About this Guide

The Palo Alto Networks M-500 appliance is a multi-function appliance that you can configure to function as a Panorama Manager, Panorama Log Collector, or PAN-DB Private Cloud used for URL filtering. This guide provides instructions on installing the hardware and performing maintenance procedures, and provides product specifications. This guide is intended for system administrators responsible for installing and maintaining the M-500 appliance.

For information on using Panorama, refer to the Palo Alto Networks Panorama Administrator’s Guide 7.0 or later. For information on using PAN-DB, refer to the Palo Alto Networks PAN-OS Administrator’s Guide 7.0 or later.

For additional information, refer to the following resources:

- For information on the additional capabilities and for instructions on configuring the features on the firewall, refer to https://www.paloaltonetworks.com/documentation.

- For access to the knowledge base, complete documentation set, discussion forums, and videos, refer to https://live.paloaltonetworks.com.

- For information on support programs, to manage your account or devices, or to open a support case, refer to https://www.paloaltonetworks.com/services/support.

- For the latest release notes, go to the software downloads page at https://support.paloaltonetworks.com/Updates/SoftwareUpdates.

To provide feedback on the documentation, please write to us at: documentation@paloaltonetworks.com.
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Chapter 1
Overview

The Palo Alto Networks M-500 appliance is a multi-function appliance that you can configure for one of the following three modes:

- **Panorama mode**—Performs both central management and log collection for Palo Alto Networks firewalls. This is the default mode.

- **Log Collector mode**—Functions as a dedicated Log Collector, which either an M-100 or M-500 appliance in Panorama mode or a Panorama virtual appliance can manage.

- **PAN-DB Private Cloud mode**—Functions as a private URL filtering solution that Palo Alto Networks firewalls can use to perform URL filtering lookups. This solution is ideal for organizations that restrict their firewalls from having direct access to the Internet.

  Note: The minimum Panorama version that you can install on a M-500 appliance is 7.0.

Use the following topics to learn about the front and back panel components.

- “Front Panel Description” on page 6
- “Back Panel Description” on page 8
Front Panel Description

Figure 1 shows the front panel of the M-500 appliance and Table 1 describes the front panel features.

Figure 1. Front Panel

Table 1. Front Panel Features

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Disk drives/bays</td>
<td>The M-500 appliance has 24 disk drive bays. Starting from left to right, the bays are labeled A1 to L2. Each pair of drives are in a RAID1 configuration. For example, A1-A2 is a RAID1 pair, B1-B2 is a RAID1 pair, and so on. The M-500 appliance ships with 4TBs of storage consisting of either eight 1TB drives in RAID1 pairs installed in drive bays A1-D2 or four 2TB drives in RAID1 pairs installed in drive bays A1-B2. As of the PAN-OS 8.0 release, you can use all 24 drive bays (A1-L2) to increase storage capacity for a total capacity of up to 24TB of RAID1 storage (depending on the size of the installed drives). Prior to PAN-OS 8.0 only 16 bays (A1-H2) can be used.</td>
</tr>
</tbody>
</table>
| 2. Drive LEDs    | • Left LED—Illuminates red when a drive failure occurs.  
                    • Right LED—Flashes blue when there is drive activity. A connection to the SATA backplane enables the LED to flash on and off when the particular drive is being accessed. |
| 3. Power button  | Main power button used to power the device on or to power it off. Turning off system power with this button keeps the standby power on. To completely power off the device, you must remove the power source (AC plugs). |
| 4. Reset button  | Reboots the system when pressed. A small object, such as a paper clip, is required to access the button. |
| 5. Power LED     | The LED is solid green when the appliance is powered on. |
| 6. Power failure LED | The LED flashes red when a power supply failure occurs or if a power cord is removed. |
### Table 1. Front Panel Features (Continued)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. HDD LED</td>
<td>Indicates IDE channel activity (SAS/SATA drive).</td>
</tr>
</tbody>
</table>
| 8. Overheat/fan failure LED | Modes:  
  - Continuously on red—An overheat condition occurred, possibly due to cables blocking the air vents.  
  - Blinking red (1Hz)—Fan failure has occurred.  
  - Blinking red (25Hz)—Power failure due to power supply failure or the power cord is not connected to one of the power supplies.  
  - Solid blue—The Unique Identification (UID) function is on. This is used to identify the appliance in a rack. For more information, see the back panel description. |
Back Panel Description

Figure 2 shows the back panel of the M-500 appliance and Table 2 describes the back panel features.

Figure 2. Back Panel

Table 2. Back Panel Features

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Power supplies</td>
<td>Two 1200W redundant hot-swappable power supplies.</td>
</tr>
<tr>
<td>2. Console</td>
<td>DB-9 serial port for console access.</td>
</tr>
<tr>
<td>3. USB</td>
<td>Four USB ports (reserved for future use).</td>
</tr>
<tr>
<td>4. MGT</td>
<td>RJ-45 10/100/1000 management (MGT) port used for managing the device and for data traffic.</td>
</tr>
<tr>
<td>1, 2, 3</td>
<td>RJ-45 10/100/1000 Ethernet ports (ethernet1/1, ethernet1/2, and ethernet1/3).</td>
</tr>
<tr>
<td>For information on configuring these ports, refer to the Panorama Administrator’s Guide on the Technical Documentation Portal for the release that the appliance is running. If the appliance is in PAN-DB mode, refer to the PAN-OS Administrators Guide 7.0 or later. Prior to Panorama release version 8.0, Ethernet port 3 (ethernet1/3) is not functional.</td>
<td></td>
</tr>
<tr>
<td>5. Graphics port</td>
<td>VGA port (reserved for future use and covered).</td>
</tr>
</tbody>
</table>
The Unique Identification (UID) feature is a combination LED/button that is used to assist a technician in locating a device when moving from the back of a rack to the front of a rack. When you push the button, the rear UID LED and the front panel LEDs will illuminate bright blue, assisting the technician in identifying the device in a rack. Push the button again to stop the LED from flashing.

Note that the UID button is very small and is located slightly to the left of the UID port hole. Use a small object, such as a paper clip, to press the button.

Prior to Panorama release version 8.0, ethernet1/4 and ethernet1/5 are not functional.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. UID</td>
<td>The Unique Identification (UID) feature is a combination LED/button that is used to assist a technician in locating a device when moving from the back of a rack to the front of a rack. When you push the button, the rear UID LED and the front panel LEDs will illuminate bright blue, assisting the technician in identifying the device in a rack. Push the button again to stop the LED from flashing. Note that the UID button is very small and is located slightly to the left of the UID port hole. Use a small object, such as a paper clip, to press the button.</td>
</tr>
<tr>
<td>7. SFP ports</td>
<td>Two 10 Gigabit Ethernet enhanced Small Form-Factor Pluggable (SFP+) ports (ethernet1/4 and ethernet1/5). For information on configuring these ports, refer to the Panorama Administrator’s Guide on the Technical Documentation Portal for the release that the appliance is running. If the appliance is in PAN-DB mode, refer to the PAN-OS Administrators Guide 7.0 or later. Prior to Panorama release version 8.0, ethernet1/4 and ethernet1/5 are not functional.</td>
</tr>
</tbody>
</table>
Chapter 2
Installing the Hardware

This chapter describes how to install the M-500 appliance. See the following topics:

- “Tamper Proof Statement” on page 11
- “Before You Begin” in the next section
- “Equipment Rack Installation” on page 12
- “Connecting Cables to the Device” on page 19
- “Connecting Power” on page 19

Tamper Proof Statement

To ensure that products purchased from Palo Alto Networks have not been tampered with during shipping, verify the following upon receipt of each product:

- The tracking number provided to you electronically when ordering the product matches the tracking number that is physically labeled on the box.
- The integrity of the tamper-proof tape used to seal the box is not compromised.
- The integrity of the warranty label on the appliance is not compromised.

Before You Begin

- It is recommended that two people rack mount the M-500 appliance.
- Have a Phillips-head screwdriver available and a small pliers or nut wrench.
- Verify that the intended location where you will install the appliance has adequate air circulation and meets the temperature requirements. See “Environmental Specifications” on page 30.
- Verify that power is not connected to the M-500 appliance.
- Allow clear space on all sides of the M-500 appliance.
The M-500 appliance ships with a four-post rack kit with two sets of rail assemblies (one for each side) and the mounting screws needed for installing the system into a four-post 19” rack. This rail kit will fit a rack between 26.5” and 36.4” deep.

Note: You can order a two-post rail kit from Palo Alto Networks for installation in a two-post rack. See “Two-Post Rack Installation” on page 16 for installation procedures.

The following safety guidelines apply to rack installation:

- **Elevated ambient operating temperature**—If the M-500 appliance is installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient room temperature. Verify that the ambient temperature of the rack assembly meets the maximum rated ambient temperature requirements listed in “Environmental Specifications” on page 30.

- **Reduced airflow**—Ensure that the airflow required for safe device operation is not compromised by the rack installation and that you allow at least 30” of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.

- **Mechanical loading**—Ensure that the rack-mounted device does not cause hazardous conditions due to uneven mechanical loading.

- **Circuit overloading**—Ensure that the circuit that supplies power to the device is sufficiently rated to avoid circuit overloading or excess load on supply wiring. See “Electrical Specifications” on page 30.

- **Reliable earthing**—Maintain reliable earthing of rack mounted equipment. Pay special attention to supply connections other than direct connections to the branch circuit (such as the use of power strips).

### Rack Mount Procedures

The following sections describe the required steps to install the M-500 appliance in a two-post or four-post 19” rack:

- “Four-post Rack Installation” in the next section

- “Two-Post Rack Installation” on page 16

### Four-post Rack Installation

1. Unpack the rail kit, which contains two rail assemblies (one for each side of the M-500 appliance). Each assembly consists of three sections: An inner rail that secures directly to the chassis, an outer rail that secures to the rack, and a middle rail that extends from the outer rail. These assemblies are specifically designed for the left and right side of the chassis.
2. Pull the inner rail out of the outer rail until it is fully extended and then press the locking tab down to release the inner rail as shown in Figure 3. Repeat this step on the other rail.

**Figure 3. Remove the Inner Rail**

![Inner rail removal](image)

**Note:** Each inner rail has a locking tab, which locks the chassis into place when installed and pushed fully into the rack. These tabs also lock the chassis in place when fully extended from the rack to prevent the chassis from coming completely out when servicing.

3. Install the left inner rail on the left side of the chassis and the right inner rail on the right side of the chassis. The inner rails install over the mounting hooks and then slide forward to lock in place. The mounting screw holes will be exposed at which time you can use the provided screws to secure the inner rail to the chassis as shown in Figure 4.

**Figure 4. Attach the Inner Rails to the Chassis**

![Inner rails attachment](image)
4. Attach the outer rail to the rack by pressing upward on the locking tab at the rear end of the middle rail and then push the middle rail back into the outer rail. Hang the hooks of the front of the outer rail onto the slots on the front of the rack as shown in Figure 5. Use rack-mount screws to secure the outer rails to the rack.

**Figure 5. Attach the Outer Rail to the Rack Posts**

5. Pull out the rear of the outer rail to adjust the length until the rail fits within the posts of the rack.

6. Hang the hooks of the rear portion of the outer rail onto the slots on the rear of the rack. Use rack-mount screws to secure the rear of the outer rail to the rear of the rack as shown in Figure 5.

7. Repeat these steps for the remaining rail.

8. Install the chassis into the rack by pulling the middle rail out from the front of the outer rail, ensuring that the ball-bearing shuttle is at the front locking position of the middle rail.

9. Align the chassis inner rails with the front of the middle rails and slide the inner rails on the chassis into the middle rails, keeping even pressure on both sides until the locking tab
of the inner rail clicks into the front of the middle rail as shown in Figure 6. This will lock the chassis into the fully extended position.

**Figure 6. Install the Chassis Into the Rack**

10. Simultaneously press the locking tabs on both sides of the rails and push the chassis all the way into the rear of the rack as shown in Figure 6.

11. Use rack mounting screws to secure the chassis to the rack. The mounting holes are located below each front handle of the chassis.
Two-Post Rack Installation

This section describes how to install the M-500 appliance in a two-post rack.

**Note:** The M-500 appliance ships with a four-post rack kit. To obtain a two-post rack kit, contact Palo Alto Networks or your local sales representative.

1. Unpack the two-post rail kit, which contains two rail assemblies (one for each side of the M-500 appliance). Each assembly consists of two sections: An inner rail that secures directly to the chassis and an outer rail that attaches to the inner rail and screws into the chassis. The inner rail has mounting holes that mount to the front of the rack post and the outer rail has mounting holes that mount to the back of the rack post.

2. Separate the inner and outer rails by sliding the outer rail until the posts reach the round holes and then evenly pull the outer rail away from the inner rail as shown in Figure 7.

**Figure 7. Two-Post Rail Kit Components**

3. Slide the inner rails on each side of the chassis over the chassis hooks. There are six hooks; install the inner rail on the middle four hooks and then secure the inner rails on both sides of the chassis using the flat-head screws as shown in Figure 8.

**Note:** You can install the inner rail to the chassis using only one screw since this only prevents the rail from sliding. The chassis hooks and inner rail provide the majority of strength/stability for the rail.
4. Mount the chassis to the rack by securing the front (inner rail) mount holes to the front of the rack with the rack mount screws and washers as shown in Figure 8.

**Figure 8. Install the Chassis Into the Rack and Secure the Front Rail**

```
Note: The chassis will be able to support itself in the rack at this point, but the rear outer rails are required to fully secure the chassis as described in the next step.
```

5. Align the outer rail holes with the inner rail post and push the outer rail into place. Then slide it forward until the rack mount holes rest against the rack post. Secure the rail to the post with the provided rack mount screws and washers.
6. Install the cylinder head screw through the outer rail to the inner rail threaded post as shown in Figure 9.

**CAUTION:** It is important that you secure the outer rail to the inner rail with the cylinder head screw to ensure that the outer rail does not inadvertently become separated from the inner rail.

**Figure 9. Install the Outer Rail to Secure the Chassis to the Rack**
Connecting Cables to the Device

Figure 10 shows the M-500 appliance cable connections on the back of the device. See Table 1 for descriptions of the front panel and Table 2 for descriptions of the back panel interfaces.

**CAUTION:** You must use shielded interface cables that are grounded to ensure agency compliance with electromagnetic emissions (EMC).

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**Figure 10. Back Panel Cable Connections**

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Connecting Power

To power on the M-500 appliance, plug two power cables into grounded wall outlets (using separate circuits) and then attach them to each of the two power supplies on the back of the M-500 appliance. After the power cords are connected, press the power button on the front of the device to power on. If only one power supply is connected, a warning beep will sound.
Chapter 3
Service the M-500 Appliance Hardware

This chapter describes how to interpret the device LEDs, replace disk drives, and troubleshoot hardware problems. See the following topics:

• “Cautions and Warnings” in the next section
• “Interpreting the Port LEDs” on page 21
• “Replace an M-500 Appliance Disk Drive” on page 22
• “Power Supply Replacement” on page 26

Cautions and Warnings

CAUTION: Disconnect all power cords before servicing the M-500 appliance.

WARNING: To avoid risk of explosion, do not replace the battery with an incorrect type. Dispose of used batteries according to the battery manufacturer’s instructions.

WARNING: Removal of the equipment’s top cover is to be done only by Palo Alto Networks trained service person(s).

Interpreting the Port LEDs

Each Ethernet port on the M-500 appliance has two LEDs. Table 3 describes the LEDs.

Table 3. Port LEDs

<table>
<thead>
<tr>
<th>LED</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left</td>
<td>• Off—No link</td>
</tr>
<tr>
<td></td>
<td>• Green—100 Mbps link</td>
</tr>
<tr>
<td></td>
<td>• Amber—1 Gbps link</td>
</tr>
<tr>
<td>Right</td>
<td>Flashes yellow if there is network activity.</td>
</tr>
</tbody>
</table>
Replace an M-500 Appliance Disk Drive

The M-500 appliance has 24 drive bays and the first 16 bays (A1 through H2) are configurable in PAN-OS 7.1 and earlier releases and all 24 bays (A1 through L2) are configurable in PAN-OS 8.0 and later releases. Each drive pair (A1 and A2 for example) is in an independent separate RAID 1 array. This redundant configuration ensures that there is no service interruption or loss of log data if a disk drive fails.

For information on how to increase log storage capacity, refer to the Panorama 7.1 or later Administrator’s Guide located on the Technical Documentation Portal.

**CAUTION:** Do not attempt to replace a drive with a third-party drive. Also, do not mix drive models within a RAID 1 array (for example, the drive model must be the same for both drives in the A1/A2 RAID 1 array). You can, however, mix drive models in different RAID 1 arrays. For example, the drives in the A1/A2 array can both be model ST91000640NS and the drives in the B1/B2 array can both be model ST1000NX0423.

**Note:** The following procedure describes how to replace a disk drive on an M-500 appliance that is in Panorama or log collector mode. This procedure does not apply when the M-500 appliance is in PAN-DB mode because all PAN-DB content is stored on the internal solid-state drive (SSD) and the front disk drives are not used.

1. Place an anti-static wrist strap around your wrist and connect it to ground.
2. Identify the failed drive and note the drive model by running the following operational command and viewing the status and model fields:
   
   ```
   admin@M-500> show system raid detail
   ```
   
   For example, the following output shows that disk drive A2 failed and the drive model is ST91000640NS.

<table>
<thead>
<tr>
<th>Disk Pair A</th>
<th>Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>clean, degraded</td>
</tr>
<tr>
<td>Disk id A1</td>
<td>Present</td>
</tr>
<tr>
<td>model</td>
<td>ST91000640NS</td>
</tr>
<tr>
<td>size</td>
<td>953869 MB</td>
</tr>
<tr>
<td>status</td>
<td>active sync</td>
</tr>
<tr>
<td>Disk id A2</td>
<td>Present</td>
</tr>
<tr>
<td>model</td>
<td>ST91000640NS</td>
</tr>
<tr>
<td>size</td>
<td>953869 MB</td>
</tr>
<tr>
<td>status</td>
<td>failed</td>
</tr>
</tbody>
</table>

3. Remove the failed drive from the RAID 1 array. In this example, run the following command to remove drive A2 from the array:

   ```
   admin@M-500> request system raid remove A2
   ```
4. Press the ejector button on the carrier of the failed drive (A2 in this example) to release the carrier handle and gently pull the handle toward you and slide the carrier out of the appliance. Figure 11 shows how to remove a drive carrier (E1 in the illustration) from the appliance.

**Figure 11. Remove or Install an M-500 Appliance Disk Drive Carrier**

5. Remove the replacement drive from the packaging and compare the drive model written on the label with the drive model of the failed drive. Proceed as follows based on your findings:
   - If the replacement drive is the same model number of the failed drive that you removed, then continue to Step 6.
   - If the replacement drive is a different model number than the drive that you removed, then continue to Step 7.

6. **(Same model replacement drive only)** Install a replacement disk drive that is the same model as the other drive in the RAID 1 array:
a. Remove the four screws that hold the failed drive in the drive carrier and then remove the drive from the carrier as shown in Figure 12.

Note: If you are using an empty carrier that does not have a drive installed, you may have to remove the blank drive insert by removing the four screws that attach the insert to the carrier.

Figure 12. Removing/Installing a Drive from the Drive Carrier

b. Put the new drive in the carrier and secure it to the carrier using the four screws you removed from the failed drive.

c. Ensure that the drive carrier lever is in the open position; if it is not, press the ejector button on the drive carrier to release the lever and pull it out until it is fully open.

d. Slide the drive carrier into the drive bay on the appliance until it is about 1/4” from being fully inserted. You can do this by pressing the ejector button on the carrier, which will cause the lever to close part way. When the drive is almost fully inserted, close the lever to seat the drive.

e. Add the replacement drive to the RAID 1 array. In this example, run the following command to add drive A2 to the array:

```
admin@M-500> request system raid add A2
```

The system automatically configures the new drive to mirror contents of the other drive in that RAID 1 array.
Replace an M-500 Appliance Disk Drive

f. Continue to view RAID status until you see that the disk pair (Disk Pair A in this example) shows Available and both drives show the status active sync. To view RAID status, run the following command:

```
admin@M-500> show system raid detail
```

The following output shows that the RAID 1 array is functioning properly:

<table>
<thead>
<tr>
<th>Disk Pair A</th>
<th>Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>clean</td>
</tr>
<tr>
<td>Disk id A1</td>
<td></td>
</tr>
<tr>
<td>model</td>
<td>ST91000640NS</td>
</tr>
<tr>
<td>size</td>
<td>953869 MB</td>
</tr>
<tr>
<td>status</td>
<td>active sync</td>
</tr>
<tr>
<td>Disk id A2</td>
<td></td>
</tr>
<tr>
<td>model</td>
<td>ST91000640NS</td>
</tr>
<tr>
<td>size</td>
<td>953869 MB</td>
</tr>
<tr>
<td>status</td>
<td>active sync</td>
</tr>
</tbody>
</table>

7. **(Different model replacement drive only)** Install a replacement disk drive that is a different model than the other drive in the RAID 1 array:

   **Note:** When you initiate the copy command as described in the following steps, logging and log query will not be available on the disk pair until the copy is complete and the disk pair shows Available. If the other drive pairs (B1/B2, C1/C2, and so on) are low on disk space during the copy process, older logs are deleted to make room for new logs.

a. Remove the four screws that hold the drive in the drive carrier and then remove the failed disk drive (A2 in this example) as shown in Figure 12.

   **Note:** If you are using an empty carrier that does not have a drive installed, you may have to remove the blank drive insert by removing the four screws that attach the insert to the carrier.

b. Put the new drive in the carrier and attach it using the four screws you removed from the failed drive.

c. Ensure that the drive carrier lever is in the open position; if it is not, press the ejector button on the drive carrier to release the lever and pull it out until it is fully open.

d. Slide the drive carrier into the drive bay on the appliance until it is about 1/4” from being fully inserted. You can do this by pressing on the ejector button which will cause the lever to close part way. When the drive carrier is almost fully inserted, close the lever to seat the drive.

e. Copy the data from the existing drive in the RAID 1 array to the replacement drive. In this example, run the following command to copy the data from drive A1 to drive A2:

```
admin@M-500> request system raid copy from A1 to A2
```

f. Run the following CLI command to view the status of the copy:

```
admin@M-500> show system raid detail
```

Continue to view RAID status until the copy is complete and the disk pair shows Available. In this example, the output shows that Disk Pair A is Available.

   **Note:** At this point, drive A1 will show not in use because there is a drive model mismatch.
g. Install the second replacement drive. In this example, physically remove the drive from bay A1, install it in the carrier, and then install the second replacement drive into bay A1—one that is the same model as the new drive you installed in bay A2.

h. Add the second replacement drive to the RAID 1 array. In this example, run the following command to add drive A1 to the array:
   ```
   admin@M-100> request system raid add A1
   ```
   The system will automatically configure the new drive to mirror the contents of the other drive (A2 in this example) in that RAID 1 array.

i. Continue to view the RAID status until you see that the disk pair (A in this example) shows Available and both drives show the status active sync.
   ```
   admin@M-500> show system raid detail
   ```
   The following output shows that the RAID 1 array is functioning properly:

```
Disk Pair A                         Available
   Status                        clean, degraded
Disk id A1                         Present
   model        : ST91000640NS
   size         : 953869 MB
   status       : not in use
Disk id A2                         Present
   model        : ST1000NX0423
   size         : 953869 MB
   status       : active sync
```

---

**Power Supply Replacement**

The M-500 appliance has two hot-swappable redundant power supplies. If a power supply fails, a system log alert will be generated, an audible alert will sound, and the power failure indicator described in the “Front Panel Description” on page 6 will change to amber and will flash.

To replace a failed power supply:

1. Identify the failed power supply and remove the power cord. The LED on the power supply will be off or amber if it has failed.
2. Press the release tab on the back of the power supply to release the power module from the chassis and remove it from the chassis as shown in Figure 13.

**Figure 13. Power Supply Replacement**

3. Install the new power supply ensuring that you close the release tab and then plug the power cord back into the new power supply.

4. Check that all power supply warning indicators are in their normal state.
Power Supply Replacement
Chapter 4
Specifications

This chapter provides specifications for the M-500 appliance. For more information, see the following topics:

- “Physical Specifications” in the next section
- “Interface Specifications” on page 30
- “Electrical Specifications” on page 30
- “Environmental Specifications” on page 30

Physical Specifications

Table 4 lists the physical specifications for the M-500 appliance.

Table 4. Physical Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>3.5 inches (8.89cm) 2U</td>
</tr>
<tr>
<td>Depth</td>
<td>24.8 inches (62.99cm)</td>
</tr>
<tr>
<td>Width</td>
<td>17.2 inches (43.69cm)</td>
</tr>
<tr>
<td>Weight</td>
<td>42.5lbs (19.2kg) Includes eight disk drives. No rail kit installed.</td>
</tr>
<tr>
<td>Mounting</td>
<td>Standard 19-inch rack</td>
</tr>
<tr>
<td>Fans</td>
<td>Four</td>
</tr>
</tbody>
</table>
Interface Specifications

Table 5 describes the interfaces for the M-500 appliance.

Table 5. Interface Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethernet ports</td>
<td>3 RJ-45 10/100/1000 Ethernet ports. You can configure ports 1 and 2 to distribute the Panorama or PAN-DB traffic load. For information on configuring these ports for Panorama, refer to the Panorama Administrator’s Guide 7.0 or later and for information on configuring these ports for PAN-DB, refer to the PAN-OS Administrator’s Guide 7.0 or later located on the Technical Documentation Portal. Port 3 is reserved for future use.</td>
</tr>
<tr>
<td>MGT port</td>
<td>1 RJ-45 10/100/1000 Ethernet port used for device management and for data traffic.</td>
</tr>
<tr>
<td>Console port</td>
<td>1 DB-9 serial port for connecting a serial console. Use these settings:  - Data rate: 9600  - Data bits: 8  - Parity: none  - Stop bits: 1  - Flow control: none</td>
</tr>
<tr>
<td>USB ports</td>
<td>4 USB ports reserved for future use.</td>
</tr>
</tbody>
</table>

Electrical Specifications

Table 6 lists the electrical specifications for the M-500 appliance.

Table 6. Electrical Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum internal power dissipation</td>
<td>200W</td>
</tr>
<tr>
<td>AC input rating</td>
<td>100-240 VAC 50-60Hz, 2A</td>
</tr>
</tbody>
</table>

Environmental Specifications

Table 7 lists the environmental specifications for the M-500 appliance.

Table 7. Environmental Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating temperature range</td>
<td>50°F to 95°F (10°C to 35°C)</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>-40°F to 158°F (-40°C to 70°C)</td>
</tr>
</tbody>
</table>
### Table 7. Environmental Specifications (Continued)

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>System air flow</td>
<td>Front to rear</td>
</tr>
<tr>
<td>Operating humidity</td>
<td>8% to 90% non-condensing</td>
</tr>
<tr>
<td>Storage humidity</td>
<td>5% to 95% non-condensing</td>
</tr>
</tbody>
</table>
Chapter 5
Compliance Statements

This section provides the compliance statement for the Voluntary Control Council for Interference by Information Technology Equipment (VCCI), which governs radio frequency emissions in Japan.

The following information is in accordance to VCCI Class A requirements:

Translation: This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take corrective actions.
Appendix A
General Safety Information

CAUTION
Please Note the Following:

- The M-500 appliance should not be used in a home, school or other public area where the general population would have access to it.

WARNING
To prevent the potential for personal injury, property damage, or death, please observe the following instructions:

- Do not use damaged equipment, including exposed, frayed or damaged power cords. Use only the approved power cable that is rated for the equipment. The voltage and current rating of the cable should be greater than the ratings marked on the equipment.
- Plug the power cables into properly grounded electrical outlets. Do not use adapter plugs or remove the grounding prong from a cable.
- Observe extension cable and power strip ratings to ensure that the total ampere rating of all equipment plugged into the extension cable or power strip does not exceed 80 percent of the ampere ratings limit for the extension cable or power strip.
- The power supplies in the M-500 appliance may produce high voltages and potential energy hazards. By opening the cover of the appliance you may be exposed to a risk of electric shock. The components inside the appliance housing should only be serviced by Palo Alto Networks.
- The M-500 appliance should not be operated with the cover removed.
- Components inside the M-500 appliance housing may become extremely hot during normal operation. These components include the memory and CPU modules.
- The M-500 appliance should not be operated in environments that can get wet. Protect the appliance at all times from liquid intrusion.
- If your M-500 appliance gets wet, turn off the AC power at the circuit breaker before attempting to remove the power cables from the electrical outlet and then disconnect power to the appliance and to any attached devices.
- Avoid obstructing the M-500 appliance air vents or pushing objects into vent openings. Doing so could lead to fire or electric shock.

CAUTION
To prevent hardware damage or loss of data, observe the following precautions:
• Follow installation instructions carefully.
• Do not attempt to service the equipment yourself.
• You should operate this equipment from the type of external power source indicated on the electrical ratings label.
• Always leave at least 4 inches (10.2cm) of physical clearance on all vented sides of the M-500 appliance. This permits the airflow required for proper ventilation.
• Avoid placing equipment close together such that it is subject to re-circulated (pre-heated) air.
• Ensure that all cables connected to the M-500 appliance are not under stress or high tension and that nothing rests on the cables.
• If the equipment is located in a rack, move it with caution. Ensure that all casters and/or stabilizers are firmly connected. While moving the equipment, avoid uneven surfaces and sudden stops.
• Do not place other equipment, monitors, or other devices on top of the M-500 appliance.
• To protect the M-500 appliance from fluctuations in electrical power, use a surge suppressor, line conditioner or uninterruptible power supply (UPS).

CAUTION

Please observe the following additional precautions for rack-mounted systems:

• Slide Rail Caution—Slide rail mounted equipment is not to be used as a shelf or a work space.
• Elevated Operating Ambient—If the M-500 appliance is installed in a closed or multi-unit rack assembly, the operating ambient temperature in the rack environment may be greater than the room ambient temperature. Therefore, consideration should be given to the maximum operating temperature specified in “Environmental Specifications” on page 30.
• Reduced Air Flow—Installation of the M-500 appliance in a rack should be such that the amount of air flow required for safe operation is not compromised.
• Mechanical Loading—Mounting of the M-500 appliance in the rack should not create a hazardous condition from uneven mechanical loading.
• Circuit Overloading—Connection of the equipment to the supply circuit should not create an overloaded situation. Pay close attention to equipment nameplate ratings.
• Reliable Grounding—Devices mounted in racks should be grounded properly. If using power strips to connect the M-500 appliance to the supply circuit, make certain that the power strips are also grounded properly.
• Compatible Rack Systems—It is your responsibility to ensure that the rack and the provided rail system are compatible with each other before installing the M-500 appliance.
• Rack Stabilizers—Install the front and side stabilizers on the rack prior to installing equipment. Failure to install stabilizers may cause a rack to tip over.
Rack Weight Distribution—Load racks from the bottom up, loading the heaviest items near the bottom of the rack. Do not stand or step on components in the rack.

WARNING
Grounding Instructions for Qualified Electricians Only:

- Grounding techniques may vary. However, a positive connection to a safety (earth) ground is required.
- Make the ground connection first and disconnect it last to prevent hazards.
- Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor.

Other Regulatory Information

Export Regulations

Customer acknowledges that these Products, which may include technology and software, are subject to the customs and export control laws and regulations of the United States ("U.S.") and may also be subject to the customs and export laws and regulations of the country in which the Products are manufactured and/or received. Customer agrees to abide by those laws and regulations. Further, under U.S. law, the Products may not be sold, leased or otherwise transferred to restricted end-users or to restricted countries. In addition, the Products may not be sold leased or otherwise transferred to, or utilized by an end-user engaged in activities related to weapons of mass destruction, including without limitation, activities related to the design, development, production or use of nuclear weapons, materials or facilities, missiles or the support of missile projects, and chemical or biological weapons.