Trapeze Mobility Point™

MP-372 Installation Guide

Part Number 730-9502-0052, Revision C

Trapeze Networks, Inc.
5753 W. Las Positas Blvd.
Pleasanton, CA 94588

Tel: +1 925-474-2200
Fax: +1 925-251-0642
Toll-Free: 877-FLY-TRPZ (877-359-8779)

www.trapezenetworks.com

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Comments and Feedback

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For the most current version of this document, see www.trapezenetworks.com.

Note. The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

Customer Service

For general information about Trapeze Networks Mobility System™ products and services, visit www.trapezenetworks.com. For warranty, license, and support information, visit the following sites:

- **Warranty and software licenses.** Current Trapeze Networks warranty and software licenses are available at www.trapezenetworks.com/services/warranty.asp.
- **Support services.** For information about Trapeze support services, visit www.trapezenetworks.com/services/. Or call 1-866-877-9822 (in the US or Canada) or +1 925-474-2400 and select option 5.

Note. TRAPEZE NETWORKS SELLS AND SERVICES ITS PRODUCTS PRIMARILY THROUGH ITS AUTHORIZED RESELLERS AND DISTRIBUTORS. If you purchased your product from an authorized Trapeze reseller or distributor and do not have a service contract with Trapeze Networks, you must contact your local reseller or distributor for technical assistance.

Contacting the Technical Assistance Center

Contact the Trapeze Networks Technical Assistance Center (TAC) by telephone, email, or fax. If you have a service contract or are a Trapeze Authorized Partner, log in to www.trapezenetworks.com/services/sup_programs.asp for more help.

- Within the US and Canada, call 1-866-TRPZTAC (1-866-877-9822).
- Within Europe, call +31 35 64 78 193.
- From locations outside the US and Canada, call +1 925-474-2400.
- In non-emergencies, send email to support@trapezenetworks.com.
- When your case is active, you can fax more information to +1 925-474-2423.

TAC Response Time

TAC responds to service requests as follows:

Contact method	Priority	Response time
Telephone	Emergency	One hour
	Non-emergency	Next business day
Email	Non-emergency	Next business day

Information to Have Available

To expedite your service request, have the following information available when you call or write to TAC for technical assistance:

- Your company name and address
- Your name, telephone number, cell phone or pager number, and email address
- Name, model, and serial number of the product(s) requiring service
- Software version and release number
- Output of the **show tech-support** command
- Wireless client information
- License levels for RingMaster™ and Mobility Exchange™ (MX™) products
- Description of the problem and status of the troubleshooting effort

Contents

1

Introducing the Trapeze Networks Mobility System

This guide shows you how to install a Trapeze Networks™ Mobility Point™ (MP™) access point in a Trapeze Networks Mobility System™ wireless LAN (WLAN).

Read this guide if you are a network administrator or other person installing MP access points in a network.

Trapeze Networks Mobility System

The Trapeze Networks Mobility System is an enterprise-class WLAN solution that seamlessly integrates with an existing wired enterprise network. The Trapeze system provides secure connectivity to both wireless and wired users in large environments such as office buildings, hospitals, and university campuses.

The Trapeze Mobility System fulfills the three fundamental requirements of an enterprise WLAN: It eliminates the distinction between wired and wireless networks, allows users to work safely from anywhere (*secure mobility*), and provides a comprehensive suite of intuitive tools for planning and managing the network before and after deployment, greatly easing the operational burden on IT resources.

The Trapeze Networks Mobility System consists of the following components:

- **RingMaster tool suite**—A full-featured graphical user interface (GUI) client application used to plan, configure, and deploy a WLAN and its users. It also provides a centralized service application for WLAN and user monitoring, reporting, and diagnostics
- **One or more Mobility Exchange™ (MX™) switches**—Distributed, intelligent machines for managing user connectivity, connecting and powering Mobility Point (MP) access points, and connecting the WLAN to the wired network backbone
- **Multiple Mobility Point™ (MP™) access points**—Wireless access points (APs) that transmit and receive radio frequency (RF) signals to and from wireless users and connect them to an MX switch
- **Mobility System Software™ (MSS™)**—The operating system that runs all MX switches and MP access points in a WLAN, and is accessible through a command-line interface (CLI), the Web View interface, or the RingMaster GUI

Documentation

Consult the following documents to plan, install, configure, and manage a Trapeze Networks Mobility System.

Planning, Configuration, and Deployment

Trapeze RingMaster User's Guide. Instructions for planning, configuring, deploying, and managing the entire WLAN with the RingMaster tool suite. Read this guide to learn how to plan wireless services, how to configure and deploy Trapeze equipment to provide those services, and how to optimize and manage your WLAN.

Trapeze RingMaster Reference Manual. Detailed instructions and information for all RingMaster planning, configuration, and management features.

Installation

- *Trapeze Mobility System Software Quick Start Guide*. Instructions for performing basic setup of secure (802.1X) and guest (Web AAA) access, for configuring a Mobility Domain for roaming, and for accessing a sample network plan in RingMaster for advanced configuration and management
- *Trapeze Mobility Exchange Installation and Basic Configuration Guide*. Instructions and specifications for installing an MX switch in a Trapeze Mobility System WLAN, and basic instructions for deploying a secure IEEE 802.11 wireless service
- *Trapeze Mobility Point Installation Guide*. Instructions and specifications for installing an MP access point and connecting it to an MX switch
- *Trapeze Regulatory Information*. Important safety instructions and compliance information that you must read before installing Trapeze Networks products

Configuration and Management

- *Trapeze RingMaster Reference Manual*. Instructions for planning, configuring, deploying, and managing the entire WLAN with the RingMaster tool suite
- *Trapeze Mobility System Software Configuration Guide*. Instructions for configuring and managing the system through the MSS CLI
- *Trapeze Mobility System Software Command Reference*. Functional and alphabetic reference to all MSS commands supported on MX switches and MP access points

Safety and Advisory Notices

The following kinds of safety and advisory notices appear in this manual. (For translations of the warning conventions and of all warnings in this manual, see Appendix C, “Translated Warning Conventions and Warnings,” on page 61.)

Caution! This situation or condition can lead to data loss or damage to the product or other property.

Warning! This situation or condition can cause injury.

Warning! High voltage. This situation or condition can cause injury due to electric shock.

Warning! Radiation. This situation or condition can cause injury due to improper handling of fiber-optic equipment.

Note. This information is of special interest.

Text and Syntax Conventions

Trapeze manuals use the following text and syntax conventions:

Convention	Use
`Monospace text`	Sets off command syntax or sample commands and system responses.
Bold text	Highlights commands that you enter or items you select.
Italic text	Designates command variables that you replace with appropriate values, or highlights publication titles or words requiring special emphasis.
Menu Name > **Command**	Indicates a menu item that you select. For example, **File** > **New** indicates that you select **New** from the File menu.
[ ] (square brackets)	Enclose optional parameters in command syntax.
{ } (curly brackets)	Enclose mandatory parameters in command syntax.
| (vertical bar)	Separates mutually exclusive options in command syntax.

2

MP Overview

A Trapeze Networks Mobility Point (MP) access point provides IEEE 802.11 wireless access to the network. MP access points are designed for use with a Trapeze Networks Mobility Exchange (MX) switch. MP access points require hardware installation only. All configuration for an MP access point takes place on the MX switch.

This guide describes MP model MP-372. The MP-372 has one 802.11a radio and one 802.11b/g radio. Both radios have internal diversity omnidirectional antennas. In addition, both radios have separate jacks for attachment of optional external sectorized or directional antennas. The antennas must be ordered separately.

Warning! Installation must be performed by qualified service personnel only. Read and follow all warning notices and instructions marked on the product or included in the documentation. Before installing the product, read the *Trapeze Regulatory Information* document. (For translations of this warning, see "Qualified Service Personnel Warning" on page 63.)

Note. The MP radios are disabled by default and can be enabled only by a system administrator using the MX switch.

External Hardware Features

Figure 1 and Figure 2 show the external hardware features of the MP-372.

Figure 1. MP Access Point Model MP-372—Top View

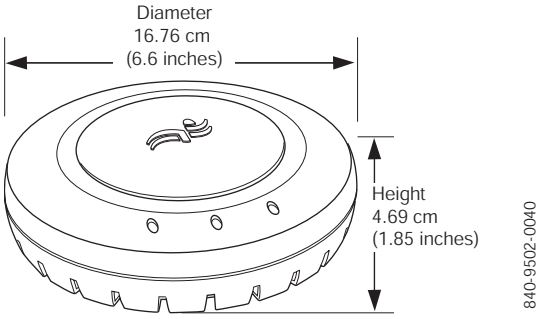
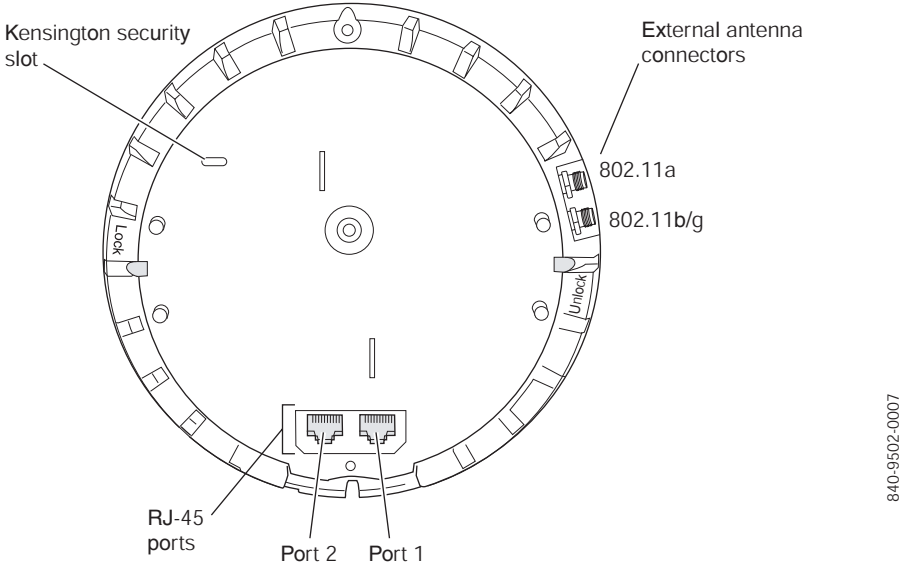


Figure 2. MP Access Point Model MP-372—Bottom View



Cable Ports

The MP-372 has two RJ-45 ports. (See Figure 2.) Each port provides a 10/100BASE-TX Ethernet connection to an MX switch. The connection can be direct to an MX-switch or indirect through an intermediate Layer 2 or Layer 3 network.

The MP receives power and data through the RJ-45 ports. Use a Category 5 (Cat 5) cable with straight-through signaling and standard RJ-45 connectors to connect an MP to an MX switch or other device in the network. The MP-372 supports 802.3af, and also can receive PoE from Trapeze switches and Trapeze-approved power injectors. (See the *Release Notes for Trapeze Networks Mobility Point Access Points*.)

The two RJ-45 ports support dual-homed configurations for redundancy. An MP uses only one link for booting, configuration, and data transfer. If the link becomes unavailable, the MP can reboot using the other link. The ports are identical except for logical numbering (1 or 2). You can use either port to connect an MP access point to an MX switch. However, an MP always attempts to boot on MP port 1 first. Only if the boot attempt on port 1 fails does the MP attempt to boot on port 2. If one port becomes unavailable, the other port can provide full power to the MP.

Note. MP access points do not support daisy-chain configurations. Do not connect the MP access point to another MP access point.

External Antenna Connectors

The MP-372 has connectors for attaching optional external antennas. (See Figure 2.) Table 1 lists the external antenna models.

Table 1. Trapeze External Antenna Models

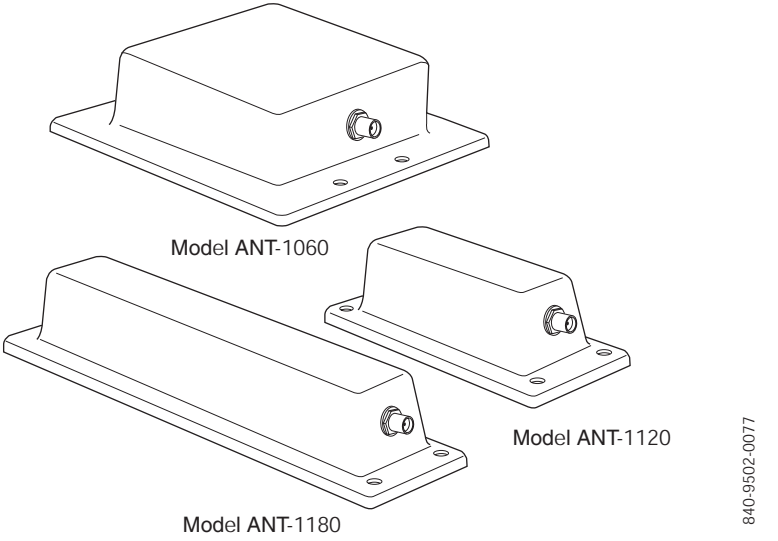
Model	Type	Gain	Beamwidth	
			Horizontal	Vertical
ANT-5060 (ASTN6S)[1]	802.11a	14.5 dBi	60°	14°
ANT-5120 (ASTN6T)	802.11a	12.5 dBi	120°	14°
ANT-5180 (ASTN6H)	802.11a	10.8 dBi	180°	14°
ANT-1060	802.11b/g	10 dBi	60°	65°
ANT-1120	802.11b/g	7 dBi	120°	60°
ANT-1180	802.11b/g	6 dBi	180°	40°

1. The numbers in parentheses are the numbers that appear on the back of an 802.11a antenna's reflector plate. To verify an 802.11a external antenna's model number, look for the number in parentheses.

Note. The MP-372 radios are certified for use only with these external antennas.

Figure 3 shows the 802.11b/g antennas.

Figure 3. External 802.11b/g Antennas



The 802.11a external antennas look similar to the 802.11b/g model ANT-1180, but each has a reflector plate specific to the model number. You can identify an 802.11a external antenna's model by looking on the back of its reflector plate. Do not reverse or remove the reflector plate. It is required for antenna operation.

Each antenna comes with a connector cable, mounting hardware, and installation instructions.

Caution! The external connectors on the MP are labeled: 11B/G and 11A. Each connector is a standard SMA connector. Make sure you attach the antenna to the correct connector.

Note. Operation in the band 5.15–5.25 Ghz is restricted to indoor use only.

Kensington Security Slot

Models MP-372 has a slot for attachment of a Kensington security cable. The cable is not included with the MP but can be ordered separately.

MP Mounting Options

You can mount an MP access point on any of the following types of surfaces:

- Suspended T-bar ceiling
- Junction box
- Solid surface wall or ceiling
- Tabletop

Note. The solid surface mounting option requires Cat 5 cable that does not have strain relief. The other mounting options can use Cat 5 cable with or without strain relief.

Status LEDs

The MP has LEDs that provide status information for the device. Figure 4 shows the locations of the LEDs. Table 2 describes the LEDs.

Figure 4. Health and Radio LEDs—MP-372

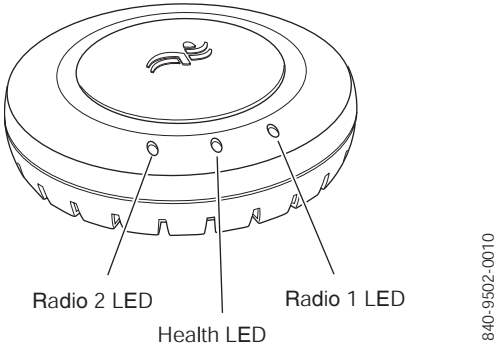


Table 2. MP Access Point LEDs—MP-372

LED	Appearance	Meaning
Health	Solid green	All the following are true: • Management link with an MX switch is operational. • MP access point has booted. • MP access point has received a valid configuration from an MX switch. • At least one radio is enabled or is in sentry mode.
	Solid amber	MP access point is waiting to receive boot instructions and a configuration file from an MX switch.
	Alternating green and amber	MP access point is booting and receiving its configuration file from an MX switch.
Radio 1 Radio 2	Solid green	A client is associated with the radio.
	Blinking green	Associated client is sending or receiving traffic.
	Blinking amber	Non-associated client is sending or receiving traffic.
	Alternating green and amber	Radio is unable to transmit. This state can occur due to any of the following: • Excessive radio interference in the environment is preventing the radio from sending beacons. • The radio has failed.
	Unlit	Means one of the following: • Radio is disabled. • Radio is enabled, but no clients are associated with the radio and there is no traffic activity.

Connection Options

You can connect an MP access port directly to an MX switch port or indirectly to MX switches through an intermediate Layer 2 or Layer 3 network. In either case, use Category 5 (CAT 5) cable with straight-through signaling for each MP connection.

You also can provide data link redundancy by connecting both of its ports directly to MX switch ports or indirectly to MX switches through the network.

You can provide MX management redundancy even on a single MP Ethernet port by connecting the MP indirectly to multiple MX switches through an intermediate Layer 2 or Layer 3 network.

Note. Install the Cat 5 cables for the MP access point at the installation site before installing the access point itself. During installation, you will insert the Cat 5 cable(s) into the MP port(s) before attaching the access point to the bracket.

3

Installing and Connecting an MP-372

Note. Before installing an MP access point, you might need to generate a network plan and an MP work order with RingMaster. (See "RingMaster Network Plan and Work Orders" on page 18.)

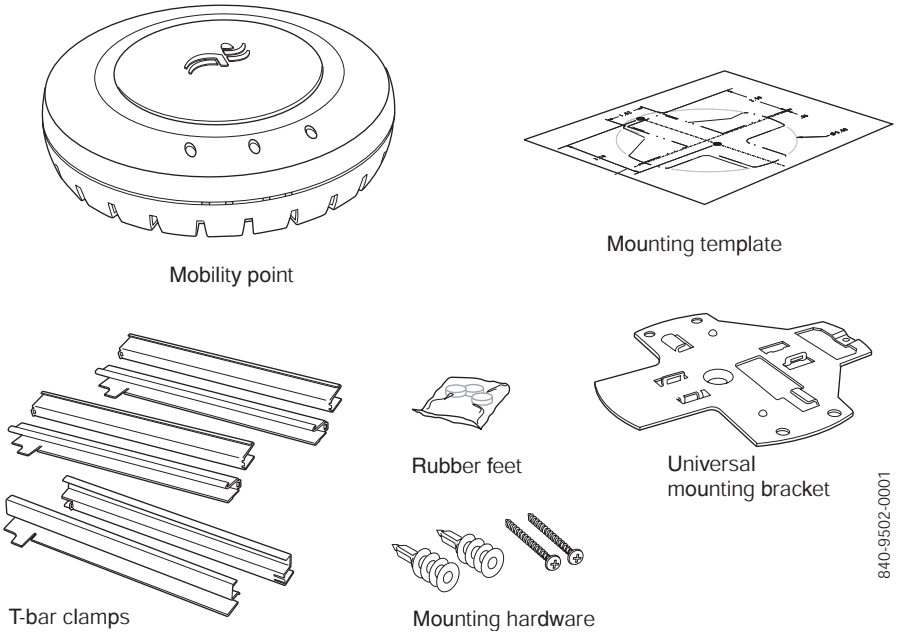
Unpacking an MP

The shipping carton for an MP access point contains the following items:

- One MP access point
- Mounting kit:
  - One universal mounting bracket (attached to the MP)
  - One paper mounting template (used for marking cutting areas and screw holes)
  - One two-piece 14.2-mm (9/16-inch) T-bar clamp
  - One two-piece 15.9-mm (5/8-inch) T-bar clamp
  - One two-piece 23.9-mm (15/16-inch) T-bar clamp
  - Two #6 sheet metal screws and two drywall anchors
  - Three adhesive rubber feet
- One documentation pack that includes quick mounting instructions and a registration card (not shown)

Figure 5 shows the contents of the shipping carton for model MP-372.

Figure 5. MP-372 Shipping Carton Contents



Before you begin installation:

1. Open the carton and carefully remove the contents, if you have not already done so.
2. Place the packing materials back in the carton and save the carton.
3. Verify that you received each item in the previous list. If any item is missing or damaged, contact Trapeze Networks.

Installation Requirements and Recommendations

For best results, follow these requirements and recommendations before installing an MP access point.

RingMaster Network Plan and Work Orders

If you are using RingMaster to plan your Trapeze Networks Mobility System installation, you might want to create and verify a network plan for the entire Trapeze network installation and generate an MP work order, before installing MP access points. A network plan and the MP work orders generated from it provide the following information about MP access point installation and configuration:

- Number of MP access points required for adequate WLAN capacity in each coverage area
- Detailed installation location for each MP access point
- Settings for all MP access points in the WLAN

(For information about installing RingMaster, creating and verifying a network plan, and generating an MP work order, see the *Trapeze RingMaster User's Guide* and *Trapeze RingMaster Reference Manual*.)

MX Switch Recommendation

Trapeze Networks recommends that you install and configure the MX switch before installing an MP access point. If the switch is already installed and configured for the MP access point(s), you can immediately verify the cable connection(s) when you plug the cable(s) into the MP access point.

Caution! MP model MP-372 is designed to receive power only from an 802.3af-compliant source, a Trapeze Networks Mobility Exchange (MX) switch, or a Trapeze-approved power injector. Connecting an MP access point to a Power over Ethernet (PoE) device that is not approved by Trapeze Networks can damage the equipment.

(For information about connecting an MP access point to an MX switch port, see “Connecting an MP to an MX Switch” on page 50.)

Wall Installation Recommendations

If you plan to install an MP on a partial wall or other vertical surface, orient the top of the access point (the side with the LEDs) toward the intended coverage area. The radio antennas transmit through the top of the access point but not through the bottom (where the bracket is).

This recommendation does not apply if you plan to use external antennas. You can orient the antennas independently of the MP itself. Orient an external antenna to face the intended coverage area.

MP Radio Safety Advisories

When you enable the MP radio(s) as part of MX switch configuration, the radios are able to receive and transmit radio frequency energy as soon as you connect the MP access point(s) to the MX switch, either directly or through the network.

Radio Frequency Exposure

Federal Communications Commission (FCC) Docket 96-8 for Spread Spectrum Transmitters specifies a safety standard for human exposure to radio frequency electromagnetic energy emitted by FCC-certified equipment. When used with the proper antennas (shipped in the product), Trapeze Networks MP access point products meet the uncontrolled environmental limits found in OET-65 and ANSI C95.1-1991. Proper installation of the MP access point according to the instructions in this manual will result in user exposure that is below the FCC recommended limits.

Additional Radio Safety Advisories

(For translations of warnings, see “Radio Safety Warnings” on page 64.)

Warning! In the U.S., locate the MP access point and any externally attached antennas a minimum of 20 cm (7.9 inches) away from people. This safety warning conforms with FCC radio frequency exposure limits for dipole antennas such as those used in the MP access point.

Warning! Do not operate the MP access point near unshielded blasting caps or in an otherwise explosive environment unless the device has been modified for such use by qualified personnel.

Warning! Do not touch or move the MP access point when the antennas are transmitting or receiving.

Warning! Do not hold any radio device so that the antenna is very close to or touching the face, eyes, or other exposed body part while the device's radio antenna is transmitting.

Warning! Before using a wireless device in a hazardous location, consult the local codes, national codes, and safety directors of the location for usage constraints.

Cable Requirements

Warning! Do not connect or disconnect cables or otherwise work with the MP access point hardware during periods of lightning activity. (For translations of this warning, see "Lightning Warning" on page 67.)

Note. The MP access point is intended for indoor use only. Do not install the device outdoors, unless you install it in a properly installed Trapeze Networks outdoor MP enclosure.

Note. To reduce the possibility of connection interference caused by dust, clean the Cat 5 connector pins before inserting a cable into an MP access point.

Cat 5 cable with straight-through signaling must be installed at the site before you install an MP access point. A single connection requires one cable. A dual-homed connection requires two cables.

Table 3 lists the pin signals for 10/100 Ethernet straight-through wiring. Pins 4, 5, 7, and 8 are used when Trapeze Power over Ethernet (PoE) is enabled on the port. *RD* means *Receive Data* and *TD* means *Transmit Data*.

Table 3. 10/100 Ethernet Straight-Through Pin Signals

MX Switch		Other Device	
Pin	**Function**	**Pin**	**Function**
1	RD+	1	TD+
2	RD-	2	TD-
3	TD+	3	RD+
4	PoE+	4	PoE+
5	PoE+	5	PoE+
6	TD-	6	RD-
7	PoE-	7	PoE-
8	PoE-	8	PoE-

Mounting an MP access point on a solid surface requires Cat 5 cable that does not have strain relief. For installation on all other surfaces, you can use Cat 5 cable with or without strain relief.

(For more information about cables, see “Cable Ports” on page 9.)

Installing an MP-372

To install an MP-372, use one of the procedures in this section.

Installation Hardware and Tools

Table 4 lists the mounting hardware and tools required for each type of installation.

Table 4. Required Mounting Hardware and Tools—Model MP-372

Mounting Option	Required Hardware and Tools	Included with the Product
Suspended ceiling—flush ceiling tiles	Mounting template	Yes
	Universal mounting bracket	Yes
	T-bar clamp **Note:** A T-bar clamp is not required for a 23.9-mm (15/16-inch) T-bar ceiling with flush ceiling tiles.	Yes
	Box cutter	No
	Small screwdriver (3-mm or 1/8-inch)	No
Suspended ceiling—drop ceiling tiles	Mounting template	Yes
	Universal mounting bracket	Yes
	T-bar clamp	Yes
	Box cutter	No
	Small screwdriver (3-mm or 1/8-inch)	No

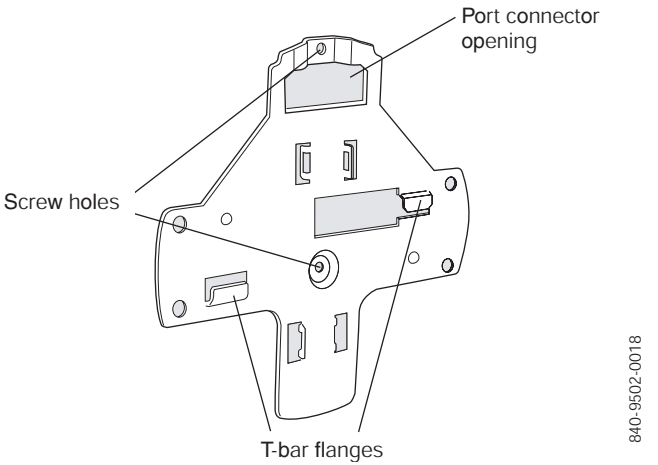
Table 4. Required Mounting Hardware and Tools—Model MP-372

Mounting Option	Required Hardware and Tools	Included with the Product
Junction box	Junction box	No
	Two #6-32 x 1-inch machine screws	Yes
	Universal mounting bracket	Yes
	Small screwdriver (3-mm or 1/8-inch)	No
	#2 Phillips-head screwdriver	No
Solid wall or ceiling	Two #6 sheet metal screws and two drywall anchors	Yes
	Universal mounting bracket	Yes
	Hammer	No
	Small screwdriver (3-mm or 1/8-inch)	No
	#2 Phillips-head screwdriver	No
Tabletop	Universal mounting bracket	Yes
	Three adhesive rubber feet	Yes
	Small screwdriver (3-mm or 1/8-inch)	No

Note. The MP-372 model is UL2043 plenum rated, so it also can be installed in the space above the ceiling if preferred.

Figure 6 shows the universal mounting bracket.

Figure 6. Universal Mounting Bracket



Suspended Ceiling Installation—Flush Ceiling Tiles

(For required mounting hardware and tools, see Table 4 on page 22.)

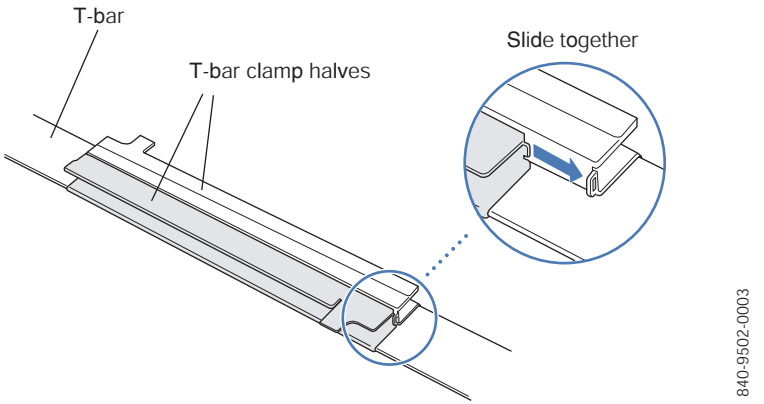
1. Select an installation location that is centered over a T-bar in the ceiling.
2. Cut a hole as follows in the ceiling tile for the Cat 5 cable(s):
   - **a** Place the mounting template over the area where you plan to install the MP access point.
   - **b** Use the box cutter to cut along the line marking the opening for the port connectors.
   - **c** Remove the mounting template and the material you cut from the ceiling panel.
3. Determine whether to install a T-bar clamp onto the ceiling T-bar:
   - If the T-bar width is 14.2 mm (9/16 inches), you need to install the 14.2-mm (9/16-inch) T-bar clamp. Go to step 4.
   - If the T-bar width is 23.9 mm (15/16 inches), the universal mounting bracket fits directly onto the T-bar. Go to step 5.

4 Install the 14.2-mm (9/16-inch) T-bar clamp onto the ceiling T-bar as shown in Figure 7.

a Slide each half of the clamp onto the T-bar so that the clamp lip is fully on the T-bar.

b Slide the two halves of the clamp toward each other until the tabs are inserted completely into the holes and the clamp fits snugly on the T-bar.

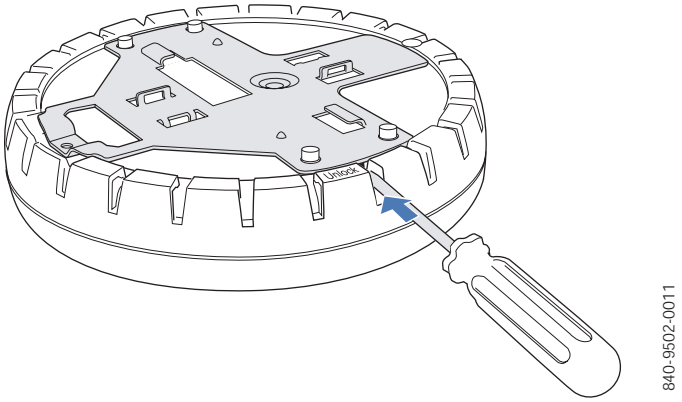
Figure 7. Step 4—Installing a T-bar Clamp



5 Unlock the universal mounting bracket from the MP access point by inserting the 3-mm or 1/8-inch screwdriver into the *Unlock* hole on the MP access point as shown in Figure 8.

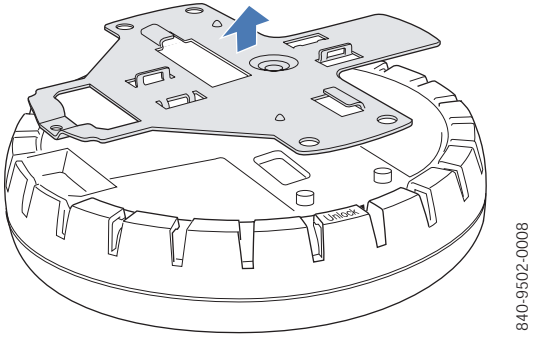
Caution! To avoid damage to the MP access point's lock mechanism or electronic components, do not use excessive force when inserting a tool into the *Unlock* or *Lock* hole.

Figure 8. Step 5—Unlocking the Bracket



6 Remove the bracket as shown in Figure 9.

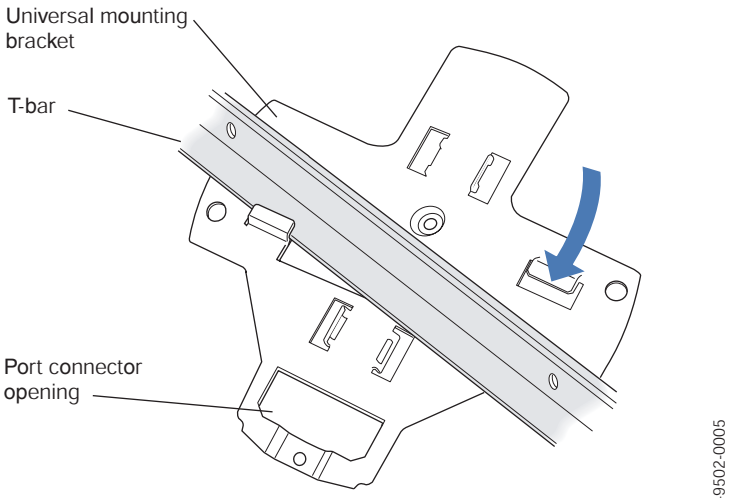
Figure 9. Step 6—Removing the Bracket



7 Install the universal mounting bracket as follows onto the T-bar or T-bar clamp:

a As shown in Figure 10, place the universal mounting bracket against the T-bar or clamp so that the two screw holes face downward and the two T-bar flanges face upward and are adjacent to the T-bar edges.

Figure 10. Step 7—Top View

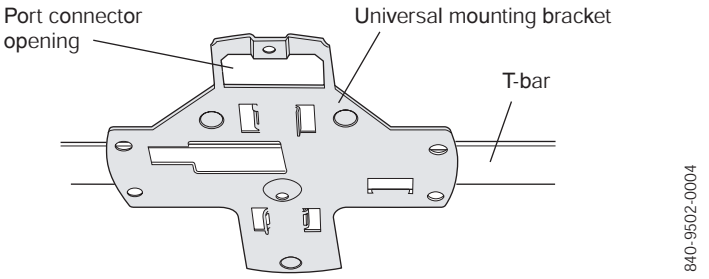


(Viewed from above ceiling tiles, looking down.)

b Properly align the bracket for mounting by placing the bracket so that its port connector opening is to the left of the hole you cut for the cables.

c Rotate the universal mounting bracket clockwise until the flanges snap into place on the T-bar or clamp as shown in Figure 11.

Figure 11. Step 7—Bottom View



8 Pull the Cat 5 cable(s) about 15 cm (about 6 inches) out of the hole in the ceiling tile and through the port connector opening to create enough slack to insert the cable(s).

9 Insert the Cat 5 cable(s) into the connector(s):

- For a single connection, use the connector for port 1.
- For redundancy, insert one cable into each connector.

10 Install the Kensington lock, if you plan to used one.

a Loop the Kensington lock's cable around an object that cannot be moved or damaged by a person pulling on the cable.

b Insert the key into the Kensington lock.

c Insert the Kensington lock into the security slot on the MP.

d Rotate the key right or left to secure the lock to the MP.

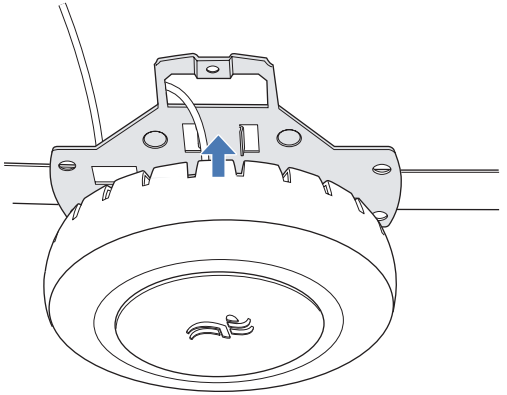
e Pull on the lock to verify that it is secured to the MP.

f Remove the key.

11 Lift the MP access point into place on the universal mounting bracket as shown in Figure 12.

Make sure the cable feeds properly into the ceiling as you lift the device, and does not become trapped between the access point and the bracket.

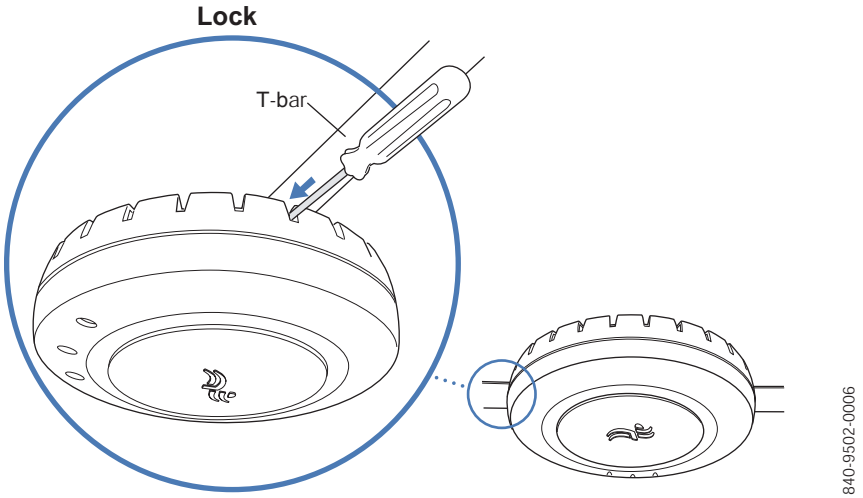
Figure 12. Step 10—Placing the MP Access Point on the Bracket



12 Lock the MP access point onto the bracket by inserting the 3-mm or 1/8-inch screwdriver into the *Lock* hole on the access point as shown in Figure 13.

Caution! To prevent possible damage to the MP access point, make sure the device is fully locked onto the bracket before letting go of it.

Figure 13. Step 11—Locking the Bracket



13 To ensure that the MP access point is fully locked onto the bracket, gently pull down on the access point and attempt to rotate it from side to side.

14 If the access point comes off the bracket, relock the device onto the bracket as described in step 12 on page 29.

15 If the MP requires an external antenna, install and connect the antenna. (See "Connecting an MP to an External Antenna" on page 49.)

16 If the other ends of the Cat 5 cable(s) are not already connected and the link activated, go to "Connecting an MP to an MX Switch" on page 50. Otherwise, go to "Verifying MP Health" on page 52.

Suspended Ceiling Installation—Drop Ceiling Tiles

(For required mounting hardware and tools, see Table 4 on page 22.)

1. Select an installation location that is centered over a T-bar in the ceiling.
2. Cut a hole as follows in the ceiling tile for the Cat 5 cable(s):
   a. Place the mounting template over the area where you plan to install the MP access point.
   b. Use the box cutter to cut along the line marking the opening for the port connectors.
   c. Remove the mounting template and the material you cut from the ceiling panel.
3. Install the T-bar clamp that fits the T-bar:
   a. Slide each half of the clamp onto the T-bar so that the clamp lip is fully on the T-bar.
   b. Slide the two halves of the clamp toward each other until the tabs are inserted completely into the holes and the clamp fits snugly on the T-bar.

   Figure 14 shows an example for a 23.9-mm (15/16-inch) T-bar. Figure 15 shows an example for a 15.9-mm (5/8-inch) T-bar.

Figure 14. Step 3—Installing the T-bar Clamp for a 23.9-mm (15/16-inch) T-bar

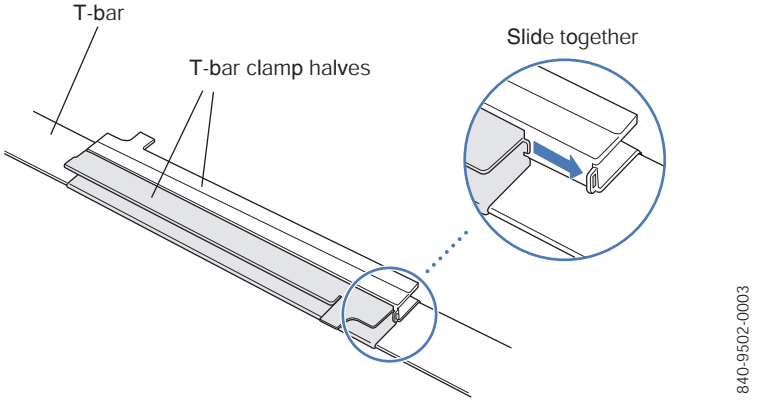
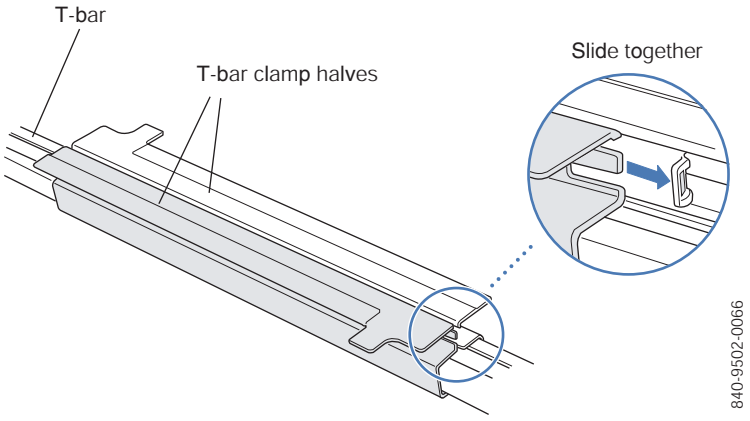


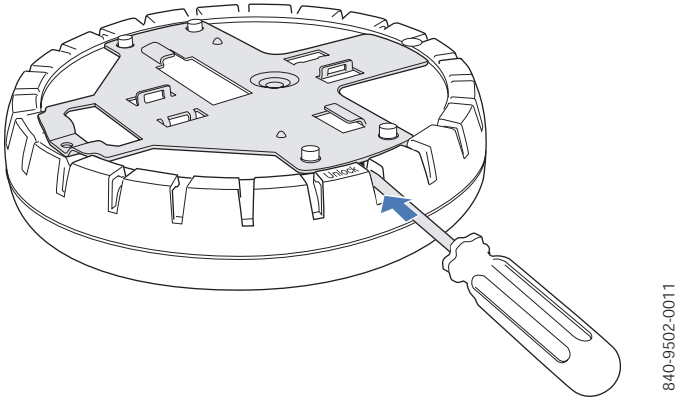
Figure 15. Step 3—Installing the T-bar Clamp for a 15.9-mm (5/8-inch) T-bar



4 Unlock the universal mounting bracket from the MP access point by inserting the 3-mm or 1/8-inch screwdriver into the *Unlock* hole on the MP access point as shown in Figure 16.

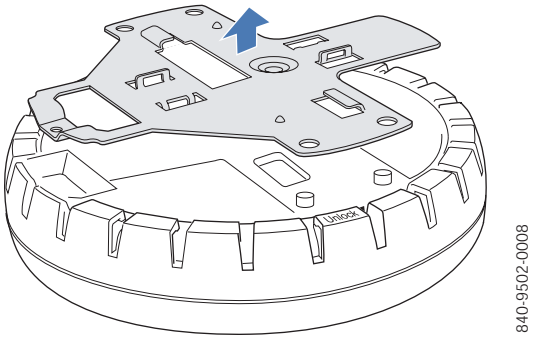
Caution! To avoid damage to the MP access point's lock mechanism or electronic components, do not use excessive force when inserting a tool into the *Unlock* or *Lock* hole.

Figure 16. Step 4—Unlocking the Bracket



5 Remove the bracket as shown in Figure 17.

Figure 17. Step 5—Removing the Bracket



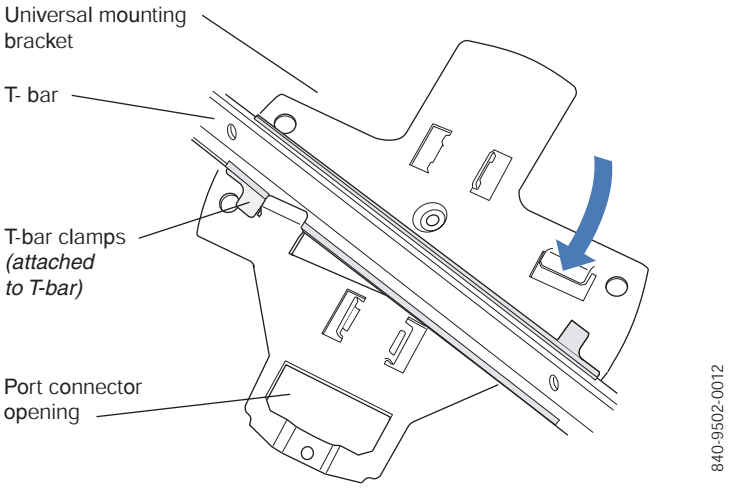
6 Install the universal mounting bracket as follows onto the T-bar clamp:

a As shown in Figure 18, place the universal mounting bracket against the T-bar clamp so that the two screw holes face downward and the two T-bar flanges face upward and are adjacent to the T-bar edges.

b Properly align the bracket for mounting by placing the bracket so that its port connector opening is to the left of the hole you cut for the cables.

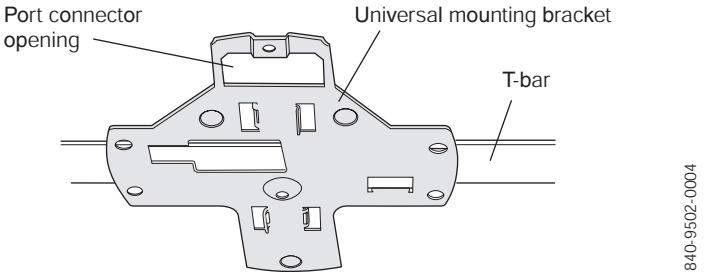
c Rotate the universal mounting bracket clockwise until the flanges snap into place on the T-bar clamp as shown in Figure 19.

Figure 18. Step 6—Top View



(Viewed from above ceiling tiles, looking down.)

Figure 19. Step 6—Bottom View



7 Pull the Cat 5 cable(s) about 15 cm (about 6 inches) out of the hole in the ceiling tile and through the port connector opening to create enough slack to insert the cable(s).

8 Insert the Cat 5 cable(s) into the connector(s):

- For a single connection, use the connector for port 1.
- For redundancy, insert one cable into each connector.

9 Install the Kensington lock, if you plan to used one.

a Loop the Kensington lock's cable around an object that cannot be moved or damaged by a person pulling on the cable.

b Insert the key into the Kensington lock.

c Insert the Kensington lock into the security slot on the MP.

d Rotate the key right or left to secure the lock to the MP.

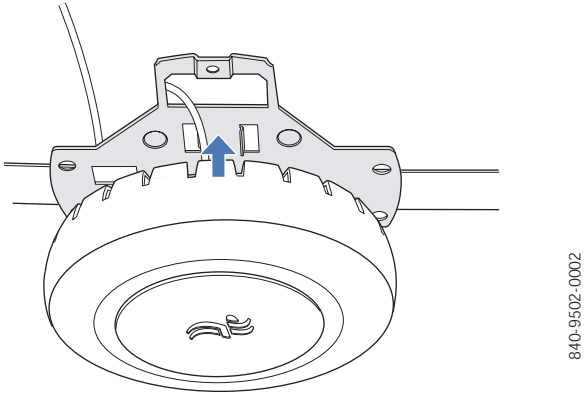
e Pull on the lock to verify that it is secured to the MP.

f Remove the key.

10 Lift the MP access point into place on the universal mounting bracket as shown in Figure 20.

Make sure the cable feeds properly into the ceiling as you lift the device, and does not become trapped between the access point and the bracket.

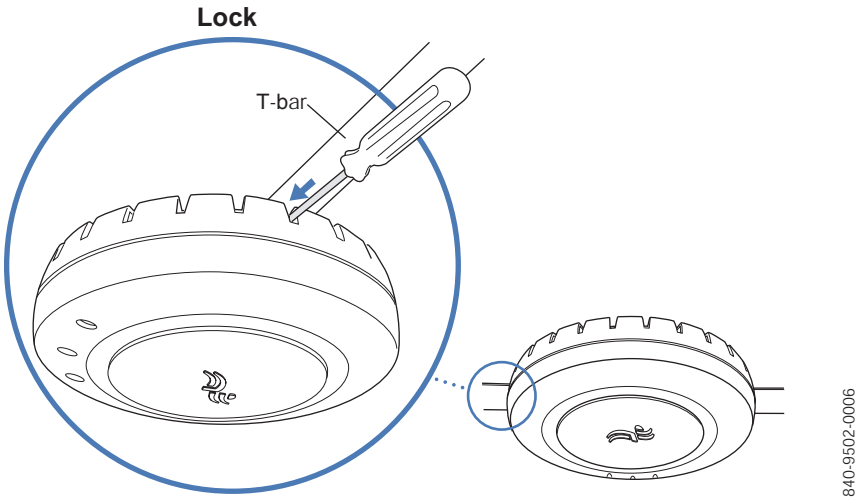
Figure 20. Step 9—Placing the MP Access Point on the Bracket



11 Lock the MP access point onto the bracket by inserting the 3-mm or 1/8-inch screwdriver into the *Lock* hole on the access point as shown in Figure 21.

Caution! To prevent possible damage to the MP access point, make sure the device is fully locked onto the bracket before letting go of it.

Figure 21. Step 10—Locking the Bracket



12 To ensure that the MP access point is fully locked onto the bracket, gently pull down on the access point and attempt to rotate it from side to side.

If the access point comes off the bracket, relock the device onto the bracket as described in step 11 on page 34.

13 If the MP requires an external antenna, install and connect the antenna. (See "Connecting an MP to an External Antenna" on page 49.)

14 If the other ends of the Cat 5 cable(s) are not already connected and the link activated, go to "Connecting an MP to an MX Switch" on page 50. Otherwise, go to "Verifying MP Health" on page 52.

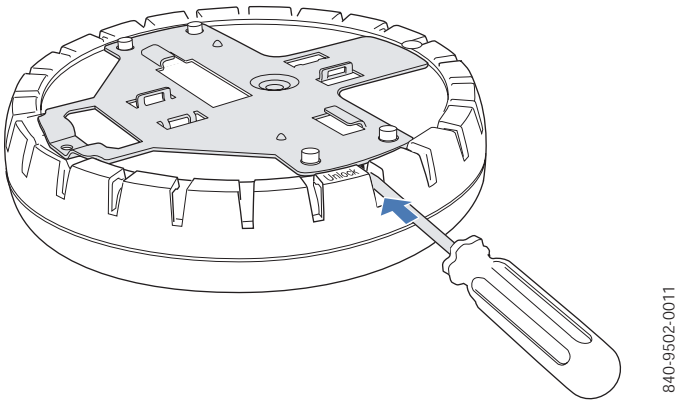
Junction Box Installation

(For required mounting hardware and tools, see Table 4 on page 22.)

1 Unlock the universal mounting bracket from the MP access point by inserting the 3-mm or 1/8-inch screwdriver into the *Unlock* hole on the MP access point as shown in Figure 22.

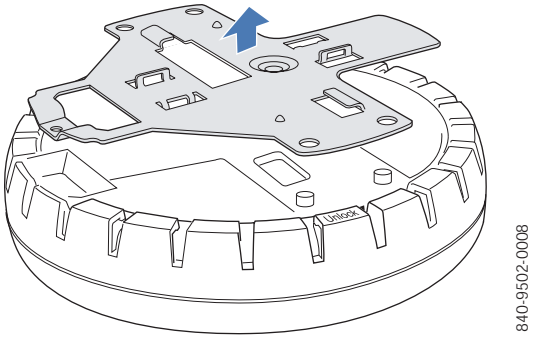
Caution! To avoid damage to the MP access point's lock mechanism or electronic components, do not use excessive force when inserting a tool into the *Unlock* or *Lock* hole.

Figure 22. Step 1—Unlocking the Bracket



2 Remove the bracket as shown in Figure 23.

Figure 23. Step 2—Removing the Bracket

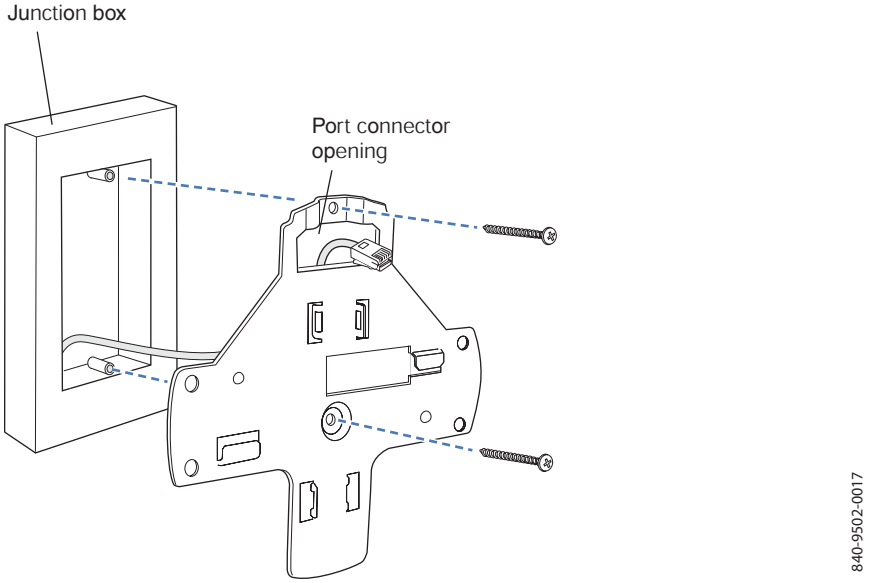


3 Attach the universal mounting bracket to the junction box as shown in Figure 24:

a Place the universal mounting bracket against the junction box so that the two screw holes face the junction box and align over the screw holes in the box.

b Insert the #6-32 x 1-inch machine screws in the universal mounting bracket's screw holes, and use a #2 Phillips-head screwdriver to tighten them.

Figure 24. Step 3—Placing the Bracket on the Junction Box



4 Pull the Cat 5 cable(s) about 15 cm (about 6 inches) out of the junction box and through the port connector opening to create enough slack to insert the cable(s) into the port connectors.

5 Insert the Cat 5 cable(s) into the connector(s):

- For a single connection, use the connector for port 1.
- For redundancy, insert one cable into each connector.

6 Install the Kensington lock, if you plan to used one.

a Loop the Kensington lock's cable around an object that cannot be moved or damaged by a person pulling on the cable.

b Insert the key into the Kensington lock.

c Insert the Kensington lock into the security slot on the MP.

d Rotate the key right or left to secure the lock to the MP.

e Pull on the lock to verify that it is secured to the MP.

f Remove the key.

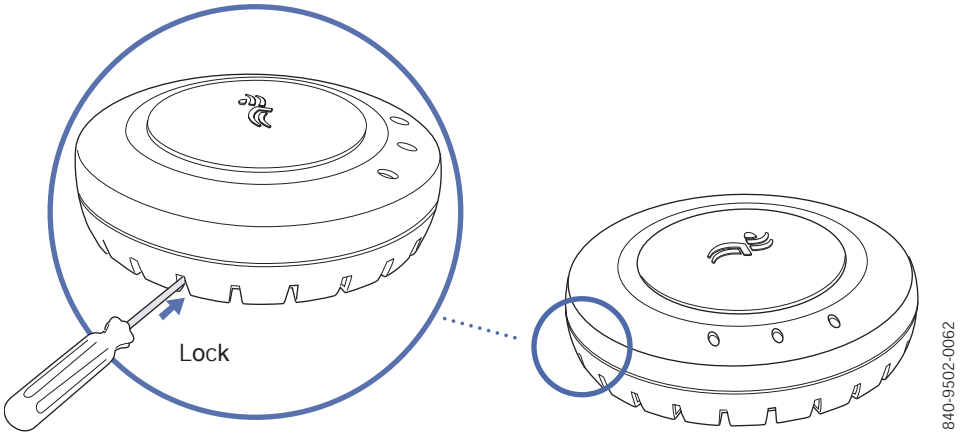
7 Lift the MP access point into place on the universal mounting bracket.

Make sure the cable feeds properly into the junction box as you lift the device, and does not become trapped between the access point and the bracket.

8 Lock the MP access point onto the bracket by inserting the 3-mm or 1/8-inch screwdriver into the *Lock* hole on the access point as shown in Figure 25.

Caution! To prevent possible damage to the MP access point, make sure the device is fully locked onto the bracket before letting go of it.

Figure 25. Step 7—Locking the Bracket



9 To ensure that the MP access point is fully locked onto the bracket, gently pull down on the access point and attempt to rotate it from side to side.

If the access point comes off the bracket, relock the device onto the bracket as described in step 8 on page 39.

10 If the MP requires an external antenna, install and connect the antenna. (See "Connecting an MP to an External Antenna" on page 49.)

11 If the other ends of the Cat 5 cable(s) are not already connected and the link activated, go to "Connecting an MP to an MX Switch" on page 50. Otherwise, go to "Verifying MP Health" on page 52.

Solid Wall or Ceiling Installation

Note. The solid surface mounting option requires Cat 5 cable that does not have strain relief, unless you plan to route the cable through a hole in the wall or ceiling. The other options can use Cat 5 cable with or without strain relief.

(For required mounting hardware and tools, see Table 4 on page 22.)

1. Prepare holes in the wall or ceiling for the universal mounting bracket, using the following steps:
   - **a** Place the paper mounting template over the location where you want to install the MP access point.
   - **b** Mark the screw hole location(s).
     - If you plan to route the Cat 5 cable externally along the wall or ceiling, mark the locations of both the center screw hole and the screw hole by the port connector opening.
     - If you plan to route the Cat 5 cable through a hole in the wall or ceiling, mark the location of the center screw hole only. You cannot use the screw hole by the port connector opening if you cut a hole for the opening.

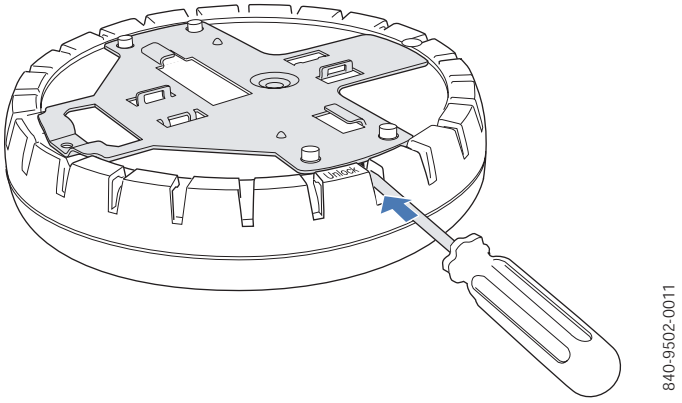
     Note. Do not mark the four holes on the edges of the bracket. (These are the holes indicated by the dashed lines in Figure 28.) The MP access point fits into these holes. They are not screw holes.

   - **c** Remove the template.
2. Install the drywall anchor(s):
   - **a** Hammer a drywall anchor into each hole, up to the beginning of the threads on the anchor.
   - **b** Screw each anchor the rest of the way into its hole using a #2 Phillips-head screwdriver.
   - **c** Remove the screw from each anchor and save the screw(s) for step 6 on page 42.

3 Unlock the universal mounting bracket from the MP access point by inserting the 3-mm or 1/8-inch screwdriver into the *Unlock* hole on the MP access point as shown in Figure 26.

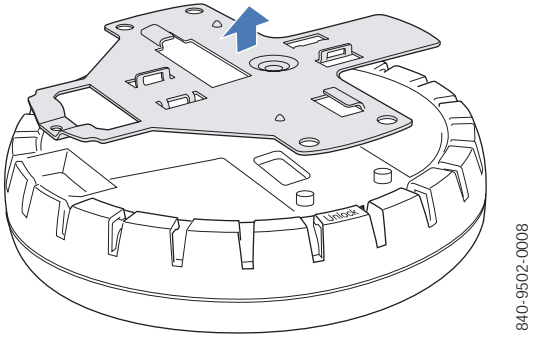
Caution! To avoid damage to the MP access point's lock mechanism or electronic components, do not use excessive force when inserting a tool into the *Unlock* or *Lock* hole.

Figure 26. Step 3—Unlocking the Bracket



4 Remove the bracket as shown in Figure 27.

Figure 27. Step 4—Removing the Bracket



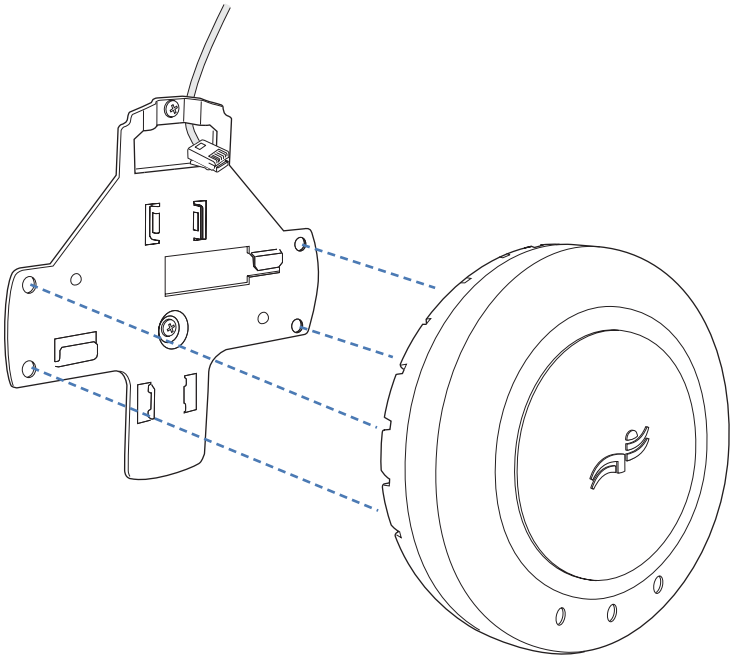
5 As shown in Figure 28, feed the Cat 5 cable(s) through the port connector opening and align the universal mounting bracket over the drywall anchors so that the two screw holes in the bracket face the drywall anchors.

6 Insert the #6 sheet metal screws into the screw holes, and tighten them to secure the universal mounting bracket to the wall or ceiling.

(If you routed the Cat 5 cable through a hole in the wall or ceiling, insert the screw into the center screw hole only.)

Note. Do not insert screws in the four holes on the edges of the bracket. (These are the holes indicated by the dashed lines in Figure 28.) The MP access point fits into these holes. They are not screw holes.

Figure 28. Steps 5 and 6—Bracket Placement on Solid Wall or Ceiling



7 Insert the Cat 5 cable(s) into the connector(s):

- For a single connection, use the connector for port 1.
- For redundancy, insert one cable into each connector.

8 Install the Kensington lock, if you plan to used one.

a Loop the Kensington lock's cable around an object that cannot be moved or damaged by a person pulling on the cable.

b Insert the key into the Kensington lock.

c Insert the Kensington lock into the security slot on the MP.

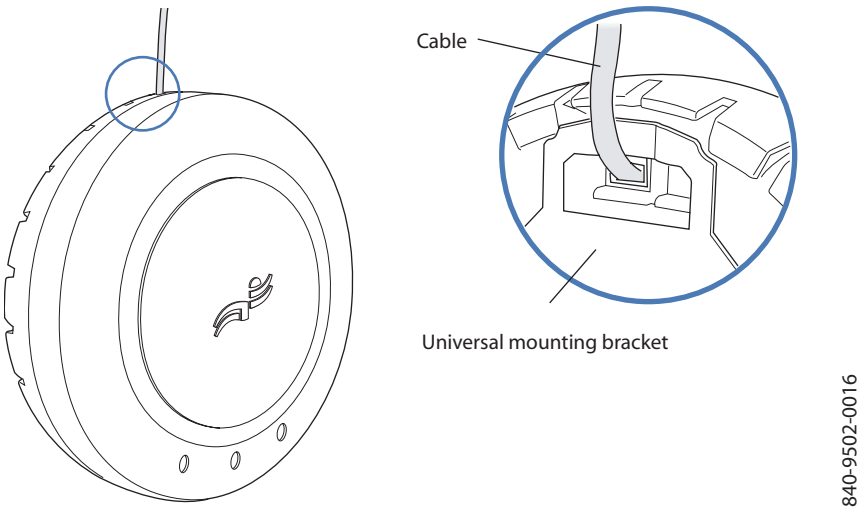
d Rotate the key right or left to secure the lock to the MP.

e Pull on the lock to verify that it is secured to the MP.

f Remove the key.

9 As shown in Figure 29, place the MP access point on the bracket, making sure to remove any slack that occurs in the cable between the bracket and the MP access point.

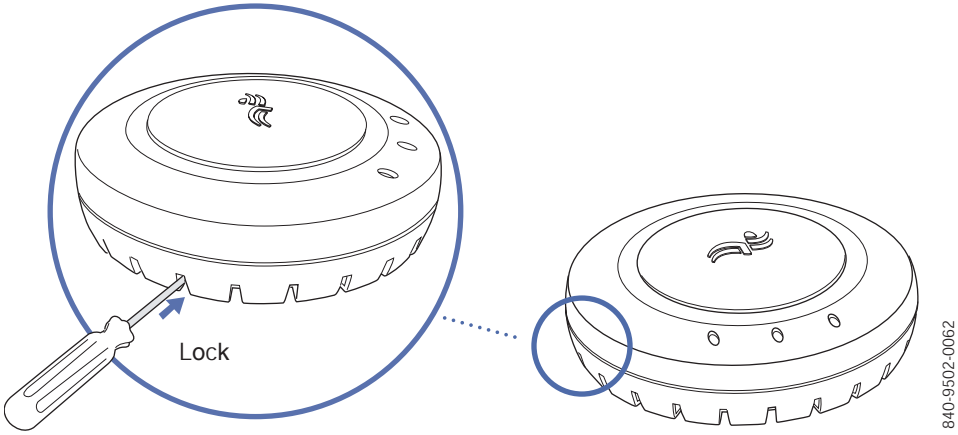
Figure 29. Step 8—Cable Placement



10 Lock the MP access point onto the bracket by inserting the 3-mm or 1/8-inch screwdriver into the *Lock* hole on the access point as shown in Figure 30.

Caution! To prevent possible damage to the MP access point, make sure the device is fully locked onto the bracket before letting go of it.

Figure 30. Step 9—Locking the Bracket



11 To ensure that the MP access point is fully locked onto the bracket, gently pull on the access point and attempt to rotate it from side to side.

If the access point comes off the bracket, relock the device onto the bracket as described in step 10 on page 44.

12 If the MP requires an external antenna, install and connect the antenna. (See "Connecting an MP to an External Antenna" on page 49.)

13 If the other ends of the Cat 5 cable(s) are not already connected and the link activated, go to "Connecting an MP to an MX Switch" on page 50. Otherwise, go to "Verifying MP Health" on page 52.

Tabletop Installation

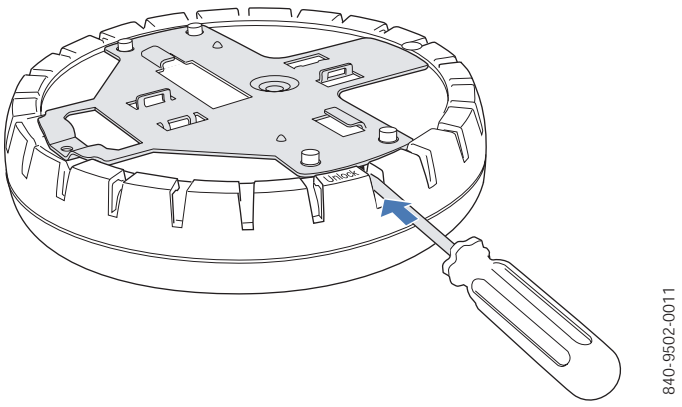
(For required mounting hardware and tools, see Table 4 on page 22.)

1 Reverse the universal mounting bracket:

a Unlock the universal mounting bracket from the MP access point by inserting the 3-mm or 1/8-inch screwdriver into the *Unlock* hole on the MP access point as shown in Figure 31.

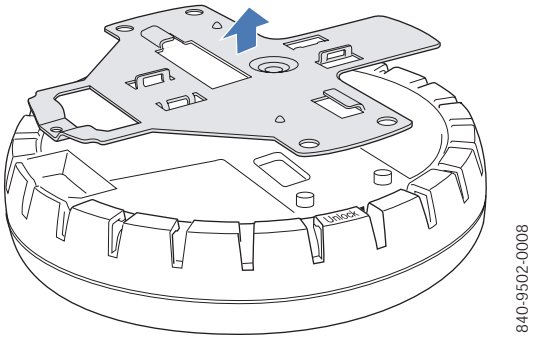
Caution! To avoid damage to the MP access point's lock mechanism or electronic components, do not use excessive force when inserting a tool into the *Unlock* or *Lock* hole.

Figure 31. Step 1a—Unlocking the Bracket



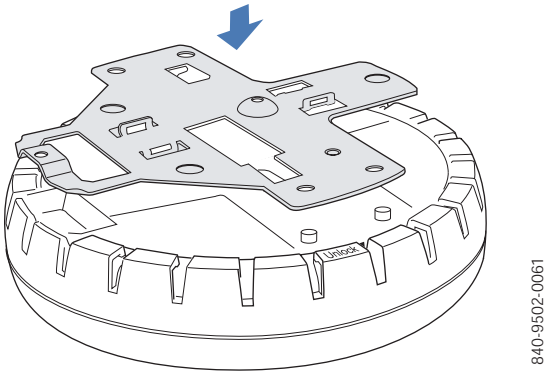
b Remove the bracket as shown in Figure 32.

Figure 32. Step 1b—Removing the Bracket



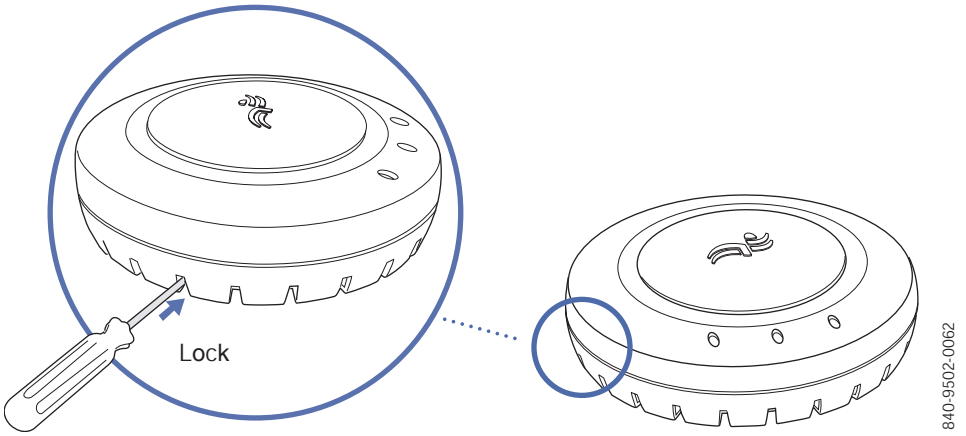
c Turn over the universal mounting bracket, then align the bracket over the cable ports and the four mounting posts as shown in Figure 33.

Figure 33. Step 1c—Turning Over the Bracket



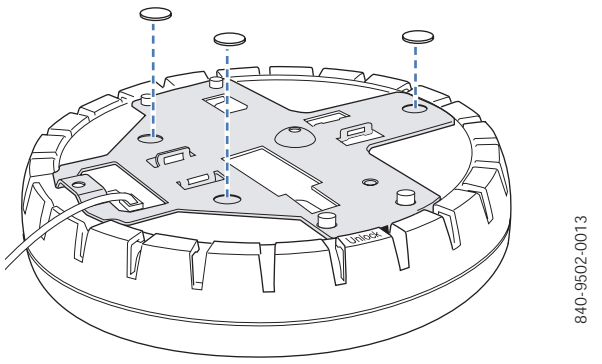
d Once the bracket is fully seated, lock the bracket onto the MP access point by inserting the 3-mm or 1/8-inch screwdriver into the *Lock* hole on the access point as shown in Figure 34.

Figure 34. Step 1d—Locking the Bracket



2 Attach the three rubber adhesive feet onto the universal mounting bracket, in the three location circles, as shown in Figure 35.

Figure 35. Step 2—Installing the Rubber Feet



3 Insert the Cat 5 cable(s) into the connector(s):

- For a single connection, use the connector for port 1.
- For redundancy, insert one cable into each connector.

4. Install the Kensington lock, if you plan to used one.
   a. Loop the Kensington lock's cable around an object that cannot be moved or damaged by a person pulling on the cable.
   b. Insert the key into the Kensington lock.
   c. Insert the Kensington lock into the security slot on the MP.
   d. Rotate the key right or left to secure the lock to the MP.
   e. Pull on the lock to verify that it is secured to the MP.
   f. Remove the key.
5. Place the MP access point in the desired location on the table.
6. If the MP requires an external antenna, install and connect the antenna. (See "Connecting an MP to an External Antenna" on page 49.)
7. If the other ends of the Cat 5 cable(s) are not already connected and the link activated, go to "Connecting an MP to an MX Switch" on page 50. Otherwise, go to "Verifying MP Health" on page 52.

Connecting an MP to an External Antenna

Each radio in an MP-372 can use an optional Trapeze external antenna. To mount the antenna, see the instructions that come with the antenna.

Caution! The external antenna must be installed at least 20 cm from the MP access point.

To connect a mounted external antenna to an MP-372:

1. Attach the exterior antenna cable that is shipped with the antenna to the MP external antenna connector.

   Both connectors are labeled to indicate the radio type. The MP has standard SMA connectors for attachment to the 802.11b/g antenna and to the 802.11a antenna.

   (For the location of the external antenna connectors, see Figure 2 on page 8.)

   Caution! The external connectors on the MP are labeled: 11B/G and 11A. Each connector is a standard SMA connector. Make sure you attach the antenna to the correct connector.

   Note. If the MP is installed in a Trapeze Networks outdoor MP enclosure, attach the antenna cable to the lightning surge arrestor (if installed) or the enclosure's SMA bulkhead connector.

2. Attach the other end of the antenna cable to the antenna.
3. If the other ends of the Cat 5 cable(s) are not already connected and the link activated, go to "Connecting an MP to an MX Switch" on page 50. Otherwise, go to "Verifying MP Health" on page 52.

Connecting an MP to an MX Switch

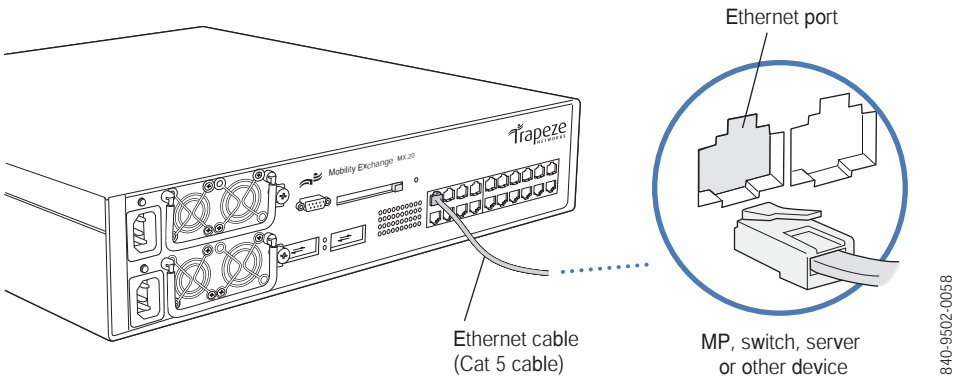
You can connect an MP access point directly to an MX switch or indirectly to the switch through an intermediate Layer 2 or Layer 3 network.

- To connect the MP directly to an MX switch, configure the MX switch port as an MP access port and use the following procedure to insert the cable into the MX switch and verify the link.
- To connect the MP indirectly to an MX switch though the network, configure a Distributed MP connection on the MX switch.

You can use the CLI or RingMaster to configure an MP access port or Distributed MP connection. (See the *Trapeze Mobility System Software Configuration Guide* or the *Trapeze RingMaster User's Guide*.)

Figure 36 shows how to insert a Cat 5 cable into 10/100 Ethernet port on an MX switch. Refer to this figure as you perform the procedure.

Figure 36. 10/100 Cat 5 Cable Installation



1 Insert a Cat 5 cable with a standard RJ-45 connector as shown in Figure 36. For connection to an MP access point, use a straight-through cable.

2 When the link is activated, observe the MP LED for the port on the MX switch:

MP LED Appearance	Meaning
Solid green	For an MP access point's active link, all the following are true: • MP access point has booted. • MP access point has received a valid configuration from the MX switch. • Management link with an MP access point is operational. • At least one radio is enabled or is in sentry mode. For an MP access point's secondary link, the link is present.
Alternating green and amber	MP access point is booting with an image received from the MX switch. After the access point boots and receives its configuration, this LED appearance persists until a radio is enabled or is placed in sentry mode.
Solid amber	PoE is on.
Blinking amber	MP is unresponsive or there is a PoE problem.
Unlit	PoE is off.

Note. An MX switch's 10/100 Ethernet ports are configured as wired network ports by default. You or the system administrator must change the port type for an MX port directly connected to an MP to activate the link. (See the *Trapeze Mobility Exchange Installation and Basic Configuration Guide*.)

Verifying MP Health

After you install the MP access point and enable PoE on the Ethernet cable connected to the MP, you can easily verify the MP's status by observing the LEDs, particularly the health LED. (See Figure 4 on page 12.)

The health or LINK LED indicates whether the MP access point is ready for operation.

- If the LED is green and glowing steadily, the MP has been booted successfully by the MX switch and is ready for operation.
- If the LED is not steadily glowing green, contact the system administrator for the MX switch or, if you are the system administrator, see Appendix A, "MP Troubleshooting," on page 53.

A

MP Troubleshooting

After you insert a Cat 5 cable into an MP access point's port connector and enable PoE on the cable, observe the device's health or LINK LED to determine the status of the connection with the MX switch.

- If the LED is green and is glowing steadily, the MP has been booted successfully by the MX switch and is ready for operation.
- If the LED is not steadily glowing green, see Table 5.

(For descriptions of all the LEDs, see "Status LEDs" on page 12.)

Table 5. Health LED States

Health or LINK LED Appearance	Diagnosis	Remedy
Not solid green	MP radio needs to be enabled.	Enable at least one of the radios. If the LED is still not solid green, try the remedy listed in this table based on the LED's appearance.
Unlit	MP access point is not receiving power.	Check the Cat 5 cable connection(s). For a direct connection to an MX switch: • Set the port type on the MX switch to an MP port. • Verify that Power over Ethernet (PoE) is enabled on the MX switch port connected to the MP access point. For an indirect connection through the network: • Configure a Distributed MP connection on an MX switch. • Verify that a Trapeze-approved PoE source is supplying power to the MP.
Slowly alternating green and amber	MP access point is booting with an image received from an MX switch.	Wait a few seconds for the boot process to complete. If this LED appearance persists, enable a radio or place a radio in sentry mode.
Solid amber	MP access point is waiting to receive boot instructions and a configuration file from an MX switch.	Wait a few seconds for the boot process to begin. If the LED remains amber, try the remedies for the other health LED appearances. If the LED still remains amber, make sure the MP access point is securely connected to its PoE source and to the network or MX switch.

B

MP Technical Specifications

This appendix lists the technical specifications for the Trapeze Networks MP-372 access point. Table 6 lists the mechanical and compliance specifications. (For detailed compliance information, see the *Trapeze Regulatory Information* document.) Table 7, Table 8, and Table 9 list the radio specifications. Table 10 lists the MAC address allocation scheme.

(For specifications for the MX switch, see the *Trapeze Mobility Exchange Installation and Basic Configuration Guide*.)

Note. This Listed Accessory is designed and approved to be used only with Trapeze Networks Mobility Exchange (MX) models MX-20, MX-8, and MXR-2. (The MX-400 switch does not directly connect to the MP.)

Note. The MP radios are disabled by default and can be enabled only by the system administrator using the RingMaster management application or the MX switch's command-line interface (CLI).

Note. The radio frequency band, operating channels, and transmit power depend on the country of operation specified by the system administrator using RingMaster or the MX switch's CLI.

Table 6. MP Mechanical and Compliance Specifications

Specification	Description
Size	Diameter: 16.76 cm (6.6 inches) Height: 4.69 cm (1.85 inches)
Weight	Without mounting bracket: 0.35 kg (12.5 ounces) With mounting bracket: 0.40 kg (14 ounces)
Operating Temperature	0° C to +50° C (32° F to 122° F)
Storage Temperature	-20° C to +70° C (-4° F to +158° F)
Humidity	10% to 95% noncondensing
Power over Ethernet (PoE)	42 VDC to 57 VDC (46 VDC nominal) IEEE 802.3af (MP-341, MP-352, and MP-52)
Status indicators	Health/MX and radio LEDs (For descriptions of the LEDs, see “Status LEDs” on page 12.)
Wired network ports	Two RJ-45 ports for 10/100BASE-T Ethernet and Power over Ethernet (PoE)
Standards compliance	IEEE 802.11 IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.3af
Safety and electromagnetic compliance	FCC Part 15, UL 60950 IC Part 15, CSA 22.2 N0-950, RSS-139-1 and RSS-210 ETS 300 328 (2.4 GHz) and 301 893 (5 GHz), EN 301 489-17 R&TTE Directive 1999/5/EC TELEC, ARIB T66 GBT-15941-1995, GBT-16841-1997 LP0002

Table 6. MP Mechanical and Compliance Specifications (continued)

Specification	Description
Encryption	Wi-Fi Protected Access (WPA) Advanced Encryption Standard (AES) 40-bit/104-bit Wired-Equivalent Privacy (WEP)
General	Power-save mode supported Transmit power control in 1 dBm increments Supports up to 250 clients per radio

Table 7. 802.11a Radio Specifications

Specification	Description
Antenna type	Integrated diversity omnidirectional External sectorized or directional (optional)
Antenna gain	Internal: 2 dBi External: • ANT-5060—14.5 dBi • ANT-5120—12.5 dBi • ANT-5180—10.8 dBi
Frequency band	5.15 GHz to 5.85 GHz based on country regulations
Operating channels	Based on the country of operation specified by the system administrator
Association rates	54 Mbps, 48 Mbps, 36 Mbps, 24 Mbps, 18 Mbps, 12 Mbps, 9 Mbps, and 6 Mbps, with automatic fallback
Modulation	Orthogonal frequency division multiplexing (OFDM)
Transmit power	Based on the country of operation specified by the system administrator

Table 8. 802.11b Radio Specifications

Specification	Description
Antenna type	Integrated diversity omnidirectional External sectorized or directional (optional)
Antenna gain	Internal: 2 dBi External: • ANT-1060—greater than 10 dBi • ANT-1120—7 dBi or more • ANT-1180—6 dBi or more
Frequency band	2.4 GHz to 2.4835 GHz based on country regulations
Operating channels	Based on the country of operation specified by the system administrator
Association rates	11 Mbps, 5.5 Mbps, 2 Mbps, and 1 Mbps, with automatic fallback
Modulation	Direct-sequence spread-spectrum (DSSS)
Transmit power	Based on the country of operation specified by the system administrator

Table 9. 802.11g Radio Specifications

Specification	Description
Antenna type	Integrated diversity omnidirectional External sectorized or directional (optional)
Antenna gain	Internal: 2 dBi External: • ANT-1060—greater than 10 dBi • ANT-1120—7 dBi or more • ANT-1180—6 dBi or more
Frequency band	2.4 GHz to 2.4835 GHz based on country regulations
Operating channels	Based on the country of operation specified by the system administrator

Table 9. 802.11g Radio Specifications (continued)

Specification	Description
Association rates	54 Mbps, 48 Mbps, 36 Mbps, 24 Mbps, 18 Mbps, 12 Mbps, 9 Mbps, and 6 Mbps, with automatic fallback
Modulation	Orthogonal frequency division multiplexing (OFDM)
Transmit power	Based on the country of operation specified by the system administrator

MAC Addresses

Each MP-372 is assigned a unique block of 64 MAC addresses. Each radio has 32 MAC addresses and can therefore support up to 32 SSIDs, with one MAC address assigned to each SSID as its BSSID.

An MP's MAC address block is listed on a label on the back of the MP. If the MP is already deployed and running on the network, you can display the MAC address assignments by using the **show {ap | dap} status** command.

All MAC addresses on an MP are assigned based on the MP's base MAC address, as described in Table 10.

Table 10. MAC Address Allocations on MP-372

MP base MAC Address	• The MP has a base MAC address. All the other addresses are assigned based on this address.
Ethernet Port MAC Addresses	• Ethernet port 1 equals the MP base MAC address. • Ethernet port 2 equals the MP base MAC address + 1.
802.11a Radio and SSID MAC Addresses	• The 802.11a radio equals the MP base MAC address + 1. • The BSSIDs for the SSIDs configured on the 802.11a radio end in odd numbers. The first BSSID is equal to the MP's base MAC address + 1. The next BSSID is equal to the MP's base MAC address + 3, and so on.
802.11b/g Radio and SSID MAC Addresses	• The 802.11b/g radio equals the MP base MAC address. • The BSSIDs for the SSIDs configured on the 802.11b/g radio end in even numbers. The first BSSID is equal to the MP's base MAC address. The next BSSID is equal to the MP's base MAC address + 2, and so on.

Appendix B

C

Translated Warning Conventions and Warnings

The following warning conventions and warnings apply to this manual.

Warning Conventions

Warning! This situation or condition can cause injury.

Waarschuwing! Deze situatie of omstandigheid kan letsel veroorzaken.

Warnung! Diese Situation oder dieser Zustand kann zu Verletzungen führen.

Avertissement ! Cette situation ou cette condition peuvent provoquer des blessures.

Aviso Esta situación o condición puede causar lesiones.

Warning! High voltage. This situation or condition can cause injury due to electric shock.

Waarschuwing! Hoog voltage. Deze situatie of omstandigheid kan letsel veroorzaken door elektrische schokken.

Warnung! Hochspannung. Diese Situation oder dieser Zustand kann einen Elektroschock verursachen.

Avertissement ! Haute tension. Cette situation ou cette condition peuvent provoquer des blessures dues à des décharges électriques.

Aviso Alta tensión. Esta situación o condición puede causar lesiones por descarga eléctrica.

Warning! Radiation. This situation or condition can cause injury due to improper handling of fiber-optic equipment.

Waarschuwing! Straling. Deze situatie of omstandigheid kan letsel veroorzaken door onjuist gebruik van glasvezelapparatuur.

Warnung! Strahlung. Diese Situation oder dieser Zustand kann durch falschen Umgang mit glasfaserbasierten Geräten zu Verletzungen führen.

Avertissement ! Radiation. Cette situation ou cette condition peuvent provoquer des blessures dues à une manipulation inappropriée d'appareils équipés de fibres optiques.

Aviso Radiación. Esta situación o condición puede causar lesiones debido a un manejo inadecuado del equipamiento de fibra óptica.

Qualified Service Personnel Warning

Warning! Installation must be performed by qualified service personnel only. Read and follow all warning notices and instructions marked on the product or included in the documentation. Before installing the product, read the *Trapeze Regulatory Information* document.

Waarschuwing! De installatie mag alleen worden uitgevoerd door bevoegd onderhoudspersoneel. Het is essentieel dat u kennis neemt van alle waarschuwingen en instructies aangebracht op het product zelf en/of opgenomen in de documentatie. Voordat u het product installeert, dient u *Trapeze Regulatory Information* in zijn geheel te hebben gelezen.

Warnung! Die Installation darf nur von einem qualifizierten Kundendienstmitarbeiter vorgenommen werden. Lesen Sie alle Warnhinweise und Anweisungen auf dem Produkt oder in der Dokumentation und befolgen Sie sie. Bevor Sie das Produkt installieren, sollten Sie *Trapeze Regulatory Information* vollständig lesen.

Avertissement ! L'installation doit être effectuée uniquement par des techniciens qualifiés. Lisez et suivez toutes les notices d'avertissement et les instructions figurant sur le produit ou comprises dans la documentation. Lisez l *Trapeze Regulatory Information* avant d'installer ce produit.

Aviso Sólo puede realizar la instalación personal cualificado de asistencia técnica. Lea y siga todas las notas de advertencia e instrucciones indicadas en el producto o incluidas en la documentación. Antes de instalar el producto, lea *Trapeze Regulatory Information*.

Radio Safety Warnings

Warning! Do not operate the MP access point near unshielded blasting caps or in an otherwise explosive environment unless the device has been modified for such use by qualified personnel.

Waarschuwing! Het MP-toegangspunt mag niet worden gebruikt in de nabijheid van onafgeschermde slaghoedjes of in een andere explosieve omgeving tenzij het apparaat voor een dergelijk gebruik is aangepast door bevoegd personeel.

Warnung! Die MP-Zugriffspunkte sollten nicht neben ungeschirmten Sprengkapseln betrieben oder in einer explosiven Umgebung eingesetzt werden. Für einen solchen Einsatz muss das Gerät von einem qualifizierten Kundendienstmitarbeiter entsprechend angepasst werden.

Avertissement ! Le point d'accès MP ne doit pas fonctionner près de détonateurs non blindés ou dans un autre environnement qui présent un risque d'explosion, à moins que cet appareil n'ait été adapté en vue d'une telle utilisation par du personnel qualifié.

Aviso No utilice el punto de acceso de MP cerca de detonadores no blindados ni en un entorno explosivo, a menos que haya sido modificado el dispositivo con ese fin por personal cualificado.

Warning! Do not touch or move the MP access point when the antennas are transmitting or receiving.

Waarschuwing! Het MP-toegangspunt mag niet worden aangeraakt of verplaatst terwijl de antennes uitzenden of ontvangen.

Warnung! Berühren oder bewegen Sie den MP-Zugriffspunkt nicht, während die Antennen senden oder empfangen.

Avertissement ! Ne touchez ni ne déplacez le point d'accès MP lorsque les antennes sont en cours de transmission ou de réception.

Aviso No toque ni mueva el punto de acceso de MP cuando las antenas estén transmitiendo o recibiendo señales.

Warning! Do not hold any radio device so that the antenna is very close to or touching the face, eyes, or other exposed body part while the device's radio antenna is transmitting.

Waarschuwing! De antenne van een apparaat dat radiogolven aan het uitzenden is, mag nooit vlakbij of tegen het gezicht, de ogen of een andere onbedekt deel van het lichaam worden gehouden.

Warnung! Halten Sie die drahtlosen Geräte während der Übertragung mit der Antenne nicht nahe ans Gesicht, an die Augen oder an andere ungeschützte Körperteile und berühren Sie die Antenne nicht.

Avertissement ! Ne maintenez pas l'antenne d'un appareil radio près du visage, des yeux ou d'une autre partie du corps exposée ou en contact avec ces parties du corps, lorsqu'elle est en cours de transmission.

Aviso No coloque ningún dispositivo de radio demasiado cerca de la antena ni en contacto con la cara, los ojos u otras partes del cuerpo que estén al descubierto mientras la antena de radio del dispositivo esté transmitiendo señales.

Warning! Before using a wireless device in a hazardous location, consult the local codes, national codes, and safety directors of the location for usage constraints.

Waarschuwing! Voordat u een draadloos apparaat gebruikt op een gevaarlijke locatie, dient u de plaatselijke en landelijke voorschriften, en de veiligheidsvoorschriften voor de locatie te raadplegen over eventuele gebruiksbeperkingen.

Warnung! Bevor Sie drahtlose Geräte an einem gefährlichen Standort einsetzen, sollten Sie die lokalen und nationalen Regelungen und Sicherheitsbestimmungen des Standorts auf Nutzungsbeschränkungen überprüfen.

Avertissement ! Avant d'utiliser un appareil sans fil dans un endroit dangereux, consultez la réglementation locale et nationale ainsi que les responsables de la sécurité de l'endroit concerné pour obtenir des informations relatives aux conditions et aux limites d'utilisation de cet appareil.

Aviso Antes de utilizar un dispositivo inalámbrico en una ubicación peligrosa, consulte los códigos locales y nacionales y a los responsables de seguridad de la ubicación para conocer las restricciones de uso.

Lightning Warning

Warning! Do not connect or disconnect cables or otherwise work with the MP access point hardware during periods of lightning activity.

Waarschuwing! Tijdens onweer met bliksem mogen kabels nooit worden aangekoppeld aan of losgekoppeld van het MP-toegangspunt of andere werkzaamheden aan het MP-toegangspunt worden verricht.

Warnung! Verbinden und trennen Sie während eines Gewitters keine Kabel zum MP-Zugriffspunkt und arbeiten Sie nicht damit.

Avertissement ! Ne connectez pas et ne déconnectez pas de câbles et, de manière générale, ne travaillez pas sur le matériel du point d'accès MP lorsqu'il y a un risque de foudre.

Aviso No conecte ni desconecte cables, ni tampoco trabaje con el hardware del punto de acceso de MP durante una tormenta eléctrica.

Appendix C

Index

I

J

K

L

M

N

P

R

S

T

U

W