

# **WF-500 WildFire Appliance Hardware Reference Guide**



## Contact Information

<http://www.paloaltonetworks.com/contact/contact/>

## About this Guide

This guide describes the WF-500 WildFire appliance and provides instructions on installing the hardware and performing maintenance procedures, and also provides product specifications. This guide is intended for system administrators responsible for installing and maintaining the WF-500 appliance. Refer to the *Palo Alto Networks WildFire Administrator's Guide* for information on using WildFire.

All WF-500 appliances run 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>.

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Revision Date: February 29, 2016

Part number: 810-000147-00C



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# Chapter 1

# Overview

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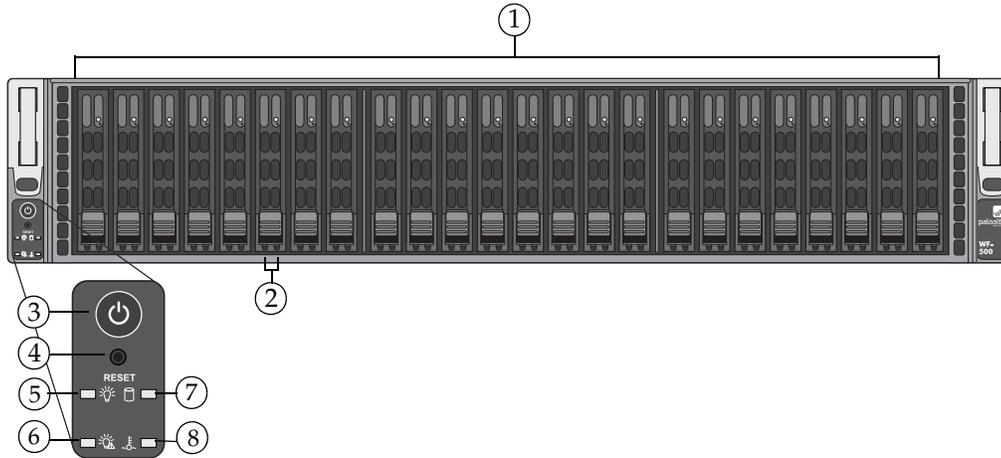
This chapter describes the front and back panel of the WF-500 appliance.

- “Front Panel Description” in the next section
- “Back Panel Description” on page 8

# Front Panel Description

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

**Figure 1. Front Panel**



**Table 1. Front Panel Features**

Item	Description
1. Disk Drives/Bays	The WF-500 appliance has 24 disk drive bays. Starting from left to right, the bays are labeled A1-A2, B1-B2 up to L1-L2. At the time of this release, only the first four drive bays (A1-A2, B1-B2) are available for use.
2. Drive LEDs	<ul style="list-style-type: none"> <li>• Left LED—Illuminates red when a drive failure occurs.</li> <li>• Right LED—Blinks blue when there is drive activity. A connection to the SATA backplane enables the LED to blink on and off when the particular drive is being accessed.</li> </ul>
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	The LED flashes red when a power supply failure occurs or if a power cord is removed.

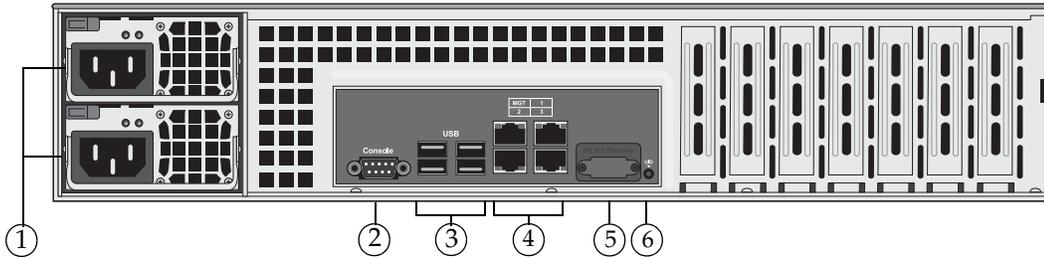
**Table 1. Front Panel Features (Continued)**

Item	Description
7. HDD (LED)	Indicates IDE channel activity (SAS/SATA drive).
8. Overheat/Fan Failure	Modes: <ul style="list-style-type: none"><li data-bbox="699 373 1398 432">• Continuously on red—An overheat condition occurred, possibly due to cables blocking the air vents.</li><li data-bbox="699 443 1203 470">• Blinking red (1Hz)—Fan failure has occurred.</li><li data-bbox="699 480 1406 539">• Blinking red (.25Hz)—Power failure due to power supply failure or the power cord is not connected to one of the power supplies.</li><li data-bbox="699 550 1414 632">• 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.</li></ul>

# Back Panel Description

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

**Figure 2. Back Panel**



**Table 2. Back Panel Features**

Item	Description
1. Power Supplies	Two redundant power supplies.
2. Console	DB-9 serial port for console access.
3. USB	Four USB ports (reserved for future use).
4. MGT	RJ-45 10/100/1000 management port used for managing the device and for data traffic.
1,2,3	RJ-45 10/100/1000 Ethernet Ports 1,2,3. Ports 2 and 3 are reserved for future use.
5. Graphics Port	VGA port (reserved for future use and covered).
6. UID	<p>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.</p> <p>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.</p>

## Chapter 2

# Installing the Hardware

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This chapter describes how to install the WF-500 appliance. For more information, see 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 18
- “Connecting Power” on page 18

## Tamper Proof Statement

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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

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- It is recommended that two people are available to mount the WF-500 appliance in a 19-inch rack.
- Have a Phillips head screwdriver available and small pliers or a nut wrench.
- Verify that the intended location has adequate air circulation and meets the temperature requirements. See “Environmental Specifications” on page 24.
- Unpack the device.
- Verify that power is not connected to the WF-500 appliance.
- Allow clear space on all sides of the WF-500 appliance.

# Equipment Rack Installation

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The WF-500 appliance ships with a 4-post rack kit with two sets of rail assemblies (one for each side) and the mounting screws needed for installing the system into a 4-post, 19" rack. This rail kit will fit a rack between 26.5" and 36.4" deep.



**Note:** You can also order a 2-post rail kit from Palo Alto Networks for installation in a 2-post rack. See "2-post Rack Installation" on page 15 for installation procedures.

The following safety guidelines apply to rack installation:

- **Elevated ambient operating temperature**—If the WF-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 24.
- **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 24.
- **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 steps needed to install the WF-500 appliance in a 2-post or 4-post 19" rack:

- "4-post Rack Installation" in the next section
- "2-post Rack Installation" on page 15

## 4-post Rack Installation

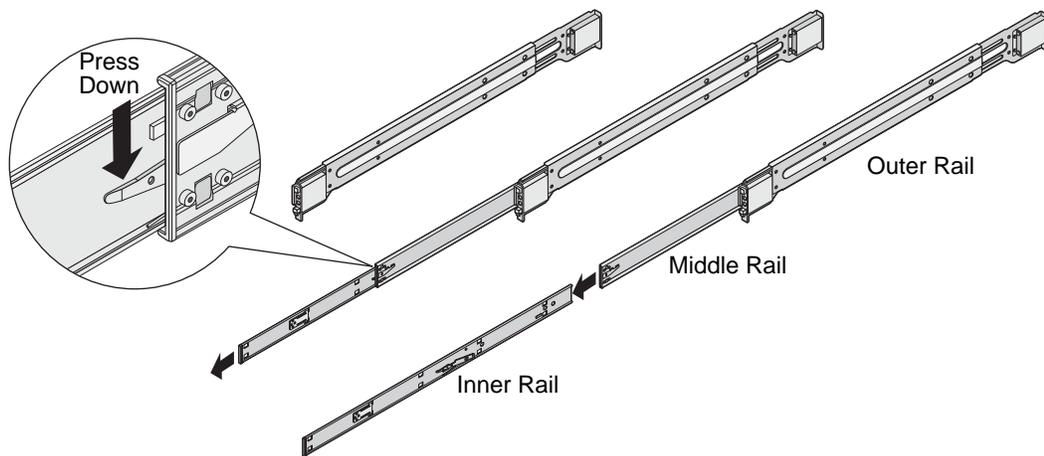
1. Unpack the rail kit, which contains two rail assemblies (one for each side of the WF-500 appliance). Each assembly consists of three sections: An inner rail that secures directly to the chassis, an outer rail that secures to the rack, and a middle rail that extends from the outer rail. These assemblies are specifically designed for the left and right side of the chassis.



**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.

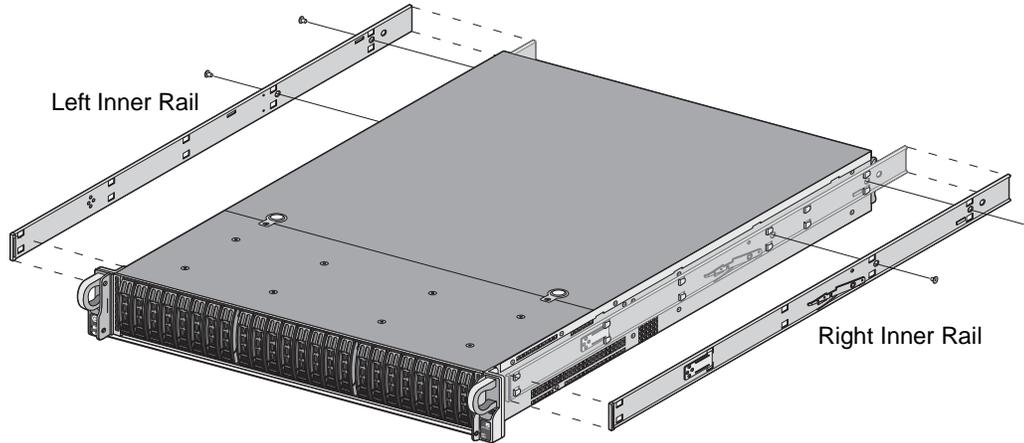
2. Pull the inner rail out of the outer rail until it is fully extended and then press the locking tab down to release the inner rail as shown in Figure 3. Repeat this step on the other rail.

**Figure 3. Removing the inner rail**



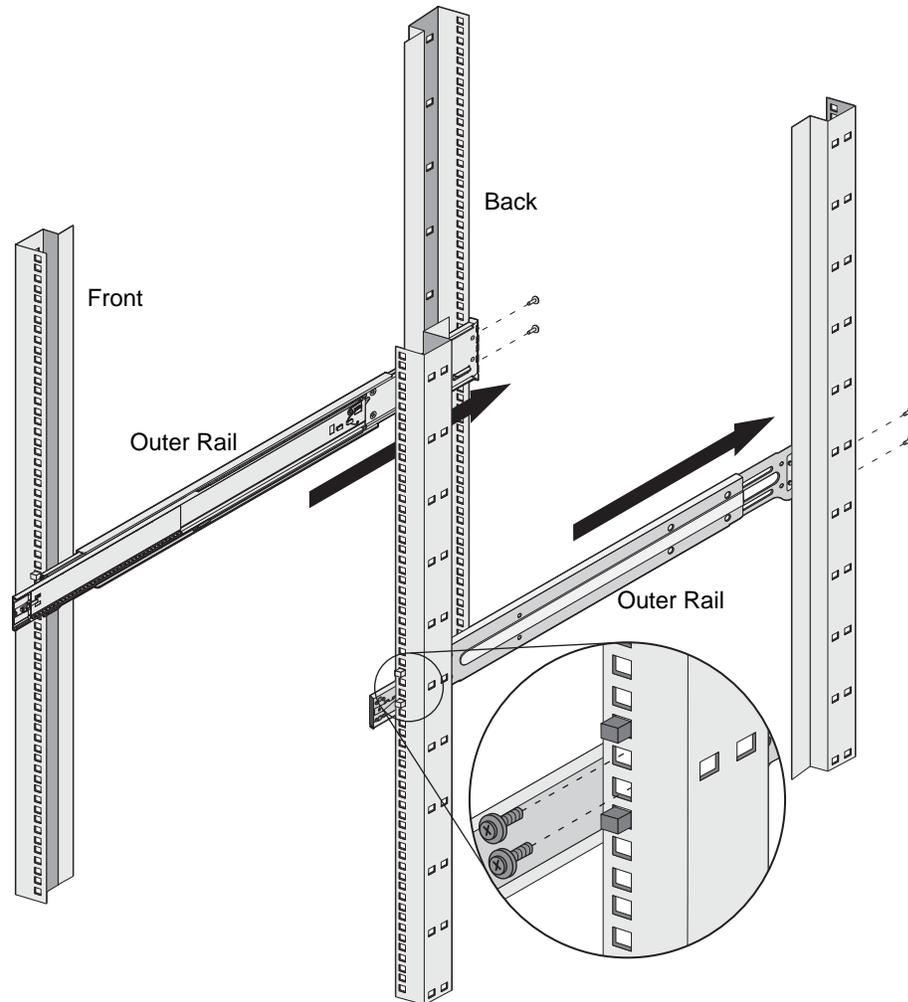
3. Install the left inner rail on the left side of the chassis and the right inner rail on the right side of the chassis. The inner rails install over the mounting hooks and then slide forward to lock in place. The mounting screw holes will be exposed at which time you can use the provided screws to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

**Figure 4. Attaching the inner rails to the chassis**



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 and then hang the hooks of the front of the outer rail onto the slots on the front of the rack as shown in Figure 5. If necessary, use screws to secure the outer rails to the rack.

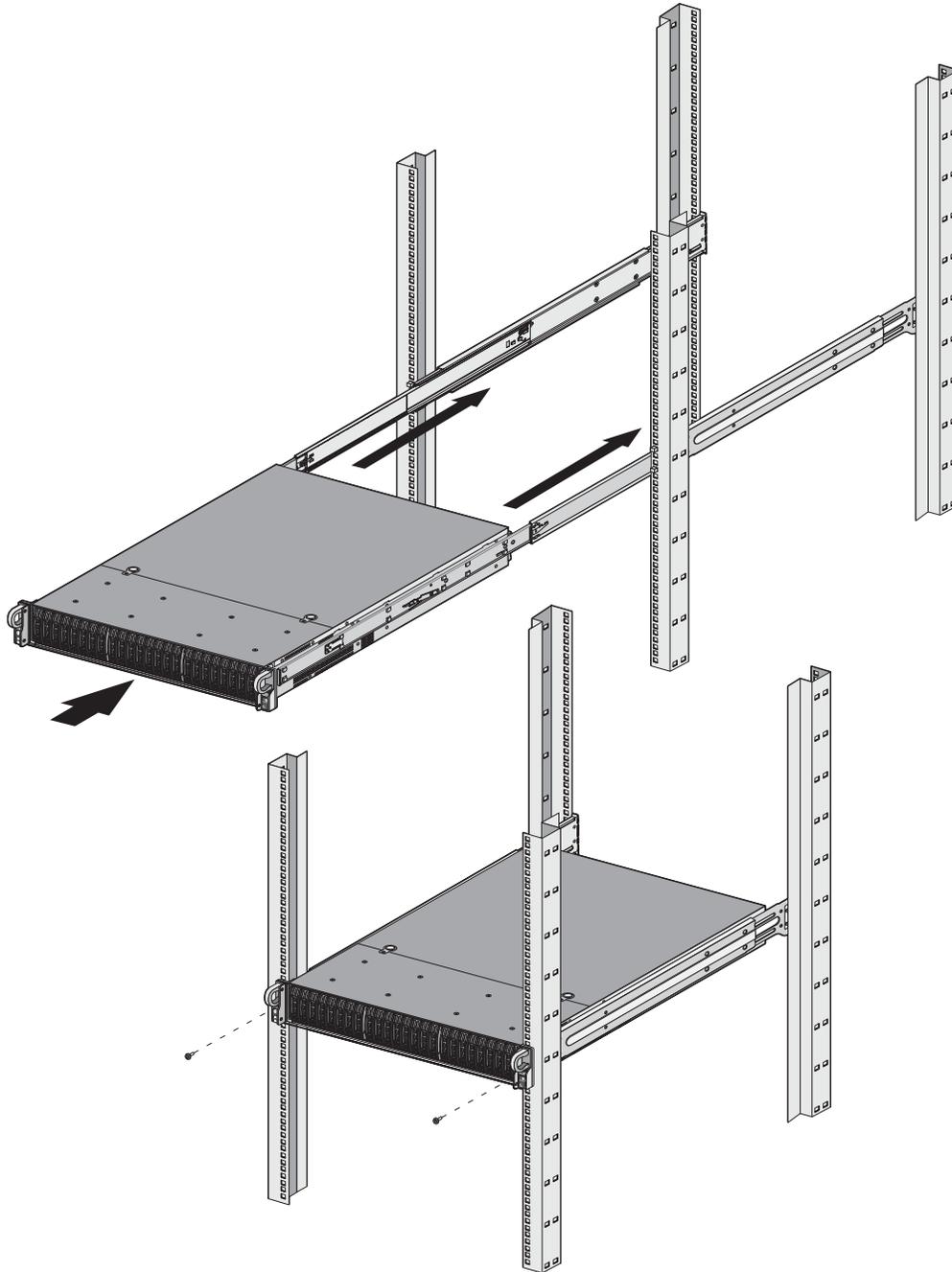
**Figure 5. Attaching the outer rail to the rack posts**



5. Pull out the rear of the outer rail, adjusting the length until it 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. If necessary, use 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. Installing the chassis into the rack**



10. Depress the locking tabs of both sides at the same time 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 on the front handles of the chassis.

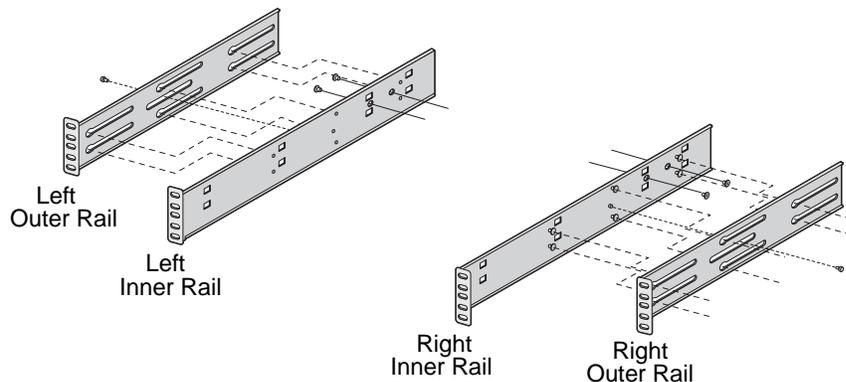
## 2-post Rack Installation



**Note:** The WF-500 appliance ships with a 4-post rack kit. You can order a 2-post rail kit from Palo Alto Networks for installation in a 2-post rack.

1. Unpack the 2-post rail kit, which contains two rail assemblies (one for each side of the WF-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. Components of the 2-post rail kit**



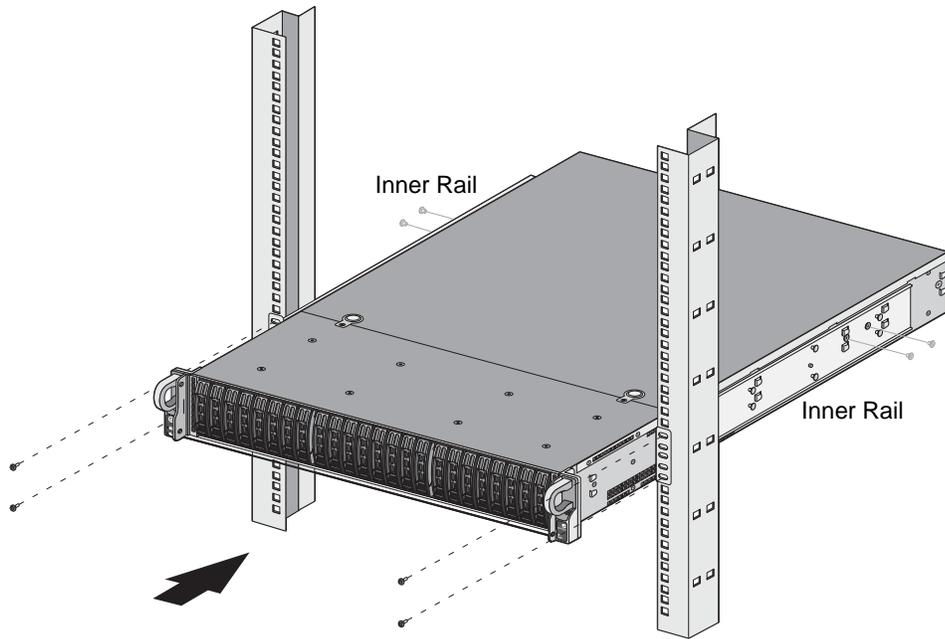
3. Slide the inner rails on each side of the chassis over the chassis hooks. There are six hooks; install the inner rail on the middle four hooks and then secure the inner rails on both sides of the chassis using the flat-head screws as shown in Figure 8.



**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.

- Using at least two people, mount the chassis to the rack 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. Installing the chassis into the rack and securing the front rail**



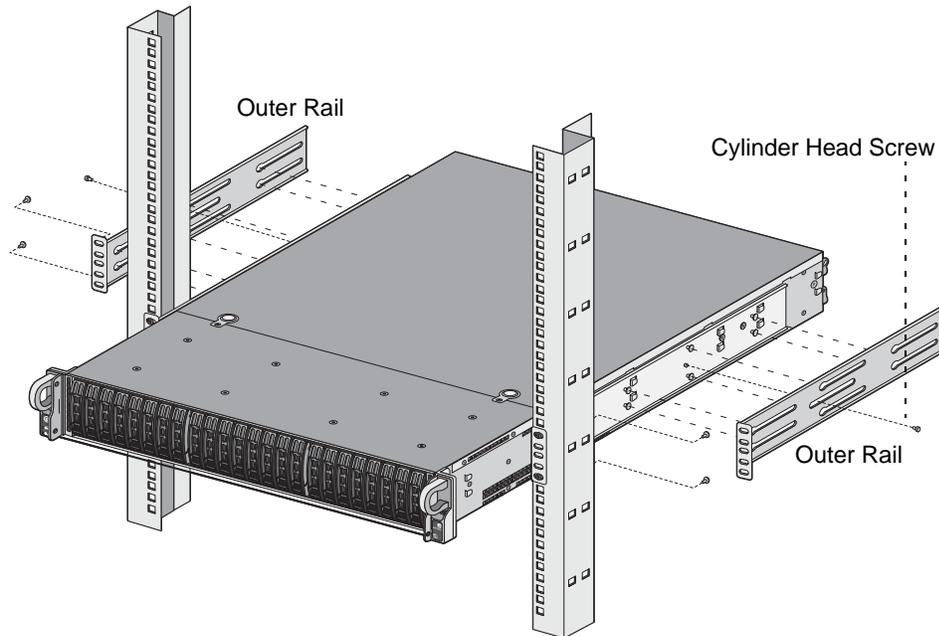
- The chassis will be able to support itself in the rack at this point, but the rear outer rails are required to fully secure the chassis. Align the outer rail holes with the inner rail post and push the outer rail into place and then slide forward until the rack mount holes rest against the rack post. 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. Installing the outer rail to finish securing the chassis to the rack**



## Connecting Cables to the Device

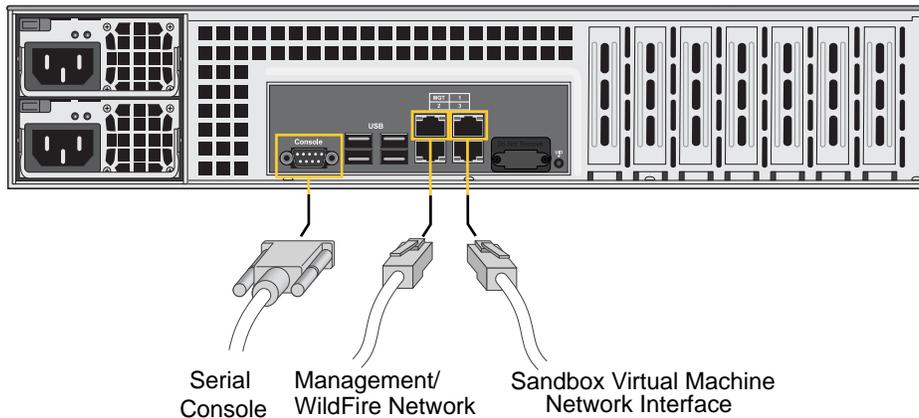
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Figure 10 shows the WF-500 appliance cable connections on the back of the device. See Table 1 for descriptions of the front panel and Table 2 for descriptions of the back panel interfaces.



**CAUTION:** Shielded interface cables that are grounded are required to ensure agency compliance with electromagnetic emissions (EMC).

**Figure 10. Cable connections for the back of the WF-500 appliance**



## Connecting Power

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To power on the WF-500 appliance, plug two power cables into grounded wall outlets and then attach them to each of the two power supplies on the back of the WF-500 appliance. It is recommended that you connect the power supplies to separate circuits. The device will power on automatically.

A warning beep will sound until both power cables are connected.

## Chapter 3

# Maintaining the Hardware

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This chapter describes how to replace disk drives, interpret LEDs, and troubleshoot hardware problems. For more information, see the following topics:

- “Cautions and Warnings” in the next section
- “Interpreting the Port LEDs” on page 19
- “Disk Drive Replacement” on page 19
- “Power Supply Replacement” on page 22

## Cautions and Warnings

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

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

## Interpreting the Port LEDs

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

**Table 3. Port LEDs**

LED	Description
Left	<ul style="list-style-type: none"> <li>• <b>Off</b>—No link</li> <li>• <b>Green</b>—100 Mbps link</li> <li>• <b>Amber</b>—1 Gbps link</li> </ul>
Right	Blinks yellow if there is network activity.

## Disk Drive Replacement

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The following section describes the procedures for replacing disk drives on the WF-500 appliance. The WF-500 appliance has 24 disk drive bays. Starting from left to right, the bays are labeled A1-A2, B1-B2 up to L1-L2. Only the first four drive bays (A1-A2, B1-B2) are

available for use. Drives A1-A2 are a RAID 1 pair; drives B1-B2 are also a RAID 1 pair. The only drive maintenance you will need to perform is a replacement of a failed drive in one of the RAID pairs.



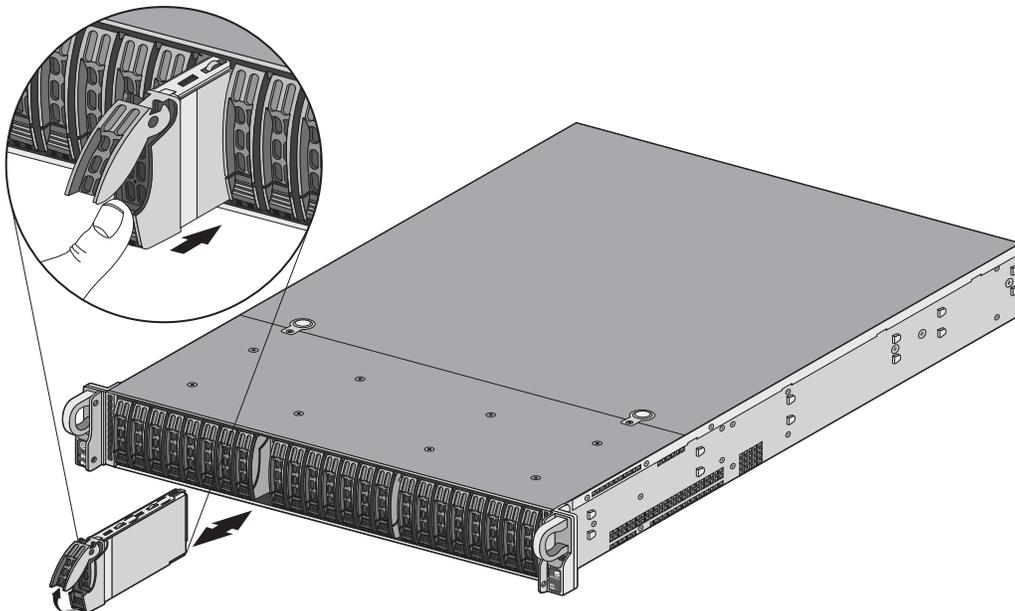
**Note:** The disk drives in the front drive bays of the WF-500 appliance are hot swappable. For more details on replacing failed drives, refer to the [Palo Alto Networks WildFire Administrator's Guide](#).

## Replacing a WF-500 Appliance Disk Drive

This section describes the steps needed to remove and install a WF-500 appliance disk drive in the event of a drive failure in one of the RAID 1 pairs.

1. Place an anti-static wrist strap on your wrist and connect it to ground.
2. Identify the failed drive indicated by the red LED on the drive bay. You can also check the drive status by running the CLI command `show system raid`. You will see Disk Pair A and Disk Pair B and the failed drive will show **Missing** or **Failed**.
3. Press the purple button on the drive bay for the failed drive to be replaced as shown in Figure 11.
4. Gently rotate the drive bay lever away from the drive until it stops.
5. Gently pull on the lever to remove the drive from the system.

**Figure 11. Disk Drive Replacement**



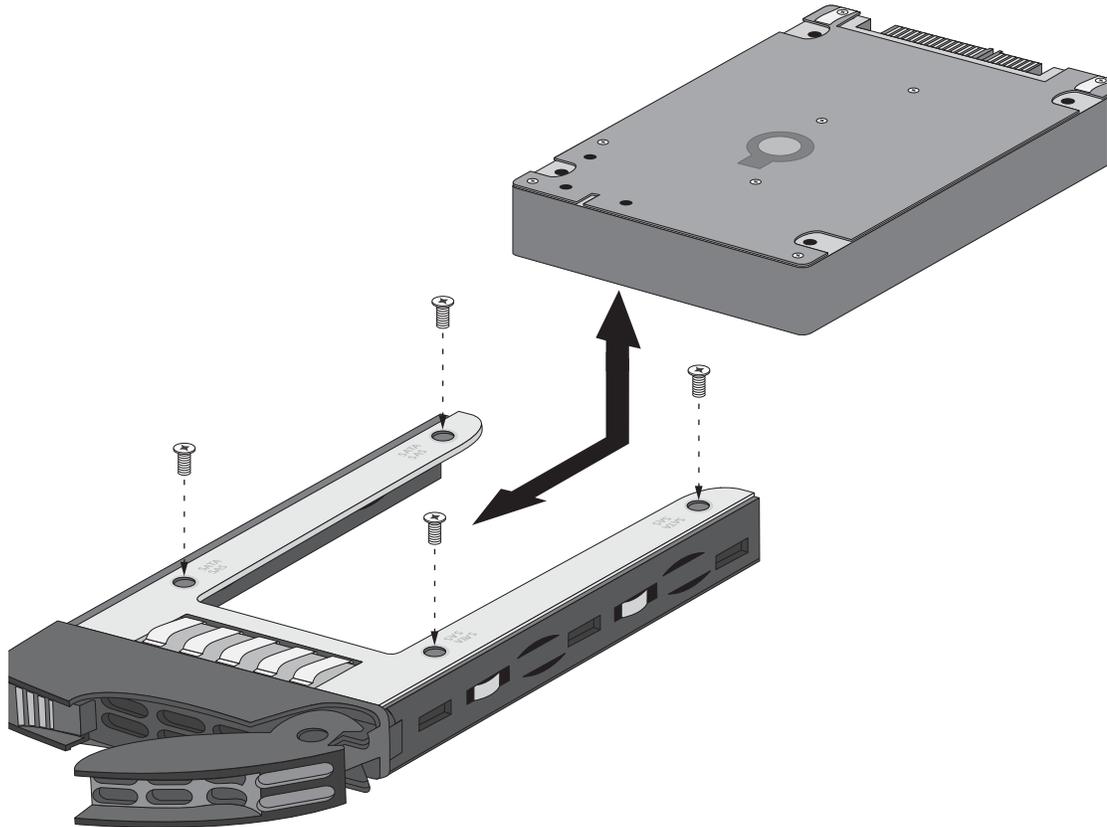
6. To install a new drive in the appliance, you will need to remove the old drive from the drive carrier. Place the failed drive/drive bay on a flat surface with the label side down and place the new drive next to it.

- Remove the four screws holding the drive in the drive bay and then remove the failed disk drive. Figure 12 shows how the drive connects to the carrier.



**Note:** If you are using a blank carrier that does not have a drive, a plastic blank will be in place of the drive. Remove the plastic blank before installing the new drive.

**Figure 12. WF-500 Appliance Drive Carrier and Drive**



- Put the new drive in the carrier and attach it to the carrier with the four screws as shown in Figure 12.
- The drive bay lever should still be in the open position; if it is not, press the purple button on the drive bay to release the drive bay lever and pull it out until it is fully open.
- With the handle of the drive fully extended, use the purple button to push the drive all the way into the empty slot. This will cause the lever to close part way. Push the lever all the way inward to lock the drive bay into place as shown in Figure 11.
- Now that the new drive is installed, you need to add it to the RAID 1 pair by running the CLI command `request system raid add <drive>`. For example, if drive A2 failed in the A1/A2 RAID pair, you would run `request system raid add A2`.
- To check the status of the new drive, run `request system raid detail`. In this example, drive A2 shows `spare rebuilding` as shown in the following output:

```
Disk Pair A
Status      Available
Disk id A1  clean, degraded
            Present
```

```
model      : ST91000640NS
size       : 953869 MB
partition_1 : active sync
partition_2 : active sync
Disk id A2                               Present
model      : ST91000640NS
size       : 953869 MB
partition_1 : spare rebuilding
partition_2 : spare rebuilding
```

After the rebuild is complete, the status will show active sync for both partitions, which completes the drive replacement operation.

## Power Supply Replacement

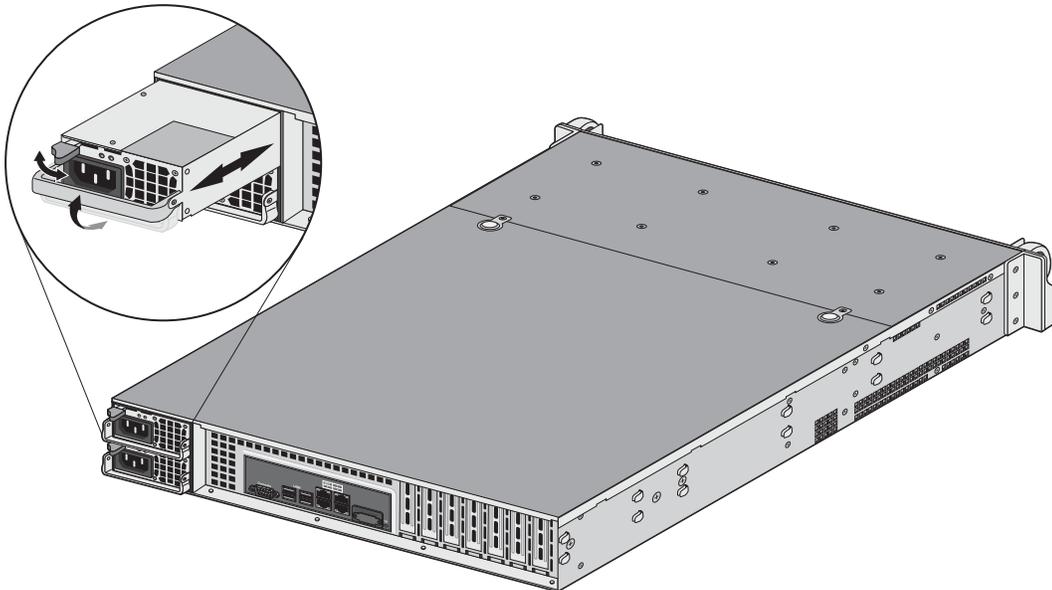
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The WF-500 appliance uses two hot-swappable redundant power supplies. If a power supply fails, a system log alert will be generated, an audible alert will sound, and the Power Failure Indicator described in the “Front Panel Description” on page 6 will change to amber and will blink.

Replacing 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. Push 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 plug the power cord back into the new power supply.
4. Check that all power supply warning indicators are in their normal state.

## Chapter 4

# Specifications

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

- “Physical Specifications” in the next section
- “Interface Specifications” on page 24
- “Electrical Specifications” on page 24
- “Environmental Specifications” on page 24

## Physical Specifications

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

**Table 4. Physical Specifications**

<b>Specification</b>	<b>Description</b>
Height	3.5 inches (2 RU)
Depth	24.8 inches
Width	17.2 inches
Weight	53 lb
Mounting	Standard 19-inch rack
Fans	4 fans

## Interface Specifications

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

**Table 5. Interface Specifications**

Specification	Description
Ethernet ports	3 RJ-45 10/100/1000 Ethernet ports for network traffic. (Ports 2 and 3 are reserved for future use).
MGT port	1 RJ-45 10/100/1000 Ethernet port used for device management and for data traffic.
Console port	1 DB-9 serial port for connecting a serial console. Use these settings: <ul style="list-style-type: none"> <li>• Data rate: 9600</li> <li>• Data bits: 8</li> <li>• Parity: none</li> <li>• Stop bits: 1</li> <li>• Flow control: none</li> </ul>
USB ports	4 USB ports reserved for future use.

## Electrical Specifications

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

**Table 6. Electrical Specifications**

Specification	Description
Maximum internal power dissipation	390W
AC voltage	100-240 VAC

## Environmental Specifications

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

**Table 7. Environmental Specifications**

Specification	Description
Operating temperature range	5° to 35° C
Storage temperature range	-20° to 65° C
System air flow	Front to rear
Operating humidity	10% to 80% non-condensing
Storage humidity	5% to 95% non-condensing

## Chapter 5

# Compliance Statements

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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:

この装置は、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。 VCCI-A

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

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### CAUTION

Please Note the Following:

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- The WF-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:

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- 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 WF-500 appliance may produce high voltages and potential energy hazards. By opening the cover of the WF-500 appliance you may be exposed to a risk of electric shock. The components inside the WF-500 appliance housing should only be serviced by Palo Alto Networks.
- The WF-500 appliance should not be operated with the cover removed.
- Components inside the WF-500 appliance housing may become extremely hot during normal operation. These components include the memory and CPU modules.
- The WF-500 appliance should not be operated in environments that can get wet. Protect the WF-500 appliance at all times from liquid intrusion.
- If your WF-500 appliance gets wet, *turn off the AC power at the circuit breaker* before attempting to remove the power cables from the electrical outlet. Then disconnect power to the equipment and to any attached devices.

- Avoid obstructing the air vents on the WF-500 appliance or pushing objects into the openings. This could lead to fire or electric shock.



CAUTION

To prevent hardware damage or loss of data, observe the following precautions:

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- 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 WF-500 appliance. This permits the airflow required for proper ventilation.
- Avoid placing equipment too close together such that it is subject to re-circulated (pre-heated) air. Avoid placing equipment too close to an appliance or exhaust vent.
- Ensure that cables are connected to the WF-500 appliance without stress 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 WF-500 appliance.
- To protect the WF-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:

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- Slide rail mounted equipment is not to be used as a shelf or a work space.
- Elevated Operating Ambient – If the WF-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 24.
- Reduced Air Flow – Installation of the WF-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 WF-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 WF-500 appliance to the supply circuit, make certain that the power strips are also grounded properly.
- It is your responsibility to ensure that the rack and the provided rail system are compatible with each other before installing the WF-500 appliance.
- Install the front and side stabilizers on the rack prior to installing equipment. Failure to install stabilizers may cause a rack to tip over.
- 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:

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- 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

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### 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.

