

AP Registration and Onboarding Troubleshooting

—From Physical Link to Logical Activation

1. Introduction

In the Asterfusion OpenWiFi campus solution, AP onboarding is not merely about “obtaining an IP address.” It is a precise closed loop composed of physical connectivity, network addressing, admission and activation, and configuration provisioning. Leveraging the latest features of the OpenWiFi controller and the telemetry capabilities of APNOS, this guide aims to provide engineers with a standardized and visualized troubleshooting workflow.

DEVICE IDENTIFICATION	HOST NAME	DEVICE TYPE	SOFTWARE STATE	IP	ONU	HEALTH	MEMORY UTILIZATION	CPU UTILIZATION	VERSION	ENTITY / VENUE	CONNECTED	UPTIME
60eb5a036bbf	60eb5a036bbf	CAP6020-F	Configuration Mismatch	17.1.100.173	cell3c7cb184	100%	48.2%	6%	V4.288919	Asterfusion_real_demo	2 hour(s) 52 minute(s) 38 second(s)	5 day(s) 20 hour(s) 34 second(s)
60eb5a036bc1	60eb5a036bc1	CAP6020-F	Normal	17.1.100.170	cell3c7cb180	100%	55.3%	6%	V4.288919	Asterfusion_real_demo	2 hour(s) 52 minute(s) 50 second(s)	5 day(s) 21 hour(s) 28 minute(s)
60eb5a036bc4	60eb5a036bc4	CAP6020-F	Configuration Mismatch	17.1.100.155	cell3c7cb178	100%	48.4%	6%	V4.288919	Asterfusion_real_demo	2 hour(s) 51 minute(s) 59 second(s)	5 day(s) 20 hour(s) 38 second(s)
60eb5a036be4	60eb5a036be4	CAP6020-F	Configuration Mismatch	17.1.100.176	cell3c7cb13c	100%	48.4%	7%	V4.288919	Asterfusion_real_demo	2 hour(s) 52 minute(s) 17 second(s)	5 day(s) 20 hour(s) 42 second(s)
60eb5a036be7	60eb5a036be7	CAP6020-F	Configuration Mismatch	17.1.100.175	cell3c7cb134	100%	48.3%	7%	V4.288919	Asterfusion_real_demo	2 hour(s) 52 minute(s) 36 second(s)	5 day(s) 20 hour(s) 35 second(s)
60eb5a036beb	60eb5a036beb	CAP6020-F	Configuration Mismatch	17.1.100.164	cell3c7cb138	100%	48.4%	6%	V4.288919	Asterfusion_real_demo	2 hour(s) 52 minute(s) 46 second(s)	5 day(s) 20 hour(s) 36 second(s)
60eb5a036bf9	60eb5a036bf9	CAP6020-F	Configuration Mismatch	17.1.100.180	cell3c7cb854	100%	48.3%	7%	V4.288919	Asterfusion_real_demo	5 hour(s) 24 minute(s) 35 second(s)	5 day(s) 20 hour(s) 38 second(s)
60eb5a036bfa	60eb5a036bfa	CAP6020-F	Configuration Mismatch	17.1.100.157	cell3c7cb86c	100%	48.1%	7%	V4.288919	Asterfusion_real_demo	2 hour(s) 52 minute(s) 24 second(s)	5 day(s) 20 hour(s) 36 second(s)
60eb5a036c01	60eb5a036c01	CAP6020-F	Configuration Mismatch	17.1.100.159	cell3c7cb878	100%	48.2%	6%	V4.288919	Asterfusion_real_demo	2 hour(s) 52 minute(s) 29 second(s)	5 day(s) 20 hour(s) 34 second(s)
60eb5a036c03	60eb5a036c03	CAP6020-F	Configuration Mismatch	17.1.100.166	cell3c7cb818	100%	48.4%	6%	V4.288919	Asterfusion_real_demo	2 hour(s) 52 minute(s) 35 second(s)	5 day(s) 20 hour(s) 32 second(s)
60eb5a036c09	60eb5a036c09	CAP6020-F	Configuration Mismatch	17.1.100.169	cell3c7cb830	100%	48.4%	6%	V4.288919	Asterfusion_real_demo	2 hour(s) 52 minute(s) 53 second(s)	5 day(s) 20 hour(s) 34 second(s)
60eb5a036c0e	60eb5a036c0e	CAP6020-F	Configuration Mismatch	17.1.100.177	cell3c7cb87c	100%	48.5%	7%	V4.288919	Asterfusion_real_demo	2 hour(s) 52 minute(s) 36 second(s)	5 day(s) 20 hour(s) 37 second(s)

Figure 1 AP Online status

2. In-Depth Analysis of Physical Link and PoE Power Supply

Symptoms: The AP LED is off, or the controller dashboard shows “Connection Lost,” while the switch port frequently flaps.

PoE Power Specification and Protocol Matching

According to APNOS characteristics, APs (such as AP6020) are highly sensitive to power stability.

- Troubleshooting Logic

Verify whether the switch supports 802.3at (PoE+). If the AP is connected to a port that only supports 802.3af, it may repeatedly reboot due to insufficient power during radio initialization, when inrush current peaks.

- Controller Operation:

Navigate to [Device Management] → [Switch Configuration] → [Port Details].

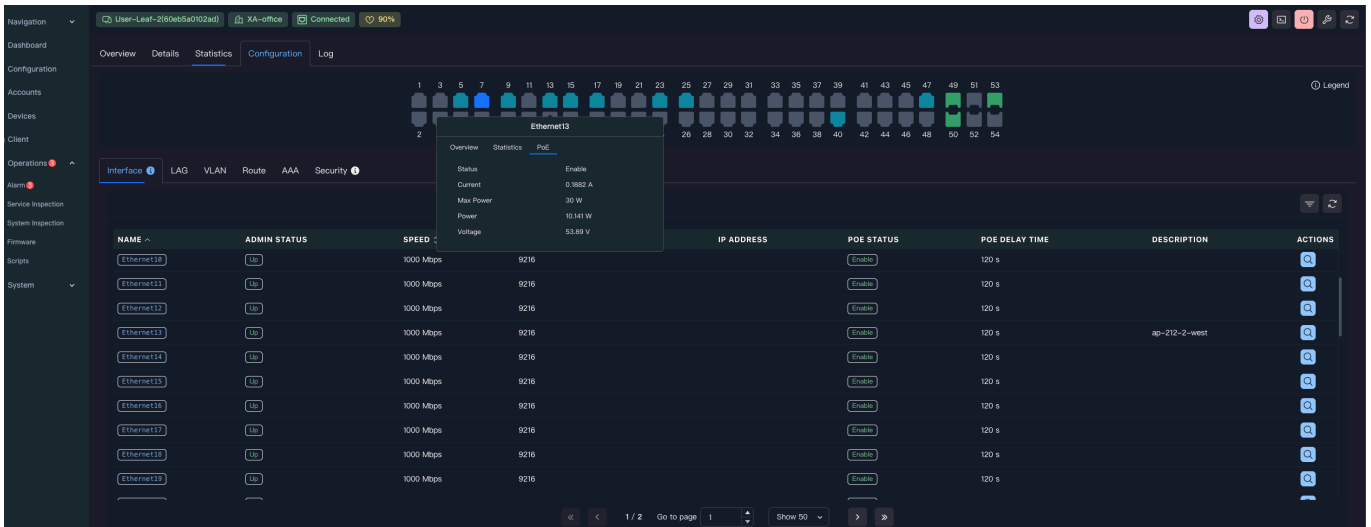


Figure 2 PoE status

- Key Indicator

Check the PoE Power Consumption. If the real-time power is close to 15.4W (the upper limit of 802.3af) and the AP is offline, the port must be switched to an 802.3at (PoE+) port.

Standard	IEEE Spec	Max Power per Port	Max Power to Device	Wire Pairs	Typical Applications
PoE	802.3af	15.4 W	12.95 W	2 pairs	IP phones, basic cameras
PoE+	802.3at	30 W	25.5 W	2 pairs	Dual-band APs, PTZ cameras
PoE++ (Type 3)	802.3bt	60 W	51 W	4 pairs	Wi-Fi 6 APs, smart devices
PoE++ (Type 4)	802.3bt	90-100 W	71.3 W	4 pairs	Wi-Fi 7 APs, thin clients

3. L2/L3 Discovery Phase — “Trinity” Addressing Mechanism

Symptom: The AP is powered on, but its status remains **Offline** in [Devices] → [AP].

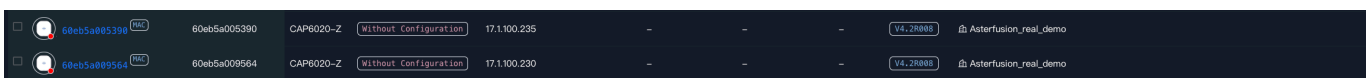


Figure 3 offline AP

DHCP Option 138

After booting, the AP sends a DHCP Request. In cross-Layer 3 environments, the AP must obtain the controller’s northbound IP address via **Option 138**.

- Troubleshooting Path
Check the DHCP pool on the gateway.
- Key Verification Point
Option 138 must point to the controller’s **Management IP**, not the service/business IP.

No DHCP Environment: Enable Local DHCP on Switch

The Asterfusion OpenWiFi Controller supports enabling a local DHCP server directly on the access switch.

- Steps
Locate the directly connected switch in the controller’s topology view.
Navigate to **[Switch Configuration] → [Local DHCP]**.
- Key Configuration
Ensure Option 138 is enabled and populated with the correct controller address.

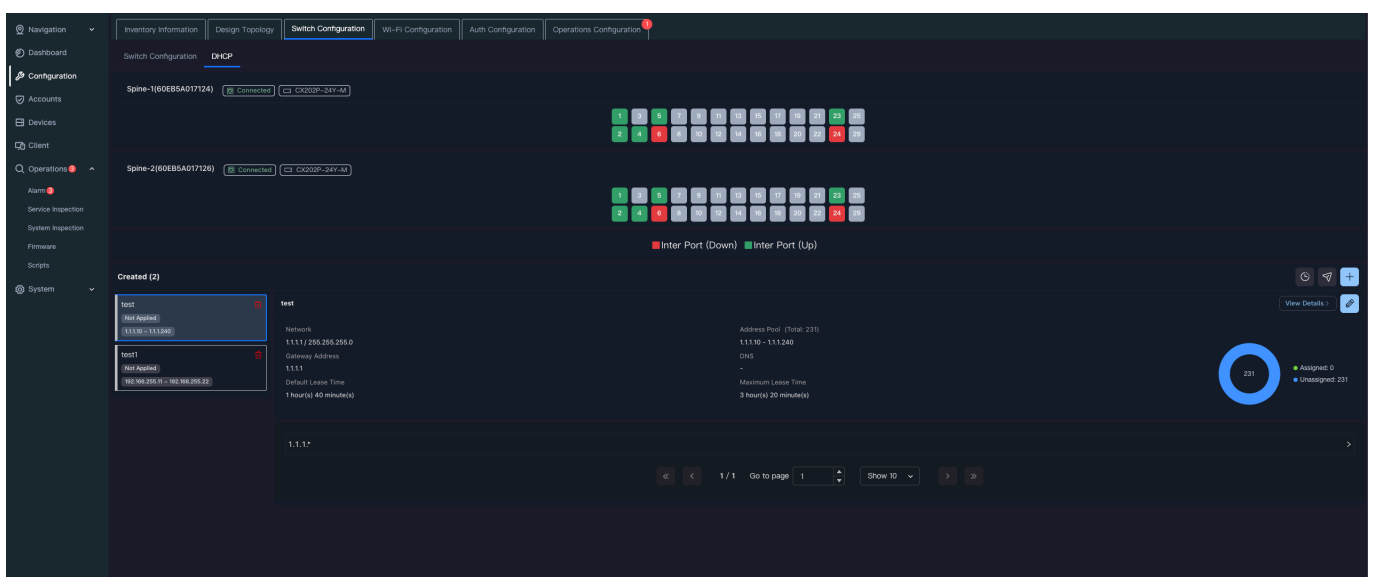


Figure 4 DHCP status

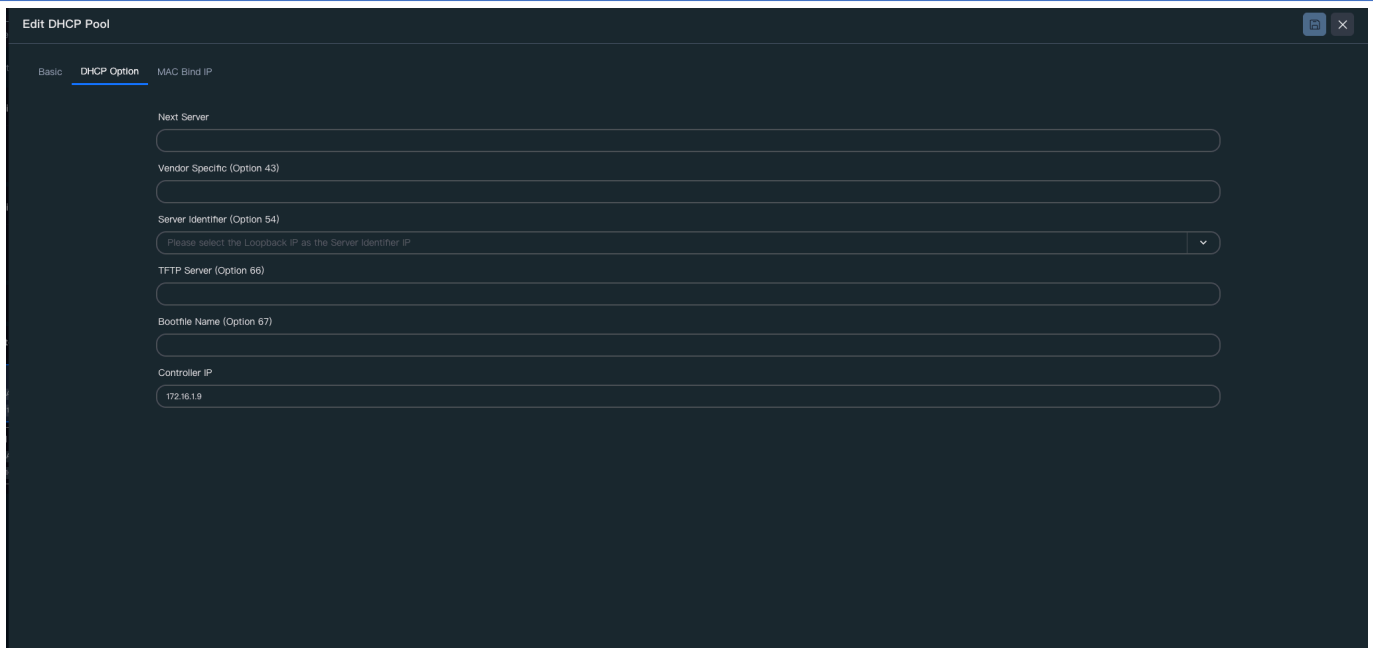


Figure 5 DHCP Config

4. Identity Verification and License Activation (Core Admission Logic)

Symptom: The AP status is Online, but the radio is not operational and no SSID is being broadcast.

“Fingerprint” Matching via Asset Pre-Provisioning

The Asterfusion OpenWiFi Controller enforces strict device identity verification.

- Troubleshooting Details:
 - Verify the MAC address and Serial Number (SN) in [Inventory] to ensure they match the actual device.
- Automation Recommendation:
 - Leverage the Bulk Upload feature to import devices in batches via CSV. The controller also supports exporting configurations directly from organization/site nodes for cross-verification.

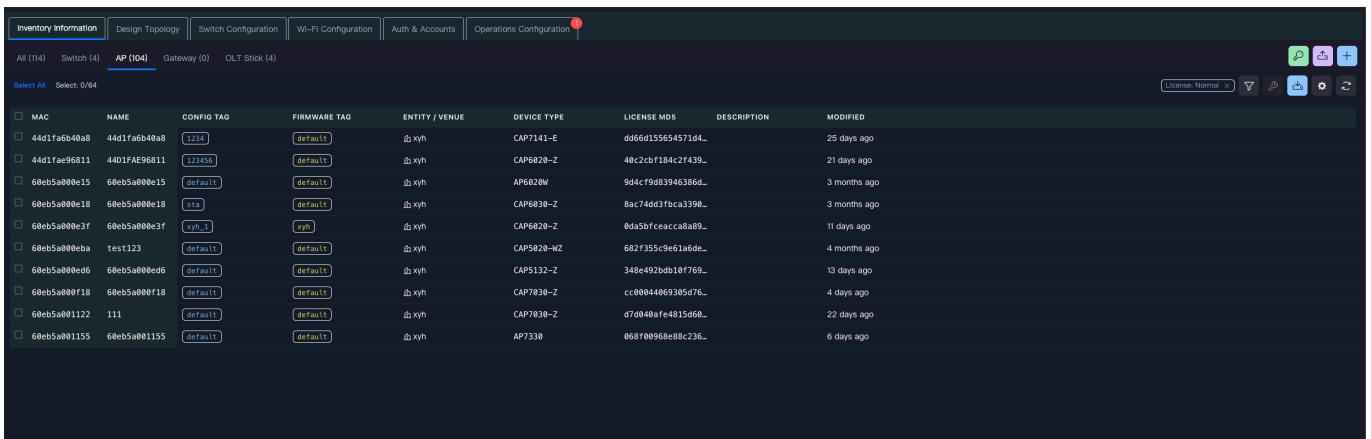


Figure 6 AP Inventory

License Lock Mechanism (Critical — Must Check)

For APs with expired or insufficient licenses, the radio management process (WiFi-Frame) will be suspended.

- Check Path:
Navigate to [Configuration] → [Inventory] → [License].
- Issue Identification:
Check the Used License count. If the number of available licenses is insufficient, newly onboarded APs will not receive a Valid status.
- Resolution:
Import the latest .json license file and ensure the AP is assigned to the correct Organization node.

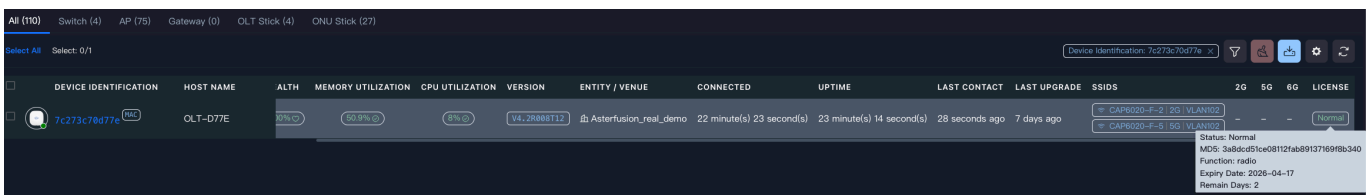


Figure 7 AP License

5. Configuration Provisioning and Controller Tag Matching

Symptom: The AP is online and licensed, but configuration provisioning is stuck, or SSIDs are not visible.

Config Tag as the “Logical Bridge”

Logical Mapping: [Tags in Inventory] <== match ==> [Tag Name in Wi-Fi Configuration]

- Common Misconfiguration:

If the SSID configuration is defined under the tag Campus_WiFi, but the AP in Inventory is assigned the default tag, the configuration will remain indefinitely in the controller’s pending queue and will not be pushed to the device.

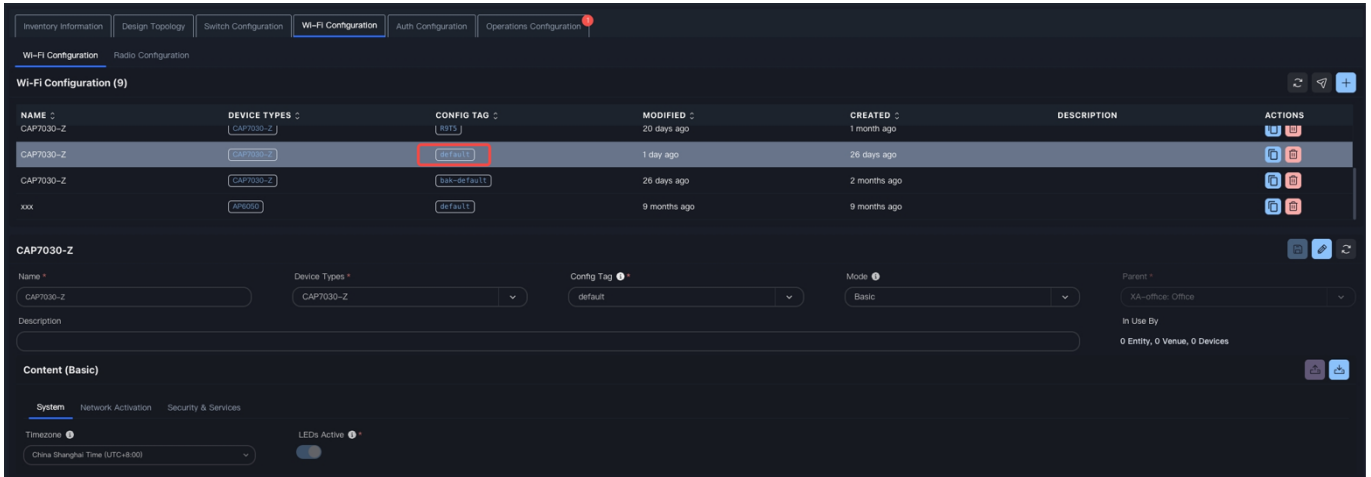


Figure 8 AP Config Tag

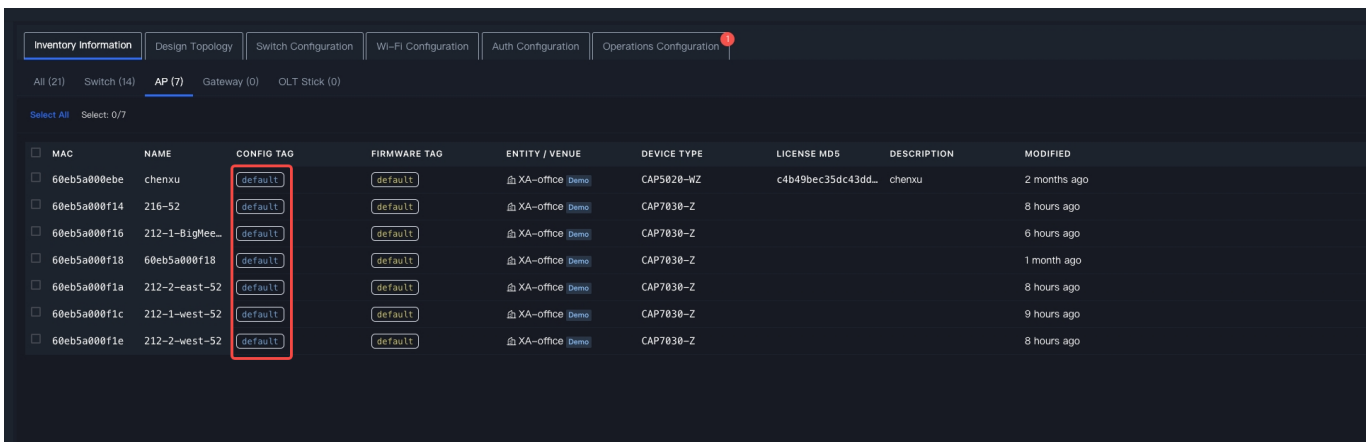


Figure 9 AP Inventory Config Tag

Management Channel vs Service VLAN Isolation

- Uplink Port Verification:

Confirm the VLAN tagging configuration on the AP uplink port (typically WAN*).

- Troubleshooting:

If the SSID is mapped to a service VLAN (e.g., **VLAN 100**), but the corresponding trunk port on the access switch does not allow VLAN 100, it will result in a situation where the **AP is online but client devices cannot connect to the network.**

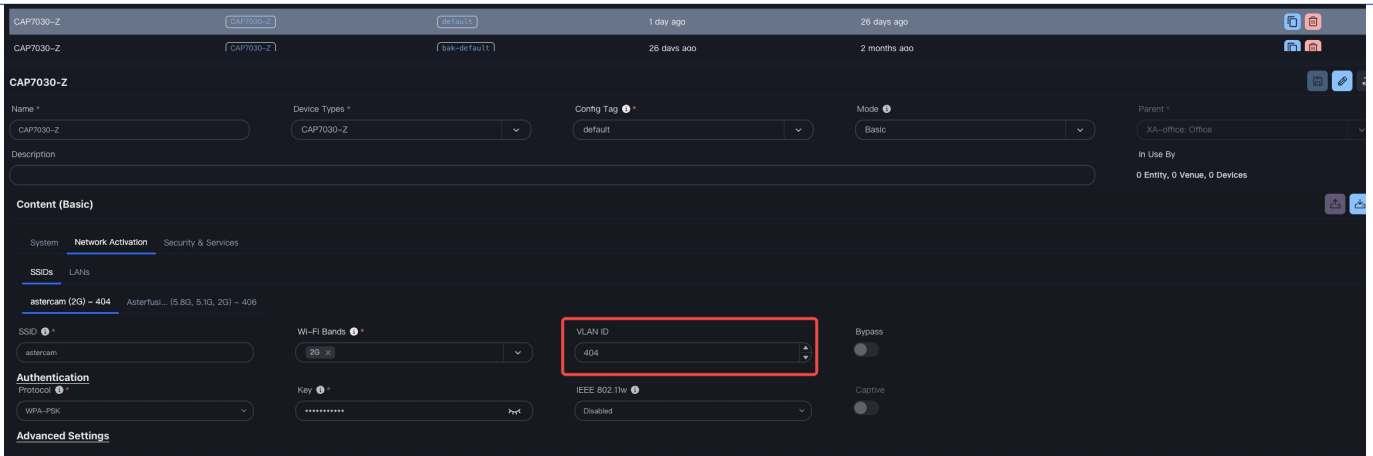


Figure 10 Service VLAN Tag

6. Final Troubleshooting Checklist

Check Phase	Key Metric	Normal Value	Failure Action
L1 Physical Layer	PoE Power	> 15W (802.3at)	Switch to 802.3at port / power source
L2 Network Layer	Management IP Acquisition	IP obtained in the subnet defined by Option 138	Check DHCP Server Option 138 configuration
L3 Admission Layer	License Status	Status: Valid	Verify and re-import the .json license file
L4 Configuration Layer	Tag Matching	100% string match	Correct tags in Inventory or SSID configuration