PA-4000 Series
Hardware Reference Guide

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About this Guide

This guide describes the PA-4000 Series firewall hardware, provides instructions on installing the hardware, describes how to perform maintenance procedures, and provides product specifications. This guide is intended for system administrators responsible for installing and maintaining the PA-4000 Series firewall.

All PA-4000 Series devices run PAN-OS, a purpose-built operating system with extensive functionality. 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 contacting support, for information on the support programs, or to manage your account or devices, refer to https://support.paloaltonetworks.com.

- 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

This chapter describes the features of the front and back panel of the PA-4000 Series firewall. For more information, refer to the following topics:

- "Front Panel" in the next section

- "Back Panel" on page 8

Front Panel

Figure 1 shows the front panel of the PA-4050 and PA-4020 and Table 1 describes the front panel features.
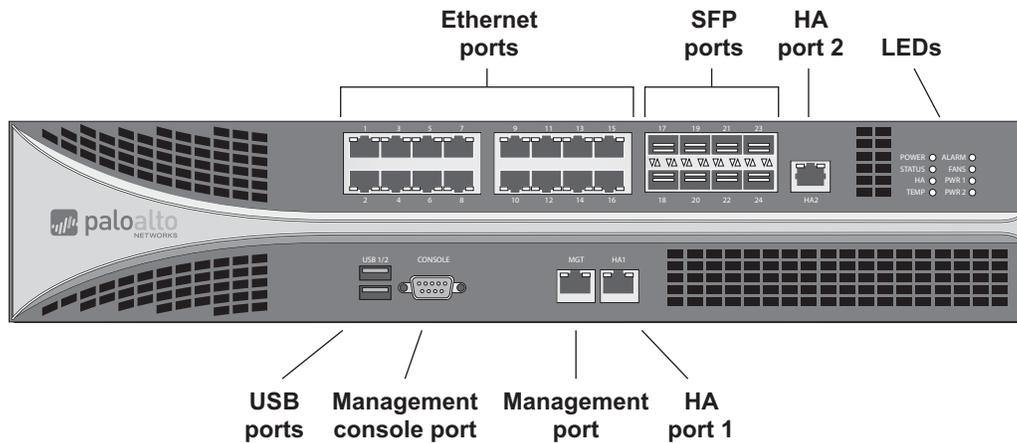

Figure 1.   PA-4050 and PA-4020 Front Panel

Table 1.   PA-4050 and PA-4020 Front Panel Features

Item	Description
Ethernet ports	16 RJ-45 10/100/1000Mbps ports for network traffic.
SFP ports	Eight Small Form-Factor Pluggable (SFP) ports for network traffic.
Management ports	One RJ-45 port to access the device management interfaces through an Ethernet interface.
Management console port	One DB-9 port for connecting a serial console.
High-availability (HA) ports	Two RJ-45 ports for high-availability (HA) control and synchronization.
USB ports	One USB port that accepts a USB flash drive that contains a bootstrap bundle (PAN-OS configuration) that enables you to bootstrap the firewall. Bootstrapping enables you to provision the firewall with a specific configuration, license it, and make it operational on the network.
	The firewall must have PAN-OS 7.1 or later installed to use this feature. Prior to PAN-OS 7.1, this port is disabled. For information on bootstrapping, refer to Bootstrap the Firewall in the PAN-OS® Administrator's Guide Version 7.1.
LED dashboard	Eight LEDs indicating system status. Refer to "Interpreting the Device LEDs" on page 14 for LED definitions.

Figure 2 shows the front panel of the PA-4060 Series and Table 2 describes the front panel features.
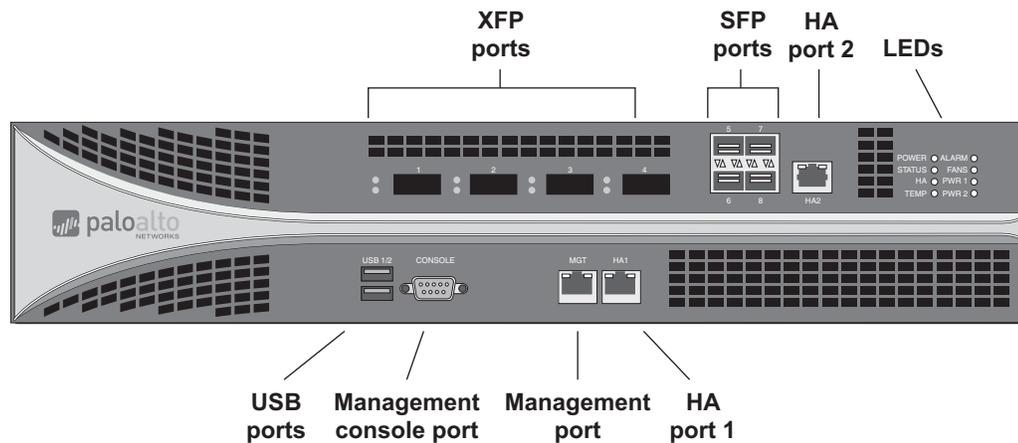

Figure 2.   PA-4060 Front Panel

Table 2.   PA-4060 Front Panel Features

Item	Description
SFP ports	Four Small Form-Factor Pluggable (SFP) ports for network traffic.
XFP ports	Four 10 Gigabit Small Form-Factor Pluggable (XFP) ports for network traffic.
Management ports	One RJ-45 port to access the device management interfaces through an Ethernet interface.
Management console port	One DB-9 port for connecting a serial console.
High-availability (HA) ports	Two RJ-45 ports for high-availability (HA) control and synchronization.
USB ports	One USB port that accepts a USB flash drive that contains a bootstrap bundle (PAN-OS configuration) that enables you to bootstrap the firewall. Bootstrapping enables you to provision the firewall with a specific configuration, license it, and make it operational on the network. The firewall must have PAN-OS 7.1 or later installed to use this feature. Prior to PAN-OS 7.1, this port is disabled. For information on bootstrapping, refer to Bootstrap the Firewall in the PAN-OS® Administrator's Guide Version 7.1.
LED dashboard	Eight LEDs indicating system status. Refer to "Interpreting the Device LEDs" on page 14 for LED definitions.

Back Panel

Figure 3 shows the back panel of the PA-4000 Series and Table 3 describes the back panel features.
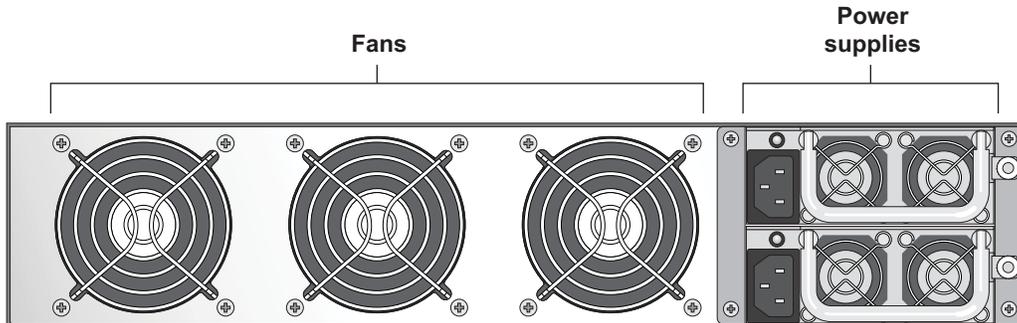
Figure 3.   Back Panel

Table 3.   Back Panel Features

Item	Description
Fans	3 fans for cooling the device.
Power supplies	2 redundant, hot-swappable power supplies.

The PA-4000 Series does not have a power button. The device is powered by plugging power cords into the power supplies. Refer to "Replacing a Power Supply" on page 13 for instructions on replacing the power supplies.

Chapter 2
Installing the Hardware

This chapter describes how to install the PA-4000 Series firewall. For more information, refer to the following topics:

- "Tamper Proof Statement" on page 9

- "Before You Begin" in the next section

- "Equipment Rack Installation" on page 10

- "Connecting Cables to the Device" on page 11

- "Connecting Power" on page 12

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 or crate.

- The integrity of the tamper-proof tape used to seal the box or crate has not been compromised.

- The warranty seals on the device itself do not show evidence of tampering.

Before You Begin

- It is recommended that two people be available to mount the PA-4000 Series in a 19-inch rack.

- Have a Phillips head screwdriver available.

- Verify that the intended location has adequate air circulation and meets the temperature requirements. Refer to "Environmental Specifications" on page 19.

- Allow clear space at the front and back of the device.

- Unpack the device.

- Verify that power is not connected to the device.

Equipment Rack Installation

Figure 4 illustrates how rack mounting brackets are attached to the PA-4000 Series. You can attach the brackets using the holes at the front or the midpoint of the unit.
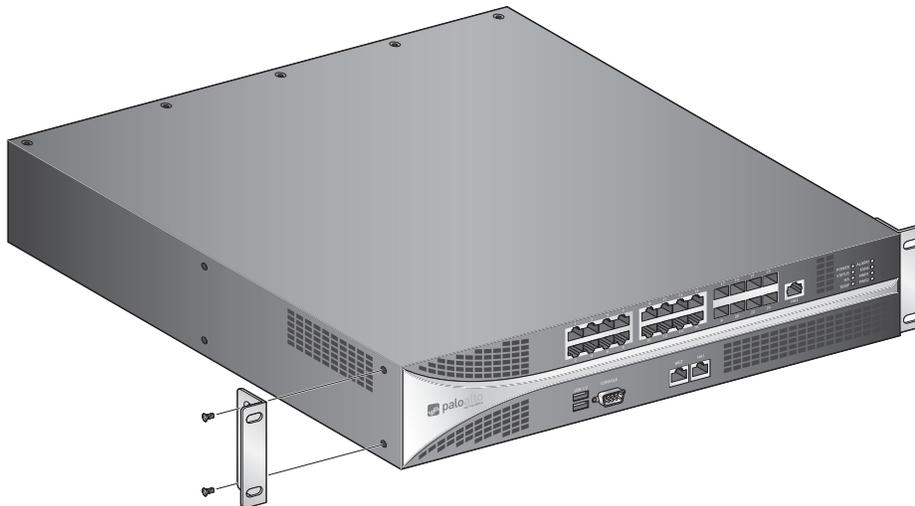

Figure 4.   Attaching Rack Mounting Brackets

The following safety guidelines apply to rack installation:

- **Elevated ambient operating temperature**—If the PA-4000 Series 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 19.

- **Reduced air flow**—Ensure that the airflow required for safe device operation is not compromised by the rack installation.

- **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. Refer to "Electrical Specifications" on page 18.

- **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 use of power strips).

To install the PA-4000 Series in a grounded 19-inch rack:

1. Screw the rack mounting brackets onto the front or midpoint of the unit using a Phillips head screwdriver.

2. Lift the device and position it in the rack. It is recommended that two people perform this function.

3. Align the mounting holes on the side of the device with holes in the rack rail. Make sure that rack rail holes are selected so that the PA-4000 Series is level.

4. Insert mounting screws into the aligned holes. Tighten with a Phillips screwdriver.

Connecting Cables to the Device

Figure 5 shows the cable connections of the PA-4050 and PA-4020. Refer to Table 1 for descriptions of the front panel interfaces.

> ⚠ **CAUTION:** *Fiber Transceivers that are installed by the user shall be Class I and CDRH certified.*
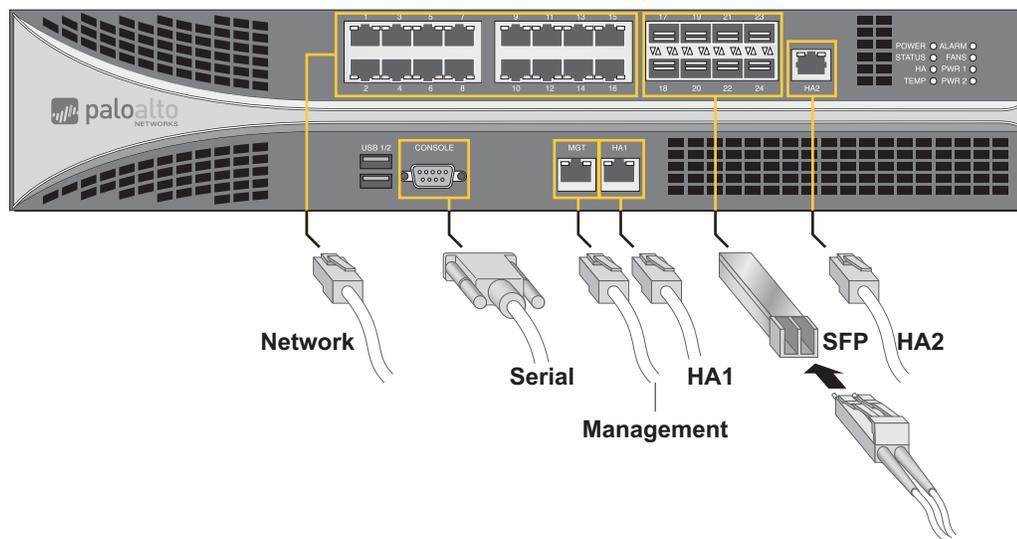

Figure 5.   Cable Connections for the PA-4050 and PA-4020

Figure 6 shows the cable connections of the PA-4060. Refer to Table 2 for descriptions of the front panel interfaces.
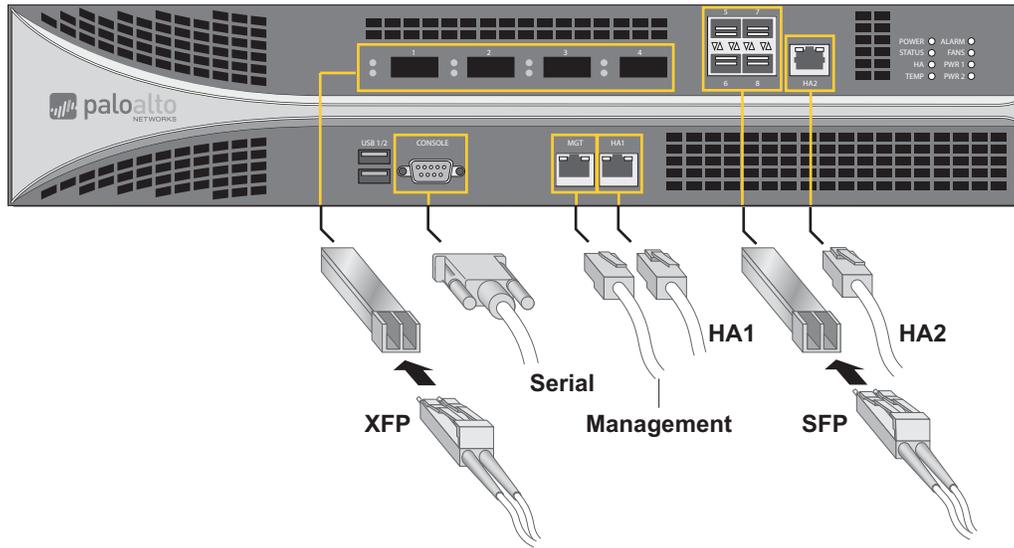
Figure 6. Cable Connections for the PA-4060

Connecting Power

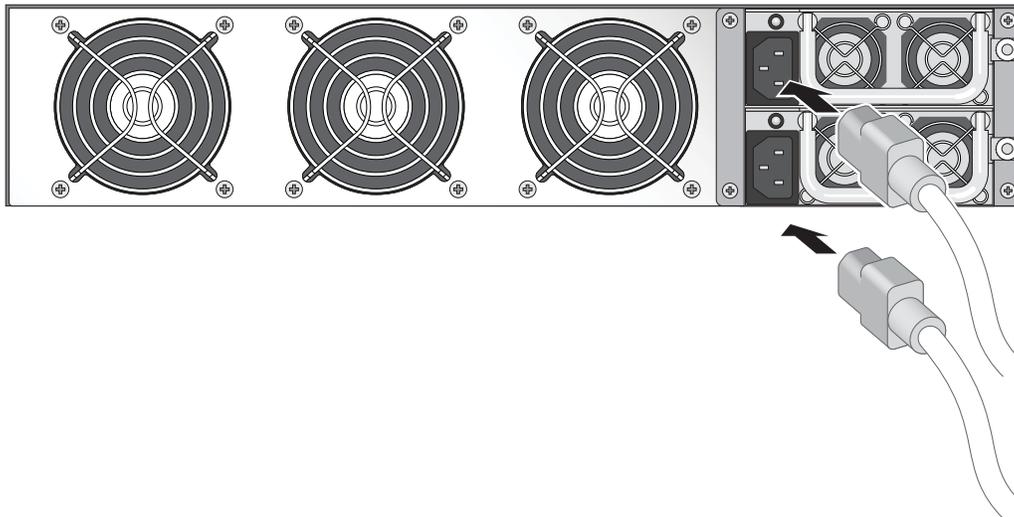Figure 7 shows the power connections for the PA-4000 Series.

Figure 7. Power Connection for the PA-4000 Series

To power up the PA-4000 Series, attach a power cable to each of the power supplies, and plug each into a grounded wall outlet. The device has no power switch, and is automatically powered when one or more power cables are connected to the device and to an AC power source.

Chapter 3
Maintaining the Hardware

This chapter describes how to replace power supplies, interpret LEDs, and troubleshoot hardware problems. For more information, refer to the following topics:

- "Cautions and Warnings" in the next section

- "Replacing a Power Supply" on page 13

- "Interpreting the Device LEDs" on page 14

- "Interpreting the Port LEDs" on page 15

Cautions and Warnings

CAUTION: *Disconnect all power cords before servicing.*

WARNING: *Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the battery manufacturer's instructions.*

WARNING: *Removal of equipment top cover is to be done only by trained service person(s).*

Replacing a Power Supply

The PA-4000 Series firewall has two hot-swappable power supplies. Both power supplies should be connected during normal operations. If the system detects a loss of power, either due to loss of power connection or failure of the power supply, the power supply LED located above the power plug and the front panel PWR LED both turn red, and a continuous audible alert is generated.

To replace the PWR1 or PWR2 power supply:

1. While the PA-4000 Series is running, unplug the power cord from the power supply that you need to replace, and unscrew the screw knob.

2. Use the handle to slide the power supply out of the device, as shown in Figure 8.

3. Slide a replacement power supply into the device, and attach with the screw knob. Tighten the screws more with a tool after initial and subsequent access to the power supply.

4. Connect the power cable to the power supply and to an AC power source.

Note: *The audible alert continues to be generated until two power supplies are installed and operational.*
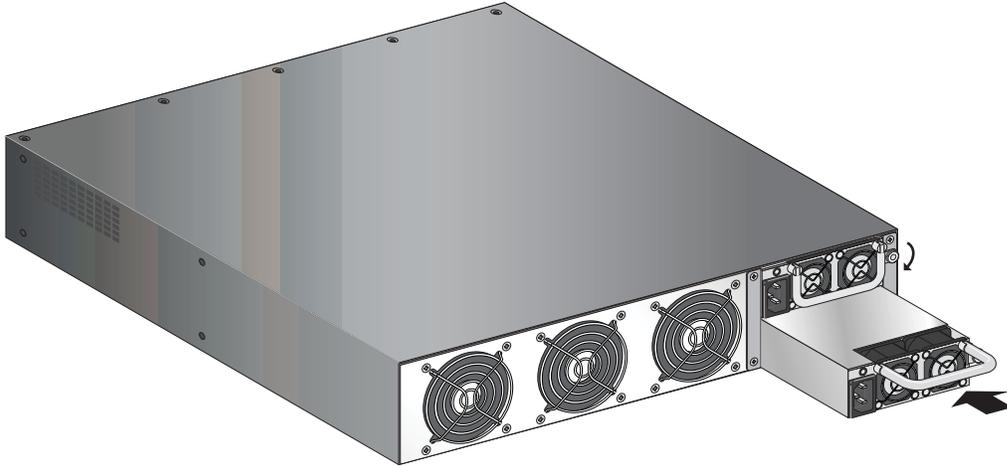

Figure 8.   Power Supply Replacement

Interpreting the Device LEDs

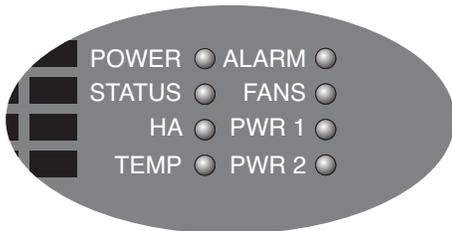Figure 9 shows the LED dashboard on the front panel, and Table 4 describes the LED functions and states.

Figure 9.   Front Panel LEDs

Table 4.   Functions and States of the LED Dashboard

Interface	State	Description
POWER	Green	The device is powered.
	Off	Power is off.
STATUS	Green	The device is operating normally.
	Yellow	The device is booting up.
HA	Green	This device is the current active device.
	Yellow	This device is the current passive device.
	Off	High availability (HA) is not enabled on this device.
TEMP	Green	The temperature is normal.
	Yellow	The temperature is outside the normal tolerance.
ALARM	Red	There is a hardware failure, which may include power supply detected but not working, fan failure, HA failover, or temperature above high temperature threshold.
	Off	The device is operating normally.
FANS	Green	All fans are operating normally.
	Red	One or more fans have failed.
PWR1	Green	The top power supply is powered and active.
	Red	The top power supply is not detected or is detected but not working.
PWR2	Green	The bottom power supply is powered and active.
	Red	The bottom power supply is not detected or is detected but not working.

Interpreting the Port LEDs

Table 5 describes the LEDs for the PA-4050 and PA-4020 Ethernet ports. Refer to Figure 1.

Table 5.   PA-4050 and PA-4020 Port LEDs

LED	Description
Left	Shows green if there is a network link.
Right	Blinks if there is network activity.

Table 6 describes the LEDs for the PA-4060 Gigabit Small Form-Factor Pluggable (XFP) ports. Refer to Figure 2.

Table 6.   PA-4060 Port LEDs

LED	Description
Top	Shows green if there is a network link.
Bottom	Blinks if there is network activity.

Table 7 describes the LEDs for the PA-4000 Series Management port. Refer to Figure 1 and Figure 2.

Table 7.   PA-4000 Series Management Port LEDs

LED	Description
Left	Shows green when a 100 Mbps link is connected or amber when a 1 Gbps link is connected.
Right	Blinks orange if there is network activity.

Chapter 4
Specifications

This chapter provides specifications for the PA-4000 Series firewall. For more information, refer to the following topics:

- "Physical Specifications" in the next section

- "Interface Specifications" on page 18

- "Electrical Specifications" on page 18

- "Environmental Specifications" on page 19

Physical Specifications

Table 8 lists physical specifications for the PA-4000 Series.

Table 8.   Physical Specifications

Specification	Description
Height	3.5 inches (2 RU)
Depth	16.5 inches
Width	17.5 inches
Mounting	Standard 19-inch rack
Fans	Three fans
Power supplies	Two self-contained hot-swappable

Interface Specifications

Table 9 lists the interfaces for the PA-4000 Series.

Table 9.   Interface Specifications

Specification	Description
Ethernet ports	PA-4050/PA-4020: 16 RJ-45 10/100/1000Mbps ports for network traffic.
SFP ports	PA-4050/PA-4020: Eight Small Form-Factor Pluggable (SFP) ports for network traffic. PA-4060: Four SFP ports for network traffic.
XFP ports	PA-4060: Four 10 Gigabit Small Form-Factor Pluggable (XFP) ports for network traffic.
Management ports	One RJ-45 port to access the device CLI through an Ethernet interface.
Management console port	One DB-9 port for connecting a serial console. Use these settings: – Data rate: 9600 – Data bits: 8 – Parity: none – Stop bits: 1 – Flow control: None
High-availability (HA) port	Two RJ-45 ports for high-availability control and synchronization.
USB ports	One USB port that you can use to bootstrap the firewall. For details, see "Front Panel" on page 6.

Electrical Specifications

Table 10 lists electrical specifications for the PA-4000 Series.

Table 10.   Electrical Specifications

Specification	Description
Maximum internal power dissipation	400W
AC voltage	100-240 VAC

Environmental Specifications

Table 11 lists environmental specifications for the PA-4000 Series.

Table 11. Environmental Specifications

Specification	Description
Operating temperature range	0° to 50° C
Storage temperature range	-20° to 70° C
System air flow	Front to back

Environmental Specifications

Chapter 5
Compliance Statement

This chapter 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

クラスA情報技術装置

この装置は，情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準
に基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波
妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ず
るよう要求されることがあります。

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.