

# Administration Guide

## DATA SECURITY MANAGER – FX2200 HARDWARE INSTALLATION GUIDE

VERSION 3.2



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**TABLE OF CONTENTS**

**1.0 INTRODUCTION ..... 4**

**2.0 ACCESSORIES AND PARTS INCLUDED IN THE PACKAGE ..... 4**

**3.0 FX2200 SERIES 2 APPLIANCE VIEWS.....5**

3.1 Front View .....5

3.2 Rear View.....5

**4.0 FX2200 SERIES 2 COMPONENTS AND SPECIFICATIONS.....6**

4.1 Chassis Specifications .....6

4.2 Front and Rear Panel Components .....8

4.2.1 Front Panel LEDs..... 8

4.2.2 Rear Panel LED..... 9

4.3 Ports and Connectors.....9

4.3.1 Network Interface Ports ..... 10

4.3.2 Management Port (IPMI Interface)..... 10

4.3.3 DB9 Console Port..... 11

4.3.4 VGA Port..... 12

4.3.5 USB Port..... 12

**5.0 POWER SUPPLY AND COOLING SYSTEM ..... 12**

5.1 AC Power Supply in FX2200 Series 2 Appliance ..... 12

5.2 AC Power Cord Specifications..... 12

5.3 Cooling System in an FX2200 Series 2 Appliance..... 13

**6.0 SERVER INSTALLATION..... 13**

6.1 Overview ..... 13

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- 6.2 Unpacking the System..... 13**
- 6.3 Preparing for Setup..... 13**
  - 6.3.1 Choose a Setup location ..... 14
  - 6.3.2 Rack Precautions..... 14
  - 6.3.3 Server Precautions..... 14
  - 6.3.4 Rack Mounting Considerations ..... 14
  - 6.3.5 Mechanical Loading ..... 15
- 6.4 Installing the System into a rack..... 15**
  - 6.4.1 Identifying the Sections of the Rack Rails ..... 16
  - 6.4.2 Installing the Server into the Rack ..... 16
- 7.0 SYSTEM SAFETY ..... 16**
- 7.1 Electrical Safety Precautions..... 16**
- 7.2 General Safety Precautions..... 16**
- 8.0 PREREQUISITES..... 17**
- 9.0 SYSTEM CONFIGURATION AND INSTALLATION..... 19**
- 10.0 FORTANIX DATA SECURITY MANAGER INSTALLATION AND CONFIGURATION..... 19**
- 11.0 USING FORTANIX DATA SECURITY MANAGER ..... 19**
- 12.0 TROUBLESHOOTING AND SUPPORT ..... 19**
- 13.0 APPENDIX..... 20**
- 13.1 List of Required Open Ports..... 20**
- 14.0 DOCUMENT INFORMATION..... 21**
- 14.1 Document Location ..... 21**

<b>14.2 Document Updates .....</b>	<b>21</b>
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## 1.0 INTRODUCTION

This document guides you through the process of installing and configuring the Fortanix Data Security Manager (DSM) in a three-phase process as follows:

- **Appliance Specifications and Components**
- **Server Installation:** In this phase, you rack and stack the server.
- **System Installation and Configuration:** In this phase, you install the operating system and configure the network on the servers.
- **Data Security Manager Installation and Configuration:** In this phase, you install the Fortanix DSM service and configure the Fortanix DSM cluster.

The rest of this document provides the prerequisites for the installation and the details for each phase.

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## 2.0 ACCESSORIES AND PARTS INCLUDED IN THE PACKAGE

The following accessories and parts are included as part of the shipment:

- One FX2200 Series II appliance
- One Rail kit with instructions
- Two US power cords
- Three Ethernet cables

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### 3.0 FX2200 SERIES 2 APPLIANCE VIEWS

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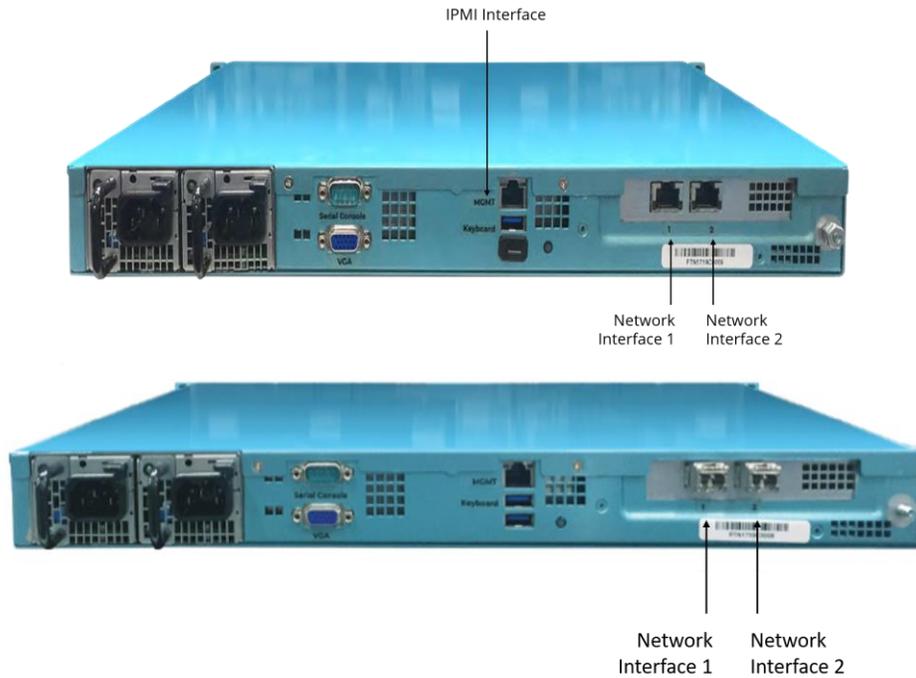
#### 3.1 FRONT VIEW



**FIGURE 1: FX2200 FRONT VIEW**

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#### 3.2 REAR VIEW



**FIGURE 2: FX2200 REAR VIEW**

## 4.0 FX2200 SERIES 2 COMPONENTS AND SPECIFICATIONS

### 4.1 CHASSIS SPECIFICATIONS

The following table lists the FX2200 Series 2 appliance chassis specifications:

ITEM	SPECIFICATION
<b>Services and Slot Density</b>	
Power Supply	Dual redundant 300w AC power supply
Memory	64 GB high speed memory
Storage	1 TB
Processor	Intel® SGX
Network Connectivity	Dual Copper 10 Gigabit Ethernet, 10GBASE-T, IEEE 802.3an, supporting link aggregation Gigabit Ethernet, 1000Base-T 100 Mb Ethernet : 100BASE-TX 1 x IPMI port Dual SFP28 (Small Form Factor Pluggable) supports: SFI interfaces supports 25GBase-R PCS and 25 Gigabit PMA in order to connect with SFP28 to 25GBase-SR
High Availability	Scale-out clustered design with built-in HA / DR
Management / Monitoring	Centralized Management with Web UI, CLI and APIs Syslog, Splunk integration, and APIs. Integration with Syslog, Splunk, Prometheus, and Google Stackdriver.

ITEM	SPECIFICATION
Reliability	Non Rotating media- Solid State Devices  Dual Redundant Power Supplies, FRU's (Field Replaceable Units)  MTBF 250,000 hours (basis of parts count method)
<b>Power Specifications</b>	
Power supply	Dual
AC input voltage	100-240v
AC input line frequency	63-47hz 5-2.5a
Max power draw	200 W
Average Power draw	<TBD>
<b>Physical Specifications</b>	
Height	1.7 in (43.7 mm)
Width	17.24 in (438 mm)
Depth	20.88 in (530.3 mm)
Weight	47lbs / 21.31Kg
Rack mount accessory kit	Included with the unit
<b>Packaging Specifications</b>	
Package height	9.63 in (244.6 mm)
Package width	28.88 in (733.55 mm)
Package depth	23.88 in (606.55mm)
<b>Fans</b>	

ITEM	SPECIFICATION
Total number of fans	4 (not FRU)
Direction of air flow	Front-to-back, port side is the exhaust
<b>Operating Condition</b>	
Temperature	-5 to 40 C°
<b>Transportation/Storage Condition</b>	
Temperature	-40 to 70 C°
<b>Reliability</b>	
Safety	CE, TUV, GS
EMC	FCC Class B, C-Tick, CCC, VCCI
Environmental	RoHS

## 4.2 FRONT AND REAR PANEL COMPONENTS

This section describes components of the front and rear panels of the FX2200 Series 2 appliance. See section 2.0 for the exact location of these components on the appliance.

### 4.2.1 FRONT PANEL LEDs

FX2200 Series 2 has five status LEDs located in the front.

The following table describes the LEDs, their color, and the status they indicate.

LED	COLOR	STATUS
<b>Fortanix Logo</b>	White	Indicates the unit is on
<b>Power</b>	Blue	<ul style="list-style-type: none"> <li>Off: Indicates the unit is turned off</li> <li>On: Indicates the unit is turned on</li> </ul>
<b>System Status</b>   <b>NOTE:</b> The System Status LED may not function properly on certain older units.	Green	On: Indicates the power supply units (PSUs) plugged in are powered on. This includes the scenario when only one power supply is plugged in and powered on.
	Yellow	Blinking: Indicates both PSUs are plugged in, but only one is powered on
<b>Disk Activity</b>	Amber	Blinking: Indicates there is disk activity
<b>ID</b>	Blue	Indicates the button is pressed for identification

#### 4.2.2 REAR PANEL LED

The rear panel of the FX2200 Series 2 appliance has an ID button similar to the front panel for identification.

LED	COLOR	STATUS
<b>ID button</b>	Blue	<ul style="list-style-type: none"> <li>Blue: When the button is pressed for identification</li> </ul>

#### 4.3 PORTS AND CONNECTORS

The FX2200 Series 2 appliance supports five types of ports: Network Interface ports, IPMI Interface port, USB Serial Console port, VGA port, and USB port for keyboard connection.

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#### 4.3.1 NETWORK INTERFACE PORTS

There are two built-in network interface ports on the FX2200 Series 2 appliance. These ports support 10Gigabit Ethernet, 10GBASE-T, IEEE802.3an, supporting link aggregation Gigabit Ethernet, 1000Base-T 100 Mb Ethernet: 100BASE-TX and are numbered 1 and 2.

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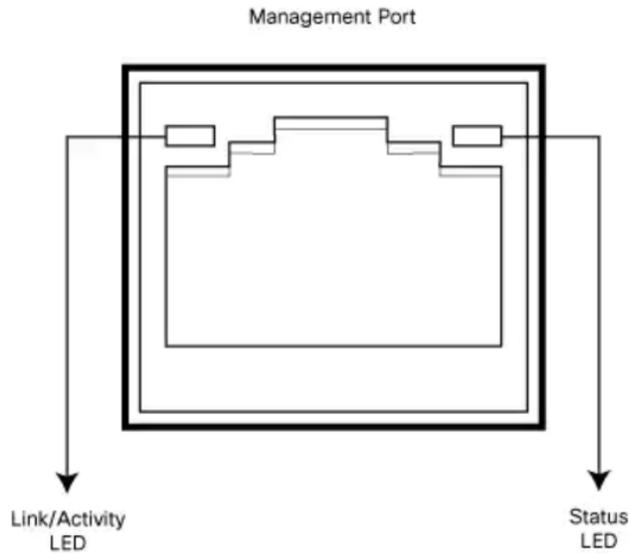
#### 4.3.2 MANAGEMENT PORT (IPMI INTERFACE)

The management Ethernet port on an FX2200 Series 2 appliance is used for the IPMI setup. It uses an RJ-45 connector to connect to a management device for out-of-band management.

The management port uses an autosensing RJ-45 connector to support a 10/100/1000Base-T connection. The two LEDs on the port indicate link/activity on the port as well as the link speed status of the port.

##### **Management Port LEDs:**

The management port on the FX2200 Series 2 appliance has two LEDs that indicate link/activity and port status.



**FIGURE 3: MANAGEMENT PORT LEDs**

The following table describes the LEDs on the management port for both IPMI and copper ports.

LED	Color	State and Description
<b>Link/Activity</b>	Green	<ul style="list-style-type: none"> <li>Blinking: Indicates that link is up and there is link activity.</li> <li>Steady On: Indicates that link is up but there is no link activity.</li> <li>Off: Powered off when the unit is off.</li> </ul>
<b>Status</b>	Green/yellow	<ul style="list-style-type: none"> <li>Indicates the speed of the link: Green - 1000 Mbps Yellow -100 Mbps Off -10 Mbps</li> </ul>

#### 4.3.3 DB9 CONSOLE PORT

The Console port on the FX2200 Series 2 appliance is a serial port and is accessible through a DB9 connector.

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#### 4.3.4 VGA PORT

The VGA port is used to connect the monitor.

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#### 4.3.5 USB PORT

There are two USB ports for the keyboard on the FX2200 Series 2 appliance. The USB port complies with the USB 3.0 specification.



**NOTE:** For hardening the security, all USB ports on the FX2200 appliance are disabled by default. However, if there is a need to enable the USB ports, then use the following command on each appliance to enable it.

```
rm /etc/modprobe.d/usb_storage.conf
modprobe usb-storage
```

---

## 5.0 POWER SUPPLY AND COOLING SYSTEM

The FX2200 Series 2 appliance has a built-in AC-to-DC power supply unit. Read this section to learn more about the AC power supply in the appliance as well as about the cooling system and airflow through the appliance chassis.

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### 5.1 AC POWER SUPPLY IN FX2200 SERIES 2 APPLIANCE

The FX2200 appliance has two integrated AC power supply that exposes a NEMA 5-15P male AC inlet connector externally. The unit can be powered by connecting the supplied power cord to AC mains with the C13 female connector end of the power cord plugged into the unit.

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### 5.2 AC POWER CORD SPECIFICATIONS

The FX2200 Series 2 appliance ships with two detachable AC power cords. The power cord uses a C13 female connector at one end and the other end is a NEMA 5-15P Male.

### 5.3 COOLING SYSTEM IN AN FX2200 SERIES 2 APPLIANCE

The cooling system in an FX2200 Series 2 appliance consists of internal heat sinks and an internal fan with adjustable speed. The fan speed is algorithmically controlled, based on readings obtained from internal temperature sensors that in turn is determined by factors such as external ambient as well as the traffic workload.

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## 6.0 SERVER INSTALLATION

If the ambient temperature inside the chassis rises above the acceptable range, the appliance raises an alarm. If the temperature inside the chassis rises above the maximum threshold temperature, the appliance shuts down automatically.

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### 6.1 OVERVIEW

This section provides a quick setup checklist to get your FX2200 up and running. By following these steps in the order given will enable you to have the system operational within a minimum amount of time.

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### 6.2 UNPACKING THE SYSTEM

Inspect the box in which FX2200 was shipped and note if it was damaged in any way. If the server itself shows damage, file a damage claim with the carrier who delivered it. Decide on a suitable location for the rack unit that will hold the FX2200. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise, and electromagnetic fields are generated. Place it near a grounded power outlet. Read the Rack and Server Precautions in the next section.

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### 6.3 PREPARING FOR SETUP

The box the FX2200 was shipped in should include two sets of rail assemblies, two rail mounting brackets, and the mounting screws you will need to install the system into the rack. Follow the steps in the order given to complete the installation process in a minimum amount of time. **Read this section in its entirety before you begin the installation procedure outlined in the sections that follow.**

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### 6.3.1 CHOOSE A SETUP LOCATION

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches).
- Leave approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.
- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets, and the like).

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### 6.3.2 RACK PRECAUTIONS

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installation, stabilizers should be attached to the rack.
- In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a component from the rack.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

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### 6.3.3 SERVER PRECAUTIONS

- Review the electrical and general safety precautions.
- Determine the placement of each component in the rack before you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

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### 6.3.4 RACK MOUNTING CONSIDERATIONS

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- **Ambient Operating Temperature:** If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra).
- **Reduced Airflow:** Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

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#### 6.3.5 MECHANICAL LOADING

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

- **Circuit Overloading:** Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern
- **Reliable Ground:** A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (that is, the use of power strips, and so on.)

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#### 6.4 INSTALLING THE SYSTEM INTO A RACK

This section provides information on installing the FX2200 into a rack unit with the rack rails provided. If the system has already been mounted into a rack, you can skip ahead. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. You should also refer to the installation instructions that came with the rack unit you are using.

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#### 6.4.1 IDENTIFYING THE SECTIONS OF THE RACK RAILS

Two rack rail assemblies are provided in the rack mounting kit. Each assembly consists of two sections: an inner fixed chassis rail that secures directly to the server chassis and an outer fixed rack rail that secures directly to the rack itself. Two pairs of short brackets to be used on the front side of the outer rails are also included.

---

#### 6.4.2 INSTALLING THE SERVER INTO THE RACK

Once you have rails attached to both the chassis and the rack unit, the next step is to install the server into the rack. Do this by lining up the rear of the chassis rails with the front of the rack rails. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting). When the server has been pushed completely into the rack, you should hear the locking of the tabs "click".

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## 7.0 SYSTEM SAFETY

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### 7.1 ELECTRICAL SAFETY PRECAUTIONS

Basic electrical safety precautions should be followed to protect yourself from harm and the FX2200 from damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch, or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.
- Do not work alone when working with high voltage components.
- When disconnecting power, you should first power down the system with the operating system and then unplug the power cords of all the power supply modules in the system.

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### 7.2 GENERAL SAFETY PRECAUTIONS

Follow these rules to ensure general safety:

- Keep the area around the FX2200 clean and free of clutter.

- FX2200 weighs approximately 43 lbs when fully loaded. When lifting the system, two people at either end should lift slowly with their feet spread out to distribute the weight. Always keep your back straight and lift with your legs.
- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.
- The power supply power cord must include a grounding plug and must be plugged into grounded electrical outlets.

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## 8.0 PREREQUISITES

Before beginning the Fortanix DSM installation process, please make sure the following requirements are met.

1. Fortanix DSM appliances are racked and stacked with all cables connected.
2. The IPMI should be configured correctly, and the appliances should be available remotely through the IPMI IP address (See IPMI Guide for more details).
3. Network configuration (IP address, subnet mask, and gateway) has been assigned for each server.
4. The hostname should be assigned to the Fortanix DSM cluster.
5. You should add DNS entries (A records) for all the appliances, all mapped to the cluster IP address described above, to your DNS server.
6. All the ports mentioned in the “List of required open ports” should be open between servers.
7. You should have the ability to issue or generate certificates for certificate requests (CSRs) generated by Fortanix DSM with the subject alternative name (SAN) containing the above-stated hostnames.
8. You should be able to configure NTP on the servers. If the servers are not going to have access to public NTP servers, then they need to be able to connect to an NTP server on your network.

9. If you are working with Fortanix provided servers, then you must have the default username/password for the servers handy. These will be distributed by email from Fortanix to post shipment of the servers, to a relevant contact person in your team.
10. When doing a remote login to FX2200 through IPMI KVM (Keyboard, Video, and Mouse) for network configuration, the following keyboard settings are required:
  - a. Install US keyboard layout on the user machine
  - b. Open the Virtual Keyboard windows accessory (comes preinstalled in all Windows deployments) to make special characters clearly visible with respect to their position on the keyboard.

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## 9.0 SYSTEM CONFIGURATION AND INSTALLATION

For details on Remote Administration by IPMI and Network Configuration, refer to *Section 4.0* of the Fortanix DSM installation guide.

<https://support.fortanix.com/hc/en-us/articles/360020884152-Fortanix-Data-Security-Manager-Installation-Guide#4.0SystemInstallationandConfiguration>

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## 10.0 FORTANIX DATA SECURITY MANAGER INSTALLATION AND CONFIGURATION

This phase installs Fortanix DSM software and configures the Fortanix DSM cluster. For more details refer to *Section 5.0* of the Fortanix DSM Installation guide.

<https://support.fortanix.com/hc/en-us/articles/360020884152-Fortanix-Data-Security-Manager-Installation-Guide#5.0FortanixDataSecurityManagerInstallationandConfiguration>

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## 11.0 USING FORTANIX DATA SECURITY MANAGER

After all the servers reboot, you can access the Fortanix DSM web interface using the hostname assigned to the Fortanix DSM cluster (for example **Error! Hyperlink reference not valid.>**) . For detailed information on Fortanix DSM usage, please refer to [Section 6.0 of Fortanix DSM Installation Guide](#).

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## 12.0 TROUBLESHOOTING AND SUPPORT

If any of the scripts fail at any step, they will print a detailed error message. Please report the problem to Fortanix support ([support@fortanix.com](mailto:support@fortanix.com)) and provide the script output.

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## 13.0 APPENDIX

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### 13.1 LIST OF REQUIRED OPEN PORTS

For a list of open ports refer to the article: <https://support.fortanix.com/hc/en-us/sections/360012109452-Fortanix-Data-Security-Manager-On-Premises>

## 14.0 DOCUMENT INFORMATION

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### 14.1 DOCUMENT LOCATION

The latest version of this document is located in the URL: <https://support.fortanix.com/hc/en-us/articles/360056649592-Fortanix-Data-Security-Manager-FX2200-Hardware-Guide>

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### 14.2 DOCUMENT UPDATES

This document will typically be updated on a periodic review and update cycle.

For any urgent document updates, please send an email to: [support@fortanix.com](mailto:support@fortanix.com)

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