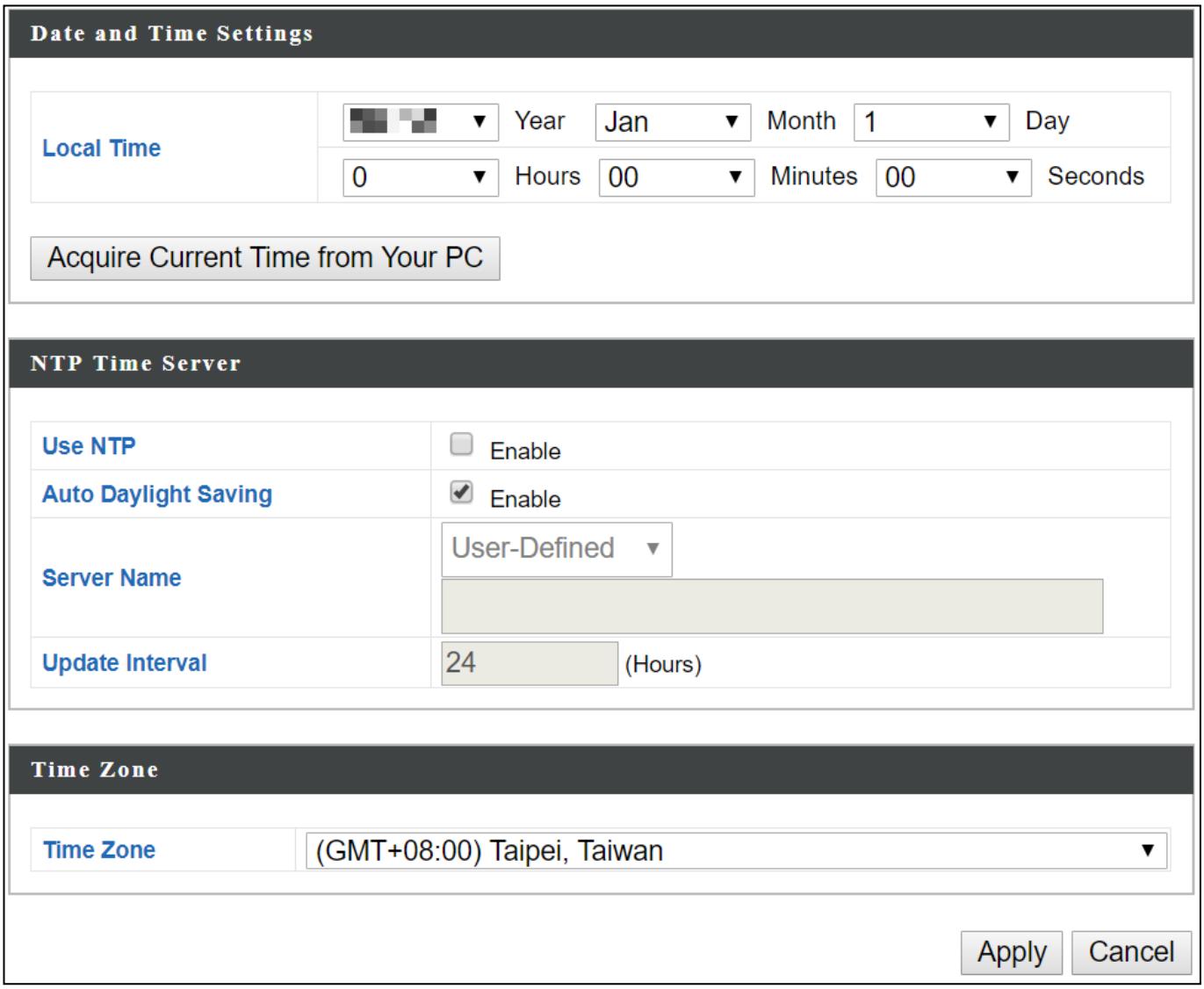
**SNMP**

*Simple Network Management Protocol. SNMPv1, v2 & v3 protocol supported. SNMPv2 can be used with community based authentication. SNMPv3 uses user-based security model (USM) architecture.*

Press “Apply” to apply the configuration.

## VI-4-2 Date and Time

Configure the date and time settings of the access point here. The date and time of the device can be configured manually or can be synchronized with a time server.




| Date and Time Settings | |
|---|---|
| **Local Time** | Set the access point's date and time manually using the drop down menus. |
| **Acquire Current Time from your PC** | Click "Acquire Current Time from Your PC" to enter the required values automatically according to your computer's current time and date. |

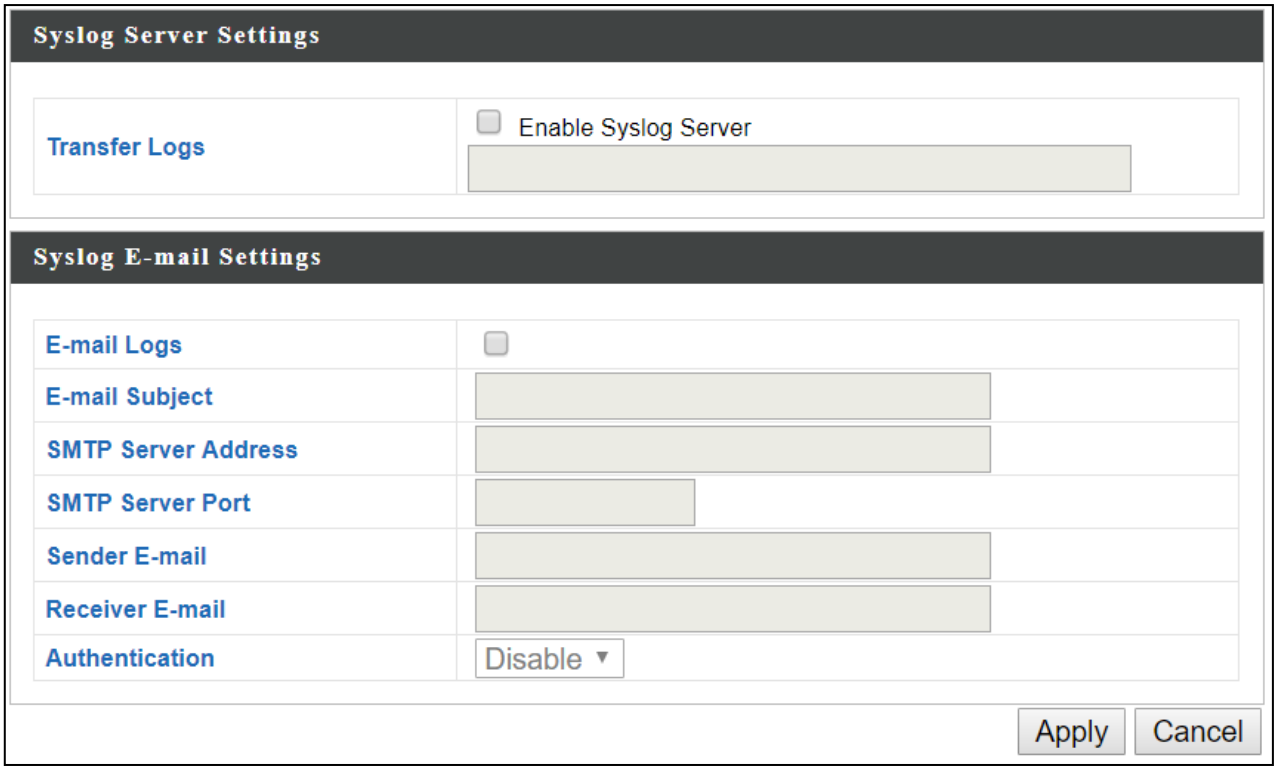
| NTP Time Server | |
|---|---|
| **Use NTP** | The access point also supports NTP (Network Time Protocol) for automatic time and date setup. |
| **Server Name** | Enter the host name or IP address of the time server if you wish. |
| **Update Interval** | Specify a frequency (in hours) for the access point to update/synchronize with the NTP server. |

| Time Zone | |
|---|---|
| **Time Zone** | Select the time zone of your country/region. If your country/region is not listed, please select another country/region whose time zone is the same as yours. |

Press “Apply” to apply the configuration, or “Cancel” to forfeit the changes.

## VI-4-3 Syslog Server

The system log can be sent to a server.



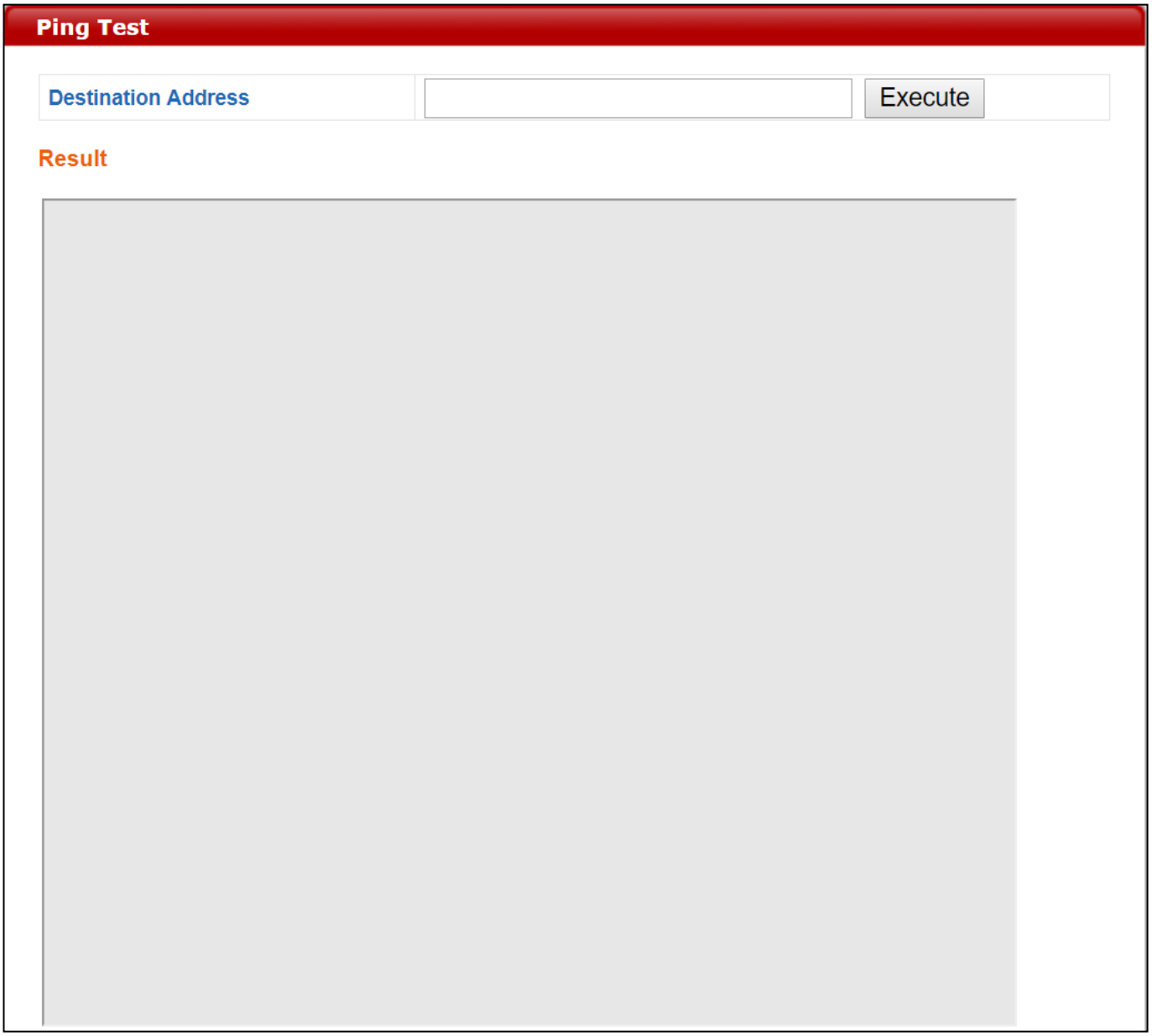

| Syslog Server Settings | |
|---|---|
| **Transfer Logs** | Check the box to enable the use of a syslog server.<br>Enter a host name, domain or IP address for the server, consisting of up to 128 alphanumeric characters. |

| Syslog E-mail Settings | |
|---|---|
| **E-mail Logs** | Check the box to enable/disable e-mail logs. |
| **E-mail Subject** | Specify the subject line of log emails. |
| **SMTP Server Address** | Specify the SMTP server address used to send log emails. |
| **SMTP Server Port** | Specify the SMTP server port used to send log emails. |
| **Sender E-mail** | Specify the sender email address. |
| **Receiver E-mail** | Specify the email to receive log emails. |
| **Authentication** | Disable or select authentication type: SSL or TLS. When using SSL or TLS, enter the username and password. |

Press “Apply” to apply the configuration, or “Cancel” to forfeit the changes.

## VI-4-4 Ping Test

The access point includes a built-in ping test function. Ping is a computer network administration utility used to test whether a particular host is reachable across an IP network and to measure the round-trip time for sent messages.




| | |
|---|---|
| **Destination Address** | Enter the address of the host. |
| **Execute** | Click execute to ping the host. |

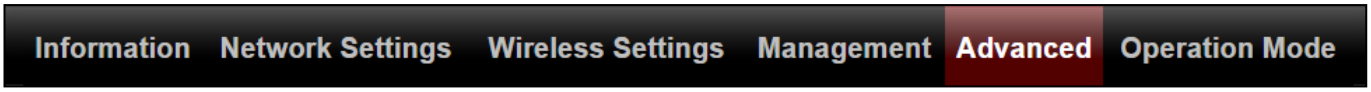
## VI-4-5 I’m Here

The access point features a built-in buzzer which can sound on command using the “I’m Here” page. This is useful for network administrators and engineers working in complex network environments to locate the access point.


***The buzzer is loud!***

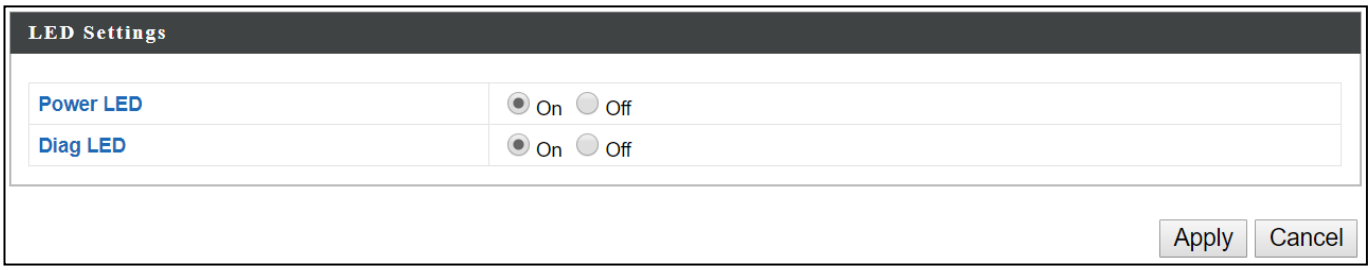
| | |
|---|---|
| **Duration of Sound** | Set the duration for which the buzzer will sound when the “Sound Buzzer” button is clicked. |
| **Sound Buzzer** | Activate the buzzer sound for a duration specified above. |

## VI-5 Advanced




### VI-5-1 LED Settings

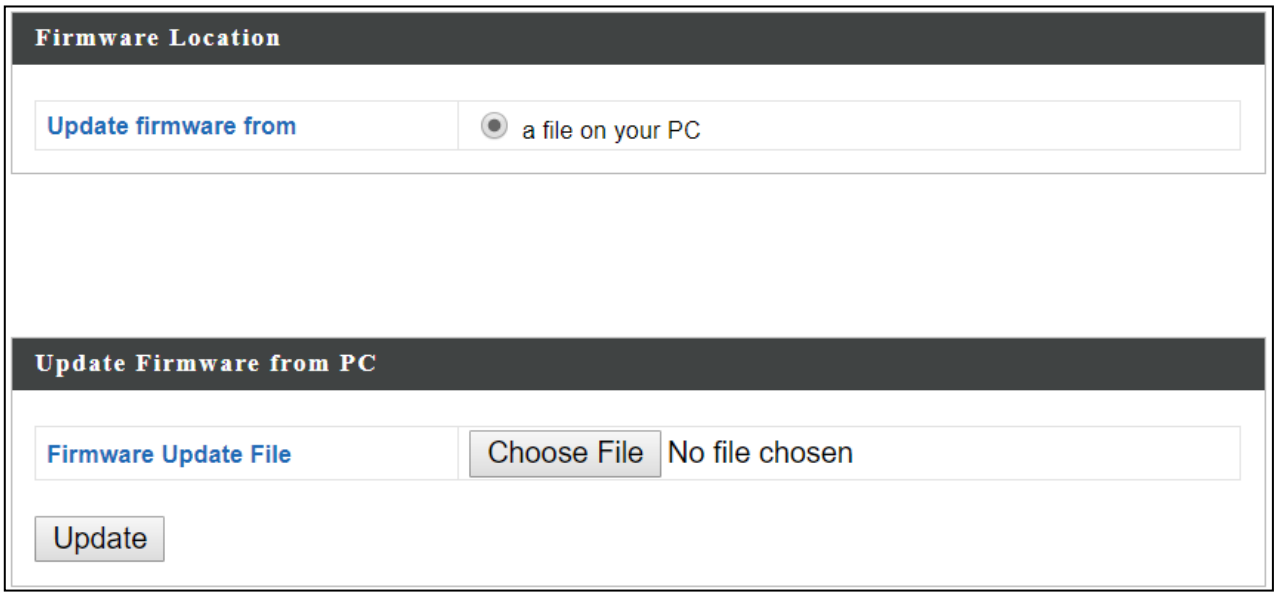
The access point's LEDs can be manually enabled or disabled according to your preference.




| | |
|---|---|
| **Power LED** | Select on or off. |
| **Diag LED** | Select on or off. |

## VI-5-2 Update Firmware

The “Firmware” page allows you to update the firmware of the system. Updated firmware versions often offer increased performance and security, as well as bug fixes. Download the latest firmware from the Edimax website.

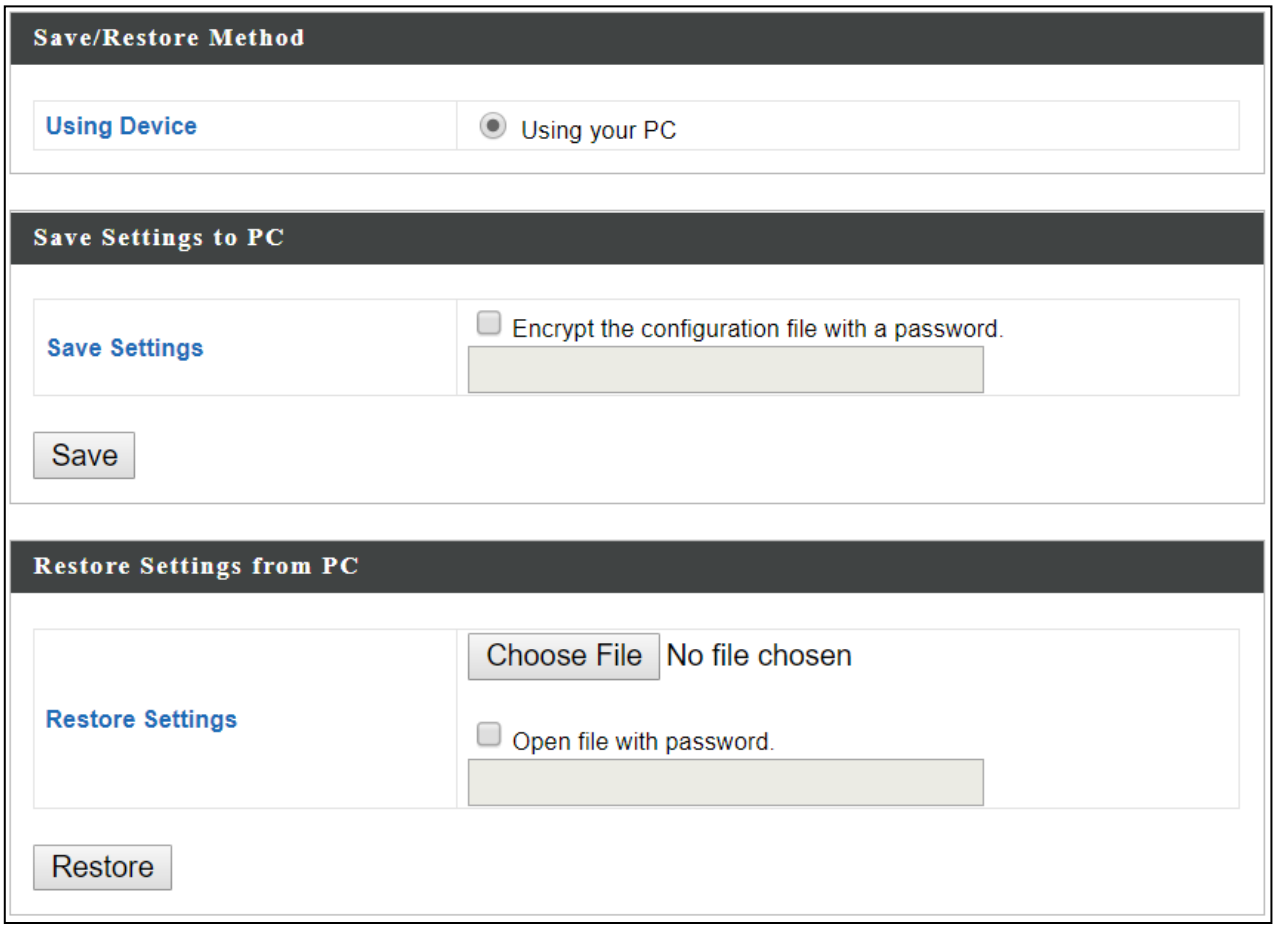



***Do not switch off or disconnect the access point during a firmware upgrade, as this could damage the device.***

| | |
|---|---|
| **Firmware Location** | Click “Choose File” to upload firmware from your local computer. |

## VI-5-3 Save / Restore Settings

The device's "Save / Restore Settings" page enables you to save / backup the device's current settings as a file to your local computer, and restore the device to previously saved settings.




| Save Settings to PC | |
|---|---|
| **Save Settings** | **Encryption**: If you wish to encrypt the configuration file with a password, check the "Encrypt the configuration file with a password" box and enter a password.<br>Click "Save" to save current settings. A new window will open to allow you to specify a location to save to. |

| Restore Settings from PC | |
|---|---|
| **Restore Settings** | Click the "Choose File" button to find a previously saved settings file on your computer. If your settings file is encrypted with a password, check the "Open file with password" box and enter the password in the following field.<br>Click "Restore" to replace your current settings. |

## VI-5-4 Factory Default

If the access point malfunctions or is not responding, rebooting the device (VI-5-5 **Reboot**) maybe an option to consider. If rebooting does not work, try resetting the device back to its factory default settings. You can reset the access point back to its default settings using this feature if the reset button is not readily accessible.

This will restore all settings to factory defaults.

Factory Default

| | |
|---|---|
| **Factory Default** | Click "Factory Default" to restore settings to the factory default. A pop-up window will appear and ask you to confirm. |

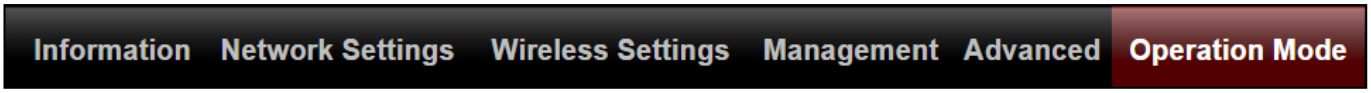
***After resetting to factory defaults, please wait for the access point to reset and restart.***

## VI-5-5 Reboot

If the access point malfunctions or is not responding, rebooting the device may be an option to consider. You can reboot the access point remotely using this feature.

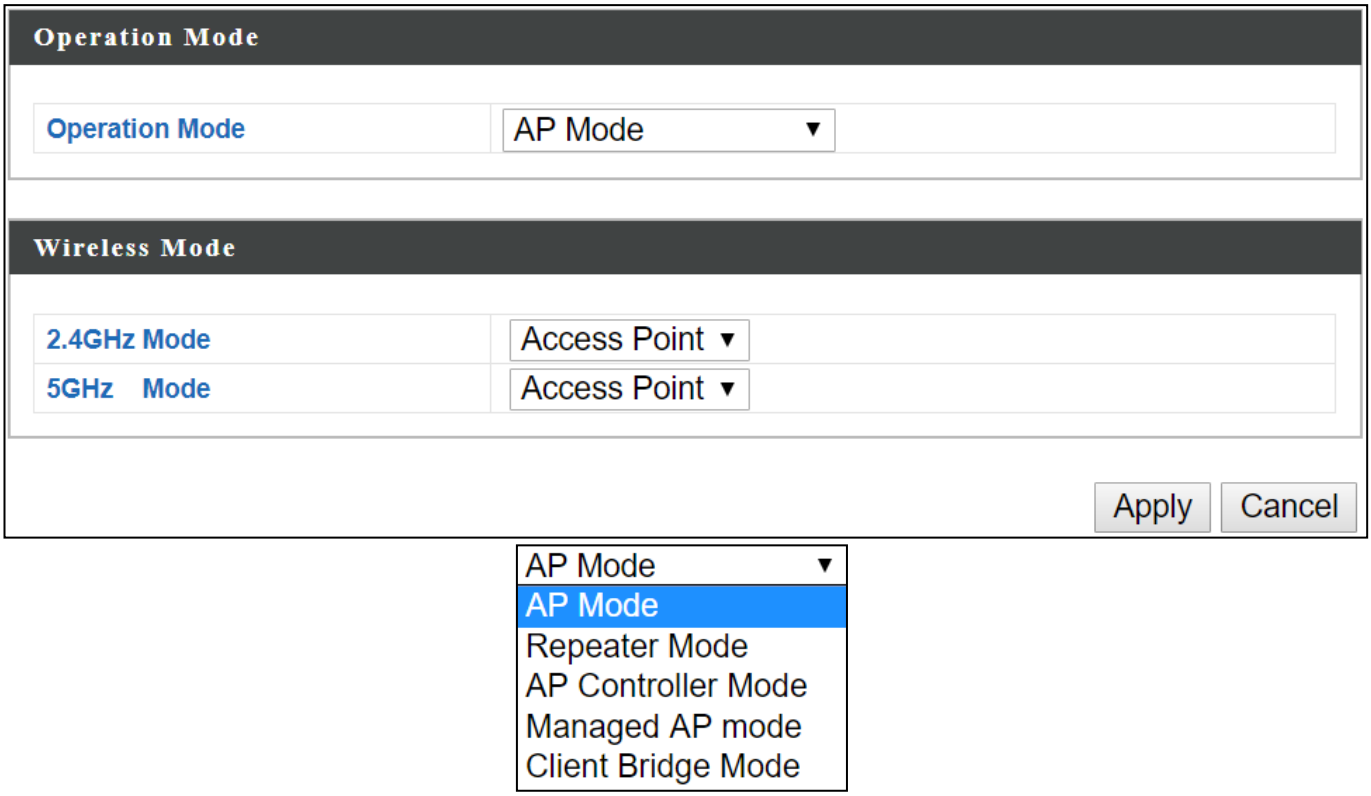

| | |
|---|---|
| **Reboot** | Click “Reboot” to reboot the device. A countdown will indicate the progress of the reboot. |

## VI-6 Operation Mode




The access point can function in five different modes. Set the operation mode of the access point here.

1. AP Mode: The device acts as a standalone access point
2. Repeater Mode: The device acts as a wireless repeater (also called wireless range extender) that takes an existing signal from a wireless router or wireless access point and rebroadcasts it to create a second network.
3. AP controller Mode: The device acts as the designated master of the AP array
4. Managed AP Mode: The device acts as a slave AP within the AP array.
5. Client Bridge Mode: The device is now a client bridge. The client bridge receives wireless signal and provides it to devices connected to the bridge (via Ethernet cable).




***In Managed AP mode some functions of the access point will be disabled in this user interface and must be set using Edimax Pro NMS on the AP Controller.***

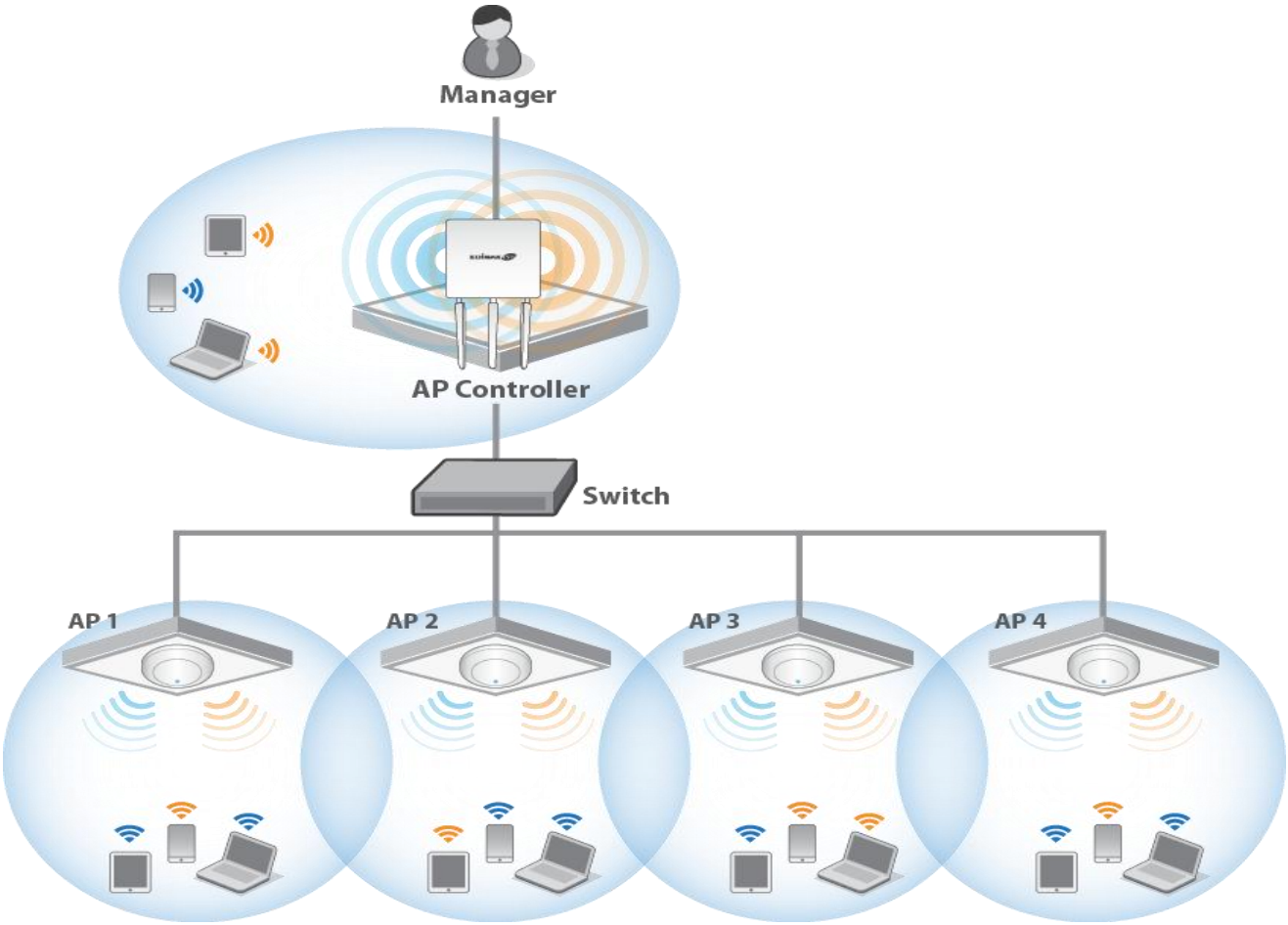
***In AP Controller Mode the access point will switch to the Edimax Pro NMS user interface.***

Press “Apply” to apply the configuration, or “Cancel” to forfeit the changes.

# VII Product Information

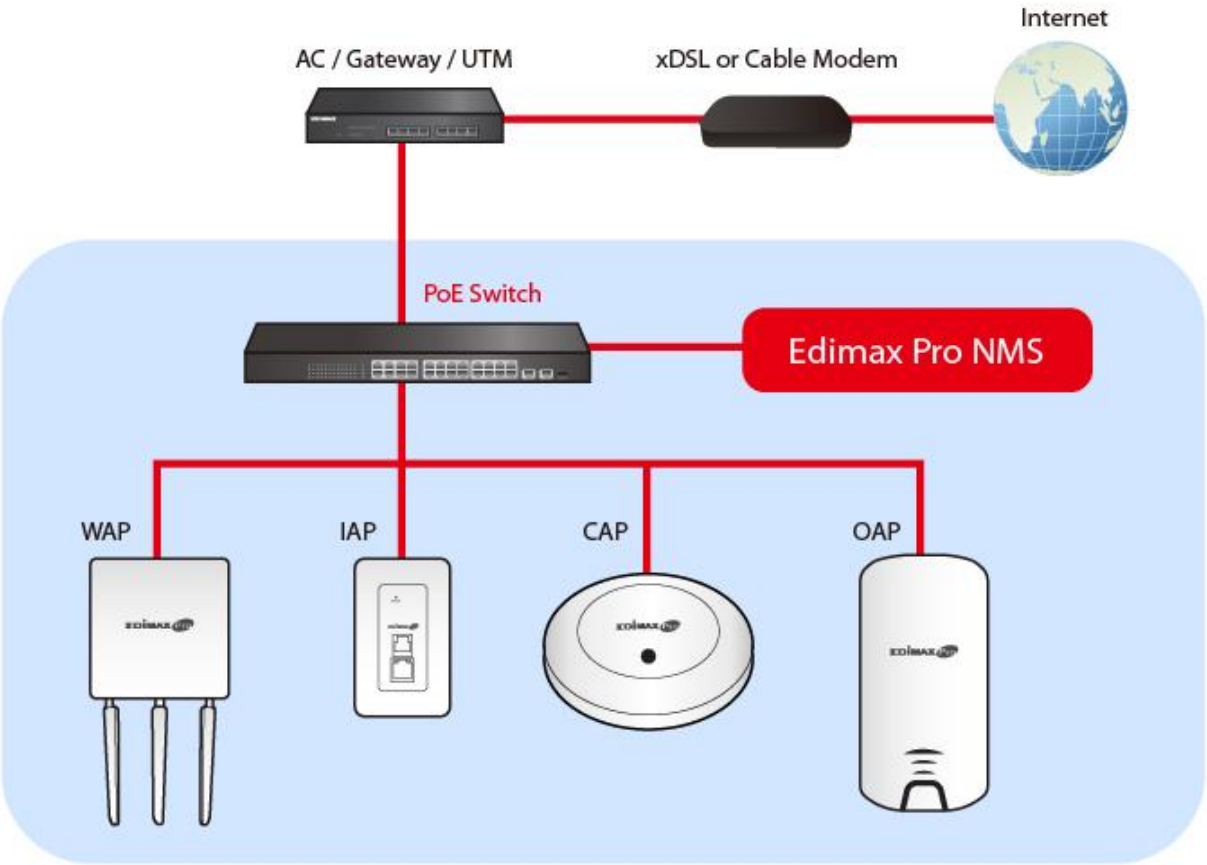
Edimax Pro Network Management Suite (NMS) supports the central management of a group of access points, otherwise known as an AP Array. NMS can be installed on one access point and support up to 16 Edimax Pro access points with no additional wireless controller required, reducing costs and facilitating efficient remote AP management.

Access points can be deployed and configured according to requirements, creating a powerful network architecture which can be easily managed and expanded in the future, with an easy to use interface and a full range of functionality – ideal for small and mid-sized office environments. A secure WLAN can be deployed and administered from a single point, minimizing cost and complexity.



# VIII Quick Setup - NMS

Edimax Pro NMS (AP Controller Mode) is simple to setup. An overview of the system is shown below:

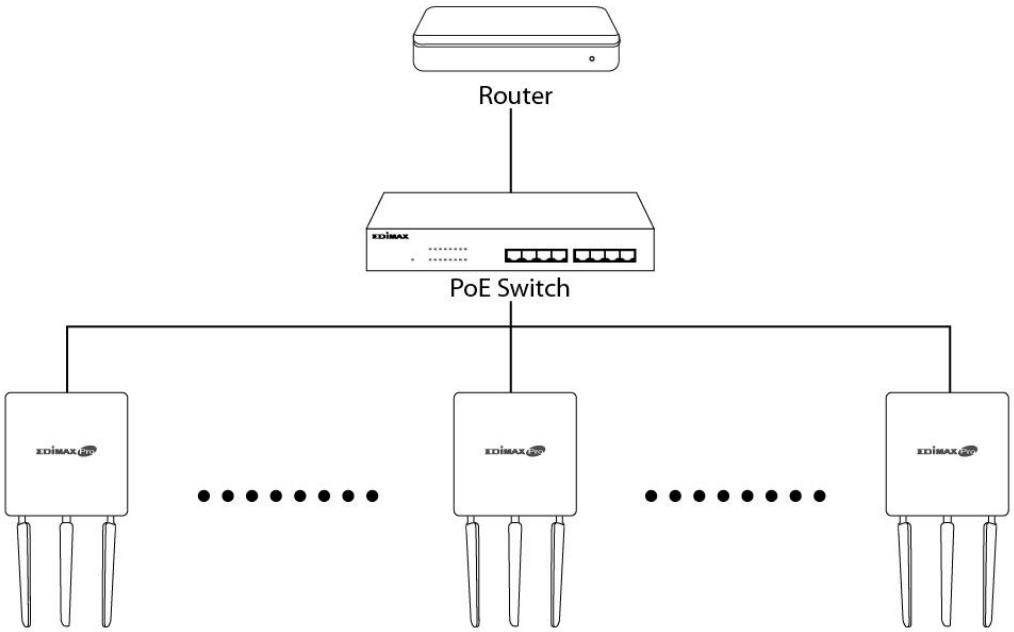



One AP (access point) is designated as the AP Controller (master) and other connected Edimax Pro APs are automatically designated as Managed APs (slaves). Using Edimax Pro NMS you can monitor, configure and manage all Managed APs (up to 16) from the single AP Controller.

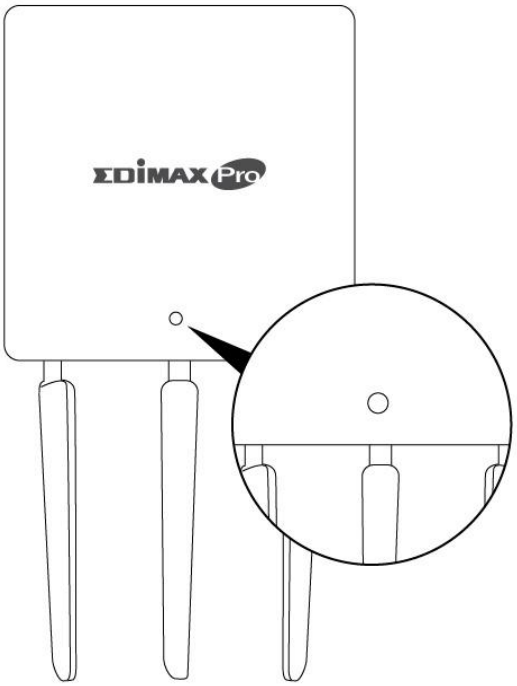
## VIII-1 Hardware Deployment

***Ensure you have the latest firmware from the Edimax website for your Edimax Pro products.***

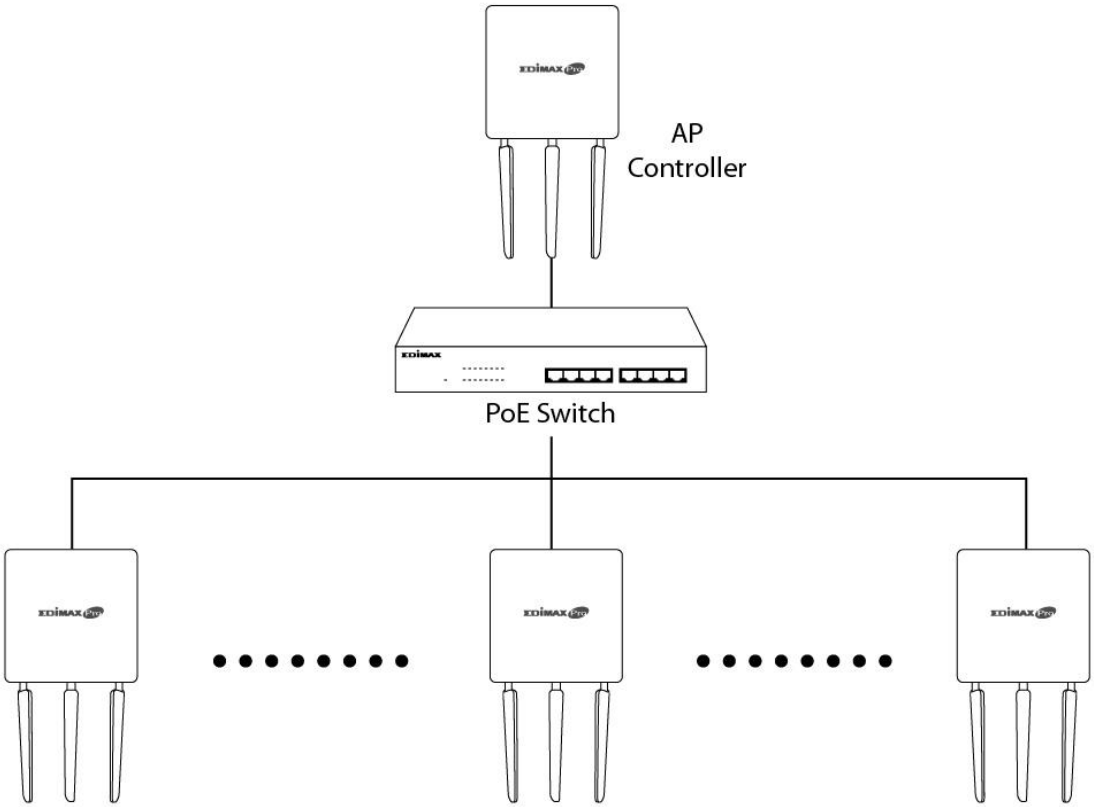
**1.** Connect all APs to an Ethernet or PoE switch which is connected to a gateway/router.



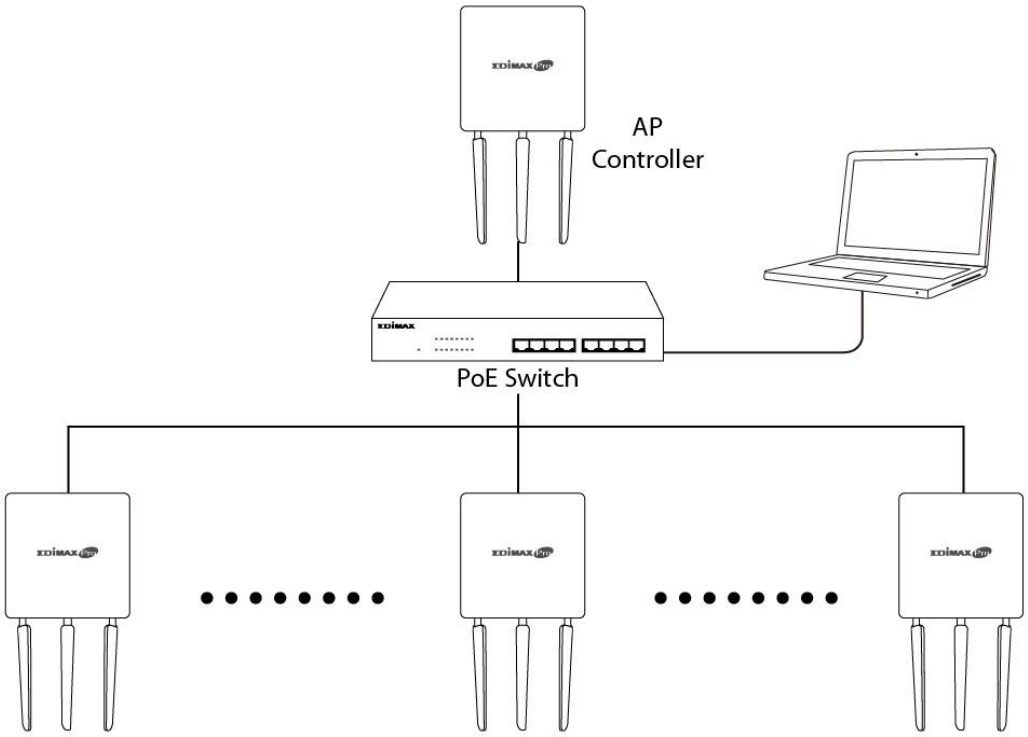

**2.** Ensure all APs are powered on (check their LEDs).



**3.** Designate one AP as the *AP Controller* which will manage all other connected APs (up to 16).




**4.** Connect a computer to the designated AP Controller using an Ethernet cable.



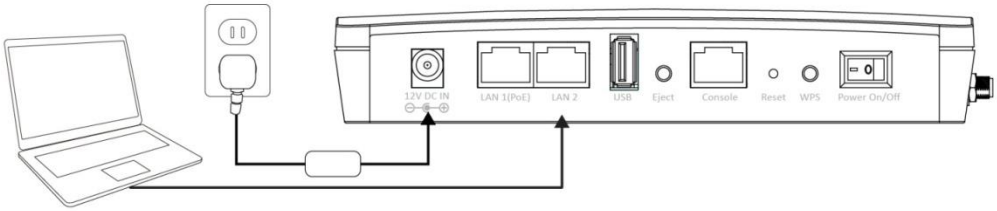
## VIII-2 Software Setup

**1.** Set your computer's IP address to **192.168.2.x** where **x** is a number in the range **3 – 100**. If you are unsure how to do this, please refer XI-1.

***Please ensure there are no other active network connections on your computer by disabling Wi-Fi and other Ethernet connections.***

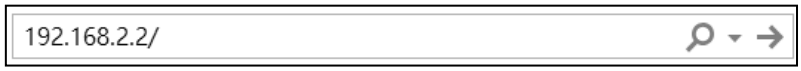
**2.** Disconnect the designated AP Controller from the PoE switch and connect it to your computer via Ethernet cable.

**3.** Connect the power adapter to the device's 12V DC port and plug the power adapter into a power supply.



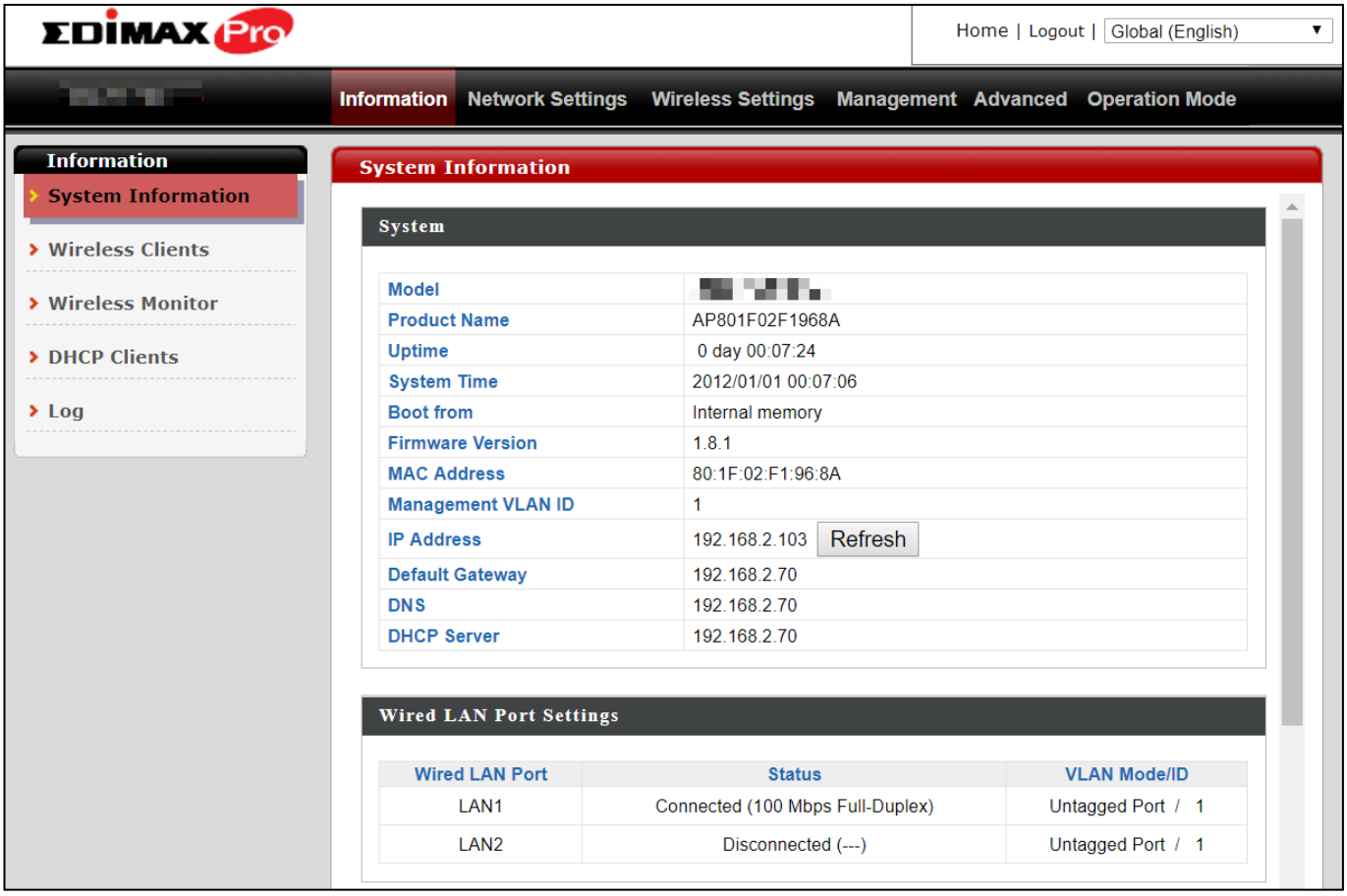

**4.** Please wait a moment for the device to start up. The device is ready when the LED is **blue**.

**5.** Enter the device's default IP address **192.168.2.2** into the URL bar of a web browser.



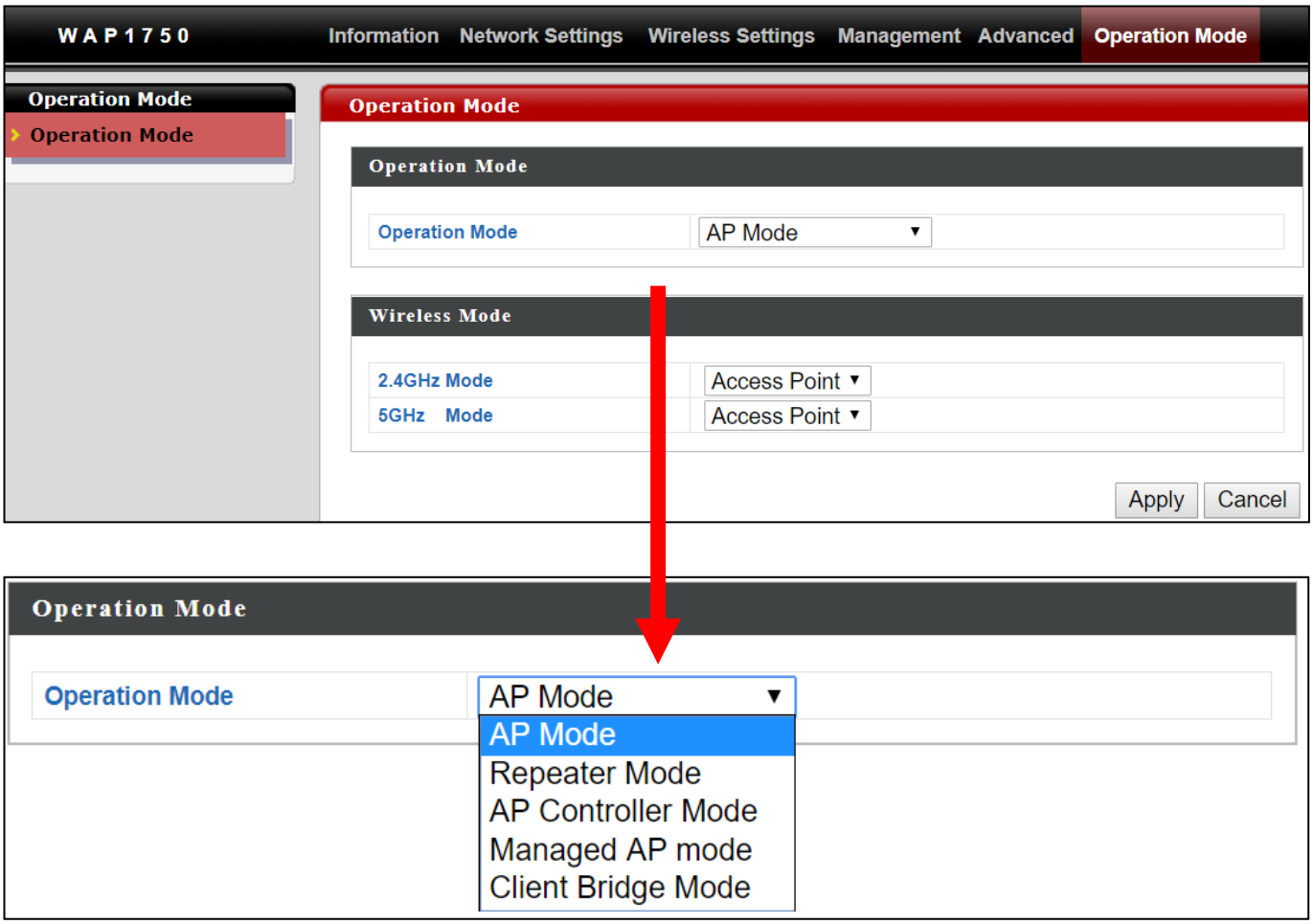
**6.** You will be prompted for a username and password. Enter the default username "**admin**" and the default password "**1234**".


**7.** "System Information" home screen will be shown:



**8.** By default, the device is in **AP Mode**.

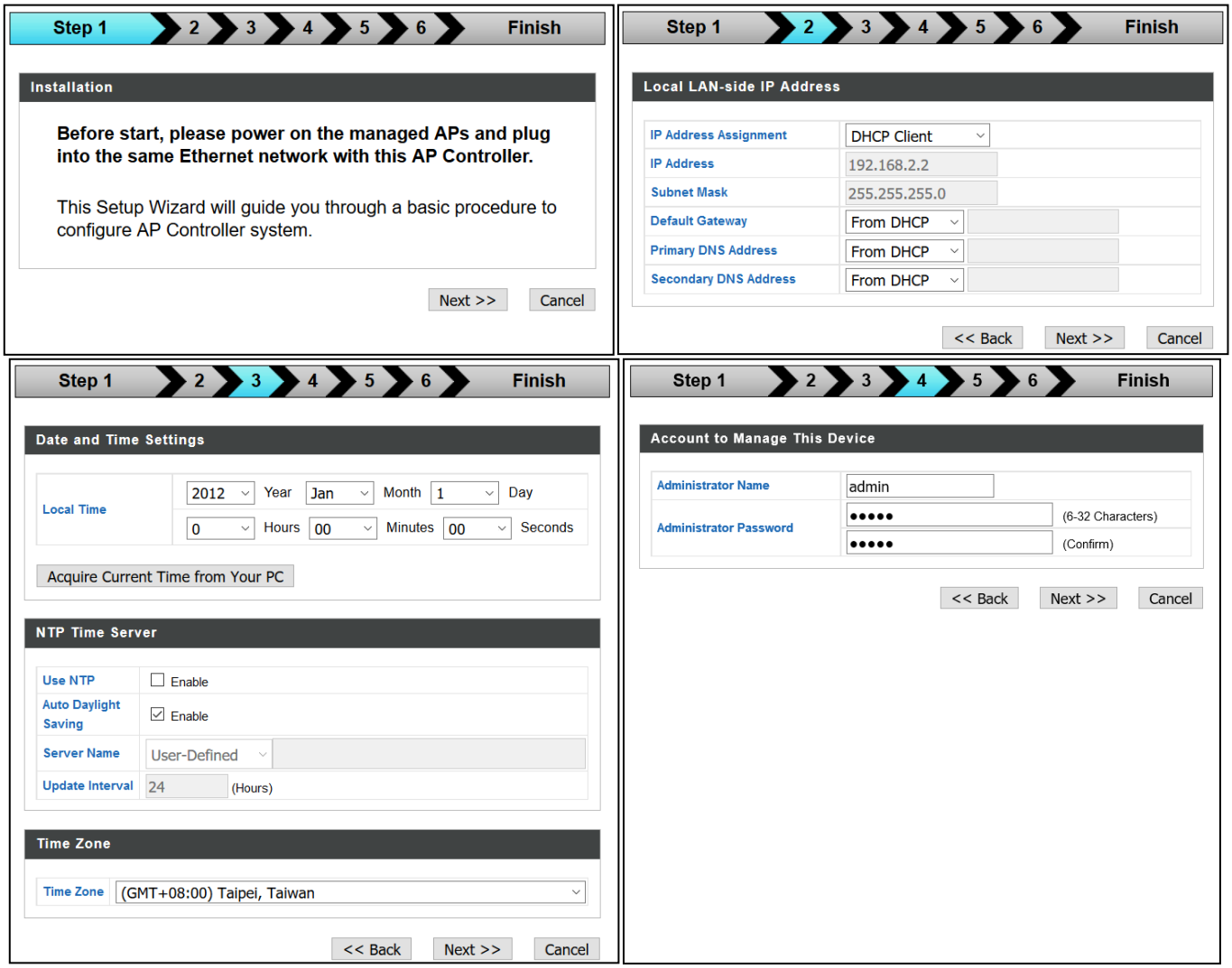
**9.** Go to “Operation Mode” to select AP Controller Mode.

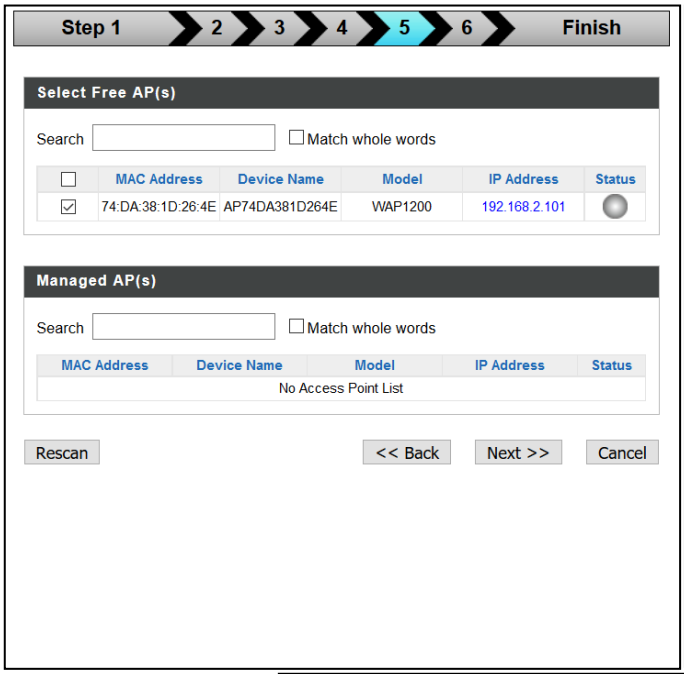


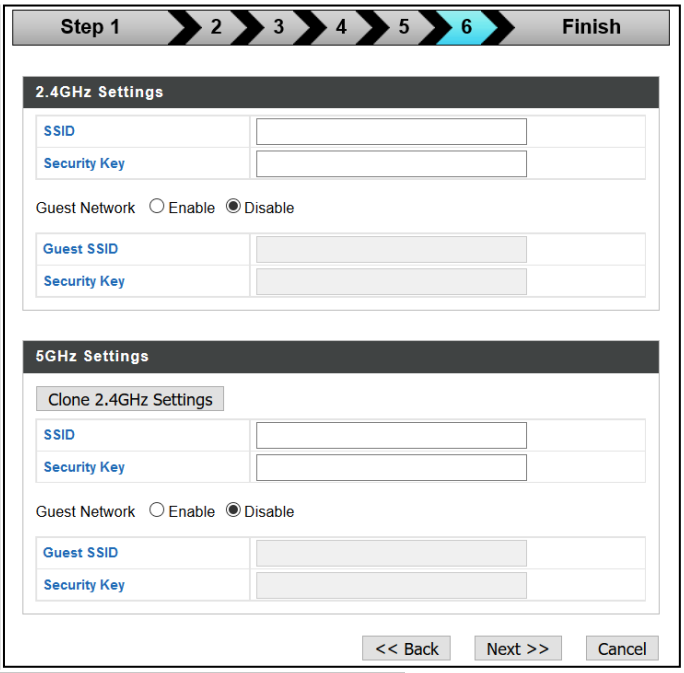

**10.** Once selected, press “Apply” to apply the settings.
Wait for the device to reboot.

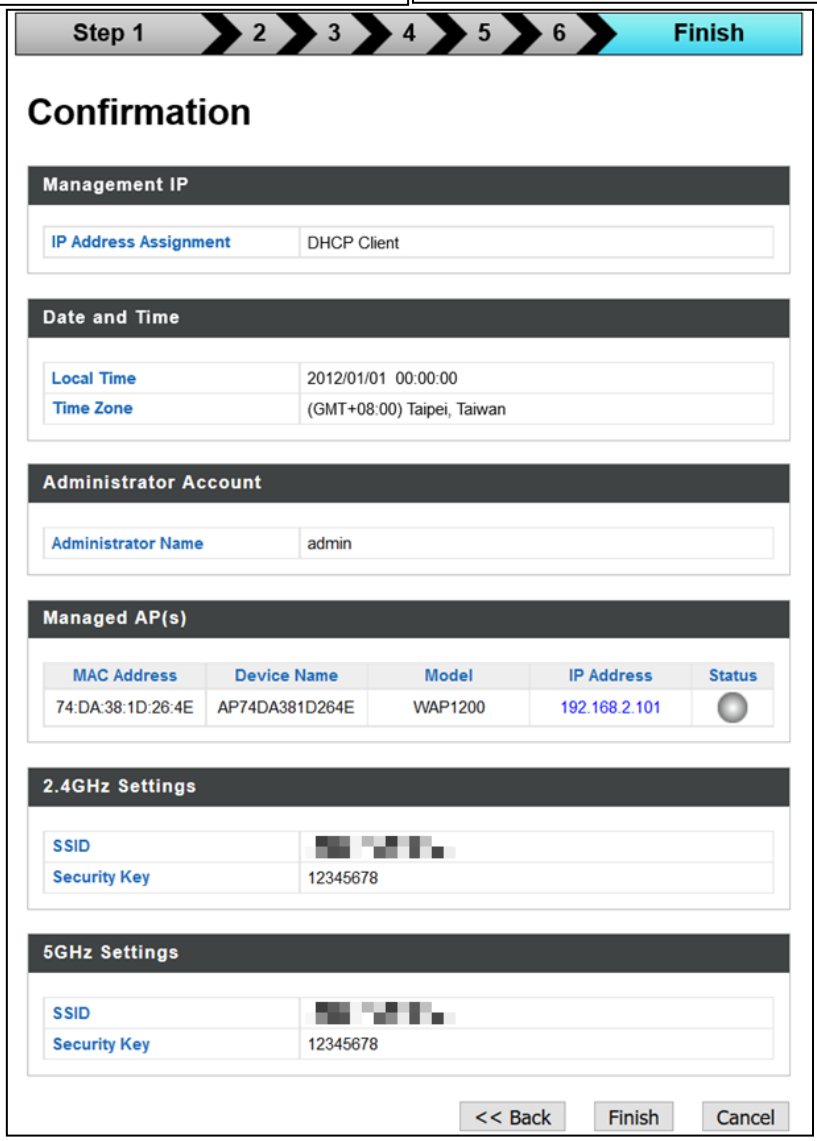
**11.** Edimax Pro NMS includes a wizard to quickly setup the SSID & security for Managed APs. Go back to the web user interface, locate and click “Wizard” in the top right corner to begin the wizard.

**12.** Follow the on-screen instructions to complete **Steps 1-6** and click **"Finish"** to save the settings.



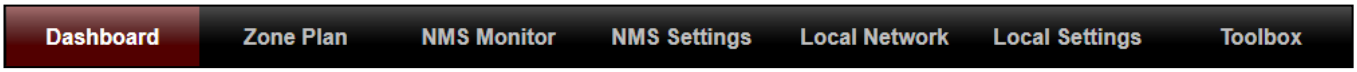



***If any of your Managed APs cannot be found, reset it to its factory default settings.***

**13.** Your AP Controller & Managed APs should be fully functional. Use the top menu to navigate around Edimax Pro NMS.




Use ***Dashboard***, ***Zone Plan***, ***NMS Monitor*** & ***NMS Settings*** to configure Managed APs.

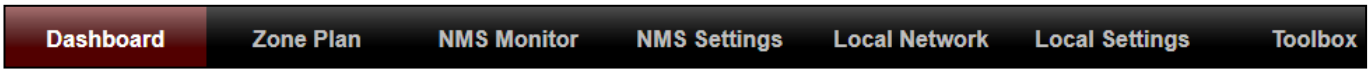
Use ***Local Network & Local Settings*** to configure your AP Controller.

Use ***Toolbox*** to diagnose network status including *Ping*, *Traceroute*, and *IP Scan*.

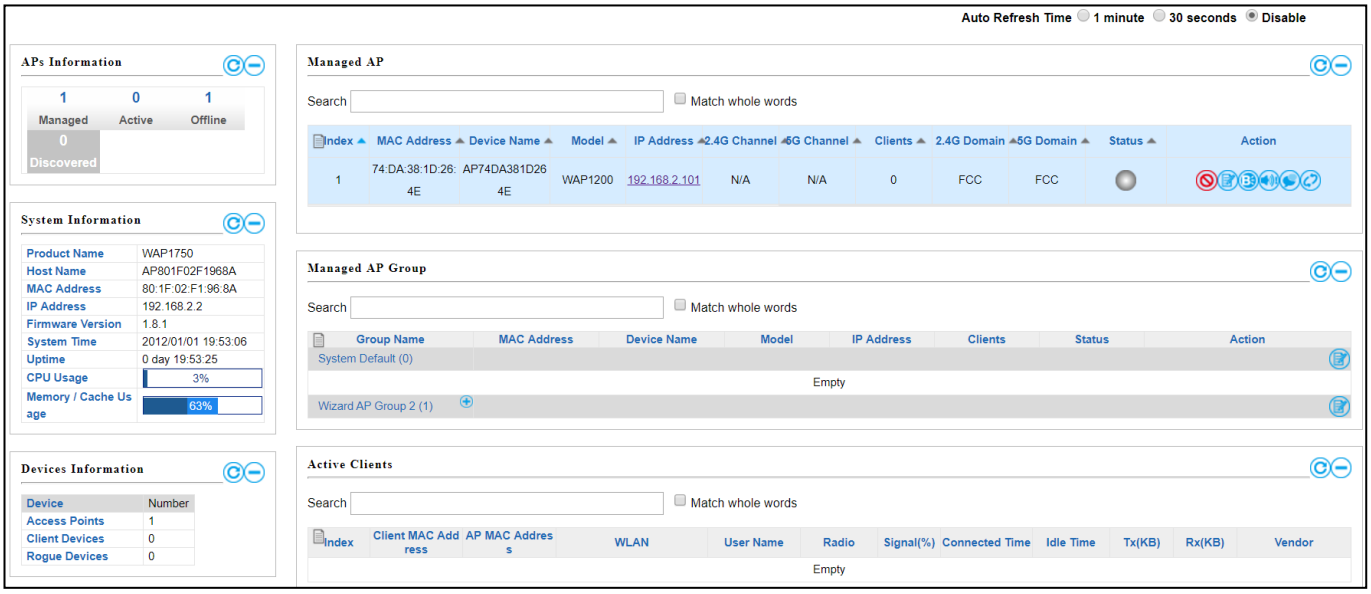
# IX Webpage Layout - NMS

The top menu features 7 panels: *Dashboard, Zone Plan, NMS Monitor, NMS Settings, Local Network, Local Settings & Toolbox.*

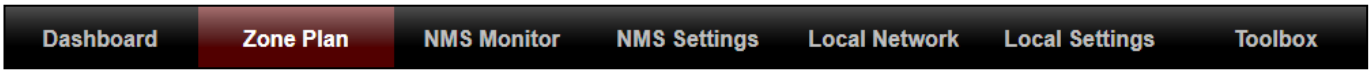
## Dashboard



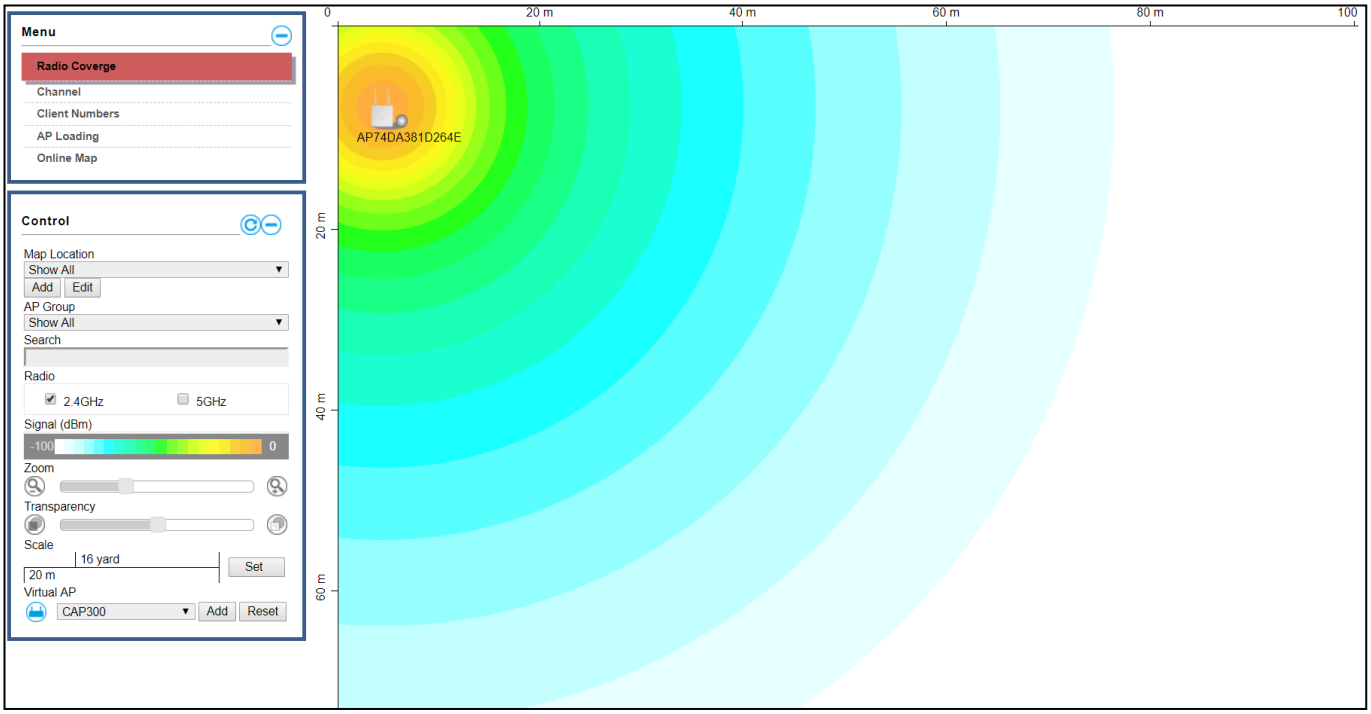

The **Dashboard** panel displays an overview of your network and key system information, with quick links to access configuration options for Managed APs and Managed AP groups. Each panel can be refreshed, collapsed or moved according to your preference.



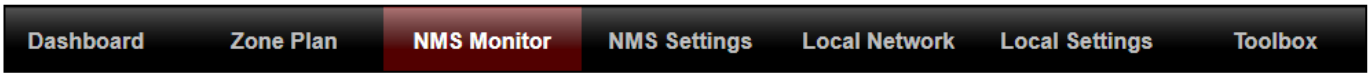
# Zone Plan




**Zone Plan** displays a customizable live map of Managed APs for a visual representation of your network coverage. Each AP icon can be moved around the map, and a background image can be uploaded for user-defined location profiles using **NMS Settings → Zone Edit**. Options can be configured using the menu on the right side and signal strength is displayed for each AP.



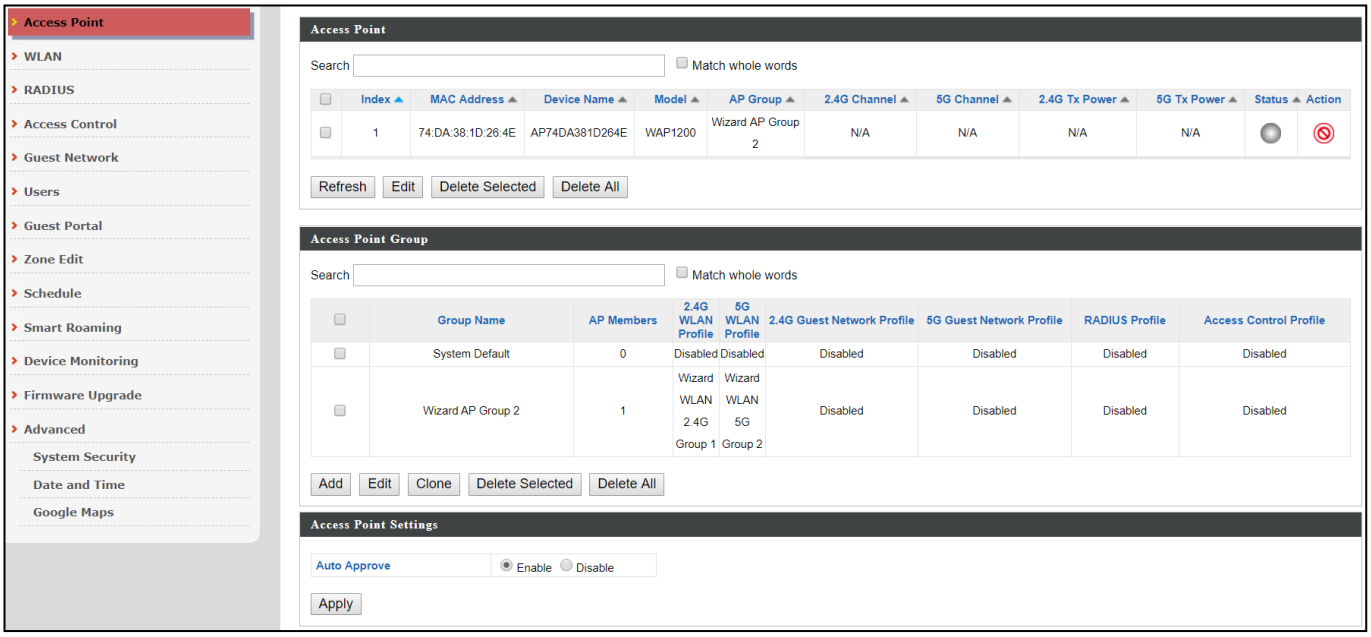
# NMS Monitor



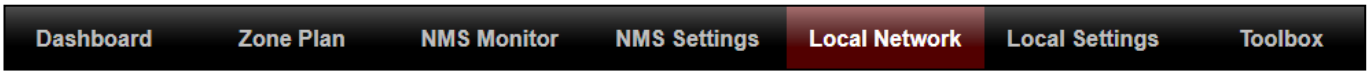

The **NMS Monitor** panel provides more detailed monitoring information about the AP Array than found on the Dashboard, grouped according to categories in the menu down the left side.

# NMS Settings

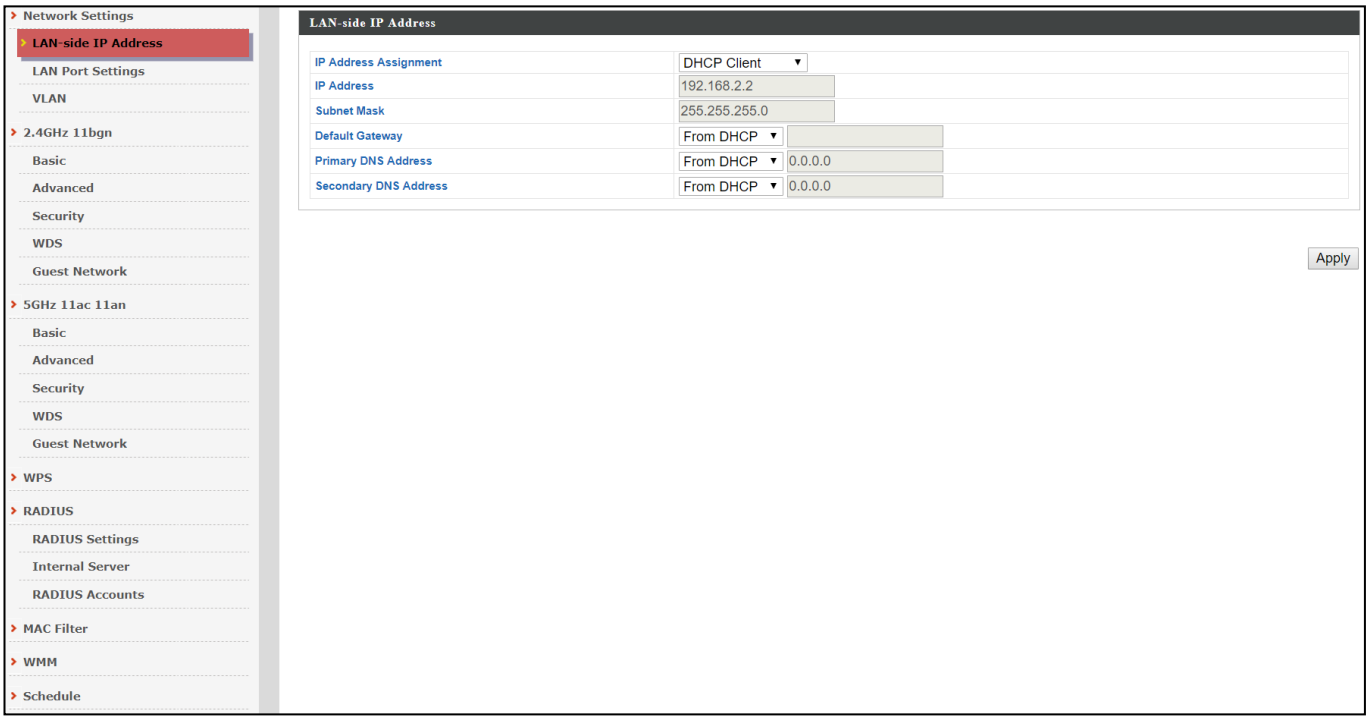

**NMS Settings** provides extensive configuration options for the AP Array. You can manage each access point, assign access points into groups, manage WLAN, RADIUS & guest network settings as well as upgrade firmware across multiple access points. The Zone Plan can also be configured using "Zone Edit".



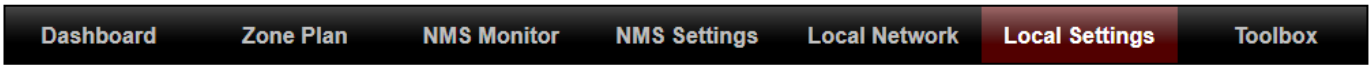
# Local Network



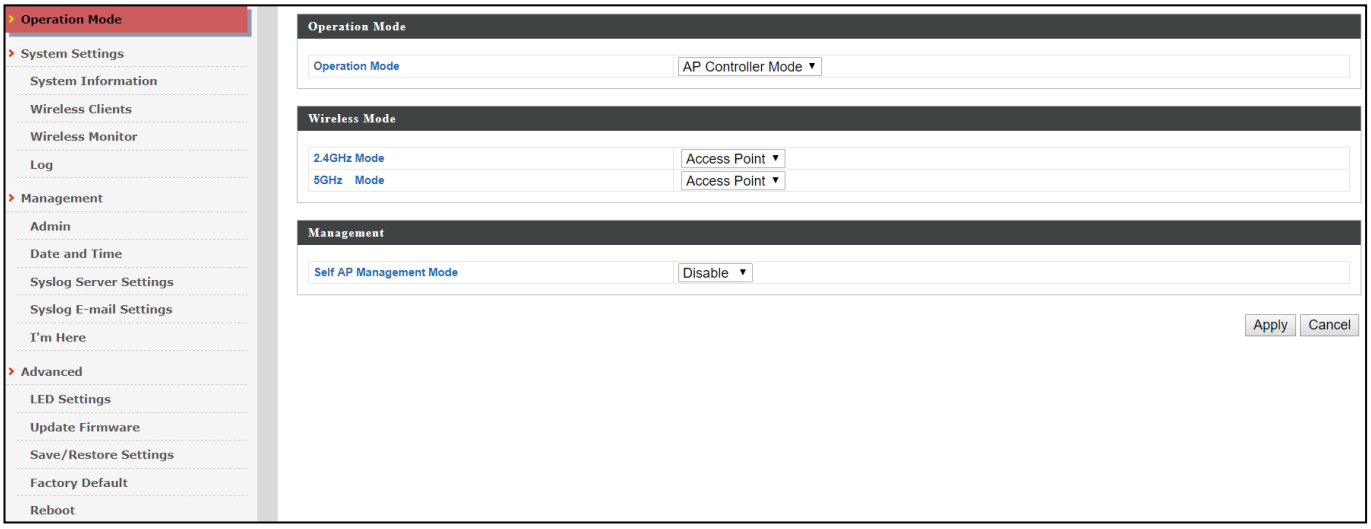

**Local Network** settings are for your AP Controller. You can configure the IP address and DHCP server of the AP Controller in addition to 2.4GHz & 5Ghz Wi-Fi and security, with WPS, RADIUS server, MAC filtering and WMM settings also available.



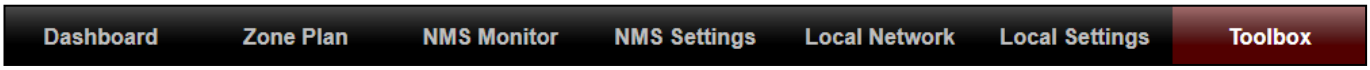
# Local Settings



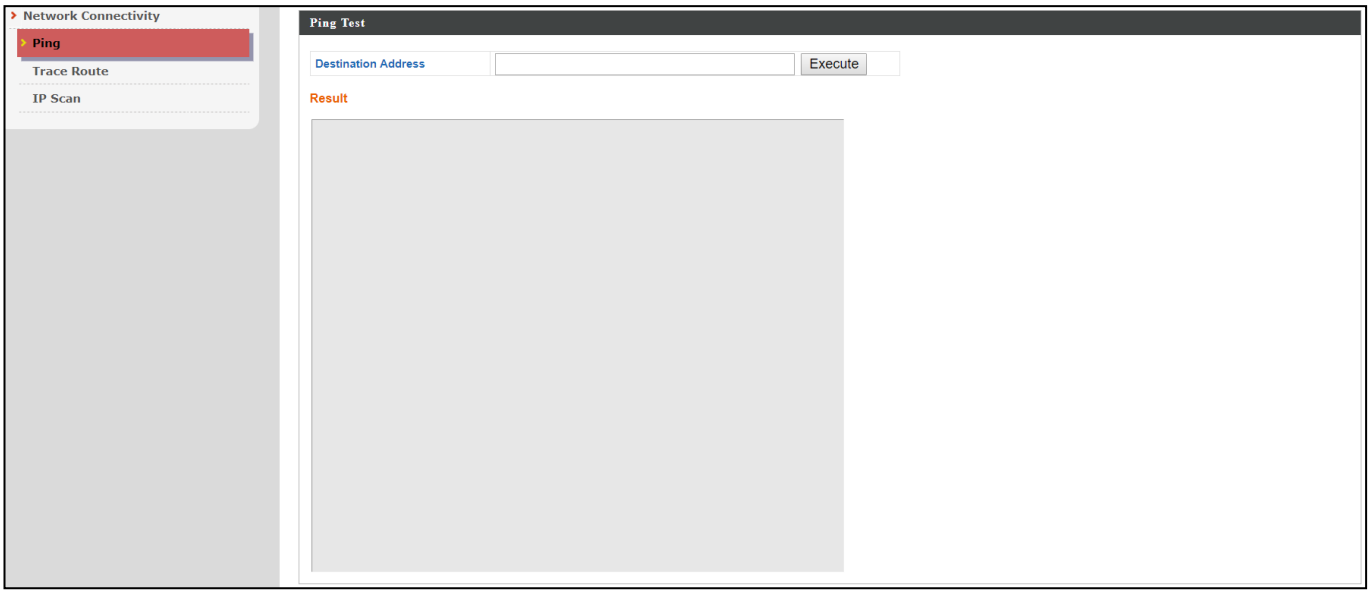

**Local Settings** are for your AP Controller. You can set the operation mode and view network settings (clients and logs) specifically for the AP Controller, as well as other management settings such as date/time, admin accounts, firmware and reset.



# Toolbox




The Toolbox panel provides network diagnostic tools: *Ping*, *Traceroute*, and *IP Scan*.



# X NMS Features

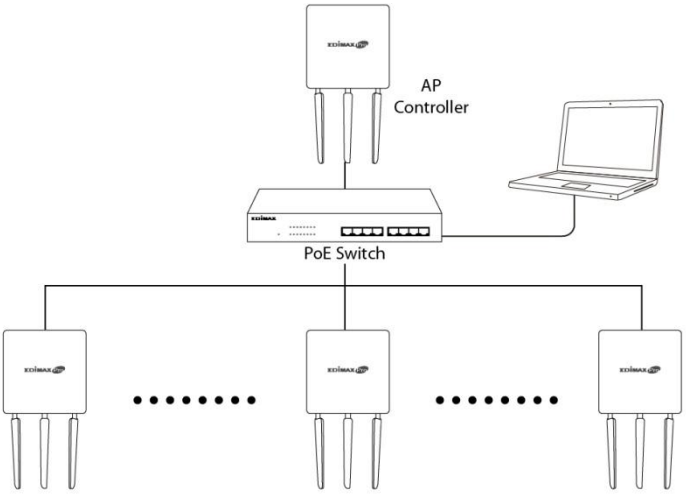
Descriptions of the functions of each main panel can be found below. When using Edimax NMS, click “Apply” to save changes:


## X-1 Login, Logout & Restart

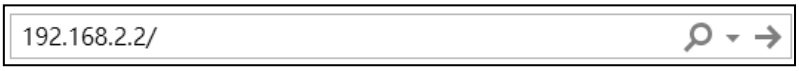
***It is recommended that you login to the AP Controller to make configurations to Managed APs.***

**<u>Login</u>**

**1.** Connect a computer to the designated AP Controller using an Ethernet cable:




**2.** Open a web browser and enter the AP Controller’s IP address in the address field. The default IP address is **192.168.2.2**



***Your computer's IP address must be in the same subnet as the AP Controller. Refer to*** XI-1 *Configuring your IP address* ***for more help.***

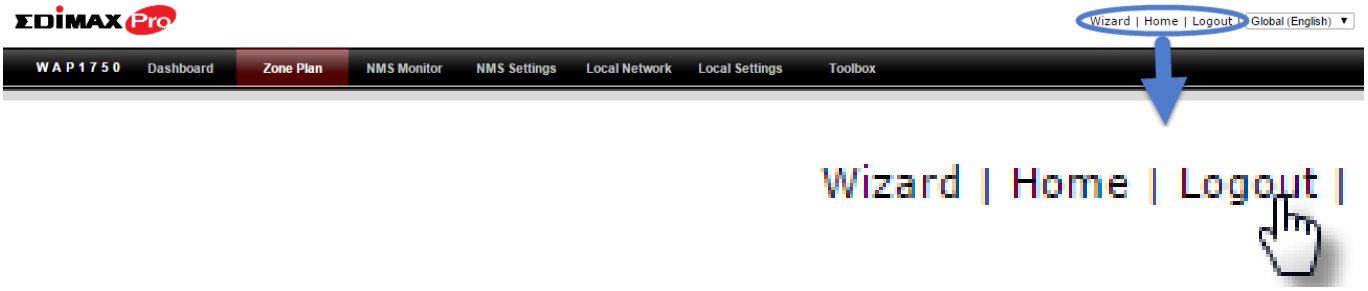
***If you changed the AP Controller's IP address, or if your gateway/router uses a DHCP server, ensure you enter the correct IP address. Refer to your gateway/router's settings.***

***If a DHCP server is used in the network, it is advised to use your DHCP server's settings to assign the AP Controller a static IP address.***

**3.** Enter the username & password to login. The default username & password are **admin** & **1234**.

## Logout

To logout from Edimax NMS, click "Logout" in the top right corner:

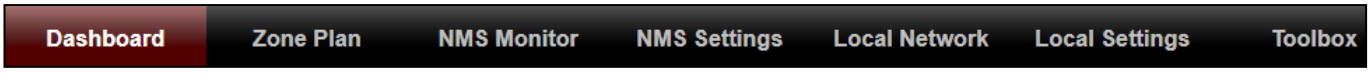



## Restart

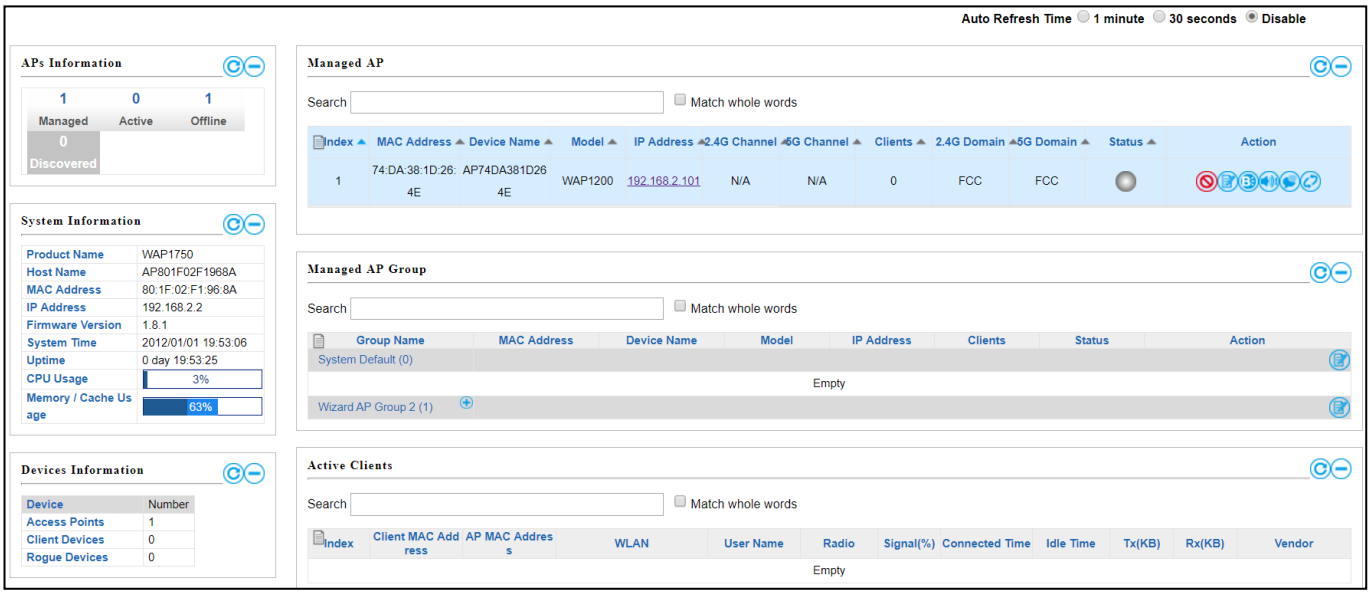
You can restart your AP Controller or any Managed AP using Edimax NMS. To restart your AP Controller go to **Local Settings → Advanced → Reboot** and click "Reboot".


To restart Managed APs click the Restart icon for the specified AP on the Dashboard:

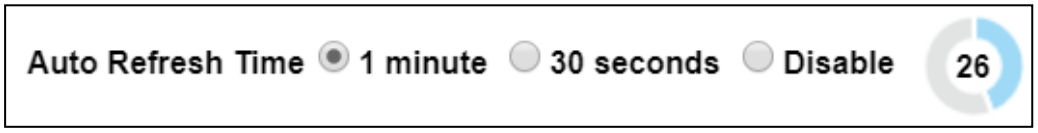
# X-2 Dashboard




The dashboard displays an overview of your AP array:

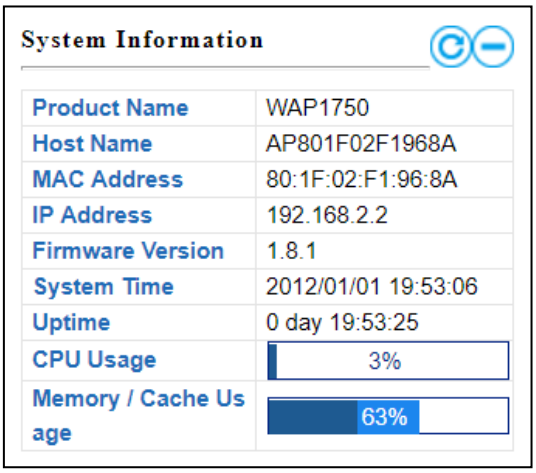



Use the blue icons above to refresh or collapse each panel in the dashboard. Click and drag to move a panel to suit your preference. You can set the dashboard to auto-refresh every 1 minute, 30 seconds or disable auto-refresh:



## X-2-1 System Information

**System Information** displays information about the AP Controller: *Product Name (model), Host Name, MAC Address, IP Address, Firmware Version, System Time and Uptime (time the access point has been on).*

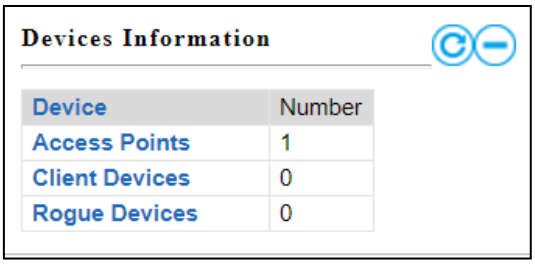


System Information

| | |
|---|---|
| Product Name | WAP1750 |
| Host Name | AP801F02F1968A |
| MAC Address | 80:1F:02:F1:96:8A |
| IP Address | 192.168.2.2 |
| Firmware Version | 1.8.1 |
| System Time | 2012/01/01 19:53:06 |
| Uptime | 0 day 19:53:25 |
| CPU Usage | 3% |
| Memory / Cache Usage | 63% |

## X-2-2 Devices Information

**Devices Information** is a summary of the number of all devices in the local network: *Access Points, Clients Connected, and Rogue (unidentified) Devices.*



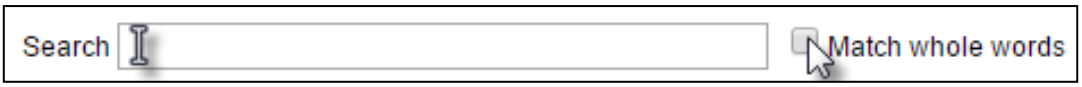
Devices Information

| Device | Number |
|---|---|
| Access Points | 1 |
| Client Devices | 0 |
| Rogue Devices | 0 |

## X-2-3 Managed AP

This page displays information about the Managed APs in the local network: *Index (reference number), MAC Address, Device Name, Model, IP Address, 2.4GHz & 5GHz Wireless Channel Number, No. of Clients connected to each access point, and Status (connected, connecting or disconnected).*


The **search** function can be used to locate a specific Managed AP. Type in the search box and the list will update:




The **Status** icon displays *grey* (disconnected), *yellow* (connecting) or *green* (connected) for each Managed AP.

Each Managed AP has "**Action**" icons with the following functions:


1. **Disallow**
   *Remove the Managed AP from the AP array and disable connectivity.*

2. **Edit**
   *Edit various settings for the Managed AP (refer to* X-5-1 ***Access Point****).*

3. **Blink LED**
   *The Managed AP's LED will flash temporarily to help identify & locate the access point.*

4. **Buzzer**
   *The Managed AP's buzzer will sound temporarily to help identify/locate the access point.*

5. **Network Connectivity**
   *Go to the "Network Connectivity" panel to perform a ping or traceroute.*

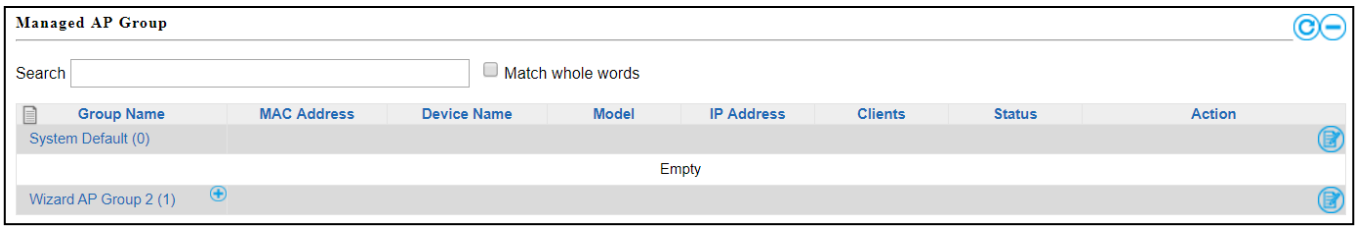
6. **Restart**
   *Restarts the Managed AP.*

| Status Icons | | | |
|---|---|---|---|
| **Icon** | **Color** | **Status** | **Definition** |
| | Grey | Disconnected | Managed AP is disconnected. *Please check the network connection and ensure the Managed AP is in the same IP subnet as the AP Controller.* |
| | Red | Authentication Failed<br><br>Or<br><br>Incompatible NMS Version | System security must be the same for all access points in the AP array. *Please check security settings (refer to* X-5-13-1 ***System Security****).*<br><br>All access points must have the same firmware version. *Please use the AP Controller's firmware upgrade function (refer to* X-5-12 ***Firmware Upgrade****).* |
| | Orange | Configuring or Upgrading | *Please wait while the Managed AP makes configurations or while the firmware is upgrading.* |
| | Yellow | Connecting | *Please wait while Managed AP is connecting.* |
| | Green | Connected | *Managed AP is connected.* |
| | Blue | Waiting for Approval | Managed AP is waiting for approval. *Note: Up to sixteen Managed APs are supported. Additional APs will have this status until an existing Managed AP is removed.* |

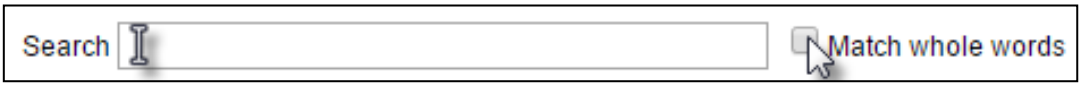
## X-2-4 Managed AP Group

Managed APs can be grouped according to your requirements. **Managed AP Group** displays information about each Managed AP group in the local network: *Group Name, MAC Address, Device Name, Model, IP Address, 2.4GHz & 5GHz Wireless Channel Number, No. of Clients connected to each access point, and Status (connected or disconnected).*

To edit Managed AP Groups go to **NMS Settings → Access Point** (refer to X-5-1 ***Access Point***).




The search function can be used to locate a specific Managed AP Group. Type in the search box and the list will update:




The **Status** icon displays *grey* (disconnected), *yellow* (connecting) or *green* (connected) for each individual Managed AP.

Each Managed AP Group has "**Action**" icons with the following functions:


1. **Disallow**
   *Remove the Managed AP Group from the AP array and disable connectivity.*

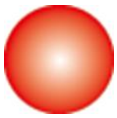
2. **Edit**
   *Edit various settings for the Managed AP Group (refer to* X-5-1 ***Access Point****)*

3. **Blink LED**
   *The LED of all Managed APs in the group will flash temporarily to help identify & locate the access points.*

4. **Buzzer**
   *The buzzer of all Managed APs in the group will sound temporarily to help identify & locate the access points.*

5. **Network Connectivity**
   *Go to the "Network Connectivity" panel to perform a ping or traceroute.*

6. **Restart**
   *Restarts all Managed APs in the group.*

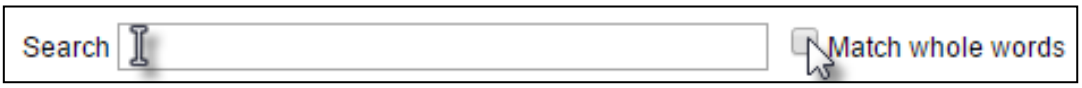
| Status Icons | | | |
|---|---|---|---|
| **Icon** | **Color** | **Status** | **Definition** |
|  | Grey | Disconnected | Managed AP is disconnected. *Please check the network connection and ensure the Managed AP is in the same IP subnet as the AP Controller.* |
|  | Red | Authentication Failed<br><br>Or<br><br>Incompatible NMS Version | System security must be the same for all access points in the AP array. *Please check security settings (refer to* X-5-13-1 ***System Security****).*<br><br>All access points must have the same firmware version. *Please use the AP Controller's firmware upgrade function (refer to* X-5-12 ***Firmware Upgrade****).* |
|  | Orange | Configuring or Upgrading | *Please wait while the Managed AP makes configurations or while the firmware is upgrading.* |
|  | Yellow | Connecting | *Please wait while Managed AP is connecting.* |
|  | Green | Connected | *Managed AP is connected.* |

| | | | |
|---|---|---|---|
| | Blue | Waiting for Approval | Managed AP is waiting for approval. *Note: Up to sixteen Managed APs are supported. Additional APs will have this status until an existing Managed AP is removed.* |

## X-2-5 Active Clients

**Active Clients** displays information about each client in the local network: *Index (reference number), Client MAC Address, Device Name, Model, IP Address, 2.4GHz & 5GHz Wireless Channel Number, No. of Clients connected to each access point, and Status (on or off).*

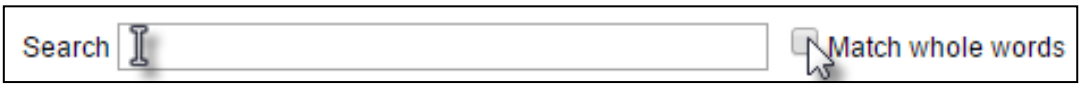

The search function can be used to locate a specific client. Type in the search box and the list will update:



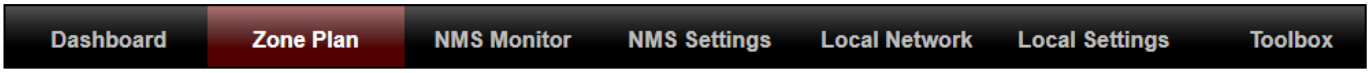

## X-2-6 Active Users

**Active Users** displays information about users currently connected to the AP Array: *User Name, MAC Address, IP Address, SSID, Creator, Create Time , Expire Time, Usage Percentage, Vendor , Platform and Action.*

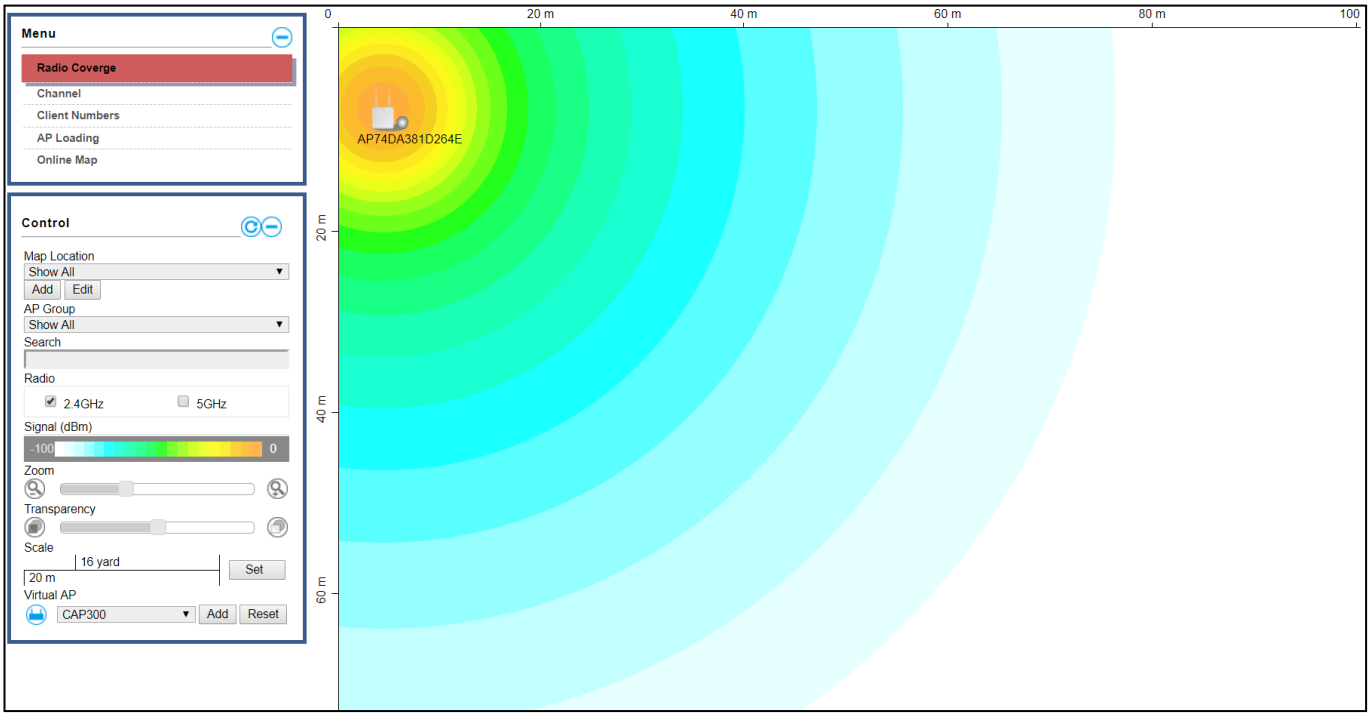

The search function can be used to locate a specific user. Type in the search box and the list will update:



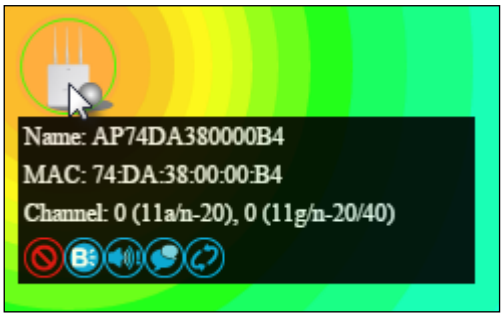
## X-3 Zone Plan




The Zone Plan can be fully customized to match your network environment. You can move the AP icons and select different location images (upload location images in **NMS Settings → Zone Edit**) to create a visual map of your AP array.

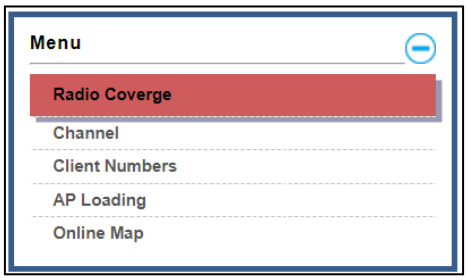



Use the menu on the left side to make adjustments and mouse-over an AP icon in the zone map to see more information. Click an AP icon in the zone map to select it and display action icons:



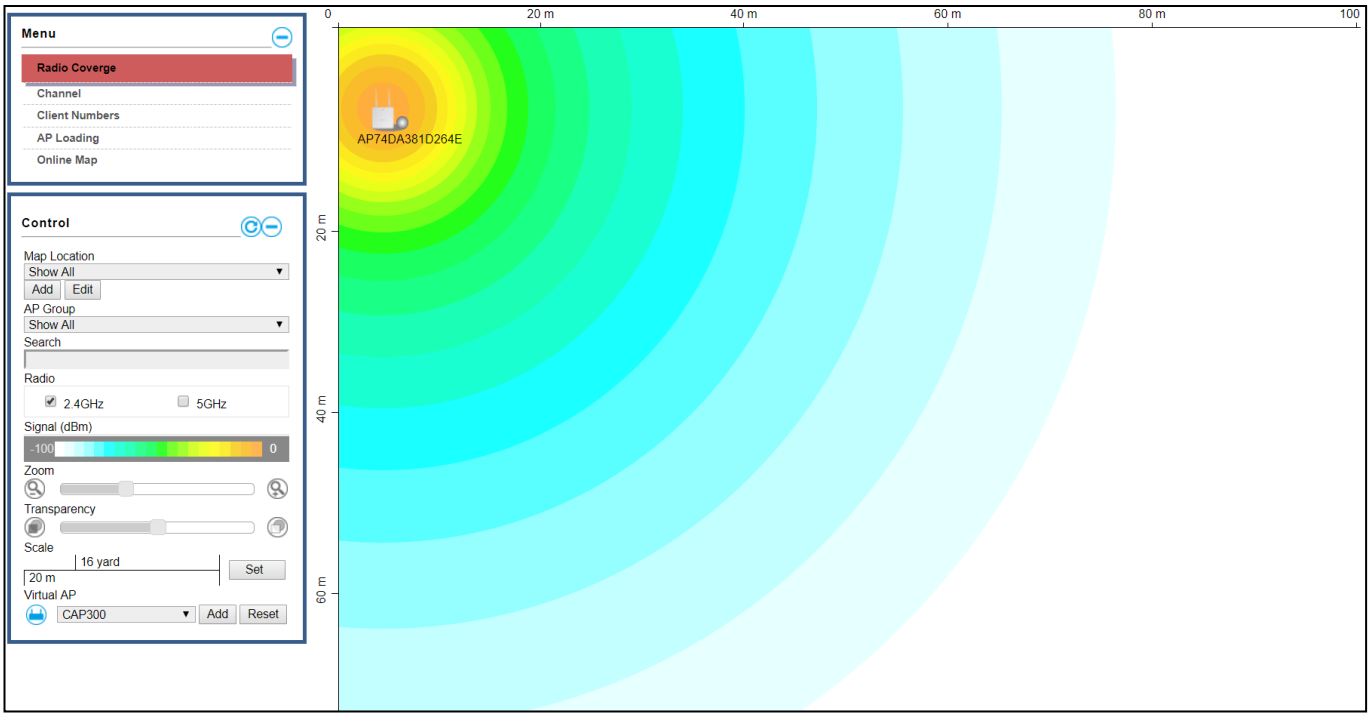
## X-3-1 Menu

Menu allows you to keep track of the access points' information. Select between *Radio Coverage*, *Channel*, *Client Numbers*, *AP Loading*, and *Online Map*. When an option is selected, the zone plan and Control section will change accordingly.



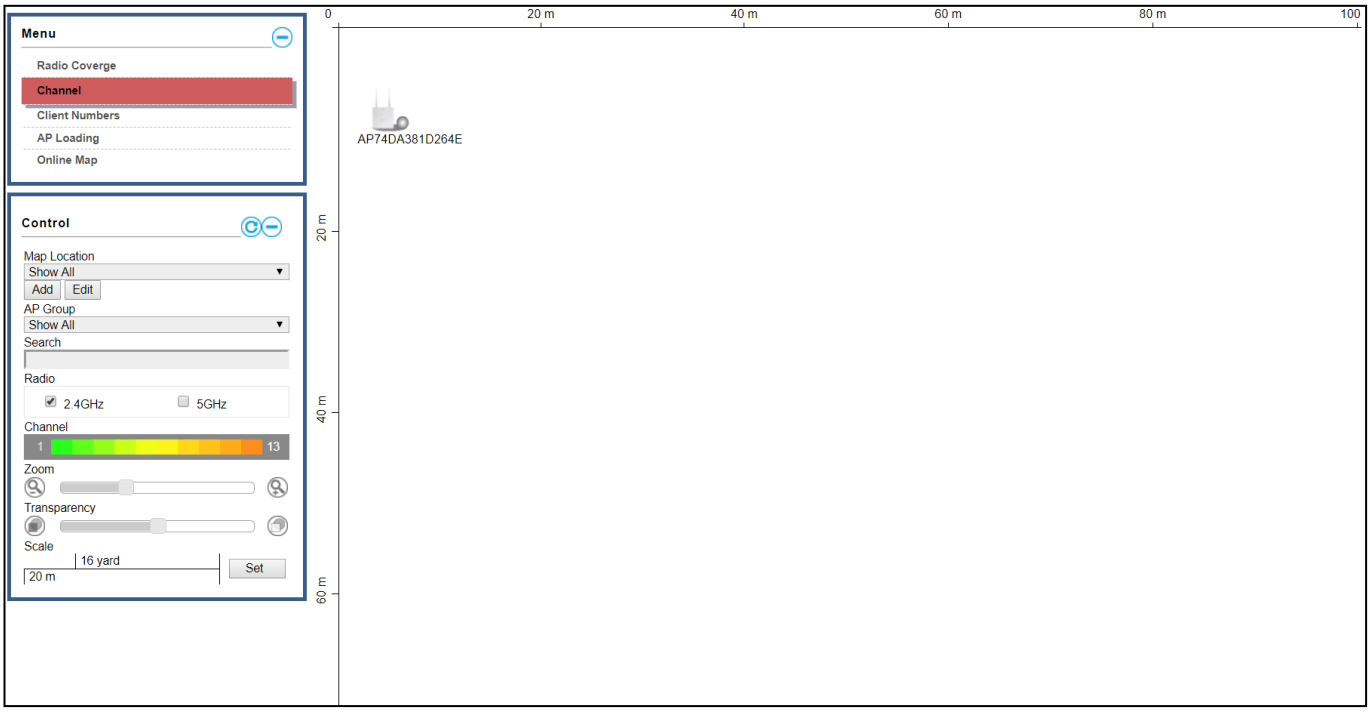

## Radio Coverage

Below is displayed as Radio Coverage is selected:



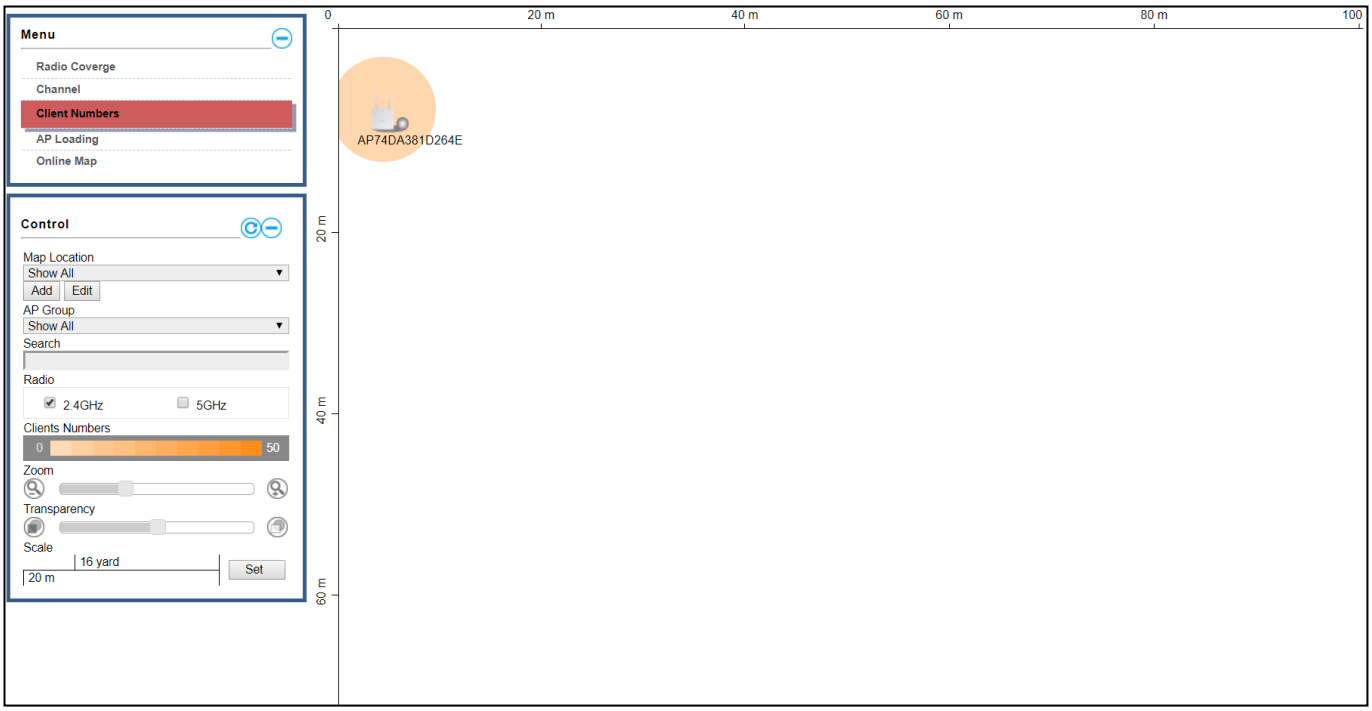
# Channel

Below is displayed as Channel is selected:



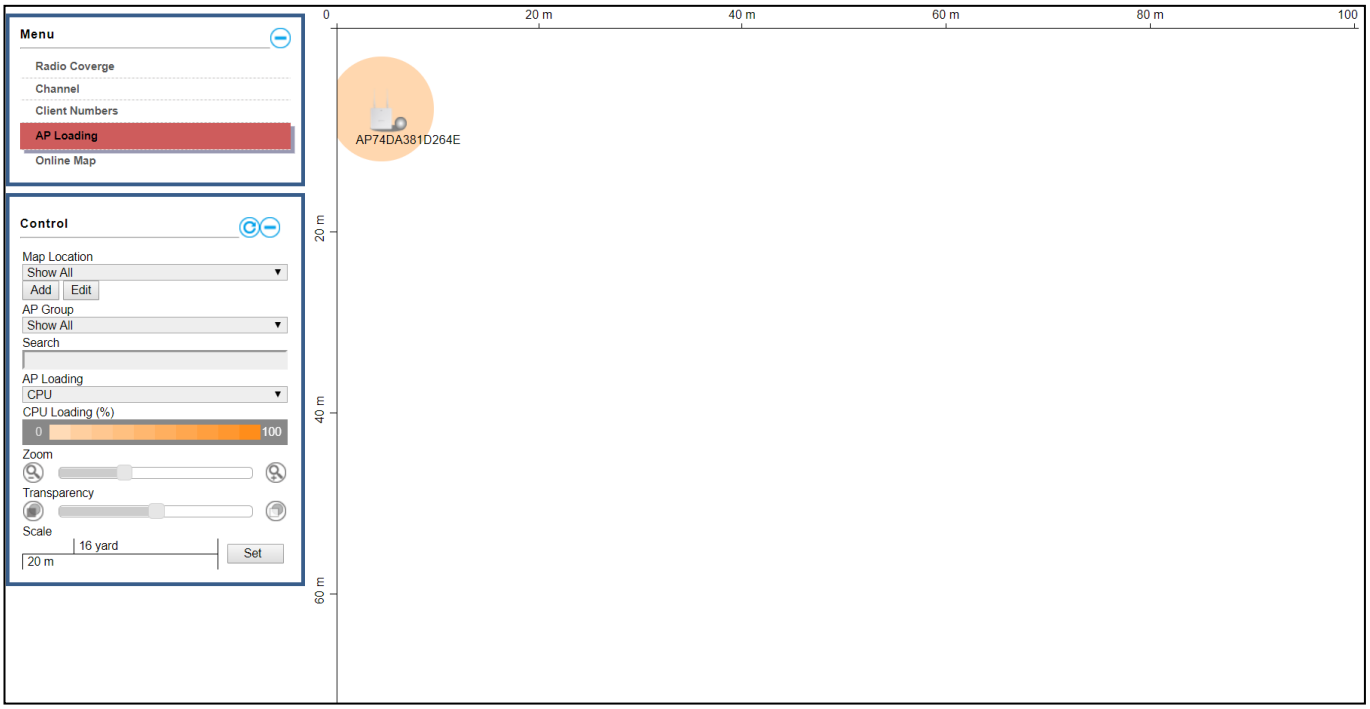

# Client Numbers

Below is displayed as Client Numbers is selected:



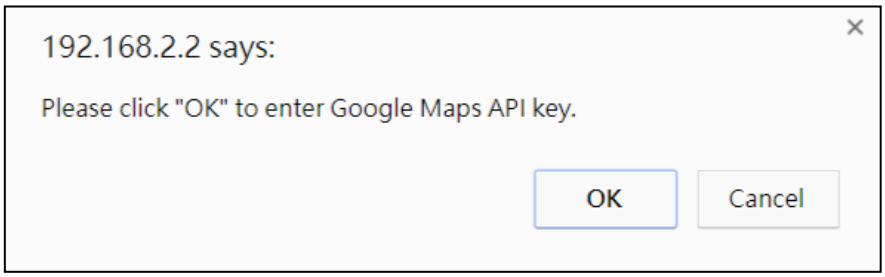
## AP Loading

Below is displayed as AP Loading is selected:

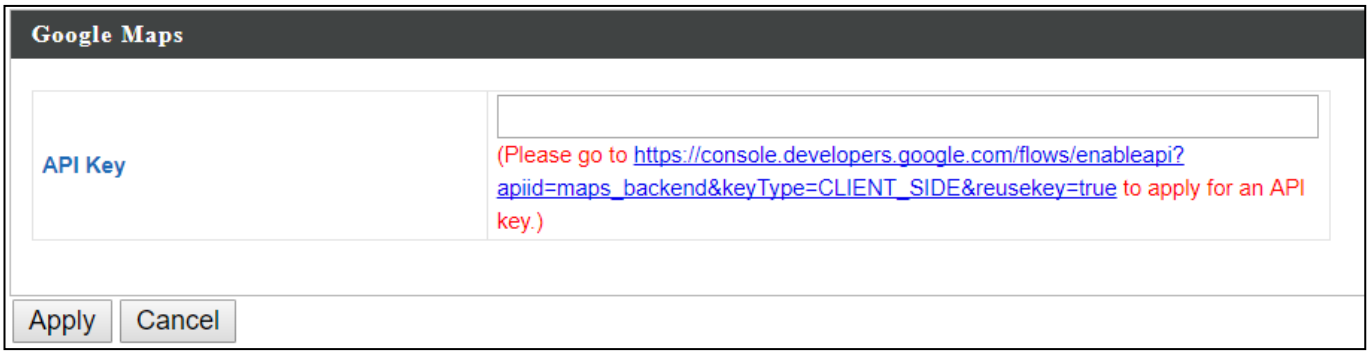



## Online Map

When Online Map is selected, the message below is displayed:




Click “OK” and the interface will bring you to the page shown below to allow API key entry:

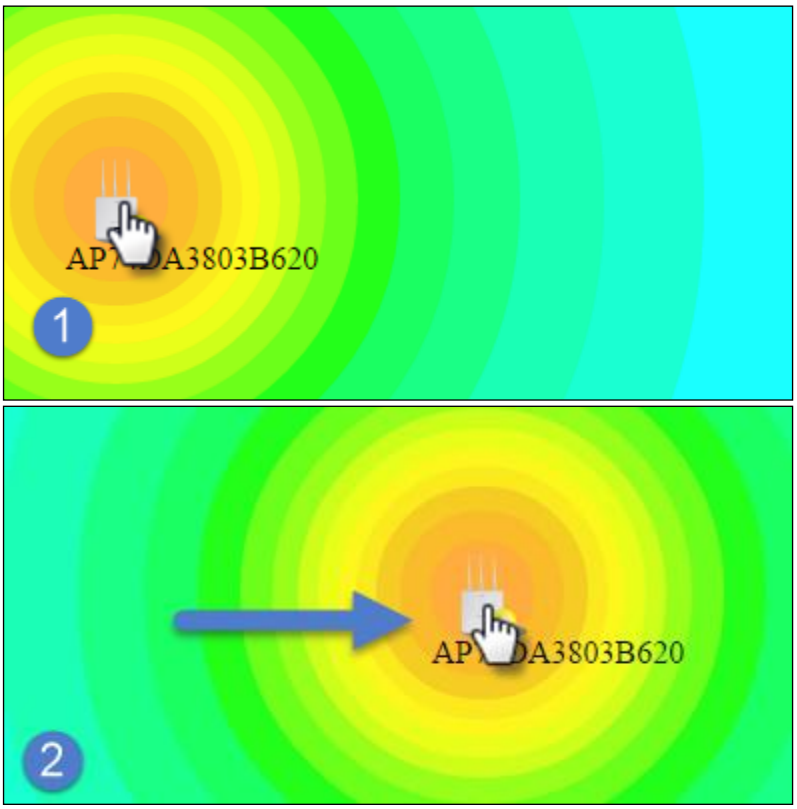


### X-3-2 Control

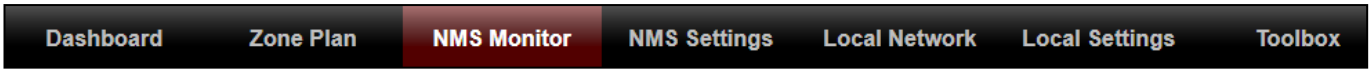
The Control section will change according to the selection in the Menu section.

| | |
|---|---|
| **Map Location** | Select a pre-defined location from the drop down menu. When you upload a location image in **NMS Settings → Zone Edit**, it will be available for selection here. |
| **AP Group** | You can select an AP Group to display in the zone map. Edit AP Groups in **NMS Settings → Access Point.** |
| **Search** | Use the search box to quickly locate an AP. |
| **Radio** | Use the checkboxes to display APs according to 2.4GHz or 5GHz wireless radio frequency. |
| **Signal** | When Radio Coverage is selected in Menu, signal strength is shown in the Control section below the “Radio” option. Signal strength chart displays the signal strength in dBm, and is also shown around each AP in the zone map. |
| **Channel** | When Channel is selected in Menu, channel is shown in the Control section below the “Radio” option. |
| **Client Numbers** | When Client Numbers is selected in Menu, client numbers is shown in the Control section below the “Radio” option. |
| **AP Loading** | When AP Loading is selected in Menu, AP loading is shown in the Control section below the “Search” option. Two options are available: “CPU” or “Traffic (Tx + Rx)”. |
| **CPU Loading** | This shows the CPU loading of the AP. |
| **Traffic (Tx + Rx)** | This shows the Traffic (Tx+Rx) loading. |
| **Zoom** | Use the slider to adjust the zoom level of the map. |
| **Transparency** | Use the slider to adjust the transparency of location images. |
| **Scale** | Zone map scale. |
| **Device/Number** | Displays number and type of devices in the zone map. |

Click and drag an AP icon to move the icon around the zone map. The signal strength for each AP is displayed according to the “Signal” key in the menu on the right side:



## X-4 NMS Monitor

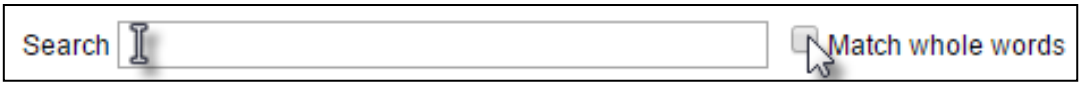



### X-4-1 Access Point

#### X-4-1-1 Managed AP

Displays information about each Managed AP in the local network: *Index (reference number), MAC Address, Device Name, Model, IP Address, 2.4GHz & 5GHz Wireless Channel Number, No. of Clients connected to each access point, and Status (connected, connecting or disconnected).*


The **search** function can be used to locate a specific Managed AP. Type in the search box and the list will update:




The **Status** icon displays the status of each Managed AP.

| Status Icons | | | |
|---|---|---|---|
| **Icon** | **Color** | **Status** | **Definition** |
| | Grey | Disconnected | Managed AP is disconnected. *Please check the network connection and ensure the Managed AP is in the same IP subnet as the AP Controller.* |
| | Red | Authentication Failed | System security must be the same for all access points in the AP array. *Please check security settings (refer to* X-5-13-1 ***System*** |

| | | | |
|---|---|---|---|
| | | Or<br><br>Incompatible NMS Version | ***Security***).<br><br>All access points must have the same firmware version. *Please use the AP Controller's firmware upgrade function (refer to* X-5-12 ***Firmware Upgrade***). |
| | Orange | Configuring or Upgrading | *Please wait while the Managed AP makes configurations or while the firmware is upgrading.* |
| | Yellow | Connecting | *Please wait while Managed AP is connecting.* |
| | Green | Connected | *Managed AP is connected.* |
| | Blue | Waiting for Approval | Managed AP is waiting for approval. *Note: Up to sixteen Managed APs are supported. Additional APs will have this status until an existing Managed AP is removed.* |

Each Managed AP has "**Action**" icons with the following functions:


1. **Disallow**
   *Remove the Managed AP from the AP array and disable connectivity.*

2. **Edit**
   *Edit various settings for the Managed AP (refer to* X-5-1 ***Access Point***).

3. **Blink LED**
   *The Managed AP's LED will flash temporarily to help identify & locate access points.*

4. **Buzzer**
   *The Managed AP's buzzer will sound temporarily to help identify & locate access points.*

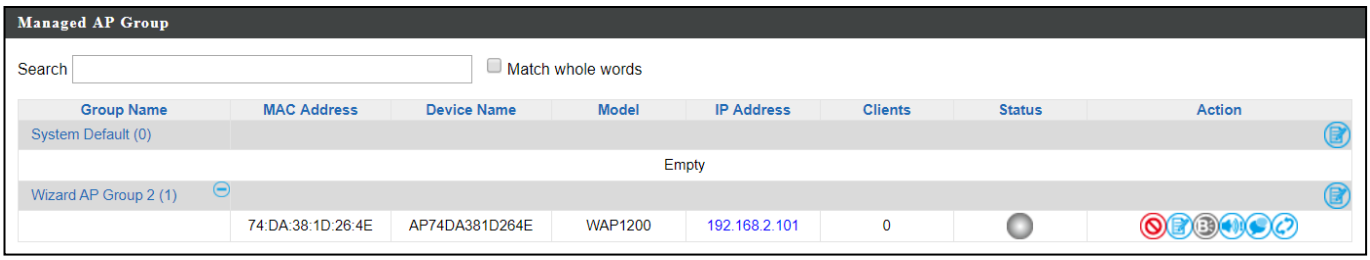
5. **Network Connectivity**
   *Go to the "Network Connectivity" panel to perform a ping or traceroute.*

6. **Restart**
   *Restarts the Managed AP.*

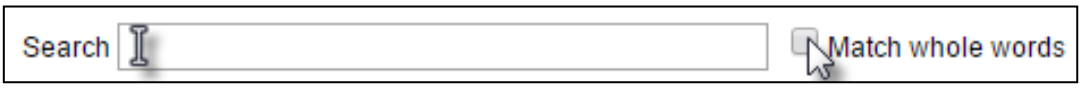
## X-4-1-2 Managed AP Group

Managed APs can be grouped according to your requirements. Managed AP Group displays information about each Managed AP group in the local network: *Group Name, MAC Address, Device Name, Model, IP Address, 2.4GHz & 5GHz Wireless Channel Number, No. of Clients connected to each access point, and Status (connected or disconnected).*

To edit Managed AP Groups go to **NMS Settings → Access Point** (refer to X-5-1 **Access Point**).




The search function can be used to locate a specific Managed AP Group. Type in the search box and the list will update:




The **Status** icon displays the status of each Managed AP.

| Status Icons | | | |
|---|---|---|---|
| **Icon** | **Color** | **Status** | **Definition** |
| | Grey | Disconnected | Managed AP is disconnected. *Please check the network connection and ensure the Managed AP is in the same IP subnet as the AP Controller.* |
| | Red | Authentication Failed<br><br>Or<br><br>Incompatible NMS Version | System security must be the same for all access points in the AP array. *Please check security settings (refer to* X-5-13-1 ***System Security****).*<br><br>All access points must have the same firmware version. *Please use the AP* |

| | | | |
|---|---|---|---|
| | | | *Controller's firmware upgrade function (refer to* X-5-12 ***Firmware Upgrade****).* |
| | Orange | Configuring or Upgrading | *Please wait while the Managed AP makes configurations or while the firmware is upgrading.* |
| | Yellow | Connecting | *Please wait while Managed AP is connecting.* |
| | Green | Connected | *Managed AP is connected.* |
| | Blue | Waiting for Approval | Managed AP is waiting for approval. *Note: Up to sixteen Managed APs are supported. Additional APs will have this status until an existing Managed AP is removed.* |

Each Managed AP has "**Action**" icons with the following functions:


1. **Disallow**
   *Remove the Managed AP Group from the AP array and disable connectivity.*

2. **Edit**
   *Edit various settings for the Managed AP Group (refer to* X-5-1 ***Access Point****)*

3. **Blink LED**
   *The LED of all Managed APs in the group will flash temporarily to help identify & locate the access points.*

4. **Buzzer**
   *The buzzer of all Managed APs in the group will sound temporarily to help identify & locate the access points.*

5. **Network Connectivity**
   *Go to the "Network Connectivity" panel to perform a ping or traceroute.*

6. **Restart**

   *Restarts all Managed APs in the group.*

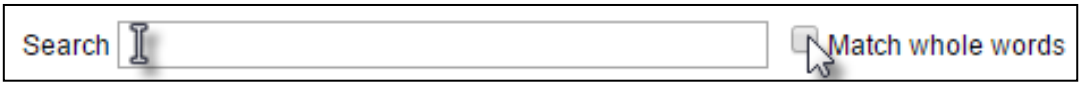
## X-4-2 WLAN

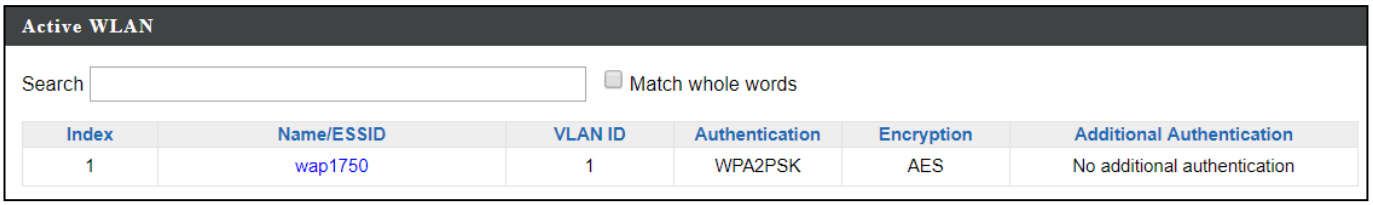
### X-4-2-1 Active WLAN

Displays information about each SSID in the AP Array: *Index (reference number), Name/SSID, VLAN ID, Authentication, Encryption, IP Address and Additional Authentication.*

To configure encryption and VLANs for Managed APs go to **NMS Settings → WLAN**.

The search function can be used to locate a specific SSID. Type in the search box and the list will update:

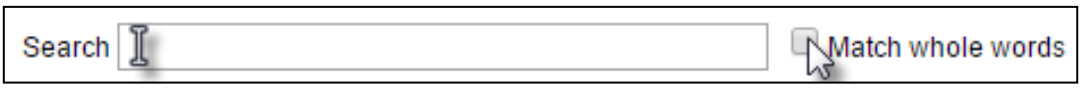


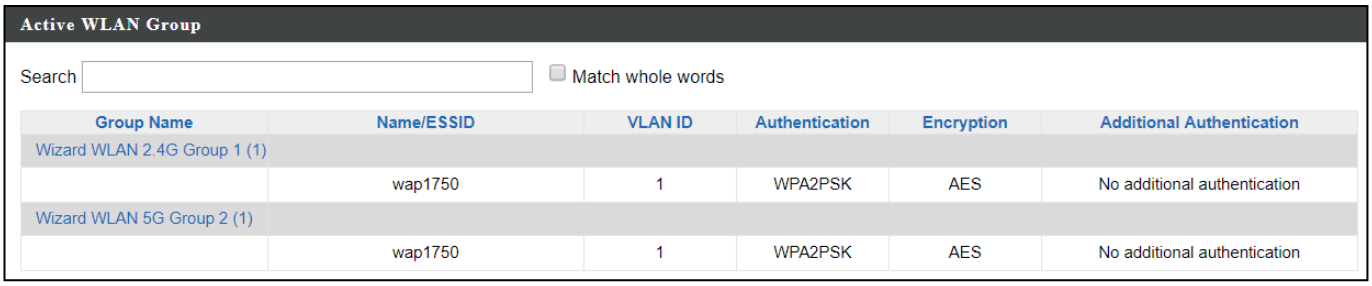



## X-4-2-2 Active WLAN Group

WLAN groups can be created according to your preference. Active WLAN Group displays information about WLAN group: *Group Name, Name/SSID, VLAN ID, Authentication, Encryption, IP Address and Additional Authentication.*

The search function can be used to locate a specific Active WLAN Group. Type in the search box and the list will update:




| Group Name | Name/ESSID | VLAN ID | Authentication | Encryption | Additional Authentication |
|---|---|---|---|---|---|
| Wizard WLAN 2.4G Group 1 (1) | | | | | |
| | wap1750 | 1 | WPA2PSK | AES | No additional authentication |
| Wizard WLAN 5G Group 2 (1) | | | | | |
| | wap1750 | 1 | WPA2PSK | AES | No additional authentication |

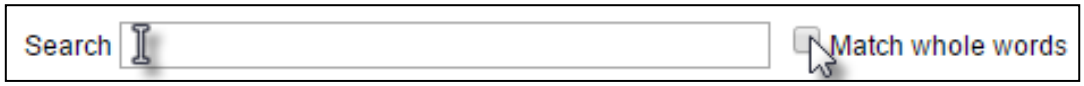
## X-4-3 Clients

### X-4-3-1 Active Clients

Displays information about clients currently connected to the AP Array: *Index (reference number), Client MAC Address, AP MAC Address, WLAN (SSID), Radio (2.4GHz or 5GHz), Signal Strength received by Client, Connected Time, Idle Time, Tx & Rx (Data transmitted and received by Client in KB), and the Vendor of the client device.*

You can set or disable the auto-refresh time for the client list or click “Refresh” to manually refresh.

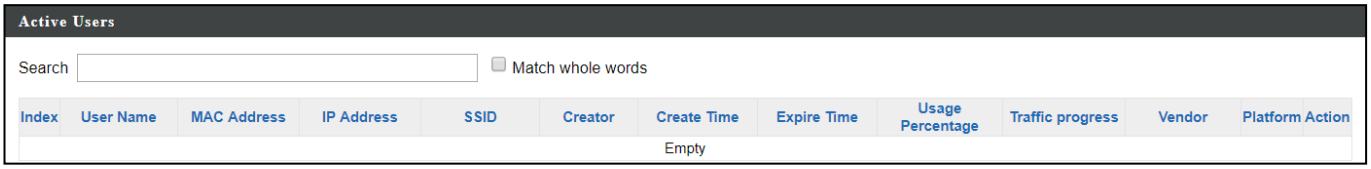
The search function can be used to locate a specific client. Type in the search box and the list will update:




## X-4-4 Users

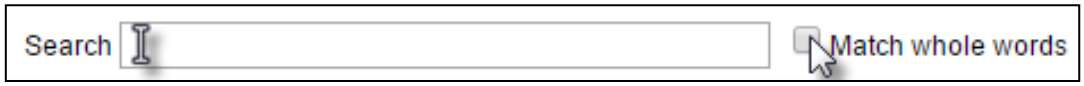
### X-4-4-1 Active Users

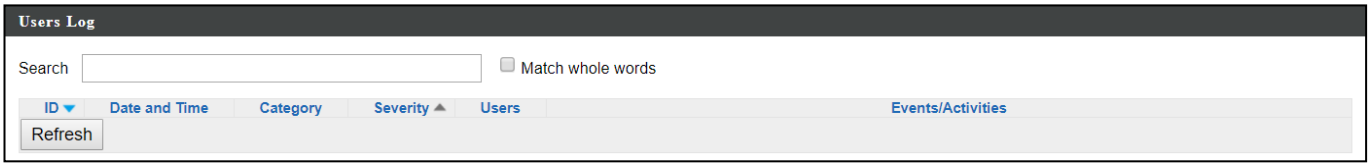
Displays information about users currently connected.



## X-4-4-2 Users Log

Displays the log information about users currently connected.



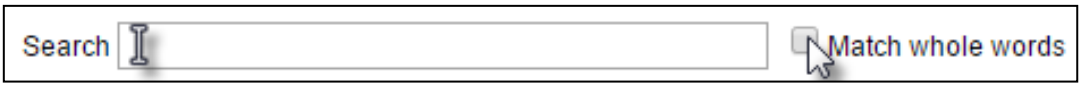
## X-4-5 Rogue Devices

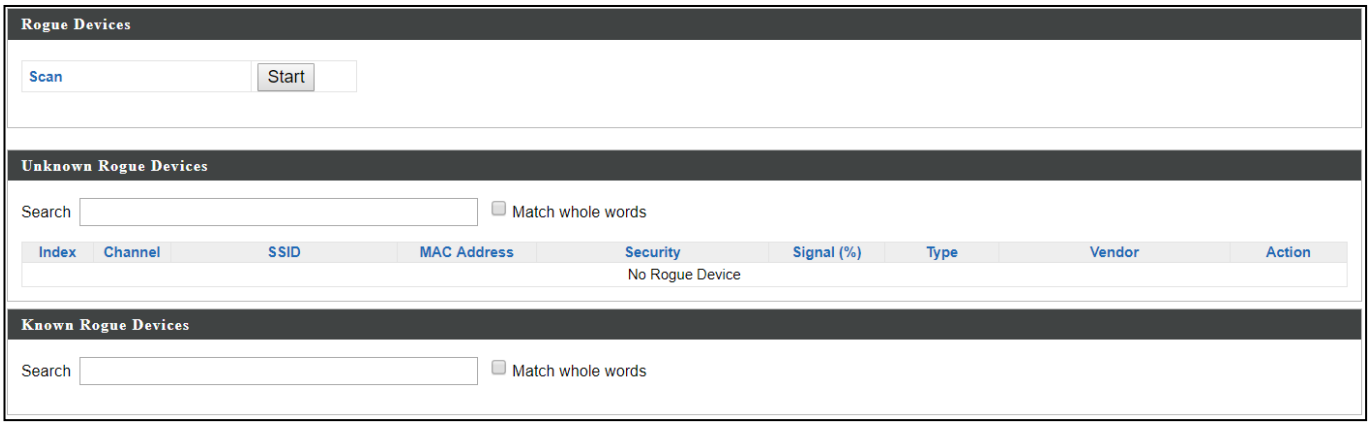
Rogue access point detection can identify any unauthorized access points which may have been installed in the network.

Click “Start” to scan for rogue devices:


Unknown Rogue Devices area displays information about rogue devices discovered during the scan*: Index (reference number), Channel, SSID, MAC Address, Security, Signal Strength, Type, Vendor and Action.*

The search function can be used to locate a known rogue device. Type in the search box and the list will update:

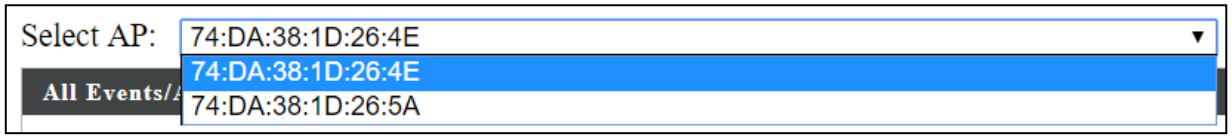


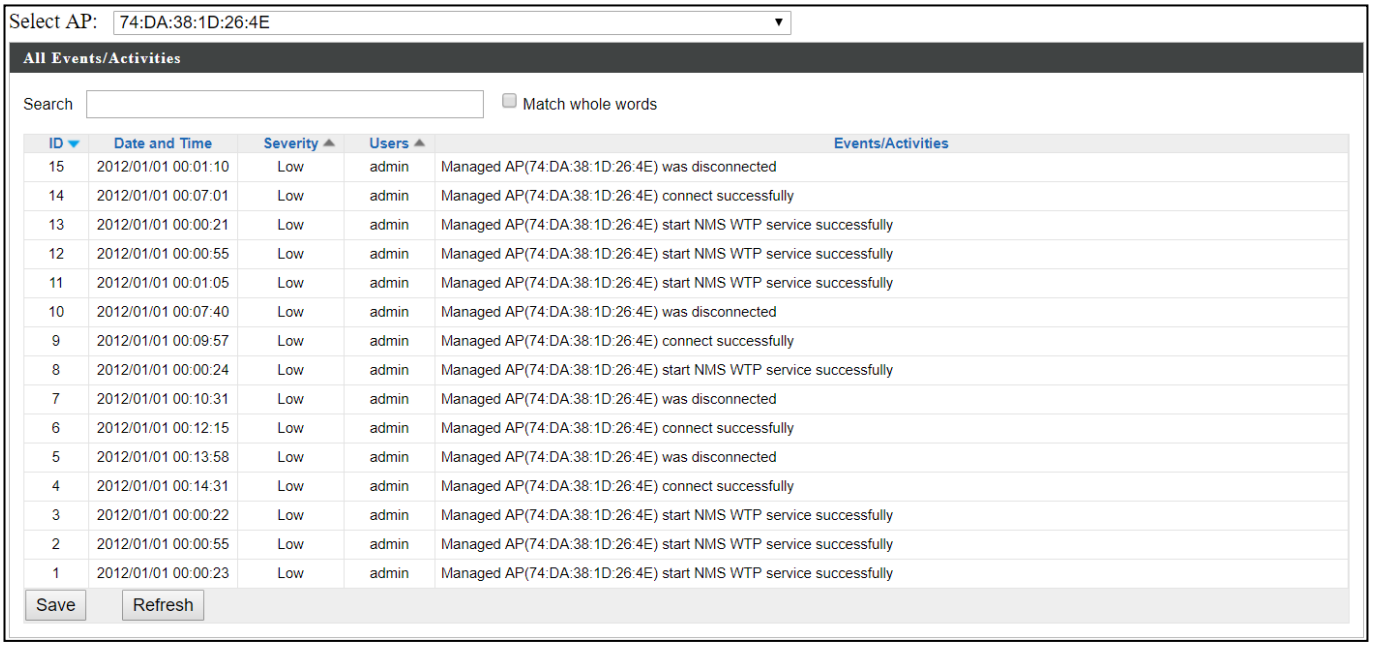



## X-4-6 Information

### X-4-6-1 All Events/Activities

Displays a log of time-stamped events for each access point in the Array – use the drop down menu to select an access point and view the log.



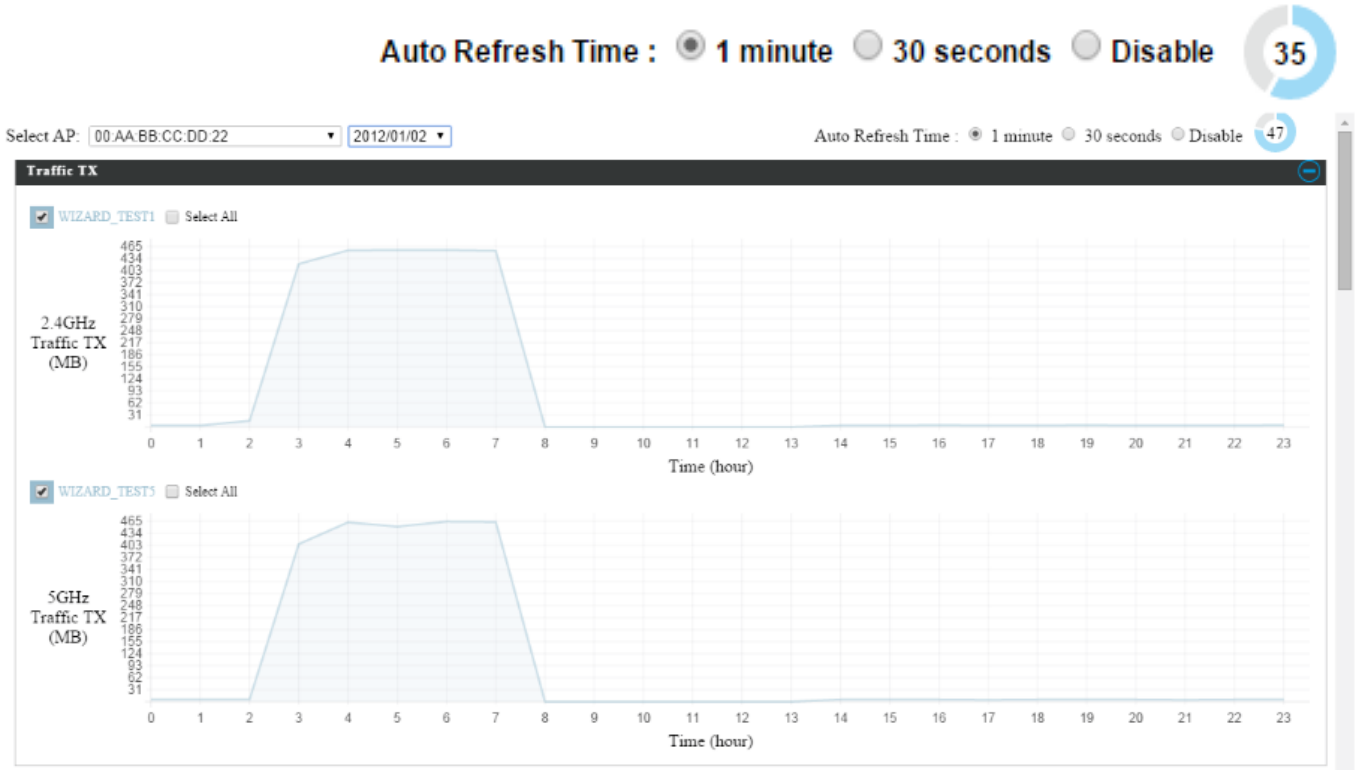

| ID | Date and Time | Severity | Users | Events/Activities |
|---|---|---|---|---|
| 15 | 2012/01/01 00:01:10 | Low | admin | Managed AP(74:DA:38:1D:26:4E) was disconnected |
| 14 | 2012/01/01 00:07:01 | Low | admin | Managed AP(74:DA:38:1D:26:4E) connect successfully |
| 13 | 2012/01/01 00:00:21 | Low | admin | Managed AP(74:DA:38:1D:26:4E) start NMS WTP service successfully |
| 12 | 2012/01/01 00:00:55 | Low | admin | Managed AP(74:DA:38:1D:26:4E) start NMS WTP service successfully |
| 11 | 2012/01/01 00:01:05 | Low | admin | Managed AP(74:DA:38:1D:26:4E) start NMS WTP service successfully |
| 10 | 2012/01/01 00:07:40 | Low | admin | Managed AP(74:DA:38:1D:26:4E) was disconnected |
| 9 | 2012/01/01 00:09:57 | Low | admin | Managed AP(74:DA:38:1D:26:4E) connect successfully |
| 8 | 2012/01/01 00:00:24 | Low | admin | Managed AP(74:DA:38:1D:26:4E) start NMS WTP service successfully |
| 7 | 2012/01/01 00:10:31 | Low | admin | Managed AP(74:DA:38:1D:26:4E) was disconnected |
| 6 | 2012/01/01 00:12:15 | Low | admin | Managed AP(74:DA:38:1D:26:4E) connect successfully |
| 5 | 2012/01/01 00:13:58 | Low | admin | Managed AP(74:DA:38:1D:26:4E) was disconnected |
| 4 | 2012/01/01 00:14:31 | Low | admin | Managed AP(74:DA:38:1D:26:4E) connect successfully |
| 3 | 2012/01/01 00:00:22 | Low | admin | Managed AP(74:DA:38:1D:26:4E) start NMS WTP service successfully |
| 2 | 2012/01/01 00:00:55 | Low | admin | Managed AP(74:DA:38:1D:26:4E) start NMS WTP service successfully |
| 1 | 2012/01/01 00:00:23 | Low | admin | Managed AP(74:DA:38:1D:26:4E) start NMS WTP service successfully |

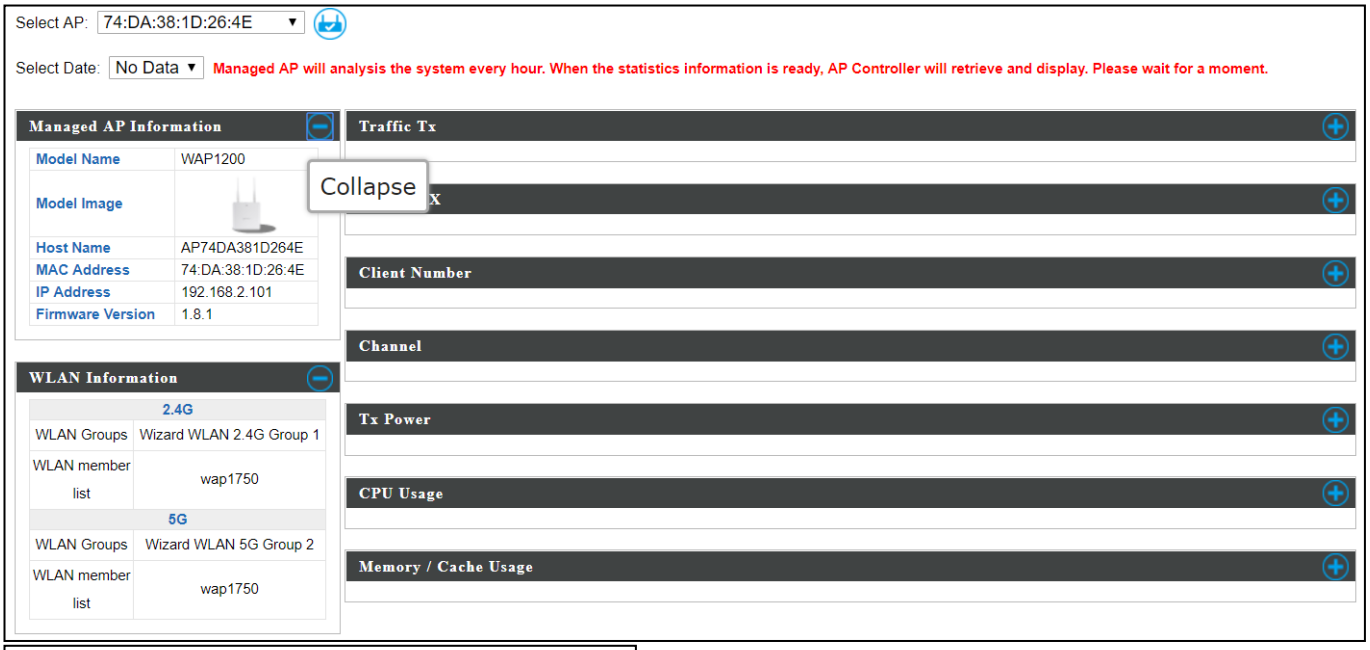
## X-4-6-2 AP Monitoring

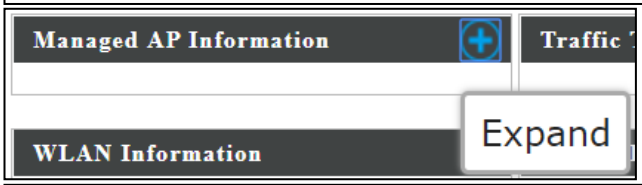
Displays graphical monitoring information about access points in the Array for 2.4GHz & 5GHz: *Traffic Tx (data transmitted in MB), Traffic Rx (data received in MB), No. of Clients, Wireless Channel, Tx Power (wireless radio power), CPU Usage and Memory Usage.*

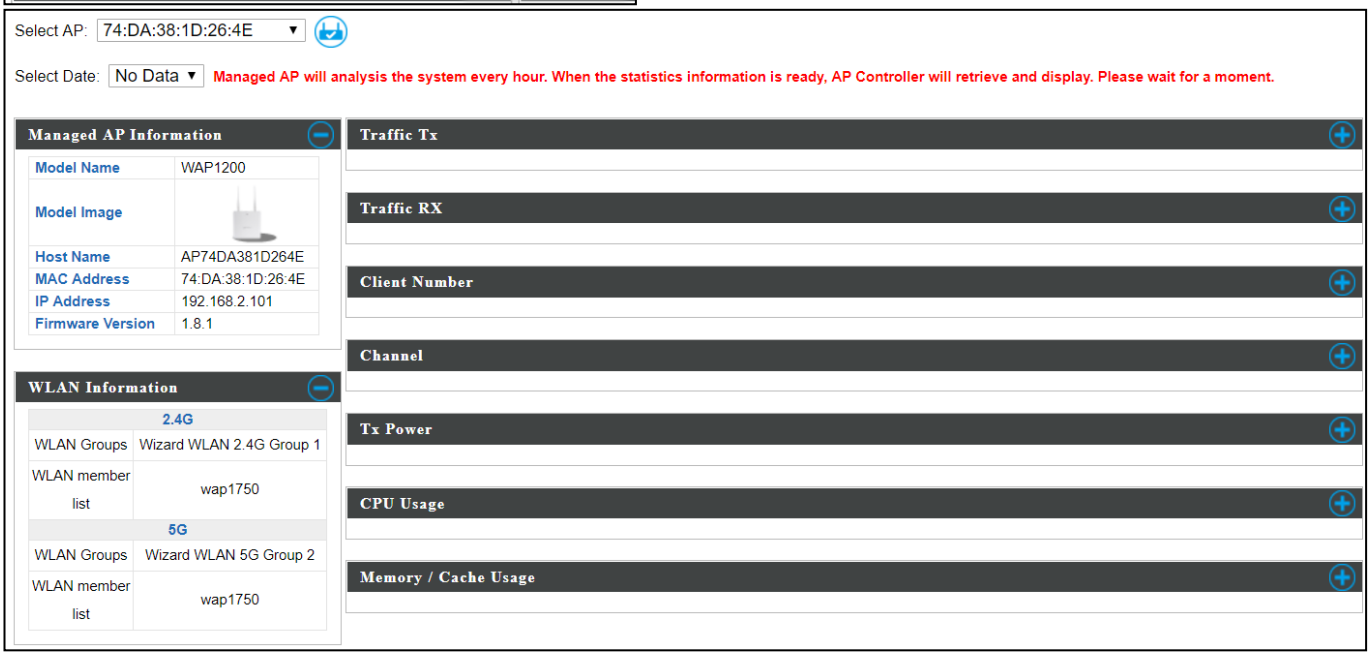
Use the drop down menus to select an access point and date.

You can set or disable the auto-refresh time for the data:



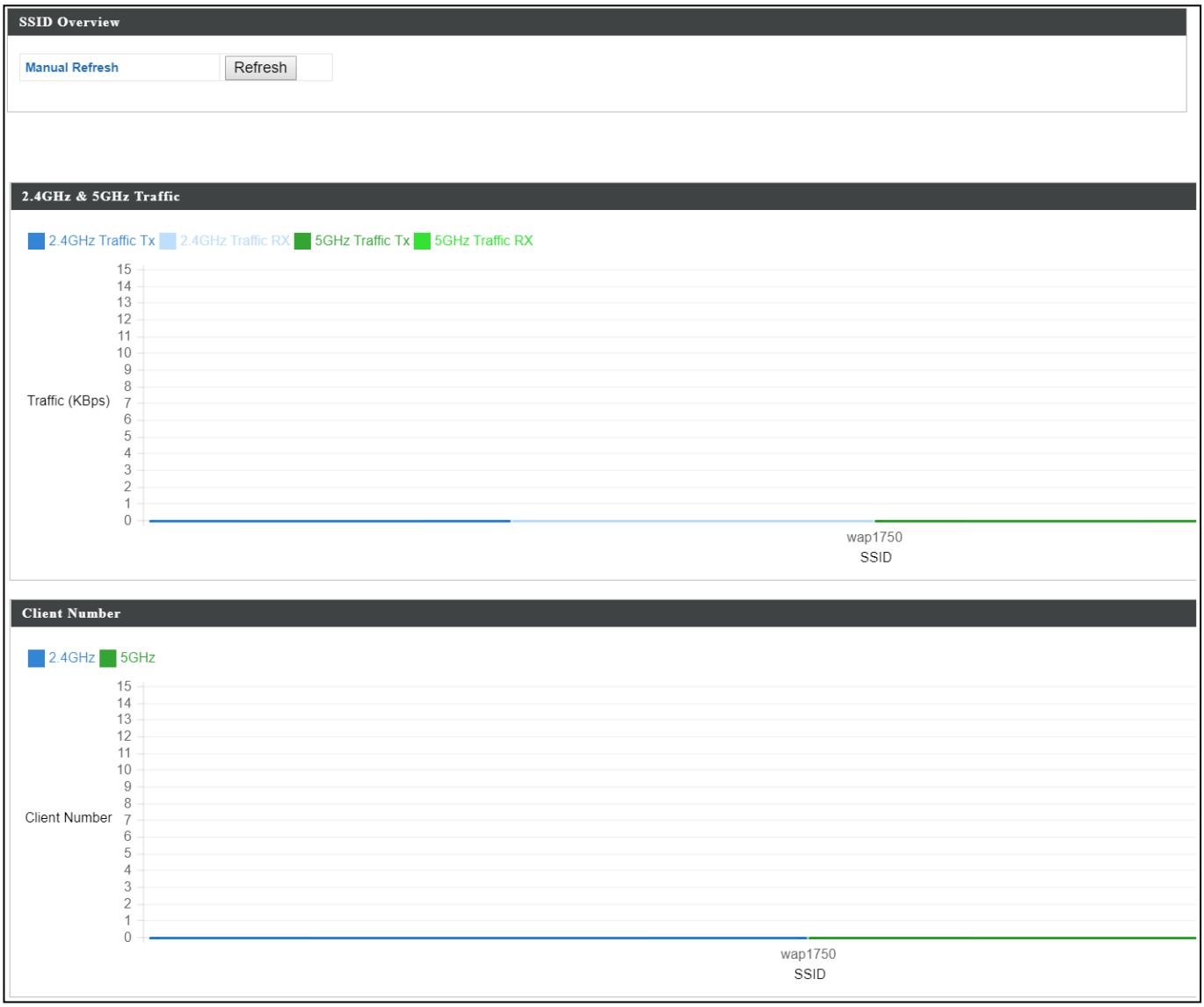

Select AP: 74:DA:38:1D:26:4E
Select Date: No Data
Managed AP will analysis the system every hour. When the statistics information is ready, AP Controller will retrieve and display. Please wait for a moment.
Managed AP Information
Model Name WAP1200
Model Image
Host Name AP74DA381D264E
MAC Address 74:DA:38:1D:26:4E
IP Address 192.168.2.101
Firmware Version 1.8.1
Collapse
WLAN Information
2.4G
WLAN Groups Wizard WLAN 2.4G Group 1
WLAN member list wap1750
5G
WLAN Groups Wizard WLAN 5G Group 2
WLAN member list wap1750
Traffic Tx
Client Number
Channel
Tx Power
CPU Usage
Memory / Cache Usage


Managed AP Information
Traffic
WLAN Information
Expand


Select AP: 74:DA:38:1D:26:4E
Select Date: No Data
Managed AP will analysis the system every hour. When the statistics information is ready, AP Controller will retrieve and display. Please wait for a moment.
Managed AP Information
Model Name WAP1200
Model Image
Host Name AP74DA381D264E
MAC Address 74:DA:38:1D:26:4E
IP Address 192.168.2.101
Firmware Version 1.8.1
WLAN Information
2.4G
WLAN Groups Wizard WLAN 2.4G Group 1
WLAN member list wap1750
5G
WLAN Groups Wizard WLAN 5G Group 2
WLAN member list wap1750
Traffic Tx
Traffic RX
Client Number
Channel
Tx Power
CPU Usage
Memory / Cache Usage

## X-4-6-3 SSID Overview

Displays graphical monitoring information about access points in the Array for 2.4GHz & 5GHz.

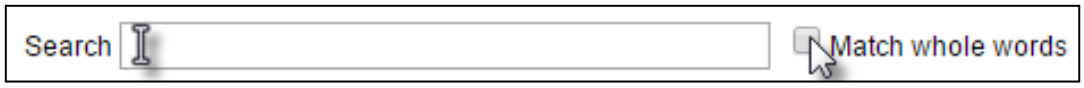


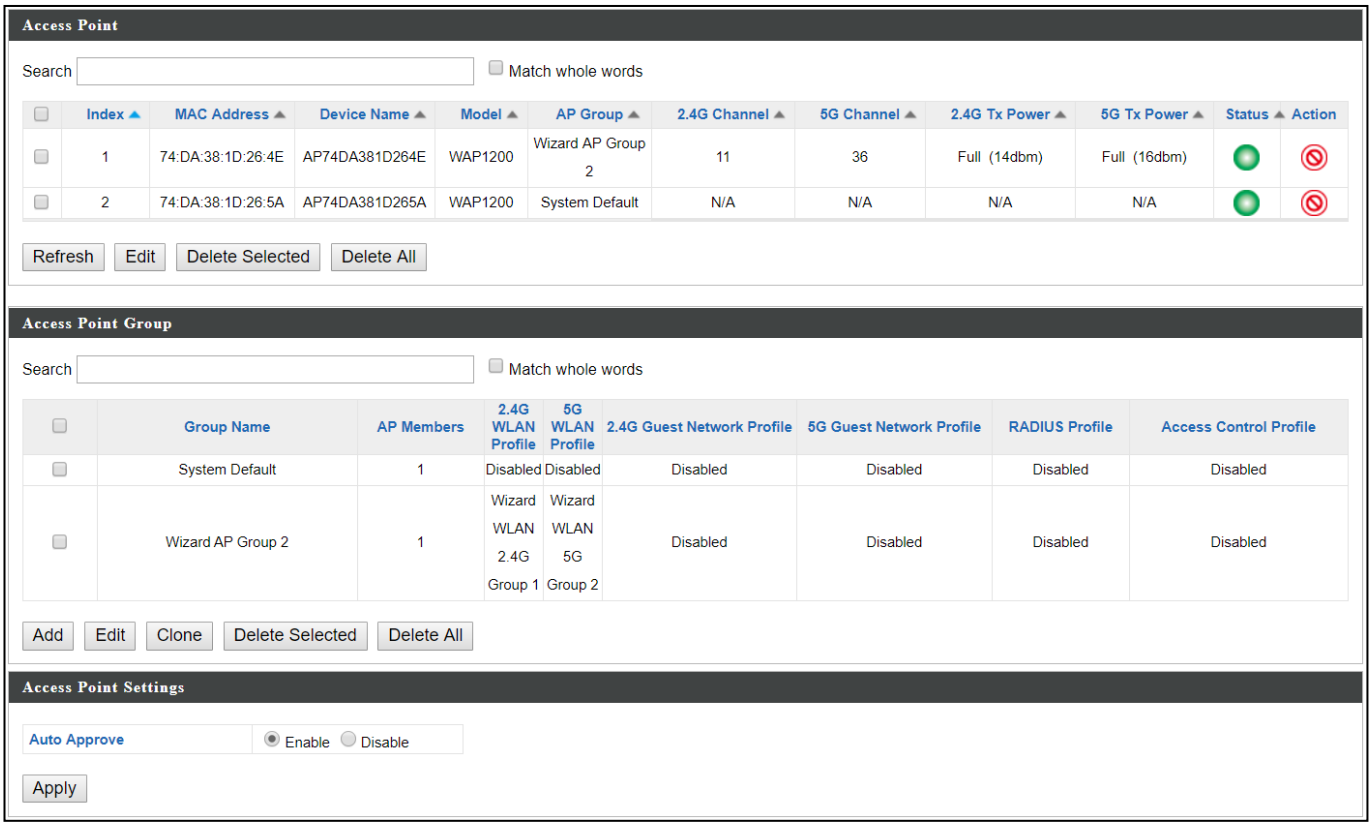
## X-5 NMS Settings


### X-5-1 Access Point

Displays information about each access point and access point group in the local network and allows you to edit access points and edit or add access point groups.

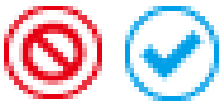
The **search** function can be used to locate an access point or access point group. Type in the search box and the list will update:




The **Status** icon displays *grey* (disconnected), *red* (authentication failed/incompatible NMS version), *orange* (upgrading firmware), *yellow* (connecting), *green* (connected) or *blue* (waiting for approval) for each

individual Managed AP. Refer to the *Status Icons in* X-2-3 ***Managed AP*** for full descriptions.

The **"Action"** icons enable you to allow or disallow an access point: 

Select an access point or access point group using the check-boxes and click "**Edit**" to make configurations, or click "**Add**" to add a new access point group:


The **Access Point Settings** panel can enable or disable Auto Approve for all Managed APs. When enabled, Managed APs will automatically join the AP Array with the Controller AP. When disabled, Managed APs must be manually approved to join the AP Array with the Controller AP.


| Access Point Settings | |
|---|---|
| **Auto Approve** | Enable or disable Auto Approve for all Managed APs. |

To manually approve a Managed AP, use the *allow* "Action" icon for the specified access point:

### X-5-1-1 Edit Access Point

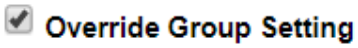
Configure your selected access point on your LAN. You can set the access point as a DHCP client or specify a static IP address for your access point, and assign the access point to an AP group, as well as edit 2.4GHz & 5GHz wireless radio settings. Event log is displayed at the bottom of the page.

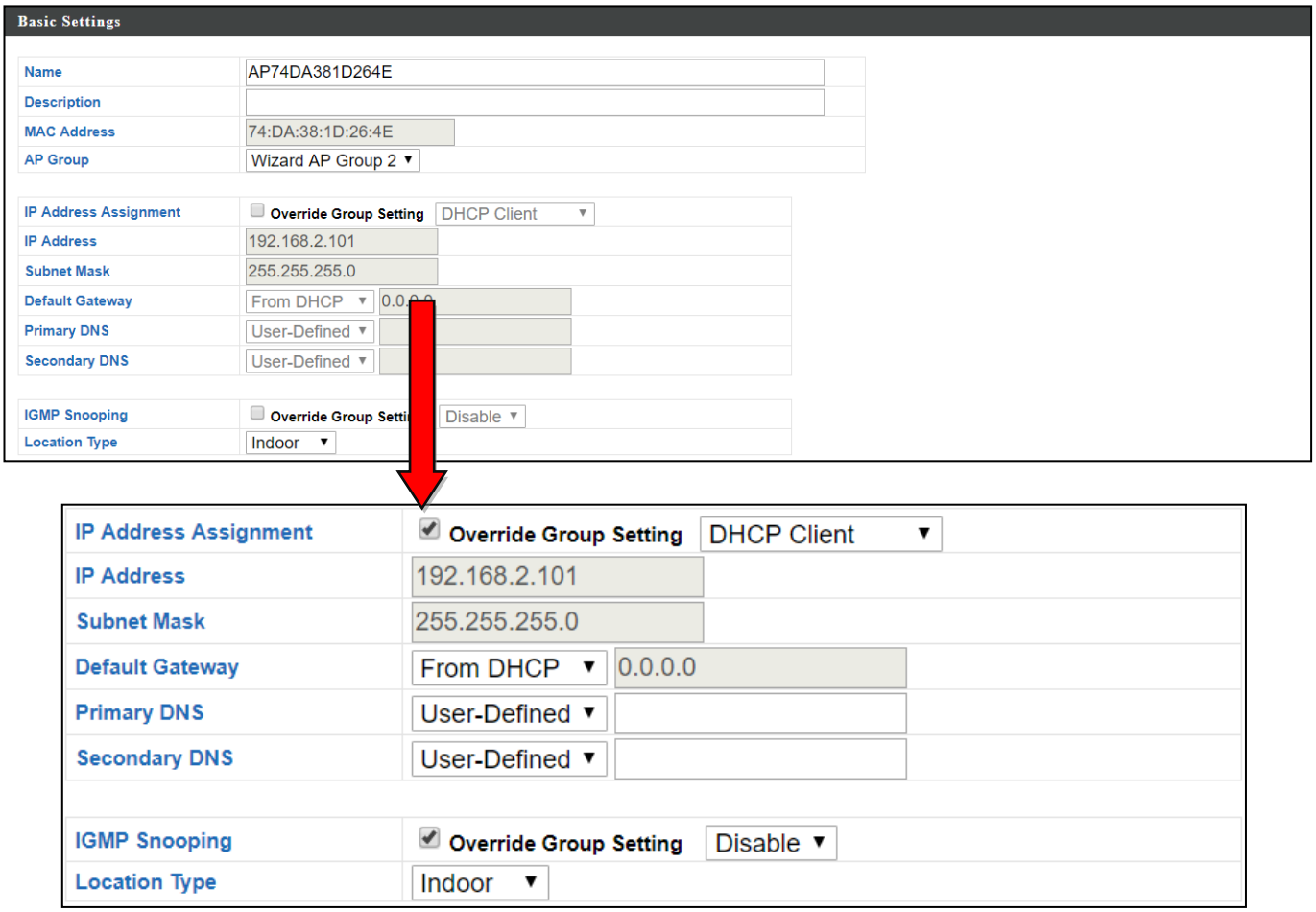
You can also use **Profile Settings** to assign the access point to WLAN, Guest Network, RADIUS and Access Control groups independently from Access Point Group settings.

Click “Save” to save the settings. Click “Cancel” to forfeit the changes. Click “Save and Apply” to save and apply the settings.


## X-5-1-1-1 Edit Basic Settings

When “**Override Group Setting**” is checked, options/fields will turn white to allow adjustments.

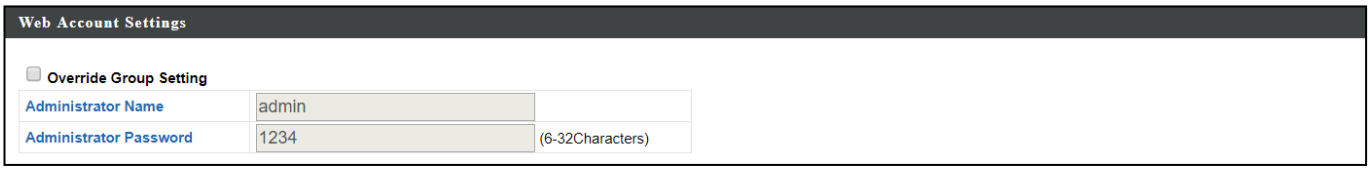


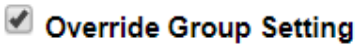

| Basic Settings | |
|---|---|
| **Name** | Edit the access point name. The default name is AP + MAC address. |
| **Description** | Enter a description of the access point for reference e.g. 2nd Floor Office. |
| **MAC Address** | Displays MAC address. |
| **AP Group** | Use the drop down menu to assign the AP to an AP Group. |

| | |
|---|---|
| | You can edit AP Groups from the **NMS Settings → Access Point** page. |
| **IP Address Assignment** | Select "DHCP Client" for your access point to be assigned a dynamic IP address from your router's DHCP server, or select "Static IP" to manually specify a static/fixed IP address for your access point (below). Check the box "Override Group Setting" if the AP is a member of an AP Group and you wish to use a different setting than the AP Group setting. |
| **IP Address** | Specify the IP address here. This IP address will be assigned to your access point and will replace the default IP address. |
| **Subnet Mask** | Specify a subnet mask. The default value is 255.255.255.0 |
| **Default Gateway** | For DHCP users, select "From DHCP" to get default gateway from your DHCP server or "User-Defined" to enter a gateway manually. For static IP users, the default value is blank. |
| **Primary DNS** | DHCP users can select "From DHCP" to get primary DNS server's IP address from DHCP or "User-Defined" to manually enter a value. For static IP users, the default value is blank. |
| **Secondary DNS** | DHCP users can select "From DHCP" to get secondary DNS server's IP address from DHCP or "User-Defined" to manually enter a value. For static IP users, the default value is blank. |
| **IGMP Snooping** | Enable / Disable the IGMP Snooping function.<br>IGMP snooping is the process of listening to Internet Group Management Protocol (IGMP) network traffic. |
| **Location Type** | Select the location of the AP (indoor or outdoor). |

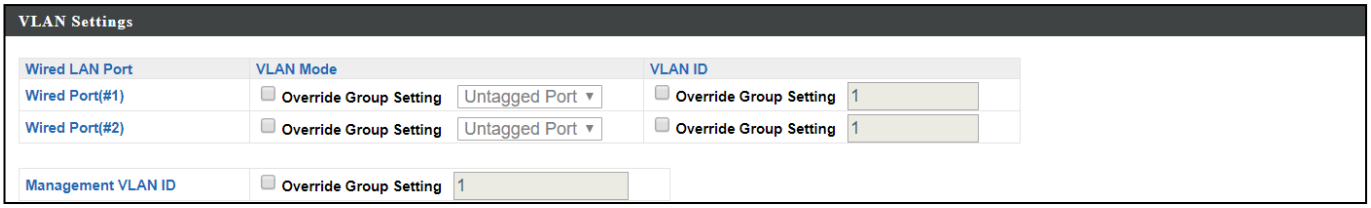
### X-5-1-1-2 Edit Web Account Settings



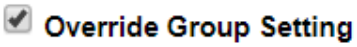

When "**Override Group Setting**" is checked, options/fields will turn white to allow adjustments.



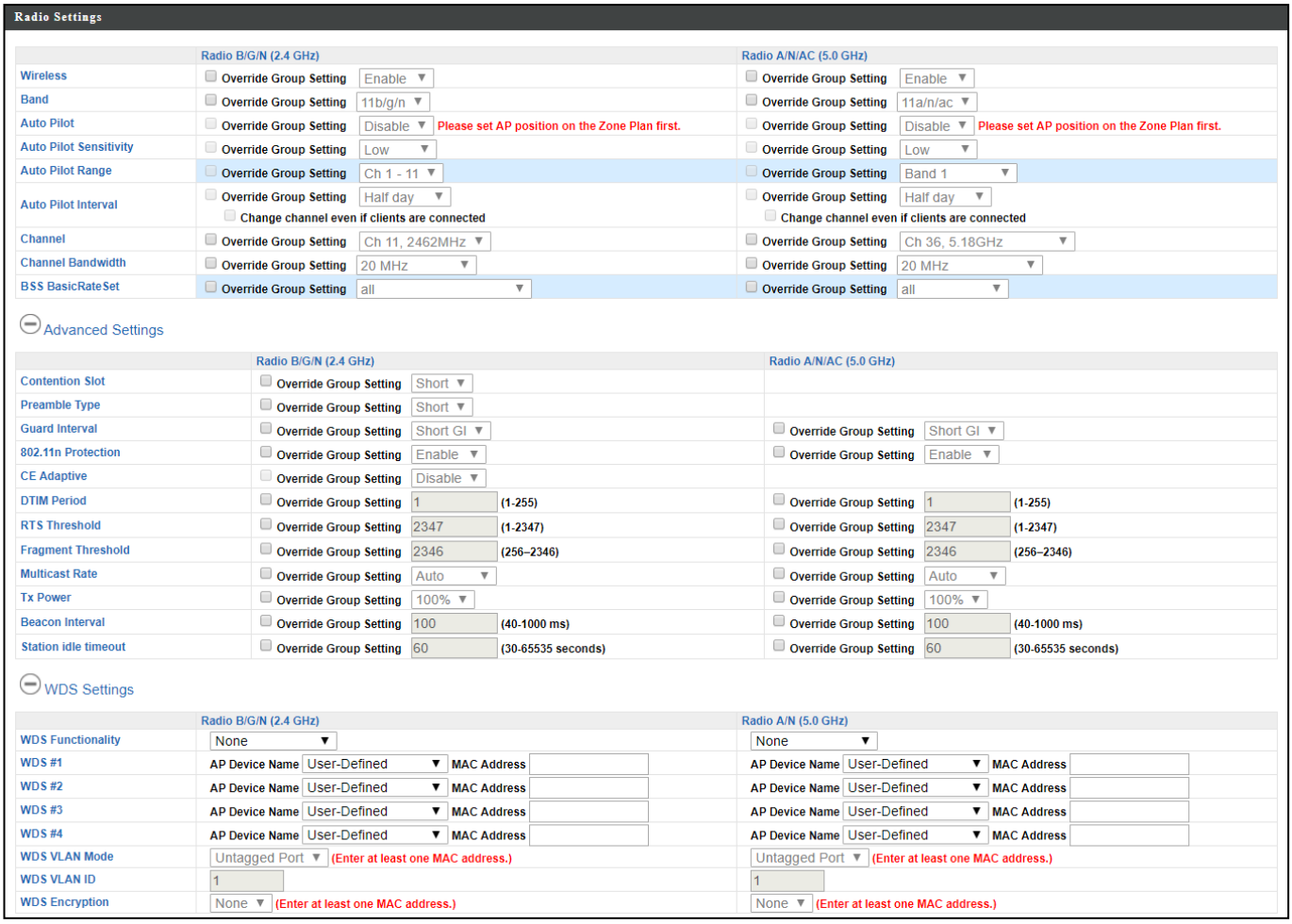
## X-5-1-1-3 Edit VLAN Settings




When "**Override Group Setting**" is checked, options/fields will turn white to allow adjustments.



## X-5-1-1-4 Edit Radio Settings




| Radio Settings | |
|---|---|
| **Wireless** | Enable or disable the access point's 2.4GHz or 5GHz wireless radio. When disabled, no SSIDs on that frequency will be active. |
| **Band** | Select the wireless standard used for the access point. Combinations of 802.11b, 802.11g, 802.11n & 802.11ac can be selected. |
| **Auto Pilot** | Enable/disable auto channel selection. Auto channel selection will automatically set the wireless channel for the access point's 2.4GHz or 5GHz frequency based on availability and potential interference. When disabled, select a channel manually. |
| **Auto Pilot Sensitivity** | Select sensitivity of Auto Pilot. |
| **Auto Pilot** | Select a range from which the auto channel setting (above) |

| | |
|---|---|
| **Range** | will choose a channel. |
| **Auto Pilot Interval** | Specify a frequency for how often the auto channel setting will check/reassign the wireless channel. Check/uncheck the "Change channel even if clients are connected" box according to your preference. |
| **Channel** | When Auto Pilot is disabled, select a channel (1-11) manually. |
| **Channel Bandwidth** | Set the channel bandwidth or use Auto (automatically select based on interference level). |
| **BSS BasicRateSet** | Set a Basic Service Set (BSS) rate: this is a series of rates to control communication frames for wireless clients. |

These settings are for experienced users only. Please do not change any of the values on this page unless you are already familiar with these functions.

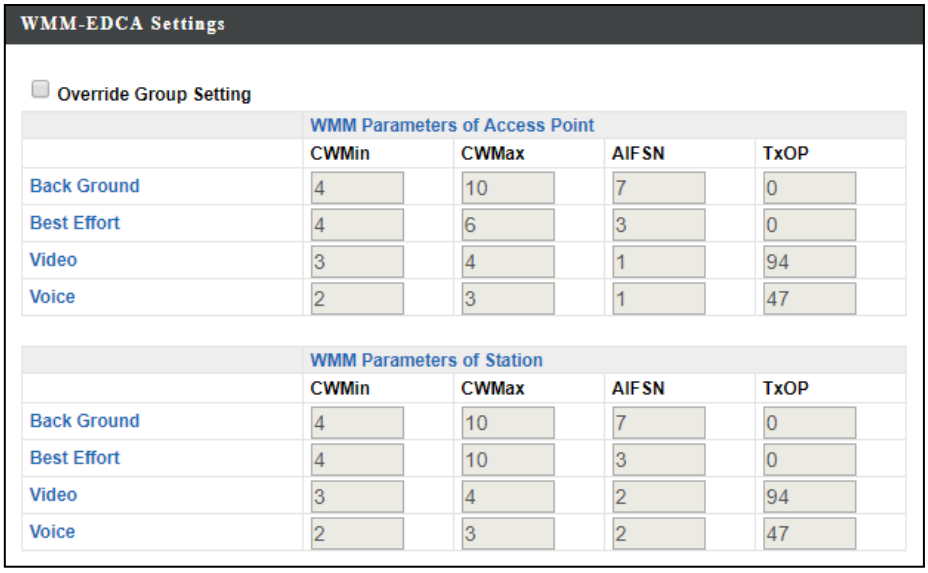
***Changing these settings can adversely affect the performance of your access point.***

| Advanced Settings | |
|---|---|
| **Contention Slot** | Select "Short" or "Long" – this value is used for contention windows in WMM (see X-6-7 ***WMM***). |
| **Preamble Type** | Set the wireless radio preamble type. The preamble type in 802.11 based wireless communication defines the length of the CRC (Cyclic Redundancy Check) block for communication between the access point and roaming wireless adapters. The default value is "Short Preamble". |
| **Guard Interval** | Set the guard interval. A shorter interval can improve performance. |
| **802.11n Protection** | Enable/disable 802.11n protection, which increases reliability but reduces bandwidth (clients will send Request to Send (RTS) to access point, and access point will broadcast Clear to Send (CTS), before a packet is sent from client.) |
| **CE Adaptive** | The measurement procedure follows clause 5.3.11.2.2 of the ETSI EN 300 328 V1.8.1 |
| **DTIM Period** | Set the DTIM (delivery traffic indication message) period value of the wireless radio. The default value is 1. |
| **RTS Threshold** | Set the RTS threshold of the wireless radio. The default value is 2347. |

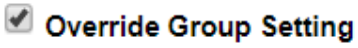
| | |
|---|---|
| **Fragment Threshold** | Set the fragment threshold of the wireless radio. The default value is 2346. |
| **Multicast Rate** | Set the transfer rate for multicast packets or use the “Auto” setting. |
| **Tx Power** | Set the power output of the wireless radio. You may not require 100% output power. Setting a lower power output can enhance security since potentially malicious/unknown users in distant areas will not be able to access your signal. |
| **Beacon Interval** | Set the beacon interval of the wireless radio. The default value is 100. |
| **Station idle timeout** | Set the interval for keepalive messages from the access point to a wireless client to verify if the station is still alive/active. |

| WDS Settings | |
|---|---|
| **WDS Functionality** | A wireless distribution system (WDS) is a system enabling the wireless interconnection of access points in an IEEE 802.11 network. It allows a wireless network to be expanded using multiple access points without the traditional requirement for a wired backbone to link them. |
| **AP Device Name** | Set AP Device Name. |
| **MAC Address** | Set MAC Address of AP. |
| **WDS VLAN Mode** | Enable / Disable VLAN function. |
| **WDS VLAN ID** | Set VLAN ID of WDS. |
| **WDS Encryption** | Set WDS Encryption. |

## X-5-1-1-5 Edit WMM-EDCA Settings

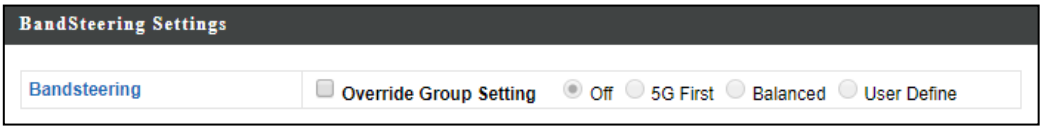



When "**Override Group Setting**" is checked, options/fields will turn white to allow adjustments.

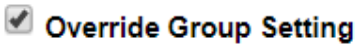



| WMM-EDCA Settings: | |
|---|---|
| **Back Ground** | Access Category (AC) is Back Ground |
| **Best Effort** | Access Category (AC) is Best Effort |
| **Video** | Access Category (AC) is video |
| **Voice** | Access Category (AC) is voice |

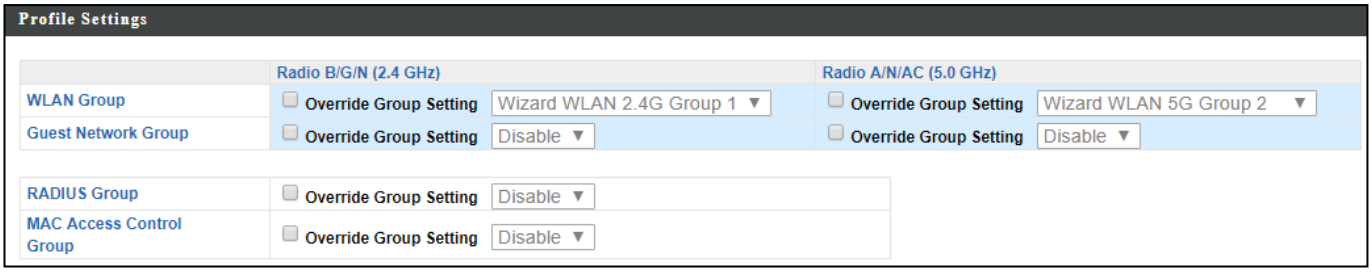
## X-5-1-1-6 Edit BandSteering Settings




When "**Override Group Setting**" is checked, options/fields will turn white to allow adjustments.



## X-5-1-1-7 Edit Profile Settings




When "**Override Group Setting**" is checked, options/fields will turn white to allow adjustments.


| Profile Settings | |
|---|---|
| **WLAN Group** | Assign the access point's 2.4GHz or 5GHz SSID(s) to a WLAN Group. You can edit WLAN groups in **NMS Settings → WLAN**. |
| **Guest Network Group** | Assign the access point's 2.4GHz or 5GHz SSID(s) to a Guest Network Group. You can edit Guest Network groups in **NMS Settings → Guest Network**. |
| **RADIUS Group** | Assign the access point's 2.4GHz SSID(s) to a RADIUS group. You can edit RADIUS groups in **NMS Settings → RADIUS**. |
| **MAC Access Control Group** | Assign the access point's 2.4GHz SSID(s) to a RADIUS group. You can edit RADIUS groups in **NMS Settings → Access Control** |

## X-5-1-1-8 Events

Press “Refresh” to refresh the event log
Press “Save” to save the event log as .log file.

**Events**

Search Match whole words

| ID | Date and Time | Severity | Users | Events/Activities |
|---|---|---|---|---|
| 15 | 2012/01/01 00:01:10 | Low | admin | Managed AP(74:DA:38:1D:26:4E) was disconnected |
| 14 | 2012/01/01 00:07:01 | Low | admin | Managed AP(74:DA:38:1D:26:4E) connect successfully |
| 13 | 2012/01/01 00:00:21 | Low | admin | Managed AP(74:DA:38:1D:26:4E) start NMS WTP service successfully |
| 12 | 2012/01/01 00:00:55 | Low | admin | Managed AP(74:DA:38:1D:26:4E) start NMS WTP service successfully |
| 11 | 2012/01/01 00:01:05 | Low | admin | Managed AP(74:DA:38:1D:26:4E) start NMS WTP service successfully |
| 10 | 2012/01/01 00:07:40 | Low | admin | Managed AP(74:DA:38:1D:26:4E) was disconnected |
| 9 | 2012/01/01 00:09:57 | Low | admin | Managed AP(74:DA:38:1D:26:4E) connect successfully |
| 8 | 2012/01/01 00:00:24 | Low | admin | Managed AP(74:DA:38:1D:26:4E) start NMS WTP service successfully |
| 7 | 2012/01/01 00:10:31 | Low | admin | Managed AP(74:DA:38:1D:26:4E) was disconnected |
| 6 | 2012/01/01 00:12:15 | Low | admin | Managed AP(74:DA:38:1D:26:4E) connect successfully |
| 5 | 2012/01/01 00:13:58 | Low | admin | Managed AP(74:DA:38:1D:26:4E) was disconnected |
| 4 | 2012/01/01 00:14:31 | Low | admin | Managed AP(74:DA:38:1D:26:4E) connect successfully |
| 3 | 2012/01/01 00:00:22 | Low | admin | Managed AP(74:DA:38:1D:26:4E) start NMS WTP service successfully |
| 2 | 2012/01/01 00:00:55 | Low | admin | Managed AP(74:DA:38:1D:26:4E) start NMS WTP service successfully |
| 1 | 2012/01/01 00:00:23 | Low | admin | Managed AP(74:DA:38:1D:26:4E) start NMS WTP service successfully |

Save Refresh

## X-5-1-2 Add/Edit Access Point Group

Configure your selected access point group. Access point group settings apply to all access points in the group, unless individually set to override group settings.

You can use **Profile Group Settings** to assign the access point group to WLAN, Guest Network, RADIUS and Access Control groups.

Click “Save” to save the settings. Click “Cancel” to forfeit the changes. Click “Save and Apply” to save and apply the settings.

Save Cancel Save & Apply

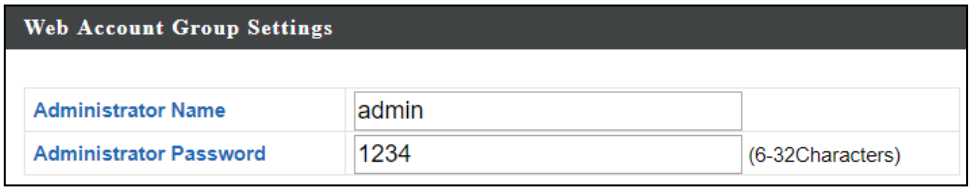
## X-5-1-2-1 Edit Basic Group Settings

The **Group Settings** panel can be used to quickly move access points between existing groups: select an access point and use the drop down menu or search

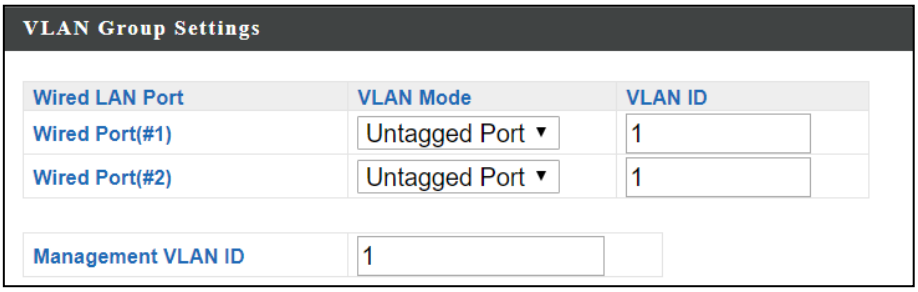
to select access point groups and use << and >> arrows to move APs between groups.


| Basic Group Settings | |
|---|---|
| **Name** | Edit the access point group name. |
| **Description** | Enter a description of the access point group for reference e.g. 2nd Floor Office Group. |
| **IGMP Snooping** | Enable / Disable the IGMP Snooping function.<br>IGMP snooping is the process of listening to Internet Group Management Protocol (IGMP) network traffic. |

## X-5-1-2-2 Edit Web Account Group Settings




## X-5-1-2-3 Edit VLAN Group Settings



## X-5-1-2-4 Edit Radio Group Settings

**Radio Group Settings**

| | Radio B/G/N (2.4 GHz) | Radio A/N/AC (5.0 GHz) |
|---|---|---|
| Wireless | Enable | Enable |
| Band | 11b/g/n | 11a/n/ac |
| Auto Pilot | Disable | Disable |
| Auto Pilot Sensitivity | Low | Low |
| Auto Pilot Range | Ch 1 - 11 | Band 1 |
| Auto Pilot Interval | Half day<br>Change channel even if clients are connected | Half day<br>Change channel even if clients are connected |
| Channel | Ch 11, 2462MHz | Ch 36, 5.18GHz |
| Channel Bandwidth | 20 MHz | 20 MHz |
| BSS BasicRateSet | all | all |

Advanced Settings

| | Radio B/G/N (2.4 GHz) | Radio A/N/AC (5.0 GHz) |
|---|---|---|
| Contention Slot | Short | |
| Preamble Type | Short | |
| Guard Interval | Short GI | Short GI |
| 802.11n Protection | Enable | Enable |
| CE Adaptive | Disable | |
| DTIM Period | 1 (1-255) | 1 (1-255) |
| RTS Threshold | 2347 (1-2347) | 2347 (1-2347) |
| Fragment Threshold | 2346 (256–2346) | 2346 (256–2346) |
| Multicast Rate | Auto | Auto |
| Tx Power | 100% | 100% |
| Beacon Interval | 100 (40-1000 ms) | 100 (40-1000 ms) |
| Station idle timeout | 60 (30-65535 seconds) | 60 (30-65535 seconds) |

| Radio Group Settings | |
|---|---|
| **Wireless** | Enable or disable the access point group's 2.4GHz or 5GHz wireless radio. When disabled, no SSIDs on that frequency will be active. |
| **Band** | Select the wireless standard used for the access point group. Combinations of 802.11b, 802.11g, 802.11n & 802.11ac can be selected. |
| **Auto Pilot** | Enable/disable auto channel selection. Auto channel selection will automatically set the wireless channel for the access point group's 2.4GHz or 5GHz frequency based on availability and potential interference. When disabled, select a channel manually. |
| **Auto Pilot Sensitivity** | Select sensitivity of Auto Pilot. |
| **Auto Pilot Range** | Select a range from which the auto channel setting (above) will choose a channel. |

| | |
|---|---|
| **Auto Pilot Interval** | Specify a frequency for how often the auto channel setting will check/reassign the wireless channel. Check/uncheck the "Change channel even if clients are connected" box according to your preference. |
| **Channel** | When Auto Pilot is disabled, select a channel (1-11) manually. |
| **Channel Bandwidth** | Set the channel bandwidth or use Auto (automatically select based on interference level). |
| **BSS BasicRateSet** | Set a Basic Service Set (BSS) rate: this is a series of rates to control communication frames for wireless clients. |

These settings are for experienced users only. Please do not change any of the values on this page unless you are already familiar with these functions.

***Changing these settings can adversely affect the performance of your access points.***

| Advanced Settings | |
|---|---|
| **Contention Slot** | Select "Short" or "Long" – this value is used for contention windows in WMM (see X-6-7 ***WMM***). |
| **Preamble Type** | Set the wireless radio preamble type. The preamble type in 802.11 based wireless communication defines the length of the CRC (Cyclic Redundancy Check) block for communication between the access point and roaming wireless adapters. The default value is "Short Preamble". |
| **Guard Interval** | Set the guard interval. A shorter interval can improve performance. |
| **802.11n Protection** | Enable/disable 802.11n protection, which increases reliability but reduces bandwidth (clients will send Request to Send (RTS) to access point, and access point will broadcast Clear to Send (CTS), before a packet is sent from client.) |
| **CE Adaptive** | The measurement procedure follows clause 5.3.11.2.2 of the ETSI EN 300 328 V1.8.1 |
| **DTIM Period** | Set the DTIM (delivery traffic indication message) period value of the wireless radio. The default value is 1. |
| **RTS Threshold** | Set the RTS threshold of the wireless radio. The default value is 2347. |

| | |
|---|---|
| **Fragment Threshold** | Set the fragment threshold of the wireless radio. The default value is 2346. |
| **Multicast Rate** | Set the transfer rate for multicast packets or use the “Auto” setting. |
| **Tx Power** | Set the power output of the wireless radio. You may not require 100% output power. Setting a lower power output can enhance security since potentially malicious/unknown users in distant areas will not be able to access your signal. |
| **Beacon Interval** | Set the beacon interval of the wireless radio. The default value is 100. |
| **Station idle timeout** | Set the interval for keepalive messages from the access point to a wireless client to verify if the station is still alive/active. |

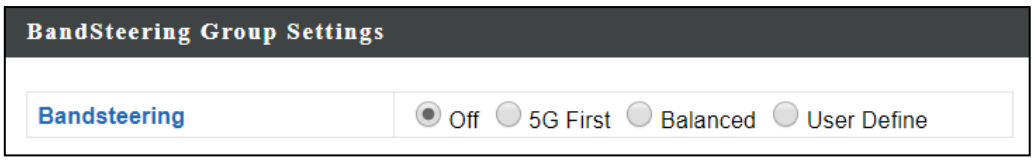
### X-5-1-2-5 Edit WMM-EDCA Settings

**WMM-EDCA Settings**

| | WMM Parameters of Access Point | | | |
|---|---|---|---|---|
| | CWMin | CWMax | AIFSN | TxOP |
| Back Ground | 4 | 10 | 7 | 0 |
| Best Effort | 4 | 6 | 3 | 0 |
| Video | 3 | 4 | 1 | 94 |
| Voice | 2 | 3 | 1 | 47 |

| | WMM Parameters of Station | | | |
|---|---|---|---|---|
| | CWMin | CWMax | AIFSN | TxOP |
| Back Ground | 4 | 10 | 7 | 0 |
| Best Effort | 4 | 10 | 3 | 0 |
| Video | 3 | 4 | 2 | 94 |
| Voice | 2 | 3 | 2 | 47 |

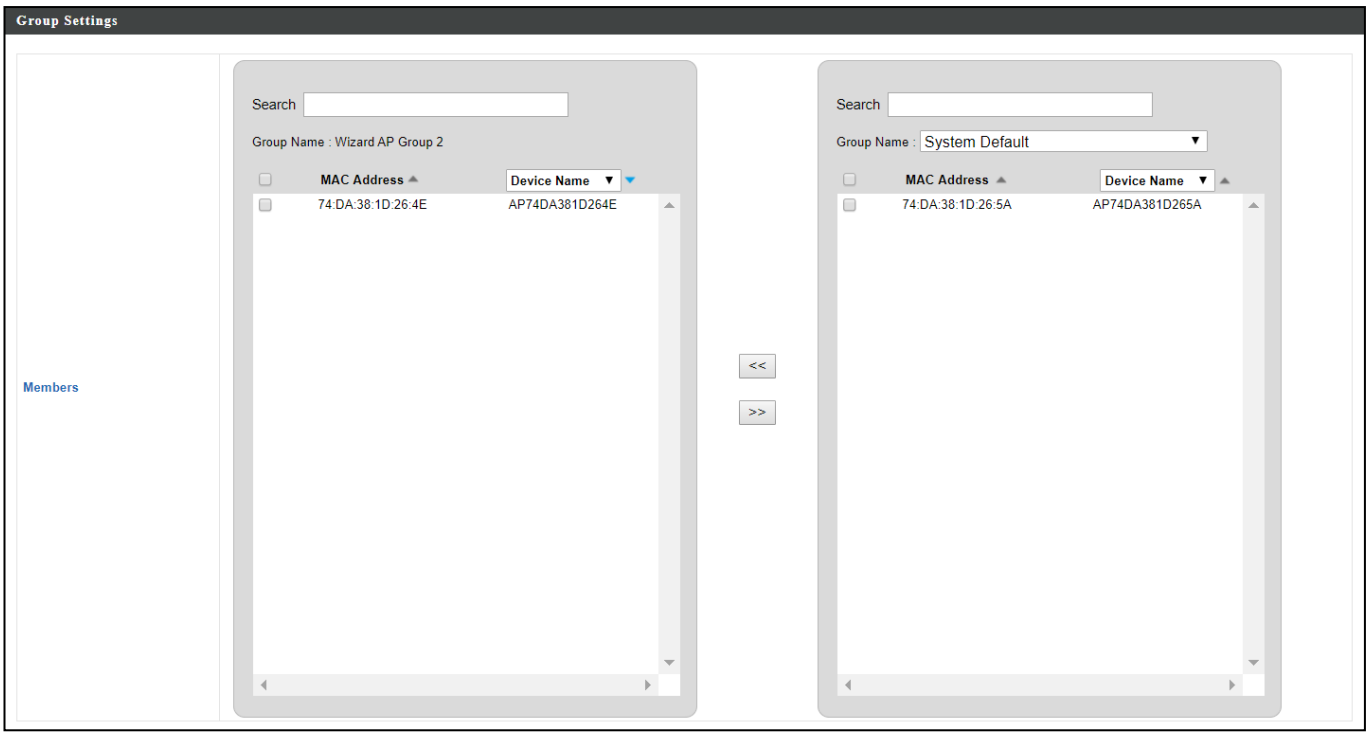
## X-5-1-2-6 Edit BandSteering Settings




## X-5-1-2-7 Edit Profile Settings


| Profile Group Settings | |
|---|---|
| **WLAN Group** | Assign the access point group's 2.4GHz or 5GHz SSIDs to a WLAN Group. You can edit WLAN groups in **NMS Settings → WLAN**. |
| **Guest Network Group** | Assign the access point group's 2.4GHz or 5GHz SSIDs to a Guest Network Group. You can edit Guest Network groups in **NMS Settings → Guest Network**. |
| **RADIUS Group** | Assign the access point group's 2.4GHz SSIDs to a RADIUS group. You can edit RADIUS groups in **NMS Settings → RADIUS**. |
| **MAC Access Control Group** | Assign the access point's 2.4GHz SSIDs to a RADIUS group. You can edit RADIUS groups in **NMS Settings → Access Control.** |

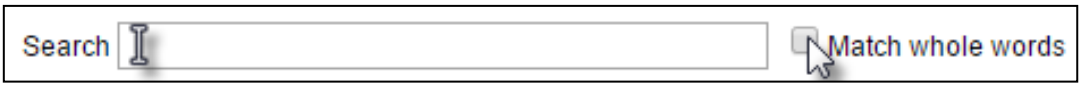
# X-5-1-2-8 Edit Group Settings

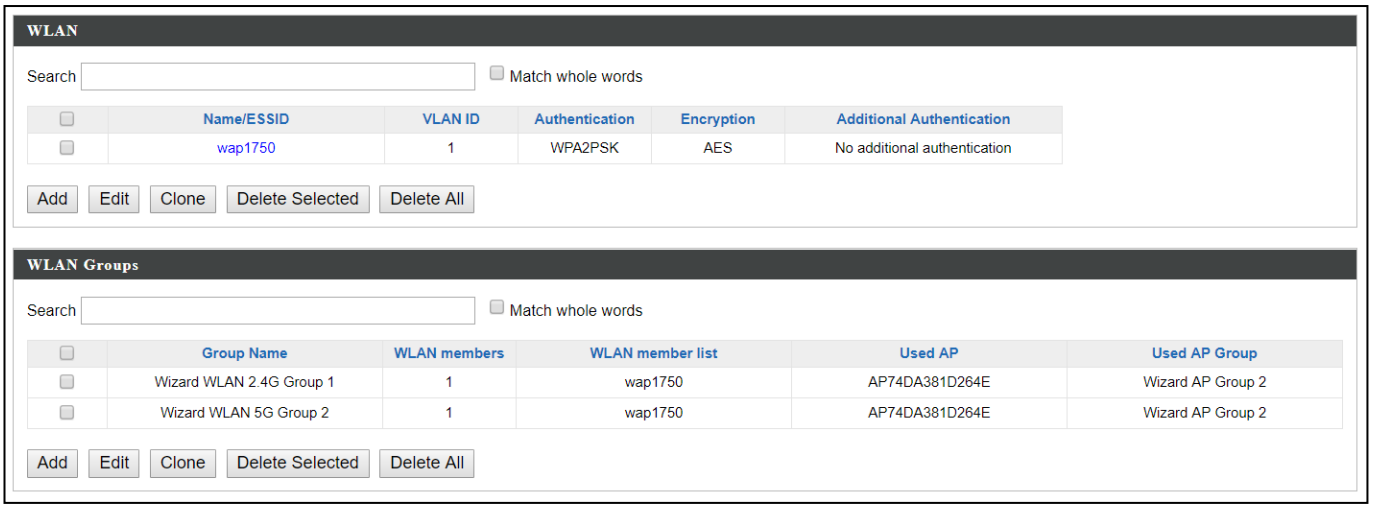


## X-5-2 WLAN

Displays information about each WLAN and WLAN group in the local network and allows you to add or edit WLANs & WLAN Groups. When you add a WLAN Group, it will be available for selection in **NMS Settings → Access Point** access point **Profile Settings** & access point group **Profile Group Settings** (**X-5-1**).

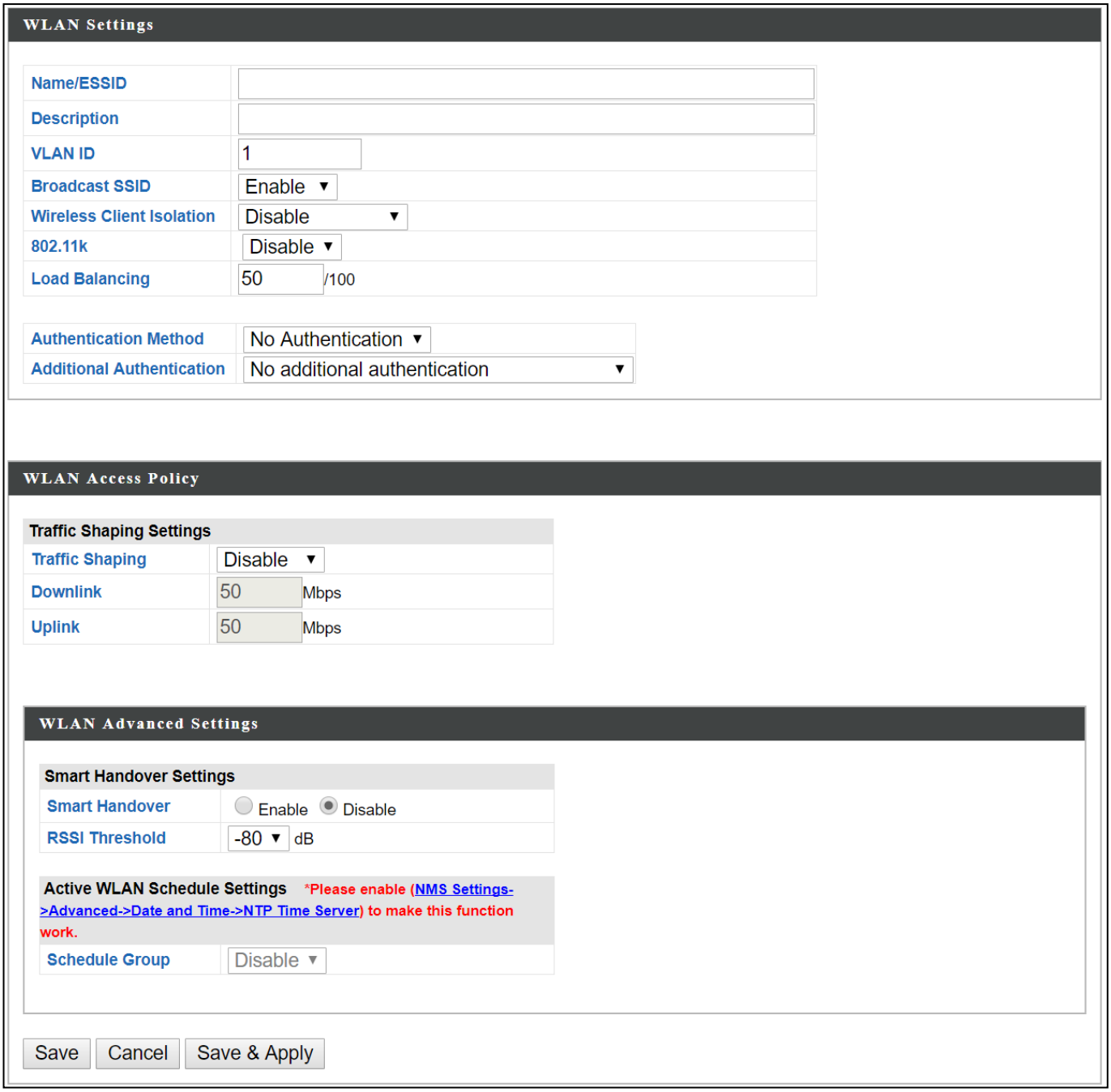
The **search** function can be used to locate a WLAN or WLAN Group. Type in the search box and the list will update:




Select a WLAN or WLAN Group using the check-boxes and click "**Edit**" or click "**Add**" to add a new WLAN or WLAN Group:

## X-5-2-1 Add/Edit WLAN




| WLAN Settings | |
|---|---|
| **Name/ESSID** | Edit the WLAN name (SSID). |
| **Description** | Enter a description of the SSID for reference e.g. 2nd Floor Office HR. |
| **VLAN ID** | Specify the VLAN ID. |
| **Broadcast SSID** | Enable or disable SSID broadcast. When enabled, the SSID will be visible to clients as an available Wi-Fi network. When disabled, the SSID will not be visible as an available Wi-Fi |

| | |
|---|---|
| | network to clients – clients must manually enter the SSID in order to connect. A hidden (disabled) SSID is typically more secure than a visible (enabled) SSID. |
| **Wireless Client Isolation** | Enable or disable wireless client isolation. Wireless client isolation prevents clients connected to the access point from communicating with each other and improves security. Typically, this function is useful for corporate environments or public hot spots and can prevent brute force attacks on clients' usernames and passwords. |
| **802.11k** | Enable / Disable to define and expose radio and network information (helps facilitate the management and maintenance of a mobile wireless LAN). |
| **Load Balancing** | Load balancing limits the number of wireless clients connected to an SSID. Set a load balancing value (maximum 100). |
| **Authentication Method** | Select an authentication method from the drop down menu. |
| **WPA Type** | It can select WPA only or WPA2 only or WPA/WPA2 Mixed Mode-PSK |
| **Encryption Type** | It can select TKIP/AES Mixed Mode or AES |
| **Key Renewal Interval** | It can set renewal internal time |
| **Pre-Shared Key Type** | It can set Passphrase or Hex (64 characters) |
| **Pre-Shared Key** | It can set 8-64 characters |
| **Additional Authentication** | Select an additional authentication method from the drop down menu. |

Various security options (wireless data encryption) are available. When data is encrypted, information transmitted wirelessly cannot be read by anyone who does not know the correct encryption key.

***It is essential to configure wireless security in order to prevent unauthorised access to your network.***

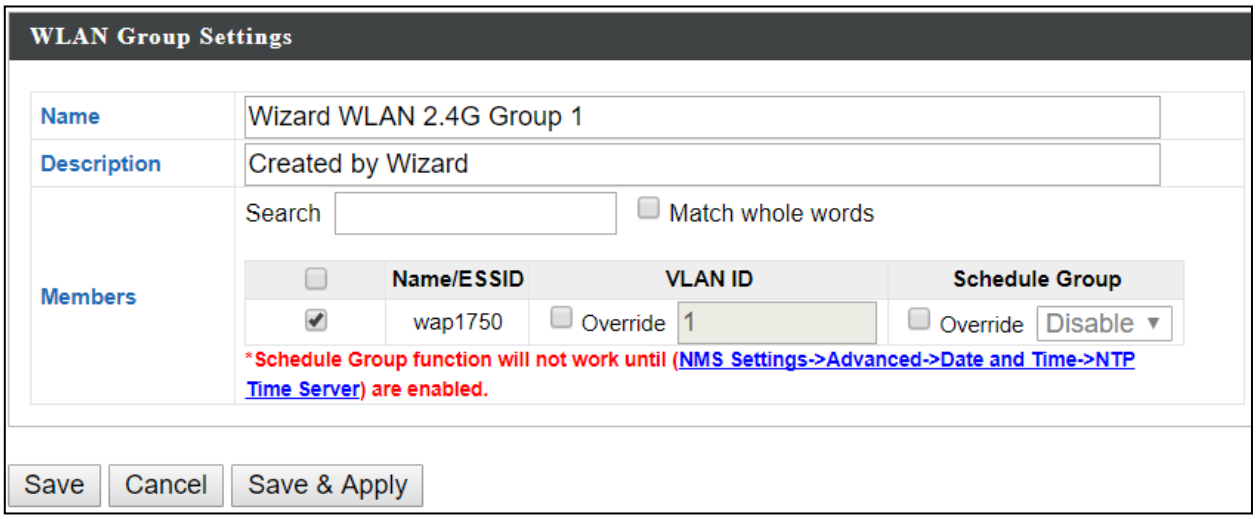
***Select hard-to-guess passwords which include combinations of numbers, letters and symbols, and change your password regularly.***

| WLAN Access Policy | |
|---|---|
| **Traffic Shaping** | Enable / Disable traffic shaping. |
| **Downlink** | Set downlink between 1-200Mbps |
| **Uplink** | Set uplink between 1-200Mbps |

| WLAN Advanced Settings | |
|---|---|
| **Smart Handover** | Enable or disable Smart Handover. |
| **RSSI Threshold** | Set a RSSI Threshold level. |

## X-5-2-2 Add/Edit WLAN Group

When you add a WLAN Group, it will be available for selection in **NMS Settings → Access Point** access point **Profile Settings** & access point group **Profile Group Settings** (X-5-1).

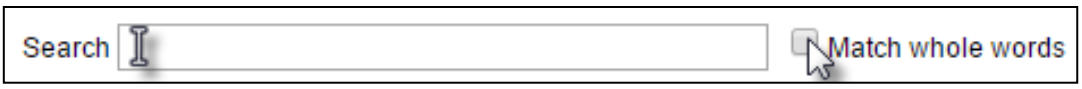



| WLAN Group Settings | |
|---|---|
| **Name** | Edit the WLAN Group name. |
| **Description** | Enter a description of the WLAN Group for reference e.g. 2nd Floor Office HR Group. |
| **Members** | Select SSIDs to include in the group using the checkboxes and assign VLAN IDs. |

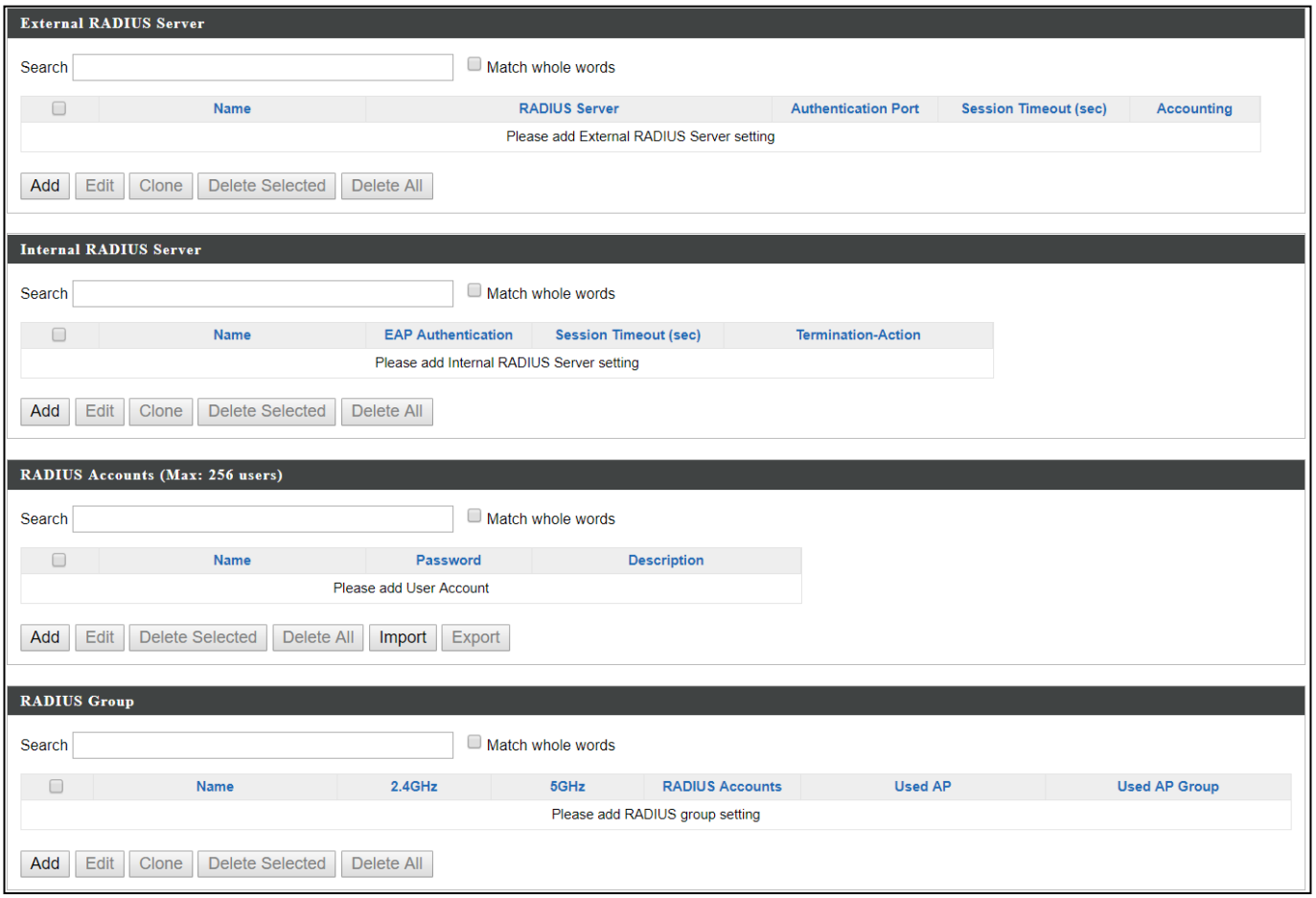
## X-5-3 RADIUS

Displays information about External & Internal RADIUS Servers, Accounts and Groups and allows you to add or edit RADIUS Servers, Accounts & Groups. When you add a RADIUS Group, it will be available for selection in **NMS Settings → Access Point** access point **Profile Settings** & access point group **Profile Group Settings** (**X-5-1**).

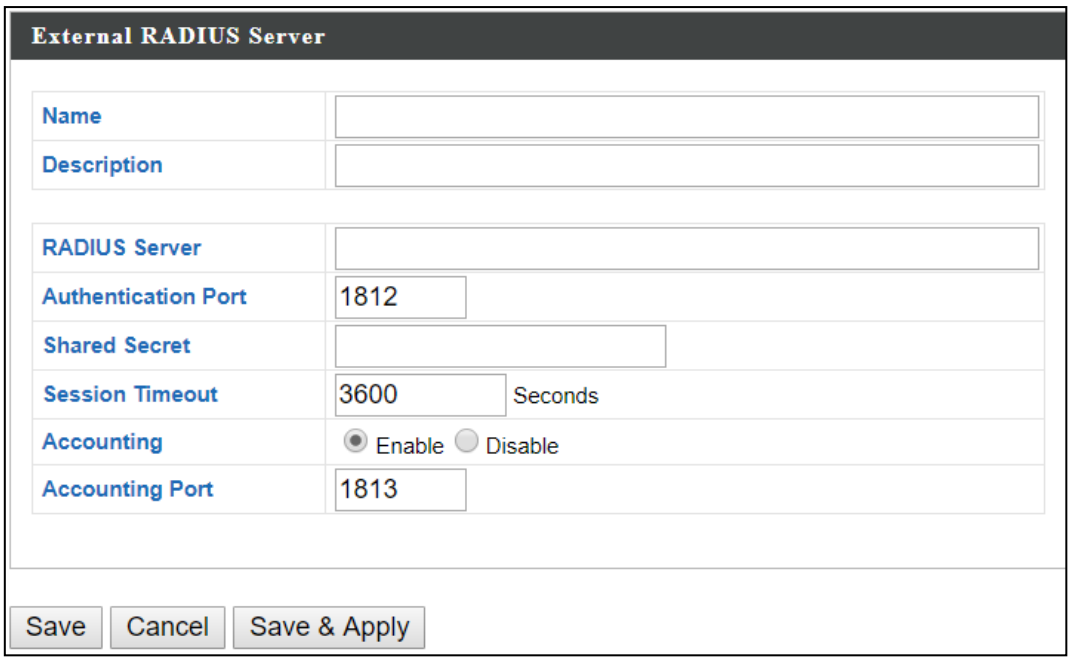
The **search** function can be used to locate a RADIUS Server, Account or Group. Type in the search box and the list will update:




Make a selection using the check-boxes and click "**Edit**" or click "**Add**" to add a new WLAN or WLAN Group:

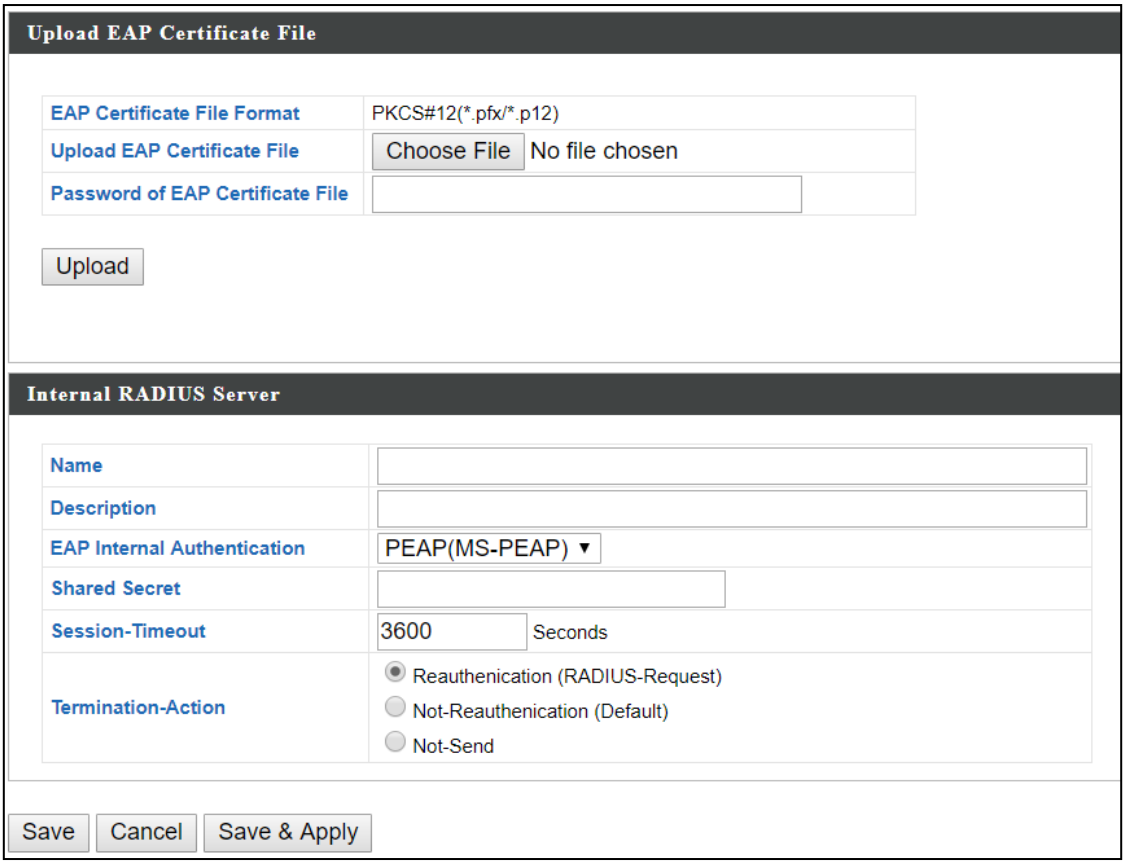



## X-5-3-1 Add/Edit External RADIUS Server




| | |
|---|---|
| **Name** | Enter a name for the RADIUS Server. |
| **Description** | Enter a description of the RADIUS Server for reference. |
| **RADIUS Server** | Enter the RADIUS server host IP address. |
| **Authentication Port** | Set the UDP port used in the authentication protocol of the RADIUS server. Value must be between 1 – 65535. |
| **Shared Secret** | Enter a shared secret/password between 1 – 99 characters in length. This should match the "MAC-RADIUS" password used in X-6-2-3 or X-6-3-3. |
| **Session Timeout** | Set a duration of session timeout in seconds between 0 – 86400. |
| **Accounting** | Enable or disable RADIUS accounting. |
| **Accounting Port** | When accounting is enabled (above), set the UDP port used in the accounting protocol of the RADIUS server. Value must be between 1 – 65535. |

## X-5-3-2 Add/Edit Internal RADIUS Server



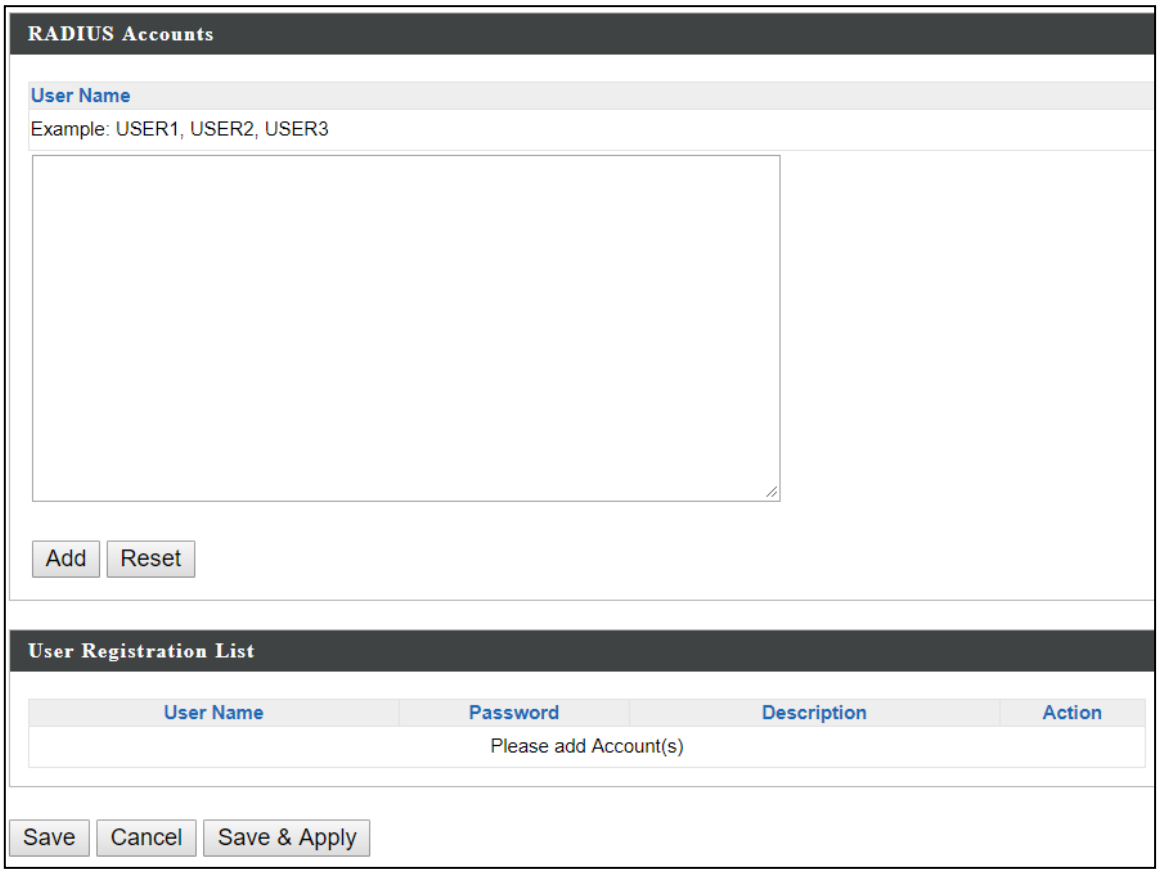

| Upload EAP Certificate File | |
|---|---|
| **EAP Certificate File Format** | Displays the EAP certificate file format: PKCS#12(*.pfx/*.p12) |
| **EAP Certificate File** | Click “Upload” to open a new window and select the location of an EAP certificate file to use. If no certificate file is uploaded, the internal RADIUS server will use a self-made certificate. |

| Internal RADIUS Server | |
|---|---|
| **Name** | Enter a name for the Internal RADIUS Server. |
| **Description** | Enter a description of the Internal RADIUS Server for reference. |
| **EAP Certificate File Format** | Displays the EAP certificate file format: PCK#12(*.pfx/*.p12) |
| **EAP Certificate File** | Click “Upload” to open a new window and select the location of an EAP certificate file to use. If no certificate file is uploaded, the internal RADIUS server will use a self-made |

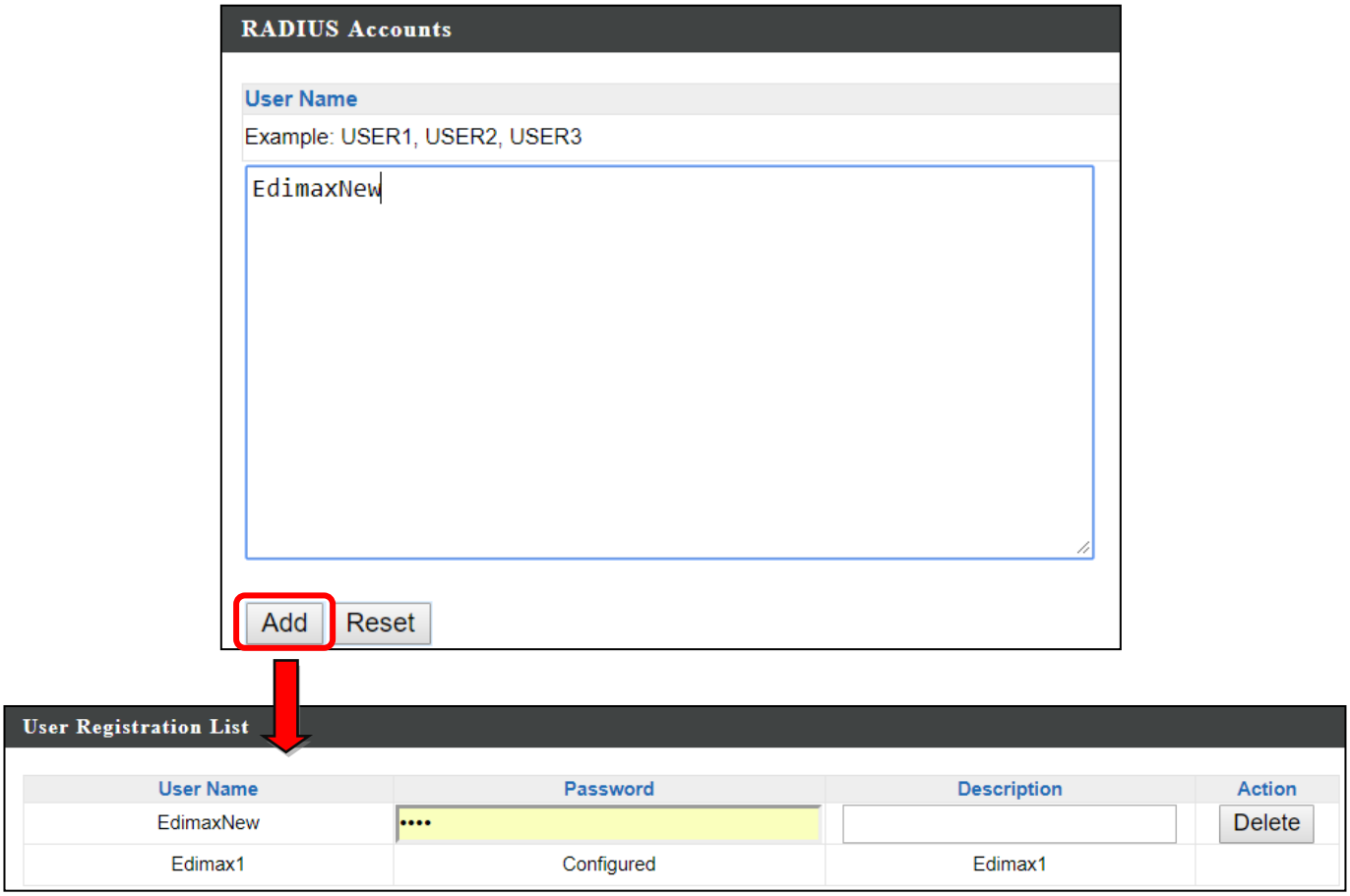
| | |
|---|---|
| | certificate. |
| **EAP Internal Authentication** | Select EAP internal authentication type from the drop down menu. |
| **Shared Secret** | Enter a shared secret/password for use between the internal RADIUS server and RADIUS client. The shared secret should be 1 – 99 characters in length. |
| **Session Timeout** | Set a duration of session timeout in seconds between 0 – 86400. |
| **Termination Action** | Select a termination-action attribute: “Reauthentication” sends a RADIUS request to the access point, “Not-Reauthentication” sends a default termination-action attribute to the access point, “Not-Send” no termination-action attribute is sent to the access point. |

### X-5-3-3 Add/Edit/Import/Export RADIUS Accounts

The internal RADIUS server can authenticate up to 256 user accounts. The “RADIUS Accounts” page allows you to configure and manage users.



## Add

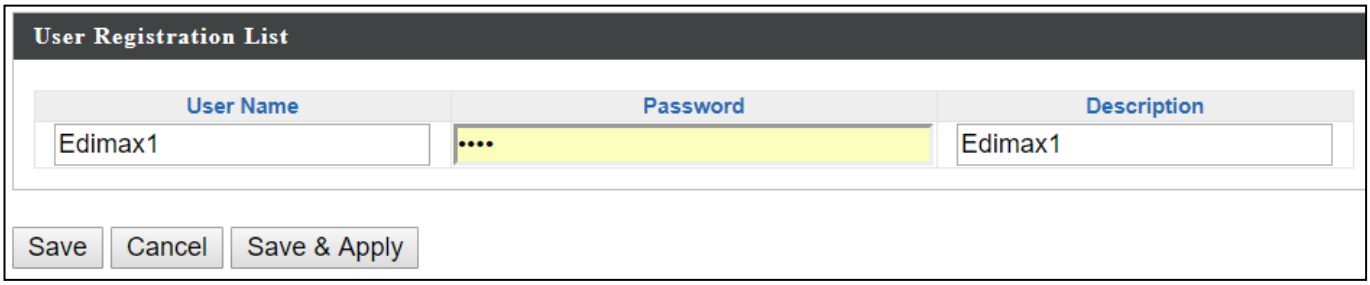



| RADIUS Accounts | |
|---|---|
| **User Name** | Enter the user names here, separated by commas. |
| **Add** | Click “Add” to add the user to the user registration list. |
| **Reset** | Clear text from the user name box. |

| User Registration List | |
|---|---|
| **User Name** | Displays the user name. |
| **Password** | Enter a password. |
| **Description** | Enter a description of the user. |
| **Delete** | Delete the user. |

Press “Save” to save the above actions, “Cancel” to forfeit the changes, or “Save & Apply” to save and apply the above actions.

## Edit

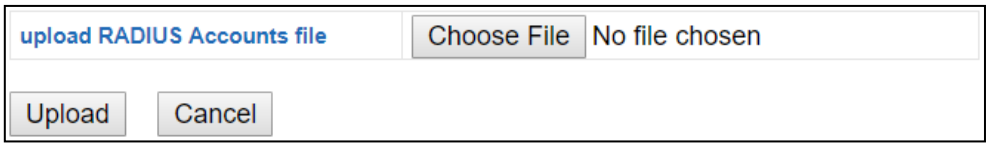



| Edit User Registration List | |
|---|---|
| **User Name** | Existing user name is displayed here and can be edited according to your preference. |
| **Password** | Enter or edit a password for the specified user. |
| **Description** | Displays current description of the user and can be edited. |

| | |
|---|---|
| **Delete Selected** | Delete selected user from the user registration list. |
| **Delete All** | Delete all users from the user registration list. |

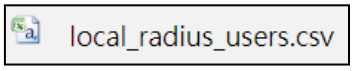
## Import

If you wish to import RADIUS accounts, press "Import". The following page is displayed below. Choose a file from a file and press "Upload" to import RADIUS accounts.



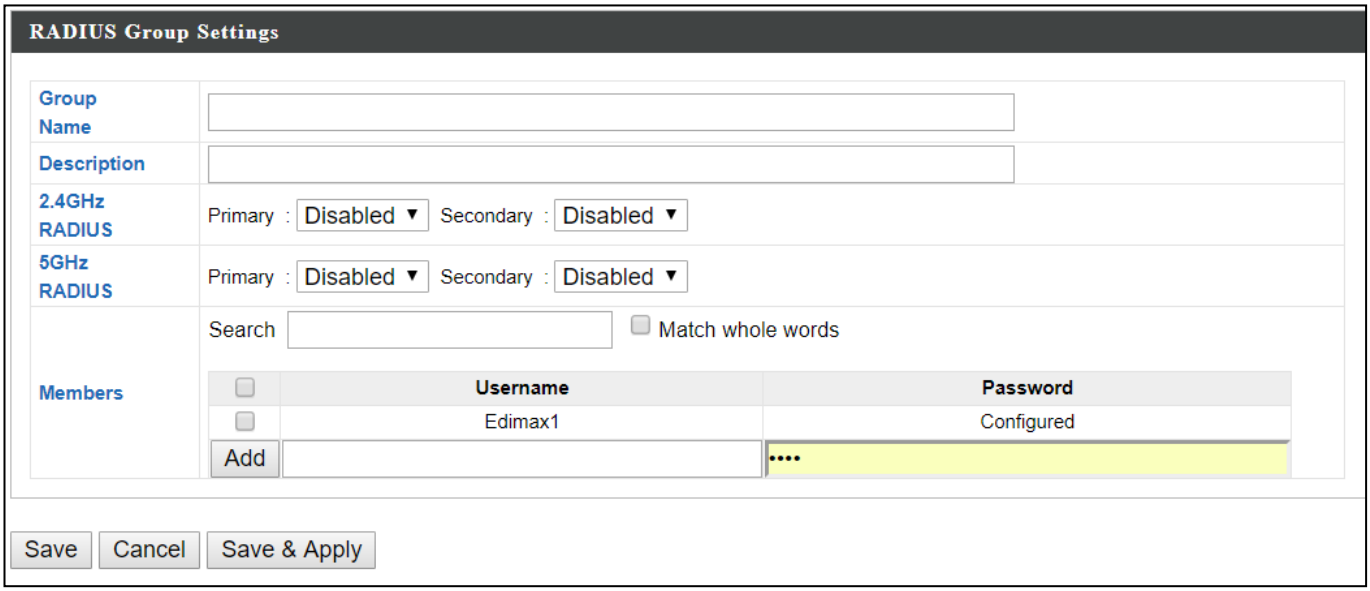

## Export

If you wish to export your current list of RADIUS accounts, press "Export". Your list will be saved in a format similar to the one below:



## X-5-3-4 Add/Edit RADIUS Group

When you add a RADIUS Group, it will be available for selection in **NMS Settings → Access Point** access point **Profile Settings** & access point group **Profile Group Settings** (X-5-1).




| RADIUS Group Settings | |
|---|---|
| **Group Name** | Edit the RADIUS Group name. |
| **Description** | Enter a description of the RADIUS Group for reference. |
| **2.4GHz RADIUS** | Enable/Disable primary & secondary RADIUS servers for 2.4GHz. |
| **5GHz RADIUS** | Enable/Disable primary & secondary RADIUS servers for 5GHz. |
| **Members** | Add RADIUS user accounts to the RADIUS group. |

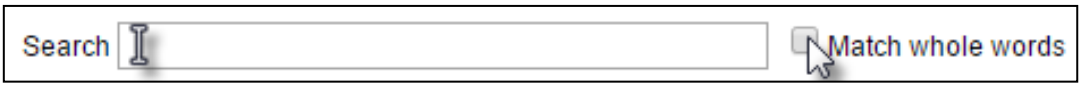
## X-5-4 Access Control

MAC Access Control is a security feature that can help to prevent unauthorized users from connecting to your access point.

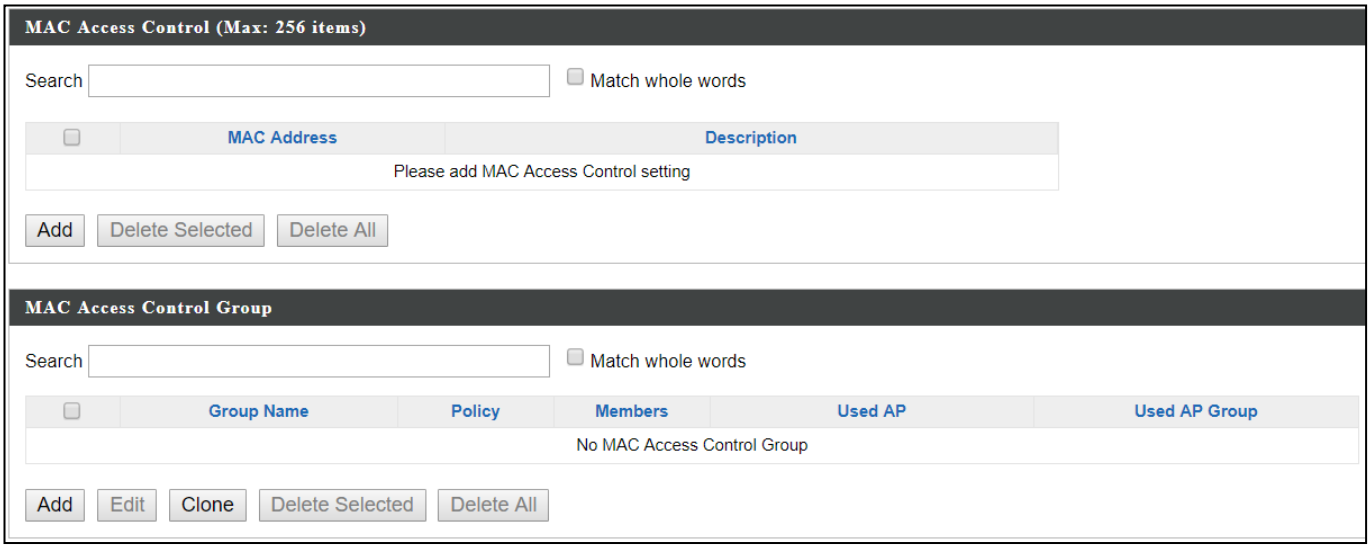
This function allows you to define a list of network devices permitted to connect to the access point. Devices are each identified by their unique MAC address. If a device not on the list of permitted MAC addresses attempts to connect to the access point, it will be denied.

The Access Control panel displays information about MAC Access Control & MAC Access Control Groups and Groups and allows you to add or edit MAC Access Control & MAC Access Control Group settings. When you add an Access Control Group, it will be available for selection in **NMS Settings → Access Point** access point **Profile Settings** & access point group **Profile Group Settings** (X-5-1).

The **search** function can be used to locate a MAC address or MAC Access Control Group. Type in the search box and the list will update:



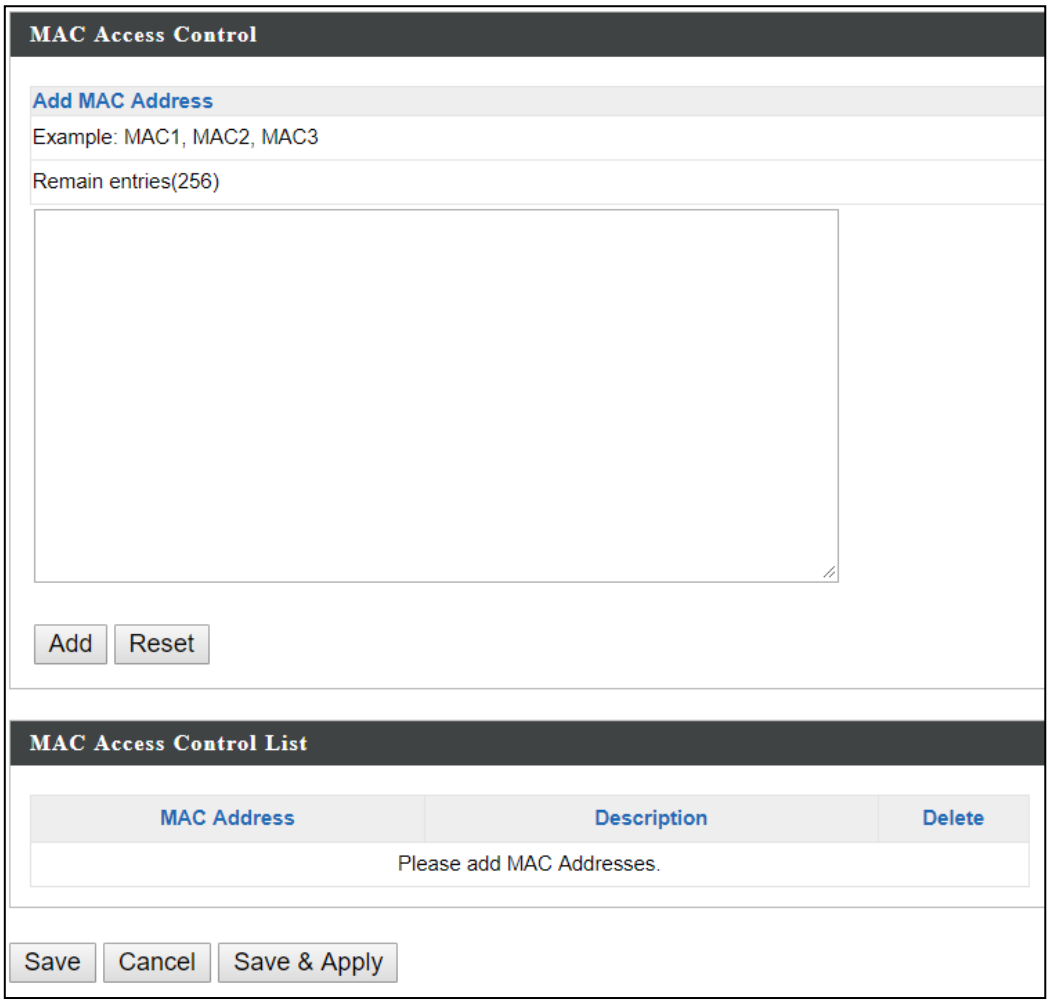

Make a selection using the check-boxes and click "**Edit**" or click "**Add**" to add a new MAC Address or MAC Access Control Group:

| | |
|---|---|
| **Delete Selected** | Delete the selected entry(s) from the list. |
| **Delete All** | Delete all entries from the table. |

## X-5-4-1 Add/Edit MAC Access Control

Click “Add” to enter the page shown below:




| | |
|---|---|
| **Add MAC Address** | Enter a MAC address of computer or network device manually e.g. ‘aa-bb-cc-dd-ee-ff’ or enter multiple MAC addresses separated with commas, e.g. ‘aa-bb-cc-dd-ee-ff,aa-bb-cc-dd-ee-gg’ |
| **Add** | Click “Add” to add the MAC address to the MAC address filtering table. |
| **Reset** | Clear all fields. |

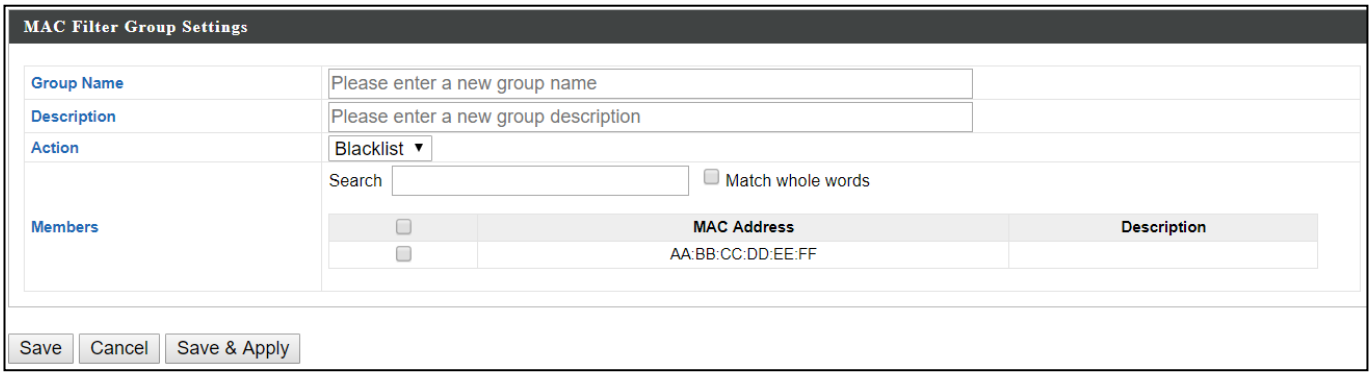
MAC address entries will be listed in the “MAC Address Filtering Table”. Select an entry using the “Select” checkbox.

Press “Save” to save the above actions, “Cancel” to forfeit the changes, or “Save & Apply” to save and apply the above actions.

## X-5-4-2 Add/Edit/Clone MAC Access Control Group

When you add an Access Control Group, it will be available for selection in **NMS Settings → Access Point** access point **Profile Settings** & access point group **Profile Group Settings** (X-5-1).

Click "Add" to enter the page shown below:




| MAC Filter Group Settings | |
|---|---|
| **Group Name** | Edit the MAC Access Control Group name. |
| **Description** | Enter a description of the MAC Access Control Group for reference. |
| **Action** | Select "Blacklist" to deny access to specified MAC addresses in the group, and select "Whitelist" to permit access to specified MAC address in the group. |
| **Members** | Check the checkbox to add MAC addresses to the group. |

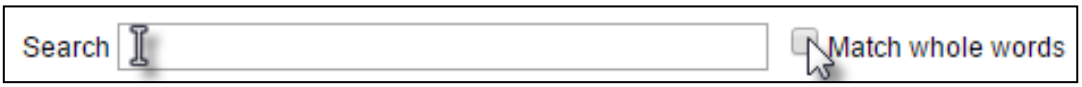
Press "Save" to save the above actions, "Cancel" to forfeit the changes, or "Save & Apply" to save and apply the above actions.

## X-5-5 Guest Network

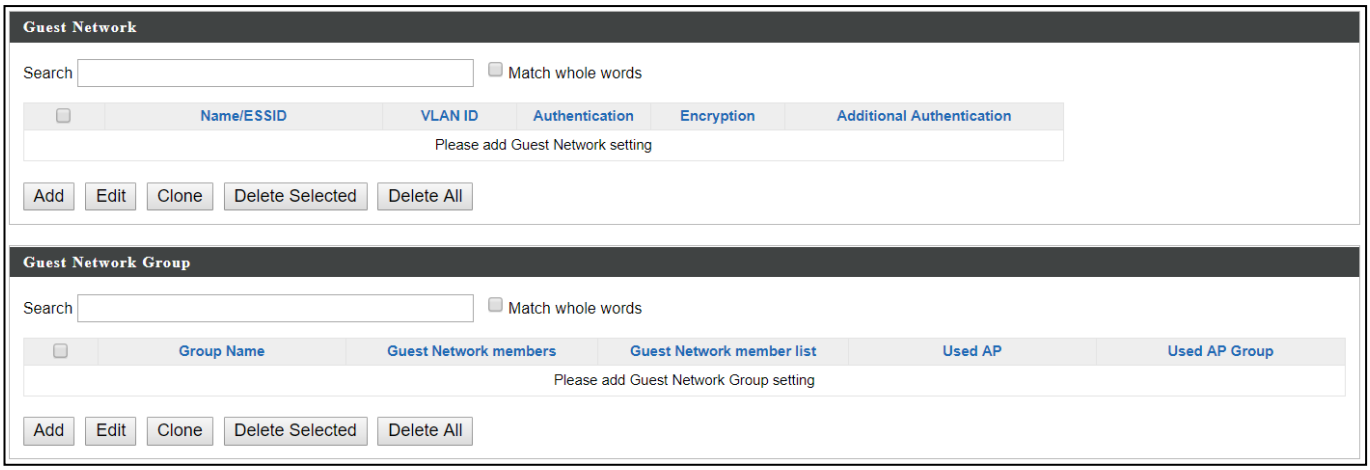
You can setup an additional “Guest” Wi-Fi network so guest users can enjoy Wi-Fi connectivity without accessing your primary networks. The “Guest” screen displays settings for your guest Wi-Fi network.

The Guest Network panel displays information about Guest Networks and Guest Network Groups and allows you to add or edit Guest Network and Guest Network Group settings. When you add a Guest Network Group, it will be available for selection in **NMS Settings → Access Point** access point **Profile Settings** & access point group **Profile Group Settings** (X-5-1).

The **search** function can be used to locate a Guest Network or Guest Network Group. Type in the search box and the list will update:



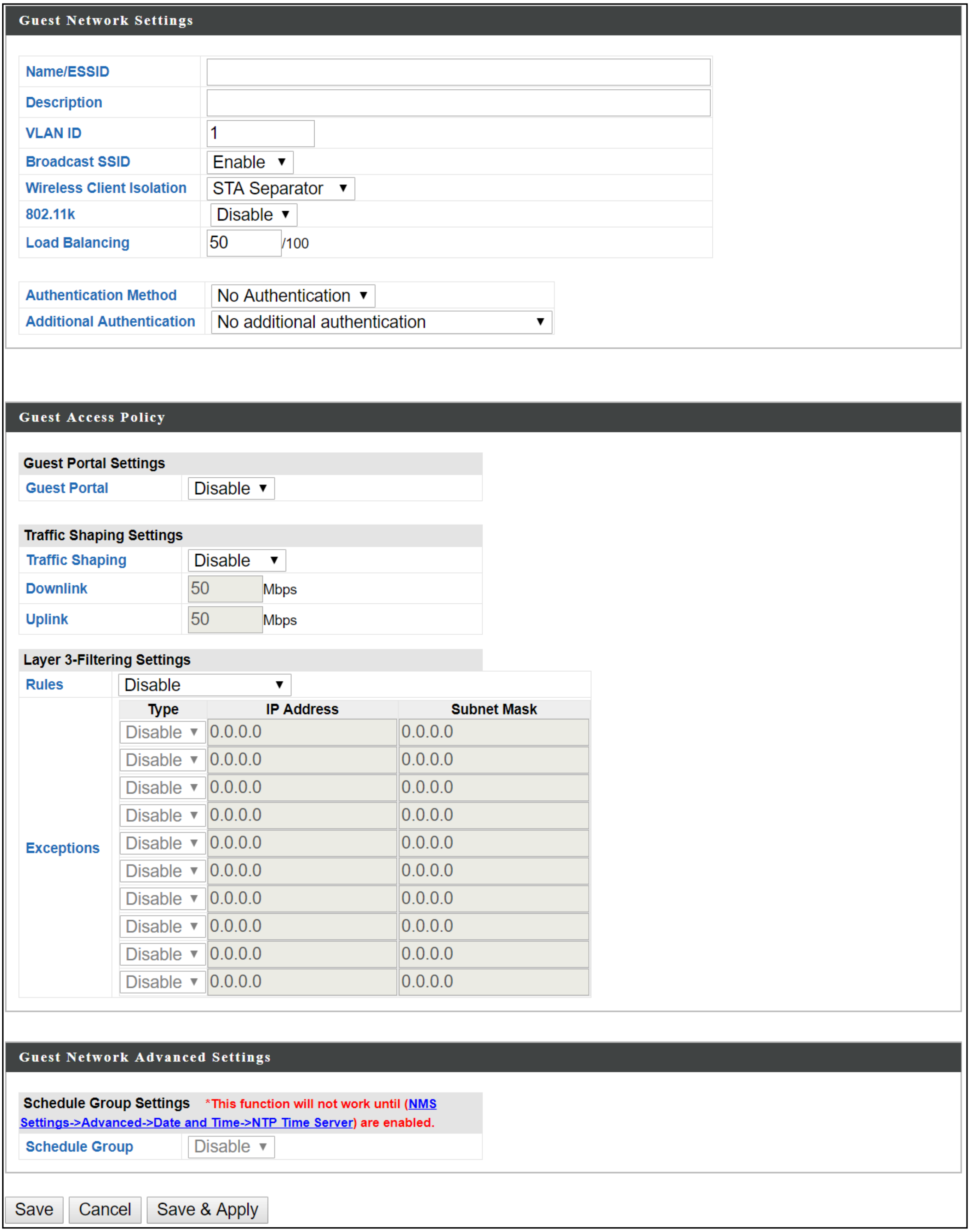

Make a selection using the check-boxes and click “**Edit**” or click “**Add**” to add a new Guest Network or Guest Network Group.


| | |
|---|---|
| **Delete Selected** | Delete the selected entry(s) from the list. |
| **Delete All** | Delete all entries from the table. |

### X-5-5-1 Add/Edit Guest Network

Click “Add” to enter the page shown below:



**Guest Network Settings**

| | |
|---|---|
| Name/ESSID | |
| Description | |
| VLAN ID | 1 |
| Broadcast SSID | Enable |
| Wireless Client Isolation | STA Separator |
| 802.11k | Disable |
| Load Balancing | 50 /100 |

| | |
|---|---|
| Authentication Method | No Authentication |
| Additional Authentication | No additional authentication |

**Guest Access Policy**

**Guest Portal Settings**

| | |
|---|---|
| Guest Portal | Disable |

**Traffic Shaping Settings**

| | |
|---|---|
| Traffic Shaping | Disable |
| Downlink | 50 Mbps |
| Uplink | 50 Mbps |

**Layer 3-Filtering Settings**

Rules: Disable

| | Type | IP Address | Subnet Mask |
|---|---|---|---|
| Exceptions | Disable | 0.0.0.0 | 0.0.0.0 |
| | Disable | 0.0.0.0 | 0.0.0.0 |
| | Disable | 0.0.0.0 | 0.0.0.0 |
| | Disable | 0.0.0.0 | 0.0.0.0 |
| | Disable | 0.0.0.0 | 0.0.0.0 |
| | Disable | 0.0.0.0 | 0.0.0.0 |
| | Disable | 0.0.0.0 | 0.0.0.0 |
| | Disable | 0.0.0.0 | 0.0.0.0 |
| | Disable | 0.0.0.0 | 0.0.0.0 |
| | Disable | 0.0.0.0 | 0.0.0.0 |

**Guest Network Advanced Settings**

**Schedule Group Settings** *This function will not work until (NMS Settings->Advanced->Date and Time->NTP Time Server) are enabled.

| | |
|---|---|
| Schedule Group | Disable |

| Guest Network Settings | |
|---|---|
| **Name/ESSID** | Edit the Guest Network name (SSID). |
| **Description** | Enter a description of the Guest Network for reference e.g. 2nd Floor Office HR. |
| **VLAN ID** | Specify the VLAN ID. |
| **Broadcast SSID** | Enable or disable SSID broadcast. When enabled, the SSID will be visible to clients as an available Wi-Fi network. When disabled, the SSID will not be visible as an available Wi-Fi network to clients – clients must manually enter the SSID in order to connect. A hidden (disabled) SSID is typically more secure than a visible (enabled) SSID. |
| **Wireless Client Isolation** | Enable or disable wireless client isolation. Wireless client isolation prevents clients connected to the access point from communicating with each other and improves security. Typically, this function is useful for corporate environments or public hot spots and can prevent brute force attacks on clients' usernames and passwords. |
| **802.11k** | Enable / Disable to define and expose radio and network information (helps facilitate the management and maintenance of a mobile wireless LAN). |
| **Load Balancing** | Load balancing limits the number of wireless clients connected to an SSID. Set a load balancing value (maximum 100). |
| **Authentication Method** | Select an authentication method from the drop down menu. |
| **Additional Authentication** | Select an additional authentication method from the drop down menu. |

Various security options (wireless data encryption) are available. When data is encrypted, information transmitted wirelessly cannot be read by anyone who does not know the correct encryption key.

***It is essential to configure wireless security in order to prevent unauthorised access to your network.***

***Select hard-to-guess passwords which may include combinations of numbers, letters and symbols, and change your passwords regularly.***

Please refer to X-6-2-3 or X-6-3-3 for more information on authentication and additional authentication types.

| Guest Access Policy | |
|---|---|
| **Guest Portal** | Enable or disable guest portal for the guest network. |
| **Traffic Shaping** | Enable or disable traffic shaping for the guest network. |
| **Downlink** | Enter a downlink limit in MB. |
| **Uplink** | Enter an uplink limit in MB. |
| **Rules** | Enter IP addresses to be filtered according to the drop down menu: “Allow all by Default”, “Deny all by Default”, “Internet Only” and “Disable” |
| **Exceptions** | After selecting the rule above, exceptions can be setup to allow / deny guest access. |

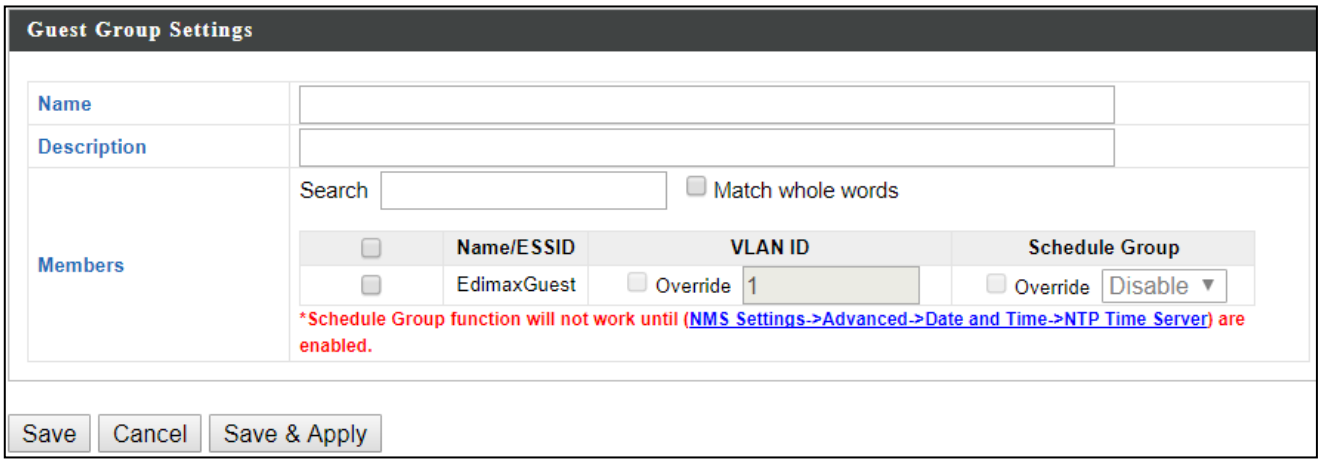
| Guest Network Advanced Settings | |
|---|---|
| **Schedule Group** | Select a schedule group. |

Press “Save” to save the above actions, “Cancel” to forfeit the changes, or “Save & Apply” to save and apply the above actions.

| | |
|---|---|
| **Clone** | Select an entry and clone its settings. You will be taken to the add guest network settings page shown above. Enter / edit the fields and save your selection. |

## X-5-5-2 Add/Edit Guest Network Group

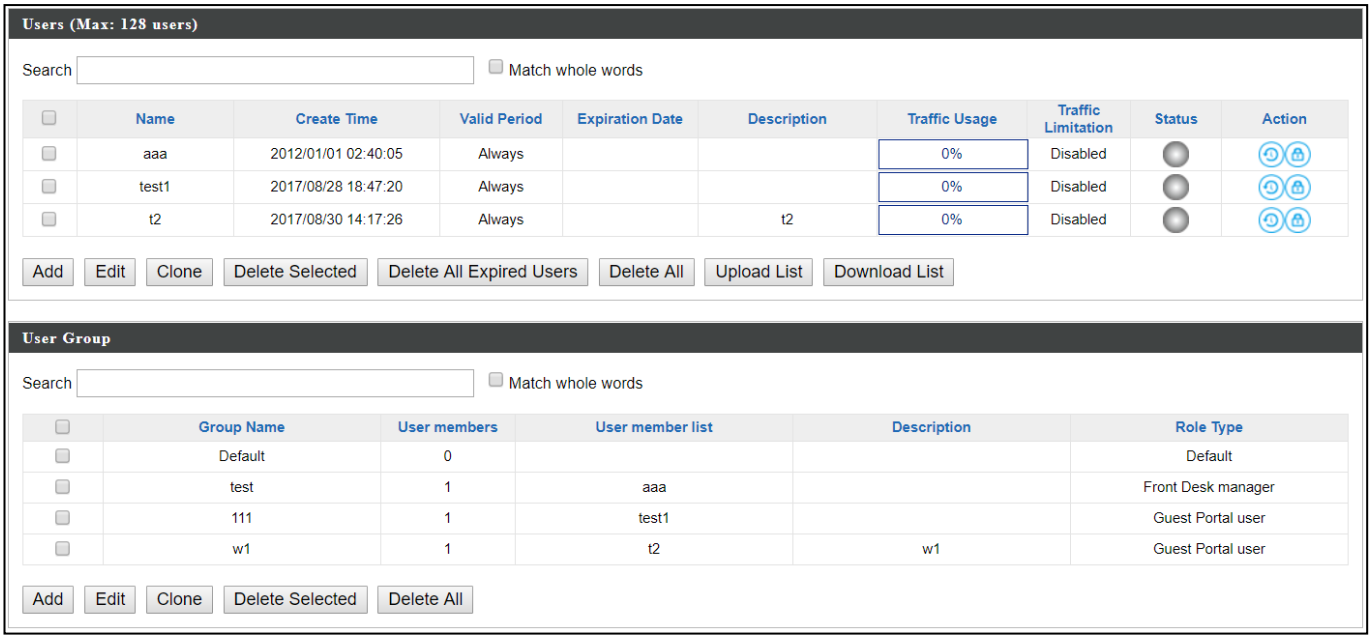
When you add a Guest Network Group, it will be available for selection in **NMS Settings → Access Point** access point **Profile Settings** & access point group **Profile Group Settings** (X-5-1).




| Guest Network Group Settings | |
|---|---|
| **Group Name** | Edit the Guest Network Group name. |
| **Description** | Enter a description of the Guest Network for reference. |
| **Members** | Add SSIDs to the Guest Network group. |

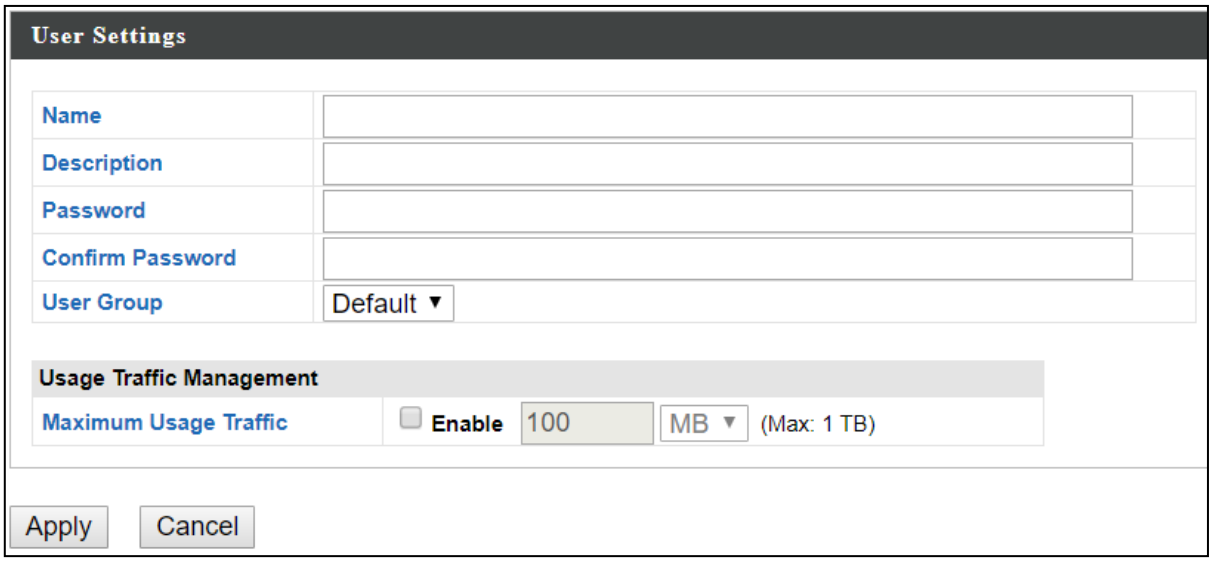
Press "Save" to save the above actions, "Cancel" to forfeit the changes, or "Save & Apply" to save and apply the above actions.

## X-5-6 Users




## User Panel

Press “Add” to add a new user, or “Edit” to edit an existing user, or “Clone” to clone an existing user’s settings. For the 3 options specified above, enter the fields below:

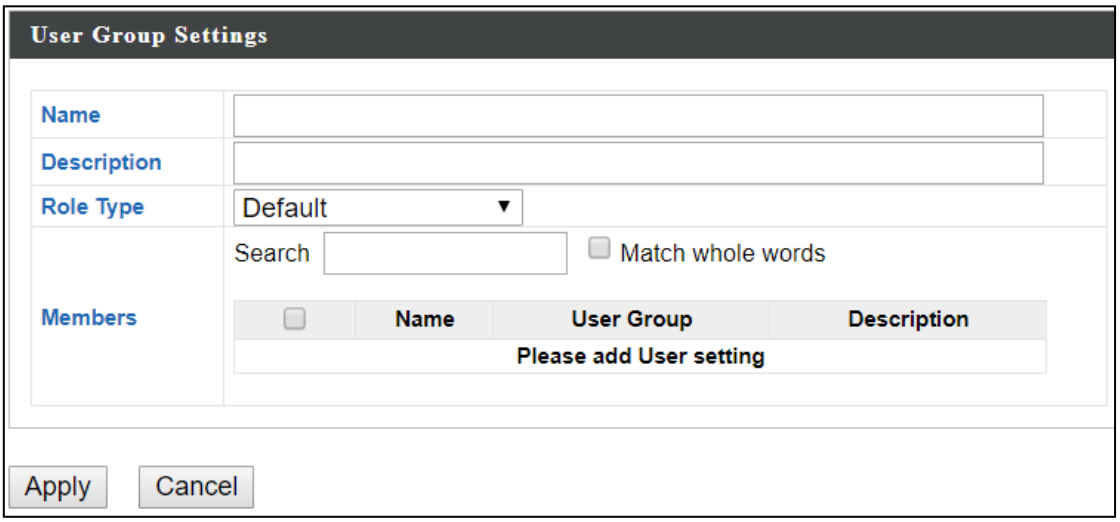



Press “Save” to save the above actions, or “Cancel” to forfeit the changes.
Check the checkbox of the user(s) you wish to delete and press “Delete Selected” to delete (multiple selections possible).
Press “Delete All Expired Users” to delete the expired users.
Press “Delete All” to delete all users.

Use “Upload List” to upload a user list.
Use “Download List” to download existing list for possible future reference.

## User Group Panel

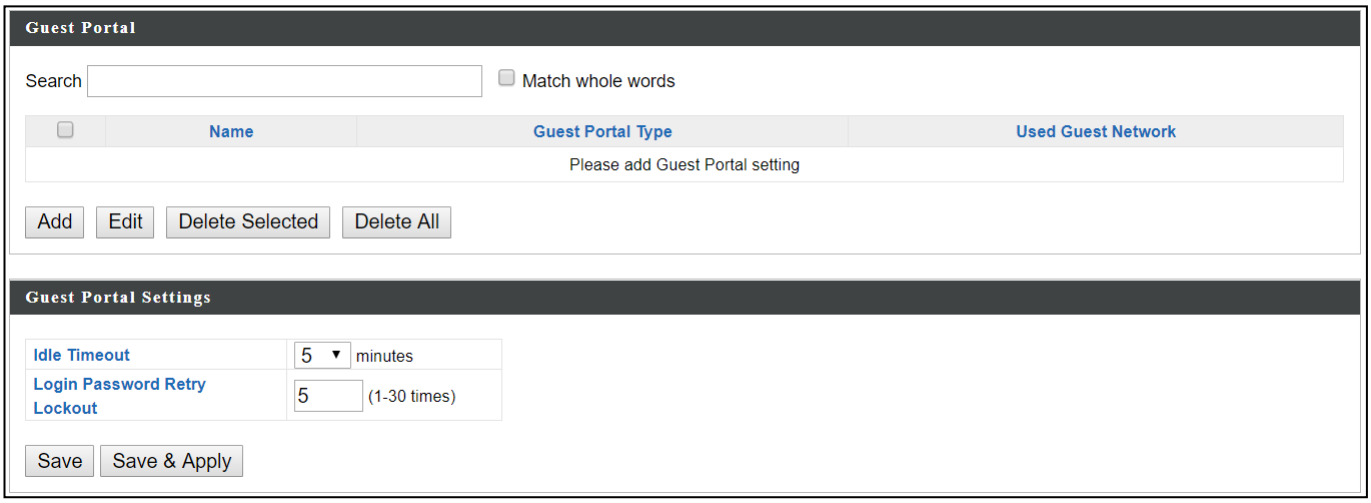
Click “Add” to add a new user group, or “Edit” to edit an existing user group, or “Clone” to clone an existing user group’s settings. For the 3 options specified above, enter the fields below:




Press “Save” to save the above actions, or “Cancel” to forfeit the changes.
Check the checkbox of the user group(s) you wish to delete and press “Delete Selected” to delete (multiple selections possible).
Press “Delete All” to delete all user groups.

## X-5-7 Guest Portal

A guest portal is a web page which is displayed to newly connected users before they are granted broader access to network resources.

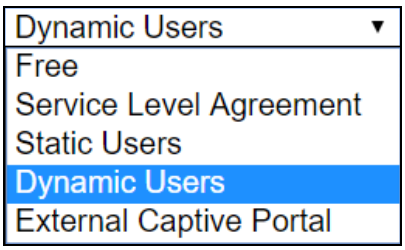



Check the checkbox of the portal(s) you wish to delete and press “Delete Selected” to delete (multiple selections possible).
Press “Delete All” to delete all portals.

| Guest Portal Settings | |
|---|---|
| **Idle Timeout** | Select an idle timeout time from the drop down menu. |
| **Login Password Retry Lockout** | Enter a number (between 1 and 30) for the number of login password retry. If login password has been entered incorrectly for the number entered here, it will be locked. |

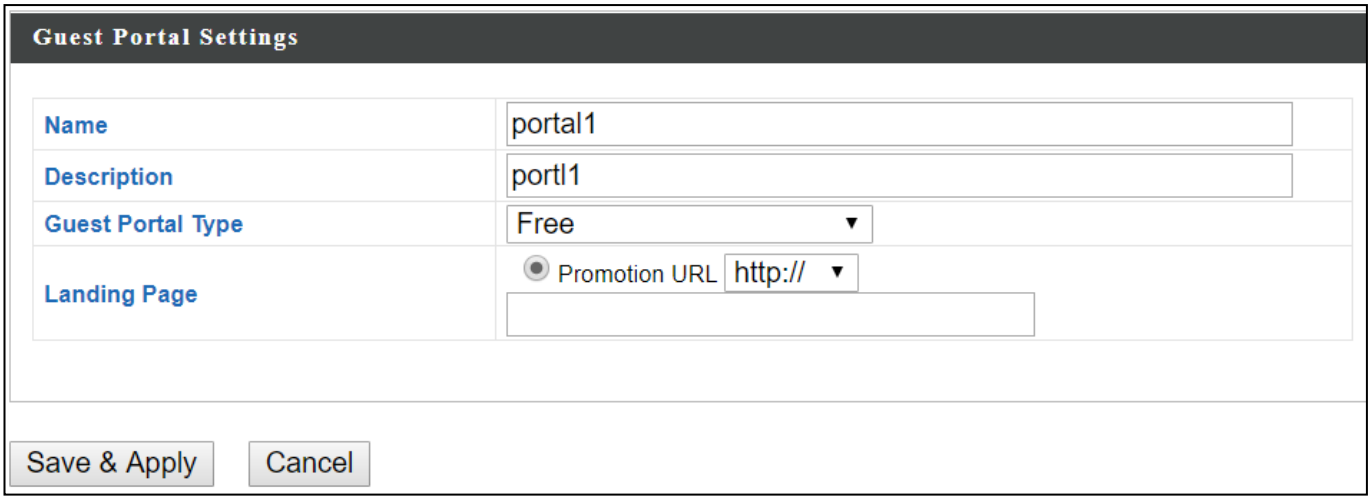
### <u>Add / Edit</u>

Enter the fields according to the selected “Guest Portal Type” below:



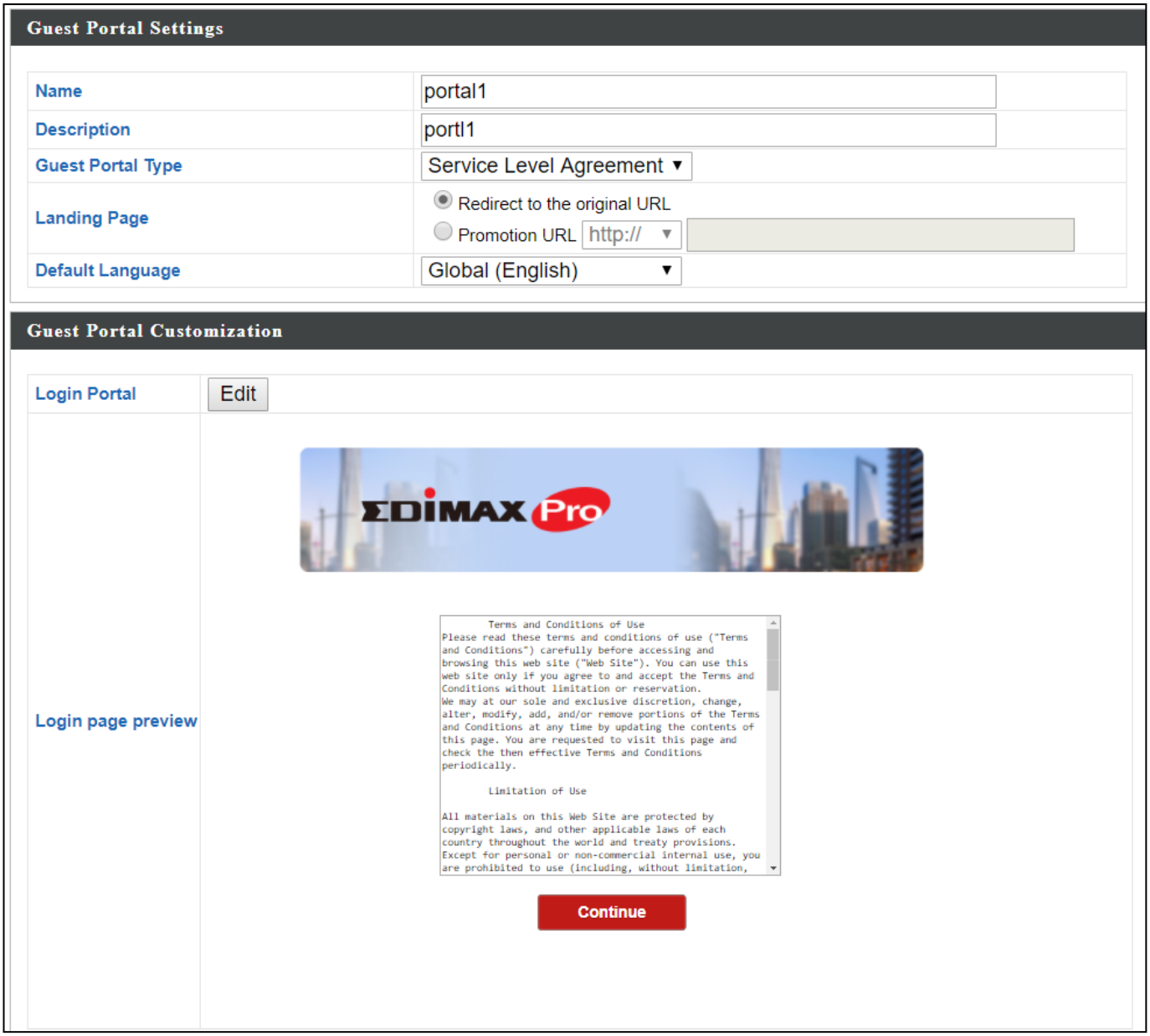

Press “Save & Apply” to save the above actions, or “Cancel” to forfeit the changes.

## X-5-7-1 Free Guest Portal Type




| Guest Portal Settings | |
|---|---|
| **Name** | Enter / edit portal name. |
| **Description** | Enter / edit description of the portal for reference. |
| **Landing Page** | Enter a “Promotion URL”. |

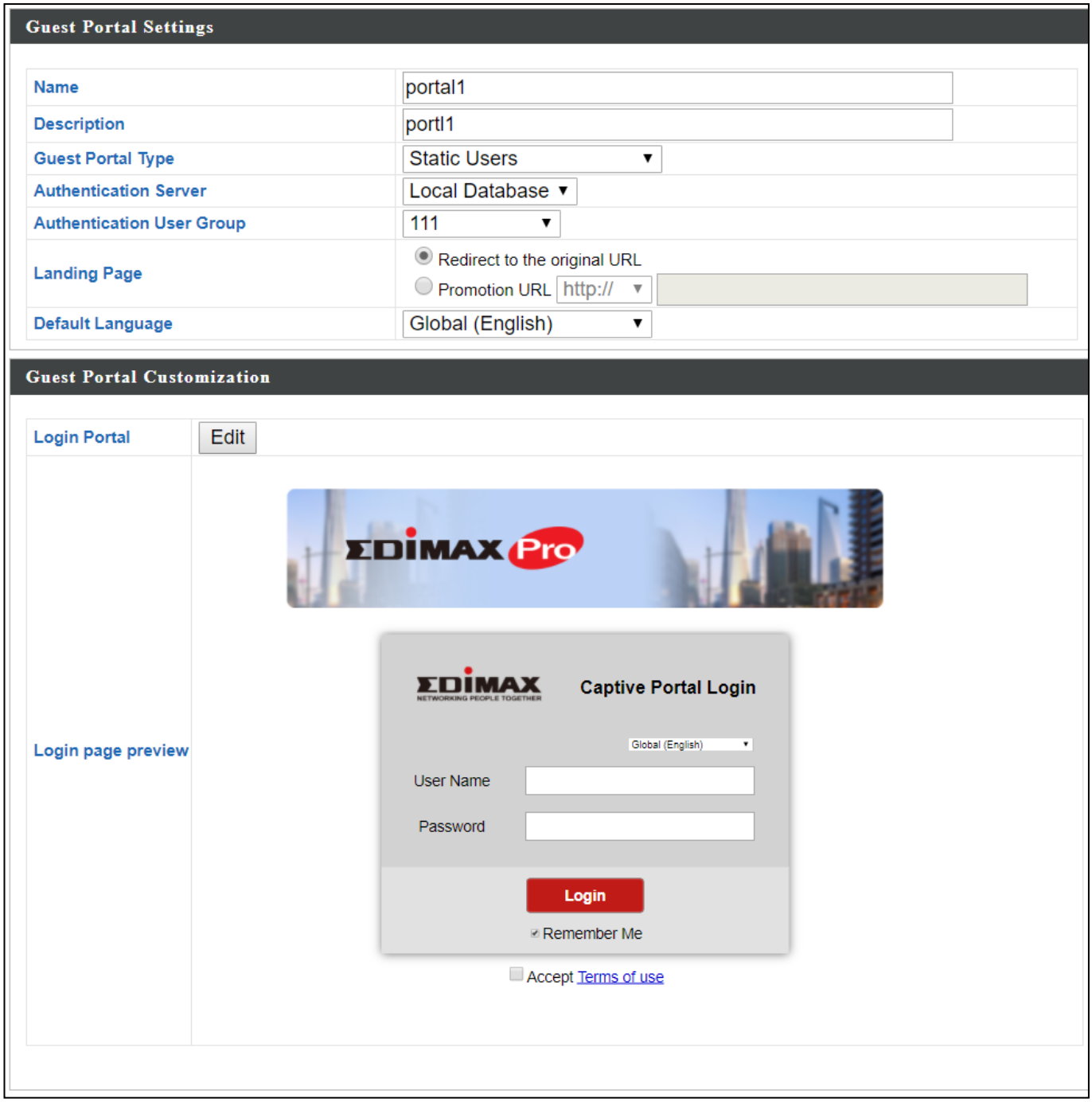
## X-5-7-2 User Level Agreement Guest Portal Type




| Guest Portal Settings | |
|---|---|
| **Name** | Enter / edit portal name. |
| **Description** | Enter / edit description of the portal for reference. |
| **Landing Page** | Select between “Redirect to the original URL” or “Promotion URL” (enter the promotion URL). |
| **Default Language** | Choose a default language. |

For **Login Portal**, click “Edit” and see below to edit the login portal.

## X-5-7-3 Static Users Guest Portal Type

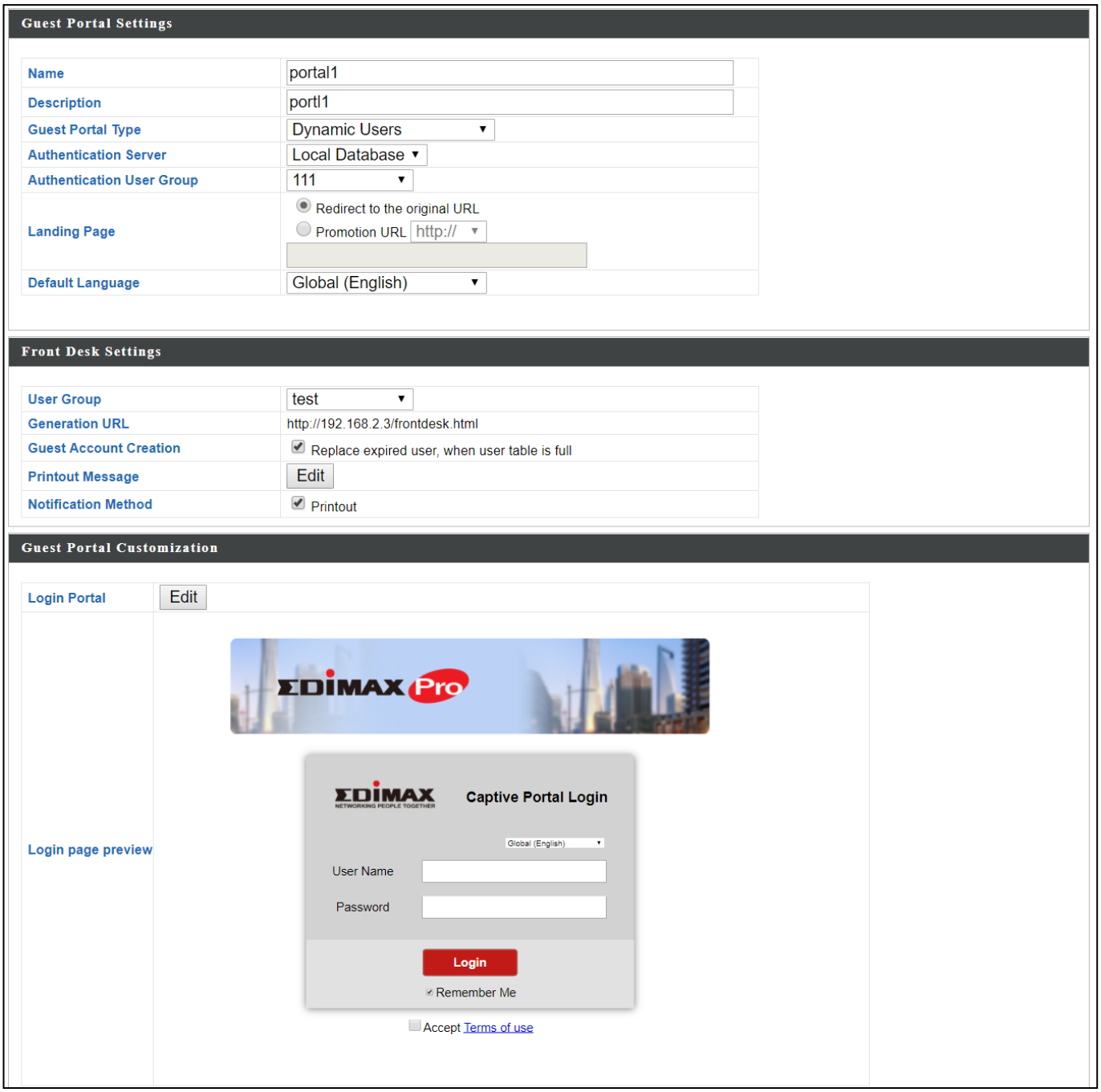



| Guest Portal Settings | |
|---|---|
| **Name** | Enter / edit portal name. |
| **Description** | Enter / edit description of the portal for reference. |
| **Authentication Server** | Select an authentication server. |
| **Authentication User Group** | Select an authentication user group. |

| | |
|---|---|
| **Landing Page** | Select between “Redirect to the original URL” or “Promotion URL” (enter the promotion URL). |
| **Default Language** | Choose a default language. |

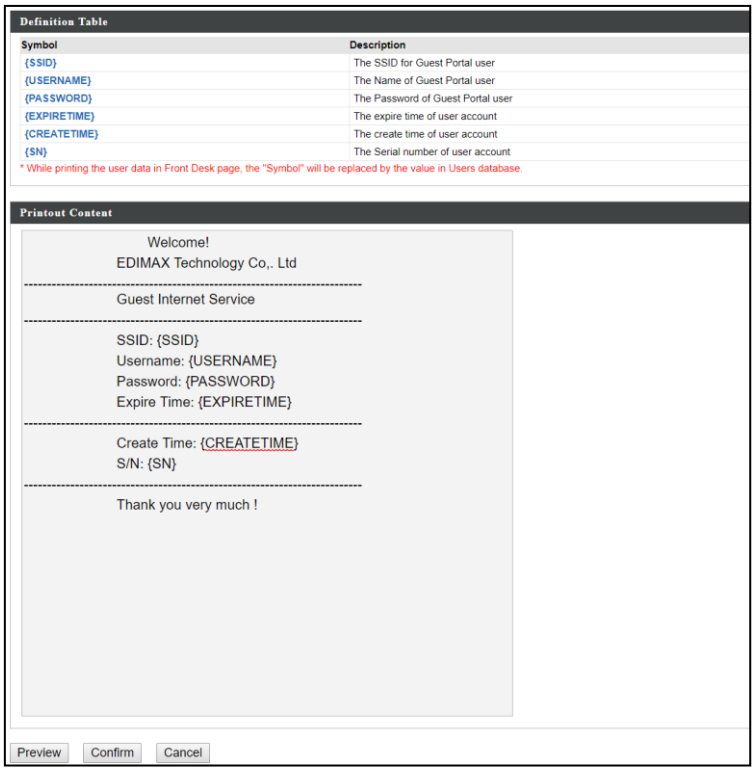
For **Login Portal**, click “Edit” and see below to edit the login portal.

## X-5-7-4 Dynamic Users Guest Portal Type



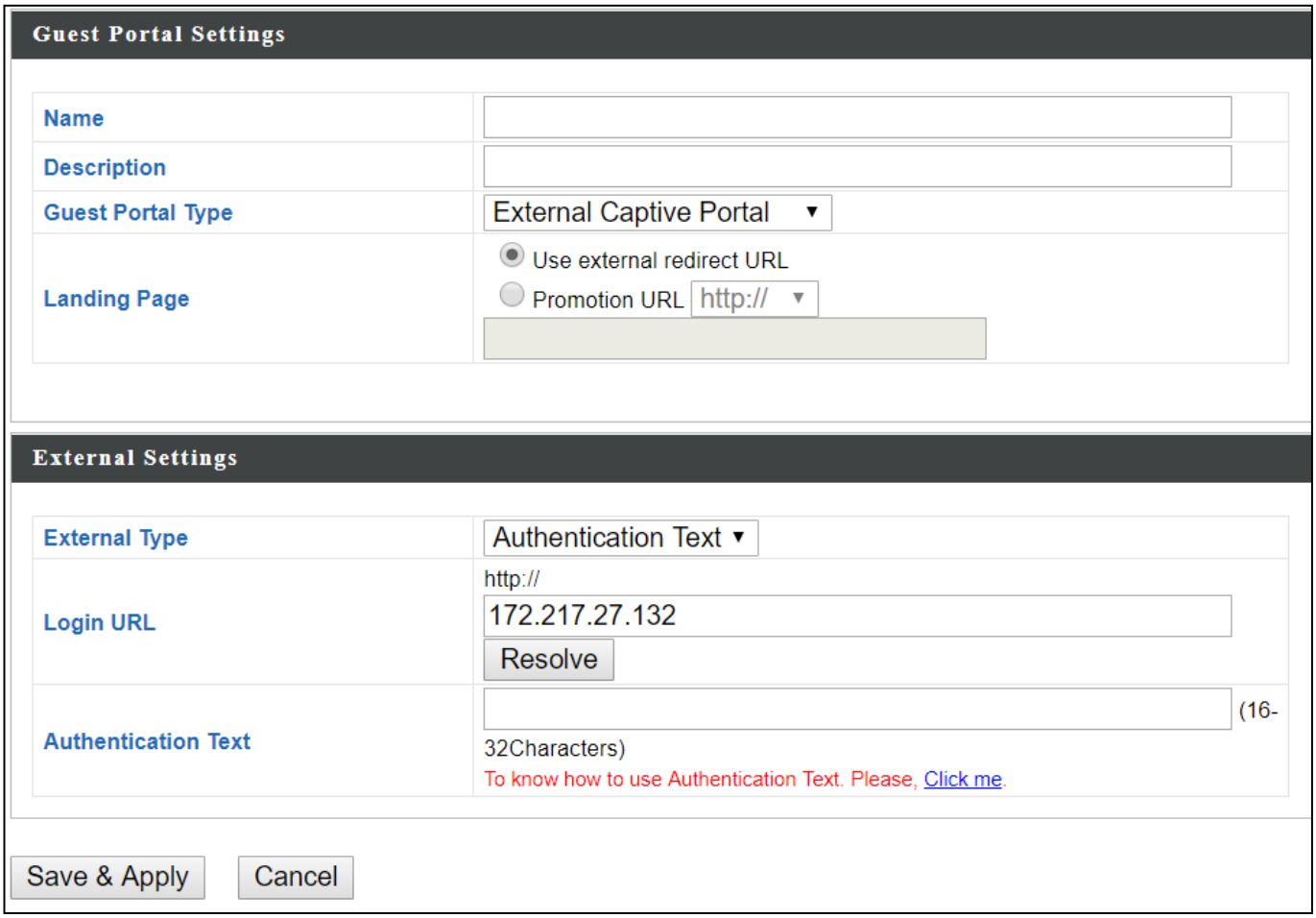
| Guest Portal Settings | |
|---|---|
| **Name** | Enter / edit portal name. |
| **Description** | Enter / edit description of the portal for reference. |
| **Authentication Server** | Select an authentication server. |
| **Authentication User Group** | Select an authentication user group. |
| **Landing Page** | Select between “Redirect to the original URL” or “Promotion URL” (enter the promotion URL). |
| **Default Language** | Choose a default language. |

| Front Desk Settings | |
|---|---|
| **User Group** | Select a user group. |
| **Generation URL** | Go to this URL to create dynamic account (and password) for a user. |
| **Guest Account Creation** | Check / uncheck to enable / disable “Replace expired user when user table is full”. |
| **Printout Message** | Click “Edit” to edit printout message, please see below. |
| **Notification Method** | Check / uncheck to enable / disable notification by printout. |



Click “Preview” to preview the printout, “Confirm” to confirm the message, or “Cancel” to cancel the changes.
For **Login Portal**, click “Edit” and see below to edit the login portal.

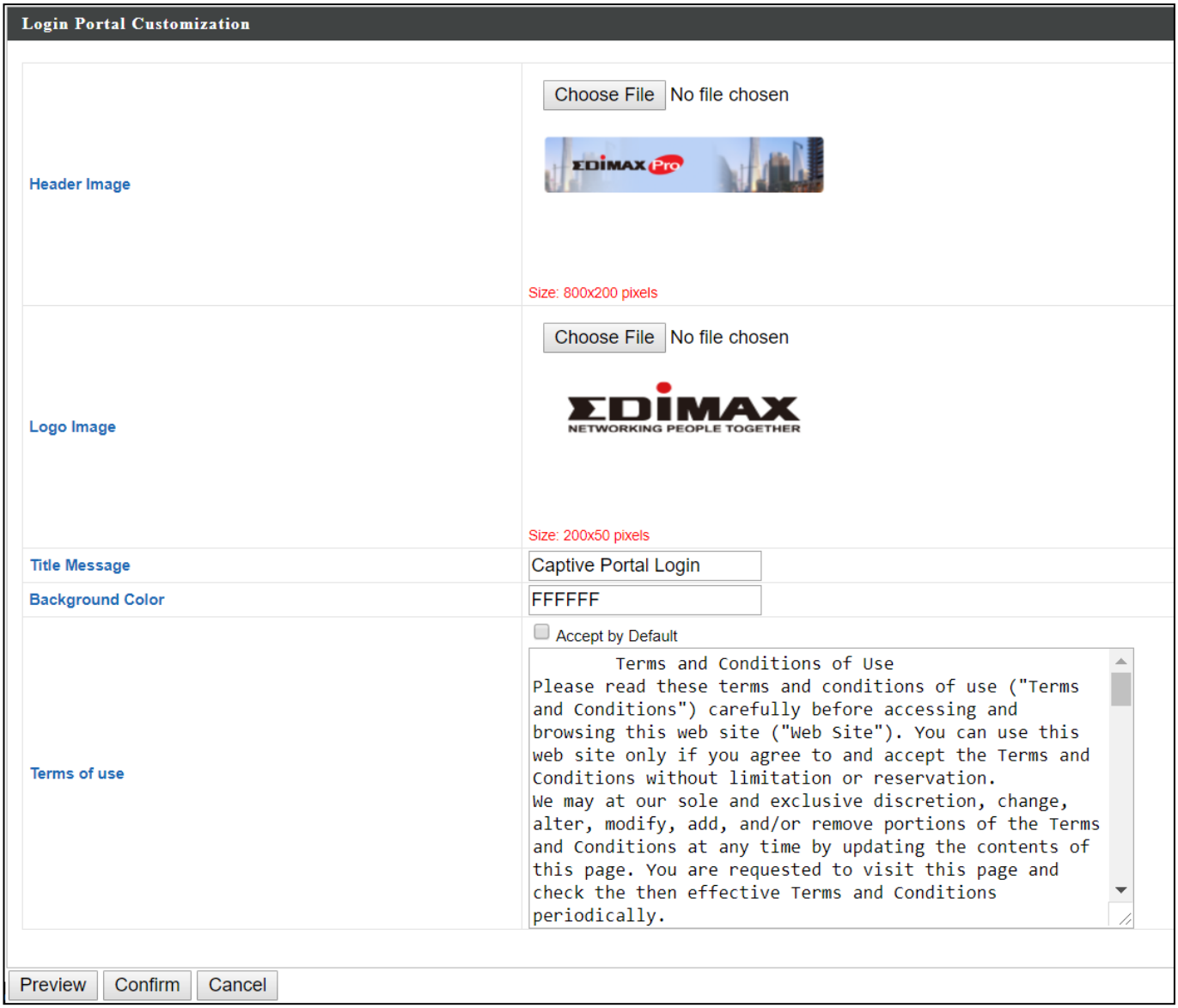
### X-5-7-5 External Captive Portal Guest Portal Type



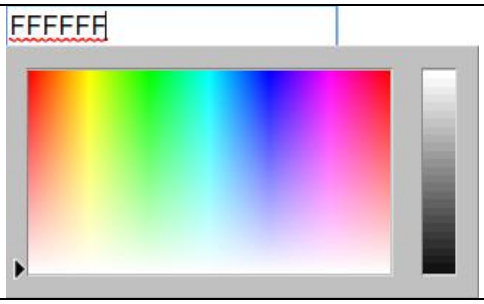

| Guest Portal Settings | |
|---|---|
| **Name** | Enter / edit portal name. |
| **Description** | Enter / edit description of the portal for reference. |
| **Landing Page** | Select between “Use external redirect URL” or “Promotion URL” (enter the promotion URL). |

| External Settings | |
|---|---|
| **Login URL** | Enter / edit a login URL. |
| **Authentication Text** | Enter an authentication text.<br>Click “Click me” for help. |

## X-5-7-6 Editing “Login Portal”




| | |
|---|---|
| **Header Image** | Click “Choose File” to select a file as the header image. |
| **Logo Image** | Click “Choose File” to select a file as the logo image.<br>(Only for Static and Dynamic users guest portal type) |
| **Title Message** | Enter / edit a title message.<br>(Only for Static and Dynamic users guest portal type) |
| **Background Color** | Click on the field where color selection will be available.<br>Select a desired color. |

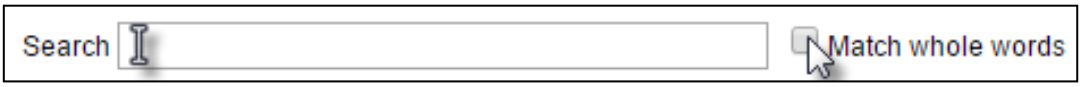
| | |
|---|---|
| |  |
| **Terms of use** | Enter / edit the terms of use message |

Click “Preview” to preview the printout, “Confirm” to confirm the message, or “Cancel” to cancel the changes.

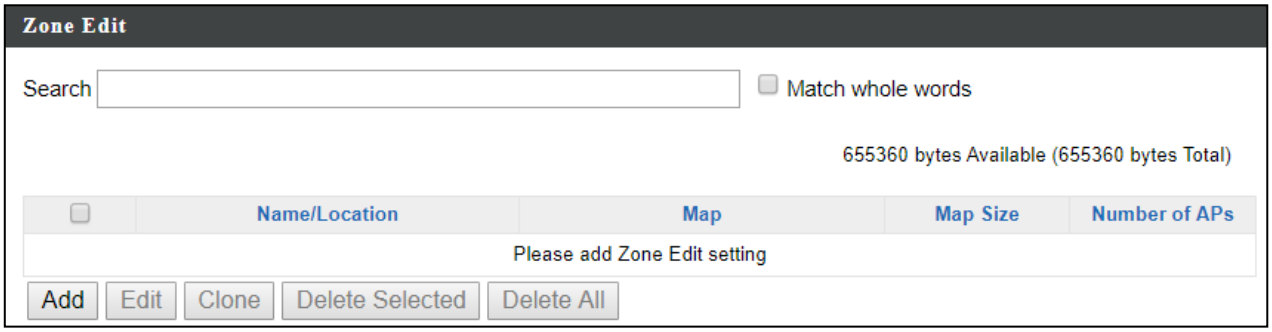
## X-5-8 Zone Edit

Zone Edit displays information about zones for use with the Zone Plan feature and allows you to add or edit zones.

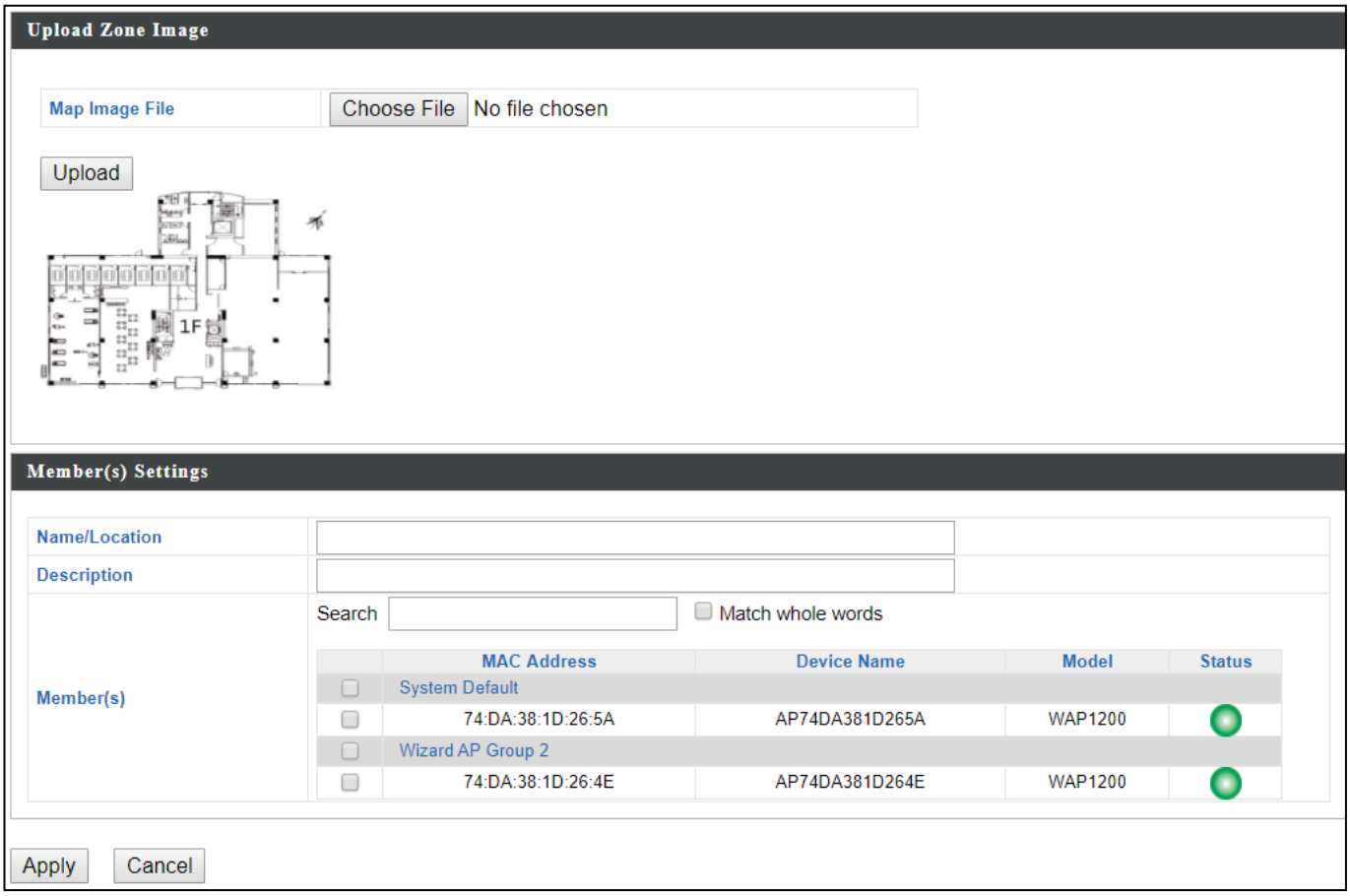
The **search** function can be used to find existing zones. Type in the search box and the list will update:




Make a selection using the check-boxes and click "**Edit**" or click "**Add**" to add a new zone.

# Add/Edit Zone

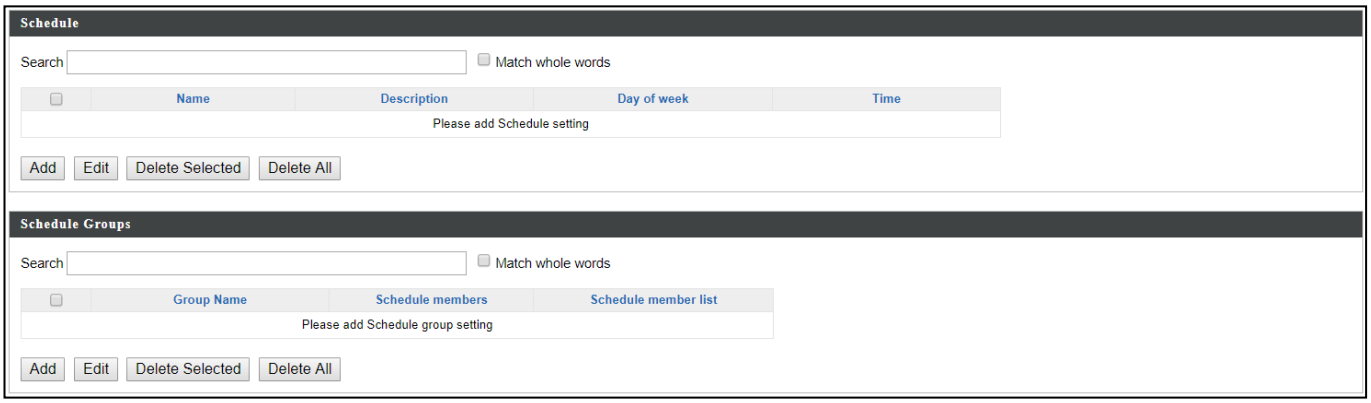



| Upload Zone Image | |
|---|---|
| **Choose File** | Click to locate an image file to be displayed as a map in the Zone Plan feature. Typically a floor plan image is useful. |

| Member(s) Setting | |
|---|---|
| **Name/Location** | Name the location or simply enter the name of the location. |
| **Description** | Enter a description of the zone/location for reference. |
| **Members** | Assign access points to the specified zone/location for use with the Zone Plan feature. |

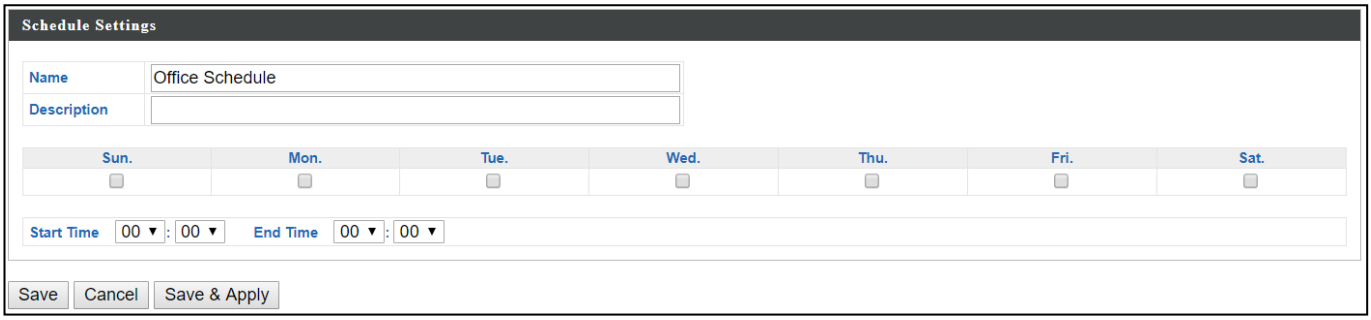
## X-5-9 Schedule

Setup schedule start time/end time in Active WLAN Schedule Settings or Guest Network Advanced Settings.




Check the checkbox of the schedules(s) you wish to delete and press “Delete Selected” to delete (multiple selections possible).
Press “Delete All” to delete all schedules.

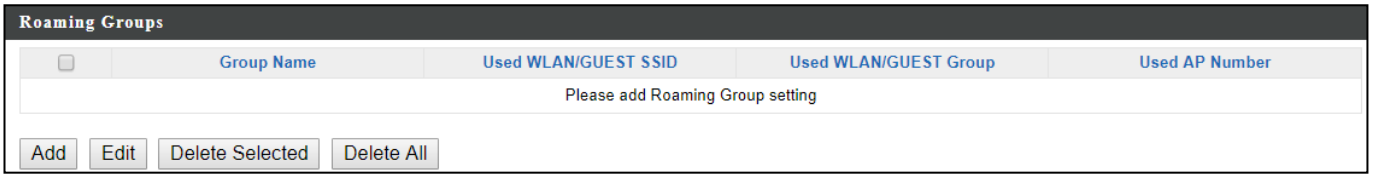
### <u>Add / Edit</u>



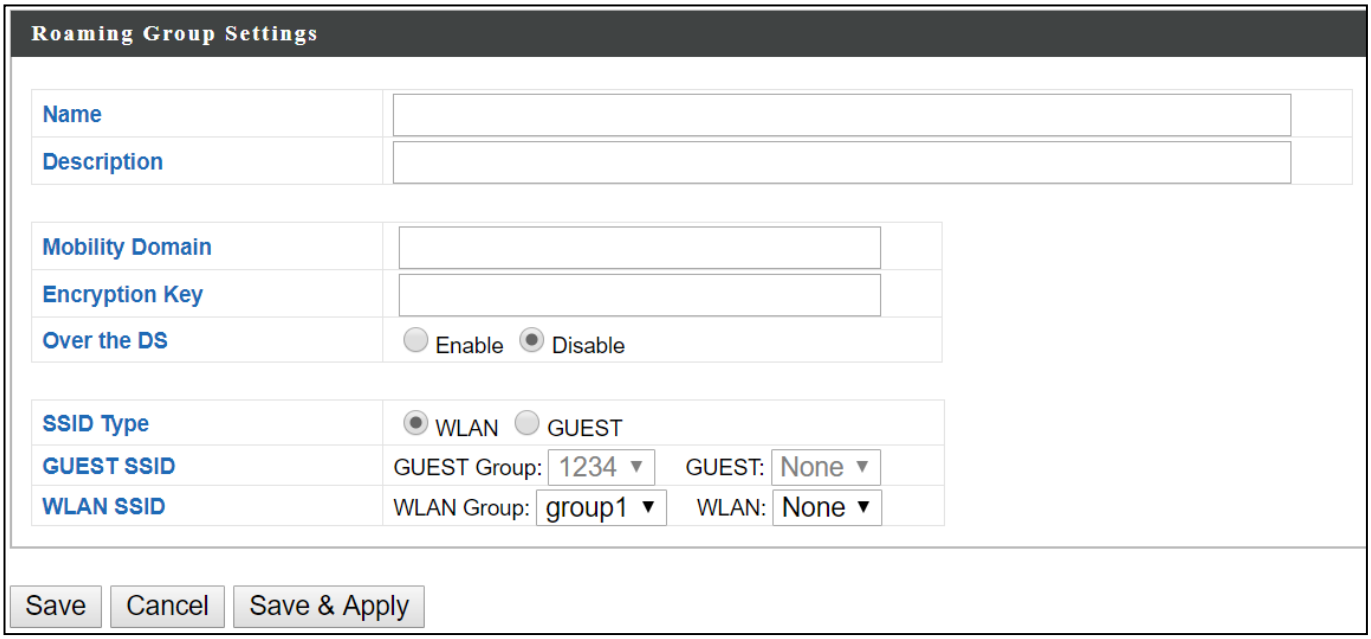

Press “Save” to save the above actions, “Cancel” to forfeit the changes, or “Save & Apply” to save and apply the above actions.

## X-5-10 Smart Roaming

Smart roaming permits continuous connectivity on wireless devices that are moving. The handoffs from one station to another are fast and secure, and are managed seamlessly.




**Add / Edit**

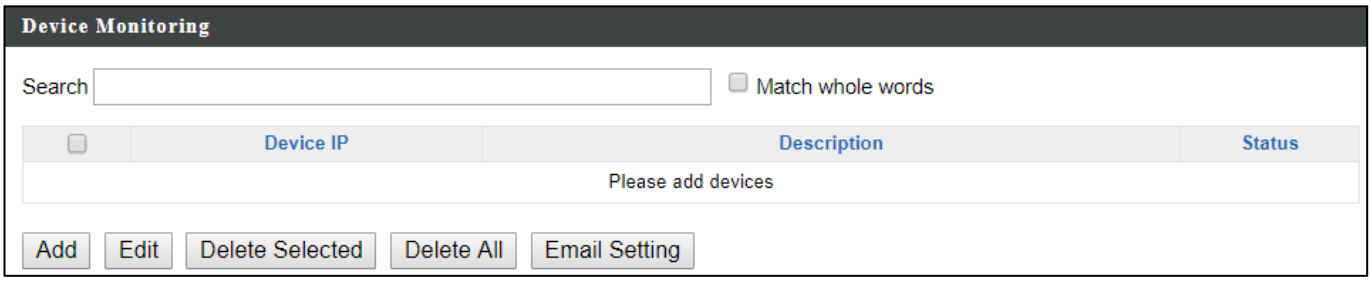



| Roaming Group Settings | |
|---|---|
| **Name** | Enter / edit the name of roaming group. |
| **Description** | Enter / edit a description for reference. |
| **Mobility Domain** | Enter / edit a mobility domain. |
| **Encryption Key** | Enter / edit an encryption key. |
| **Over the DS** | Check to enable / disable this function. |
| **SSID Type** | Select the SSID type. |
| **Guest SSID** | Select the Guest Group from the drop down menu. Select a Guest from the drop down menu. |
| **WLAN SSID** | Select the WLAN Group from the down down menu. Select a WLAN from the drop down menu. |

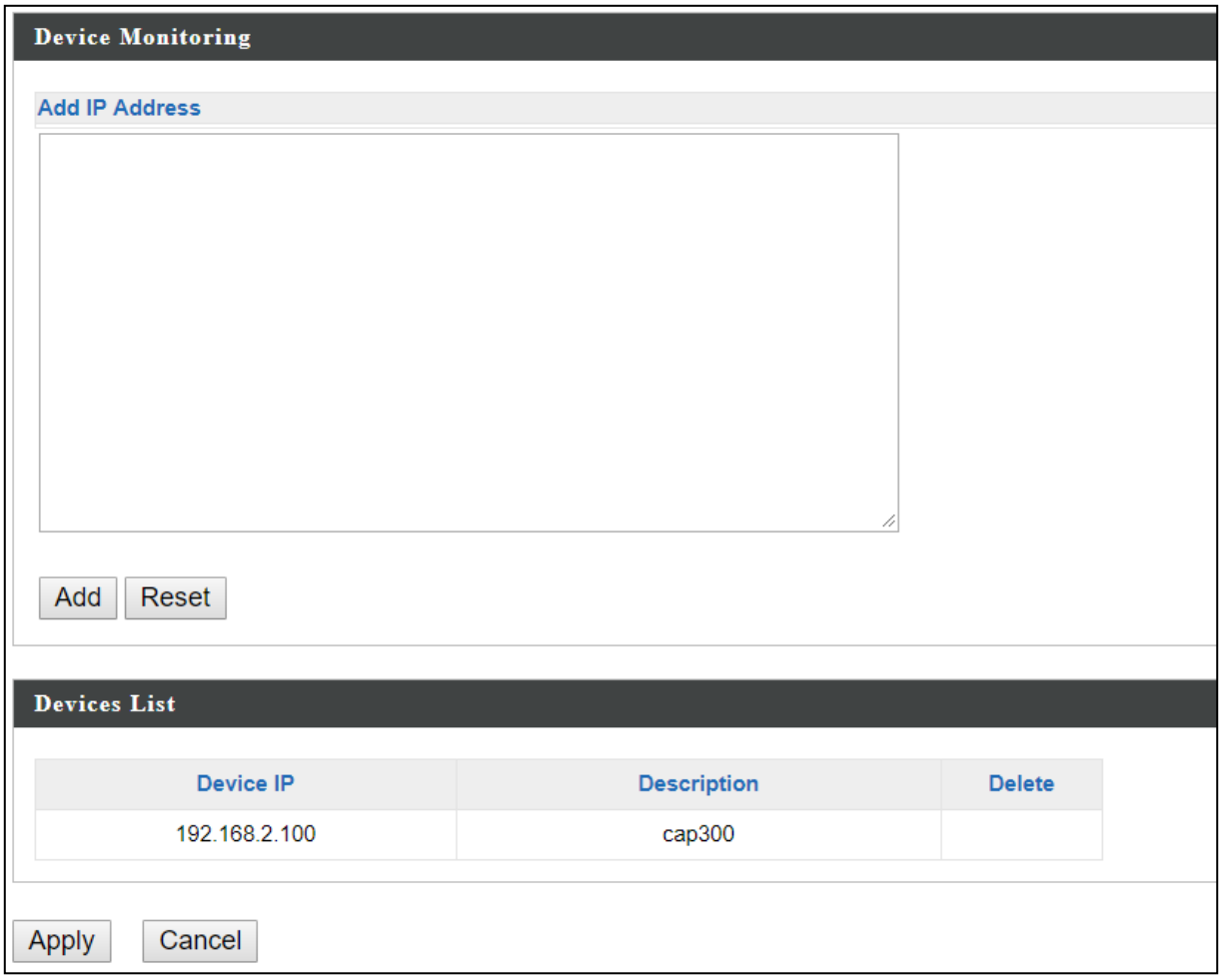
Press “Save” to save the above actions, “Cancel” to forfeit the changes, or “Save & Apply” to save and apply the above actions.

## X-5-11 Device Monitoring

This page monitors the device's status (alive or not alive) after you set the Device IP.




## Add / Edit

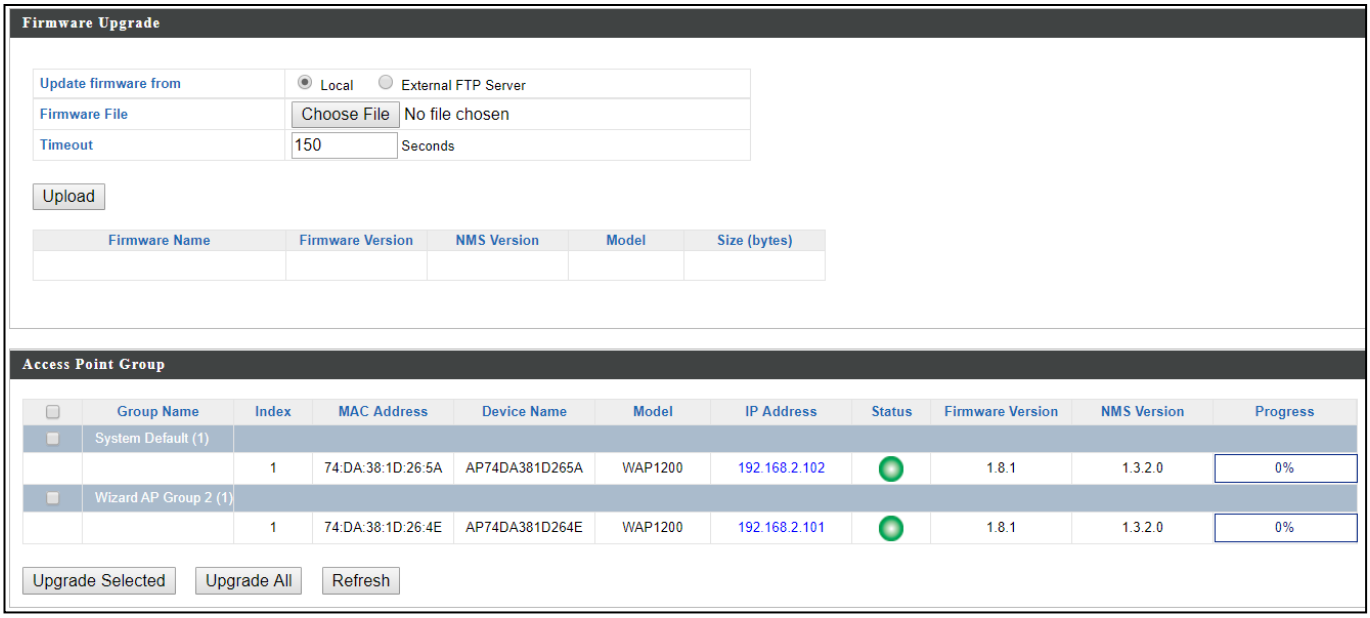



Enter an IP Address(es) and click "Add" to add the device(s). Click "Reset" to clear the field.
Press "Apply" to apply the above action or "Cancel" to forfeit the addition.

## X-5-12 Firmware Upgrade

Firmware Upgrade allows you to upgrade firmware to Access Point Groups. First, upload the firmware file from a local disk or external FTP server: locate the file and click “Upload” or “Check”. The table below will display the *Firmware Name, Firmware Version, NMS Version, Model and Size*.

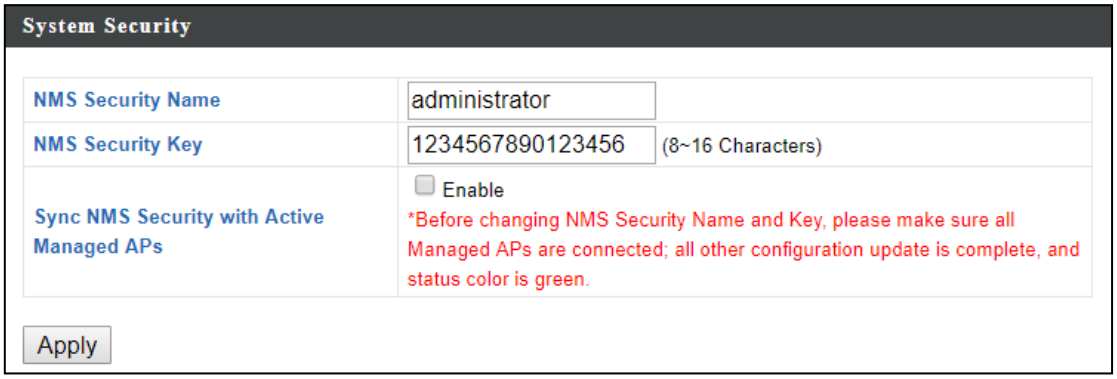
Then click “Upgrade All” to upgrade all access points in the Array or select Access Point groups from the list using check-boxes and click “Upgrade Selected” to upgrade only selected access points.



## X-5-13 Advanced

### X-5-13-1 System Security

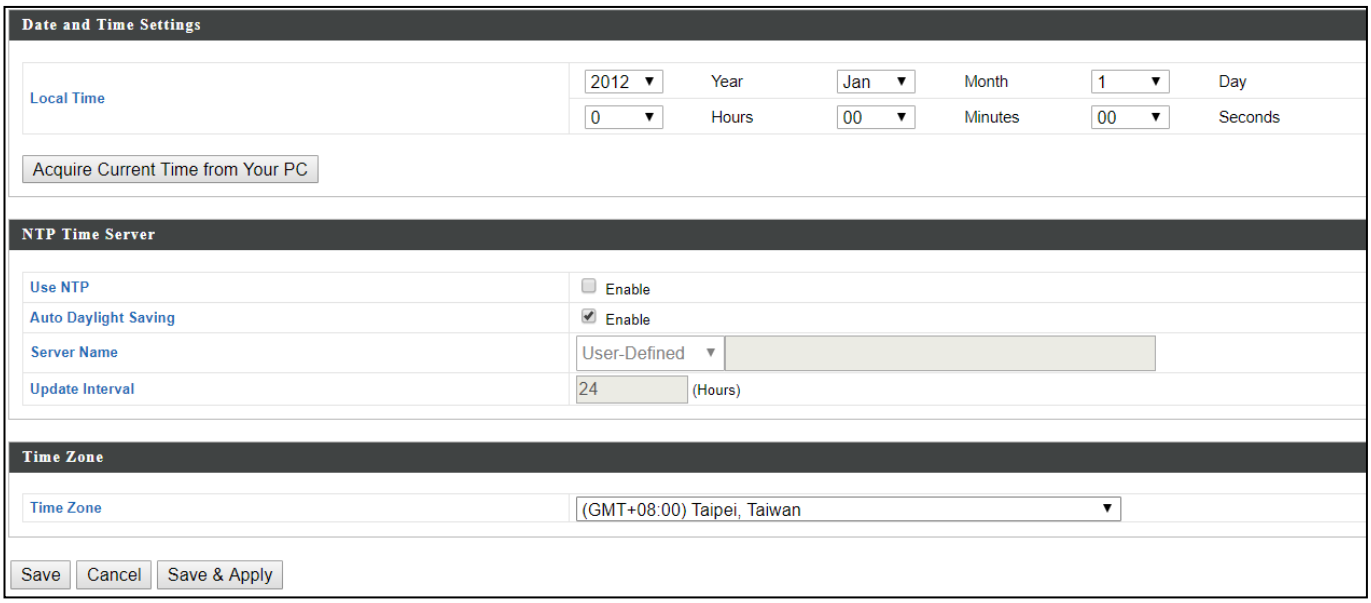
Configure the NMS system login name and password.




Press “Apply” to apply the settings.

### X-5-13-2 Date & Time

Configure the date & time settings of the AP Array. The date and time of the access points can be configured manually or can be synchronized with a time server.



| Date and Time Settings | |
|---|---|
| **Local Time** | Set the access point's date and time manually using the drop down menus. |
| **Acquire Current Time from your PC** | Click "Acquire Current Time from Your PC" to enter the required values automatically according to your computer's current time and date. |

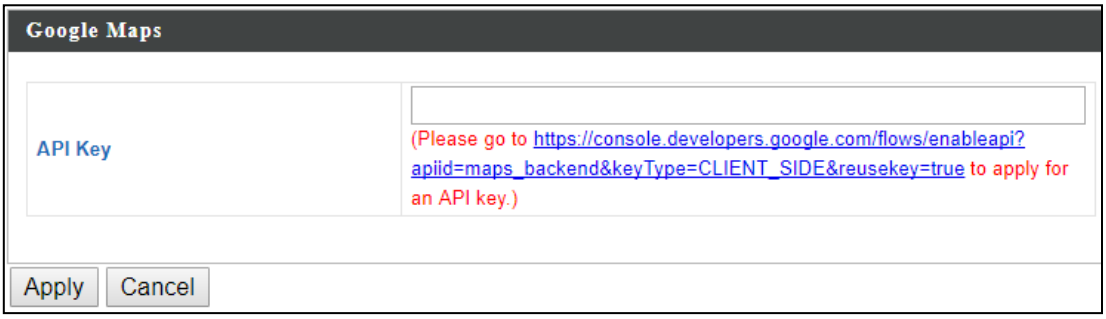
| NTP Time Server | |
|---|---|
| **Use NTP** | The access point also supports NTP (Network Time Protocol) for automatic time and date setup. |
| **Server Name** | Enter the host name or IP address of the time server if you wish. |
| **Update Interval** | Specify a frequency (in hours) for the access point to update/synchronize with the NTP server. |

| Time Zone | |
|---|---|
| **Time Zone** | Select the time zone of your country/ region. If your country/region is not listed, please select another country/region whose time zone is the same as yours. |

Press "Save" to save the above actions, "Cancel" to forfeit the changes, or "Save & Apply" to save and apply the above actions.

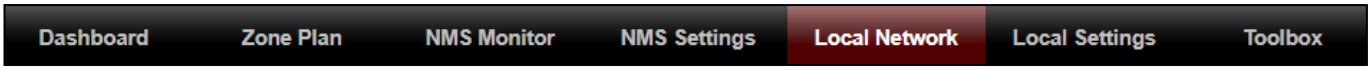
## X-5-13-3 Google Maps

Click on the link below the entry field and follow Google's instructions to obtain an API key. Enter the key into the entry field.




Press "Apply" to apply the setting or "Cancel" to forfeit the change.

## X-6 Local Network



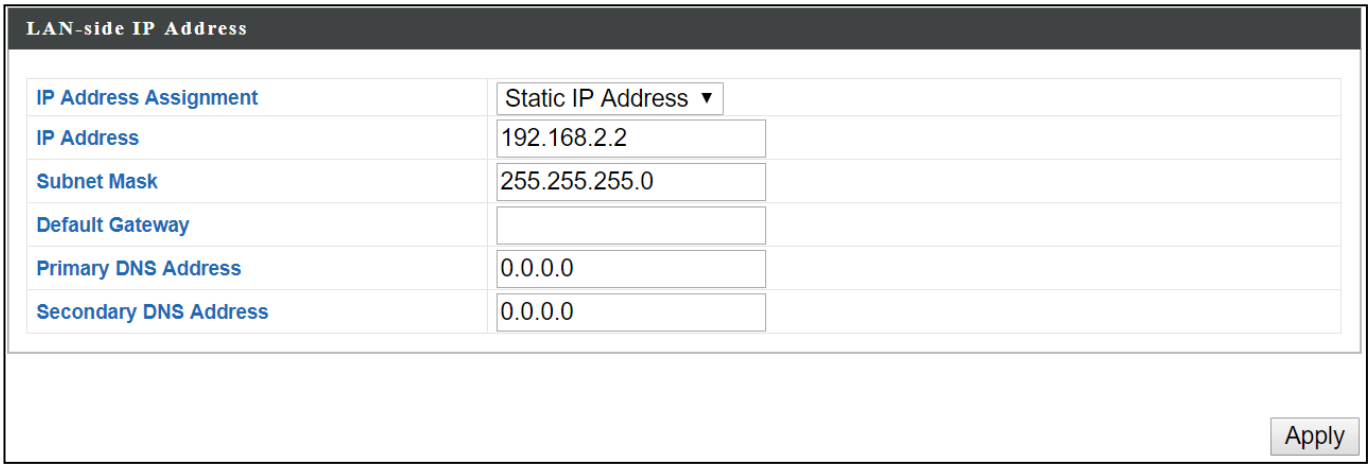

### X-6-1 Network Settings

#### X-6-1-1 LAN-Side IP Address

The "LAN-side IP address" page allows you to configure your AP Controller on your Local Area Network (LAN). You can enable the access point to dynamically receive an IP address from your router's DHCP server or you can specify a static IP address for your access point, as well as configure DNS servers. You can also set your AP Controller as a DHCP server to assign IP addresses to other devices on your LAN.

***The access point's default IP address is 192.168.2.2***

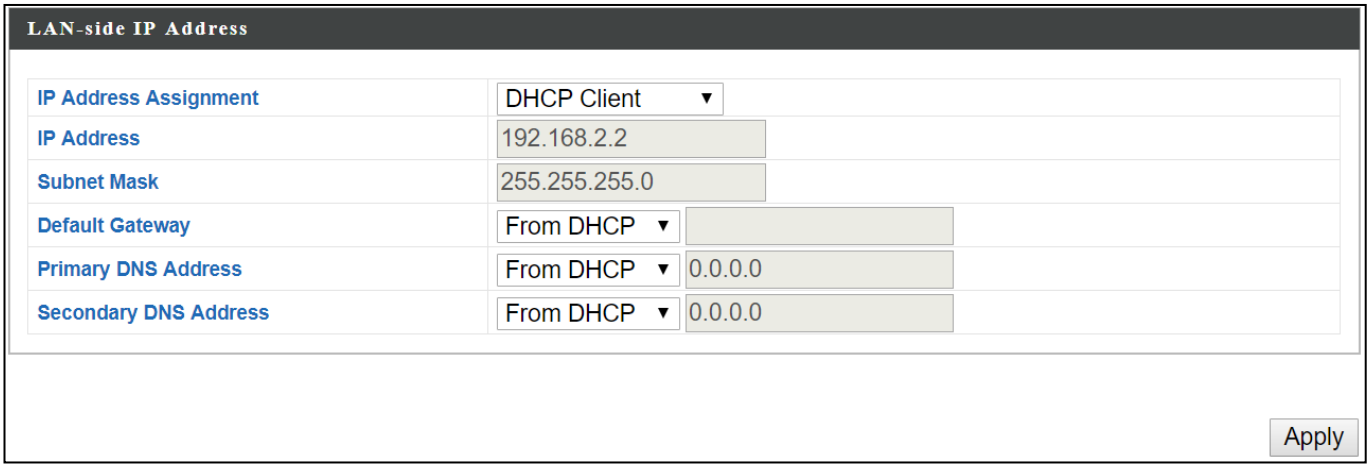
***Disable other DHCP servers on the LAN if using AP Controllers DHCP Server.***



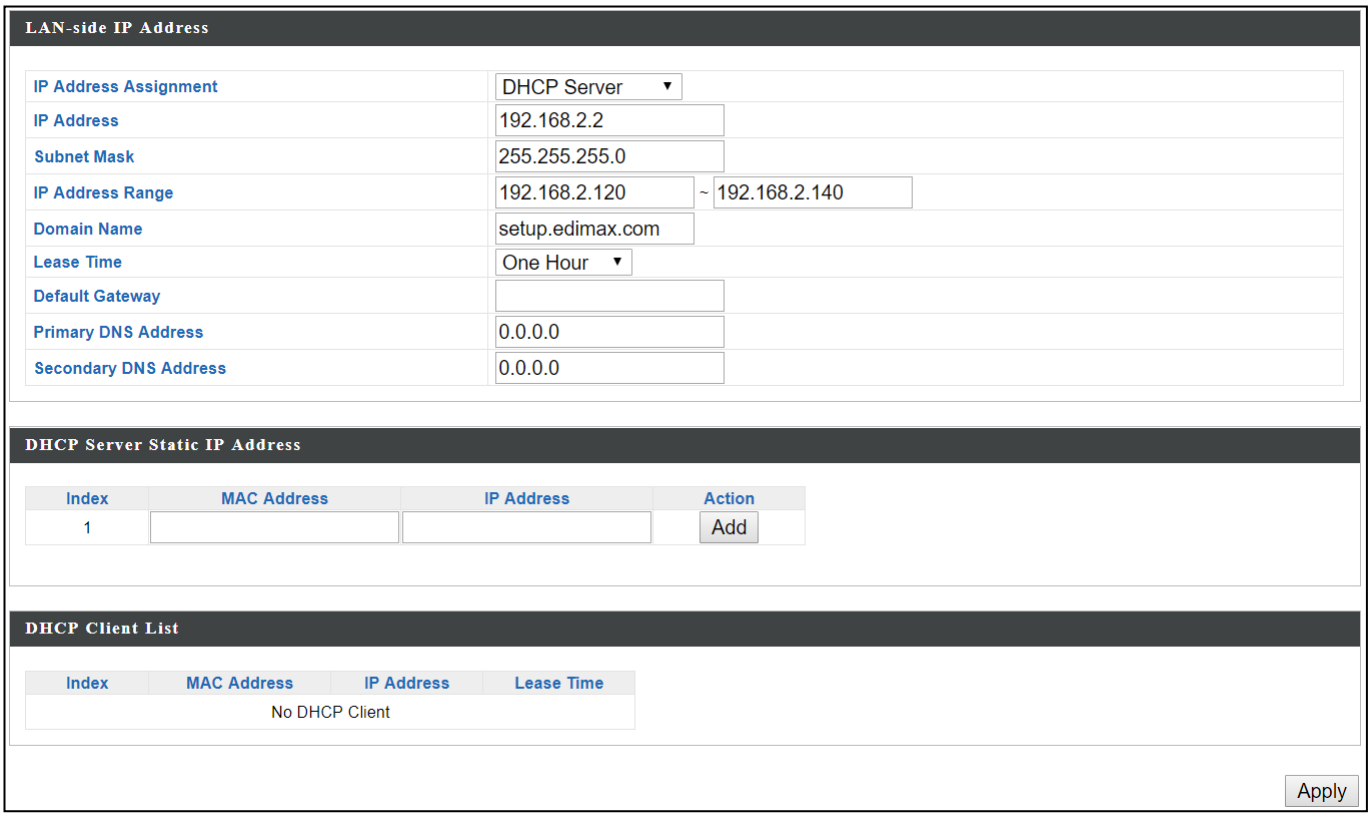

| LAN-side IP Address | |
|---|---|
| **IP Address Assignment** | Select "Static IP" to manually specify a static/fixed IP address for your access point. Select "DHCP Client" for your access point to be assigned a dynamic IP address from your router's DHCP server, or select "DHCP Server" for your access point to |

| | |
|---|---|
| | act as a DHCP server and assign IP addresses on your LAN. |

| Static IP Address | |
|---|---|
| **IP Address** | Specify the IP address here. This IP address will be assigned to your access point and will replace the default IP address. |
| **Subnet Mask** | Specify a subnet mask. The default value is 255.255.255.0 |
| **Default Gateway** | For DHCP users, select “From DHCP” to get default gateway from your DHCP server or “User-Defined” to enter a gateway manually. For static IP users, the default value is blank. |
| **Primary DNS Address** | For static IP users, the default value is blank. |
| **Secondary DNS Address** | For static IP users, the default value is blank. |




| DHCP Client | |
|---|---|
| **IP Address** | When “DHCP Client” is selected this value cannot be modified. |
| **Subnet Mask** | When “DHCP Client” is selected this value cannot be modified. |
| **Default Gateway** | Select “From DHCP” or select “User-Defined” and enter a default gateway. |
| **Primary DNS Address** | Select “From DHCP” or select “User-Defined” and enter a primary DNS address. |
| **Secondary DNS Address** | Select “From DHCP” or select “User-Defined” and enter a secondary DNS address. |



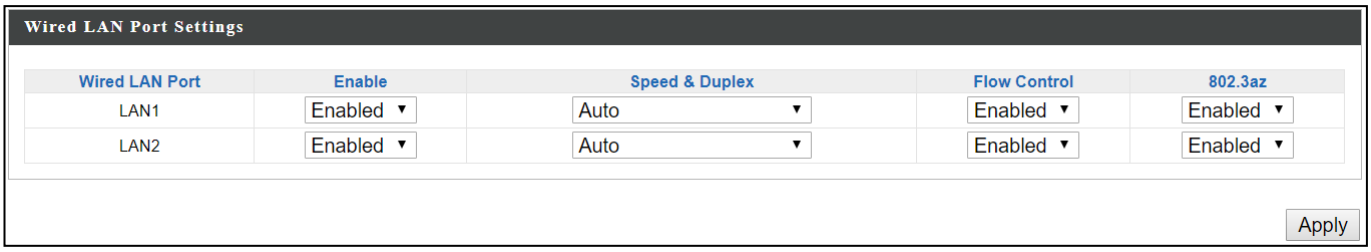

| DHCP Server | |
|---|---|
| **IP Address** | Specify the IP address here. This IP address will be assigned to your access point and will replace the default IP address. |
| **Subnet Mask** | Specify a subnet mask. The default value is 255.255.255.0 |
| **IP Address Range** | Enter the start and end IP address of the IP address range which your access point's DHCP server will assign to devices on the network. |
| **Domain Name** | Enter a domain name. |
| **Lease Time** | Select a lease time from the drop down menu. IP addresses will be assigned for this period of time. |
| **Default Gateway** | Enter a default gateway. |
| **Primary DNS Address** | Enter a primary DNS address. |
| **Secondary DNS Address** | Enter a secondary DNS address. |

Your access point's DHCP server can be configured to assign static (fixed) IP addresses to specified network devices, identified by their unique MAC address:

| DHCP Server Static IP Address | |
|---|---|
| **MAC Address** | Enter the MAC address of the network device to be assigned a static IP address. |
| **IP Address** | Specify the IP address to assign the device. |
| **Add** | Click to assign the IP address to the device. |

### X-6-1-2 LAN Port Settings

The “LAN Port” page allows you to configure the settings for your AP Controllers wired LAN (Ethernet) ports.

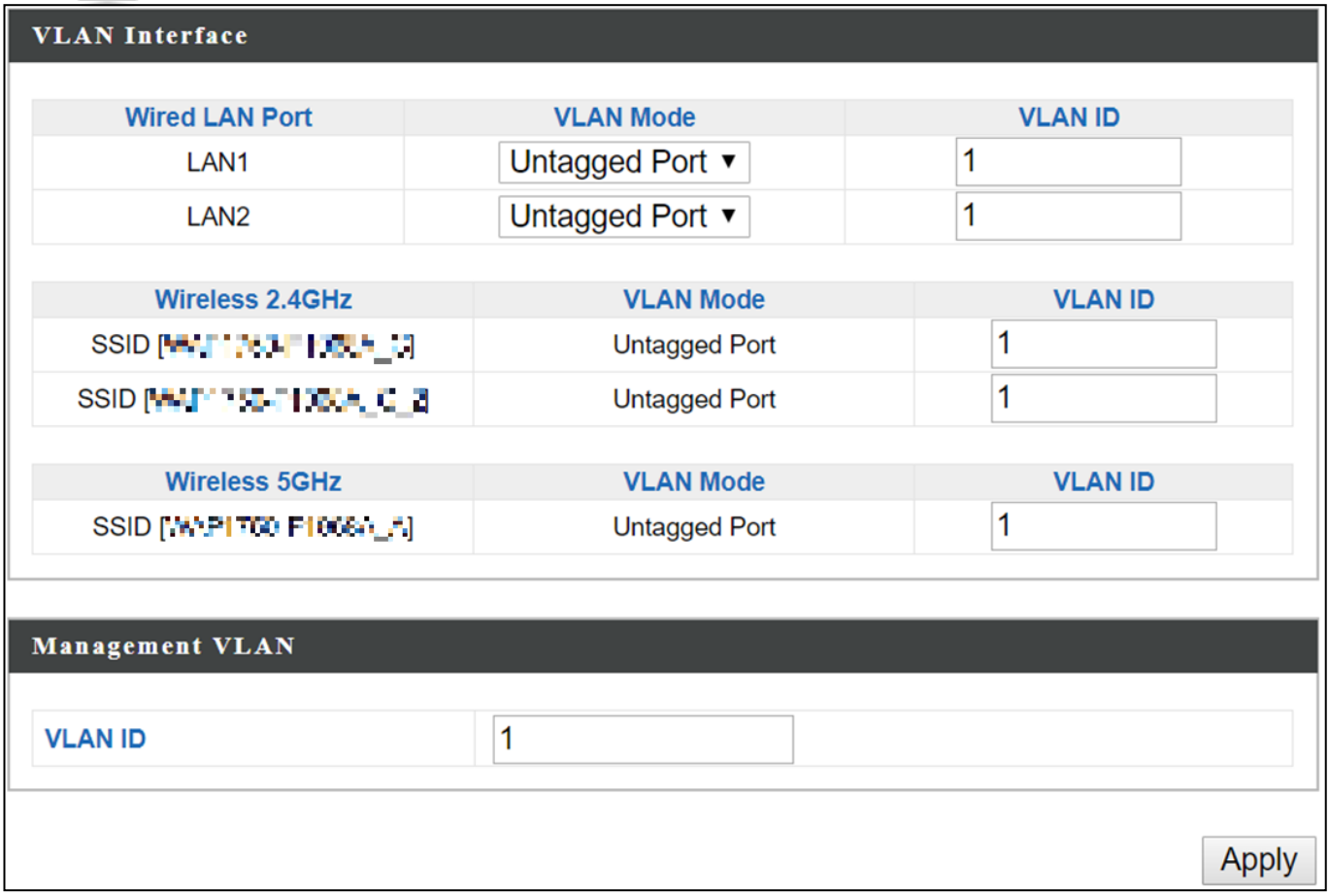



| | |
|---|---|
| **Wired LAN Port** | Identifies LAN port 1 or 2. |
| **Enable** | Enable/disable specified LAN port. |
| **Speed & Duplex** | Select a speed & duplex type for specified LAN port, or use the “Auto” value. LAN ports can operate up to 1000Mbps and full-duplex enables simultaneous data packets transfer/receive. |
| **Flow Control** | Enable/disable flow control. Flow control can pause new session request until current data processing is complete, in order to avoid device overloads under heavy traffic. |
| **802.3az** | Enable/disable 802.3az. 802.3az is an Energy Efficient Ethernet feature which disables unused interfaces to reduce power usage. |

## X-6-1-3 VLAN

"VLAN" (Virtual Local Area Network) enables you to configure VLAN settings. A VLAN is a local area network which maps workstations virtually instead of physically and allows you to group together or isolate users from each other.

***VLAN IDs in the range 1 – 4095 are supported.***




| VLAN Interface | |
|---|---|
| **Wired LAN Port/Wireless** | Identifies LAN port 1 or 2 and wireless SSIDs. |
| **VLAN Mode** | Select "Tagged Port" or "Untagged Port" for specified LAN interface. |
| **VLAN ID** | Set a VLAN ID for specified interface, if "Untagged Port" is selected. |

| Management VLAN | |
|---|---|
| **VLAN ID** | Specify the VLAN ID of the management VLAN. Only the hosts belonging to the same VLAN can manage the device. |

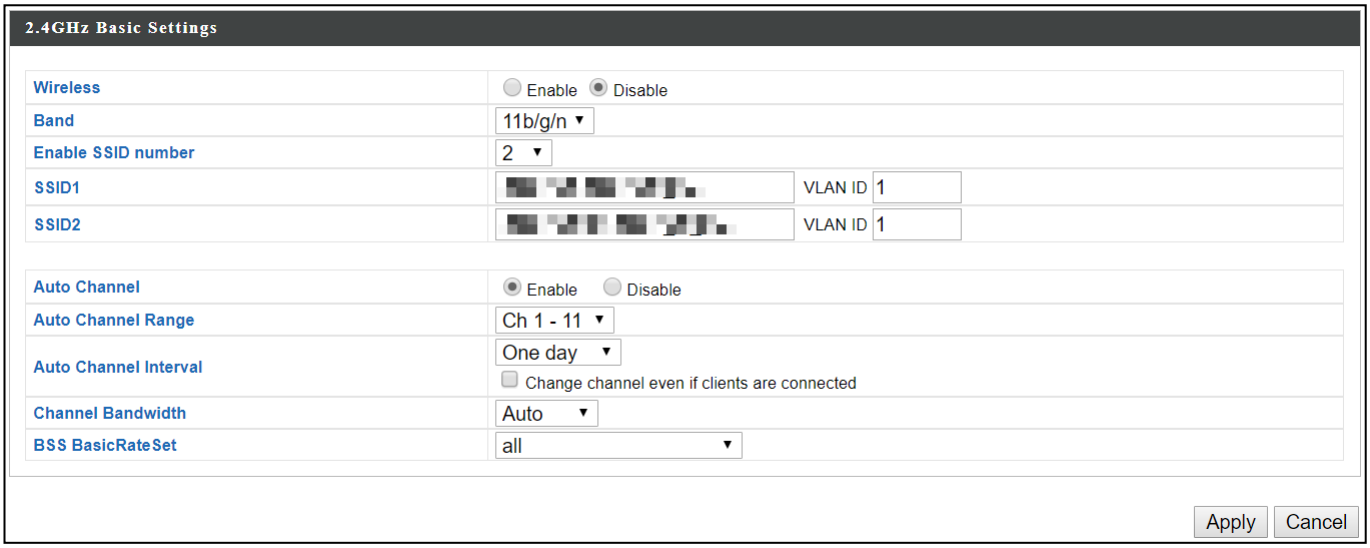
Press "Apply" to confirm the settings.

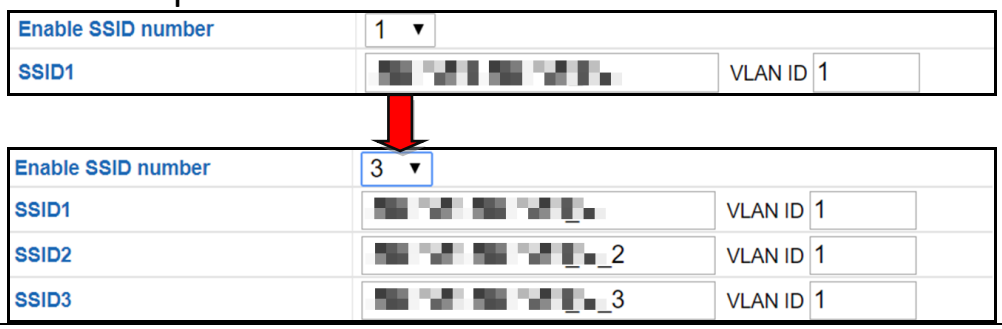
## X-6-2 2.4GHz 11bgn

The “2.4GHz 11bgn” menu allows you to view and configure information for your access point’s 2.4GHz wireless network across five categories: Basic, Advanced, Security, WDS & Guest Network.

## X-6-2-1 Basic

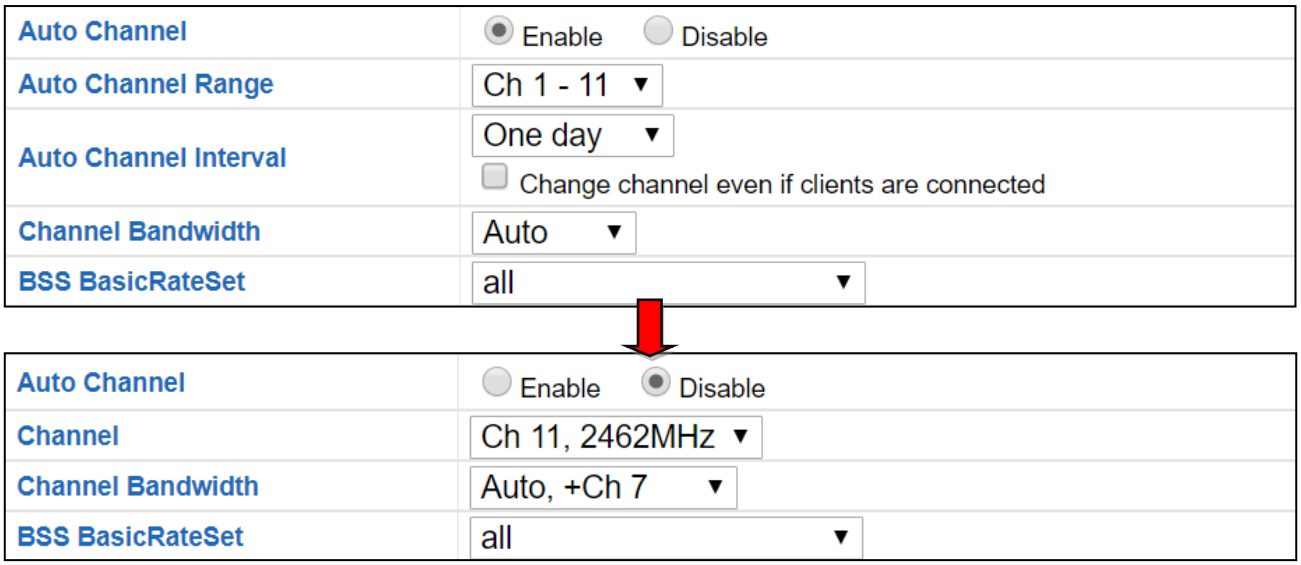
The “Basic” screen displays basic settings for your access point’s 2.4GHz Wi-Fi network (s).




| | |
|---|---|
| **Wireless** | Enable or disable the access point’s 2.4GHz wireless radio. When disabled, no 2.4GHz SSIDs will be active. |
| **Band** | Wireless standard used for the access point. Combinations of 802.11b, 802.11g & 802.11n can be selected. |
| **Enable SSID Number** | Select how many SSIDs to enable for the 2.4GHz frequency from the drop down menu. A maximum of 16 can be enabled.   |
| **SSID#** | Enter the SSID name for the specified SSID (up to 16). The SSID can consist of any combination of up to 32 alphanumeric characters. |
| **VLAN ID** | Specify a VLAN ID for each SSID. |
| **Auto Channel** | Enable/disable auto channel selection.<br>Enable: Auto channel selection will automatically set the wireless channel for the access point’s 2.4GHz frequency based on availability and potential interference.<br>Disable: Select a channel manually as shown in the next table. |

| | |
|---|---|
| **Auto Channel Range** | Select a range to which auto channel selection can choose from. |
| **Auto Channel Interval** | Select a time interval for how often the auto channel setting will check/reassign the wireless channel.<br>Check/uncheck the “Change channel even if clients are connected” box according to your preference. |
| **Channel Bandwidth** | Select the channel bandwidth:<br>20MHz (lower performance but less interference); or<br>40MHz (higher performance but potentially higher interference); or<br>Auto (automatically select based on interference level). |
| **BSS BasicRateSet** | Set a Basic Service Set (BSS) rate: this is a series of rates to control communication frames for wireless clients. |

When auto channel is disabled, configurable fields will change. Select a wireless channel manually:




| | |
|---|---|
| **Channel** | Select a wireless channel from 1 – 11. |
| **Channel Bandwidth** | Set the channel bandwidth:<br>20MHz (lower performance but less interference); or<br>40MHz (higher performance but potentially higher interference); or<br>Auto (automatically select based on interference level). |

| | |
|---|---|
| **BSS BasicRateSet** | Set a Basic Service Set (BSS) rate: this is a series of rates to control communication frames for wireless clients. |

Press “Apply” to apply the configuration, or “Cancel” to forfeit the changes.

## X-6-2-2 Advanced

These settings are for experienced users only. Please do not change any of the values on this page unless you are already familiar with these functions.

***Changing these settings can adversely affect the performance of your access point.***

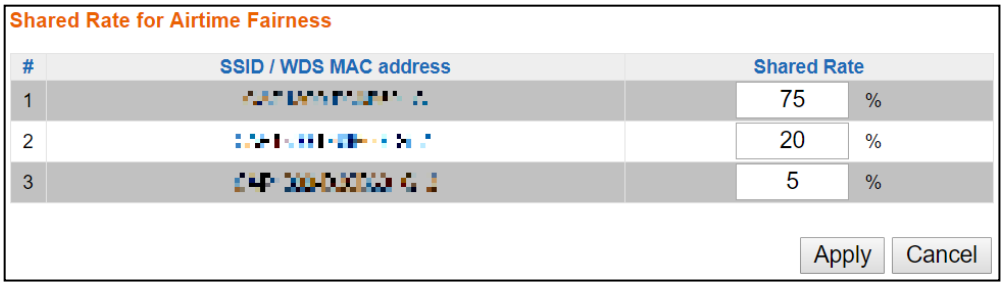
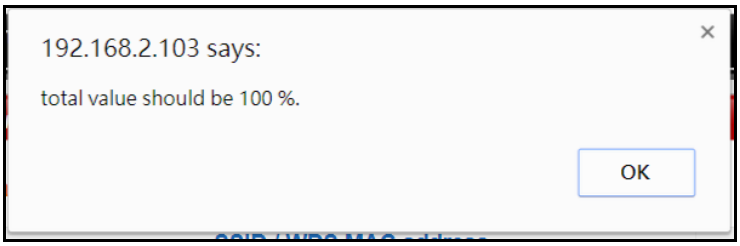
**2.4GHz Advanced Settings**

| | |
|---|---|
| Contention Slot | Short |
| Preamble Type | Short |
| Guard Interval | Short GI |
| 802.11g Protection | Enable Disable |
| 802.11n Protection | Enable Disable |
| DTIM Period | 1 (1-255) |
| RTS Threshold | 2347 (1-2347) |
| Fragment Threshold | 2346 (256–2346) |
| Multicast Rate | Auto |
| Tx Power | 100% 21dbm |
| Beacon Interval | 100 (40-1000 ms) |
| Station Idle Timeout | 60 (30-65535 seconds) |
| Airtime Fairness | Disabled Edit SSID Rate |

Apply Cancel

| | |
|---|---|
| **Contention Slot** | Select “Short” or “Long” – this value is used for contention windows in WMM (see X-6-7 ***WMM***). |
| **Preamble Type** | Set the wireless radio preamble type. The preamble type in 802.11 based wireless communications defines the length of the CRC (Cyclic Redundancy Check) block for communication between the access point and roaming wireless adapters. The default value is “Short Preamble”. |
| **Guard Interval** | Set the guard interval. A shorter interval can improve performance. |

| | |
|---|---|
| **802.11g Protection** | Enable/disable 802.11g protection, which increases reliability but reduces bandwidth (clients will send Request to Send (RTS) to access point, and access point will broadcast Clear to Send (CTS), before a packet is sent from client). |
| **802.11n Protection** | Enable/disable 802.11n protection, which increases reliability but reduces bandwidth (clients will send Request to Send (RTS) to access point, and access point will broadcast Clear to Send (CTS), before a packet is sent from client). |
| **DTIM Period** | Set the DTIM (delivery traffic indication message) period value of the wireless radio. The default value is 1. |
| **RTS Threshold** | Set the RTS threshold of the wireless radio. The default value is 2347. |
| **Fragment Threshold** | Set the fragment threshold of the wireless radio. The default value is 2346. |
| **Multicast Rate** | Set the transfer rate for multicast packets or use the “Auto” setting. The range of the transfer rate is between 1Mbps to 54Mbps |
| **Tx Power** | Set the power output of the wireless radio. You may not require 100% output power. Setting a lower power output may enhance security since access to your signal can be potentially prevented from malicious/unknown users in distant areas. |
| **Beacon Interval** | Set the beacon interval of the wireless radio. The default value is 100. |
| **Station idle timeout** | Set the interval for the access point to send keepalive messages to a wireless client to check if the station is still alive/active. |

| | |
|---|---|
| **Airtime Fairness** | Airtime Fairness gives equal amounts of air time (instead of equal number of frames) to each client regardless of its theoretical data rate.<br>Set airtime fairness to “Auto”, “Static” or “Disable”.<br>When “Auto” is selected, the share rate is automatically managed.<br>When “Static” is selected, press “Edit SSID Rate” to enter a % for each SSID’s share rate as shown below:<br>  <br><br>The % field has to add up to 100% or the system will display a message:<br>  <br><br>Airtime fairness is disabled if “Disable” is selected. |

Press “Apply” to apply the configuration, or “Cancel” to forfeit the changes.

## X-6-2-3 Security

The access point provides various security options (wireless data encryption). When data is encrypted, information transmitted wirelessly cannot be read by anyone who does not know the correct encryption key.

***It is essential to configure wireless security in order to prevent unauthorised access to your network.***

**2.4GHz Wireless Security Settings**

| | |
|---|---|
| SSID | [redacted] |
| Broadcast SSID | Enable |
| Wireless Client Isolation | Disable |
| 802.11k | Disable |
| Load Balancing | 100 /100 |
| Authentication Method | No Authentication |
| Additional Authentication | No additional authentication |

**2.4GHz Wireless Advanced Settings**

Smart Handover Settings

| | |
|---|---|
| Smart Handover | ○ Enable ◉ Disable |
| RSSI Threshold | -80 dB |

Apply Cancel

| | |
|---|---|
| **SSID Selection** | Select a SSID to configure its security settings. |
| **Broadcast SSID** | Enable or disable SSID broadcast.<br>Enable: the SSID will be visible to clients as an available Wi-Fi network.<br>Disable: the SSID will not be visible as an available Wi-Fi network to clients – clients must manually enter the SSID in order to connect. A hidden (disabled) SSID is typically more secure than a visible (enabled) SSID. |
| **Wireless Client Isolation** | Enable or disable wireless client isolation.<br>Wireless client isolation prevents clients connected to the access point from communicating with each other and improves security. Typically, this function is useful for corporate environments or public hot spots and can prevent brute force attacks on clients' usernames and passwords. |
| **Load Balancing** | Load balancing limits the number of wireless clients connected to an SSID. Set a load balancing value (maximum 100). |
| **Authentication Method** | Select an authentication method from the drop down menu and refer to the appropriate information below for your method. |

### X-6-2-3-1 No Authentication / Additional Authentication

When "No Authentication" is selected in "Authentication Method", extra options are made available in the next line:

| | |
|---|---|
| **Additional Authentication** | Select an additional authentication method from the drop down menu or select "No additional authentication" for no authentication, where no password/key is required to connect to the access point.<br>For other options, refer to the information below. |

***"No additional authentication" is not recommended as anyone can connect to your device's SSID.***

Additional wireless authentication methods can be applied to all authentication methods:

***WPS must be disabled to use additional authentication. See*** X-6-4 *WPS* ***for WPS settings.***

**MAC Address Filter**

Restrict wireless clients access based on MAC address specified in the MAC filter table.

***See*** X-6-6 *MAC Filter* ***to configure MAC filtering.***

**MAC-RADIUS Authentication**

Restrict wireless clients access based on MAC address via a RADIUS server, or password authentication via a RADIUS server.

***See*** X-6-5 *RADIUS* ***to configure RADIUS servers.***

***WPS must be disabled to use MAC-RADIUS authentication. See*** X-6-4 *WPS* ***for WPS settings.***

| | |
|---|---|
| Additional Authentication | MAC RADIUS authentication ▼ |
| MAC RADIUS Password | ◉ Use MAC address<br>○ Use the following password |

**MAC Filter & MAC-RADIUS Authentication**

Restrict wireless clients access using both of the above MAC filtering & RADIUS authentication methods.

| | |
|---|---|
| Additional Authentication | MAC filter & MAC RADIUS authentication ▼ |
| MAC RADIUS Password | ◉ Use MAC address<br>○ Use the following password |

| | |
|---|---|
| **MAC RADIUS Password** | Select whether to use MAC address or password authentication via RADIUS server. If you select “Use the following password”, enter the password in the field below. The password should match the “Shared Secret” used in X-6-5 **RADIUS.** |

### X-6-2-3-2 WEP

WEP (Wired Equivalent Privacy) is a basic encryption type.
When selected, a notice will pop-up as exemplified below:

WPS 2.0 will be disabled if WEP is used.

Below is a figure showing the configurable fields:

| | |
|---|---|
| Authentication Method | WEP ▼ |
| Key Length | 64-bit ▼ |
| Key Type | ASCII (5Characters) ▼ |
| Default Key | Key 1 ▼ |
| Encryption Key 1 | |
| Encryption Key 2 | |
| Encryption Key 3 | |
| Encryption Key 4 | |

| | |
|---|---|
| **Key Length** | Select 64-bit or 128-bit. 128-bit is more secure than 64-bit and is recommended. |
| **Key Type** | Choose from "ASCII" (any alphanumerical character 0-9, a-z and A-Z) or "Hex" (any characters from 0-9, a-f and A-F). |
| **Default Key** | Select which encryption key (1 – 4 below) is the default key. For security purposes, you can set up to four keys (below) and change which is the default key. |
| **Encryption Key 1 – 4** | Enter your encryption key/password according to the format you selected above. |

For a higher level of security, please consider using WPA encryption.

### X-6-2-3-3 IEEE802.1x/EAP

Below is a figure showing the configurable fields:

| | |
|---|---|
| Authentication Method | IEEE802.1x/EAP ▼ |
| Key Length | 64-bit ▼ |

| | |
|---|---|
| **Key Length** | Select 64-bit or 128-bit. 128-bit is more secure than 64-bit and is recommended. |

### X-6-2-3-4 WPA-PSK

WPA-PSK is a secure wireless encryption type with strong data protection and user authentication, utilizing 128-bit encryption keys.

Below is a figure showing the configurable fields:

| | |
|---|---|
| Authentication Method | WPA-PSK ▼ |
| 802.11r Fast Roaming | ◉ Enable ○ Disable |
| WPA Type | WPA/WPA2 Mixed Mode-PSK ▼ |
| Encryption Type | TKIP/AES Mixed Mode ▼ |
| Key Renewal Interval | 60 minute(s) |
| Pre-shared Key Type | Passphrase ▼ |
| Pre-shared Key | |

Fast Roaming Settings will also be shown:

**802.11r Fast Transition Roaming Settings**

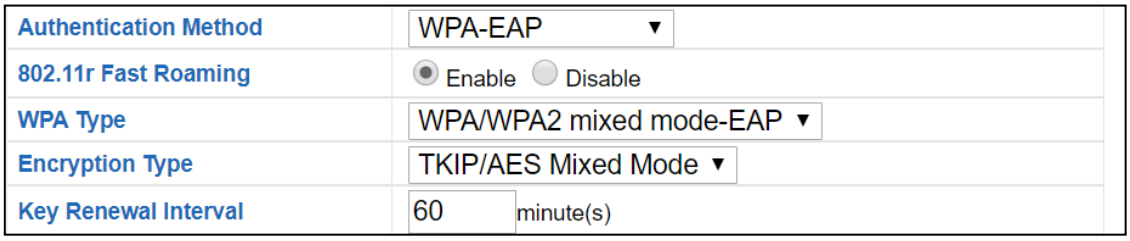
| | |
|---|---|
| mobility_domain | |
| Encryption Key | |
| Over the DS | ○ Enable ◉ Disable |

| | |
|---|---|
| **802.11r Fast Roaming** | When your device roams from one AP to another on the same network, 802.11r uses a feature called Fast Basic Service Set Transition (FT) to authenticate more quickly. FT works with both preshared key (PSK) and 802.1X authentication methods. |
| **WPA Type** | Select from WPA/WPA2 Mixed Mode-PSK, WPA2 or WPA only. WPA2 is safer than WPA, but is not supported by all wireless clients. Please make sure your wireless client supports your selection. |
| **Encryption** | Select “TKIP/AES Mixed Mode” or “AES” encryption type. |
| **Key Renewal Interval** | Specify a frequency for key renewal in minutes. |
| **Pre-Shared** | Choose from “Passphrase” (8 – 63 alphanumeric characters) |

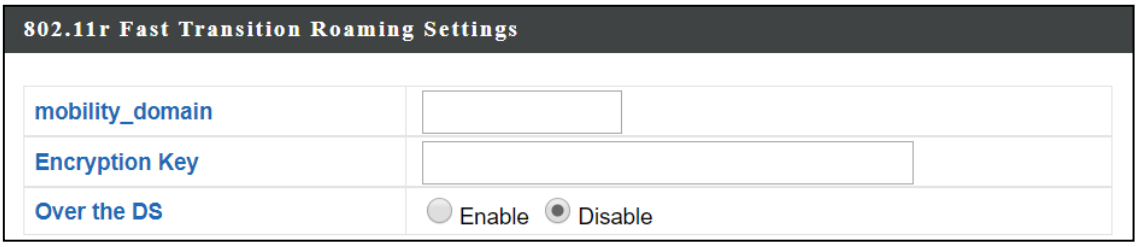
| | |
|---|---|
| **Key Type** | or “Hex” (up to 64 characters from 0-9, a-f and A-F). |
| **Pre-Shared Key** | Please enter a security key/password according to the format you selected above. |

| 802.11r Fast Transition Roaming Settings | |
|---|---|
| **Mobility_domain** | Specify the mobility domain (2.4GHz or 5GHz) |
| **Encryption Key** | Specify the encryption key |
| **Over the DS** | Enable or disable this function. |

**X-6-2-3-5 WPA-EAP**




Fast Roaming Settings will also be shown:




| | |
|---|---|
| **WPA Type** | Select from WPA/WPA2 Mixed Mode-EAP, WPA2-EAP or WPA-EAP. |
| **Encryption Type** | Select “TKIP/AES Mixed Mode” or “AES” encryption type. |
| **Key Renewal Interval** | Specify a frequency for key renewal in minutes. |

***WPA-EAP must be disabled to use MAC-RADIUS authentication.***

| 802.11r Fast Transition Roaming Settings | |
|---|---|
| **Mobility_domain** | Specify the mobility domain (2.4GHz or 5GHz) |
| **Encryption Key** | Specify the encryption key |
| **Over the DS** | Enable or disable this function. |

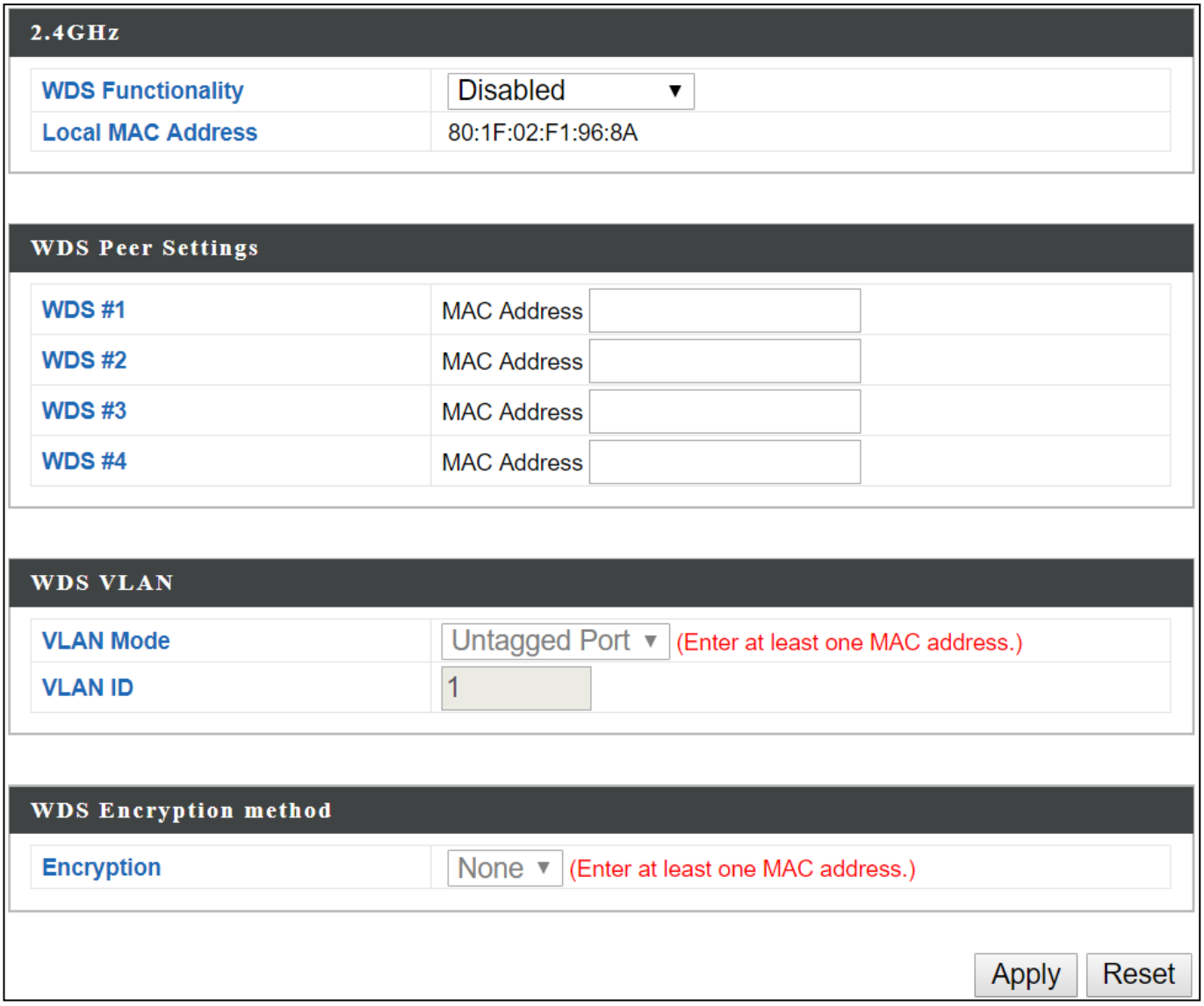
Press “Apply” to apply the configuration, or “Cancel” to forfeit the changes.

## X-6-2-4 WDS

Wireless Distribution System (WDS) can bridge/repeat access points together in an extended network. WDS settings can be configured as shown below.

***When using WDS, configure the IP address of each access point to be in the same subnet and ensure there is only one active DHCP server among connected access points, preferably on the WAN side.***

WDS must be configured on each access point, using correct MAC addresses. All access points should use the same wireless channel and encryption method.



| 2.4GHz | |
|---|---|
| **WDS Functionality** | Select “WDS with AP” to use WDS with access point or “WDS Dedicated Mode” to use WDS and also block communication with regular wireless clients. When WDS is used, each access point should be configured with corresponding MAC addresses, wireless channel and wireless encryption method. |
| **Local MAC Address** | Displays the MAC address of your access point. |

| WDS Peer Settings | |
|---|---|
| **WDS #** | Enter the MAC address for up to four other WDS devices you wish to connect. |

| WDS VLAN | |
|---|---|
| **VLAN Mode** | Specify the WDS VLAN mode to “Untagged Port” or “Tagged Port”. |
| **VLAN ID** | Specify the WDS VLAN ID when “Untagged Port” is selected above. |

| WDS Encryption method | |
|---|---|
| **Encryption** | Select whether to use “None” or “AES” encryption and enter a pre-shared key for AES consisting of 8-63 alphanumeric characters. |

Press “Apply” to apply the configuration, or “Reset” to forfeit the changes.

## X-6-2-5 Guest Network

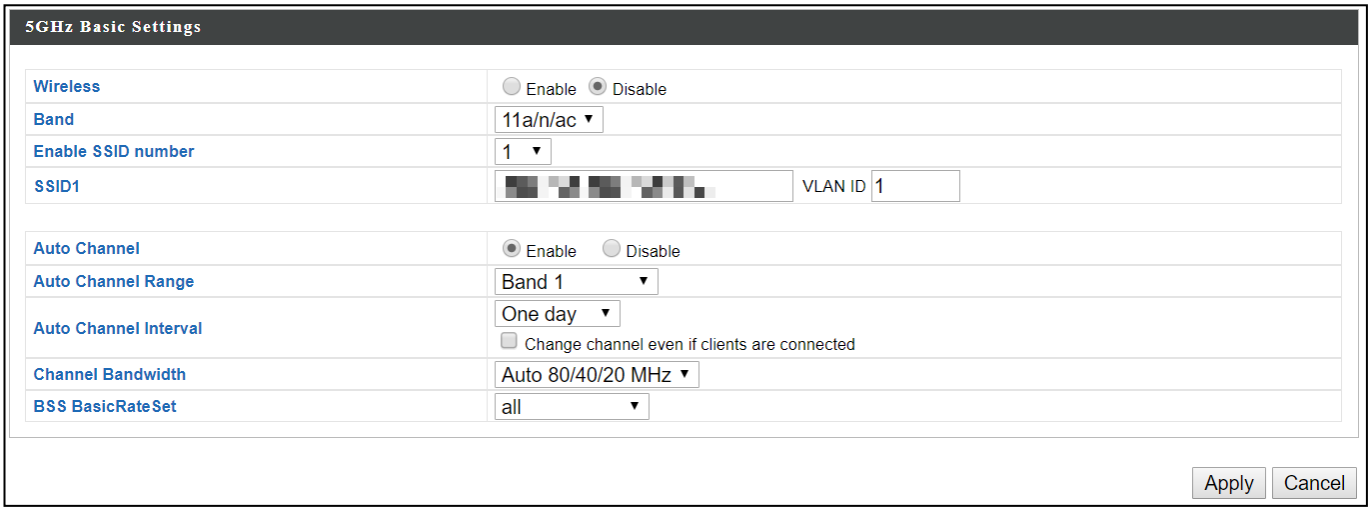
Enable / disable guest network to allow clients to connect as guests.

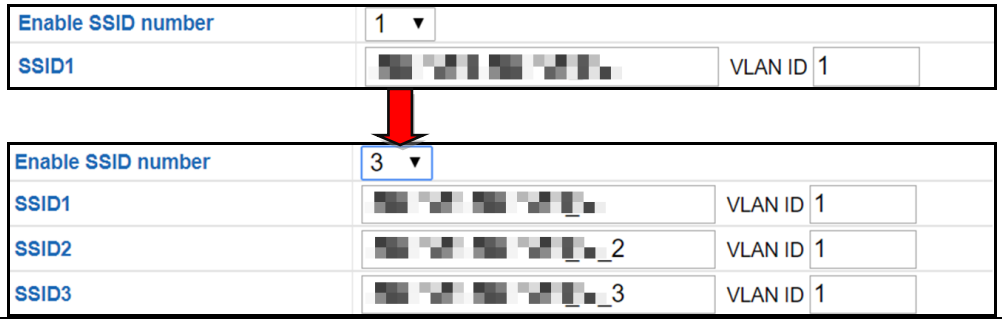
## X-6-3 5GHz 11ac 11an

The “5GHz 11ac 11an” menu allows you to view and configure information for your access point’s 5GHz wireless network across five categories: Basic, Advanced, Security, WDS & Guest Network.

## X-6-3-1 Basic

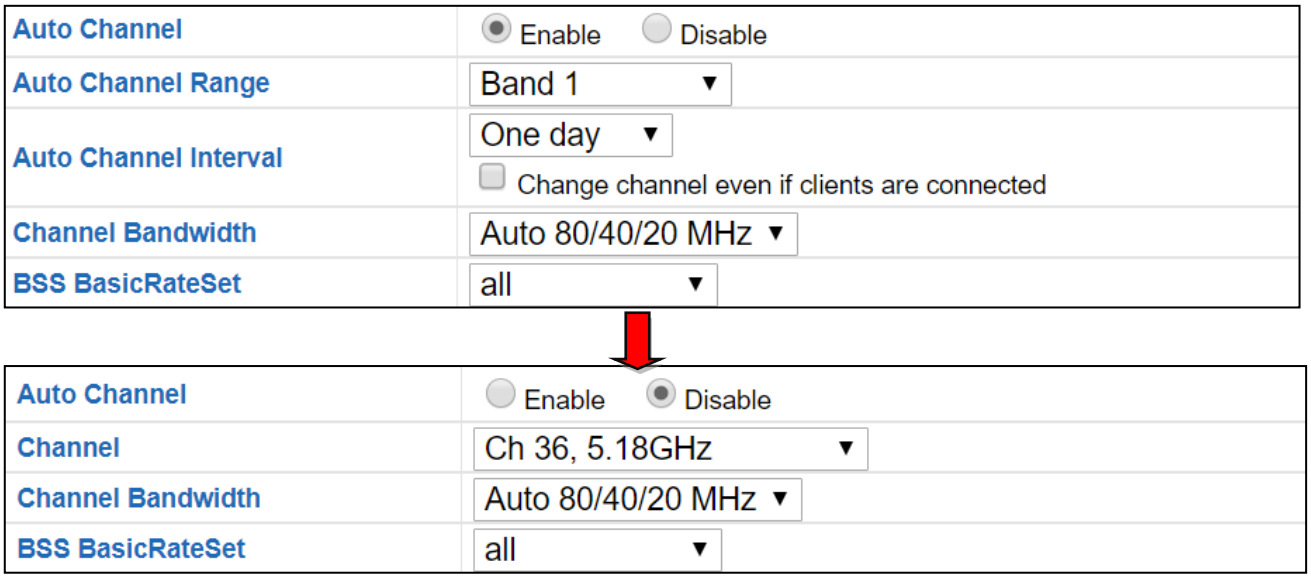
The “Basic” screen displays basic settings for your access point’s 5GHz Wi-Fi network (s).




| | |
|---|---|
| **Wireless** | Enable or disable the access point’s 5GHz wireless radio. When disabled, no 5GHz SSIDs will be active. |
| **Band** | Wireless standard used for the access point. Combinations of 802.11a, 802.11n & 802.11ac can be selected. |
| **Enable SSID Number** | Select how many SSIDs to enable for the 2.4GHz frequency from the drop down menu. A maximum of 16 can be enabled.   |
| **SSID#** | Enter the SSID name for the specified SSID (up to 16). The SSID can consist of any combination of up to 32 alphanumeric characters. |
| **VLAN ID** | Specify a VLAN ID for each SSID. |
| **Auto Channel** | Enable/disable auto channel selection. Auto channel selection will automatically set the wireless channel for the access point’s 5GHz frequency based on availability and potential interference. When disabled, configurable fields will change as shown below: |
| **Auto** | Select a range to which auto channel selection can choose |

| | |
|---|---|
| **Channel Range** | from. |
| **Auto Channel Interval** | Select a time interval for how often the auto channel setting will check/reassign the wireless channel.<br>Check/uncheck the “Change channel even if clients are connected” box according to your preference. |
| **Channel Bandwidth** | Select the channel bandwidth:<br>20MHz (lower performance but less interference); or<br>Auto 40/20 MHz; or<br>Auto 80/40/20 MHz (automatically select based on interference level). |
| **BSS BasicRateSet** | Set a Basic Service Set (BSS) rate: this is a series of rates to control communication frames for wireless clients. |

When auto channel is disabled, configurable fields will change. Select a wireless channel manually:




| | |
|---|---|
| **Channel** | Select a wireless channel. |
| **Channel Bandwidth** | Select the channel bandwidth:<br>20MHz (lower performance but less interference); or<br>Auto 40/20 MHz; or<br>Auto 80/40/20 MHz (automatically select based on interference level). |
| **BSS BasicRateSet** | Set a Basic Service Set (BSS) rate: this is a series of rates to control communication frames for wireless clients. |

Press “Apply” to apply the configuration, or “Cancel” to forfeit the changes.

## X-6-3-2 Advanced

These settings are for experienced users only. Please do not change any of the values on this page unless you are already familiar with these functions.

***Changing these settings can adversely affect the performance of your access point.***

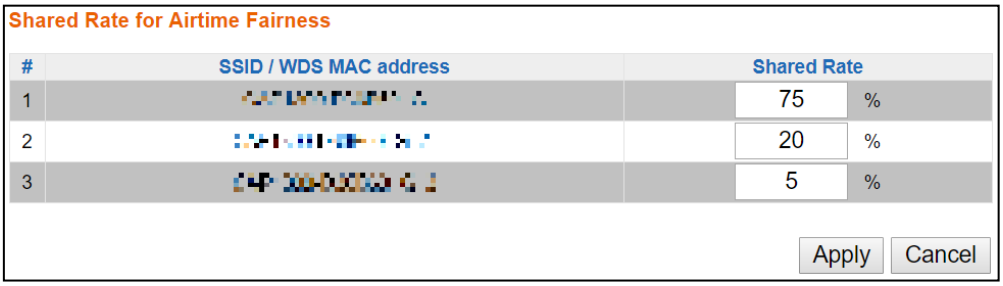
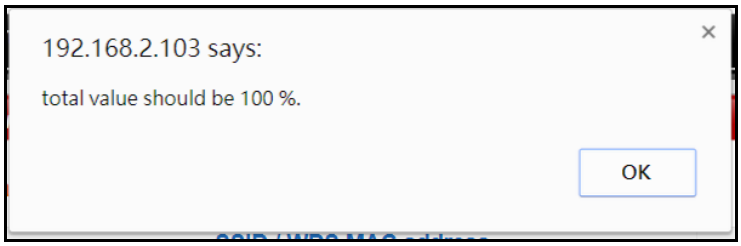
**5GHz Advanced Settings**

| | |
|---|---|
| Guard Interval | Short GI ▾ |
| 802.11n Protection | ◉ Enable ○ Disable |
| DTIM Period | 1 (1-255) |
| RTS Threshold | 2347 (1-2347) |
| Fragment Threshold | 2346 (256–2346) |
| Multicast Rate | Auto ▾ |
| Tx Power | 100% 21dbm ▾ |
| Beacon Interval | 100 (40-1000 ms) |
| Station Idle Timeout | 60 (30-65535 seconds) |
| Beamforming | ◉ Enable ○ Disable |
| Airtime Fairness | Disabled ▾ Edit SSID Rate |

Apply Cancel

| | |
|---|---|
| **Guard Interval** | Set the guard interval. A shorter interval can improve performance. |
| **802.11n Protection** | Enable/disable 802.11n protection, which increases reliability but reduces bandwidth (clients will send Request to Send (RTS) to access point, and access point will broadcast Clear to Send (CTS), before a packet is sent from client.) |
| **DTIM Period** | Set the DTIM (delivery traffic indication message) period value of the wireless radio. The default value is 1. |
| **RTS Threshold** | Set the RTS threshold of the wireless radio. The default value is 2347. |
| **Fragment Threshold** | Set the fragment threshold of the wireless radio. The default value is 2346. |

| | |
|---|---|
| **Multicast Rate** | Set the transfer rate for multicast packets or use the “Auto” setting. |
| **Tx Power** | Set the power output of the wireless radio. You may not require 100% output power. Setting a lower power output can enhance security since potentially malicious/unknown users in distant areas will not be able to access your signal. |
| **Beacon Interval** | Set the beacon interval of the wireless radio. The default value is 100. |
| **Station idle timeout** | Set the interval for keepalive messages from the access point to a wireless client to verify if the station is still alive/active. |
| **Beamforming** | Beamforming is a signal processing technique used in sensor arrays for directional signal transmission or reception.<br>This is achieved by combining elements in an antenna array in such a way that signals at particular angles experience constructive interference while others experience destructive interference. Beamforming can be used at both the transmitting and receiving ends in order to achieve spatial selectivity. The improvement compared with omnidirectional reception / transmission is known as the directivity of the array. |

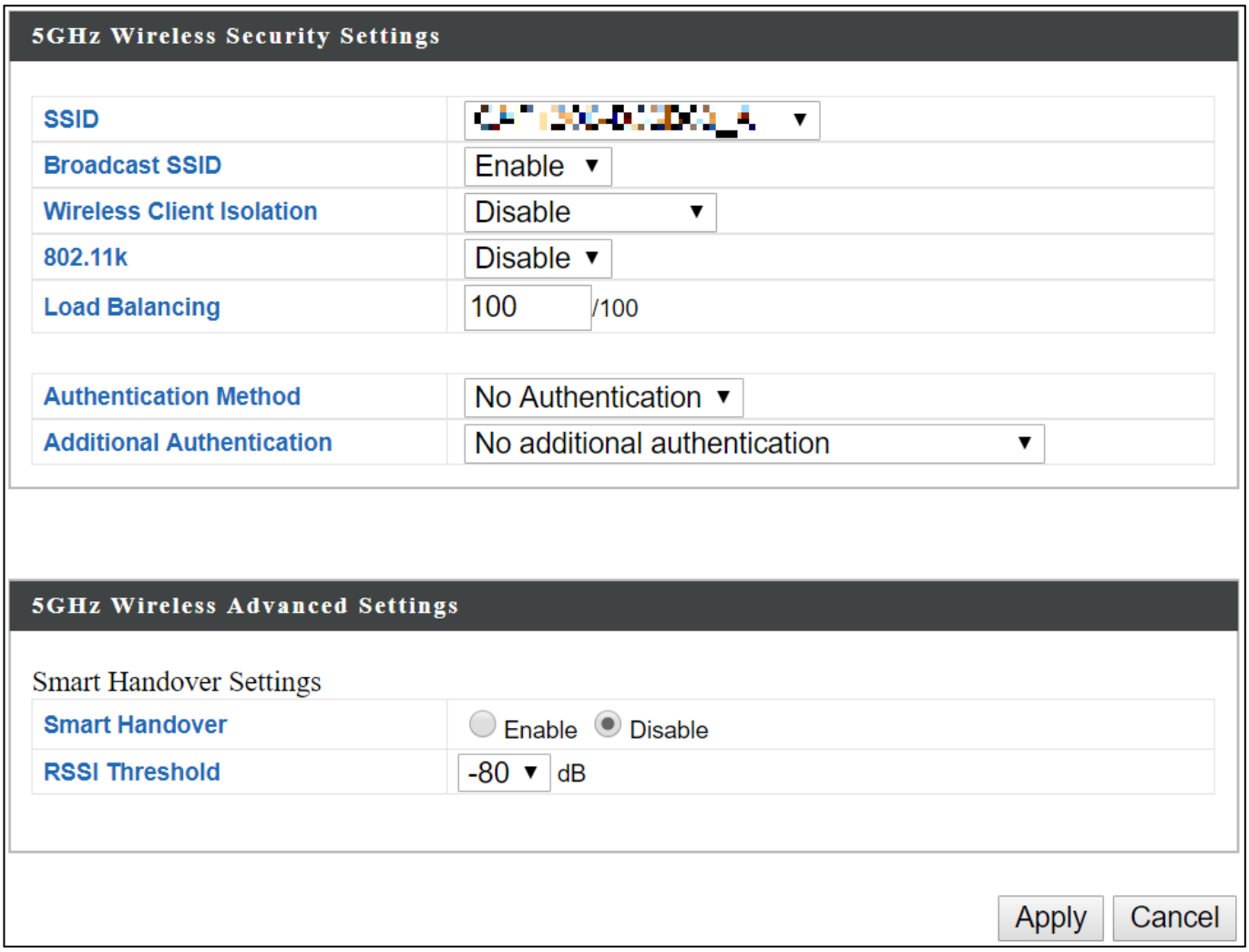
| | |
|---|---|
| **Airtime Fairness** | Airtime Fairness gives equal amounts of air time (instead of equal number of frames) to each client regardless of its theoretical data rate.<br>Set airtime fairness to “Auto”, “Static” or “Disable”.<br>When “Auto” is selected, the share rate is automatically managed.<br>When “Static” is selected, press “Edit SSID Rate” to enter a % for each SSID’s share rate as shown below:<br>  <br><br>The % field has to add up to 100% or the system will display a message:<br>  <br><br>Airtime fairness is disabled if “Disable” is selected. |

Press “Apply” to apply the configuration, or “Cancel” to forfeit the changes.

## X-6-3-3 Security

The access point provides various security options (wireless data encryption). When data is encrypted, information transmitted wirelessly cannot be read by anyone who does not know the correct encryption key.

***It's essential to configure wireless security in order to prevent unauthorised access to your network.***




| | |
|---|---|
| **SSID Selection** | Select which SSID to configure security settings for. |
| **Broadcast SSID** | Enable or disable SSID broadcast. When enabled, the SSID will be visible to clients as an available Wi-Fi network. When disabled, the SSID will not be visible as an available Wi-Fi network to clients – clients must manually enter the SSID in order to connect. A hidden (disabled) SSID is typically more secure than a visible (enabled) SSID. |

| | |
|---|---|
| **Wireless Client Isolation** | Enable or disable wireless client isolation. Wireless client isolation prevents clients connected to the access point from communicating with each other and improves security. Typically, this function is useful for corporate environments or public hot spots and can prevent brute force attacks on clients' usernames and passwords. |
| **Load Balancing** | Load balancing limits the number of wireless clients connected to an SSID. Set a load balancing value (maximum 100). |
| **Authentication Method** | Select an authentication method from the drop down menu and refer to the appropriate information in X-6-2-3 ***Security*** for your method. |

Press "Apply" to apply the configuration, or "Cancel" to forfeit the changes.

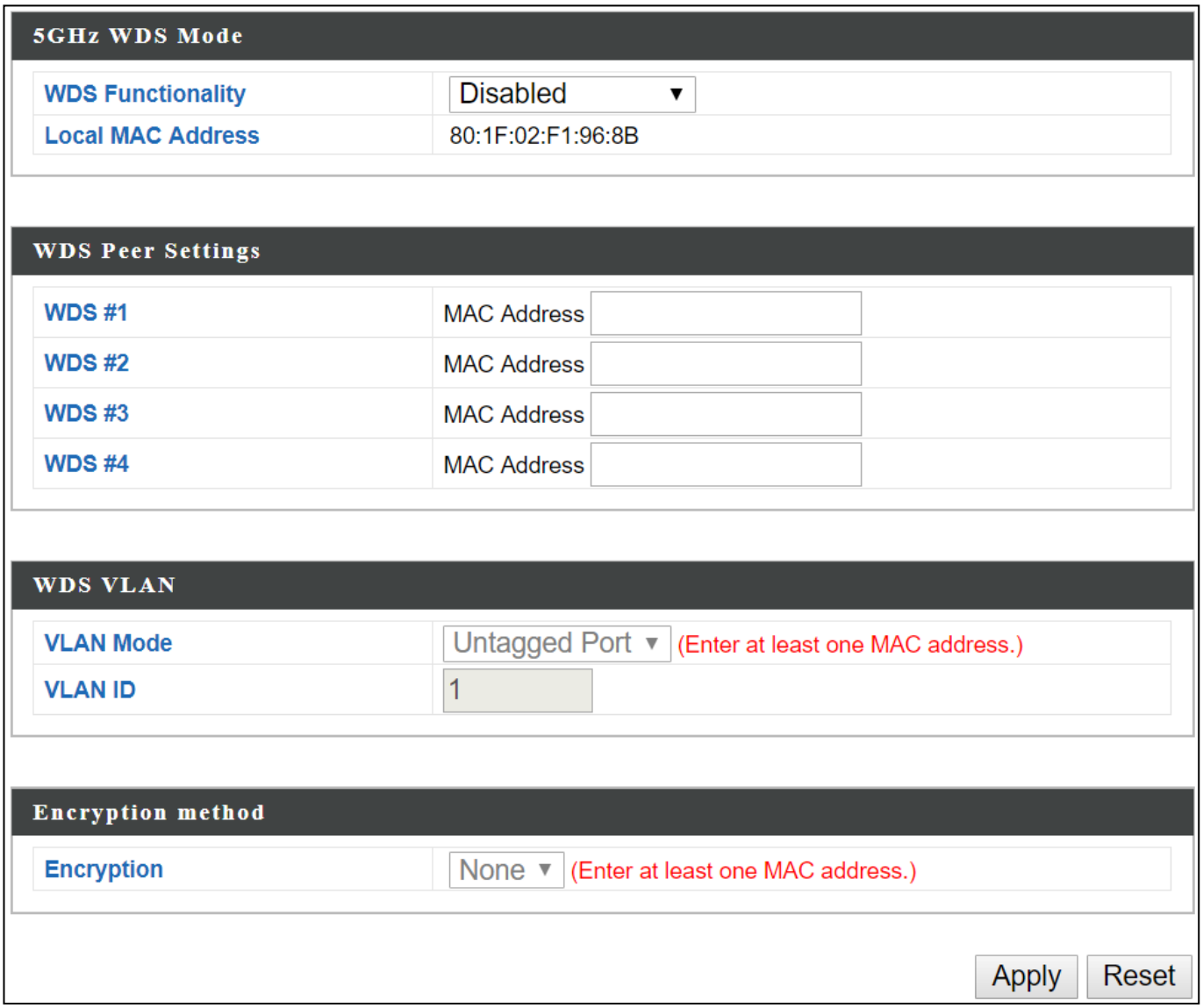
Please refer back to X-6-2-3 ***Security*** for more information on authentication and additional authentication types.

## X-6-3-4 WDS

Wireless Distribution System (WDS) can bridge/repeat access points together in an extended network. WDS settings can be configured as shown below.

***When using WDS, configure the IP address of each access point to be in the same subnet and ensure there is only one active DHCP server among connected access points, preferably on the WAN side.***

WDS must be configured on each access point, using correct MAC addresses. All access points should use the same wireless channel and encryption method.



| 5GHz WDS Mode | |
|---|---|
| **WDS Functionality** | Select “WDS with AP” to use WDS with access point or “WDS Dedicated Mode” to use WDS and also block communication with regular wireless clients. When WDS is used, each access point should be configured with corresponding MAC addresses, wireless channel and wireless encryption method. |
| **Local MAC Address** | Displays the MAC address of your access point. |

| WDS Peer Settings | |
|---|---|
| **WDS #** | Enter the MAC address for up to four other WDA devices you wish to connect. |

| WDS VLAN | |
|---|---|
| **VLAN Mode** | Specify the WDS VLAN mode to “Untagged Port” or “Tagged Port”. |
| **VLAN ID** | Specify the WDS VLAN ID when “Untagged Port” is selected above. |

| WDS Encryption | |
|---|---|
| **Encryption** | Select whether to use “None” or “AES” encryption and enter a pre-shared key for AES with 8-63 alphanumeric characters. |

Press “Apply” to apply the configuration, or “Reset” to forfeit the changes.

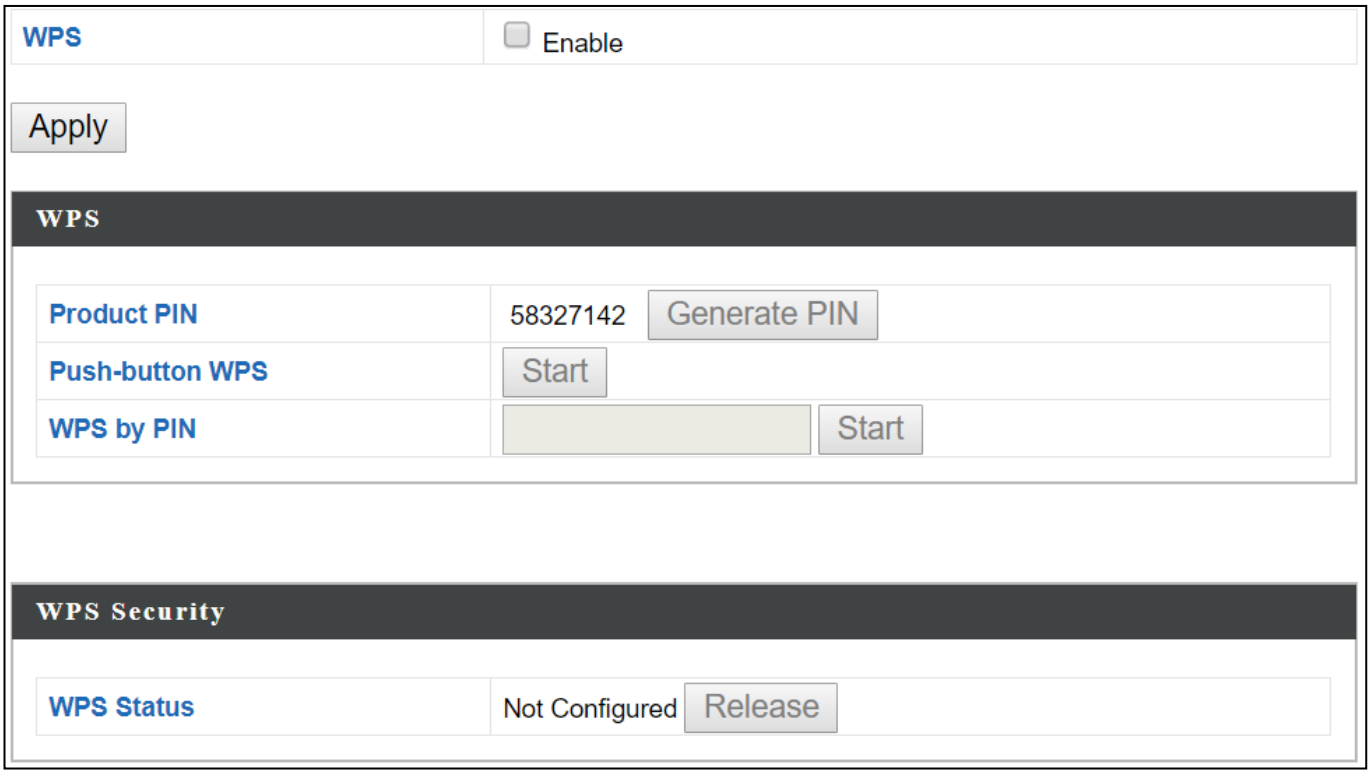
## X-6-3-5 Guest Network

Enable / disable guest network to allow clients to connect as guests.

## X-6-4 WPS

Wi-Fi Protected Setup is a simple way to establish connections between WPS compatible devices. WPS can be activated on compatible devices by pushing a WPS button on the compatible device or from within the compatible device's firmware / configuration interface (known as PBC or "Push Button Configuration"). When WPS is activated in the correct manner and at the correct time for two compatible devices, they will automatically connect. "PIN code WPS" is a variation of PBC which includes the additional use of a PIN code between the two devices for verification.

***Please refer to the manufacturer's instructions of your WPS device.***




| | |
|---|---|
| **WPS** | Check/uncheck this box to enable/disable WPS functionality. WPS must be disabled when using MAC-RADIUS authentication (see X-6-2-3-1 **&** X-6-5). |

Press "Apply" to apply the configuration.

| WPS | |
|---|---|
| **Product PIN** | Displays the WPS PIN code of the device, used for PIN code WPS. You will be required to enter this PIN code into another WPS device for PIN code WPS. Click “Generate PIN” to generate a new WPS PIN code. |
| **Push-Button WPS** | Click “Start” to activate WPS on the access point for approximately 2 minutes. |
| **WPS by PIN** | Enter the PIN code of another WPS device and click “Start” to attempt to establish a WPS connection. WPS function will last for approximately 2 minutes. |

| WPS Security | |
|---|---|
| **WPS Status** | WPS security status is displayed here. Click “Release” to clear the existing status. |

## X-6-5 RADIUS

The RADIUS menu allows you to configure the access point's external RADIUS server settings.

A RADIUS server provides user-based authentication to improve security and offer wireless client control – users can be authenticated before gaining access to a network.

The access point can utilize a primary and a secondary (backup) external RADIUS server for each of its wireless frequencies (2.4GHz & 5GHz).

***To use RADIUS servers, go to*** *"Wireless Settings"* → *"Security"* ***and select*** *"MAC RADIUS Authentication"* → *"Additional Authentication"* ***and select*** *"MAC RADIUS Authentication"* ***(see*** X-6-2-3 ***&*** X-6-3-3***).***

## X-6-5-1 RADIUS Settings

Configure the RADIUS server settings for 2.4GHz and 5GHz. Each frequency can use an internal or external RADIUS server.

**RADIUS Server (2.4GHz)**

| Primary RADIUS Server | |
|---|---|
| RADIUS Type | ○ Internal ◉ External |
| RADIUS Server | |
| Authentication Port | 1812 |
| Shared Secret | |
| Session Timeout | 3600 second(s) |
| Accounting | ◉ Enable ○ Disable |
| Accounting Port | 1813 |

| Secondary RADIUS Server | |
|---|---|
| RADIUS Type | ○ Internal ◉ External |
| RADIUS Server | |
| Authentication Port | 1812 |
| Shared Secret | |
| Session Timeout | 3600 second(s) |
| Accounting | ◉ Enable ○ Disable |
| Accounting Port | 1813 |

**RADIUS Server (5GHz)**

| Primary RADIUS Server | |
|---|---|
| RADIUS Type | ○ Internal ◉ External |
| RADIUS Server | |
| Authentication Port | 1812 |
| Shared Secret | |
| Session Timeout | 3600 second(s) |
| Accounting | ◉ Enable ○ Disable |
| Accounting Port | 1813 |

| Secondary RADIUS Server | |
|---|---|
| RADIUS Type | ○ Internal ◉ External |
| RADIUS Server | |
| Authentication Port | 1812 |
| Shared Secret | |
| Session Timeout | 3600 second(s) |
| Accounting | ◉ Enable ○ Disable |
| Accounting Port | 1813 |

Apply Cancel

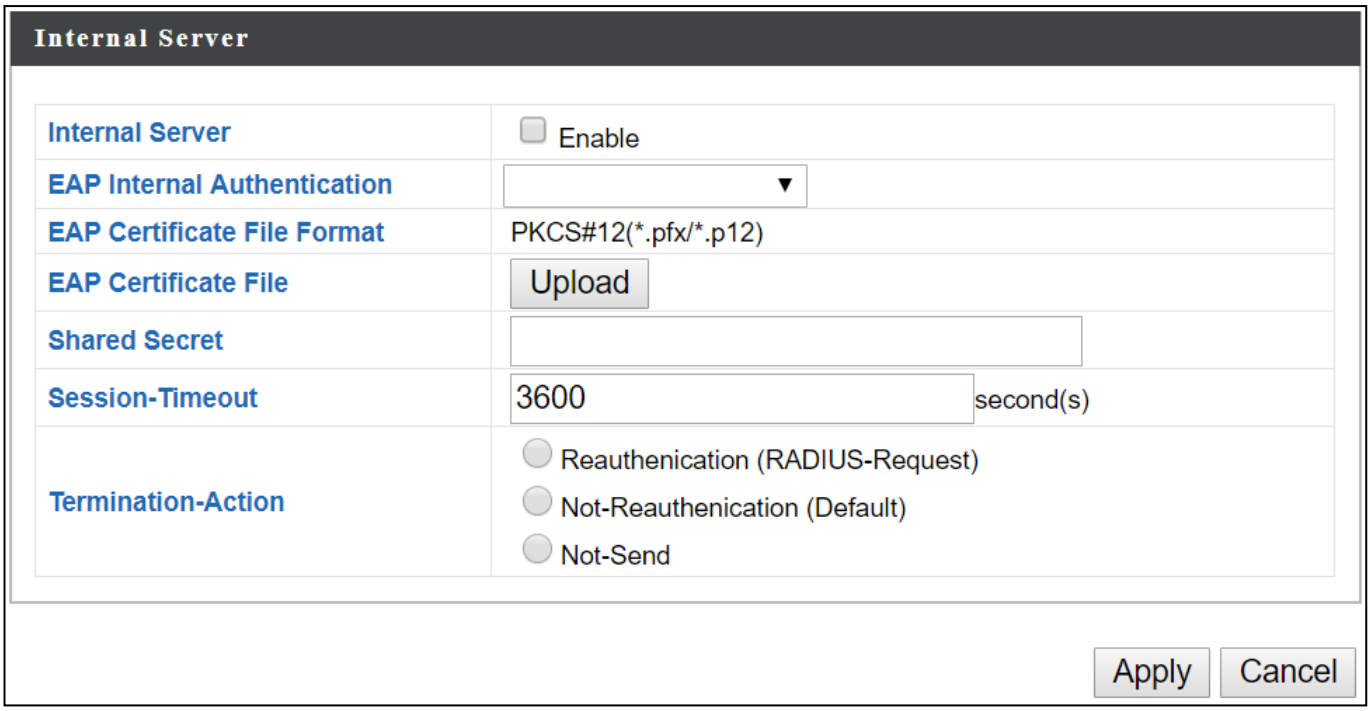
| | |
|---|---|
| **RADIUS Type** | Select “Internal” to use the access point’s built-in RADIUS server or “external” to use an external RADIUS server. |
| **RADIUS Server** | Enter the RADIUS server host IP address. |
| **Authentication Port** | Set the UDP port used in the authentication protocol of the RADIUS server. Value must be between 1 – 65535. |
| **Shared Secret** | Enter a shared secret/password between 1 – 99 characters in length. This should match the “MAC-RADIUS” password used in X-6-2-3 or X-6-3-3. |
| **Session Timeout** | Set a duration of session timeout in seconds between 0 – 86400. |
| **Accounting** | Enable or disable RADIUS accounting. |
| **Accounting Port** | When accounting is enabled (above), set the UDP port used in the accounting protocol of the RADIUS server. Value must be between 1 – 65535. |

Press “Apply” to apply the configuration, or “Cancel” to forfeit the changes.

## X-6-5-2 Internal Server

The access point features a built-in RADIUS server which can be configured as shown below used when "Internal" is selected for "RADIUS Type" in the "Wireless Settings" → "RADIUS" → "RADIUS Settings" menu.

***To use RADIUS servers, go to** "Wireless Settings" → "Security" **and select** "MAC RADIUS Authentication" → "Additional Authentication" **and select** "MAC RADIUS Authentication" **(see** X-6-2-3 **&** X-6-3-3**).***



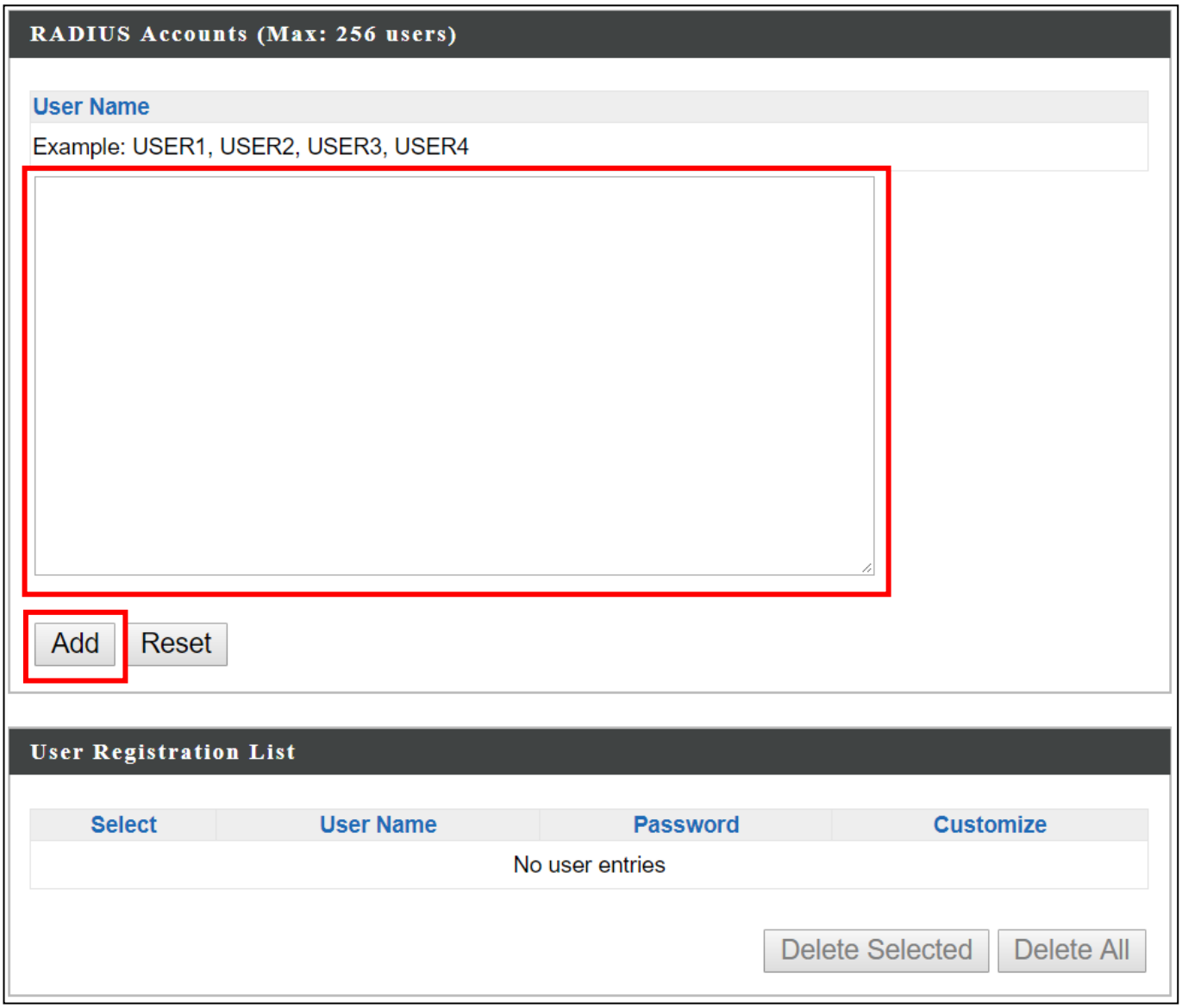

| | |
|---|---|
| **Internal Server** | Check/uncheck to enable/disable the access point's internal RADIUS server. |
| **EAP Internal Authentication** | Select EAP internal authentication type from the drop down menu. |
| **EAP Certificate File Format** | Displays the EAP certificate file format: PCK#12(*.pfx/*.p12) |
| **EAP Certificate File** | Click "Upload" to open a new window and select the location of an EAP certificate file to use. If no certificate file is uploaded, the internal RADIUS server will use a self-made certificate. |
| **Shared Secret** | Enter a shared secret/password for use between the internal RADIUS server and RADIUS client. The shared secret should be 1 – 99 characters in length. This should match the |

| | |
|---|---|
| | “MAC-RADIUS” password used in X-6-2-3 or X-6-3-3. |
| **Session Timeout** | Set a duration of session timeout in seconds between 0 – 86400. |
| **Termination Action** | Select a termination-action attribute:<br>Reauthentication: sends a RADIUS request to the access point; or,<br>Not-Reauthentication: sends a default termination-action attribute to the access point; or<br>Not-Send: no termination-action attribute is sent to the access point. |

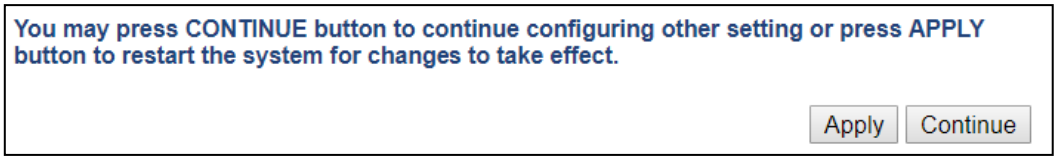
Press “Apply” to apply the configuration, or “Cancel” to forfeit the changes.

## X-6-5-3 RADIUS Accounts

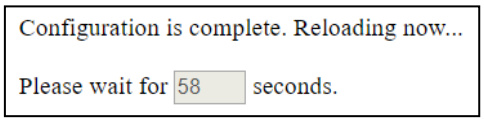
The internal RADIUS server can authenticate up to 256 user accounts. The "RADIUS Accounts" page allows you to configure and manage users.



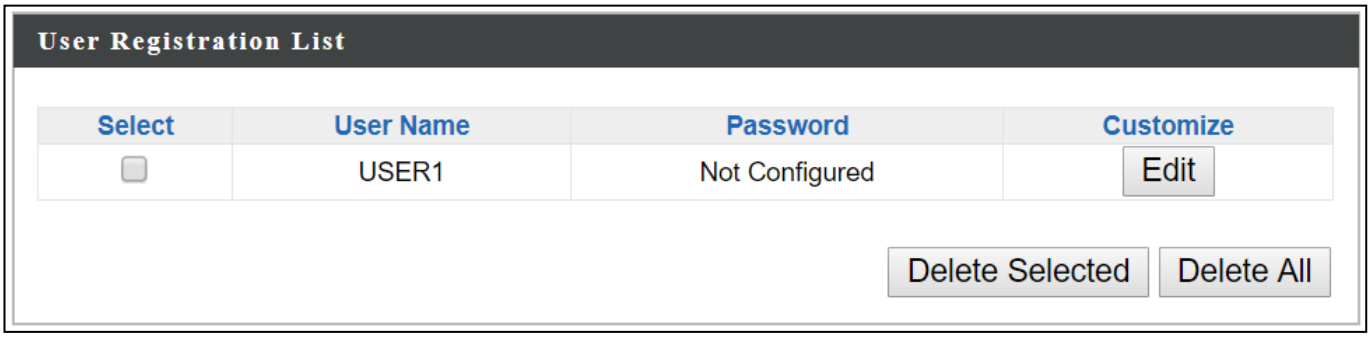

Enter a username in the box below and click "Add" to add the username. The webpage will display the message below:



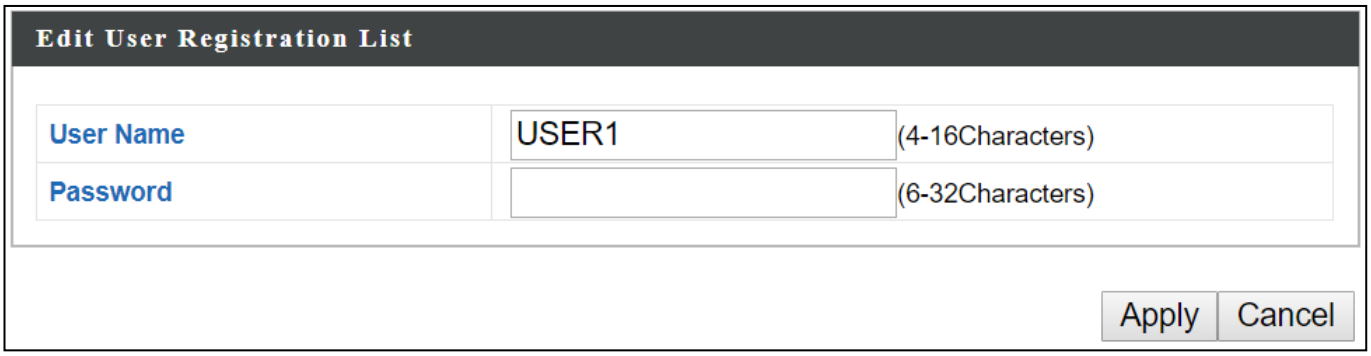

If you choose to apply the settings (by clicking "Apply"), your system will restart the system with a message shown below:



Press “Continue” see the new user registration list.




Select “Edit” to edit the username and password of the RADIUS account:




Press “Apply” to apply the configuration, or “Cancel” to forfeit the changes.

| | |
|---|---|
| **User Name** | Enter the user names here, separated by commas. |
| **Add** | Click “Add” to add the user to the user registration list. |
| **Reset** | Clear text from the user name box. |

| | |
|---|---|
| **Select** | Check the box to select a user. |
| **User Name** | Displays the user name. |
| **Password** | Displays if specified user name has a password (configured) or not (not configured). |
| **Customize** | Click “Edit” to open a new field to set/edit a password for the specified user name (below). |

| | |
|---|---|
| **Delete Selected** | Delete selected user from the user registration list. |
| **Delete All** | Delete all users from the user registration list. |

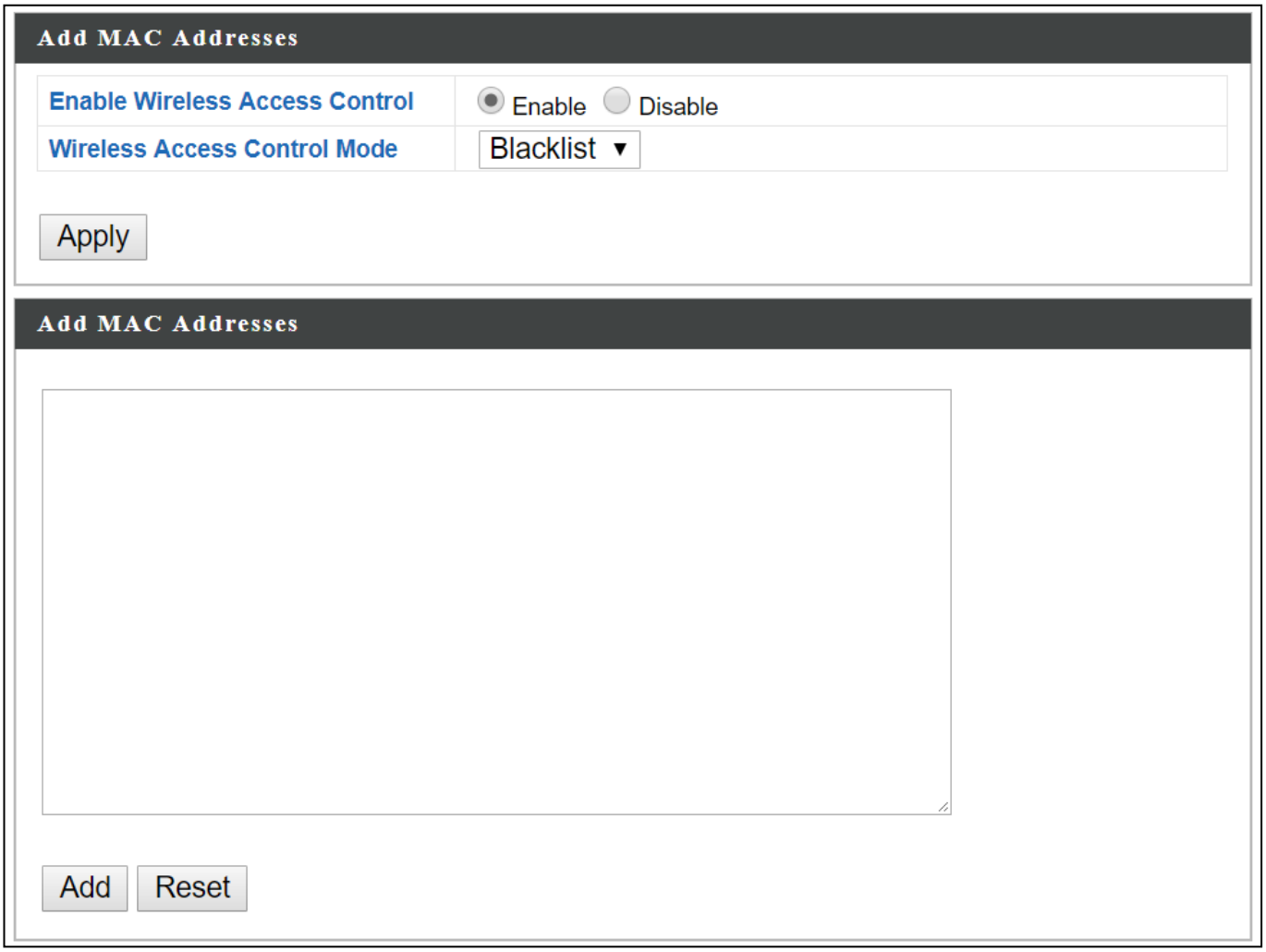
## X-6-6 MAC Filter

MAC filtering is a security feature that can help to prevent unauthorized users from connecting to your access point.

This function allows you to define a list of network devices permitted to connect to the access point. Devices are each identified by their unique MAC address. If a device which is not on the list of permitted MAC addresses attempts to connect to the access point, it will be denied.

***To enable MAC filtering, go to*** *"Wireless Settings"* → *"2.4G Hz 11bgn"* → *"Security"* → *"Additional Authentication"* ***and select*** *"MAC Filter"* ***(see*** X-6-2-3 ***Security).***

The MAC address filtering table is displayed below:



| | |
|---|---|
| **Add MAC Address** | Enter a MAC address of computer or network device manually e.g. 'aa-bb-cc-dd-ee-ff' or enter multiple MAC addresses separated with commas, e.g. 'aa-bb-cc-dd-ee-ff,aa-bb-cc-dd-ee-gg' |
| **Add** | Click "Add" to add the MAC address to the MAC address filtering table. |
| **Reset** | Clear all fields. |

MAC address entries will be listed in the "MAC Address Filtering Table". Select an entry using the "Select" checkbox.


| | |
|---|---|
| **Select** | Delete selected or all entries from the table. |
| **MAC Address** | The MAC address is listed here. |
| **Delete Selected** | Delete the selected MAC address from the list. |
| **Delete All** | Delete all entries from the MAC address filtering table. |
| **Export** | Click "Export" to save a copy of the MAC filtering table. A new window will pop up for you to select a location to save the file. |

## X-6-7 WMM

Wi-Fi Multimedia (WMM) is a Wi-Fi Alliance interoperability certification based on the IEEE 802.11e standard, which provides Quality of Service (QoS) features to IEE 802.11 networks. WMM prioritizes traffic according to four categories: background, best effort, video and voice.

**WMM-EDCA Settings**

| WMM Parameters of Access Point | CWMin | CWMax | AIFSN | TxOP |
|---|---|---|---|---|
| **Back Ground** | 4 | 10 | 7 | 0 |
| **Best Effort** | 4 | 6 | 3 | 0 |
| **Video** | 3 | 4 | 1 | 94 |
| **Voice** | 2 | 3 | 1 | 47 |

| WMM Parameters of Station | CWMin | CWMax | AIFSN | TxOP |
|---|---|---|---|---|
| **Back Ground** | 4 | 10 | 7 | 0 |
| **Best Effort** | 4 | 10 | 3 | 0 |
| **Video** | 3 | 4 | 2 | 94 |
| **Voice** | 2 | 3 | 2 | 47 |

Apply Cancel

Configuring WMM consists of adjusting parameters on queues for different categories of wireless traffic. Traffic is sent to the following queues:

| | | |
|---|---|---|
| **Background** | Low Priority | High throughput, non time sensitive bulk data e.g. FTP |
| **Best Effort** | Medium Priority | Traditional IP data, medium throughput and delay. |
| **Video** | High Priority | Time sensitive video data with minimum time delay. |
| **Voice** | High Priority | Time sensitive data such as VoIP and streaming media with minimum time delay. |

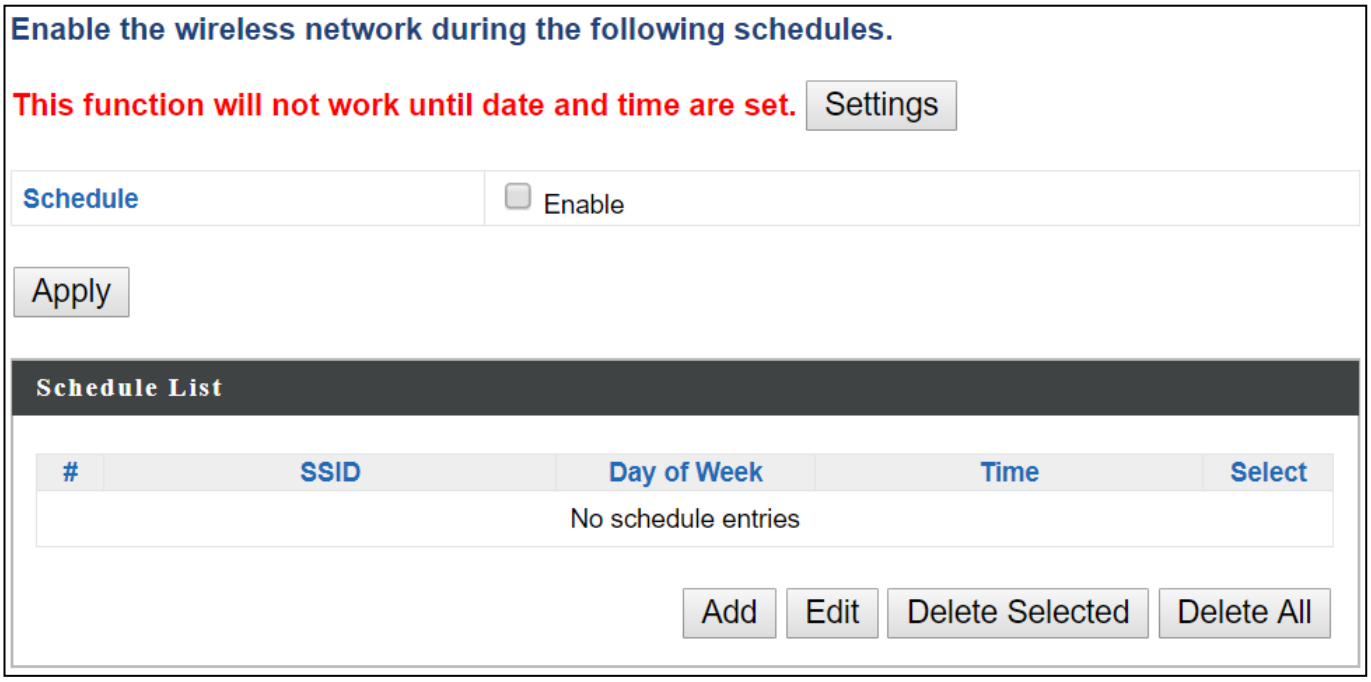
Queues automatically provide minimum transmission delays for video, voice, multimedia and critical applications. The values can be adjusted further manually:

| | |
|---|---|
| **CWMin** | Minimum Contention Window (milliseconds): This value is input to the initial random backoff wait time algorithm for retry of a data frame transmission. The backoff wait time will be generated between 0 and this value. If the frame is not sent, the random backoff value is doubled until the value reaches the number defined by CWMax (below). The CWMin value must be lower than the CWMax value. The contention window scheme helps to avoid frame collisions and determine priority of frame transmission. A shorter window has a higher probability (priority) of transmission. |
| **CWMax** | Maximum Contention Window (milliseconds): This value is the upper limit to random backoff value doubling (see above). |
| **AIFSN** | Arbitration Inter-Frame Space (milliseconds): Specifies additional time between when a channel goes idle and the AP/client sends data frames. Traffic with a lower AIFSN value has a higher priority. |
| **TxOP** | Transmission Opportunity (milliseconds): The maximum interval of time an AP/client can transmit. This makes channel access more efficiently prioritized. A value of 0 means only one frame per transmission. A greater value means higher priority. |

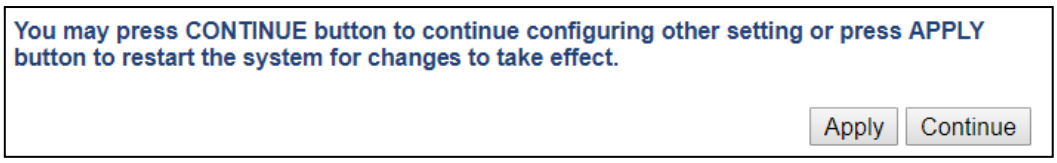
Press “Apply” to apply the configuration, or “Cancel” to forfeit the changes.

## X-6-8 Schedule

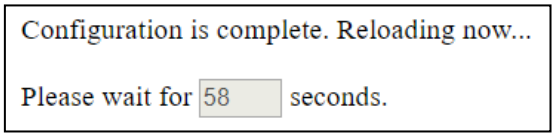
The schedule feature allows you to automate the wireless network for the specified time ranges. Wireless scheduling can save energy and increase the security of your network.
Check/uncheck the box “Enable” and select “Apply” to enable/disable the wireless scheduling function.



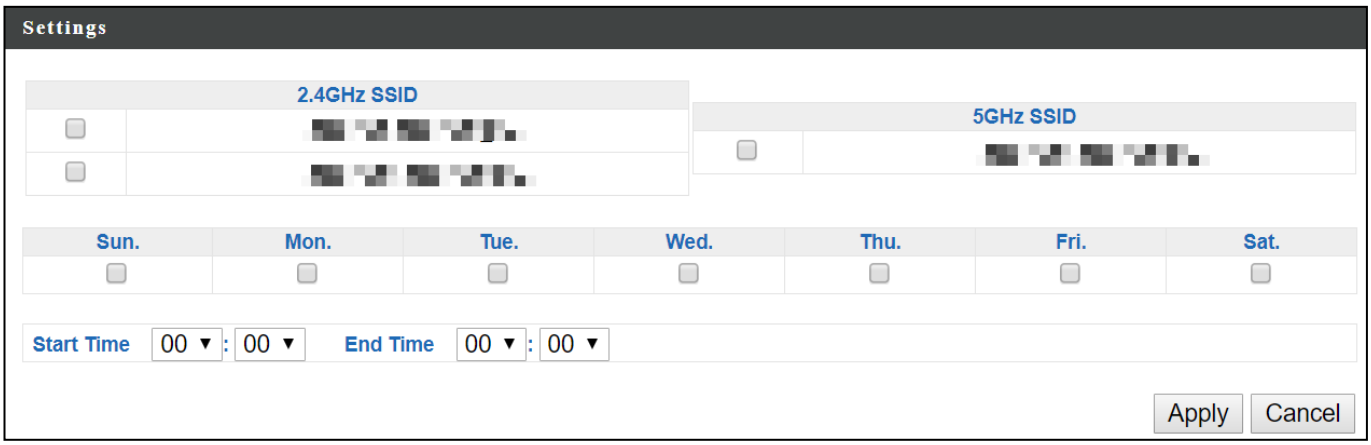

**1.** Select “Add” to add a schedule.
The webpage will display the message below:



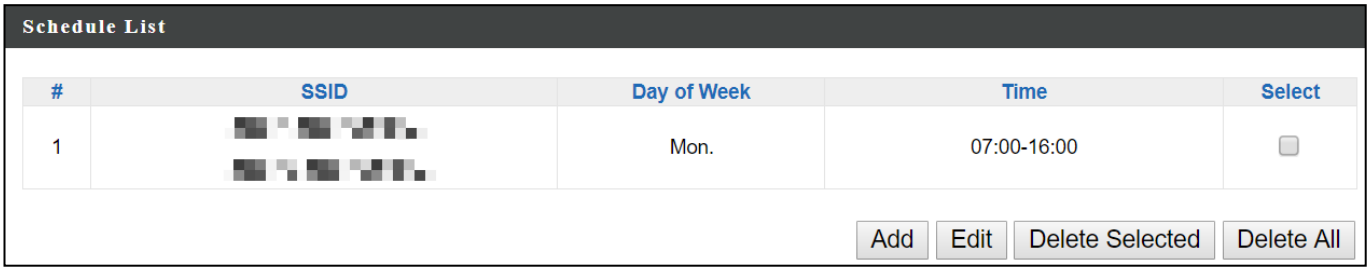

If you choose to apply the settings (by clicking “Apply”), your system will restart the system with a message shown below:



**2.** Settings page will be shown if “Continue” is selected:
Check/uncheck the box of the desired SSID network, day of schedule and select the Start Time and End Time (using the dropdown menu).
Select “Apply” to apply the settings, or “Cancel” to forfeit the schedule.




Schedules will be shown in the Schedule List as exemplified below:



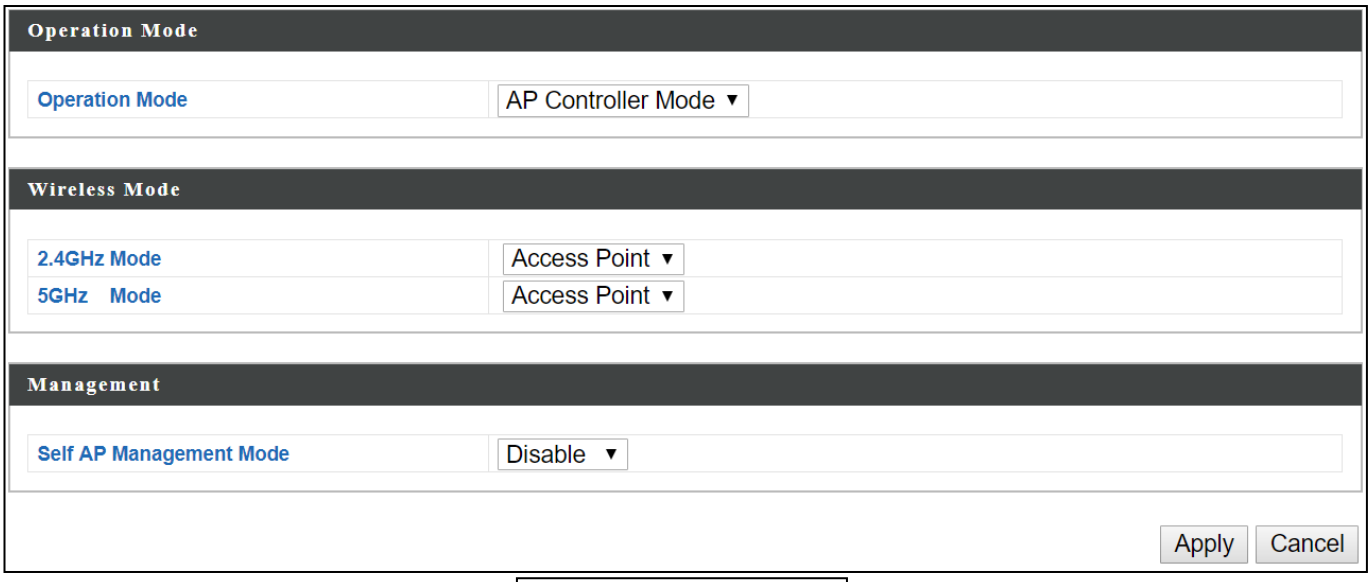

**3.** Select “Add” to add more schedules; or
Check the box of currently available schedule, select “Edit” to edit, or select “Delete Selected” to delete; or
Select “Delete All” to delete all schedules.

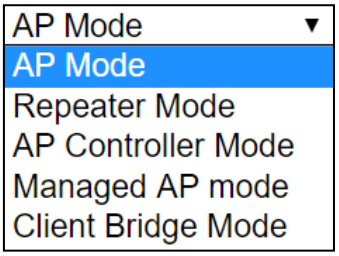
## X-7 Local Settings

### X-7-1 Operation Mode

The access point can function in five different modes. Set the operation mode of the access point here.

1. AP Mode: The device acts as a standalone access point
2. Repeater Mode: The device acts as a wireless repeater (also called wireless range extender) that takes an existing signal from a wireless router or wireless access point and rebroadcasts it to create a second network.
3. AP controller Mode: The device acts as the designated master of the AP array
4. Managed AP Mode: The device acts as a slave AP within the AP array.
5. Client Bridge Mode: The device is now a client bridge. The client bridge receives wireless signal and provides it to devices connected to the bridge (via Ethernet cable).



***In Managed AP mode some functions of the access point will be disabled in this user interface and must be set using Edimax Pro NMS on the AP Controller.***

***In AP Controller Mode the access point will switch to the Edimax Pro NMS user interface.***

Press “Apply” to apply the configuration, or “Cancel” to forfeit the changes.

## X-7-2 Network Settings

### X-7-2-1 System Information

"System Information" page displays basic system information.

**System**

| | |
|---|---|
| Model | [redacted] |
| Product Name | AP801F02F1968A |
| Uptime | 1 day 23:51:09 |
| System Time | [redacted] /01/02 23:53:07 |
| Boot from | Internal memory |
| Firmware Version | 1.8.1 |
| MAC Address | 80:1F:02:F1:96:8A |
| Management VLAN ID | 1 |
| IP Address | 192.168.2.103 Refresh |
| Default Gateway | 192.168.2.70 |
| DNS | 192.168.2.70 |
| DHCP Server | 192.168.2.70 |

**Wired LAN Port Settings**

| Wired LAN Port | Status | VLAN Mode/ID |
|---|---|---|
| LAN1 | Connected (100 Mbps Full-Duplex) | Untagged Port / 1 |
| LAN2 | Disconnected (---) | Untagged Port / 1 |

**Wireless 2.4GHz**

| | |
|---|---|
| Status | Enabled |
| MAC Address | 80:1F:02:F1:96:8A |
| Channel | Ch 7 (Auto) |
| Transmit Power | 100% 28dbm |
| RSSI | -63/-79/-80 |

**Wireless 2.4GHz /SSID**

| SSID | Authentication Method | Encryption Type | VLAN ID | Additional Authentication | Wireless Client Isolation |
|---|---|---|---|---|---|
| [redacted] | No Authentication | No Encryption | 1 | No additional authentication | Disabled |
| [redacted] | No Authentication | No Encryption | 1 | No additional authentication | Disabled |

**Wireless 2.4GHz /WDS Disabled**

| MAC Address | Encryption Type | VLAN Mode/ID |
|---|---|---|
| No WDS entries. | | |

**Wireless 5GHz**

| | |
|---|---|
| Status | Enabled |
| MAC Address | 80:1F:02:F1:96:8B |
| Channel | Ch 36 + 40 + 44 + 48 (Auto) |
| Transmit Power | 100% 24dbm |
| RSSI | 0/0 |

**Wireless 5GHz /SSID**

| SSID | Authentication Method | Encryption Type | VLAN ID | Additional Authentication | Wireless Client Isolation |
|---|---|---|---|---|---|
| [redacted] | No Authentication | No Encryption | 1 | No additional authentication | Disabled |

**Wireless 5GHz /WDS Disabled**

| MAC Address | Encryption Type | VLAN Mode/ID |
|---|---|---|
| No WDS entries. | | |

Refresh

| System | |
|---|---|
| **Model** | Displays the model number of the access point. |
| **Product Name** | Displays the product name for reference, which consists of “AP” plus the MAC address. |
| **Uptime** | Displays the total time since the device was turned on. |
| **System Time** | Displays the system time. |
| **Boot From** | Displays information for the booted hardware, booted from internal memory. |
| **Firmware Version** | Displays the firmware version. |
| **MAC Address** | Displays the access point’s MAC address. |
| **Management VLAN ID** | Displays the management VLAN ID. |
| **IP Address** | Displays the IP address of this device. Click “Refresh” to update this value. |
| **Default Gateway** | Displays the IP address of the default gateway. |
| **DNS** | IP address of DNS (Domain Name Server) |
| **DHCP Server** | IP address of DHCP Server. |

| Wired LAN Port Settings | |
|---|---|
| **Wired LAN Port** | Specifies which LAN port (1 or 2). |
| **Status** | Displays the status of the specified LAN port (connected or disconnected). |
| **VLAN Mode/ID** | Displays the VLAN mode (tagged or untagged) and VLAN ID for the specified LAN port. See X-6-1-3 ***VLAN***. |

| Wireless 2.4GHz (5GHz) | |
|---|---|
| **Status** | Displays the status of the 2.4GHz or 5GHz wireless (enabled or disabled). |
| **MAC Address** | Displays the access point’s MAC address. |
| **Channel** | Displays the channel number the specified wireless frequency is using for broadcast. |
| **Transmit Power** | Displays the wireless radio transmit power level as a percentage. |
| **RSSI** | Received signal strength indicator (RSSI) is a measurement of |

| | |
|---|---|
| | the power present in a received radio signal. |

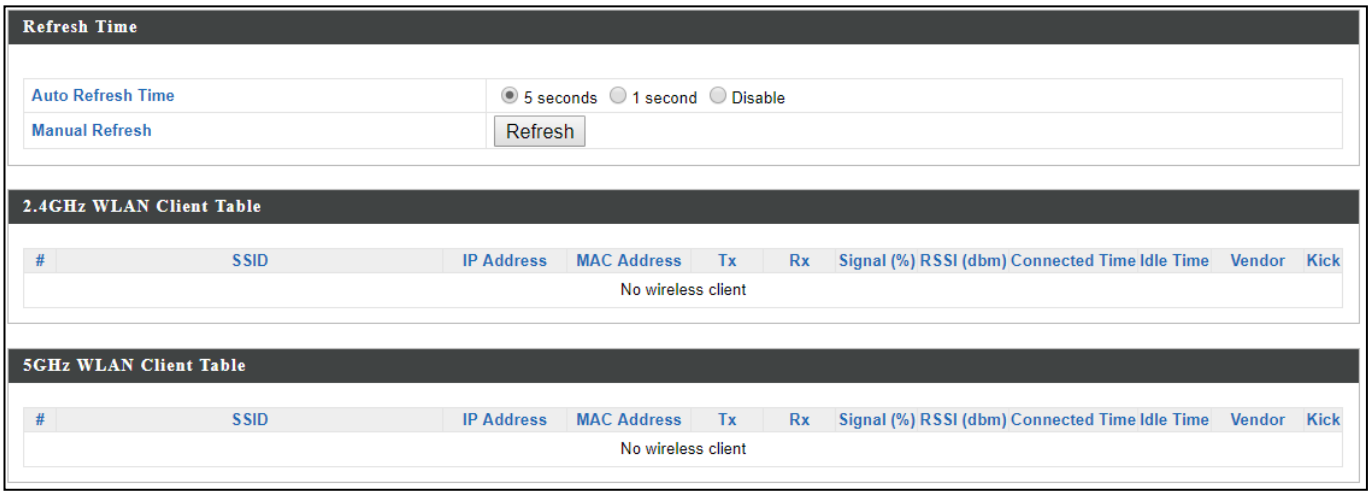
| Wireless 2.4GHZ (5GHz) / SSID | |
|---|---|
| **SSID** | Displays the SSID name(s) for the specified frequency. |
| **Authentication Method** | Displays the authentication method for the specified SSID. See X-6-1 ***Network Settings***. |
| **Encryption Type** | Displays the encryption type for the specified SSID. See X-6-1 ***Network Settings***. |
| **VLAN ID** | Displays the VLAN ID for the specified SSID. See X-6-1-3 ***VLAN***. |
| **Additional Authentication** | Displays the additional authentication type for the specified SSID. See X-6-1 ***Network Settings***. |
| **Wireless Client Isolation** | Displays whether wireless client isolation is in use for the specified SSID. See X-6-1-3 ***VLAN***. |

| Wireless 2.4GHZ (5GHz) / WDS Status | |
|---|---|
| **MAC Address** | Displays the peer access point's MAC address. |
| **Encryption Type** | Displays the encryption type for the specified WDS. See X-6-2-4 ***WDS***. |
| **VLAN Mode/ID** | Displays the VLAN ID for the specified WDS. See X-6-2-4 ***WDS***. |

Select "Refresh" to refresh all information.

## X-7-2-2 Wireless Clients

"Wireless Clients" page displays information about all wireless clients connected to the access point on the 2.4GHz or 5GHz frequency.

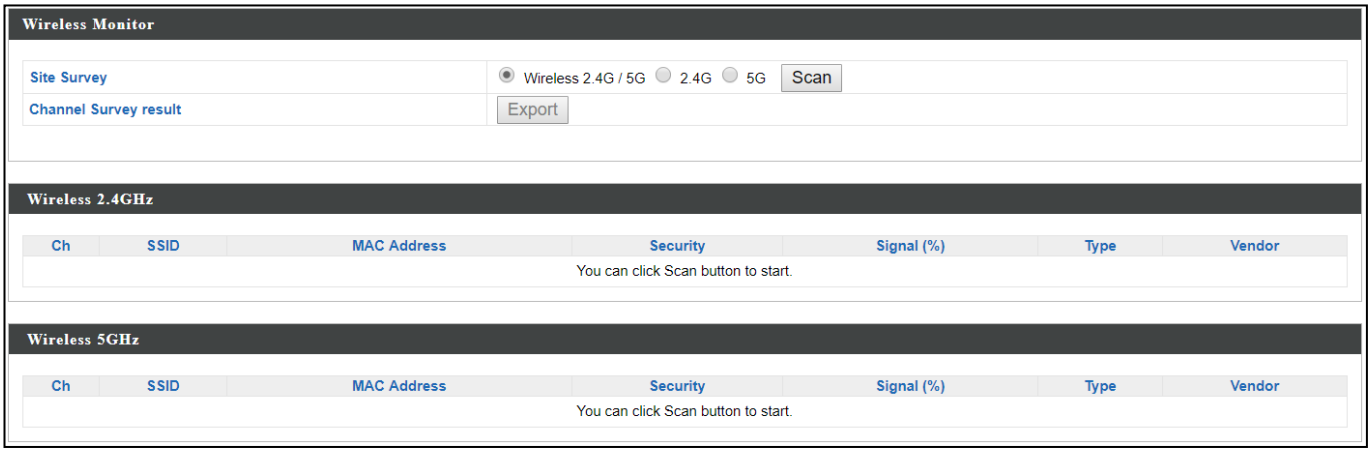



| Refresh time | |
|---|---|
| **Auto Refresh Time** | Select a time interval for the client table list to automatically refresh. |
| **Manual Refresh** | Click refresh to manually refresh the client table. |

| 2.4GHz (5GHz) WLAN Client Table | |
|---|---|
| **SSID** | Displays the SSID which the client is connected to. |
| **MAC Address** | Displays the MAC address of the client. |
| **Tx** | Displays the total data packets transmitted by the specified client. |
| **Rx** | Displays the total data packets received by the specified client. |
| **Signal (%)** | Displays the wireless signal strength for the specified client. |
| **Connected Time** | Displays the total time the wireless client has been connected to the access point. |
| **Idle Time** | Client idle time is the time for which the client has not transmitted any data packets i.e. is idle. |
| **Vendor** | The vendor of the client's wireless adapter is displayed here. |

## X-7-2-3 Wireless Monitor

"Wireless Monitor" is a tool built into the access point to scan and monitor the surrounding wireless environment. Select a frequency and click "Scan" to display a list of all SSIDs within range along with relevant details for each SSID.



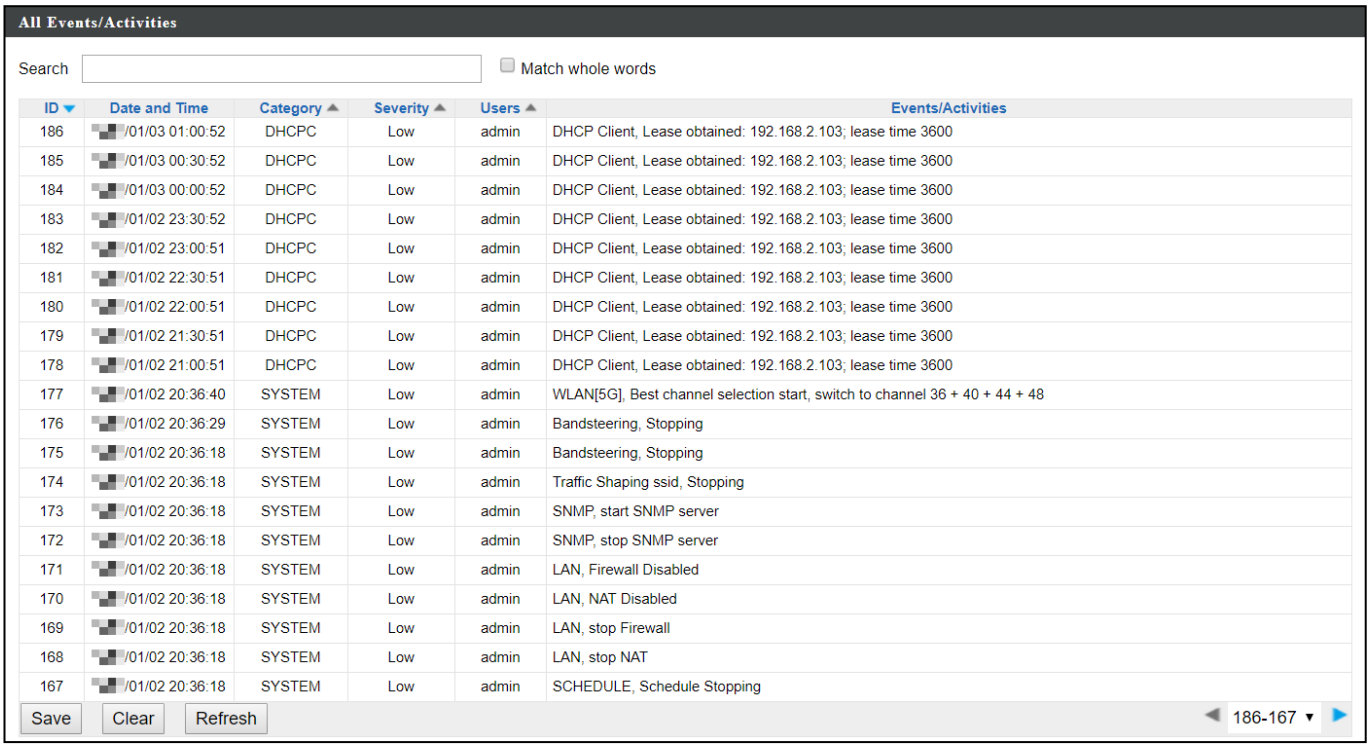

| Wireless Monitor | |
|---|---|
| **Site Survey** | Select which frequency (or both) to scan, and click "Scan" to begin. |
| **Channel Survey Result** | After a scan is complete, click "Export" to save the results to local storage. |

| Site Survey Results | |
|---|---|
| **Ch** | Displays the channel number used by the specified SSID. |
| **SSID** | Displays the SSID identified by the scan. |
| **MAC Address** | Displays the MAC address of the wireless router/access point for the specified SSID. |
| **Security** | Displays the authentication/encryption type of the specified SSID. |
| **Signal (%)** | Displays the current signal strength of the SSID. |
| **Type** | Displays the 802.11 wireless networking standard(s) of the specified SSID. |
| **Vendor** | Displays the vendor of the wireless router/access point for the specified SSID. |

## X-7-2-4 Log

"System log" displays system operation information such as up time and connection processes. This information is useful for network administrators.

***Older entries will be overwritten when the log is full***




| ID | Date and Time | Category | Severity | Users | Events/Activities |
|---|---|---|---|---|---|
| 186 | /01/03 01:00:52 | DHCPC | Low | admin | DHCP Client, Lease obtained: 192.168.2.103; lease time 3600 |
| 185 | /01/03 00:30:52 | DHCPC | Low | admin | DHCP Client, Lease obtained: 192.168.2.103; lease time 3600 |
| 184 | /01/03 00:00:52 | DHCPC | Low | admin | DHCP Client, Lease obtained: 192.168.2.103; lease time 3600 |
| 183 | /01/02 23:30:52 | DHCPC | Low | admin | DHCP Client, Lease obtained: 192.168.2.103; lease time 3600 |
| 182 | /01/02 23:00:51 | DHCPC | Low | admin | DHCP Client, Lease obtained: 192.168.2.103; lease time 3600 |
| 181 | /01/02 22:30:51 | DHCPC | Low | admin | DHCP Client, Lease obtained: 192.168.2.103; lease time 3600 |
| 180 | /01/02 22:00:51 | DHCPC | Low | admin | DHCP Client, Lease obtained: 192.168.2.103; lease time 3600 |
| 179 | /01/02 21:30:51 | DHCPC | Low | admin | DHCP Client, Lease obtained: 192.168.2.103; lease time 3600 |
| 178 | /01/02 21:00:51 | DHCPC | Low | admin | DHCP Client, Lease obtained: 192.168.2.103; lease time 3600 |
| 177 | /01/02 20:36:40 | SYSTEM | Low | admin | WLAN[5G], Best channel selection start, switch to channel 36 + 40 + 44 + 48 |
| 176 | /01/02 20:36:29 | SYSTEM | Low | admin | Bandsteering, Stopping |
| 175 | /01/02 20:36:18 | SYSTEM | Low | admin | Bandsteering, Stopping |
| 174 | /01/02 20:36:18 | SYSTEM | Low | admin | Traffic Shaping ssid, Stopping |
| 173 | /01/02 20:36:18 | SYSTEM | Low | admin | SNMP, start SNMP server |
| 172 | /01/02 20:36:18 | SYSTEM | Low | admin | SNMP, stop SNMP server |
| 171 | /01/02 20:36:18 | SYSTEM | Low | admin | LAN, Firewall Disabled |
| 170 | /01/02 20:36:18 | SYSTEM | Low | admin | LAN, NAT Disabled |
| 169 | /01/02 20:36:18 | SYSTEM | Low | admin | LAN, stop Firewall |
| 168 | /01/02 20:36:18 | SYSTEM | Low | admin | LAN, stop NAT |
| 167 | /01/02 20:36:18 | SYSTEM | Low | admin | SCHEDULE, Schedule Stopping |

| | |
|---|---|
| **Save** | Click to save the log as a file on your local computer. |
| **Clear** | Clear all log entries. |
| **Refresh** | Refresh the current log. |

The following information/events are recorded by the log:

- **USB**
  *Mount & unmount*
- **Wireless Client**
  *Connected & disconnected*
  *Key exchange success & fail*
- **Authentication**
  *Authentication fail or successful.*
- **Association**
  *Success or fail*

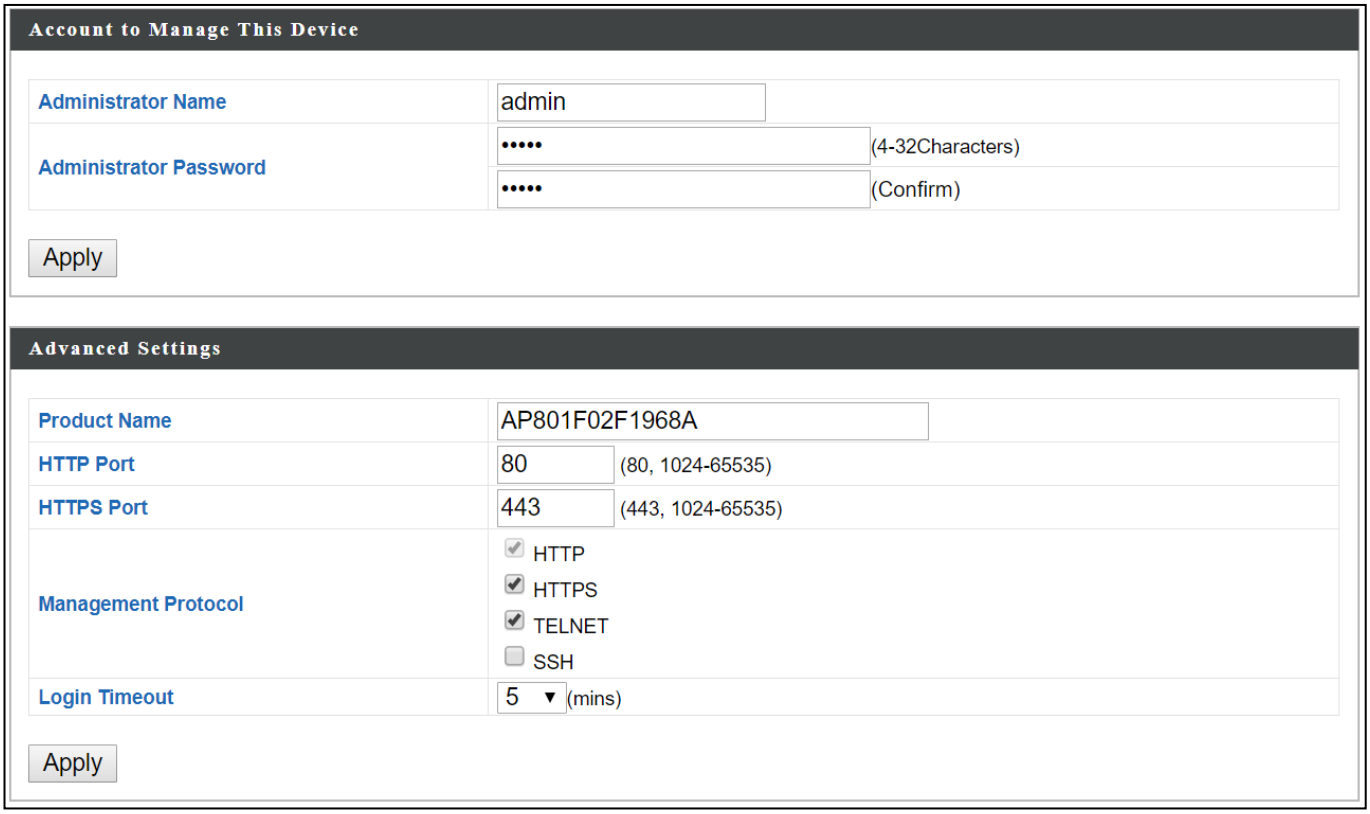
- **WPS**
  *M1 - M8 messages*
  *WPS success*
- **Change Settings**
- **System Boot**
  *Displays current model name*
- **NTP Client**
- **Wired Link**
  *LAN Port link status and speed status*
- **Proxy ARP**
  *Proxy ARP module start & stop*
- **Bridge**
  *Bridge start & stop.*
- **SNMP**
  *SNMP server start & stop.*
- **HTTP**
  *HTTP start & stop.*
- **HTTPS**
  *HTTPS start & stop.*
- **SSH**
  *SSH-client server start & stop.*
- **Telnet**
  *Telnet-client server start or stop.*
- **WLAN (2.4G)**
  *WLAN (2.4G] channel status and country/region status*
- **WLAN (5G)**
  *WLAN (5G) channel status and country/region status*

## X-7-3 Management

### X-7-3-1 Admin

You can change the password used to login to the browser-based configuration interface here. It is advised to do so for security purposes.

***If you change the administrator password, please make a note of the new password. In the event that you forget this password and are unable to login to the browser based configuration interface, see*** I-5 *Reset* ***for how to reset the access point.***




| Account to Manage This Device | |
|---|---|
| **Administrator Name** | Set the access point's administrator name. This is used to log in to the browser based configuration interface and must be between 4-16 alphanumeric characters (case sensitive). |
| **Administrator Password** | Set the access point's administrator password. This is used to log in to the browser based configuration interface and must be between 4-32 alphanumeric characters (case sensitive). |

Press "Apply" to apply the configuration.

| Advanced Settings | |
|---|---|
| **Product Name** | Edit the product name according to your preference consisting of 1-32 alphanumeric characters. This name is used for reference purposes. |
| **Management Protocol** | Check/uncheck the boxes to enable/disable specified management interfaces (see below). When SNMP is enabled, complete the SNMP fields below. |
| **SNMP Version** | Select SNMP version appropriate for your SNMP manager. |
| **SNMP Get Community** | Enter an SNMP Get Community name for verification with the SNMP manager for SNMP-GET requests. |
| **SNMP Set Community** | Enter an SNMP Set Community name for verification with the SNMP manager for SNMP-SET requests. |
| **SNMP Trap** | Enable or disable SNMP Trap to notify SNMP manager of network errors. |
| **SNMP Trap Community** | Enter an SNMP Trap Community name for verification with the SNMP manager for SNMP-TRAP requests. |
| **SNMP Trap Manager** | Specify the IP address or sever name (2-128 alphanumeric characters) of the SNMP manager. |

**HTTP**

*Internet browser HTTP protocol management interface*

**TELNET**

*Client terminal with telnet protocol management interface*

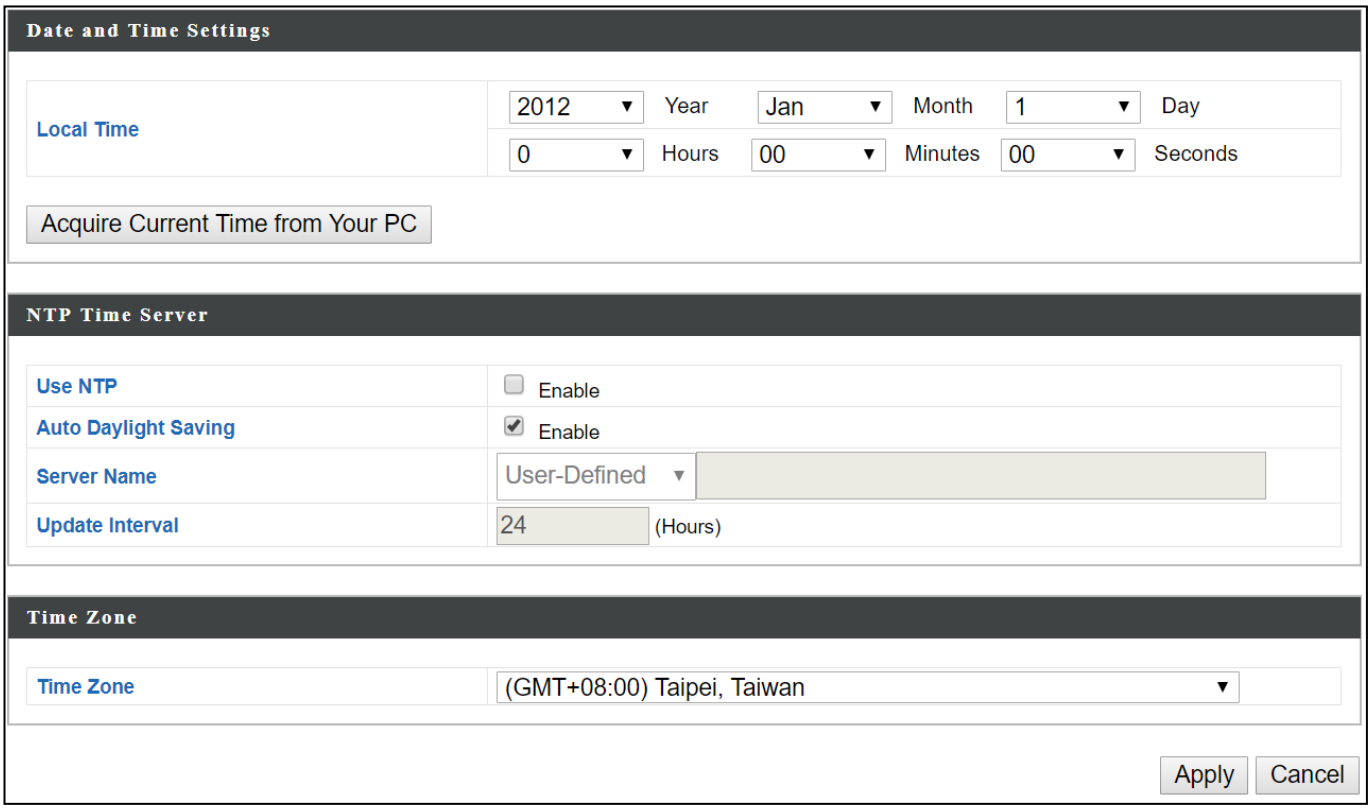
**SNMP**

*Simple Network Management Protocol. SNMPv1, v2 & v3 protocol supported. SNMPv2 can be used with community based authentication. SNMPv3 uses user-based security model (USM) architecture.*

Press “Apply” to apply the configuration.

## X-7-3-2 Date and Time

Configure the date and time settings of the access point here. The date and time of the device can be configured manually or can be synchronized with a time server.




| Date and Time Settings | |
|---|---|
| **Local Time** | Set the access point's date and time manually using the drop down menus. |
| **Acquire Current Time from your PC** | Click "Acquire Current Time from Your PC" to enter the required values automatically according to your computer's current time and date. |

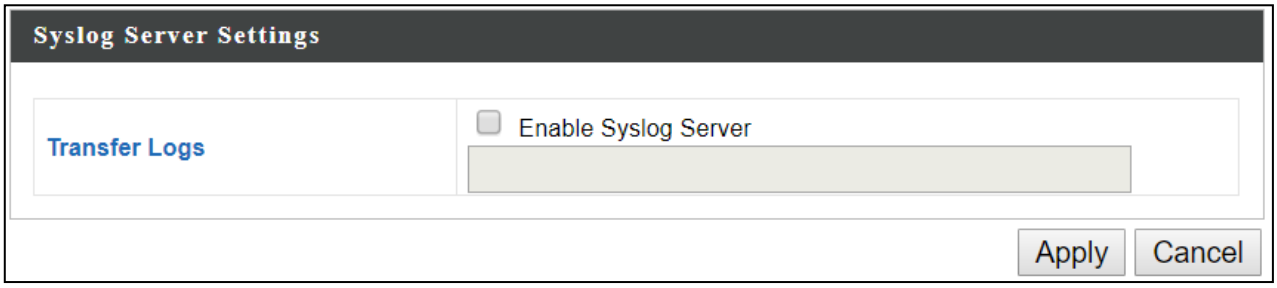
| NTP Time Server | |
|---|---|
| **Use NTP** | The access point also supports NTP (Network Time Protocol) for automatic time and date setup. |
| **Server Name** | Enter the host name or IP address of the time server if you wish. |
| **Update Interval** | Specify a frequency (in hours) for the access point to update/synchronize with the NTP server. |

| Time Zone | |
|---|---|
| **Time Zone** | Select the time zone of your country/region. If your country/region is not listed, please select another country/region whose time zone is the same as yours. |

Press “Apply” to apply the configuration, or “Cancel” to forfeit the changes.

## X-7-3-3 Syslog Server Settings

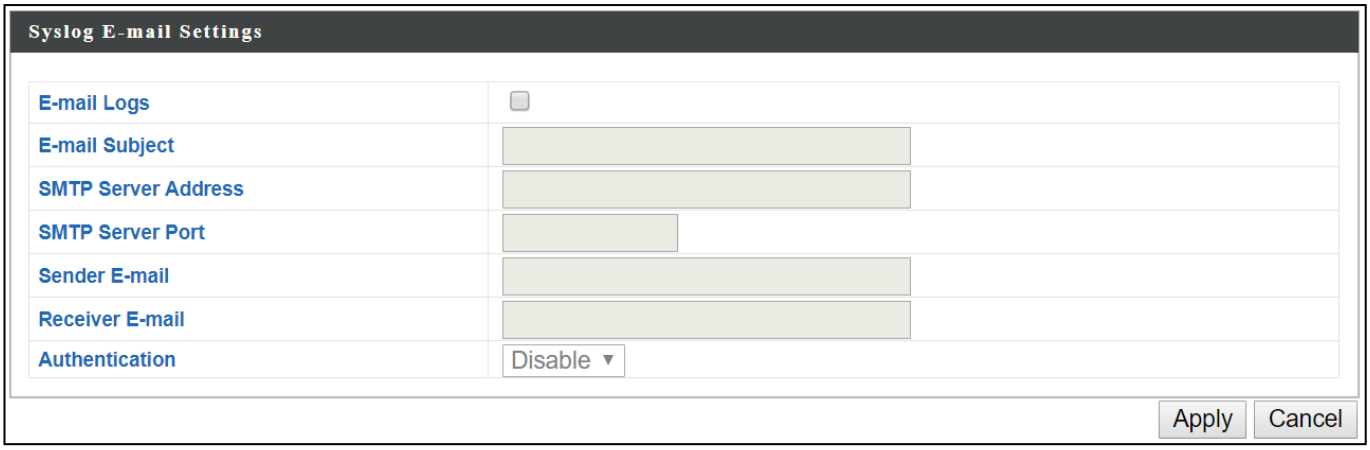
The system log can be sent to a server.




| Syslog Server Settings | |
|---|---|
| **Transfer Logs** | Check the box to enable the use of a syslog server.<br>Enter a host name, domain or IP address for the server, consisting of up to 128 alphanumeric characters. |

Press “Apply” to apply the configuration, or “Cancel” to forfeit the changes.

## X-7-3-4 Syslog E-mail Settings

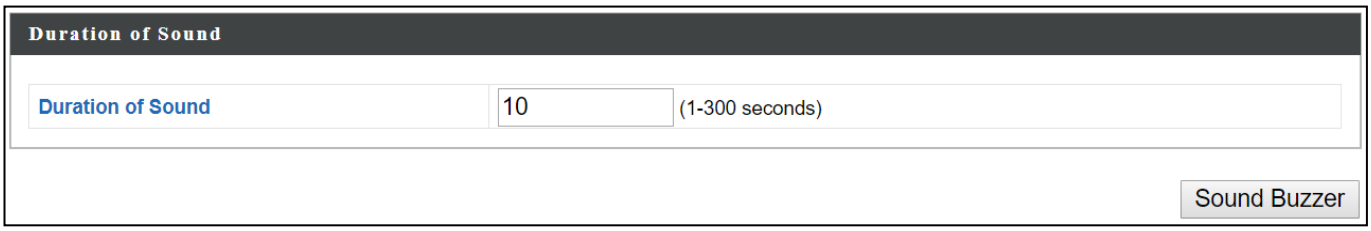



| Syslog E-mail Settings | |
|---|---|
| **E-mail Logs** | Check the box to enable/disable e-mail logs. |
| **E-mail Subject** | Specify the subject line of log emails. |
| **SMTP Server Address** | Specify the SMTP server address used to send log emails. |
| **SMTP Server Port** | Specify the SMTP server port used to send log emails. |
| **Sender E-mail** | Specify the sender email address. |
| **Receiver E-mail** | Specify the email to receive log emails. |
| **Authentication** | Disable or select authentication type: SSL or TLS. When using SSL or TLS, enter the username and password. |

Press “Apply” to apply the configuration, or “Cancel” to forfeit the changes.

## X-7-3-5 I’m Here

The access point features a built-in buzzer which can sound on command using the “I’m Here” page. This is useful for network administrators and engineers working in complex network environments to locate the access point.



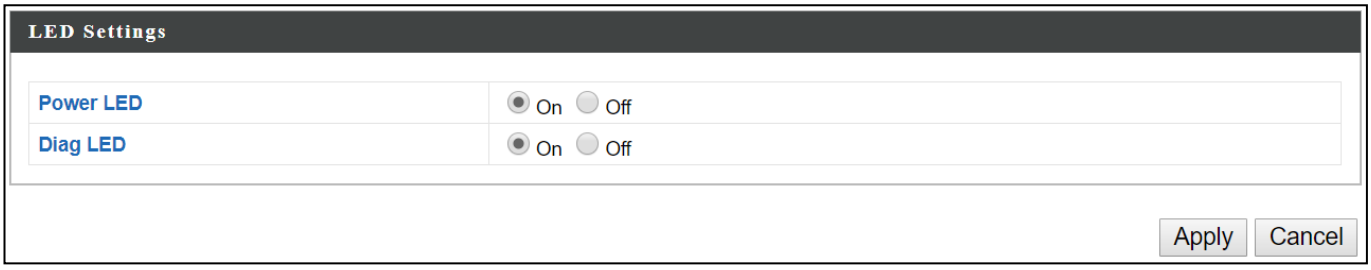

***The buzzer is loud!***

| | |
|---|---|
| **Duration of Sound** | Set the duration for which the buzzer will sound when the “Sound Buzzer” button is clicked. |
| **Sound Buzzer** | Activate the buzzer sound for the above specified duration of time. |

## X-7-4 Advanced

### X-7-4-1 LED Settings

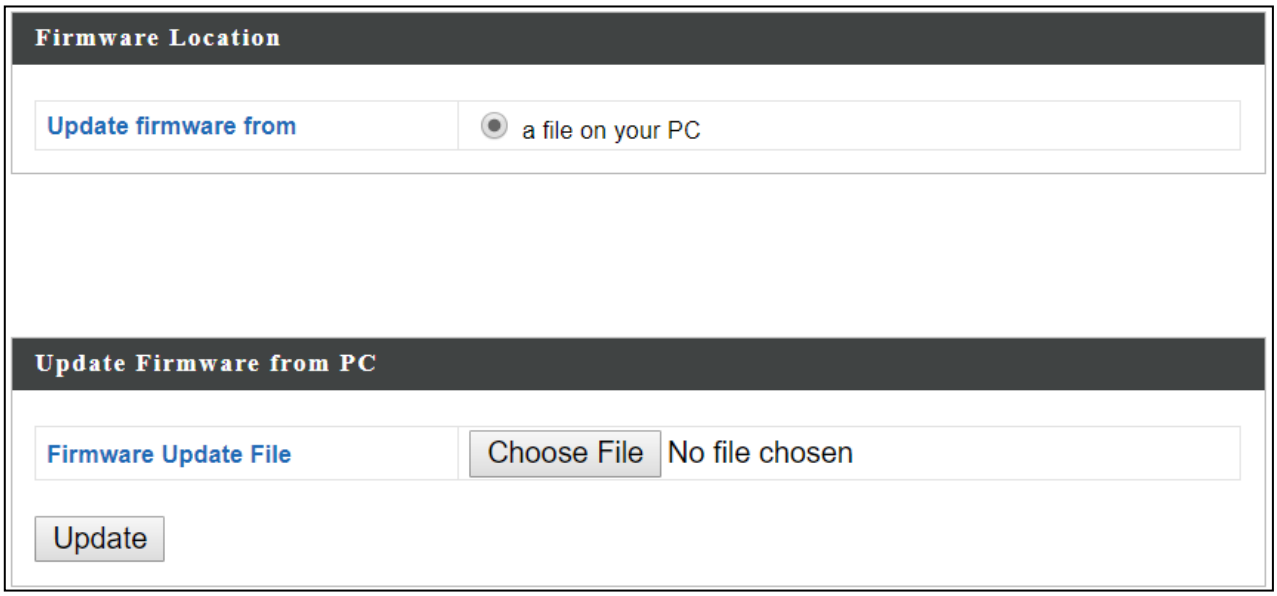
The access point's LEDs can be manually enabled or disabled according to your preference.




| | |
|---|---|
| **Power LED** | Select on or off. |
| **Diag LED** | Select on or off. |

## X-7-4-2 Update Firmware

The “Firmware” page allows you to update the firmware of the system. Updated firmware versions often offer increased performance and security, as well as bug fixes. Download the latest firmware from the Edimax website.

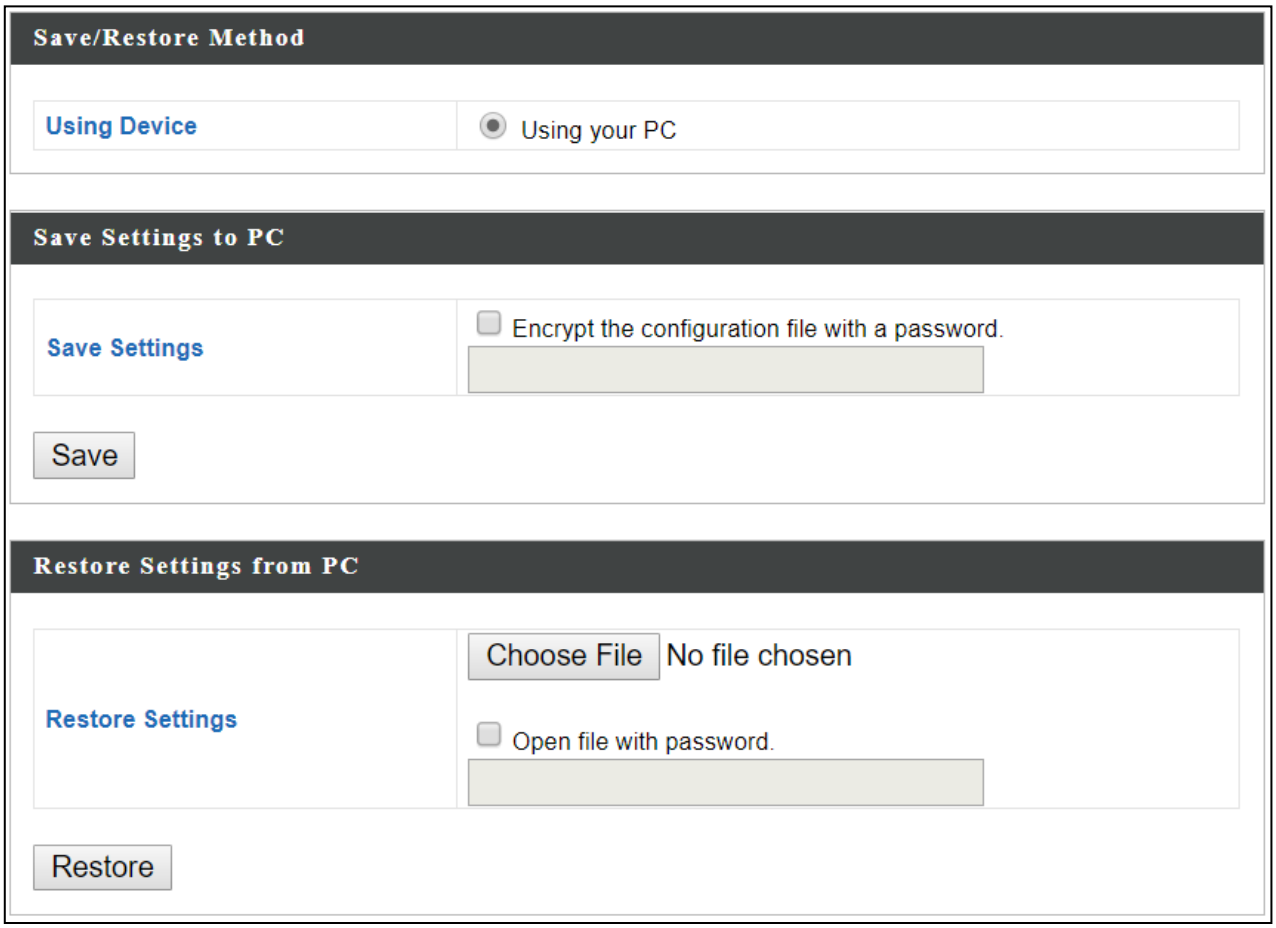



***Do not switch off or disconnect the access point during a firmware upgrade, as this could damage the device.***

| | |
|---|---|
| **Firmware Location** | Click “Choose File” to upload firmware from your local computer. |

### X-7-4-3 Save/Restore Settings

The device's "Save / Restore Settings" page enables you to save / backup the device's current settings as a file to your local computer, and restore the access point to previously saved settings.




| Save Settings to PC | |
|---|---|
| **Save Settings** | **Encryption**: If you wish to encrypt the configuration file with a password, check the "Encrypt the configuration file with a password" box and enter a password.<br>Click "Save" to save current settings. A new window will open to allow you to specify a location to save to. |

| Restore Settings from PC | |
|---|---|
| **Restore Settings** | Click the "Choose File" button to find a previously saved settings file on your computer. If your settings file is encrypted with a password, check the "Open file with password" box and enter the password in the following field.<br>Click "Restore" to replace your current settings. |

### X-7-4-4 Factory Default

If the access point malfunctions or is not responding, rebooting the device (VI-5-5 **Reboot**) maybe an option to consider. If rebooting does not work, try resetting the device back to its factory default settings. You can reset the access point back to its default settings using this feature if the reset button is not accessible.


| | |
|---|---|
| **Factory Default** | Click "Factory Default" to restore settings to the factory default. A pop-up window will appear and ask you to confirm. |

***After resetting to factory defaults, please wait for the access point to reset and restart.***

### X-7-4-5 Reboot

If the access point malfunctions or is not responding, rebooting the device may be an option to consider. You can reboot the access point remotely using this feature.


| | |
|---|---|
| **Reboot** | Click “Reboot” to reboot the device. A countdown will indicate the progress of the reboot. |

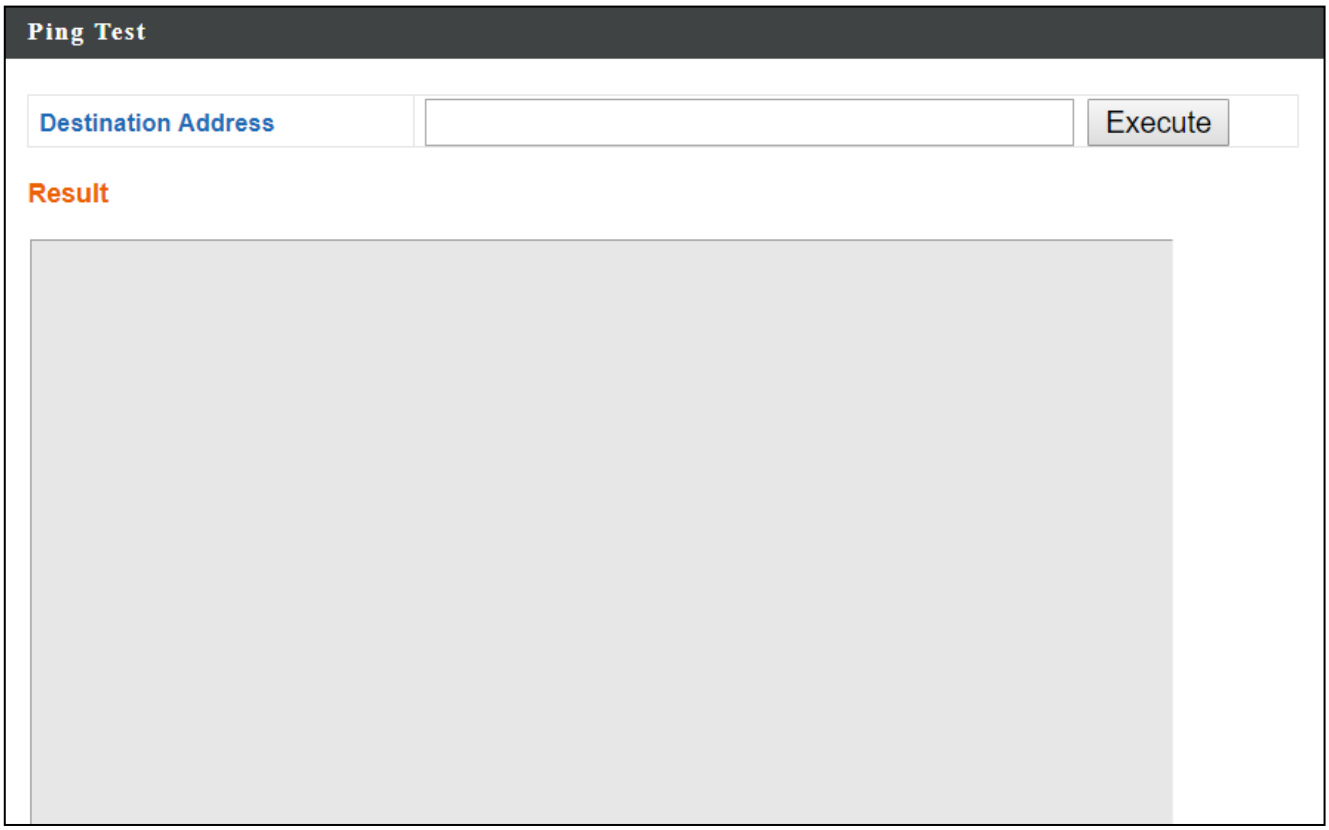
## X-8 Toolbox

The Toolbox panel provides network diagnostic tools: *Ping*, *Traceroute*, and *IP Scan*.

### X-8-1 Network Connectivity

#### X-8-1-1 Ping

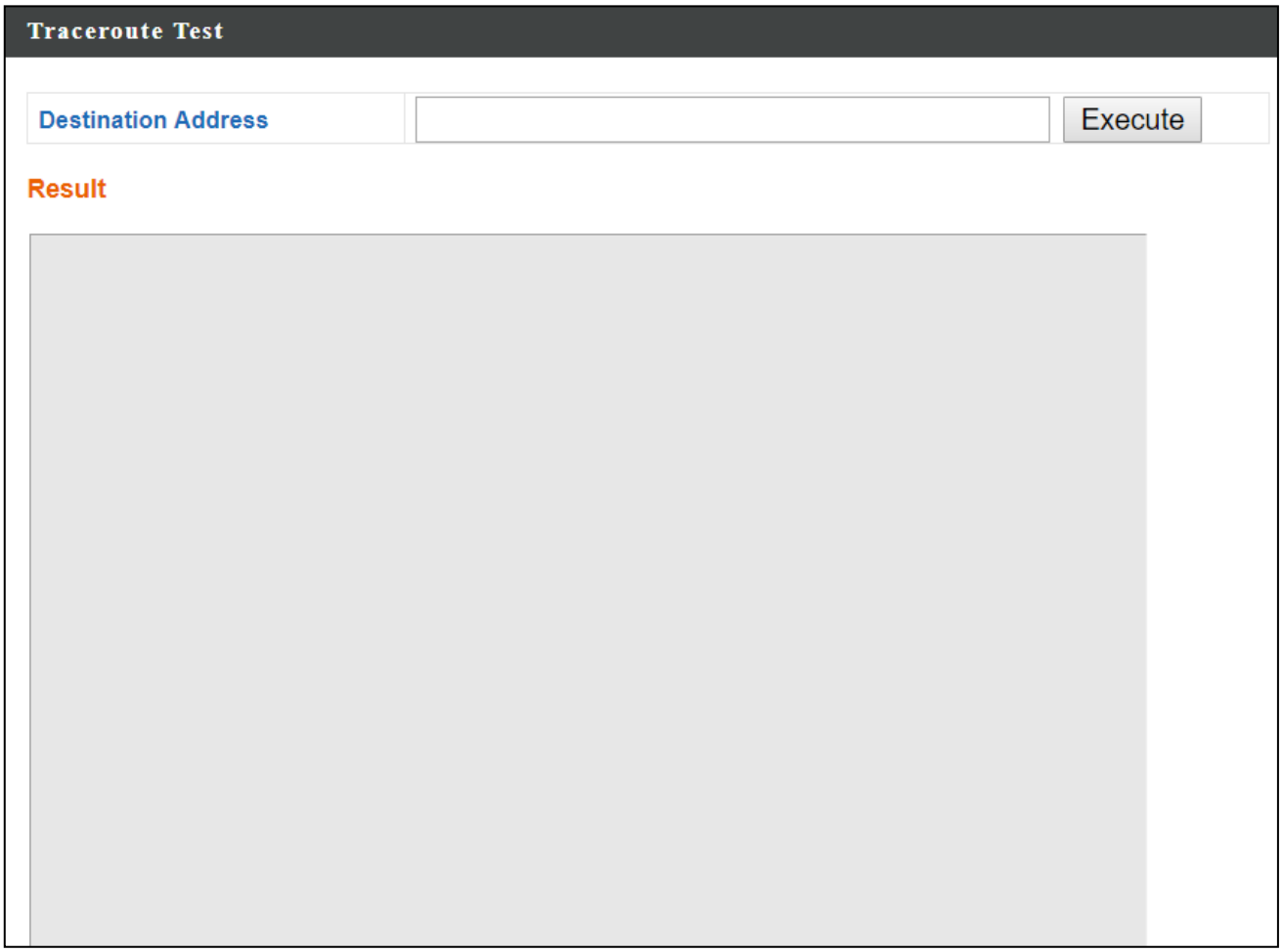
Ping is a computer network administration utility used to test whether a particular host is reachable across an IP network and to measure the round-trip time for sent messages.




| | |
|---|---|
| **Destination Address** | Enter the address of the host. |
| **Execute** | Click “Execute” to ping the host. |

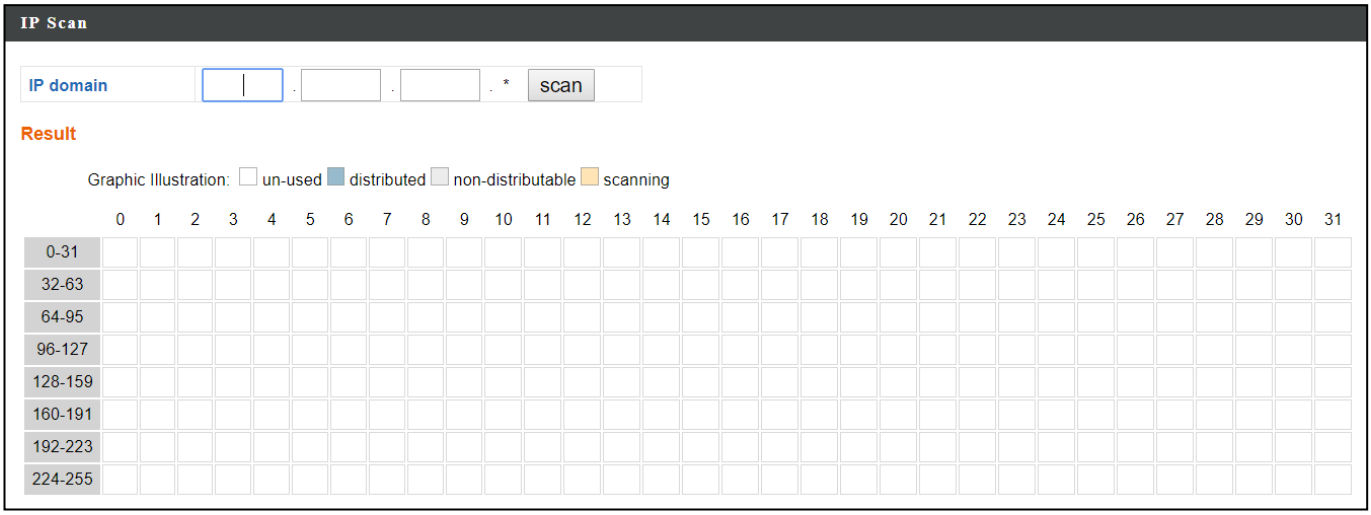
## X-8-1-2 Trace Route

Traceroute is a diagnostic tool for displaying the route (path) and measuring transit delays of packets across an IP network.




| | |
|---|---|
| **Destination Address** | Enter the address of the host. |
| **Execute** | Click “Execute” to execute the traceroute command. |

# X-8-1-3 IP Scan


IP Scan
IP domain
scan
Result
Graphic Illustration: un-used distributed non-distributable scanning
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
0-31
32-63
64-95
96-127
128-159
160-191
192-223
224-255

# XI Appendix

## XI-1 Configuring your IP address

The access point uses the default IP address **192.168.2.2**. In order to access the browser based configuration interface, you need to modify the IP address of your computer to be in the same IP address subnet e.g. **192.168.2.x (x = 3 – 254).**

The procedure for modifying your IP address varies across different operating systems; please follow the guide appropriate for your operating system.

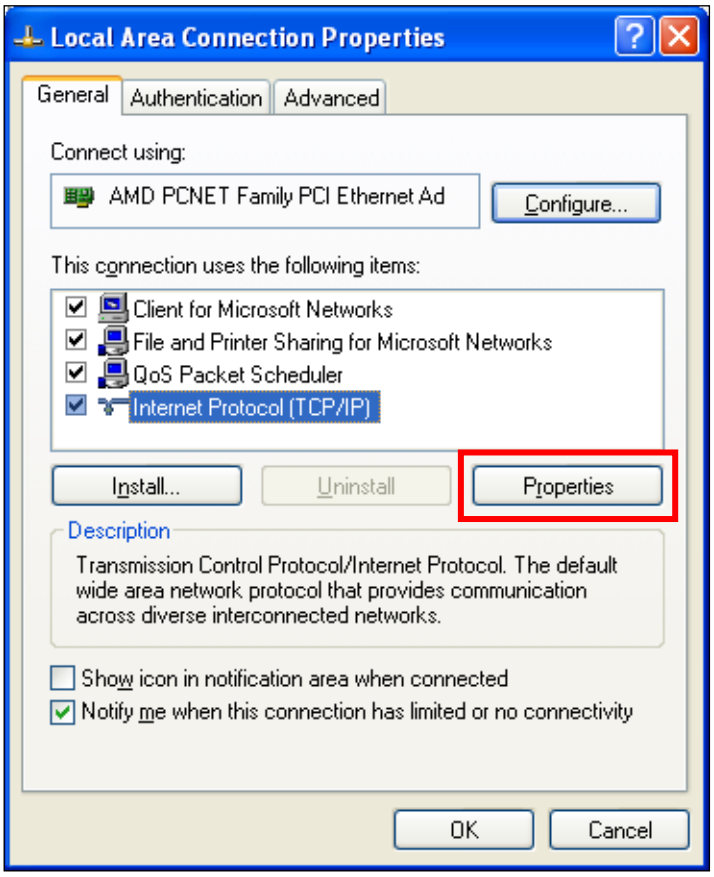
In the following examples we use the IP address **192.168.2.10** though you can use any IP address in the range **192.168.2.x (x = 3 – 254).**

***If you've changed the AP Controller's IP address, or if your gateway/router uses a DHCP server, make sure you enter the correct IP address. Refer to your gateway/router's settings. Your computer's IP address must be in the same subnet as the AP Controller.***

***If using a DHCP server on the network, it is advised to use your DHCP server's settings to assign the AP Controller a static IP address.***

## XI-1-1 Windows XP

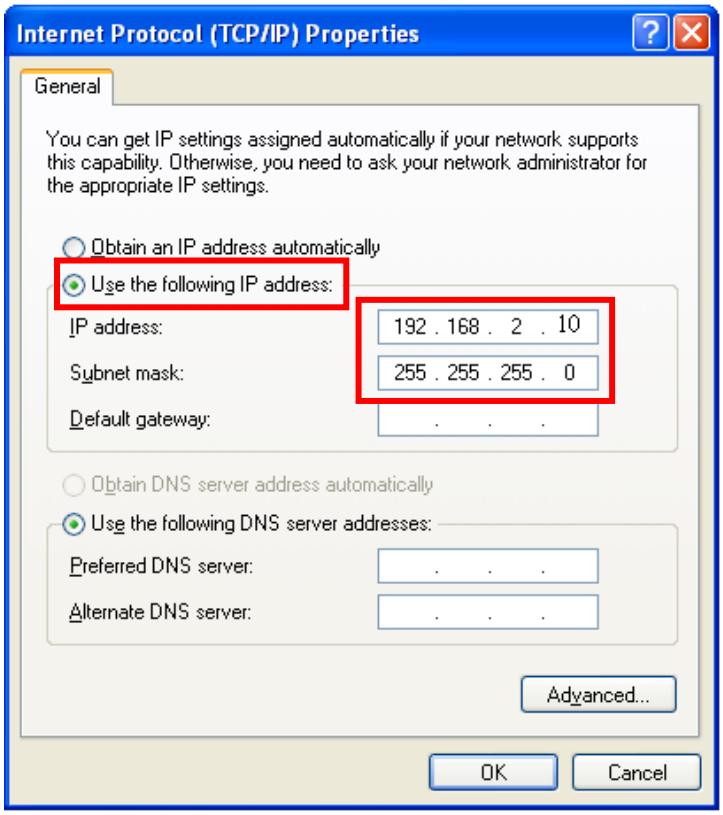
**1.** Click the “Start” button (it should be located in the lower-left corner of your computer) → “Control Panel” → “Network and Internet Connections” → “Network Connections” → “Local Area Connection”. The “Local Area Connection Properties” window will appear, select “Internet Protocol (TCP / IP)”, and click “Properties”.



**2.** Select “Use the following IP address”, then input the following values:

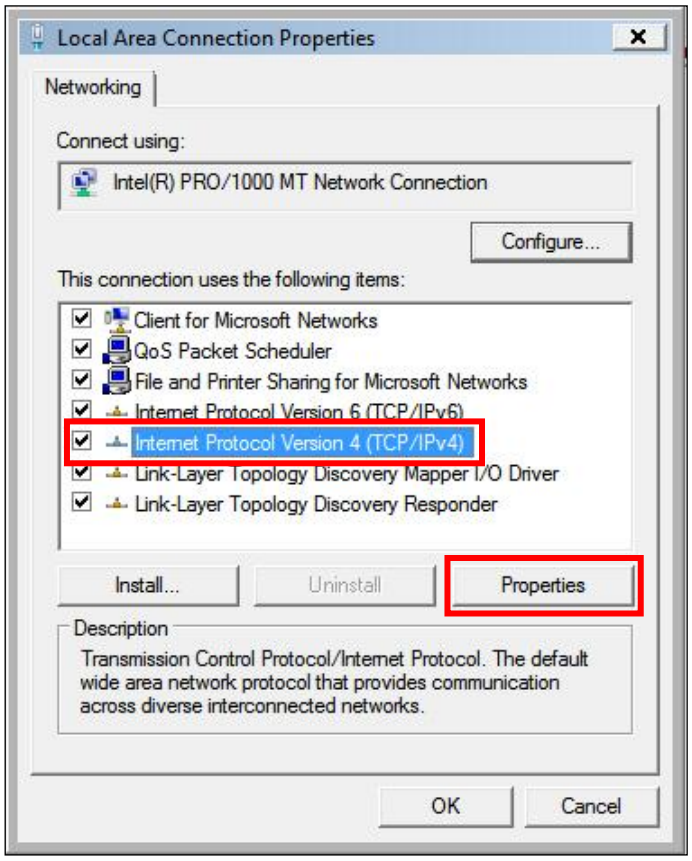
**IP address**: 192.168.2.10
**Subnet Mask**: 255.255.255.0

Click ‘OK’ when finished.



## XI-1-2 Windows Vista

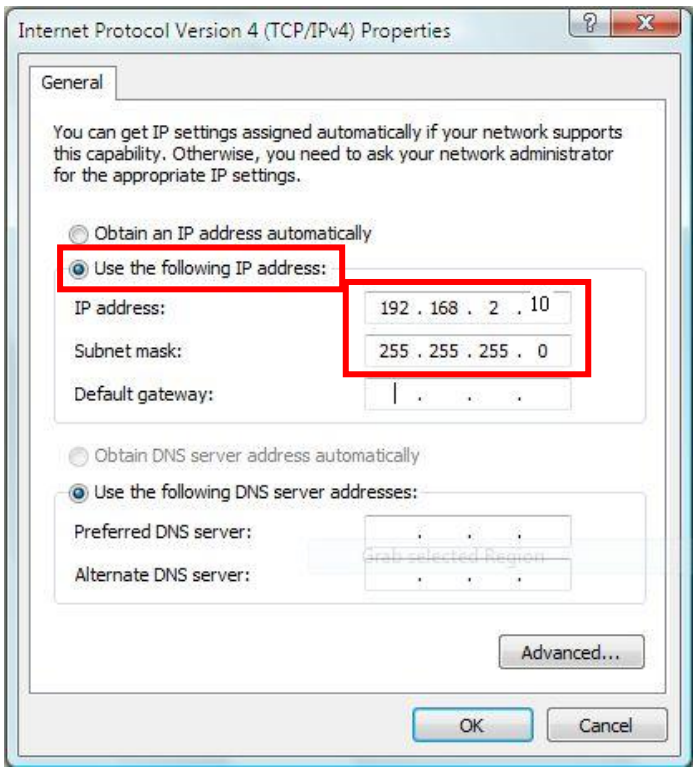
**1.** Click the “Start” button (it should be located in the lower-left corner of your computer) → “Control Panel” → “View Network Status and Tasks” → “Manage Network Connections” → “Local Area Network” → “Properties”. The “Local Area Connection Properties” window will appear, select “Internet Protocol Version 4 (TCP / IPv4)”, and then click “Properties”.



**2.** Select “Use the following IP address”, then input the following values:

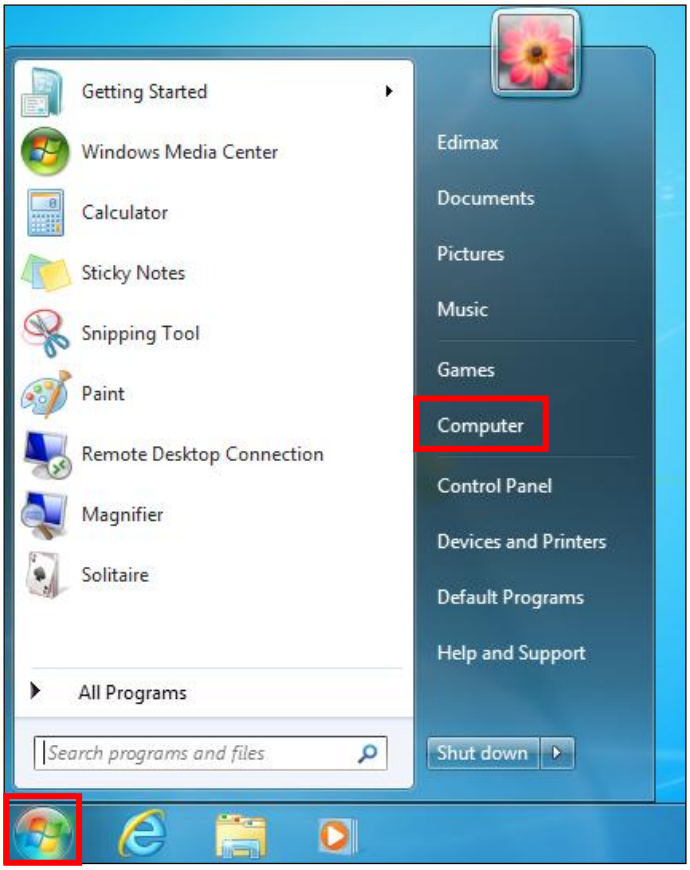
**IP address**: 192.168.2.10
**Subnet Mask**: 255.255.255.0

Click ‘OK’ when finished.

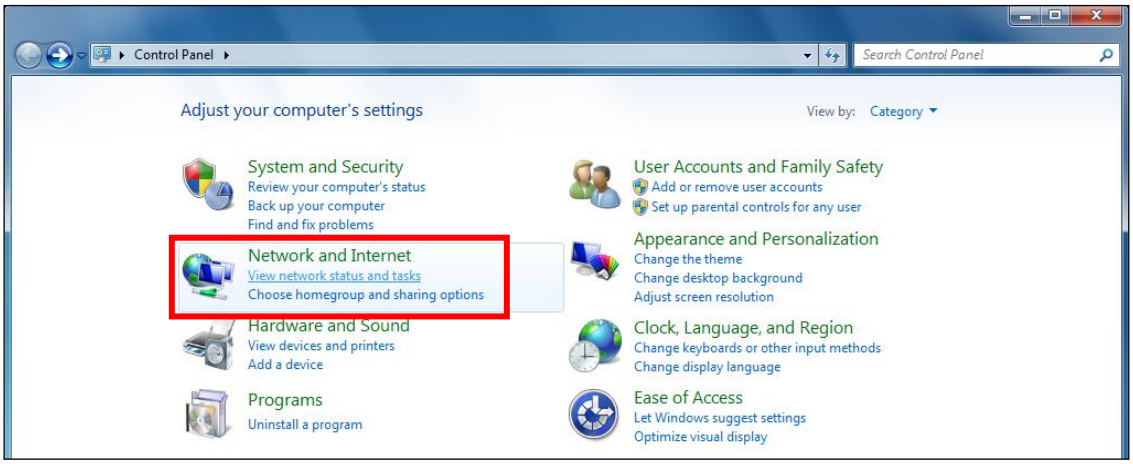


## XI-1-3 Windows 7

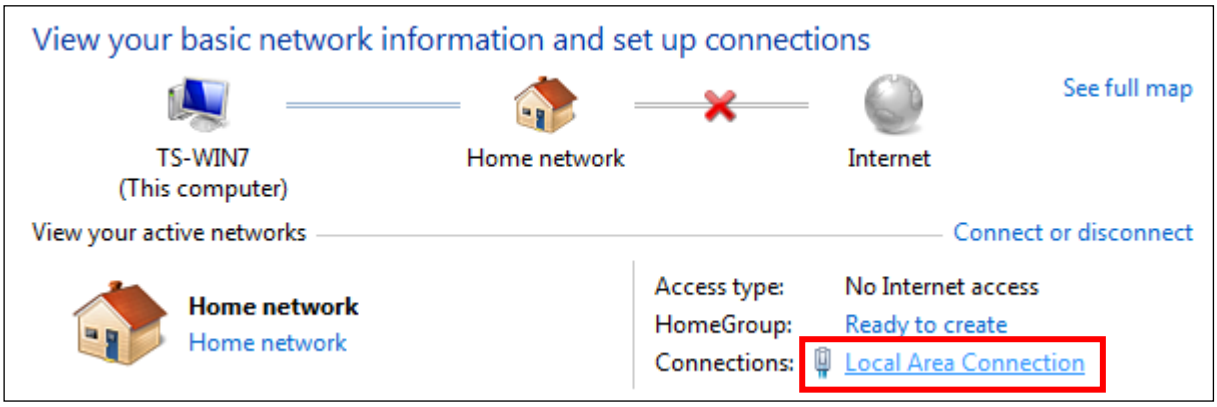
**1.** Click the “Start” button (it should be located in the lower-left corner of your computer), then click “Control Panel”.



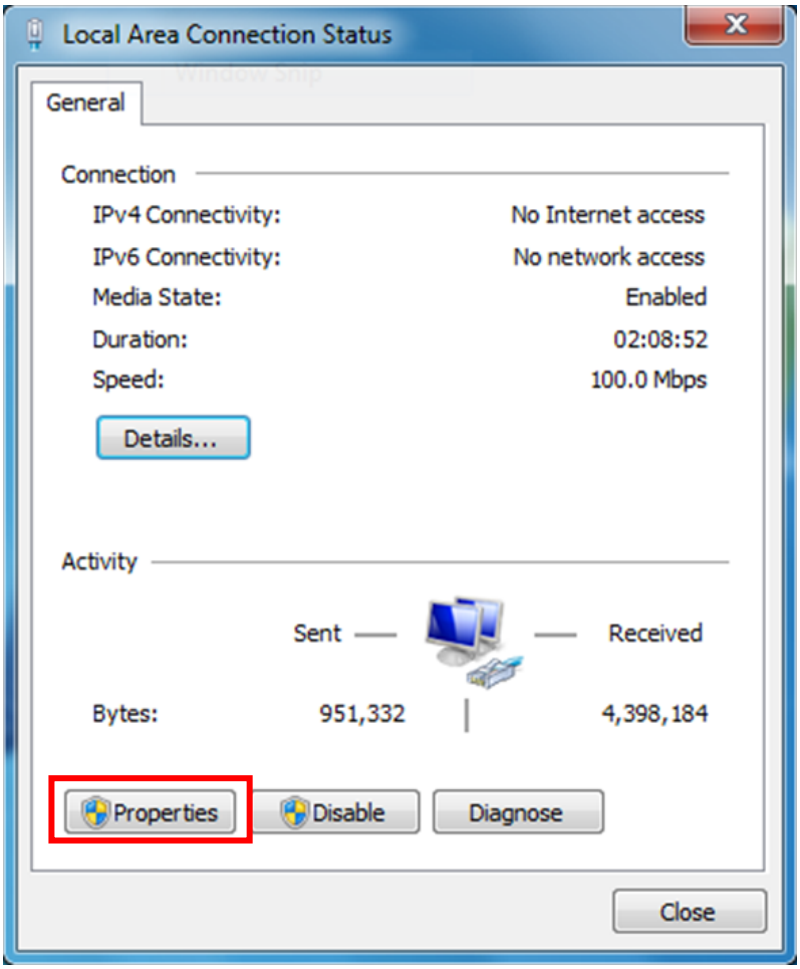

**2.** Under “Network and Internet” click “View network status and tasks”.



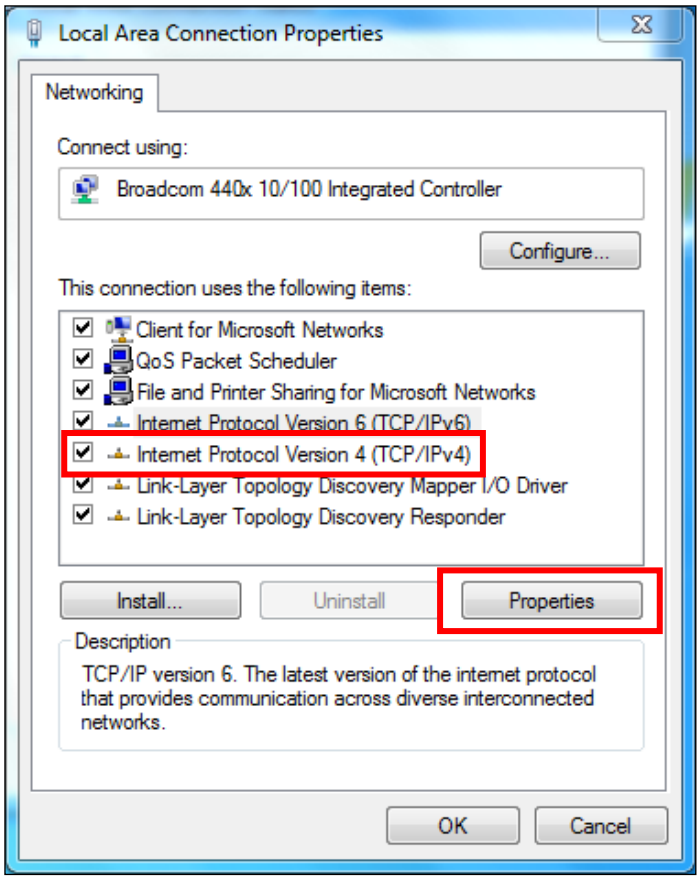
**3.** Click “Local Area Connection”.




**4.** Click “Properties”.



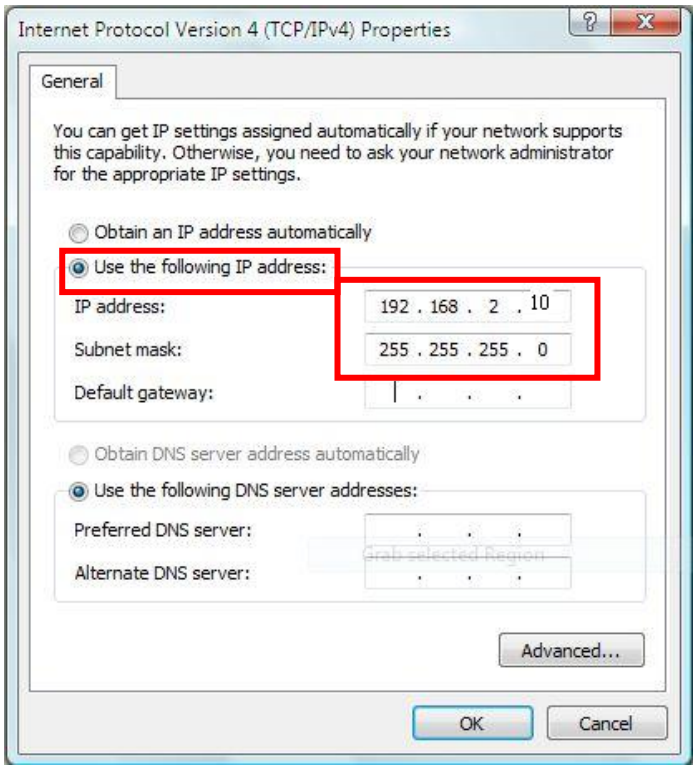
**5.** Select “Internet Protocol Version 4 (TCP/IPv4) and then click “Properties”.



**6.** Select “Use the following IP address”, then input the following values:

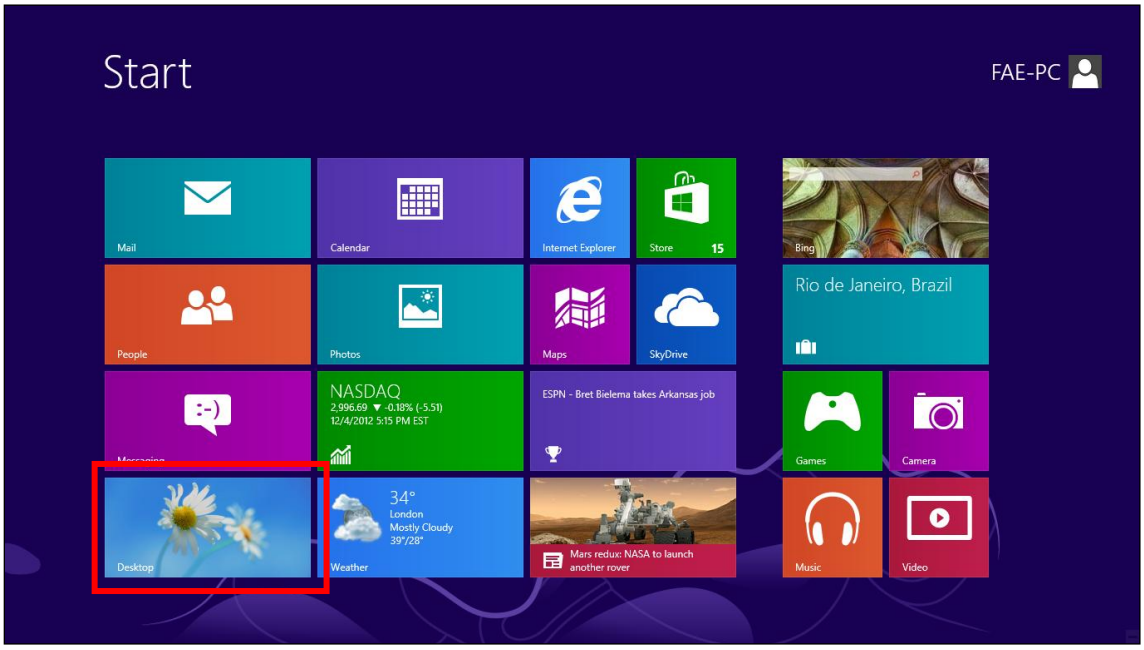
**IP address**: 192.168.2.10
**Subnet Mask**: 255.255.255.0

Click ‘OK’ when finished.

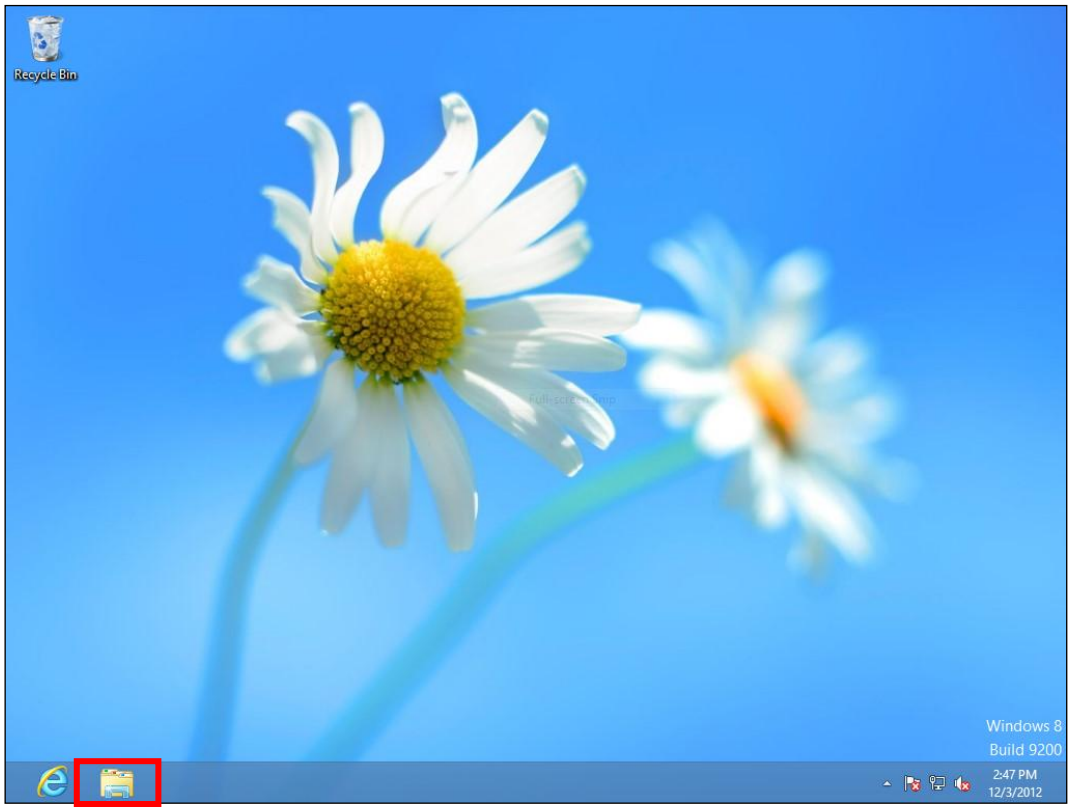


## XI-1-4 Windows 8

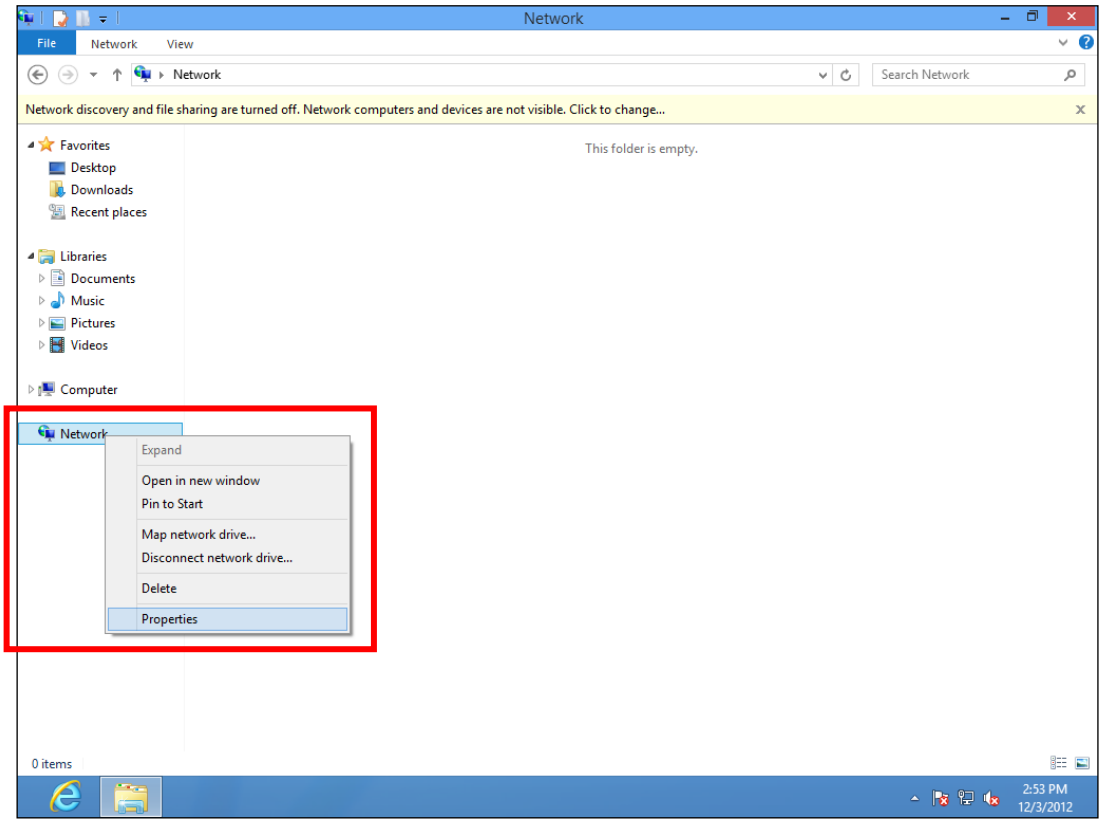
**1.** From the Windows 8 Start screen, switch to desktop mode by clicking the “Desktop” box.



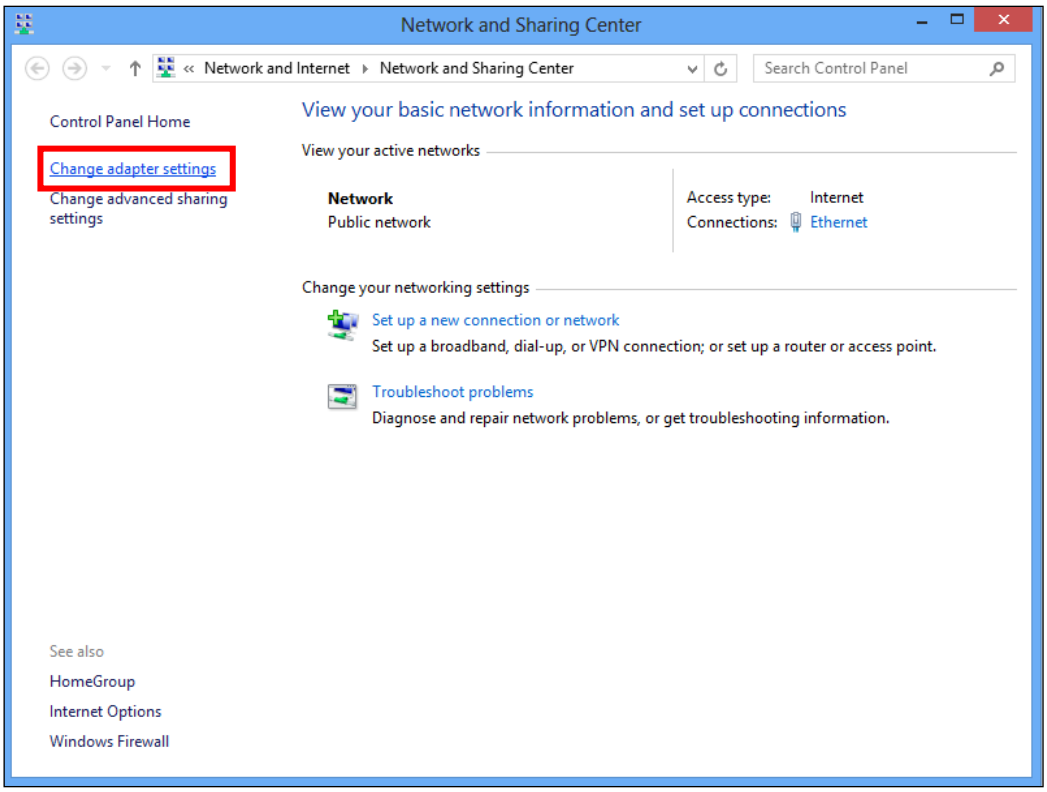

**2.** In desktop mode, click the File Explorer icon in the bottom left of the screen, as shown below.



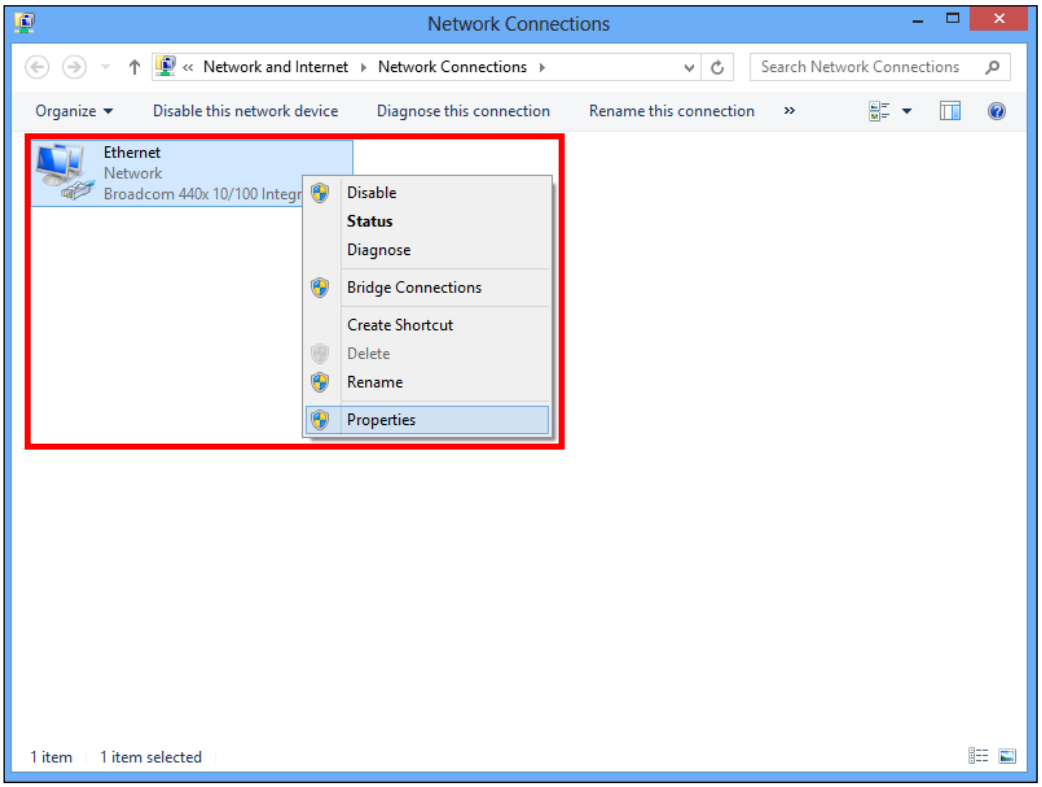
**3.** Right click “Network” and select “Properties”.



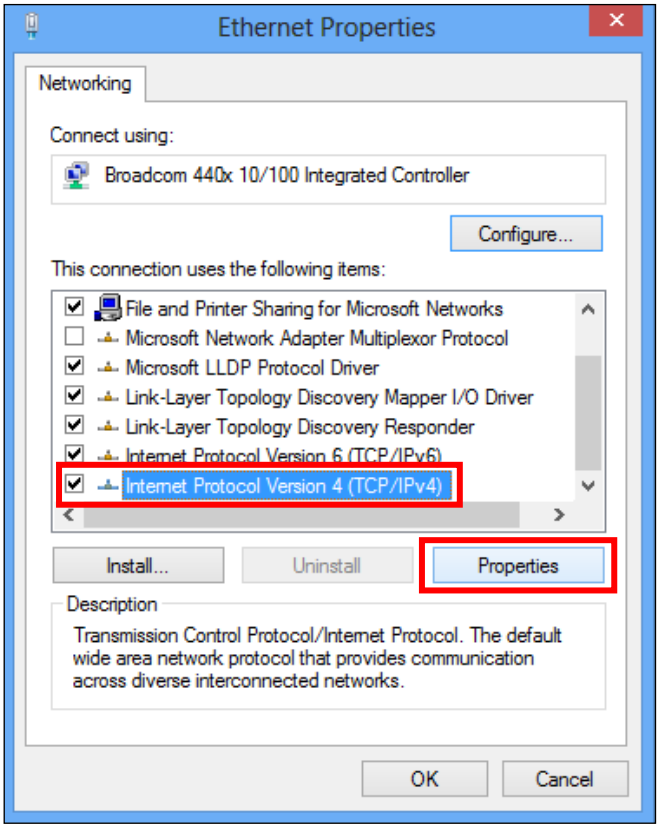

**4.** In the window that opens, select “Change adapter settings” from the left side.



**5.** Right click the connection and select “Properties”.



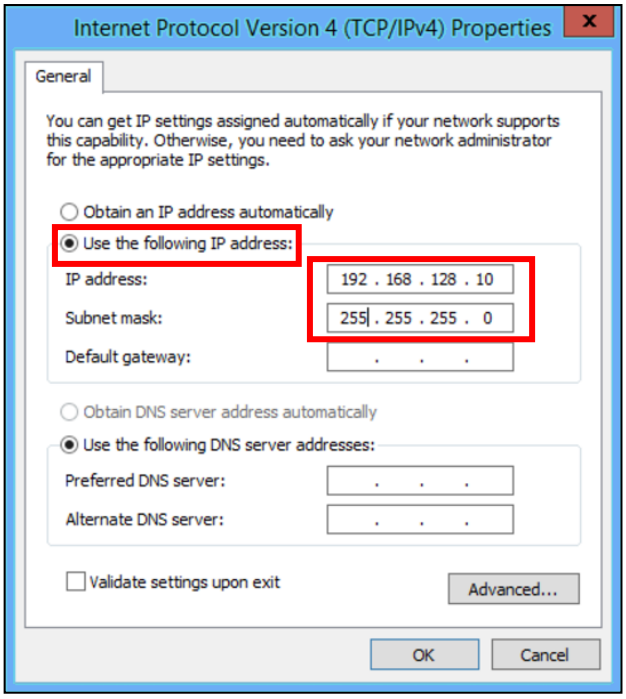

**6.** Select “Internet Protocol Version 4 (TCP/IPv4) and then click “Properties”.



**7.** Select “Use the following IP address”, then input the following values:

**IP address**: 192.168.2.10
**Subnet Mask**: 255.255.255.0

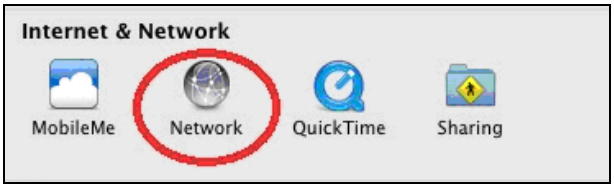
Click ‘OK’ when finished.



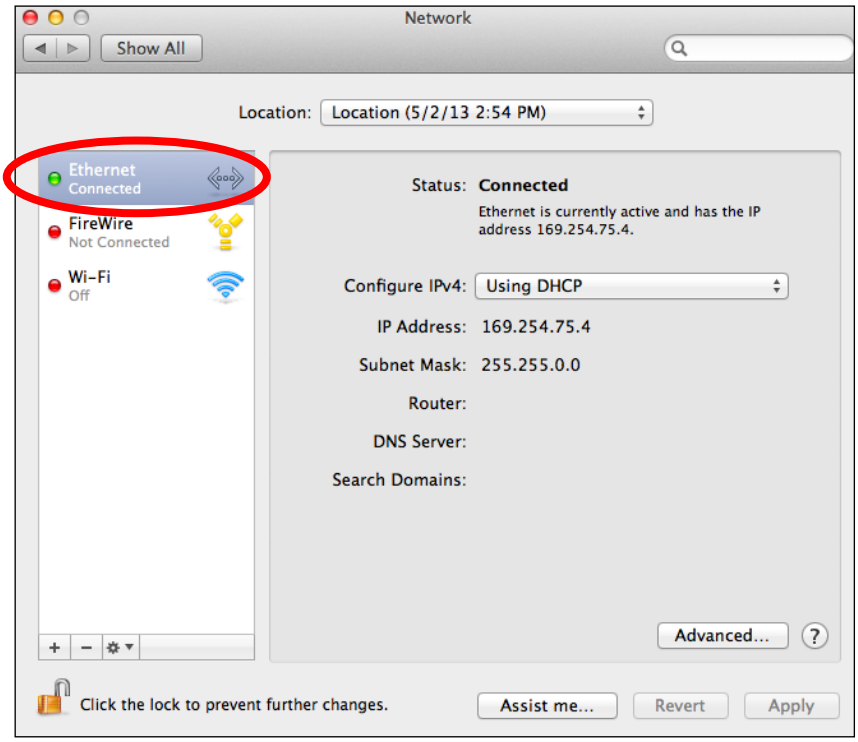
## XI-1-5 Mac

**1.** Have your Macintosh computer operate as usual, and click on “System Preferences”

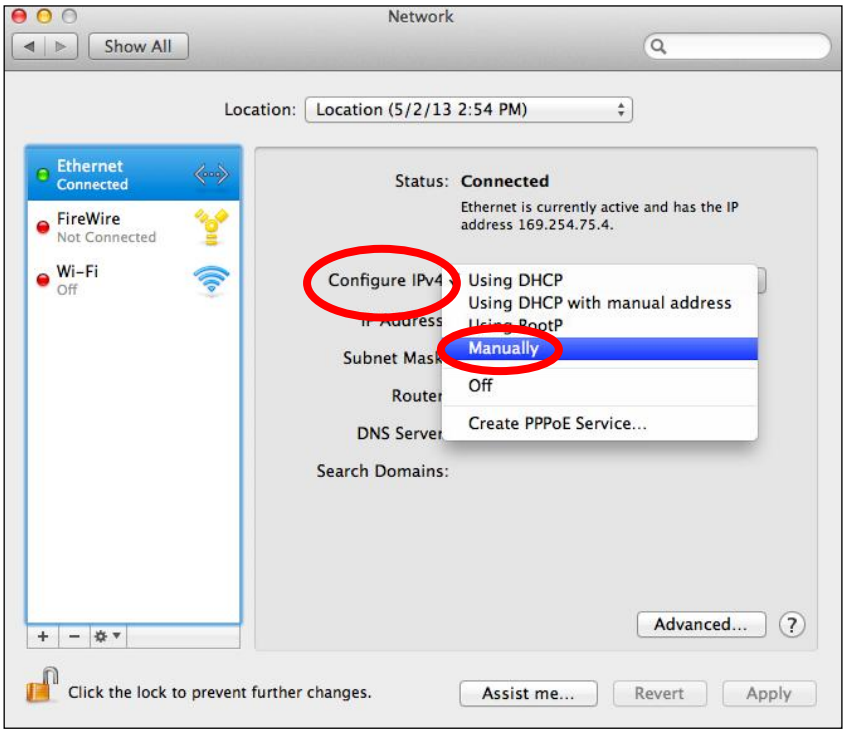

**2.** In System Preferences, click on “Network”.



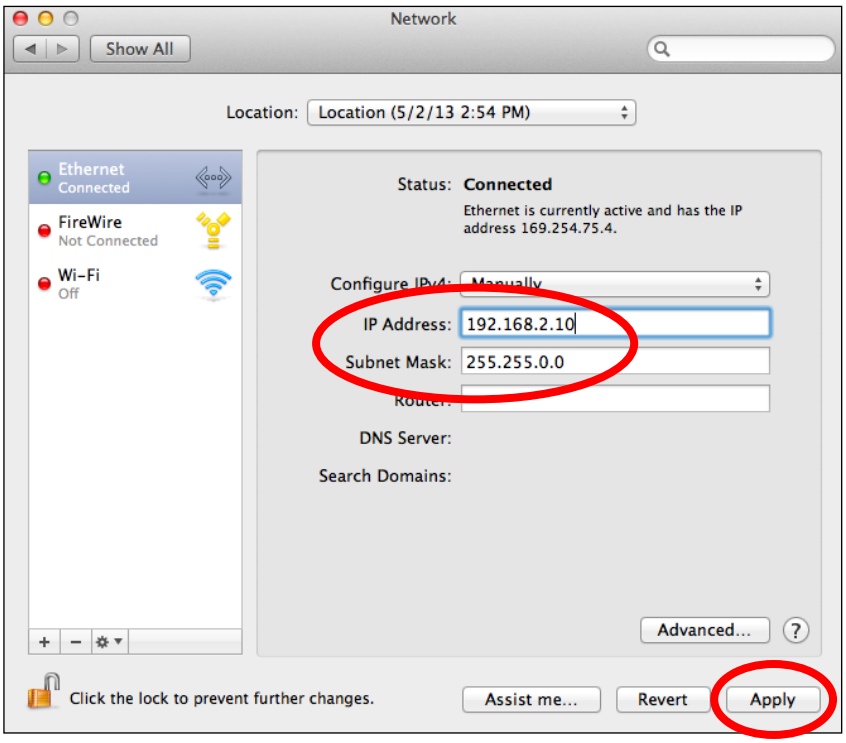

**3.** Click on “Ethernet” in the left panel.



**4.** Open the drop-down menu labeled “Configure IPv4” and select “Manually”.




**5.** Enter the IP address 192.168.2.10 and subnet mask 255.255.255.0. Click on “Apply” to save the changes.



## XI-2 Command Line Interface

Settings can also be configured using the Command Line Interface using the steps and commands shown below:

**Edit Mode**

1. Log on this product.

2. Enter the “edit start” command.
   **man$ edit start**

3. The change of prompt from "man $" to "man [edit] $" indicates that Edit Mode is initiated.
   **man[edit]$**

In Edit Mode, if more than one command is entered, you can reflect the settings using the following:

**man[edit]$ wlan 5g band 11a11n brs 24m channel 40 bandwidth 40m+ex_lower_ch**

**man[edit]$ config timezone 50 man[edit]$ edit end**

When you run the “edit end” command exit Edit Mode, the setting will be achieved.

### XI-2-1 Config

***config apname***
Name / rename this product.
<Syntax of the command>

| |
|---|
| **config apname (apname)** |

- **<Parameter>**
  **(apname)** – name of the product
- **<Default configuration>**
  AP (MAC address LAN side of this product)
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # config apname enterprise-network

***config basic_info show status***
Show the configuration information setup.
<The syntax of the command>

| |
|---|
| **config basic_info show status { admin\|buzzer\|date&time \| led_settings \| syslog_server }** |

- **<Parameter>**
  NA
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # config basic_info show status date&time
  # config basic_info show status led_settings

***config buzzer time***

Set the sound time.

<The syntax of the command>

| |
|---|
| **config buzzer time (time)** |

- **<Parameter>**
  **(time)** – Buzzer Time. (**1~300 sec**)
- **<Default configuration>**
  10
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # config buzzer time 50

***config date***

Set the internal clock function of this product.

<The syntax of the command>

| |
|---|
| **config date (yy) \| (yyyy)/(mm)/(dd) [(HH):(MM):(SS) \| (HH):(MM) ]** |

- **<Parameter>**
  **(yy) |( yyyy)** – Enter the two-digit or four-digit year setting.
  **(mm)** – Enter the two-digit month setting.
  **(dd)** – Enter the two-digit day setting.
  **(HH)** – Entered in 24-hour time display setting.
  **(MM)** – Enter the minute to set.
  **(SS)** – Enter the second to set.
- **<Default configuration>**
  Jan 1st 2012 00:00:00
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # config date 2012/10/10 12:34:56

# config date 12/12/12 15:30

***config firmware***

Update the firmware of this product.

<The syntax of the command>

| |
|---|
| **config firmware target tftp server (tftp-server) file (filename)** |

- **<Parameter>**
  **(tftp-server)** – Update the firmware from the TFTP server.
  **(filename)** – Set the name of the firmware file.
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # config firmware target tftp server 192.168.2.100 file CAP1300.bin

***config init***

Return to the initial value all the parameters that are set in this product.

<The syntax of the command>

| |
|---|
| **config init [force]** |

- **<Parameter>**
  NA
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # config init
  # config init force

***config led_setting***

Set the LED of this product.

<The syntax of the command>

| |
|---|
| **config led_setting {led} {on │ off}** |

- **<Parameter>**
  **{led}** – Enter **power** or **diag** to set either the power or diag LED
- **<Default configuration>**
  On
- **<Command mode>**
  Immediate Mode

- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # config led_setting power on
  # config led_setting diag off

***config management***

Settings for the management interface of this product.

<The syntax of the command>

| |
|---|
| **config management {protocol} {disable │ enable}** |
| **config management snmp version v1/v2 rcom (rcom) rwcom (rwcom)** |
| **config management snmp version v3** |
| **config management snmp trap {disable │ enable} trapcom (trapcom) ip (ipaddress)** |

- **<Parameter>**
  {**protocol**} **http** Set http protocol
  **Ssh** Set ssh protocol.
  **snmp** Set snmp protocol.
  **telnet** Set telnet protocol.
  **https** Set https protocol.
  **(rcom)** Set the community name specified when the SNMP manager sends a "GET Request" for this product. (**6~32** characters)
  **(rwcom)** Set the community name specified when the SNMP manager to send a "SET Request" for this product. (**6~32** characters)
  **(v3_name)** Set the name of SNMP v3.
  **(v3_passwd)** Set the password of SNMP v3.
  **(trapcom)** Set the trap community name specified.
  **(ipaddress)** Set the trap community name specified.
- **<Default configuration>**
  enable : http
  enable : https
  enable: telnet
  disable : ssh
  disable : snmp
  rcom : public
  rwcom : private
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # config management http disable
  # config management snmp enable
  # config management snmp version v1/v2 rcom edimaxrcom rwcom edimaxrwcom
  # config management snmp version v3 v3_name edimax v3_passwd edimax3047
  # config management snmp trap enable trapcom public ip 192.168.2.100

***config ntp client***

Set the NTP client function of this product.

<The syntax of the command>

| |
|---|
| **config ntp client disable** |
| **config ntp client enable server (ntp-server) interval (ntp-interval)** |

- **<Parameter>**
  **(ntp-server)** Set the host name or IP address of the NTP server.
  **(ntp-interval)** Set the interval time to query the NTP server. (**1~24**)
- **<Default configuration>**
  Invalid
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # config ntp client enable server clock.stdtime.gov.tw interval 24
  # config ntp client disable

***config password***

Set the password to log in to the setup screen of this product.

<The syntax of the command>

| |
|---|
| **config password (username) (oldpassword) (newpassword)** |

- **<Parameter>**
  **(username)** Specifies the user name.
  **(oldpassword)** Enter the password that is currently set.
  **(newpassword)** Enter the password to the new one.
- **<Default configuration>**
  Administrator Name: admin
  Administrator Password: admin
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # config password admin 1234 abc789

***config reboot***

Reboot of this product.

<The syntax of the command>

| |
|---|
| **config reboot [force]** |

- **<Parameter>**
  NA
- **<Default configuration>**
  **NA**
- **<Command mode>**

Immediate Mode

- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # config reboot
  # config reboot force

***config restore***

Restore the settings from the configuration file of this product.

<The syntax of the command>

| |
|---|
| **config restore target tftp server (tftp-server) file (filename) [pass (password)] [force]** |

- **<Parameter>**
  **tftp** Restore configuration from the TFTP server.
  **(tftp-server)** Set the host name or IP address of the TFTP server.
  **(filename)** Set the name of the configuration file.
  **(password)** Set a password to protect the configuration file.
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # config restore target tftp server 192.168.3.66 file edimax-cap1300.bin pass 123456

***config save***

Save the file to the current settings of this product.

<The syntax of the command>

| |
|---|
| **config save target tftp server (tftp-server) file (filename) [pass (password)] [force]** |

- **<Parameter>**
  **tftp** Save the settings to TFTP server.
  **(tftp-server)** Set the host name or IP address of the TFTP server.
  **(filename)** Set the name of the configuration file.
  **(password)** Set a password to protect the configuration file.
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # config save target tftp server 192.168.11.66 file edimax-cap1300.bin

***config syslog clinet***

Set the transfer function by the syslog protocol log information.

<The syntax of the command>

| |
|---|
| **config syslog client enable server (servername)**<br>**config syslog client disable** |

- **<Parameter>**
  **(servername)** Set the host name or IP address of the syslog server.
- **<Default configuration>**
  Invalid
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # config syslog client enable server 192.168.3.202
  # config syslog client disable

***config timezone***

Set time zone of the internal clock of this product.

<The syntax of the command>

| |
|---|
| **config timezone {zone-name}** |

- **<Parameter>**
  **{zone-name}** Specify a time zone.
  The values that can be set are as follows:
  - **0** | (GMT-12:00) Eniwetok, Kwajalein, International Date Line West
  - **1** | (GMT-11:00) Midway Island, Samoa
  - **2** | (GMT-10:00) Hawaii
  - **3** | (GMT-09:00) Alaska
  - **4** | (GMT-08:00) Pacific Time (US & Canada); Tijuana
  - **5** | (GMT-07:00) Arizona
  - **6** | (GMT-07:00) Chihuahua, La Paz, Mazatian
  - **7** | (GMT-07:00) Mountain Time (US & Canada)
  - **8** | (GMT-06:00) Central America
  - **9** | (GMT-06:00) Central Time (US & Canada)
  - **10** | (GMT-06:00) Guadalajara, Mexico City, Monterrey
  - **11** | (GMT-06:00) Saskatchewan
  - **12** | (GMT-05:00) Bogota, Lima, Quito
  - **13** | (GMT-05:00) Eastern Time (US & Canada)
  - **14** | (GMT-05:00) Indiana (East)
  - **15** | (GMT-04:00) Atlantic Time (Canada)
  - **16** | (GMT-04:00) Caracas, La Paz
  - **17** | (GMT-04:00) Santiago
  - **18** | (GMT-03:00) Newfoundland

**19** | (GMT-03:00) Brasilia
**20** | (GMT-03:00) Buenos Aires, Georgetown
**21** | (GMT-03:00) Greenland
**22** | (GMT-02:00) Mid-Atlantic
**23** | (GMT-01:00) Azores
**24** | (GMT-01:00) Cape Verde Is.
**25** | (GMT) Casablanca, Monrovia
**26** | (GMT) Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London
**27** | (GMT+01:00) Amsterdam, Berlin, Bern, Rome, Stockholm, Vienna
**28** | (GMT+01:00) Belgrade, Bratislava, Budapest, Ljubljana, Prague
**29** | (GMT+01:00) Brussels, Copenhagen, Madrid, Paris
**30** | (GMT+01:00) Sarajevo, Sofija, Warsaw, Zagreb, Skopje, Vilnius
**31** | (GMT+01:00) West Central Africa
**32** | (GMT+02:00) Athens, Istanbul, Minsk
**33** | (GMT+02:00) Bucharest
**34** | (GMT+02:00) Cairo
**35** | (GMT+02:00) Harare, Pretoria
**36** | (GMT+02:00) Helsinki, Riga, Tallinn
**37** | (GMT+02:00) Jerusalem
**38** | (GMT+03:00) Baghdad
**39** | (GMT+03:00) Kuwait, Riyadh
**40** | (GMT+03:00) Moscow, St. Petersburg, Volgograd
**41** | (GMT+03:00) Nairobi
**42** | (GMT+03:30) Tehran
**43** | (GMT+04:00) Abu Dhabi, Muscat
**44** | (GMT+04:00) Baku, Tbilisi, Yerevan
**45** | (GMT+04:30) Kabul
**46** | (GMT+05:00) Ekaterinburg
**47** | (GMT+05:00) Islamabad, Karachi, Tashkent
**48** | (GMT+05:30) Calcutta, Chennai, Mumbai, New Delhi
**49** | (GMT+05:45) Kathmandu
**50** | (GMT+06:00) Almaty, Novosibirsk
**51** | (GMT+06:00) Astana, Dhaka
**52** | (GMT+06:00) Sri, Jayawardenepura
**53** | (GMT+06:30) Rangoon
**54** | (GMT+07:00) Bangkok, Hanoi, Jakarta
**55** | (GMT+07:00) Krasnoyarsk
**56** | (GMT+08:00) Beijing, Hong Kong
**57** | (GMT+08:00) Irkutsk, Ulaan Bataar
**58** | (GMT+08:00) Kuala Lumpur, Singapore
**59** | (GMT+08:00) Perth

**60** | (GMT+08:00) Taipei, Taiwan
**61** | (GMT+09:00) Osaka, Sapporo, Tokyo
**62** | (GMT+09:00) Seoul
**63** | (GMT+09:00) Yakutsk
**64** | (GMT+09:00) Adelaide
**65** | (GMT+09:30) Darwin
**66** | (GMT+10:00) Brisbane
**67** | (GMT+10:00) Canberra, Melbourne, Sydney
**68** | (GMT+10:00) Guam, Port Moresby
**69** | (GMT+10:00) Hobart
**70** | (GMT+10:00) Vladivostok
**71** | (GMT+11:00) Magadan, Solamon, New Caledonia
**72** | (GMT+12:00) Auckland, Wllington
**73** | (GMT+12:00) Fiji, Kamchatka, Marshall Is.

- **<Default configuration>**
  (GMT+09:00)Osaka, Sapporo,Tokyo
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # config timezone 60

***config username***

Set the user name and password that is used to authenticate users of this product.
<The syntax of the command>

| |
|---|
| **config username admin (username) (oldpassword) (newpassword)** |

- **<Parameter>**
  **(username)** Specifies the user name or administrator name.
  **(oldpassword)** Enter the password that is currently set.
  **(newpassword)** Enter the password to the new one.
- **<Default configuration>**
  Administrator Name: admin
  Administrator Password: admin
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # config username admin administrator 1234 1234

## XI-2-2 LAN

***lan ether port {pd / pse} 8023az***

Enable or disable 802.3az for wired ports.

<The syntax of the command>

| |
|---|
| **lan ether port {pd \| pse} 8023az {state}** |

- **<Parameter>**
  **pd** Set one of wired ports.
  **pse** Set two of wired ports.
  **{state}** **disable** Disable the ether port of 802.3az.
  **enable** Enable the ether port of 802.3az.
- **<Default configuration>**
  All valid
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # lan ether port pse 8023az disable

***lan ether port {pd / pse} link***

Enable or disable the wired port.

<The syntax of the command>

| |
|---|
| **lan ether port {pd \| pse} link {disable \| enable}** |

- **<Parameter>**
  **pd** Set one of wired ports.
  **pse** Set two of wired ports.
- **<Default configuration>**
  All valid
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # lan ether port pse link disable

***lan ether port {pd / pse} speed***

Set the wired ports of PHY.

<The syntax of the command>

| |
|---|
| **lan ether port {pd \| pse} speed speed auto flowctl {state}** |
| **lan ether port {pd \| pse} speed speed {speed} duplex {duplex} flowctl {state}** |
| **lan ether port {pd \| pse} speed speed 1000 duplex full flowctl {state}** |

- **<Parameter>**
  **pd** Set the one of wired ports.
  **pse** Set the two of wired ports.
  **{speed}** **10** Set to 10Mbps.
  **100** Set to 100Mbps.
  **{duplex}** **full** Set to full duplex
  **half** Set to half duplex.
  **{state}** **disable** Disable the flow control.
  **enable** Enable the flow control.
- **<Default configuration>**
  speed:auto, flowctl:enable
  (The same configuration on all ports)
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # lan ether port pd speed speed auto flowctl enable
  # lan ether port pse speed speed 100 duplex full flowctl disable
  # lan ether port pse speed speed 1000 duplex full flowctl enable

***lan ether port {pd ｜ pse} vlan mode***

Set the wired ports of VLAN.

<The syntax of the command>

| |
|---|
| **lan ether port {pd ｜ pse} vlan mode {tagged ｜ untagged} vlan (vlanid)** |

- **<Parameter>**
  **pd** Set the one of wired ports.
  **pse** Set the two of wired ports.
  **(vlanid)** Set the VLAN ID. (**1~4094**)
- **<Default configuration>**
  Vlanid : 1, untagged
  (The same configuration on all ports)
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # lan ether port pd vlan mode untagged vlan 404
  # lan ether port pse vlan mode tagged vlan 403

***lan ether show status***

Show the status of the VLAN wired ports.

<The syntax of the command>

| |
|---|
| **lan ether show status** |

- **<Parameter>**
  NA

- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # lan ether show status

***lan ip defaultgw***

Set the default route, or manual setting of the default gateway that has the management subnet. (If you want to remove the default gateway address set, you enter the clear.)

<The syntax of the command>

| |
|---|
| **lan ip defaultgw {clear │ (gateway)}** |

- **<Parameter>**
  **(gateway)** Enter the default gateway address.
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # lan ip defaultgw clear
  # lan ip defaultgw 192.168.0.250

***lan ip dhcp***

Set the static ip to dhcp.

<The syntax of the command>

| |
|---|
| **lan ip dhcp** |

- **<Parameter>**
  NA
- **<Default configuration>**
  DHCP
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # lan ip dhcp

***lan ip dns***

Set the address of the DNS server for the subnet management.

<The syntax of the command>

| |
|---|
| **lan ip dns {primary \| secondary} { (dnsserver) \| clear }** |

- **<Parameter>**
  **(dnsserver)** Enter the IP address of the DNS server.
- **<Default configuration>**
  DHCP
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # lan ip dns primary 10.10.1.127
  # lan ip dns secondary clear

***lan ip static***

Set the DHCP to static IP.

<The syntax of the command>

```
lan ip static (ipaddress) subnet_mask (maskip)
```

- **<Parameter>**
  **(ipaddress)** Set the ip address of the lan.
  **(maskip)** Set the subnet-mask of the lan.
- **<Default configuration>**
  DHCP
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # lan ip static 192.168.10.100 subnet_mask 255.255.255.0

***lan ip show status***

Show the status of IP settings.

<The syntax of the command>

```
lan ip show status
```

- **<Parameter>**
  NA
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300

- **<Examples>**
  # lan ip show status

***lan ip vlan***
Set the VLAN ID of this product.
<The syntax of the command>

| |
|---|
| **lan ip vlan (vlanid)** |

- **<Parameter>**
  **(vlanid)** Set the VLAN ID. (**1-4094**)
- **<Default configuration>**
  1
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # lan ip vlan 1

## XI-2-3 Show

***show status config admin***
Show the username and advanced settings.
<The syntax of the command>

| |
|---|
| show status config admin |

- **<Parameter>**
  NA
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # show status config admin

***show status config buzzer***
Show the sound time status.
<The syntax of the command>

| |
|---|
| **show status config buzzer** |

- **<Parameter>**
  NA
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**

CAP1300

- **<Examples>**
  # show status config buzzer

***show status config date&time***

Show the date and time.

<The syntax of the command>

| |
|---|
| **show status config date&time.** |

- **<Parameter>**
  NA
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # show status config date&time

***show status config led_settings***

Show the LED settings.

<The syntax of the command>

| |
|---|
| **show status config led_settings** |

- **<Parameter>**
  NA
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # show status config led_settings

***show status config syslog_server***

Show the status of syslog server.

<The syntax of the command>

| |
|---|
| **show status config syslog_server** |

- **<Parameter>**
  NA
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode

- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # show status config syslog_server

***show status maclist***

Show the maclist information.

<The syntax of the command>

| |
|---|
| **show status maclist** |

- **<Parameter>**
  NA
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # show status maclist

***show status lan ether***

Show the VLAN information.

<The syntax of the command>

| |
|---|
| **show status lan ether** |

- **<Parameter>**
  NA
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # show status lan ether

***show status lan ip***

Show the IP information.

<The syntax of the command>

| |
|---|
| **show status lan ip** |

- **<Parameter>**
  NA
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode

- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # show status lan ip

***show status radius***

Show the radius information.

<The syntax of the command>

| |
|---|
| **show status radius** |

- **<Parameter>**
  NA
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # show status radius

***show status system_info***

Show the system information.

<The syntax of the command>

| |
|---|
| **show status system_info** |

- **<Parameter>**
  NA
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # show status system_info

***show status log***

Show the system log information.

<The syntax of the command>

| |
|---|
| **show status log** |

- **<Parameter>**
  NA
- **<Default configuration>**
  NA
- **<Command mode>**

Immediate Mode, Edit Mode, Reference Mode

- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # show status system_info

***show status wlan {2.4g | 5g} advanced***

Show the wireless advanced information.

<The syntax of the command>

| |
|---|
| **show status wlan {2.4g \| 5g} advanced** |

- **<Parameter>**
  NA
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # show status wlan 2.4g advanced

***show status wlan {2.4g ／5g} basic***

Show the wireless information.

<The syntax of the command>

| |
|---|
| **show status wlan {2.4g \| 5g} basic** |

- **<Parameter>**
  NA
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # show status wlan 2.4g basic

***show status wlan {2.4g | 5g} clients***

Show the status of wireless clients information.

<The syntax of the command>

| |
|---|
| **show status wlan {2.4g \| 5g} clients** |

- **<Parameter>**
  NA
- **<Default configuration>**

NA

- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # show status wlan 2.4g clients

***show status wlan {2.4g | 5g} security***

Show the wireless security information.

<The syntax of the command>

| |
|---|
| **show status wlan {2.4g \| 5g} security** |

- **<Parameter>**
  NA
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # show status wlan 2.4g security

***show status wlan {2.4g | 5g} wds***

Show the wireless wds information.

<The syntax of the command>

| |
|---|
| show status wlan {2.4g \| 5g} wds |

- **<Parameter>**
  NA
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # show status wlan 2.4g wds

***show status wlan monitor***

Show the status of wireless monitor.

<The syntax of the command>

| |
|---|
| **show status wlan monitor** |

- **<Parameter>**
  NA

- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # show status wlan monitor

***show status wlan wmm***

Show the status of wireless QoS configuration.

<The syntax of the command>

```
show status wlan wmm
```

- **<Parameter>**
  NA
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # show status wlan wmm

***show status wlan wps***

Show the status of wireless security WPS.

<The syntax of the command>

```
show status wlan wps
```

- **<Parameter>**
  NA
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # show status wlan wps

## XI-2-4 Wlan

***wlan {2.4g | 5g} 80211n_protect***

Set the 802.11n protection.

<The syntax of the command>

| |
|---|
| **wlan 5g 80211n_protect {state}**<br>**wlan 2.4g {protect} {state}** |

- **<Parameter>**

| | | |
|---|---|---|
| **{protect}** | **80211n_protect** | Set the 802.11n protection. |
| | **80211g_protect** | Set the 802.11g protection. |
| **{state}** | **disable** | Disable the 802.11n or 802.11g protection. |
| | **enable** | Enable the 802.11n or 802.11g protection. |

- **<Default configuration>**
  Enable
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # wlan 5g 80211n_protect enable
  # wlan 2.4g 80211g_protect disable

***wlan {2.4g | 5g} basic_info show status***

Show the wireless information.

<The syntax of the command>

| |
|---|
| **wlan {media} basic_info show status { advanced \| basic \| clients \| security \| wds }** |

- **<Parameter>**

| | | |
|---|---|---|
| **{media}** | **2.4g** | Show the wireless 802.11g information. |
| | **5g** | Show the wireless 802.11a information. |

- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  **#** wlan 2.4g basic_info show status advanced
  **#** wlan 5g basic_info show status security

***wlan {2.4g | 5g} beacon dtim***

Configure the transmission interval of the DTIM.

<The syntax of the command>

| |
|---|
| **wlan {media} beacon dtim (num)** |

- **<Parameter>**

  **{media}** **2.4g** Set the interval between transmission of 802.11g.

  **5g** Set the interval between transmission of 802.11a.

  **(num)** Set the transmission interval. (**1~255**)
- **<Default configuration>**

  1
- **<Command mode>**

  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**

  CAP1300
- **<Examples>**

  # wlan 5g beacon dtim 100

***wlan {2.4g | 5g} beacon interval***

Configure the transmission interval of the beacon.

<The syntax of the command>

| |
|---|
| **wlan {media} beacon interval (num)** |

- **<Parameter>**

  **{media}** **2.4g** Configure the interval between transmission of 802.11g.

  **5g** Configure the interval between transmission of 802.11a.

  **(num)** Set the transmission interval. (**20~1000** ms)
- **<Default configuration>**

  100
- **<Command mode>**

  Immediate Mode, Edit Mode
- **<Compatible Products>**

  CAP1300
- **<Examples>**

  # wlan 5g beacon interval 200

***wlan {2.4g | 5g} channel change_ch_if_STA_connected***

Set the change channel function of this product. (The station is connected status.)

<The syntax of the command>

| |
|---|
| **wlan {media} channel change_ch_if_STA_connect {disable \| enable}** |

- **<Parameter>**

  **{media}** **2.4g** Set the function enable or disable on 802.11g.

  **5g** Set the function enable or disable on 802.11a.
- **<Default configuration>**

  Disable
- **<Command mode>**

  Immediate Mode, Edit Mode
- **<Compatible Products>**

  CAP1300
- **<Examples>**

  # wlan 2.4g channel change_ch_if_STA_connect enable

***wlan {2.4g | 5g} channel checktime***

Set the channel check time.

<The syntax of the command>

| |
|---|
| **wlan {media} channel checktime {period}** |

- **<Parameter>**

| | | |
|---|---|---|
| **{media}** | **2.4g** | Set the channel check time on 802.11g. |
| | **5g** | Set the channel check time on 802.11a. |
| **{period}** | **half_hr** | Set the half hour time to check channel. |
| | **one_hr** | Set the one hour time to check channel. |
| | **two_hr** | Set the two hours time to check channel. |
| | **half_day** | Set the half day time to check channel. |
| | **one_day** | Set the one day time to check channel. |
| | **two_day** | Set the two days time to check channel. |

- **<Default configuration>**
  half hour
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # wlan 5g channel checktime one_hr

***wlan {2.4g | 5g} {disable | enable}***

Set the radio to enable or disable the wlan.

<The syntax of the command>

| |
|---|
| **wlan {media} {state}** |

- **<Parameter>**

| | | |
|---|---|---|
| **{media}** | **2.4g** | Enable or disable the wlan of the 802.11g. |
| | **5g** | Enable or disable the wlan of the 802.11a. |
| **{state}** | **disable** | Disable the wlan. |
| | **enable** | Enable the wlan. |

- **<Default configuration>**
  2.4g: disable
  5g: disable
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # wlan 5g enable
  # wlan 2.4g enable

***wlan {2.4g | 5g} fragmentthreshold***

Set the fragment threshold.

<The syntax of the command>

| |
|---|
| **wlan {media} fragmentthreshold (num)** |

- **<Parameter>**

  **{media}** **2.4g** Enable or disable the wlan of the 802.11g.

  **5g** Enable or disable the wlan of the 802.11a.

  **(num)** Set the threshold for the frame size of frame transmission to perform fragmentation. (**256~2346**)
- **<Default configuration>**

  2.4g: 2346

  5g: 2346
- **<Command mode>**

  Immediate Mode, Edit Mode
- **<Compatible Products>**

  CAP1300
- **<Examples>**

  **#** wlan 5g fragmentthreshold 2345

  **#** wlan 2.4g fragmentthreshold 2344

***wlan {2.4g | 5g} keepalive***

Set the keepalive interval terminal.

<The syntax of the command>

| |
|---|
| **wlan {media} keepalive (num)** |

- **<Parameter>**

  **{media}** **2.4g** Set the keepalive interval function of 802.11g terminal.

  **5g** Set the keepalive interval function of 802.11a terminal.

  **(num)** Set the interval between sending keepalive. (**0~65535** seconds)
- **<Default configuration>**

  60
- **<Command mode>**

  Immediate Mode, Edit Mode
- **<Compatible Products>**

  CAP1300
- **<Examples>**

  # wlan 5g keepalive 120

***wlan {2.4g | 5g} gi***

Set the guard interval.

<The syntax of the command>

| |
|---|
| **wlan {media} gi {mode}** |

- **<Parameter>**

  **{media}** **2.4g** Set the guard interval of 802.11g.

  **5g** Set the guard interval of 802.11a.

**{mode}** **short** Set the guard interval to short.

**long** Set the guard interval to long.

- **<Default configuration>**
  short
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # wlan 2.4g gi long

***wlan {2.4g | 5g} mrate***

Configure the multicast or broadcast rate.

<The syntax of the command>

| |
|---|
| **wlan {media} mrate {rate}** |

- **<Parameter>**

  **{media}** **2.4g** Set the multicast / broadcast rate of 802.11g

  **5g** Set the multicast / broadcast rate of 802.11a

  **{rate}** Set one of the following rates.

  (**1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, 54, auto)**
- **<Default configuration>**
  auto
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # wlan 5g mrate auto

***wlan {2.4g | 5g} rtsthreshold***

Set the RTS Threshold.

<The syntax of the command>

| |
|---|
| wlan {media} rtsthreshold (num) |

- **<Parameter>**

  **{media}** **2.4g** Set the RTS threshold of 802.11g

  **5g** Set the RTS threshold of 802.11a

  **(num)** Set the threshold on the frame size you begin sending RTS / CTS. (**1~2347**)
- **<Default configuration>**
  2347
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300

- **<Examples>**
  # wlan 5g rtsthreshold 1800

***wlan {2.4g | 5g} ssid addsecurity***

Configure additional authentication SSID.

<The syntax of the command>

| |
|---|
| *<No additional authentication>*<br>**wlan {media} ssid addsecurity { ssidname (ssid) \| ssidnum (ssidnum) } mode none** |
| *<Limited by the MAC address list>*<br>**wlan {media} ssid addsecurity { ssidname (ssid) \| ssidnum (ssidnum) } mode macfilter** |
| *<MAC-RADIUS authentication>*<br>**wlan {media} ssid addsecurity { ssidname (ssid) \| ssidnum (ssidnum) } mode macradius { authmac \| authpass (authpass) }** |
| *<MAC address list + MAC-RADIUS authentication>*<br>**wlan {media} ssid addsecurity { ssidname (ssid) \| ssidnum (ssidnum) } mode macradius+macfilter { authmac \| authpass (authpass) }** |

- **<Parameter>**

| | | |
|---|---|---|
| **{media}** | **2.4g** | Set the addsecurity of the SSID on 802.11g. |
| | **5g** | Set the addsecurity of the SSID on 802.11a. |
| **(ssid)** | Specify the SSID to be set. | |
| **(ssidnum)** | Specify the number of the SSID to be set. | |
| **authmac** | The MAC address as the password authentication MAC RADIUS. | |
| **authpass** | Set the password in the password authentication MAC RADIUS. | |
| **(authpass)** | Enter a shared secret. | |

- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  **#** wlan 5g ssid addsecurity ssidname edimax5g01-168801 mode none
  **#** wlan 2.4g ssid addsecurity ssidnum 1 mode macfilter
  **#** wlan 5g ssid addsecurity ssidname edimax5g01-168801 mode macradius authmac
  **#** wlan 2.4g ssid addsecurity ssidnum 2 mode macradius+macfilter authpass 12345678

***wlan {2.4g | 5g} ssid create***

Create the number of the SSID.

<The syntax of the command>

| |
|---|
| **wlan {media} ssid create (num)** |

- **<Parameter>**

| | | |
|---|---|---|
| **{media}** | **2.4g** | Create the multi-SSID on 802.11g. |

**5g** Create the multi-SSID on 802.11a.

**(num)** Create the number of the SSID.(**1~5**)

- **<Default configuration>**
  5g ssid number: 1
  2.4g ssid number: 1
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # wlan 2.4g ssid create 5

***wlan {2.4g | 5g} ssid {disable | enable}***

Enable or disable the SSID.

<The syntax of the command>

| |
|---|
| **wlan {media} ssid {disable \| enable} { ssidname (ssid) \| ssidnum (ssidnum)}** |

- **<Parameter>**
  **{media}** **2.4g** To enable or disable the SSID on 802.11g.
  **5g** To enable or disable the SSID on 802.11a.
  **(ssid)** Specify the SSID to be set.
  **(ssidnum)** Specify the number of the SSID to be set.
- **<Default configuration>**
  Enable
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  **#** wlan 2.4g ssid disable ssidnum 2
  **#** wlan 5g ssid enable ssidname edimax5g01-168801

***wlan {2.4g | 5g} ssid loadbalance***

Set the loadbalance of the SSID.

<The syntax of the command>

| |
|---|
| **wlan {media} ssid loadbalance { ssidname (ssid) \| ssidnum (ssidnum)} limit (num)** |

- **<Parameter>**
  **{media}** **2.4g** Set the loadbalance of the SSID on 802.11g.
  **5g** Set the loadbalance of the SSID on 802.11a.
  **(ssid)** Specify the SSID to be set.
  **(ssidnum)** Specify the number of the SSID to be set.
  **(num)** Set the number of the loadbalance
- **<Default configuration>**
  50

- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  **#** wlan 2.4g ssid loadbalance ssidnum 2 limit 20
  **#** wlan 5g ssid loadbalance ssidname edimax5g01-168801 limit 30

***wlan {2.4g | 5g} ssid privacy***

Set the privacy separator feature.

<The syntax of the command>

| |
|---|
| **wlan {media} ssid privacy { ssidname (ssid) \| ssidnum (ssidnum) } { station \| ssid \| disable }** |

- **<Parameter>**

| | | |
|---|---|---|
| **{media}** | **2.4g** | Set the privacy separator feature on 802.11g. |
| | **5g** | Set the privacy separator feature on 802.11a. |
| **(ssid)** | Specify the SSID to be set. | |
| **(ssidnum)** | Specify the number of the SSID to be set. | |
| **station** | To prohibit communication between all wireless cordless handset in the device. (Between devices) | |
| **ssid** | Prohibit communication between different networks SSID. | |
| **disable** | Do not use the privacy separator feature. | |

- **<Default configuration>**
  Disable
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  **#** wlan 2.4g ssid privacy ssidname edimax2g01-168800 station
  **#** wlan 5g ssid privacy ssidnum 2 ssid

***wlan {2.4g | 5g} ssid rename***

Change the name of the SSID.

<The syntax of the command>

| |
|---|
| **wlan {media} ssid rename {ssidname (ssid) \| ssidnum (ssidnum)} (newssid)** |

- **<Parameter>**

| | | |
|---|---|---|
| **{media}** | **2.4g** | Change the name of the SSID on 802.11g. |
| | **5g** | Change the name of the SSID on 802.11a. |
| **(ssid)** | Specify the SSID to be changed. | |
| **(ssidnum)** | Specify the number of the SSID to change. | |
| **(newssid)** | Specify the SSID to set a new. | |

- **<Default configuration>**

- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # wlan 2.4g ssid rename ssidname CAP1300-D6D5A0_G air_station_2.4g_2
  # wlan 5g ssid rename ssidnum 2 air_station_5g_2

***wlan {2.4g | 5g} ssid security***
Set the security of the SSID.
<The syntax of the command>

| |
|---|
| *<No authenticate>*<br>**wlan {media} ssid security {ssidname (ssid) \| ssidnum (ssidnum)} mode no_auth** |
| *<WEP authentication>*<br>**wlan {media} ssid security {ssidname (ssid) \| ssidnum (ssidnum)} mode wep length { 64 \| 128 } keytype {ascii \| hex} defaultkey (num_1-4) key (wepkey)** |
| *<EAP authentication>*<br>**wlan {media} ssid security {ssidname (ssid) \| ssidnum (ssidnum)} mode eap length { 64 \| 128 }** |
| *<WPA-PSK authentication>*<br>**wlan {media} ssid security {ssidname (ssid) \| ssidnum (ssidnum)} mode { wpapsk\|wpa2psk\|wpa2mixedpsk } type {cipher} period (num) keytype {passpharse \| hex} key (psk)** |
| *<WPA-EAP EAP authentication>*<br>**wlan {media} ssid security {ssidname (ssid) \| ssidnum (ssidnum)} mode { wpaeap\|wpa2eap\|wpa2mixedeap } type {cipher} period (num)** |

- **<Parameter>**

| | | |
|---|---|---|
| **{media}** | **2.4g** | Set the security of the SSID on 802.11g. |
| | **5g** | Set the security of the SSID on 802.11a. |
| **(ssid)** | Specify the SSID to be set. | |
| **(ssidnum)** | Specify the number of the SSID to be set. | |
| **(num_1-4)** | Specify the encryption key number to be default key.(**1~4**) | |
| **(wepkey)** | Enter the WEP encryption key. | |
| | ascii | (key length of 64-bit for ascii are 5 characters) |
| | | (key length of 128-bit for ascii are 13 characters) |
| | hex | (key length of 64-bit for hex are 10 characters) |
| | | (key length of 128-bit for hex are 26 characters) |
| **{cipher}** | Specify one of the following encryption method. | |
| | **aes** | When security mode choose wpaeap/wpa2eap/wpamixedwap or wpapsk/pa2psk/wpamixedpsk, specify the AES encryption method. |

**tkip** When security mode choose wpaeap or wpapsk, specify the TKIP encryption method.

**mixed** When security mode choose wpaeap/ wpamixedeap or wpapsk/wpamixedpsk, specify the TKIP and AES encryption method.

**(num)** Specify the period to key renewal. (**0~9999** minutes)

**(psk)** Enter the pre-shared key.
passphrase (Enter 8 characters)
hex (Enter 64 characters)

- **<Default configuration>**
  No authenticate
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  **#** wlan 2.4g ssid security ssidname CAP1300-D6D5A0_G mode wep length 64 keytype ascii defaultkey 2 key 12345
  **#** wlan 5g ssid security ssidname CAP1300-D6D5A0_G mode no_auth
  **#** wlan 5g ssid security ssidnum 1 mode wpa2psk type aes period 60 keytype passphrase key 12345678
  **#** wlan 2.4g ssid security ssidnum 2 mode wpaeap type mixed period 100

***wlan {2.4g | 5g} ssid vlan***

Set the VLAN ID.

<The syntax of the command>

| **wlan {media} ssid vlan {ssidname (ssid) \| ssidnum (ssidnum)} vlanid (vlanid)** |
|---|

- **<Parameter>**

**{media}** **2.4g** Set the VLAN ID on 802.11g.
**5g** Set the VLAN ID on 802.11a.

**(ssid)** Specify the SSID to be set.

**(ssidnum)** Specify the number of the SSID to be set.

**(vlanid)** Set the VLAN ID. (**1~4094**)

- **<Default configuration>**
  1
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # wlan 2.4g ssid vlan ssidname edimax2g03-168800 vlanid 4000
  # wlan 5g ssid vlan ssidnum 2 vlanid 2000

***wlan {2.4g | 5g} txpower***

Configure the wireless transmit power.

<The syntax of the command>

| |
|---|
| **wlan {media} txpower {power}** |

- **<Parameter>**

  {**media**} **2.4g** Set the 802.11g radio transmit power.

  **5g** Set the 802.11a radio transmit power.

  **{power}** In the range of 10-100%, and set the transmission power in 10%, 25%, 50%, 75%, 90%, 100%.

  (**10, 25, 50, 75, 90, 100**)
- **<Default configuration>**

  100
- **<Command mode>**

  Immediate Mode, Edit Mode
- **<Compatible Products>**

  CAP1300
- **<Examples>**

  # wlan 2.4g txpower 50

***wlan {2.4g | 5g} wds delete***

Remove the connection destination of the WDS.

<The syntax of the command>

| |
|---|
| **wlan {media} wds delete all** |
| **wlan {media} wds delete num (peernum)** |
| **wlan {media} wds delete address (peeraddress)** |

- **<Parameter>**

  **{media}** **2.4g** Delete a destination on 802.11g WDS.

  **5g** Delete a destination on 802.11a WDS.

  **(peernum)** Specify the peer number of the MAC address to be deleted.

  **(peeraddress)** Specify the MAC address to be deleted from the peer.
- **<Default configuration>**

  NA
- **<Default configuration>**

  100
- **<Command mode>**

  Immediate Mode, Edit Mode
- **<Compatible Products>**

  CAP1300
- **<Examples>**

  wlan 5g wds delete all

  wlan 2.4g wds delete address 12:22:33:44:55:66

  wlan 5g wds delete num 1

***wlan {2.4g | 5g} wds mode***

Set the wds mode.

<The syntax of the command>

| |
|---|
| **wlan {media} wds mode {mode)}** |

- **<Parameter>**

  **{media}** **2.4g** Set the WDS function on 802.11g.

  **5g** Set the WDS function on 802.11a.

  **{mode}** **disable** Disable the WDS

  **dedicated_wds** Set the WDS with WDS.

  **wds_with_ap** Set the WDS with AP.
- **<Default configuration>**

  disable
- **<Command mode>**

  Immediate Mode, Edit Mode
- **<Compatible Products>**

  CAP1300
- **<Examples>**

  **#** wlan 5g wds mode disable

  **#** wlan 2.4g wds mode wds_with_ap

***wlan {2.4g | 5g} wds num***

Add a connection destination of the WDS.

<The syntax of the command>

| |
|---|
| **wlan {media} wds num (1-4) add (peeraddress) vlan_mode untagged vlan (vlanid) {none\|aes} key (psk)**<br>**wlan {media} wds num (1-4) add (peeraddress) vlan_mode tagged {none\|aes} key (psk)** |

- **<Parameter>**

  **{media}** **2.4g** Add a destination on 802.11g WDS.

  **5g** Add a destination on 802.11a WDS.

  **(vlanid)** Set the VLAN ID. (**1~4094**)

  **(peeraddress)** Set the MAC address of the destination.

  **(psk)** encryption key of WDS.
- **<Default configuration>**

  NA
- **<Command mode>**

  Immediate Mode, Edit Mode
- **<Compatible Products>**

  CAP1300
- **<Examples>**

  # wlan 5g wds num 1 add 22:22:33:44:55:66 vlan_mode untagged vlan 1 none

  # wlan 2.4g wds num 2 add 12:22:33:44:55:66 vlan_mode tagged aes key 12345678

***wlan 2.4g band***

Set the operating mode of the radio and BasicRateSet on 802.11g, and configure the wireless channel.

<The syntax of the command>

```
wlan 2.4g band 11b brs { 2m | all } channel {ch} bandwidth 20m
wlan 2.4g band 11b brs { 2m | all } channel {auto-ch} bandwidth 20m
wlan 2.4g band { 11g | 11b11g} brs {brs} channel {ch} bandwidth 20m
wlan 2.4g band { 11g | 11b11g} brs {brs} channel {auto-ch} bandwidth 20m
wlan 2.4g band { 11g11n|11b11g11n} brs {brs} channel {ch} bandwidth {width}
wlan 2.4g band { 11g11n|11b11g11n} brs {brs} channel {auto-ch} bandwidth {autowidth}
```

- **<Parameter>**

  **{brs}** Select from the following basic rate set

  | | |
  |---|---|
  | **2m** | Set to 1/2 Mbps |
  | **11m** | Set to 1/2/5.5/11 Mbps |
  | **24m** | Set to 1/2/5.5/6/11/12/24Mbps |
  | **All** | Set all rate supported by current band |

  **{ch}** Set the wireless channel of 802.11g

  Available channel number: **1-13**

  **{autoch}** Set the wireless auto channel of 802.11g

  Available channel number: **auto_1-11ch**, **auto_1-13ch**

  **{width}** Set the wireless bandwidth of 802.11g

  | | |
  |---|---|
  | **20m** | Set to 20MHz normal mode |
  | **40m+ex_upper_ch** | Set to 40MHz normal mode plus extra upper channel<br>Available values: **1-9** |
  | **40m+ex_lower_ch** | Set to 40MHz normal mode plus extra lower channel<br>Available values: **5-13** |
  | **auto+ex_upper_ch** | Set to auto mode plus extra upper channel<br>Available values: **1-9** |
  | **auto+ex_lower_ch** | Set to auto mode plus extra lower channel<br>Available values: **5-13** |

  **{autowidth}**

  | | |
  |---|---|
  | **20m** | Set to 20MHz normal mode |
  | **40m** | Set to 40MHz normal mode |
  | **auto** | Set to auto mode |

- **<Default configuration>**

  Mode: 11b11g11n
  BasicRateSet: 11m
  Channel: auto_1-11ch
  Bandwidth: 20m

- **<Command mode>**

  Immediate Mode, Edit Mode

- **<Compatible Products>**

  CAP1300

- **<Examples>**

  # wlan 2.4g band 11b brs 2m channel 6 bandwidth 20m

# wlan 2.4g band 11b11g brs 24m channel 13 bandwidth 20m

# wlan 2.4g band 11b11g brs 11m channel auto_1-11ch bandwidth 20m

# wlan 2.4g band 11b11g11n brs all channel 10 bandwidth 40m+ex_lower_ch

***wlan 2.4g conslot***

Set the contention slot of 802.11g .

<The syntax of the command>

| |
|---|
| **wlan 2.4g conslot {mode}** |

- **<Parameter>**

  **{mode}** **short** Set the contention slot to short.

  **long** Set the contention slot to long.
- **<Default configuration>**

  short
- **<Command mode>**

  Immediate Mode, Edit Mode
- **<Compatible Products>**

  CAP1300
- **<Examples>**

  # wlan 2.4g conslot long

***wlan 2.4g preamble***

Set the preamble of 802.11g

<The syntax of the command>

| |
|---|
| **wlan 2.4g preamble {mode}** |

- **<Parameter>**

  **{mode}** **short** Set the preamble to short.

  **long** Set the preamble to long.
- **<Default configuration>**

  short
- **<Command mode>**

  Immediate Mode, Edit Mode
- **<Compatible Products>**

  CAP1300
- **<Examples>**

  # wlan 2.4g preamble long

***wlan 5g band***

Set the operating mode of the radio and BasicRateSet on 802.11a, and configure the wireless channel.

<The syntax of the command>

| |
|---|
| **wlan 5g band 11a brs {brs} channel {ch} bandwidth 20m** |
| **wlan 5g band 11a brs {brs} channel {auto-ch} bandwidth 20m** |
| **wlan 5g band { 11a11n \| 11a11n11ac } brs {brs} channel {ch} bandwidth {width}** |
| **wlan 5g band { 11a11n \| 11a11n11ac } brs {brs} channel {auto-ch} bandwidth** |

| **{autowidth}** |
|---|

- **<Parameter>**

  **{brs}** Select from the following basic rate set

  **24m** Set to 6/12/24 Mbps

  **All** Set all rate supported by current band

  **{ch}** Set the wireless channel of 802.11a

  Available channel number: **36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140**

  **{autoch}** Set the wireless auto channel of 802.11a

  Available channel number: **w52, w52+w53, w52+w53+w56**

  **{width}** Set the wireless bandwidth of 802.11a

  **20m** Set to 20MHz normal mode

  **40m+ex_upper_ch** Set to 40MHz normal mode plus extra upper channel

  Available values: **36, 44, 52, 60, 100, 108, 116, 124, 132**

  **40m+ex_lower_ch** Set to 40MHz normal mode plus extra lower channel

  Available values: **40, 48, 56, 64, 104, 112, 120, 128, 136**

  **80m** Set to 80/40/20 MHz normal mode

  **{autowidth}** Set the wireless auto bandwidth of 802.11a

  **20m** Set to 20MHz normal mode

  **40m** Set to 40/20MHz normal mode

  **80m** Set to 80/40/20MHz normal mode

- **<Default configuration>**

  Mode: 5g11n

  BasicRateSet: 24m

  Channel: w52(auto)

  Bandwidth: 40m

- **<Command mode>**

  Immediate Mode, Edit Mode

- **<Compatible Products>**

  CAP1300

- **<Examples>**

  # wlan 5g band 11a brs all channel 40 bandwidth 20m

  # wlan 5g band 11a brs all channel w52+w53 bandwidth 20m

  # wlan 5g band 11a11n brs 24m channel 36 bandwidth 40m+ex_upper_ch

  # wlan 5g band 11a11n brs 24m channel 140 bandwidth 20m

  # wlan 5g band 11a11n brs 24m channel w52+w53+w56 bandwidth 40m

  # wlan 5g band 11a11n11ac brs 24m channel 44 bandwidth 80m

***wlan maclist add***

Add the registration of MAC address restriction list.

<The syntax of the command>

| **wlan maclist add (macaddress)** |
|---|

- **<Parameter>**
  **(macaddress)** Enter the MAC address to be registered in the list.
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # wlan maclist add 12:22:33:44:55:66

***wlan maclist delete***

Remove the registration of MAC address restriction list.

<The syntax of the command>

| |
|---|
| **wlan maclist delete { all \| address (macaddress) \| num (list-number) } [force]** |

- **<Parameter>**
  **(macaddress)** Specify the MAC address to be deleted from the list.
  **(list-number)** Specify the list number of the MAC address to be deleted.
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  **#** wlan maclist delete all force
  **#** wlan maclist delete address 12:22:33:44:55:66 force
  **#** wlan maclist delete num 1 force

***wlan maclist show status***

Show the registration of MAC address restriction list.

<The syntax of the command>

| |
|---|
| **wlan maclist show status** |

- **<Parameter>**
  NA
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # wlan maclist show status

***wlan wmm {ap | sta}***

Set the WMM parameters.

<The syntax of the command>

| |
|---|
| **wlan wmm {ap \| sta} {parameter} bk (value) be (value) vi (value) vo (value)** |

- **<Parameter>**

  **(parameter)** aifsn, cwmax, cwmain, txop

  **(value)** Set the parameter values. (according to the rules set input **1 < cwmin < 32767, 1 < cwmax <32767, 1 < aifsn < 15, 0 < txop <65535**)

- **<Default configuration>**

| | CWMin | CWMax | AIFSN | TxOP |
|---|---|---|---|---|
| Back Ground | 4 | 10 | 7 | 0 |
| Best Effort | 4 | 6 | 3 | 0 |
| Video | 3 | 4 | 1 | 94 |
| Voice | 2 | 3 | 1 | 47 |
| | | | | |
| | | STA | | |
| | CWMin | CWMax | AIFSN | TxOP |
| Back Ground | 15 | 1023 | 7 | 0 |
| Best Effort | 15 | 1023 | 3 | 0 |
| Video | 7 | 15 | 2 | 94 |
| Voice | 3 | 7 | 2 | 47 |

- **<Command mode>**

  Immediate Mode, Edit Mode

- **<Compatible Products>**

  CAP1300

- **<Examples>**

  **#** wlan wmm ap aifsn bk 10 be 10 vi 10 vo 10

  **#** wlan wmm sta txop bk 65535 be 65535 vi 65535 vo 65535

***wlan wmm show status***

Show the QoS configuration information.

<The syntax of the command>

| |
|---|
| wlan wmm show status |

- **<Parameter>**

  NA

- **<Default configuration>**

  NA

- **<Command mode>**

  Immediate Mode, Edit Mode, Reference Mode

- **<Compatible Products>**

  CAP1300

- **<Examples>**

  # wlan wmm show status

***wlan wmm qos***

Enable or disable the wmm qos.

<The syntax of the command>

```
wlan wmm qos {disable | enable}
```

- **<Parameter>**
  NA
- **<Default configuration>**
  disable
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # wlan wmm qos enable

***wlan wps create pincode***

Generate the WPS PIN code.

<The syntax of the command>

```
wlan wps create pincode
```

- **<Parameter>**
  NA
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # wlan wps create pincode

***wlan wps {disable | enable}***

Enable or disable the WPS.

<The syntax of the command>

```
wlan wps {state}
```

- **<Parameter>**

| | | |
|---|---|---|
| **{state}** | **disable** | Disable WPS. |
| | **enable** | Enable WPS. |

- **<Default configuration>**
  enable
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # wlan wps disable

***wlan wps release***

Release the WPS.

<The syntax of the command>

| |
|---|
| **wlan wps release** |

- **<Parameter>**
  NA
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # wlan wps release

***wlan wps show status***

Show the status of wlan security WPS.

<The syntax of the command>

| |
|---|
| **wlan wps show status** |

- **<Parameter>**
  NA
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # wlan wps show status

***wlan wps start enrollee pincode***

Enter the PIN code to start WPS.

<The syntax of the command>

| |
|---|
| **wlan wps start encrollee pincode (pincode)** |

- **<Parameter>**
  **(pincode)** Enter the pincode (**0~99999999**).
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # wlan wps start enrollee pincode 14766084

***wlan wps start push_button***
Start the WPS by push the button.
<The syntax of the command>

| |
|---|
| **wlan wps start push_button** |

- **<Parameter>**
  NA
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # wlan wps start push_button

## XI-2-5 Radius

***radius {2.4g | 5g} {primary | secondary} enable server***
Configure the enable built-in RADIUS server.
<The syntax of the command>

| |
|---|
| **radius <media> {primary \| secondary} enable server (host) secret (secret) authport (port)** |

- **<Parameter>**

| | | |
|---|---|---|
| **<media>** | **2.4g** | Set the radius server of 802.11g. |
| | **5g** | Set the radius server of 802.11a. |
| **(host)** | Specifies the IP address or domain name of the host. | |
| **(secret)** | Set the SharedSecret. | |
| **(port)** | Set the UDP port of the server used in RADIUS authentication protocol. (**1~65535**) | |

- **<Default configuration>**
  primary port: 1812
  secondary port: 1812
- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # radius 2.4g primary enable server 192.168.2.123 secret 12345678 authport 1813

***radius {2.4g | 5g} {primary | secondary} session_time***
Set the RADIUS time to server communication will allow wireless devices.
<The syntax of the command>

| |
|---|
| radius <media> [primary \| secondary] session_time (num) |

- **<Parameter>**

  **<media>** **2.4g** Set the radius server of 802.11g.

  **5g** Set the radius server of 802.11a.

  **(num)** Set the time of the session-time (**0~86400 sec**)
- **<Default configuration>**

  primary session-timeout: 3600

  secondary session-timeout: 3600
- **<Command mode>**

  Immediate Mode, Edit Mode
- **<Compatible Products>**

  CAP1300
- **<Examples>**

  # radius 5g secondary session_time 4800

***radius {2.4g | 5g} {primary | secondary} accounting***

Enable or disable the RADIUS Accounting.

<The syntax of the command>

| |
|---|
| **radius <media> {primary \| secondary} accounting (state)** |

- **<Parameter>**

  **<media>** **2.4g** Set the radius server of 802.11g.

  **5g** Set the radius server of 802.11a.

  **(state)** **enable** Enable the RADIUS Accounting.

  **disable** Disable the RADIUS Accounting.
- **<Default configuration>**

  enable
- **<Command mode>**

  Immediate Mode, Edit Mode
- **<Compatible Products>**

  CAP1300
- **<Examples>**

  # radius 5g secondary accounting disable

  # radius 5g primary accounting disable

***radius {2.4g | 5g} {primary | secondary} accounting_port***

Set the UDP port of the server used in RADIUS Accounting protocol.

<The syntax of the command>

| |
|---|
| radius <media> {primary \| secondary} accounting_port (port) |

- **<Parameter>**

  **<media>** **2.4g** Set the radius server of 802.11g.

  **5g** Set the radius server of 802.11a.

  **(port)** Set the UDP port.(**0~65535**)
- **<Default configuration>**

  primary: 1813

secondary: 1813

- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  **#** radius 5g secondary accounting_port 1814
  **#** radius 2.4g primary accounting_port 1815

***radius {2.4g | 5g} {primary | secondary} accounting_interval***

Set the Accounting interval.

<The syntax of the command>

| |
|---|
| **radius <media> {primary \| secondary} accounting_interval (interval)** |

- **<Parameter>**

| | | |
|---|---|---|
| **<media>** | **2.4g** | Set the radius server of 802.11g. |
| | **5g** | Set the radius server of 802.11a. |
| **(interval)** | Set the accounting interval (60 ~ 86400) | |

- **<Default configuration>**

- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # radius 5g secondary accounting_interval 60
  # radius 2.4g primary accounting_interval 86400

***radius {2.4g | 5g} {primary | secondary} type [internal | external]***

Set the radius type.

<The syntax of the command>

| |
|---|
| radius <media> {primary \| secondary} type [internal\|external] |

- **<Parameter>**

| | | |
|---|---|---|
| **<media>** | **2.4g** | Set the radius server of 802.11g. |
| | **5g** | Set the radius server of 802.11a. |

- **<Default configuration>**

- **<Command mode>**
  Immediate Mode, Edit Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  **#** radius 5g primary type external
  **#** radius 2.4g primary type internal

***radius admin add***
Add the radius user accounts.
<The syntax of the command>

| |
|---|
| **radius admin add (username) (password)** |

- **<Parameter>**
  **(username)** username of the radius account
  **(password)** password of the radius account
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # radius admin add edimax 1234

***radius admin delete***
delete the radius user accounts.
<The syntax of the command>

| |
|---|
| **radius admin delete all** |
| **radius admin delete num (list_number)** |

- **<Parameter>**
  **(list_number)** number of the username list
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  **#** radius admin delete all
  **#** radius admin delete num 2

***radius internal {disable | enable}***
enable or disable the internal radius.
<The syntax of the command>

| |
|---|
| **radius internal enable** |

- **<Parameter>**
  **NA**
- **<Default configuration>**
  Disable
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode

- **<Compatible Products>**
  CAP1300
- **<Examples>**
  **#** radius internal disable
  **#** radius internal enable

***radius internal session_timeout***

Set the internal RADIUS time to server communication will allow wireless devices.

<The syntax of the command>

| |
|---|
| **radius internal session_timeout (sec)** |

- **<Parameter>**
  **(sec)** Set the time of the session-timeout (**0~86400 sec**)
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # radius internal session_timeout 86400

***radius internal shared_key***

Set the shared key of internal RADIUS server.

<The syntax of the command>

| |
|---|
| **radius internal shared_key (key)** |

- **<Parameter>**
  **(key)** Set the shared key
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # radius internal shared_key 1234

***radius internal termination_action [not_reauth | not_send | reauth]***

Set the termination action to internal RADIUS server.

<The syntax of the command>

| |
|---|
| **radius internal termination_action [not_reauth \| not_send \| reauth]** |

- **<Parameter>**
  NA
- **<Default configuration>**
  Not-Reauthenication

- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # radius internal termination_action not_reauth

***radius show status***

Show the radius information.

<The syntax of the command>

| |
|---|
| **radius show status** |

- **<Parameter>**
  NA
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode, Edit Mode, Reference Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # radius show status

## XI-2-6 Exit

***exit***

Quit the CLI.

<The syntax of the command>

| |
|---|
| **exit** |

- **<Parameter>**
  NA
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # exit

## XI-2-7 Quit

***quit***
Quit the CLI.
<The syntax of the command>

| |
|---|
| **quit** |

- **<Parameter>**
  NA
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # quit

## XI-2-8 Command

***Command***
Upload the cli command from tftp server
<The syntax of the command>

| |
|---|
| **Command tftp_server (tftp-server) file (filename)** |

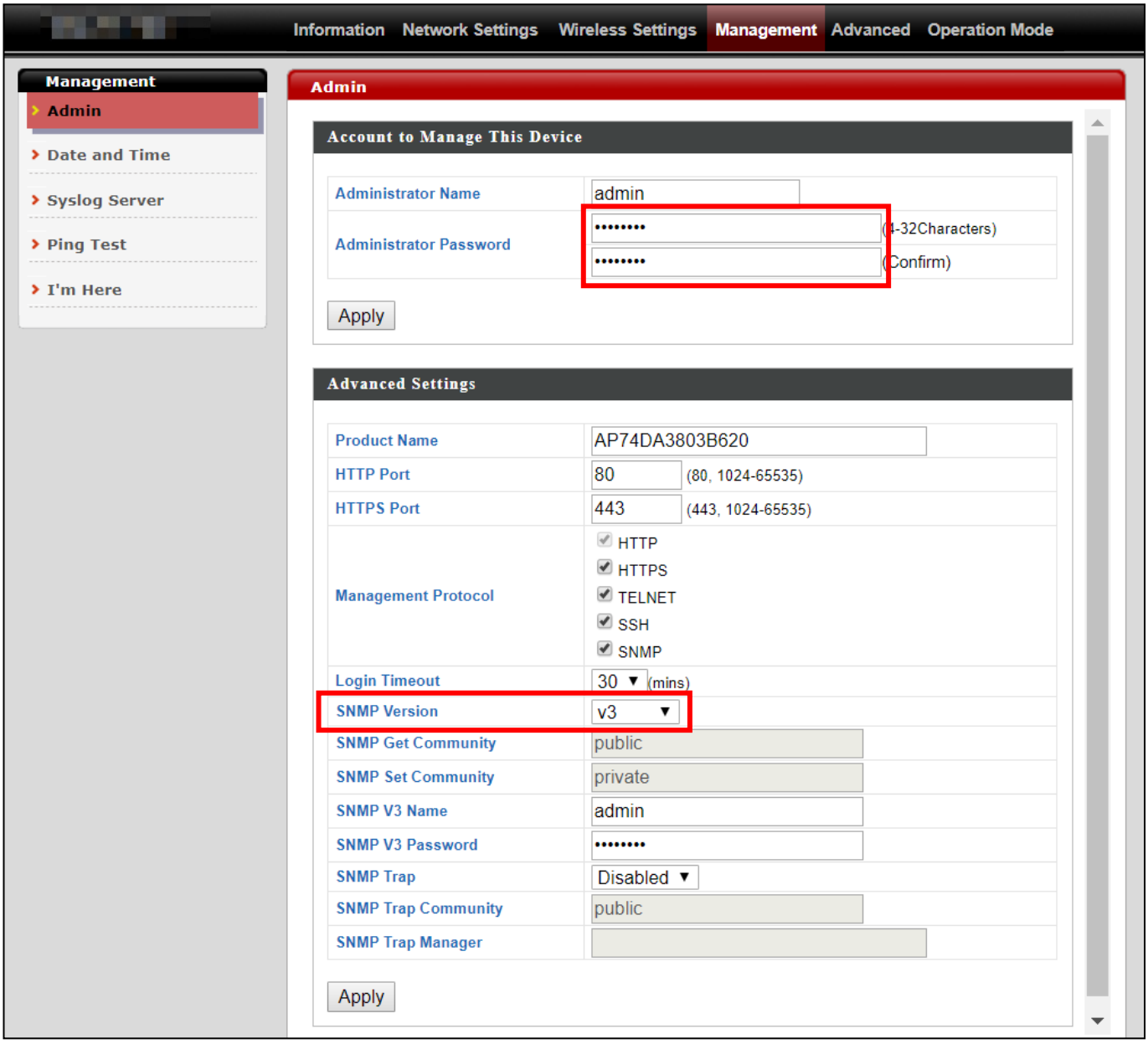
- **<Parameter>**
  **(tftp-server)** Update the Command from the TFTP server.
  **(filename)** Set the name of the Command file.
- **<Default configuration>**
  NA
- **<Command mode>**
  Immediate Mode
- **<Compatible Products>**
  CAP1300
- **<Examples>**
  # Command tftp_server 192.168.2.100 file command.ext

## XI-3 Setting AP via ManageEngine MibBrowser with SNMPv3 - Example

### XI-3-1 Setting in Web

1. The length of the password needs to be equal or greater than 8.

2. SNMP Version: V3



## XI-3-2 Setting Rule

If you want to set Basic Wireless Setting via SNMP, the related variables need to be set together. Please refer to the file *Edimax-7476HPC_private_MIB_20150715_v1.1*, for setting Radio or SSID.

| Example: Basic Wireless Settings | Settings |
|---|---|
| snmpset STRING 192.168.2.2 1.3.6.1.4.1.3822.2000.1.3.3 i 2 | Auto Channel Disable |
| snmpset STRING 192.168.2.2 1.3.6.1.4.1.3822.2000.1.2.3 i 3 | 11b/g/n: band |
| snmpset STRING 192.168.2.2 1.3.6.1.4.1.3822.2000.1.4.3 i 7 | 7: channel |
| snmpset STRING 192.168.2.2 1.3.6.1.4.1.3822.2000.1.6.3 i 1 | 20M: Bandwidth |
| snmpset STRING 192.168.2.2 1.3.6.1.4.1.3822.2000.1.7.3 i 5 | all: basic rate |

**STRING**: -v3 -l noAuthNoPriv -u admin -a MD5 -x DES

Reference: Radio Related page of *Edimax-7476HPC_private_MIB_20150715_v1.1*

## XI-3-3 Setting in ManageEngine MibBrowser

1. Set the version of SNMP

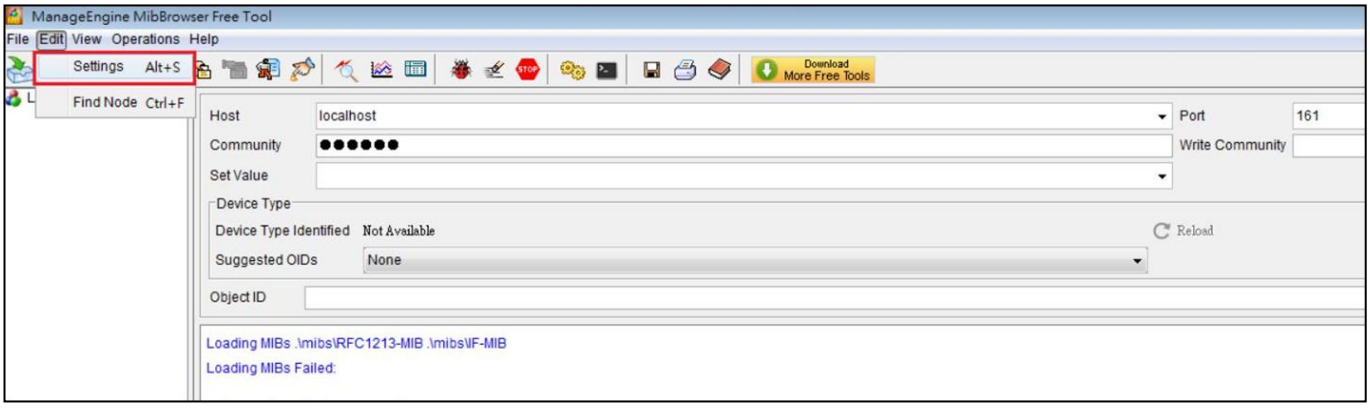



**Figure 1** Step 1:Edit → Settings

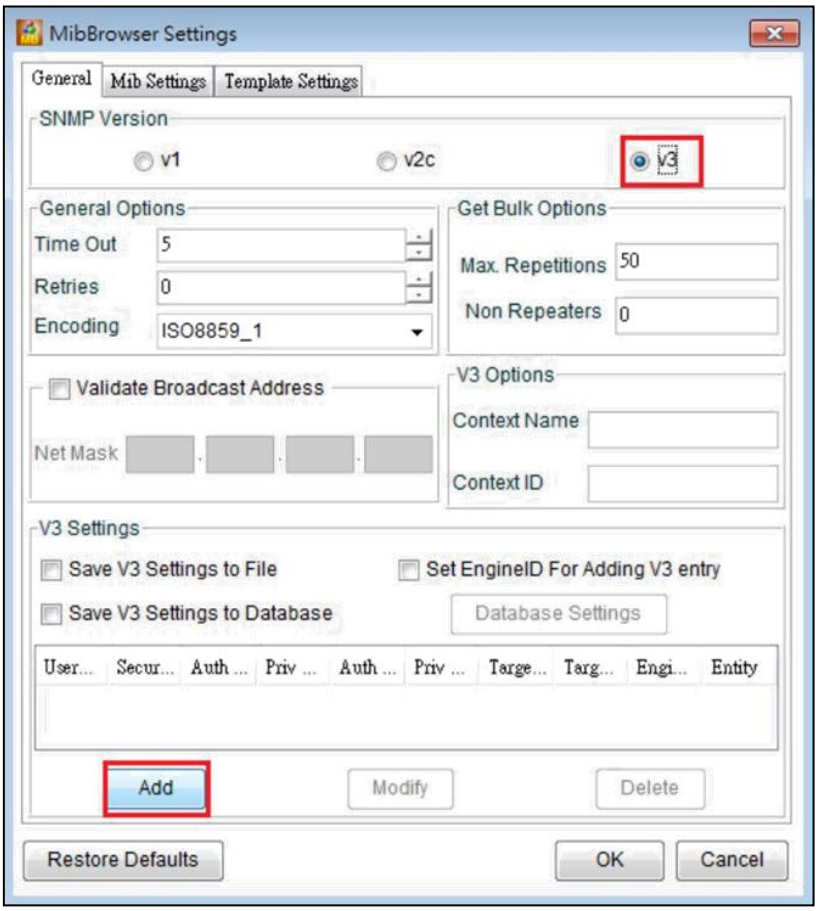



**Figure 2** Step 2: Check <u>v3</u> and click <u>Add</u>

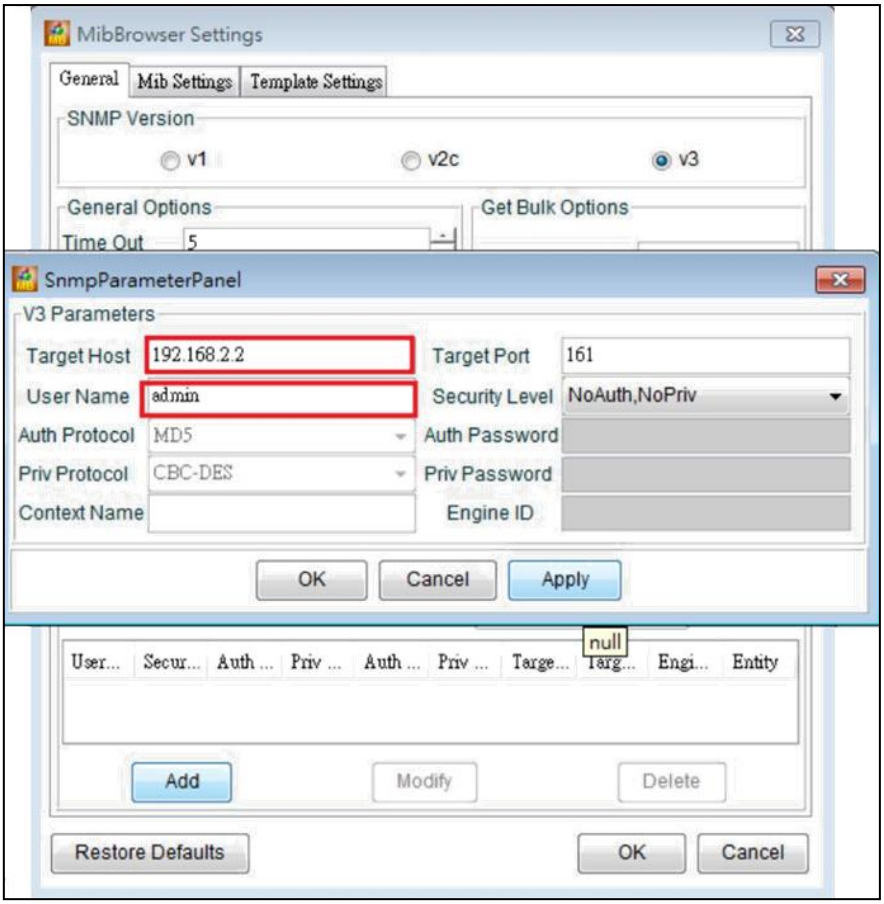



**Figure 3** Step 3: Enter AP's IP and Administrator Name (User Name)

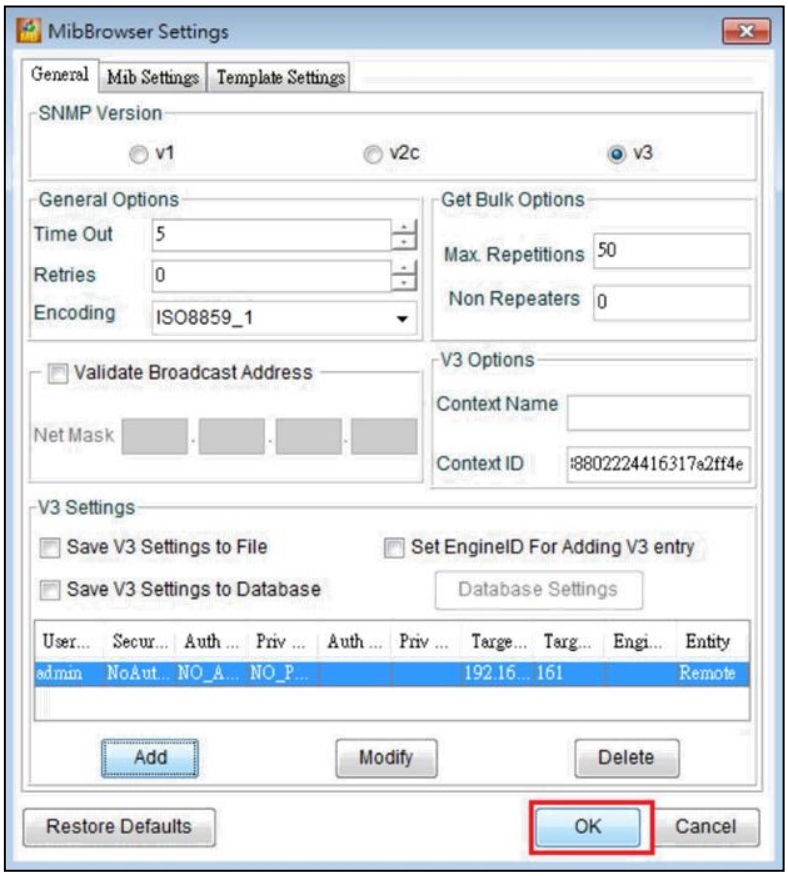



**Figure 4** Step 4: Click <u>OK</u>

## 2. Load MIB Module

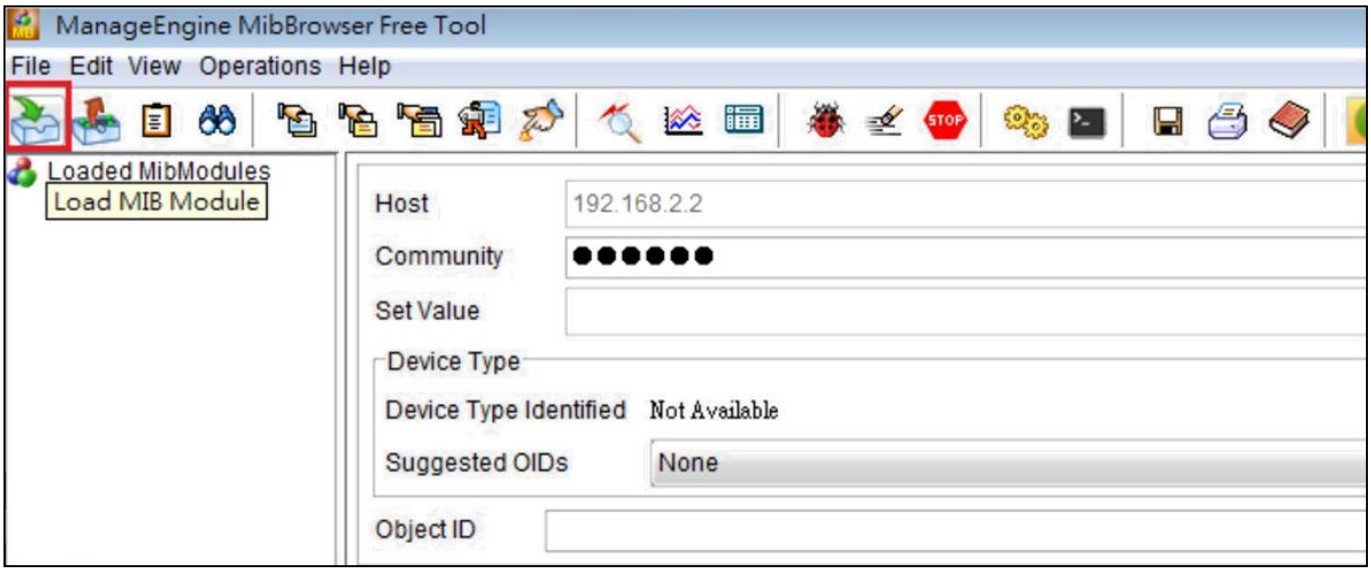



**Figure 5** <u>Click Load MIB Module</u> and choose the file, *edimax_20150728.txt* (MIB file)

3. Add variables

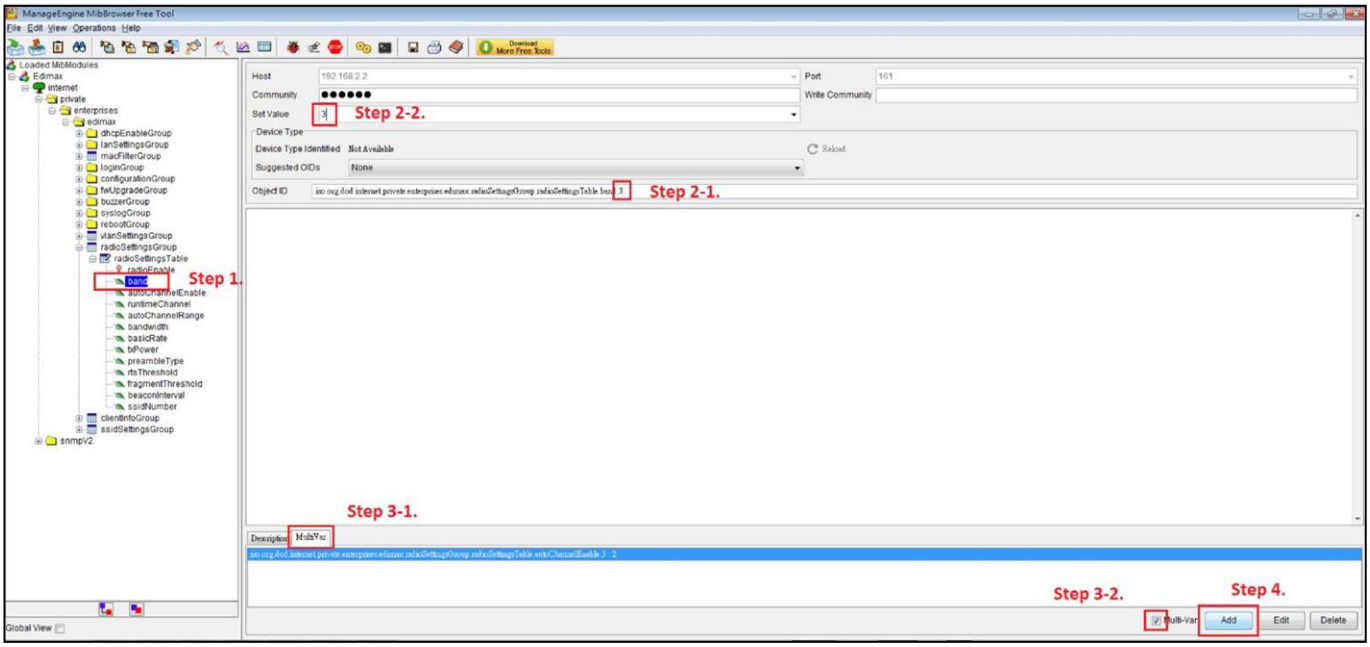



**Figure 6** Example of setting the variable

Step 1.: Select the OID.
Step 2-1.: Enter the index of Radio (2.4G).
Step 2-2.: Enter the Set Value.
Step 3-1.: Click MultiVar.
Step 3-2.: Check Multi-Var.
Step 4.: Add this Variable

## 4. Set SNMP variables

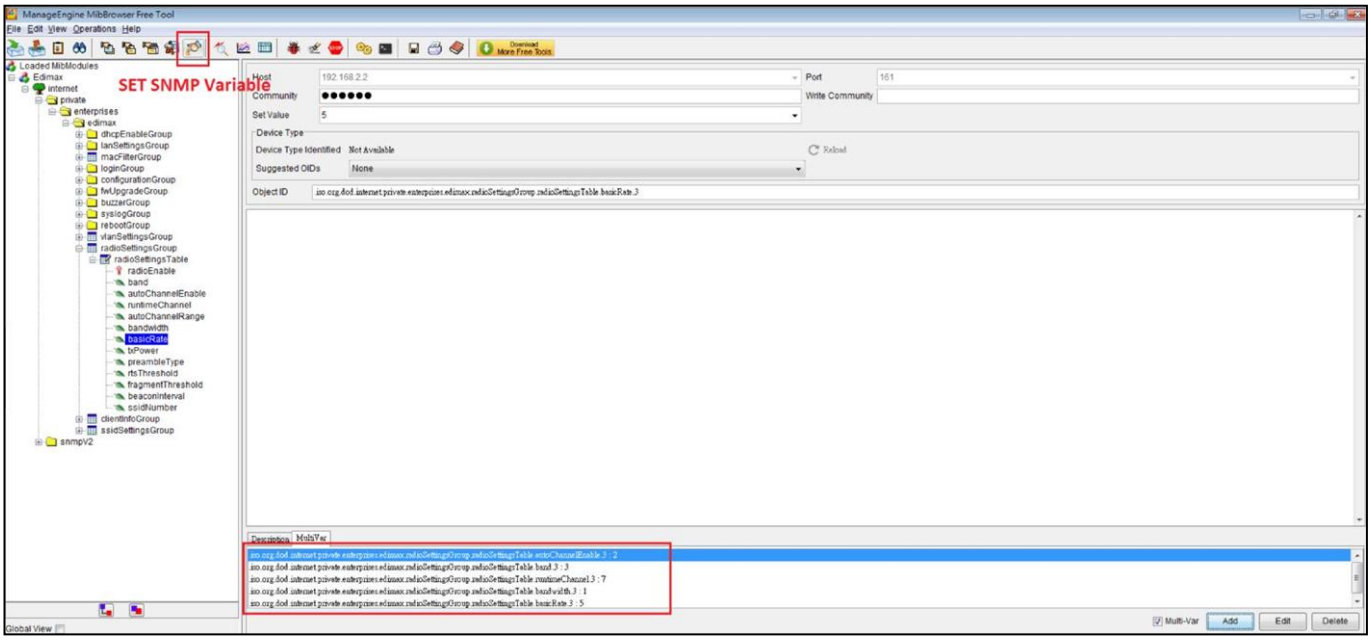



**Figure 7** All the variables have been added. Click SET SNMP Variables

# XII Best Practice

## XII-1 How to Create and Link WLAN & Access Point Groups

NMS can be used to create individual SSIDs and group multiple SSIDs together into WLAN groups. You can then assign individual access points to use those WLAN group settings and/or group multiple access points together into access point groups, which you can also assign to use WLAN group settings.

Follow the example below to:

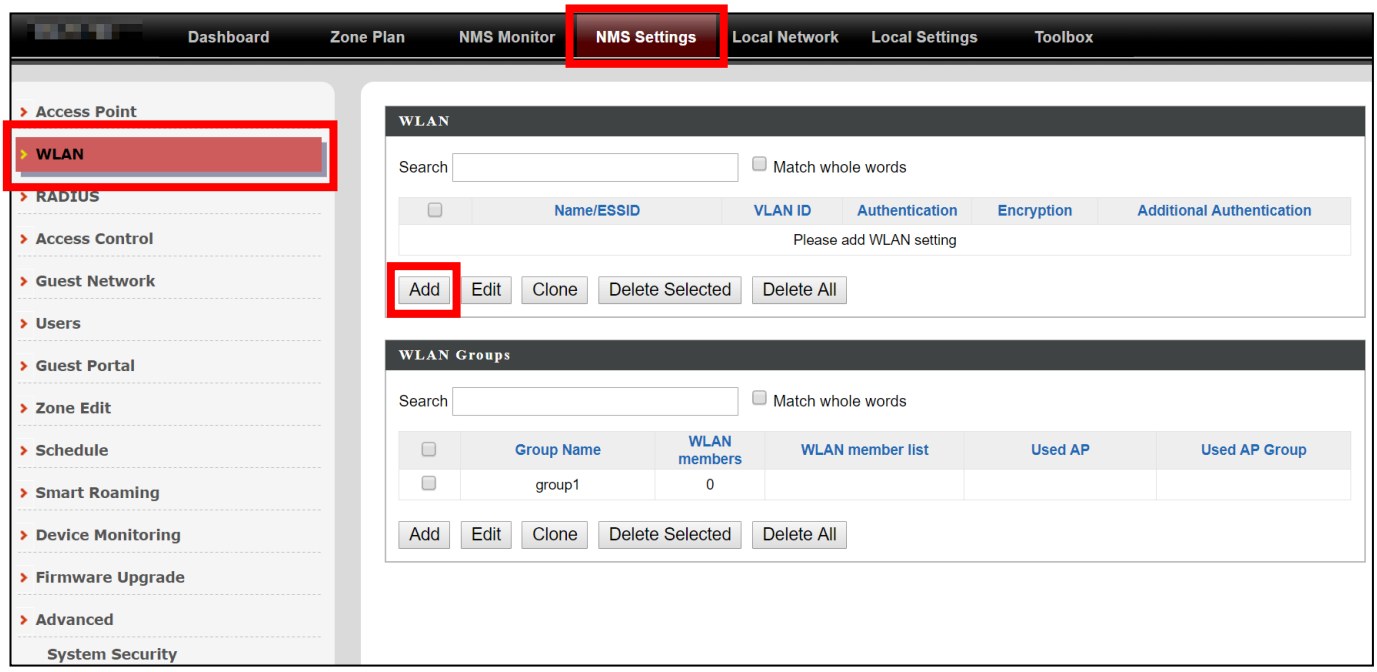
**A.** Create a WLAN group.

**B.** Create an access point group.

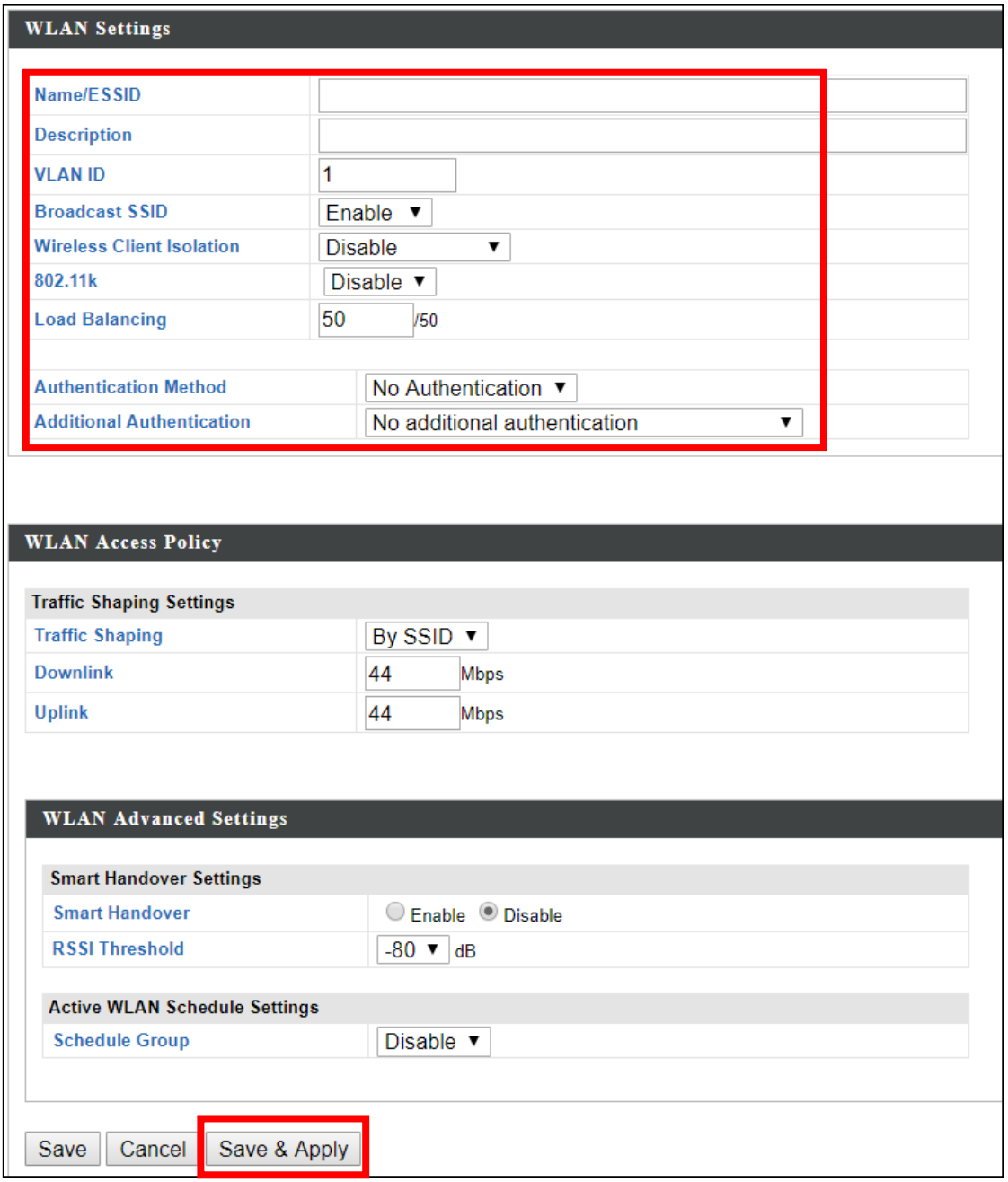
**C.** Assign the access point group to use the SSID group settings.

### XII-1-1 Create WLAN Group

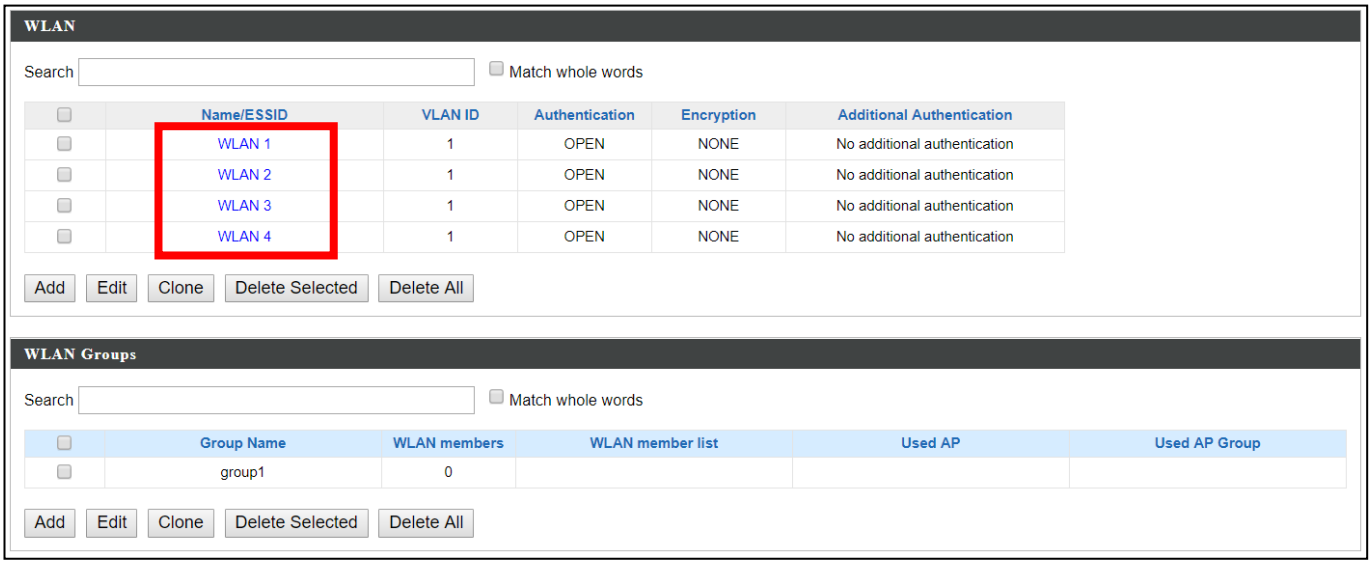
**1.** Go to **NMS Settings → WLAN** and click **"Add"** in the **WLAN** panel:



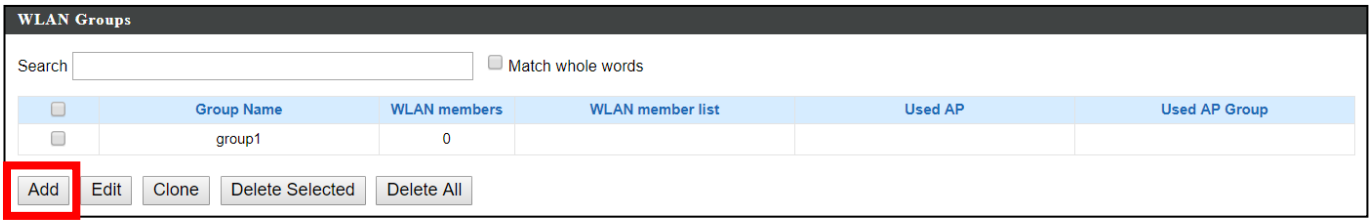
**2.** Enter an SSID **name** and set **authentication/encryption** and click **"Save & Apply"**:



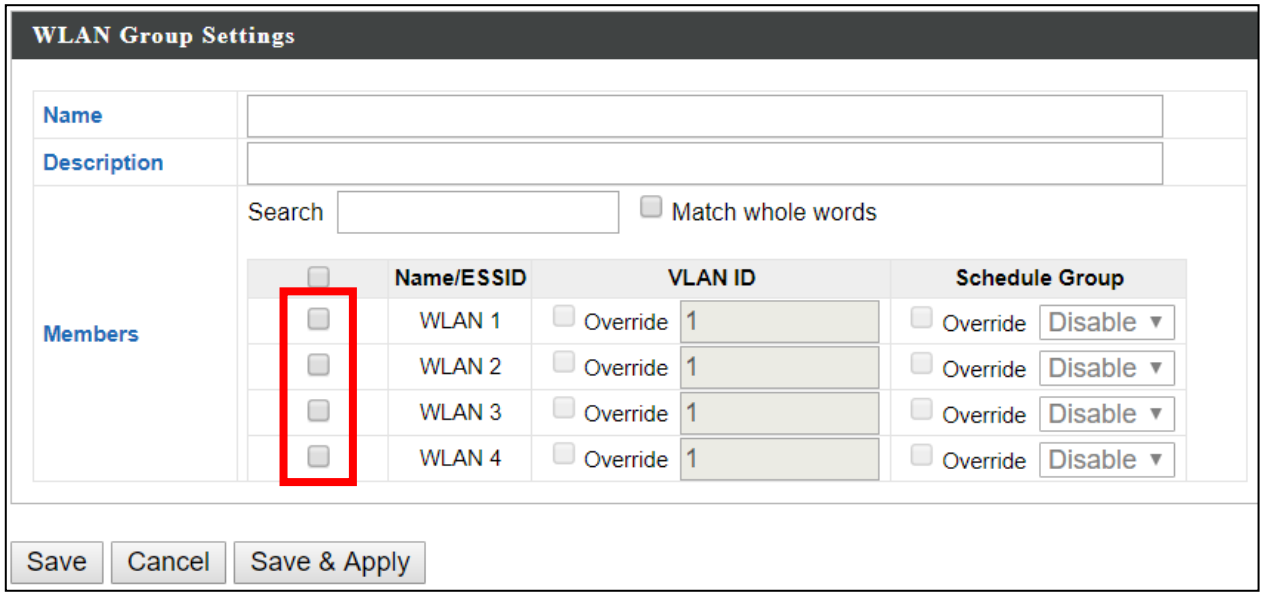
**3.** The new SSID will be displayed in the **WLAN** panel. **Repeat** to add additional SSIDs according to your preference.



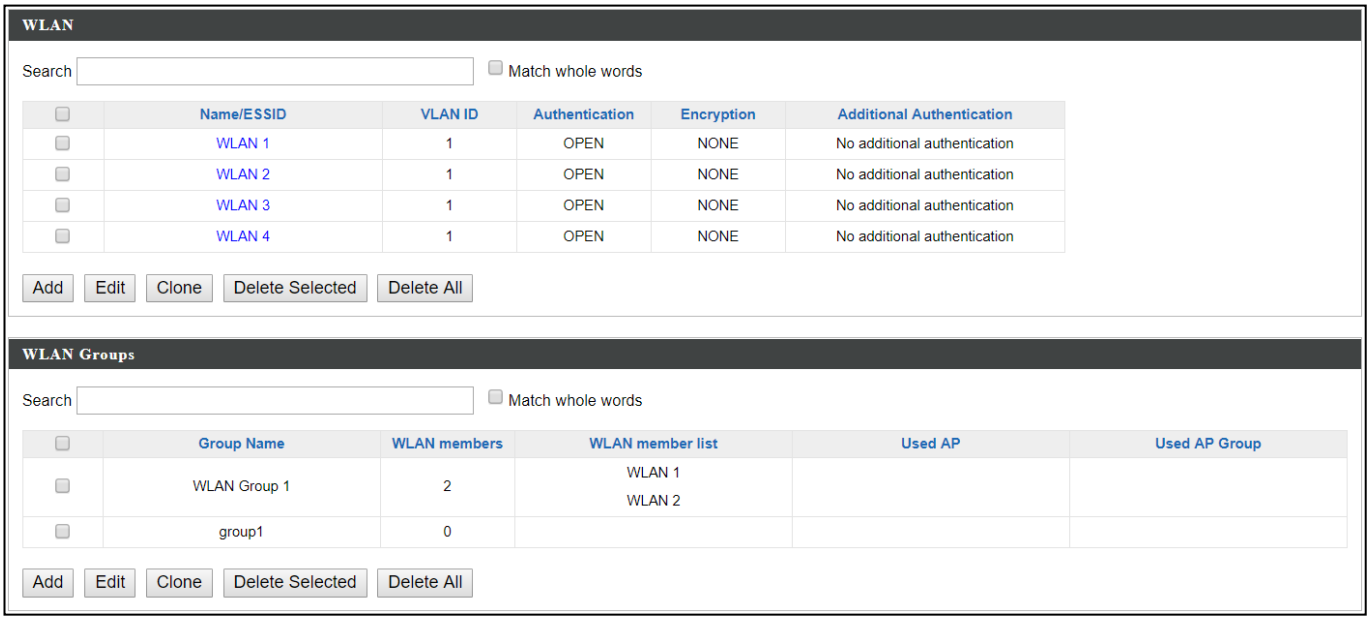

**4.** Click **"Add"** in the **WLAN Groups** panel:




**5.** Enter a **name** for the **SSID group** and **check the boxes** to select which SSIDs to include in the group. Click "**Save and Apply**" when done.

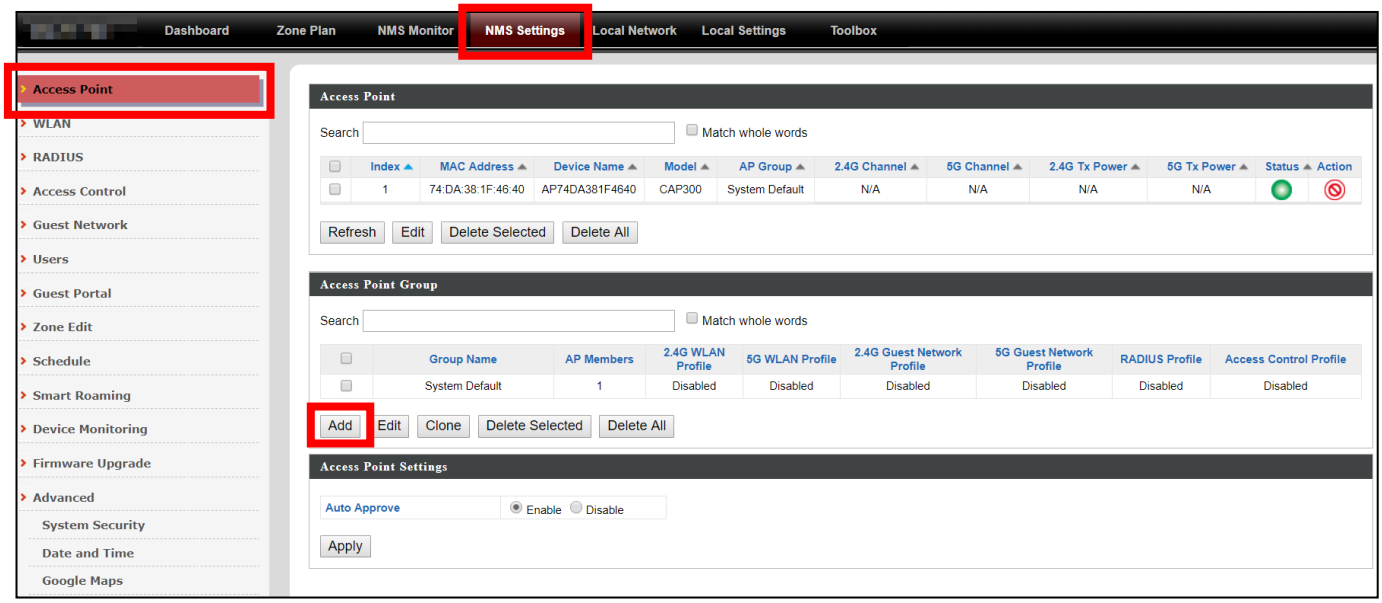


**6.** The new **WLAN group** will be displayed in the **WLAN Group** panel. **Repeat** to add additional WLAN groups according to your preference:

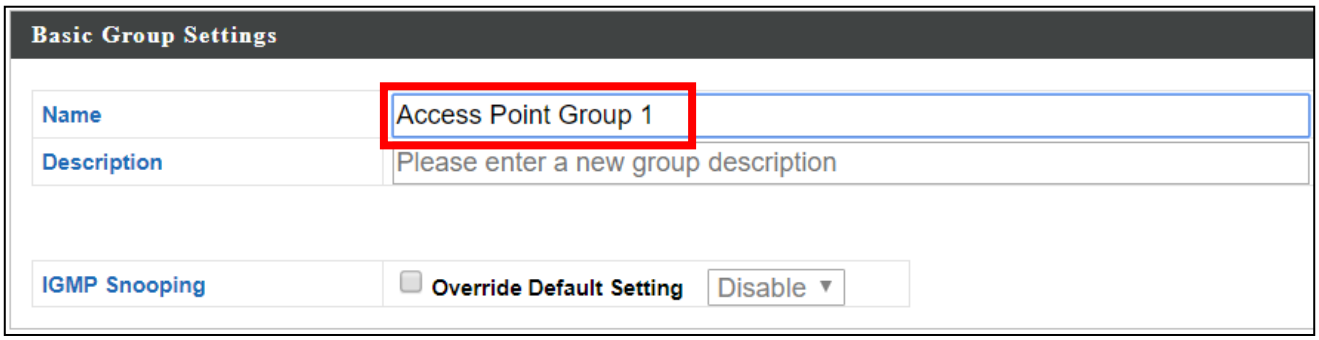


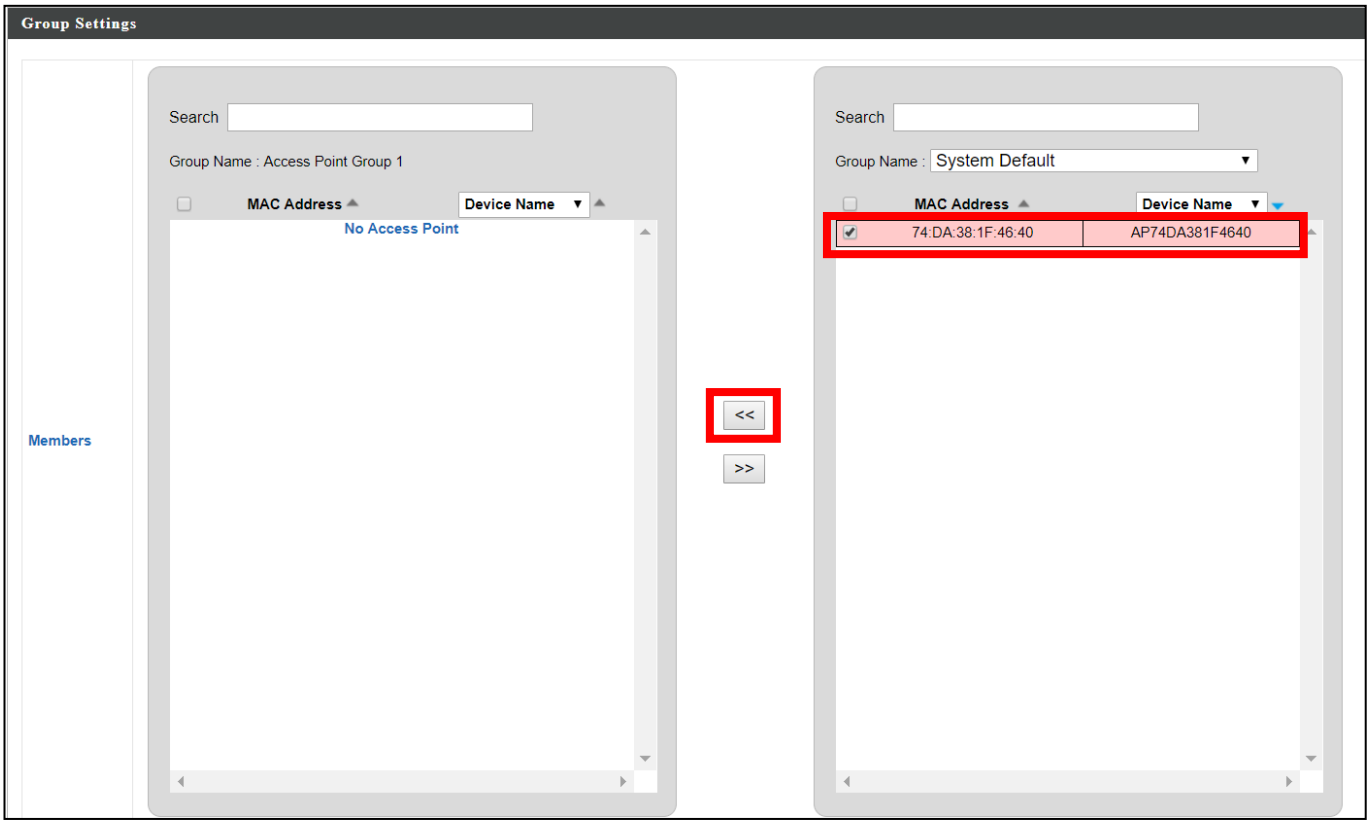

## XII-1-2 Create Access Point Group

**1.** Go to **NMS Settings → Access Point** and click "Add" in the Access Point Group panel:

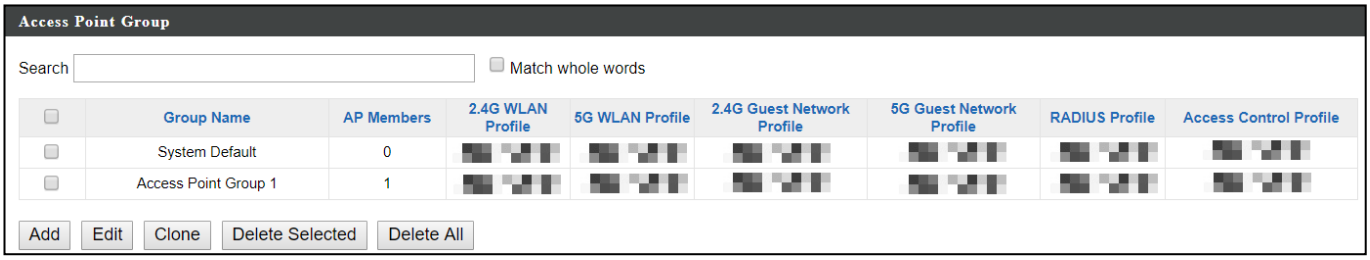


**2.** Enter a **Name** and then scroll down to the **Group Settings** panel and use the **<<** button to **add** selected access points into your group from the box on the right side. Click **"Save & Apply"** when done.



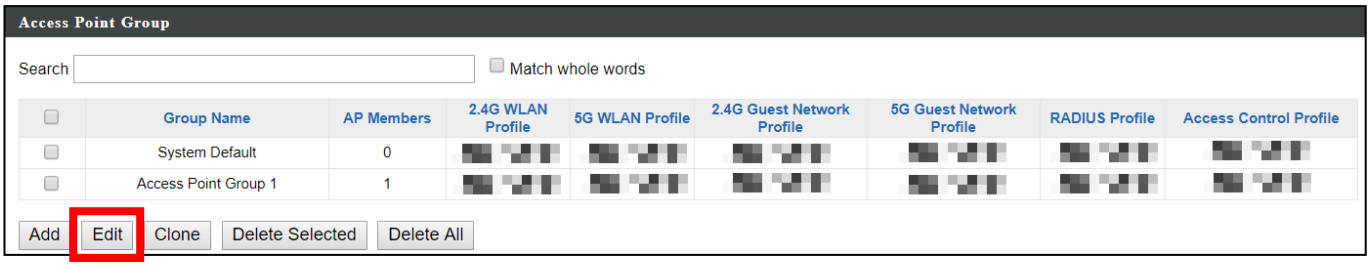




**3.** The new group will be displayed in the **Access Point Group** panel. **Repeat** to add additional access point groups according to your preference:

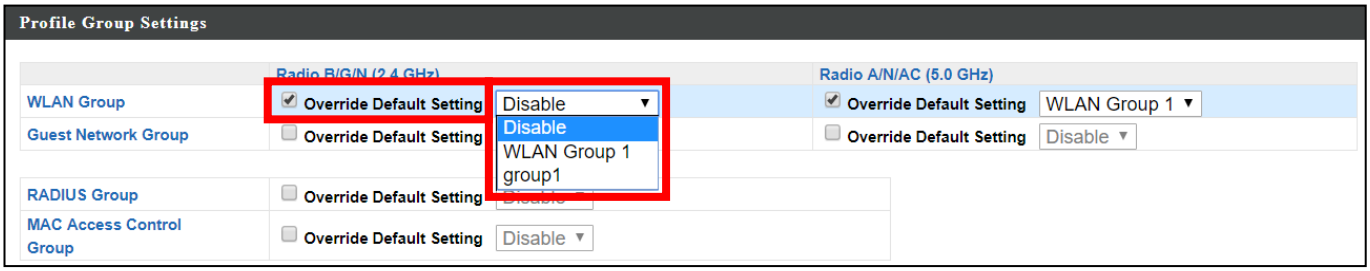


## XII-1-3 Assign Access Point Group to use the SSID group settings

**1.** Go to **NMS Settings → Access Point** and select an access point group using the checkboxes in the **Access Point Group** panel. Click "**Edit**":




**2.** Scroll down to the **Profile Group Settings** panel and check the "**Override Group Settings**" box for **WLAN Group (2.4GHz and/or 5GHz).** Select your **WLAN group** from the drop-down menu and click "**Apply**":




**3.** Repeat for other access point groups according to your preference.

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| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | AT | BE | BG | HR | CY | CZ | DK | |
| | EE | FI | FR | DE | EL | HU | IE | |
| | IT | LV | LT | LU | MT | NL | PL | |
| | PT | RO | SK | SI | ES | SE | UK | UK(NI) |

The device is restricted to indoor use only when operating in the 5150 to 5350 MHz frequency range.

## Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of 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:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio 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 equipment.

This device complies with Part 15 of the FCC Rules. Operation si 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.

For product available in the USA/Canada market, only channel 1~11 can be operated. Selection of other channels is not possible.

This device is restricted to indoor use.

**Federal Radiation Exposure Statement**

1. This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
2. This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body or nearby persons.

**RED Compliance Statement**

**Compliance with 2014/53/EU Radio Equipment Directive (RED)**

In accordance with Article 10.8(a) and 10.8(b) of the RED, the following table provides information on the frequency bands used and the maximum RF transmit power of the product for sale in the EU:

| Frequency range (MHz) | Max. transmit power (dBm) |
|---|---|
| 2400-2483.5 | 19.90 dBm |
| 5150-5250 | 22.93 dBm |
| 5250-5350 | 22.92 dBm |
| 5470-5725 | 29.29 dBm |

A simplified DoC shall be provided as follows: Article 10(9)

Hereby, Edimax Technology Co., Ltd. declares that the radio equipment type **AC1300 DBDC Ceiling-mount AP** is in compliance with Directive 2014/53/EU

The full text of the EU declaration of conformity is available at the following internet address: http://www.edimax.com/edimax/global/

**Safety**

This equipment is designed with the utmost care for the safety of those who install and use it. However, special attention must be paid to the dangers of electric shock and static electricity when working with electrical

equipment. All guidelines of this and of the computer manufacture must therefore be allowed at all times to ensure the safe use of the equipment.

**EU Countries Intended for Use**

The ETSI version of this device is intended for home and office use in Austria, Belgium, Bulgaria, Cyprus, Czech, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Turkey, and United Kingdom. The ETSI version of this device is also authorized for use in EFTA member states: Iceland, Liechtenstein, Norway, and Switzerland.

**EU Countries Not Intended for Use**

None

## EU Declaration of Conformity

**English:** This equipment is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU, 2014/35/EU.

**Français:** Cet équipement est conforme aux exigences essentielles et autres dispositions de la directive 2014/53/EU, 2014/35/EU.

**Čeština:** Toto zařízení je v souladu se základními požadavky a ostatními příslušnými ustanoveními směrnic 2014/53/EU, 2014/35/EU.

**Polski:** Urządzenie jest zgodne z ogólnymi wymaganiami oraz szczególnymi warunkami określonymi Dyrektywą UE 2014/53/EU, 2014/35/EU.

**Română:** Acest echipament este în conformitate cu cerinţele esenţiale şi alte prevederi relevante ale Directivei 2014/53/UE, 2014/35/UE.

**Русский:** Это оборудование соответствует основным требованиям и положениям Директивы 2014/53/EU, 2014/35/EU.

**Magyar:** Ez a berendezés megfelel az alapvető követelményeknek és más vonatkozó irányelveknek (2014/53/EU, 2014/35/EU).

**Türkçe:** Bu cihaz 2014/53/EU, 2014/35/EU direktifleri zorunlu istekler ve diğer hükümlerle ile uyumludur.

**Українська:** Обладнання відповідає вимогам і умовам директиви 2014/53/EU, 2014/35/EU.

**Slovenčina:** Toto zariadenie spĺňa základné požiadavky a ďalšie príslušné ustanovenia smerníc 2014/53/EU, 2014/35/EU.

**Deutsch:** Dieses Gerät erfüllt die Voraussetzungen gemäß den Richtlinien 2014/53/EU, 2014/35/EU.

**Español:** El presente equipo cumple los requisitos esenciales de la Directiva 2014/53/EU, 2014/35/EU.

**Italiano:** Questo apparecchio è conforme ai requisiti essenziali e alle altre disposizioni applicabili della Direttiva 2014/53/EU, 2014/35/UE.

**Nederlands:** Dit apparaat voldoet aan de essentiële eisen en andere van toepassing zijnde bepalingen van richtlijn 2014/53/EU, 2014/35/EU.

**Português:** Este equipamento cumpre os requesitos essênciais da Directiva 2014/53/EU, 2014/35/EU.

**Norsk:** Dette utstyret er i samsvar med de viktigste kravene og andre relevante regler i Direktiv 2014/53/EU, 2014/35/EU.

**Svenska:** Denna utrustning är i överensstämmelse med de väsentliga kraven och övriga relevanta bestämmelser i direktiv 2014/53/EU, 2014/35/EU.

**Dansk:** Dette udstyr er i overensstemmelse med de væsentligste krav og andre relevante forordninger i direktiv 2014/53/EU, 2014/35/EU.

**suomen kieli:** Tämä laite täyttää direktiivien 2014/53/EU, 2014/35/EU. oleelliset vaatimukset ja muut asiaankuuluvat määräykset.

FOR USE IN AT BE BG CZ DK DE EE IE EL ES FR HR IT CY LV LT LU HU MT NL PL PT RO SI SK FI SE UK UK(NI) TR IS LI NO CH RU UA

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### WEEE Directive & Product Disposal

At the end of its serviceable life, this product should not be treated as household or general waste. It should be handed over to the applicable collection point for the recycling of electrical and electronic equipment, or returned to the supplier for disposal.

# Declaration of Conformity

We, Edimax Technology Co., Ltd., declare under our sole responsibility, that the equipment described below complies with the requirements of the European Radio Equipment Directive.

**Equipment: AC1300 DBDC Ceiling-mount AP**
**Model No.: CAP1300**

The following European standards for essential requirements have been followed:

**Directives 2014/53/EU**

| | |
|---|---|
| Spectrum | : EN 300 328 V2.1.1 (2016-11) |
| | EN 301 893 V2.1.1 (2017-05) |
| EMC | : Draft EN 301 489-1 V2.2.1 (2019-03) |
| | Draft EN 301 489-17 V3.2.0 (2017-03) |
| EMF | : EN 62311:2008 |
| Safety (LVD) | : IEC 62368-1:2014 (2nd Edition) and/or EN 62368-1:2014+A11:2017 |

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Printed Name: David Huang
Title: Director
Edimax Technology Europe B.V.

Date of Signature: Nov., 2020
Signature:

Printed Name: Albert Chang
Title: Director
Edimax Technology Co., Ltd.

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