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HP 560 Wireless 802.11ac Access Point Quickstart

This Quickstart shows you how to install and get started using the HP 560 Dual Radio 802.11ac Access Point, hereafter referred to as the AP. The latest HP documentation is available at www.hp.com/support/manuals.

Important: Operating this AP in requires these minimum software versions: HP MSM7xx, V5.5.2; HP 20G Unified Wired-WLAN Module in an HP 7500, CMW520-R6708 or in an HP 10500 CMW520-R1208; HP 830, CMW520-B3308P18; HP WX5002/4, CMW520-R2308P18-EI.

Hardware overview

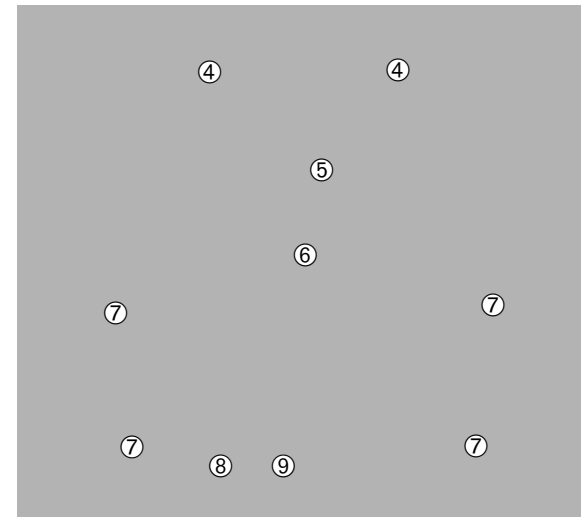


Front view

- 1: Status LEDs (left to right) Power/System OK, Ethernet, Radio 1, Radio 2
- 2: Cable lock hole
- 3: Retention screw hole

Model Numbers

HP 560: J9846A (WW), J9845A (AM), J9847A (JP), J9848A (IL)



Back view

- 1: Reset button
- 2: Cable channel
- 3: AP Bracket tab slot
- 4: Console port
- 5: Ethernet port

Package contents

The AP, AP Bracket, Padlock Bracket, two sets of AP Bracket T-bar clips with screws, two mounting screws with wall anchors, retention screw (4-40x1/4"), Adapter Bracket, and documentation.

Ports

- **Ethernet port:** Auto-sensing 10/100/1000 BaseT Ethernet port with RJ-45 connector. The port supports PoE (Power over Ethernet) 802.3af and 802.3at.
- **Console port:** Standard console (serial) port with RJ-45 connector. See *Console Ports* in the *HP 5xx Access Point Configuration Guide*, available online. There is no need to use the Console port for initial configuration.

Caution: Never connect the Console port to an Ethernet switch or PoE power source. This can damage the AP. Connect it only to other serial ports using an RJ-45 to Serial Port adapter.

Radios and antennas

The AP features two radios: A 5 GHz 802.11n/a/ac on Radio 1 and a 2.4/5 GHz 802.11n/a/b/g on Radio 2. For maximum performance, the AP supports 3x3 MIMO three-stream 802.11n and contains two 3-element, dual-band, MIMO antennas.

Reset button

The Reset button is accessible via a hole on the bottom of the AP. To reset the AP, insert a paper clip into the Reset button hole, and press and quickly release the button. To reset the AP to factory defaults, press and hold the button until the status LEDs blink three times, and then release.

Important information to read before installing

Warning: Professional installation is required. For indoor installation only. Before installing or using the AP, consult with a professional installer trained in RF installation and knowledgeable in local regulations including building and wiring codes, safety, channel, power, indoor/outdoor restrictions, and license requirements for the intended country. The end user is responsible for ensuring that installation and use comply with local safety and radio regulations.

Cabling: You must use supported Cat 5e (or better) cables, and where applicable, surge protection, for your region.

Plenum installation: The AP can be installed in a plenum. The AP is suitable for use in environmental air space in accordance with Section 300-22(C) of the National Electrical Code, and Sections 2-128, 12-010(3) and 12-100 of the Canadian Electrical Code, Part 1, CSA C22.1. It should be installed in a similar orientation as in a ceiling installation. However, a qualified installer can determine how to install/secure the AP in a plenum in an appropriate and safe manner. Plenum-rated cables and attachment hardware must be used.

Country of use: In some regions, you are prompted to select the country of use during setup. After the country has been set, the AP automatically limits the available wireless channels, ensuring compliant operation in the selected country. Entering the incorrect country can result in illegal operation and can cause harmful interference to other systems.

Safety: Consider the following safety information during installation:

- If your network covers an area served by more than one power distribution system, ensure that all safety grounds are securely interconnected.
- Network cables can occasionally be subject to hazardous transient voltages (caused by lightning or disturbances in the electrical power grid).
- Handle exposed metal components of the network with caution.
- The AP is powered on when connected to a PoE power source.
- The AP and all interconnected equipment must be installed indoors within the same building (except for outdoor antennas), including all PoE-powered network connections, as described by Environment A of the IEEE 802.3af standard.

Powering the AP

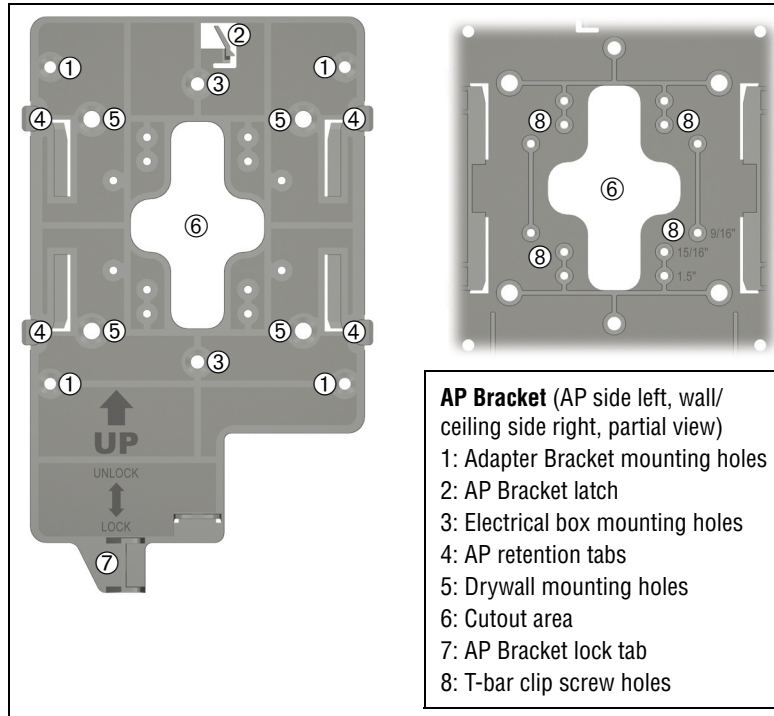
The AP can be powered by:

- A 10/100 or 10/100/1000 PoE-enabled switch. Various PoE-enabled switches are available from HP.
- An HP 1-Port Power Injector (J9407B).

Caution: If the AP will be powered by a user-supplied PoE power injector, use only a gigabit-compatible power injector. Although 10/100 PoE-enabled switches are compatible, PoE injectors designed for 10/100 networks only are not compatible with the AP.

Installation

The AP can be mounted on a wall, a wall-mounted electrical box, or a suspended ceiling. The AP Bracket is mounted first and then the AP is attached to the bracket. The AP Bracket is two-sided: The AP is installed on the side with the UP arrow. The other side with the T-bar clip screw holes faces the wall or T-bar.



Mounting directly on a wall

1. Hold the AP bracket with the UP arrow pointing up against the wall where you want to install it. Mark the location of the screw holes (5) and the cutout area (6).
2. Drill two holes for the wall anchors, typically 4.7 mm (3/16 inch) in diameter.
3. If necessary, drill a hole for the Ethernet cable in the marked cutout area of the AP Bracket. Alternatively, you can feed the Ethernet cable from above and through the AP cable channel.

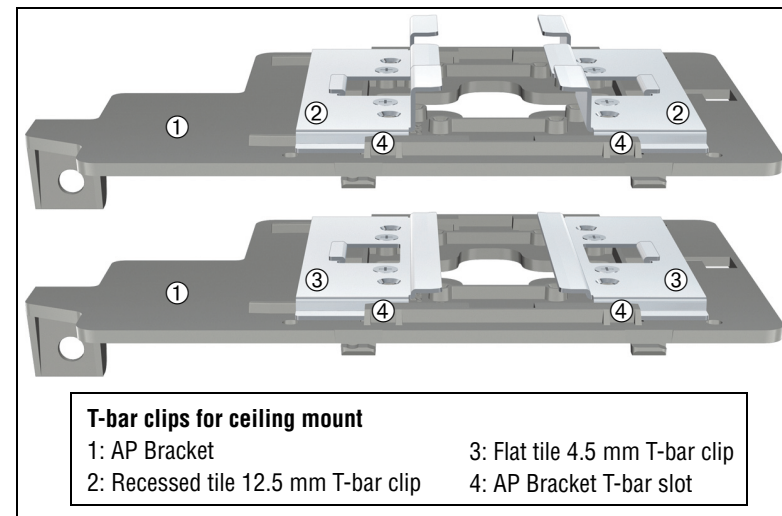
4. Insert the anchors and tap them flush with the wall surface.
5. Pull the Ethernet cable through the hole in the wall and the AP Bracket.
6. Use the mounting screws to attach the AP Bracket to the wall. Proceed to *Attach the AP* on page 4.

Mounting on an electrical box

1. Disconnect power and take any other needed security precautions.
2. Remove the electrical box cover and any contents.
3. Pull the Ethernet cable down into the box and through the hole in the AP Bracket.
4. Hold the AP Bracket against the box orienting the UP arrow, and attach the AP Bracket to the box using the countersunk screws. Proceed to *Attach the AP* on page 4.

Mounting on a suspended ceiling

The AP can be mounted on a suspended ceiling using T-bar clips. Two sets of T-bar clips are provided, a 12.5 mm set for recessed tiles and a 4.5 mm set for flush-mount tiles.



1. Slide one of the T-bar clips into the AP Bracket T-bar slot. Attach it using two self-tapping screws. Select the screw holes marked according to the width of your T-bar: 9/16 in, 15/16 in, or 1.5 in. (The other T-bar clip attaches to the AP Bracket from above the false ceiling, after the bracket is in place on the T-bar.)

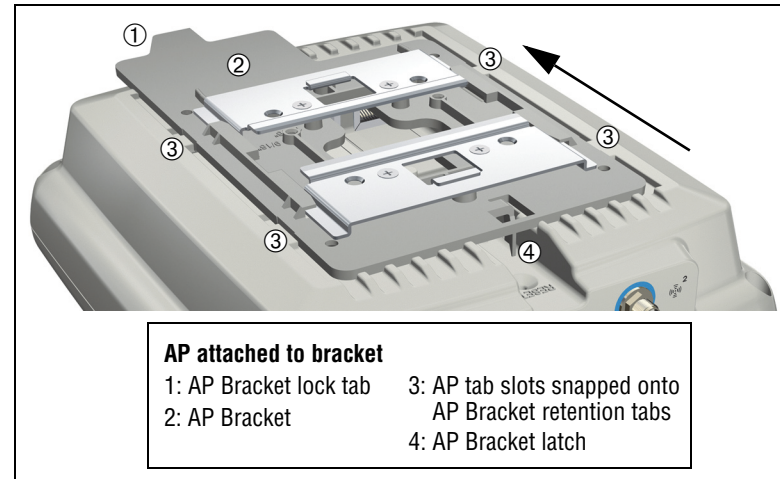
Warning: Areas above false ceilings can contain dangerous electrical cabling, gas pipes, and other hazards. Make whatever safety arrangements are needed to ensure that you can work safely above the false ceiling. HP recommends that you use a non-conductive step ladder such as one made of fiberglass.

- Position yourself at shoulder-height above the ceiling so that you can attach the second T-bar clip. Remove/relocate two ceiling tiles, one on each side of the T-bar on which you are installing the AP Bracket.
- Carrying a screw driver, the AP Bracket with T-bar clip attached, and the other T-bar clip and two screws, position yourself approximately 60 cm (2 feet) above the T-bar on which you are installing the AP Bracket.
- Attach the AP Bracket onto the T-bar, slide the other T-bar clip into the AP Bracket T-bar clip slot, and then use screws to attach it such that both T-bar clips firmly grip the T-bar.
- Tighten all four T-bar clip screws fully and verify that the AP Bracket is firmly anchored to the T-bar from both sides.
- Re-install the ceiling tile through which you will pass the Ethernet cable.
- Using the hole in the AP Bracket as a guide, drill or cut a hole in the ceiling tile large enough to pass the Ethernet connector through. Alternatively, you can run a cable outside of the ceiling tile and through the AP cable channel.
- Slide the ceiling tile to the side. Feed the Ethernet cable down from above and through the hole in the tile and through the hole in the AP Bracket. Pull through an extra 60 cm (2 feet) of cable.

Attach the AP

- Connect the Ethernet cable to the AP.
- Hold the bottom of the AP against the AP Bracket, aligning the AP tab slots with the AP retention tabs on the AP Bracket. Pull back any Ethernet cable slack at the same time.

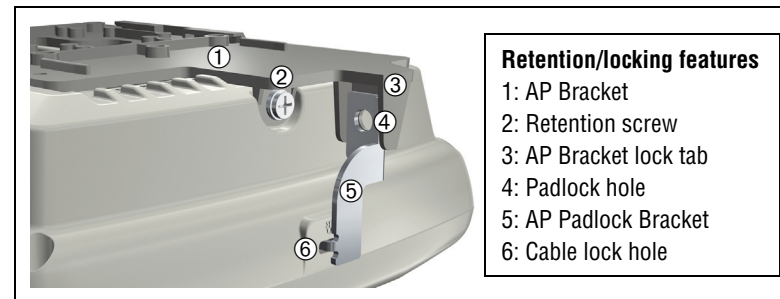
- While firmly holding the AP against the AP Bracket, slide the AP toward the AP Bracket lock tab so that the AP snaps onto the bracket. Do not let go of the AP until you confirm that it is firmly in place.



Secure the AP

HP strongly recommends that as soon as the AP is installed, you install the retention screw that anchors the AP Bracket to the AP (callout 2 below).

Optionally, attach a cable lock in its hole or Insert the tab of the supplied AP Padlock Bracket into the cable lock hole, and then align the AP Padlock Bracket hole with the AP Bracket lock hole and install a user-supplied padlock.



For more information about installing an AP and Regulatory information, see the *HP 560 Access Point Installation Guide*.

Removing the AP

To remove the AP from the bracket:

1. Detach any locks and remove the retaining screw.
2. While carefully holding the AP, insert a flat screwdriver into the cable channel between the channel wall and the AP Bracket latch, releasing the AP from the bracket, while being careful to retain grip on the AP as you slide it away from the AP Bracket lock tab.
3. Disconnect the Ethernet cable from the AP. Controllers

The AP can run as a standalone AP in autonomous mode; however, it is typically used with one of these controller families:

- HP MSM710, MSM720, MSM760, MSM765zl
- HP 10500/7500, HP 830, HP WX5002/WX5004

Note: Both controller families cannot coexist on the same network. HP 10500/7500, HP 830, and HP WX5002/WX5004 Controllers are not compatible with HP MSM7xx Controllers.

Using controllers

To become operational, the AP must establish a management tunnel with a controller. The controller manages the AP and provides all configuration settings.

When power is applied, the AP establishes a connection to the controller automatically if default settings are used on the AP and the controller, and both devices are on the same subnet. No further configuration is required.

After the discovery process is complete, and the AP has established a secure management tunnel to the controller, the Power LED remains on and the Ethernet and Radio LEDs blink to indicate the presence of traffic.

For more information about using the AP with MSM7xx Controllers, see *Working with controlled APs* in the *MSM7xx Controllers Configuration Guide*.

For more information about using the AP with HP 10500/7500, HP 830 or WX5002/WX5004 Controllers, see the *HP 830 Switch and HP 10500/7500 20G Module Access Controller Module Basic Configuration Guide*, the *H3C WX Series Access Controller Module Configuration Guide*, or the *HP Unified Wireless: Migrating from an MSM Deployment*.

AP status LED states (with controller connection)

Status LED state	Description
Power LED blinks every two seconds.	The AP is starting up.
Power LED blinks once per second.	The AP is looking for an IP address, or building the list of VLANs on which to perform discovery. The management tool is available until discovery occurs.
Power/System OK, Ethernet, and Radio LEDs blink in sequence from left to right.	The AP has obtained an IP address and is attempting to discover a controller.
Power/System OK LED is on. Ethernet and Radio LEDs blink alternately.	The AP has found a controller and is attempting to establish a secure management tunnel with it.
Power/System OK and Ethernet LEDs blink alternately and quickly. Radio LEDs are off.	The AP has received a discovery reply from two or more controllers with the same priority setting. It cannot connect with either controller until the conflict is resolved.
Power/System OK and Radio LEDs blink slowly.	The AP is attempting to establish a local mesh link to a master node.
Power/System OK and Ethernet LEDs blink slowly.	The AP is attempting to establish wired connectivity.

Controller part numbers

- HP MSM710: J9325A, J9328A
- HP MSM720: J9693A, J9694A, J9695A (TAA), J9696A (TAA)
- HP MSM760: J9420A, J9421A
- HP MSM765zl: J9370A
- HP 10500/7500: JG639A
- HP 830: JG640A (24P), JG641A (8P)
- HP WX5002: JD447B
- HP WX5004: JD448B

Note: The remainder of this Quickstart does not apply to controller-managed APs.

Using autonomous mode

In autonomous mode, the AP operates as a standalone AP. You configure and manage an autonomous AP by using its web-based management tool, as described in this section.

AP status LED states in autonomous mode

LED	State	Description
Power/ System OK	Off	The AP has no power.
	Blinking	The AP is starting up. A Power LED that continues to blink after several minutes indicates that the software failed to load. Reset or power cycle the AP. If this condition persists, contact HP customer support.
	On	The AP is fully operational.
Ethernet	Off	The port is not connected or there is no activity.
	Blinking	The port is transmitting or receiving data.
Radio	Blinking	The radio is transmitting or receiving data.

This procedure describes how to set a factory-default AP to autonomous mode, and then perform its initial configuration that enables you to establish a wireless connection through the AP to the Internet.

In autonomous mode, the AP is managed via its web-based management tool using Microsoft Internet Explorer 8 or later or Mozilla Firefox 9.0.1 or later. The browser must have SSLv3 enabled.

Caution: **Wireless protection: A factory-default AP that has been switched to autonomous mode has wireless protection options disabled. HP recommends that you either follow the procedure in *Configure basic wireless protection* on page 7 or configure protection of your choice.**

See also *Wireless protection* in the *MSM3xx / MSM4xx Access Points Configuration Guide*.

Note: Do not power on the AP until directed.

A. Configure your computer

1. Disconnect your computer LAN port and configure it to use a static IP address in the range **192.168.1.2** to **192.168.1.254**, and a subnet mask

of **255.255.255.0**. Set the default gateway to **192.168.1.1**, and DNS server to **192.168.1.1**.

2. Disable any wireless connection on your computer. Connect the cables and power on the AP
 1. Connect the cables:
 - If using a PoE switch, use Ethernet cables to connect your computer and the AP to an unused factory-default PoE switch.
 - If using a PoE injector, use Ethernet cables to connect your computer to the data in port of the PoE injector and the AP to the data and power out port of the PoE injector.
 2. Power on the AP by powering on the PoE switch or injector. Initially, the AP power LED blinks once every two seconds. Wait approximately a minute until it begins blinking once per second before proceeding to the next step.

B. Switch the AP to autonomous mode

Note: A factory-default AP is assumed.

1. In a web browser, enter the address: **https://192.168.1.1**.
2. A security certificate warning is displayed the first time you connect to the management tool. This is expected behavior. Select whatever option is needed in your web browser to continue to the management tool.
3. On the Login page, specify **admin** for both **Username** and **Password** and then select **Login**. The AP management tool home page opens.
4. Select **Switch to Autonomous Mode** and confirm the change. The AP restarts in autonomous mode.

Note: To avoid a delay after switching modes, clear the ARP (address resolution protocol) cache on your computer. In Windows for example, from the **Windows Start** menu, select **Run** and enter `arp -d`, and then select **OK**.

C. Log in

1. Wait until the Power LED is on solid.
2. On the Login page, specify **admin** for both **Username** and **Password** and then select **Login**.
3. Click through the other prompts for License and Registration.

- If a **Country** prompt appears, select the country in which the AP will operate.

Caution: To ensure compliance, you must select the correct country. See *Country of use* on page 2.

- At the password prompt, HP recommends that you change the default password and select **Save**. Passwords must be at least six characters long and include four different characters.

The management tool is organized with menus and sub-menus. Instructions for making menu selections, such as “select **Wireless > Local mesh**” instruct you to select the **Wireless** menu and then the **Local mesh** sub-menu, as follows:

VSC	Wireless	Network	Security	Authentication	Management	Status	Main-menu
		Overview	Radios	Local mesh	Neighborhood	Multicast	Sub-menu

D. Configure basic wireless protection

HP recommends that you configure basic wireless protection. See *Wireless protection* in the *MSM3xx / MSM4xx Access Points Configuration Guide*. To configure basic WPA protection:

- Select **VSC > HP**, and then enable **Wireless protection** and set it to **WPA**.
- Under **Mode**, select **WPA or WPA2**, and then under **Key source**, select **Preshared key** and specify a key of at least 20 characters. Select **Save**.

E. Assigning an IP address to the AP

By default, the AP operates as a DHCP client. This means that if the network has a DHCP server, the AP automatically receives a new IP address in place of its default address of 192.168.1.1 upon connecting to the network. Use one of the following methods to assign an IP address to the AP:

- Preconfigure the DHCP server** to assign a specific IP address to the AP. To do this you must specify the AP Ethernet MAC address and a reserved IP address on the DHCP server. The AP Ethernet MAC address is printed on the AP label identified as **LAN MAC**, and listed on the management tool **Home** page as **Ethernet base MAC address**.
- Let the DHCP server automatically assign an IP address.** By default, the DHCP server assigns an IP address after the AP connects to the network. After the DHCP server assigns an IP address to the AP, you can find the IP address of the AP by looking for its Ethernet base MAC address in the DHCP server log. For example after Step F.4 below, you can go to the DHCP server log to retrieve the IP address assigned to the AP.

- Assign a static IP address to the AP.** The address must be on the same subnet as the network to which the AP connects.
 - Select **Network > DNS**, and set the DNS server address. Select **Save**.
 - Select **Network > Ports > Bridge port**.
 - Select **Static**, and then **Configure**. For **IP address** set an address that is on the same subnet as the network to which the AP will connect after installation. Respect any DHCP server-mandated static address ranges. Also set **Mask** and **Default gateway**.
 - Select **Save**. Connection to the management tool is lost. You can reconnect to the management tool by specifying the new IP address.

F. Test the wireless network

In this example, the network must have a DHCP server and an Internet connection. Broadband routers typically include a DHCP server.

- Disconnect your computer from the PoE switch or injector.
- Power off the AP by disconnecting the Ethernet cable from the AP.
- Use a standard Ethernet cable to connect the switch or the data in port of the injector to the network.
- Reconnect and power on the AP. Use a standard Ethernet cable to reconnect the AP to the PoE switch or the data and power out port of the injector.
- Enable the wireless network interface of your computer, and verify that it is set to obtain an IP address automatically.
- By default, the AP creates a wireless network named *HP* in the 5 GHz band for 802.11n and 802.11a users. Connect your computer to this wireless network, specifying the preshared key you set in step E.2.
- Confirm that you can browse the Internet using the wireless network.

G. Before performing additional configuration

Configure your computer LAN port and connect it to the same network as the AP. Re-launch the AP management tool at <https://<IP address>> where **<IP address>** is the AP IP address assigned in Section F.

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