Introduction to
OW-500 A1/OW-500 A3

CERIO
Amplify your Wireless Network

eXtreme Power Wave2 4X 2x2
Tri-Band Outdoor Bridge/AP

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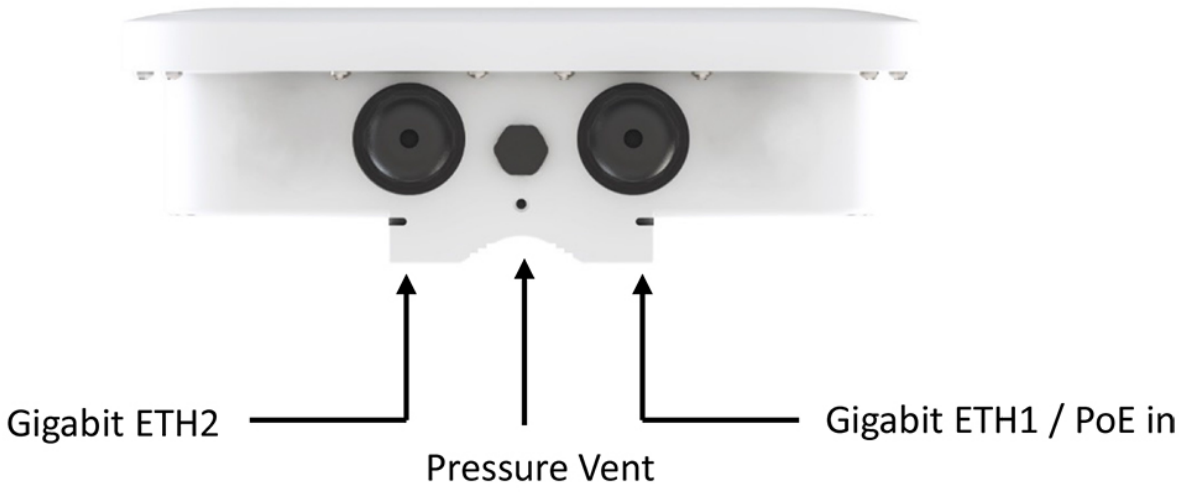
Product Overview

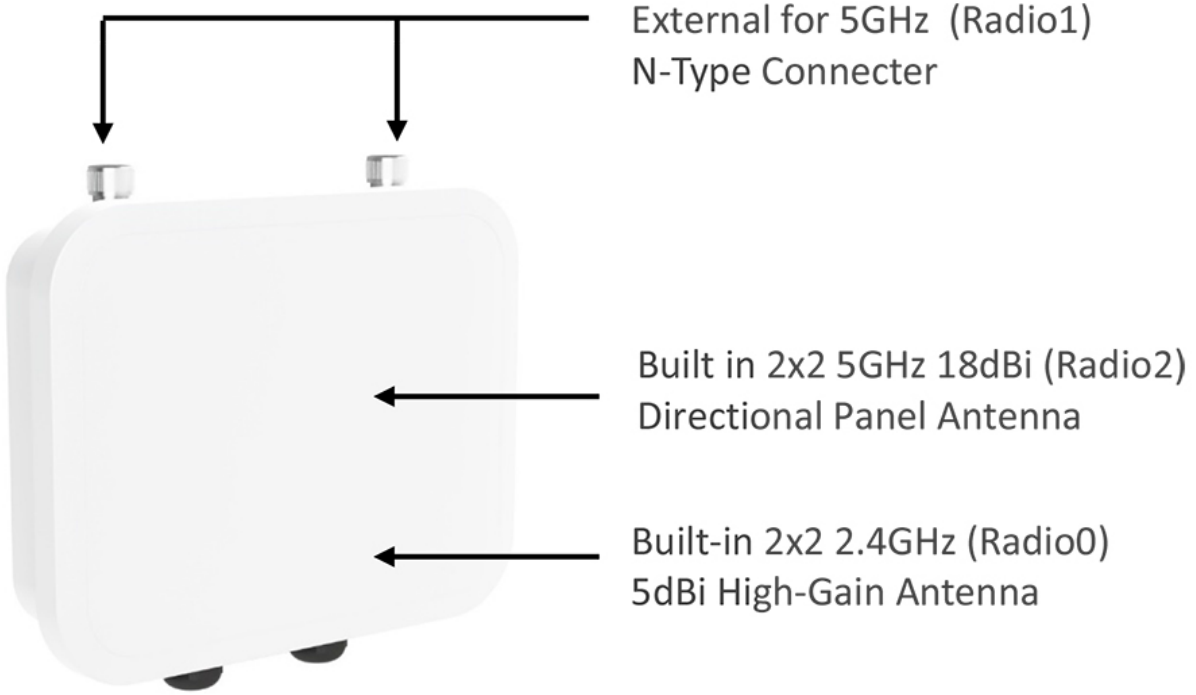
- Supports 2.4/5/5GHz concurrent Tri-Band function
- 2.4GHz band supports standard IEEE 802.11 bgn with maximum data transfer rate of 400Mbps
- 5GHz(Radio1) and 5GHz(Radio2) bands supports IEEE 802.11 an/ac each with a maximum data transfer rate of 867Mbps
- Supports 2 10/100/1000Mbps Gigabit Ethernet Port and ETH1 port supports PoE function
- IEEE 802.3af/at Power over Ethernet supported
- Support 4 external N-Type connectors are assigned to the 5GHz band and one built-in 2x2 2.4GHz 5dBi High-Gain Omnidirectional Antenna**(OW-500 A3)**
- Built in 2x2 5GHz 18dBi Directional Panel Antenna and 5dBi 2.4GHz High-Gain Antenna and Support 2 external N-Type connectors are assigned to the 5GHz band **(OW-500 A1)**
- With IP68 weather-proof durable design are made to withstand harsh environment deployment

Advanced Features

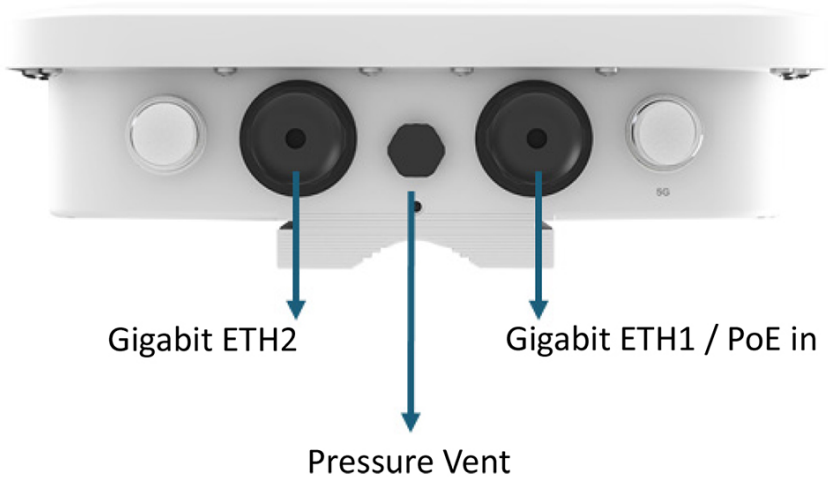
- Concurrent Tri-Band access point with the latest MU-MIMO Wave2 technology provides wireless 4 channel (4x speed) simultaneous operation in Tri-band 2.4GHz, 5GHz(Radio1)and 5GHz(Radio2) wireless coverage for maximum flexibility.
- Operation modes include: AP with WDS Mode and Captive Portal, Control Access Point Mode, Client Bridge Mode, and WISP/ CPE Mode
- Provide customizable login and logout Captive portal page by Web Page
- Built in 802.1x RADIUS authentication server and supports up to 50 User Accounts
- Incorporates 802.11r/k Fast Roaming Protocol
- CenOS 5.0 Control Access Point Mode (CAP) supports centralized management of up to 64 AP devices
- Unique design for bundles RJ45 Function Kit, which is able to reset the device to default remotely. It can save extra re-installation cost and time
- Integrates a long-range power amplifier and high sensitivity receiver to deliver unmatched reliability and performance at large coverage application

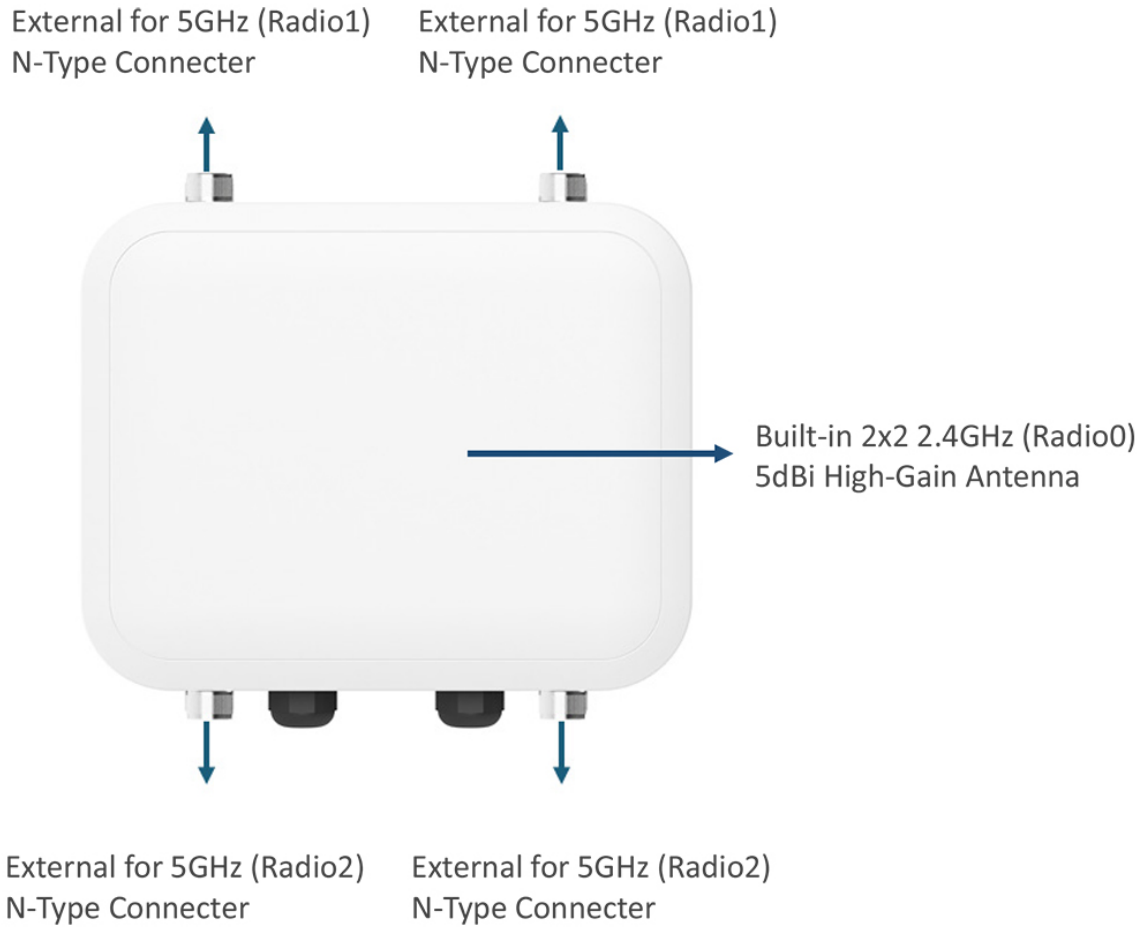
Hardware Overview OW-500 A1





Hardware Overview OW-500 A3



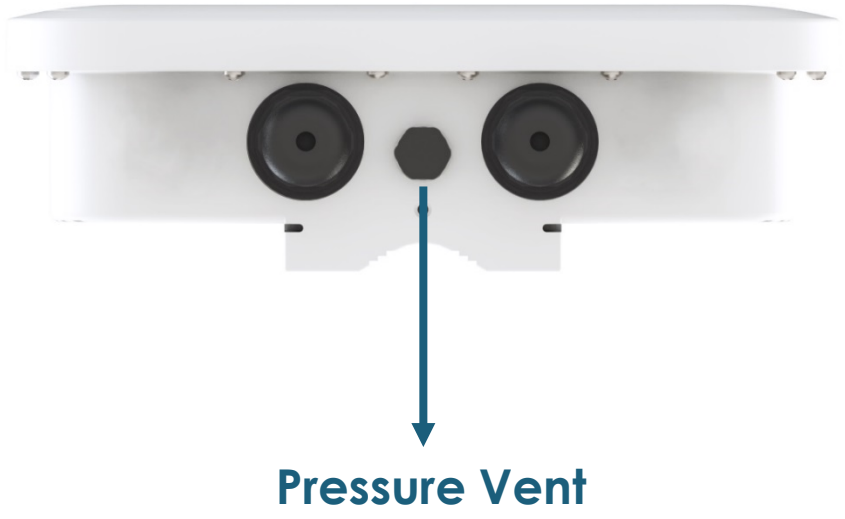


Pressure Vent

The integrated pressure vent allows the IP68 enclosure to breathe safely.

This auto-adjusting technology **equalizes pressure** inside the device and **reduces condensation** from building up inside.

The overall result of the Pressure Vent is that product performance and durability are increased. This effectively gives users peace of mind when deploying out OW-500 Series products.



IP68 Rating Waterproof

Support P68 Rating Waterproof Design

OW-500 Series provide high performance and IP68 durable design are made to withstand harsh environment deployment. This provides product durability and user peace of mind when deploying wireless devices in outdoor environments.

Versatile Mounting

Wall Mount Supported

Adjustable

Pole Mount Supported

Adjustable

Hardware Reset Function Kit

Bundles RJ45 Function Kit, which is able to reset the device to default remotely. It can save extra re-installation cost and time.

Surge Protector

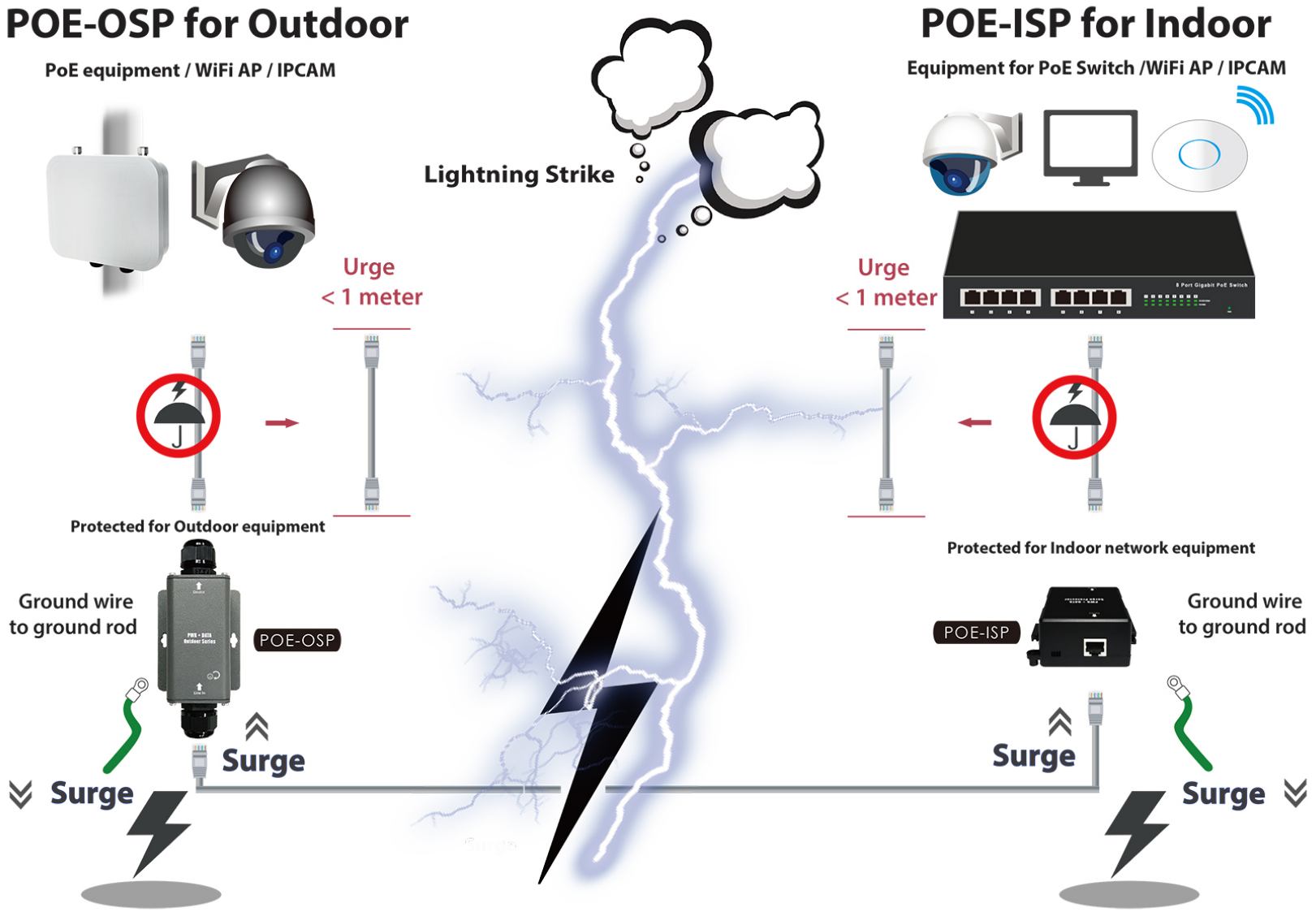
Indoor/Outdoor Surge Protector (Optional)

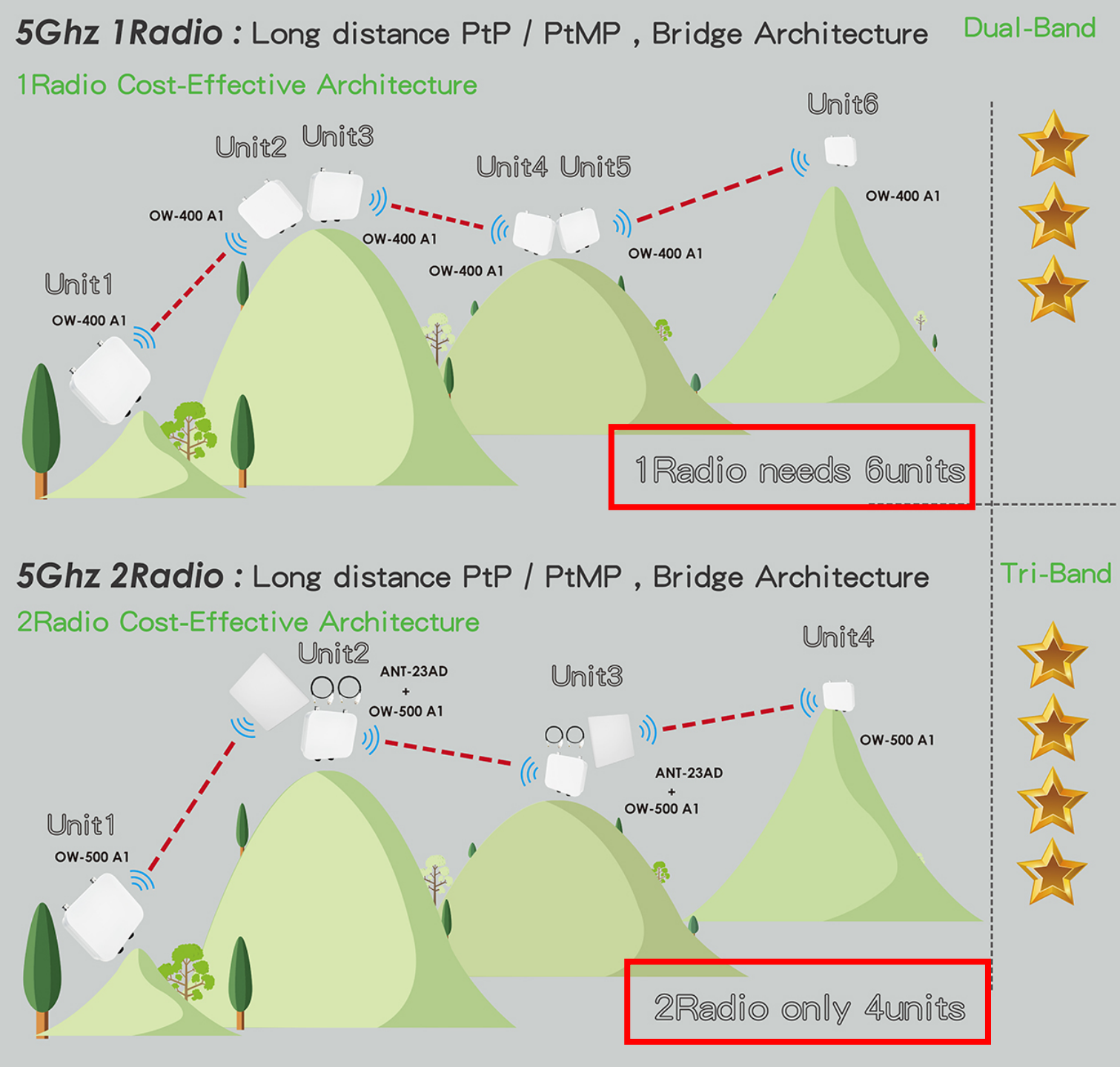
Provides surge protector for optional · Installing two surge protector devices, one is nearly terminal equipment (such as OW-500 Series Outdoor AP or other Ethernet devices), and the other at source equipment (such as Switch, Router). Damaging ESD attacks and surges will be absorbed by the surge protector devices and safely discharged into the ground. It is a cost-effective solution for protecting expensive outdoor Ethernet devices

Outdoor Type POE-OSP

Indoor Type POE-ISP

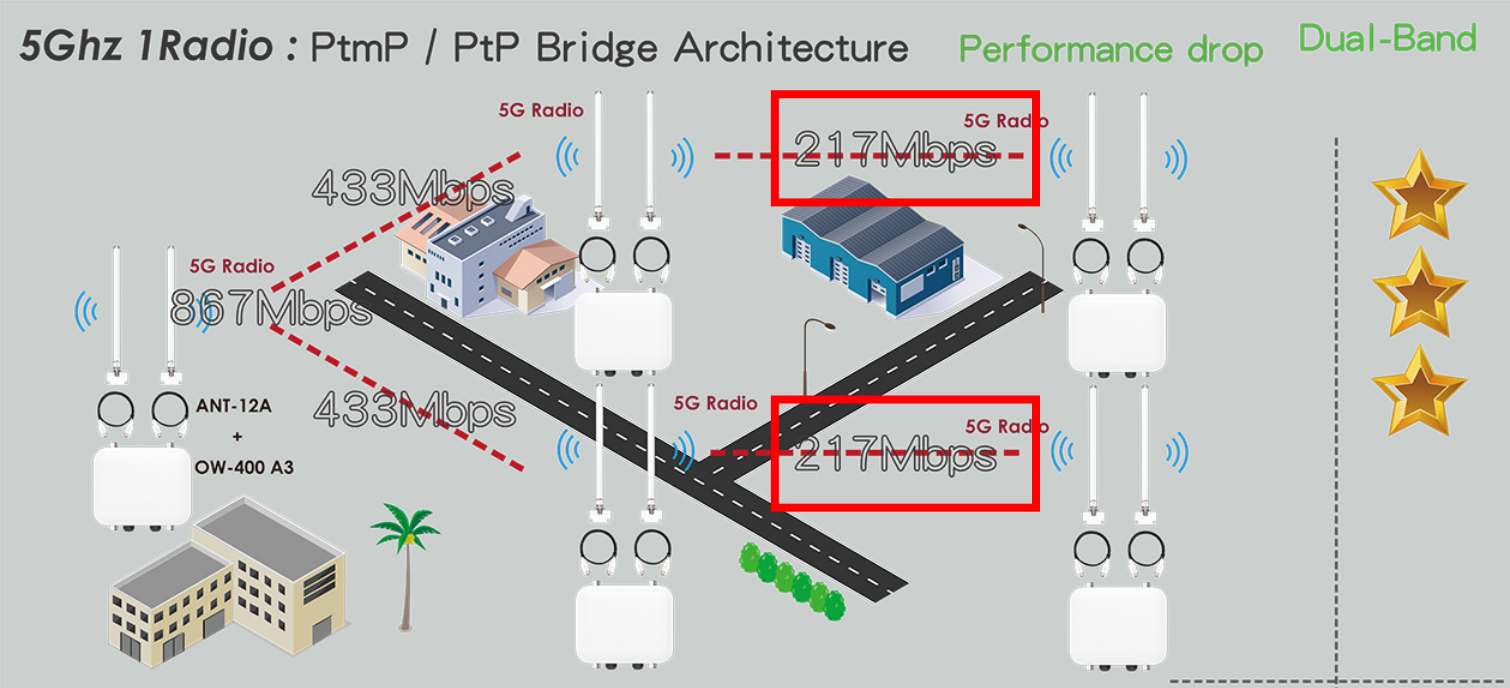
Surge Protector Application

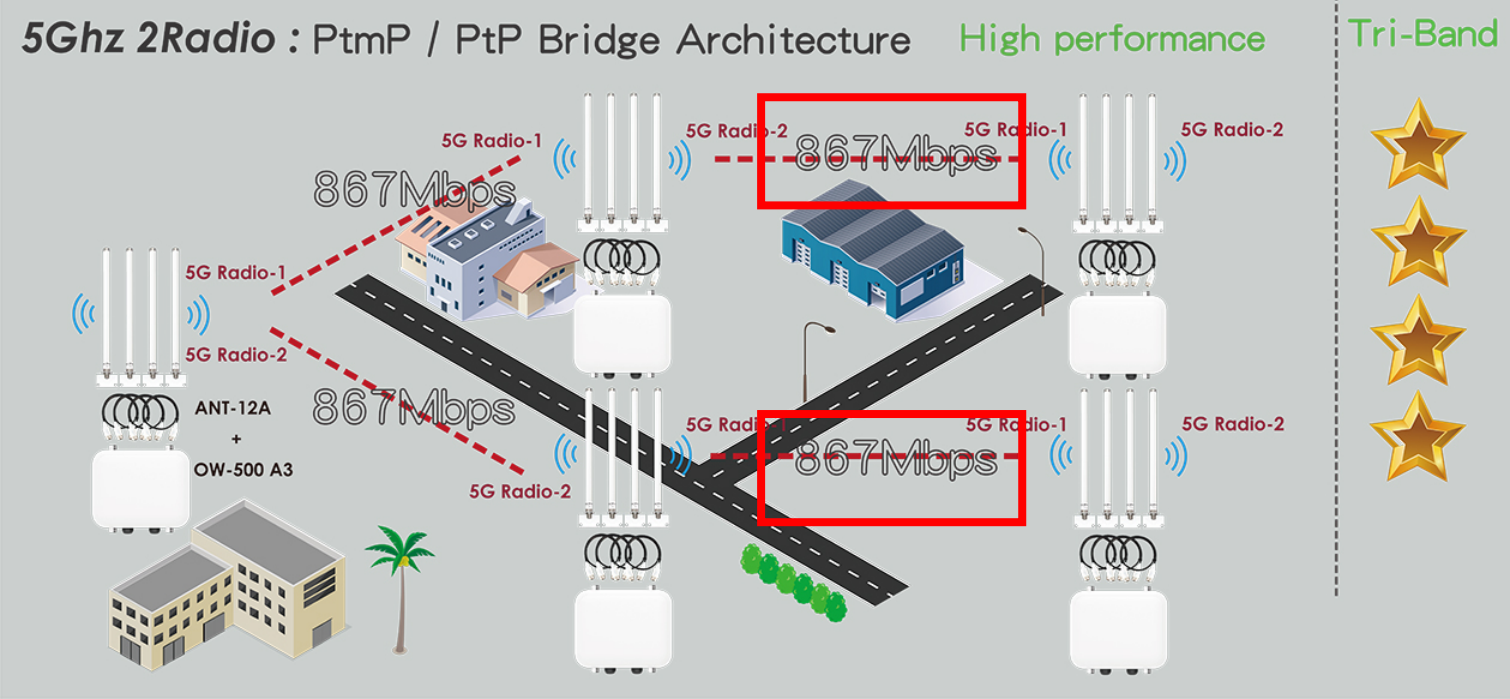




Long-distance P-to-P / P-to-MP architecture cost-effective solution

The OW-500 Tri-band series uses two 5GHz radios to make a multi-point (P-to-MP) long-distance bridge (uplink/downlink) to complete a multi-link network Bridge easily. Compared with dual-band single 5GHz radio HW design, due to the limitation of one radio which can only apply to uplink or downlink connection. Therefore, OW-500 Tri-band series provide the most economical long-distance wireless bridge application, greatly reducing the installation and procurement costs of wireless architecture.





When the Tri-band equipment do wireless bridging then bridging, it will not affect performance

The Multi-radio feature completely solves the single radio shares the innate principle of uplink and downlink transmission performance. For example, the OW-500 Tri-band series one 5G Radio can be responsible for the uplink, and the other 5G Radio can be responsible for the downlink so that their links can maintain the highest transmission performance. Compared with the Dual-Band model, this tri-band model greatly improves the transmission performance of the wireless architecture.

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The Tri-band wireless equipment which can improve the deployment cost and benefit of the site

When the OW-500 series is built at a remote relay center, and its two 5GHz Radios can be used as the backbone central backhaul center for the remote areas on both sides. Through the OW-500 tri-band wireless equipment, transmitted back the data from the remote area. The OW-500 Series wireless equipment which can use fewer units to complete the connection. Therefore, both performance and construction costs can be significantly improved.

Proven Test Results

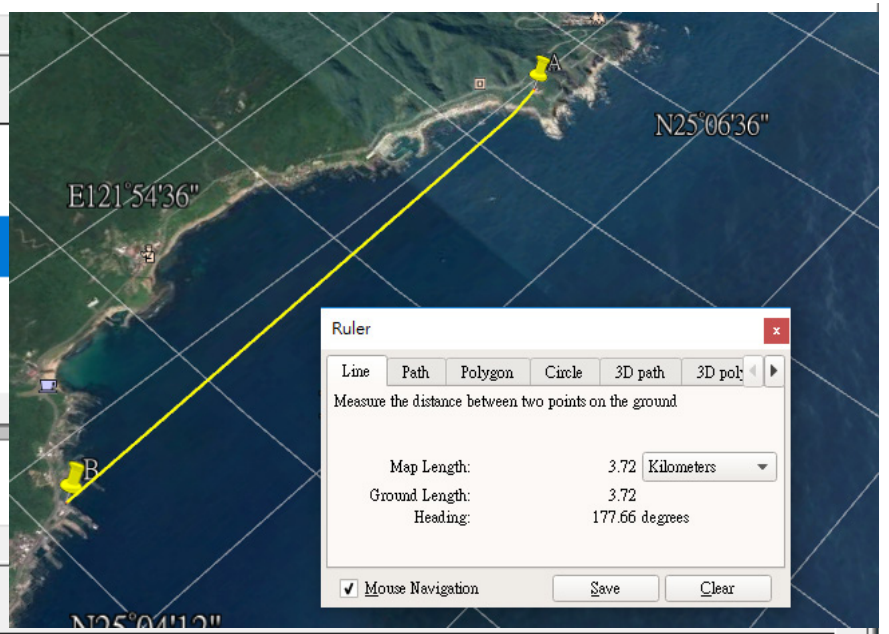
The OW-500 Tri-band series high performance design maintained a high bandwidth of 405Mbps during a 3.7KM (A to B) and when total distance up to 7.4KM (A to B to C) , the throughput still can can keep up to 309Mbps.

CenOS 5.0

Proven Test Results 7.4km

Test Setup | Throughput | Transaction Rate | Response Time | Raw Data Totals | Endpoint Configuration

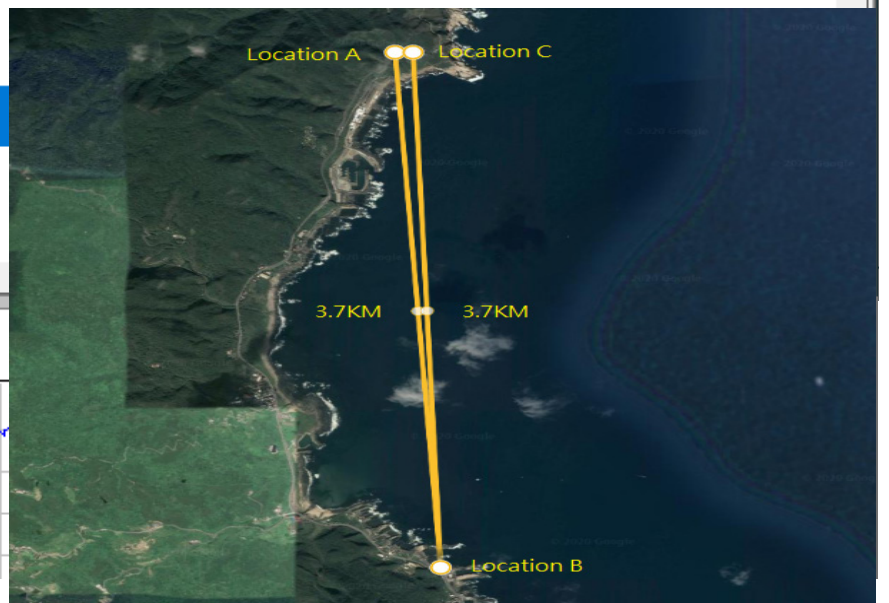
Group	Pair Group Name	Run Status	Timing Records Completed	95% Confidence Interval	Average (Mbps)	Minimum (Mbps)	Maximum (Mbps)	Measured Time (sec)	Relative Precision
All Pairs			**304**		**405.448**	**92.593**	**111.732**		
Pair 1	No Group	Finished	78	-0.497 : +0.497	104.781	99.751	111.732	59.553	0.474
Pair 2	No Group	Finished	76	-0.576 : +0.576	102.073	94.563	105.960	59.565	0.564
Pair 3	No Group	Finished	75	-0.587 : +0.587	100.118	92.593	103.761	59.929	0.586
Pair 4	No Group	Finished	75	-0.412 : +0.412	101.105	96.735	106.383	59.344	0.407



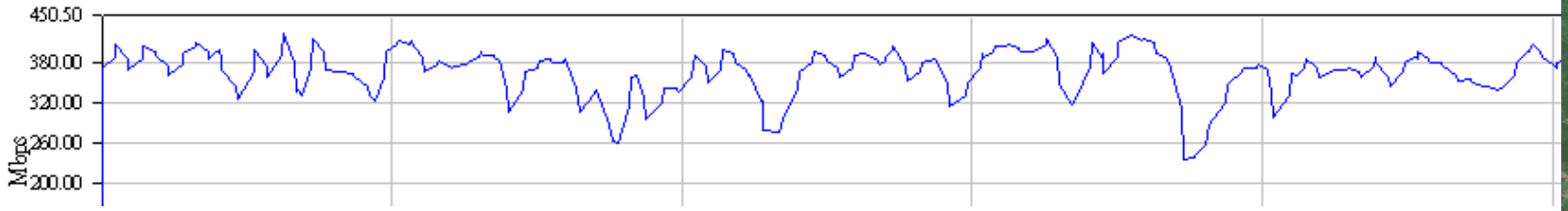
Throughput

Test Setup | Throughput | Transaction Rate | Response Time | Raw Data Totals | Endpoint Configuration

Group	Pair Group Name	Run Status	Timing Records Completed	95% Confidence Interval	Average (Mbps)	Minimum (Mbps)	Maximum (Mbps)	Measured Time (sec)	Relative Precision
All Pairs			**232**		**309.607**	**48.691**	**81.800**		
Pair 1	No Group	Finished	58	-2.078 : +2.078	77.718	48.691	81.549	59.709	2.674
Pair 2	No Group	Finished	58	-2.156 : +2.156	77.448	49.659	80.645	59.911	2.784
Pair 3	No Group	Finished	58	-1.856 : +1.856	78.211	50.220	81.800	59.327	2.373
Pair 4	No Group	Finished	58	-1.976 : +1.976	77.901	48.990	81.549	59.563	2.536



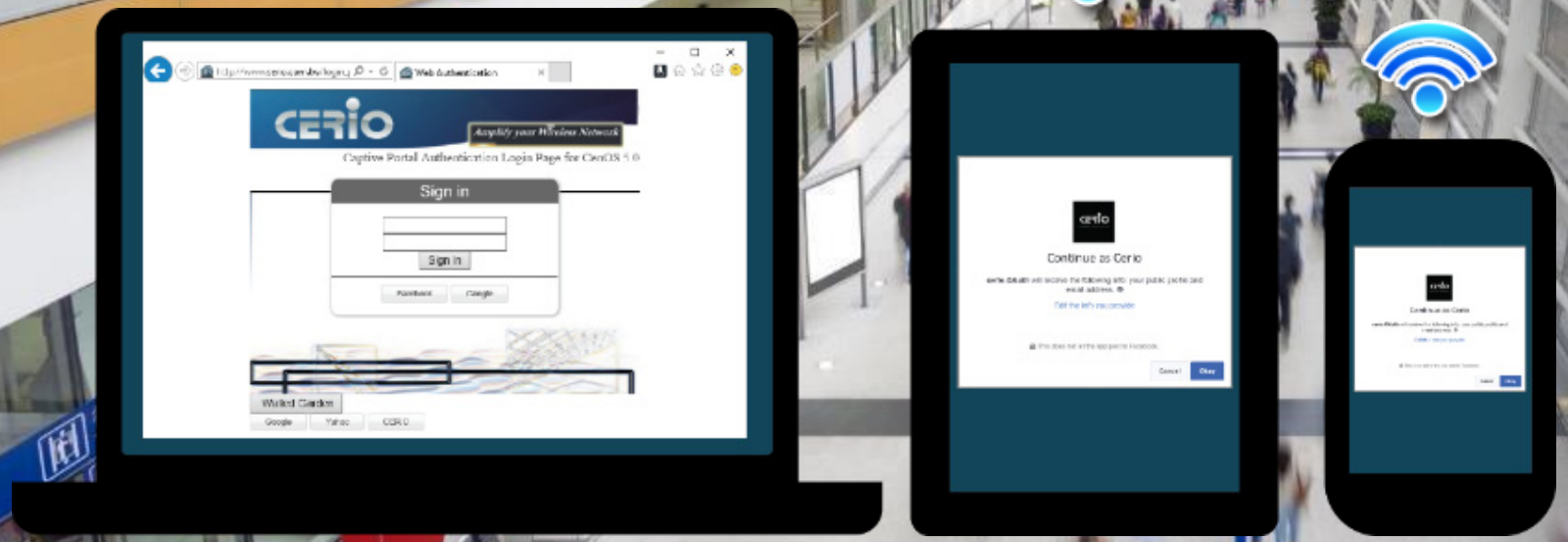
Throughput



CenOS 5.0

Captive Portal Authentication

Captive Portal Authentication conveniently allows wireless clients to access the network through a customized web login portal.



Local Account Login

Facebook Login

Administrators can deploy a customized Captive Portal with the following login methods

1. Guest Login
2. Local Account Login
3. OAuth2.0 Login (Facebook/Google/etc.)

Ideal Deployment

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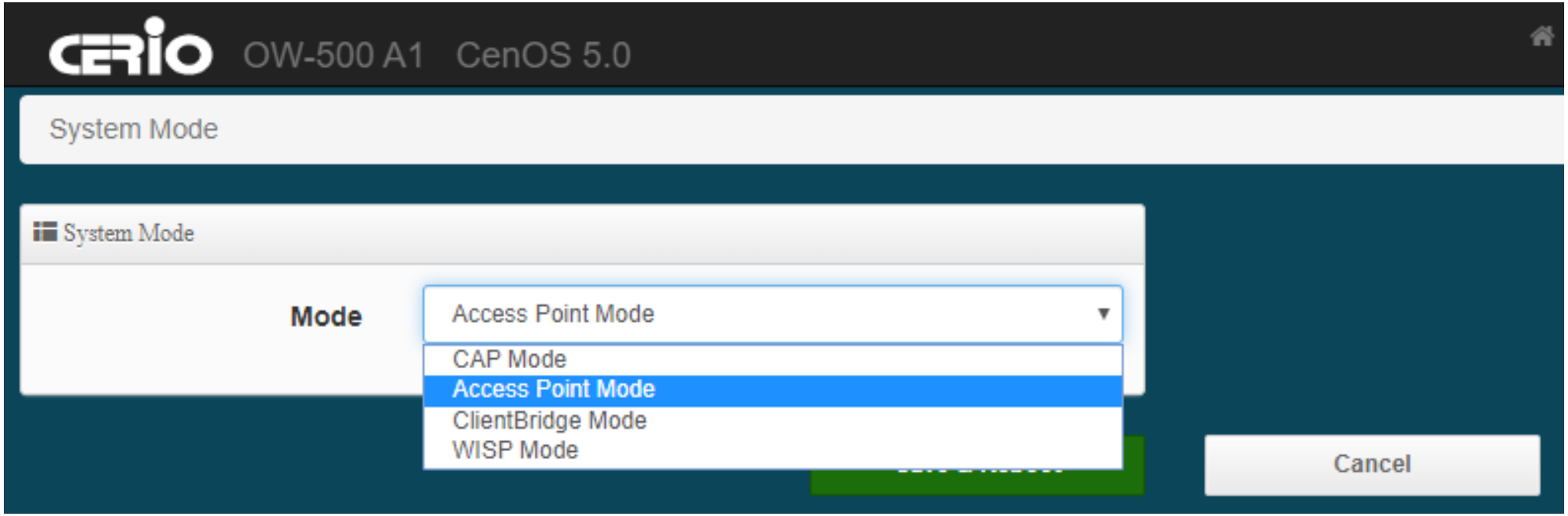
Software Overview

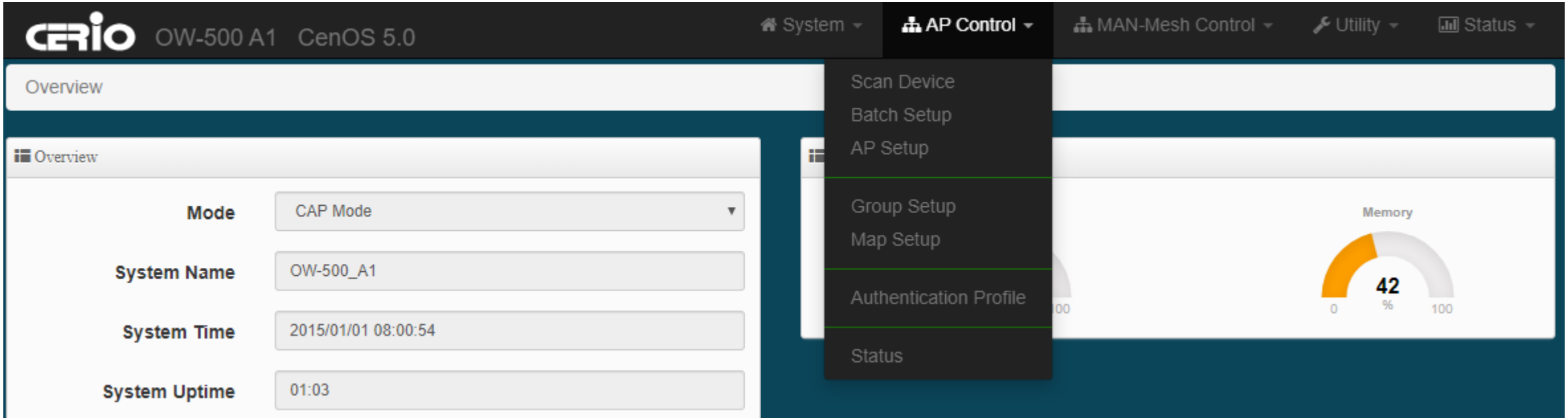
Operation Modes

OW-500 Series supports four different Operation Modes: Control Access Point, Access Point Mode with WDS and Captive Portal Authentication, Client Bridge + Repeater Mode, WISP/CPE Repeater AP Mode.

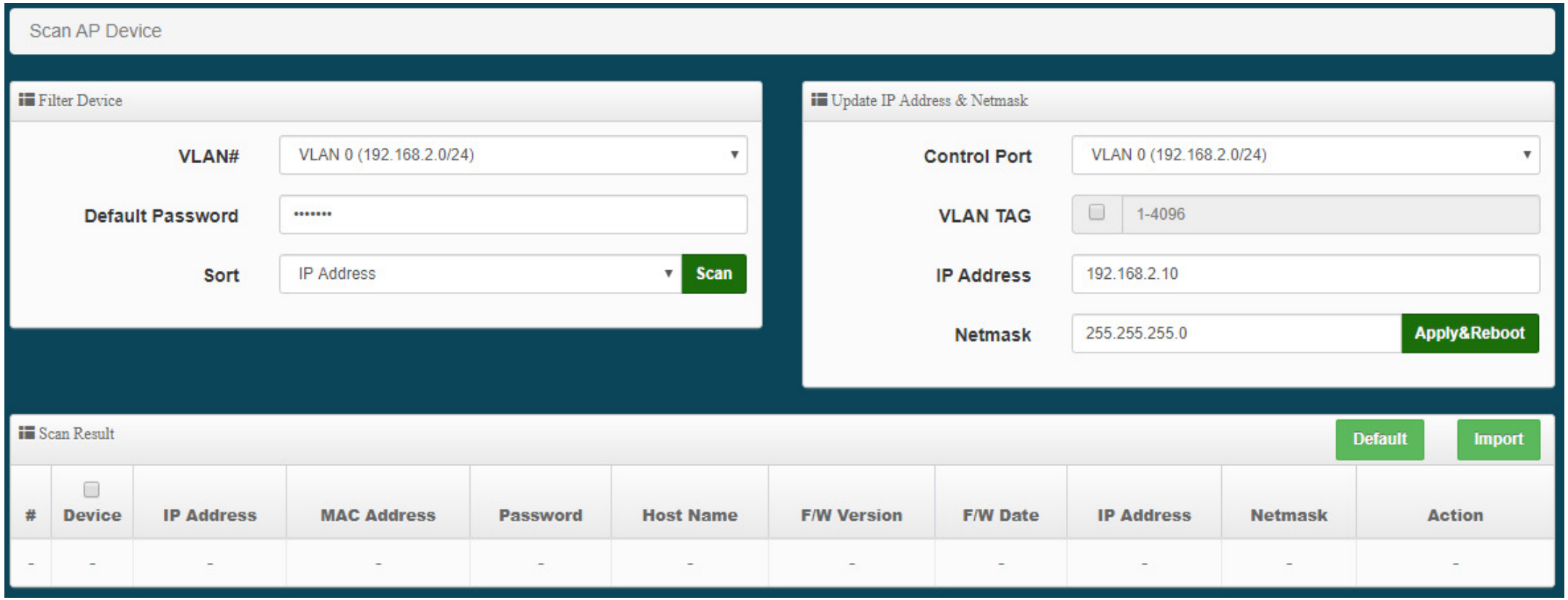


Control Access Point

Control Access Point (CAP) Mode's converts the device into a centralized AP management controller. When OW-400/408 A1 is in CAP Mode, it can centrally manage up to 64 AP devices.

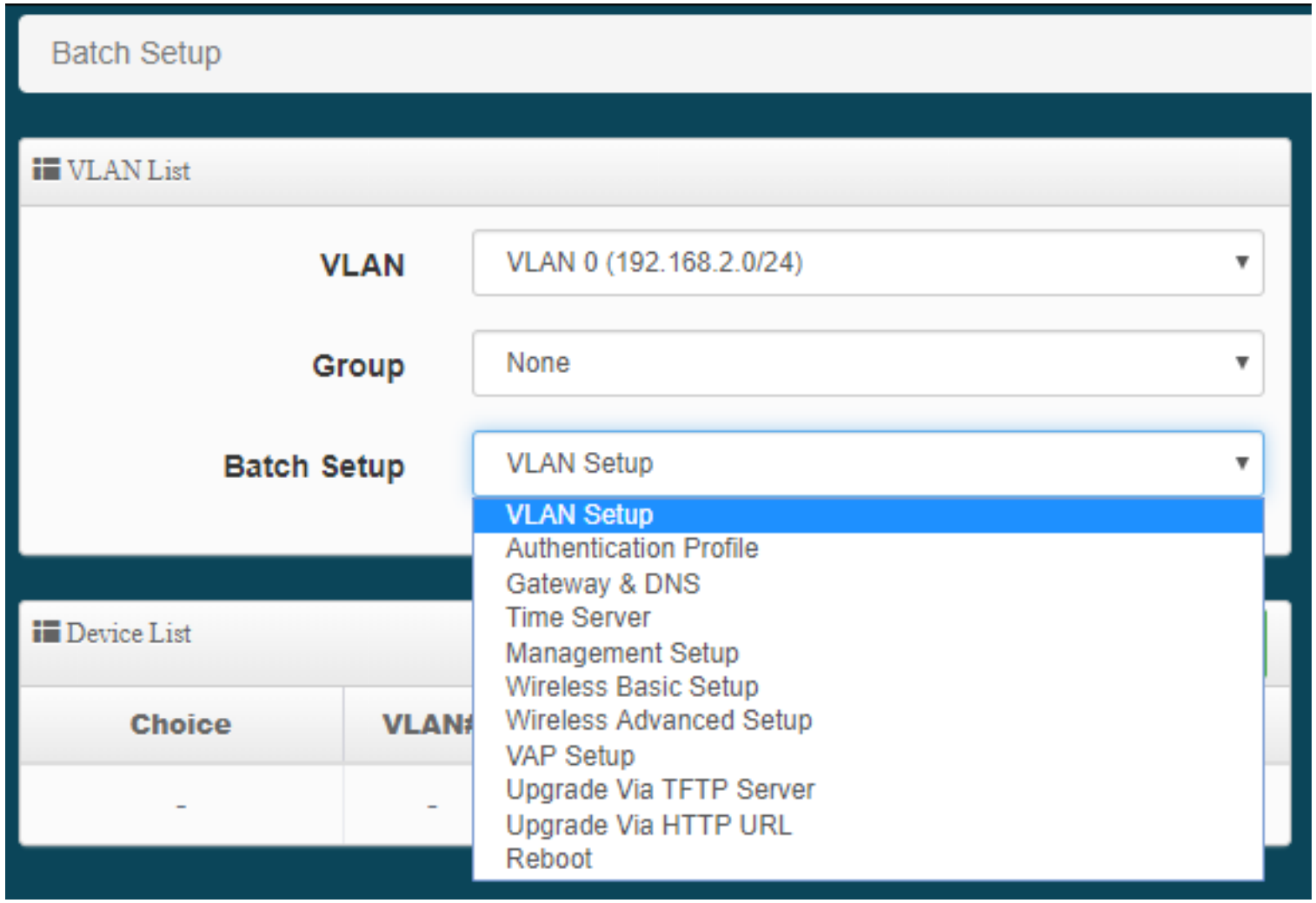


Scan and Import



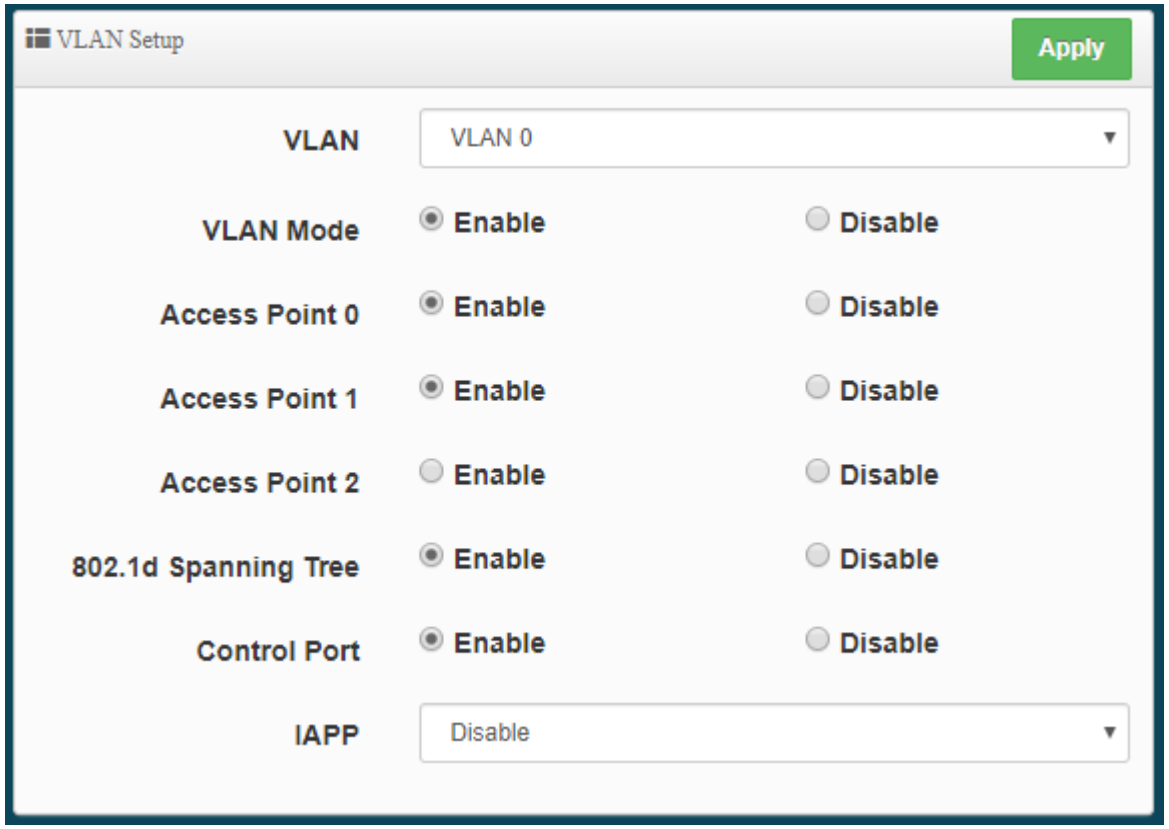
CAP Mode allows administrators to scan for AP devices within their virtual LAN and import them into the management database. Once imported, administrators can make quick changes such as changing IP addresses for organization and easy management. Also it supports multi-VLAN centralized management.

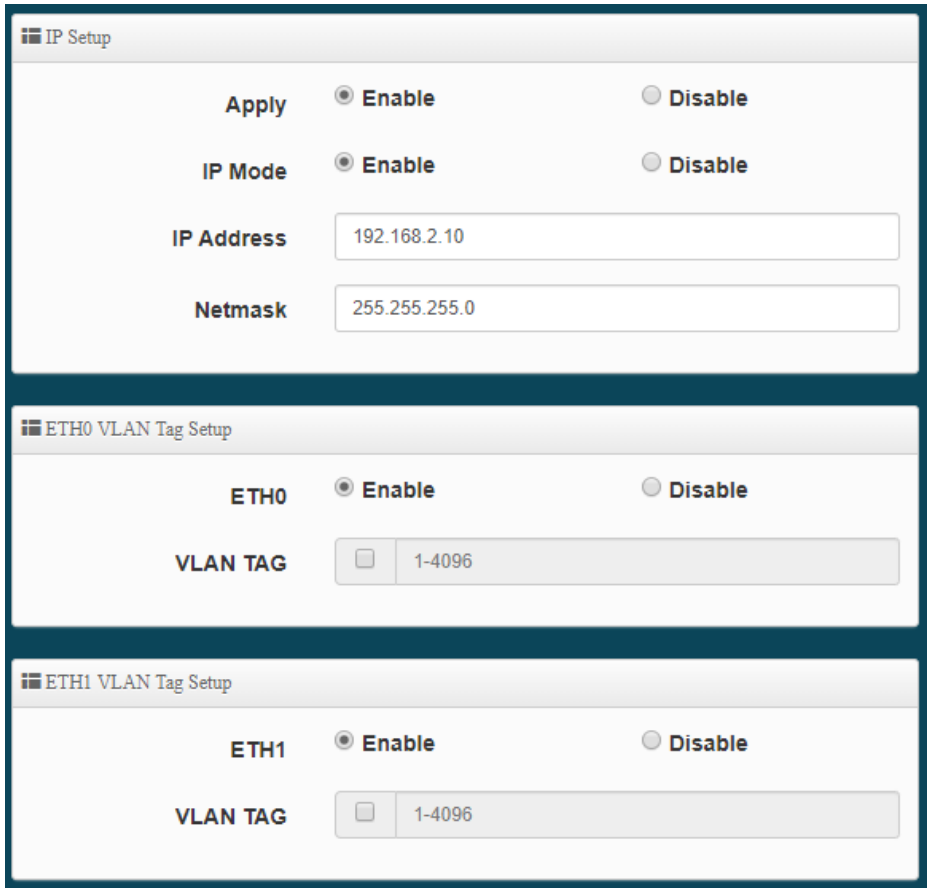
Batch Setup



CAP Mode's control function supports centralized configuration of managed APs. This allows administrators to make convenient batch changes to the network of AP devices from one centralized location. This main function of CAP mode can save time and cost by reducing servicing and installation time.

Batch Setup

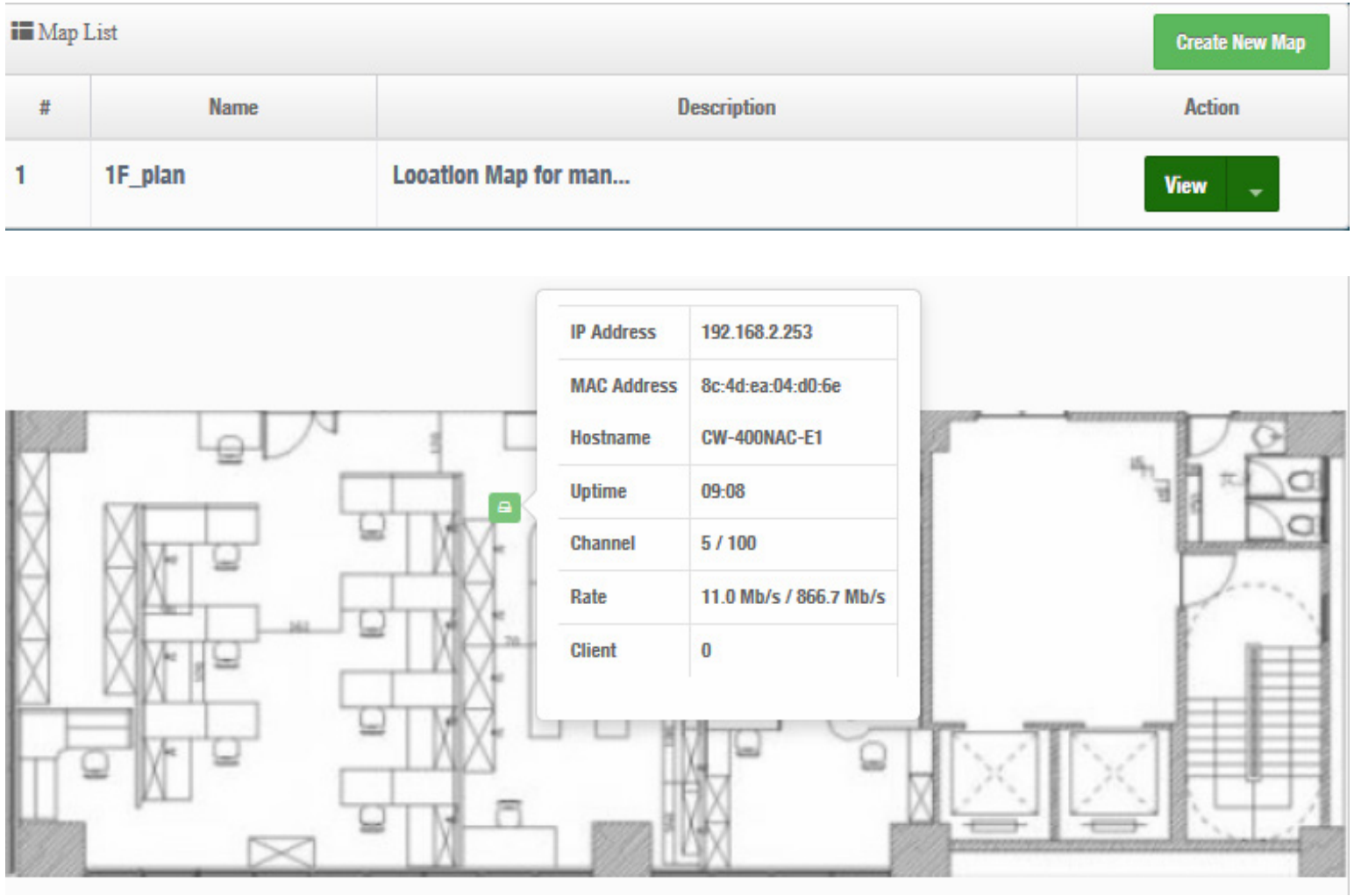




Administrators can enable VLAN Mode, Spanning tree, Control Port capabilities, IAPP Roaming, change IP settings and setup VLAN tag (IEEE 802.1Q) for batches of access points. These changes can be implemented differently for each VLAN, allowing for both centralized and organized control.

Map Setup

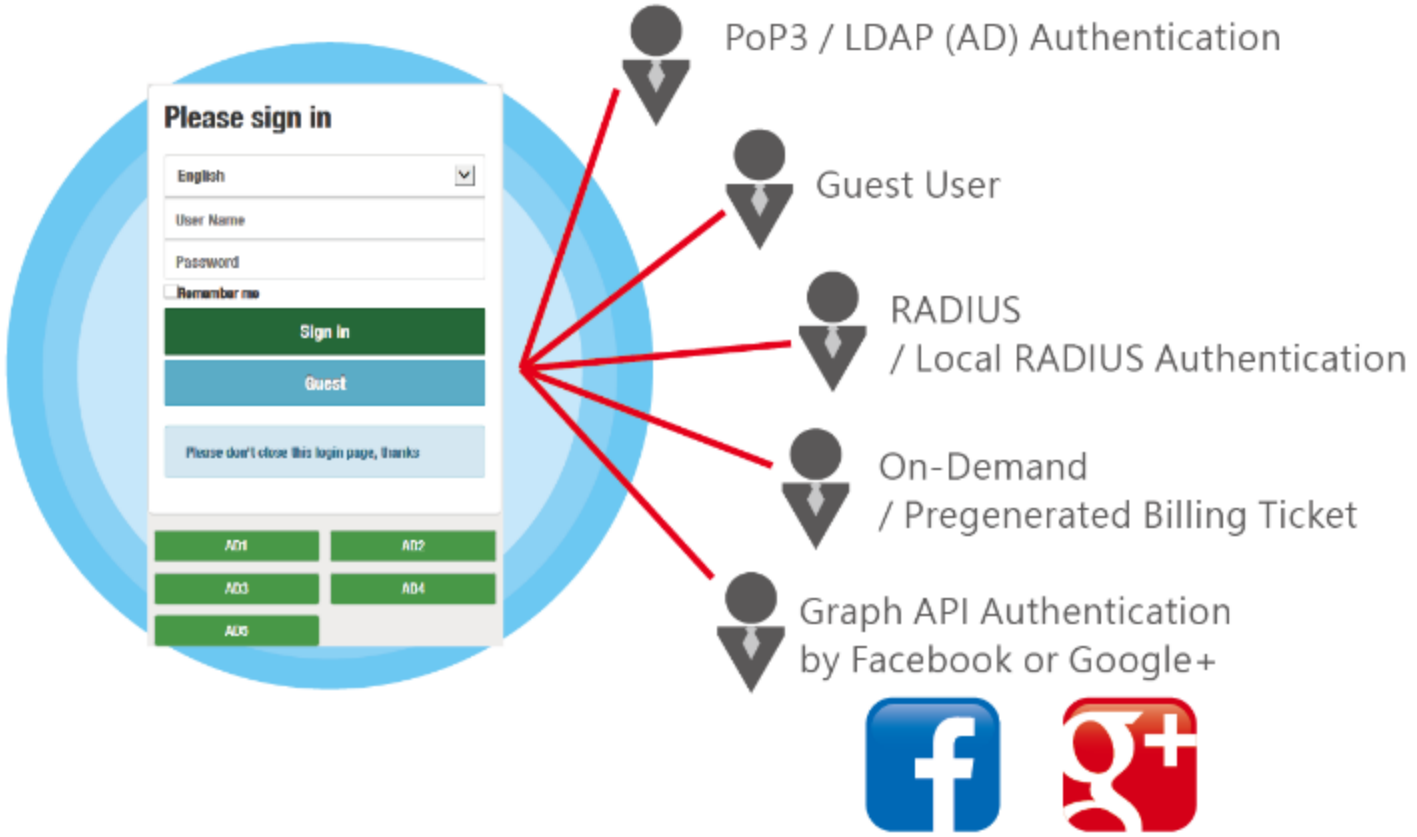
CAP Mode also supports Map Setup function for organizing your AP network. Administrators can create maps by uploading floor plan URLs and dragging APs to the correct location. Once complete, administrators can monitor AP statuses such as uptime, data rates, and connected clients



Authentication AP

CenOS 5.0 supports Authentication Access Point Mode for versatile AP deployment. Administrators can choose from many authentication options to best suit their network needs.

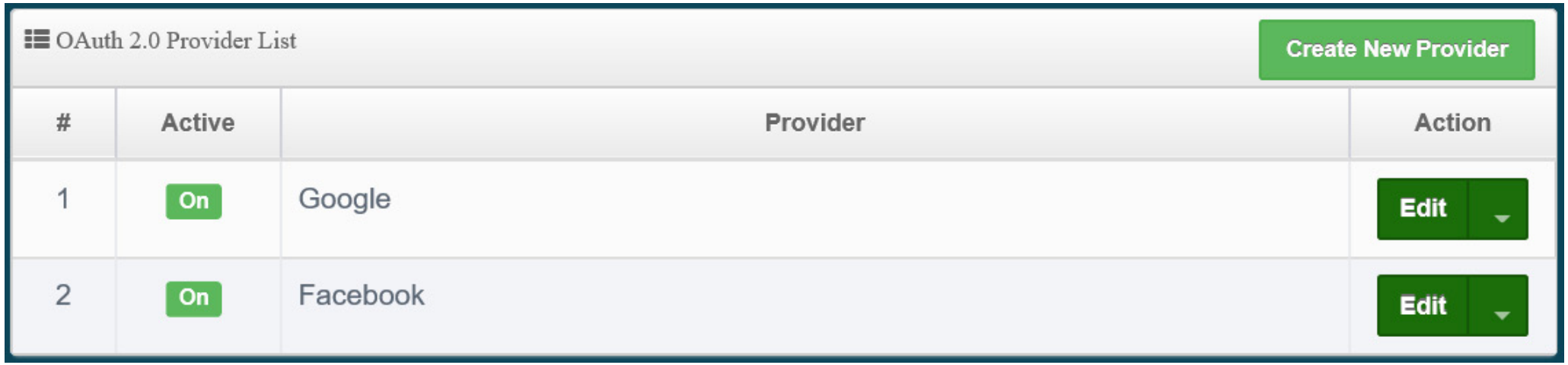
This enables convenient access to the wireless network for public clients, as well as improved management and organization for network administrators



Authentication

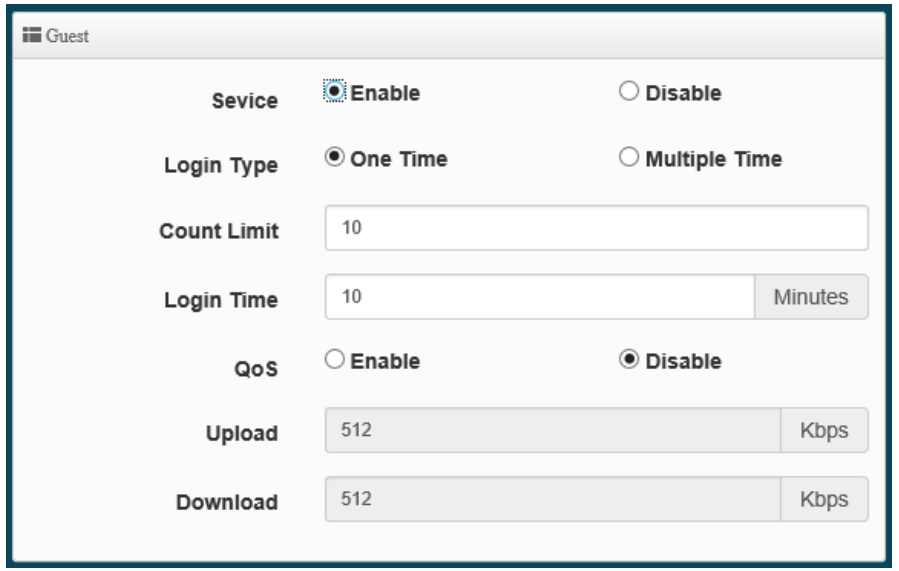
CenOS 5.0 supports multiple methods of authentication for user management, security and convenience.

OAuth2.0 : Allows devices to use third-party credentials such as Facebook and Google+ for user authentication. This provides login convenience for public clients and also allows administrators to collect data through Facebook / Google analytics.

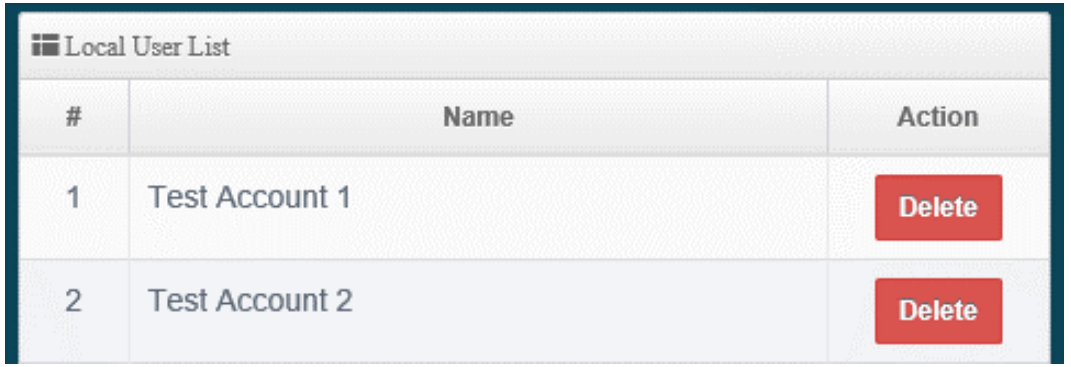


Authentication

Guest Login : Provides limited WiFi connection to clients to an open network. Limitations can be put in place to manage client limits, connection time, and control bandwidth



Local User: Provides fixed authentication user accounts for controlled client login and data management. Administrators can track Local Account usage, connection time, etc. CenOS 5.0 supports up to 10 Local User accounts

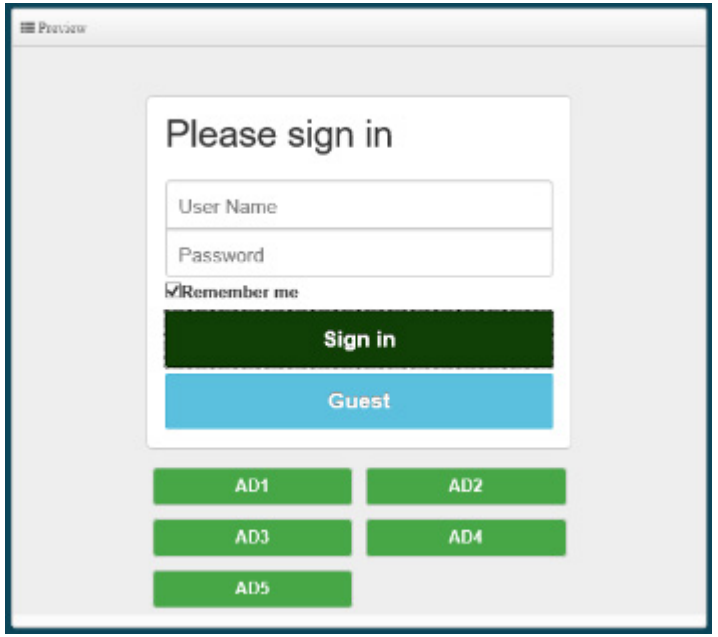


Customized Login Page

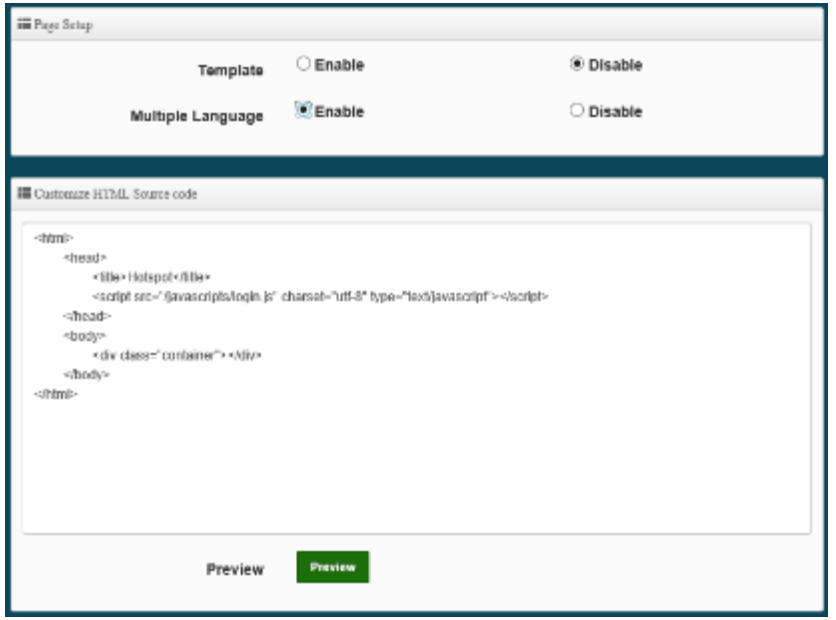
Administrators can create a customized Login Page which can become a platform for:

(1.) Promotions **(2.)** Brand Exposure **(3.)** Advertisements **(4.)** Platform for providing Information

This customized Captive Portal supports login through **1.** Guest Users **2.** Local Accounts **3.** Facebook, Google+, etc using OAuth2.0.



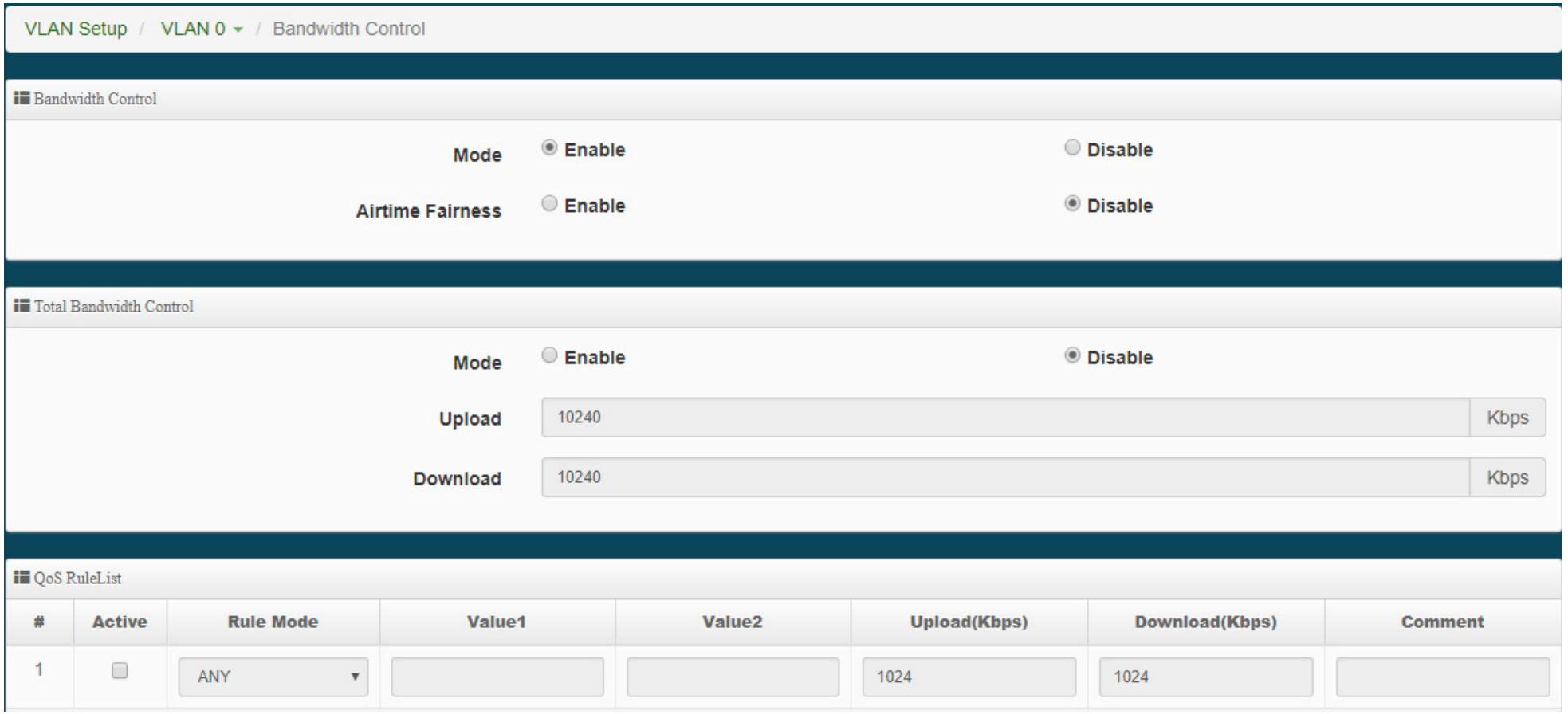
Default Template



Customize through HTML Code

Bandwidth Control

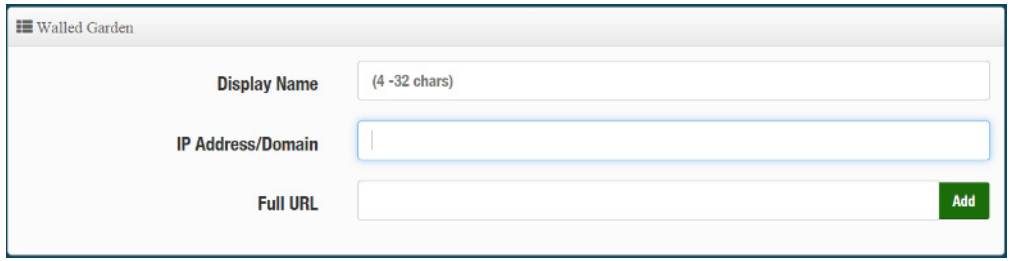
Bandwidth Control of connected clients allows administrators to control individual user upload and download speeds, as well as set a maximum limit on the total amount of bandwidth that can be used at a single time.

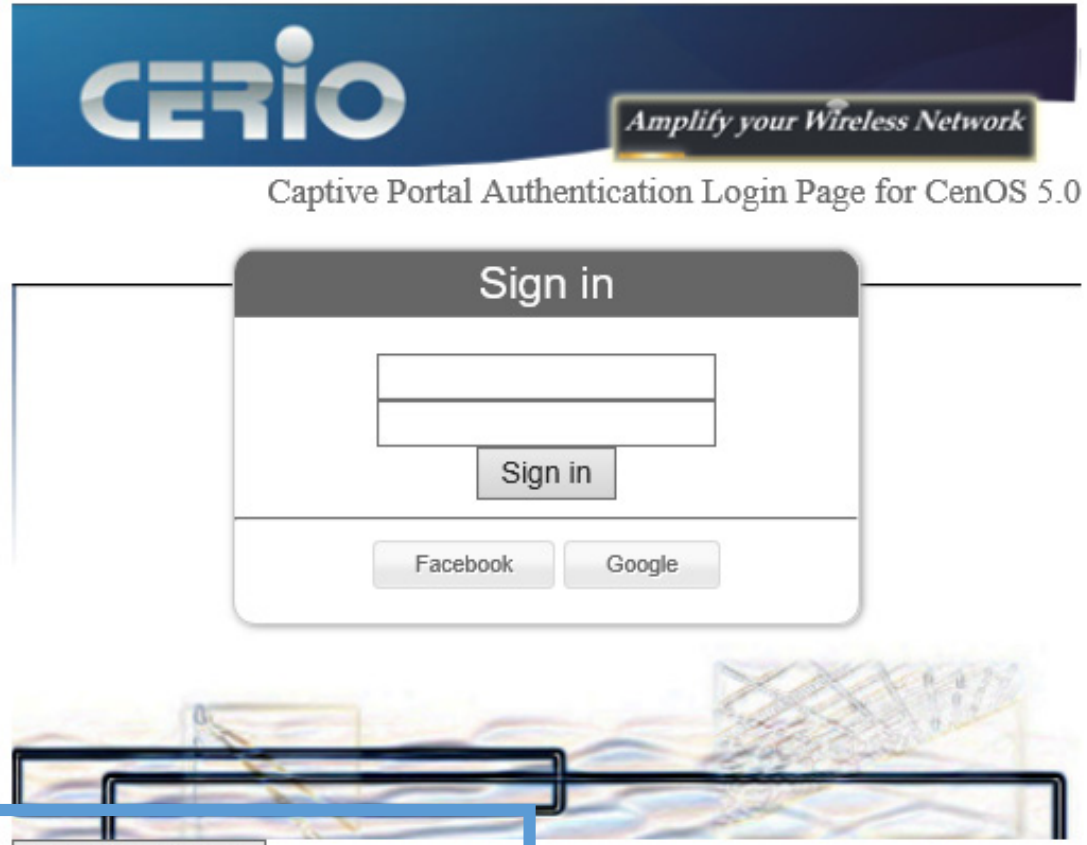


Walled Garden

Modes Walled Garden function allows administrators to create a browsing environment that controls user access and accessible information. This function is ideal for directing users to specific parts of the Web such as;

1. Paid Content
2. Self-Promotions
3. Free access to specific websites
4. Advertisement web pages

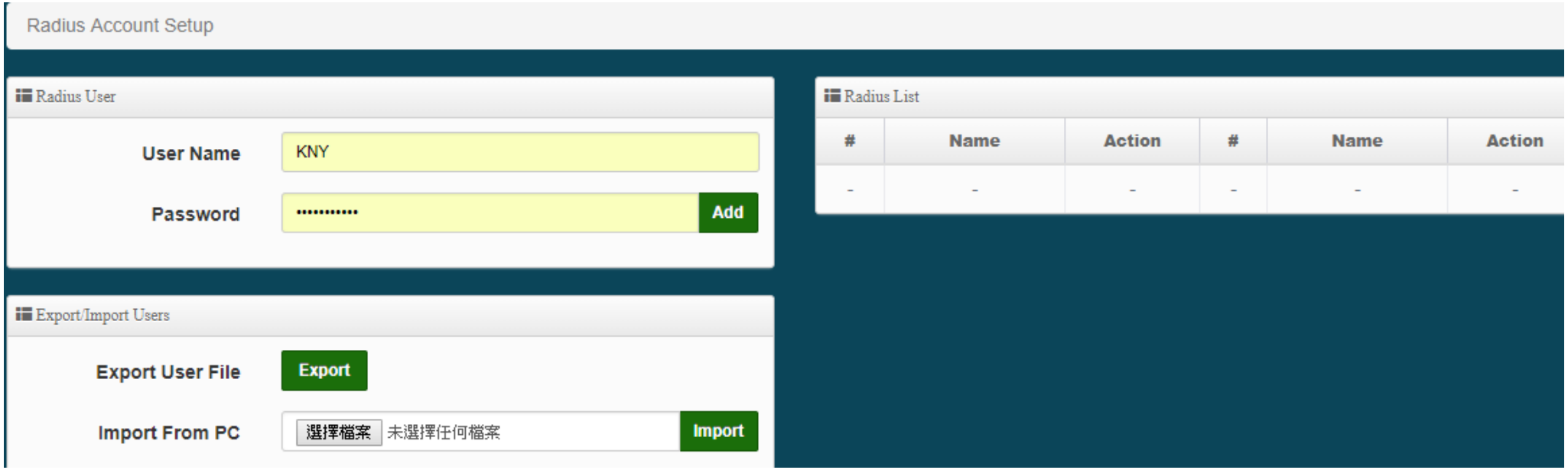




Enabled Walled Garden Websites

Built-in 802.1x RADIUS

Supports integrated 802.1x RADIUS Server authentication for small to medium network environments. This supports a maximum of 50 built-in RADIUS Users.

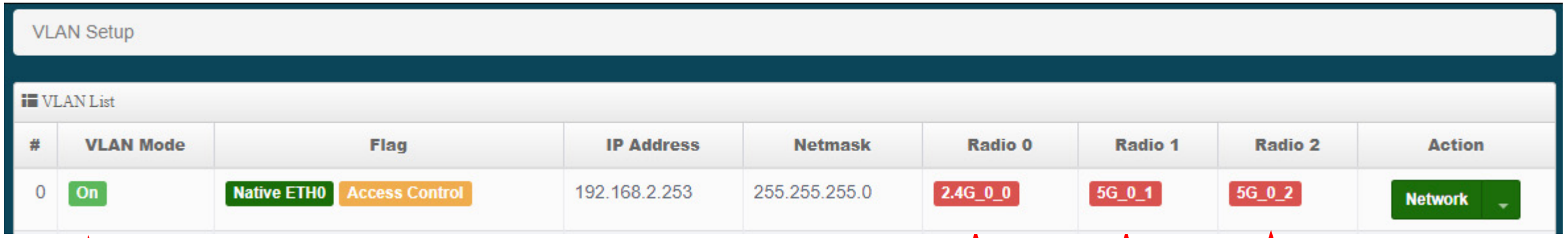


Increased Security- Individual user sessions are encrypted uniquely, which prevents other users from acquiring private information

Cost Efficient – The built-in RADIUS server design removes the need to purchase additional equipment such as external servers.

Virtual LANs & SSIDs

OW-500 Series Tri-Band radio design supports a total of 16 Virtual LANs (VLAN) and 48 SSIDs. Each VLAN supports three SSIDs, one on the 2.4GHz frequency band and one on the 5GHz Radio1 and one on the 5GHz Radio2 frequency band.

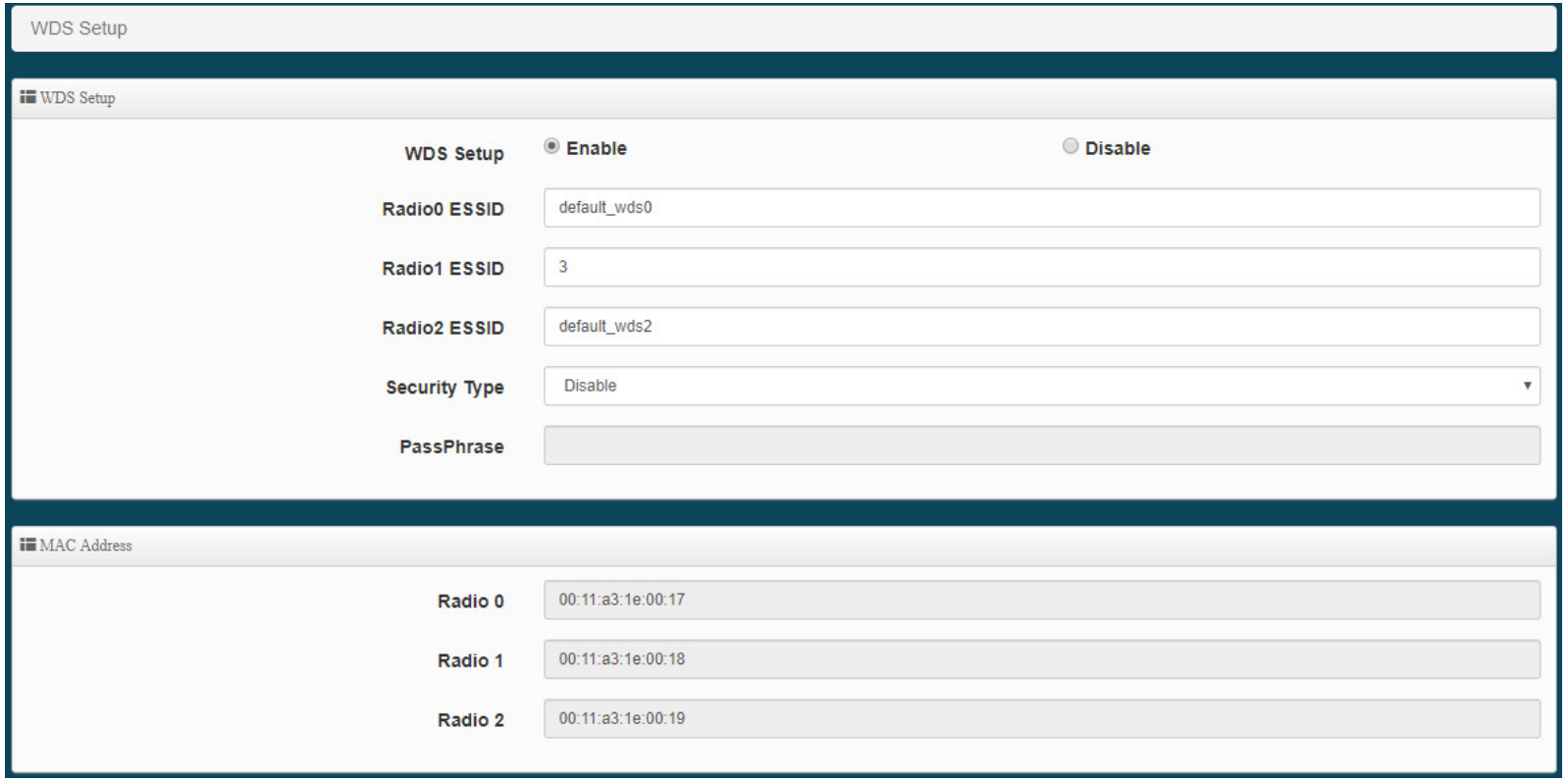


Supports 16 VLANS (#0 to 15)

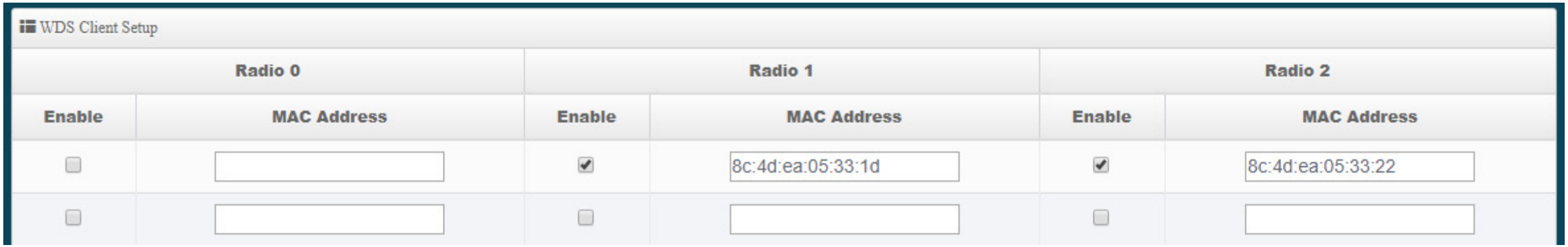
Each VLAN supports 3 SSIDs, one for 2.4G and one for 5G Radio1 and one for 5G Radio2

Support up to **4096** Tags. This is a crucial feature that ensures successful directing of packet traffic for VLANs that span across multiple switches.

WDS Support



OW-500 Series with **CenOS 5.0** supports **WDS Setup** when operating in **Access Point Mode**



WDS Support

OW-500 Series Access Point mode supports **8** WDS links per radio for a total of **24 links** per device

(8x WDS on the 2.4GHz frequency band)

(8x WDS on the 5GHz Radio1 frequency band)

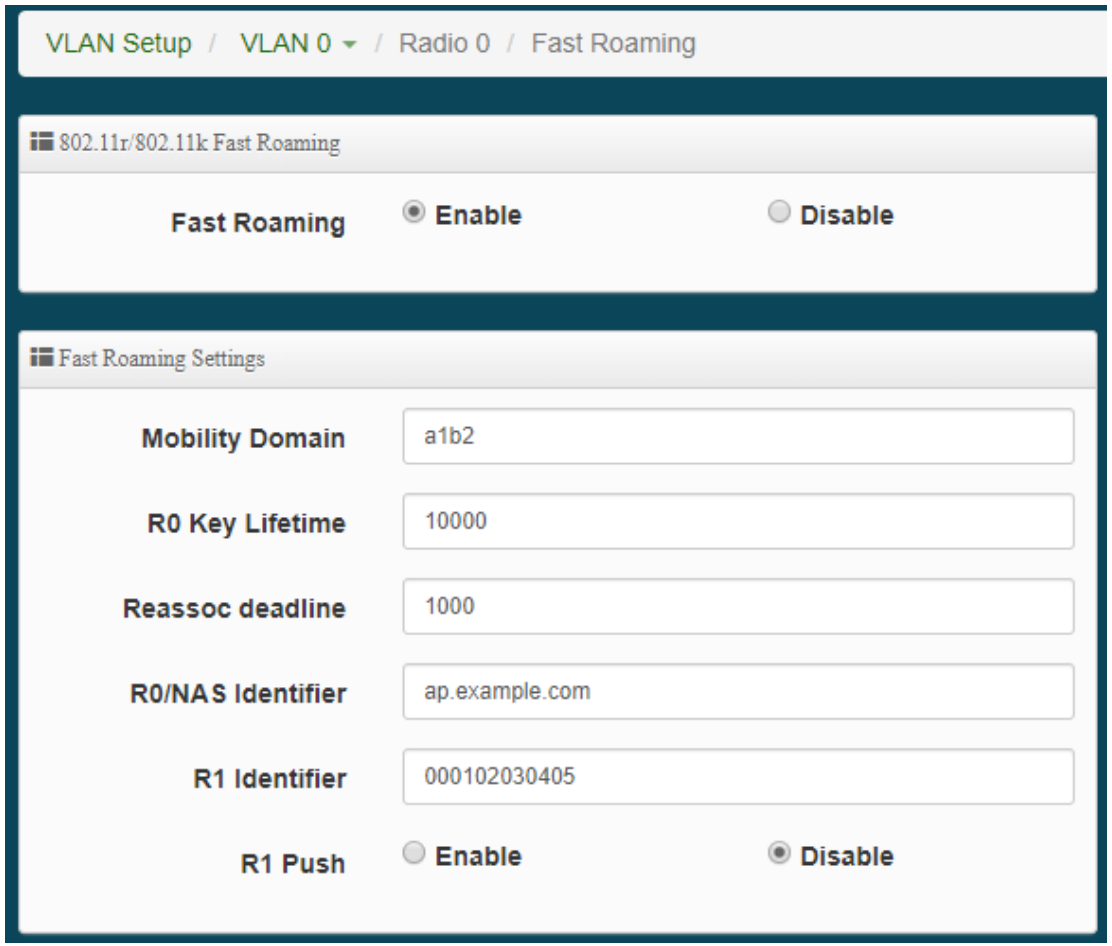
(8x WDS on the 5GHz Radio2 frequency band)

Supports multi-tags on same WDS channel

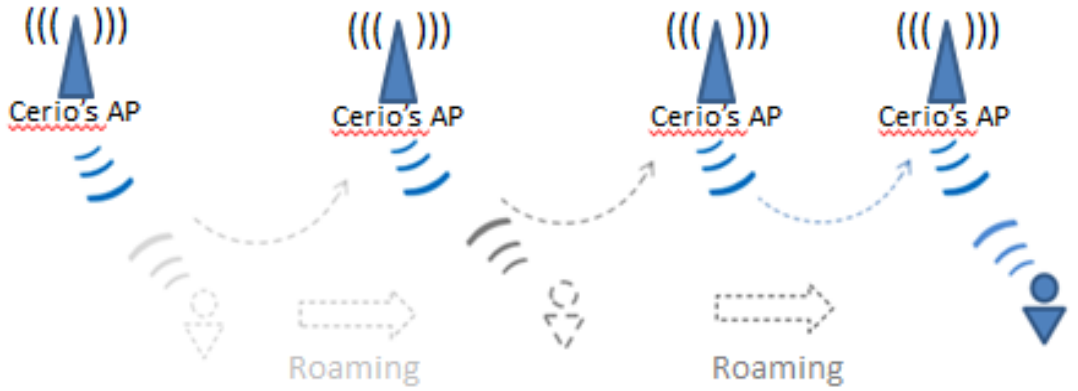
VLAN Setup

VLAN#	Radio 0			Radio 1			Radio 2		
	Native	TAG	TAG ID	Native	TAG	TAG ID	Native	TAG	TAG ID
VLAN 0	◉	☐		◉	☐		◉	☐	
VLAN 1	○	☐	101	○	☐	101	○	☐	101
VLAN 2	○	☐	102	○	☐	102	○	☐	102
VLAN 3	○	☐	103	○	☐	103	○	☐	103
VLAN 4	○	☐	104	○	☐	104	○	☐	104
VLAN 5	○	☐	105	○	☐	105	○	☐	105

Fast Roaming

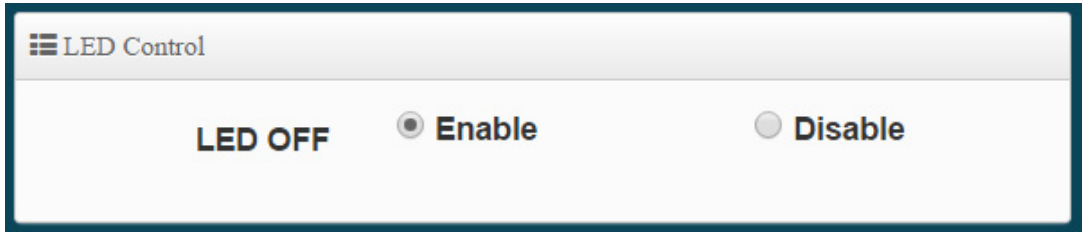


802.11k- Smartly provides roaming client with information regarding nearby APs and their channels, which prepares the client for easier roaming.

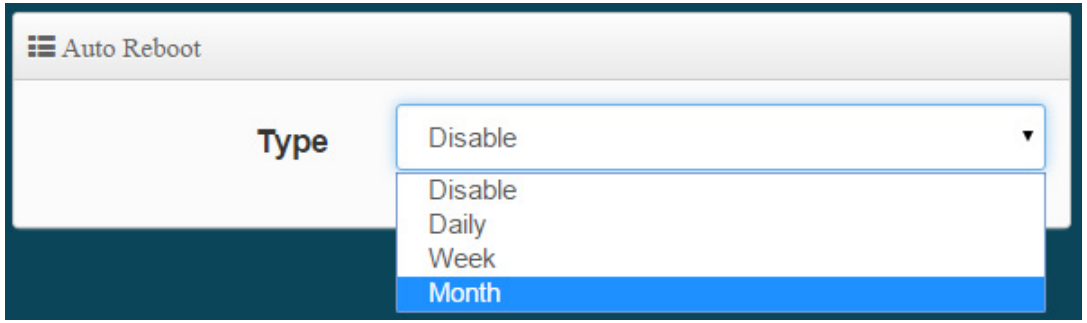


802.11r- Stores encryption keys on all the APs within the network. This simplifies the authentication process when clients roam to new APs, greatly reducing CPU loading and latency.

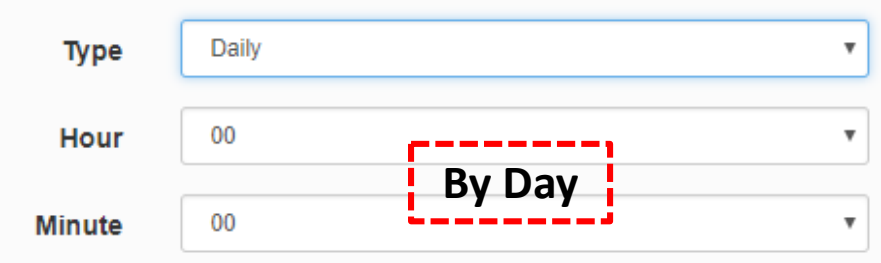
Additional Features

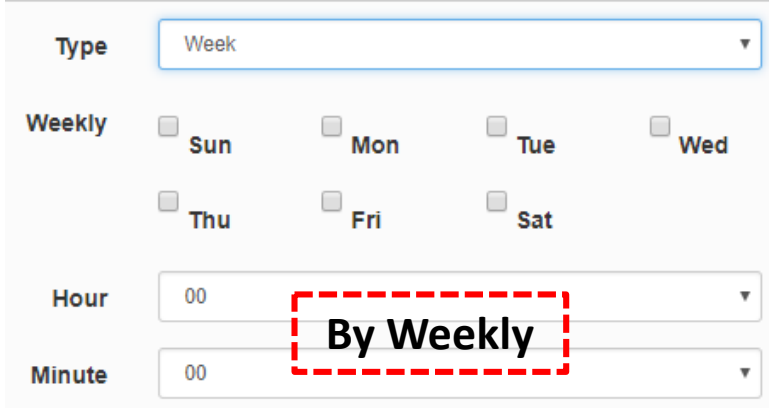


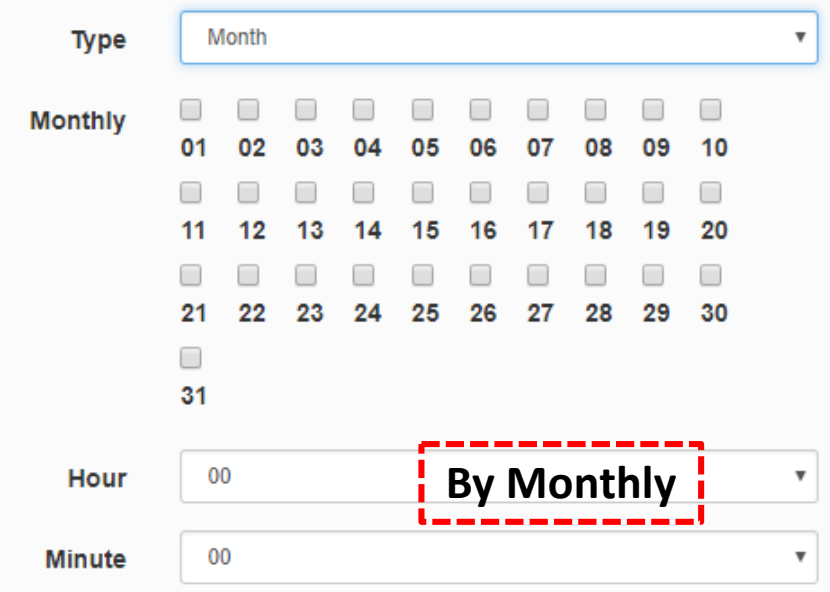
LED Control- User can select LED disable or enable by their preferences or environmental needs



Auto Reboot- Setup device auto reboot schedule to reduce CPU overloading and device crashes.







What we do

Innovation & Design

Our R&D team continues to incorporate the newest wireless protocols and features to make our products perfect for enterprise deployment.

Wireless Solutions

Our Field Application Engineers and Specialists have unparalleled experience providing the perfect solution for any wireless projects (e.g. Hotels, Long Distance PTP Backhaul, Universities)

Software Development & Design

Our software provides a high featured and easily operated User Interface and also supports centralized AP Management for convenient device deployment.

Outstanding Customer Service

CERIO's customer service staff are experts on our products and possess clear and patient communication skills.

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