



WAP-EN1750W

NMS User Manual

Version 1.0, November 2015



FCC Compliance

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

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

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

To comply with the FCC RF exposure compliance requirements, this device and its antenna must not be co-located or operating to conjunction with any other antenna or transmitter.

This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Copyright

Copyright© 2015 Comtrend Corporation. All rights reserved. The information contained herein is proprietary to Comtrend Corporation. No part of this document may be translated, transcribed, reproduced, in any form, or by any means without the prior written consent of Comtrend Corporation.

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program. If not, see <http://www.gnu.org/licenses/>

| |
|---|
| NOTE: This document is subject to change without notice. |
|---|

Protect Our Environment



This symbol indicates that when the equipment has reached the end of its useful life, it must be taken to a recycling centre and processed separate from domestic

The cardboard box, the plastic contained in the packaging, and the parts that make up this router can be recycled in accordance with regionally established regulations. Never dispose of this electronic equipment along with your household waste; you may be subject to penalties or sanctions under the law. Instead, please be responsible and ask for disposal instructions from your local

I. Product Information

The 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 5 access points with no additional wireless controller required, reducing costs and facilitating efficient remote access point management.

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

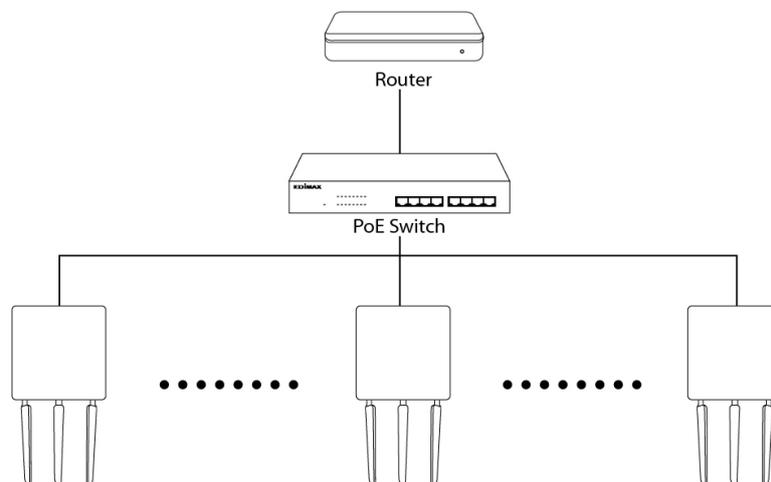
II. Quick Setup

One AP (access point) is designated as the AP Controller (master) and other connected APs are designated as Managed APs (slaves). Using the NMS you can monitor, configure and manage all Managed APs (up to 5) from the single AP Controller.

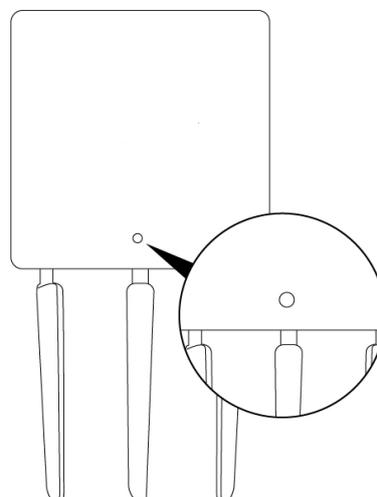
Follow the steps below:

1. Connect all APs to an Ethernet or 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 the LED status.



3. Designate one AP as the AP Controller which will manage all other connected APs (up to 5).
4. Connect a computer to the AP Controller using an Ethernet cable. Connect the AP Controller to power and power on the unit.
5. Open a web browser and enter the AP Controller's IP address in the address field. The default IP address is **192.168.2.2**.



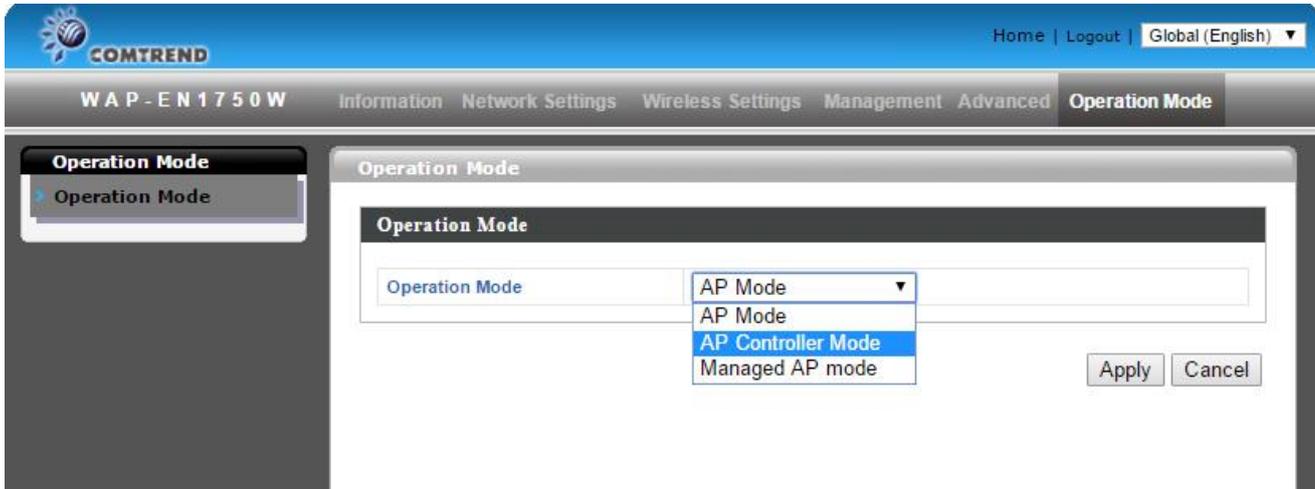
DHCP is enabled on the access point by default. If no DHCP Service is found, the access point will default to IP address 192.168.2.2.



Your computer's IP address must be in the same subnet as the AP Controller. 192.168.2.10 is being used in this example.



6. Enter the username & password to login. The default username & password are **admin** & **1234** respectively.
7. You will arrive at the Access Point Information screen. Go to → **“Operation Mode”** and select **“AP Controller Mode”** from the drop down menu.



8. Click “Apply” to save the settings.



9. Your Controller AP & Managed APs should be fully functional. Use the top menu to navigate around the NMS.



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

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

Use **Toolbox** to diagnose connection issues.

III. Software Layout

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

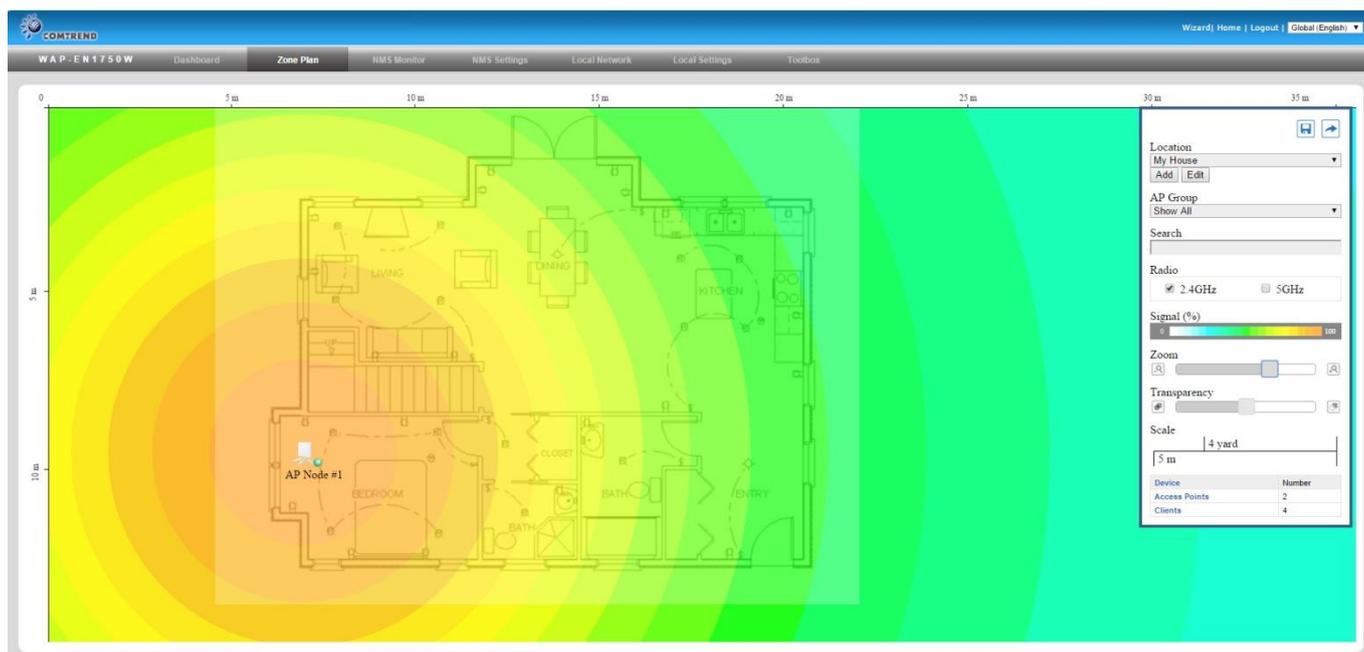
Dashboard

The screenshot displays the COMTREND NMS Dashboard interface. At the top, there is a navigation bar with the following menu items: W.A.P. - E.N.1750W, Dashboard, Zone Plan, NMS Monitor, NMS Settings, Local Network, Local Settings, and Toolbox. The user is logged in as 'Wizard' and the language is set to 'English'. The dashboard is divided into several sections:

- System Information:** A table showing details for the WAP-EH1750W device, including Host Name (APController), MAC Address (D8B6B707DEA0), IP Address (192.168.0.4), Firmware Version (3.0.0), NMS Version (1.0.2.0), System Time (2015/11/16 16:01:27), and Uptime (0 day 00:03:32).
- Devices Information:** A small table showing the number of various device types: Access Points (2), Client Devices (4), and Rogue Devices (0).
- Managed AP:** A table listing managed APs with columns for Index, MAC Address, Device Name, Model, IP Address, 2.4G Channel, 5G Channel, Clients, Status, and Action. Two APs are listed: AP Node #1 and AP Node #2.
- Managed AP Group:** A table listing managed AP groups with columns for Group Name, MAC Address, Device Name, Model, IP Address, Clients, Status, and Action. It shows 'System Default (0)' and 'Wicard AP Group 02 (2)'. The latter contains two entries for AP Node #1 and AP Node #2.
- Active Clients:** A table listing active clients with columns for Index, Client MAC Address, AP MAC Address, WLAN, Radio, Signal(%), Connected Time, Idle Time, Tx(KB), Rx(KB), and Vendor. Four clients are listed, all connected to the 'Contrend-2.4g' WLAN.

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 screenshot displays the NMS Monitor interface. The main area shows a table of Managed APs. The table has the following columns: Index, MAC Address, Device Name, Model, IP Address, 2.4G Channel, 5G Channel, Clients, Status, and Action. The table contains two rows of data:

| Index | MAC Address | Device Name | Model | IP Address | 2.4G Channel | 5G Channel | Clients | Status | Action |
|-------|-------------------|-------------|-------------|-------------|--------------|------------|---------|--------|---------|
| 1 | 00:1D:20:FF:C8:71 | AP Node #1 | WAP-EN1750W | 192.168.0.2 | 8 | 36 | 4 | Green | [Icons] |
| 2 | 00:1D:20:FF:C8:7B | AP Node #2 | | 192.168.0.6 | N/A | N/A | 0 | Grey | [Icons] |

The left sidebar menu includes the following categories:

- Access Point
 - Managed AP
- Managed AP Group
- WLAN
 - Active WLAN
 - Active WLAN Group
- Clients
 - Active Clients
- Rogue Devices
- Information
 - All Events/Activities
 - Monitoring

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

The screenshot displays the NMS Settings interface. The top navigation bar includes 'W.A.P. - EN1750W', 'Dashboard', 'Zone Plan', 'NMS Monitor', 'NMS Settings', 'Local Network', 'Local Settings', and 'Toolbox'. The left sidebar lists various settings categories: Access Point, WLAN, RADIUS, Access Control, Guest Network, Zone Edit, Device Monitoring, Firmware Upgrade, Advanced, System Security, and Date and Time. The main content area is divided into three sections:

- Access Point:** A table with columns for MAC Address, Device Name, Model, AP Group, 2.4G Channel, 5G Channel, 2.4G Tx Power, 5G Tx Power, Status, and Action. Two rows are visible, representing AP Node #1 and AP Node #2.
- Access Point Group:** A table with columns for Group Name, AP Members, 2.4G WLAN Profile, 5G WLAN Profile, 2.4G Guest Network Profile, 5G Guest Network Profile, RADIUS Profile, and Access Control Profile. One row is visible for 'Wizard AP Group 02'.
- Access Point Settings:** A section with 'Auto Approve' set to 'Enable' and an 'Apply' button.

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

Local Network

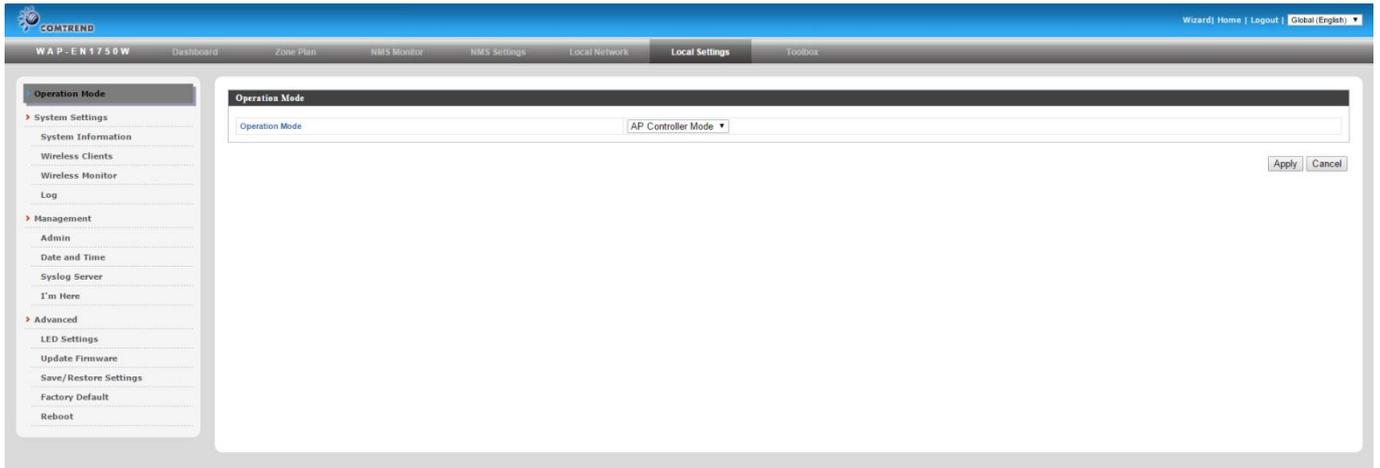
The screenshot displays the Local Network settings interface. The top navigation bar includes 'W.A.P. - EN1750W', 'Dashboard', 'Zone Plan', 'NMS Monitor', 'NMS Settings', 'Local Network', 'Local Settings', and 'Toolbox'. The left sidebar lists various settings categories: Network Settings, LAN-side IP Address, LAN Port Settings, WLAN, 2.4GHz 11bgn, Basic, Advanced, Security, WDS, 5GHz 11ac 11an, Basic, Advanced, Security, WDS, WPS, RADIUS, RADIUS Settings, Internal Server, RADIUS Accounts, MAC Filter, and WMM. The main content area is titled 'LAN-side IP Address' and contains a form with the following fields:

- IP Address Assignment: Static IP Address
- IP Address: 192.168.0.4
- Subnet Mask: 255.255.255.224
- Default Gateway: 192.168.0.1
- Primary DNS Address: 4.2.2.2
- Secondary DNS Address: 4.2.2.1

An 'Apply' button is located at the bottom right of the form.

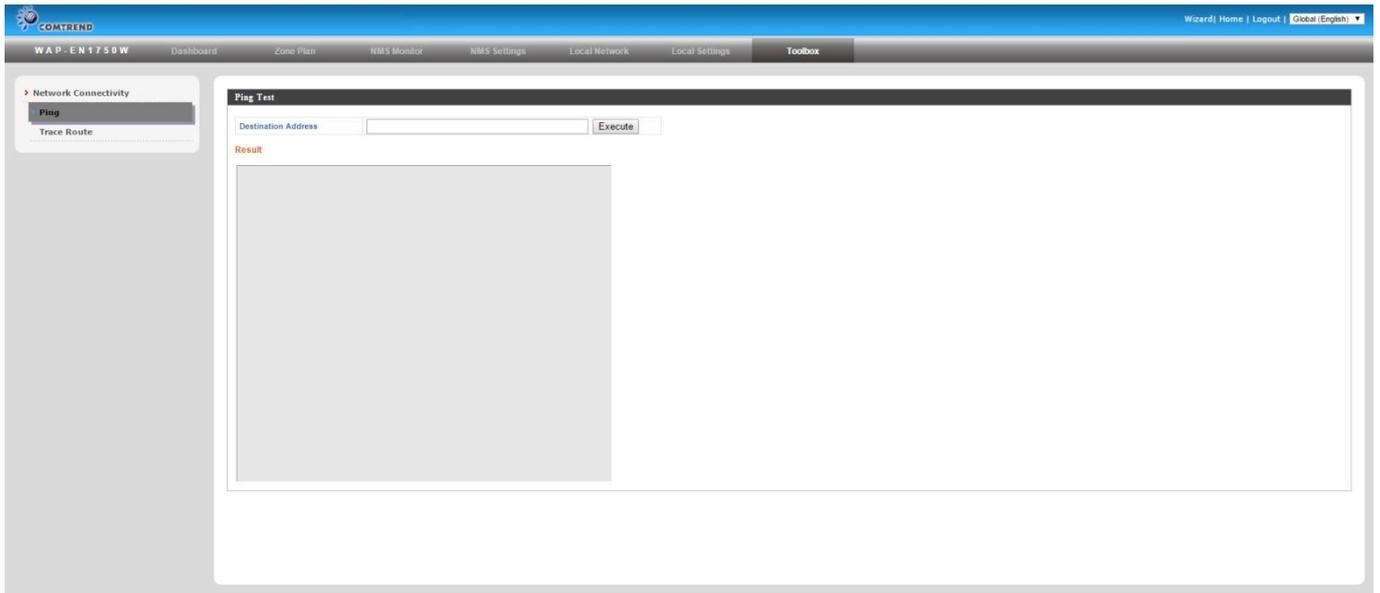
Local Network settings are for your AP Controller. You can configure the IP address and DHCP server of the AP Controller in addition to 2.4GHz & 5Ghz Wi-Fi and security, with WPS, RADIUS server, MAC filtering and WMM settings also available.

Local Settings



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

Toolbox



The Toolbox panel provides a network diagnostic tools: *ping* and *trace route*.

IV. 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 the NMS, click “Apply” to save changes:



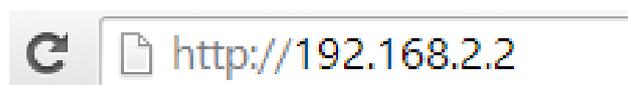
 ***Screenshots displayed are examples. The information shown on your screen will vary depending on your configuration.***

IV-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 **192.168.2.2**



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

 ***DHCP is enabled on the access point by default. If no DHCP Service is found, the access point will default to IP address 192.168.2.2.***

 ***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**.

RESTART

You can restart your AP Controller or any Managed AP using the 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:



IV-2. DASHBOARD

The dashboard displays an overview of your AP array:

The dashboard is divided into four main sections:

- System Information:** Displays details for the device, including Product Name (Generic-1750), Host Name (AP74DA380000B4), MAC Address (74:DA:38:00:00:B4), IP Address (192.168.2.2), Firmware Version (1.0.9), System Time (2012/01/01 00:19:40), and Uptime (0 day 00:19:48).
- Devices Information:** A summary table showing the number of devices of each type.

| Device | Number |
|----------------|--------|
| Access Points | 2 |
| Client Devices | 0 |
| Rogue Devices | 0 |
- Managed AP:** A table listing individual managed APs with columns for Index, MAC Address, Device Name, Model, IP Address, 2.4G Channel, 5G Channel, Clients, Status, and Action.

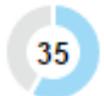
| Index | MAC Address | Device Name | Model | IP Address | 2.4G Channel | 5G Channel | Clients | Status | Action |
|-------|-----------------------|--------------------|-------|----------------|--------------|------------|---------|--------|---------|
| 1 | 00-AA-BB-C C-DD:01 | AP00AABBC CDD01 | | 192.168.2 2 | 0 | 0 | 0 | ● | [Icons] |
| 2 | 00-AA-BB-C C-DD:02 | | | | 0 | 0 | 0 | ● | [Icons] |
- Managed AP Group:** A table listing managed AP groups with columns for Group Name, MAC Address, Device Name, Model, IP Address, Clients, Status, and Action.

| Group Name | MAC Address | Device Name | Model | IP Address | Clients | Status | Action |
|-------------------------|-----------------------|-------------------|-------|-------------|---------|--------|---------|
| System Default t (2) | | | | | | | [Icon] |
| | 00-AA-BB-CC:D D:01 | AP00AABBC DD01 | | 192.168.2.2 | 0 | ● | [Icons] |
| | 00-AA-BB-CC:D D:02 | | | | 0 | ● | [Icons] |
- Active Clients:** A table for active clients with columns for Index, Client MAC Address, AP MAC Address, WLAN, Radio, Signal (%), Connected Time, Idle Time, Tx(KB), Rx(KB), and Vendor. The table is currently empty.



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:

Auto Refresh Time : 1 minute 30 seconds Disable



IV-2-1. System Information

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

System Information

| | |
|------------------|---------------------|
| Product Name | Generic-1750 |
| Host Name | AP74DA380000B4 |
| MAC Address | 74:DA:38:00:00:B4 |
| IP Address | 192.168.2.2 |
| Firmware Version | 1.0.9 |
| System Time | 2012/01/01 00:20:09 |
| Uptime | 0 day 00:20:17 |

IV-2-2. Devices Information

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

Devices Information

| Device | Number |
|----------------|--------|
| Access Points | 2 |
| Client Devices | 0 |
| Rogue Devices | 0 |

IV-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 | 00:AA:BB: CC:DD:01 | AP00AAB BCCDD01 | | 192.168. 2.2 | 0 | 0 | 0 | | |
| 2 | 00:AA:BB: CC:DD:02 | | | | 0 | 0 | 0 | | |

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

Search Match whole words

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 IV-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.

IV-2-4. Managed AP Group

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

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

Managed AP Group ↔

Search Match whole words

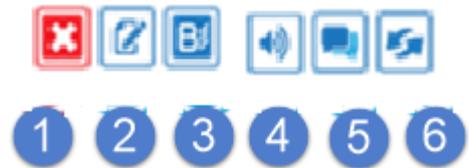
| Group Name | MAC Address | Device Name | Model | IP Address | Clients | Status | Action |
|--------------------|-----------------------|--------------------|-------|-----------------|---------|--------|--------|
| System Default (2) | | | | | | | |
| | 00:AA:BB:C C:DD:01 | AP00AABBC CDD01 | | 192.168.2. 2 | 0 | | |
| | 00:AA:BB:C C:DD:02 | | | | 0 | | |

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

Search Match whole words

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 **IV-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.

IV-2-5. Active Clients

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

Active Clients ⊞

Search Match whole words

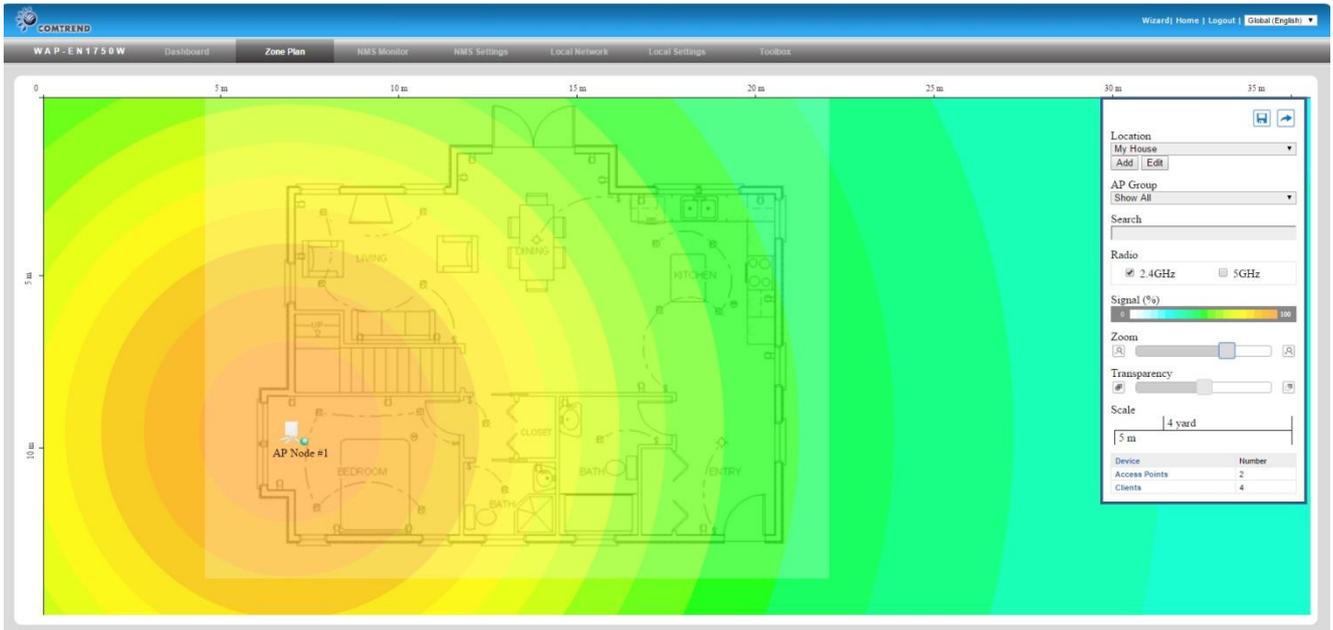
| Index | Client MAC Address | AP MAC Address | WLAN | Radio | Signal(%) | Connected Time | Idle Time | Tx(KB) | Rx(KB) | Vender |
|-------|--------------------|----------------|------|-------|-----------|----------------|-----------|--------|--------|--------|
| Empty | | | | | | | | | | |

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

Search Match whole words

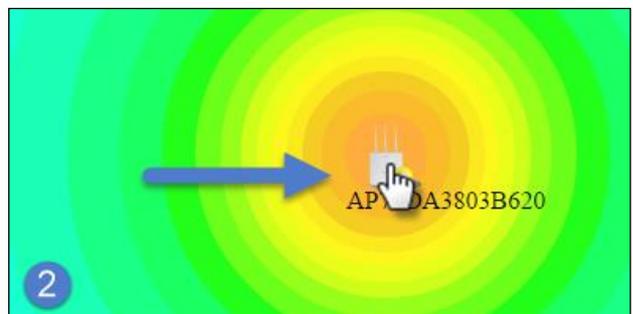
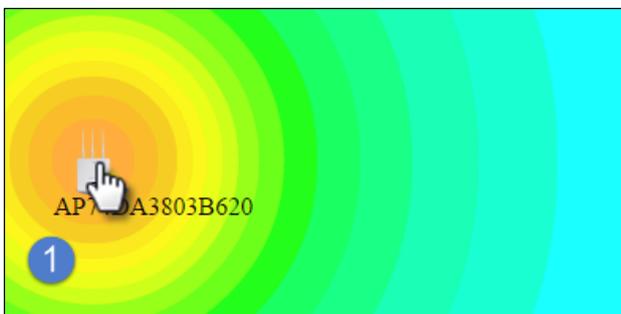
IV-3. ZONE PLAN

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. |

IV-4. NMS MONITOR

IV-4-1. Access Point

IV-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 | 00:1D:20:FF:C8:71 | AP Node #1 | WAP-EN1750W | 192.168.0.2 | 11 | 36 | 2 | | |
| 2 | 00:1D:20:FF:C8:7B | AP Node #2 | | 192.168.0.6 | N/A | N/A | 0 | | |

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

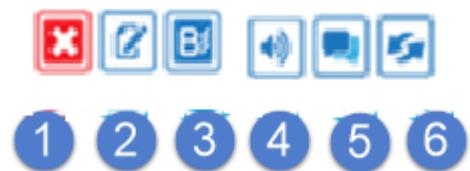


The **Status** icon displays the status of each Managed AP.

| Status Icons | | | |
|--------------|-------|---|---|
| Icon | Color | Status | Definition |
| | Grey | Disconnected | Managed AP is disconnected. <i>Please check the network connection and ensure the Managed AP is in the same IP subnet as the AP Controller.</i> |
| | Red | Authentication Failed Or Incompatible NMS Version | System security must be the same for all access points in the AP array. <i>Please check security settings (refer to IV-5-8-1. System Security).</i> Access points must use the same version of NMS: the managed AP will not be able to make configurations. <i>Please use the AP Controller's firmware upgrade function (refer to IV-5-7. Firmware Upgrade).</i> |

| | | | |
|---|--------|--------------------------|---|
|  | Orange | Configuring or Upgrading | <i>Please wait while the Managed AP makes configurations or while the firmware is upgrading.</i> |
|  | Yellow | Connecting | <i>Please wait while Managed AP is connecting.</i> |
|  | Green | Connected | <i>Managed AP is connected.</i> |
|  | Blue | Waiting for Approval | <i>Managed AP is waiting for approval. Refer to IV-5-1. Access Point: Auto Approval. Note: Eight Managed APs are supported. Additional APs will display this status until an existing Managed AP is removed.</i> |

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 **IV-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.

IV-4-1-2. Managed AP Group

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

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

| Group Name | MAC Address | Device Name | Model | IP Address | Clients | Status | Action |
|------------------------|-------------------|-------------|-------------|-------------|---------|--------|--------|
| System Default (0) | | | | | | | |
| Empty | | | | | | | |
| Wizard AP Group 02 (2) | | | | | | | |
| | 00:1D:20:FF:C8:71 | AP Node #1 | WAP-EN1750W | 192.168.0.2 | 2 | | |
| | 00:1D:20:FF:C8:7B | AP Node #2 | | 192.168.0.6 | 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), *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 **IV-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 **IV-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.

IV-4-2. WLAN

IV-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:

Search Match whole words

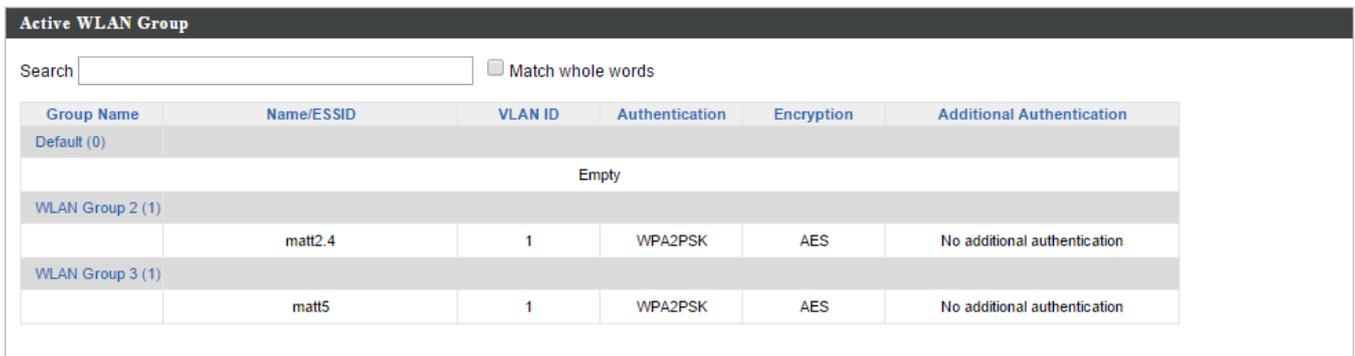
| Active WLAN | | | | | |
|-------------|------------|---------|----------------|------------|------------------------------|
| Index | Name/ESSID | VLAN ID | Authentication | Encryption | Additional Authentication |
| 1 | mat2.4 | 1 | WPA2PSK | WPAPSK | No additional authentication |
| 2 | mat5 | 1 | WPA2PSK | WPAPSK | No additional authentication |

IV-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:

Search Match whole words



The screenshot shows the 'Active WLAN Group' interface. At the top, there is a search bar with the text 'Search' and a cursor, followed by a checkbox labeled 'Match whole words'. Below this is a table with the following columns: Group Name, Name/ESSID, VLAN ID, Authentication, Encryption, and Additional Authentication. The table contains three rows of data:

| Group Name | Name/ESSID | VLAN ID | Authentication | Encryption | Additional Authentication |
|------------------|------------|---------|----------------|------------|------------------------------|
| Default (0) | | | | | |
| Empty | | | | | |
| WLAN Group 2 (1) | | | | | |
| | matt2.4 | 1 | WPA2PSK | AES | No additional authentication |
| WLAN Group 3 (1) | | | | | |
| | matt5 | 1 | WPA2PSK | AES | No additional authentication |

IV-4-3. Clients

IV-4-3-1. Active Clients

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

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

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

Search Match whole words

Refresh time

Auto Refresh time

1 Minute 30 seconds Disable

Manual Refresh

Refresh

Active Clients



Search

Match whole words

| Index | Client MAC Address | AP MAC Address | WLAN | Radio | Signal(%) | Connected Time | Idle Time | Tx(KB) | Rx(KB) | Vender |
|-------|--------------------|-------------------|--------------|--------|-----------|----------------|-----------|--------|---------|-------------------------------|
| 1 | 6C:88:14:70:C2:14 | 74:DA:38:00:00:24 | WIZARD_TEST5 | 5GHz | 100 | 3 min 33 secs | 4320 | 17.974 | 627.154 | Intel Corporate |
| 2 | B4:52:7E:84:DB:5B | 00:AA:BB:CC:DD:22 | WIZARD_TEST1 | 2.4GHz | 100 | 6 min 53 secs | 120 | 8.554 | 46.607 | Sony Mobile Communications AB |

IV-4-4. Information

IV-4-4-1. 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.

Select AP:

```
2012/01/01 00:03:57: Managed AP(74:DA:38:03:B6:20) was disconnected
2012/01/01 00:08:25: Managed AP(74:DA:38:03:B6:20) was disconnected
2012/01/01 00:12:49: Managed AP(74:DA:38:03:B6:20) was disconnected
2012/01/01 00:17:17: Managed AP(74:DA:38:03:B6:20) was disconnected
2012/01/01 00:21:44: Managed AP(74:DA:38:03:B6:20) was disconnected
2012/01/01 00:26:11: Managed AP(74:DA:38:03:B6:20) was disconnected
2012/01/01 00:30:36: Managed AP(74:DA:38:03:B6:20) was disconnected
2012/01/01 00:35:03: Managed AP(74:DA:38:03:B6:20) was disconnected
2012/01/01 00:39:27: Managed AP(74:DA:38:03:B6:20) was disconnected
2012/01/01 00:43:55: Managed AP(74:DA:38:03:B6:20) was disconnected
2012/01/01 00:48:22: Managed AP(74:DA:38:03:B6:20) was disconnected
```

IV-5. NMS Settings

IV-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:

Search Match whole words

Access Point

Search Match whole words

| <input type="checkbox"/> | MAC Address | Device Name | Model | AP Group | 2.4G Channel | 5G Channel | 2.4G Tx Power | 5G Tx Power | Status | Action |
|--------------------------|-------------------|---------------|-------|----------------|--------------|------------|---------------|-------------|--------|--------|
| <input type="checkbox"/> | 00:AA:BB:CC:DD:01 | AP00AABCCDD01 | | System Default | 0 | 0 | Full | Full | | |
| <input type="checkbox"/> | 00:AA:BB:CC:DD:02 | | | System Default | 0 | 0 | Full | Full | | |

Access Point Group

Search Match whole words

| <input type="checkbox"/> | Group Name | AP Members | 2.4G WLAN Profile | 5G WLAN Profile | 2.4G Guest Network Profile | 5G Guest Network Profile | RADIUS Profile | Access Control Profile |
|--------------------------|----------------|------------|-------------------|-----------------|----------------------------|--------------------------|----------------|------------------------|
| <input type="checkbox"/> | System Default | 2 | Disabled | Disabled | Disabled | Disabled | Disabled | Disabled |

Access Point Settings

Auto Approve Enable Disable

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 **IV-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

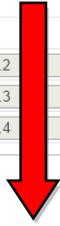
Configure your selected access point on your LAN. You can set the access point as a DHCP client or specify a static IP address for your access point, and assign the access point to an AP group, as well as edit 2.4GHz & 5GHz wireless radio settings. An events log is displayed at the bottom of the page.

You can also use **Profile Settings** to assign the access point to WLAN, 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:



| Basic Settings | |
|-----------------------|---|
| Name | AP74DA3803B530 |
| Description | |
| MAC Address | 74:DA:38:03:B5:30 |
| AP Group | System Default |
| IP Address Assignment | |
| | <input type="checkbox"/> Override Group Setting Static IP Address |
| IP Address | 192.168.222.101 |
| Subnet Mask | 255.255.255.0 |
| Default Gateway | User-Defined 192.168.222.2 |
| Primary DNS | User-Defined 192.168.222.3 |
| Secondary DNS | User-Defined 192.168.222.4 |



| | |
|-----------------------|--|
| IP Address Assignment | <input checked="" type="checkbox"/> Override Group Setting DHCP Client |
| IP Address | 192.168.222.101 |
| Subnet Mask | 255.255.255.0 |
| Default Gateway | From DHCP 192.168.222.2 |
| Primary DNS | From DHCP 192.168.222.3 |
| Secondary DNS | From DHCP 192.168.222.4 |

| 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. 2 nd 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. |

Radio Settings

| | Radio B/G/N (2.4 GHz) | Radio A/N (5.0 GHz) |
|----------------------------|--|--|
| Wireless | <input type="checkbox"/> Override Group Setting Enable | <input type="checkbox"/> Override Group Setting Enable |
| Band | <input type="checkbox"/> Override Group Setting 11b/g/n | <input type="checkbox"/> Override Group Setting 11a/n/ac |
| Auto Pilot | <input type="checkbox"/> Override Group Setting Enable | <input type="checkbox"/> Override Group Setting Enable |
| Auto Pilot Range | <input type="checkbox"/> Override Group Setting Ch 1 - 11 | <input type="checkbox"/> Override Group Setting |
| Auto Pilot Interval | <input type="checkbox"/> Override Group Setting Half day <input type="checkbox"/> Change channel even if clients are connected | <input type="checkbox"/> Override Group Setting Half day <input type="checkbox"/> Change channel even if clients are connected |
| Channel Bandwidth | <input type="checkbox"/> Override Group Setting Auto | <input type="checkbox"/> Override Group Setting Auto 80/40/20 MHz |
| BSS BasicRateSet | <input type="checkbox"/> Override Group Setting all | <input type="checkbox"/> Override Group Setting all |

Advanced Settings

| | Radio B/G/N (2.4 GHz) | Radio A/N (5.0 GHz) |
|-----------------------------|---|---|
| Contention Slot | <input type="checkbox"/> Override Group Setting Short | <input type="checkbox"/> Override Group Setting Short |
| Preamble Type | <input type="checkbox"/> Override Group Setting Short | <input type="checkbox"/> Override Group Setting Short |
| Guard Interval | <input type="checkbox"/> Override Group Setting Short GI | <input type="checkbox"/> Override Group Setting Short GI |
| 802.11n Protection | <input type="checkbox"/> Override Group Setting Enable | <input type="checkbox"/> Override Group Setting Enable |
| DTIM Period | <input type="checkbox"/> Override Group Setting 255 (1-255) | <input type="checkbox"/> Override Group Setting 255 (1-255) |
| RTS Threshold | <input type="checkbox"/> Override Group Setting 2347 (1-2347) | <input type="checkbox"/> Override Group Setting 2347 (1-2347) |
| Fragment Threshold | <input type="checkbox"/> Override Group Setting 2346 (256-2346) | <input type="checkbox"/> Override Group Setting 2346 (256-2346) |
| Multicast Rate | <input type="checkbox"/> Override Group Setting Auto | <input type="checkbox"/> Override Group Setting Auto |
| Tx Power | <input type="checkbox"/> Override Group Setting 100% | <input type="checkbox"/> Override Group Setting 100% |
| Beacon Interval | <input type="checkbox"/> Override Group Setting 100 (40-1000 ms) | <input type="checkbox"/> Override Group Setting 100 (40-1000 ms) |
| Station idle timeout | <input type="checkbox"/> Override Group Setting 300 (30-65535 seconds) | <input type="checkbox"/> Override Group Setting 300 (30-65535 seconds) |

| Radio Settings | |
|-------------------|---|
| Wireless | Enable or disable the access point’s 2.4GHz or 5GHz wireless radio. When disabled, no SSIDs on that frequency will be active. |
| Band | Select the wireless standard used for the access point. Combinations of 802.11b, 802.11g, 802.11n & 802.11ac can be selected. |
| Auto Pilot | Enable/disable auto channel selection. Auto |

| | |
|----------------------------|---|
| | channel selection will automatically set the wireless channel for the access point's 2.4GHz or 5GHz frequency based on availability and potential interference. When disabled, select a channel manually. |
| Auto Pilot 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 in WMM (see IV-6-7. WMM). |
| Preamble Type | Set the wireless radio preamble type. The preamble type in 802.11 based wireless communication defines the length of the CRC(Cyclic Redundancy Check)block for communication between the access point and roaming wireless adapters. The default value is "Short Preamble". |
| Guard Interval | Set the guard interval.A shorter interval can improve performance. |

| | |
|-----------------------------|---|
| 802.11g 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 | | | |
|----------------------|--|---|----------------|
| | Radio B/G/N (2.4 GHz) | Radio A/N (5.0 GHz) | |
| WLAN Group | <input type="checkbox"/> Override Group Setting WLAN Group 2 ▼ | <input type="checkbox"/> Override Group Setting | WLAN Group 3 ▼ |
| Guest Network Group | <input type="checkbox"/> Override Group Setting Disable ▼ | <input type="checkbox"/> Override Group Setting | Disable ▼ |
| RADIUS Group | <input type="checkbox"/> Override Group Setting ▼ | | |
| Access Control Group | <input type="checkbox"/> Override Group Setting Default ▼ | | |

| 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 . |
| 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, 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 | System Default |
| Description | System default group for APs |

| Basic Group Settings | |
|----------------------|--|
| Name | Edit the access point group name. |
| Description | Enter a description of the access point group for reference e.g. 2 nd Floor Office Group. |

| Radio Group Settings | | |
|----------------------|---|---|
| | Radio B/G/N (2.4 GHz) | Radio A/N (5.0 GHz) |
| Wireless | Enable ▾ | Enable ▾ |
| Band | 11b/g/n ▾ | 11a/n/ac ▾ |
| Auto Pilot | Enable ▾ | Enable ▾ |
| Auto Pilot Range | Ch 1 - 11 ▾ | ▾ |
| Auto Pilot Interval | Half day ▾ <input type="checkbox"/> Change channel even if clients are connected | Half day ▾ <input type="checkbox"/> Change channel even if clients are connected |
| Channel Bandwidth | Auto ▾ | Auto 80/40/20 MHz ▾ |
| BSS BasicRateSet | all ▾ | all ▾ |
| ⊖ Advanced Settings | | |
| | Radio B/G/N (2.4 GHz) | Radio A/N (5.0 GHz) |
| Contention Slot | Short ▾ | Short ▾ |
| Preamble Type | Short ▾ | Short ▾ |
| Guard Interval | Short GI ▾ | Short GI ▾ |
| 802.11n Protection | Enable ▾ | Enable ▾ |
| DTIM Period | 255 (1-255) | 255 (1-255) |
| RTS Threshold | 2347 (1-2347) | 2347 (1-2347) |
| Fragment Threshold | 2346 (256-2346) | 2346 (256-2346) |
| Multicast Rate | Auto ▾ | Auto ▾ |
| Tx Power | 100% ▾ | 100% ▾ |
| Beacon Interval | 100 (40-1000 ms) | 100 (40-1000 ms) |
| Station idle timeout | 300 (30-65535 seconds) | 300 (30-65535 seconds) |

| Radio Group Settings | |
|----------------------------|---|
| Wireless | Enable or disable the access point group's 2.4GHz or 5GHz wireless radio. When disabled, no SSIDs on that frequency will be active. |
| Band | Select the wireless standard used for the access point group. Combinations of 802.11b, 802.11g, 802.11n & 802.11ac can be selected. |
| Auto Pilot | Enable/disable auto channel selection. Auto channel selection will automatically set the wireless channel for the access point group's 2.4GHz or 5GHz frequency based on availability and potential interference. When disabled, select a channel manually. |
| Auto Pilot 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 in WMM (see IV-6-7. WMM). |

| | |
|-----------------------------|---|
| Preamble Type | Set the wireless radio preamble type. The preamble type in 802.11 based wireless communication defines the length of the CRC(Cyclic Redundancy Check)block for communication between the access point and roaming wireless adapters. The default value is "Short Preamble". |
| Guard Interval | Set the guard interval.A shorter interval can improve performance. |
| 802.11g 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 distantareas 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

| | Radio B/G/N (2.4 GHz) | Radio A/N (5.0 GHz) |
|----------------------|-----------------------|---------------------|
| WLAN Group | Default ▾ | Default ▾ |
| Guest Network Group | Disable ▾ | Disable ▾ |
| RADIUS Group | ▾ | |
| Access Control Group | Default ▾ | |

Group Settings

Members

Search

Group Name: System Default

| MAC Address | Device Name |
|------------------|-------------|
| No Access Point. | |

<<

>>

Search

AP Group 02 ▾

| MAC Address | Device Name |
|-------------------|----------------|
| 74:DA:38:03:B6:20 | AP74DA3803B620 |

| 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 . |
| 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 . |

IV-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 (IV-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:

Search Match whole words

| WLAN | | | | | |
|--------------------------|----------------------|--------------------------|-------------------|------------|------------------------------|
| Search | <input type="text"/> | <input type="checkbox"/> | Match whole words | | |
| <input type="checkbox"/> | Name/ESSID | VLAN ID | Authentication | Encryption | Additional Authentication |
| <input type="checkbox"/> | mat2.4 | 1 | WPA2-PSK | AES | No additional authentication |
| <input type="checkbox"/> | mat5 | 1 | WPA2-PSK | AES | No additional authentication |

| WLAN Group | | | |
|--------------------------|----------------------|--------------------------|-------------------|
| Search | <input type="text"/> | <input type="checkbox"/> | Match whole words |
| <input type="checkbox"/> | Group Name | WLAN members | WLAN member list |
| <input type="checkbox"/> | Default | 0 | |
| <input type="checkbox"/> | WLAN Group 2 | 1 | mat2.4 |
| <input type="checkbox"/> | WLAN Group 3 | 1 | mat5 |

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 | <input type="text" value="matt2.4"/> |
| Description | <input type="text" value="Created by Wizard"/> |
| VLAN ID | <input type="text" value="1"/> |
| Broadcast SSID | <input type="button" value="Enable"/> |
| Wireless Client Isolation | <input type="button" value="Disable"/> |
| Load Balancing | <input type="text" value="50"/> /50 |
| Authentication Method | <input type="button" value="WPA-PSK"/> |
| WPA Type | <input type="button" value="WPA2 Only"/> |
| Encryption Type | <input type="button" value="AES"/> |
| Key Renewal Interval | <input type="text" value="60"/> minute(s) |
| Pre-shared Key Type | <input type="button" value="Passphrase"/> |
| Pre-shared Key | <input type="text" value="abcd1234"/> |
| Additional Authentication | <input type="button" value="No additional authentication"/> |

| WLAN Advanced Settings | |
|-------------------------|---|
| Smart Handover Settings | |
| Smart Handover | <input type="radio"/> Enable <input checked="" type="radio"/> Disable |
| RSSI Threshold | <input type="text" value="-80"/> dB |

| WLAN Settings | |
|----------------------------------|--|
| Name/ESSID | Edit the WLAN name (SSID). |
| Description | Enter a description of the SSID for reference e.g. 2 nd 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 **IV-6-2-3.Security** for more information on authentication and additional authentication types.

| | |
|------------------------|-----------------------------|
| WLAN Advanced Settings | |
| RSSI Threshold | Set a RSSI Threshold level. |

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 (IV-5-1.)**

| WLAN Group Settings | | | |
|---------------------|-------------------------------------|----------------------|--|
| Name | WLAN Group 2 | | |
| Description | Created by Wizard | | |
| | Search | <input type="text"/> | <input type="checkbox"/> Match whole words |
| Members | <input type="checkbox"/> | Name/ESSID | VLAN ID |
| | <input checked="" type="checkbox"/> | matt2.4 | <input type="checkbox"/> Override 1 |
| | <input type="checkbox"/> | matt5 | <input type="checkbox"/> Override 1 |

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

IV-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 (IV-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:



External RADIUS Server

Search Match whole words

| <input type="checkbox"/> | Name | RADIUS server | Authentication Port | Session Tim |
|---|------|---------------|---------------------|-------------|
| Please add External RADIUS Server setting | | | | |

Internal RADIUS Server

Search Match whole words

| <input type="checkbox"/> | Name | EAP Authentication | Session Timeout (sec) | Termination-Action |
|---|------|--------------------|-----------------------|--------------------|
| Please add Internal RADIUS Server setting | | | | |

RADIUS Account

Search Match whole words

| <input type="checkbox"/> | Name | Password |
|--------------------------|------|----------|
| Please add User Account | | |

RADIUS Group

Search Match whole words

| <input type="checkbox"/> | Name | 2.4GHz | 5GHz | RADIUS accounts |
|---------------------------------|------|--------|------|-----------------|
| Please add RADIUS group setting | | | | |

Add/Edit External RADIUS Server

| External RADIUS Server | |
|------------------------|---|
| Name | <input type="text"/> |
| Description | <input type="text"/> |
| RADIUS Server | <input type="text"/> |
| Authentication Port | <input type="text" value="1812"/> |
| Shared Secret | <input type="text"/> |
| Session Timeout | <input type="text" value="3600"/> Seconds |
| Accounting | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| Accounting Port | <input type="text" value="1813"/> |

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

| Upload EAP Certificate File | |
|---------------------------------------|---|
| EAP Certificate File Format | PKCS#12(*.pfx/*.p12) |
| Upload EAP Certificate File | <input type="button" value="Choose File"/> No file chosen |
| Password of EAP Certificate File | <input type="text"/> |
| <input type="button" value="Upload"/> | |

| Internal RADIUS Server | |
|-----------------------------|--|
| Name | <input type="text"/> |
| Description | <input type="text"/> |
| EAP Internal Authentication | PEAP(MS-PEAP) ▾ |
| Shared Secret | <input type="text"/> |
| Session-Timeout | <input type="text" value="3600"/> Seconds |
| Termination-Action | <input checked="" type="radio"/> Reauthentication (RADIUS-Request) <input type="radio"/> Not-Reauthentication (Default) <input type="radio"/> Not-Send |

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-Reauthentication” 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

Example: USER1, USER2, USER3, USER4

Enter username here

User Registration List

| Select | User Name | Password | Customize |
|--------------------------|-----------|----------------|-------------------------------------|
| <input type="checkbox"/> | Edimax | Not Configured | <input type="button" value="Edit"/> |



Edit User Registration List

| | | |
|------------------|--------|------------------|
| User Name | Edimax | (4-16characters) |
| Password | | (6-32characters) |

| 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 (IV-5-1.)**

RADIUS Group Settings

| Group Name | <input type="text"/> | | | | | | |
|----------------------|--|----------------------|----------|----------|-----|----------------------|----------------------|
| Description | <input type="text"/> | | | | | | |
| 2.4GHz RADIUS | Primary : <input type="text" value="Disabled"/> Secondary : <input type="text" value="Disabled"/> | | | | | | |
| 5GHz RADIUS | Primary : <input type="text" value="Disabled"/> Secondary : <input type="text" value="Disabled"/> | | | | | | |
| Members | Search <input type="text"/> <input type="checkbox"/> Match whole words <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <thead> <tr> <th style="width: 5%;"></th> <th style="width: 45%;">Username</th> <th style="width: 50%;">Password</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Add</td> <td><input type="text"/></td> <td><input type="text"/></td> </tr> </tbody> </table> | | Username | Password | Add | <input type="text"/> | <input type="text"/> |
| | Username | Password | | | | | |
| Add | <input type="text"/> | <input type="text"/> | | | | | |

| 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(Maximum 5). |

Add/Edit MAC Access Control

MAC Access Control

Add MAC Address

Remain entries (256)

MAC Access Control List

| MAC Address | Description | Delete |
|--------------------------|-------------|--------|
| Please add MAC Addresses | | |

| | |
|------------------------|---|
| 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 (IV-5-1.)**

The screenshot shows the 'MAC Filter Group Settings' web interface. It features a dark header with the title. Below the header, there are four main sections: 'Group Name' with a text input field containing 'Please enter a new group name'; 'Description' with a text input field containing 'Please enter a new group description'; 'Action' with a dropdown menu set to 'Blacklist'; and 'Members' which includes a search input field, a 'Match whole words' checkbox, and a table. The table has columns for 'MAC Address' and 'Description', and currently displays the text 'No MAC Access Control Profile'.

| 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. |

IV-5-5. Firmware Upgrade

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

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

Firmware Upgrade

Local External FTP Server

| | |
|----------------------|---|
| Firmware Update File | <input type="text"/> |
| FTP Server Address | <input type="text"/> |
| Username | <input type="text"/> |
| Password | <input type="password"/> <input type="checkbox"/> Show password |

| Firmware Name | Firmware Version | NMS Version | Model | Size (bytes) |
|---------------|------------------|-------------|-------|--------------|
| | | | | |

Access Point Groups

| Group Name | MAC Address | Device Name | Model | IP Address | Status | Firmware Version | NMS Version | Progress |
|--------------------------------|-------------------|----------------|---------|--------------|--------|------------------|-------------|----------|
| System Default (0) | | | | | | | | |
| No Access Point in this group. | | | | | | | | |
| AP Group 02 (1) | | | | | | | | |
| <input type="checkbox"/> | 74:DA:38:03:B6:20 | AP74DA3803B620 | WAP1750 | 192.168.8.21 | | 0.9.8 | 0.9.8.1 | 0% |

IV-5-6. Advanced

IV-5-6-1. System Security

Configure the NMS system login name and password.

| System Security | |
|--------------------------------------|---|
| NMS System Name | <input type="text" value="administrator"/> |
| NMS Security Key | <input type="text" value="1234567890123456"/> (8~16 Characters) |
| <input type="button" value="Apply"/> | |

IV-6. Local Network

IV-6-1. Network Settings

IV-6-1-1. LAN-Side IP Address

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



The access point’s default IP address is 192.168.2.2



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

| LAN-side IP Address | |
|-----------------------|---------------------|
| IP Address Assignment | Static IP Address ▾ |
| IP Address | 192.168.222.220 |
| Subnet Mask | 255.255.255.0 |
| Default Gateway | 192.168.222.1 |
| Primary DNS Address | 0.0.0.0 |
| Secondary DNS Address | 0.0.0.0 |

| 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. |

| LAN-side IP Address | |
|-----------------------|---------------------------|
| IP Address Assignment | DHCP Client ▼ |
| IP Address | 192.168.222.220 |
| Subnet Mask | 255.255.255.0 |
| Default Gateway | From DHCP ▼ 192.168.222.1 |
| Primary DNS Address | From DHCP ▼ 0.0.0.0 |
| Secondary DNS Address | From DHCP ▼ 0.0.0.0 |

| 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. |

LAN-side IP Address

| | |
|-----------------------|-----------------------------------|
| IP Address Assignment | DHCP Server ▾ |
| IP Address | 192.168.222.220 |
| Subnet Mask | 255.255.255.0 |
| IP Address Range | 192.168.222.120 ~ 192.168.222.140 |
| Domain Name | WAP1750 |
| Lease Time | Forever ▾ |
| Default Gateway | 192.168.222.1 |
| Primary DNS Address | 0.0.0.0 |
| Secondary DNS Address | 0.0.0.0 |

DHCP Server Static IP Address

| Index | MAC Address | IP Address | Action |
|-------|----------------------|----------------------|--------|
| 1 | <input type="text"/> | <input type="text"/> | Add |

DHCP Client List

| Index | MAC Address | IP Address | Lease Time |
|----------------|-------------|------------|------------|
| No DHCP Client | | | |

| 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. |

IV-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 Settings | | | | |
|-------------------------|-----------|----------------|--------------|-----------|
| Wired LAN Port | Enable | Speed & Duplex | Flow Control | 802.3az |
| Wired Port (#1) | Enabled ▾ | Auto ▾ | Enabled ▾ | Enabled ▾ |
| Wired Port (#2) | Enabled ▾ | Auto ▾ | Enabled ▾ | Enabled ▾ |

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

IV-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 – 4094 are supported.



VLAN IDs in the range 1 – 4094 are supported.

| VLAN Interface | | |
|-----------------------|-----------------|---------|
| Wired LAN Port | VLAN Mode | VLAN ID |
| Wired Port (#1) | Untagged Port ▾ | 1 |
| Wired Port (#2) | Untagged Port ▾ | 1 |
| Wireless 2.4GHz | VLAN Mode | VLAN ID |
| SSID [AMPED_DNS_TEST] | Untagged Port | 1 |

| Management VLAN | |
|-----------------|---|
| VLAN ID | 1 |

| 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. |

IV-6-2. 2.4GHz 11bgn

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

IV-6-2-1. Basic

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

| 2.4GHz Basic Settings | |
|-----------------------|--|
| Wireless | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| Band | 11b/g/n ▼ |
| Enable SSID number | 1 ▼ |
| SSID1 | AMPED_DNS_TEST <input type="text"/> VLAN ID <input type="text" value="1"/> |
| Auto Channel | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| Auto Channel Range | Ch 1 - 11 ▼ |
| Auto Channel Interval | One day ▼ <input type="checkbox"/> Change channel even if clients are connected |
| Channel Bandwidth | Auto ▼ |
| BSS BasicRateSet | 1,2,5,5,11 Mbps ▼ |



| | |
|-------------------|---|
| Auto Channel | <input type="radio"/> Enable <input checked="" type="radio"/> Disable |
| Channel | Ch 11, 2462MHz ▼ |
| Channel Bandwidth | Auto, +Ch 7 ▼ |
| BSS BasicRateSet | 1,2,5,5,11 Mbps ▼ |

When auto channel is disabled, select a wireless channel manually:

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

IV-6-2-2. Advanced

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



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

| 2.4GHz Advanced Settings | |
|--------------------------|---|
| Contention Slot | Short ▾ |
| Preamble Type | Short ▾ |
| Guard Interval | Short GI ▾ |
| 802.11g Protection | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| 802.11n Protection | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| DTIM Period | 1 (1-255) |
| RTS Threshold | 2347 (1-2347) |
| Fragment Threshold | 2346 (256-2346) |
| Multicast Rate | Auto ▾ |
| Tx Power | 100% ▾ |
| Beacon Interval | 100 (40-1000 ms) |
| Station idle timeout | 60 (30-65535 seconds) |

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

IV-6-2-3. Security

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



It'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.

| 2.4GHz Wireless Security Settings | |
|-----------------------------------|--------------------------------|
| SSID | AMPED_DNS_TEST ▾ |
| Broadcast SSID | Enable ▾ |
| Wireless Client Isolation | Disable ▾ |
| Load Balancing | 50 /50 |
| Authentication Method | No Authentication ▾ |
| Additional Authentication | No additional authentication ▾ |

| | |
|----------------------------------|--|
| SSID | Select which SSID to configure security settings for. |
| Broadcast SSID | Enable or disable SSID broadcast. When enabled, the SSID will be visible to clients as an available Wi-Fi network. When disabled, the SSID will not be visible as an available Wi-Fi network to clients – clients must manually enter the SSID in order to connect. A hidden (disabled) SSID is typically more secure than a visible (enabled) SSID. |
| Wireless Client Isolation | Enable or disable wireless client isolation. Wireless client isolation prevents clients connected to the access point from communicating with each other and improves security. Typically, this function is useful for corporate environments or public hot spots and can prevent brute force attacks on clients' usernames and passwords. |

| | |
|----------------------------------|--|
| Load Balancing | Load balancing limits the number of wireless clients connected to an SSID. Set a load balancing value (maximum 50). |
| Authentication Method | Select an authentication method from the drop down menu and refer to the information below appropriate for your method. |
| Additional Authentication | Select an additional authentication method from the drop down menu and refer to the information below (IV-6-2-3-6.) appropriate for your method. |

IV-6-2-3-1. 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.

IV-6-2-3-2. 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 alphanumeric 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. |

IV-6-2-3-3. IEEE802.1x/EAP

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

IV-6-2-3-4. WPA-PSK

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

| | |
|-----------------------------|---|
| 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 andA-F). |
| Pre-Shared Key | Please enter a security key/password according to the format you selected above. |

IV-6-2-3-5. 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.

IV-6-2-3-6. 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 IV-6-6. 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 IV-6-5. RADIUS to configure RADIUS servers.



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

MAC RADIUS Password

Use MAC address
 Use the following password

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

IV-6-2-4. WDS

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



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

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

| 2.4GHz | |
|-------------------|--|
| WDS Functionality | Disabled ▼ |
| Local MAC Address | Disabled WDS with AP Dedicated WDS |

| WDS Peer Settings | |
|-------------------|----------------------------------|
| WDS #1 | MAC Address <input type="text"/> |
| WDS #2 | MAC Address <input type="text"/> |
| WDS #3 | MAC Address <input type="text"/> |
| WDS #4 | MAC Address <input type="text"/> |

| WDS VLAN | |
|-----------|---|
| VLAN Mode | Untagged Port ▼ (Enter at least one MAC address.) |
| VLAN ID | 1 <input type="text"/> |

| WDS Encryption method | |
|-----------------------|--|
| Encryption | None ▼ (Enter at least one MAC address.) |

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

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

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

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

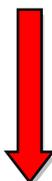
IV-6-3. 5GHz 11ac 11an

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

IV-6-3-1. Basic

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

| 5GHz Basic Settings | |
|-----------------------|--|
| Wireless | <input type="radio"/> Enable <input checked="" type="radio"/> Disable |
| Band | 11a/n/ac ▼ |
| Enable SSID number | 1 ▼ |
| SSID1 | WAP1750-03EC1A_A <input type="text"/> VLAN ID <input type="text" value="1"/> |
| Auto Channel | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| Auto Channel Range | Band 1 ▼ |
| Auto Channel Interval | One day ▼ <input type="checkbox"/> Change channel even if clients are connected |
| Channel Bandwidth | Auto 80/40/20 MHz ▼ |
| BSS BasicRateSet | 6,12,24 Mbps ▼ |



| | |
|-------------------|---|
| Auto Channel | <input type="radio"/> Enable <input checked="" type="radio"/> Disable |
| Channel | Ch 36, 5.18GHz ▼ |
| Channel Bandwidth | Auto 80/40/20 MHz ▼ |
| BSS BasicRateSet | 6,12,24 Mbps ▼ |

| | |
|---------------------------|--|
| Wireless | Enable or disable the access point’s 5GHz wireless radio. When disabled, no 5GHz SSIDs will be active. |
| Band | Select the wireless standard used for the access point. Combinations of 802.11a, 802.11n & 802.11ac can be selected. |
| Enable SSID Number | Select how many SSIDs to enable for the 5GHz frequency from the drop down menu. A maximum of 16 can be enabled. |

| | |
|------------------------------|--|
| SSID# | Enter the SSID name for the specified SSID (up to 16). The SSID can consist of any combination of up to 32 alphanumeric characters. |
| VLAN ID | Specify a VLAN ID for each SSID. |
| Auto Channel | Enable/disable auto channel selection. Auto channel selection will automatically set the wireless channel for the access point's 5GHz frequency based on availability and potential interference. When disabled, select a channel manually as shown in the next table. |
| Auto Channel Range | Select a range from which the auto channel setting (above) will choose a channel. |
| Auto Channel 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: 20MHz (lower performance but less interference), Auto 40/20MHz or Auto 80/40/20MHz (automatically select based on interference level). |
| BSS BasicRate Set | Set a Basic Service Set (BSS) rate: this is a series of rates to control communication frames for wireless clients. |

When auto channel is disabled, select a wireless channel manually:

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

IV-6-3-2. Advanced

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



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

| 5GHz Advanced Settings | |
|------------------------|---|
| Guard Interval | Short GI ▾ |
| 802.11n Protection | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| DTIM Period | 1 (1-255) |
| RTS Threshold | 2347 (1-2347) |
| Fragment Threshold | 2346 (256-2346) |
| Multicast Rate | Auto ▾ |
| Tx Power | 100% ▾ |
| Beacon Interval | 100 (40-1000 ms) |
| Station idle timeout | 60 (30-65535 seconds) |

| | |
|---------------------------|---|
| Guard Interval | Set the guard interval. A shorter interval can improve performance. |
| 802.11n Protection | Enable/disable 802.11n protection, which increases reliability but reduces bandwidth (clients will send Request to Send (RTS) to access point, and access point will broadcast Clear to Send (CTS), before a packet is sent from client.) |
| DTIM Period | Set the DTIM (delivery traffic indication message) period value of the wireless radio. The default value is 1. |
| RTS Threshold | Set the RTS threshold of the wireless radio. The default value is 2347. |
| Fragment Threshold | Set the fragment threshold of the wireless radio. The default value is 2346. |
| Multicast Rate | Set the transfer rate for multicast packets or use the "Auto" setting. |
| Tx Power | Set the power output of the wireless radio. You may not require 100% output power. Setting a lower power output can enhance security since potentially malicious/unknown users in distant areas will not be able to access your signal. |

| | |
|-----------------------------|--|
| Beacon Interval | Set the beacon interval of the wireless radio. The default value is 100. |
| Station idle timeout | Set the interval for keepalive messages from the access point to a wireless client to verify if the station is still alive/active. |

IV-6-3-3. Security

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



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



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

| 5GHz Wireless Security Settings | |
|---------------------------------|--------------------------------|
| SSID | WAP1750-03EC1A_A ▾ |
| Broadcast SSID | Enable ▾ |
| Wireless Client Isolation | Disable ▾ |
| Load Balancing | 50 /50 |
| Authentication Method | No Authentication ▾ |
| Additional Authentication | No additional authentication ▾ |

| | |
|----------------------------------|--|
| SSID | Select which SSID to configure security settings for. |
| Broadcast SSID | Enable or disable SSID broadcast. When enabled, the SSID will be visible to clients as an available Wi-Fi network. When disabled, the SSID will not be visible as an available Wi-Fi network to clients – clients must manually enter the SSID in order to connect. A hidden (disabled) SSID is typically more secure than a visible (enabled) SSID. |
| Wireless Client Isolation | Enable or disable wireless client isolation. Wireless client isolation prevents clients connected to the access point from communicating with each other and improves security. Typically, this function is useful for corporate environments or public hot spots and can prevent brute force attacks on clients' usernames and passwords. |

| | |
|----------------------------------|--|
| Load Balancing | Load balancing limits the number of wireless clients connected to an SSID. Set a load balancing value (maximum 50). |
| Authentication Method | Select an authentication method from the drop down menu and refer to the information below appropriate for your method. |
| Additional Authentication | Select an additional authentication method from the drop down menu and refer to the information below appropriate for your method. |

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

IV-6-3-4. WDS

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



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

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

| 5GHz WDS Mode | |
|-------------------|--|
| WDS Functionality | Disabled |
| Local MAC Address | Disabled WDS with AP Dedicated WDS |
| WDS Peer Settings | |
| WDS #1 | MAC Address <input type="text"/> |
| WDS #2 | MAC Address <input type="text"/> |
| WDS #3 | MAC Address <input type="text"/> |
| WDS #4 | MAC Address <input type="text"/> |
| WDS VLAN | |
| VLAN Mode | Untagged Port <small>(Enter at least one MAC address.)</small> |
| VLAN ID | 1 |
| Encryption method | |
| Encryption | None <small>(Enter at least one MAC address.)</small> |

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

| | |
|-------------------|--|
| WDS Peer Settings | |
|-------------------|--|

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

| | |
|----------|--|
| WDS VLAN | |
|----------|--|

| | |
|------------------|--|
| VLAN Mode | Specify the WDS VLAN mode to “Untagged Port” or “Tagged Port”. |
|------------------|--|

| | |
|----------------|---|
| VLAN ID | Specify the WDS VLAN ID when “Untagged Port” is selected above. |
|----------------|---|

| | |
|----------------|--|
| WDS Encryption | |
|----------------|--|

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

IV-6-4. WPS

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



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

| | | |
|--------------------------------------|----------------------|---|
| WPS | | <input checked="" type="checkbox"/> Enable |
| <input type="button" value="Apply"/> | | |
| WPS | | |
| Product PIN | 02570501 | <input type="button" value="Generate PIN"/> |
| Push-button WPS | | <input type="button" value="Start"/> |
| WPS by PIN | <input type="text"/> | <input type="button" value="Start"/> |
| WPS Security | | |
| WPS Status | Configured | <input type="button" value="Release"/> |

| | |
|------------------------|--|
| WPS | Check/uncheck this box to enable/disable WPS functionality. WPS must be disabled when using MAC-RADIUS authentication (see IV-6-2-3-6. & IV-6-5). |
| Product PIN | Displays the WPS PIN code of the device, used for PIN code WPS. You will be required to enter this PIN code into another WPS device for PIN code WPS. Click “Generate PIN” to generate a new WPS PIN code. |
| Push-Button WPS | Click “Start” to activate WPS on the access point for approximately 2 minutes. This has the same effect as physically pushing the access point’s WPS button. |
| WPS by PIN | Enter the PIN code of another WPS device and click “Start” to attempt to establish a WPS connection for approximately 2 minutes. |

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

IV-6-5. RADIUS

The RADIUS sub menu allows you to configure the access point’s RADIUS server settings, categorized into three submenus: RADIUS settings, Internal Server and RADIUS accounts.

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

The access point can utilize both a primary and secondary (backup) RADIUS server for each of its wireless frequencies (2.4GHz & 5GHz). External RADIUS servers can be used or the access point’s internal RADIUS server can be used.



To use RADIUS servers, go to “Local Network” → “Security” → “Additional Authentication” and select “MAC RADIUS Authentication” (see IV-6-2-3.&IV-6-3-3).

IV-6-5-1. RADIUS Settings

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

| RADIUS Server (2.4GHz) | |
|--------------------------------|--|
| Primary RADIUS Server | |
| RADIUS Type | <input type="radio"/> Internal <input checked="" type="radio"/> External |
| RADIUS Server | <input type="text"/> |
| Authentication Port | <input type="text" value="1812"/> |
| Shared Secret | <input type="text"/> |
| Session Timeout | <input type="text" value="3600"/> second(s) |
| Accounting | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| Accounting Port | <input type="text" value="1813"/> |
| Secondary RADIUS Server | |
| RADIUS Type | <input type="radio"/> Internal <input checked="" type="radio"/> External |
| RADIUS Server | <input type="text"/> |
| Authentication Port | <input type="text" value="1812"/> |
| Shared Secret | <input type="text"/> |
| Session Timeout | <input type="text" value="3600"/> second(s) |
| Accounting | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| Accounting Port | <input type="text" value="1813"/> |

| RADIUS Server (5GHz) | |
|--------------------------------|--|
| Primary RADIUS Server | |
| RADIUS Type | <input type="radio"/> Internal <input checked="" type="radio"/> External |
| RADIUS Server | <input type="text"/> |
| Authentication Port | <input type="text" value="1812"/> |
| Shared Secret | <input type="text"/> |
| Session Timeout | <input type="text" value="3600"/> second(s) |
| Accounting | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| Accounting Port | <input type="text" value="1813"/> |
| Secondary RADIUS Server | |
| RADIUS Type | <input type="radio"/> Internal <input checked="" type="radio"/> External |
| RADIUS Server | <input type="text"/> |
| Authentication Port | <input type="text" value="1812"/> |
| Shared Secret | <input type="text"/> |
| Session Timeout | <input type="text" value="3600"/> second(s) |
| Accounting | <input checked="" type="radio"/> Enable <input type="radio"/> Disable |
| Accounting Port | <input type="text" value="1813"/> |

| | |
|--------------------|--|
| RADIUS Type | Select "Internal" to use the access point's built-in RADIUS server or "external" to use an external RADIUS server. |
|--------------------|--|

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

IV-6-5-2. Internal Server

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



To use RADIUS servers, go to “Wireless Settings” → “Security” “Additional Authentication” and select “MAC RADIUS Authentication” (see IV-6-2-3.&IV-6-3-3).

| Internal Server | |
|-----------------------------|--|
| Internal Server | <input type="checkbox"/> Enable |
| EAP Internal Authentication | PEAP(MS-PEAP) ▼ |
| EAP Certificate File Format | PKCS#12(*.pfx/*p12) |
| EAP Certificate File | <input type="button" value="Upload"/> |
| Shared Secret | <input type="text"/> |
| Session-Timeout | <input type="text" value="3600"/> second(s) |
| Termination-Action | <input checked="" type="radio"/> Reauthentication (RADIUS-Request) <input type="radio"/> Not-Reauthentication (Default) <input type="radio"/> Not-Send |

| | |
|------------------------------------|--|
| Internal Server | Check/uncheck to enable/disable the access point’s internal RADIUS server. |
| EAP Internal Authentication | Select EAP internal authentication type from the drop down menu. |

| | |
|------------------------------------|---|
| EAP Certificate File Format | Displays the EAP certificate file format: PCK#12(*.pfx/*.p12) |
| EAP Certificate File | Click “Upload” to open a new window and select the location of an EAP certificate file to use. If no certificate file is uploaded, the internal RADIUS server will use a self-made certificate. |
| Shared Secret | Enter a shared secret/password for use between the internal RADIUS server and RADIUS client. The shared secret should be 1 – 99 characters in length. This should match the “MAC-RADIUS” password used in IV-6-2-3-6 or IV-6-3-3 . |
| Session Timeout | Set a duration of session timeout in seconds between 0 – 86400. |
| Termination Action | Select a termination-action attribute: “Reauthentication” sends a RADIUS request to the access point, “Not-Reauthentication” sends a default termination-action attribute to the access point, “Not-Send” no termination-action attribute is sent to the access point. |

IV-6-5-3. RADIUS Accounts

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

| Select | User Name | Password | Customize |
|--------------------------|-----------|----------------|-----------|
| <input type="checkbox"/> | Edimax | Not Configured | Edit |

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

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

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

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. |

IV-6-6. MAC Filter

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

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

 **To enable MAC filtering, go to “Local Settings” → “Security” → “Additional Authentication” and select “MAC Filter” (see IV-6-2-3.&IV-6-3-3).**

The MAC address filtering table is displayed below:

Add MAC Addresses

AddReset

MAC Address Filtering Table

| Select | MAC Address |
|--------------------------|-------------------|
| <input type="checkbox"/> | FC:F8:AE:43:43:7E |

Delete Selected Delete All Export

| | |
|------------------------|---|
| 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 filteringtable. A new window will pop up for you to select a location to save the file. |

IV-6-7. WMM

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

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

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

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

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

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

IV-7. Local Settings

IV-7-1. Operation Mode

Set the operation mode of the access point. AP mode is a standalone access point, AP controller mode acts as the designated master of the AP array, and Managed AP mode acts as a slave AP within the AP array.



Operation Mode

Operation Mode

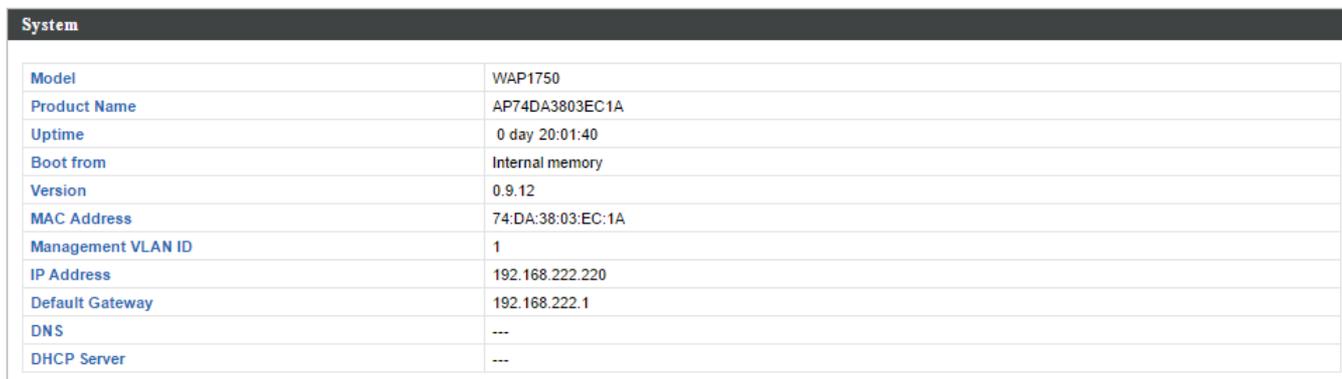
- AP Controller Mode
- AP Mode
- AP Controller Mode
- Managed AP mode

Apply Cancel

IV-7-2. Network Settings

IV-7-2-1. System Information

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



| System | |
|--------------------|-------------------|
| Model | WAP1750 |
| Product Name | AP74DA3803EC1A |
| Uptime | 0 day 20:01:40 |
| Boot from | Internal memory |
| Version | 0.9.12 |
| MAC Address | 74:DA:38:03:EC:1A |
| Management VLAN ID | 1 |
| IP Address | 192.168.222.220 |
| Default Gateway | 192.168.222.1 |
| DNS | --- |
| DHCP Server | --- |

Wired LAN Port Settings

| Wired LAN Port | Status | VLAN Mode/ID |
|-----------------|-----------------------------------|-------------------|
| Wired Port (#1) | Connected (1000 Mbps Full-Duplex) | Untagged Port / 1 |
| Wired Port (#2) | Disconnected (---) | Untagged Port / 1 |

Wireless 2.4GHz

| | |
|----------------|-------------------|
| Status | Enabled |
| MAC Address | 74:DA:38:03:EC:1A |
| Channel | Ch 6 (Auto) |
| Transmit Power | 100% |

Wireless 2.4GHz /SSID

| SSID | Authentication Method | Encryption Type | VLAN ID | Additional Authentication | Wireless Client Isolation |
|----------------|-----------------------|---------------------|---------|------------------------------|---------------------------|
| AMPED_DNS_TEST | WPA/WPA2-PSK | TKIP/AES Mixed Mode | 1 | No additional authentication | Disabled |

Wireless 2.4GHz /WDS Disabled

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

| 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 IV-6-1-3. VLAN |
|---------------------|---|

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

| Wireless 2.4GHZ (5GHz) / SSID | |
|----------------------------------|--|
| SSID | Displays the SSID name(s) for the specified frequency. |
| Authentication Method | Displays the authentication method for the specified SSID. See IV-6. Wireless Settings |
| Encryption Type | Displays the encryption type for the specified SSID. See IV-6. Wireless Settings |
| VLAN ID | Displays the VLAN ID for the specified SSID. See IV-6-1-3. VLAN |
| Additional Authentication | Displays the additional authentication type for the specified SSID. See IV-6. Wireless Settings |
| Wireless Client Isolation | Displays whether wireless client isolation is in use for the specified SSID. See IV-6-1-3. VLAN |

| Wireless 2.4GHZ (5GHz) / WDS Status | |
|-------------------------------------|--|
| MAC Address | Displays the peer access point's MAC address. |
| Encryption Type | Displays the encryption type for the specified WDS. See IV-6-2-4. WDS |
| VLAN Mode/ID | Displays the VLAN ID for the specified WDS. See IV-6-2-4. WDS |

| | |
|----------------|-----------------------------------|
| Refresh | Click to refresh all information. |
|----------------|-----------------------------------|

IV-7-2-2. Wireless Clients

The “Wireless Clients” page displays information about all wireless clients connected to the access point on the 2.4GHz or 5GHz frequency.

Refresh time

Auto Refresh time 5 seconds 1 second Disable

Manual Refresh

2.4GHz WLAN Client Table

| # | SSID | MAC Address | Tx | Rx | Signal (%) | Connected Time | Idle Time | Vendor |
|---|----------------|-------------------|------------|------------|------------|-------------------------|-----------|----------------|
| 1 | AMPED_DNS_TEST | F8:7B:8C:1F:2D:61 | 3.6 KBytes | 7.6 MBytes | 100 | 14 hours 29 min 30 secs | 0 | Amped Wireless |

5GHz WLAN Client Table

| # | SSID | MAC Address | Tx | Rx | Signal (%) | Connected Time | Idle Time | Vendor |
|--------------------|------|-------------|----|----|------------|----------------|-----------|--------|
| No wireless client | | | | | | | | |

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

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

IV-7-2-3. Wireless Monitor

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

| Wireless Monitor | |
|-----------------------|--|
| Site Survey | <input checked="" type="radio"/> Wireless 2.4G/ 5G <input type="radio"/> 2.4G <input type="radio"/> 5G <input type="button" value="Scan"/> |
| Channel Survey result | <input type="button" value="Export"/> |

| Wireless 2.4GHz (112 Accesspoints) | | | | | | |
|--------------------------------------|-------------|-------------------|-------------------------|------------|-------|------------------------------|
| Ch | SSID | MAC Address | Security | Signal (%) | Type | Vendor |
| 1 | | 00:18:0A:D3:4C:F0 | WPA1PSKWPA2PSK /TKIPAES | 84 | b/g/n | Meraki, Inc. |
| 1 | 11111 | 00:AA:BB:02:01:E0 | NONE | 97 | b/g/n | Unknown |
| 1 | 13213136 | 26:DA:38:00:20:40 | NONE | 98 | b/g/n | Unknown |
| 1 | 22222 | 02:AA:BB:02:01:E0 | NONE | 96 | b/g/n | Unknown |
| 1 | EA3500-2.4G | C8:D7:19:2C:9F:1F | WPA2PSK/AES | 100 | b/g/n | Cisco Consumer Products, LLC |

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

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

IV-7-2-4. Log

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



When the log is full, old entries are overwritten.

```
Jan 1 00:00:51 [SYSTEM]: WLAN[2.4G], Best channel selection start, switch to channel 6
Jan 1 00:00:47 [SYSTEM]: WLAN[2.4G], Best channel selection start, switch to channel 6
Jan 1 00:00:15 [NMS]: start AP Controller successfully
Jan 1 00:00:14 [NMS]: NMS version: 0.9.12.1
Jan 1 00:00:14 [SYSTEM]: Auto Pilot, Stopping
Jan 1 00:00:14 [SYSTEM]: FTP Server, start
Jan 1 00:00:14 [SYSTEM]: TELNETD, start Telnet-cli Server
Jan 1 00:00:14 [SYSTEM]: HTTPS, start
Jan 1 00:00:14 [SYSTEM]: HTTP, start
Jan 1 00:00:13 [SYSTEM]: LAN, Firewall Disabled
Jan 1 00:00:13 [SYSTEM]: LAN, NAT Disabled
Jan 1 00:00:13 [SYSTEM]: NET, Firewall Disabled
Jan 1 00:00:13 [SYSTEM]: NET, NAT Disabled
Jan 1 00:00:13 [SYSTEM]: LEDs, light on specific LEDs
Jan 1 00:00:11 [SYSTEM]: WLAN[5G], Channel = AutoSelect
Jan 1 00:00:11 [SYSTEM]: WLAN[5G], Wireless Mode = 11ACVHT80
Jan 1 00:00:03 [SYSTEM]: WLAN[2.4G], Channel = AutoSelect
Jan 1 00:00:03 [SYSTEM]: WLAN[2.4G], Wireless Mode = 11NGHT40MINUS
Jan 1 00:00:03 [SYSTEM]: LAN, IP address=192.168.222.220
Jan 1 00:00:03 [SYSTEM]: LAN, start
Jan 1 00:00:02 [SYSTEM]: Bridge, start
Jan 1 00:00:02 [SYSTEM]: Bridge, start
Jan 1 00:00:00 [SYSTEM]: SYS, Model Name: Wireless Gigabit Router
Jan 1 00:00:00 [SYSTEM]: SYS, Application Version: 0.9.12
Jan 1 00:00:00 [SYSTEM]: BOOT, WAP1750
```

Save

Clear

Refresh

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

The following information/events are recorded by the log:

- ◆ **USB**
Mount & unmount
- ◆ **Wireless Client**
Connected & disconnected
Key exchange success & fail
- ◆ **Authentication**
Authentication fail or successful.
- ◆ **Association**
Success or fail
- ◆ **WPS**
M1 - M8 messages
WPS success
- ◆ **Change Settings**
- ◆ **System Boot**
Displays current model name
- ◆ **NTP Client**
- ◆ **Wired Link**
LAN Port link status and speed status
- ◆ **Proxy ARP**
Proxy ARP module start & stop
- ◆ **Bridge**
Bridge start & stop.
- ◆ **SNMP**
SNMP server start & stop.
- ◆ **HTTP**
HTTP start & stop.
- ◆ **HTTPS**
HTTPS start & stop.
- ◆ **SSH**
SSH-client server start & stop.
- ◆ **Telnet**
Telnet-client server start or stop.
- ◆ **WLAN (2.4G)**
WLAN (2.4G) channel status and country/region status
- ◆ **WLAN (5G)**
WLAN (5G) channel status and country/region status
- ◆ **ADT**

IV-7-3. Management

IV-7-3-1. Admin

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



If you change the administrator password, please make a note of the new password. In the event that you forget this password and are unable to login to the browser based configuration interface, see IV-7-4-4. Factory Default for how to reset the access point.

Account to Manage This Device

| | |
|------------------------|---|
| Administrator Name | <input type="text" value="admin"/> |
| Administrator Password | <input type="password" value="****"/> (4-32 Characters) |
| | <input type="password" value="****"/> (Confirm) |

Advanced Settings

| | |
|---------------------|--|
| Product Name | <input type="text" value="AP74DA3803EC1A"/> |
| Management Protocol | <input checked="" type="checkbox"/> HTTP <input checked="" type="checkbox"/> HTTPS <input checked="" type="checkbox"/> TELNET <input type="checkbox"/> SSH <input type="checkbox"/> SNMP |
| SNMP Version | v1/v2c ▾ |
| SNMP Get Community | <input type="text" value="public"/> |
| SNMP Set Community | <input type="text" value="private"/> |
| SNMP Trap | Disabled ▾ |
| SNMP Trap Community | <input type="text" value="public"/> |
| SNMP Trap Manager | <input type="text"/> |

| 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. |
| 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.

IV-7-3-2. 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. |

IV-7-3-3. Syslog Server

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

| Syslog Server Settings | |
|----------------------------------|--|
| Transfer Logs | <input type="checkbox"/> Enable Syslog Server <input type="text"/> |
| Copy Logs to Attached USB Device | <input type="checkbox"/> Enable |
| Syslog E-mail Settings | |
| E-mail Logs | <input checked="" type="checkbox"/> |
| E-mail Subject | <input type="text"/> |
| SMTP Server Address | <input type="text"/> |
| SMTP Server Port | <input type="text"/> |
| Sender E-mail | <input type="text"/> |
| Receiver E-mail | <input type="text"/> |
| Authentication | <div style="border: 1px solid black; padding: 2px;"> SSL ▾ Disable SSL TLS </div> |
| Account | <input type="text"/> |
| Password | <input type="text"/> |

| 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. |

IV-7-3-4. 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.

| Duration of Sound | |
|-------------------|---|
| Duration of Sound | <input type="text" value="10"/> (1-300 seconds) |

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. |

IV-7-4. Advanced

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

IV-7-4-1. LED Settings

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

| LED Settings | |
|--------------|---|
| Power LED | <input checked="" type="radio"/> On <input type="radio"/> Off |
| Diag LED | <input checked="" type="radio"/> On <input type="radio"/> Off |

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

IV-7-4-2. 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.



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.

| Firmware Location | |
|----------------------|---|
| Update firmware from | <input checked="" type="radio"/> a file on your PC <input type="radio"/> a file on an attached USB device (No USB device connected.) |

| Update firmware from PC | |
|---------------------------------------|---|
| Firmware Update File | <input type="button" value="Choose File"/> No file chosen |
| <input type="button" value="Update"/> | |



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 or from an attached USB device. |
| 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. |

IV-7-4-3. 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 or to an attached USB device. |
| 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. |

IV-7-4-4. Factory Default

If the access point malfunctions or is not responding, then it is recommended that you reboot the device (see IV-7-4-5.) 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.

This will restore all settings to factory defaults.

Factory Default

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



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

IV-7-4-5. 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 IV-7-4-4). You can reboot the access point remotely using this feature.

This will reboot the product. Your settings will not be changed. Click “Reboot” to reboot the product now.

Reboot

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

IV-8. Toolbox

IV-8-1. Network Connectivity

IV-8-1-1. Ping

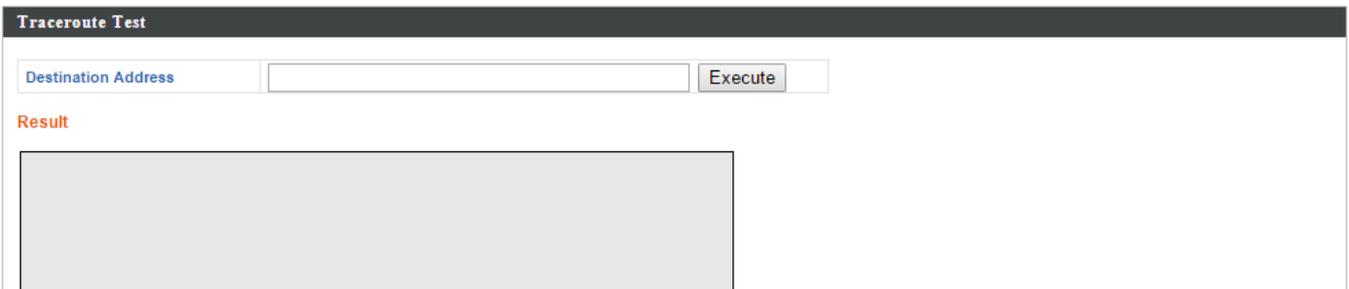
Ping is a computer network administration utility used to test whether a particular host is reachable across an IP network and to measure the round-trip time for sent messages.



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

IV-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. |

V. Best Practice

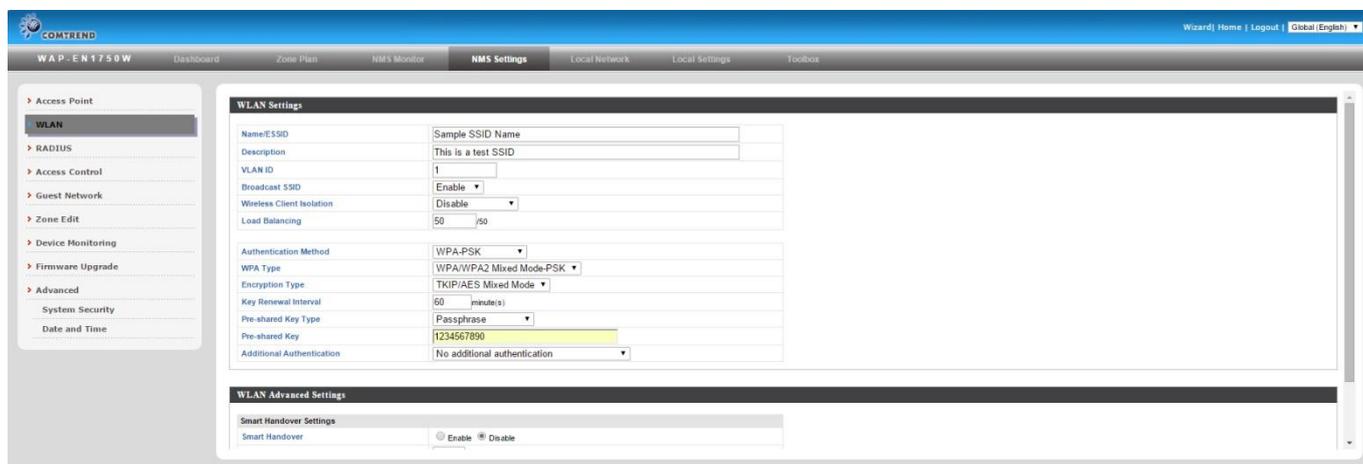
How to Create and Link WLAN & Access Point Groups

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.

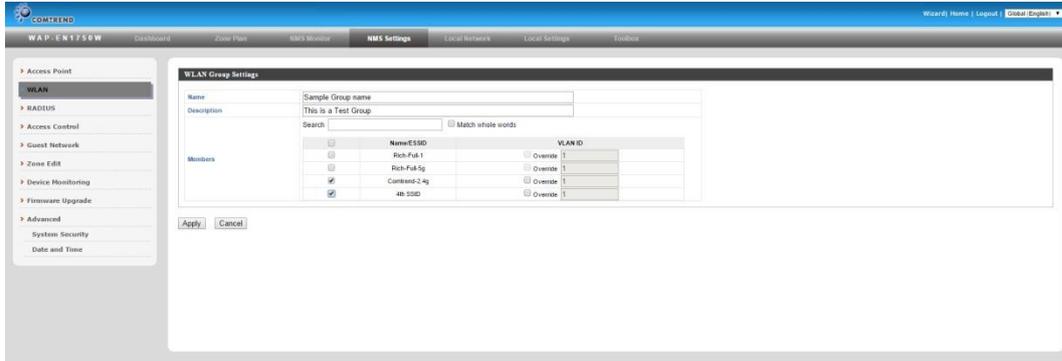
Follow the example below to:

- 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”**:

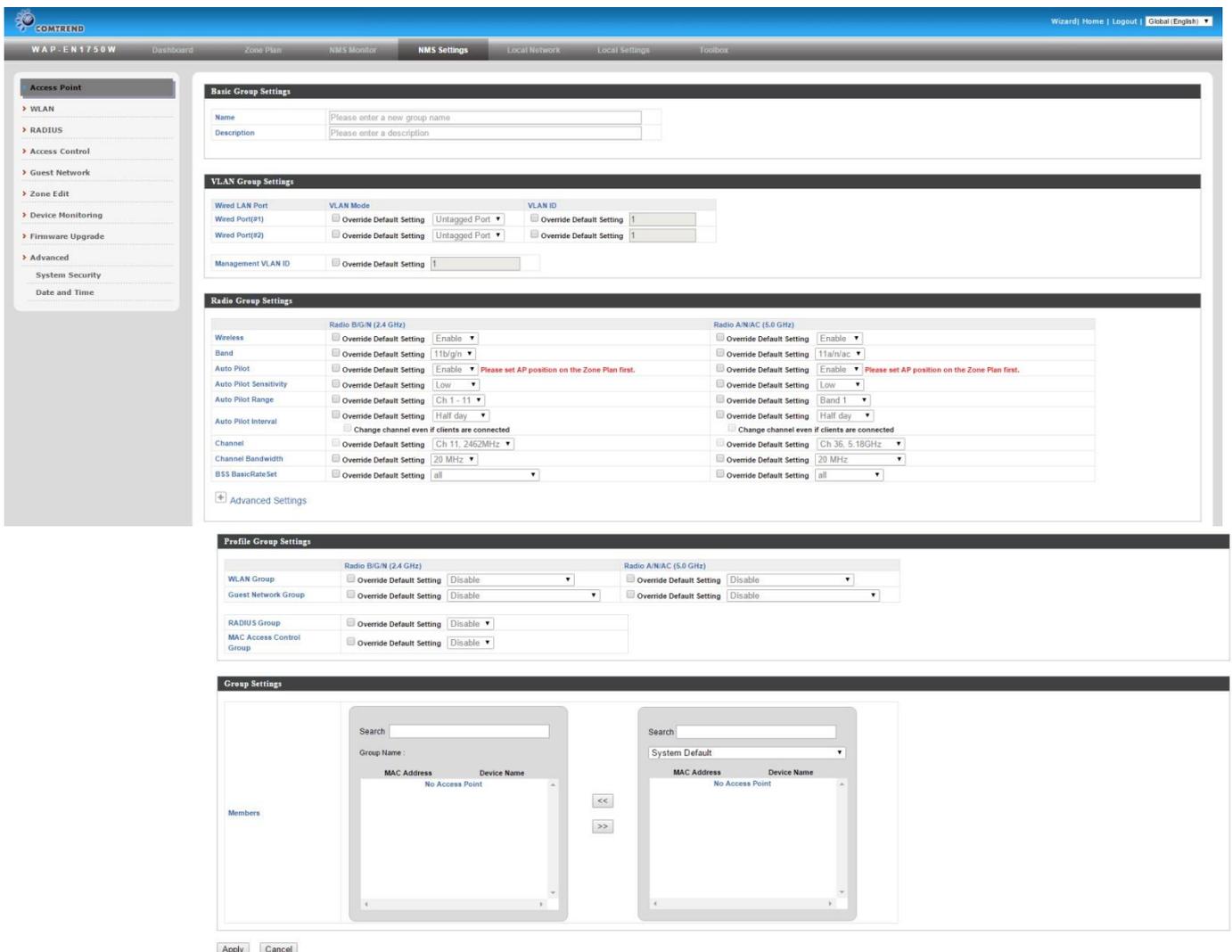


- 3. The new SSID will be displayed in the **WLAN** panel. **Repeat** to add additional SSIDs according to your preference, and then click **“Add”** in the **WLAN Group** panel:
- 4. Enter a **name** for the **SSIDgroup** and **check the boxes** to select which SSIDs to include within the group. Click **“Apply”** when done.



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

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

COPYRIGHT

Copyright ©2015 by this company. All rights reserved. No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language or computer language, in any form or by any means, electronic, mechanical, magnetic, optical, chemical, manual or otherwise, without the prior written permission of this company

This company makes no representations or warranties, either expressed or implied, with respect to the contents hereof and specifically disclaims any warranties, merchantability or fitness for any particular purpose. Any software described in this manual is sold or licensed "as is". Should the programs prove defective following their purchase, the buyer (and not this company, its distributor, or its dealer) assumes the entire cost of all necessary servicing, repair, and any incidental or consequential damages resulting from any defect in the software. Further, this company reserves the right to revise this publication and to make changes from time to time in the contents thereof without obligation to notify any person of such revision or changes.