

Introduction to **OW-400 A1/OW-408 A1**

CERIO
Amplify your Wireless Network



**eXtreme Power Wave2 4x 11N/ac 2.4/5Ghz
2x2 Outdoor Bridge/AP (300mW)**

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Product Overview

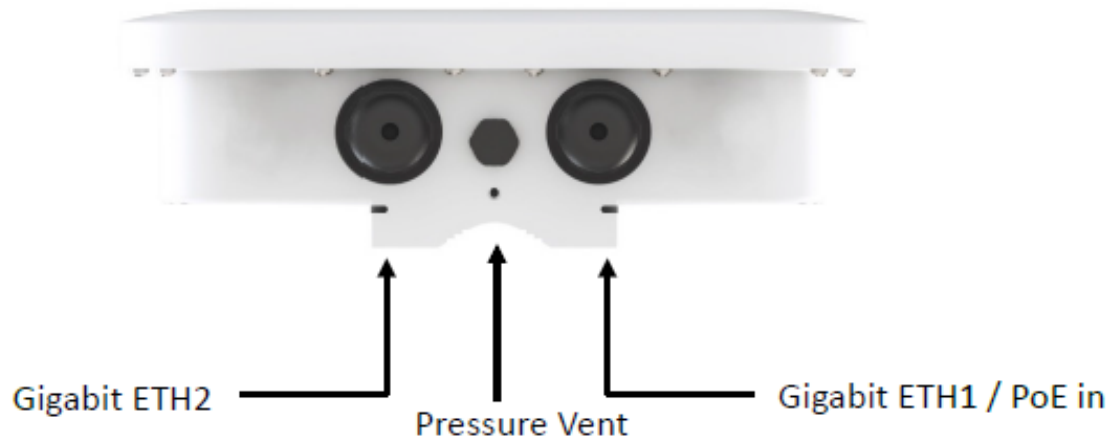


- 2.4Ghz band supports standard 802.11 bgn protocol with maximum data transfer rate of 400Mbps
- 5Ghz band supports 802.11 an/ac wireless protocol with a maximum data transfer rate of 867Mbps
- 300mW AC1300 Dual Band Outdoor Access Point
- Supports IEEE 802.3at Power over Ethernet
- Built-in 18dBi 5GHz Directional Panel Antenna and 2 N-Type Connectors for 2.4GHz external antennas (**OW-400 A1**)
- Built in 8dBi dual band Wide Coverage Directional Antenna (**OW-408 A1**)
- Supports CenOS 5.0 Software Core
- Weather-proof Housing (**IP68** Approved)

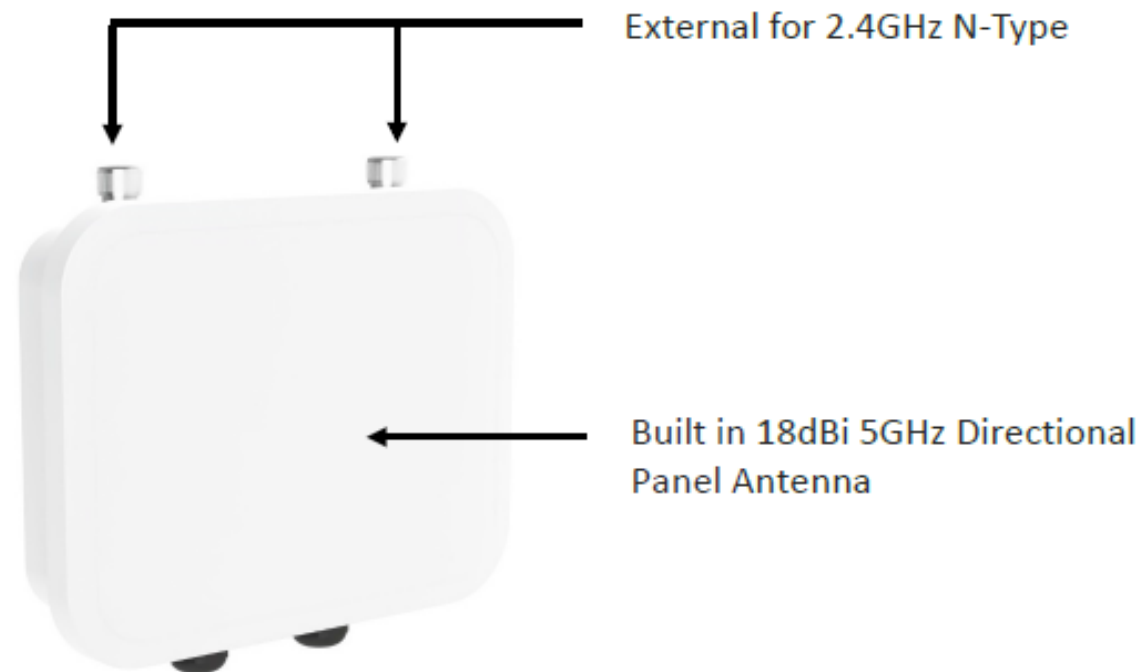


- Latest MU-MIMO technology provides wireless 4 channel (4x speed) simultaneous operation in both 2.4GHz and 5GHz wireless coverage for maximum flexibility.
- Operation modes include: AP with WDS Mode and Captive Portal, Control Access Point Mode, Client Bridge Mode, and WISP/ CPE Mode
- Built in 802.1x 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

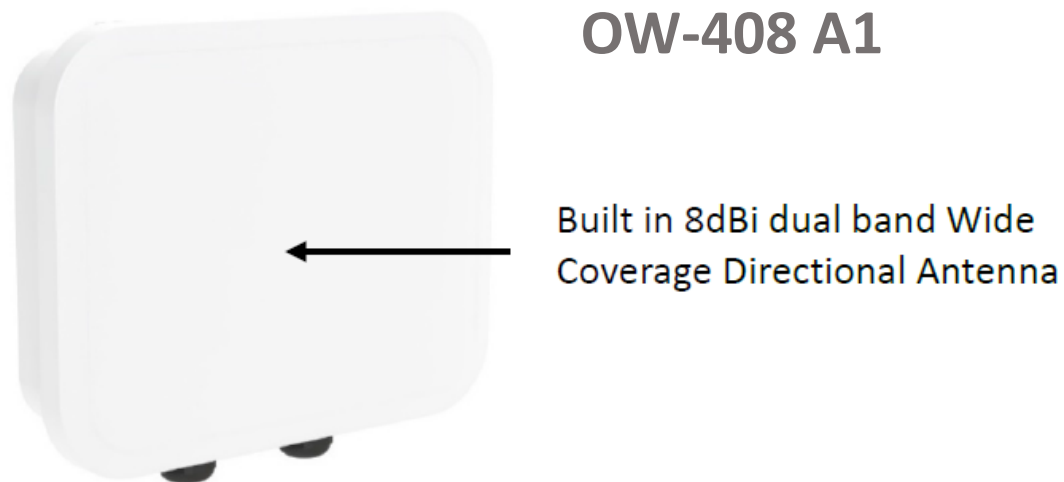
Hardware Overview



OW-400 A1



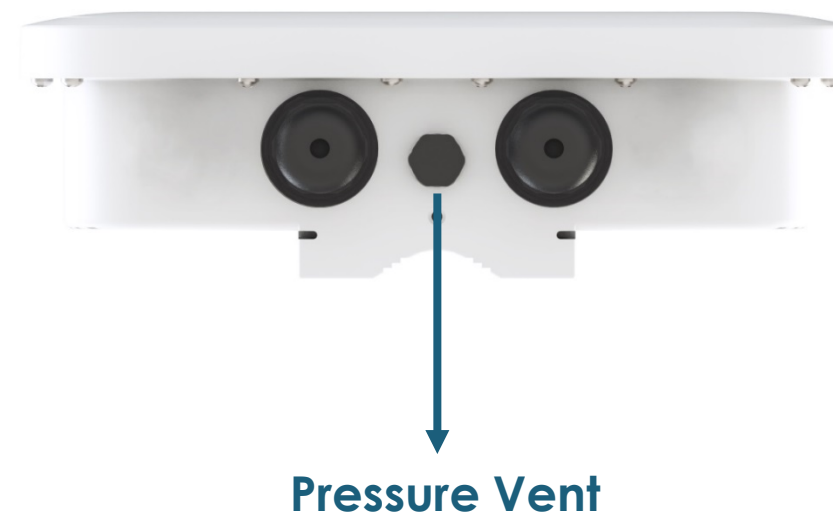
OW-408 A1



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

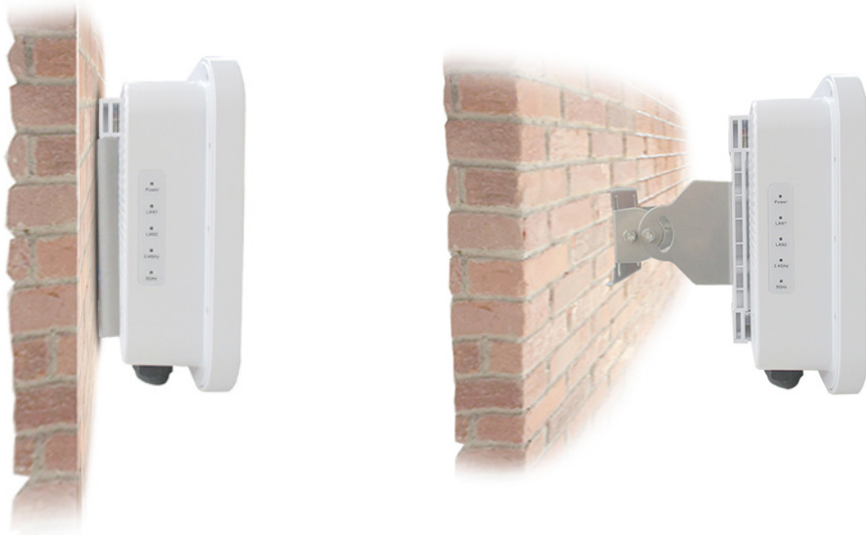
This auto-adjusting technology **equalizes pressure** inside the device and **reduces condensation** from building up inside.

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-400 A1 / OW-408 A1.



Versatile Mounting

Wall Mount Supported



Adjustable

Pole Mount Supported

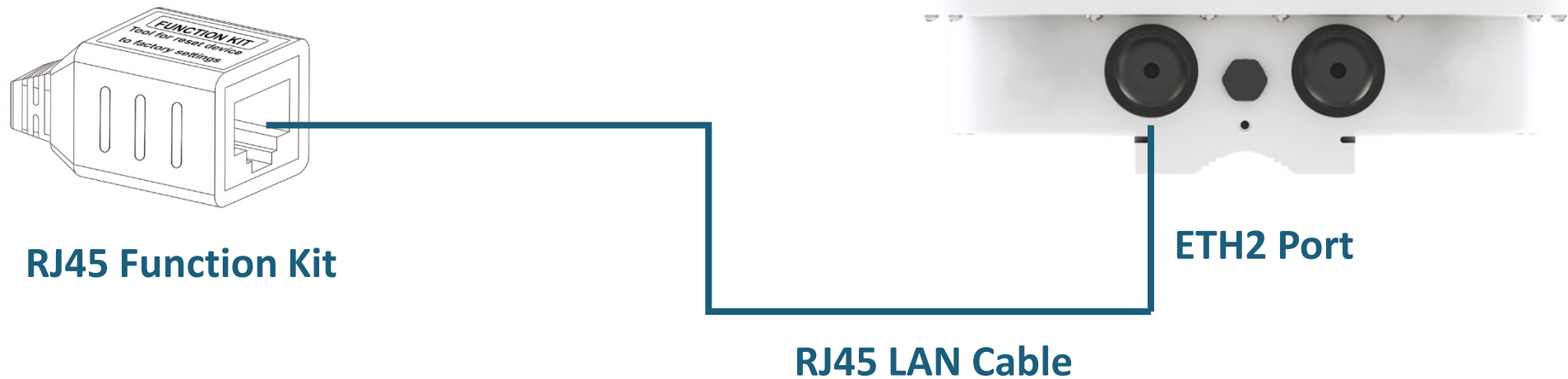


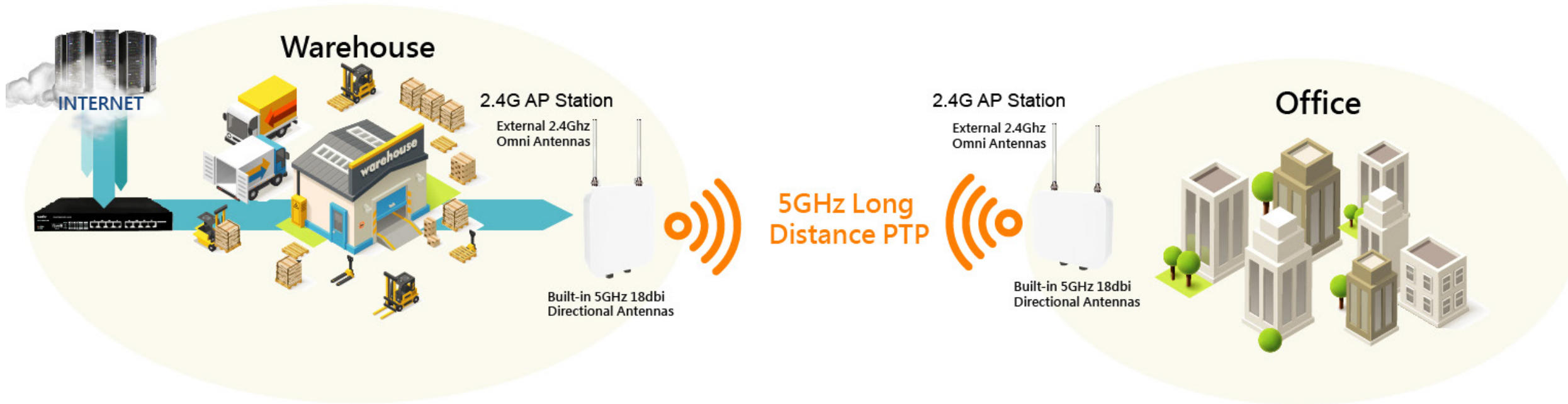
Adjustable

OW-408 A1's Adjustable pole/wall mounting kit is optional (OW-PKUR)

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.





OW-400/408 A1's 11ac dual-band design is perfect for long distance PTP connections over the 5GHz frequency band, while simultaneously operating as an AP station over the 2.4GHz frequency band.

Proven Test Results — CERIO

OW-400 A1's high performance design maintained a high bandwidth of **446Mbps** during a **3.7KM outdoor point-to-point test** (5GHz) using a built-in 18 dBi antenna.



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			392		446.133	63.241	126.183		
	Pair 1 No Group	Finished	97	-2.312 : +2.312	111.555	63.241	123.457	69.562	2.072
	Pair 2 No Group	Finished	98	-1.715 : +1.715	112.045	88.790	123.648	69.972	1.531
	Pair 3 No Group	Finished	100	-1.758 : +1.758	113.903	91.743	126.183	70.235	1.526
	Pair 4 No Group	Finished	97	-1.687 : +1.687	111.812	86.768	124.224	69.402	1.518



Powerful Performance — CERIO

The image shows a busy train station with people walking. Overlaid on the scene are numerous circular speed test results in blue and orange. The results include values such as 1Mbps, 2Mbps, 3Mbps, 4Mbps, 8Mbps, 9Mbps, 10Mbps, 11Mbps, and 12Mbps. On the right side, there are technical specifications for the CERIO AP:

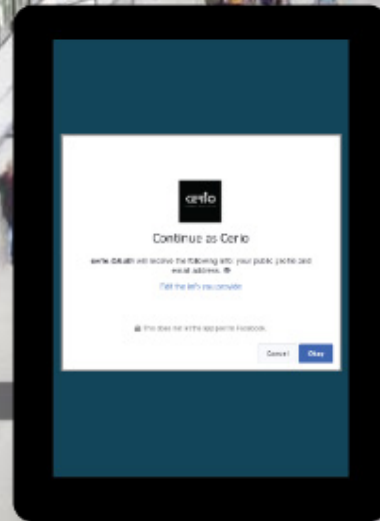
- 2.4G WiFi Band
- 5G WiFi Band
- OW-400/408 A1 Dual Band AP**
- Supports:
 - 100** Concurrent Users
 - Band Steering Technology

Captive Portal Authentication

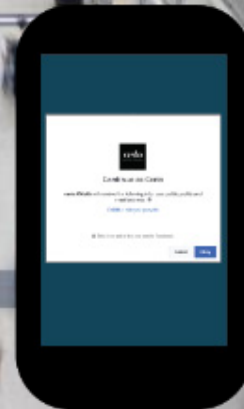
Captive Portal Authentication conveniently allows wireless clients to access the network through a customized web login portal.



Local Account Login



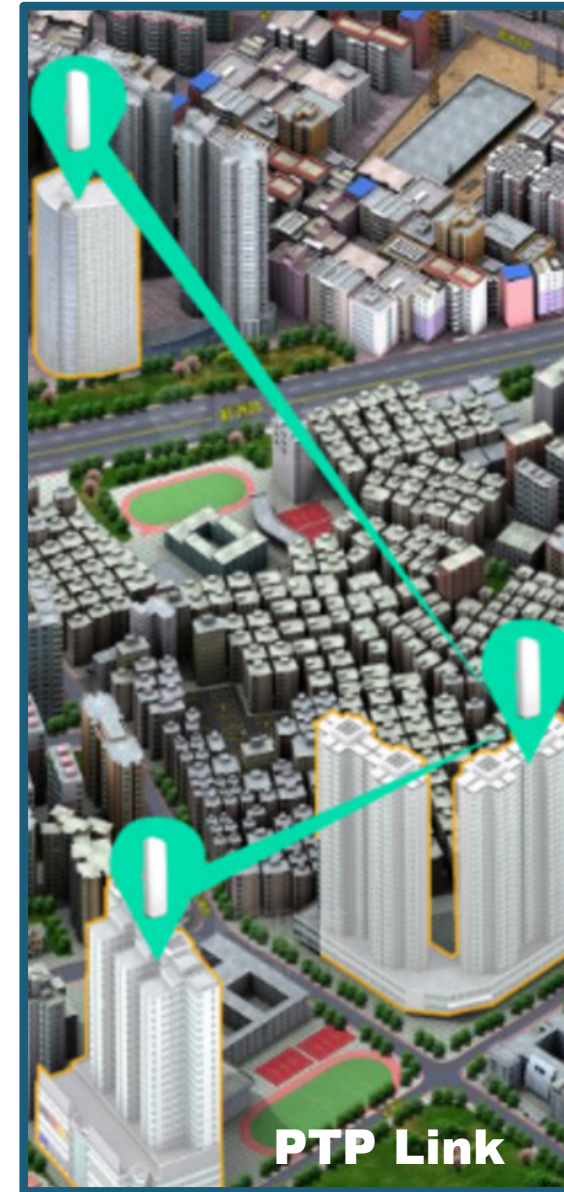
Facebook Login



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.)

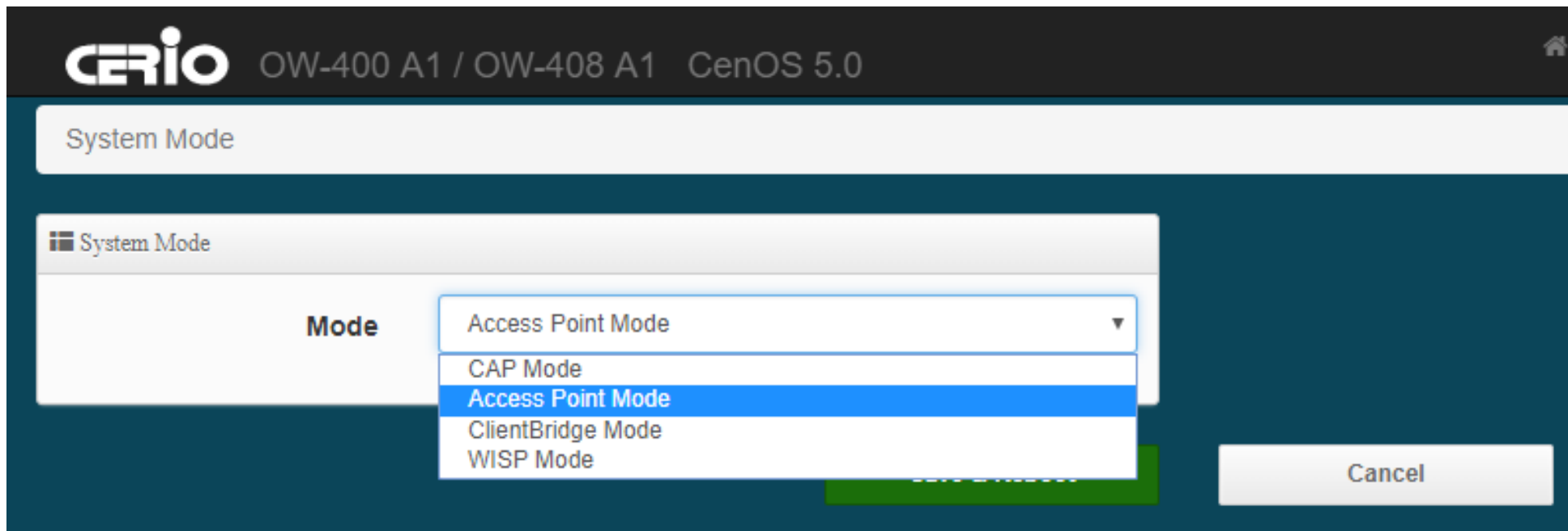
Ideal Deployment



Software Overview



OW-400/408 A1 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 — CERIO

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.

The screenshot displays the CERIO web interface for an OW-400 A1 / OW-408 A1 device running CenOS 5.0. The interface is divided into several sections:

- System Overview:** A table of system parameters:

Mode	CAP Mode
System Name	OW-400 A1 / OW-408 A1
System Time	2018/01/01 08:00:57
System Uptime	54
Firmware Version	Pme-CPE-IPQ40XX-CERIO V1.0.0
Firmware Date	2018/05/31 14:50:15
- Information:** Two gauge charts showing system health:
 - CPU Usage:** 0% (0/100)
 - Memory:** 77% (77/100)
- AP Control Menu:** A dropdown menu with the following options:
 - Scan Device
 - Batch Setup
 - AP Setup
 - Group Setup
 - Map Setup
 - Authentication Profile
 - Status

Scan AP Device

Filter Device

VLAN#

Default Password

Sort

Update IP Address & Netmask

Control Port

VLAN TAG

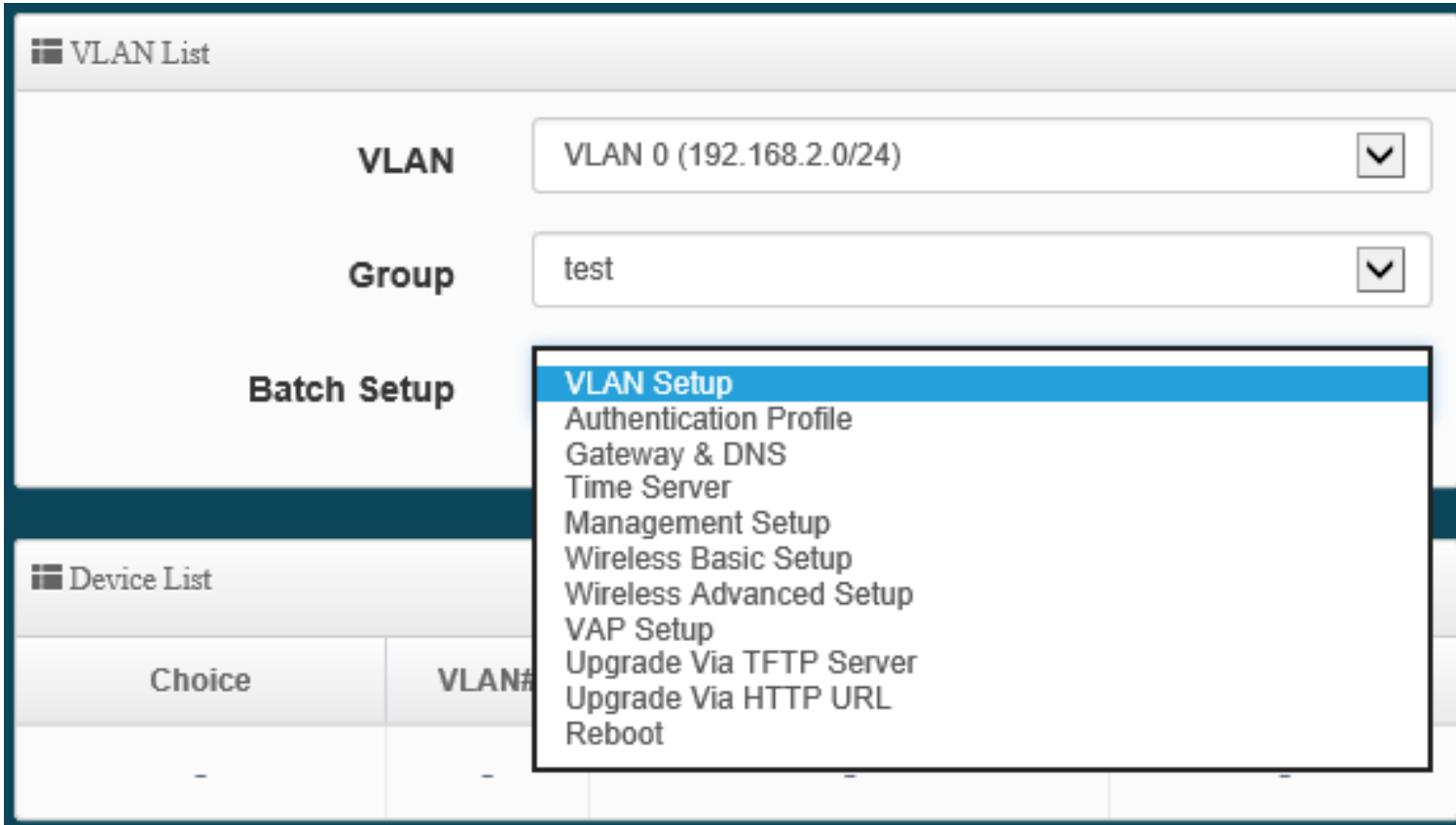
IP Address

Netmask

Scan Result

#	Device	IP Address	MAC Address	Password	Host Name	F/W Version	F/W Date	IP Address	Netmask	Action
-	-	-	-	-	-	-	-	-	-	-

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.



The screenshot shows the CERIO Batch Setup interface. At the top, there is a 'VLAN List' section with two dropdown menus: 'VLAN' set to 'VLAN 0 (192.168.2.0/24)' and 'Group' set to 'test'. Below this is a 'Batch Setup' section with a dropdown menu that is open, showing a list of configuration options: 'VLAN Setup' (highlighted), 'Authentication Profile', 'Gateway & DNS', 'Time Server', 'Management Setup', 'Wireless Basic Setup', 'Wireless Advanced Setup', 'VAP Setup', 'Upgrade Via TFTP Server', 'Upgrade Via HTTP URL', and 'Reboot'. At the bottom, there is a 'Device List' table with columns for 'Choice' and 'VLAN#', both containing dashes.

Choice	VLAN#
-	-

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.

VLAN Setup

Apply

VLAN

VLAN Mode Enable Disable

Access Point 0 Enable Disable

Access Point 1 Enable Disable

802.1d Spanning Tree Enable Disable

Control Port Enable Disable

IAPP

IP Setup

Apply Enable Disable

IP Mode Enable Disable

IP Address

Netmask

ETH0 VLAN Tag Setup

ETH0 Enable Disable

VLAN TAG

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.

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

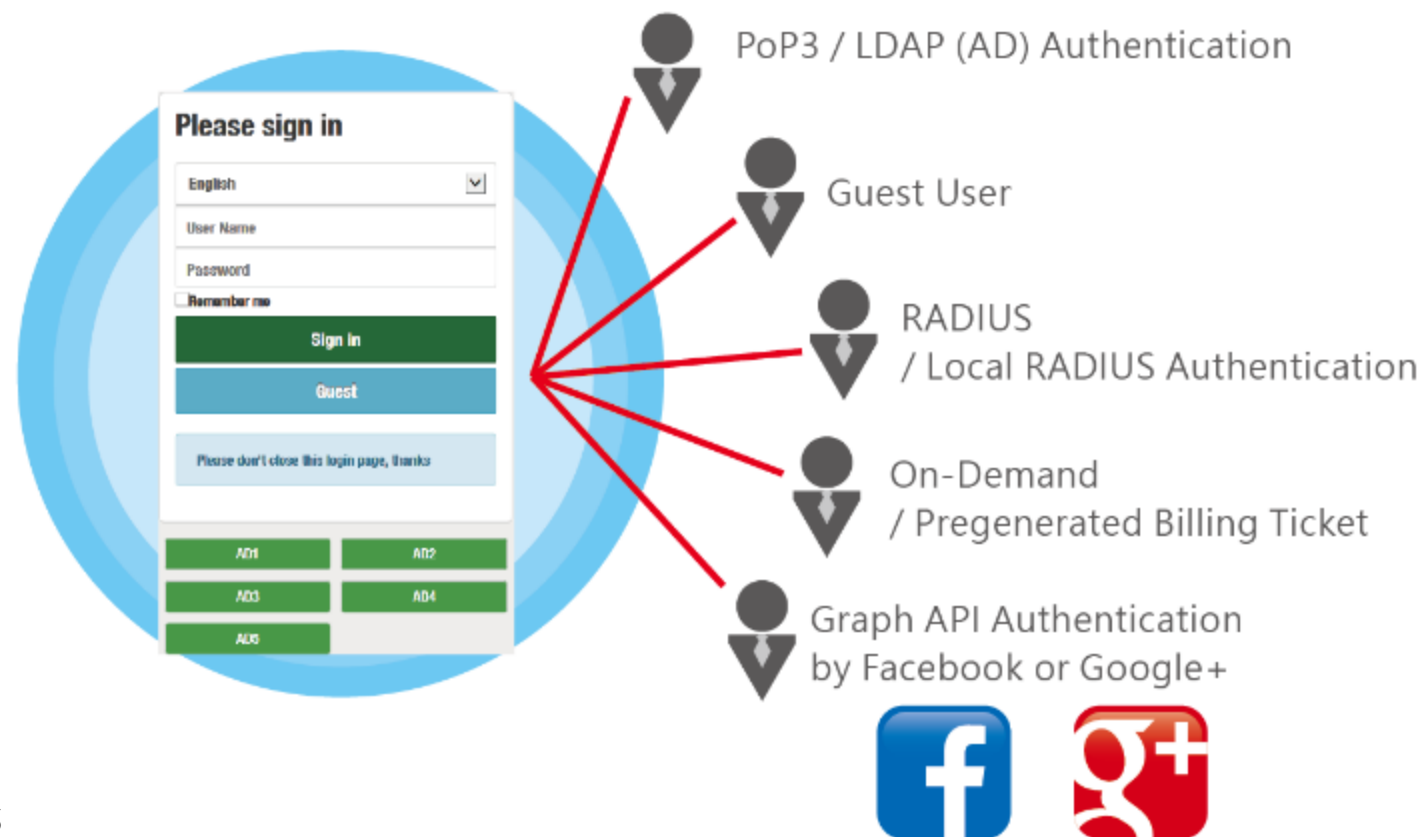
Map List				Create New Map
#	Name	Description	Action	
1	1F_plan	Location Map for man...	View	▼

The image shows a floor plan map with a popup window displaying the status of an Access Point (AP). The popup window contains the following information:

IP Address	192.168.2.253
MAC Address	8c:4d:ea:04:d0:6e
Hostname	CW-400NAC-E1
Uptime	09:08
Channel	5 / 100
Rate	11.0 Mb/s / 866.7 Mb/s
Client	0

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



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.

OAuth 2.0 Provider List Create New Provider			
#	Active	Provider	Action
1	On	Google	Edit ▼
2	On	Facebook	Edit ▼



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

The screenshot shows the 'Guest' configuration interface. It includes the following settings:

- Service**: Enable, Disable
- Login Type**: One Time, Multiple Time
- Count Limit**:
- Login Time**: Minutes
- QoS**: Enable, Disable
- Upload**: Kbps
- Download**: Kbps

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

The screenshot shows the 'Local User List' interface with the following table:

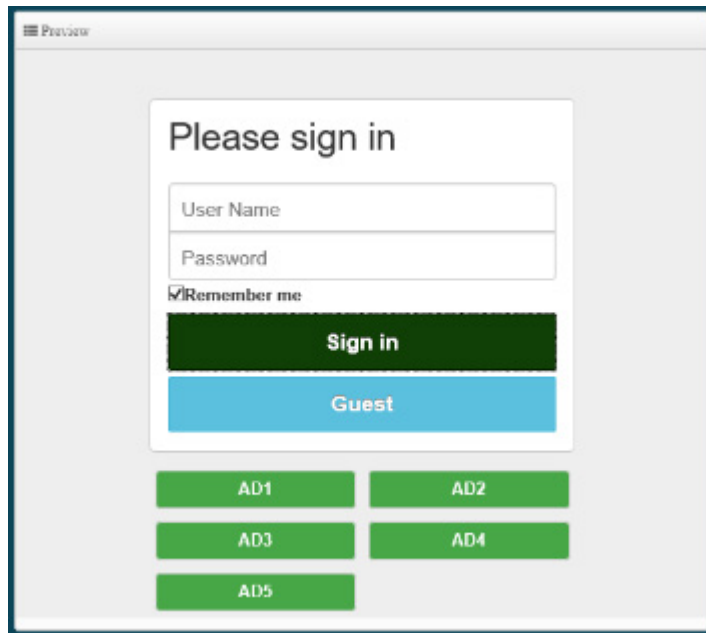
#	Name	Action
1	Test Account 1	Delete
2	Test Account 2	Delete

Customized Login Page — CERIO

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

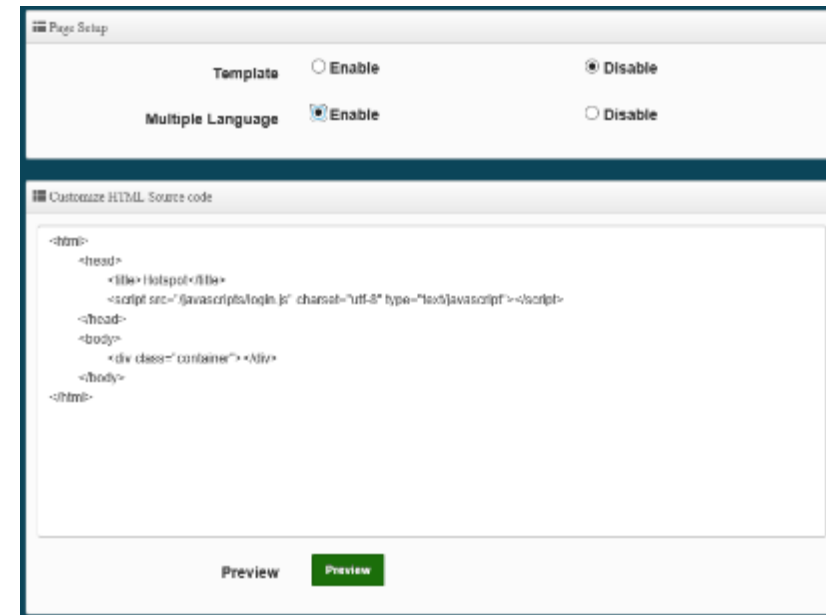
(1.) Promotions **(2.)** Brand Exposure **(3.)** Advertisements **(4.)** Platform for providing Information

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



The screenshot shows a web browser window with a "Preview" tab. The page displays a "Please sign in" form. The form includes a "User Name" input field, a "Password" input field, and a checked "Remember me" checkbox. Below the form are two buttons: a dark green "Sign in" button and a light blue "Guest" button. At the bottom of the page, there are five green buttons labeled "AD1", "AD2", "AD3", "AD4", and "AD5", arranged in two rows.

Default Template



The screenshot shows a "Page Setup" interface. At the top, there are two rows of radio buttons: "Template" with "Enable" and "Disable" options, and "Multiple Language" with "Enable" and "Disable" options. Below this is a section titled "Customize HTML Source code" containing a text area with the following HTML code:

```
<html>
<head>
  <title> | hotspot | /title>
  <script src="/javascripts/login.js" charset="utf-8" type="text/javascript"></script>
</head>
<body>
  <div class="container"> *N/A*
</body>
</html>
```

At the bottom of the interface, there are two buttons: "Preview" and "Preview".

Customize through HTML Code

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.

VLAN Setup / VLAN 0 ▾ / Bandwidth Control

Bandwidth Control

Mode Enable Disable

Airtime Fairness Enable Disable

Total Bandwidth Control

Mode Enable Disable

Upload Kbps

Download Kbps

QoS RuleList

#	Active	Rule Mode	Value1	Value2	Upload(Kbps)	Download(Kbps)	Comment
1	<input type="checkbox"/>	ANY ▾	<input type="text"/>	<input type="text"/>	<input type="text" value="1024"/>	<input type="text" value="1024"/>	<input type="text"/>

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

Walled Garden

Display Name (4 -32 chars)

IP Address/Domain

Full URL

Enabled Walled Garden Websites



Built-in 802.1x RADIUS

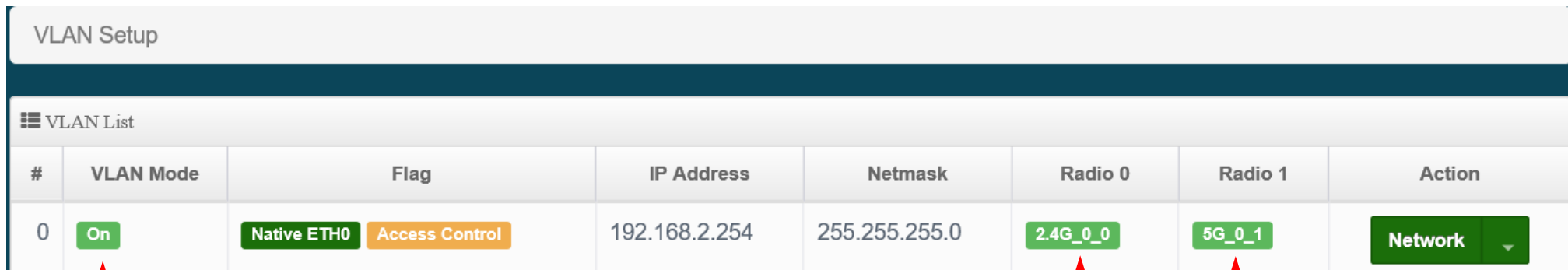
Supports integrated 802.1x RADIUS Server authentication for small to medium network environments. This supports a maximum of 50 built-in RADIUS Users.

#	Name	Action	#	Name	Action
-	-	-	-	-	-

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.

OW-400/408 A1's Dual Band radio design supports a total of 16 Virtual LANs (VLAN) and 32 SSIDs. Each VLAN supports two SSIDs, one on the 2.4GHz frequency band and one on the 5GHz frequency band.

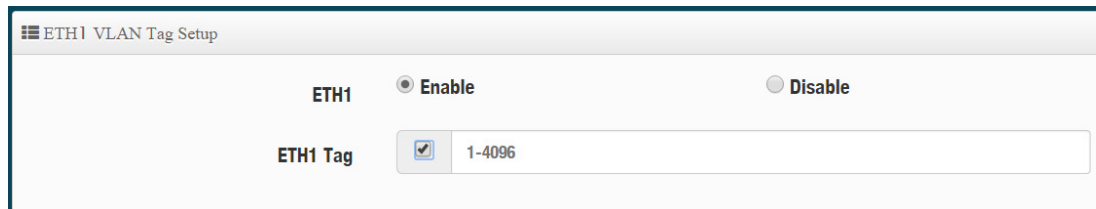


The screenshot shows the 'VLAN Setup' page with a 'VLAN List' table. The table has columns for #, VLAN Mode, Flag, IP Address, Netmask, Radio 0, Radio 1, and Action. The first row shows VLAN #0 with 'On' mode, 'Native ETH0' and 'Access Control' flags, IP 192.168.2.254, Netmask 255.255.255.0, Radio 0 '2.4G_0_0', Radio 1 '5G_0_1', and a 'Network' action button. Red stars are placed under the 'On' mode, '2.4G_0_0', and '5G_0_1' fields.

#	VLAN Mode	Flag	IP Address	Netmask	Radio 0	Radio 1	Action
0	On	Native ETH0 Access Control	192.168.2.254	255.255.255.0	2.4G_0_0	5G_0_1	Network

Supports 16 VLANs (#0 to 15)

Each VLAN supports 2 SSIDs, one for 2.4G and one for 5G



The screenshot shows the 'ETH1 VLAN Tag Setup' page. It has a radio button for 'Enable' (selected) and 'Disable'. Below it, there is a checkbox for 'ETH1 Tag' (checked) and a text input field containing '1-4096'.

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 Setup

WDS Setup Enable Disable

Security Type

PassPhrase

WDS Client Setup

Radio 0		Radio 1	
Enable	MAC Address	Enable	MAC Address
<input type="checkbox"/>	<input type="text"/>	<input type="checkbox"/>	<input type="text"/>
<input type="checkbox"/>	<input type="text"/>	<input type="checkbox"/>	<input type="text"/>
<input type="checkbox"/>	<input type="text"/>	<input type="checkbox"/>	<input type="text"/>
<input type="checkbox"/>	<input type="text"/>	<input type="checkbox"/>	<input type="text"/>

OW-400/408 A1 with **CenOS 5.0** supports **WDS Setup** when operating in **Access Point Mode**

OW-400/408 A1's Access Point mode

supports **8** WDS links per radio for a total of **16 links** per device

(8x WDS on the 2.4GHz frequency band)

(8x WDS on the 5GHz frequency band)

Supports multi-tags on same WDS channel

VLAN Setup

VLAN#	Radio 0			Radio 1		
	Native	TAG	TAG ID	Native	TAG	TAG ID
VLAN 0	<input checked="" type="radio"/>	<input type="checkbox"/>	<input type="text"/>	<input checked="" type="radio"/>	<input type="checkbox"/>	<input type="text"/>
VLAN 1	<input type="radio"/>	<input type="checkbox"/>	<input type="text" value="101"/>	<input type="radio"/>	<input type="checkbox"/>	<input type="text" value="101"/>

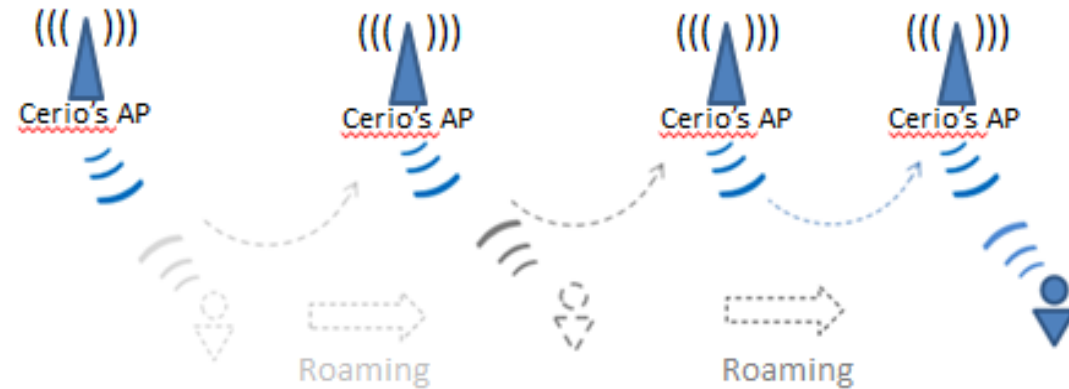
802.11r/802.11k Fast Roaming

Fast Roaming Enable Disable

Fast Roaming Settings

Mobility Domain	<input type="text" value="a1b2"/>
R0 Key Lifetime	<input type="text" value="10000"/>
Reassoc deadline	<input type="text" value="1000"/>
R0/NAS Identifier	<input type="text" value="ap.example.com"/>
R1 Identifier	<input type="text" value="000102030405"/>
R1 Push	<input type="radio"/> Enable <input checked="" type="radio"/> Disable

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.

LED Control

LED OFF Enable Disable

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

Auto Reboot

Type:

- Disable
- Daily
- Week
- Month

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

Type:

Hour:

Minute:

By Day

Type:

Weekly: Sun Mon Tue Wed Thu Fri Sat

Hour:

Minute:

By Weekly

Type:

Monthly

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
01	02	03	04	05	06	07	08	09	10
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	12	13	14	15	16	17	18	19	20
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21	22	23	24	25	26	27	28	29	30
<input type="checkbox"/>									
31									

Hour:

Minute:

By Monthly

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.

Contact Information

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