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Juniper AP61 Access Point Deployment Guide

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YEAR 2000 NOTICE

Juniper Networks hardware and software products are Year 2000 compliant. Junos OS has no known time-related limitations through the year 2038. However, the NTP application is known to have some difficulty in the year 2036.

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About This Guide

Use this guide to install, manage, and troubleshoot the Juniper® AP61 High-Performance Access Point. After completing the installation procedures covered in this guide, refer to the Juniper Mist™ Wi-Fi Assurance documentation for information about further configuration.

1
CHAPTER

Overview

IN THIS CHAPTER

AP61 Access Point Overview

IN THIS SECTION

The Juniper® AP61 High Performance Access Point is an IP67 rated Wi-Fi 5 outdoor access point (AP) that provides high-performance wireless access. The AP61 supports Bluetooth® Low Energy (BLE) and Internet of Things (IoT). You can use the AP61 for location services such as asset visibility and user engagement.

The AP61 has three IEEE 802.11ac Wave 2 radios, which deliver up to 2x2 multiple input, multiple output (MIMO) with two spatial streams. Out of the three radios, one is dedicated for scanning. The AP uses this radio for radio resource management (RRM) and wireless security.

The AP61 can operate in either multi-user or single-user mode. The AP61 is backward compatible with the 802.11a, 802.11b, 802.11g, and 802.11n wireless standards.

The AP61 has a dynamic virtual Bluetooth Low Energy (vBLE) antenna array that the Juniper Mist cloud controls. The AP61 leverages the Mist AI to provide highly accurate Bluetooth LE location services using virtual beacons. Virtual beacons eliminate the need for physical beacons, resulting in time and cost savings. The antenna gains on the vBLE antenna array will vary for the internal and external antenna models of the AP.

The AP61 provides maximum data rates of 1733 Mbps in the 5-GHz band and 800 Mbps in the 2.4-GHz band.

Figure 1: Front and Rear View of AP61

AP61 Access Point Models

AP61 models have either internal or external antennas. Table 1 on page 3 lists the AP61 models.

Table 1: AP61 Models

Model	Antenna	Regulatory Domain
AP61-US	Internal	United States only
AP61-WW	Internal	Outside of the United States
AP61E-US	External	United States only
AP61E-WW	External	Outside of the United States

NOTE: Juniper products are manufactured in accordance with electrical and environmental regulations specific to certain regions and countries. Customers are responsible for ensuring that any regional or country-specific SKUs are used only in the specified authorized area. Failure to do so may void the warranty of Juniper products.

Benefits of AP61 Access Points

- Simple and quick deployment—You can deploy the AP with minimal manual intervention. The AP automatically connects to the Mist cloud after powering on, downloads its configuration, and connects to the appropriate network. Automatic firmware upgrades ensure that the AP runs the latest firmware version.
- Proactive troubleshooting—The AI-driven Marvis® Virtual Network Assistant leverages the Mist AI to identify issues proactively and provide recommendations to fix issues. Marvis can identify issues such as offline APs and APs with insufficient capacities and coverage issues.
- Location precision and accuracy—The directional vBLE antenna array provides precise locations and accurate location services.

AP61 Components and Specifications

Figure 2 on page 4 shows the components on the AP61.

Figure 2: AP61 Components

Table 2: AP61 Components

Component	Description
Reset	A reset button that you can use to reset the AP configuration to the factory default. See *Reset an AP to the Factory-Default Configuration*.
LED	A multicolor status LED. For more information about the status LED, see *Troubleshoot a Juniper Access Point*.
Eth1	10/100/1000BASE-T RJ-45 port
Eth0+PoE In	10/100/1000BASE-T RJ-45 port that supports an 802.3at PoE-powered device
Antenna connectors (available only in AP61E models)	Four N-type connectors

The AP61 also has a grounding point on the rear. Figure 4 on page 5 shows the location of the grounding point on the AP61.

Figure 4: Rear Panel of AP61

For AP61 specifications, see the AP61 Datasheet.

Power-On Options for the AP61

You can use any of the following options to power on the AP:

- Power over Ethernet Plus (PoE+) from an Ethernet switch

  We recommend that you use an Ethernet cable with a maximum length of 100 m to connect the access point (AP) to the switch port.

  If you use an Ethernet cable that is longer than 100 m by placing an Ethernet PoE+ extender in the path, the AP might power up, but the Ethernet link does not transmit data across such a long cable. You might see the status LED blink yellow twice. This LED behavior indicates that the AP is unable to receive data from the switch.

- PoE injector

See PoE Requirements for Juniper Mist APs for the power requirements for an AP61.

2
CHAPTER

Installation

IN THIS CHAPTER

Mount the AP61 Access Point

IN THIS SECTION

You can mount the AP61 either on a wall or on a pole using two methods—flush mount or articulating mount.

Mounting Brackets for AP61

IN THIS SECTION

We ship the AP61 with the articulating and flush mount brackets. You can order the flush mount brackets separately. Table 3 on page 8 lists the part numbers for the mounting brackets.

Table 3: Part Numbers for AP61 Mounting Brackets

Part Number	Description
APOUTBR-ART	Articulating mount brackets

Table 3: Part Numbers for AP61 Mounting Brackets *(Continued)*

Part Number	Description
APOUTBR-FM	Flush mount brackets

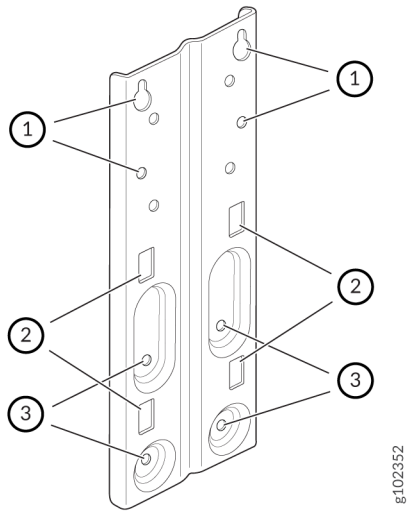
Mounting Brackets and Accessories for Flush Mount

The mounting accessories for flush mount include the following:

- One flush mount bracket (part number: APOUTBR-FM)
- Two hose clamps
- Four M6 screws
- Four sets of M6 screws, washers, and spring washers
- Five sets of anchors and screws

Figure 5 on page 9 shows the screw holes to use for mounting on a wall and pole.

Figure 5: APOUTBR-FM Flush Mount Bracket



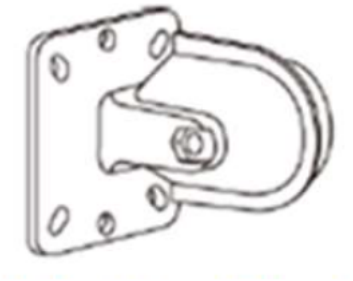
1—Screw holes to use for mounting an AP61 on a wall	2—Holes to use for attaching hose clamps

3—Screw holes to use for attaching the bracket to an AP61	

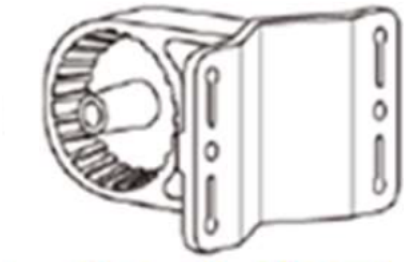
Mounting Brackets and Accessories for Articulating Mount

The mounting accessories for articulating mount include the following:

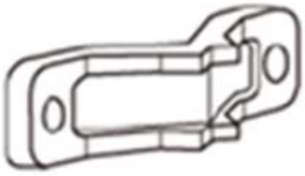
- One articulation pole



- One T-form bracket



- One W-Bar



- Two M8x80 screw bolts
- One M8x90 screw bolt and nut

- Four M6x16 screws
- Four M6x10 screws
- Four wood screws
- Four wood or gyprock plugs
- Eight washers
- Eight spring washers
- One metal plate assembly with RT2 mount

Connect the Grounding Cable

We recommend that you ground the AP before mounting it on a wall or pole. The AP61 has a single-hole protective grounding terminal on the rear. Use this grounding terminal to ground the AP.

To ground the AP61:

1. Remove the screw from the grounding terminal.
2. Place the grounding lug attached to the grounding cable over the grounding terminal. We recommend a minimum of 18-AWG wire for the AP.
3. Secure the grounding cable lug to the grounding terminal with the screw.

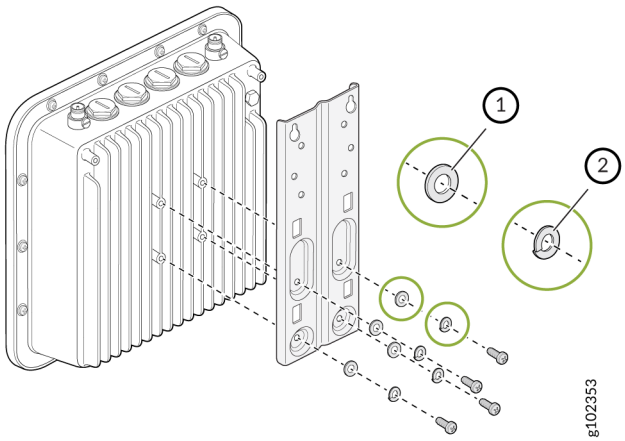
Mount the AP61 on a Wall (Flush Mount)

To flush mount the AP61 on a wall:

1. Drill four holes on the wall in such a way that they align with the location of holes marked with callout #1 in Figure 5 on page 9. Insert anchors in all the four holes.
2. Insert screws in the two upper holes. Do not tighten the screws fully.
3. Attach the APOUTBR-FM flush mount bracket to the AP by using the four screws, washers, and spring washers provided along with the AP.

   Use the bracket screw holes marked with callout #3 in Figure 5 on page 9.

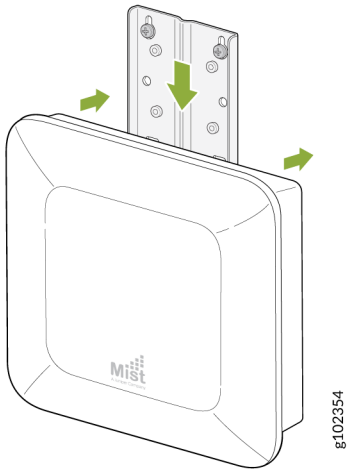
Figure 6: Attach the APOUTBR-FM Flush Mount Bracket to an AP61



1—Washer	2—Spring washer

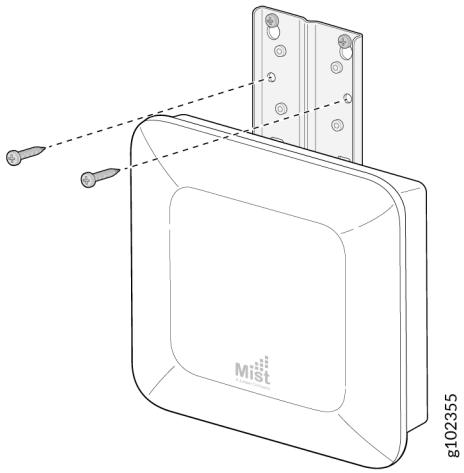
4. Position the AP such that the two screws that you inserted into the wall in Step 1 fit into the holes in the bracket. Slide the AP downward so that the screws lock in place.

Figure 7: Mount an AP61 on a Wall (Flush Mount)



5. Insert the other two screws through the bracket into the holes in the wall and then tighten all the four screws.

Figure 8: Secure the AP61 to a Wall



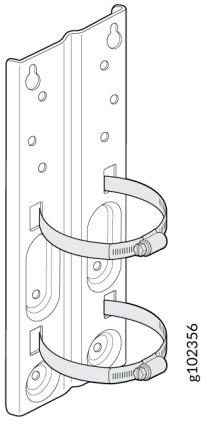
Mount the AP61 on a Pole (Flush Mount)

To flush mount the AP61 on a pole:

1. Attach the hose clamps to the APOUTBR-FM flush mount bracket. Use a screwdriver to release the hose clamps and then pass the hose clamps through the slots on the flush mount bracket. Figure 5 on page 9 shows the slots that you can use.

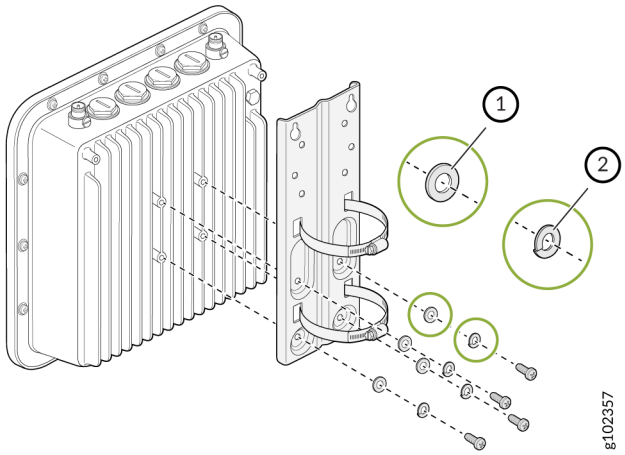
   Ensure that the open end of the hose clamps faces outward.

Figure 9: Attach Hose Clamps to the APOUTBR-FM Flush Mount Bracket



2. Attach the APOUTBR-FM flush mount bracket with the hose clamps to the AP by using the four screws, washers, and spring washers provided along with the AP.

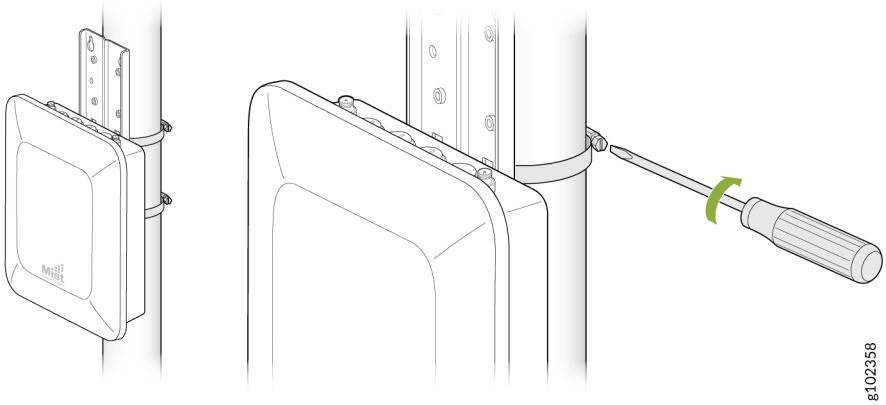
Figure 10: Attach the APOUTBR-FM Flush Mount Bracket to an AP61



1—Washer	2—Spring washer

3. Mount the AP on the pole. Wind the open end of the hose clamps around the pole and tighten the hose clamp screws by using a screwdriver. Tighten the screws until the AP and bracket assembly are secured in place.

Figure 11: Mount an AP61 on a Pole (Flush Mount)

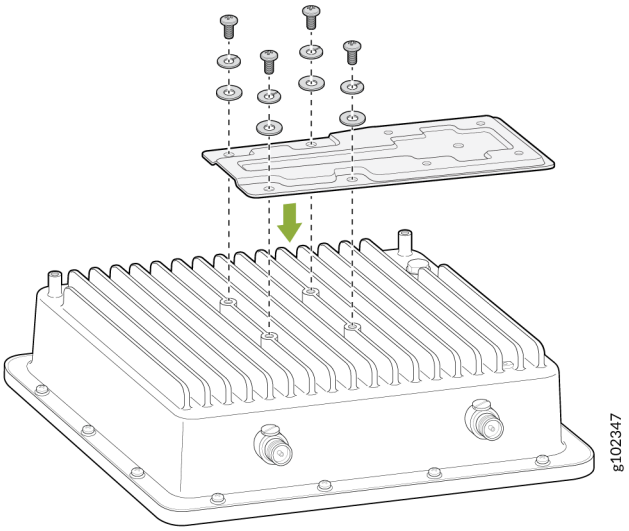


Mount the AP61 on a Wall (Articulating Mount)

To mount the AP61 on a wall using the articulating mount bracket:

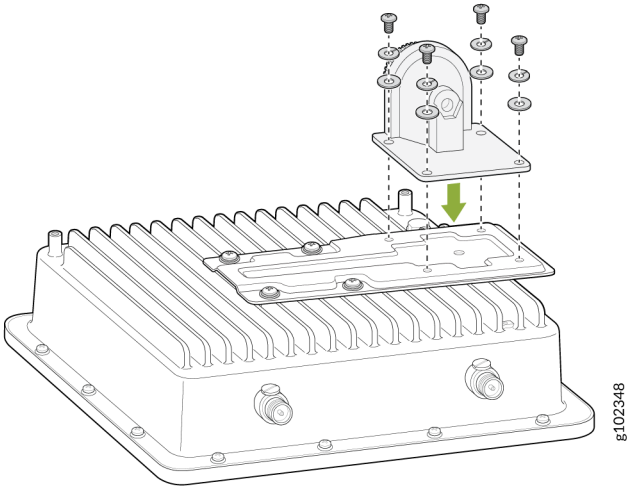
1. Attach the metal plate assembly to the AP by using the four M6x16 screws, washers, and spring washers.

Figure 12: Attach the Metal Plate Assembly to an AP61



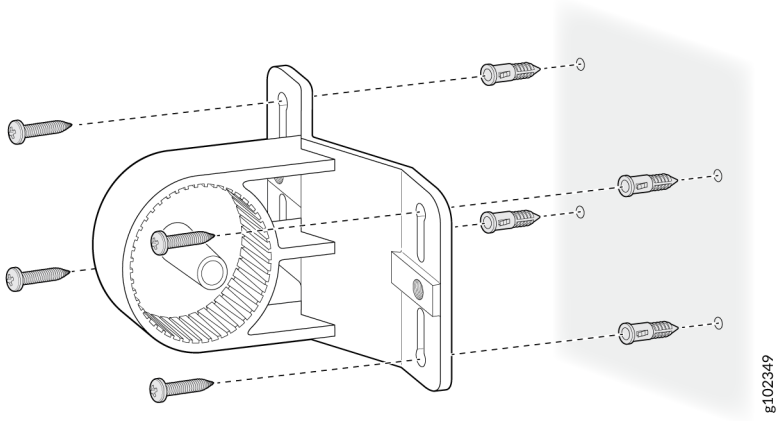
2. Attach the articulating mount bracket to the metal plate assembly by using the four M6x10 screws, washers, and spring washers.

Figure 13: Attach the Articulating Bracket to the Metal Plate Assembly on an AP61



3. Install the T-form bracket on the wall by using wood or gyprock screws.

Figure 14: Install the T-Form Bracket on the Wall



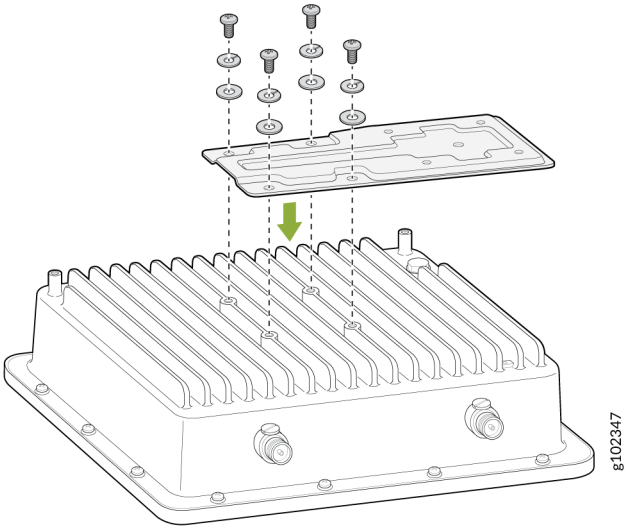
4. Mount the AP61 on the wall by attaching the AP and articulating mount bracket assembly to the T-form bracket. Use screws with the following specifications:
   - Diameter of the screw head—1/4 in. (6.3 mm)
   - Length—At least 2 in. (50.8 mm)

Mount the AP61 on a Pole (Articulating Mount)

You can mount the AP61 on a pole, which has a diameter greater than 1.5 in. (35 mm) and less than 3 in. (80 mm). To mount the AP61 on a pole using the articulating mount bracket:

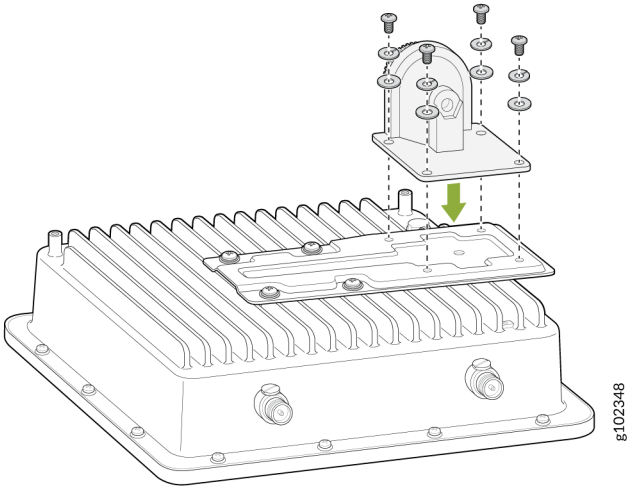
1. Attach the metal plate to the AP by using the four M6x16 screws, washers, and spring washers.

Figure 16: Attach the Metal Plate to an AP61



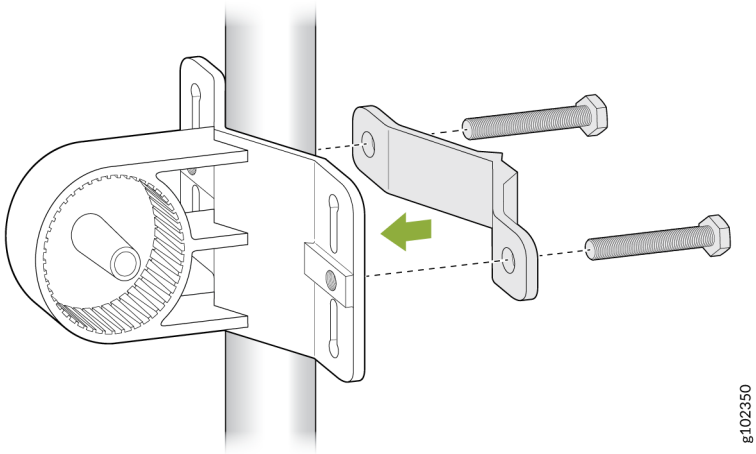
2. Attach the articulating bracket to the metal plate by using the four M6x10 screws, washers, and spring washers.

Figure 17: Attach the Articulating Bracket to the Metal Plate on an AP61



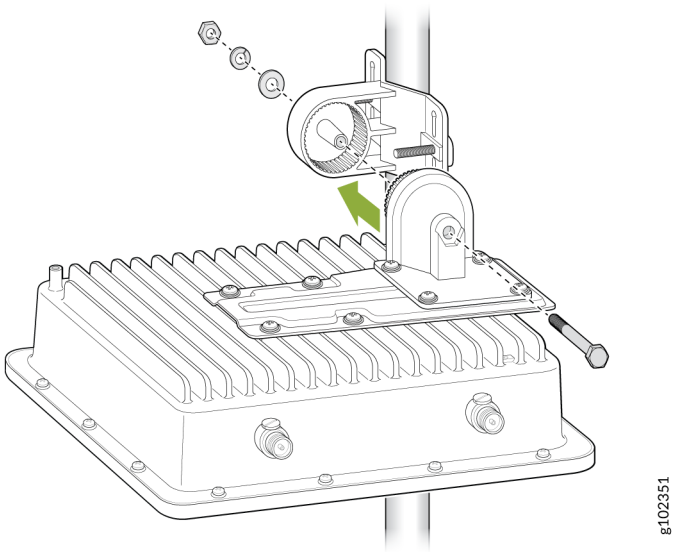
3. Install the T-form bracket on the pole by using the provided screw bolts and nuts.

Figure 18: Install the T-Form Bracket on the Pole



4. Attach the articulating bracket to the T-form bracket by using M8x80 screws.

Figure 19: Mount the AP61 on a Pole (Articulating Mount)



Connect an AP61 to the Network and Power It On

When you power on an AP and connect it to the network, the AP is automatically onboarded to the Juniper Mist cloud. The AP onboarding process involves the following steps:

- When you power on an AP, the AP obtains an IP address from the DHCP server on the untagged VLAN.
- The AP performs a Domain Name System (DNS) lookup to resolve the Juniper Mist cloud URL. See Firewall Configuration for the specific cloud URLs.
- The AP establishes an HTTPS session with the Juniper Mist cloud for management.
- The Mist cloud then provisions the AP by pushing the required configuration after the AP is assigned to a site.

To ensure that your AP has access to the Juniper Mist cloud, ensure that the required ports on your Internet firewall are open. See Firewall Configuration.

To connect the AP to the network:

1. Connect an Ethernet cable from a switch to the **Eth0+PoE** port on the AP.

   For information on power requirements, see PoE Requirements for Juniper Mist APs.

If the switch or router that you connect to the AP does not support PoE, use an 802.3at or 802.3bt power injector.

- Connect an Ethernet cable from the switch to the **data in** port on the power injector.
- Connect an Ethernet cable from the **data out** port on the power injector to the **Eth0+PoE** port on the AP.

2. Wait for a few minutes for the AP to boot completely.
   When the AP connects to the Juniper Mist portal, the LED on the AP turns green, which indicates that the AP is connected and onboarded to the Juniper Mist cloud.
   After you've onboarded the AP, you can configure the AP according to your network and requirements. See the Juniper Mist Wireless Configuration Guide and Location Services Guide to configure your AP.

   NOTE: If the AP is unable to connect to the Juniper Mist cloud, you can use the status LED to troubleshoot. See *Troubleshoot a Juniper Access Point*.

   A few things to keep in mind about your AP:

   - When an AP boots for the first time, it sends a Dynamic Host Configuration Protocol (DHCP) request on the trunk port or native VLAN. You can reconfigure the AP to assign it to a different VLAN after you've onboarded the AP (that is, the AP state shows as Connected in the Juniper Mist portal. Ensure that you reassign the AP to a valid VLAN because, on rebooting, the AP sends DHCP requests only on that VLAN. If you connect the AP to a port on which the VLAN doesn't exist, Mist displays a **No IP address found** error.
   - We recommend that you avoid using a static IP address on an AP. The AP uses the configured static information whenever it reboots, and you cannot reconfigure the AP until it connects to the network. If you need to correct the IP address, you'll need to reset the AP to the factory-default configuration.

     If you must use a static IP address, we recommend that you use a DHCP IP address during the initial setup. Before assigning a static IP address, ensure that:

     - You've reserved the static IP address for the AP.
     - The switch port can reach the static IP address.

3

CHAPTER

Troubleshoot

IN THIS CHAPTER

Troubleshooting Overview

If your access point (AP) is not working correctly, follow these steps to troubleshoot the issue:

- See the **Marvis** > **Marvis Actions** dashboard to identify issues. See *Marvis Actions Overview*.
- Use Marvis Query Language to monitor your network. See *Troubleshoot Using Marvis Query Language*.
- Check the blinking pattern of the status LED. See *AP Troubleshooting Overview*.

If you are unable to resolve the issue, you can create a support ticket on the Juniper Mist portal.

Contact Customer Support

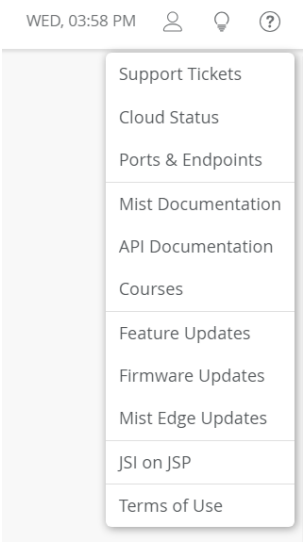
You can create a support ticket on the Juniper Mist portal. The Juniper Mist Support team will contact you to help resolve your problem. If needed, you can request a Return Material Authorization (RMA).

Before you begin, ensure that you have the following information:

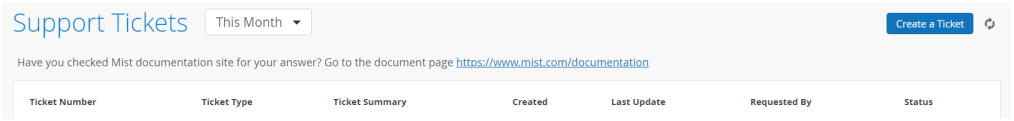
- The MAC address of the faulty AP
- The exact LED blink pattern seen on the AP (or a short video of the blinking pattern)
- The system logs from the AP

To create a support ticket:

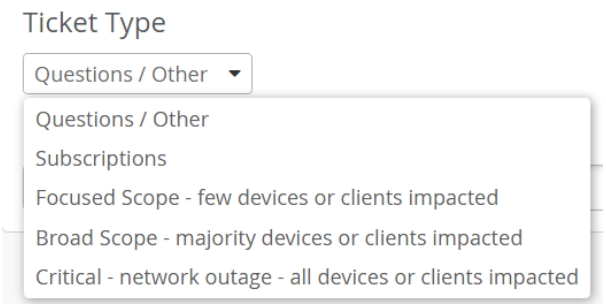
1. Click the **?** (question mark) icon in the top-right corner of the Juniper Mist portal.
2. Select **Support Tickets** from the drop-down menu.



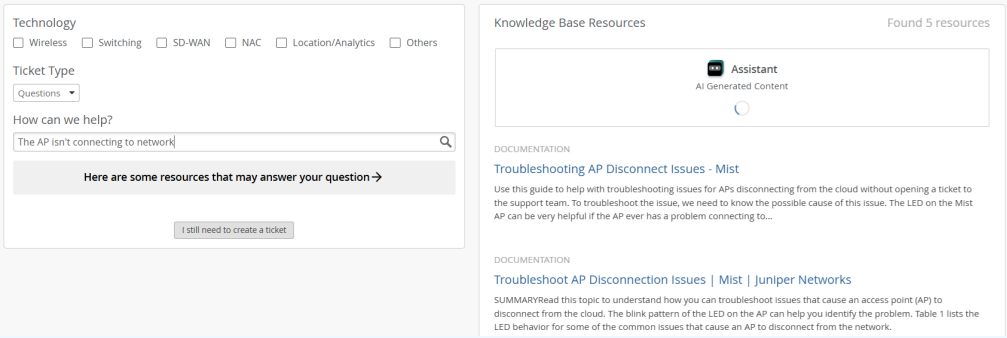
3. Click **Create a Ticket** in the top-right corner of the **Support Tickets** page.



4. Select the appropriate ticket type depending on the severity of your problem.

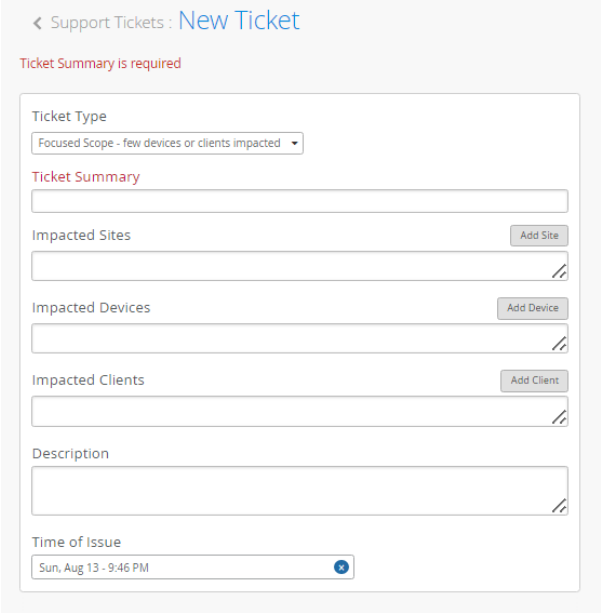


NOTE: Selecting **Questions/Other** will open a search box and redirect you to available documentation and resources related to your issue. If you cannot resolve your issue by using the suggested resources, click **I still need to create a ticket**.



5. Enter a ticket summary, and select the sites, devices, or clients that are impacted.

   If you are requesting an RMA, select the impacted device.



6. Enter a description to explain the issue in detail.

   Provide the following information:

   - The MAC address of the device
   - The exact LED blink pattern seen on the device
   - The system logs from the device

NOTE: To share device logs:

a. Navigate to the **Access Points** page in the Juniper Mist portal. Click the impacted device.

b. Select **Utilities** > **Send AP Log to Mist** in the top right corner of the device page.

It takes at least 30 seconds to 1 minute to send the logs. Do not reboot your device in that interval.

7. (Optional) You can provide any additional information that may help to resolve the issue, such as:
   - Is the device visible on the connected switch?
   - Is the device receiving power from the switch?
   - Is the device receiving an IP address?
   - Is the device pinging on the Layer 3 (L3) gateway of your network?
   - Have you already followed any troubleshooting steps?
8. Click **Submit**.