

# Introduction to **OW-400 A3**

**CERIO**  
*Amplify your Wireless Network*

**CenOS5.0 Software Core**



eXtreme Power Wave2 4X 11N/ac 2.4/5Ghz 2x2  
External-ANT Outdoor Access Point ( 300mW )

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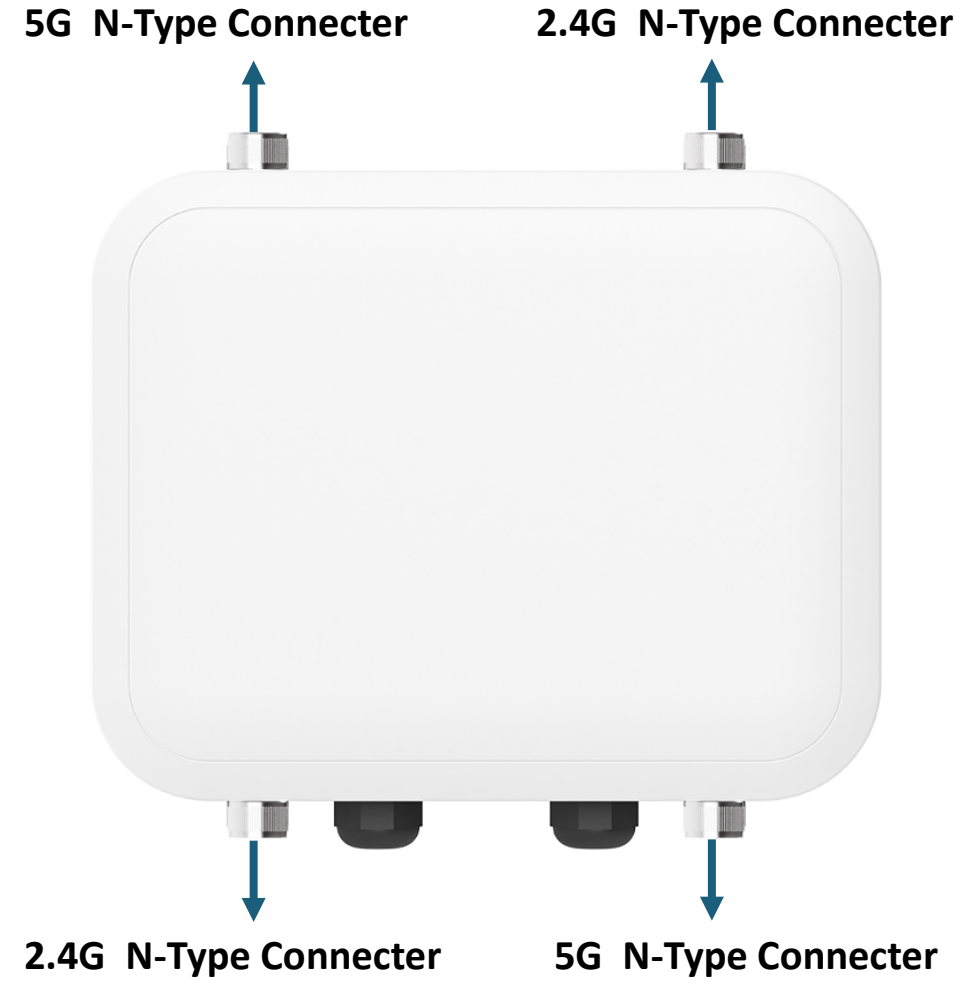
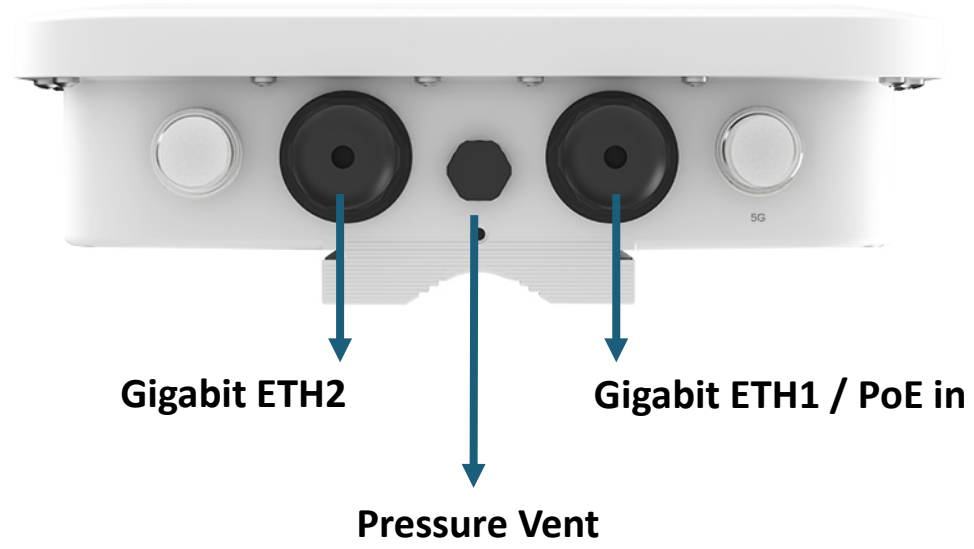


- 2.4Ghz band supports standard 802.11 bgn protocol with maximum data transfer rate of 400Mbps
- 5Ghz band supports 802.11 an/ac wireless protocol with a maximum data transfer rate of 867Mbps
- Supports 2 10/100/1000Mbps Gigabit Ethernet Port and ETH1 port supports PoE function
- Supports IEEE 802.3at Power over Ethernet
- Support 4 external N-Type connectors , two of the N-Type connectors are assigned to the 2.4GHz band and two are assigned to the 5GHz band
- 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 and Captive Portal, Control Access Point, Client Bridge and WISP/ CPE Mode
- Built in 802.1x RADIUS authentication server and supports up to 50 User Accounts
- Provide customizable login and logout Captive portal page by Web Page
- Incorporates 802.11r/k Fast Roaming Protocol
- CenOS 5.0 Control Access Point Mode (CAP) supports centralized management of up to 64 AP devices
- Bundles RJ45 Function Kit, which is able to reset the device to default remotely. It can save extra re-installation cost and time

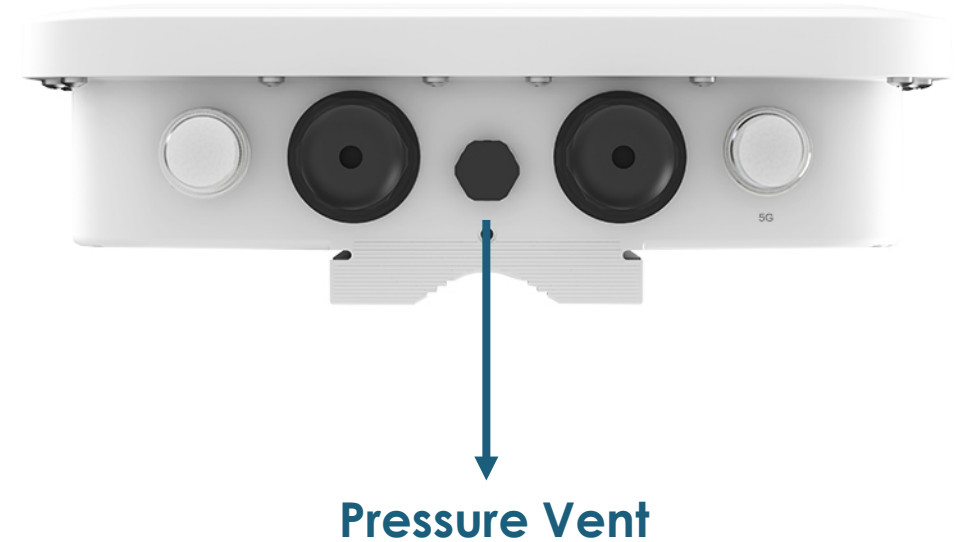
# Hardware Overview



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

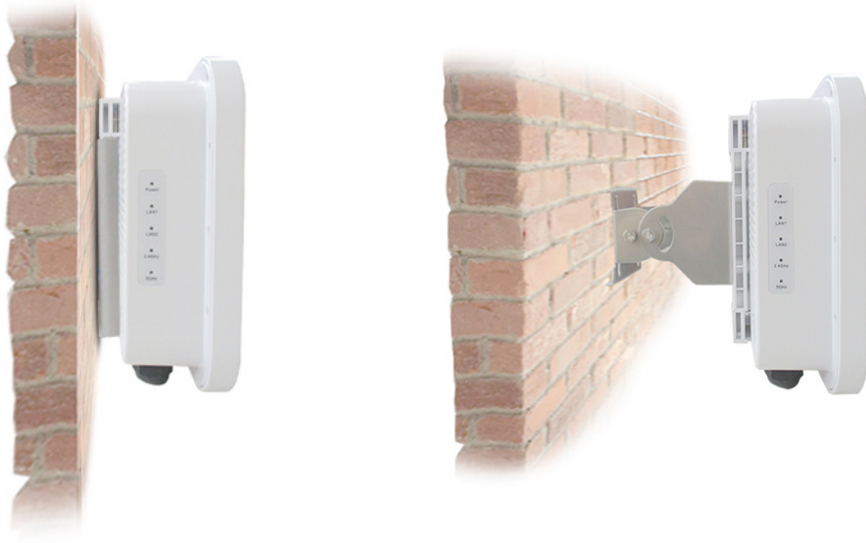
This auto-adjusting technology **equalizes pressure** inside the device and **reduces condensation** from building up inside.

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 A3.



# Versatile Mounting

## Wall Mount Supported



Adjustable

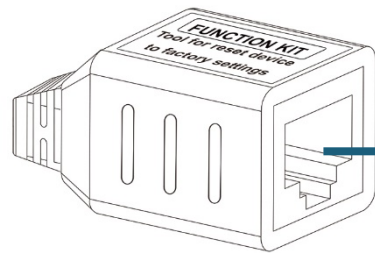
## Pole Mount Supported



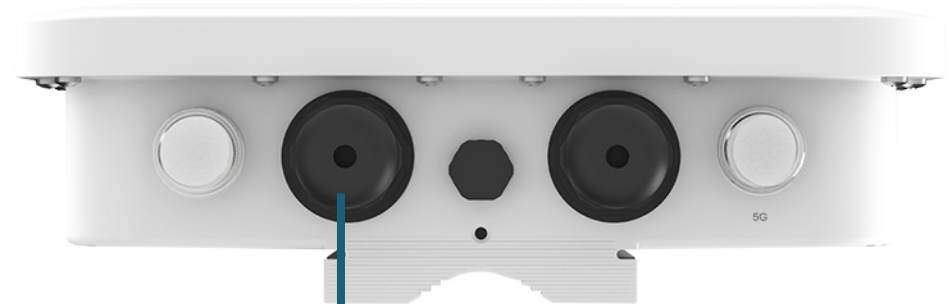
Adjustable

# 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



**RJ45 Function Kit**



**ETH2 Port**

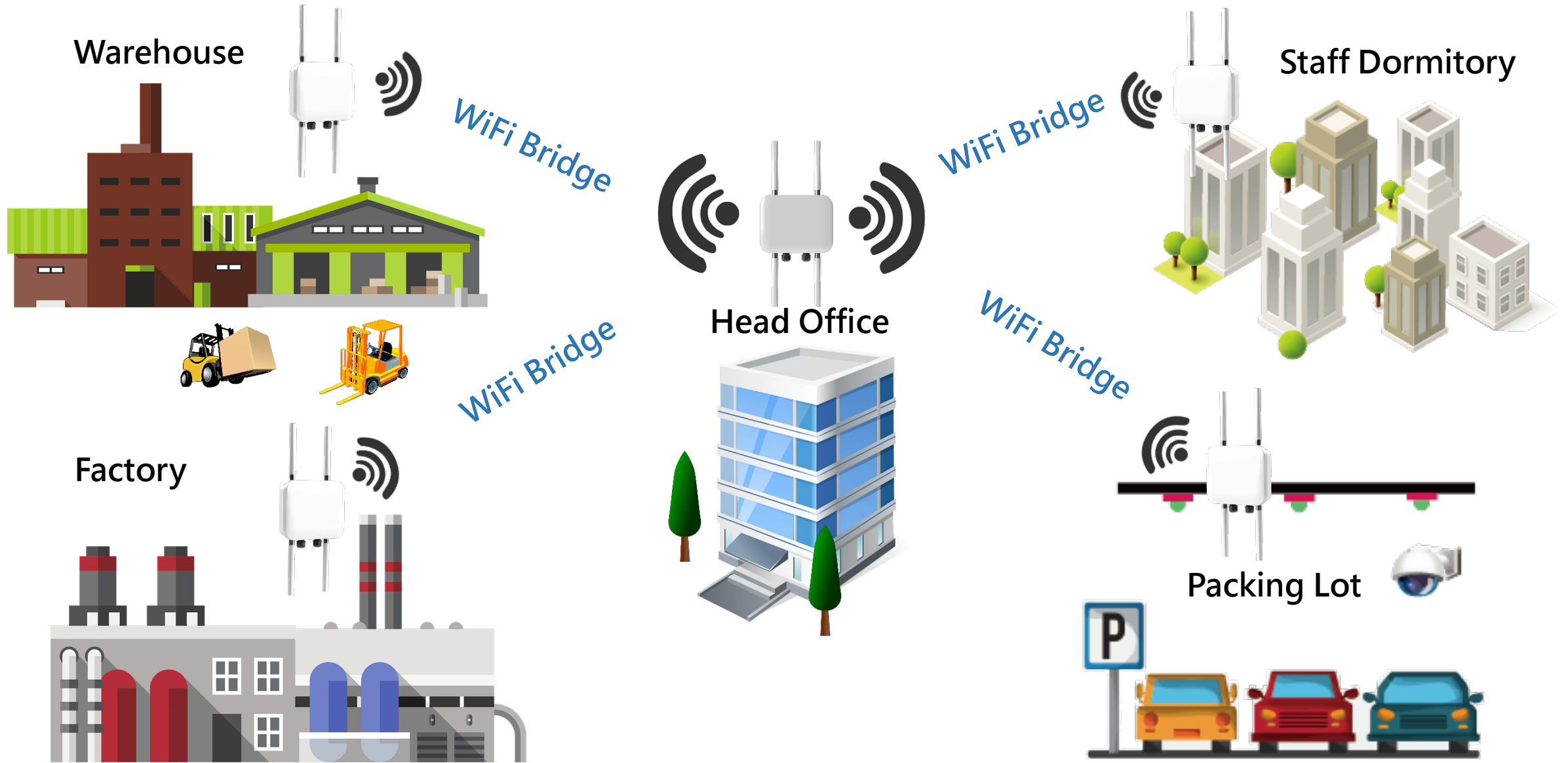
**RJ45 LAN Cable**





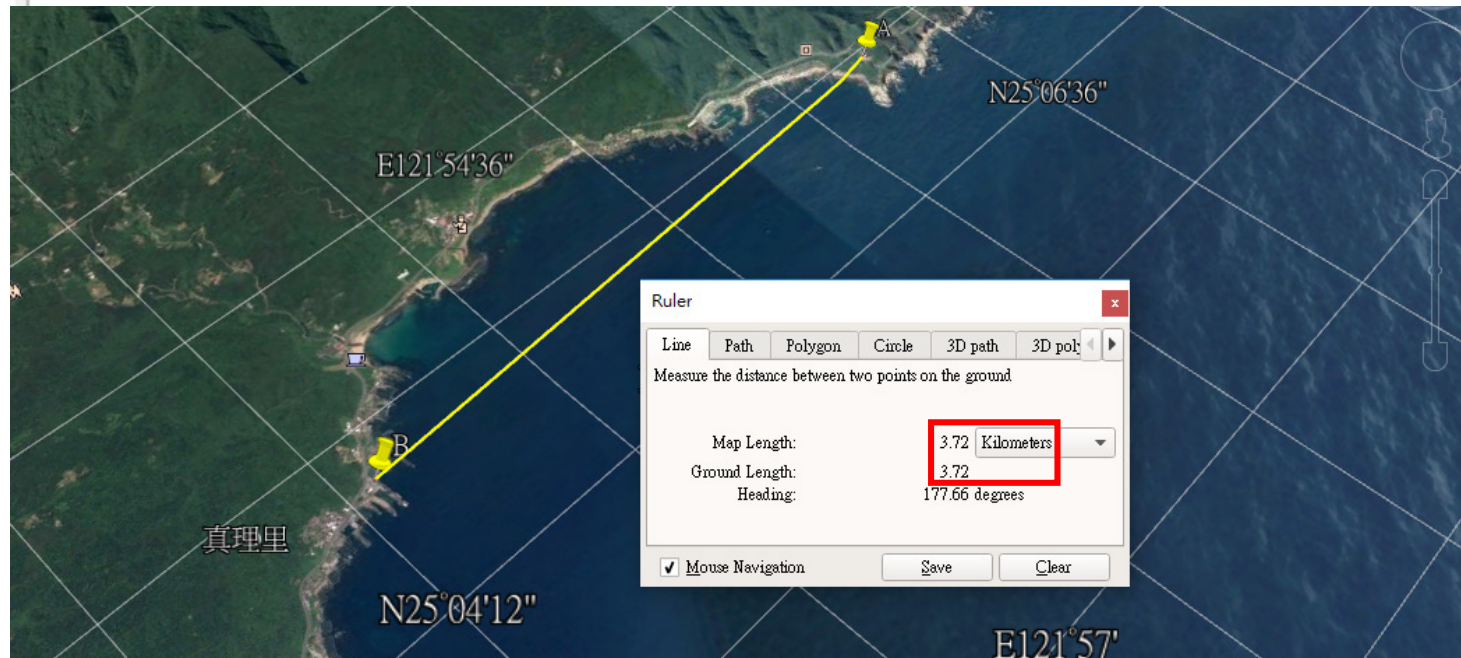
OW-400 A3's 11ac dual-band design is perfect for open area (such as Baseball field/Sports field) wireless connections over the 2.4GHz and 5GHz frequency bands.

# Multi Point WiFi Bridge



OW-400 A3's high performance design maintained a high bandwidth of **446Mbps** during a **3.7KM outdoor point-to-point test** (5GHz) using a external 23 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	Failed	97	-2.312 : +2.312	111.555	63.241	123.457	69.562	2.072
	Pair 2 No Group	Failed	98	-1.715 : +1.715	112.045	88.790	123.648	69.972	1.531
	Pair 3 No Group	Failed	100	-1.738 : +1.738	113.903	91.743	126.183	70.235	1.526
	Pair 4 No Group	Failed	97	-1.687 : +1.687	111.812	86.762	124.224	69.402	1.518



# Powerful Performance



**Latest 11n/ac MU-MIMO Wave2 chipset solution**

**2.4Ghz & 5Ghz bands provides enterprise grade CPU performance, allowing the device to handle up to 200 concurrent clients**

**Approximately 120-130 Clients on the 5Ghz band (App. 60%)**

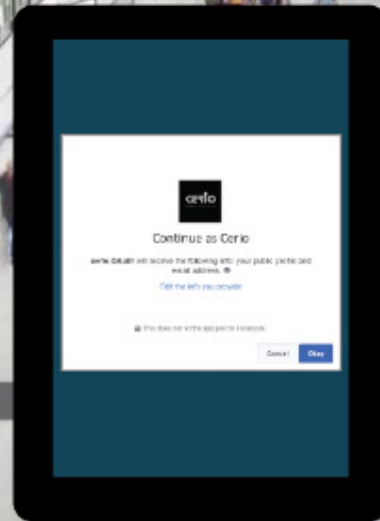
**Approximately 70-80 Clients on the 2.4GHz band (App. 40%)**

# Captive Portal Authentication

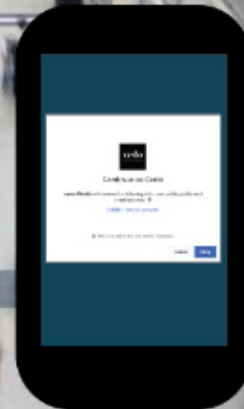
Captive Portal Authentication conveniently allows wireless clients to access the network through a customized web login portal.



Local Account Login



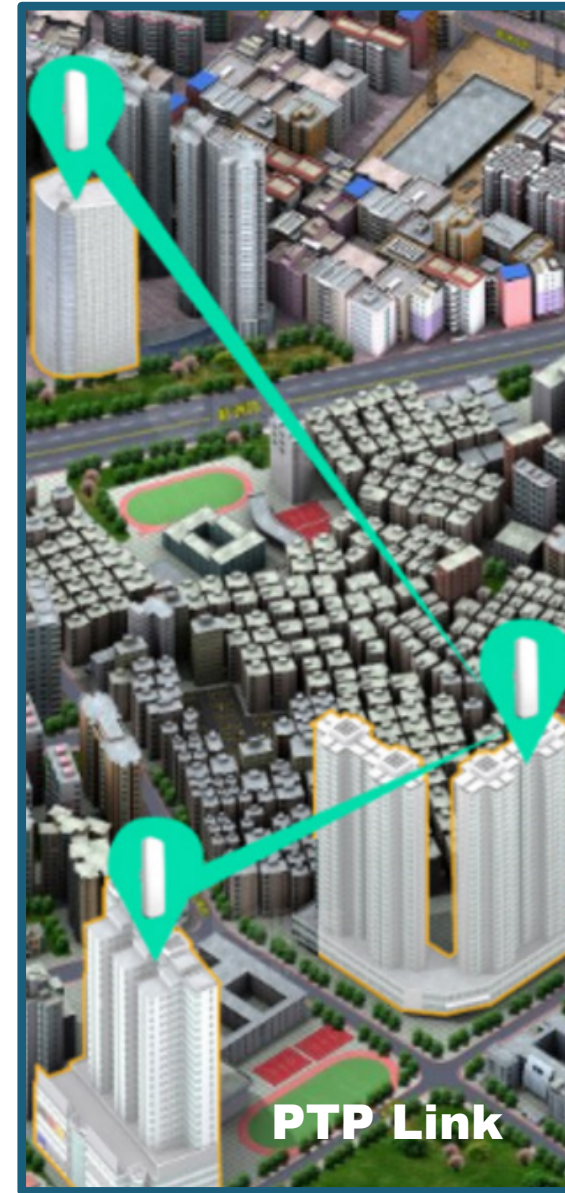
Facebook Login



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.)

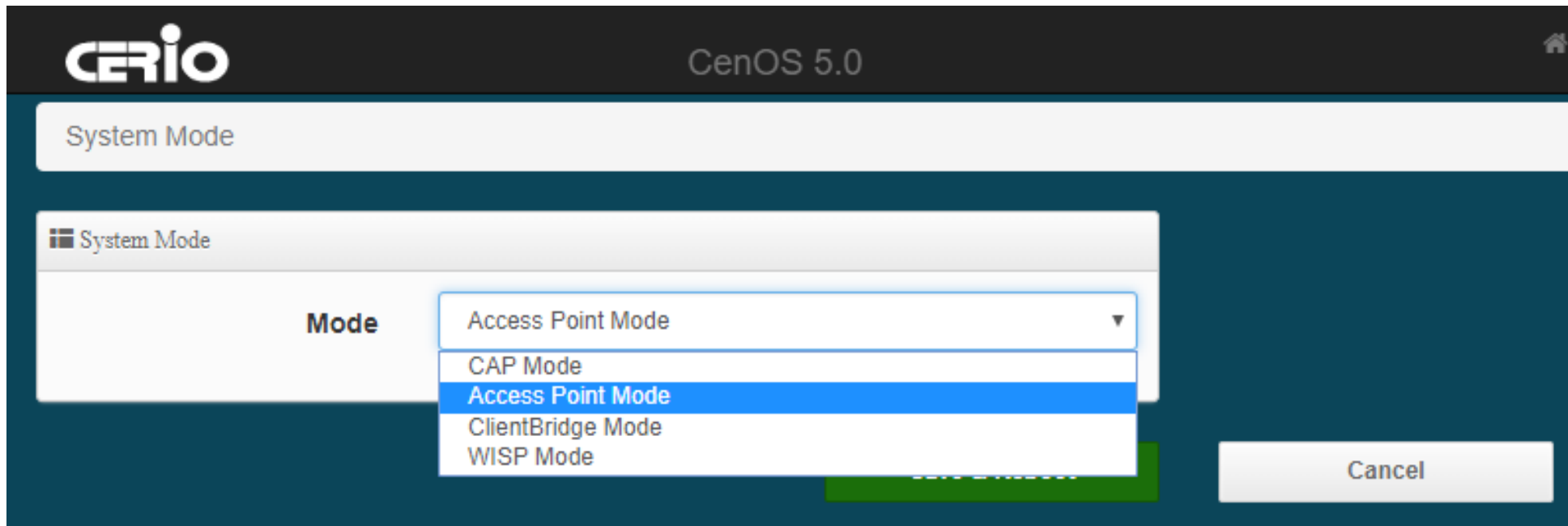
# Ideal Deployment



# Software Overview



OW-400 A3 supports 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 A3 is in CAP Mode, it can centrally manage up to 64 AP devices.

The screenshot displays the CERIO web interface for a 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 A3
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 to 100 scale)
  - Memory:** 77% (0 to 100 scale)
- Navigation:** A top navigation bar with tabs for System, AP Control, Utility, and Status. The AP Control tab is active, and a dropdown menu is open showing options: Scan Device, Batch Setup, AP Setup, Group Setup, Map Setup, Authentication Profile, and Status.

### Scan AP Device

#### Filter Device

VLAN#

Default Password

Sort

#### Update IP Address & Netmask

Control Port

VLAN TAG

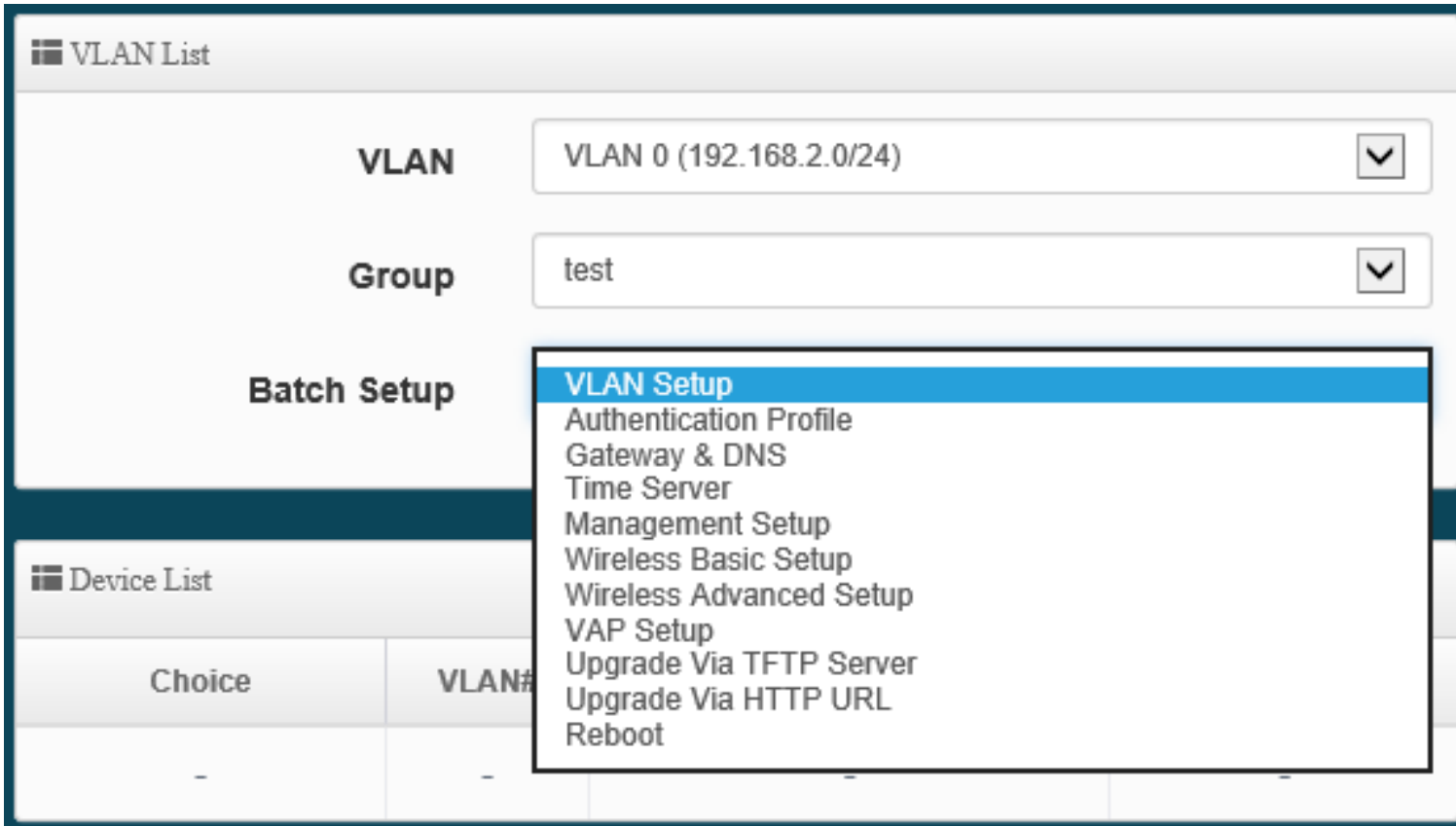
IP Address

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 'Batch Setup' interface in CERIO. It features a 'VLAN List' section with two dropdown menus: 'VLAN' set to 'VLAN 0 (192.168.2.0/24)' and 'Group' set to 'test'. Below these is a 'Batch Setup' 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

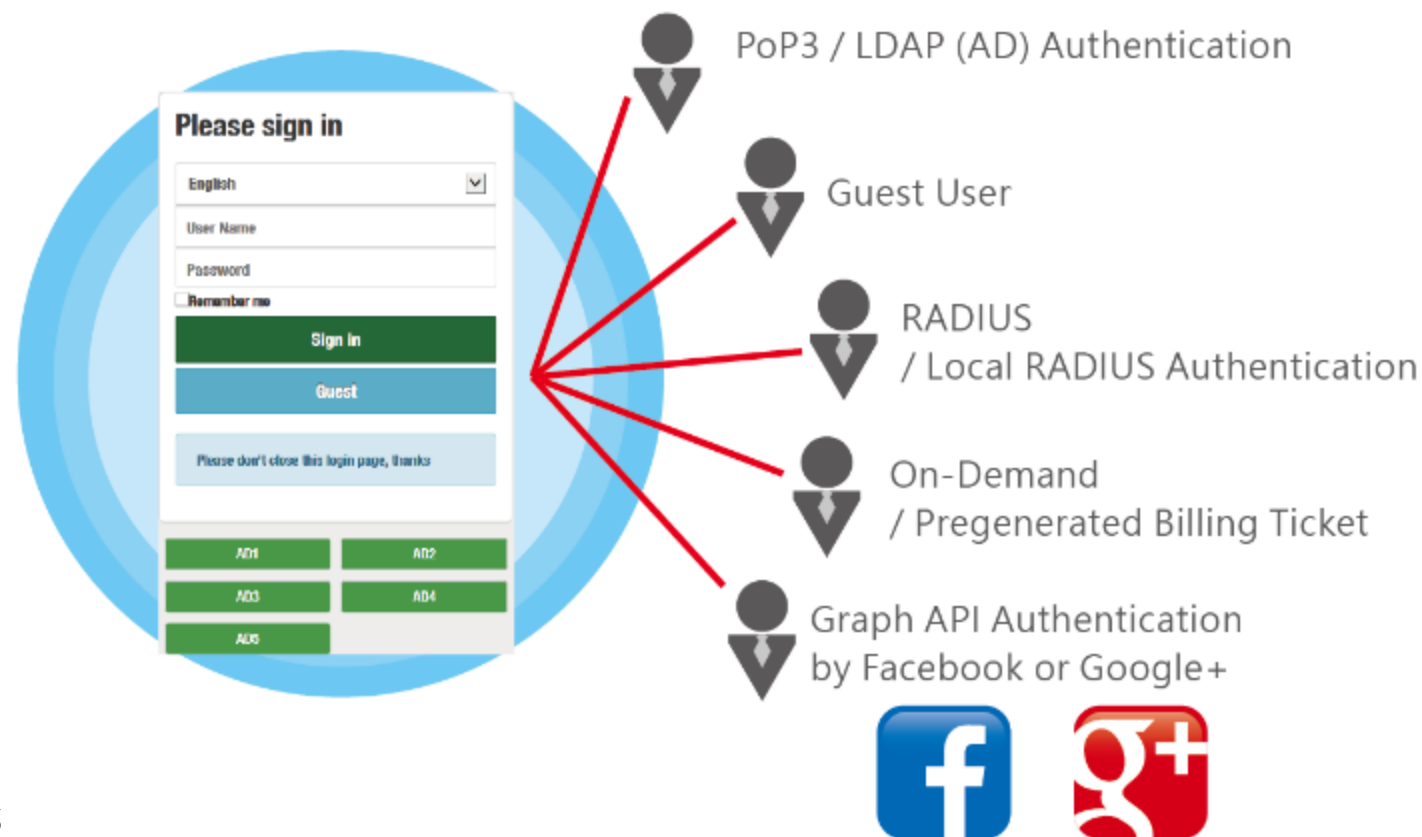
Map List				Create New Map
#	Name	Description	Action	
1	1F_plan	Location Map for man...	View	▼

The image shows a floor plan map with an AP icon. A popup window displays 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



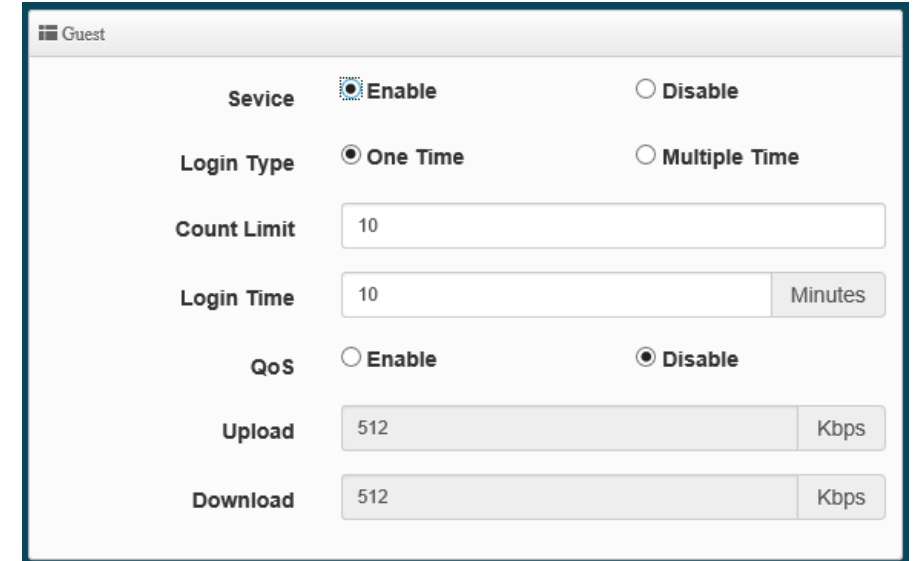
CenOS 5.0 supports multiple methods of authentication for user management, security and convenience.

**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 <span style="float: right;">Create New Provider</span>			
#	Active	Provider	Action
1	<span>On</span>	Google	<span>Edit</span> <span>▼</span>
2	<span>On</span>	Facebook	<span>Edit</span> <span>▼</span>



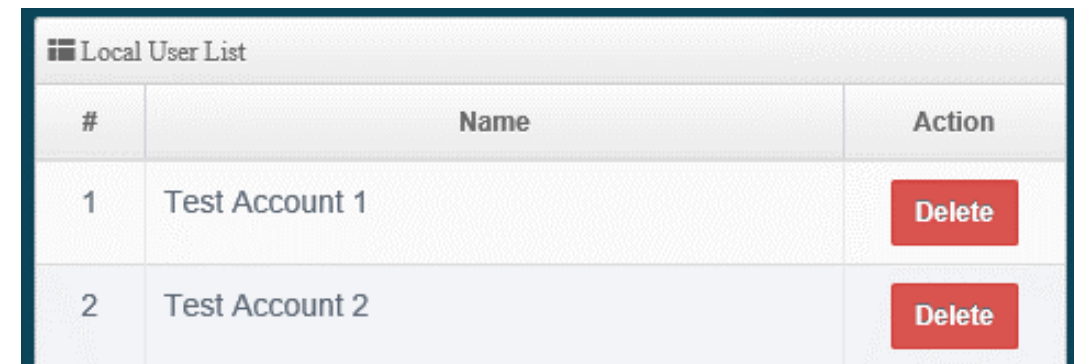
**Guest Login** : Provides limited WiFi connection to clients to an open network. Limitations can be put in place to manage client limits, connection time, and control bandwidth



The screenshot shows the 'Guest' configuration page. 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' table with the following data:

#	Name	Action
1	Test Account 1	<a href="#">Delete</a>
2	Test Account 2	<a href="#">Delete</a>

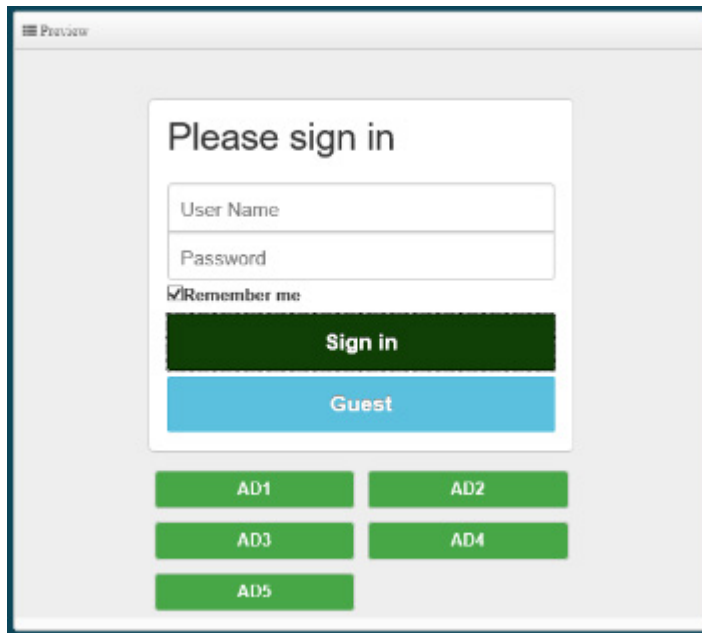


# Customized Login Page — CERIO

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

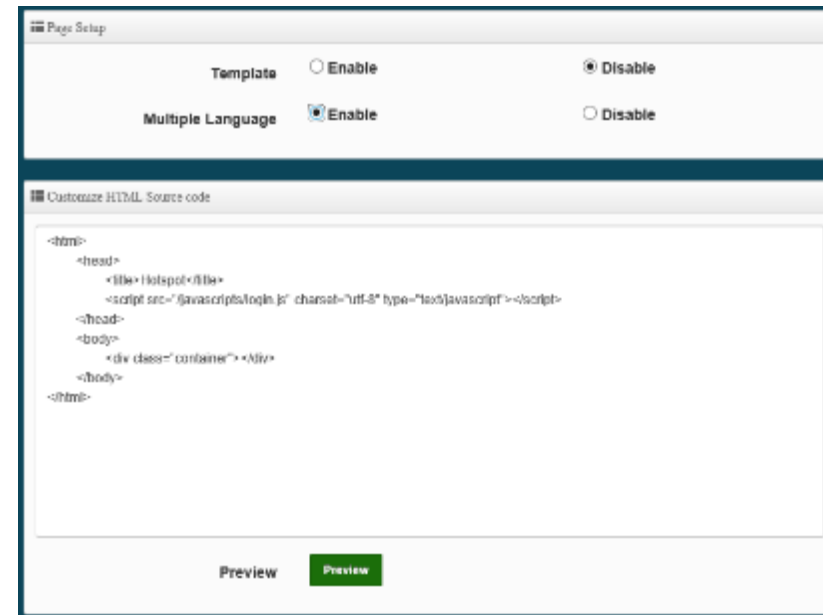
**(1.) Promotions (2.) Brand Exposure (3.) Advertisements (4.) Platform for providing Information**

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



The screenshot shows a 'Preview' window of a login page. The page has a light gray background. At the top, it says 'Please sign in'. Below this are two input fields: 'User Name' and 'Password'. There is a checked checkbox for 'Remember me'. Below the input fields are two buttons: a dark green 'Sign in' button and a light blue 'Guest' button. At the bottom, there are five green buttons labeled 'AD1', 'AD2', 'AD3', 'AD4', and 'AD5' arranged in two rows.

**Default Template**



The screenshot shows a 'Page Setup' window. At the top, there are two rows of radio buttons. The first row has 'Template' with 'Enable' and 'Disable' options, where 'Disable' is selected. The second row has 'Multiple Language' with 'Enable' and 'Disable' options, where 'Enable' is selected. Below this is a section titled 'Customize HTML Source code' with a text area containing 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"> <div>
</body>
</html>
```

At the bottom of the window, there are two 'Preview' buttons.

**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

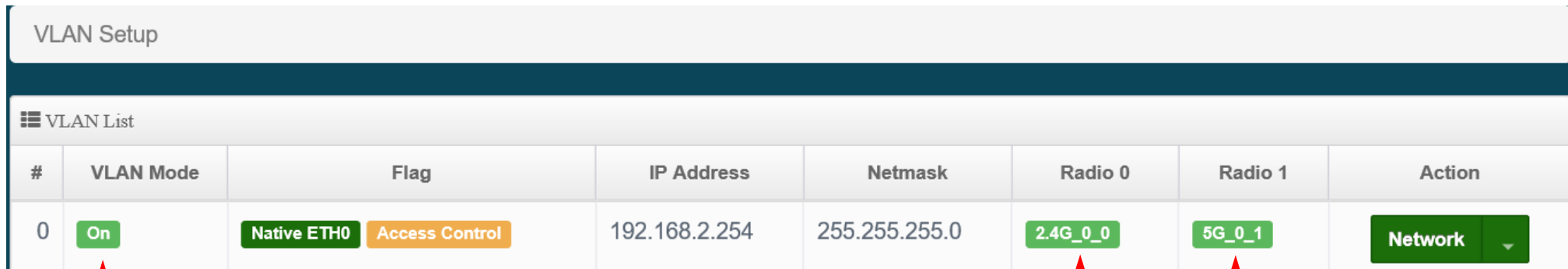
Supports integrated 802.1x RADIUS Server authentication for small to medium network environments. This supports a maximum of 50 built-in RADIUS Users.

#	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 A3'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.

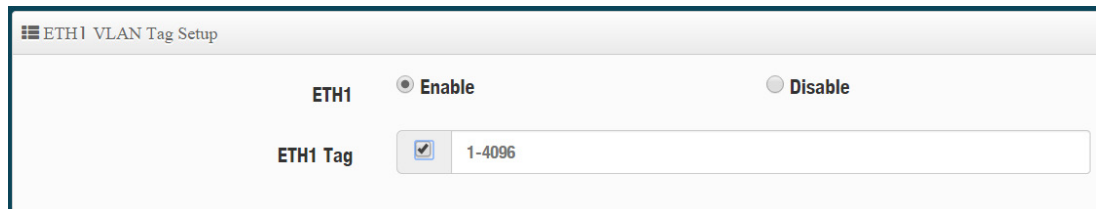


The screenshot shows the 'VLAN Setup' page with a 'VLAN List' table. The table has columns for #, VLAN Mode, Flag, IP Address, Netmask, Radio 0, Radio 1, and Action. The first row shows VLAN #0 with 'On' mode, 'Native ETH0' and 'Access Control' flags, IP 192.168.2.254, Netmask 255.255.255.0, Radio 0 '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' which is 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 A3** with **CenOS 5.0** supports **WDS Setup** when operating in **Access Point Mode**

**OW-400 A3'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-tages 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

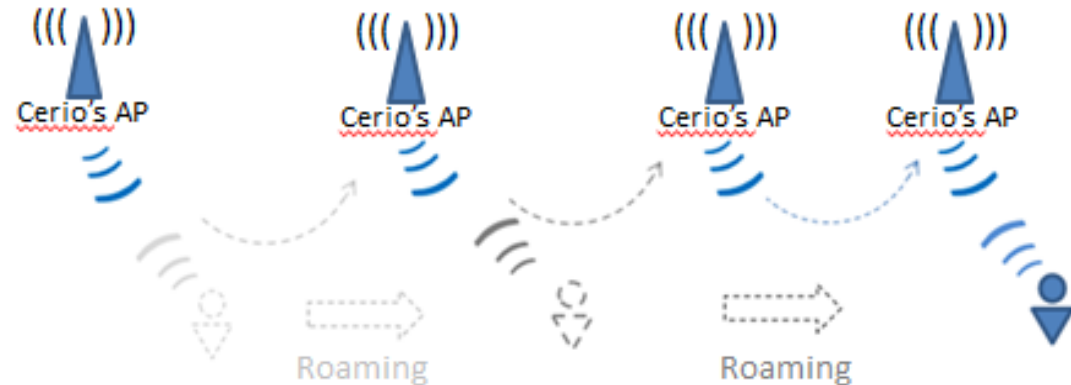
Fast Roaming  Enable  Disable

---

#### 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

**CERIO**

## CERIO Corporation

4F.-3., No.192, Sec. 2, Zhongxing Rd., Xindian Dist.,  
New Taipei City 231, Taiwan (R.O.C.)

Telephone : +(886) 02-8911-6160

Fax : +(886) 02-8911-6180



[www.cerio.com.tw](http://www.cerio.com.tw)



[issales@cerio.com.tw](mailto:issales@cerio.com.tw)



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*Amplify your Wireless Network*