AP 1815 Wall Plate Deployment Guide

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Introduction

The Cisco Network Plug and Play solution provides a simple, secure, unified, and integrated offering for enterprise network customers to ease new branch or campus rollouts, or for provisioning updates to an existing network. The solution allows use of Cloud Redirection service, on-prem, or combination which provide a unified approach to provision enterprise networks comprised of Cisco routers, switches, and wireless devices with a near zero touch deployment experience.

This deployment guide introduces the Cisco Network Plug and Play application for wireless access points. This application allows you to pre-provision the remote site. When you provision a large site, you can use the Cisco Network Plug and Play application to pre-provision the site and add access points to the site. This includes entering access point information and setting up a bootstrap configuration if required. The bootstrap configuration enables the Plug and Play Agent to configure the access point such as the WLC info, hostname, AP group, FlexGroup, AP mode and so on.

When you create small sites where pre-provisioning is not required, access points can be deployed without prior set up on the Cisco Network Plug and Play application and then claimed. When an installer installs and powers up the access point, it auto-discovers the Cisco APIC-EM controller by using the DHCP, DNS or cloud redirection service. After the auto-discovery process is complete, the AP either joins a WLC with configuration from local PnP server, or communicates with the cloud redirection service for direction to target WLC or PnP server.

Product Overview

The Cisco® Aironet® 1815w Series Access Points offer a compact, wall plate-mountable access point, ideal for hospitality, cruise ships, residential halls or other multi-dwelling-unit deployments.

The Aironet 1815w Series combines 802.11ac Wave 2 wireless and Gigabit Ethernet wired connectivity into a sleek device, built to take advantage of existing cabling infrastructure. This combination provides best in class performance while reducing total cost of ownership.

Features and Benefits

By adhering to the 802.11ac Wave 2 standard, the 1815w Series provides a data rate of up to 867 Mbps on the 5-GHz radio. This exceeds the data rates offered by access points that support the 802.11n standard. It also enables a total aggregate dual-radio data rate
of up to 1 Gbps. This allows for the necessary foundation for enterprise and service provider networks to stay ahead of the performance expectations and needs of their wireless users.

Due to its convenience, in recent years corporate users have increasingly preferred wireless access as the form of network connectivity. Along with this shift, there is an expectation that wireless should not slow down users’ day-to-day work, but should enable a high-performance experience while allowing users to move freely. The 1815w Series delivers industry-leading performance for highly secure and reliable wireless connections and provides a robust mobility end-user experience.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>MU-MIMO</td>
<td>Multiuser (MU) multiple-input multiple-output (MU-MIMO) allows transmission of data to multiple 802.11ac Wave 2-capable clients simultaneously to improve the client experience. Prior to MU-MIMO, 802.11n and 802.11ac Wave 1 access points could transmit data to only one client at a time, typically referred to as single-user MIMO (SU-MIMO).</td>
</tr>
<tr>
<td>Gigabit Ethernet ports</td>
<td>Three local Gigabit Ethernet ports are available to securely connect wired devices to the network. Traffic from wired devices can be tunneled back to a wireless LAN controller (for compatible controllers) or be locally switched by the access point. One of these Ethernet ports can also provide Power over Ethernet (PoE) out to power a device such as an IP phone or a security camera.</td>
</tr>
<tr>
<td>Mobility Express Solution</td>
<td>Flexible deployment mode through the Mobility Express Solution is ideal for small to medium-sized deployments that require 25 or fewer access points. Easy setup allows the 1815w Series to be deployed on networks without a physical controller.</td>
</tr>
<tr>
<td>Integrated Bluetooth 4.1</td>
<td>Integrated Bluetooth low-energy (BLE) 4.1 radio for location and asset tracking (future availability).</td>
</tr>
</tbody>
</table>

The Cisco ® Aironet ® 1815W Series Access Points is a compact wall mount 802.11ac Wave 2 Access Point. It targets Multi-Dwelling-Unit (MDU) deployments, such as customers requiring support for Hospitality, university dorm-rooms, cruise ships, residential halls, K-12 classrooms, and healthcare, seeking a high-performance in-room Wireless + Wired Access Device. The Aironet 1815W Series combines Gigabit Ethernet wired and 802.11ac Wave 2 wireless connectivity into a sleek device, built to take advantage of existing cabling infrastructure.

Features include:

- Simultaneous Wired and Wireless Access.
- Dual Radio, Dual Band with 802.11ac Wave 2.
- Designed for ease of mounting to numerous global wall junction standards. Accessories available to mount directly on a wall or have it desk mounted.
- Sleek design in a small form factor: 3.5 x 5.5 x 1.25 in (89 x 140 x 31.5 mm).
- 3 x Local GigE Ethernet Ports + 1 x uplink GigE port + 1 x passive pass-through RJ45.
- Powered over Ethernet (PoE) or with AC Adapter.
• PoE out on LAN 1 port, up to 803.af Class 0 (depending on powering options)

**Part Number and Descriptions**

AIR-AP1810W includes a Wall Mounting bracket (AIR-AP-BRACKET-W2) and has a number of accessory options which are sold separately and can be ordered as spares.

<table>
<thead>
<tr>
<th>SKU</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIR-AP1815W-x-K9</td>
<td>Single Unit; Dual-band, controller-based 802.11a/g/n/ac, Wave 2 Comes with Wall Mounting Bracket</td>
</tr>
<tr>
<td>SKU</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| AIR - AP1815W - x - K9C | Dual-band 802.11a/g/n/ac Wave 2 with default software Mobility Express  
• Regulatory domains: (x = regulatory domain)  
• For Mobility Express, part number AIR-AP1815W-x-K9C offers default software option Mobility Express |
| AIR - AP - BRACKET - 8= | Mounting bracket also available as a spare.                                                                                                  |
| AIR - AP1815W - KIT=  | Spacer Kit: Includes spacer and RJ-45 jumper cable.                                                                                           |
| AIR - BRACKET-W3=    | Mounting bracket also available as a spare.                                                                                                  |

**Note**  
Included with the access point: mounting bracket AIR-AP-BRACKET-W3, compatible to install to single gang junction box or multiple international standards.

**Supported Code Versions Compatible with AIR-AP1815W**

Supported Code versions compatible with AIR-AP1815W:

- WLC AireOS release
- Prime Infrastructure 3.1.3, Device Pack 3
- ISE 2.0 or later
- MSE or CMX10.2.2

**AIR-AP1815W Mechanicals**

The physical size of AIR-AP1810W is slightly bigger than the AIR-AP701W and therefore the mounting bracket has a different form factor than AIR-AP702W.

<table>
<thead>
<tr>
<th>Product ID</th>
<th>Length</th>
<th>Width</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIR-AP1810W-xK9</td>
<td>5.5&quot;</td>
<td>3.5&quot;</td>
<td>1.25&quot;</td>
</tr>
</tbody>
</table>
You cannot use the AIR-AP701W mounting bracket on AIR-AP1815W. However, the holes on the AIR-1815W mounting bracket match the ones on the AIR-AP702W and therefore, there should be no need to drill the new holes to mount the AIR-AP1815W Access Point.

### Software Features
AIR-AP1815W delivers a wide range of features.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data DTLS can be enabled on 1815w. Default is disabled</td>
<td>CDP runs first to negotiate power with switch. If it fails, then LLDP runs to negotiate power 1815w</td>
</tr>
<tr>
<td>CDP and LLDP on LAN1 (PSE)</td>
<td>No CDP, LLDP support on LAN1(PSE) and is fixed power on LAN1 PSE port (not negotiable)</td>
</tr>
<tr>
<td>Feature</td>
<td>Benefit</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Authentication and Security                  | • Advanced Encryption Standard (AES) for Wi-Fi Protected Access 2 (WPA2).
|                                              | • 802.1X, RADIUS authentication, authorization and accounting (AAA) on WLAN and RLAN.
|                                              | • 802.11i                                                                |
| MAC Filtering                                | —                                                                        |
| Dynamic VLAN Assignment                      | —                                                                        |
| FlexConnect Local Switching                  | Supported on both WLAN and RLAN                                          |
| WebAuth Support                              | Guest Access on Wireless and Wired ports                                 |
| Cisco Mobility Express                       | 25 Access Points, 500 Clients                                           |

## Ports and Interfaces on the AIR-AP1815W

The following ports and interfaces are present on AIR-AP1815W:

- One 10/100/1000BASE-T PoE uplink port
- Three 10/100/1000BASE-T ports (local Ethernetports), including one PoE out port
- When AP is powered by 802.3at, the PSE-LAN1 Port can provide 802.3af (15.4W out) One passive pass-through port RJ-45 (back to bottom)
Figure 2: AIR-AP1815W Ports and Interfaces

Table 1: Cisco Aironet® Access Point 1810W(Wall Plate) Ports

<table>
<thead>
<tr>
<th>Port/Interface on AIR-AP1810W</th>
<th>Port as Noted in Figure</th>
<th>Port/Interface as shown on AIR-AP1810W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connectivity to the AP</td>
<td>1</td>
<td>POE</td>
</tr>
<tr>
<td>Pass Through (Back of AP)</td>
<td>2</td>
<td>Pass Through (Back of AP)</td>
</tr>
<tr>
<td>Passive Pass Through</td>
<td>3</td>
<td>Pass Through</td>
</tr>
<tr>
<td>LAN - 3</td>
<td>4</td>
<td>LAN-3</td>
</tr>
<tr>
<td>LAN - 2</td>
<td>5</td>
<td>LAN-2</td>
</tr>
<tr>
<td>PSE-LAN - 1</td>
<td>6</td>
<td>PSE LAN 1</td>
</tr>
</tbody>
</table>

Understanding Passive Pass Through Port on the AIR-AP1815W

If there are two cables in the wall jack, one for providing connectivity to the Access Point and a second one for some other purpose and it needs to be guided out from behind the Access Point, Passive Pass-Thru port on the AIR-AP1815W can be used for this purpose.

- DC power connector
The additional cable can be inserted to Pass Thru port at the back of the Access Point and can be guided out from the Pass Thru port on the bottom of the Access Point.

*Figure 3: AIR-AP1815W Pass Thru Port implementation*

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**Physical Hardware and Mounting Options**

**Access Point Physical Hardware and Mounting Options**

AIR-AP1815W has a slightly bigger form factor when compared to the AIR-AP702W. If you are replacing an existing AIR-AP702W with the AIR-AP1815W, you are required to use the wall mount bracket which is included with the AIR-AP1815W when it is ordered. Even though the AIR-AP1815W is slightly bigger than AIR-AP702W, holes on the bracket line up with the AIR-AP702W so no new holes have to be drilled in existing installations when installing the AIR-AP1815W.

There are a few different installation options available depending upon the requirements of the customer.

The AIR-AP1815W can be directly wall mounted using the Wall Mount bracket or if a space is needed between the wall and the Access Point, the Spacer Kit (AIR-AP1815W-KIT=) can be used for that purpose. Given below are examples how the AIR-AP1815W can be directly mounted and using the Spacer Kit.

**Mounting AIR-AP1815W using AIR-AP-BRACKET-W3=**

To mount the AIR-AP1815W on the junction box, perform the following steps:

**Procedure**

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>Using the screws provided, attach the bracket to the junction box on the wall.</td>
</tr>
<tr>
<td>Step 2</td>
<td>Connect the RJ45 cables as to the Access Point.</td>
</tr>
<tr>
<td>Step 3</td>
<td>Align the Access Point to the Guide and move it into the Wall Mount and then push it down so that the Access Point fits into the Holding Bracket.</td>
</tr>
<tr>
<td>Step 4</td>
<td>Install the Torx screw and cover it with the tape provided.</td>
</tr>
</tbody>
</table>
AIR-AP1815W Powering Options

AIR-AP1810W can be powered using multiple options as mentioned below:

- 802.3af/at Ethernet switch
- Optional Cisco power injectors (AIR-PWRINJ5=, AIR-PWRINJ6=)

**Note**

It is important to note that PoE out on PSE LAN1 port has dependency on the Powering options selected for the AIR-AP1815W. The table below show PoE out capabilities on PSE LAN1 for the various powering options.

<table>
<thead>
<tr>
<th>1815W Model</th>
<th>Power Source</th>
<th>Power Type</th>
<th>PoE Budget(W)</th>
<th>2.4GHz Radio</th>
<th>5GHz Radio</th>
<th>USB 2.0</th>
<th>PSE LAN1 PoE Out</th>
</tr>
</thead>
<tbody>
<tr>
<td>1815W</td>
<td>802.3af / AIR-PWRINJ5=</td>
<td>PoE</td>
<td>8.5W</td>
<td>2x2:2</td>
<td>2x2:2</td>
<td>n/a</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>802.3at / AIR-PWRINJ6=</td>
<td>PoE</td>
<td>24.5W</td>
<td>2x2:2</td>
<td>2x2:2</td>
<td>n/a</td>
<td>Class 0 (15.4W)</td>
</tr>
</tbody>
</table>
Antenna Patterns on AIR-AP1815W

The AIR-AP1815W Access Point has antennas located on the edges of the AP, the user should take care not to place the Access Point in areas near metal objects or the signal may become directional. The antenna gain is approximately 2 dBi in both bands and designed to radiate in a 360 degree pattern think "beach ball" like pattern, similar to a light bulb (without a lamp shade). Think of the Access Point as a lamp and try to place it in close proximity to the users.
Metal objects obstruct the signal much like the lampshade analogy, you can experience degraded throughput or range if the signal must penetrate or go through solid objects. If you expect connectivity in say a three story home, avoid placing the AP in the basement and try to mount the Access Point in a central location within the home.

*Figure 4: AIR-AP1815W access point with antennas*

*Figure 5: 2.4 GHz Normalized antenna radiation pattern for both ANT1 and ANT2*
Configuring AIR-AP1815W

AIR-AP1815W supports both Local mode as well as FlexConnect mode. When AIR-AP1815W is in FlexConnect mode, one can enable FlexConnect Local switching for both WLAN and RLAN. In addition, one can specify the VLAN for local switching when FlexConnect local switching is enabled on the RLAN.

There is no change to the WLAN configuration and is the same as before. Since AIR-AP1810W supports FlexConnect local switching, there are changes to the RLAN configuration which are outlined in this chapter.

Note

RLANs are associated with Ethernet LAN ports for Wired access similar to how WLANs are associated with Radios for Wireless access.

In this chapter we will configure WLAN for Central Switching and RLAN for local switching using 802.1x authentication and associate them to Ethernet LAN ports on the AIR-AP1810W for Wired Access. The following are the tasks which we will configure:

• Enabling FlexConnect Mode on AIR-AP1815W
• Configuring Native VLAN on the AIR-AP1815W Access Point
• Creating WLAN (Centrally Switched) with WPA2-PSK
• Creating RLAN (Locally Switched) with 802.1x
• Creating AP Group
• Associating AIR-AP1815W with AP Group
• Associating WLANs, RLANs with AP Group
• Associating RLANs to Ethernet LAN ports on AP Group

Enabling FlexConnect Mode on AIR-AP1815W

Procedure

Step 1  On the WLC UI, Navigate to Wireless > Access Points > All APs.
Step 2  Go to the AIR-AP1810W Access Point and change the AP Mode to FlexConnect. Click Apply.
Configuring Native VLAN on the AIR-AP1815W Access Point

Procedure

**Step 1**  On the WLC User Interface, Navigate to Wireless > Access Points > All APs. Select the AIR-AP1815W Access and go to the FlexConnect Tab

**Step 2**  Enable VLAN Support checkbox and enter the Native VLAN ID.

**Step 3**  Click Apply.

---

Creating WLAN (Centrally Switched) with WPA2-PSK

Procedure

**Step 1**  On the WLC User Interface, navigate to WLANs. Select Create New and click Go.

**Step 2**  From the Type drop down list, select WLAN. Enter the Profile Name and SSID and click Apply.

**Step 3**  From the General tab, enable the WLAN by clicking the Enabled checkbox.
Step 4  From the Security tab, Select WPA+WPA2 from Layer 2 Security drop-down list.

Step 5  Scroll down and click the PSK checkbox. Enter the Pass Phrase as shown below and click the Apply button.

Creating RLAN(Locally Switched) with 802.1x

Procedure

Step 1  On the WLC user interface, navigate to WLANs. Select Create New and click the Go button as shown.
Step 2  From the Type drop-down list, select Remote LAN. Enter the Profile Name and click the Apply button.

Step 3  From the General tab, enable the RLAN by clicking on the Enabled checkbox.

Step 4  From the Security tab, select 802.1x from Layer 2 Security under Layer sub tab. Disable MAC Filtering if it is not required.

Step 5  Go to AAA Servers sub tab and under the Security tab. Select the RADIUS servers as shown and click Apply.
For RADIUS server to show up in the drop down list for Server 1, you must have configured RADIUS servers on the WLC. Configuring RADIUS server on WLC is not shown as part of this configuration.

**Step 6**
Go to Advanced sub tab and enable FlexConnect Local Switching. Enter the VLAN for local switching configured on the switch. Click Apply.

---

**Creating AP Group**

**Procedure**

**Step 1**
On the WLC user guide, navigate to WLANs > Advanced > AP Groups. Click Add Group.

**Step 2**
Enter the AP Group Name and Description. Click Add.
Associating WLANs and RLANs to the AP Group

Procedure

**Step 1**  Navigate to **AP Group** and click the created AP Group.

**Step 2**  Go to the **WLANs** tab and click on **Add New** button. Select the WLAN from the **WLAN SSID** drop-down list. Click the **Add** button to associate the WLAN to the AP Group. Repeat step 2 to associate RLAN to the AP Group.
**Associating AIR-AP1815W to the AP Group**

**Procedure**

**Step 1** Navigate to AP Group and click the AP Group created above.

**Step 2** Go to the APs tab. Under the Add APs to the Group, APs with their MAC will be available. Select the AP to be added and click the Add APs to add the AP to the AP Group.

**Note** Step 2 above will reboot AIR-AP1815W and after it comes up, it will join the AP Group.

**Step 3** After the AIR-AP1815W comes up, it will be shown under the APs currently in the Group section.

---

**Associating RLAN to Ethernet LAN ports on AP Group**

**Procedure**

**Step 1** Navigate to the AP Group and click on the AP Group created above.
Step 2  Go to the Ports/Module tab. To enable the LAN ports, select the Enable check box for the applicable LAN ports. If POE has to be enabled on LAN1, select the POE check box. To associate RLAN to the LAN ports, select RLAN under the RLAN drop-down list for each of the LAN ports.

Note  Different RLANs can be applied to individual LAN ports.

Step 3  Click Apply.

Over-riding AP Group Ethernet LAN Port Settings

One can configure Ethernet LAN ports settings on the AP group and these would apply to all the AIR-AP1815W Access Points. To override this setting at individual AP level, follow the below steps:

Procedure

Step 1  On the WLC user interface, navigate to Wireless > Access Points > All APs. Select the AIR-AP1815W Access and go to the Interfaces.

Step 2  Click LAN Override. You can Enable/Disable LAN ports and POE for LAN1. Click Apply.

Note  Overriding LAN port settings will only apply to this AP and not the remaining APs in the AP Group. Overriding of RLAN is not supported at AP level.
Configuring AIR-AP1815W (Wall Plate) to OfficeExtend AP

To configure the AIR-AP1810W to operate as an AIR-OEAP1810 on the Wireless LAN Controller UI, follow the below steps:

Procedure

**Step 1**  
Join the AIR-AP1815W Access Point to the WLC. If you have already assembled the Access Point, connect the Access Point to network via the port marked WAN on the back of the cradle so that it can join the WLC.

**Step 2**  
On the WLC user interface, navigate to Wireless > Access Points > All APs.

**Step 3**  
Click on the AIR-1815W (identify using the MAC) that you wish to configure to operate as an OfficeExtend AP.

**Step 4**  
From the General tab, configure the AP Mode to FlexConnect. Click Apply. The AP will reboot. Wait for AP to come back up.
Step 5  After the AP is back up again, click the High Availability tab. Enter the Primary Controller Name and Management IP Address of the controller.

Step 6  From the FlexConnect tab, select the Enable OfficeExtend AP. Click OK to enable encryption.
**Step 7**  
Click OK to disable Rogue Detection.

**Step 8**  
From the Advanced tab, verify that the Data Encryption is checked and Rogue Detection is un-checked. Click Apply and then click OK.
The Access Point will reboot and after reboot, it will operate as an OfficeExtend Access Point.

**Step 9** Verify that the AIR-AP1815W is operating as an OfficeExtend Access Point, open the Web Browser and enter the IP address of the Access Point. Login to the access point Administration page using the default credentials (admin/admin).
Frequently Asked Questions (FAQs)

Q: What is the minimum AireOS version needed to support AIR-AP1815W?

Q: Does the AIR-AP1815W support OfficeExtend Access Point mode?
A: Yes, AIR-AP1815W can be configured to support OfficeExtend mode.

Q: What AP modes does the AIR-AP1815W support?
A: AIR-AP1815W supports, Local, FlexConnect and Sniffer mode.

Q: Does AIR-AP1815W has the same dimensions as the AIR-AP702W?
A: AIR-AP1815W has slightly smaller dimension than AIR-AP702W.

Q: How many radios does AIR-AP1815W support?
A: AIR-AP1810W is 802.11ac Wave 2 Access Point and supports dual radio 2x 2.4GHz and 2x 5GHz.

Q: Does the AIR-AP1810W support Flexible Radio Architecture?
A: AIR-AP1815W does not support Flexible Radio Architecture. It has 2.4/5GHz radios.

Q: How many spatial streams does the AIR-AP1815W support?
A: AIR-AP1815W supports 2 spatial streams.

Q: Does the 1815 support MU-MIMO? If yes, how many concurrent MU-MIMO clients does it support?
A: It support MU-MIMO with 2 concurrent Single Stream clients.

Q: Does the AIR-AP1815W support CleanAir?
A: AIR-AP1815W does not support CleanAir.

Q: How many ports Wired Ethernet LAN ports are simultaneously active?
A: All three Wired Ethernet LAN ports can be active on the AIR-AP1815W.

Q: Is there an option to turn off the LED on AIR-AP1815W?
A: Yes. LED on AIR-P1815w will be turned off when the AP joins the WLC.

Q: Is Dynamic VLANs supported on RLAN ports via 802.1X?
A: Yes, Dynamic VLAN is supported on RLANs.

Q: Is WGB supported on AIR-AP1815W?
A: Not at this time but possibly in a future release.

Q: How many AIR-AP1815W needs to be deployed in hotel rooms?
A: Ideal deployment is 1 AP per room. Covering multiple rooms will depend on WiFi propagation in that particular building.

Q: Is there a Kensington lock slot on the AIR-AP18105W?
A: Yes, there is a Kensington lock slot.

Q: Does AIR-AP1815w have AC Adapter for customers without PoE?
A: No, this Access Point requires PoE to function.
<table>
<thead>
<tr>
<th>Americas Headquarters</th>
<th>Asia Pacific Headquarters</th>
<th>Europe Headquarters</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Jose, CA 95134-1706 USA</td>
<td>Singapore</td>
<td>Amsterdam, The Netherlands</td>
</tr>
</tbody>
</table>

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