This document outlines the various deployment scenarios for Unified Access Points (UAPs) and the procedures involved in deploying the APs in switch-based and AOS-W Instant operating modes. The APs run different images for switch-based (AOS-W image) and switchless (AOS-W Instant image) modes.

Deployment Scenarios and Procedures

This section outlines the various types of scenarios involved in the deployment of APs in a switch-based or switchless customer network. The APs introduced in this release can run in both switch-based mode and switchless mode. Based on the selected mode, the AP runs a corresponding image:

- Switch mode will run AOS-W image.
- Switchless mode will run AOS-W Instant image.

Each AP is deployed with a manufacturing image or an AOS-W Instant image or can act as its own AOS-W Instant virtual switch. An AP with either of the limited functionality manufacturing image or the AOS-W Instant image will run a full discovery logic. Based on that, it will download the AOS-W or AOS-W Instant image and convert to the corresponding mode. For more information on discovery logic, refer to the AP Discovery Logic section in the *AOS-W User Guide* and the *AOS-W Instant User Guide.*

Read through the scenarios given in this document carefully to choose the best-suited procedure for your deployment needs:

Deploy APs in a Centralized Switch-Based Network

This section outlines the following scenarios for deploying APs purely in a centralized switch-based network.

AP has access to the console:

1. Set the Server IP address in apboot.
2. Upgrade AOS-W image from apboot.
3. Reboot the AP with the AOS-W image.

NOTE

If a static environment variable is set in apboot for the master AP, the above steps are executed automatically during the switch discovery stage.

Switch-based AP to be deployed in a separate lab deployment network

Some users prefer to deploy the AP in a separate test lab environment before deploying it for general use on the working network. In such a scenario, Layer 2 switches are used to connect the switch and the AP. There are no dynamic host configuration protocol (DHCP) or domain name system (DNS) switch settings involved and the AP discovers the switch through Aruba discovery protocol (ADP).

Case 1: AP is powered ON, switch status is UP, and AP discovers the switch through ADP.

- AP boots up with the limited functionality manufacturing image or the AOS-W Instant image.
- AP discovers the switch through ADP.
- AP downloads the AOS-W image from the switch and reboots with the AOS-W firmware.
- When the AP is up and running as a switch-based AP, provision the AP using the AOS-W provisioning procedure. For information on AOS-W provisioning, refer to the *AOS-W User Guide*.

Case 2: AP is powered ON, Switch is not ready, and AP is unable to detect the switch during the initial bootup stage.

- If there is no switch found in the initial discovery stage, the AP enters the AOS-W Instant-discovery stage. In order to restrain the AP from transitioning to the AOS-W Instant mode, there should be no AOS-W Instant Virtual Switch, OmniVista 3600 Air Manager, or Activate found in the AOS-W Instant-discovery stage.
- The factory-default AP waits for few minutes; if there are no changes in the configuration and the AP is still in factory-default state, the AP reboots and repeats the discovery procedure from the beginning.
- After the AP discovers the switch, the AOS-W image is upgraded on the AP and the AP reboots.
- When the AP is up and running as a switch-based AP, provision the AP using the AOS-W provisioning procedure. For information on AOS-W provisioning, see the *AOS-W User Guide.*

Direct deployment of APs in a new switch-based network

In this scenario, the AP and switch are directly deployed in a customer's running network. In a switch-based network, the AP and the switch are usually deployed in different subnets. However, there are cases when the AP and the switch belong to the same subnet and the switch can be discovered through DHCP, DNS, or ADP.

Case 1: Factory-default AP is powered ON, switch is already up, and AP is able to find the switch through DHCP or DNS.

- AP boots up with the limited functionality manufacturing image or the AOS-W Instant image.
- AP discovers the switch through DHCP or DNS.
- AP downloads the AOS-W image from the switch and reboots as an AP running the AOS-W firmware.
- When the AP is up and running as a switch-based AP, provision the AP using the AOS-W provisioning procedure. For information on AOS-W provisioning, refer to the *AOS-W User Guide*.

Case 2: Factory-default AP is powered ON, switch is not ready, and AP is unable to detect the switch during the initial bootup stage.

- If the AP is unable to connect to the switch, the AP attempts to reconnect multiple times before it reboots.
- If the AP is able to connect to the switch, then the AOS-W image is downloaded to the AP and the AP reboots.
- When the AP is up and running as a switch-based AP, provision the AP using the AOS-W provisioning procedure. For information on AOS-W provisioning, refer to the *AOS-W User Guide*.

Incremental deployment of APs in a switch-based network

There are two ways to add or replace APs in a customer network with existing switch and OAW-AP devices:

- If only a few APs need to be added to the customer network, you can use the AP console connection to statically set the environment variables in apboot mode.
- If you do not wish to set the apboot environment variable manually, use the ADP, DHCP, or DNS method of switch-based discovery. For more information on configuring an AP's environment variables through a console connection, refer to the **Managing AP Console Settings** section of the **Access Points** chapter of the *AOS-W User Guide*.

Deploy APs in an AOS-W Instant network

The following are the most common cases in Instant AP deployments:

Deployment of an AP in a running AOS-W Instant network:

In this scenario, there is an actively running AOS-W Instant network with a master AOS-W Instant AP.

The AP is able to successfully discover the AOS-W Instant Virtual Switch and join the cluster. The manufacturing image is upgraded to the AOS-W Instant image and the configuration is synchronized from the Virtual Switch to the newly added AOS-W Instant AP.

Deployment of a New AOS-W Instant AP Cluster when OmniVista 3600 Air Manager and Activate are reachable

In this scenario, there is no cluster deployed in the subnet but OmniVista 3600 Air Manager and Activate can be reached over the network.

APs are upgraded to the OmniVista 3600 Air Manager and Activate through the following steps:

1. The AP boots up with the limited functionality manufacturing image or the AOS-W Instant image.

2. The AP enters the switch discovery process using a **static/DHCP/ADP/DNS** based switch discovery. If the preference role is set to switchless, the AP bypasses switch discovery and immediately enters AOS-W Instant discovery.

3. If the AP cannot locate any switches, it enters the AOS-W Instant discovery process to locate an Instant Virtual Switch, OmniVista 3600 Air Manager or Activate.

4. The AP attempts to discover a Virtual Switch in an existing AOS-W Instant AP cluster.

5. If the AP cannot locate a Virtual Switch in an existing AOS-W Instant AP cluster, the AP attempts to locate OmniVista 3600 Air Manager or Activate to upgrade the image and form a new AOS-W Instant AP cluster.

Deployment of an AP when OmniVista 3600 Air Manager and Activate are not reachable

In this scenario, when the AOS-W Instant AP is being deployed, it is possible that the WAN link could be down or OmniVista 3600 Air Manager or Activate is not reachable. One of the possible ways to upgrade the AP with the AOS-W Instant image is to use the specific service set identifier (SSID) that is broadcast by the AP manufacturing image and the special WebUI to upgrade the AOS-W Instant image locally. The following 2 cases must be considered in this scenario:

Case 1: All APs to be deployed are of the same image class

When all the APs are of the same type, it would be sufficient to upgrade one of the APs with the AOS-W Instant image. This AP will assume automatically assume the role of the master AOS-W Instant AP after it reboots. All other APs are then allowed to join the master AOS-W Instant AP and upgrade to the AOS-W Instant image.

Case 2: APs to be deployed have a different image class

Because the AOS-W Instant image cannot be upgraded online though OmniVista 3600 Air Manager or Activate, the AOS-W Instant image needs to be upgraded on all the APs using a local method.

1. Select one AP from each of the image class types.

2. Upgrade the AOS-W Instant image manually on each of the AP types by accessing the SSID broadcast when the AP is in its factory-default state and running the manufacturing image.

3. Reboot the APs and deploy the rest of the APs to upgrade to the respective AOS-W Instant image class.

Deploy AP as a Switch-Based AP in a Hybrid Switch and AOS-W Instant Network

A hybrid switch and AOS-W Instant network deployment means that the switch-based and switchless deployment criteria co-exist when deployed in a customer network. Since the switch and the AOS-W Instant OmniVista 3600 Air Manager discovery process involve DHCP or DNS mode of discovery, deployment requires the following conditions to be met.

- The switch-based APs and switchless AOS-W Instant APs must work on different subnets.

- The mode of discovery used for switch based APs and switchless AOS-W Instant APs should be different. For example, if the switch-based APs use DHCP for discovery, then the switchless AOS-W Instant APs should use the DNS mode of discovery.

- If both types of APs (switch and AOS-W Instant AP) should use the same mode of discovery, then the DHCP server response must be through either the subnet or the vendor ID.
- The DNS mode of discovery cannot be used for both types of APs in a hybrid deployment as DNS is a Layer 3 protocol and does not have a subnet limit.

SSID and Local WebUI Settings for AP Manufacturing Image

The AP in its factory-default state runs the manufacturing image and broadcasts a special SSID when the AP is brought up. This SSID, which is specific to the AP manufacturing image, provides additional options to manually provision an AP as a OAW-AP or an OAW-IAP, when the discovery logic is unable to locate a switch or a Virtual Switch in the network. The SSID is internally programmed to redirect the client to a provisioning page **https://setmeup.arubanetworks.com** where the user has the option to provision the AP as a OAW-AP or an OAW-IAP.

Follow these steps to provision the AP as a OAW-AP or an OAW-IAP using the local WebUI:

Figure 1 *Access Point Provisioning using WebUI*

1. Bring up the factory-default AP with the manufacturing image.

2. Connect your laptop to the SSID and open the web browser. You will be redirected to the local provisioning WebUI.

3. Log in to the WebUI by using the default username **admin** and the default password **admin**.

4. To provision the AP as an OAW-IAP, navigate to **Access Point Setup > Virtual Switch** and specify the local image file or image URL.

5. To provision the AP as a OAW-AP, navigate to **Access Point Setup > Mobility Switch** and specify the switch IP address.

6. Click **Save** and reboot the AP.

Manual Conversion of AP

This section describes how to manually convert a factory default AP to a OAW-AP, OAW-RAP, or OAW-IAP.

Manual Conversion of AP to OAW-AP or OAW-RAP

If the AP cannot be converted into a OAW-AP or OAW-RAP through Activate, users can connect to a special provisioning SSID broadcasted by the unprovisioned AP to manually convert the AP to a OAW-AP or a OAW-RAP through the WebUI. To manually convert an AP to a OAW-AP or OAW-RAP in the WebUI:

1. On your device, connect to the following provisioning SSID broadcasted by the unprovisioned AP: **SetMeUp-xx:xx:xx**.

2. Open a web browser. You will automatically be redirected to a special provisioning page in the WebUI to convert the AP.

3. Under **Convert to**, select **OAW-AP** or **OAW-RAP**.

4. Enter the IP address or host name of the switch to which the OAW-RAP or OAW-AP will be connected.

5. Click **Save**.

Manual Conversion of AP to OAW-IAP

If the AP cannot be upgraded into an OAW-IAP through a virtual switch, OmniVista 3600 Air Manager or Activate, users can connect to a special provisioning SSID broadcasted by the unprovisioned AP to manually convert the AP to an OAW-IAP through the WebUI. To manually convert an AP to an OAW-IAP in the WebUI:

1. Login to your virtual switch.

2. Connect to the following provisioning SSID broadcasted by the unprovisioned AP: **SetMeUp-xx:xx:xx**.

3. Open a web browser. You will automatically be redirected to a special provisioning page in the WebUI to convert the AP.

4. Under **Access Point Setup**, select **Image File** or **Image URL** to upload the AOS-W Instant image.

   - If you select **Image File**, click **Browse** to locate and select an AOS-W Instant image file from your local file explorer.
   - If you select **Image URL**, enter the web address of the AOS-W Instant image in the **URL** field.

5. Click **Save**.

After the AP is upgraded, it reboots in AOS-W Instant mode.

Remote Deployment of AP in a Switch-Based Network

The remote deployment scenario uses the same procedure as that of the current AOS-W provisioning of OAW-RAPs. The primary reason is to be able to use a specific SSID and a WebUI to locally configure the factory-default AP as a OAW-RAP.

Following are the steps involved in deploying a switch-based OAW-RAP:

1. Add the OAW-RAP whitelist to the switch OAW-RAP whitelist table which includes rap-mac, ap-group, ap-name, and other entries.

2. Connect the AP at the remote location.

3. Boot up the factory-default AP. Normally, there is no DHCP option 43 and DNS switch options at the remote site. The AP boots up in its factory-default state and enters the AOS-W Instant-discovery stage. The AP runs in the unprovisioned state and broadcasts an SSID in the 2.4 GHz radio.

4. Connect your laptop to the SSID and access the WebUI. The WebUI presents the option to select the mode of installation and other options such as switch IP, uplink type, and static IP.

5. Select the mode of installation as **OAW-RAP**. The AP tries to establish an IPsec tunnel to the switch, downloads the image, and reboots.

Regulatory Compliance

Alcatel-Lucent recommends an upgrade of the AOS-W Instant AP firmware and/or downloadable regulatory table (DRT) file to the latest available version. This ensures that the AOS-W Instant AP supports the most up-to-date set of countries and regulatory specifications.

Contacting Support

Table 1: *Contact Information*

Contact Center Online	
Main Site	https://www.al-enterprise.com
Support Site	https://businessportal2.alcatel-lucent.com
Email	ebg_global_supportcenter@al-enterprise.com
Service & Support Contact Center Telephone	
North America	1-800-995-2696
Latin America	1-877-919-9526
EMEA	+800 00200100 (Toll Free) or +1(650)385-2193
Asia Pacific	+65 6240 8484
Worldwide	1-818-878-4507

Copyright Information

Alcatel-Lucent and the Alcatel-Lucent Enterprise logo are trademarks of Alcatel-Lucent. To view other trademarks used by affiliated companies of ALE Holding, visit:

https://www.al-enterprise.com/en/legal/trademarks-copyright

All other trademarks are the property of their respective owners. The information presented is subject to change without notice. Neither ALE Holding nor any of its affiliates assumes any responsibility for inaccuracies contained herein. (2019)

Open Source Code

This product includes code licensed under the GNU General Public License, the GNU Lesser General Public License, and/or certain other open source licenses.