Dell PowerConnect W-AP68 Access Point

Installation Guide

About the Dell W-AP68

The Dell W-AP68 are single-radio, single-band wireless access points that support the IEEE 802.11n standard for high-performance WLAN. These access points deliver high-performance, 802.11n 2.4 GHz functionality while simultaneously supporting existing 802.11b/g wireless services. The W-AP68 access point works only in conjunction with a Dell Controller.

The Dell W-AP68 access point provides the following capabilities:

- Wireless transceiver
- Protocol-independent networking functionality
- IEEE 802.11b/g/n operation as a wireless access point
- IEEE 802.11b/g/n operation as a wireless air monitor
- Compatibility with IEEE 802.3af PoE
- Central management configuration and upgrades through an Dell Controller

NOTE: The Dell W-AP68 requires ArubaOS 6.0 or later.
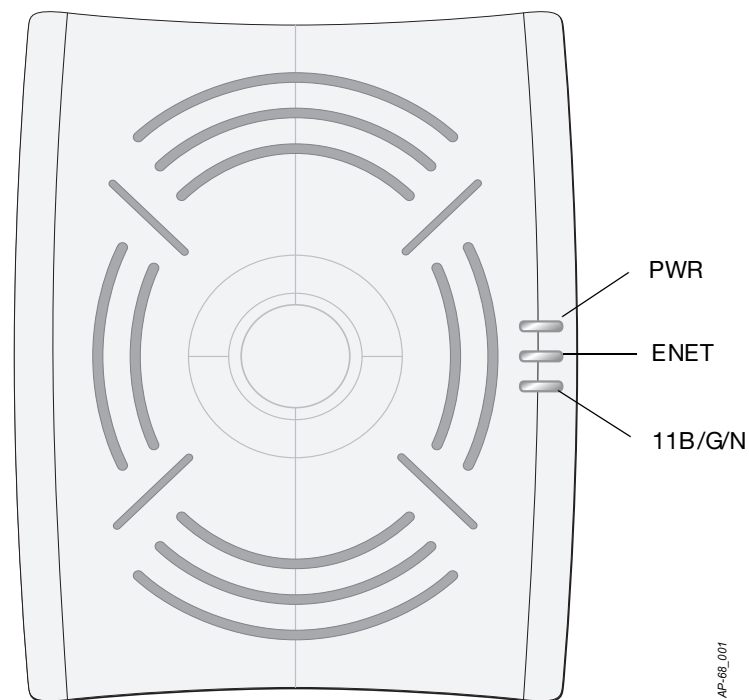
Package Contents

- W-AP68 access point
- Installation Guide
- 9/16-inch Ceiling Rail Adapter
- 15/16-inch Ceiling Rail Adapter
- Ceiling Rail Adapter Installation Guide
- 4x Rubber Feet

NOTE: Inform your supplier if there are any incorrect, missing, or damaged parts. If possible, retain the carton, including the original packing materials. Use these materials to repack and return the unit to the supplier if needed.

W-AP68 Hardware Overview

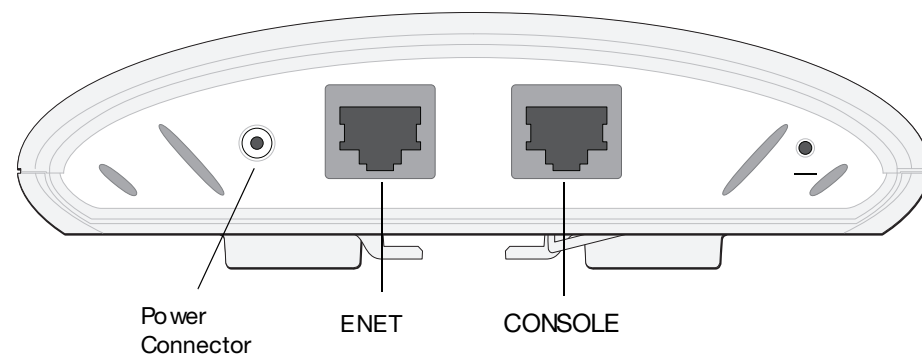**Figure 1** *Front*

LEDs

- PWR: Indicates whether or not the W-AP68 is powered-on
- ENET: Indicates the status of the W-AP68's Ethernet port
- 11B/G/N: Indicates the status of the 802.11b/g/n radio

For information about the W-AP68's LED behavior, see Table 1.

Figure 2 *Rear*

Figure 3 *Bottom*

Console Port

Use the console port to connect to a terminal for direct local management.

Ethernet Port

The W-AP68 is equipped with a single 10/100Base-T (RJ-45) auto-sensing, MDI/MDX wired-network connectivity port. This port supports IEEE 802.3af Power over Ethernet (PoE) compliance, accepting 48VDC as a standard defined Powered Device (PD) from a Power Sourcing Equipment (PSE) such as a PoE midspan injector, or network infrastructure that supports PoE.

DC Power Socket

If PoE is not available, an optional Dell 12V AP AC-DC adapter kit (sold separately) can be used to power the W-AP68.

Before You Begin

⚠ *CAUTION: FCC Statement: Improper termination of access points installed in the United States configured to non-US model controllers will be in violation of the FCC grant of equipment authorization. Any such willful or intentional violation may result in a requirement by the FCC for immediate termination of operation and may be subject to forfeiture (47 CFR 1.80).*

⚠ *CAUTION: EU Statement:*

Lower power radio LAN product operating in 2.4 GHz band. Please refer to the ArubaOS User Guide for details on restrictions.

Produit réseau local radio basse puissance operant dans la bande fréquence 2.4 GHz. Merci de vous referrer au ArubaOS User Guide pour les details des restrictions.

Low Power FunkLAN Produkt, das im 2.4 GHz Band arbeitet. Weitere Informationen bezlüglich Einschränkungen finden Sie im ArubaOS User Guide.

Apparati Radio LAN a bassa Potenza, operanti a 2.4 GHz. Fare riferimento alla ArubaOS User Guide per avere informazioni detagliate sulle restrizioni.

Pre-Installation Network Requirements

After WLAN planning is complete and the appropriate products and their placement have been determined, the Dell controller(s) must be installed and initial setup performed before the Dell APs are deployed.

For initial setup of the controller, refer to the *ArubaOS Quick Start Guide* for the software version installed on your controller.

AP Pre-Installation Checklist

Before installing your W-AP68 access point, be sure that you have the following:

- CAT5 UTP cable of required length
- One of the following power sources:
  - IEEE 802.3af-compliant Power over Ethernet (PoE) source
  - Dell AP AC-DC adapter kit (sold separately)
- Dell Controller provisioned on the network:
  - Layer 2/3 network connectivity to your access point

One of the following network services:

- Dell Discovery Protocol (ADP)
- DNS server with an "A" record
- DHCP Server with vendor-specific options

Summary of the Setup Process

NOTE: It is important that you verify the items listed under AP Pre-Installation Checklist before you attempt to set up and install an W-AP68 access point.

Successful setup of an W-AP68 access point consists of five tasks, which must be performed in this order:

1. Verify pre-installation connectivity.
2. Identify the specific installation location for each AP.
3. Install each AP.
4. Verify post-installation connectivity.
5. Configure each AP.

NOTE: Dell, in compliance with governmental requirements, has designed the W-AP68 access points so that only authorized network administrators can change the settings. For more information about AP configuration, refer to the ArubaOS Quick Start Guide and ArubaOS User Guide.

⚠ *CAUTION: Access points are radio transmission devices and as such are subject to governmental regulation. Network administrators responsible for the configuration and operation of access points must comply with local broadcast regulations. Specifically, access points must use channel assignments appropriate to the location in which the access point will be used.*

Verifying Pre-Installation Connectivity

Before you install APs in a network environment, make sure that the APs are able to locate and connect to the controller after power on. Specifically, you must verify the following conditions:

- When connected to the network, each AP is assigned a valid IP address
- APs are able to locate the controller

Refer to the *ArubaOS Quick Start* Guide for instructions on locating and connecting to the controller.

Identifying Specific Installation Locations

You can mount the W-AP68 access point on a wall or on the ceiling. Use the AP placement map generated by Dell's RF Plan software application to determine the proper installation location(s). Each location should be as close as possible to the center of the intended coverage area and should be free from obstructions or obvious sources of interference. These RF absorbers/reflectors/interference sources will impact RF propagation and should have been accounted for during the planning phase and adjusted for in RF plan.

Identifying Known RF Absorbers/Reflectors/Interference Sources

Identifying known RF absorbers, reflectors, and interference sources while in the field during the installation phase is critical. Make sure that these sources are taken into consideration when you attach an AP to its fixed location.

RF absorbers include:

- Cement/concrete—Old concrete has high levels of water dissipation, which dries out the concrete, allowing for potential RF propagation. New concrete has high levels of water concentration within the concrete, blocking RF signals.
- Natural Items—Fish tanks, water fountains, ponds, and trees

---

- Brick

RF reflectors include:

- Metal Objects—Metal pans between floors, rebar, fire doors, air conditioning/heating ducts, mesh windows, blinds, chain link fences (depending on aperture size), refrigerators, racks, shelves, and filing cabinets.
- Do not place an AP between two air conditioning/heating ducts. Make sure that APs are placed below ducts to avoid RF disturbances.

RF interference sources include:

- Microwave ovens and other 2.4 or 5 GHz objects (such as cordless phones)
- Cordless headset such as those used in call centers or lunch rooms
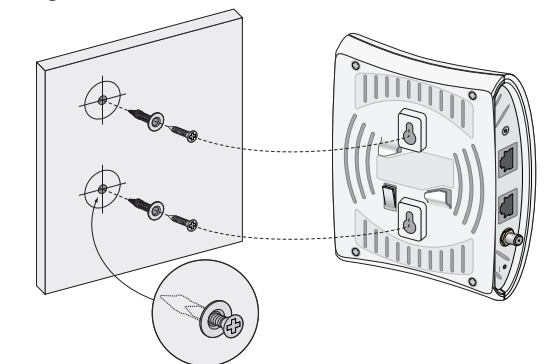
Installing the AP

NOTE: Service to all Dell Networks products should be performed by trained service personnel only.

Using the Integrated Wall-Mounting Slots

The keyhole-shaped slots on the back of the AP can be used to attach the device upright to an indoor wall or shelf. When you choose the mounting location, allow additional space at the right of the unit for cables.

1. At the mounting location, install two screw on the wall or shelf, 2.1 inches (5.3 cm) apart. If you are attaching the device to drywall, Dell recommends using appropriate wall anchors (not included).
2. Align the mounting slots on the rear of the AP over the screws and slide the unit into place.

Figure 4 *Mounting W-AP68 on a Wall*
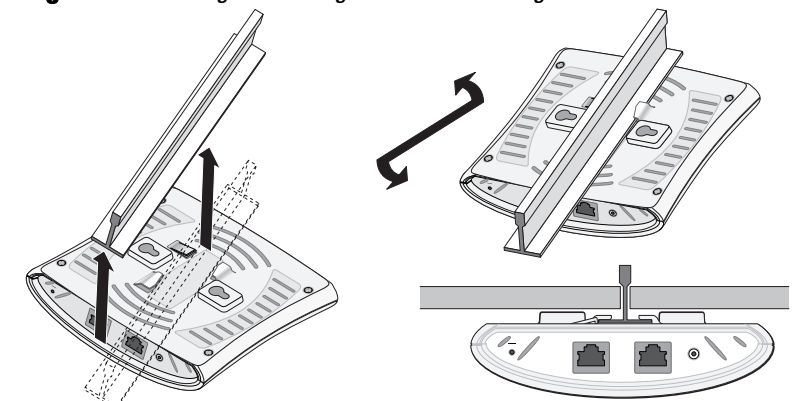

Using the Integrated Ceiling Tile Rail Slots

The snap-in tile rail slots on the rear of the AP can be used to securely attach the device directly to a 15/16" wide, standard ceiling tile rail.

⚠ *CAUTION: Make sure the AP fits securely on the ceiling tile rail when hanging the device from the ceiling; poor installation could cause it to fall onto people or equipment.*

1. Pull the necessary cables through a prepared hole in the ceiling tile near where the AP will be placed.
2. If necessary, connect the console cable to the console port on the bottom of the AP.
3. Hold the AP next to the ceiling tile rail with the ceiling tile rail mounting slots at approximately a 30-degree angle to the ceiling tile rail (see Figure 5). Make sure that any cable slack is above the ceiling tile.
4. Rotate the AP clockwise until the device clicks into place on the tile rail.

Figure 5 *Orienting the Ceiling Tile Rail Mounting Slots*
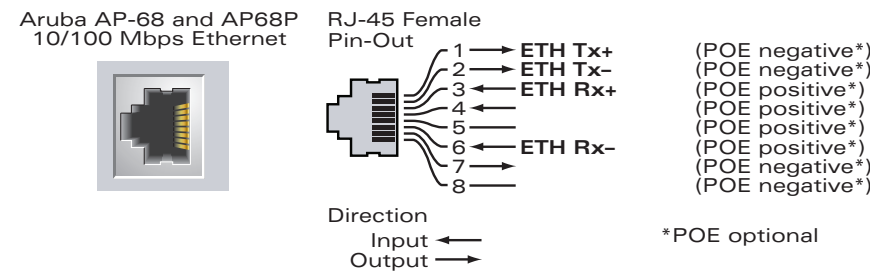

Rubber Feet Installation

If you are installing your W-AP68 on a flat surface (such as a desk), you must install the included rubber feet. Install these by inserting one foot into each of the four holes at each corner on the bottom of the AP.

Ethernet Ports

The RJ45 Ethernet port (ENET) supports 10/100Base-T auto-sensing MDI/MDX connections. Use these ports to connect the AP to a twisted pair Ethernet LAN segment or directly to an Dell Controller. Use a 4- or 8-conductor, Category 5 UTP cable up to 100 m (325 feet) long.

The 10/100 Mbps Ethernet port is on the back of the AP. The port has an RJ-45 female connector with the pin-outs shown in .

Figure 6 *Fast Ethernet Port Pin-Out*

Aruba AP-68 and AP68P
10/100 Mbps Ethernet

RJ-45 Female Pin-Out

1 — ETH Tx+ (POE negative*)
2 — ETH Tx– (POE negative*)
3 — ETH Rx+ (POE positive*)
4 (POE positive*)
5 (POE positive*)
6 — ETH Rx– (POE positive*)
7 (POE negative*)
8 (POE negative*)

Direction
Input
Output

*POE optional

Serial Console Port

The serial console port (Console) allows you to connect the AP to a serial terminal or a laptop for direct local management. This port is an RJ-45 female connector with the pinouts described in Figure 7. Connect this port directly to a terminal or terminal server using an Ethernet cable.

Use a modular adapter to convert the RJ-45 (female) connector on the AP to a DB-9 (male) connector, and connect the adapter to a laptop using an RS-232 cable. See Figure 8 for connector details of the adapter.
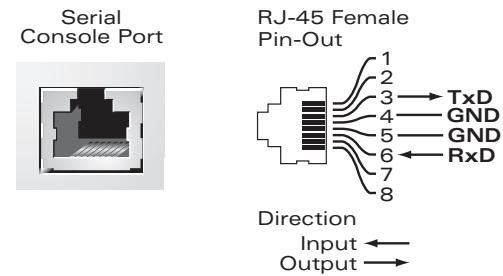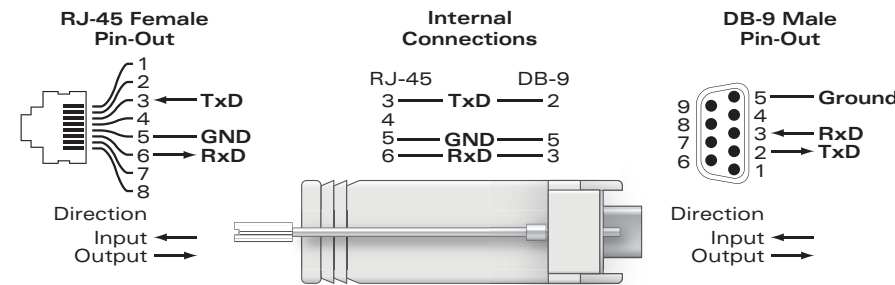
Figure 7 *Serial Port Pin-Out*

Serial Console Port

RJ-45 Female Pin-Out

1
2
3 — TxD
4 — GND
5 — GND
6 — RxD
7
8

Direction
Input
Output

Figure 8 *RJ-45 (Female) to DB-9 (Male) Modular Adapter Conversion*

RJ-45 Female Pin-Out
1
2
3 — TxD
4
5 — GND
6 — RxD
7
8

Internal Connections
RJ-45   DB-9
3 — TxD — 2
4
5 — GND — 5
6 — RxD — 3

DB-9 Male Pin-Out
9
8
7
6
5 — Ground
4
3 — RxD
2 — TxD
1

Direction
Input
Output

Power Connection

The W-AP68 has a single 12V DC power jack socket to support powering through an AC-to-DC power adapter.

NOTE: If both POE and DC power are available, the AP uses POE even when there is not enough POE voltage available to power the AP.

Verifying Post-Installation Connectivity

.The integrated LEDs on the AP can be used to verify that the AP is receiving power and initializing successfully (see Table 1). Refer to the *ArubaOS Quick Start Guide* for further details on verifying post-installation network connectivity

LED	Color/State	Meaning
PWR	Off	No power to AP
	Green flashing	Device booting, not ready
	Red steady	Initial power-up condition
	Green steady	Power on, device ready
ENET (10/100 Mbps)	Off	No link
	Green on	10/100 Mbps link
	Green flashing	Ethernet link activity
11B/G/N	Off	2.4 GHz radio disabled
	Amber	2.4 GHz radio enabled in WLAN mode
	Green	2.4 GHz radio enabled in 11n mode
	Green flashing	2.4 GHz Air Monitor

Configuring the W-AP68

AP Provisioning/Reprovisioning

Provisioning parameters are unique to each AP. These local AP parameters are initially configured on the controller which are then pushed out to the AP and stored on the AP itself. Dell recommends that provisioning settings be configured via the ArubaOS Web UI only. Refer to the *ArubaOS User Guide* for complete details.

AP Configuration

Configuration parameters are network or controller specific and are configured and stored on the controller. Network configuration settings are pushed out to the AP(s) but remain stored on the controller.

Configuration settings can be configured via the ArubaOS Web UI, ArubaOS CLI, or Dell MMS. Refer to their respective guides for further details: the *ArubaOS User Guide* or *Dell Mobility Management System User Guide*.

Product Specifications

Mechanical

- Dimensions (HxWxD):
  - 5.5 inches x 4.1 inches x 1.5 inches
  - 14.0 cm x 10.5 cm x 3.8 cm
- Weight: 145g/5.1 oz.
- Operating Temperature: 0ºC to 40ºC (32ºF to 104ºF)
- Storage Temperature: −10ºC to 70ºC (14ºF to 158ºF)
- Relative Humidity: 5% to 95% non-condensing
- Altitude: 3,000 m
- Mounting: Wall or ceiling
- Visual Status Indicators (LEDs): See Table 1

Electrical

- Ethernet:
  - 1 x 10/100Base-T auto-sensing Ethernet RJ-45 Interfaces
  - MDI/MDX
  - IEEE 802.3 (10Base-T), IEEE 802.3u (100Base-T)
  - Power over Ethernet (IEEE 802.3af compliant), 48V DC/350mA (see Figure 6 for pin configuration)
- Power: 12 VDC power interface, supports powering through an AC-to-DC power adapter

NOTE: If a power adapter other than the one provided by Dell Networks is used in the US or Canada, it should be NRTL Listed, with an output rated 12 VDC, minimum 1.25A, marked "LPS" or "Class 2," and suitable for plugging into a standard power receptacle in the US and Canada.

Wireless LAN

- Network Standards: IEEE 802.11b, IEEE 802.11g, and IEEE 802.11n
- Antenna Type:2x 802.11b/g/n, internal
- Antenna Gain: 2.4 – 2.5 GHz/3 dBi (max)
- Radio Technology
  - Orthogonal Frequency Division Multiplexing (OFDM)
  - Direct Sequence Spread Spectrum (DSSS)
- Radio Modulation Type:
  - 802.11b - CCK, BPSK, QPSK
  - 802.11g - CCK, BPSK, QPSK,16-QAM, 64-QAM
  - 802.11n draft 2.0
- Media Access Control: CSMA/CA with ACK
- Supported Frequency Bands 2.4GHz:
  - 2.400 ~ 2.4835GHz (Global), channels country specific
- Data Rates:
  - 802.11b - 1, 2, 5.5, 11 Mbps per channel
  - 802.11g - 6, 9, 12, 18, 24, 36, 48 and 54 Mbps per channel
  - 802.11n - Data rate MCS0 – MCS7 (from 6.5 Mbps to 150 Mbps)

Proper Disposal of Dell Equipment

For the most current information about Global Environmental Compliance and Dell products, see our website at dell.com.

European Union RoHS

Dell products also comply with the EU Restriction of Hazardous Substances Directive 2002/95/EC (RoHS). EU RoHS restricts the use of specific hazardous materials in the manufacture of electrical and electronic equipment. Specifically, restricted materials

under the RoHS Directive are Lead (including Solder used in printed circuit assemblies), Cadmium, Mercury, Hexavalent Chromium, and Bromine. Some Dell products are subject to the exemptions listed in RoHS Directive Annex 7 (Lead in solder used in printed circuit assemblies). Products and packaging will be marked with the "RoHS" label shown at the left indicating conformance to this Directive.

Safety and Regulatory Compliance

Dell Networks provides a multi-language document that contains country-specific restrictions and additional safety and regulatory information for all Dell access points. This document can be viewed or downloaded from the following location:
support.dell.com/manuals

⚠ **CAUTION:** RF Radiation Exposure Statement: This equipment complies with FCC RF radiation exposure limits. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body for 2.4 GHz operations. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC and Industry Canada Statement

This device has been tested and found to comply with the limits for a Class B digital device, persuant to Part 15 of the FCC Rules and Canadian ICES-003.

Products available in USA and Canada, only channels 1 through 11 can be used. Do not operate such products on any other channels.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC and ICES-003 Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Cet appareil numérique de la classe B est conforme á la norme NMB-003 du Canada.

Contents subject to change without notice. You can download the latest Installation Guide in multiple languages at **support.dell.com/manuals**.

Dell PowerConnect W-AP68 Access Point

Installation Guide

Support Information

Web Site Support	
Main Website	Dell.com
Support Website	support.Dell.com
Dell Documentation	support.dell.com/manuals