# 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.

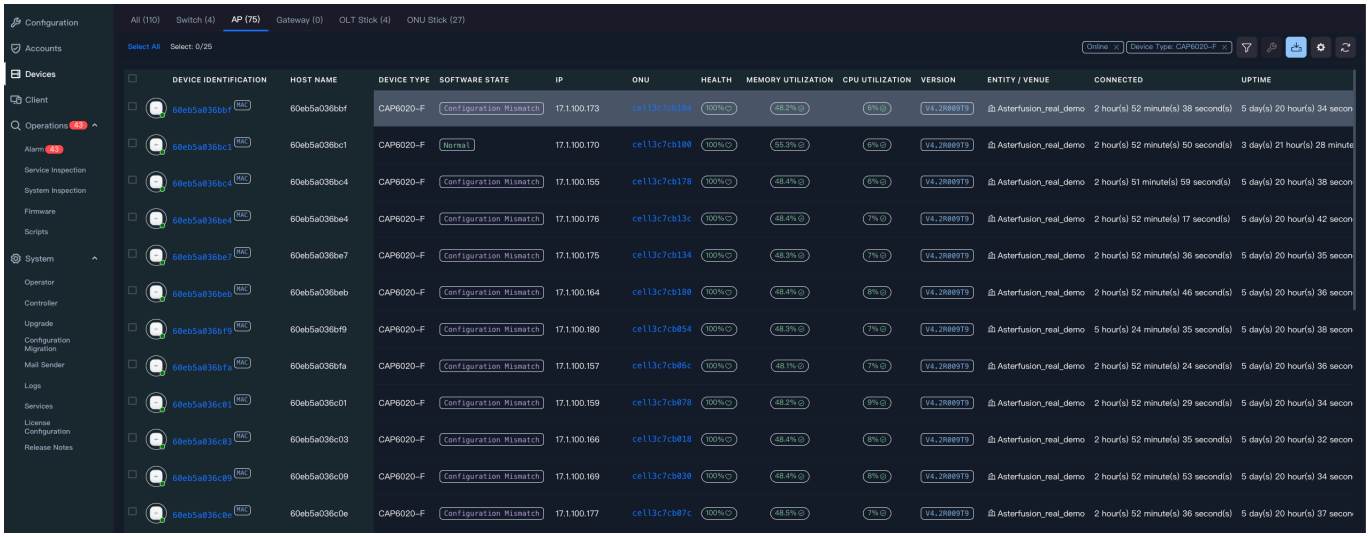


Figure 1 AP Online status

# 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.

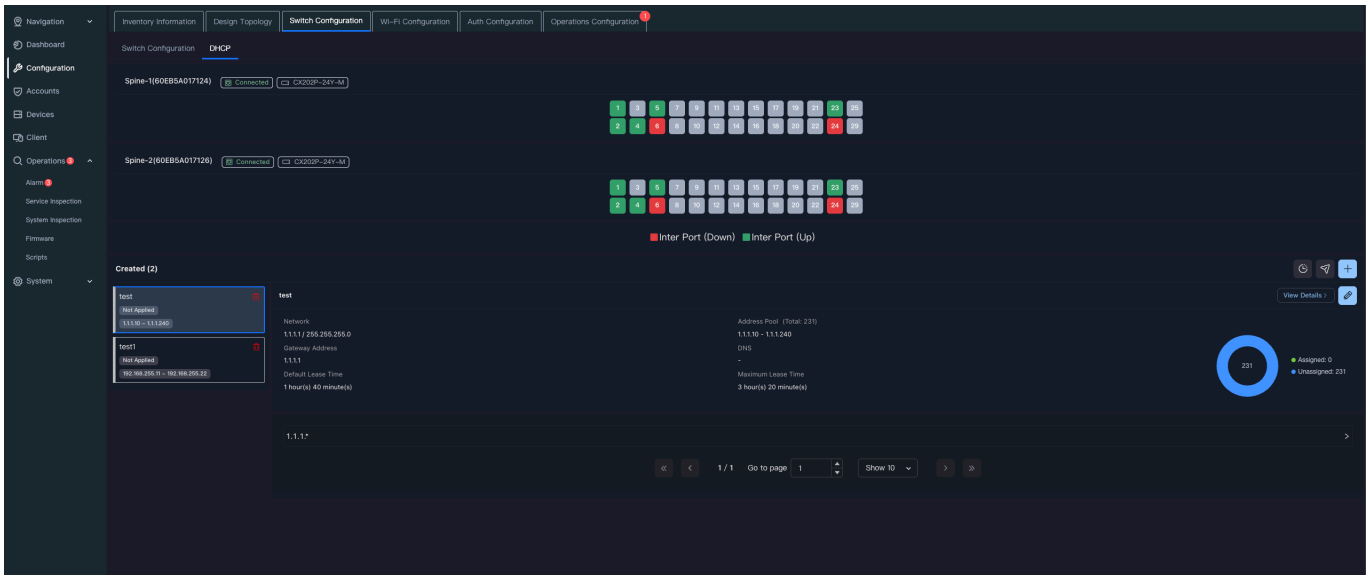


Figure 4 DHCP status

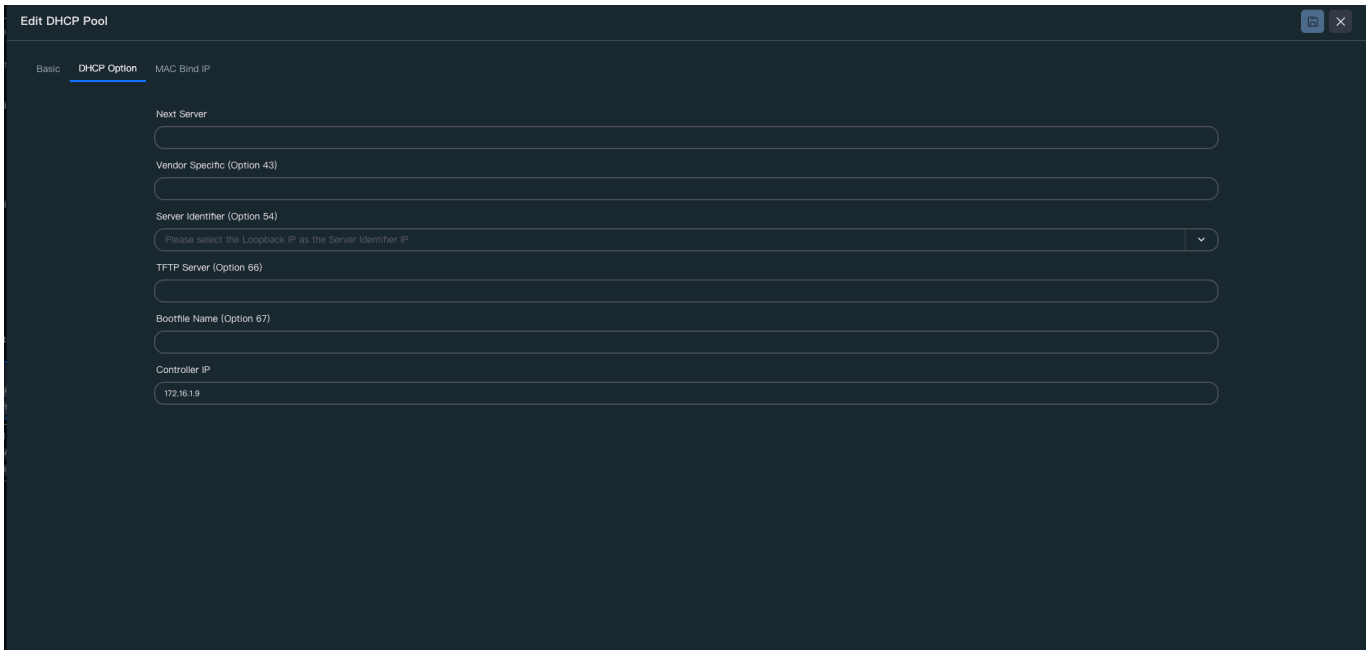


Figure 5 DHCP Config

# 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.

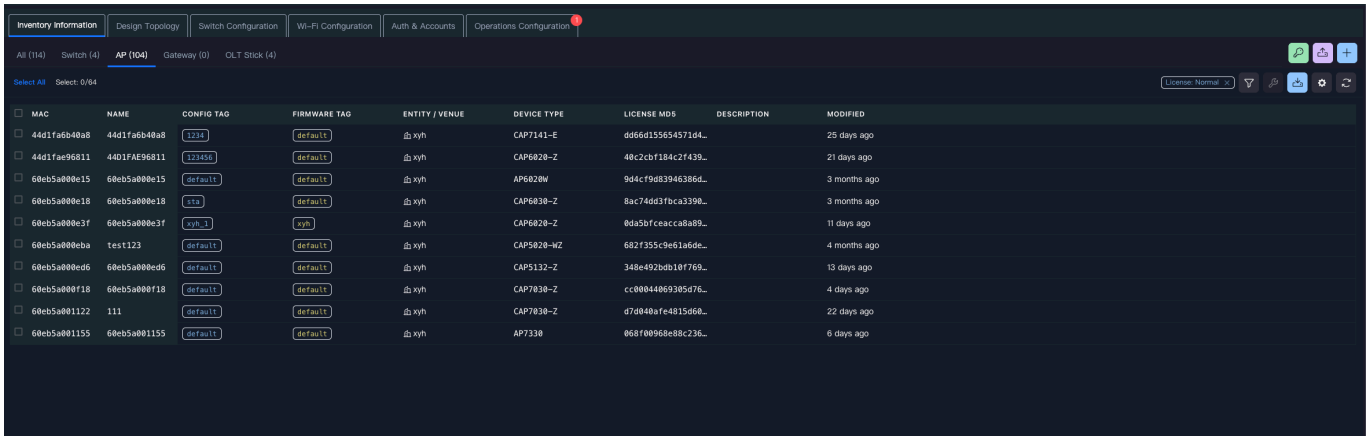


Figure 6 AP Inventory

**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.

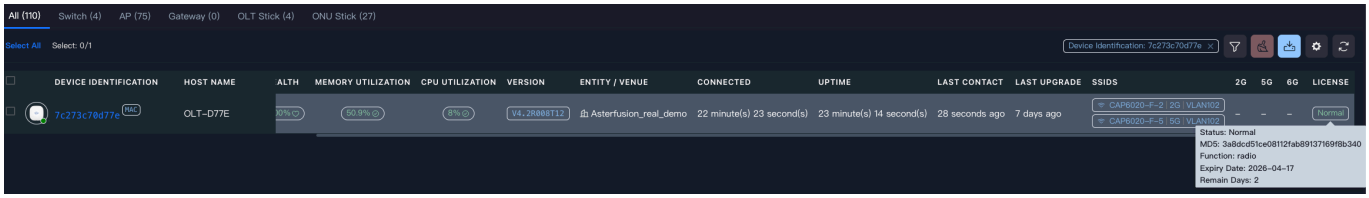


Figure 7 AP License

# 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.

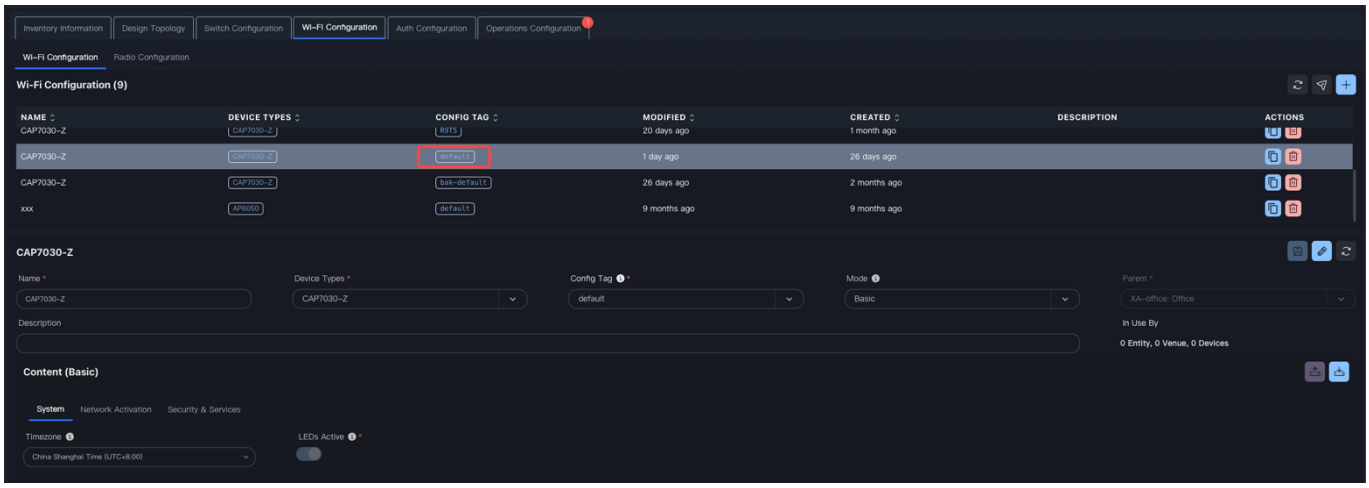


Figure 8 AP Config Tag

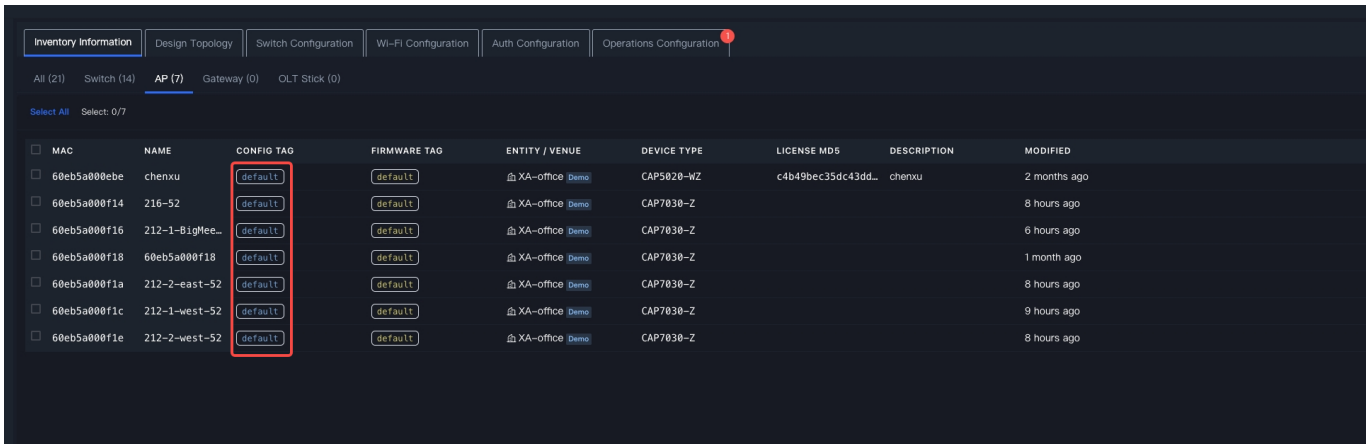


Figure 9 AP Inventory Config Tag

## 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**.

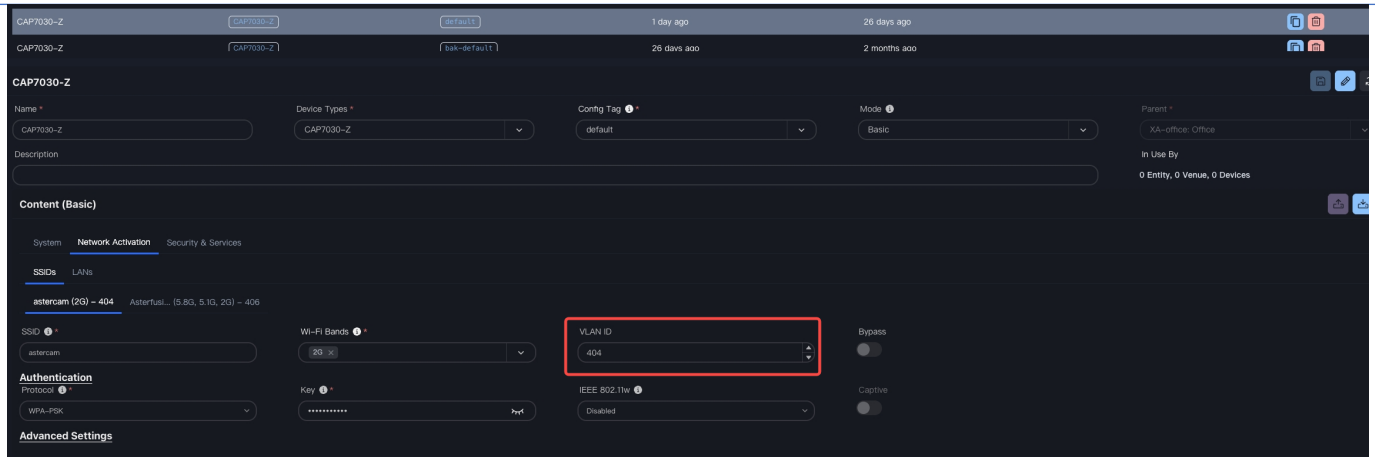


Figure 10 Service VLAN Tag

# 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 |
| **L3Admission 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 |