EDIMAX
NETWORKING PEOPLE TOGETHER

APC500

User Manual

11-2015 / v1.0

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I. Product Information

The APC500 supports central management for up to 32 Edimax Pro access points, **suitable for SMBs/SMEs**. Functions include:

L2/L3 AP Management
QoS by SSID
Batch Setup/Configuration
Channel/RF Power/Load Optimization
Captive Portal/Guest Policy
Local Radius (AAA)
Group Firmware Upgrade/Restart
Edimax NMS

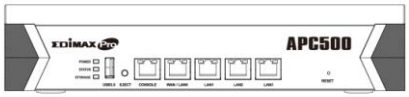
Edimax Pro Network Management Suite (NMS) supports the central management of a group of access points, otherwise known as an AP Array. NMS can be installed on one access point and support up to 16 Edimax Pro access points with no additional wireless controller required. The APC500 is a standalone AP Controller with support for up 32 APs.

Edimax Pro NMS	**CAP Series**	**WAP Series**	**APC500**
Platform	Software	Software	Standalone Box
Segment	Entry	Middle	High
Managed AP Capacity	1 – 8	1 – 16	1 - 32

The APC500 Controller connects to a network via a switch or directly to a router, and other connected Edimax Pro access points are automatically designated as Managed APs. Using the APC500 you can configure, monitor and manage all Managed APs (up to 32 connected by switches) from the single AP Controller.

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.

I-1. Package Contents



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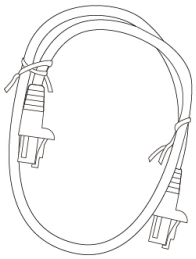

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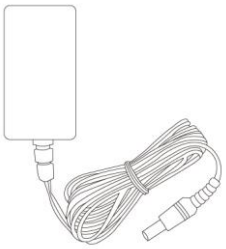

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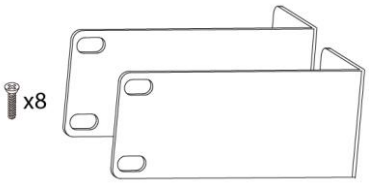

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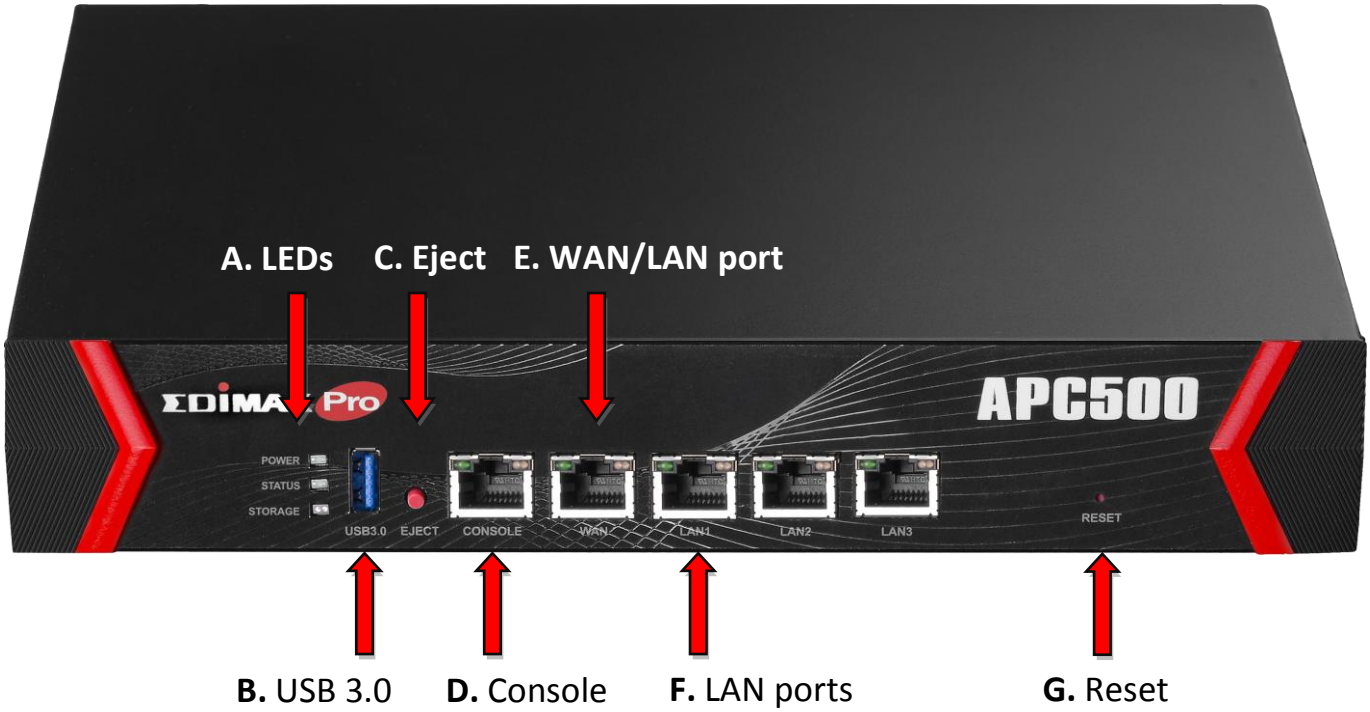
1. APC500
2. Ethernet Cable
3. Console Cable
4. Power Adapter
5. CD
6. Quick Installation Guide
7. Rack-Mount Kit
8. Wall-Mount Kit

I-2. System Requirements

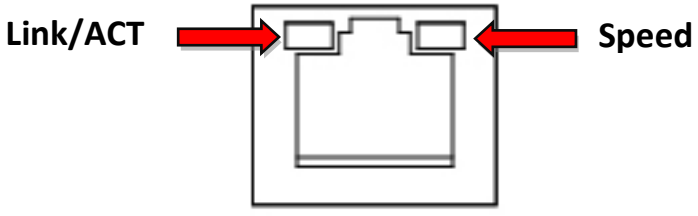
- Existing cable/DSL modem & router
- Computer with web browser for access point configuration

I-3. Hardware Overview



A. Power, status & storage LEDs.
B. USB 3.0 port for system log and save/restore settings.
C. Eject an attached USB device.
D. Connect a management console.
E. WAN/LAN port 0.
F. LAN ports 1 – 3.
G. Reset the controller to factory default settings.

WAN & LAN ports 1 – 3 LEDs:



I-4. LED Status

LED	LED Color	LED Status	Description
Power	**Blue**	**On**	The controller is on.
		Flashing	The controller is starting up.
		Off	The controller is off.
Status	**Blue**	**On**	The controller is working properly.
		Flashing	Transferring/receiving data.
		Off	The controller is offline.
Storage	**Blue**	**On**	USB storage attached.
		Flashing	USB activity.
		Off	No USB storage attached.
Link/ACT	**Green**	**On**	Active link.
		Flashing	Network activity.
		Off	Inactive link.
Speed	**Green**	**On**	1000 Mbps
		Off	10/100 Mbps

I-5. Reset

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

1. Press and hold the reset button on the front of the controller for at least 10 seconds.

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

2. Wait for the controller to restart. The controller is ready for setup when the **blue** power LED is **on**.

I-6. Console/HyperTerminal

The controller can be configured via the “Console” port located on the access point’s side panel using a terminal or a PC-based terminal-emulation program (e.g. HyperTerminal).

Use a DB9 straight cable to connect the Console (RS-232 serial port) of the APC500 and the RS-232 serial port of a terminal or PC.

Use the following configuration settings for terminal-emulation programs:

Baud Rate	115200
Data	8 bit
Parity	None
Stop	1 bit
Flow Control	None

The console cable pin definition is compatible with Cisco console cables.

I-7. 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 controller is designed for indoor use only; do not place the controller outdoors.

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

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

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

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

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

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

8. The controller 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 you smell burning or see smoke coming from the controller or power adapter, then disconnect the controller and power adapter immediately, as far as it is safely possible to do so. Call your dealer of purchase for help.

II. Hardware Installation

II-1. Wall Mount

The APC500 includes screws to mount your controller to a wall.

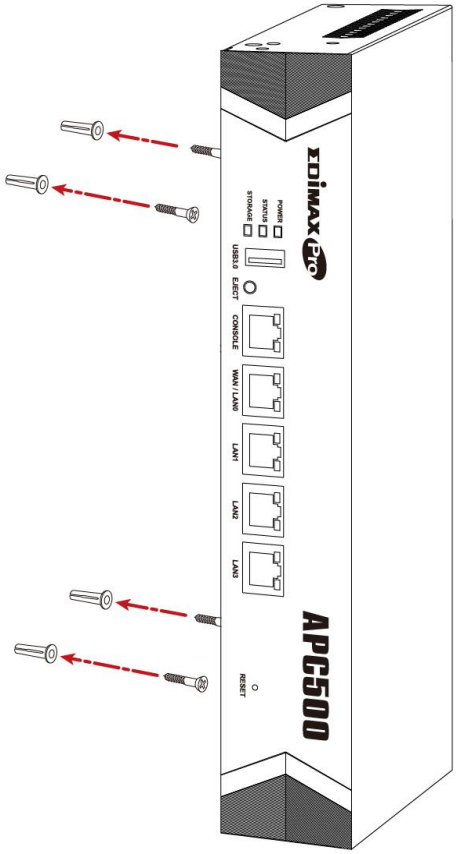
Remove the rubber feet from the underside of the APC500 by pulling gently before using the wall mount.

1. Identify and mark correct screw positions on your selected wall.

2. Attach the APC500 to your wall using the included screws, as shown in the diagram.

3. Ensure the APC500 is fixed to the wall firmly and oriented correctly, with the controller's Edimax logo as shown in the diagram.

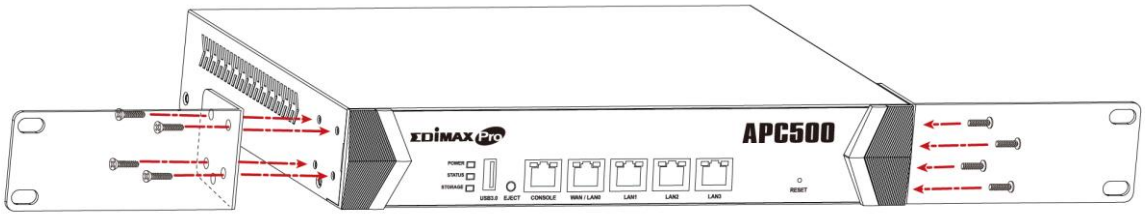
Ensure your controller is securely attached to the wall.



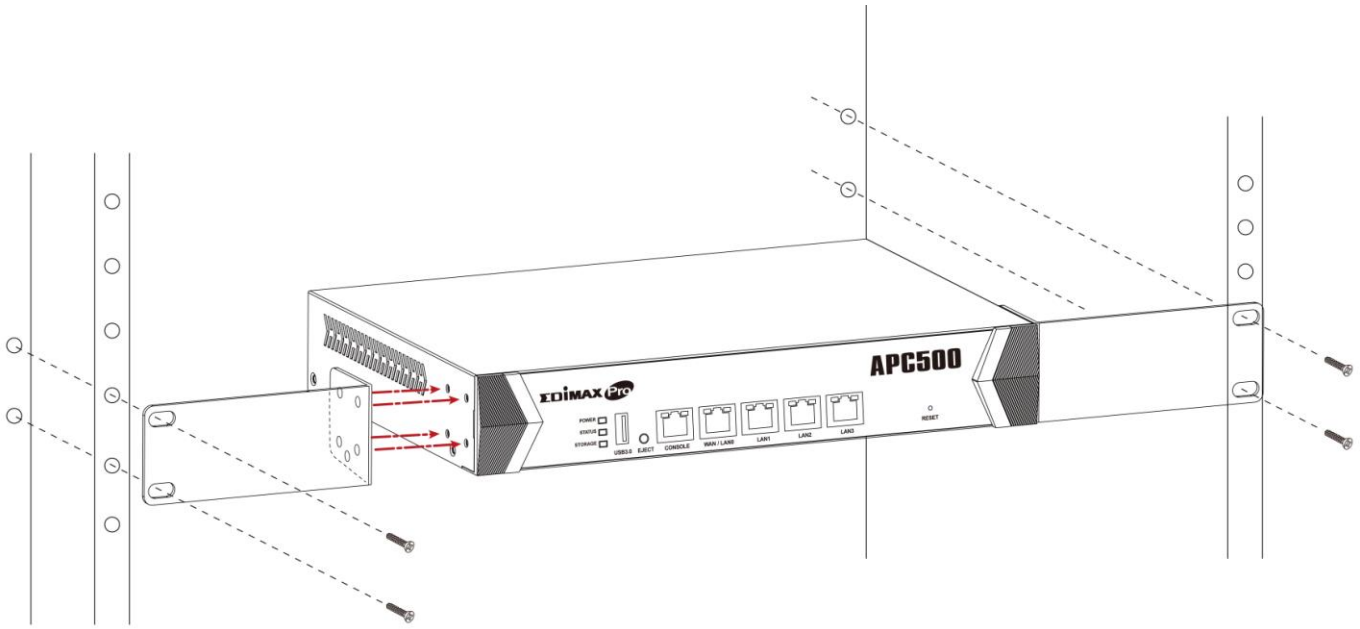
II-2. Rack Mount

The controller can be mounted in a rack which can be placed in a wiring closet with other equipment. To install the switch, please follow these steps:

1. Attach the mounting brackets on the controller's side panels (one on each side) and secure them with the screws provided.



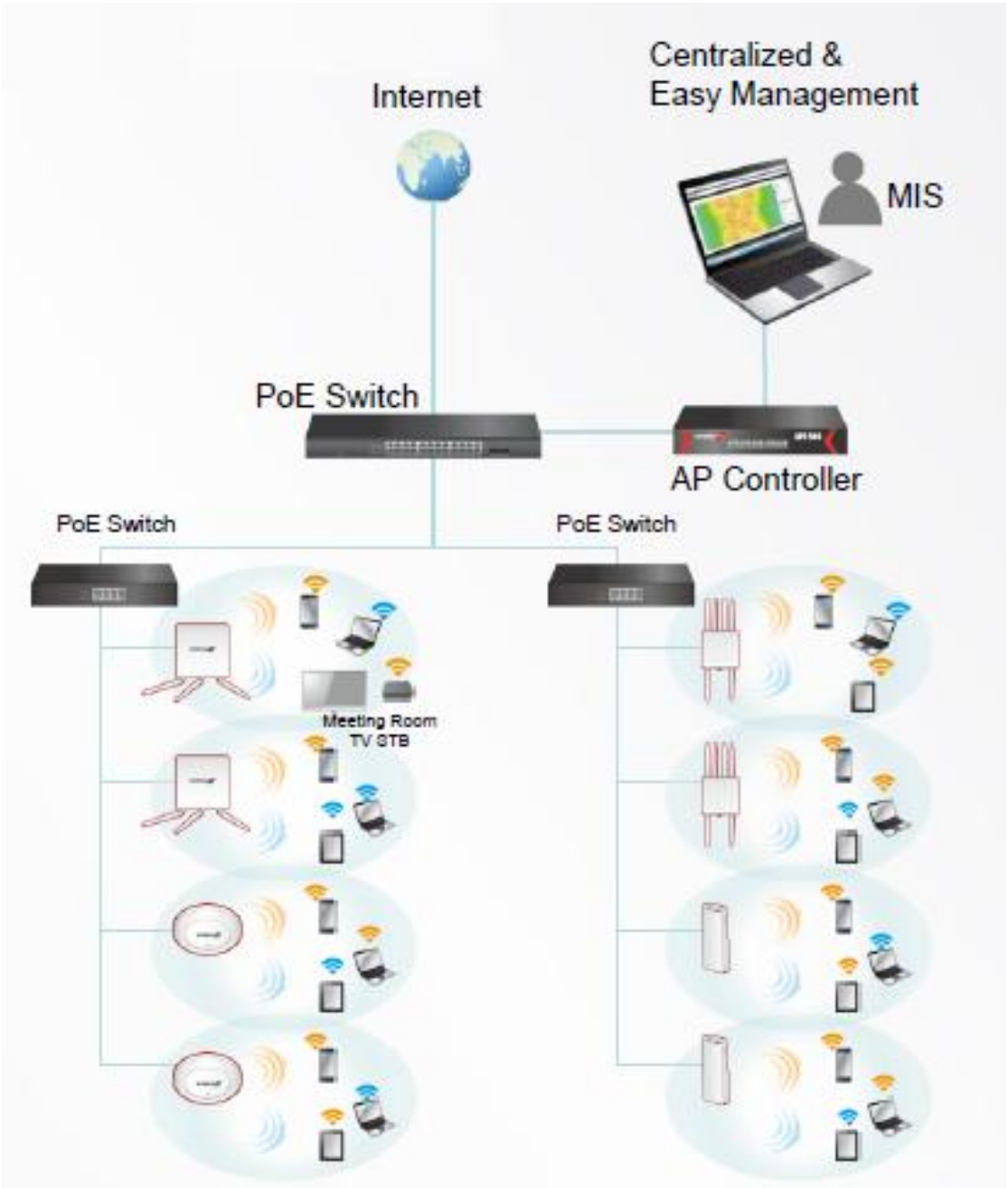
2. Use the screws provided with your equipment rack to mount the controller on the rack and tighten it.



III. Quick Setup

The APC500 supports central management for up to 32 Edimax Pro access points, reducing costs and facilitating efficient remote AP management.

APC500 is simple to setup. An overview of a recommended network is shown below:

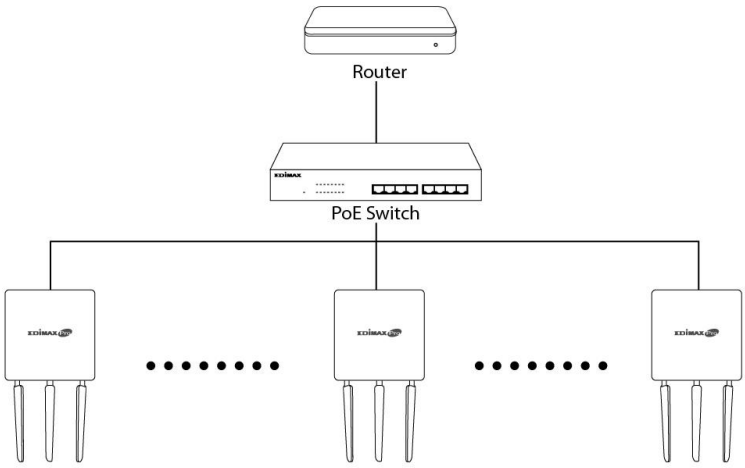


The APC500 Controller connects to a network via a switch or directly to a router, and other connected Edimax Pro access points are automatically designated as Managed APs. Using the APC500 you can configure, monitor and manage all Managed APs (up to 32 connected by switches) from the single AP Controller.

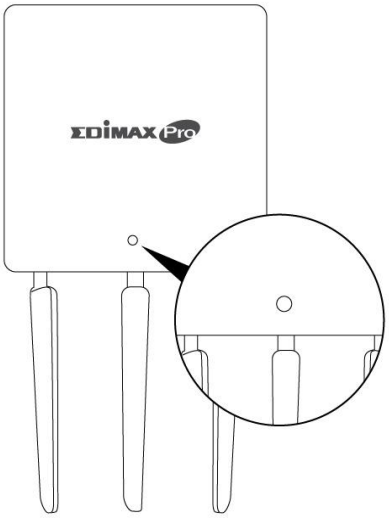
Ensure you have the latest firmware from the Edimax website for your Edimax Pro products.

1. Connect all APs to a PoE switch which is connected to a gateway/router.

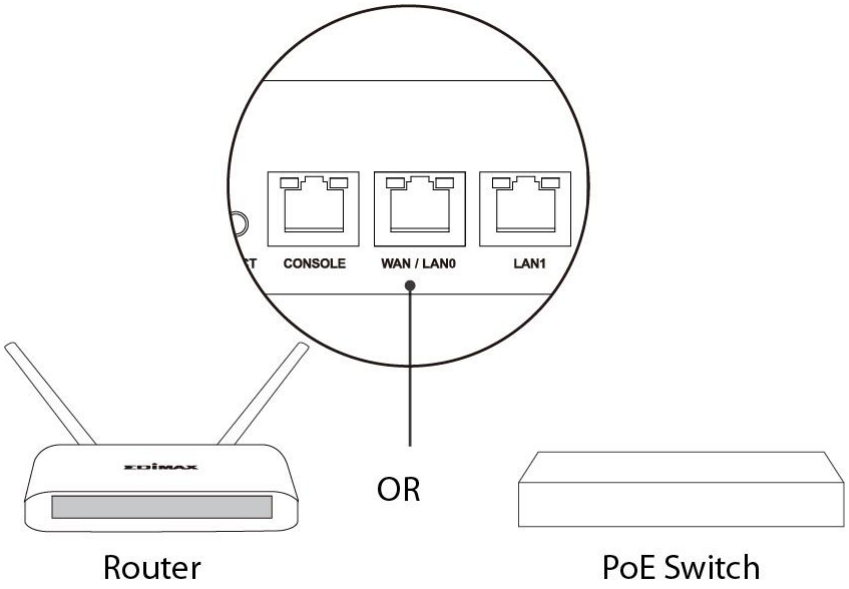
You can use your router as a DHCP server or you can later configure your AP Controller as a DHCP server.



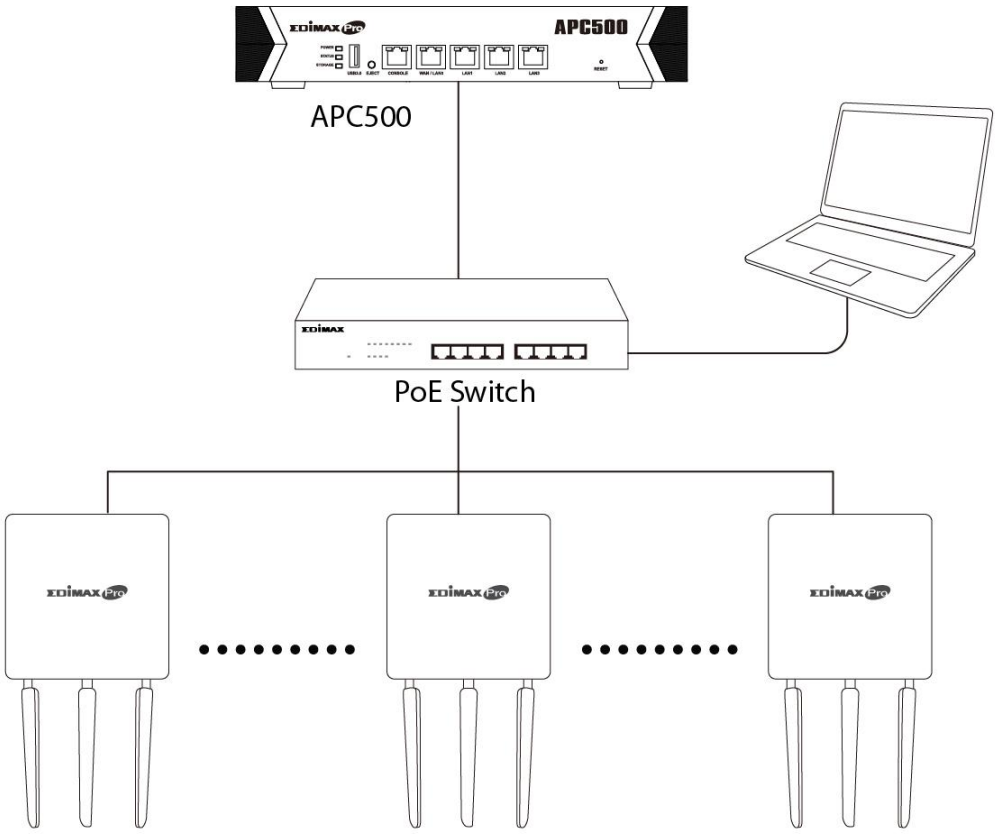
2. Ensure all APs are powered on and check LEDs.



3. Connect the APC500 to the PoE switch (LAN port) or gateway/router (WAN port) and connect the power supply.

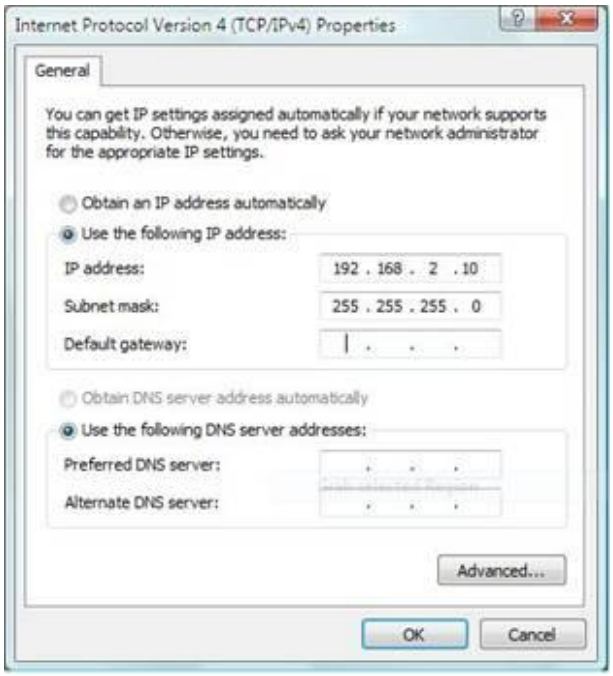


4. Connect a computer to the APC500 using an Ethernet cable.



5. Open a web browser and enter the AP Controller's IP address in the address field. The default IP address is **192.168.2.1**

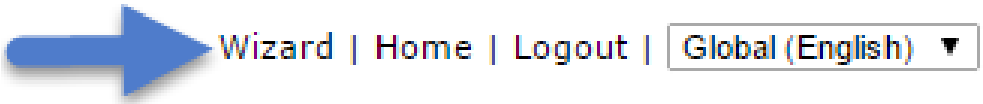
Your computer's IP address must be in the same subnet as the AP Controller. Refer to *V-1. Configuring your IP* ***Address for help.***



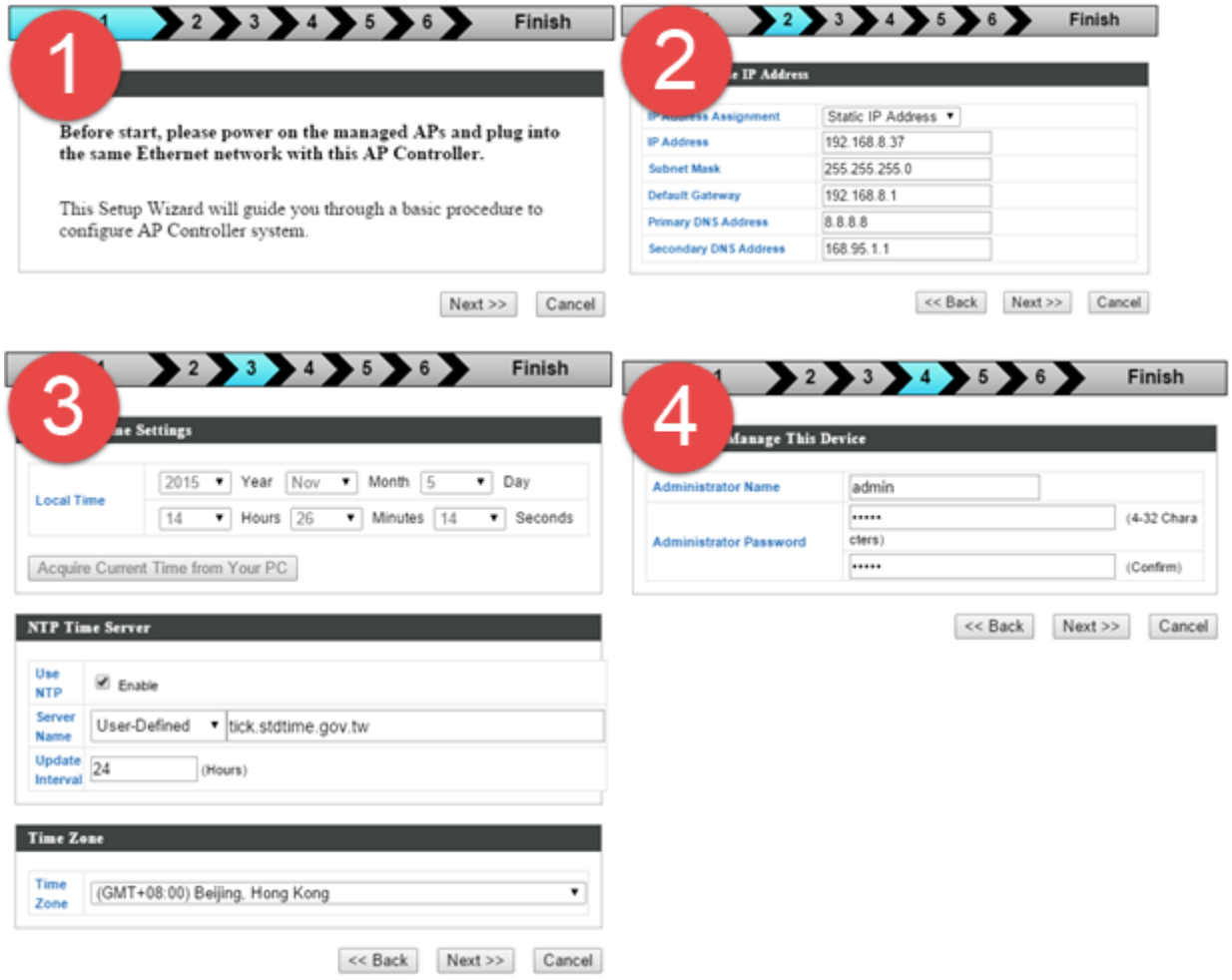
If you changed the AP Controller's IP address, or if your gateway/router uses a DHCP server, ensure you enter the correct IP address. Refer to your gateway/router's settings.

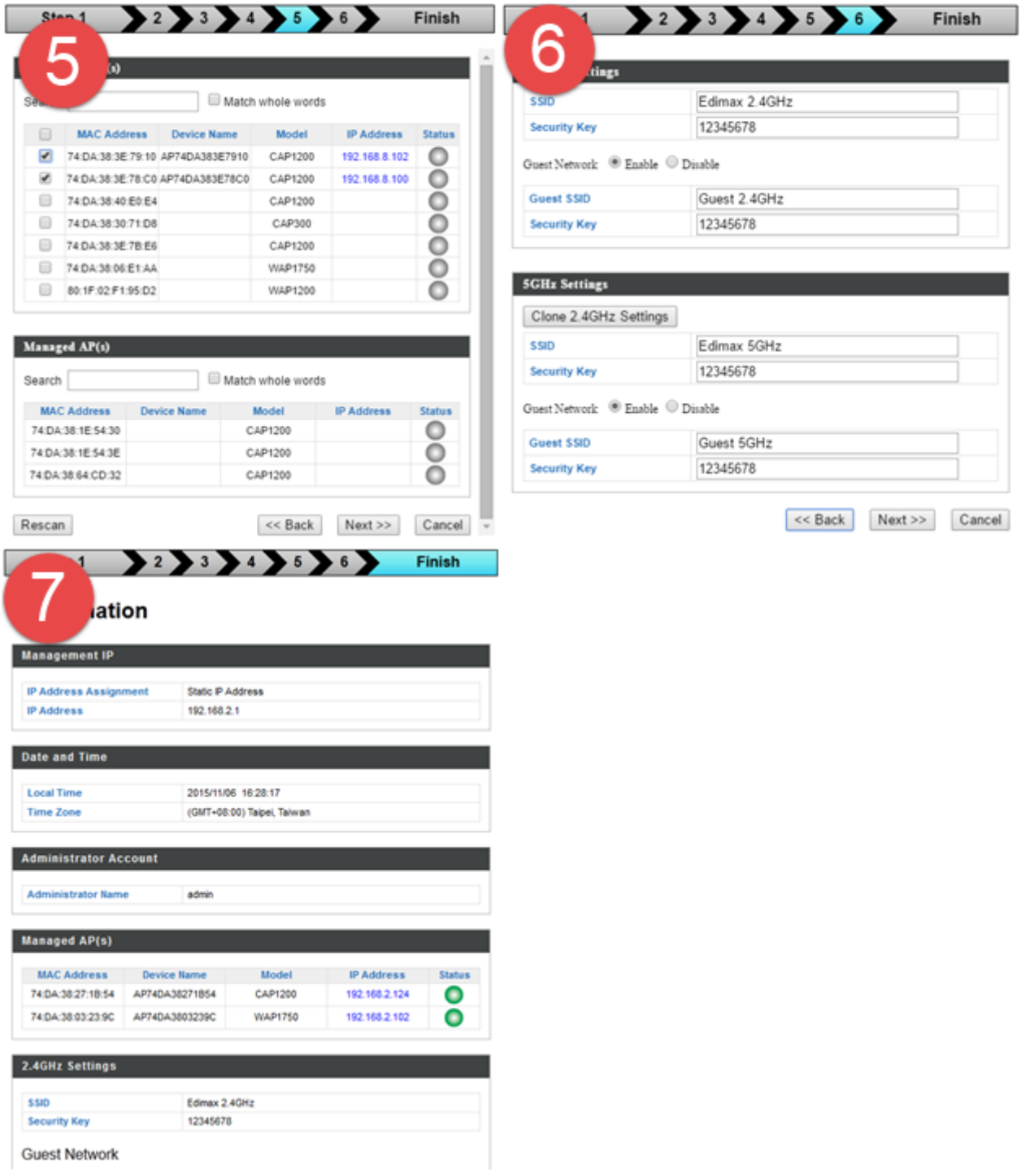
6. Enter the username & password to login. The default username & password are **admin** & **1234**.

7. You will arrive at the APC500 Dashboard. APC500 includes a wizard to quickly setup the LAN IP address, admin login & time/date settings for the APC500, as well as SSID & security for Managed APs. Click "Wizard" in the top right corner to begin.



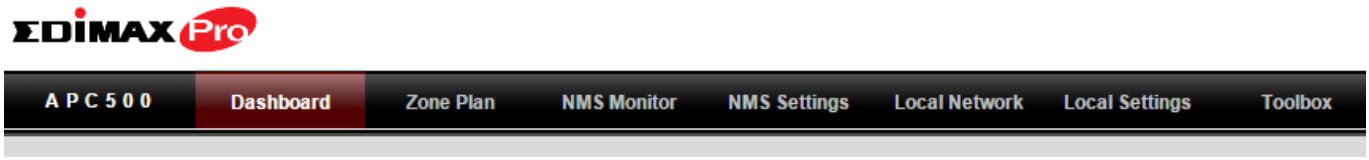
8. Follow the instructions on-screen to complete **Steps 1 - 7** and click **"Finish"** to save the settings. The wizard will help you set up LAN IP address, 2.4GHz & 5GHz SSID and security, administrator name & password, time & date settings and Managed APs.





If any of your Managed APs are not found during** Step 5 Select Free APs**, reset the Managed AP to its factory default settings. Refer to the AP's user manual for help.

9. Your APC500 Controller & Managed APs should be fully functional with all of the basic settings configured. Use the top menu to navigate around Edimax Pro NMS (Network Management Suite) settings.



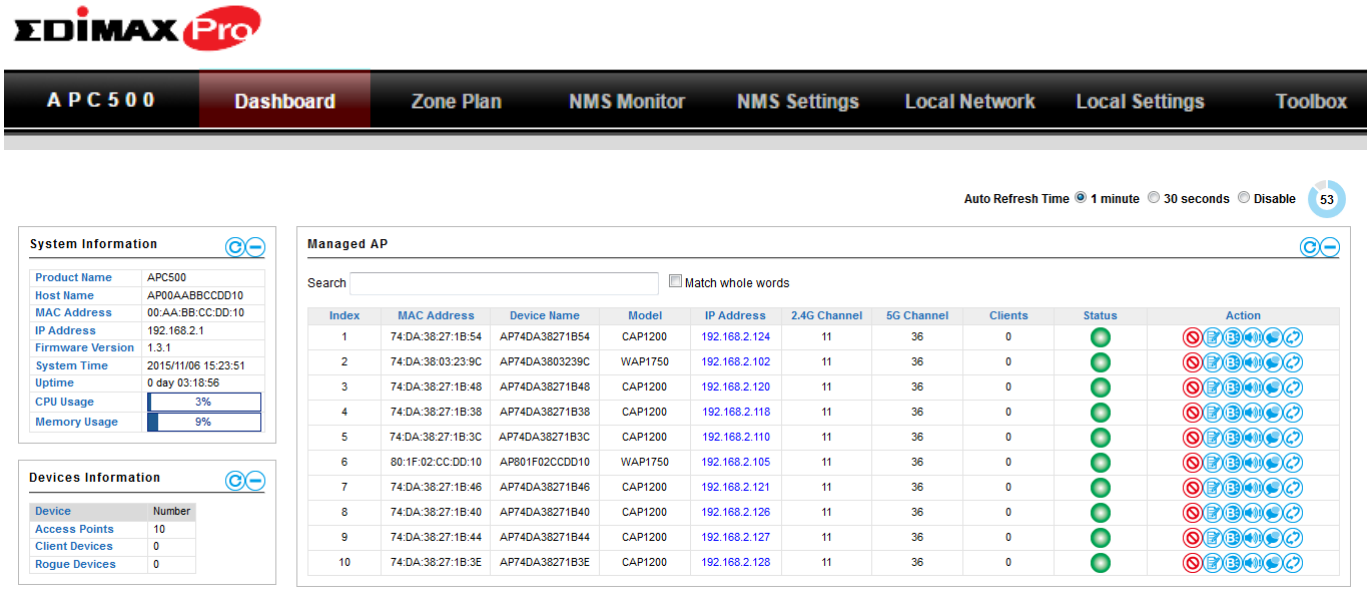
Use ***Dashboard, Zone Plan, NMS Monitor*** & ***NMS Settings*** to configure Managed APs.

Use ***Local Network & Local Settings*** to configure your APC500.

IV. Software Layout

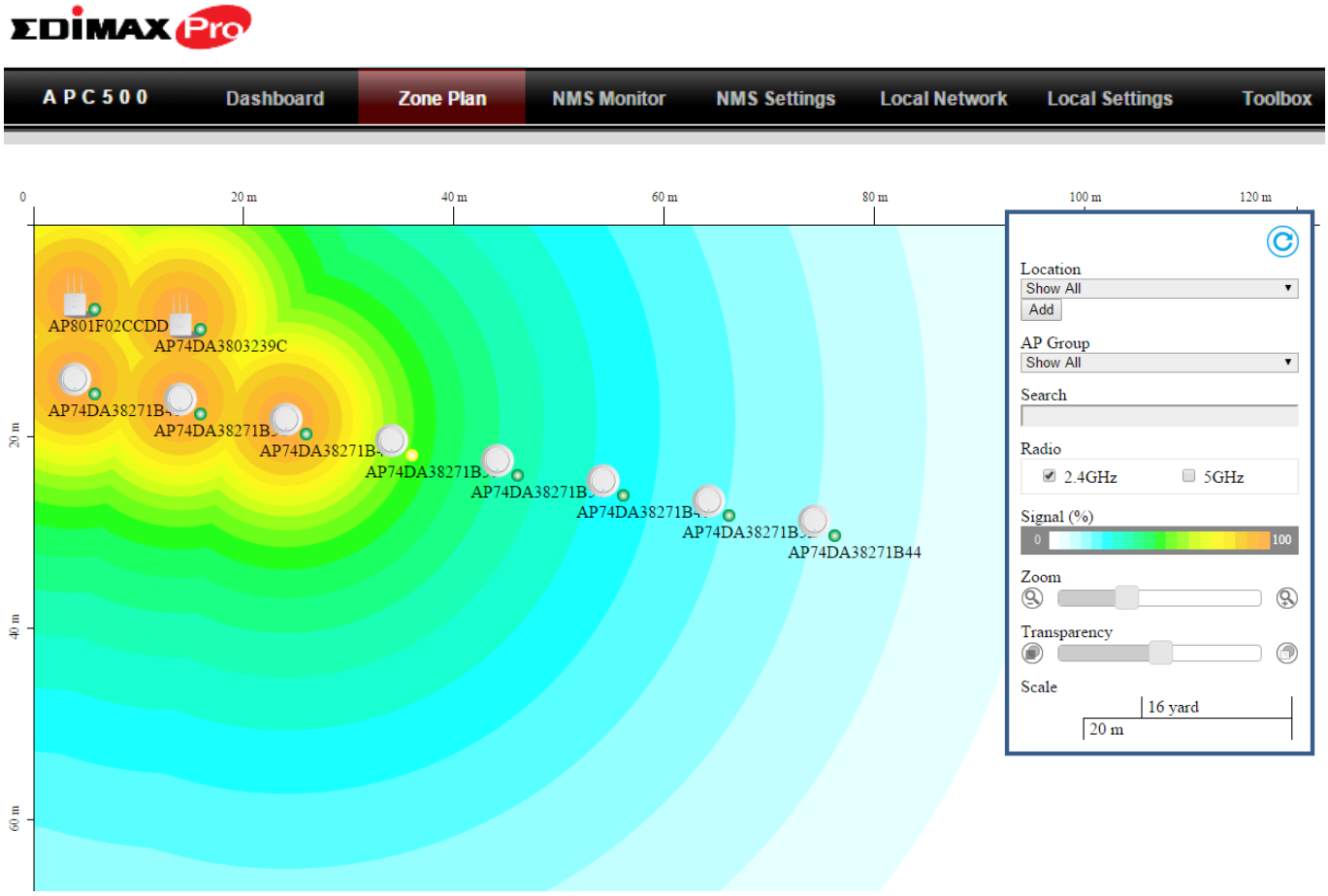
The top menu features 7 panels: *Dashboard, Zone Plan, NMS Monitor, NMS Settings, Local Network, Local Settings & Toolbox.*

Dashboard



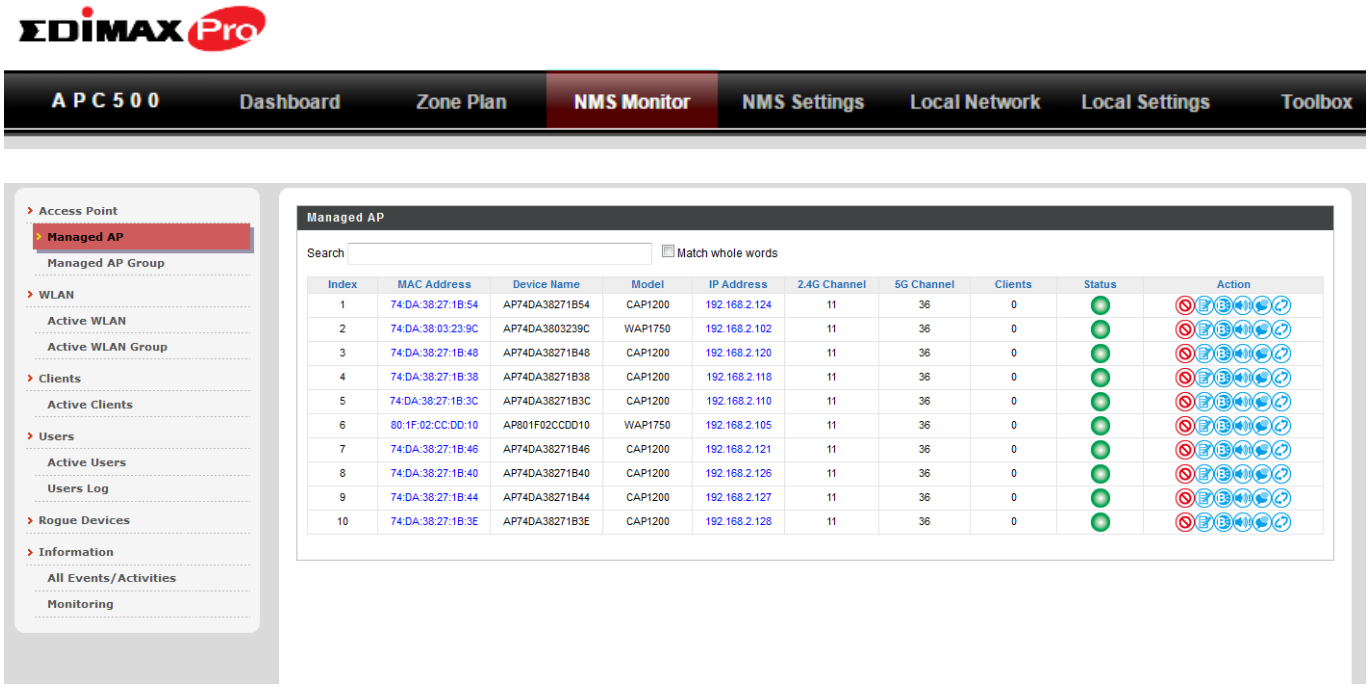
The **Dashboard** panel displays an overview of your network and key system information, with quick links to access configuration options for Managed APs and Managed AP groups. Each panel can be refreshed, collapsed or moved according to your preference.

Zone Plan



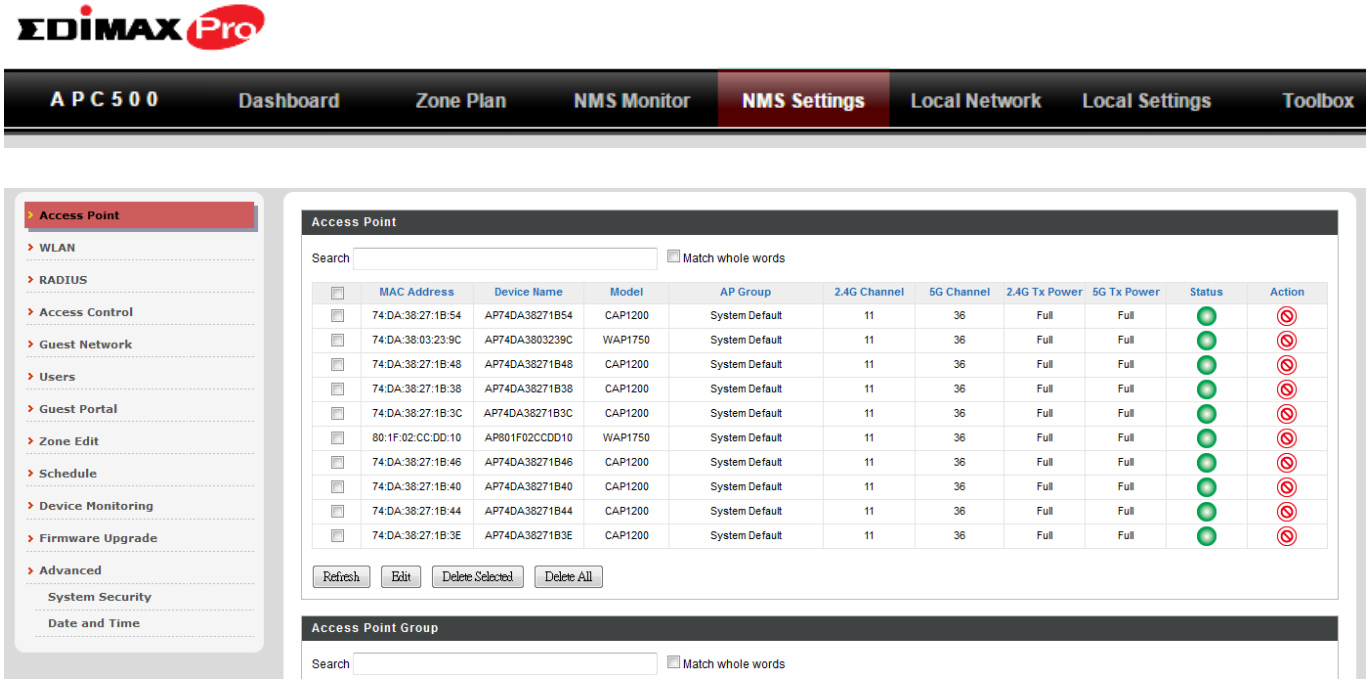
Zone Plan displays a customizable live map of Managed APs for a visual representation of your network coverage. Each AP icon can be moved around the map, and a background image can be uploaded for user-defined location profiles using **NMS Settings → Zone Edit**. Options can be configured using the menu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

NMS Monitor



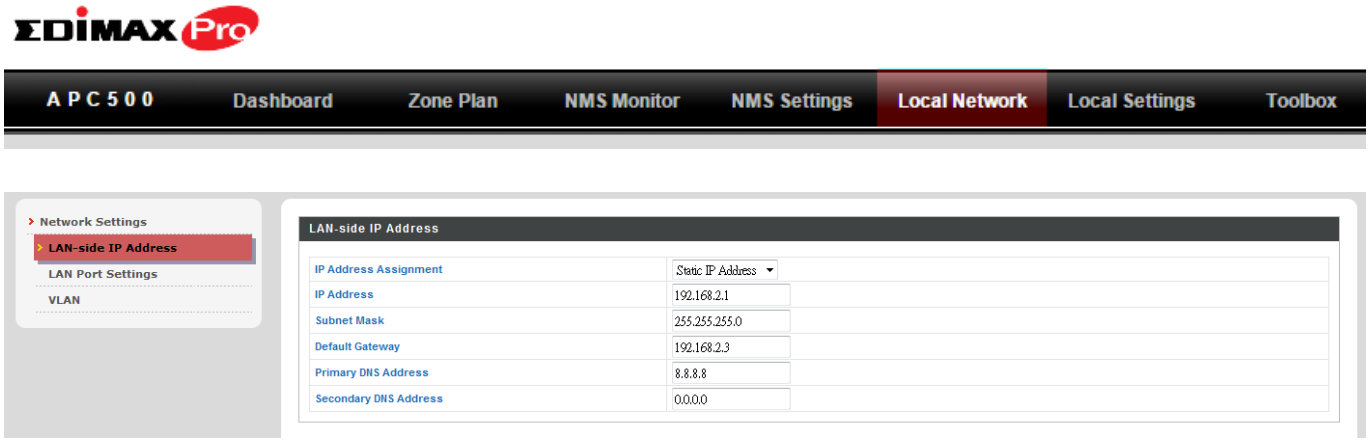
The **NMS Monitor** panel provides more detailed monitoring information about the AP Array than found on the Dashboard, grouped according to categories in the menu down the left side.

NMS Settings



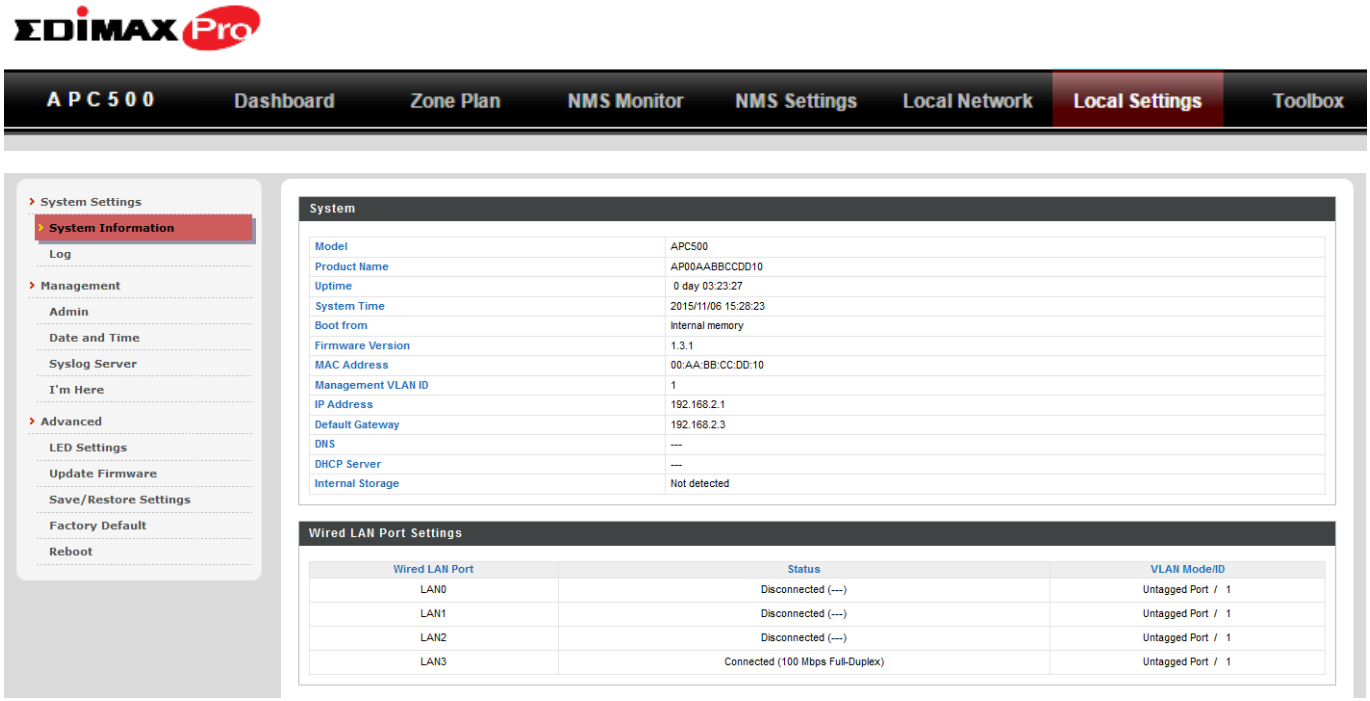
NMS Settings provides extensive configuration options for the AP Array. You can manage each access point, assign access points into groups, manage WLAN, RADIUS, guest network, guest network, users and scheduling settings as well as upgrade firmware across multiple access points. The Zone Plan can also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

Local Network



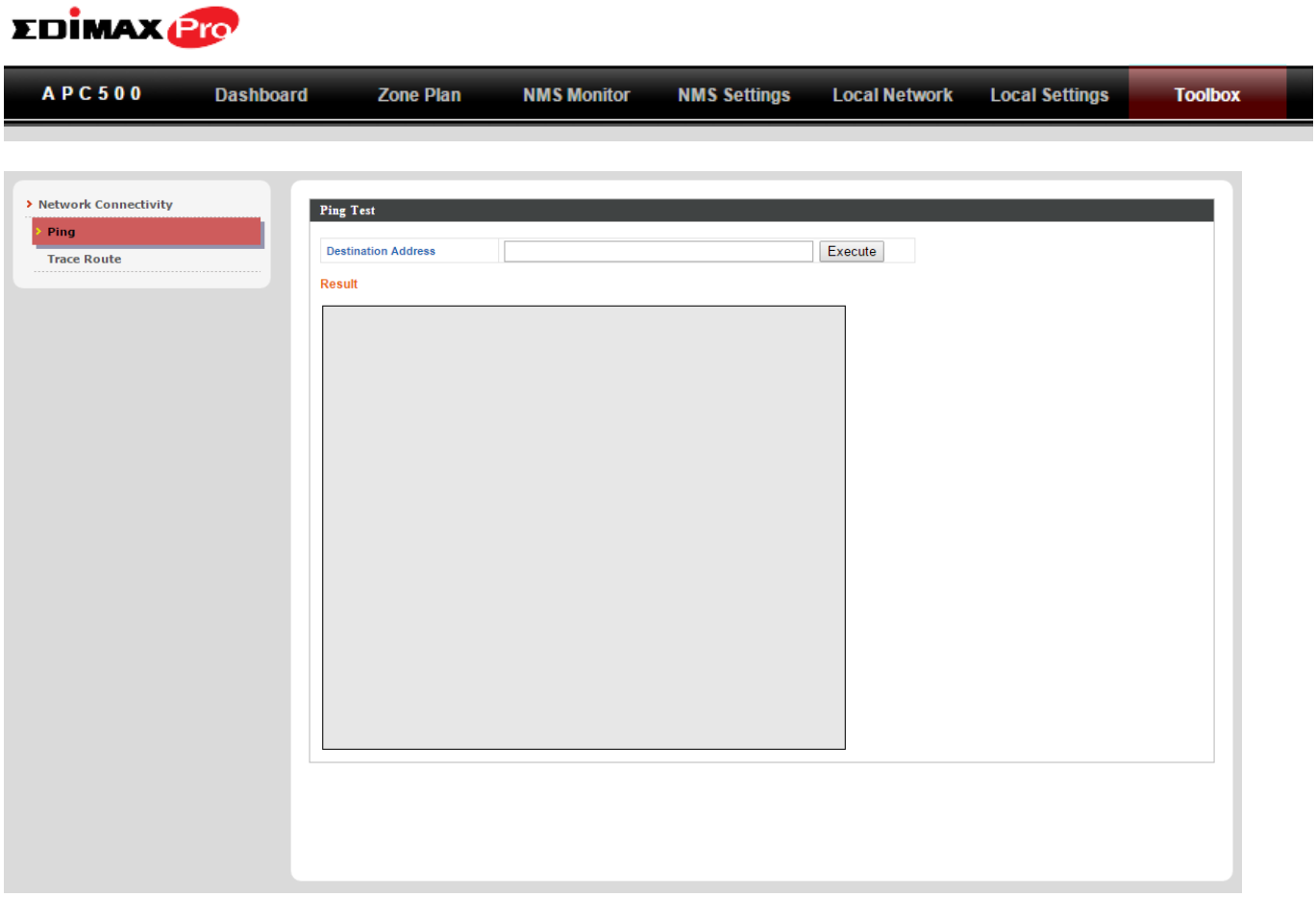
Local Network settings are for your AP Controller. You can configure the IP address and DHCP server of the AP Controller in addition to LAN Port and VLAN settings.

Local Settings



Local Settings are for your AP Controller. You can view basic system settings 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 two network diagnostic tools: *ping* and *traceroute*.

V. Features

Descriptions of the functions of each main panel *Dashboard, Zone Plan, NMS Monitor, NMS Settings, Local Network, Local Settings & Toolbox* can be found below. When using Edimax NMS, click "Apply" to save changes:

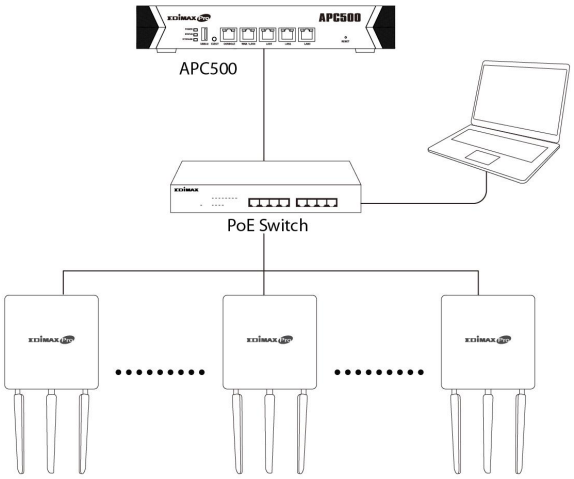
Screenshots displayed are examples. The information shown on your screen will vary depending on your configuration.

V-1. LOGIN, LOGOUT & RESTART

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

LOGIN

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 **192.168.2.1**

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

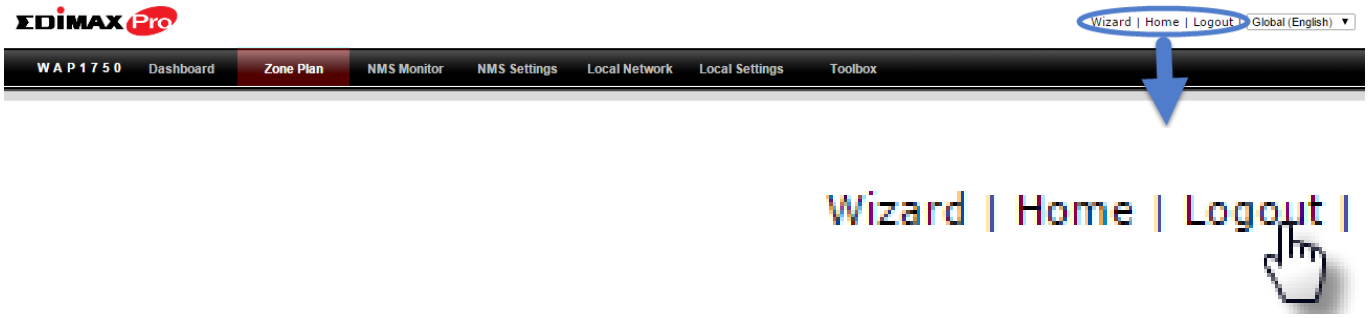
If you changed the AP Controller's IP address, or if your gateway/router uses a DHCP server, ensure you enter the correct IP address. Refer to your gateway/router's settings.

If 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.

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

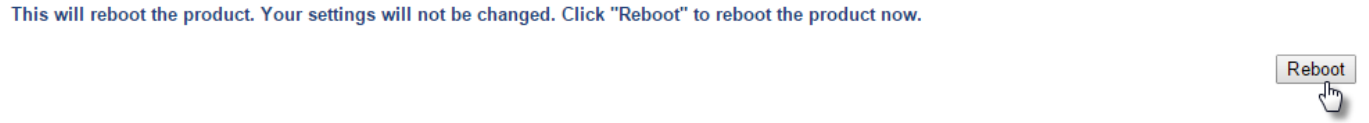
LOGOUT

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



RESTART

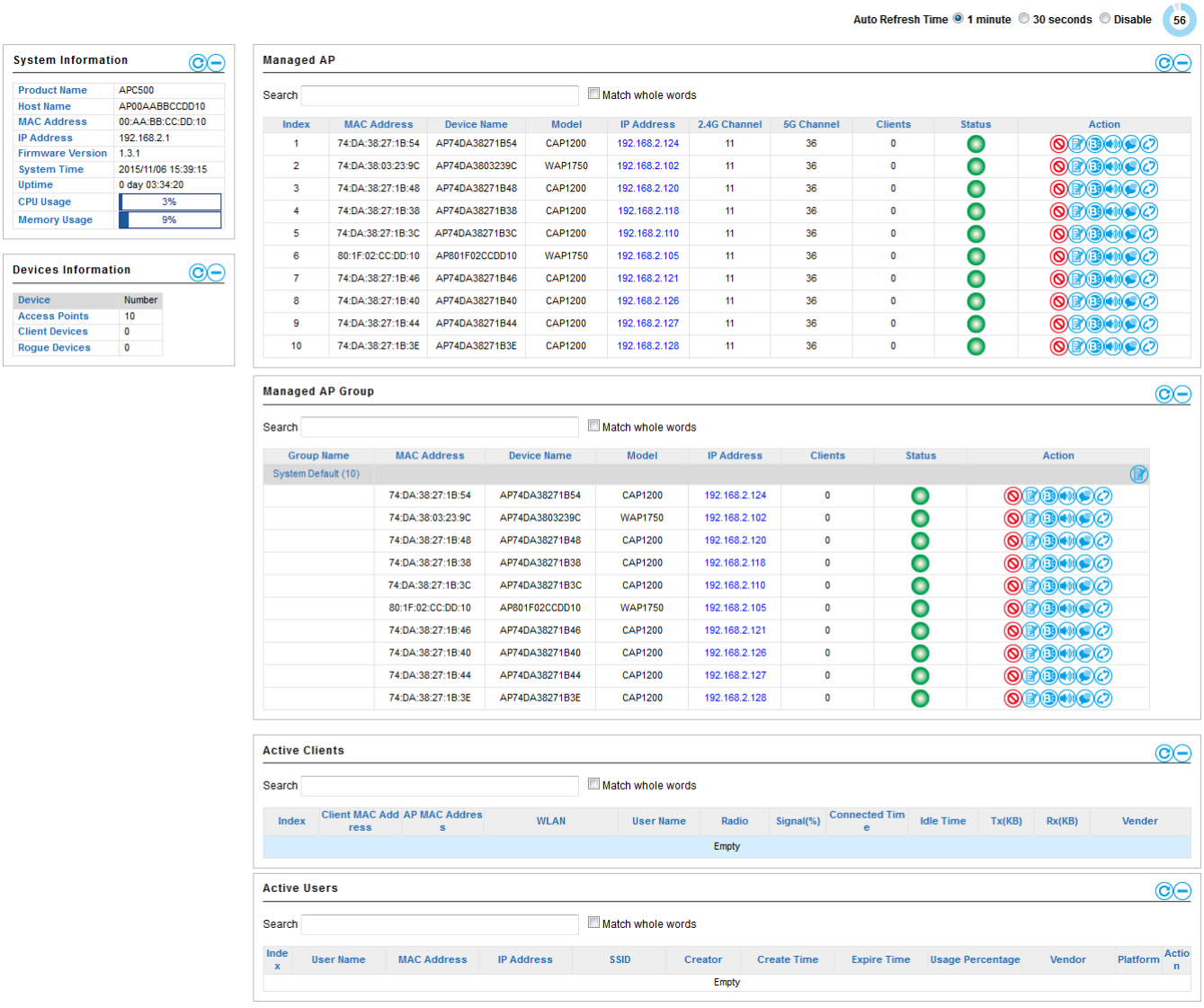
You can restart your AP Controller or any Managed AP using Edimax NMS. To restart your AP Controller go to **Local Settings → Advanced → Reboot** and click "Reboot".



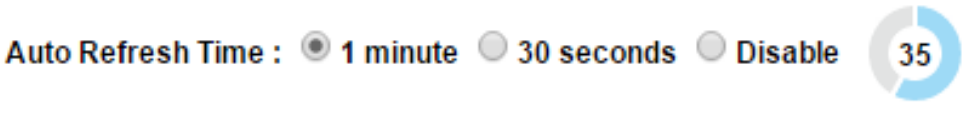
To restart Managed APs click the Restart icon for the specified AP on the Dashboard:

V-2. DASHBOARD

The dashboard displays an overview of your AP array:

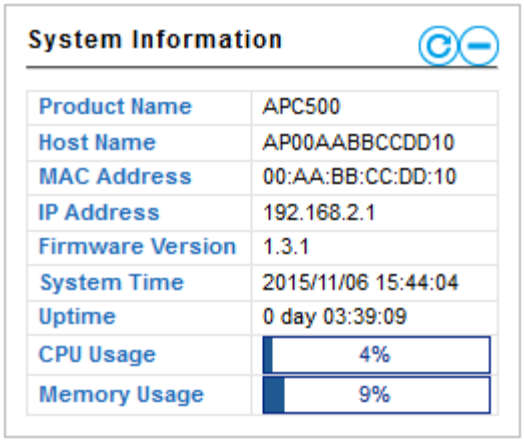


Use the blue icons above to refresh or collapse each panel in the dashboard. Click and drag to move a panel to suit your preference. You can set the dashboard to auto-refresh every 1 minute, 30 seconds or disable auto-refresh:



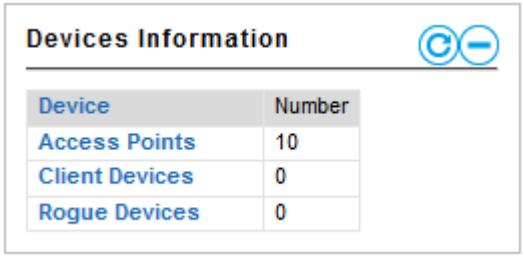
V-2-1. System Information

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), CPU Usage & Memory Usage.*



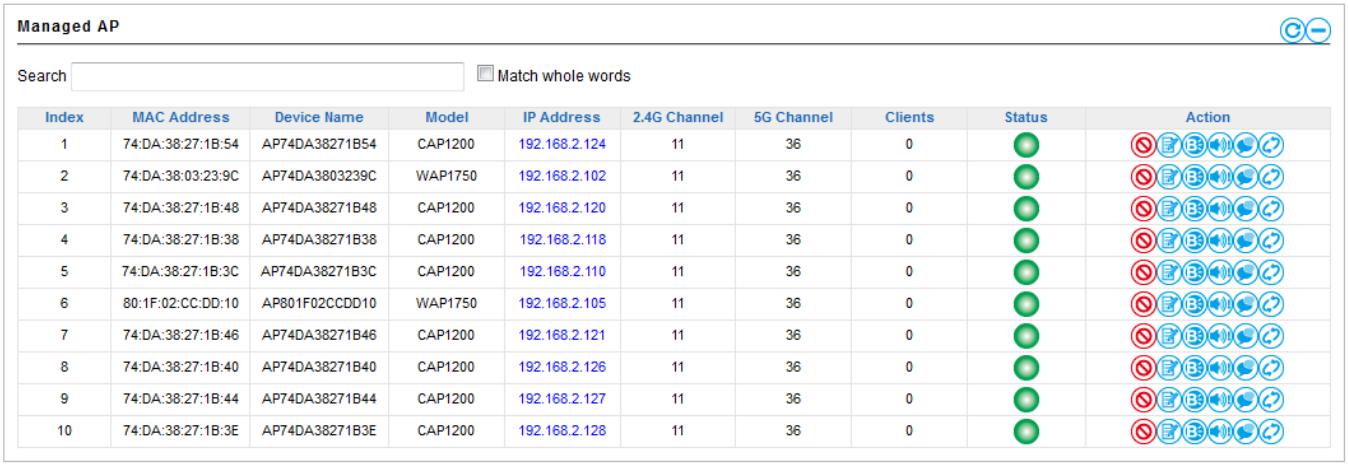
V-2-2. Devices Information

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



V-2-3. Managed AP

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).*



Index	MAC Address	Device Name	Model	IP Address	2.4G Channel	5G Channel	Clients	Status	Action
1	74:DA:38:27:1B:54	AP74DA38271B54	CAP1200	192.168.2.124	11	36	0		
2	74:DA:38:03:23:9C	AP74DA3803239C	WAP1750	192.168.2.102	11	36	0		
3	74:DA:38:27:1B:48	AP74DA38271B48	CAP1200	192.168.2.120	11	36	0		
4	74:DA:38:27:1B:38	AP74DA38271B38	CAP1200	192.168.2.118	11	36	0		
5	74:DA:38:27:1B:3C	AP74DA38271B3C	CAP1200	192.168.2.110	11	36	0		
6	80:1F:02:CC:DD:10	AP801F02CCDD10	WAP1750	192.168.2.105	11	36	0		
7	74:DA:38:27:1B:46	AP74DA38271B46	CAP1200	192.168.2.121	11	36	0		
8	74:DA:38:27:1B:40	AP74DA38271B40	CAP1200	192.168.2.126	11	36	0		
9	74:DA:38:27:1B:44	AP74DA38271B44	CAP1200	192.168.2.127	11	36	0		
10	74:DA:38:27:1B:3E	AP74DA38271B3E	CAP1200	192.168.2.128	11	36	0		

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 **V-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.

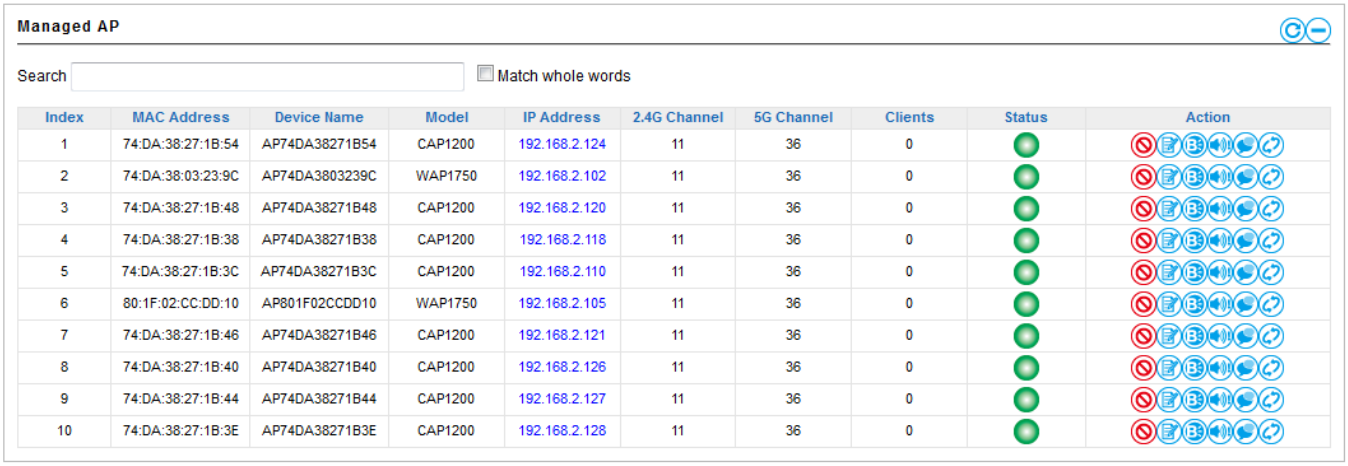
5. **Network Connectivity**
   Go to the "Network Connectivity" panel to perform a ping or traceroute.

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

V-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, 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 **V-5-1. Access Point**).



Index	MAC Address	Device Name	Model	IP Address	2.4G Channel	5G Channel	Clients	Status	Action
1	74:DA:38:27:1B:54	AP74DA38271B54	CAP1200	192.168.2.124	11	36	0		
2	74:DA:38:03:23:9C	AP74DA3803239C	WAP1750	192.168.2.102	11	36	0		
3	74:DA:38:27:1B:48	AP74DA38271B48	CAP1200	192.168.2.120	11	36	0		
4	74:DA:38:27:1B:38	AP74DA38271B38	CAP1200	192.168.2.118	11	36	0		
5	74:DA:38:27:1B:3C	AP74DA38271B3C	CAP1200	192.168.2.110	11	36	0		
6	80:1F:02:CC:DD:10	AP801F02CCDD10	WAP1750	192.168.2.105	11	36	0		
7	74:DA:38:27:1B:46	AP74DA38271B46	CAP1200	192.168.2.121	11	36	0		
8	74:DA:38:27:1B:40	AP74DA38271B40	CAP1200	192.168.2.126	11	36	0		
9	74:DA:38:27:1B:44	AP74DA38271B44	CAP1200	192.168.2.127	11	36	0		
10	74:DA:38:27:1B:3E	AP74DA38271B3E	CAP1200	192.168.2.128	11	36	0		

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 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 **V-5-1. Access Point**)*

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

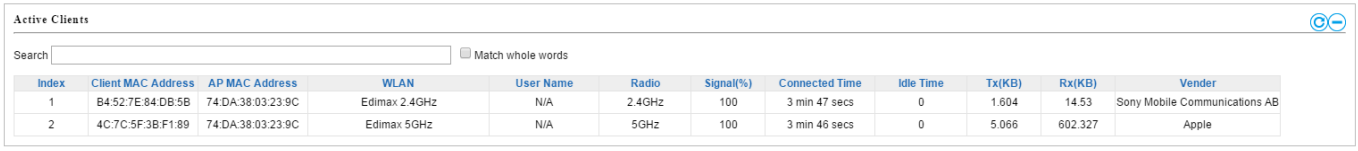
4. **Buzzer**
   The Managed AP's buzzer will sound temporarily to help identify & locate access points.

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

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

V-2-5. Active Clients

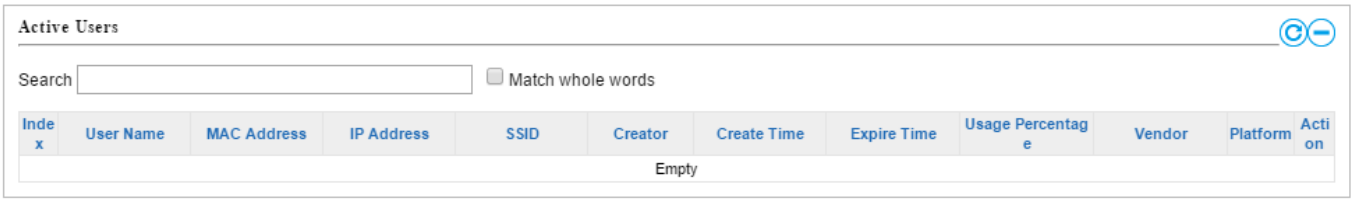
Active Clients displays information about each client in the local network: *Index (reference number), Client MAC Address, AP MAC Address, WLAN, User Name, Radio (frequency), Signal Strength, Connected Time, Idle Time, Tx & Rx (data transmitted and received) and Vendor of the client device.*



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

V-2-6. Active Users

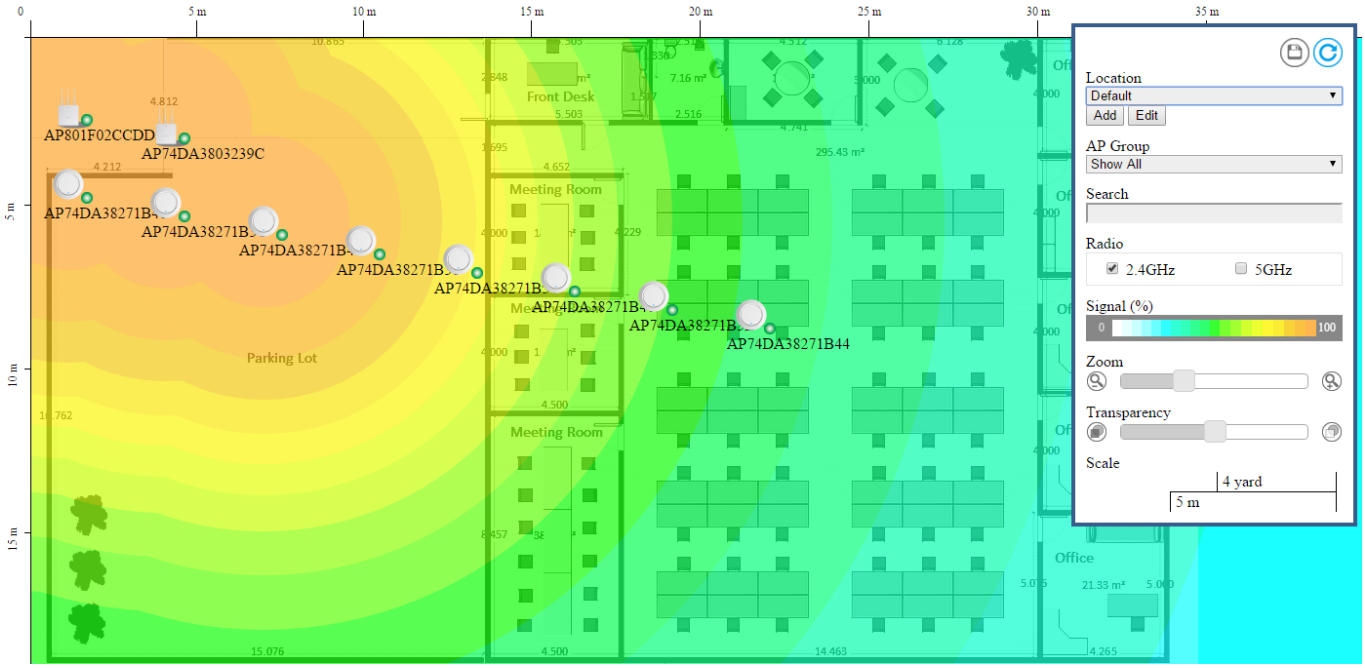
Active Users displays information about each user in the local network via guest portals: *Index (reference number), User Name, MAC Address, IP Address, SSID, Creator, Create Time, Expire Time, Usage Percentage, Vendor & Platform of the user device.*



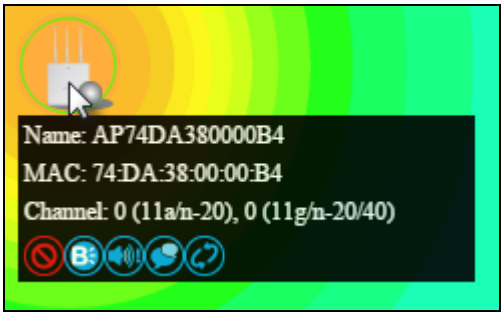
The search function can be used to locate a specific client. Type in the search box and the list will update:

V-3. ZONE PLAN

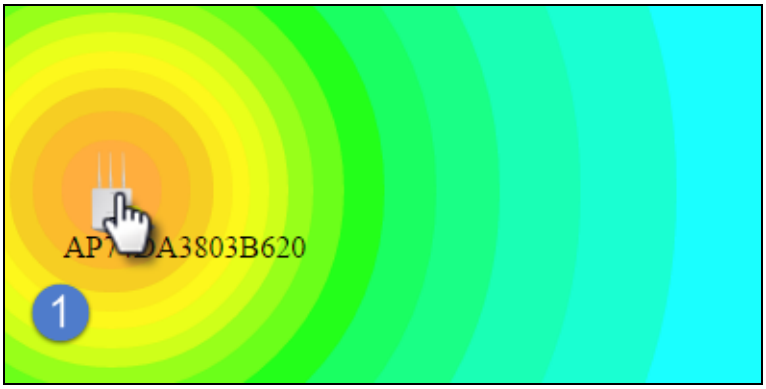
The Zone Plan can be fully customized to match your network environment. You can move the AP icons and select different location images (upload location images in **NMS Settings → Zone Edit**) to create a visual map of your AP array.

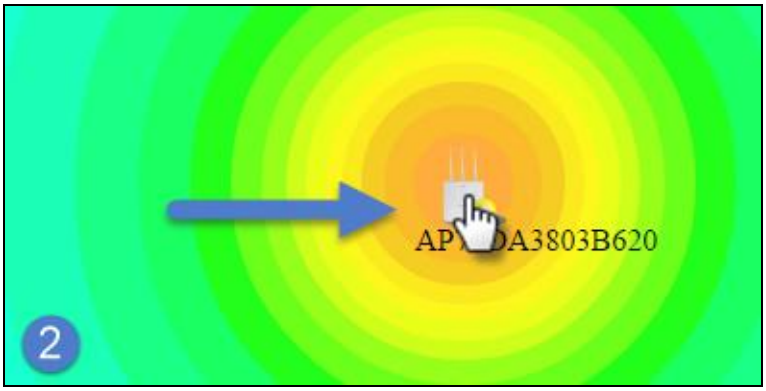


Use the menu on the right side to make adjustments and mouse-over an AP icon in the zone map to see more information. Click an AP icon in the zone map to select it and display action icons:



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:





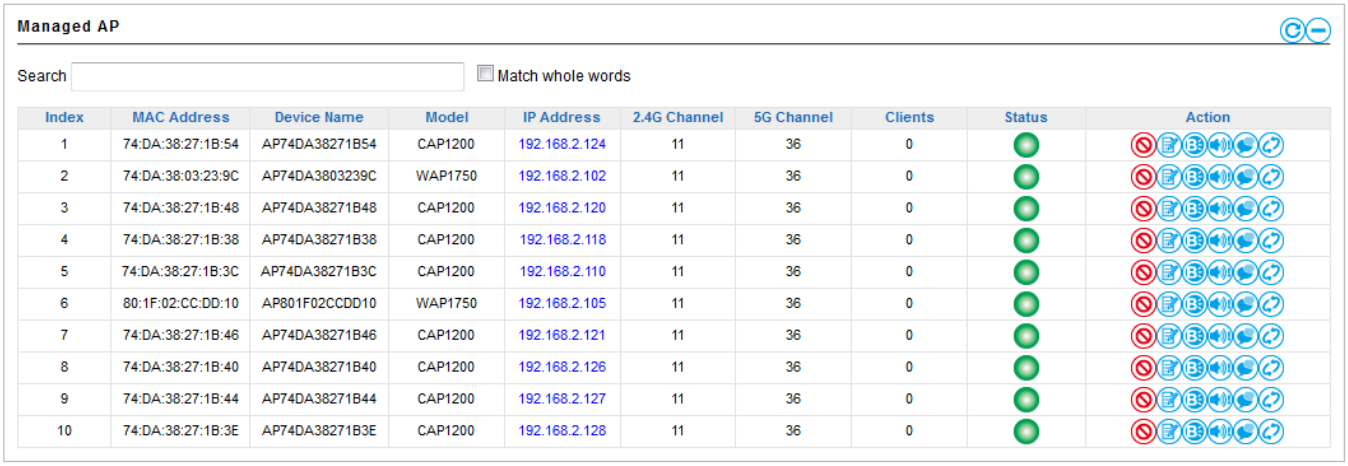
Location	Select a pre-defined location from the drop down menu. When you upload a location image in **NMS Settings → Zone Edit**, it will be available for selection here.
AP Group	You can select an AP Group to display in the zone map. Edit AP Groups in **NMS Settings → Access Point.**
Search	Use the search box to quickly locate an AP.
Radio	Use the checkboxes to display APs according to 2.4GHz or 5GHz wireless radio frequency.
Signal	Signal strength key for the signal strength display around each AP in the zone map.
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.

V-4. NMS MONITOR

V-4-1. Access Point

V-4-1-1. Managed AP

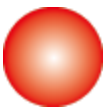
Displays information about each Managed AP in the local network: *Index (reference number), MAC Address, Device Name, Model, IP Address, 2.4GHz & 5GHz Wireless Channel Number, No. of Clients connected to each access point, and Status (connected, connecting or disconnected).*



Index	MAC Address	Device Name	Model	IP Address	2.4G Channel	5G Channel	Clients	Status	Action
1	74:DA:38:27:1B:54	AP74DA38271B54	CAP1200	192.168.2.124	11	36	0		
2	74:DA:38:03:23:9C	AP74DA3803239C	WAP1750	192.168.2.102	11	36	0		
3	74:DA:38:27:1B:48	AP74DA38271B48	CAP1200	192.168.2.120	11	36	0		
4	74:DA:38:27:1B:38	AP74DA38271B38	CAP1200	192.168.2.118	11	36	0		
5	74:DA:38:27:1B:3C	AP74DA38271B3C	CAP1200	192.168.2.110	11	36	0		
6	80:1F:02:CC:DD:10	AP801F02CCDD10	WAP1750	192.168.2.105	11	36	0		
7	74:DA:38:27:1B:46	AP74DA38271B46	CAP1200	192.168.2.121	11	36	0		
8	74:DA:38:27:1B:40	AP74DA38271B40	CAP1200	192.168.2.126	11	36	0		
9	74:DA:38:27:1B:44	AP74DA38271B44	CAP1200	192.168.2.127	11	36	0		
10	74:DA:38:27:1B:3E	AP74DA38271B3E	CAP1200	192.168.2.128	11	36	0		

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 **V-5-12-1.***

		Or Incompatible NMS Version	***System Security***). Access points must use the same version of Edimax NMS: the managed AP will not be able to make configurations. *Please use the AP Controller's firmware upgrade function (refer to* ***V-5-11. 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. *Refer to* ***V-5-1. Access Point: Auto Approval****. Note: 32 Managed APs are supported. Additional APs will display 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.

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

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

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

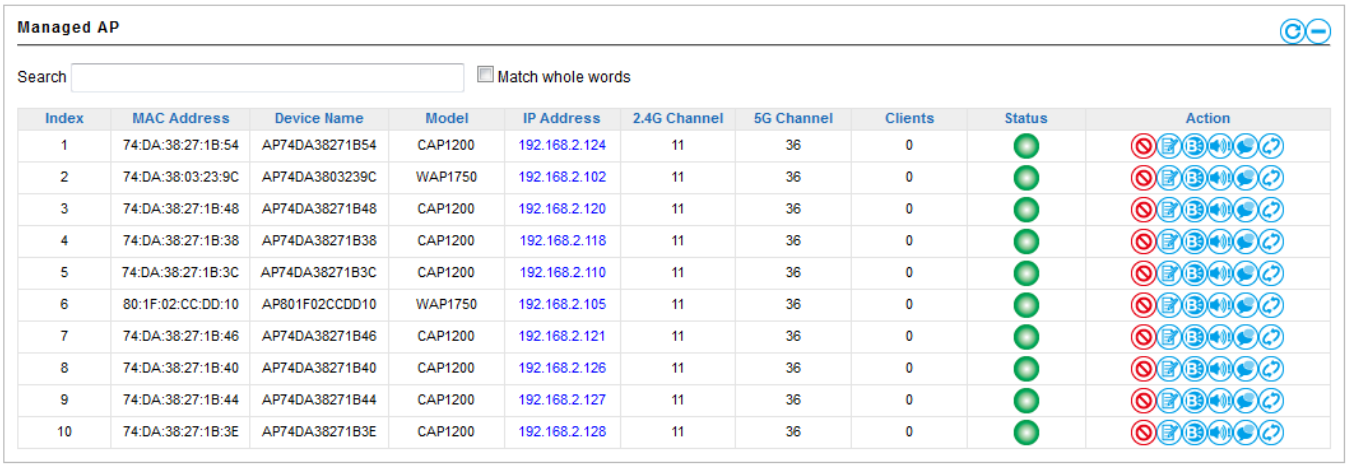
4. **Network Connectivity**
   Go to the "Network Connectivity" panel to perform a ping or traceroute.

5. **Restart**
   Restarts the Managed AP.

V-4-1-2. Managed AP Group

Managed APs can be grouped according to your requirements. 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).*

To edit Managed AP Groups go to **NMS Settings → Access Point** (refer to **V-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), *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 V-4-1-1. Managed AP:** *Status Icons* for full descriptions.

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

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

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

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

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

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

7. **Restart**
   Restarts the Managed AP.

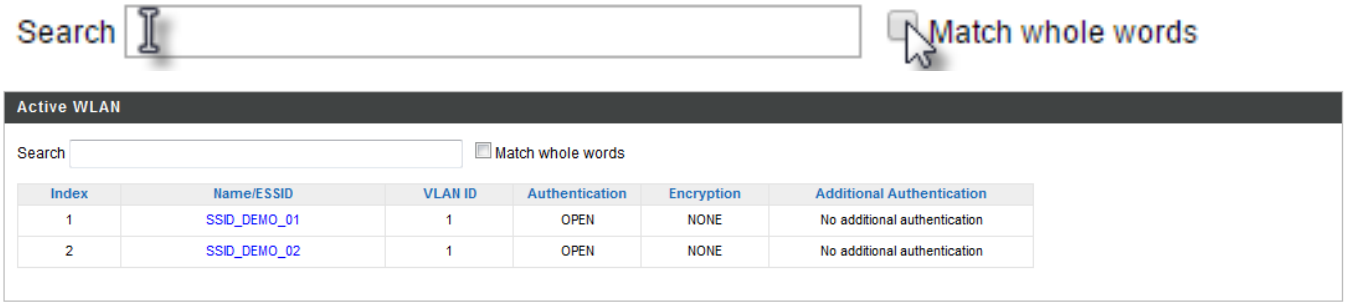
V-4-2. WLAN

V-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**.

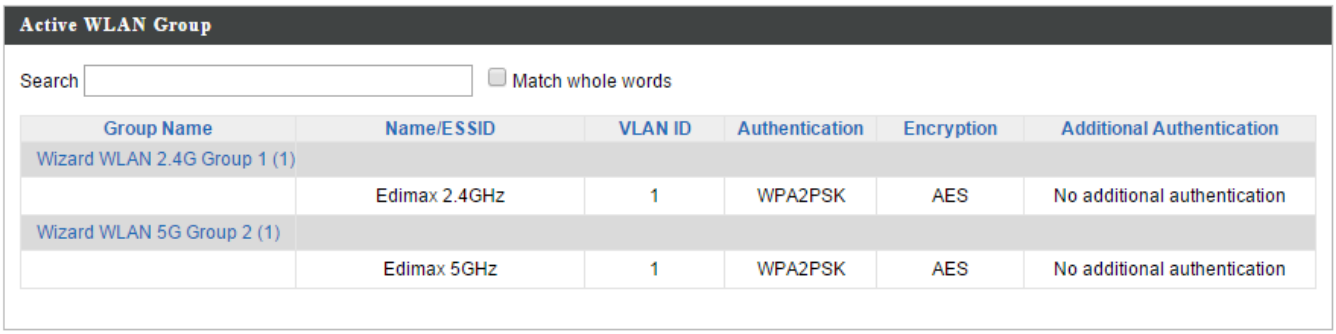
The search function can be used to locate a specific SSID. Type in the search box and the list will update:



V-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:



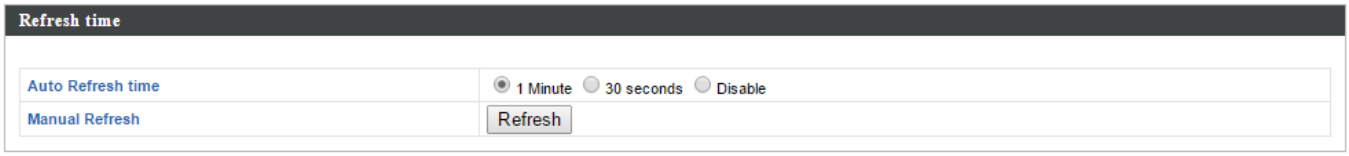
V-4-3. Clients

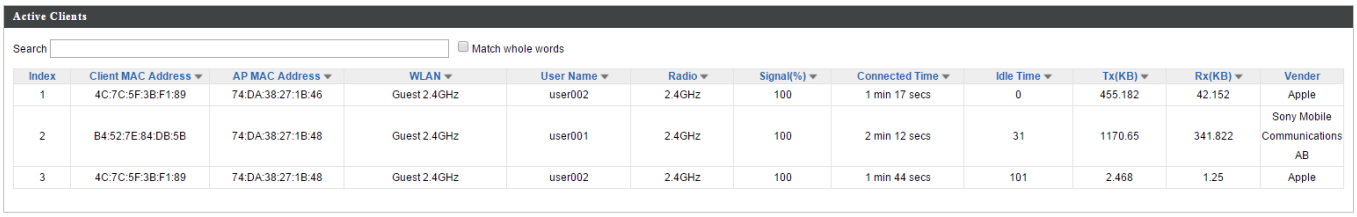
V-4-3-1. Active Clients

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

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:

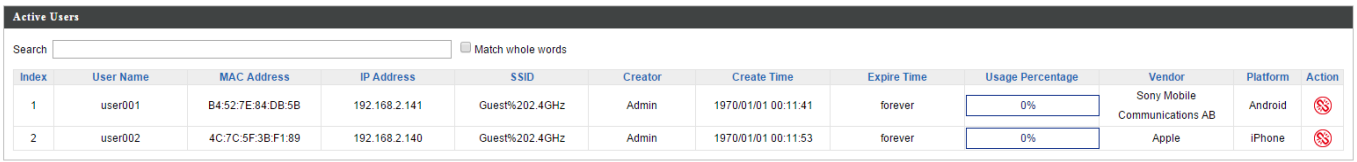




V-4-4. Users

V-4-4-1. Active Users

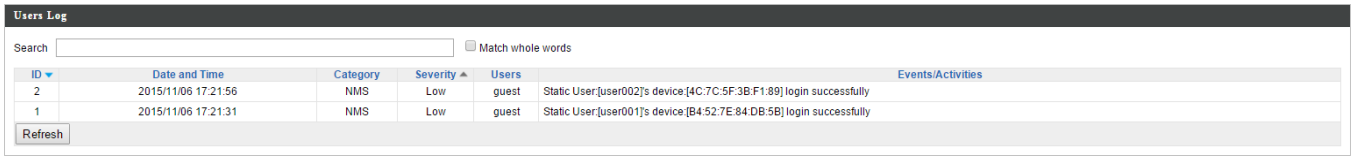
Displays information about each user in the local network via guest portals: *Index (reference number), User Name, MAC Address, IP Address, SSID, Creator, Create Time, Expire Time, Usage Percentage, Vendor & Platform of the user device.*



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

V-4-4-2. Users Log

Displays a detailed information log of users and activity on the network via guest portals: *ID, Date and Time of entry, Category of entry, Severity, Users, Event/Activities details.*



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

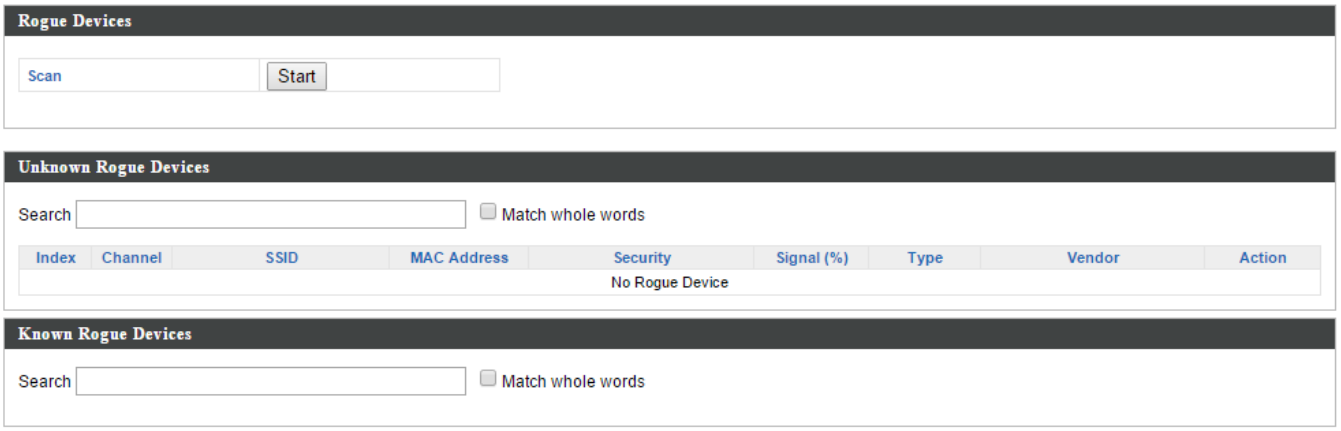
V-4-5. Rogue Devices

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

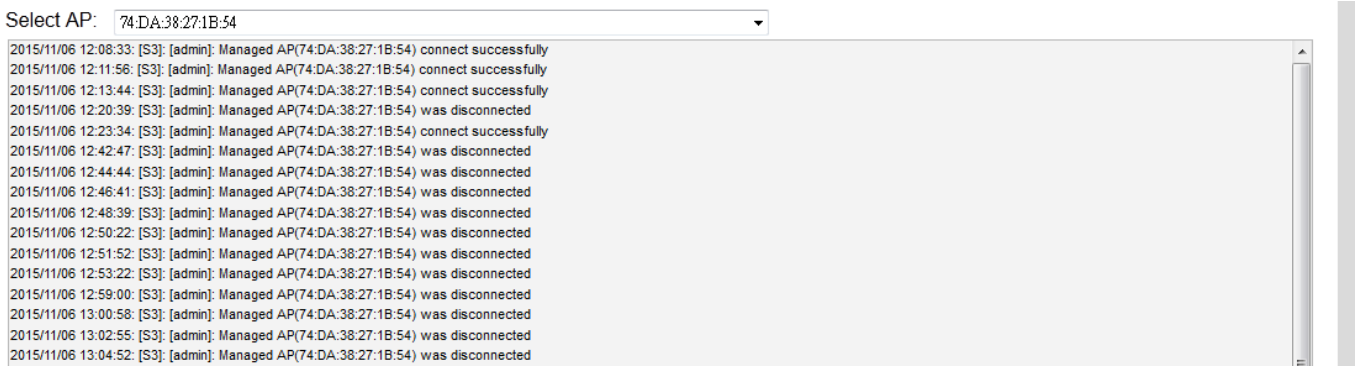
The search function can be used to locate a known rogue device. Type in the search box and the list will update:



V-4-6. Information

V-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.

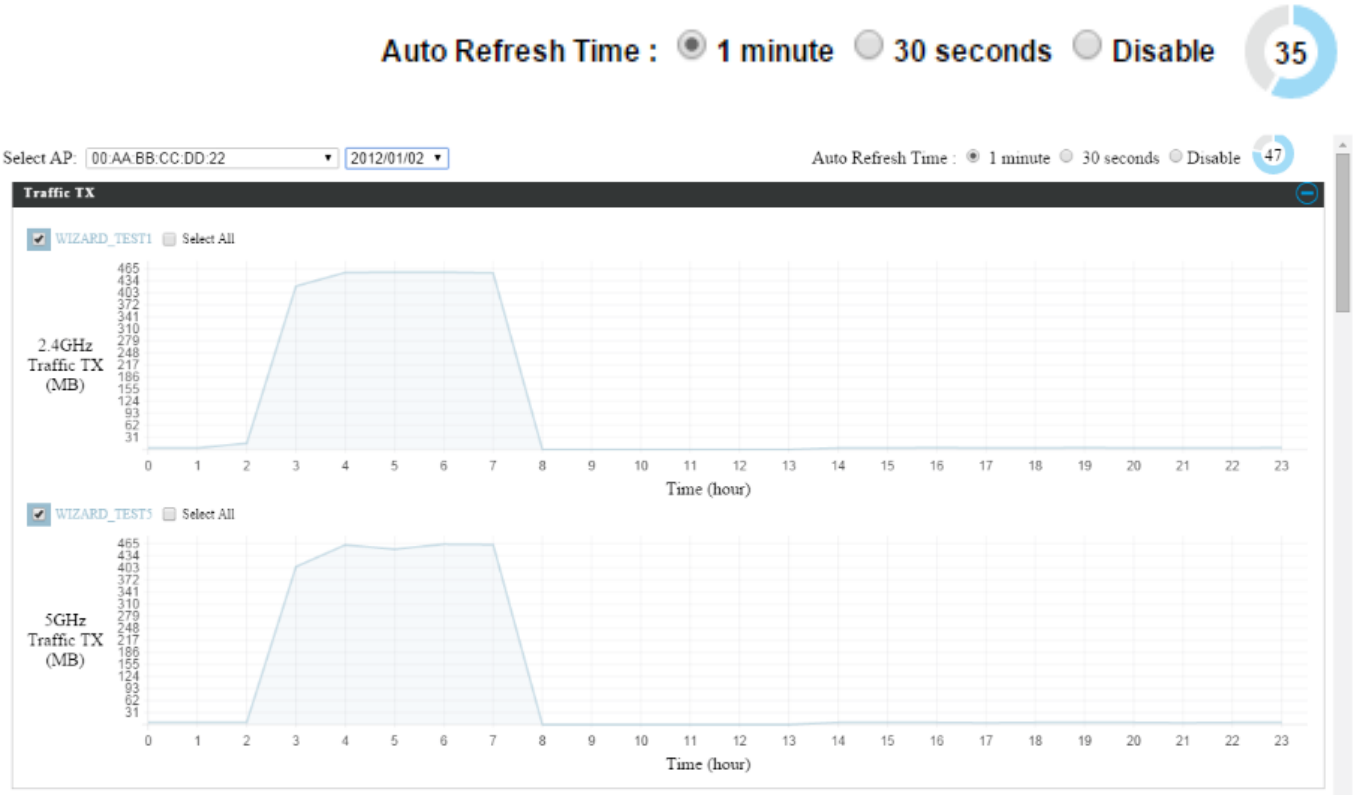


V-4-6-2. Monitoring

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:

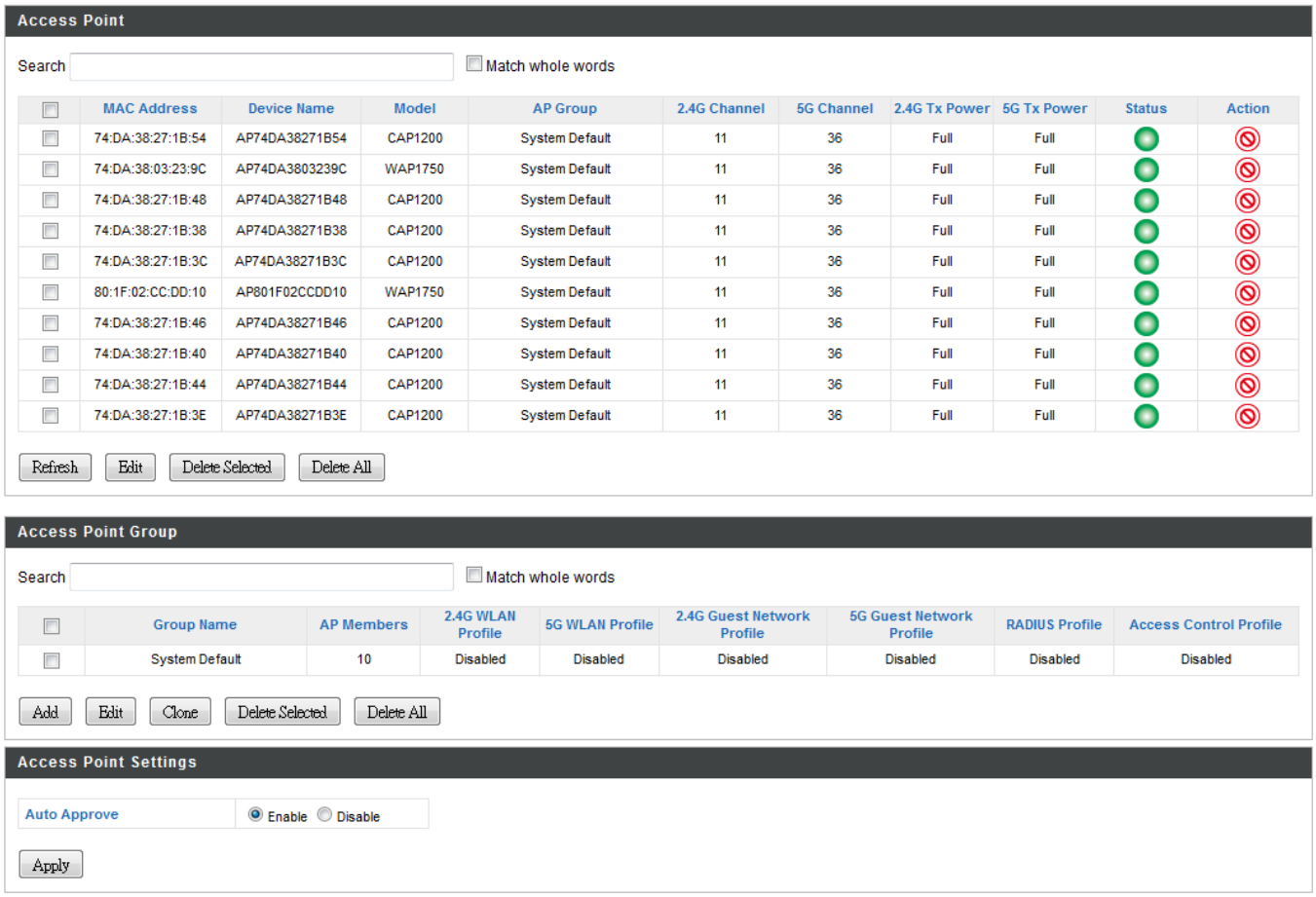


V-5. NMS Settings

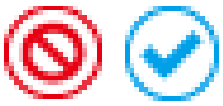
V-5-1. Access Point

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 V-4-1-1. Managed AP:** *Status Icons* 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:

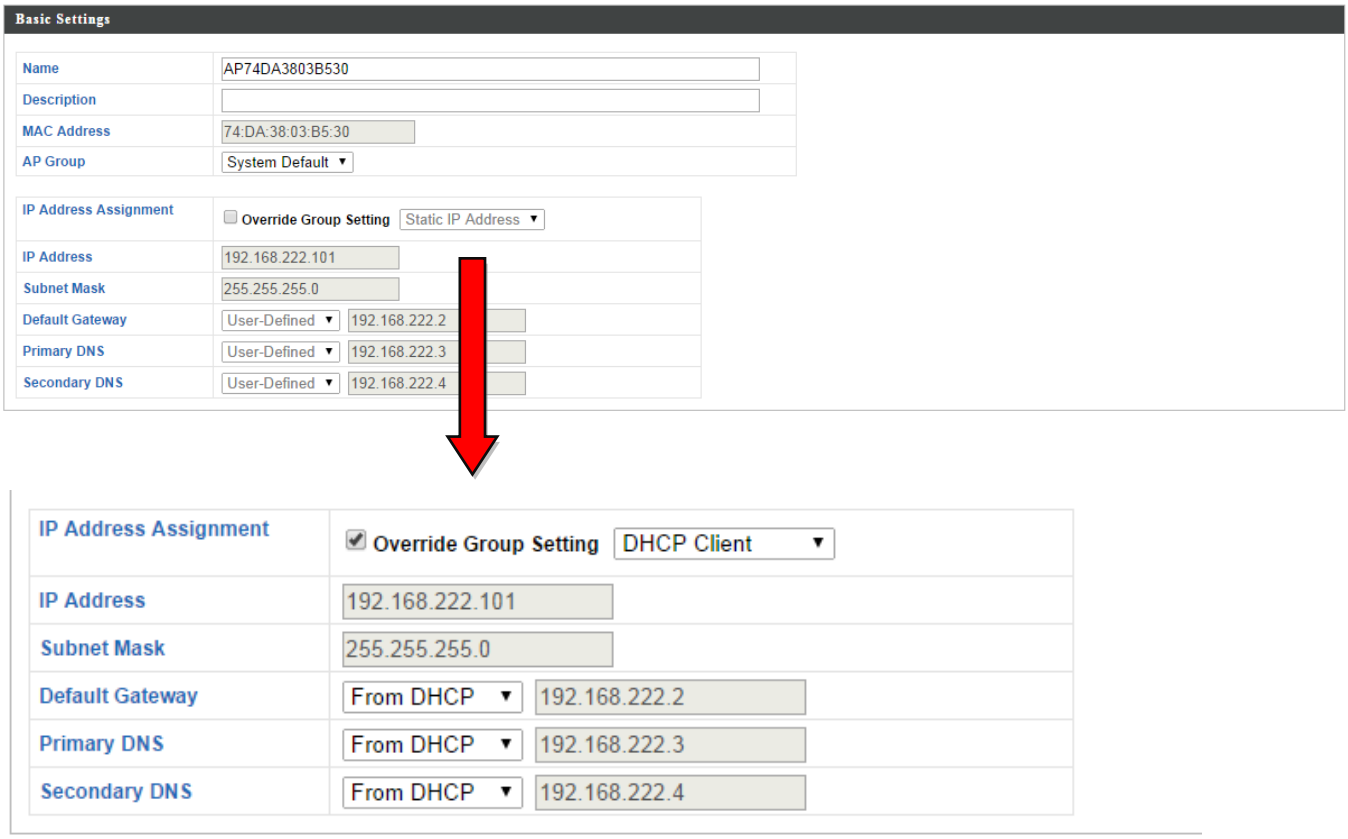
Edit Access Point

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. An events 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.

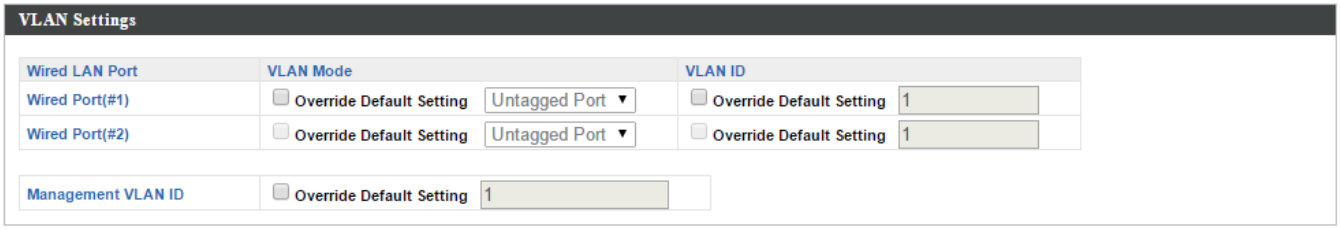
Check the "**Override Group Settings**" box to use different individual settings for access points assigned to AP Groups:

Override Group Setting

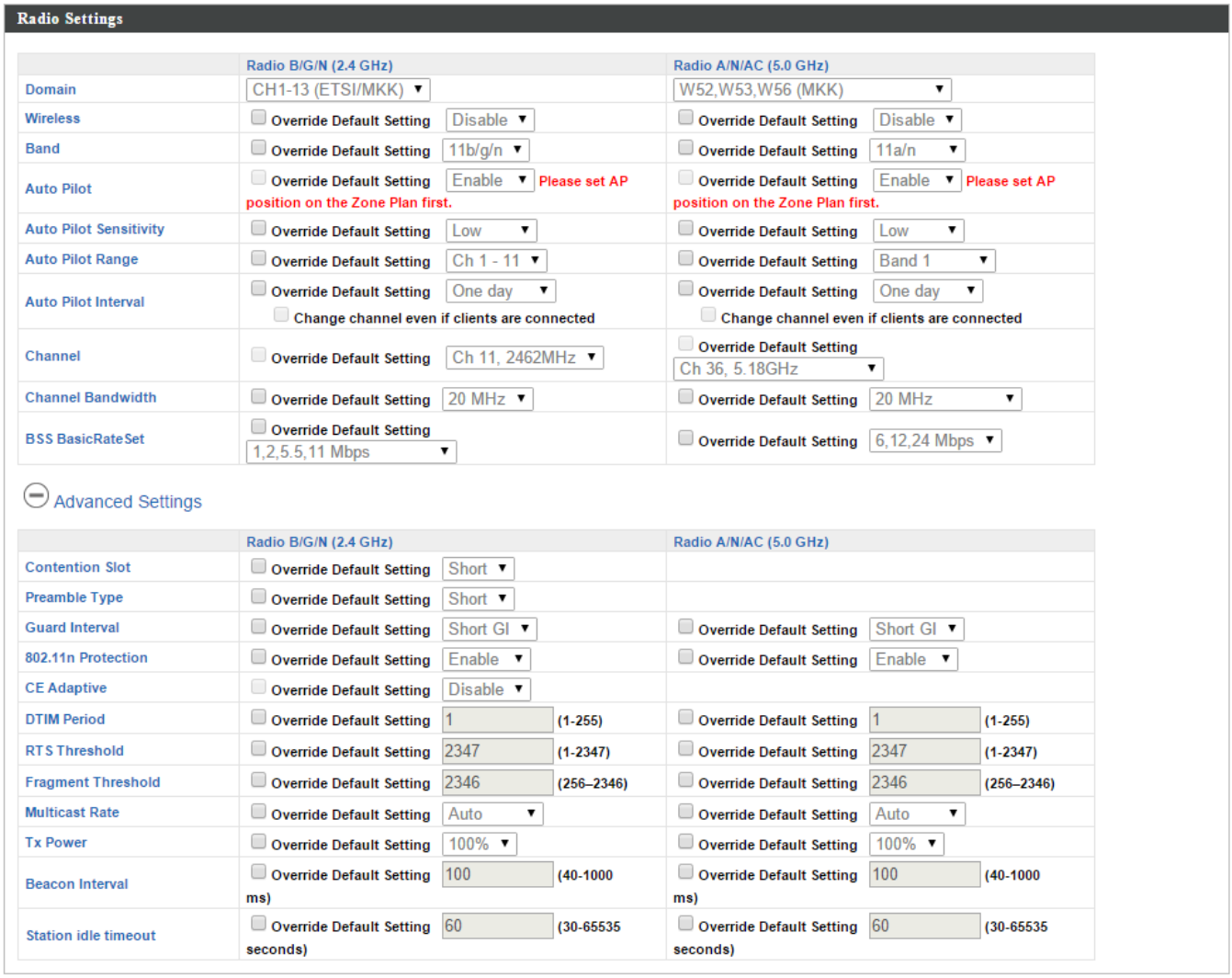


Basic Settings	
Name	Edit the access point name. The default name is AP + MAC address.
Description	Enter a description of the access point for reference e.g. 2nd Floor Office.
MAC Address	Displays MAC address.
AP Group	Use the drop down menu to assign the AP to an AP Group. You can edit AP Groups from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



VLAN Settings	
Wired LAN Port	Identifies LAN port 1 or 2.
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	Check ‘Override Default Setting’ to specify the VLAN ID of the management VLAN. Only the hosts belonging to the same VLAN can manage the device.



Radio Settings	
Domain	Set the regulatory domain for the access point's wireless channels for each frequency.
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 Range	Select a range from which the auto channel

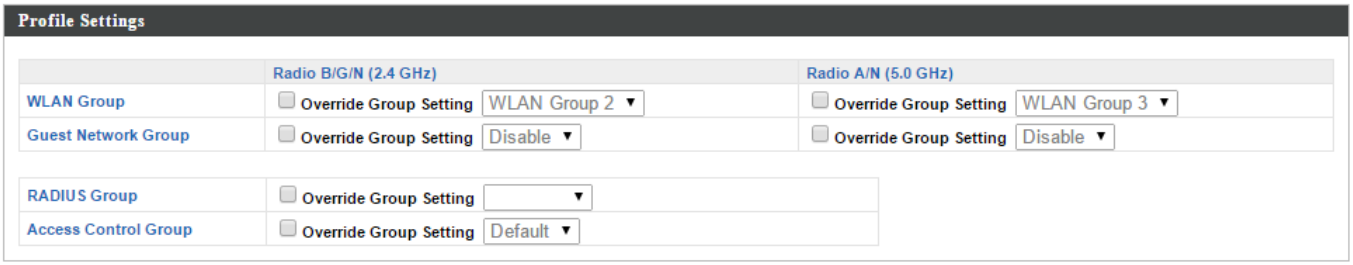
	setting (above) will choose a channel.
Auto Pilot Interval	Specify a frequency for how often the auto channel setting will check/reassign the wireless channel. Check/uncheck the “Change channel even if clients are connected” box according to your preference.
Channel Bandwidth	Set the channel bandwidth 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.
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.
802.11g 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.
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.



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**

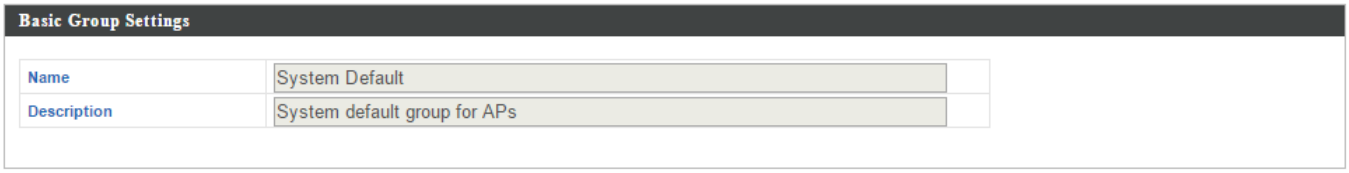
	→ **Guest Network**.
RADIUS Group	Assign the access point's 2.4GHz SSID(s) to a RADIUS group. You can edit RADIUS groups in **NMS Settings → RADIUS**.
Access Control Group	Assign the access point's 2.4GHz SSID(s) to a RADIUS group. You can edit RADIUS groups in **NMS Settings → Access Control**

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.

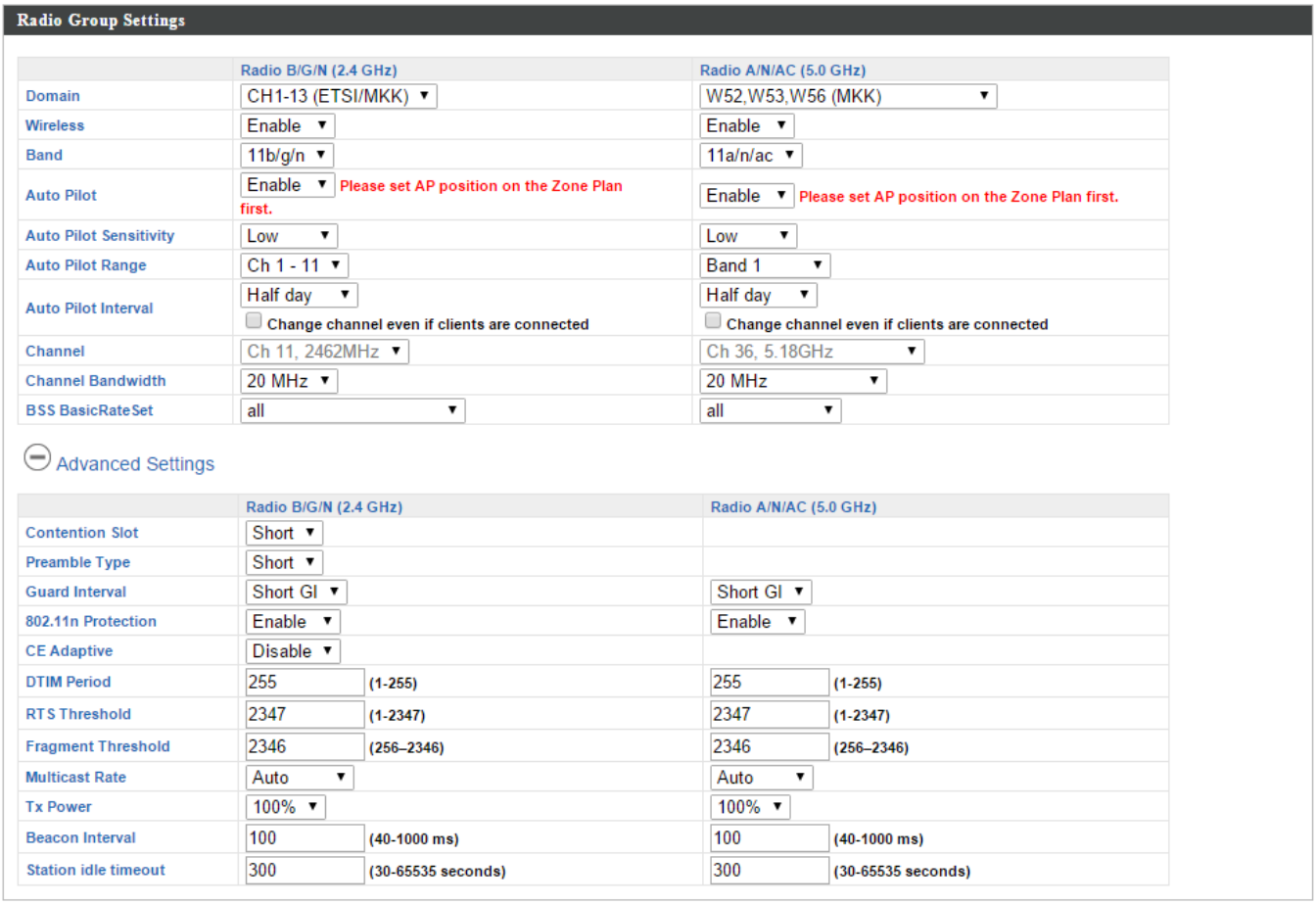
The **Group Settings** panel can be used to quickly move access points between existing groups: select an access point and use the drop down menu or search to select access point groups and use << and >> arrows to move APs between groups.



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.

VLAN Group Settings	
Wired LAN Port	Identifies LAN port 1 or 2.
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	Check ‘Override Default Setting’ to specify the VLAN ID of the management VLAN. Only the hosts belonging to the same VLAN can manage

	the device.



Radio Group Settings	
Domain	Set the regulatory domain for the access point's wireless channels for each frequency.
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 Range	Select a range from which the auto channel

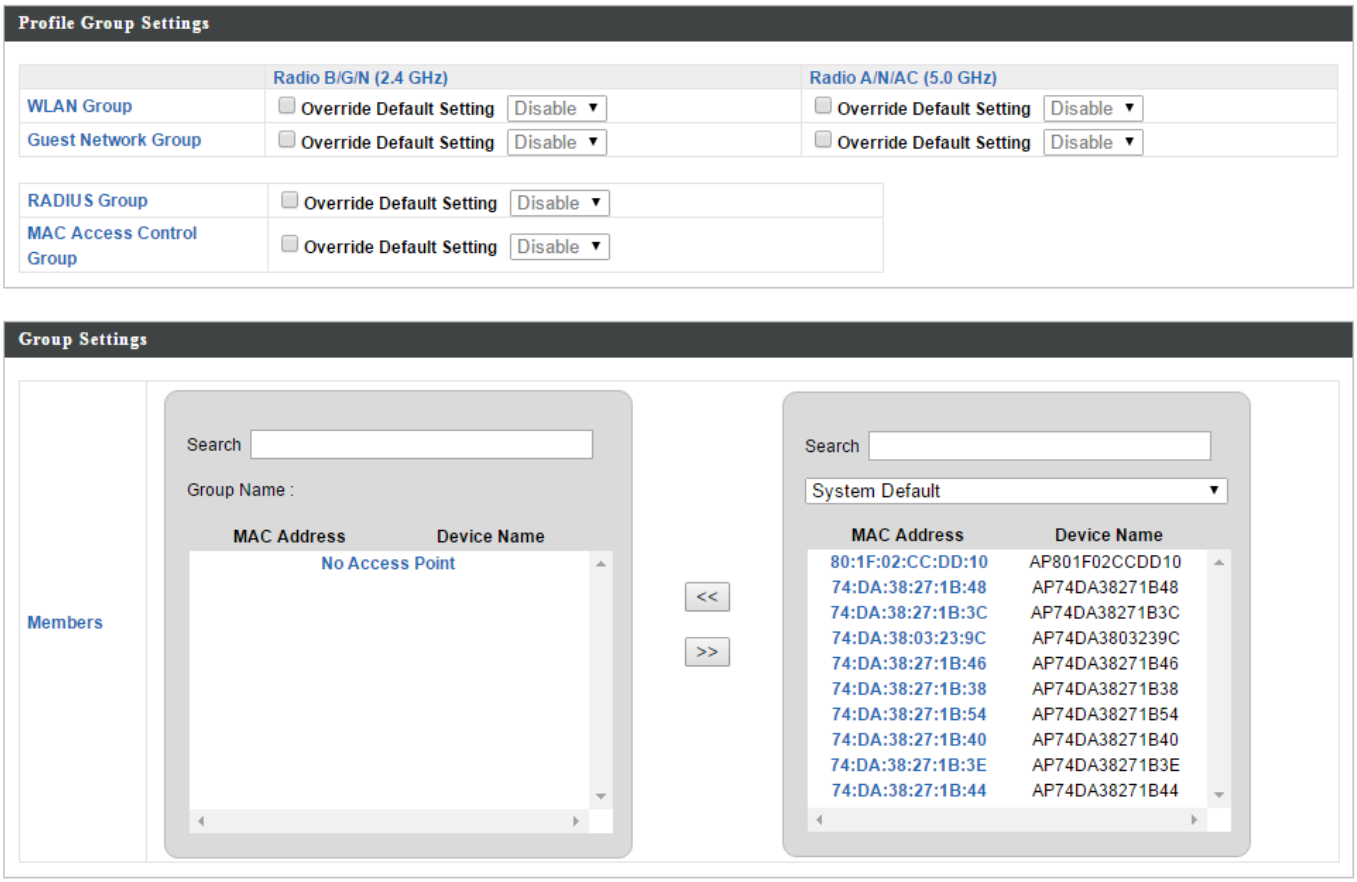
	setting (above) will choose a channel.
Auto Pilot Interval	Specify a frequency for how often the auto channel setting will check/reassign the wireless channel. Check/uncheck the “Change channel even if clients are connected” box according to your preference.
Channel Bandwidth	Set the channel bandwidth 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.
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.
802.11g 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.
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.

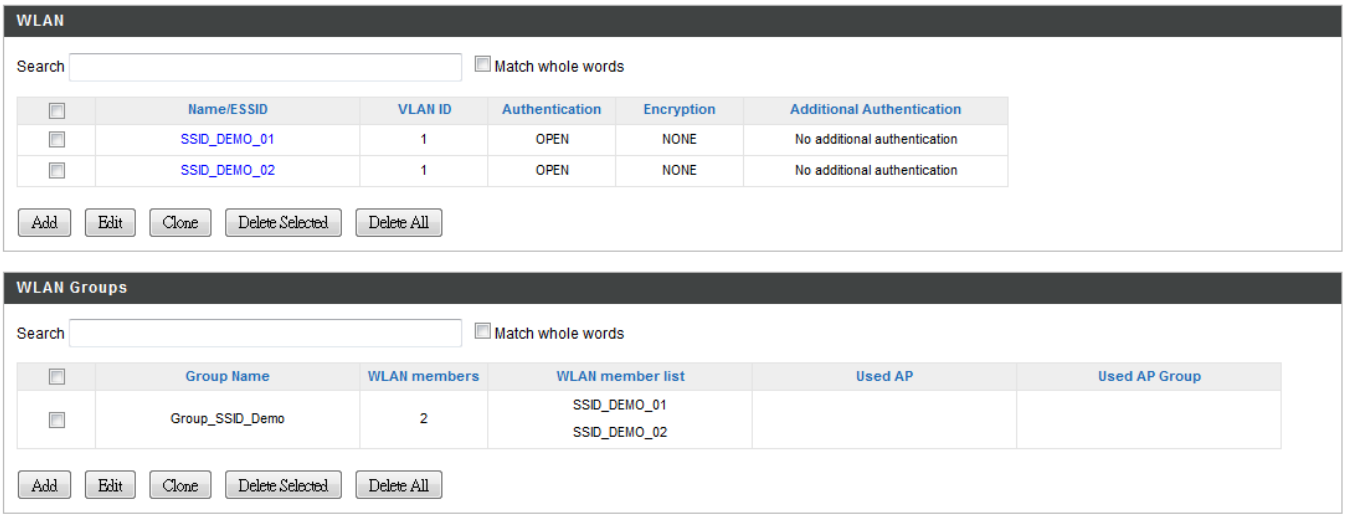


Profile Group Settings	
WLAN Group	Assign the access point group's 2.4GHz or 5GHz SSIDs to a WLAN Group. You can edit WLAN groups in **NMS Settings → WLAN**.
Guest Network Group	Assign the access point group's 2.4GHz or 5GHz SSIDs to a Guest Network Group. You can edit Guest Network groups in **NMS Settings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

V-5-2. WLAN

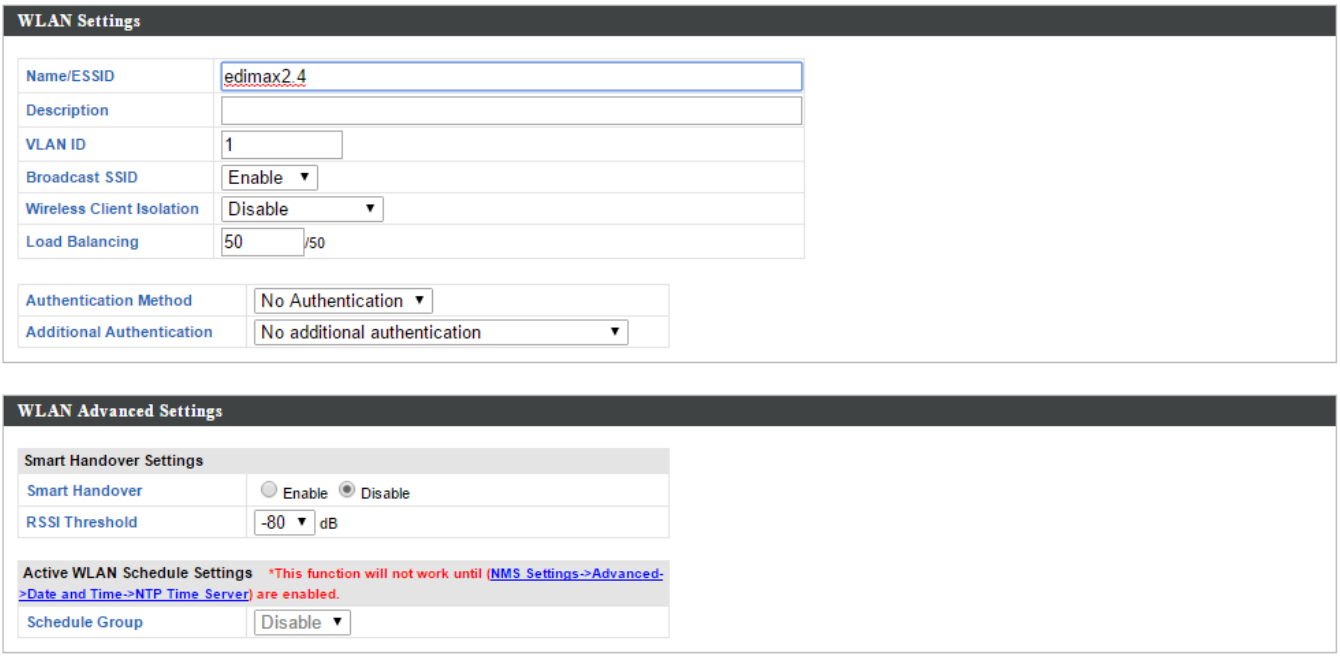
Displays information about each WLAN and WLAN group in the local network and allows you to add or edit WLANs & WLAN Groups. When you add a WLAN Group, it will be available for selection in **NMS Settings → Access Point** access point **Profile Settings** & access point group **Profile Group Settings**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

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.
SSID	Select which SSID to configure security settings for.
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.

Load Balancing	Load balancing limits the number of wireless clients connected to an SSID. Set a load balancing value (maximum 50).
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's 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.

Please refer to **V-5-2-1. No Authentication** and onwards below for more information on authentication and additional authentication types.

WLAN Advanced Settings	
Smart Handover	Enable or disable Smart Handover.
RSSI Threshold	Set a RSSI Threshold level.
Schedule Group	Assign to a specified schedule (schedule must be pre-configured in **NMS Settings → Schedule**.)

V-5-2-1. No Authentication

Authentication is disabled and no password/key is required to connect to the access point.

Disabling wireless authentication is not recommended. When disabled, anybody within range can connect to your device's SSID.

V-5-2-2. WEP

WEP (Wired Equivalent Privacy) is a basic encryption type. For a higher level of security consider using WPA encryption.

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.

V-5-2-3. IEEE802.1x/EAP

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

V-5-2-4. WPA-PSK

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

WPA Type	Select from WPA/WPA2 Mixed Mode-PSK, WPA2 or WPA only. WPA2 is safer than WPA only, but 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.

V-5-2-5. WPA-EAP

WPA Type	Select from WPA/WPA2 Mixed Mode-EAP, WPA2-EAP or WPA-EAP.
Encryption	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.

V-5-2-6. Additional Authentication

Additional wireless authentication methods can also be used:

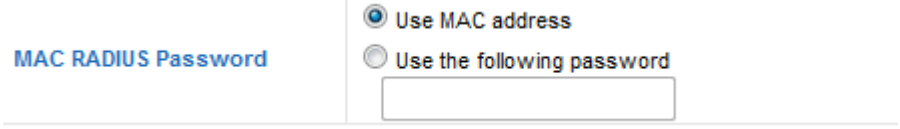
MAC Address Filter
Restrict wireless clients access based on MAC address specified in the MAC filter table.

See** V-5-4. MAC Filter **to configure MAC filtering.

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

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

See** V-5-3. RADIUS **to configure RADIUS servers.

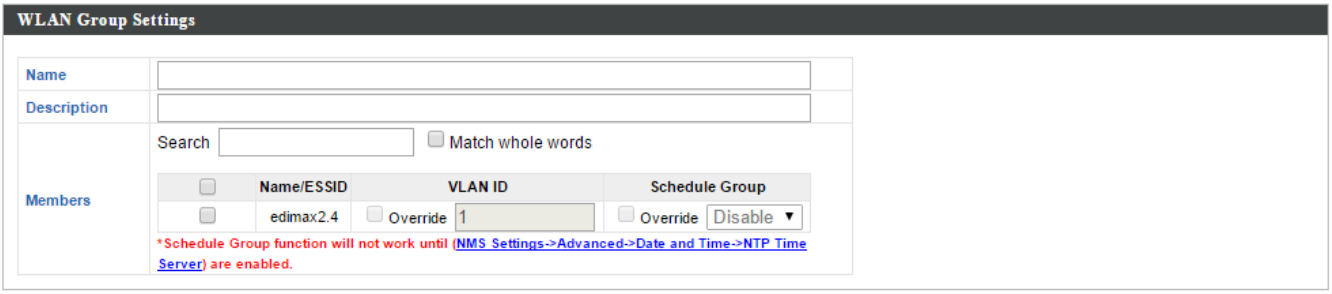


MAC RADIUS Password	Select whether to use MAC address or password authentication via RADIUS server. If

	you select “Use the following password”, enter the password in the field below. The password should match the “Shared Secret” used in **V-5-3. RADIUS**.

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** (**V-5-1.**)



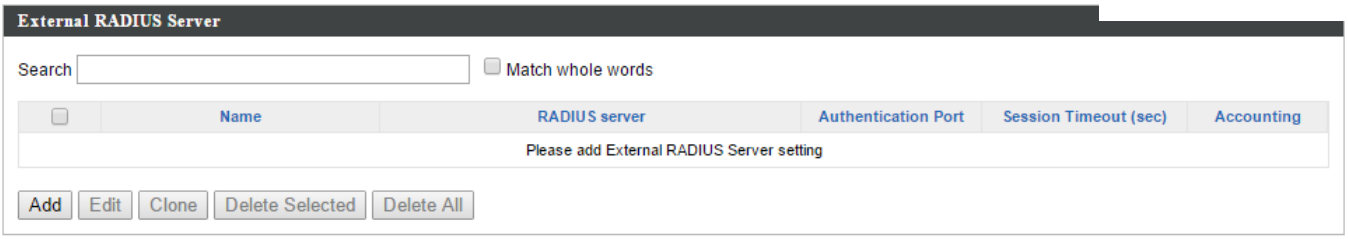
WLAN Group Settings	
Name	Edit the WLAN Group name.
Description	Enter a description of the WLAN Group for reference e.g. 2nd Floor Office HR Group.
Members	Select SSIDs to include in the group using the checkboxes and assign VLAN IDs. You can override individual schedule settings and assign a different schedule.

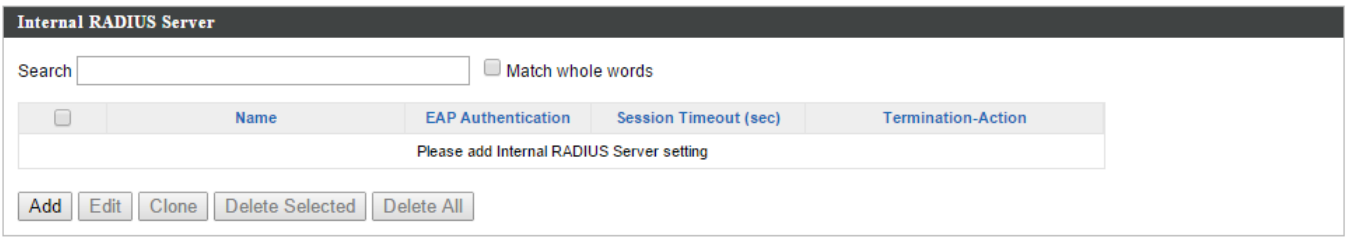
V-5-3. RADIUS

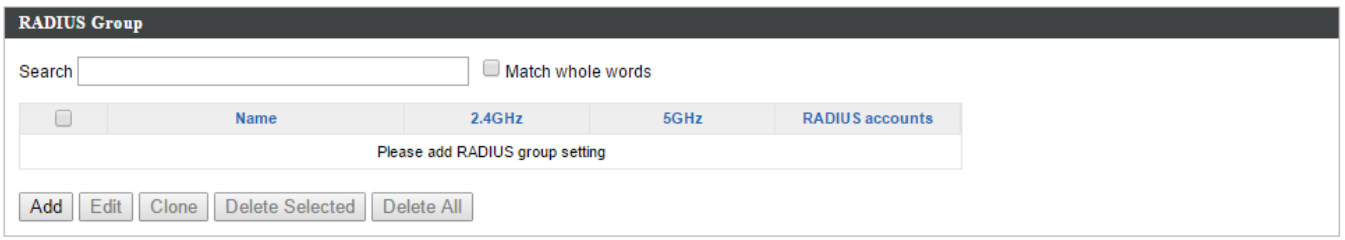
Displays information about External & Internal RADIUS Servers, Accounts and Groups and allows you to add or edit RADIUS Servers, Accounts & Groups. When you add a RADIUS Group, it will be available for selection in **NMS Settings → Access Point** access point **Profile Settings** & access point group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

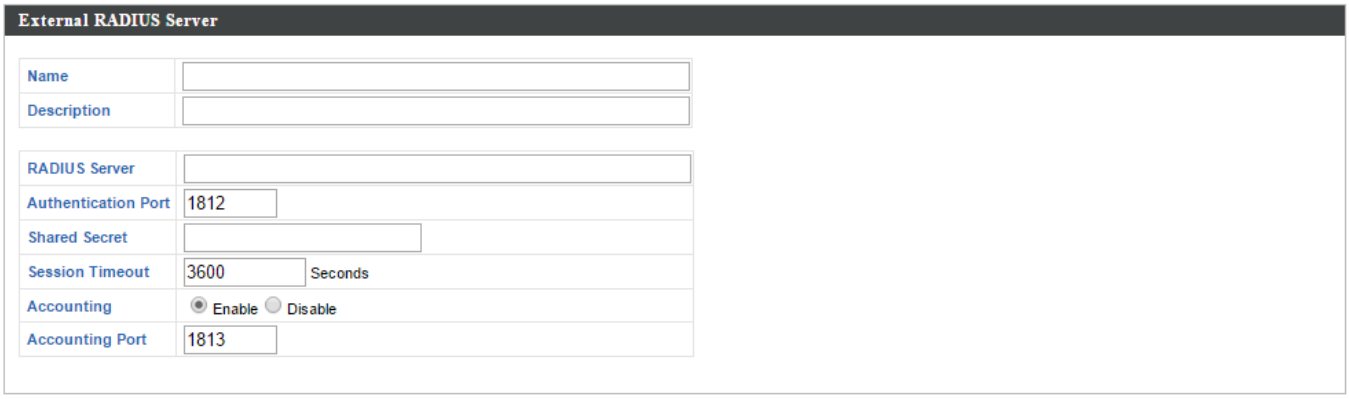
Make a selection using the check-boxes and click "**Edit**" or click "**Add**" to add a new WLAN or WLAN Group:



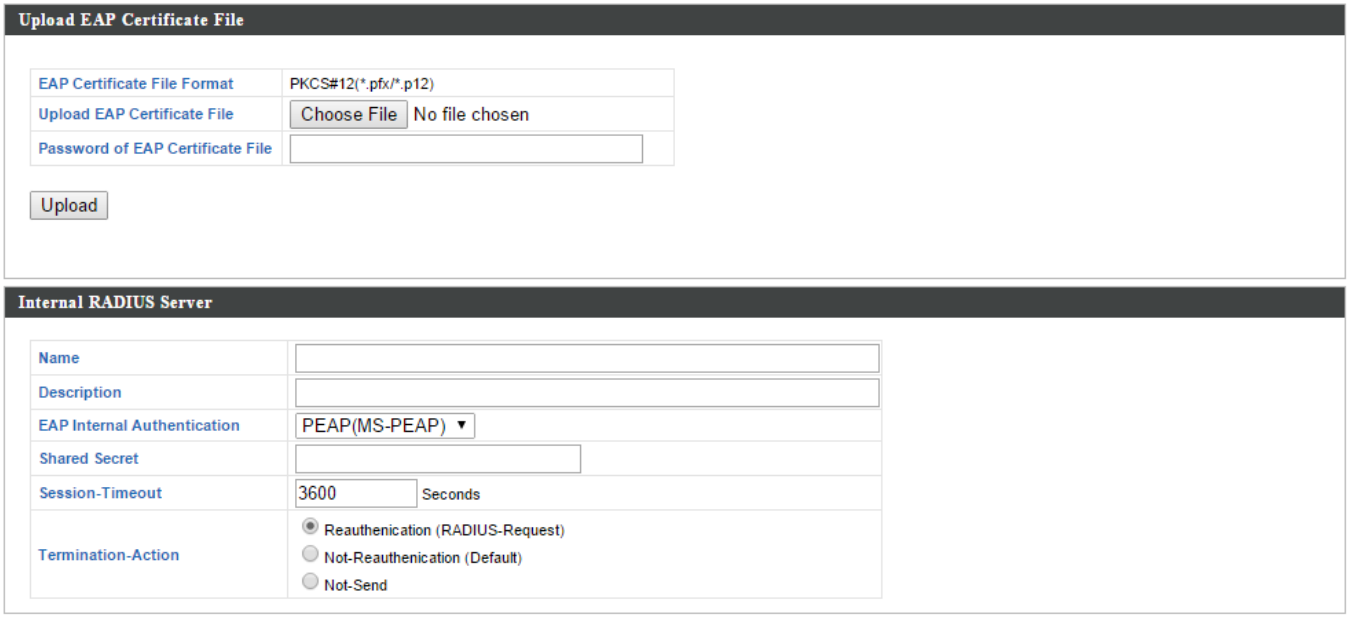




Add/Edit External RADIUS Server



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 password in RADIUS server's configuration.
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.



Add/Edit Internal RADIUS Server

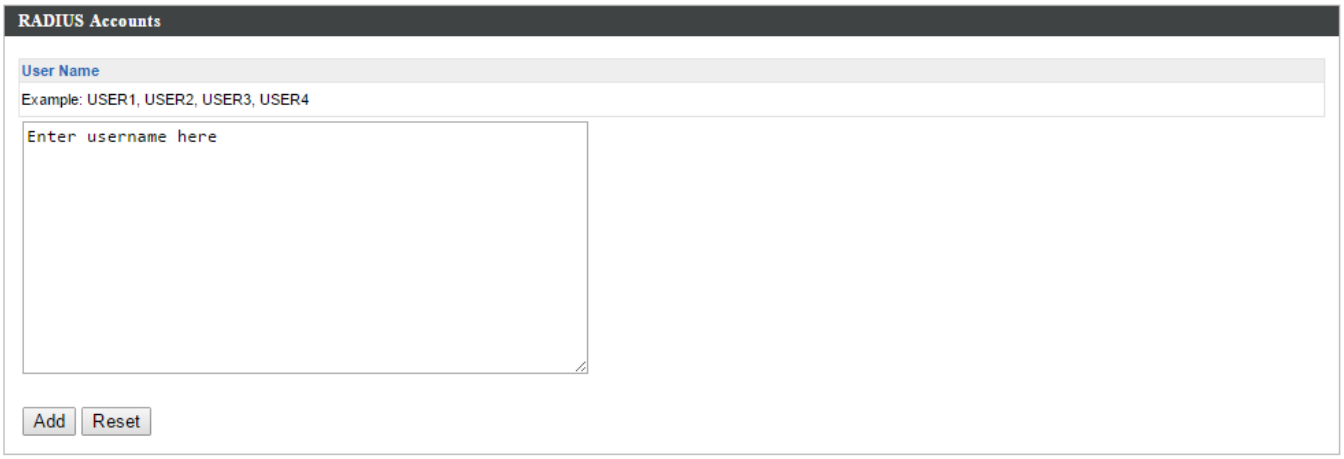
Upload EAP Certificate File	
EAP Certificate File Format	Displays the EAP certificate file format: PCK#12(*.pfx/*.p12)
EAP Certificate File	Click “Upload” to open a new window and select the location of an EAP certificate file to use. If no certificate file is uploaded, the internal RADIUS server will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

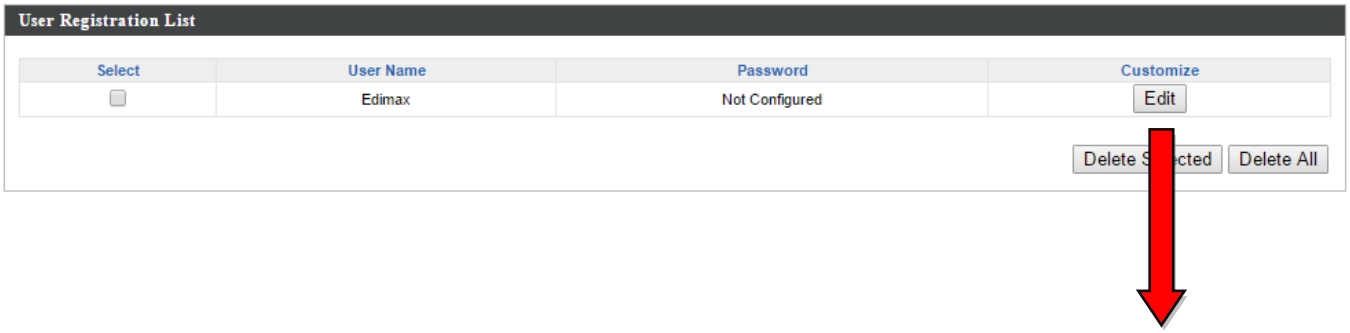
Internal RADIUS Server	
Name	Enter a name for the Internal RADIUS Server.
Description	Enter a description of the Internal RADIUS Server for reference.
EAP Certificate File Format	Displays the EAP certificate file format: PCK#12(*.pfx/*.p12)
EAP Certificate File	Click “Upload” to open a new window and 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.

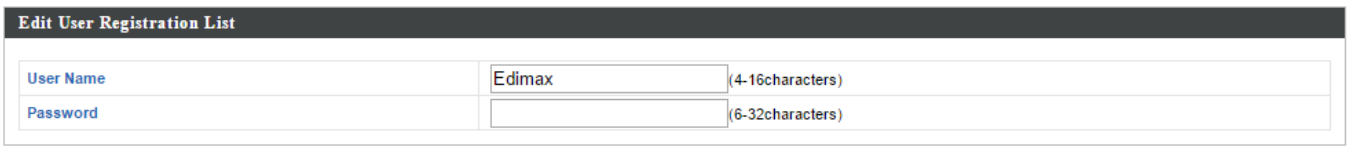
EAP Internal Authentication	Select EAP internal authentication type from the drop down menu.
Shared Secret	Enter a shared secret/password for use between the internal RADIUS server and RADIUS client. The shared secret should be 1 – 99 characters in length.
Session Timeout	Set a duration of session timeout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

Add/Edit RADIUS Accounts

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







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.

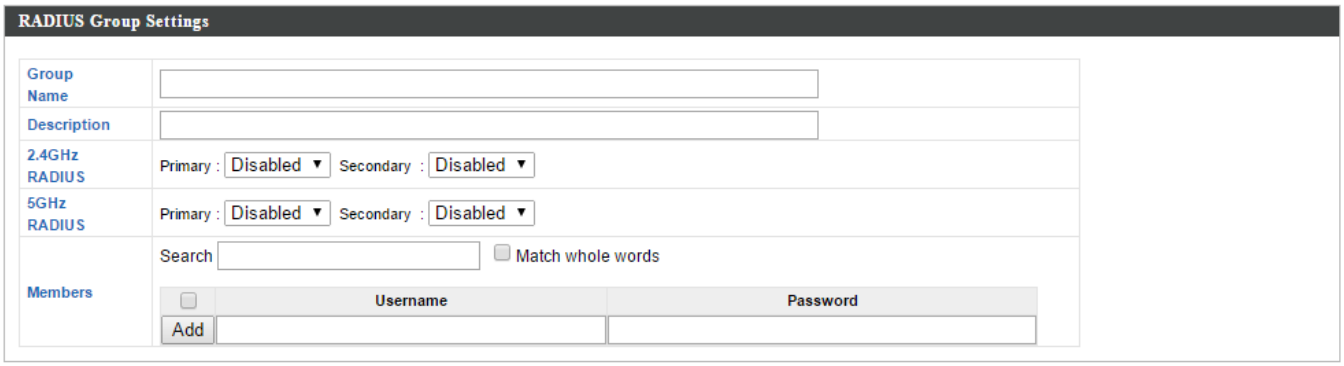
User Registration List	
Select	Check the box to select a user.
User Name	Displays the user name.
Password	Displays if specified user name has a password (configured) or not (not configured).
Customize	Click “Edit” to open a new field to set/edit a password for the specified user name (below).

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

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.

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** (**V-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.

V-5-4. Access Control

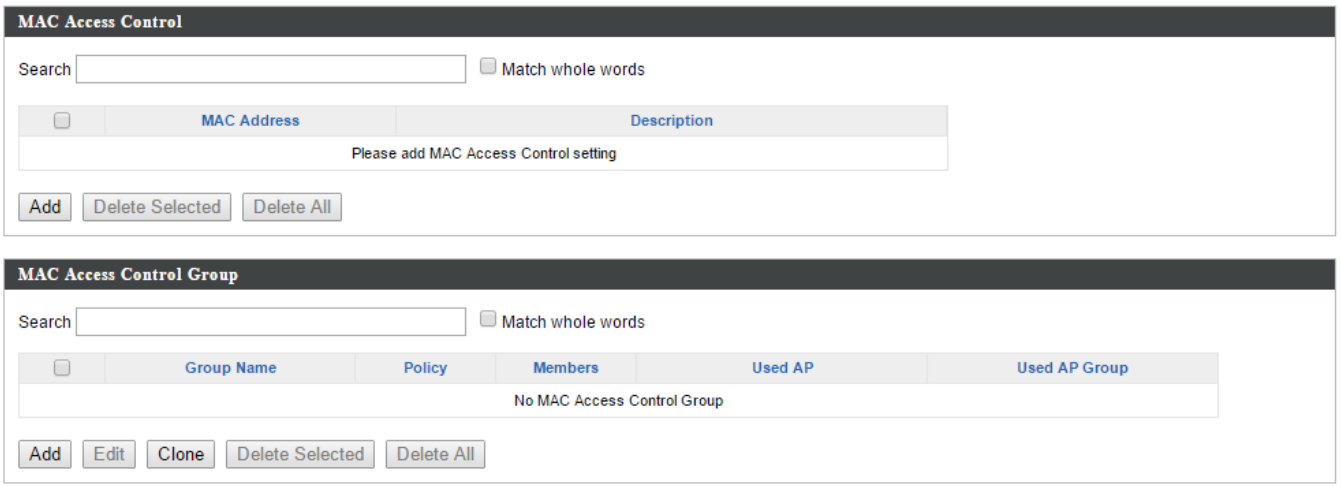
MAC Access Control is a security feature that can help to prevent unauthorized users from connecting to your access point.

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 which is not on the list of permitted MAC addresses attempts to connect to the access point, it will be denied.

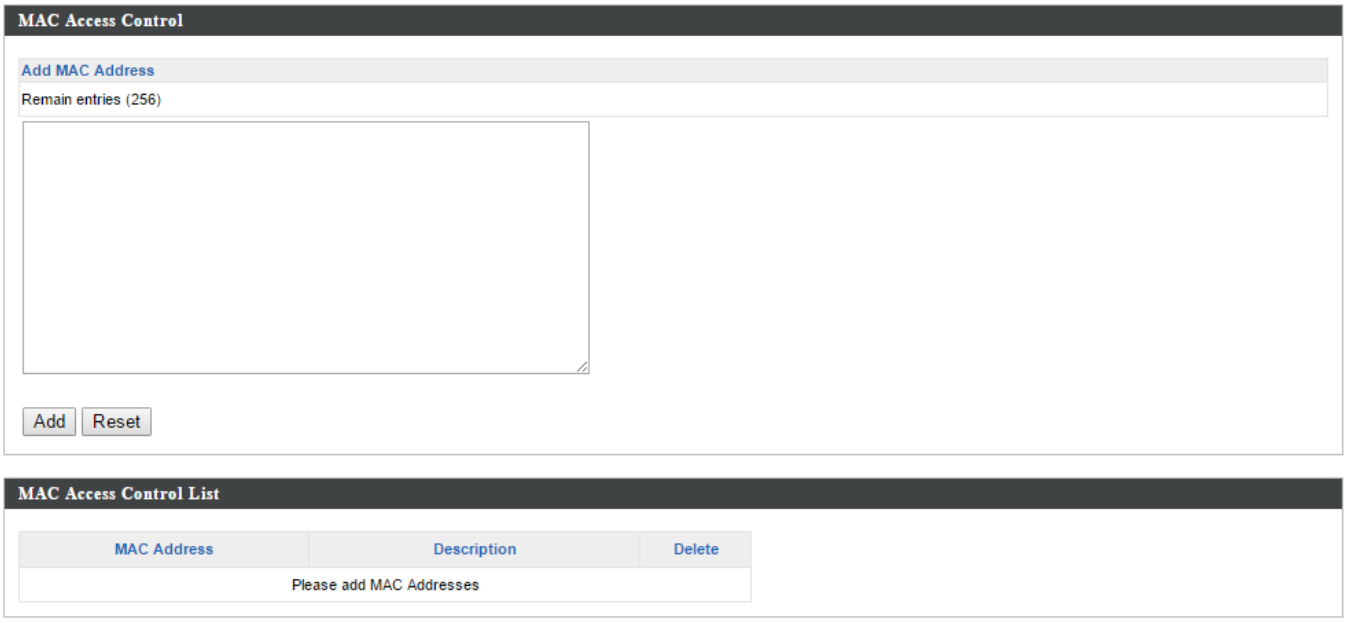
The Access Control panel displays information about MAC Access Control & MAC Access Control Groups and Groups and allows you to add or edit MAC Access Control & MAC Access Control Group settings. When you add an Access Control Group, it will be available for selection in **NMS Settings → Access Point**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



Add/Edit MAC Access Control



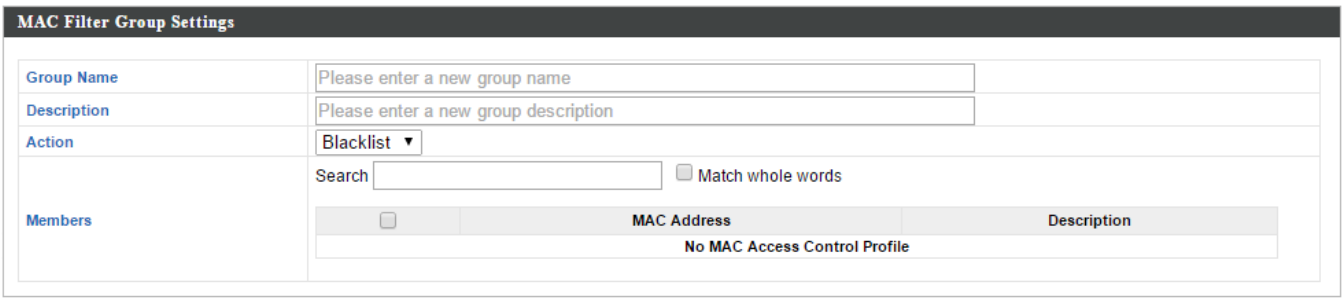
Add MAC Address	Enter a MAC address of computer or network device manually e.g. 'aa-bb-cc-dd-ee-ff' or enter multiple MAC addresses separated with commas, e.g. 'aa-bb-cc-dd-ee-ff,aa-bb-cc-dd-ee-gg'
Add	Click "Add" to add the MAC address to the MAC address filtering table.
Reset	Clear all fields.

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.

Add/Edit 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** (**V-5-1.**)



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	Add MAC addresses to the group.

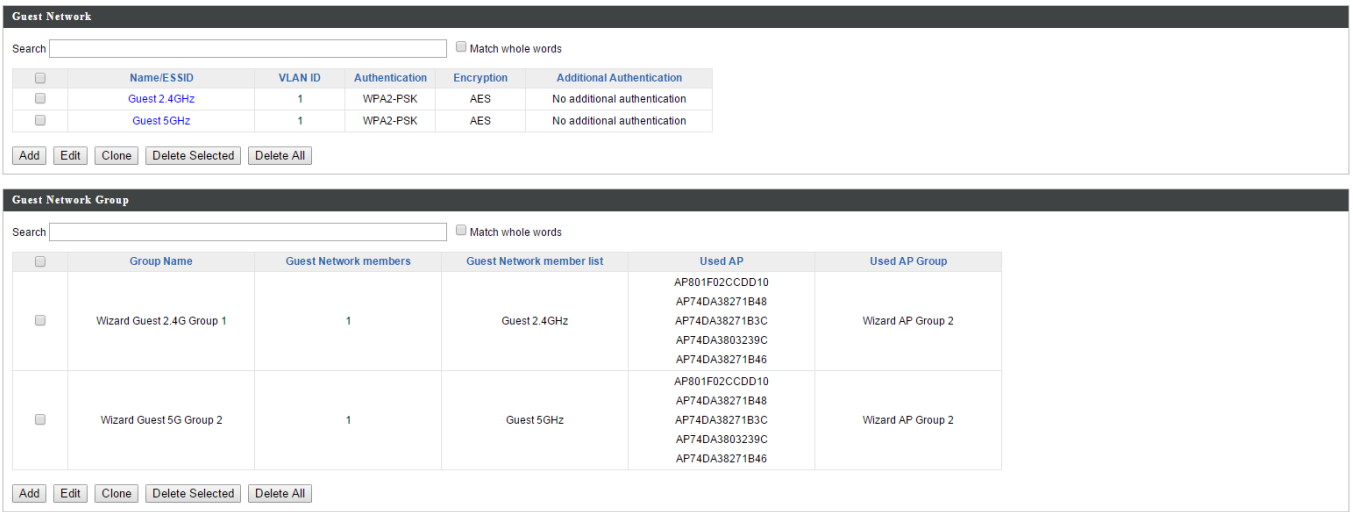
V-5-5. Guest Network

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.

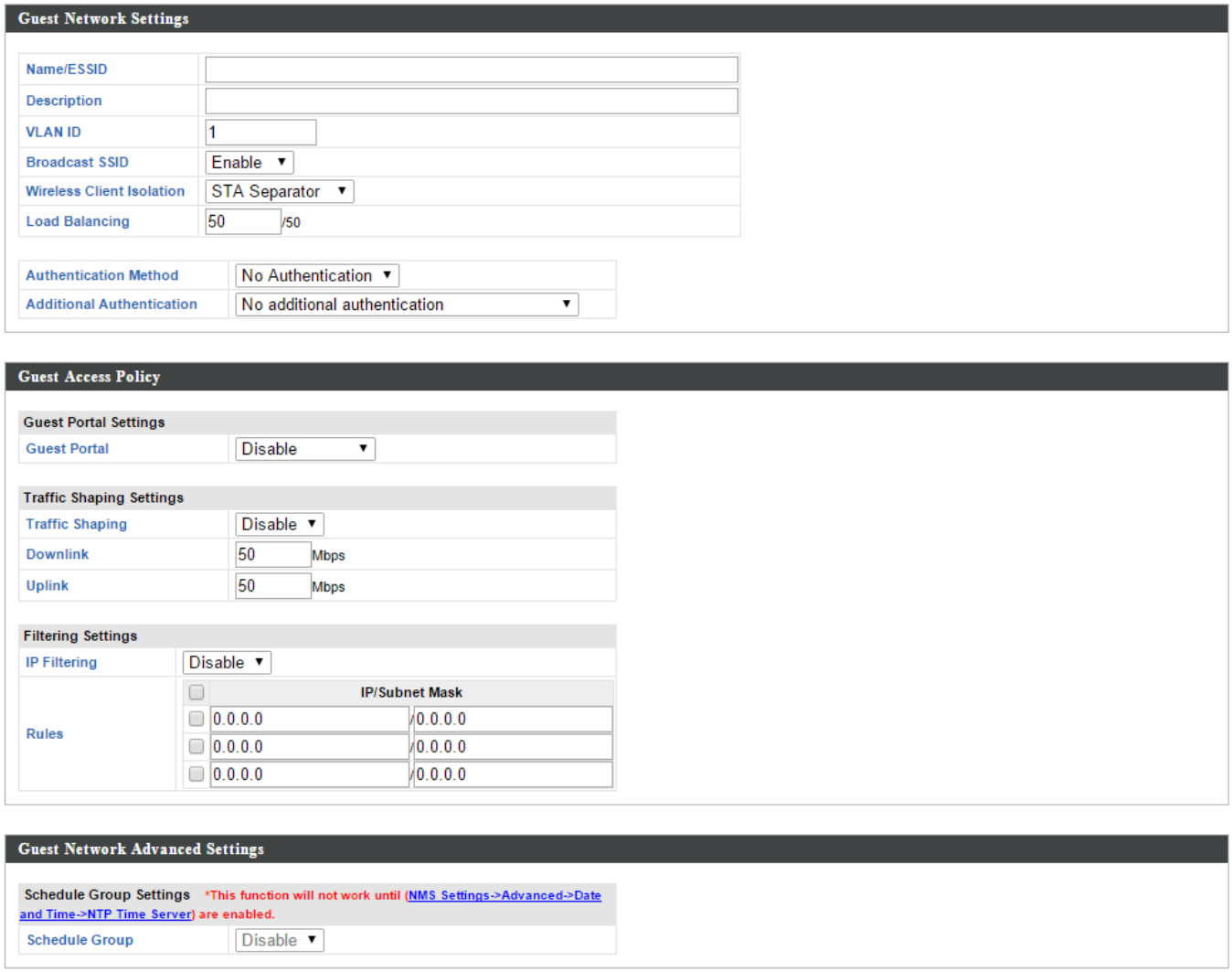
The Guest Network panel displays information about Guest Networks and Guest Network Groups and allows you to add or edit Guest Network and Guest Network Group settings. When you add a Guest Network Group, it will be available for selection in **NMS Settings → Access Point** access point **Profile Settings**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



Add/Edit Guest Network



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	Enable or disable wireless client isolation.

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 50).
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's 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.

Please refer to **V-5-2-1.** for more information on authentication and additional authentication types.

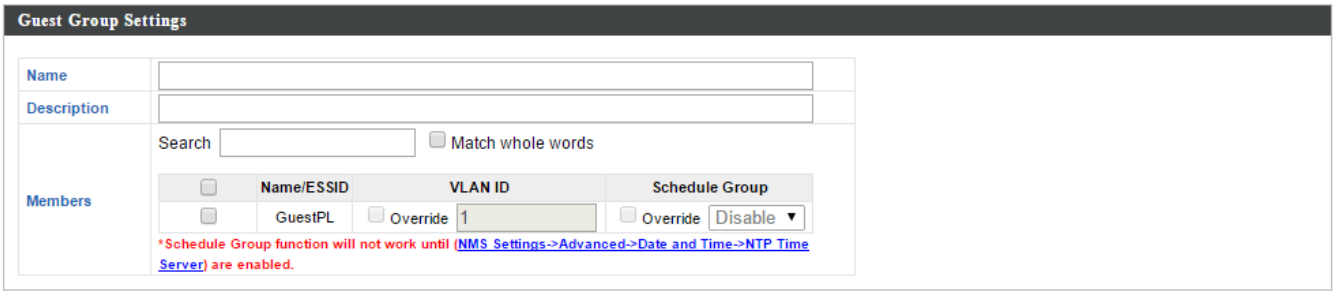
Guest Access Policy	
Guest Portal	Select a guest portal to use for this guest SSID. Guest portals can be configured in **NMS Settings → Guest Portal.**
Traffic Shaping	Enable or disable traffic shaping for the guest network.
Downlink	Enter a downlink limit in MB.
Uplink	Enter an uplink limit in MB.
IP Filtering	Select "Deny" or "Allow" to deny or allow specified IP addresses to access the guest network. Select "Disable" to disable IP

	filtering.
Rules	Enter IP addresses to be filtered according to the Deny or Allow rule specified above and check the box for each IP address to be filtered.

Guest Network Advanced Settings	
Schedule Group	Assign guest SSID to a specified schedule (schedule must be pre-configured in **NMS Settings → Schedule**.)

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** (**V-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. You can override individual VLAN ID & schedule settings and assign a different VLAN ID or schedule.

V-5-6. Users

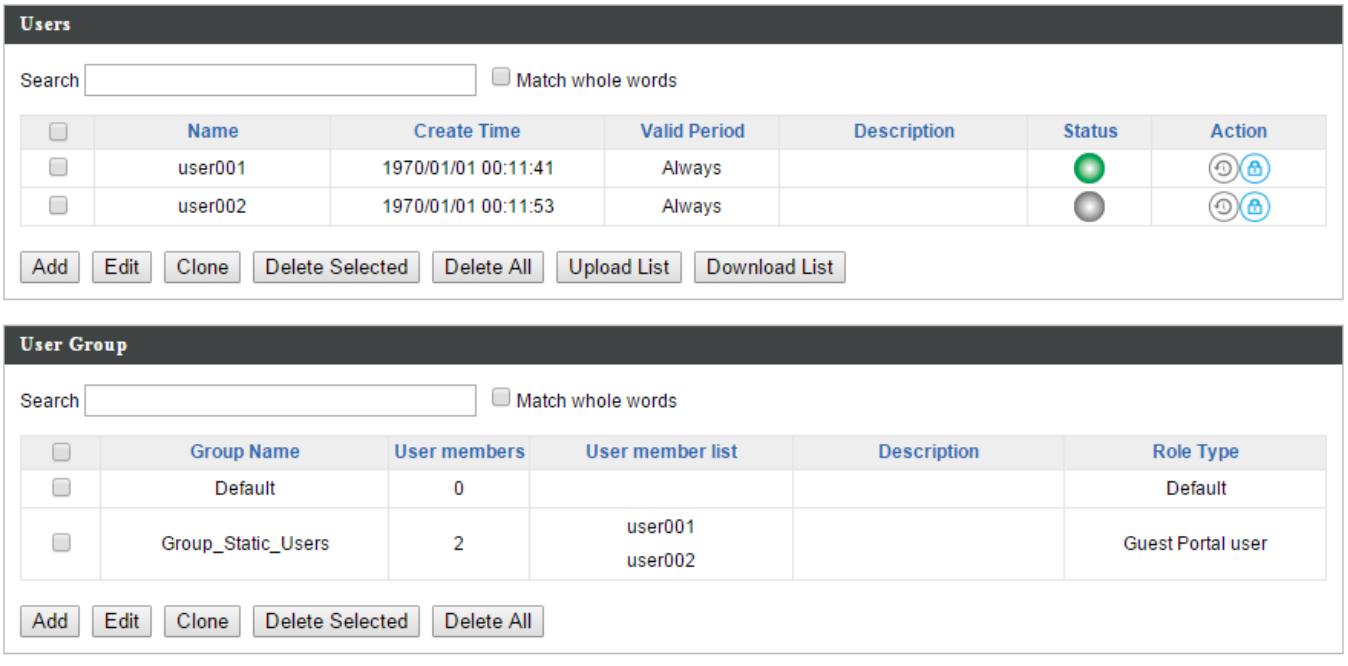
User accounts can be created, monitored and managed for use with the controller's guest portal function. Guest portal settings can be found at **V-5-7. Guest Portal** (NMS Settings → Guest Portal).

When a guest portal is enabled, users who connect to the Guest SSID will automatically arrive at the customizable guest portal page. From there a user account login is required to access the network. These user accounts are created and grouped here, and then selected as the **Authentication User Group** at **NMS Settings → Guest Portal**.

The guest portal also generates a Front Desk URL which allows staff/admins to login and quickly create/manage user accounts and expiry times, and generate & print tickets with login credentials to give to guest users. These staff/admin accounts are created and grouped here, and selected as the **Front Desk User Group** at **NMS Settings → Guest Portal**.

Information on the users page is displayed about each user account and user account group.

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



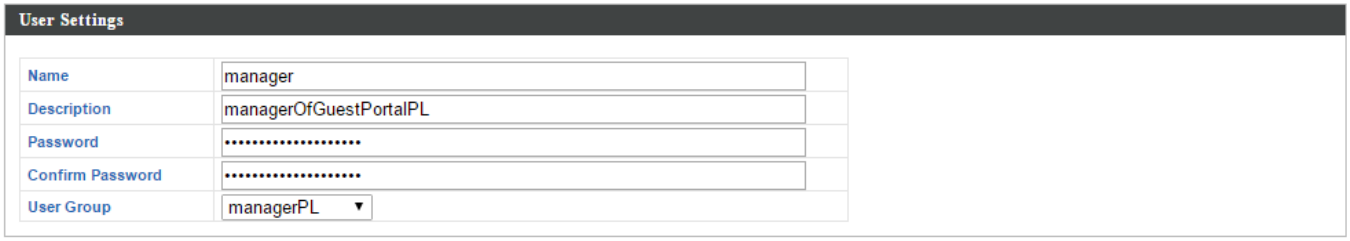
The **Status** icon displays *grey* (logged out), *yellow* (expired), *red* (locked) or *green* (active) for each user.

The **Action** icons can lock/unlock or revive (an expired) user account.

Select a user or user group using the check-boxes and click "**Edit**" to make configurations, or click "**Add**" to add new users and groups:

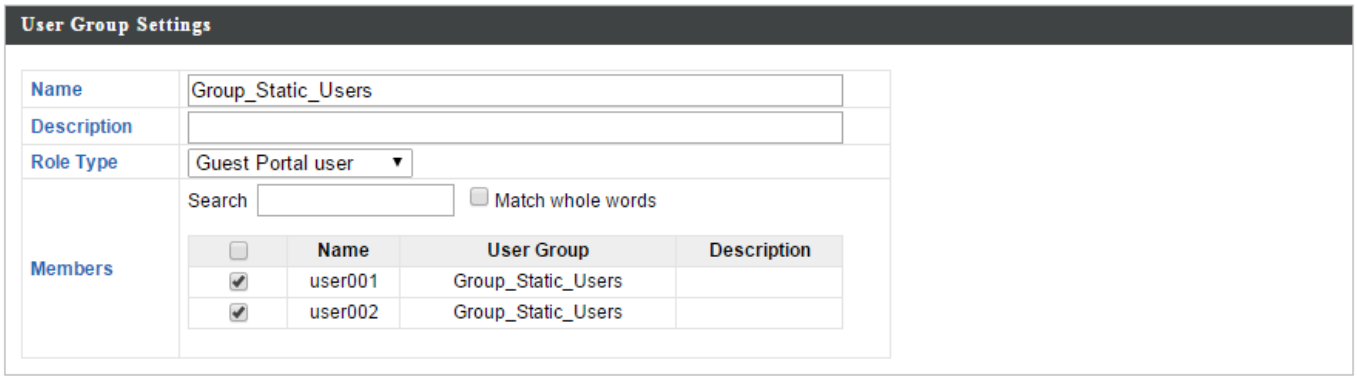
You can download and upload user lists as .csv files for convenience.

Add/Edit User



User Settings	
Name	Edit the user account name.
Description	Enter a description of the user account name e.g. Guest Portal 1
Password	Specify a password for the account.
Confirm Password	Confirm the password for the account.
User Group	Assign the user account to a user group so it can be utilized by the guest portal.

Add/Edit User Group



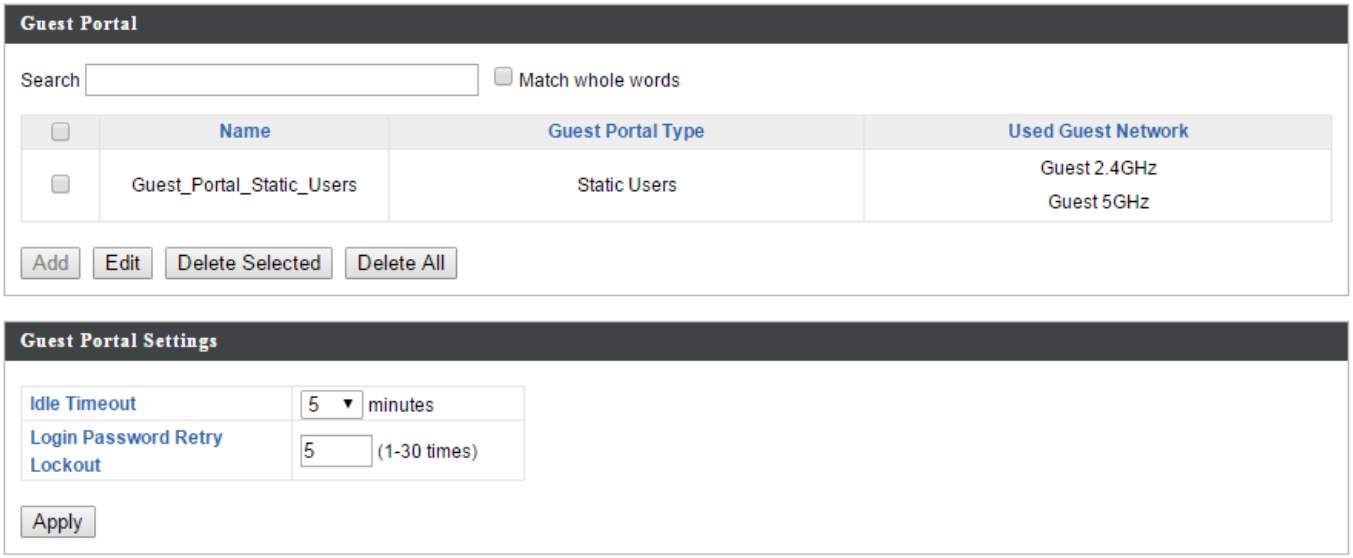
User Group Settings	
Name	Edit the user group name.
Description	Enter a description of the user group name e.g. Front Desk or Guest Users.
Role Type	Select whether the group is for Guest Portal users or Front Desk managers.
Members	Select which user accounts to include in the group.

V-5-7. Guest Portal

Displays information about guest portals and allows you to edit guest portal settings. Guest portals require **users** to be created at **NMS Settings → Users**.

When a guest portal is enabled, users who connect to the Guest SSID will automatically arrive at the customizable guest portal page. From there a user account login is required to access the network. These user accounts are created and grouped at **NMS Settings → Users**, and then selected as the **Authentication User Group** here.

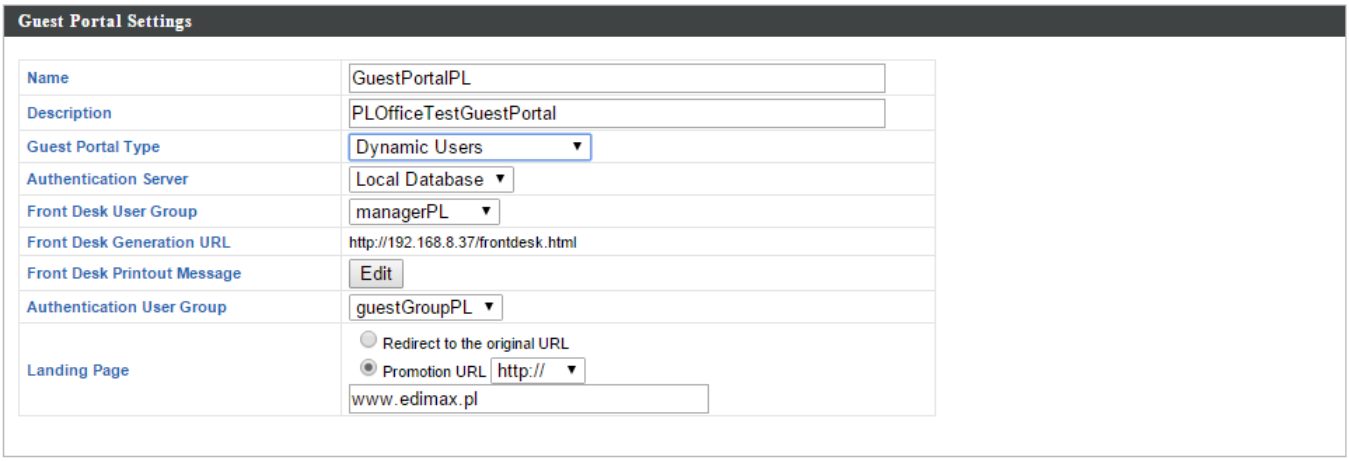
The guest portal also generates a Front Desk URL which allows staff/admins to login and quickly create/manage user accounts and expiry times, and generate & print tickets with login credentials to give to guest users. These staff/admin accounts are created and grouped at **NMS Settings → Users** and then selected as the **Front Desk User Group** here.



Guest Portal Settings	
Idle Timeout	Specify a duration of idle time after which the guest portal will timeout.
Login Password Retry Lockout	Specify number of incorrect login attempts before the user account is locked.

V-5-7-1. Add/Edit Guest Portal

Add a guest portal or edit an existing guest portal for use with the guest network.

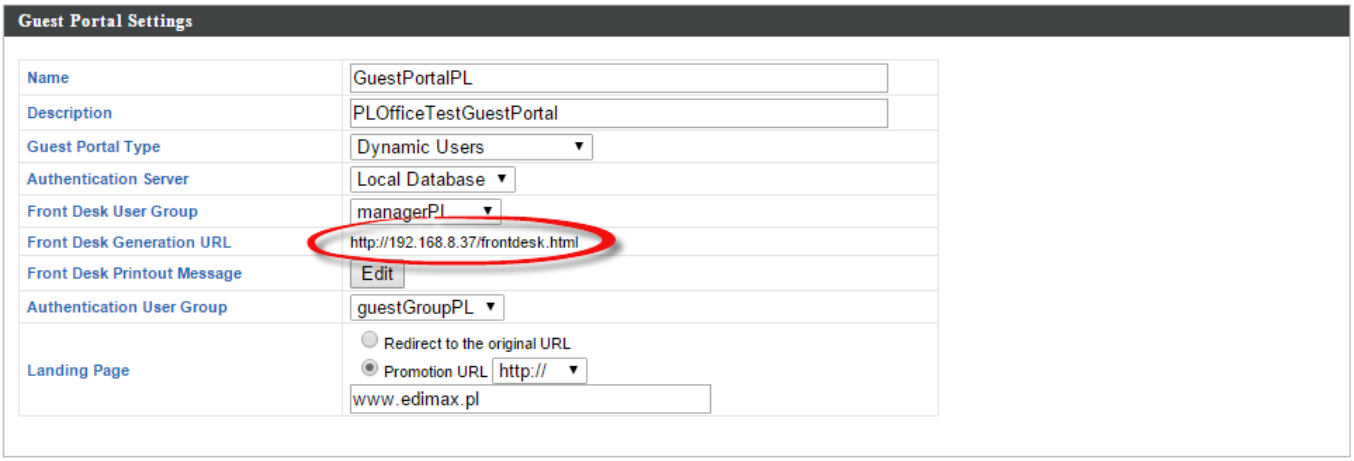


Guest Portal Settings	
Name	Edit the name of the guest portal for reference.
Description	Enter a description of the guest portal for reference.
Guest Portal Type	Select a guest portal type. Refer below for more information about available types.
Authentication Server	Select an authentication server: Local Database is the default setting.
Front Desk User Group	Select a user group for front desk access.
Front Desk Generation URL	Displays the URL of your Front Desk page. See below for more information.
Front Desk Printout Message	Edit the content of Front Desk printout ticket. Refer below for more information.
Authentication User Group	Select a user group for login to the guest network.
Landing Page	Specify a landing page for users after successful login.

V-5-7-1-1. Front Desk URL

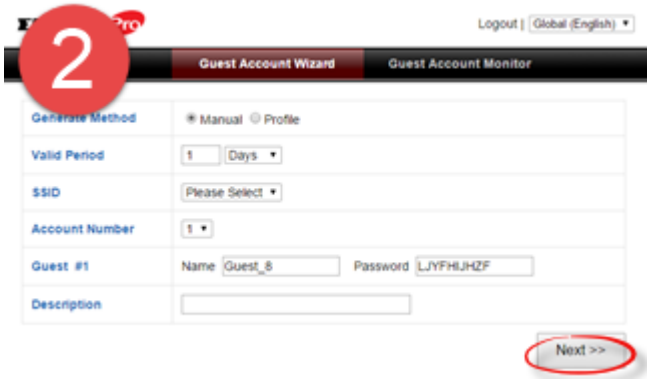
Go to this URL in a web browser and members of the **Front Desk User Group** can login to create guest accounts, set expiry limits and printout tickets.

Guest Portal Type** Dynamic **must be selected to use Front Desk.

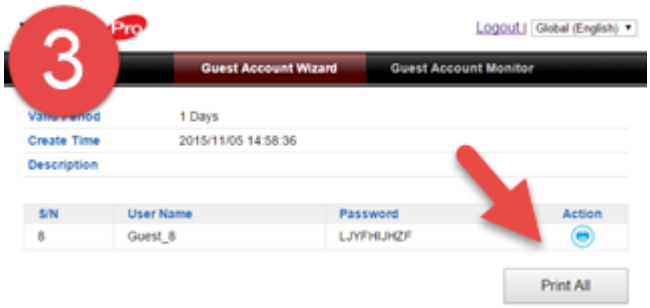


1. Login with an account from the **Front Desk User Group** (**NMS Settings → Users**).

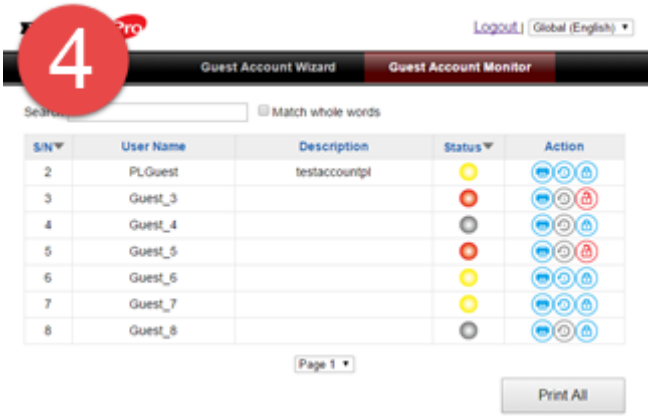
2. The **Guest Account Wizard** allows you to setup a new user account and configure the valid period & SSID, or upload a bulk guest list in .csv format. Click **Next** to continue.



3. A summary of the new account(s) is displayed with quick links to print tickets for individual or all new accounts.



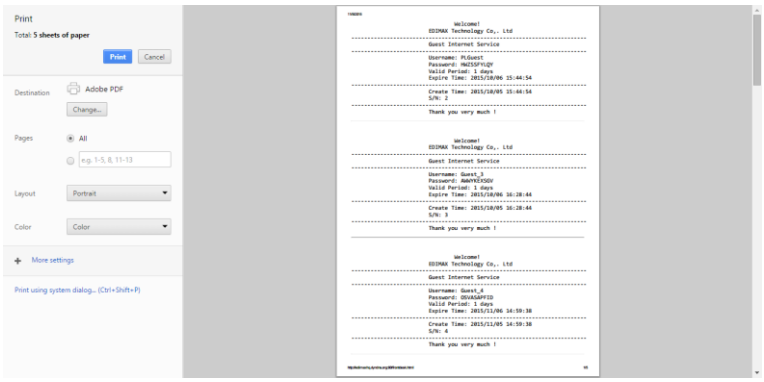
4. The **Guest Account Monitor** displays all guest accounts along with status and quick action icons to print, revive expired accounts or lock/unlock (disable/enable) accounts.



Yellow: Expired
Red: Locked
Grey: Logged out
Green: Active

Mouseover a status or action icon for a description, and use the arrows to reorder the list according to S/N or Status.

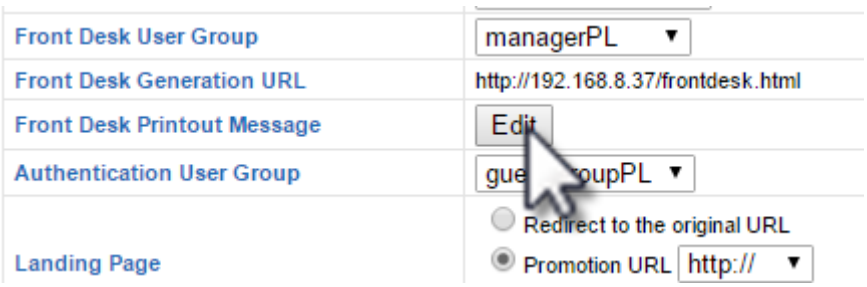
Anytime you choose to print account(s) your browser will open a print dialog box where you can select your print destination and configure print settings as usual:



V-5-7-1-2. Front Desk Printout

Edit and preview the content of the Front Desk printout in the text box using the variables listed in the Definition Table. E.g. (USERNAME) will display on the printout as the specified username.

Guest Portal Type** Dynamic **must be selected to use Front Desk.



Definition Table

Symbol	Description
{SSID}	Suggest SSID of Captive Portal user
{USERNAME}	Name of Captive Portal user
{PASSWORD}	Password of Captive Portal user
{PERIOD}	The valid access time of Network Service.
{EXPIRETIME}	The expire time of user account
{CREATETIME}	The create time of user account
{SN}	Serial number of user account

* While printing the user data in Front Desk page, the "Symbol" will be replaced by the value in Users database.

Printout Content

Welcome!
EDIMAX Technology Co,. Ltd

Guest Internet Service

SSID: {SSID}
Username: {USERNAME}
Password: {PASSWORD}
Valid Period: {PERIOD}
Expire Time: {EXPIRETIME}

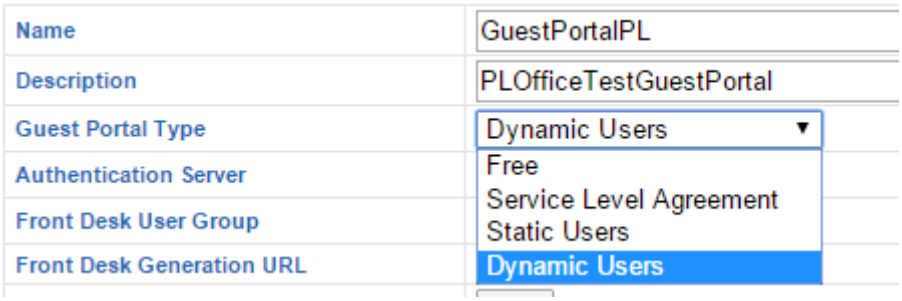
Create Time: {CREATETIME}
S/N: {SN}

Thank you very much !

Preview Apply Cancel

V-5-7-1-3. Guest Portal Type

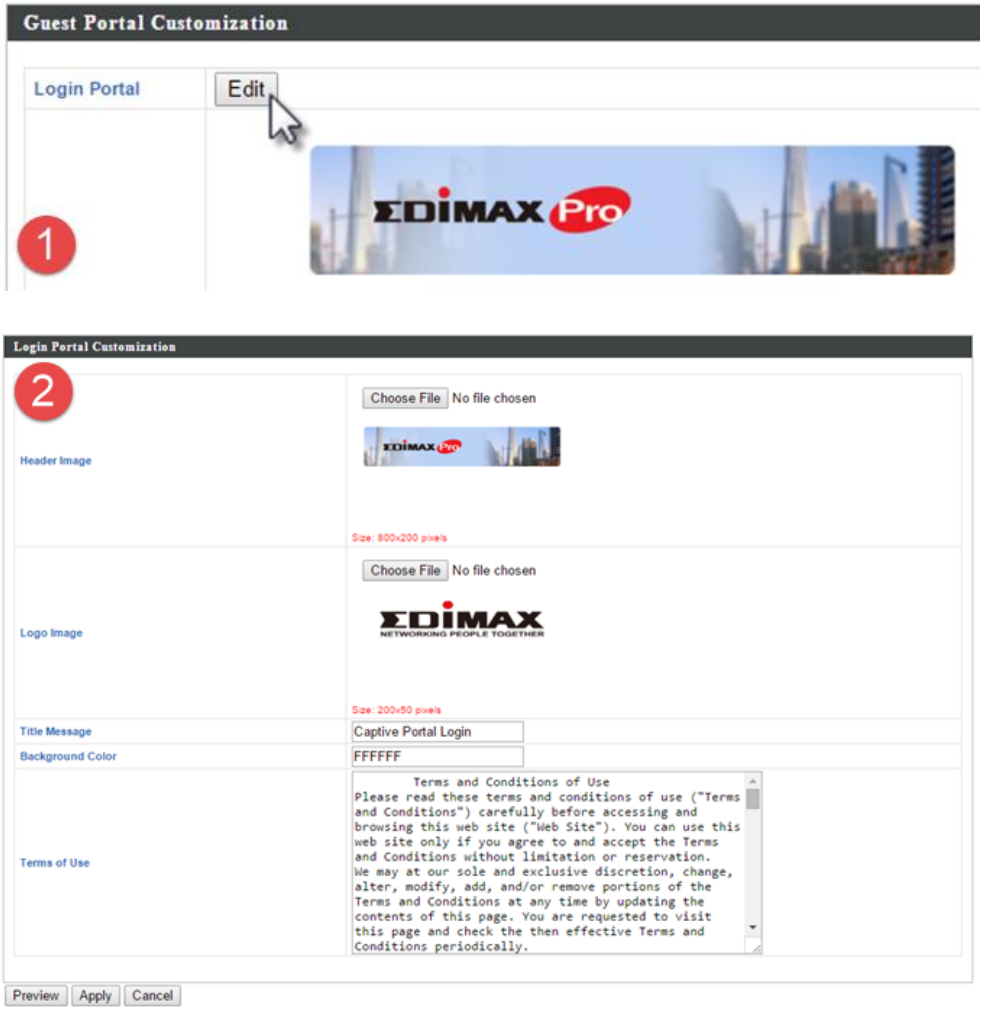
Four types of guest portal are available from the drop down menu:



Free	Redirects users to the specified landing page, with no user login required.
Service Level Agreement	Requires users to accept terms and conditions, with no user login required.
Static Users	Requires user login and accept terms and conditions. Users must be created in Edimax NMS at **NMS Settings → Users**. Front Desk is **not** used.
Dynamic Users	Requires user login and accept terms and conditions. Allows Front Desk to create user accounts in addition to Edimax NMS.

V-5-7-1-4. Guest Portal Customization

Guest portal customization varies according to guest portal type. Click **Edit** to make changes.



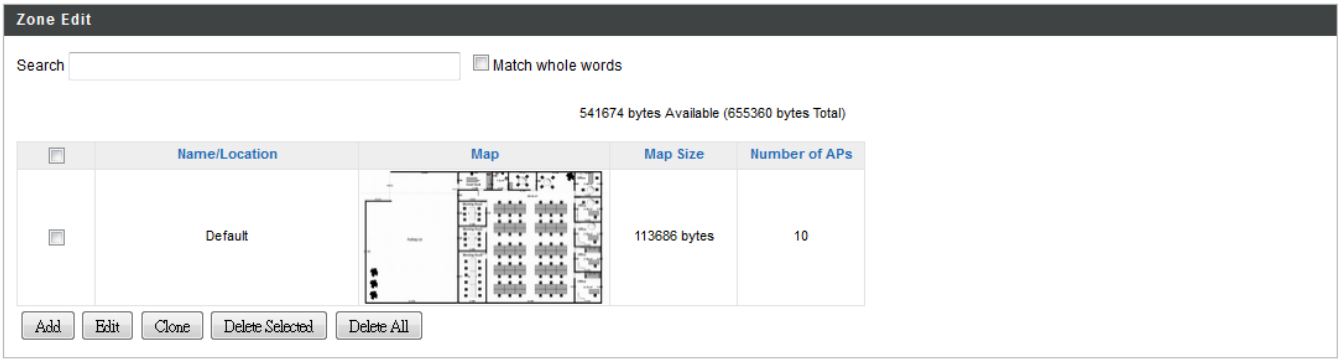
Login Portal Settings	
Header Image	Select an 800 x 200 header image.
Logo Image	Select a 200 x 50 logo image.
Title Message	Enter a title message for the guest portal page.
Background Color	Specify a background color as a HEX value.
Terms of Use	Enter your terms of use.

V-5-8. Zone Edit

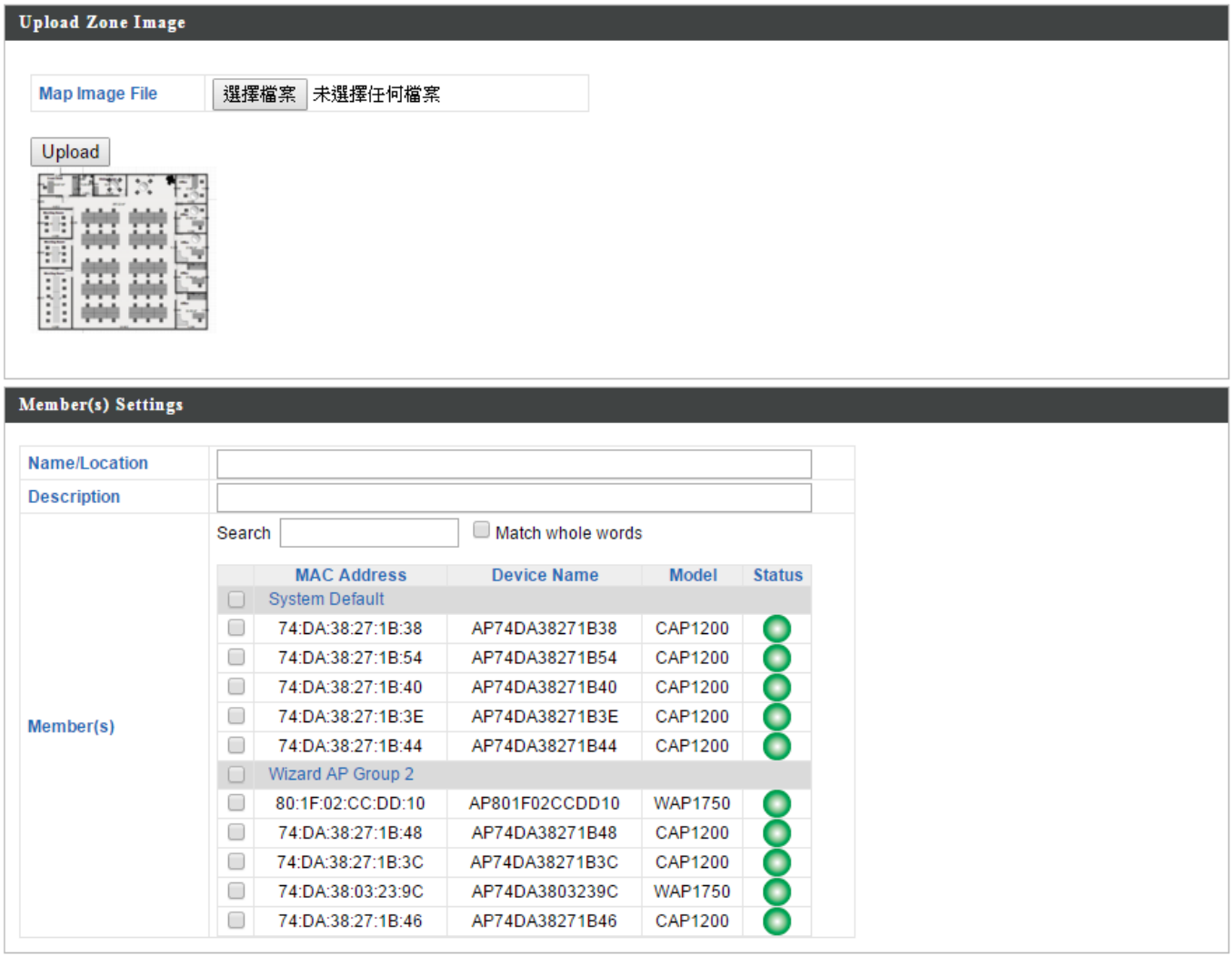
Zone Edit displays information about zones for use with the Zone Plan feature and allows you to add or edit zones.

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

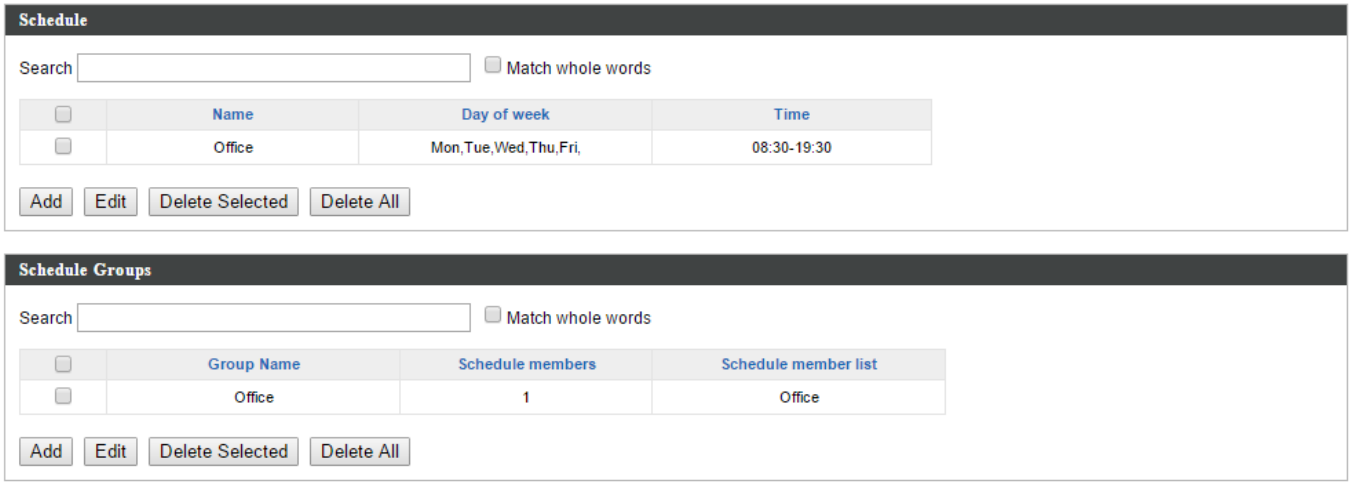


Upload Zone Image	
Choose File	Click to locate an image file to be displayed as a map in the Zone Plan feature. Typically a floor plan image is useful.
Zone Setting	
Name/Location	Enter a name of the zone/location.
Description	Enter a description of the zone/location for reference.
Members	Assign access points to the specified zone/location for use with the Zone Plan feature.

V-5-9. Schedule

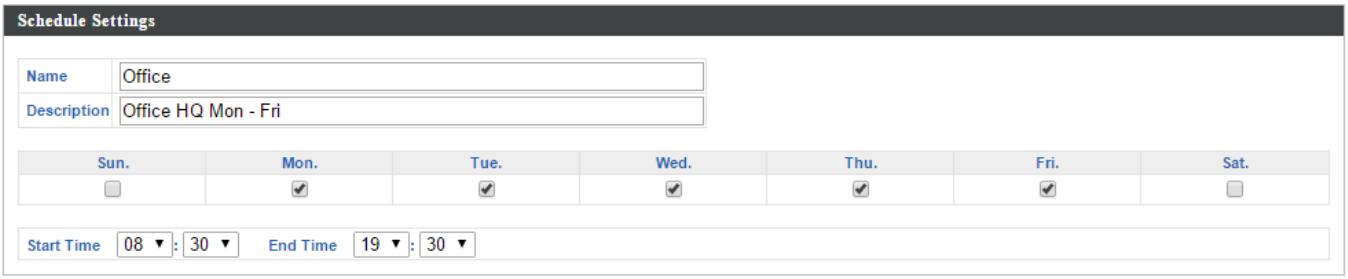
You can define schedules according to day, start time and end time - and group multiple schedules together into schedule groups.

Schedule groups can be assigned to **WLANs**, **WLAN Groups** & **Guest Network** at **NMS Settings → WLAN** and **NMS Settings → Guest Network**.

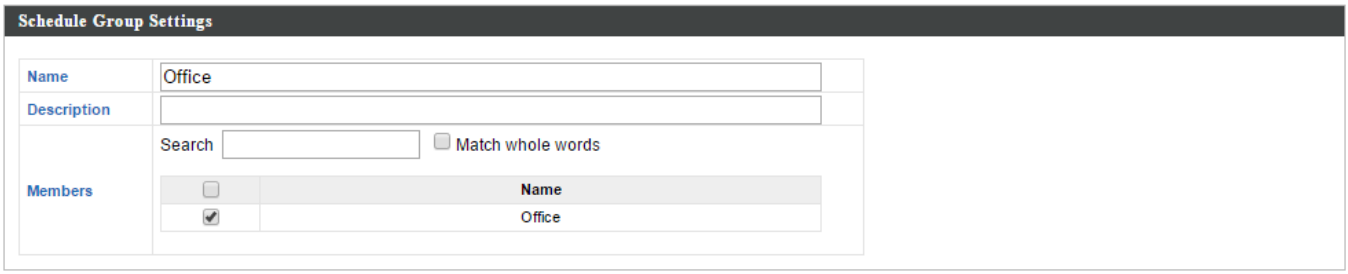


Add/Edit Schedule

Use the checkboxes and drop-down menus to setup your schedule.



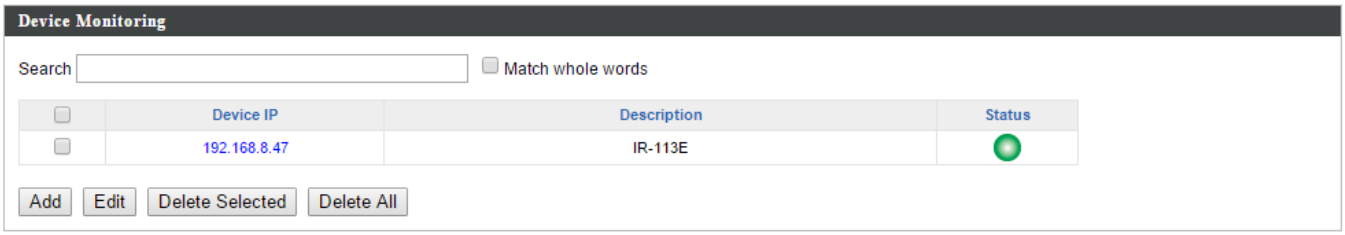
Add/Edit Schedule Group



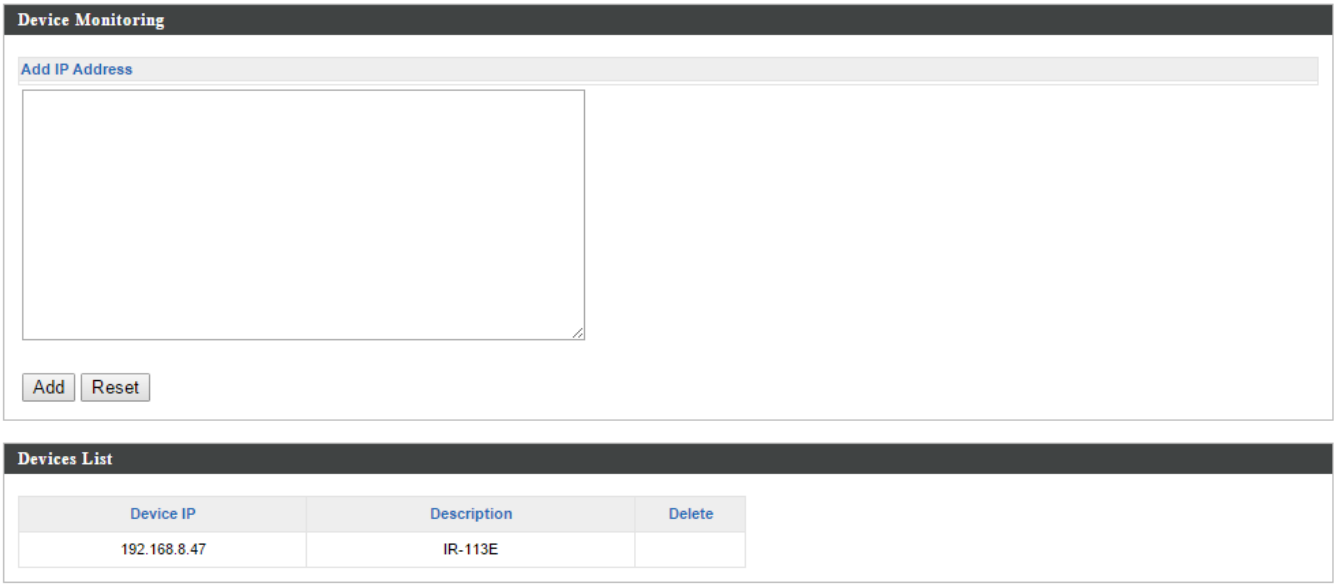
WLAN Group Settings	
Name	Edit the schedule group name.
Description	Enter a description of the schedule group for reference.
Members	Select individual schedules to include in the schedule group using the checkboxes.

V-5-10. Device Monitoring

Device monitoring enables you to specify and monitor the status any IP devices on the network such as IP cameras. The description and status of each device is displayed in the table.



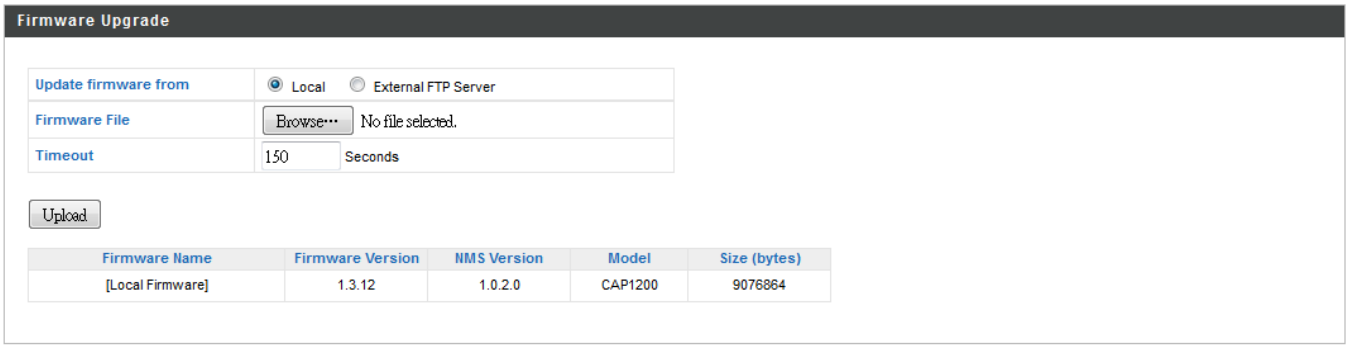
Add or **Edit** IP devices by entering the IP address.

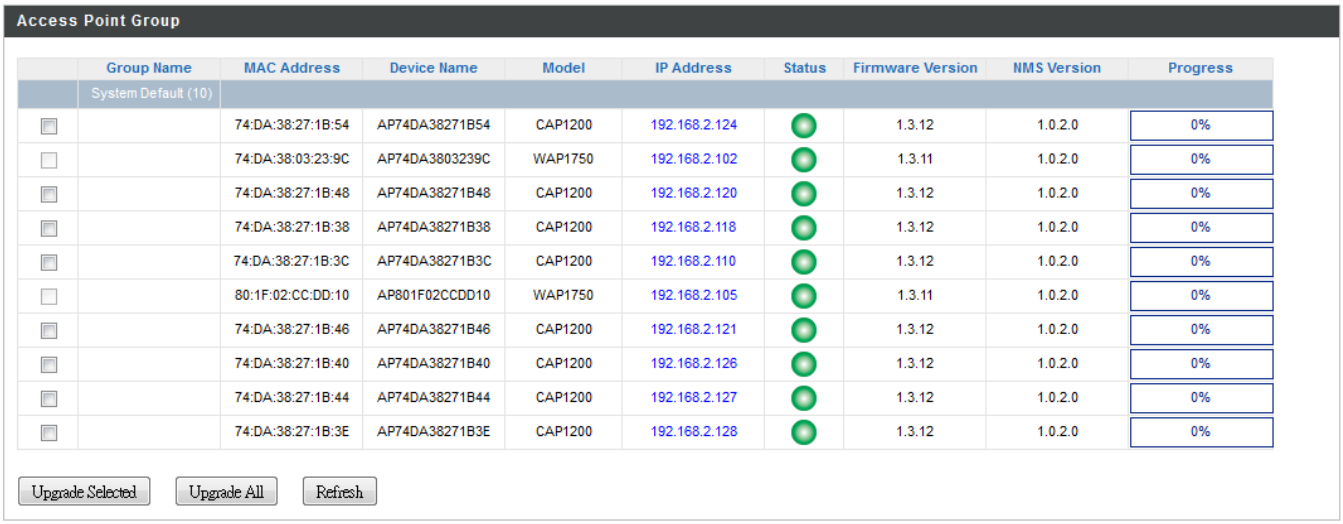


V-5-11. Firmware Upgrade

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” – you can set a timeout limit for the upload as desired. 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.





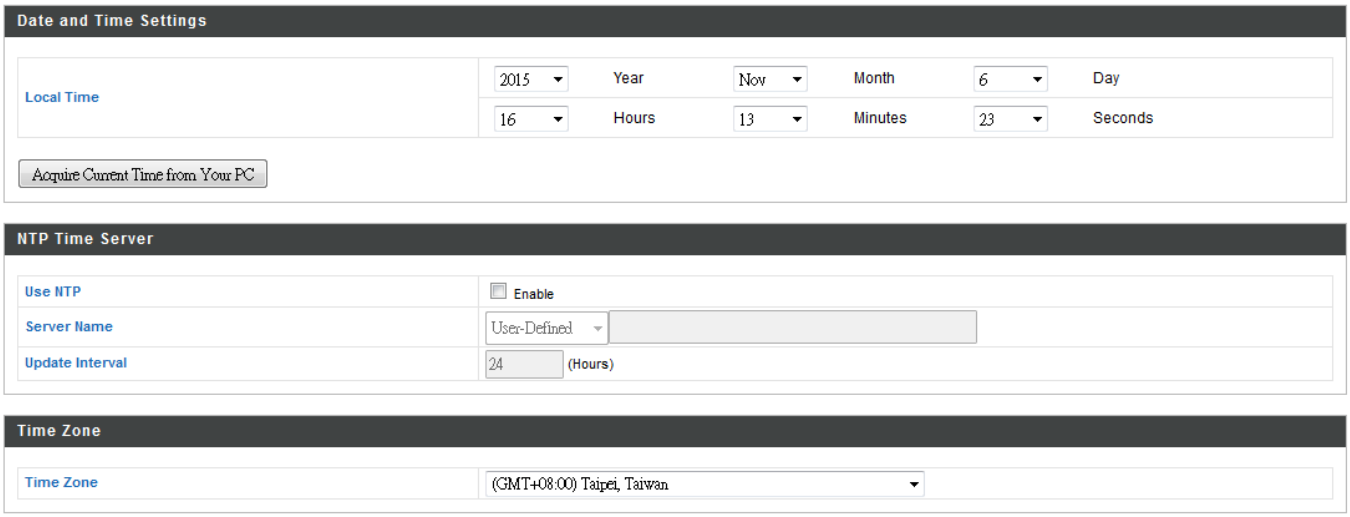
V-5-12. Advanced

V-5-12-1. System Security

Configure the NMS system name and security key for communication between AP Controller and Managed APs.

V-5-12-2. 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.

V-6. Local Network

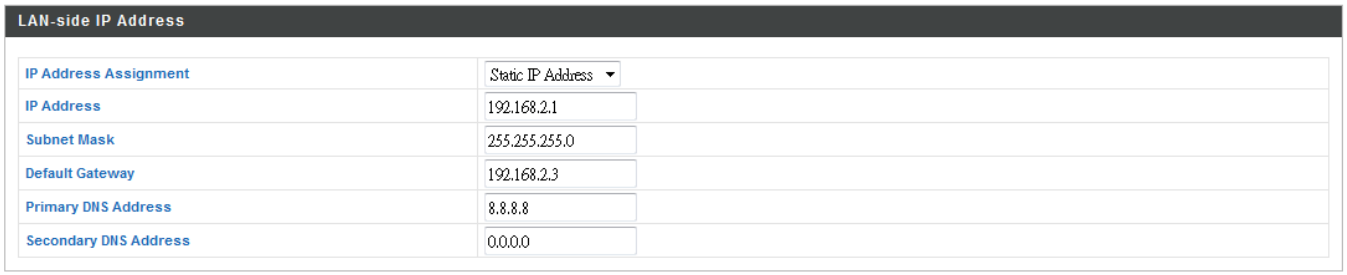
V-6-1. Network Settings

V-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 AP Controller’s default IP address is 192.168.2.1

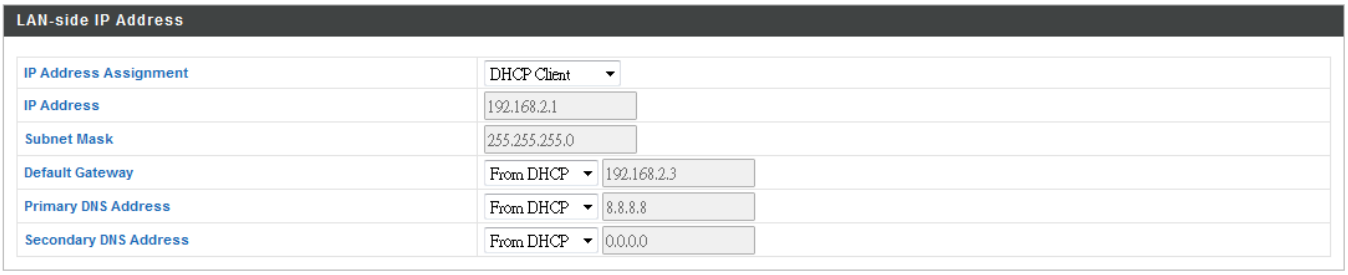
Disable other DHCP servers on the LAN if using AP Controllers DHCP Server.



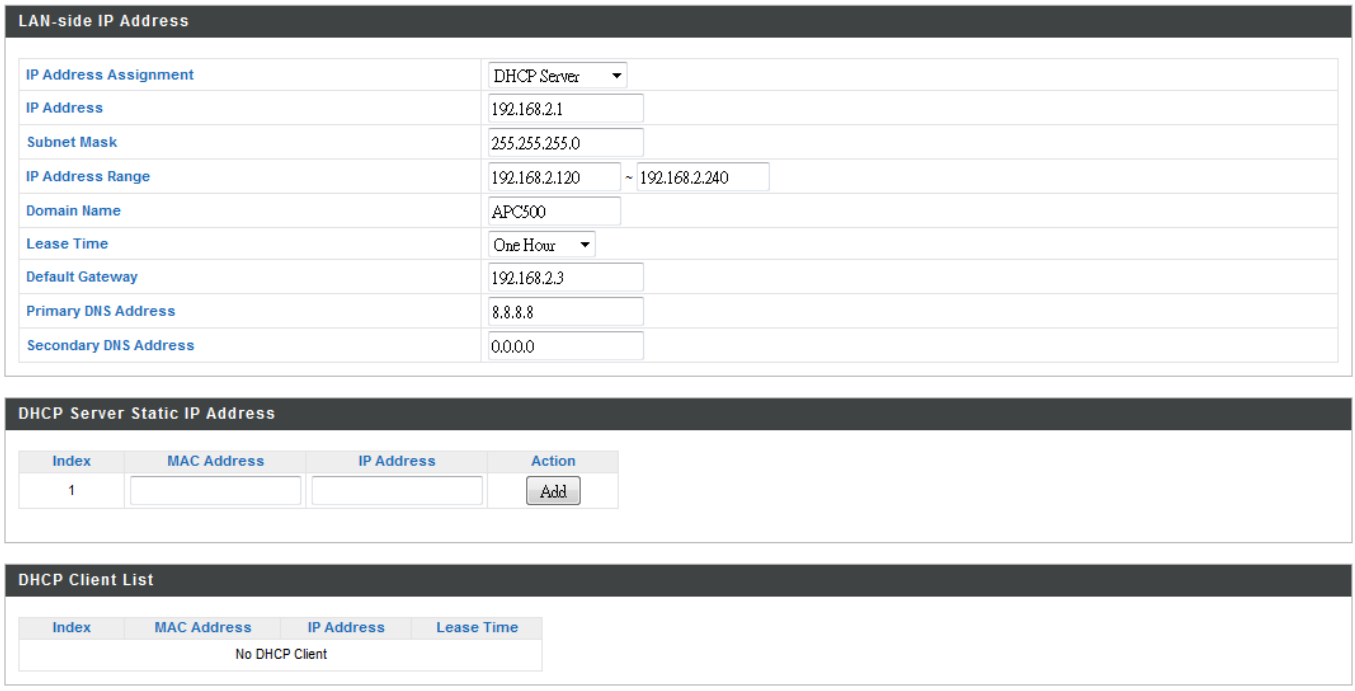
LAN-side IP Address	
IP Address Assignment	Select “Static IP” to manually specify a static/fixed IP address for your access point. Select “DHCP Client” for your access point to be assigned a dynamic IP address from your router’s DHCP server, or select “DHCP Server” for your access point to act as a DHCP 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.

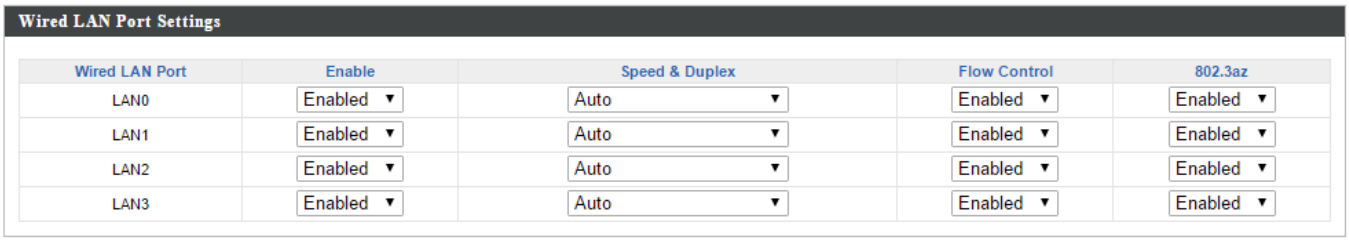
Your access point's DHCP server can be configured to assign static (fixed) IP addresses to specified network devices, identified by their unique MAC address:

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.

V-6-1-2. LAN Port Settings

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

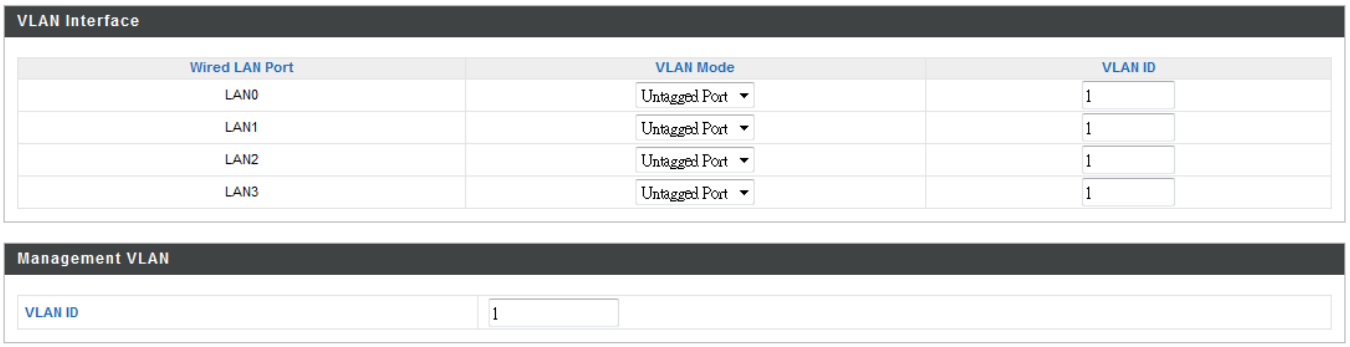


Wired LAN Port	Identifies LAN port 0 - 4.
Enable	Enable/disable specified LAN port.
Speed & Duplex	Select a speed & duplex type for specified LAN port, or use the “Auto” value. LAN ports can operate up to 1000Mbps and full-duplex enables simultaneous data packets transfer/receive.
Flow Control	Enable/disable 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.

V-6-1-3. VLAN

The “VLAN” (Virtual Local Area Network) page 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 1 – 4095 are supported.

VLAN IDs in the range 1 – 4095 are supported.



VLAN Interface	
Wired LAN Port/Wireless	Identifies LAN port 1 or 2 and wireless SSIDs (2.4GHz or 5GHz).
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.

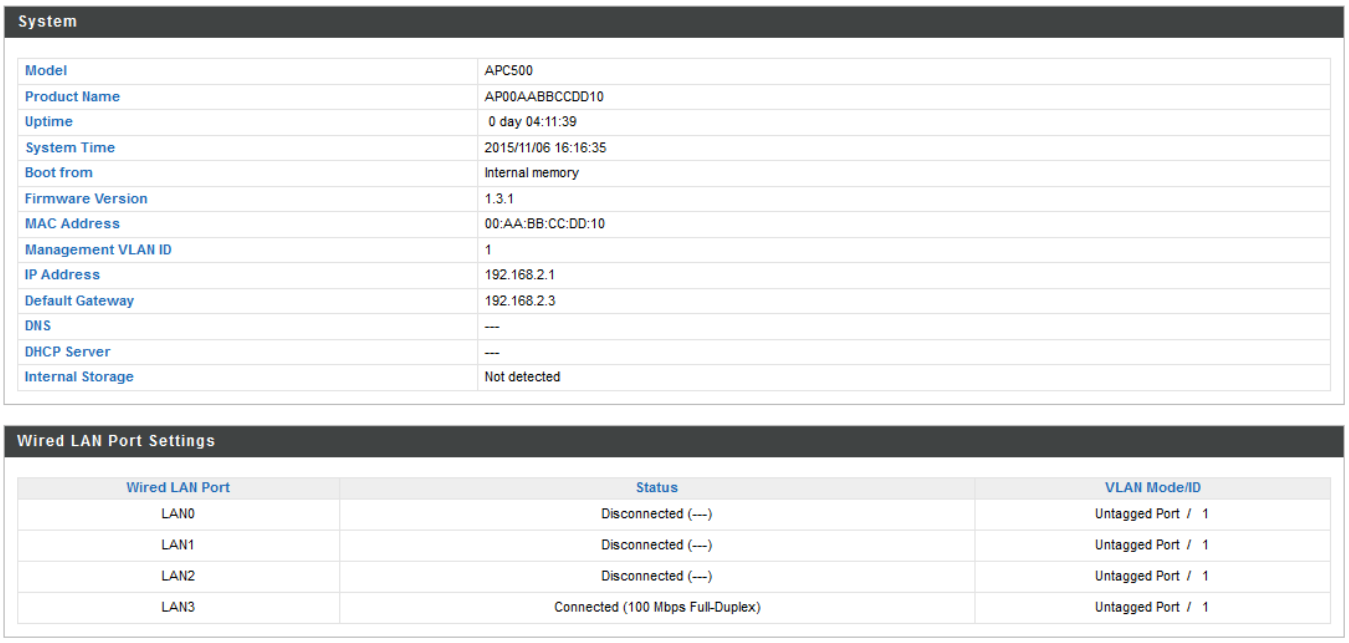
Management VLAN	
VLAN ID	Specify the VLAN ID of the management VLAN. Only the hosts belonging to the same VLAN can manage the device.

V-7. Local Settings

V-7-1. System Settings

V-7-1-1. System Information

The “System Information” page displays basic system information about the access point.



System

Model	APC500
Product Name	AP00AABBCCDD10
Uptime	0 day 04:11:39
System Time	2015/11/06 16:16:35
Boot from	Internal memory
Firmware Version	1.3.1
MAC Address	00:AA:BB:CC:DD:10
Management VLAN ID	1
IP Address	192.168.2.1
Default Gateway	192.168.2.3
DNS	---
DHCP Server	---
Internal Storage	Not detected

Wired LAN Port Settings

Wired LAN Port	Status	VLAN Mode/ID
LAN0	Disconnected (---)	Untagged Port / 1
LAN1	Disconnected (---)	Untagged Port / 1
LAN2	Disconnected (---)	Untagged Port / 1
LAN3	Connected (100 Mbps Full-Duplex)	Untagged Port / 1

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.
Boot From	Displays information for the booted hardware, booted from either USB or internal memory.
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.

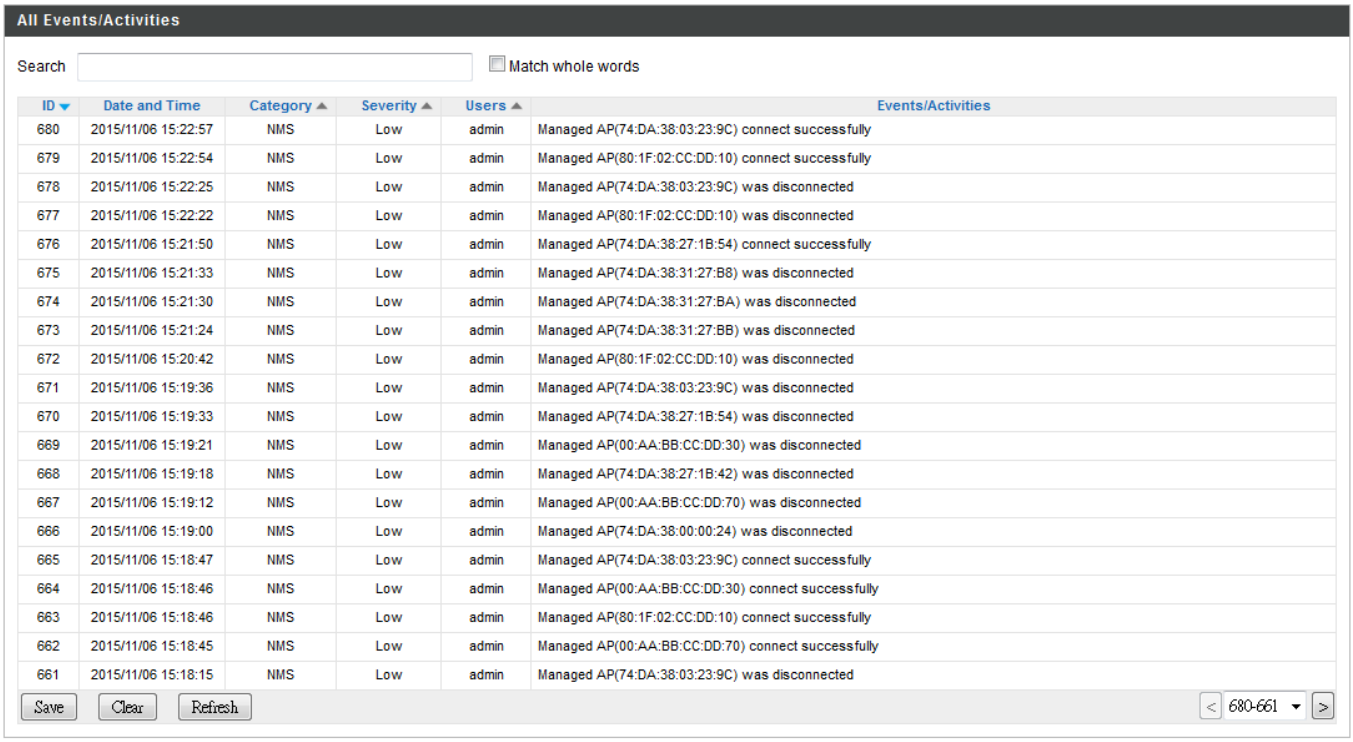
Wired LAN Port Settings	
Wired LAN Port	Specifies which LAN port (1 or 2).
Status	Displays the status of the specified LAN port (connected or disconnected).
VLAN Mode/ID	Displays the VLAN mode (tagged or untagged) and VLAN ID for the specified LAN port. See **V-6-1-3. VLAN**

Refresh	Click to refresh all information.

V-7-1-2. Log

This information is useful for network administrators. Displays a detailed information log of users and activity on the network: *ID, Date and Time of entry, Category of entry, Severity, Users, Event/Activities details.*

When the log is full, old entries are overwritten.



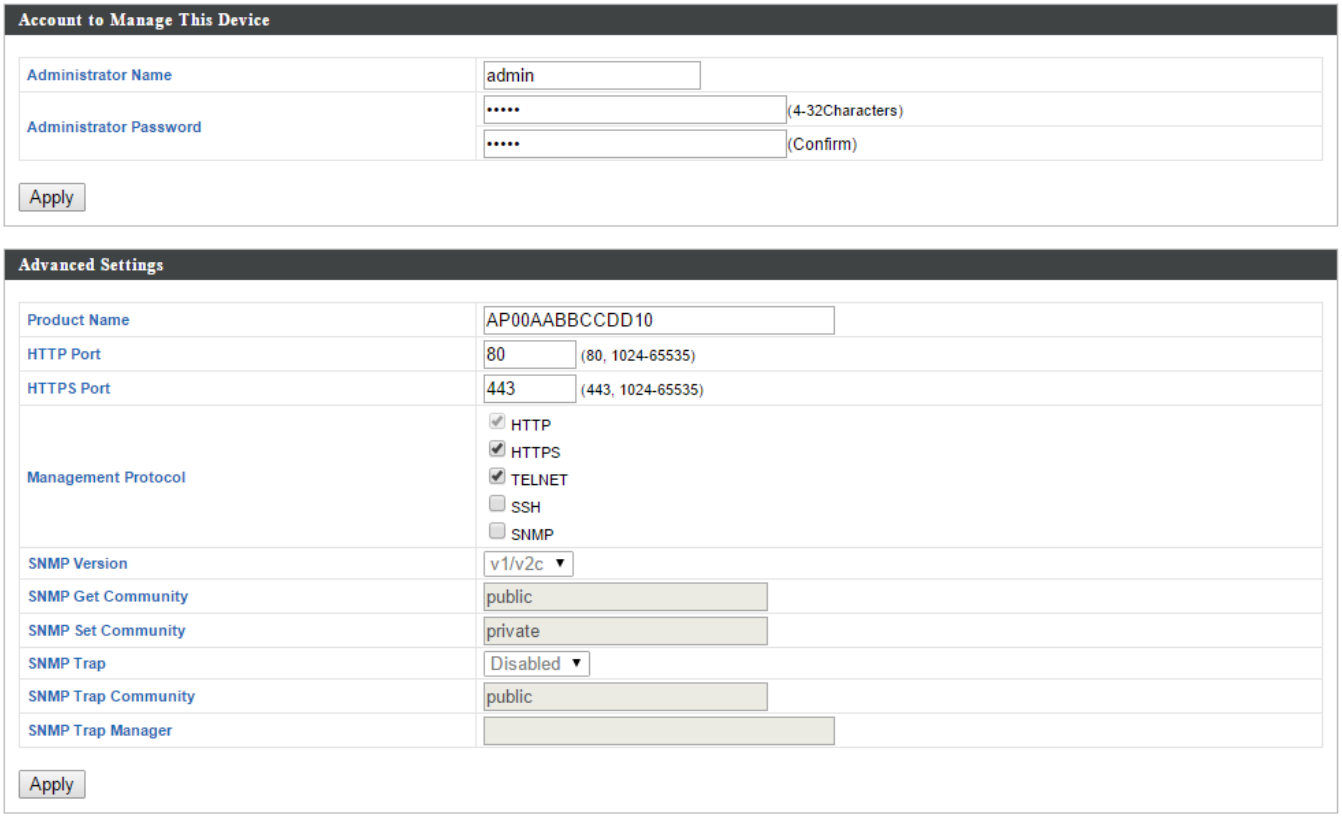
Save	Click to save the log as a file on your local computer.
Clear	Clear all log entries.
Refresh	Refresh the current log.

V-7-2. Management

V-7-2-1. 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 *V-7-3-4. Factory Default* ***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).

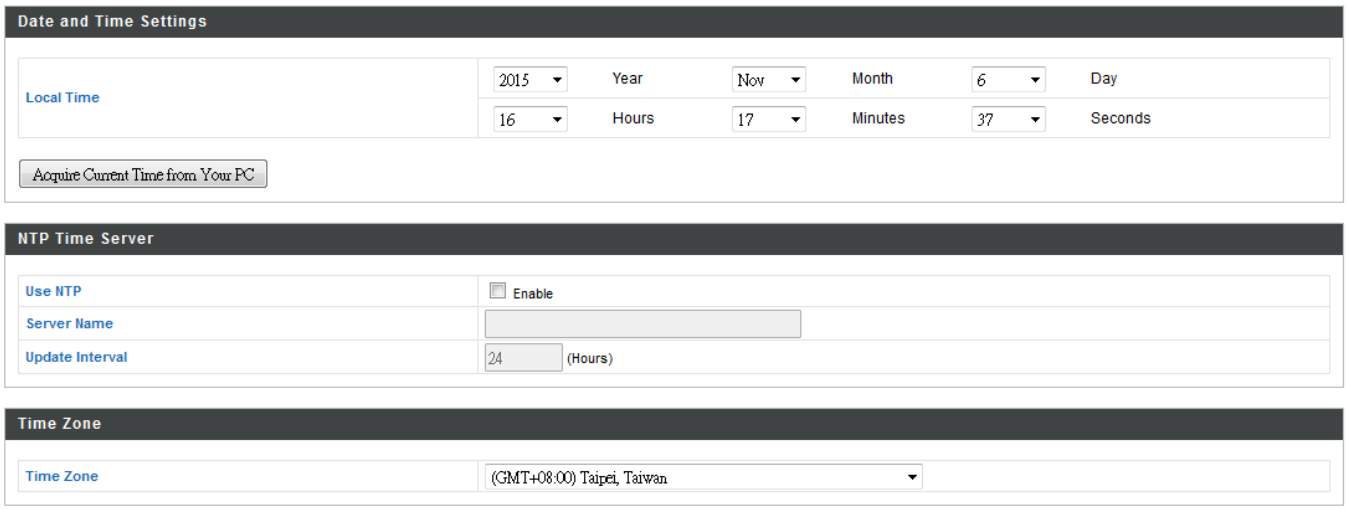
Advanced Settings	
Product Name	Edit the product name according to your preference consisting of 1-32 alphanumeric characters. This name is used for reference purposes.
HTTP Port	Specify a HTTP port for management.
HTTPS Port	Specify a HTTPS port for management.
Management Protocol	Check/uncheck the 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
HTTPS
Internet browser HTTPS protocol management interface
TELNET
Client terminal with telnet protocol management interface
SSH
Client terminal with SSH protocol version 1 or 2 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.

V-7-2-2. Date and Time

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



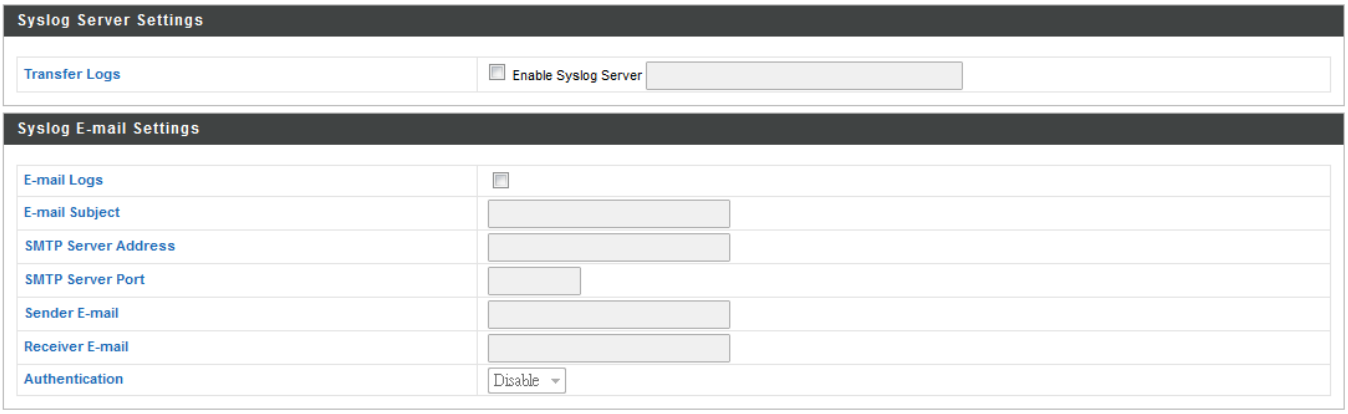
Date and Time Settings	
Local Time	Set the access point's date and time manually using the drop down menus.
Acquire Current Time from your PC	Click "Acquire Current Time from Your PC" to enter the required values automatically according to your computer's current time and date.

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.

V-7-2-3. Syslog Server

The system log can be sent to a server, attached to USB storage or sent via email.



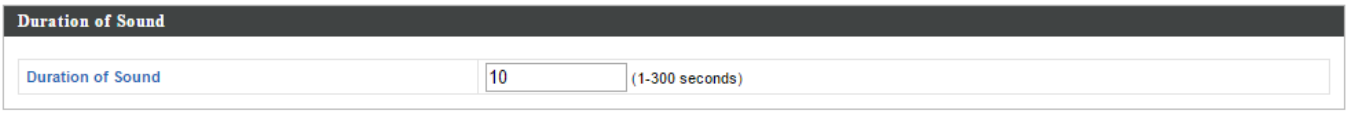
Syslog Server Settings	
Transfer Logs	Check/uncheck the box to enable/disable the use of a syslog server, and enter a host name, domain or IP address for the server, consisting of up to 128 alphanumeric characters.
Copy Logs to Attached USB Device	Check/uncheck the box to enable/disable copying logs to attached USB storage.

Syslog Email Settings	
Email Logs	Check/uncheck the box to enable/disable email logs. When enabled, the log will be emailed according to the settings below.
Email Subject	Enter the subject line of the email which will be sent containing the log.
SMTP Server Address	Specify the SMTP server address for the sender email account.
SMTP Server Port	Specify the SMTP server port for the sender email account.
Sender Email	Enter the sender's email address.
Receiver Email	Specify the email recipient of the log.
Authentication	Select "Disable", "SSL" or "TLS" according to your email authentication.
Account	When authentication is used above, enter the

	account name.
Password	When authentication is used above, enter the password.

V-7-2-4. 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.



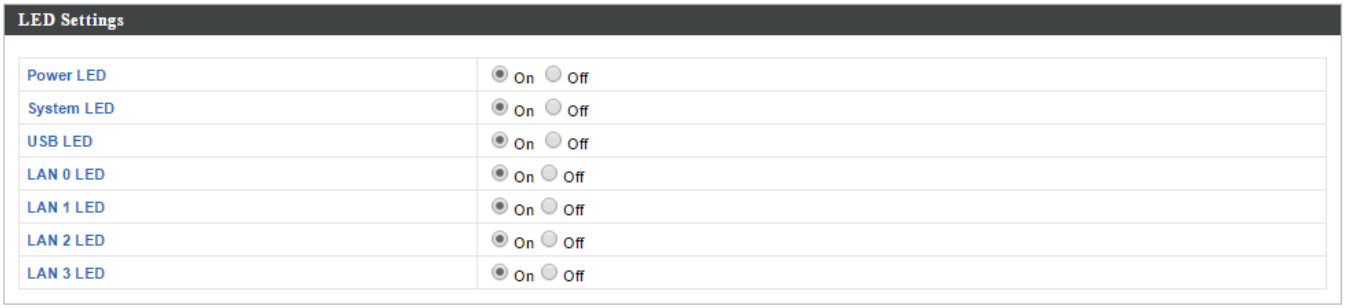
The buzzer is loud!

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.

V-7-3. Advanced

V-7-3-1. 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.

V-7-3-2. Update Firmware

The "Firmware" page allows you to update the system firmware to a more recent version. Updated firmware versions often offer increased performance and security, as well as bug fixes. You can download the latest firmware from the Edimax website.

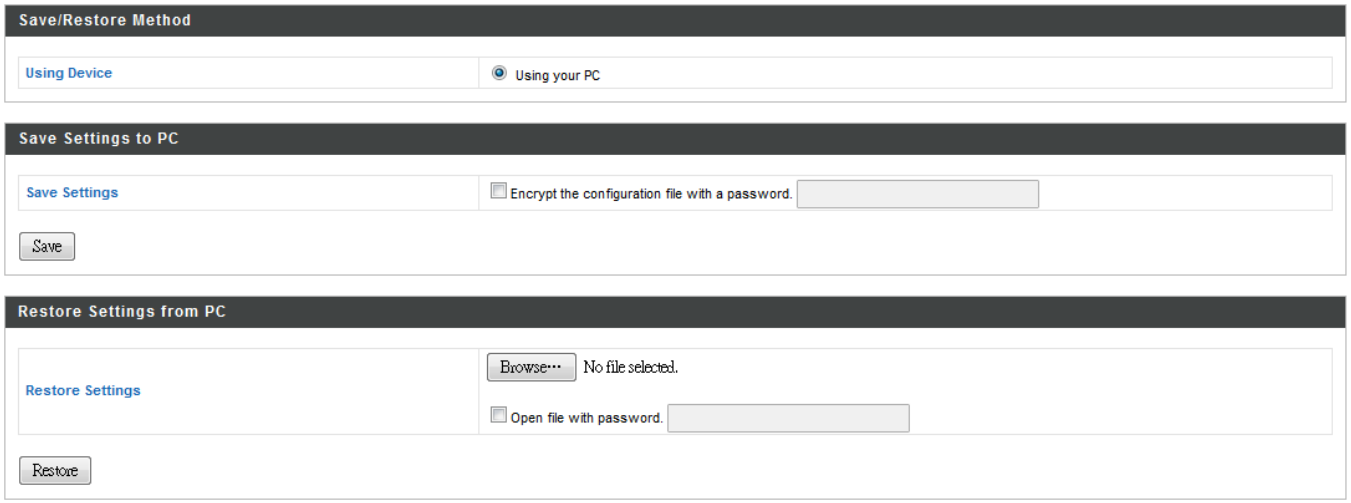
This firmware update is for an individual access point. To update firmware for multiple access points in the AP array, go to NMS Settings → Firmware Upgrade.

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

Update Firmware From	Select “a file on your PC” to upload firmware from your local computer.
Firmware Update File	Click “Browse” to open a new window to locate and select the firmware file in your computer.
Update	Click “Update” to upload the specified firmware file to your access point.

V-7-3-3. Save/Restore Settings

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



Save / Restore Settings	
Using Device	Select "Using your PC" to save the access point's settings to your local computer.

Save Settings to PC	
Save Settings	Click "Save" to save settings and a new window will open to specify a location to save the settings file. You can also check the "Encrypt the configuration file with a password" box and enter a password to protect the file in the field underneath, if you wish.

Restore Settings from PC	
Restore Settings	Click the browse button to find a previously saved settings file on your computer, then click "Restore" to replace your current settings. If your settings file is encrypted with a password, check the "Open file with password" box and enter the password in the field underneath.

V-7-3-4. Factory Default

If the access point malfunctions or is not responding, then it is recommended that you reboot the device (see **V-7-3-5.**) or reset the device back to its factory default settings. You can reset the access point back to its default settings using this feature if the location of the access point is not convenient to access the reset button.

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.

V-7-3-5. Reboot

If the access point malfunctions or is not responding, then it is recommended that you reboot the device or reset the access point back to its factory default settings (see **V-7-3-4**). 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.

V-8. Toolbox

V-8-1. Network Connectivity

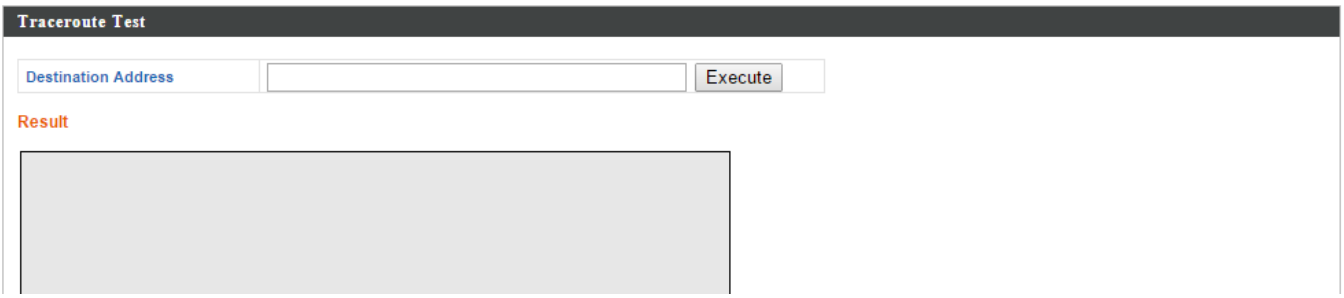
V-8-1-1. Ping

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.

V-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.

VI. Appendix

VI-1. Configuring your IP address

The AP Controller uses the default IP address **192.168.2.1**. 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.

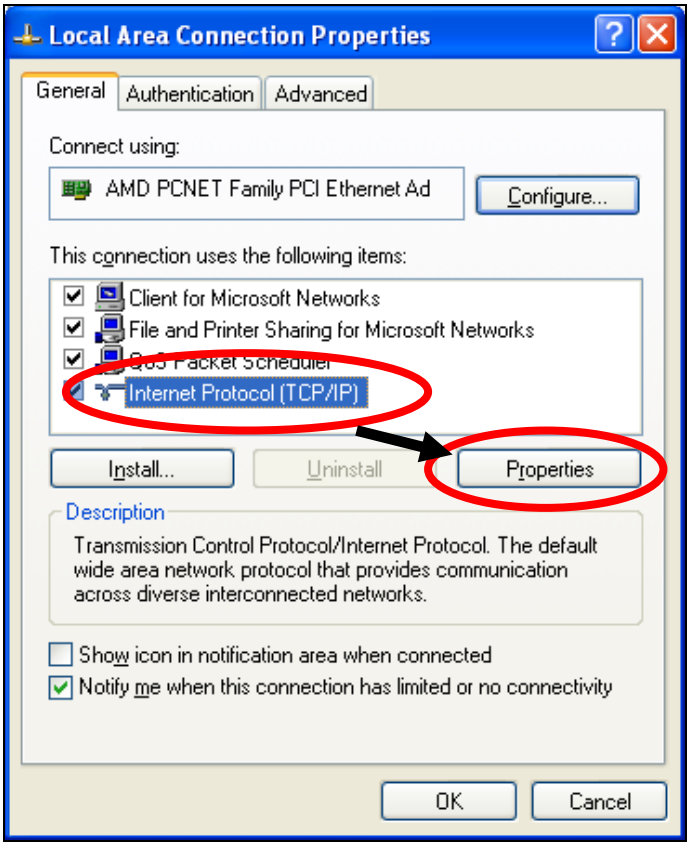
In the following examples we use the IP address **192.168.2.10** though you can use any IP address in the range **192.168.2.x (x = 3 – 254).**

If you 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. 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.

VI-1-1. Windows XP

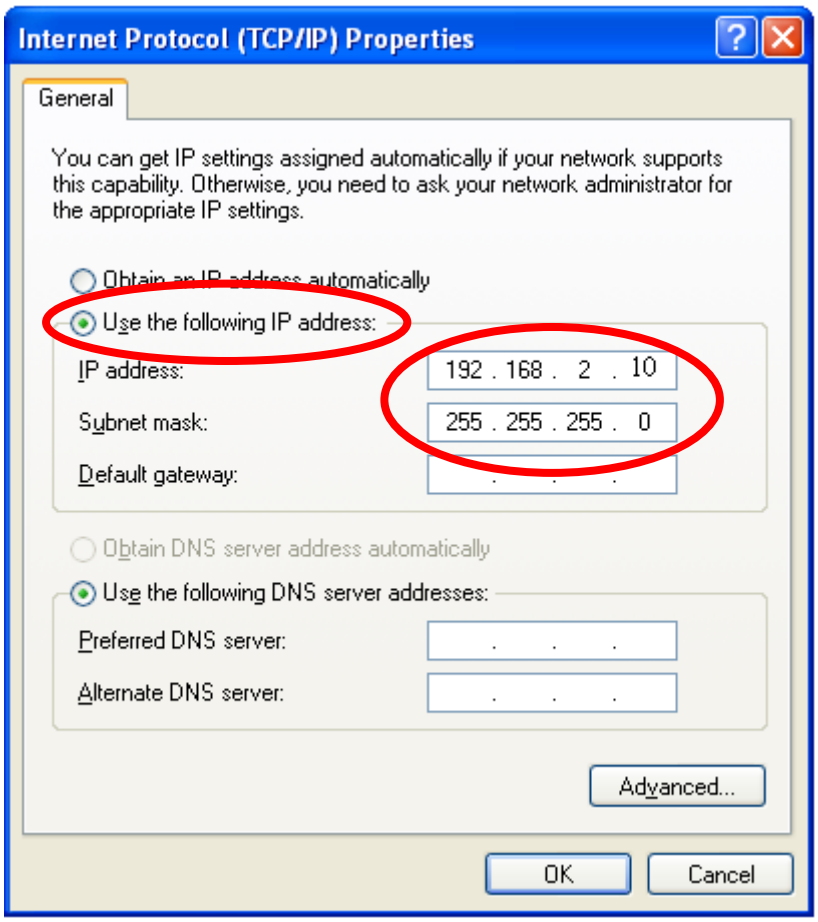
1. Click the “Start” button (it should be located in the lower-left corner of your computer), then click “Control Panel”. Double-click the “Network and Internet Connections” icon, click “Network Connections”, and then double-click “Local Area Connection”. The “Local Area Connection Status” window will then appear, click “Properties”.



2. Select “Use the following IP address”, then input the following values:

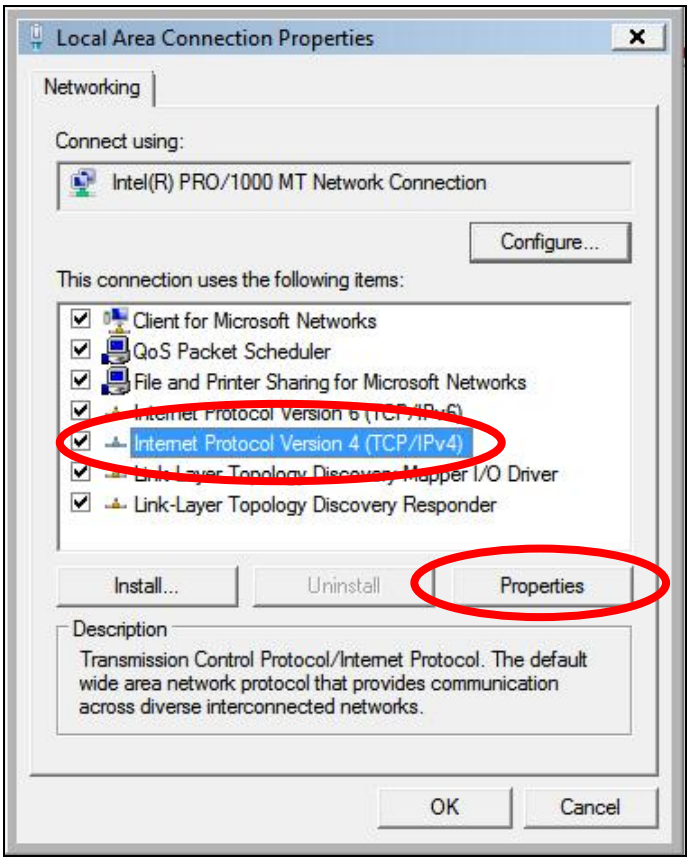
IP address: 192.168.2.10
Subnet Mask: 255.255.255.0

Click ‘OK’ when finished.


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
192 . 168 . 2 . 10
Subnet mask:
255 . 255 . 255 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

VI-1-2. Windows Vista

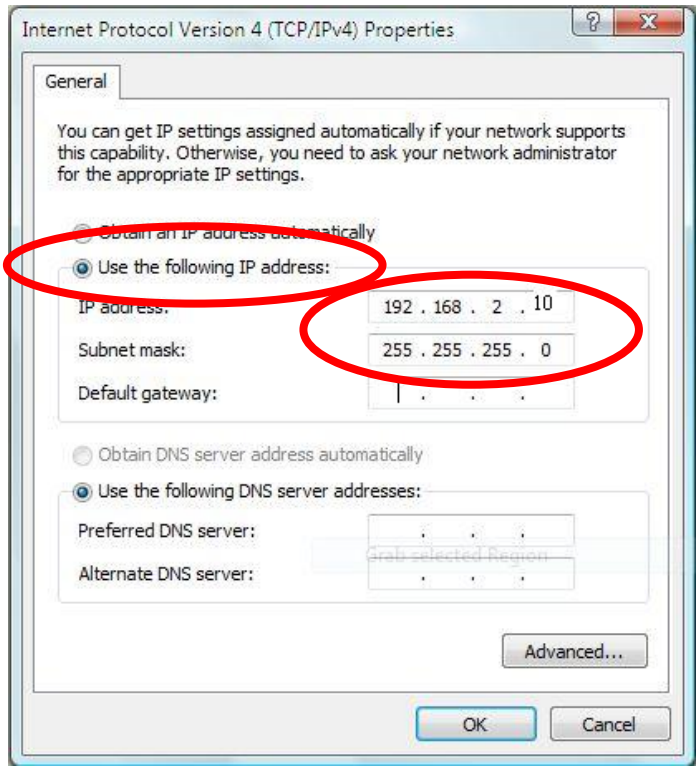
1. Click the “Start” button (it should be located in the lower-left corner of your computer), then click “Control Panel”. Click “View Network Status and Tasks”, then click “Manage Network Connections”. Right-click “Local Area Network”, then select “Properties”. The “Local Area Connection Properties” window will then appear, select “Internet Protocol Version 4 (TCP / IPv4)”, and then click “Properties”.



2. Select “Use the following IP address”, then input the following values:

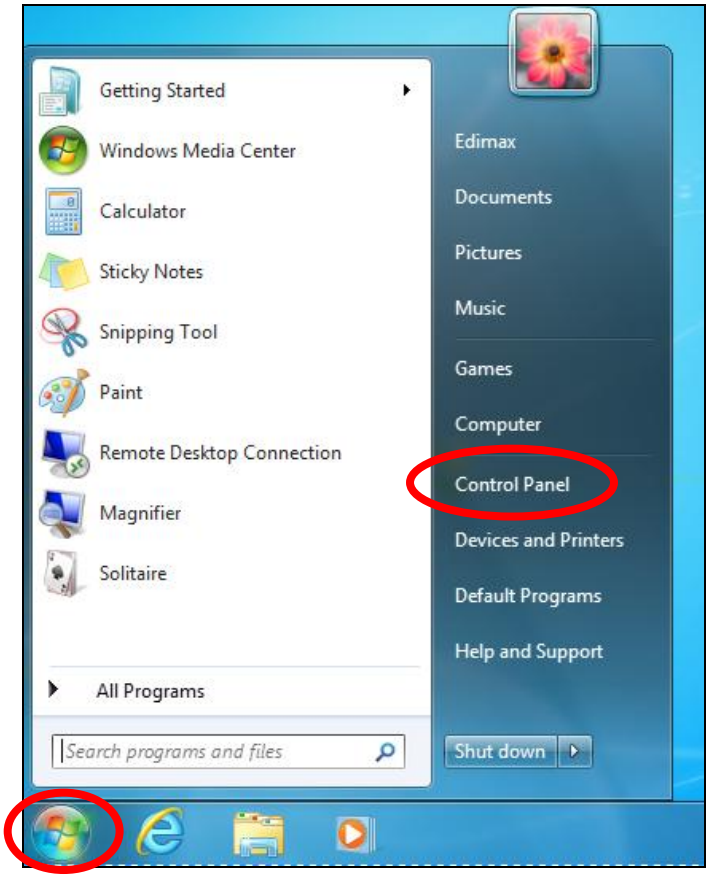
IP address: 192.168.2.10
Subnet Mask: 255.255.255.0

Click ‘OK’ when finished.

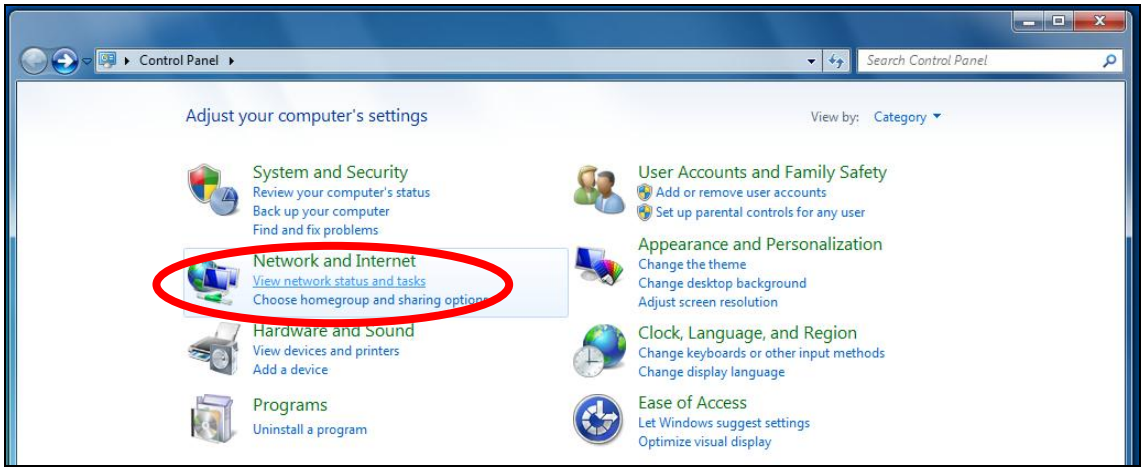

Internet Protocol Version 4 (TCP/IPv4) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Use the following IP address:
IP address:
192 . 168 . 2 . 10
Subnet mask:
255 . 255 . 255 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

VI-1-3. Windows 7

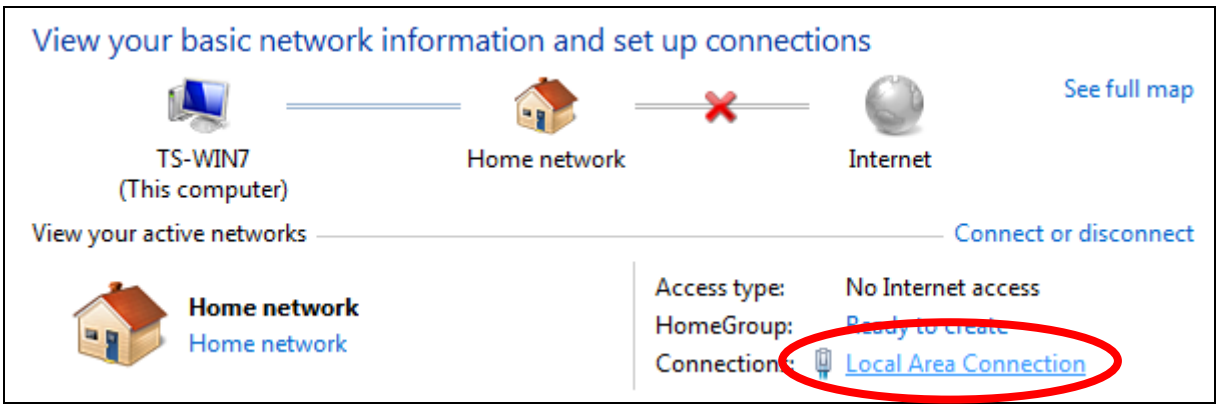
1. Click the “Start” button (it should be located in the lower-left corner of your computer), then click “Control Panel”.



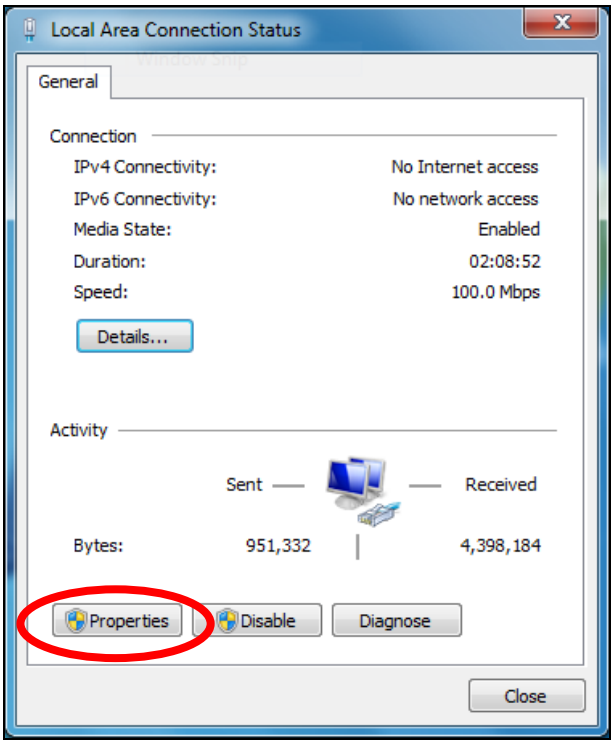
2. Under “Network and Internet” click “View network status and tasks”.



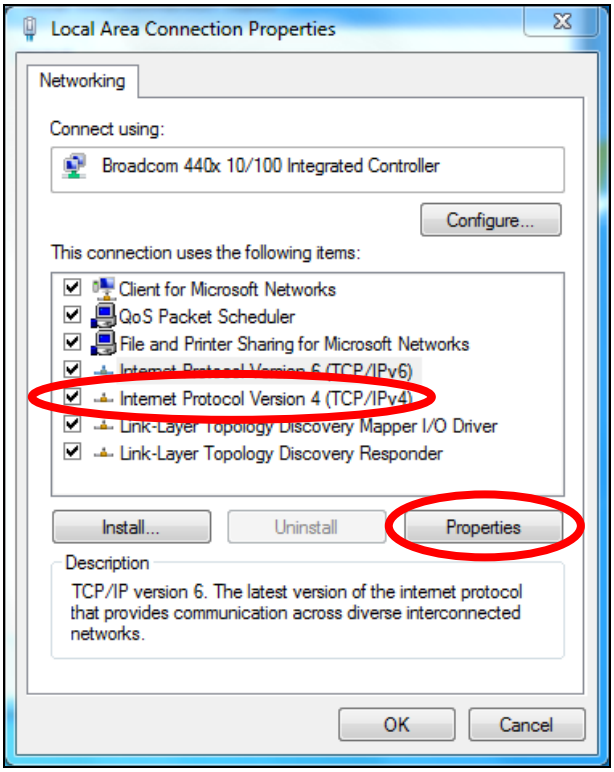
3. Click “Local Area Connection”.



4. Click “Properties”.



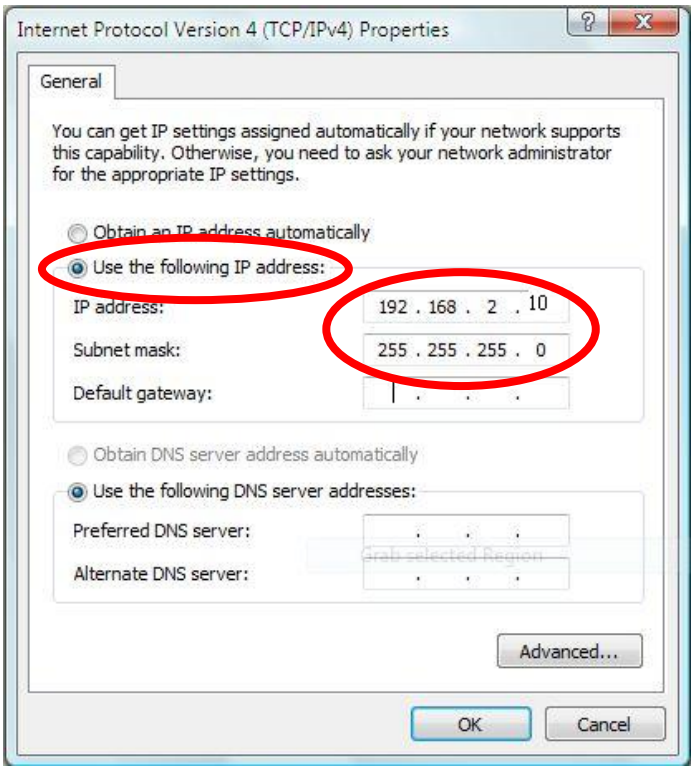
5. Select “Internet Protocol Version 4 (TCP/IPv4) and then click “Properties”.



6. Select “Use the following IP address”, then input the following values:

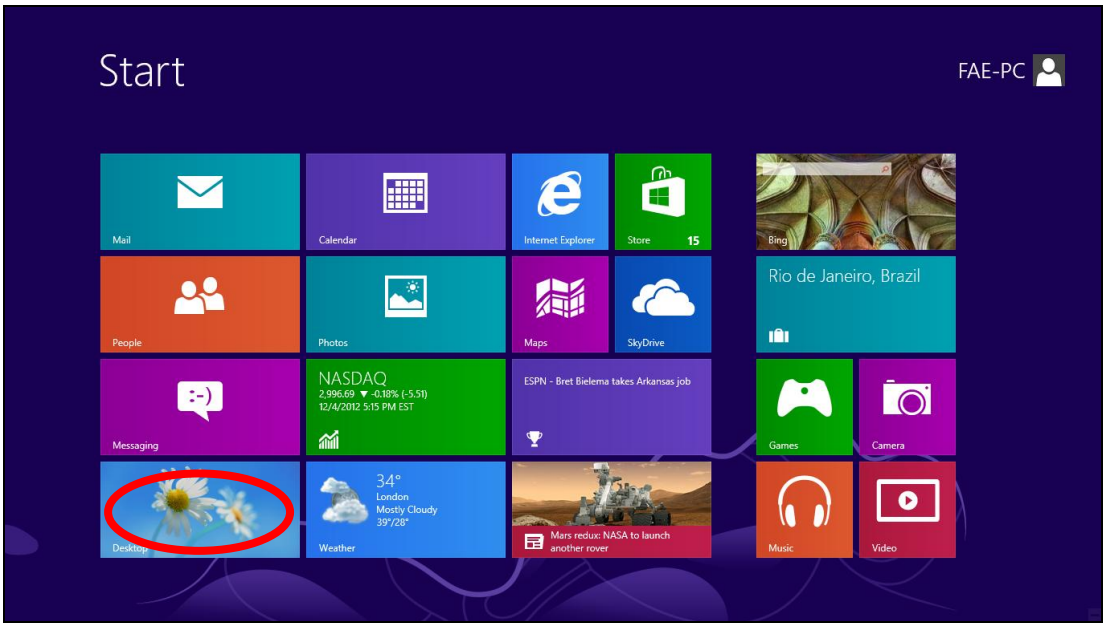
IP address: 192.168.2.10
Subnet Mask: 255.255.255.0

Click ‘OK’ when finished.

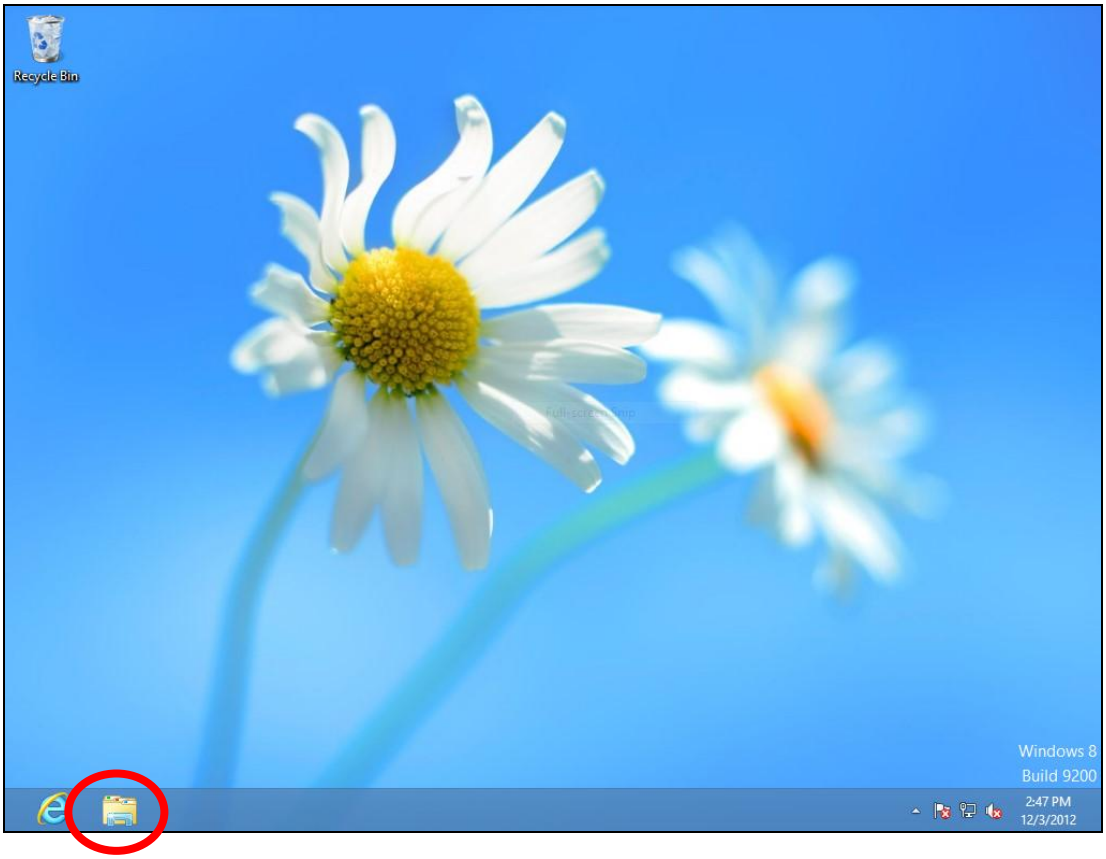

Internet Protocol Version 4 (TCP/IPv4) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
192 . 168 . 2 . 10
Subnet mask:
255 . 255 . 255 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

VI-1-4. Windows 8

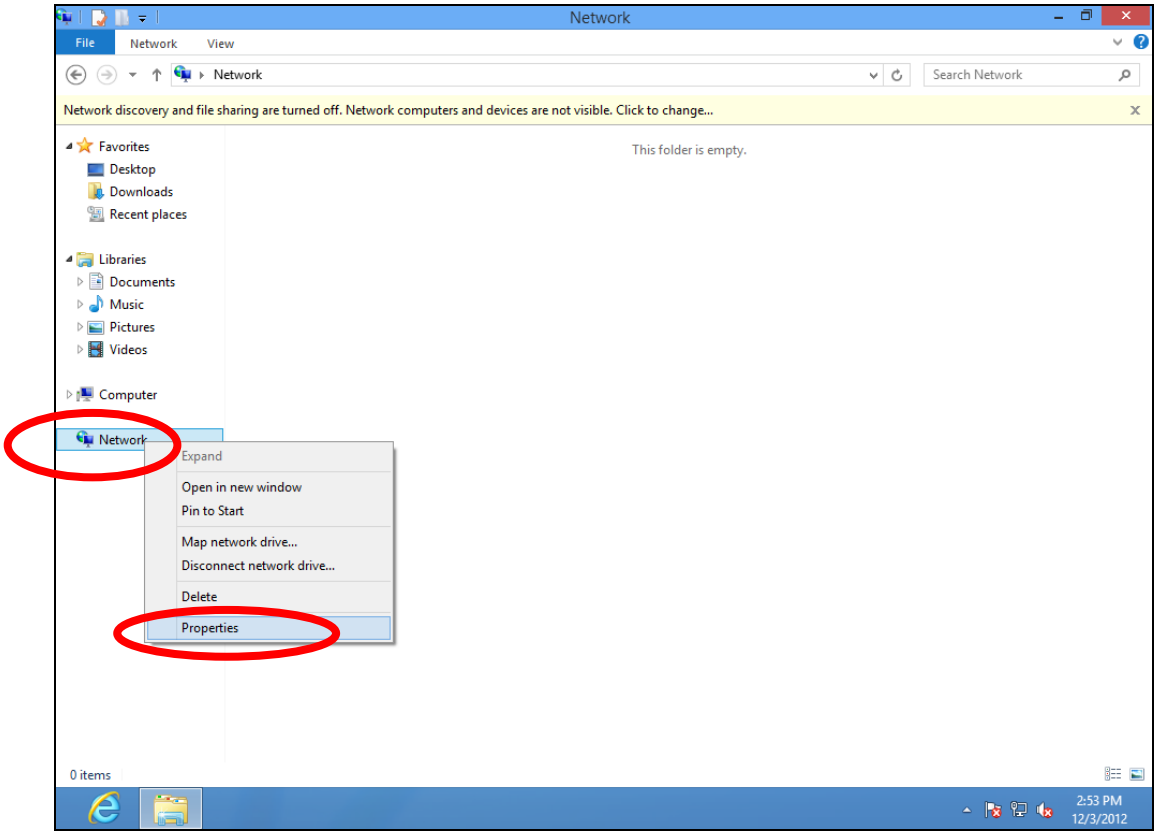
1. From the Windows 8 Start screen, you need to switch to desktop mode. Move your curser to the bottom left of the screen and click.



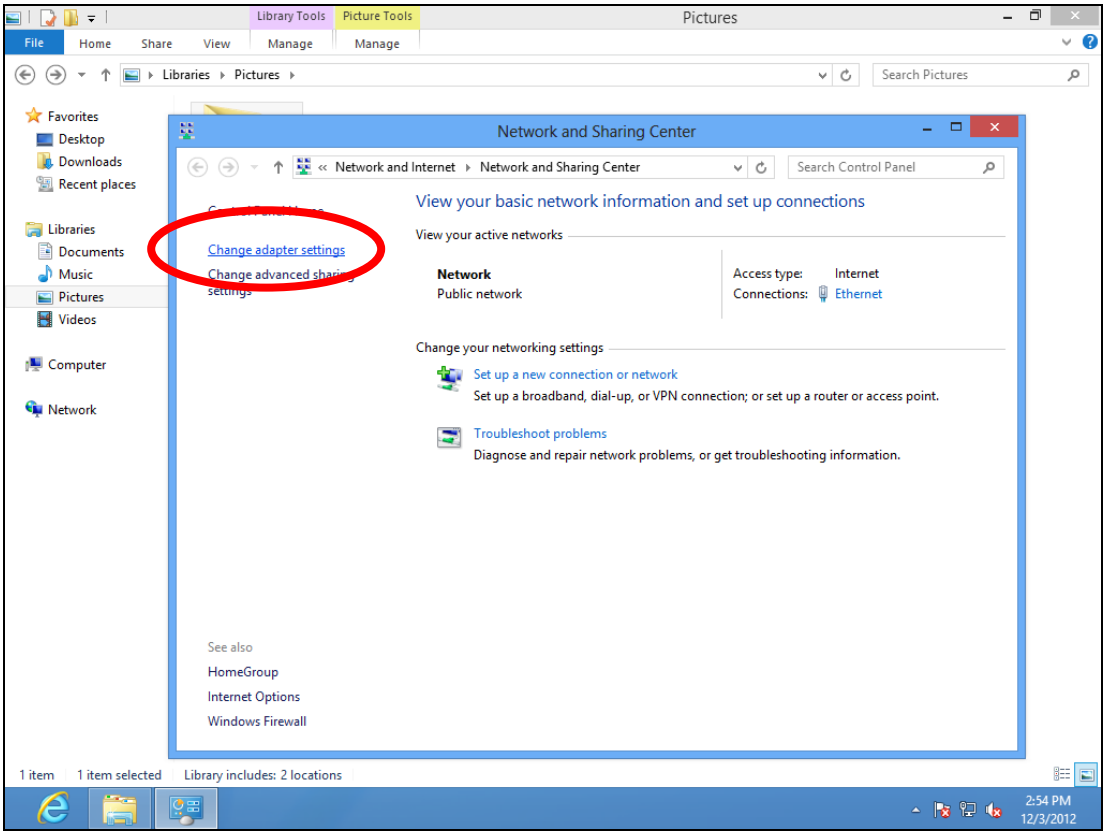
2. In desktop mode, click the File Explorer icon in the bottom left of the screen, as shown below.



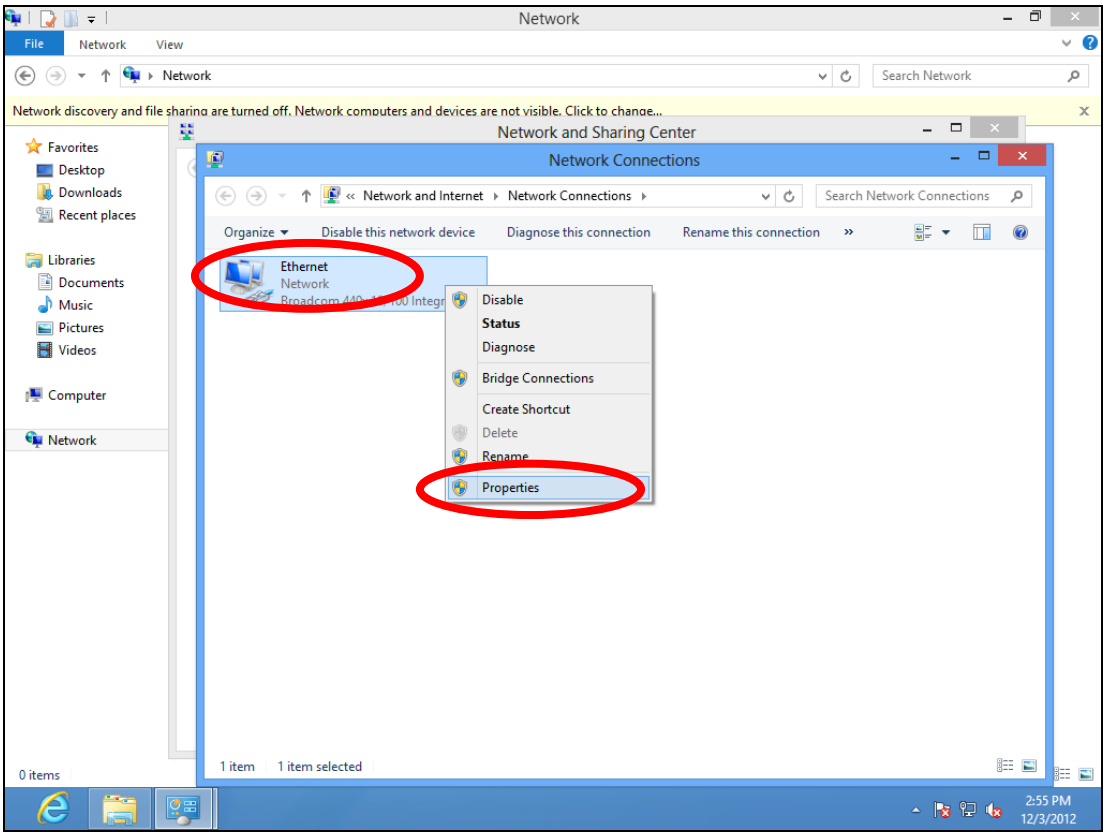
3. Right click “Network” and then select “Properties”.



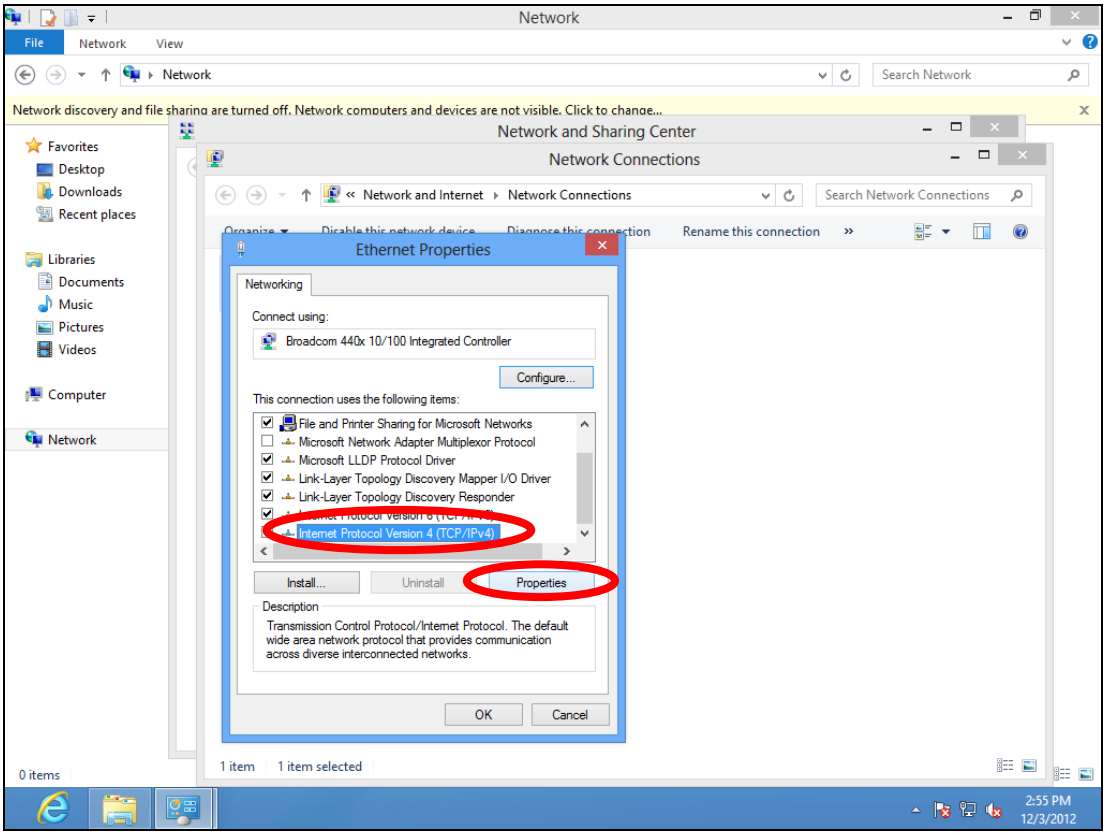
4. In the window that opens, select “Change adapter settings” from the left side.



5. Choose your connection and right click, then 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:

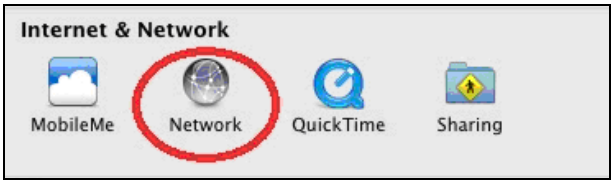
IP address: 192.168.2.10
Subnet Mask: 255.255.255.0

Click ‘OK’ when finished.

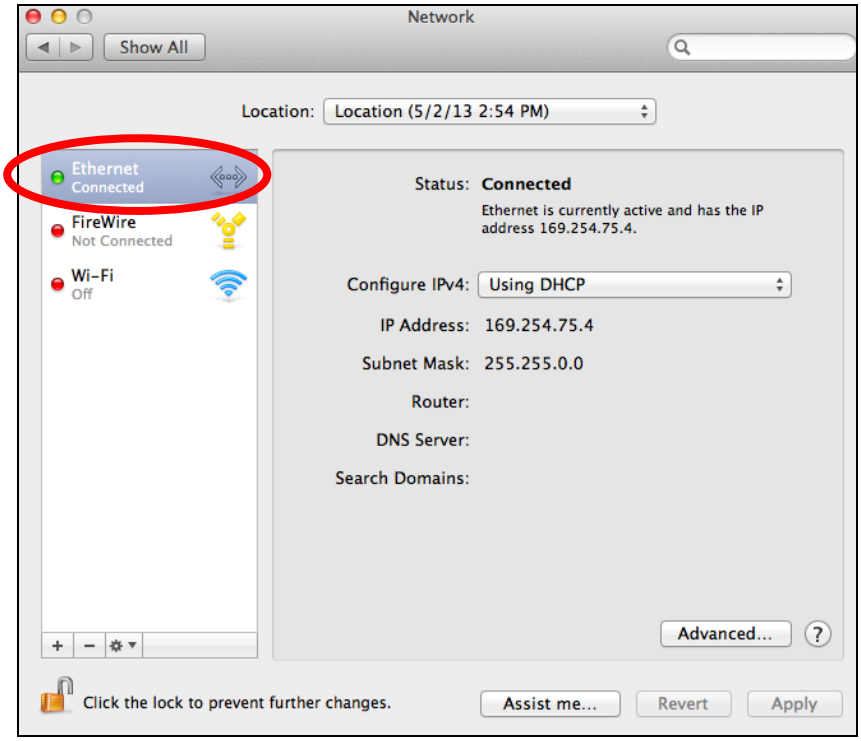
VI-1-5. Mac

1. Have your Macintosh computer operate as usual, and click on “System Preferences”

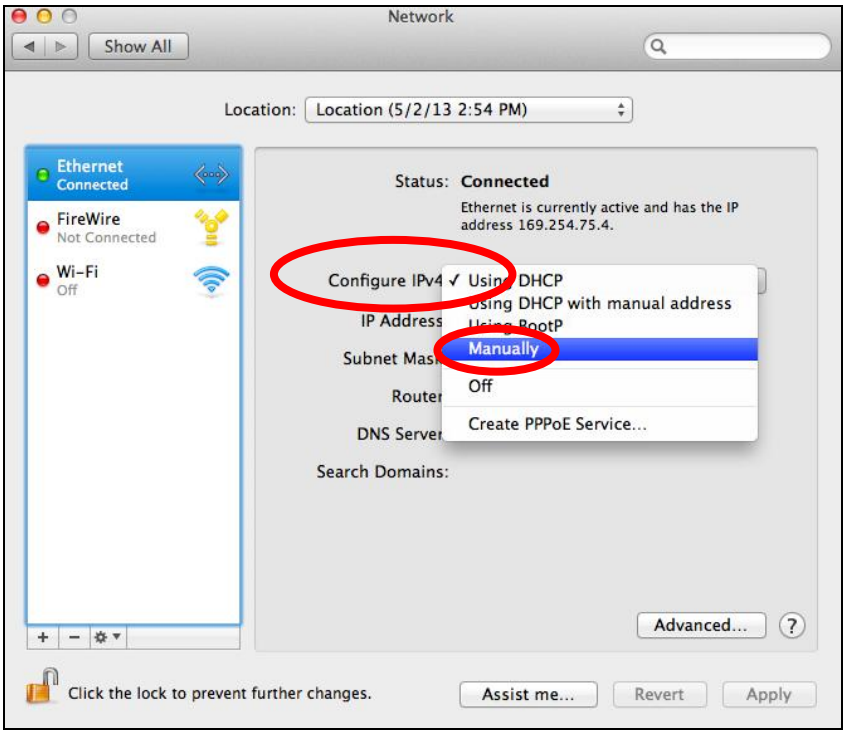
2. In System Preferences, click on “Network”.



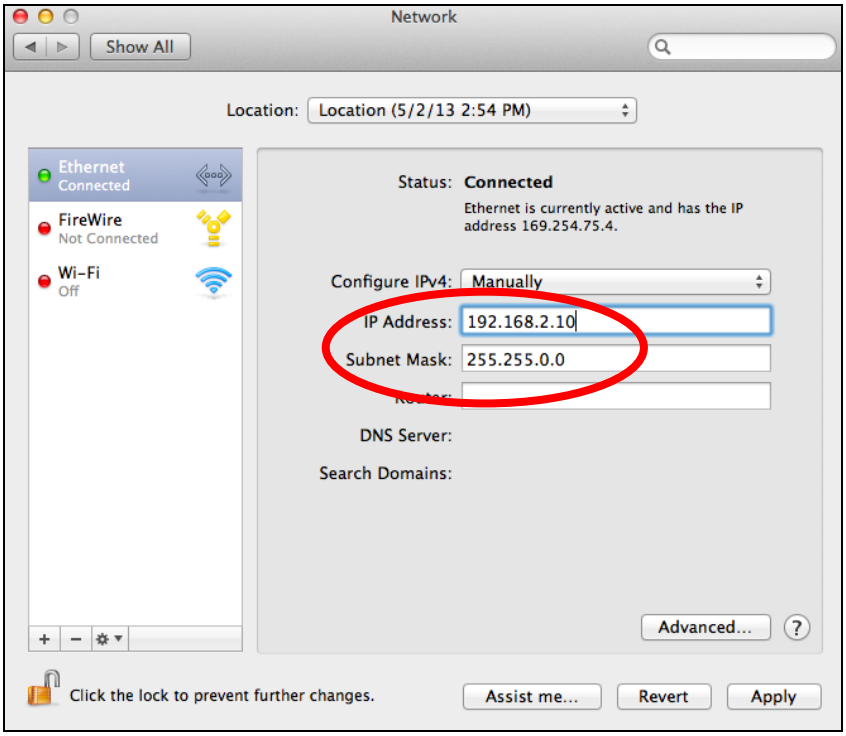
3. Click on “Ethernet” in the left panel.



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.



VII. Best Practice

VII-1. How to Create and Link WLAN & Access Point Groups

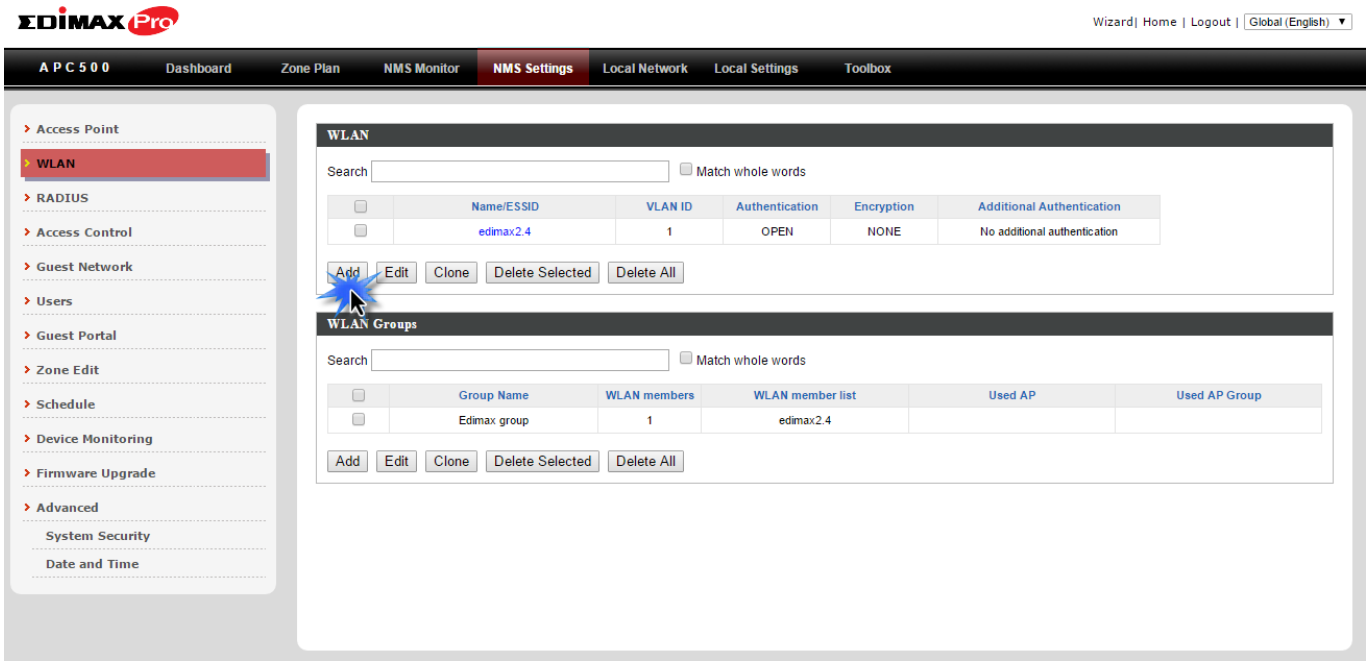
You can use NMS to create individual SSIDs and group multiple SSIDs together into WLAN groups. You can then assign individual access points to use those WLAN group settings and/or group multiple access points together into access point groups, which you can also assign to use WLAN group settings.

Follow the example below to:

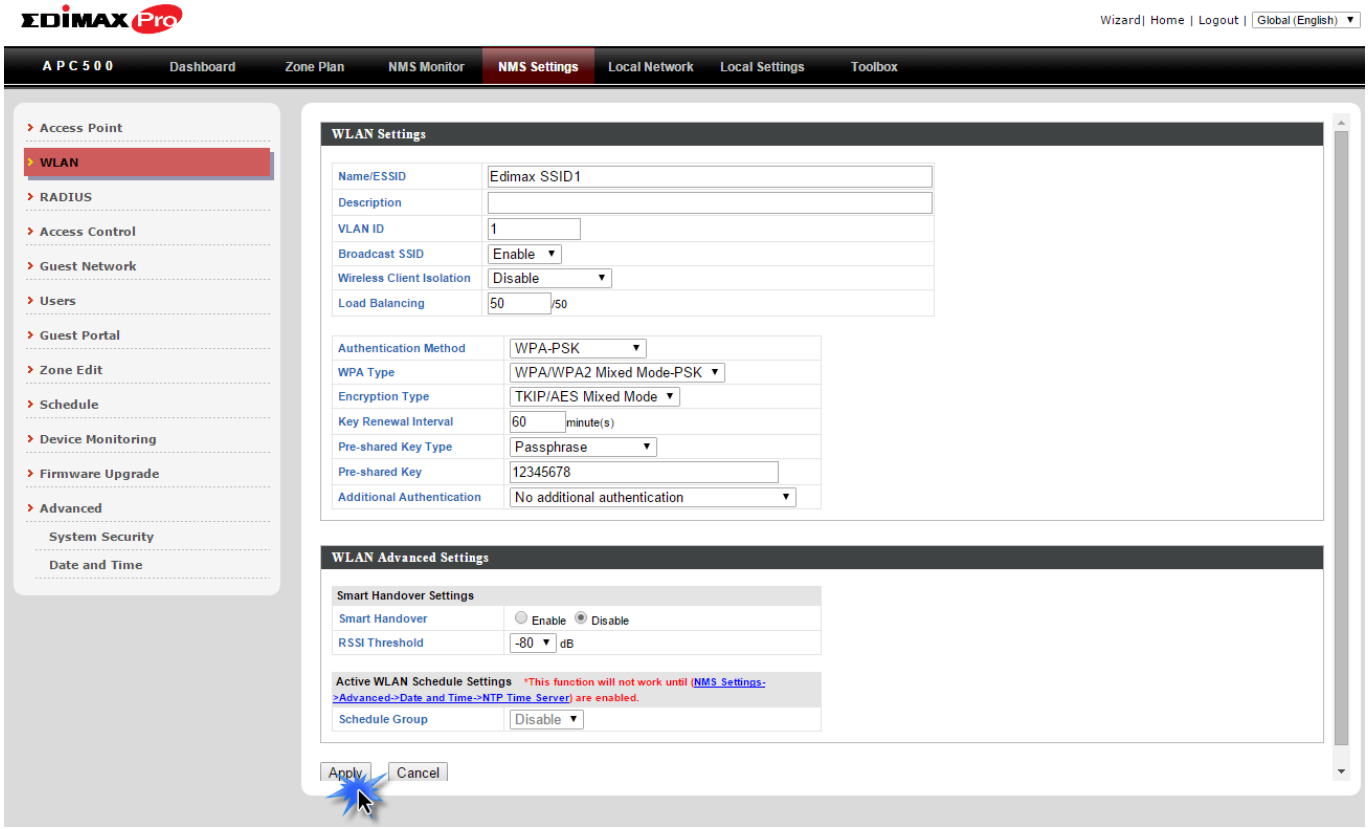
A. Create a WLAN group.
B. Create an access point group.
C. Assign the access point group to use the SSID group settings.

A.

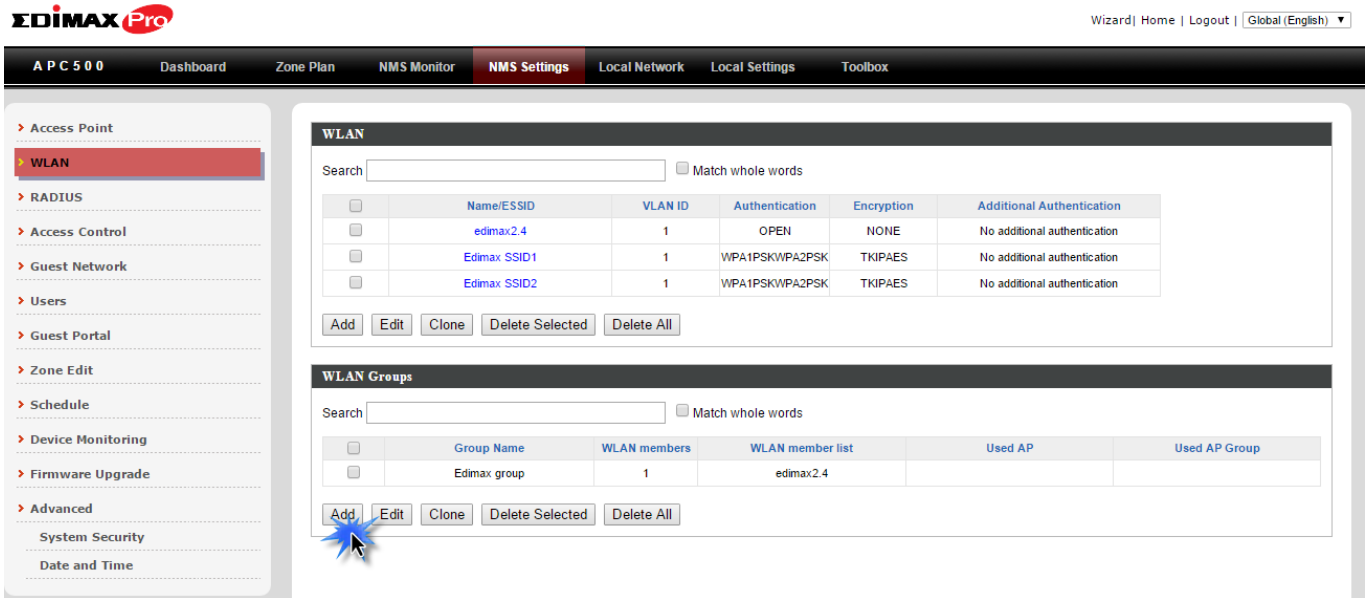
1. Go to **NMS Settings → WLAN** and click **"Add"** in the **WLAN** panel:



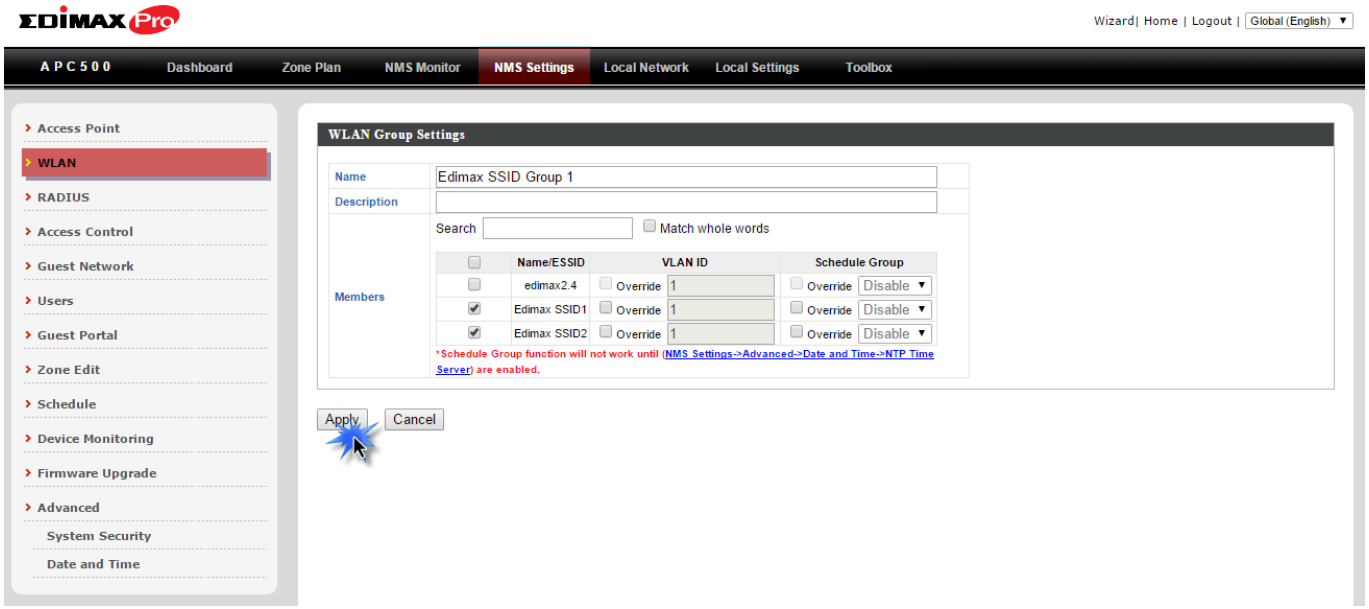
2. Enter an SSID **name** and set **authentication/encryption** and click **“Apply”**:



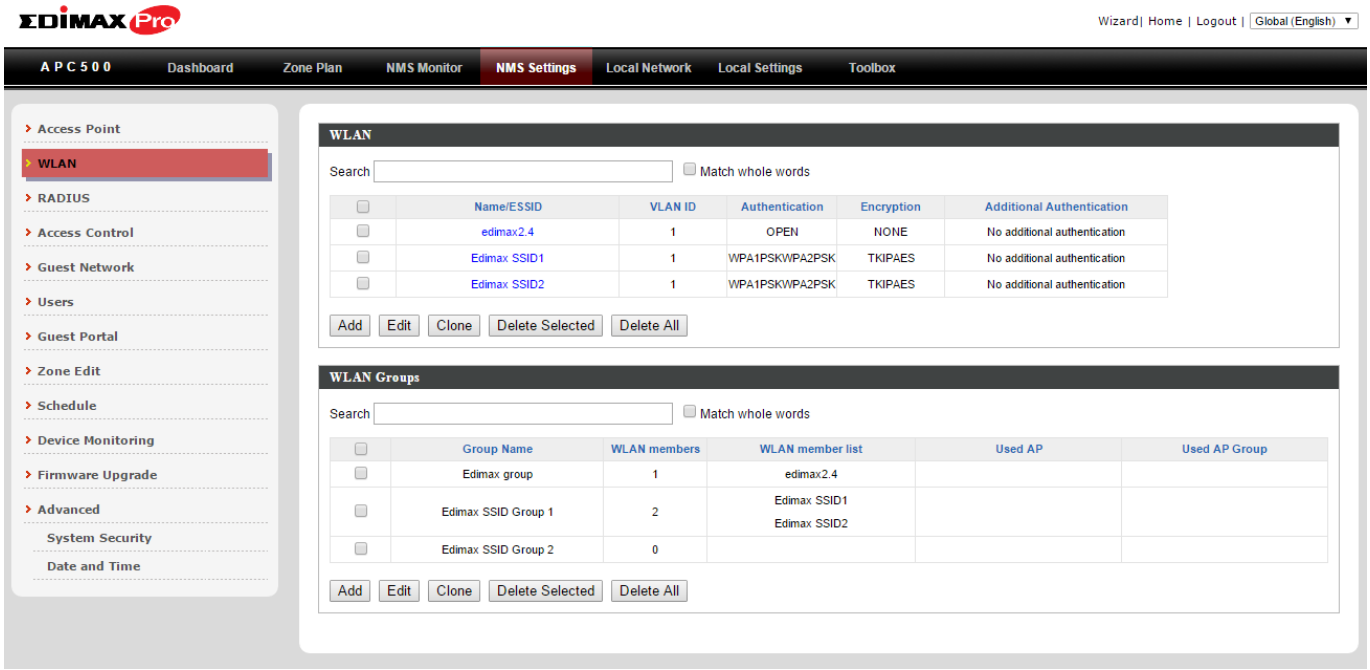
3. The new SSID will be displayed in the **WLAN** panel. **Repeat** to add additional SSIDs according to your preference, and then click **“Add”** in the **WLAN Group** panel:



4. Enter a **name** for the **SSID group** and **check the boxes** to select which SSIDs to include within the group. Click "**Apply**" when done.

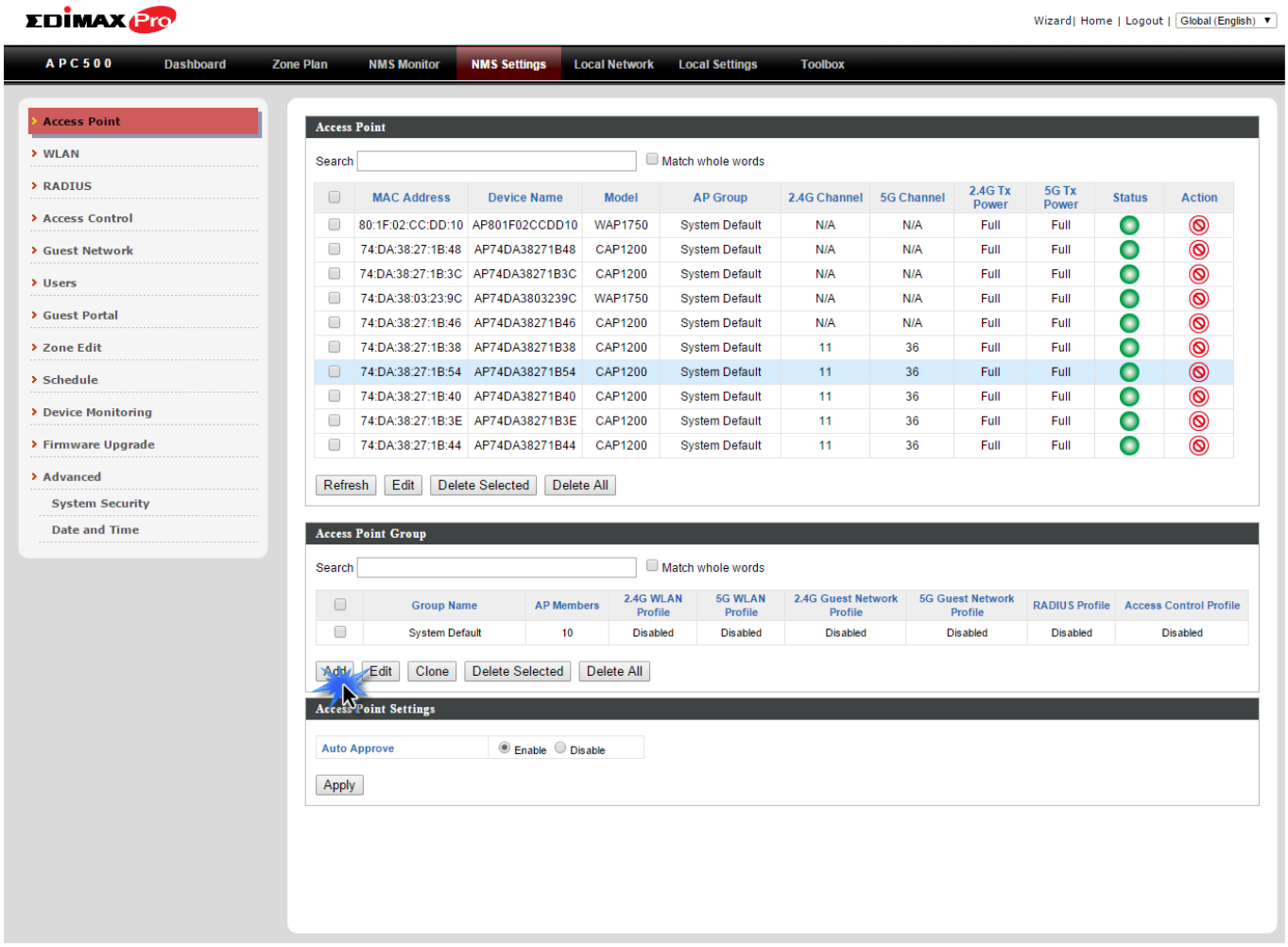


5. The new **WLAN group** will be displayed in the **WLAN Group** panel. **Repeat** to add additional WLAN groups according to your preference:

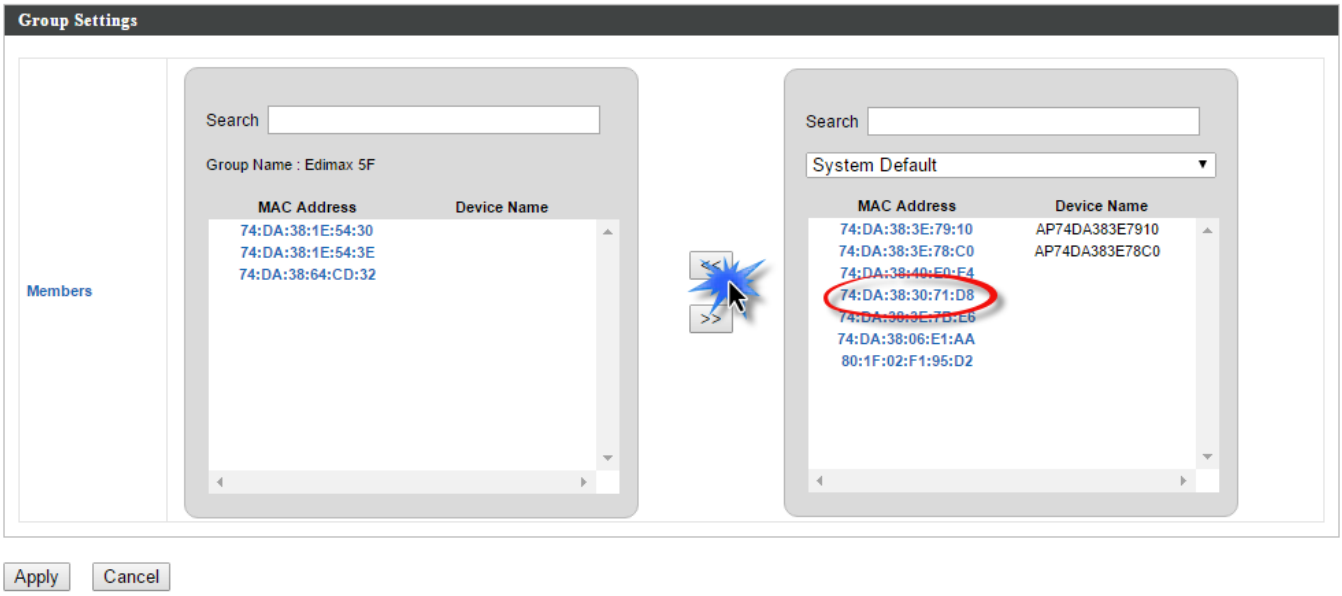


B.

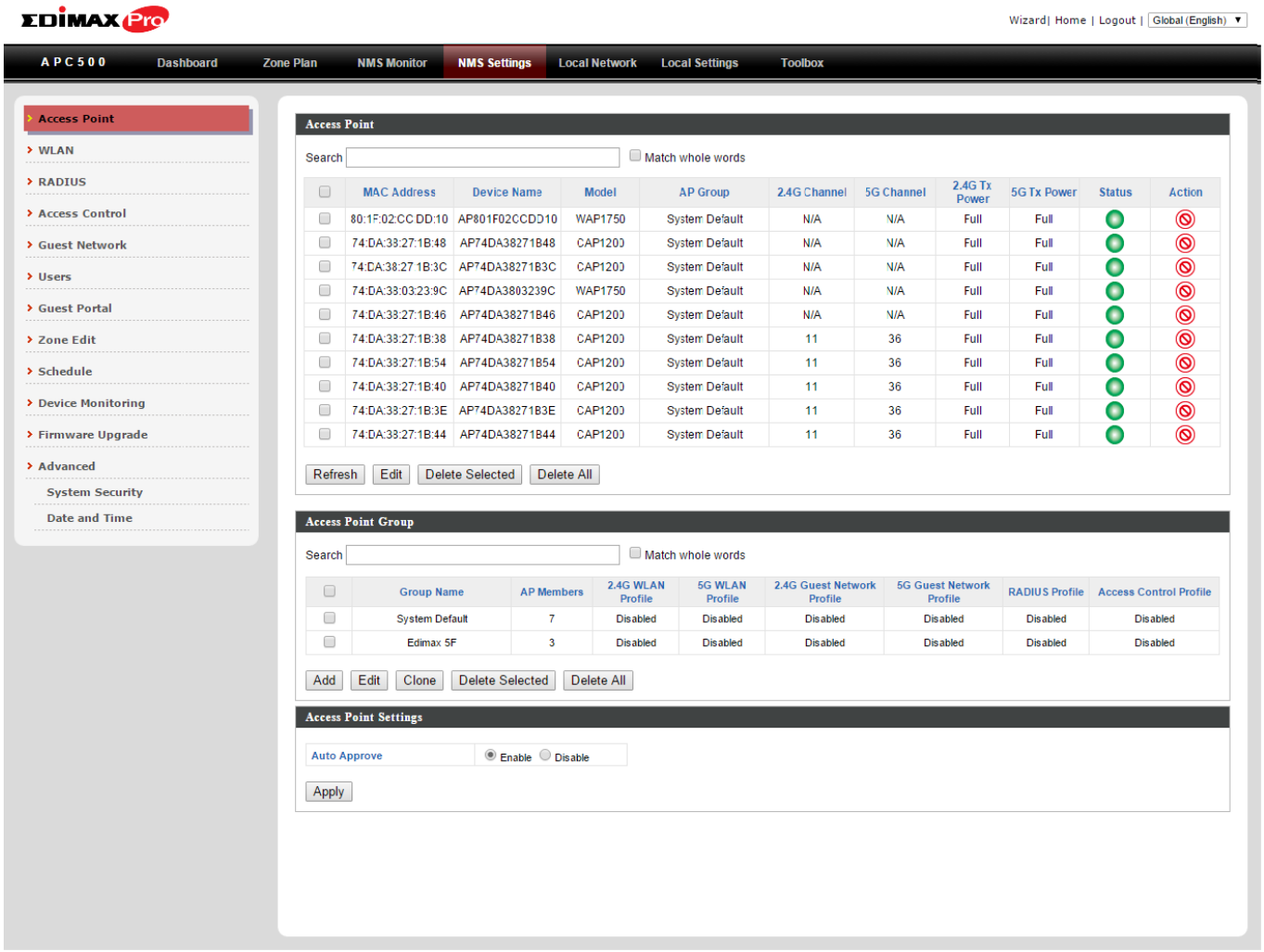
1. Go to **NMS Settings → Access Point** and click “Add” in the Access Point Group Panel:



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 **“Apply”** when done.

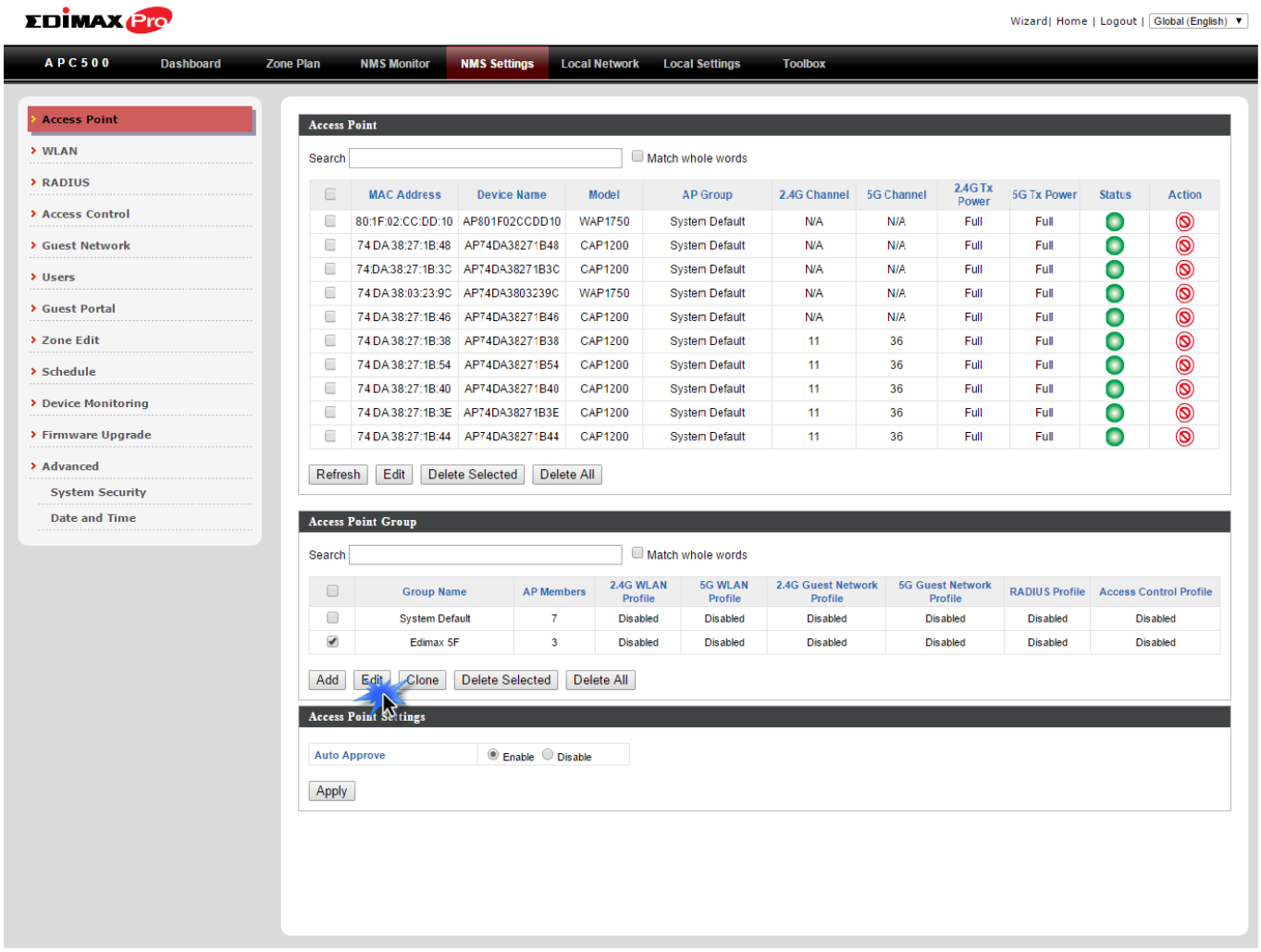


3. The new **access point group** will be displayed in the **Access Point Group** panel. **Repeat** to add additional access point groups according to your preference:

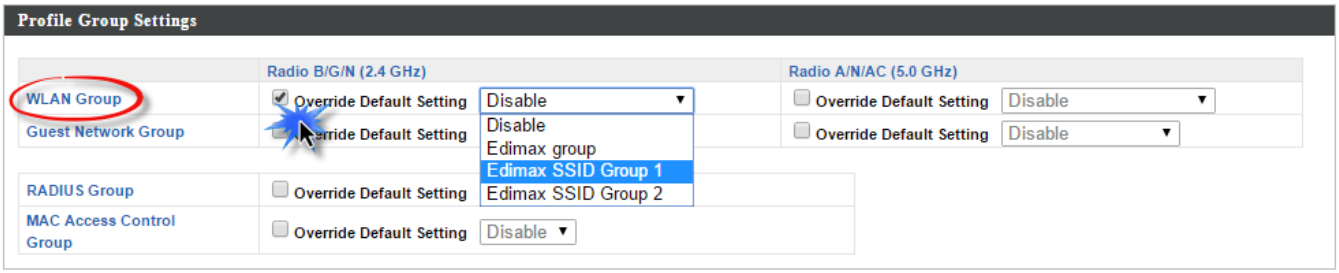


C.

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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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

This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Any changes or modifications not expressly approved by the party responsible for compliance could void the authority to operate equipment.

Federal Communications Commission (FCC) Radiation Exposure Statement

This equipment complies with FCC radiation exposure set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 2.5cm (1 inch) during normal operation.

Federal Communications Commission (FCC) RF Exposure Requirements

SAR compliance has been established in the laptop computer(s) configurations with PCMCIA slot on the side near the center, as tested in the application for certification, and can be used in laptop computer(s) with substantially similar physical dimensions, construction, and electrical and RF characteristics. Use in other devices such as PDAs or lap pads is not authorized. This transmitter is restricted for use with the specific antenna tested in the application for certification. The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

R&TTE Compliance Statement

This equipment complies with all the requirements of DIRECTIVE 1999/5/EC OF THE EUROPEAN PARLIAMENT AND THE COUNCIL of March 9, 1999 on radio equipment and telecommunication terminal equipment and the mutual recognition of their conformity (R&TTE). The R&TTE Directive repeals and replaces in the directive 98/13/EEC (Telecommunications Terminal Equipment and Satellite Earth Station Equipment) As of April 8, 2000.

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 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC.

Français: Cet équipement est conforme aux exigences essentielles et autres dispositions de la directive 1995/5/CE, 2009/125/CE, 2006/95/CE, 2011/65/CE.

Čeština: Toto zařízení je v souladu se základními požadavky a ostatními příslušnými ustanoveními směrnic 1995/5/ES, 2009/125/ES, 2006/95/ES, 2011/65/ES.

Polski: Urządzenie jest zgodne z ogólnymi wymaganiami oraz szczególnymi warunkami określonymi Dyrektywą UE 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC..

Română: Acest echipament este în conformitate cu cerinţele esenţiale şi alte prevederi relevante ale Directivei 1995/5/CE, 2009/125/CE, 2006/95/CE, 2011/65/CE.

Русский: Это оборудование соответствует основным требованиям и положениям Директивы 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC.

Magyar: Ez a berendezés megfelel az alapvető követelményeknek és más vonatkozó irányelveknek (1995/5/EK, 2009/125/EK, 2006/95/EK, 2011/65/EK).

Türkçe: Bu cihaz 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC direktifleri zorunlu istekler ve diğer hükümlerle ile uyumludur.

Українська: Обладнання відповідає вимогам і умовам директиви 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC.

Slovenčina: Toto zariadenie spĺňa základné požiadavky a ďalšie príslušné ustanovenia smerníc 1995/5/ES, 2009/125/ES, 2006/95/ES, 2011/65/ES.

Deutsch: Dieses Gerät erfüllt die Voraussetzungen gemäß den Richtlinien 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC.

Español: El presente equipo cumple los requisitos esenciales de la Directiva 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC.

Italiano: Questo apparecchio è conforme ai requisiti essenziali e alle altre disposizioni applicabili della Direttiva 1995/5/CE, 2009/125/CE, 2006/95/CE, 2011/65/CE.

Nederlands: Dit apparaat voldoet aan de essentiële eisen en andere van toepassing zijnde bepalingen van richtlijn 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC..

Português: Este equipamento cumpre os requesitos essênciais da Directiva 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC.

Norsk: Dette utstyret er i samsvar med de viktigste kravene og andre relevante regler i Direktiv 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC.

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Dansk: Dette udstyr er i overensstemmelse med de væsentligste krav og andre relevante forordninger i direktiv 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC.

suomen kieli: Tämä laite täyttää direktiivien 1995/5/EY, 2009/125/EY, 2006/95/EY, 2011/65/EY oleelliset vaatimukset ja muut asiaankuuluvat määräykset.

FOR USE IN AT BE CY CZ DK EE FI FR DE GR HU IE IT LV LT LU MT NL PL PT SK SI ES SE GB IS LI NO CH BG RO TR

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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 R&TTE directives.

Equipment: Access Point Controller
Model No: APC500

The following European standards for essential requirements have been followed:

Directives 1999/5/EC

EMC	:	EN 55022:2010/AC:2011; EN 55024:2010;
Safety (LVD)	:	IEC 60950-1:2005 (2nd Edition)+Am 1:2009+Am 2:2013 EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013

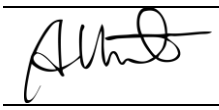
Directives 2006/95/EC

Safety (LVD)	:	IEC 60950-1:2005 (2nd Edition)+Am 1:2009+Am 2:2013 EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013

Edimax Technology Co., Ltd.
No. 3, Wu Chuan 3rd Road,
Wu-Ku Industrial Park,
New Taipei City, Taiwan

CE

Date of Signature: Dec, 2015
Signature:



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Title: Director
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