FortiSwitch-AX9000G System Guide

FortiSwitch AX9000G Series
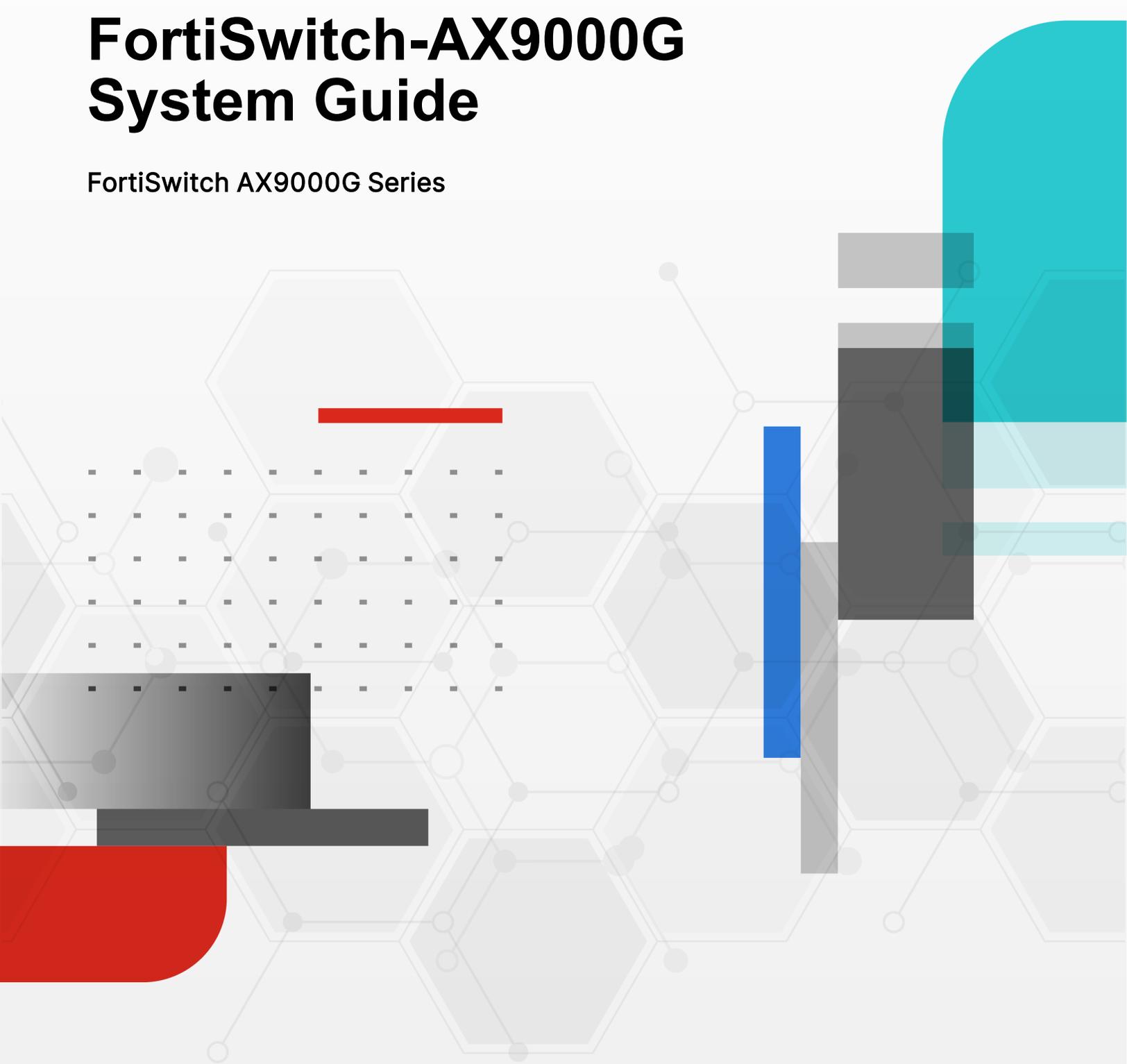
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Change log

Date	Change description
January 5, 2026	Initial version.

FortiSwitch-AX9004G series hardware description

FortiSwitch-AX9004G front panel

The FortiSwitch-AX9004G is a 11U 19-inch rackmount 6-slot chassis that provides a full-duplex switching capacity of 12.8 Tbps per Supervisor. The fabric backplane provides network data communication among chassis slots and the base backplane provides management and synchronization communication among the chassis slots.

FortiSwitch-AX9004G series front panel showing four line cards, two supervisor cards, and eight AC PSUs
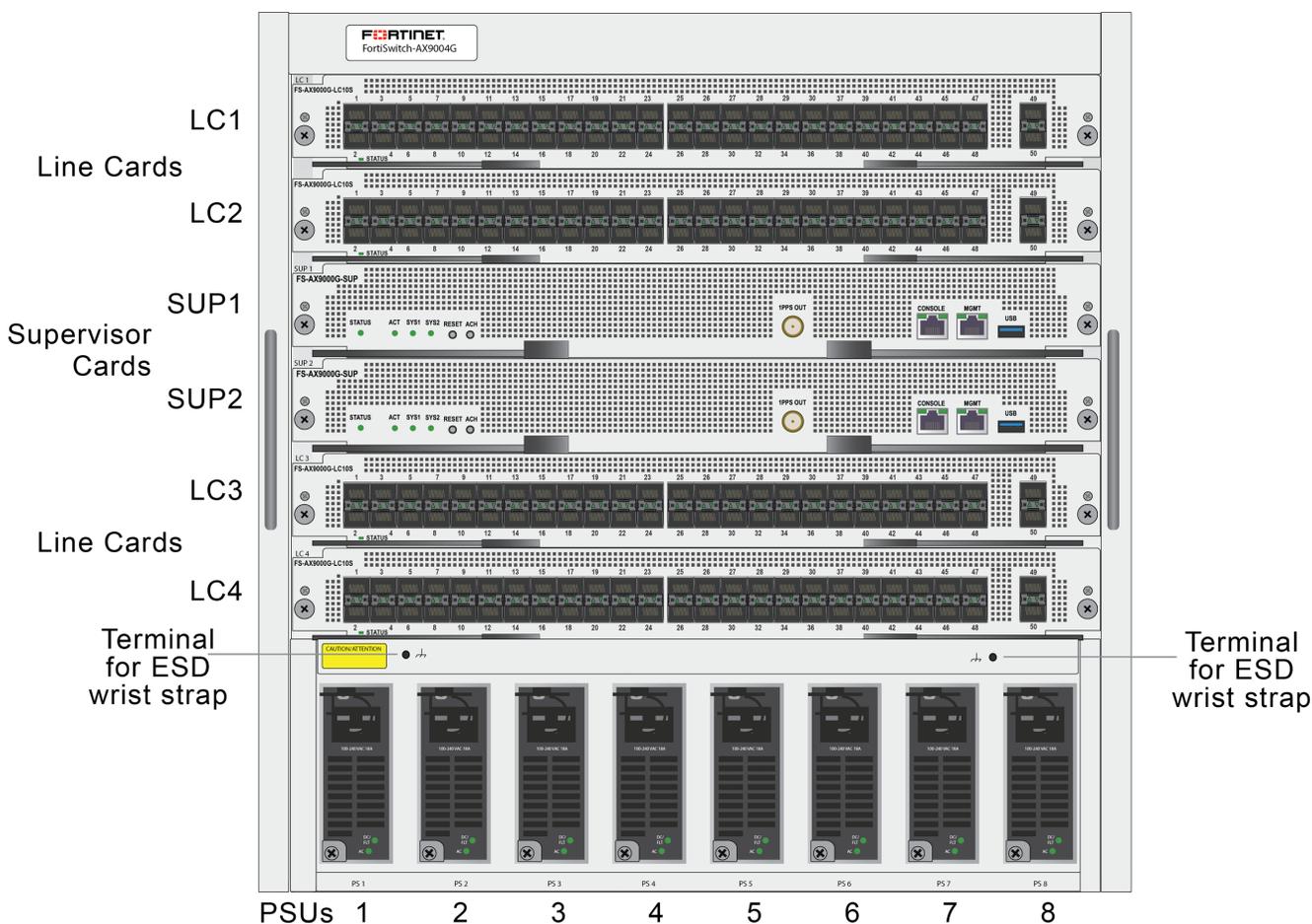
An operating FortiSwitch-AX9004G includes one or two supervisor cards in slots SUP 1 and SUP 2. The FortiSwitch-AX9004G supports the FS-AX9000G-SUP and is dual supervisor capable.

An operating FortiSwitch-AX9004G also includes up to four line cards in LC slots 1 to 4. The FortiSwitch-AX9004G supports the FS-AX9000G-LC10P, FS-AX9000G-LC10S, FS-AX9000G-LC25, and FS-AX9000G-LC100.

Power is provided to the chassis using eight hot swappable 100-240 VAC, 50/60 Hz, 1400 or 3000W AC or -48 to -60V, max. 75A, 2500W DC power supply units (PSUs).

The front panel also includes two terminal for attaching a ESD wrist strap to prevent static electricity. This terminal is compatible with a 4 mm banana plug.

Do not operate the FortiSwitch-AX9004G chassis with open slots on the front or back panel. For optimum cooling performance and safety, chassis front panel line card slots 1, 2, 3, and 4 must contain line cards or line card blank panels (also called dummy cards). Supervisor slots 1 and 2 must contain supervisor cards or supervisor card blank panels. In addition, all cooling fan units, power supplies or power supply slot covers must be installed while the chassis is operating. The blank panels shipped with the chassis should be kept available in case a card is removed from the chassis. If a card fails and you don't have a replacement blank panel available, you should keep the failed card in the chassis slot until you receive a replacement.

FS-AX9000G-SUP supervisor

The FS-AX9000G-SUP is the basic FortiSwitch-AX9000G control module.

FS-AX9000G-SUP front panel
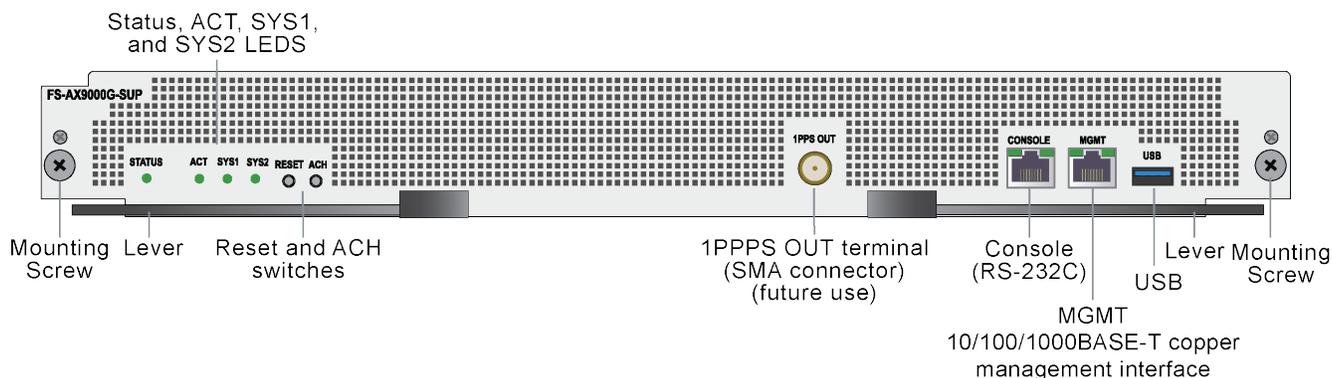
Front panel interfaces

The FS-AX9000G-SUP includes the following interfaces:

- CONSOLE, RS-232C console port
- MGMT, 10/100/1000BASE-T management interface
- USB, USB-A port

Physical description

Max power consumption	614W /565W (Input Power Base/Output Power Base. Output power = input power x 0.92)
Dimensions	2.0 x 17.2 x 19.8in (50.7 x 436 x 500.5mm)
Weight	18.5lbs (8.4 kg)
Operating temperature	32 to 104°F (0 to 40°C)
Storage temperature	-13 to 149°F (-25 to 65°C)
Relative humidity	5 to 85% (recommended value 45 to 55%)

Front panel LEDs

LED	State	Description
STATUS	Off	The FS-AX9000G-SUP is powered off.
	Green	The FS-AX9000G-SUP is powered on and operating normally.
	Flashing Green	The FS-AX9000G-SUP is starting up or has been stopped by inputting the `inactivate` command.
	Red	Supervisor fault detected.
	Flashing Red	Supervisor temperature abnormality.
ACT	Off	The FS-AX9000G-SUP is in standby mode or is powered off. In a chassis with two FS-AX9000G-SUPs, this is the standby or backup FS-AX9000G-SUP.
	Green	The FortiSwitch-AX9004G is operating. In a chassis with two FS-AX9000G-SUPs, this is the active FS-AX9000G-SUP.

LED	State	Description
SYS1	Off	The equipment is powered off.
	Green	The equipment is powered on and operating normally.
	Flashing Red	Partial equipment failure detected.
	Red	Equipment failure detected.
SYS2	Not supported	
LINK	Off	Network cable is not connected or link failure or operation is stopped.
	Green	Link established.
	Orange	Fault detected.
T/R	Off	No traffic.
	Green	Packets are being sent or received.

Front panel switches

Switch	Description
RESET	Manual reset switch. Press for 1 second to restart the FS-AX9000G-SUP. Press and hold for 10 seconds to reset the FS-AX9000G-SUP to factory defaults.
ACH	If the FortiSwitch-AX9004G has two FS-AX9000G-SUPs, you can change which FS-AX9000G-SUP is operating as the active and which is operating as the standby. After the switchover, the new standby FS-AX9000G-SUP restarts.

Connecting to the console port

Use standard terminal emulator software (such as PuTTY) and an RS-232C crossover cable (RJ-45 (male) - D-Sub 9-pin (female)) to connect a management PC to the FS-AX9000G-SUP CONSOLE port.

Use the following serial settings:

Baud Rate (bps) 115200, Data bits 8, Parity None, Stop bits 1, and Flow Control None

The pin assignment of the RS-232C crossover cable is shown below.

Console port   Management PC

pin number	signal name
1	RS
2	ER
3	SD
4	SG
5	SG
6	RD.
7	DR
8	CS

pin number	signal name
8	CS
6	DR
2	RD.
5	SG
1	CD
3	SD
4	ER
7	RS
9	commercial message

Pin assignment

8   1
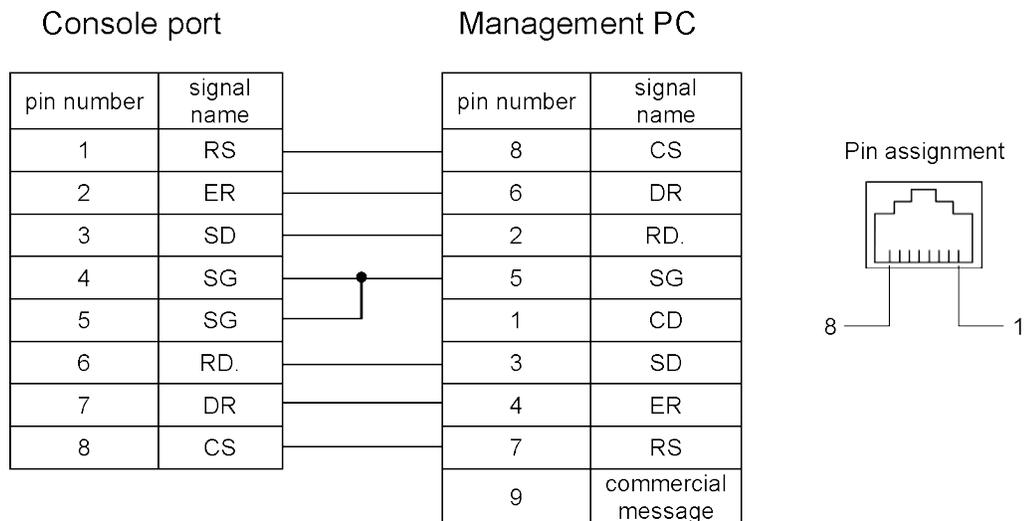
An RS-232C cable compliant with Cisco Systems' specifications can be used. Check the signal line specifications of the RS-232C cable and the management PC before use.

Using the MGMT port

You can connect the FS-AX9000G-SUP management to your network with any appropriate Ethernet cable. The FS-AX9000G-SUP supports SSH for secure CLI access and SFTP for securely uploading firmware to or downloading files from the FS-AX9000G-SUP.

Hot swapping a supervisor in a dual-supervisor configuration

Installation and replacement of optional equipment should be performed by trained technicians or maintenance personnel. When replacing the Power Supply, install and remove the power cable. Improper handling by persons other than those mentioned above may cause fire, electric shock, or equipment failure. Improper handling of other optional devices may also cause injury or device failure.

Do not touch the mounted components or solder surfaces of the Supervisor. When storing the Supervisor, keep it in an antistatic bag.

Remove the blank panel before adding a supervisor to a blank chassis slot. Keep the removed blank panel in a safe place.

When adding or replacing a supervisor while the chassis is powered on, use command input from the operating terminal.

1. If the supervisor to be replaced is operating, log into the supervisor CLI enter the `inactivate` command to shut down the supervisor.

If the supervisor is operating as the active supervisor, before it shuts down the standby supervisor will become the active supervisor.

2. Attach an ESD wrist strap to your wrist and to an ESD socket or to a bare metal surface on the chassis or frame.

3. When the supervisor has shut down (STATUS LED is off) completely loosen the supervisor retention screws.

4. Open both levers at the same time to push the supervisor out of its slot.

When moving the levers, do not apply excessive force, but move both the left and right levers slowly and simultaneously. The Supervisor moves out of the slot about 15 mm.
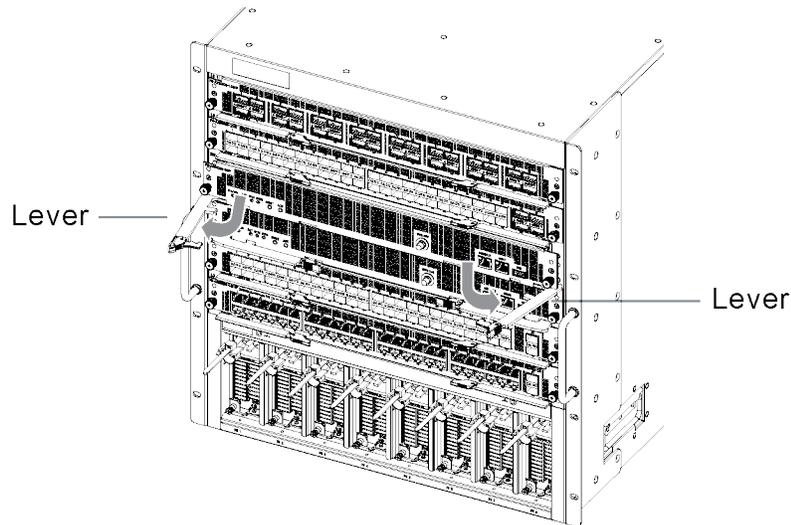
5. Pull the supervisor completely out of the slot.

6. Insert the new supervisor half way into the open supervisor slot.

7. While holding the left and right levers, slowly push the levers in until they touch the device.

8. Open the levers to the angle shown below.
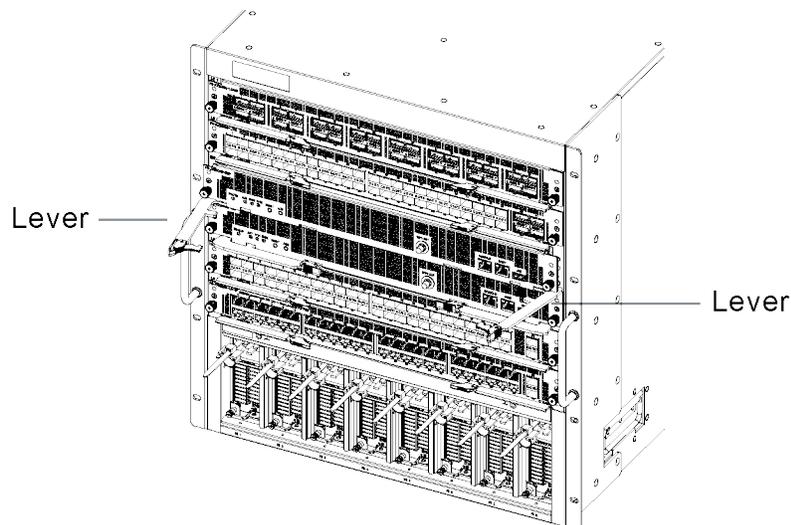
9. Push the supervisor all the way into the chassis slot until the levers make contact with the chassis.

10. Slowly close the levers to lock the supervisor in place in the slot.

Closing the levers aligns the supervisor in the slot and connects it to the chassis power and network connectors.
When moving the levers, do not apply excessive force, but move both levers slowly and simultaneously.

11. Use a screwdriver to tighten the retention screws.

Make sure the screws are firmly secured.

Setting up new supervisors

Turn on the Supervisor (use the `activate` commnd).

Do one of the following depending on the supervisor configuration and operational status:

- If the chassis contains another supervisor, synchronize the new supervisor's operational information:
  a. Match the software version with the operational system (use the update software (`ppupdate`) command).
  b. Synchronize the configuration settings with the active supervisor (use the `synchronize` command).
- If there is only one supervisor in a non-redundant configuration, recover the supervisor's operational information:
  a. Restore operational information from a previously backed up file (use the `restore` command). To restore the operational information, use the file backed up on a USB memory stick or `ftp` server.
- When replacing both supervisors, restore the operational information of both supervisors.
  a. To prevent a system switchover from occurring during the information recovery process, power down the the standby supervisor (use the `inactivate` command).
  b. Restore operational information from a previously backed up file (use the `restore` command). To restore the operational information, use the file backed up on a USB memory stick or `ftp` server.
  c. Turn on the standby supervisor (use the `activate` command).
  d. Match the software version of the standby supervisor with the active supervisor (use the update software (`ppupdate`) command).
  e. Synchronize the configuration from the active supervisor to the standby supervisor (use the `synchronize` command).

FS-AX9000G-LC10P line card

The FS-AX9000G-LC10P features the following front panel interfaces:

- Forty-eight 10/5/2.5/1 GigE RJ45 (1-48)
- Two 10 GigE SFP+ (49 and 50, 1000BASE-X is not supported on ports 49 and 50)

FS-AX9000G-LC10P front panel
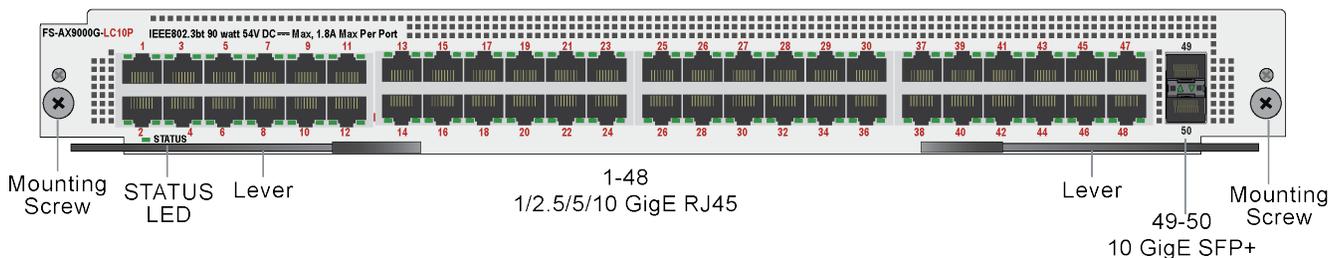
Physical description

Max power consumption (No PoE Power Supply)	234W / 215W (Input Power Base/Output Power Base. Output power = input power x 0.92)
PoE Power Supply	Max 4,320W (The total power that one FS-AX9000G-LC10P board can supply to PDs: 90W × 48 ports.)
Dimensions	2.0 x 17.2 x 19.6in (49 x 436 x 496.2mm)
Weight	15.9lbs (7.2 kg)
Operating temperature	32 to 104°F (0 to 40°C)
Storage temperature	-13 to 149°F (-25 to 65°C)
Relative humidity	5 to 85% (recommended value 45 to 55%)

Front panel LEDs

LED	State	Description
STATUS	Off	The FS-AX9000G-LC10P is powered off.
	Green	The FS-AX9000G-LC10P is powered on and operating normally.
	Flashing Green	The FS-AX9000G-LC10P is starting up or has been stopped by inputting the `inactivate` command.
	Red	Line card fault detected.
LINK	Off	Network cable is not connected or link failure or operation is stopped.
	Green	Link established.
	Flashing Green	Packets are being sent or received.
	Orange	Port failure detected.

FS-AX9000G-LC10S line card

The FS-AX9000G-LC10S features the following front panel interfaces:

- Forty-eight 10/1 GigE SPF+ (1-48)
- Two 10 GigE SFP+ (49 and 50, 1000BASE-X is not supported on ports 49 and 50)

FS-AX9000G-LC10S front panel

Physical description

Max power consumption	321W / 295W (Input Power Base/Output Power Base. Output power = input power x 0.92)
Dimensions	2.0 x 17.2 x 19.6in (49 x 436 x 496.2mm)
Weight	14.8lbs (6.7 kg)
Operating temperature	32 to 104°F (0 to 40°C)
Storage temperature	-13 to 149°F (-25 to 65°C)
Relative humidity	5 to 85% (recommended value 45 to 55%)

Front panel LEDs

LED	State	Description
STATUS	Off	The FS-AX9000G-LC10S is powered off.
	Green	The FS-AX9000G-LC10S is powered on and operating normally.
	Flashing Green	The FS-AX9000G-LC10S is starting up or has been stopped by inputting the inactivate command.
	Red	Line card fault detected.
LINK	Off	Network cable is not connected or link failure or operation is stopped.

LED	State	Description
	Green	Link established.
	Flashing Green	Packets are being sent or received.
	Orange	Port fault detected.

FS-AX9000G-LC25 line card

The FS-AX9000G-LC25 features the following front panel interfaces:

- Forty-eight 25/10 GigE SFP28 (1-48, 1000BASE-X is not supported on ports 1-48)
- Four 100/40 GigE QSFP28 (49-52)

FS-AX9000G-LC25 front panel
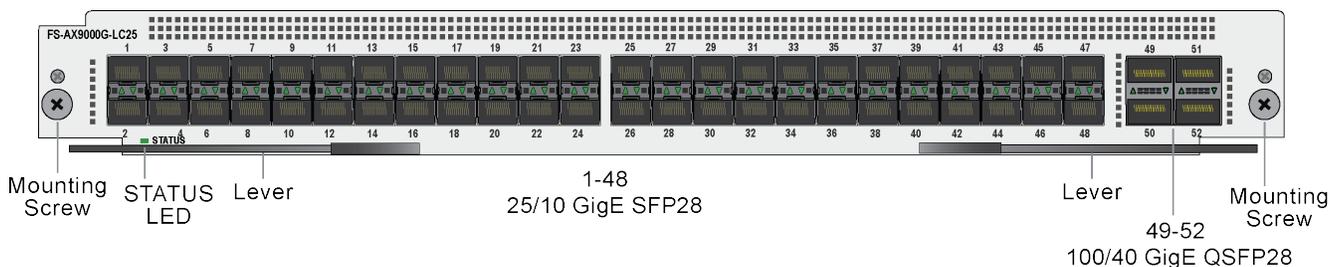
Physical description

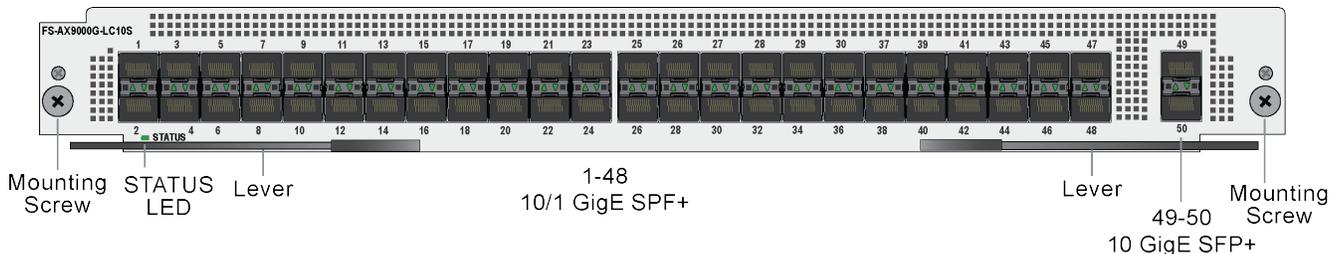|	
Max power consumption	685W / 630W (Input Power Base/Output Power Base. Output power = input power x 0.92)
Dimensions	2.0 x 17.2 x 19.6in (49 x 436 x 496.2mm)
Weight	17.0lbs (7.7 kg)
Operating temperature	32 to 104°F (0 to 40°C)
Storage temperature	-13 to 149°F (-25 to 65°C)
Relative humidity	5 to 85% (recommended value 45 to 55%)

Front panel LEDs

LED	State	Description
STATUS	Off	The FS-AX9000G-LC25 is powered off.
	Green	The FS-AX9000G-LC25 is powered on and operating normally.
	Flashing Green	The FS-AX9000G-LC25 is starting up or has been stopped by inputting the `inactivate` command.
	Red	Line card fault detected.
LINK	Off	Network cable is not connected or link failure or operation is stopped.
	Green	Link established.
	Flashing Green	Packets are being sent or received.
	Orange	Port fault detected.

FS-AX9000G-LC100 line card

The FS-AX9000G-LC100 features the following front panel interfaces:

- Thirty-two 100/40 GigE QSFP28 (1-32)

FS-AX9000G-LC100 front panel

Physical description

Max power consumption	772W / 710W (Input Power Base/Output Power Base. Output power = input power x 0.92)
Dimensions	2.0 x 17.2 x 19.6in (49 x 436 x 496.2mm)
Weight	17.2lbs (7.8 kg)
Operating temperature	32 to 104°F (0 to 40°C)
Storage temperature	-13 to 149°F (-25 to 65°C)
Relative humidity	5 to 85% (recommended value 45 to 55%)

Front panel LEDs

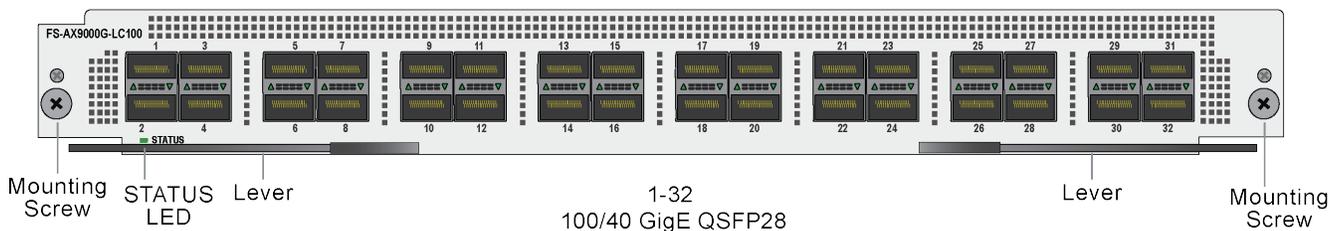| LED	State	Description
STATUS	Off	The FS-AX9000G-LC100 is powered off.
	Green	The FS-AX9000G-LC100 is powered on and operating normally.
	Flashing Green	The FS-AX9000G-LC100 is starting up or has been stopped by inputting the `inactivate` command.
	Red	Line card fault detected.
LINK	Off	Network cable is not connected or link failure or operation is stopped.
	Green	Link established.
	Flashing Green	Packets are being sent or received.
	Orange	Port fault detected.

Hot swapping a line card

⚠️ Installation and replacement of optional equipment should be performed by trained technicians or maintenance personnel. When replacing the Power Supply, install and remove the power cable. Improper handling by persons other than those mentioned above may cause fire, electric shock, or equipment failure. Improper handling of other optional devices may also cause injury or device failure.

Do not touch the mounted components or solder surfaces of the line card. When storing the line card, keep it in an antistatic bag.

Remove the blank panel before adding a line card to a blank chassis slot. Keep the removed blank panel in a safe place.

When adding or replacing a line card while the chassis is powered on, use command input from the operating terminal.

The line card may be hot. When replacing, be careful not to touch the hot parts.

1. If the line card to be replaced is operating, log into the line card CLI enter the `inactivate` command to shut down the line card.
2. Attach an ESD wrist strap to your wrist and to an ESD socket or to a bare metal surface on the chassis or frame.
3. When the line card has shut down (STATUS LED is off) completely loosen the line card retention screws.
4. Open both levers at the same time to push the line card out of its slot.

   When moving the levers, do not apply excessive force, but move both the left and right levers slowly and simultaneously. The line card moves out of the slot about 15 mm.
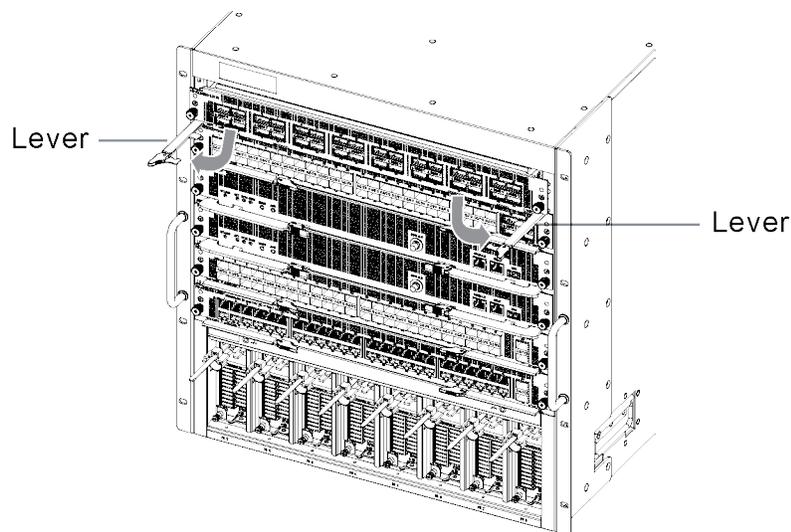
5. Pull the line card completely out of the slot.

   Protect your hand from heat because the line card may be hot.
6. Insert the new line card half way into the open line card slot.
7. While holding the left and right levers, slowly push the levers in until they touch the device.
8. Open the levers to the angle shown below.
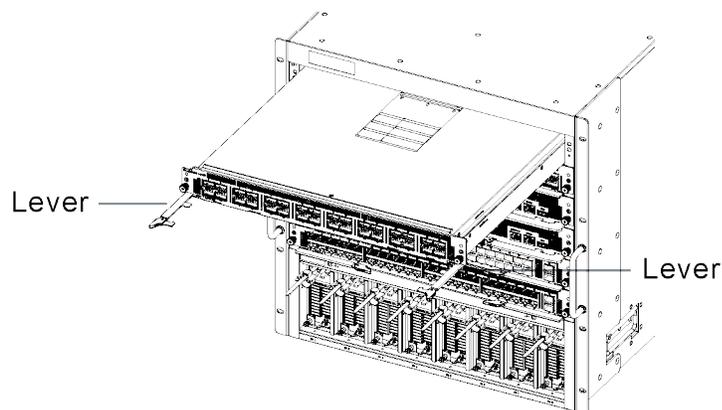
9. Push the line card all the way into the chassis slot until the levers make contact with the chassis.

10. Slowly close the levers to lock the line card in place in the slot.

    Closing the levers aligns the line card in the slot and connects it to the chassis power and network connectors.
    When moving the levers, do not apply excessive force, but move both levers slowly and simultaneously.

11. Use a screwdriver to tighten the retention screws.

    Make sure the screws are firmly secured.

FortiSwitch-AX9004G series back panel

The FortiSwitch-AX9004G series back panel supports the installation of three hot-swappable cooling fan units. For more information about fan units, including how to replace them, see Cooling fans, cooling air flow, and minimum clearance on page 22.

FortiSwitch-AX9004G back panel
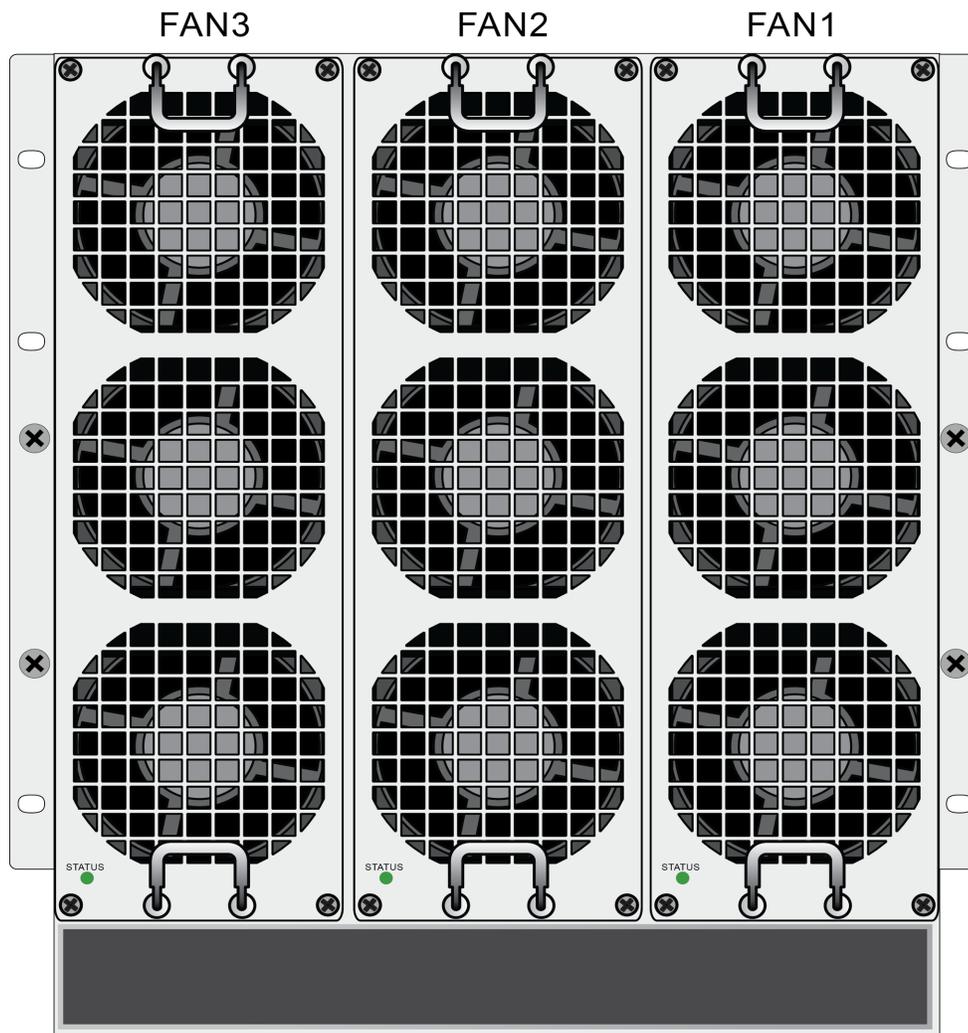
FortiSwitch-AX9004G series schematic

The FortiSwitch-AX9004G chassis schematic shows the communication channels between the supervisors (SUP1 and SUP2) and the line cards (LC1 to LC4).

By default, SUP1 is active and SUP2 is standby. Active refers to the SUP that is controlling the chassis. The MGMT interfaces and console ports on both SUPs are always available. Each SUP have a SUP-FE (forwarding engine) and an LC has an LC-FE (forwarding engine). These FEs support data communication between the SUP and the LCs. The FortiSwitch-AX9004G also supports communication among all SUPs and LCs. The base backplane includes 1Gbps ethernet management connections between the SUPs and the LCs.
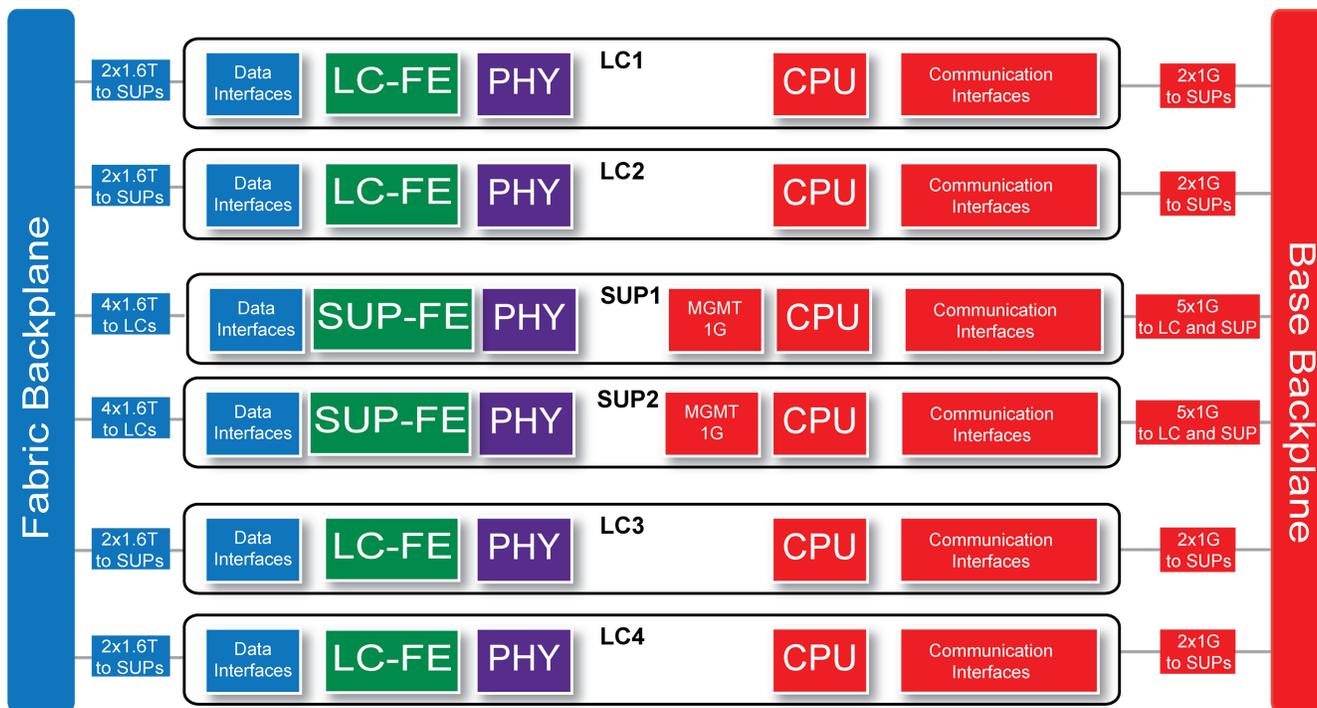
Chassis hardware information

This section introduces FortiSwitch-AX9004G hardware components and accessories including power requirements and line cards that can be installed in the chassis.

Shipping components

The FortiSwitch-AX9004G chassis is shipped as a standalone unit, not pre-assembled with other components:

- The 11U FortiSwitch-AX9004G chassis. (Blank panels are attached to the chassis. You must use the blank panels to cover any unoccupied SUP, LC, or PSU slots to ensure proper airflow and protection.).
- One or two supervisors (dual supervisor capable).
- Up to four line cards.

- Up to eight 1400W AC, 3000W AC, or 2500W DC Power Supply Units (PSUs). Each PSU includes the required power cable. AC PSUs also include a cable clamp.

Optional accessories and replacement parts

The following optional accessories can be ordered separately:

- Supervisors and line cards
- Transceivers.
- AC or DC PSUs.
- FAN units.

Physical description of the FortiSwitch-AX9000G chassis

The FortiSwitch-AX9004G chassis is a 11U chassis that can be installed in a standard 19-inch rack. The following table describes the physical characteristics of the FortiSwitch-AX9004G chassis.

		AC PSUs	DC PSUs
Dimensions (H x W x D)		19.09 x 17.36 x 23.62in (485 x 441 x 600mm)	
Weight (maximum loading)		253lbs (115kg)	
Input voltage	**Rated value**	100V to 240V AC	-48 to -60V DC
	Fluctuation range	90V to 264V AC	-40 to -72V DC
Frequency		50/60 ±3Hz	N/A
Maximum output power per PSU		1400W@AC100 to 120V (1400W PSU) 3000W@AC200 to 240V (3000W PSU)	2500W@DC-48 to -60V
Maximum input current (per Power Supply)		16.1A@AC100V 14.0A@AC110V 16.5A@AC200V	62.5A@DC-48V
Maximum apparent power (with 8 PSUs)		12.9 kVA (1400W PSU) 26.4 kVA (3000W PSU)	N/A
Maximum power consumption (with 8 PSUs)		12.8 kW (1400W PSU) 26.2 kW (3000W PSU)	20.0 kW
Maximum PoE Output power available (with 8 PSUs)		6.9 kW (1400W PSU) 17.3 kW (3000W PSU)	14.8 kW
Maximum Heat Dissipation		18,000 BTU/h	18,000 BTU/h
Noise (LwA)		75dB (measured at 25°C). Measured at a distance of 1 meter from the side of the equipment. Noise level varies with fan speed. When supplying more than 2880W of PoE per line card, noise levels may increase depending on PoE power load.	

	AC PSUs	DC PSUs
Vibration	2.45m/s^{2}or less	
Dust	0.15 mg/m^{3}or less (Complies with NEBS GR-63-CORE (5.4.2) conditions) Measured in accordance with the General Rules for Measurement Methods of Suspended Dust Concentration (JIS Z 8813).	
Operating Temperature	32 to 104 °F (0 to 40°C), Recommended 73 to 82°F (23 to 28°C)	
Non-operating Temperature	14 to 109°F (-10 to 43°C)	
Storage Temperature	-13 to 149°F (-25 to 65°C)	
Relative Humidity	5% to 85%, recommended 45% to 55%	

Cooling fans, cooling air flow, and minimum clearance

The FortiSwitch-AX9004G chassis supports up to three hot-swappable cooling fan units installed in the back. Each fan unit includes three fans that operate together. When the fan unit LED is green, all three fans are operating normally. If the LED turns red or goes off, one or more of the fans is not working and the fan unit should be replaced.

During normal chassis operation, all three fan units are active and the fan speed is controlled by active supervisor. If a single fan unit fails, the active supervisor sends a warning message indicating that a fan unit has failed. The active supervisor maintains sufficient cooling by running the still operating fans at full speed to make up the airflow loss caused by the failed fan unit. The failed fan unit should be replaced as soon as possible.

If a second fan unit fails, the chassis can continue to operate but the chassis may experience high temperature warnings. Maintaining a lower ambient temperature can reduce the chance of overheating.

Fan units are hot swappable. You can replace a failed fan unit while the chassis is operating. To replace a fan unit, unscrew the four retention screws and use the handles to pull the fan unit out of the chassis. See Replacing a fan unit on page 24.

Install a replacement fan unit by sliding it into place in the empty slot and tightening the retention screws. As you slide the new fan into place it will power up and the fan unit LED will light.

 The other fan units will continue to operate and cool the chassis as a fan unit is being removed and replaced. However an open fan unit slot will result in less air flow through the chassis so do not delay installing the replacement fan unit.

The active supervisor monitors the internal temperature of the chassis and adjusts the operating speed of the cooling fans as required. When the chassis is first powered on, all cooling fans run at full speed. Once the active supervisor is up and running, it reduces cooling fan speeds to maintain an optimum temperature in the chassis.

During normal operation, all fan units are active. If cooling requirements increase, the fan speed will increase.

Cooling Fan unit
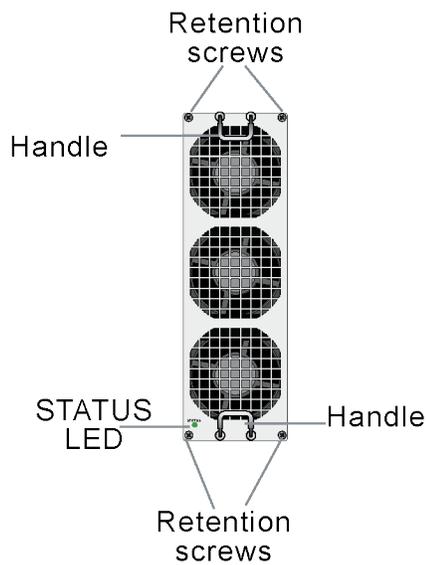
Fan unit STATUS LED

STATUS LED	Description
Off	The fan unit is powered off or the unit has failed.
Green	Normal operation
Red	Fault detected.

Cooling air flow and required minimum air flow clearance

When installing the chassis, maintain a minimum clearance of 100 mm between the equipment and the rack's front and rear doors, columns, guide rails, and other structures to ensure proper cooling airflow. The following diagram shows the cooling air flow through the chassis and the locations of fan units. Make sure the cooling air intake and warm air exhaust openings are not blocked by cables or rack construction because this could result in cooling performance reduction and possible overheating and component damage.

FortiSwitch-AX9004G cooling air flow and minimum air flow clearance

Front
cool air
intake

Back
warm air
exhaust
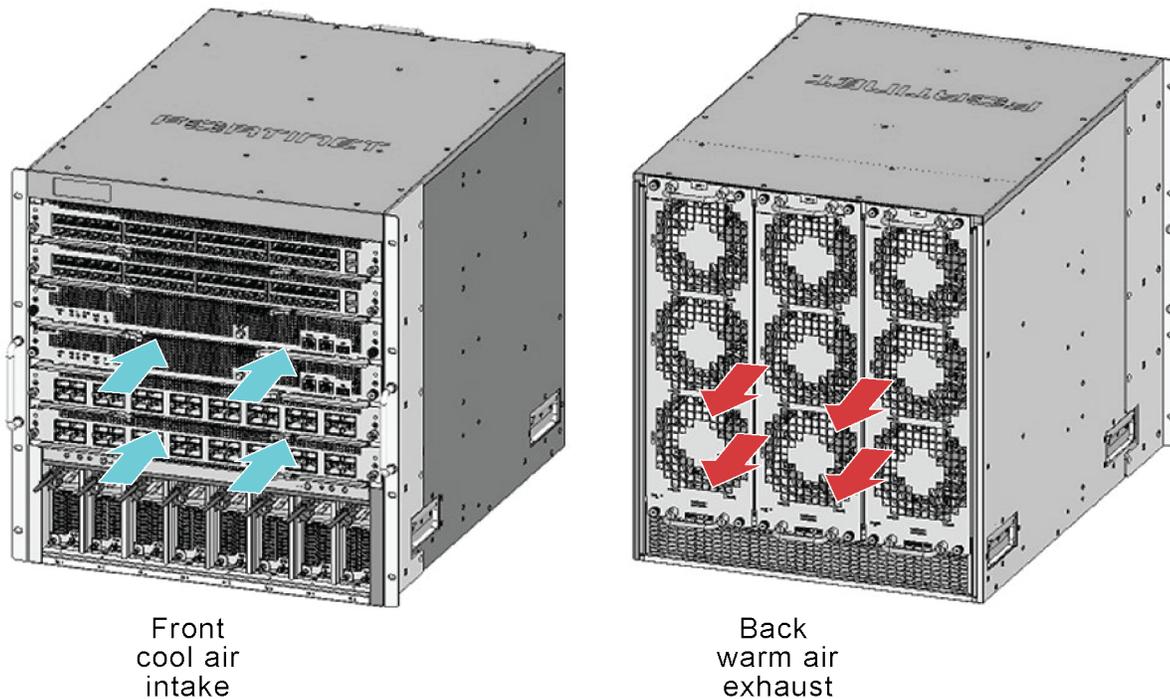
The temperature inside the rack must be within the operating temperature range of the equipment. If the temperature inside the rack does not meet the installation conditions of the equipment, malfunction or failure may result. Consider the following measures to ensure that the temperature inside the rack meets the installation conditions of the equipment.

- Provide a fan in the rack to ensure adequate ventilation inside the rack.
- Use front and rear doors with perforated holes for cooling or remove the doors to improve ventilation inside the rack.

If necessary, reduce the number of devices in the rack or mount the Switch below other heating elements.

When other devices equipped with forced air cooling systems such as fans are installed above or below the equipment, interference in air flow can adversely affect cooling and cause malfunctions or failures as described below.

- Exhaust air from peripheral equipment may be circulated into the incoming air of the chassis, causing the temperature of the incoming air to exceed the environmental specifications of the equipment.
- If the incoming or outgoing air from peripheral equipment is too strong, air pressure is applied in the opposite direction to the airflow of the chassis, resulting in a reduction in the internal cooling capacity of the chassis.

Keep the spacing between equipment mountings in the rack to avoid interference with airflow.

Replacing a fan unit

Fan unit replacement should be performed by trained technicians or maintenance personnel. Improper handling by unqualified individuals may result in injury or equipment damage.

When hot swapping a fan unit while the chassis is powered on, be sure to complete the removal and installation within 5 minutes. If you reinsert the removed fan unit, you need to wait 30 seconds.

Use the following steps to replace a fan unit:

1. Loosen the fan unit retention screws.
2. Carefully pull the fan unit toward you to remove it.
   When removing the fan unit, hold both the upper and lower handles and support it as you pull.
3. Insert the new fan unit into the open slot in the chassis.
4. Tighten the retention screws to secure the fan unit.

Power consumption for different FortiSwitch-AX9004G configurations

The following table lists power consumption for the FortiSwitch-AX9004G including three fan units as well as the power consumption for the SUPs and LCs.

A few example configurations are also included to show how you can use this information to calculate the power requirements for different FortiSwitch-AX9004G configurations.

Power consumption for individual FortiSwitch-AX9004G components

Unit	Maximum Power Consumption
FortiSwitch-AX9004G chassis with 3 FAN units	1,425 W
FS-AX9000G-SUP	565 W
FS-AX9000G-LC10P (No PoE power supply)	215 W
PoE Power Supply	Max 4,320W (The total power that one FS-AX9000G-LC10P board can supply to PDs: 90W × 48 ports.)
FS-AX9000G-LC10S	295 W
FS-AX9000G-LC25	630 W
FS-AX9000G-LC100	710 W

Rated and actual power supplied by different FortiSwitch-AX9004G PSUs

PSU	Rated Power Output	Actual Power Output (Rated Power outputx0.95)
3000W 200V AC Power Supply	3,000 W	2,850W
1400W 100V AC Power Supply	1,400 W	1330W
2500W 48V DC Power Supply	2,500 W	2375W

Actual PSU power output is estimated to be 95% of rated power output. Actual power output is lower because of efficiency loss.

Estimating Required Power Supply Quantity CASE1: SUP*1 + LC10P*4 (No PoE power supply)

Number of units	Unit	Maximum power consumption
1	FortiSwitch-AX9004G chassis with 3 FAN units	1,425W
1	FS-AX9000G-SUP	565W
4	FS-AX9000G-LC10P (No PoE power supply)	860W
	Total power consumption:	**2,850W**

Number of PSUs require to supply power and N + 1 redundancy for a FortiSwitch-AX9004G with one FS-AX9000G-SUP and four FS-AX9000G-LC10Ps.

PSU	Number of PSUs(N+1 redundancy)	Actual Power Output Capacity
3000W 200V AC Power Supply	1 + 1 = 2	5,700 W (2850W + 2850W)
1400W 100V AC Power Supply	3 + 1 = 4	5,320 W (3990W + 1330W)
2500W 48V DC Power Supply	2 + 1 = 3	7,125 W (4750W + 2375W)

Estimating Required Power Supply Quantity CASE2: SUP*1 + LC10P*4 (PoE power supply)

Number of units	Unit	Maximum power consumption
1	FortiSwitch-AX9004G chassis with 3 FAN units	1,425W
1	FS-AX9000G-SUP	565W
4	FS-AX9000G-LC10P	860W
-	PoE power supply (This is the total power supplied from the FortiSwitch-AX9004G system to external PDs.)	10,000W
	Total power consumption:	**12,850W**

Number of PSUs require to supply power and N + 1 redundancy for a FortiSwitch-AX9004G with one FS-AX9000G-SUP and four FS-AX9000G-LC10Ps.

PSU	Number of PSUs(N+1 redundancy)	Actual Power Output Capacity
3000W 200V AC Power Supply	5 + 1 = 6	17,100 W (14,250W + 2850W)
1400W 100V AC Power Supply	7 + 1 = 8	10,640 W (9,310W + 1330W) Note: The AC power supply operating at 1400W/100V cannot support 10,000W of PoE power. In the CASE2 board configuration, the limit is 6,460W while maintaining 7+1 redundancy. The calculation is as follows: 1400 × 7 × 0.95 − 1425 − 565 − 860 = 6,460 W
2500W 48V DC Power Supply	6 + 1 = 7	16,625 W (14250W + 2375W)

Estimating Required Power Supply Quantity CASE3: SUP*1 + LC10P*1 + LC10S*1 + LC25*1 + LC100*1

1	Unit	Maximum Power Consumption (Output power-based values)
1	FortiSwitch-AX9004G chassis with 3 FAN units	1,425 W
1	FS-AX9000G-SUP	565 W
1	FS-AX9000G-LC10P (No PoE power supply)	215 W
1	FS-AX9000G-LC10S	295 W
1	FS-AX9000G-LC25	630 W
1	FS-AX9000G-LC100	710 W
	Total power consumption:	**3840 W**

Number of PSUs require to supply power and N + 1 redundancy for a FortiSwitch-AX9004G with one FS-AX9000G-SUP, one FS-AX9000G-LC10P, one FS-AX9000G-LC10S, one FS-AX9000G-LC25, and one FS-AX9000G-LC100.

PSU	Number of PSUs (N+1 redundancy)	Actual Power Output Capacity
3000W 200V AC Power Supply	2 + 1 = 3	8,550 W (5700W + 2850W)
1400W 100V AC Power Supply	3 + 1 = 4	5,320 W (3990W + 1330W)
2500W 48V DC Power Supply	2 + 1 = 3	7,125 W (4750W + 2375W)

Output-based and input-based power consumption

Power consumption is defined as either an "output power-based value" based on the power supply unit's output side, or an "input power-based value" based on the power supply unit's input side. Numbers such as "3000W" for AC power supplies or "2500W" for DC power supplies represent output power-based values. Therefore, when estimating the number of power supplies required for a system, output power-based values must be used.

Unit	Maximum Power Consumption (Output power-based values)	Input power-based values
FortiSwitch-AX9004G chassis with 3 FAN units	1,425 W	1,549 W
FS-AX9000G-SUP	565 W	614 W
FS-AX9000G-LC10P (No PoE power supply)	215 W	234 W
FS-AX9000G-LC10S	295 W	321 W
FS-AX9000G-LC25	630 W	685 W
FS-AX9000G-LC100	710 W	772 W

On the input side of the power supply, power conversion efficiency means more power is required than the output power base indicates. When designing input power supply capacity, use the input power base figures. The figures in the notes are values based on input power, calculated using the power conversion efficiency (92%).

AC PSUs and supplying AC power to the chassis

The FortiSwitch-AX9004G chassis front panel can include up to eight hot swappable AC PSUs. The output power of an AC PSU varies depending on the input voltage as shown below:

- 1400W, 100-120V, 16A AC PSUs.
- 3000W, 200-240V, 16A AC PSUs.

See for locations of the PSUs.

You can mix AC PSUs with different power supply voltages in the same chassis.

The number of PSUs required by a chassis depends on the number of supervisors and line cards in the chassis.

If the chassis does not have enough power because PSUs have failed or become disconnected, the supervisors and line cards within the chassis may shut down.

To improve redundancy, you can connect each PSU to a separate power source.

AC PSUs, power connectors, and cables

The AC power supply unit (FS-AX9000G-PS-3KAC) is equipped with an IEC320 C20 power connector.
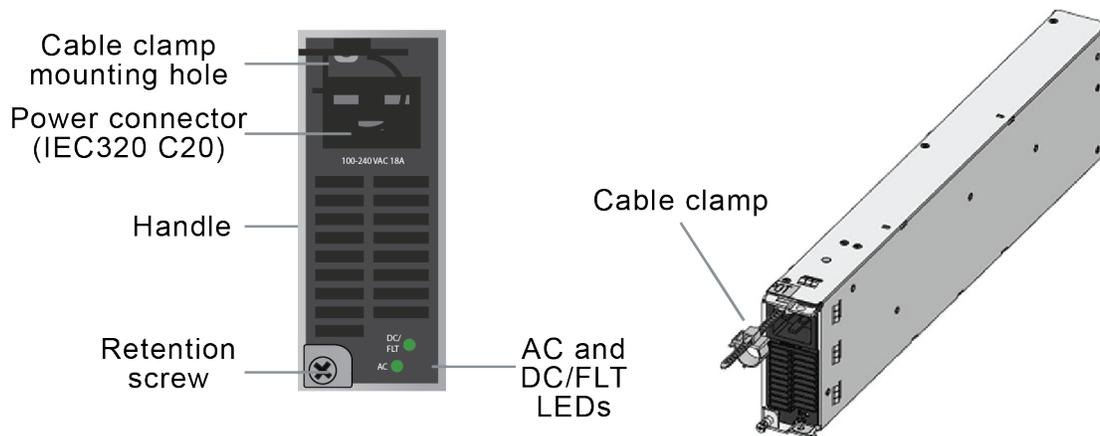
The AC PSU also includes C19 power cables to connect the PSUs to data center power or PDUs.

- Connect the C19 AC power cable to the PSU power connector (C20).
- Connect the other end of the AC power cable to your power supply or PDU.

AC PSU LED states

The PSU LED indicates whether the PSU is operating correctly and connected to power.

LED	State	Description
AC	Off	AC power not connected. If this LED is not lit, check to make sure the PSU is connected to a power feed. If the power feed is good then the PSU has failed and should be replaced.
	Green	Normal Operation with AC power connected.
	Flashing green	Abnormal input voltage.
DC/FLT	Off	No output
	Green	Normal output.
	Flashing green	Output overcurrent error.
	Red	Fault detected . Power input or output, temperature, or fan operation is close to being outside of the normal operating range. This may be caused by a problem with the PSU. This could also be caused by conditions external to the PSU, for example, if there is a problem with the power supplied to the PSU or if the PSU has gotten too hot because of insufficient ventilation.

AC power supply facilities

AC power requirements and recommendations:

- Connect power cables to grounded power outlets. Power outlets without grounding may cause electric shock and electrical noise, which may result in chassis failure.

- Install the power outlet close to the FortiSwitch-AX9004G chassis so that the power plug can be quickly disconnected.
- Do not place any objects around or otherwise obstruct power outlets.
- For each PSU, a 30AT single-phase AC100 to 240V (for 30A circuit) breaker should be attached to the branch circuit of the distribution board that supplies power to the PSU.
- Install the power distribution board in the same room as the FortiSwitch-AX9004G chassis or in a nearby room so that it can be easily operated.
- The current capacity supplied to the distribution board should be larger than the operating current of the breaker of the distribution board. If the current capacity to the distribution board is smaller than the operating current of the breaker, the breaker may not operate in the event of an error, resulting in a fire.
- In general, the operating current of a breaker is larger than its rated current. Check the specifications of the breaker to be used.

Installing and connecting AC PSUs

Follow these steps to install the AC PSUs in a FortiSwitch-AX9004G chassis.

💡	Install the AC PSUs before connecting them to power.

1. Attach an ESD wrist strap to your wrist and to an ESD socket or to a bare metal surface on the chassis or frame.
2. Remove a PSU from its packaging.
3. Loosen the retention screws, pull the handle, and insert the PSU into the chassis, sliding it fully into the slot.
4. While keeping the handle pulled out, push the PSU in and tighten the retention screw.
   Do not push the PSU in with the handle closed and do not use excessive force.
5. Attach a cable clamp to the PSU cable clamp mounting hole.
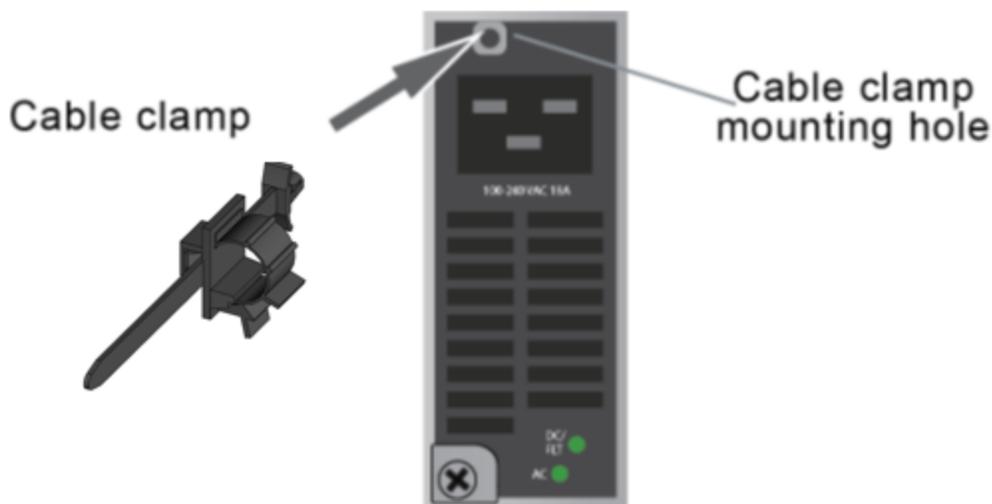
6. Insert the AC Power cable into the AC Power inlet.
7. Clamp the AC Power cable with the cable clamp.

8. Verify that the PSU status LED is solid green meaning that the PSU is powered up and operating normally.
9. Repeat to install all of the required PSUs.

Hot swapping an AC PSU

Installation and replacement of optional equipment should be performed by trained technicians or maintenance personnel. When replacing the Power Supply, install and remove the power cable. Improper handling by persons other than those mentioned above may cause fire, electric shock, or equipment failure. Improper handling of other optional devices may also cause injury or device failure.

Follow these steps to safely hot swap an AC PSU.

You can hot swap a PSU without affecting performance or interrupting traffic as long as the remaining PSUs can supply enough power for the chassis to operate normally.

The back of the PSU may be hot. When replacing, be careful not to touch the hot parts.

1. Attach an ESD wrist strap to your wrist and to an ESD socket or to a bare metal surface on the chassis or frame.
2. Turn off the power being supplied to the PSU and disconnect the power cord.
3. Loosen the retention screw.
4. Pull the PSU handle in to unlock the PSU.
5. Use the handle to pull the PSU out of the chassis.
   Hold the PSU by the bottom as you slide it out.
   Protect your hand from heat because the PSU may be hot.
6. Insert a replacement PSU into the chassis and slide it all the way into the slot.
7. While keeping the handle pulled out, push the PSU in.
   Do not push the PSU in with the handle closed and do not use excessive force.
8. Use a screwdriver to tighten the retention screw.
9. Connect power to the PSU power connector.
10. Turn on power to the PSU.
11. Verify that the PSU status LED is solid green meaning that the PSU is powered up and operating normally.

DC PSUs and supplying DC power to the chassis

The FortiSwitch-AX9004G chassis front panel can include up to eight hot swappable -48Vdc to -60VDC PSUs. The capacity of each PSU is 2500W..

See FortiSwitch-AX9004G front panel on page 6 for locations of the PSUs. The diagram shows AC PSUs, which can be replaced with DC PSUs.

The number of PSUs required by a chassis depends on the number of supervisors and line cards in the chassis.

If the chassis does not have enough power because PSUs have failed or become disconnected, the supervisors and line cards within the chassis may shut down.

Each PSU is designed to be installed in a Telecom data center or similar location that has available -48VDC power fed from a listed 100A circuit breaker. To improve redundancy you can connect each power supply to a separate power circuit.

DC power cables are intended to be used only for in-rack wiring, must be routed away from sharp edges, and must be adequately fixed to prevent excessive strain on the wires and terminals. Make sure DC terminal rings are securely and safely fastened to PSU terminals.

DC PSU
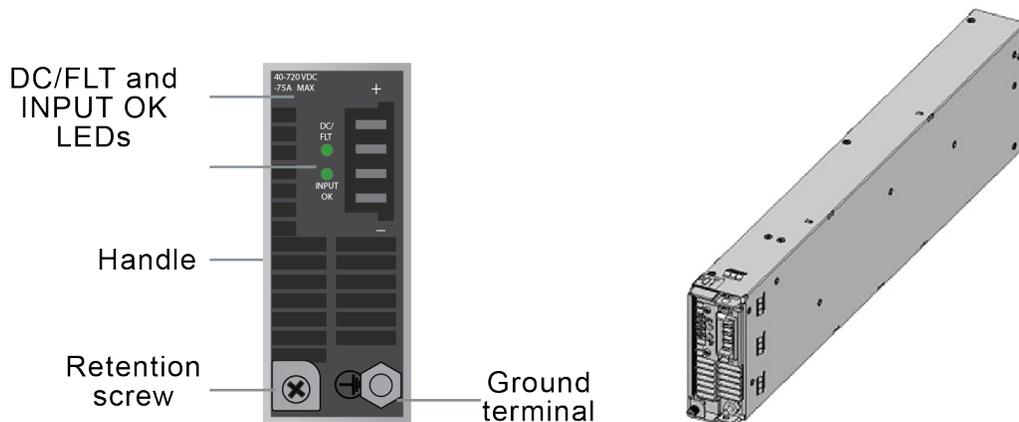
To connect the DC PSUs directly to a power circuit, Fortinet supplies custom DC power cables that connect to DC power jack on each DC PSU. Insert the connector into the DC PSU until it clicks, secure the release tab, and tighten the screw to hold the cable in place. DC terminal rings on the supplied cable must be securely and safely fastened to the your power supply terminals.

DC PSU LED states

The PSU LED indicates whether the PSU is operating correctly and connected to power.

LED	State	Description
INPUT OK	Off	AC power not connected. If this LED is not lit, check to make sure the PSU is connected to a power feed. If the power feed is good then the PSU has failed and should be replaced.
	Green	Normal Operation with AC power connected.
	Flashing green	Abnormal input voltage.

LED	State	Description
DC/FLT	Off	No output
	Green	Normal output.
	Flashing green	Output overcurrent error.
	Red	Fault detected. Power input or output, temperature, or fan operation is close to being outside of the normal operating range. This may be caused by a problem with the PSU. This could also be caused by conditions external to the PSU, for example, if there is a problem with the power supplied to the PSU or if the PSU has gotten too hot because of insufficient ventilation.

DC power connector with cable

Each DC PSU includes a four slot DC power connector. This power connector is connected to a data center PDU using a supplied 4 wore DC cable. One end of the cable includes a four-prong connector that connects to the PSU. The cable includes four single-core 10 AWG power cables to connect the DC PSU power terminal to DC power.
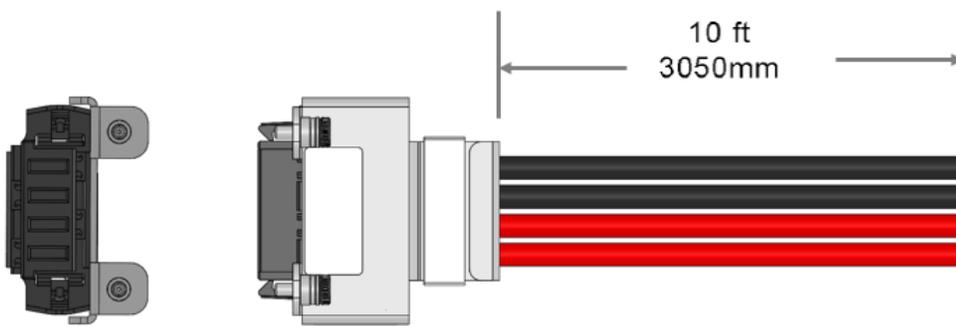
⚠️ Do not crimp energized wires.

DC power supply facilities

DC power requirements and recommendations:

- Install the distribution board in the same room as the FortiSwitch-AX9004G chassis or in a nearby room so that it can be easily operated.
- Do not place any objects around or otherwise obstruct power outlets.
- For each PSU, a 100AT DC -48 to -60V (for 100A circuit) breaker should be attached to the branch circuit of the distribution board that supplies power to the PSU.
- DC power circuit breaker must comply with applicable local and national electrical codes.
- Install the power distribution board in the same room as the FortiSwitch-AX9004G chassis or in a nearby room so that it can be easily operated.

- The current capacity supplied to the distribution board should be larger than the operating current of the breaker of the distribution board. If the current capacity to the distribution board is smaller than the operating current of the breaker, the breaker may not operate in the event of an error, resulting in a fire.
- In general, the operating current of a breaker is larger than its rated current. Check the specifications of the breaker to be used.

Installing and connecting DC PSUs ground and to DC power

The following procedure describes how to connect a FortiSwitch-AX9004G DC PSU to ground and to DC power.

- When connecting a DC PSU, always connect the PSU to ground before connecting power cables.
- Turn off the breaker to stop supplying power to the DC PSU before connecting or disconnecting the DC Power cable.

You need the following equipment to connect the FortiSwitch-AX9004G DC PSUs to DC power:

- An electrostatic discharge (ESD) preventive wrist strap with connection cord.
- One of the DC power cables supplied with your DC PSU.

To connect a DC PSU to DC power

1. Attach the ESD wrist strap to your wrist and to an ESD socket or to a bare metal surface on the chassis or frame.
2. Remove a PSU from its packaging.
3. Loosen the retention screws, pull the handle, and insert the PSU into the chassis, sliding it fully into the slot.
4. While keeping the handle pulled out, push the PSU in and tighten the retention screw.

   Do not push the PSU in with the handle closed and do not use excessive force.
5. Make sure that the PSU and power cords are not energized.
6. Remove the hex nut and washer from the ground terminal of the DC Power Supply.
7. Secure the grounding cable with the hex nut.

   Tighten the hexagon nut to a torque of 5±0.5 N ·m (51±5 kgf ·cm). Applying more torque can damage the equipment.
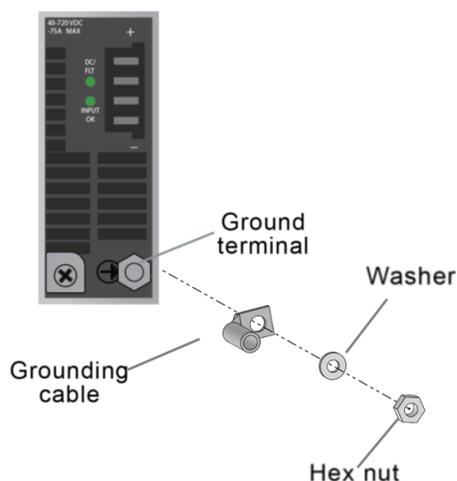
8. Plug the power cable into the PSU connector.

   Slide the connector in until the release tab clicks, locking the cable in place.
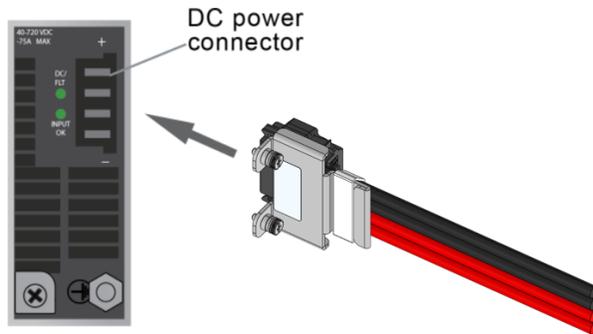
9.   Tighten the bracket mounting screw.

10. Turn on power to the PSU.

11. Verify that the PSU status LED is solid green meaning that the PSU is powered up and operating normally.

12. Repeat to install and connect all of the required PSUs.

Hot swapping a DC PSU

Follow these steps to safely hot swap a DC PSU.

|	You can hot swap a PSU without affecting performance or interrupting traffic as long as the remaining PSUs can supply enough power for the chassis to operate normally. The back of the PSU may be hot. When replacing, be careful not to touch the hot parts.

1.   Attach an ESD wrist strap to your wrist and to an ESD socket or to a bare metal surface on the chassis or frame.

2.   Turn off the power being supplied to the PSU.

3.   Disconnect the power cord and grounding wire.

4.   Loosen the retention screw.

5.   Pull the PSU handle in to unlock the PSU.

6.   Use the handle to pull the PSU out of the chassis.

7.   Hold the PSU by the bottom as you slide it out.

     Protect your hand from heat because the PSU may be hot.

8.   Insert a replacement PSU into the chassis and slide it all the way into the slot.

9.   While keeping the handle pulled out, push the PSU in.

     Do not push the PSU in with the handle closed and do not use excessive force.

10. Use a screwdriver to tighten the retention screw.

11. Connect the grounding wire to the PSU ground connector.

12. Connect power to the PSU power connector.

13. Turn on power to the PSU.

14. Verify that the PSU status LED is solid green meaning that the PSU is powered up and operating normally.

Connecting a DC PSU to ground

Each DC PSU requires one green 6 AWG stranded wire suitable for minimum 6 AWG copper wire, such as Thomas & Betts PN 54105UB.
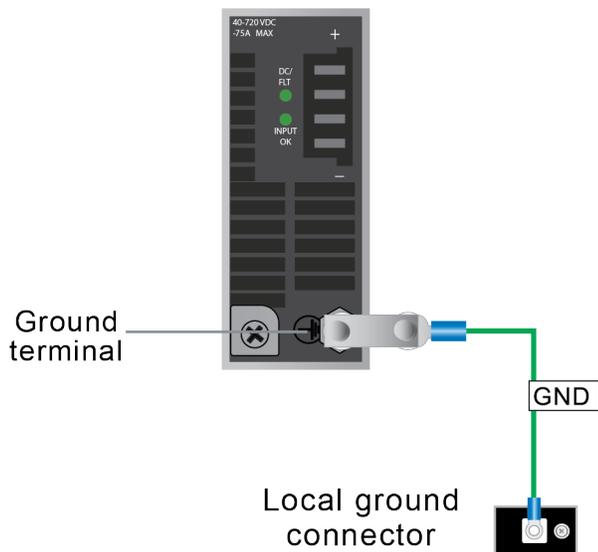
Ground cable terminals:
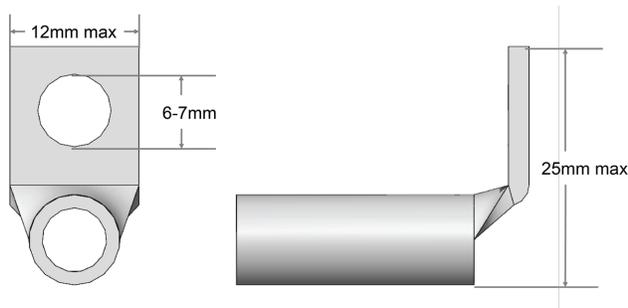
You need the following equipment to connect a DC PSU to ground:

- An electrostatic discharge (ESD) preventive wrist strap with connection cord.
- One 6 AWG grounding cable.
- A DC PSU installed in the FortiSwitch-AX9004G chassis front panel.

To connect a DC PSU to ground

1. Attach the ESD wrist strap to your wrist and to an ESD socket or to a bare metal surface on the FortiSwitch-AX9004G.
2. Make sure that DC PSU and ground wire are not energized.
3. Connect the ground wire from the local ground to the ground connector on the DC PSU.
4. Secure the ground wire to the DC PSU.
5. Optionally label the wire GND.

Considerations for electrical noise and leakage current

Electrical noise generated by other equipment may cause a fault. The following points should be observed in the Power Supply facility plan to reduce electrical noise:

- Do not connect equipment that is repeatedly turned on and off by relays, microswitches, etc. to the power branch circuit for this equipment.
- The PSUs should be connected directly to the grounding plate or a dedicated ground for the chassis.
- Include noise prevention circuits in equipment that generates electrical noise.
- Data and power and cables should be separated as much as possible.
- Each PSU includes a noise filter to prevent disturbances caused by electrical noise. This results in a leakage current of up to 3.5 mA that flows through the grounding) wire. Take this into consideration if the installation of a ground-fault circuit breaker is required.

FortiSwitch-AX9004G hardware assembly and rack mounting

The FortiSwitch-AX9004G chassis must be mounted in a standard 19-inch rack and requires 11U of vertical space in the rack. This chapter describes how to attach accessories to the FortiSwitch-AX9004G chassis, how to install the chassis in a rack, and how to install supervisors and line cards in the chassis front panel slots.

If you install the FortiSwitch-AX9004G chassis in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Make sure the operating ambient temperature does not exceed the manufacturer's maximum rated ambient temperature.

> ⚠️ The FortiSwitch-AX9004G chassis should not be operated as a free-standing appliance.

It is recommended that you mount the FortiSwitch-AX9004G chassis near the bottom of the rack to avoid making the rack top-heavy and potentially falling over. If you are going to mount the chassis higher, make sure the rack is well anchored. Since the chassis is over 200 lbs use a lift to raise the chassis into position before mounting it.

> 💡 Install supervisors and line cards after the chassis is rack mounted.

Cautions and warnings

The FortiSwitch-AX9004G must be protected from static discharge and physical shock. Only handle or work with the FortiSwitch-AX9004G at a static-free workstation. Always wear a grounded electrostatic discharge (ESD) preventive wrist strap when handling the FortiSwitch-AX9004G.

If you install the FortiSwitch-AX9004G in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Make sure the operating ambient temperature does not exceed the manufacturer's maximum rated ambient temperature.

To avoid personal injury or damage to the FortiSwitch-AX9004G, it is recommended that two or more people install the FortiSwitch-AX9004G into the rack.

Do not place heavy objects on the chassis.

Ensure there is enough room (at least 100mm) around the chassis to allow for sufficient air flow.

Do not place any objects on the chassis. Doing so may damage the equipment. It may also become unbalanced and fall over, or fall and cause injury.

Use an antistatic wrist strap. Handling without an antistatic wrist strap may damage the equipment due to static electricity.

Cables should be ducted or protected by braid. In particular, optical fiber cables should have a bending radius of 100 mm or more in the long direction and 50 mm or more in the short direction, and should be protected by metal braid or the like.

Prepare the optical fiber cable considering the length (3 m) required for maintenance of the equipment in advance, and bundle the extra length of the cable and wind it near the equipment. When optical fiber cables and other interface cables are mixed, do not apply excessive force to the optical fiber cables.

Required tools and equipment

The following tools and equipment are required to install the chassis

- No. 2 Phillips screwdriver: Required when changing rack mounting hardware or using M5 screws when mounting the equipment to a rack.
- No. 3 Phillips screwdriver: Required if M6 screws are used when mounting the equipment to the rack.
- Anti-static wrist strap: Protects equipment from static electricity.
- Hand Lifter: Used for chassis installation.
- EIA-compliant Type 19 cabinet rack with at least 11U of vertical space and at least 100mm clearance at the front and 100mm of clearance at the back of the rack for cooling air flow.
- Guide rails installed in the rack that can support the weight of the chassis (over 300 lbs).

# Changing the position of the rack mounting brackets

The rack mounting bracket attached to the chassis is a flat type that fixes the rack column to the front of the chassis. By changing the position of the rack mount brackets, the main unit can be retracted 50 mm to the rear.

You can change the position of the rack mount brackets by remove the rack mounting hardware attached to the chassis and installing them using the second set of screw holes 50mm to the rear of the chassis.

Rack mounting the chassis

The rack mount brackets provided with the chassis are for fixing the chassis to the rack, not for supporting the load. Be sure to use guide rails that are compatible with your equipment rack and are capable of supporting the weight of the chassis (over 300 lbs).

Attach guide rails to the rack and mount the chassis on the guide rails.

Rack Mount

Guide rail

Rack post
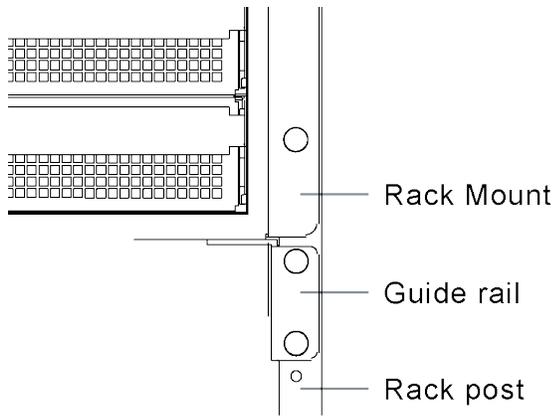
Fasten the chassis to the rack using the eight M5 or M6 rack-mount screws provided with the rack.

Guide rail

Rack post
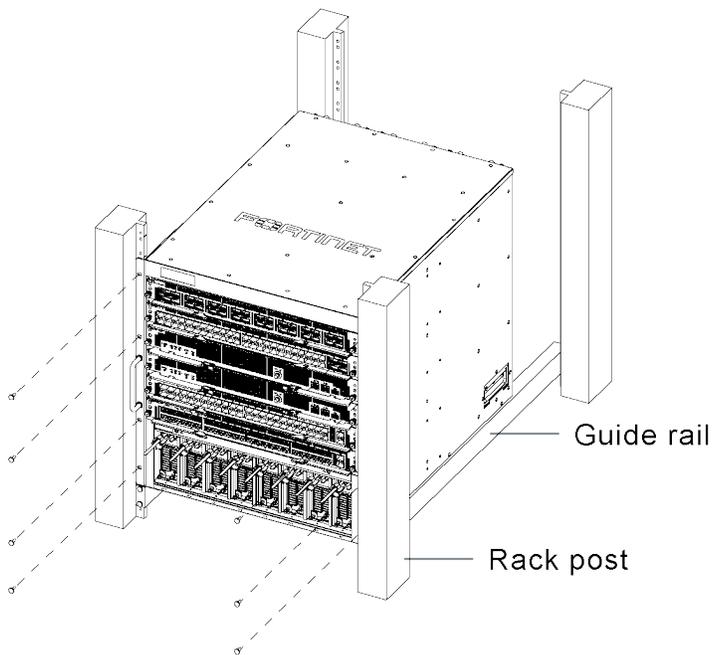
Cautions and warnings

Environmental specifications

Rack Mount Instructions - The following or similar rack-mount instructions are included with the installation instructions:

Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.

Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

Equipment must be used only with UL Listed ITE or Equivalent.

Blade Carriers, Cards and Modems must be Listed Accessories or Switch, Processor, Carrier and similar blades or cards should be UL Listed or Equivalent.

Refer to specific Product Model Data Sheet for Environmental Specifications (Operating Temperature, Storage Temperature, Humidity, and Altitude)

Installation location Do not install this equipment within reach of children. This equipment is not suitable for use in areas where children may be present.

Installation location The equipment must be installed in a location with equipotential bonding, such as a telecommunications center, a dedicated computer room, or an access-restricted area. During installation, maintenance personnel or qualified personnel must verify that the equipment is properly connected to protective grounding.

Humidity and dust Keeping equipment away from humid and dusty places isn't just good sense; it's crucial for safety. Avoid risks like fire or electric shock by installing your equipment in a clean, dry area.

Condensation Temperature changes can cause condensation to form. To prevent fire or electric shock, before powering the equipment on allow the equipment to sit for a few hours until it reaches room temperature.

Keep Inlet/Outlet vents clear and clean Blocking the inlet or outlet vents can cause overheating, smoking, or failure. Leave at least 100 mm of clearance and check for dust regularly to keep everything cool and safe. Regular cleaning is mandatory. Keep hair and objects away from the inlet and outlet vents to prevent overheating or injury.

Falling objects Keep the equipment clear of objects like metal items or liquid-filled containers to avoid fire, electric shock, or malfunctions. Avoid placing optional mechanisms or objects on top, as they may slide off and cause injury.

Foreign matter contamination Refrain from inserting or dropping items like metal or flammable materials into the equipment's inlet/outlet vents. This could result in fire or electric shock.

Indoor use This product and its interface cables should only be used indoors. When connecting outdoor-wired cables, ensure proper lightning protection measures are in place.

Guide rail Guide rail brackets are meant for securing, not supporting. Equip your rack with guide rails that are designed to bear the maximum load of your equipment.

Noise interference Keep TVs and radios apart and on separate electrical sources to avoid interference and ensure clear signals.

EMI and RFI Precautions The equipment complies with standards for Electromagnetic Interference (EMI) and Radio Frequency Interference (RFI); however, strong external signals may still impact its performance. Recommended measures: Cover unused slots with blank panels and use Shielded Twisted Pair (STP) cables for connections whenever possible. In high EMI environments, extended wiring distances may cause packet loss, as interference could exceed the shielding effectiveness of STP cables.

Hydrogen sulfide/salt Keep equipment away from areas like hot springs (hydrogen sulfide) or salty spots like beaches. These conditions can lead to quicker wear and tear, reducing equipment lifespan.

Safety

Moving parts — Hazardous moving parts. Keep away from moving fan blades.

Warning: Equipment intended for installation in Restricted Access Location.

Skilled person must install the equipment.

Warning A readily accessible disconnect device shall be incorporated in the building installation wiring.

Battery – Risk of explosion if the battery is replaced by an incorrect type. Do not dispose of batteries in a fire. They may explode. Dispose of used batteries according to your local regulations. IMPORTANT: Switzerland: Annex 4.10 of SR814.013 applies to batteries.

CAUTION: Shock Hazard. Disconnect all power sources.

CAUTION There is a danger of explosion if a battery is incorrect replaced. Dispose batteries of according to the manufacturer's instructions. Disposing a battery into fire, a hot oven, mechanically crushing, or cutting it can result in an explosion. Leaving a battery in an extremely hot environment can result in leakage of flammable liquid, gas, or an explosion. If a battery is subjected to extremely low air pressure, it may result in leakage of flammable liquid, gas, or an explosion.

Grounding — To prevent damage to your equipment, connections that enter from outside the building should pass through a lightning / surge protector, and be properly grounded. Use an electrostatic discharge workstation (ESD) and/or wear an anti-static wrist strap while you work. In addition to the grounding terminal of the plug, on the back panel, there is another, separate terminal for earthing.

This product has a separate protective earthing terminal provided on the back of the product in addition to the grounding terminal of the attachment plug. This separate protective earthing terminal must be permanently connected to earth with a green with yellow stripe conductor minimum size #6 AWG and the connection is to be installed by a qualified service personnel.

When disconnecting power from the equipment, disconnect all power supplies. Since the equipment is supplied with multiple input power sources, there is a risk of death or injury due to electric shock or burns. When disconnecting the power supply, use the following method to turn off the power supply to the equipment.

- **For AC power supply**, unplug all power cables from their power outlets.
- **For DC power supply**, turn off all circuit breakers on the distribution panels that supply power to the device

Installation and removal of the DC power connector with cable should be performed by maintenance personnel. The DC power connector with cable makes terminal connections. Therefore, mishandling of the DC power connector with cable may cause fire or electric shock.

Use DC Power Supply equipment with insulation between the primary and secondary sides. When using a DC power supply, use a power supply with insulated primary and secondary sides to prevent risk of electric shock. Use of uninsulated power supply equipment may cause electric shock.

Outlet location Make sure outlets are installed close to the equipment, allowing power plugs to be quickly disconnected. Keep the area around power outlets clear of any objects to maintain easy access and ensure safety.

Distribution board location Place the distribution board near the equipment or in a nearby room for easy access and operation.

Cover Do not remove the equipment cover, as it may lead to electric shock.

Disassembly Do not repair, modifying, or disassembling the equipment as it may result in electric shock, fire, or burns. High-voltage components inside the Power Supply are especially hazardous.

Shock Avoid dropping, hitting, or subjecting the equipment to strong impacts. If the equipment is damaged, immediately power it off and call maintenance personnel.

- **AC Power**, unplug all power cables from their outlets.
- **DC Power**, turn off the equipment and switch off all associated breakers.

Voltage Only use the equipment with the specified voltage. Using the wrong voltage may lead to damage, overheating, fire, or electric shock. Always make sure the power outlet and cord match the required specifications.

Breaker capacity Make sure the current capacity supplied to the distribution board exceeds the breaker's operating current to prevent fire hazards in case of errors.

Grounding Make sure of proper grounding for safe equipment operation.

- **AC Power Supply**, use a grounded outlet to prevent electric shock and electrical noise.
- **DC Power Supply**, connect a grounding cable to the terminal to avoid faults caused by noise or shock.

DC connector Only maintenance personnel should install or remove the DC power connector with cable to prevent risks of fire or electric shock from improper handling.

Breaker safety Always turn off the breaker on the distribution board before installing or removing the DC power connector with cable to prevent electric shock.

Installation and transportation Only trained personnel or professional carriers should handle equipment installation and transportation due to the risk of serious injury from falling or tipping. Don't use the fan unit or Power Supply handles and levers for transportation. Use proper handling devices, such as hand lifters.

Insulated equipment Always use a DC power supply with insulation between the primary and secondary sides to prevent electric shock. Uninsulated equipment poses a serious safety risk.

Power cable care Key Precautions Handle the power cable responsibly to prevent risks such as overheating, electric shock, or fire. Use the specified cable and follow guidelines like avoiding bends, twists, exposure to heat, moisture, or UV light, and ensuring quick access to the power plug. Proper care promotes safety and efficiency.

Power plug Connection Insert the power plug firmly and ensure it is clean and dry before use. Avoid loose outlets and have installations handled by qualified engineers to prevent overheating or fire risks.

Overloaded sockets Do not connect multiple power plugs to the same outlet. This can cause overheating, fire, or circuit breaker trips, disrupting other devices and posing serious risks.

Disconnection To safely disconnect power from the equipment, unplug all AC power cables from outlets and turn off all circuit breakers for DC power. Multiple input sources mean risks of electric shock or burns if not handled properly.

Expansion and replacement, Trained Personnel Only Expansion, installation, and replacement tasks, including optional mechanisms and power supply cables, must be performed by trained technicians or maintenance personnel to prevent injury, electric shock, fire, or equipment failure. Proper expertise ensures safety.

Power supply replacement First Before replacing the Power Supply, always disconnect the power cable. Even with the breaker turned off, circuits may remain energized, posing risks of fire or electric shock. Proper disconnection ensures safe replacement.

Plastic bags Store packing bags safely out of reach of children.

Use an approved power cable Using non-specified power cables can lead to fire or electric shock.

No stacking It can lead to damage or even create a falling hazard. Keep things safe and balanced.

No climbing or leaning It could damage the equipment, make it tip over, or lead to injuries.

Optional module Always carefully support modules when removing them from the equipment to prevent damage from dropping.

Equipment interior Don't place your hands inside the equipment to avoid injury from moving parts or burns from hot surfaces.

Hot surface When replacing a supervisor, line card, or power supply, avoid contact with recessed hot parts to prevent burns.

Allergic to metal This equipment contains zinc, nickel, gold, and other metals. Direct contact could trigger allergies, like eczema or rash.

Laser safety This product is a Class 1 laser product. Don't attempt to disassemble or modify the equipment, as exposure to the internal laser may be hazardous.

High temperatures Avoid placing the equipment in direct sunlight or near heat sources like stoves, as excessive heat can damage its components.

STATUS LED Don't disconnect power while the STATUS LED is blinking green during start-up or during a software update. Turning off the power too soon may cause equipment issues.

Terminals Avoid touching or short-circuiting connection terminals with hands, metal objects, or foreign items. This can cause smoking, malfunction, or poor contact.

Inrush current When turning on the equipment, an inrush current flows, which could cause voltage drops in Power Supply equipment. This might affect the equipment and other devices sharing the same facility.

Blank panels Whenever a supervisor, line card or power supply is removed, install blank panels on unused slots. Without them, airflow might be reduces, leading to overheating, potential failures, or radio interference that could affect equipment performance.

Screws Ensure screws are fully loosened and use levers when removing a supervisor, line card, or power supply. If screws remain tight, the mechanism might get damaged while opening the lever.

Dust covers Make sure to install dust covers on unused interface ports on line cards.

Storage Before transporting or storing fan units, power supplies, supervisors, or line cards place them in antistatic bags and avoid touching mounting parts, solder surfaces, or connection terminals.

Interface cable Avoid pulling or tripping on them. Don't place heavy items on the cable or route them near heat sources.

Magnets Avoid placing equipment near magnets, speakers, or anything with strong magnetic fields. Magnets can interfere and lead to malfunctions.

Transport When packing equipment for transportation, always make sure it is packed and oriented vertically. Skipping this step or transporting it upside down could lead to malfunction.

Cleaning Use a clean, dry cloth or one lightly dampened with water or neutral detergent (wrung out well) to clean the equipment exterior. Avoid harsh solvents like benzene or thinners, as they might cause damage or discoloration.

Equipment disposal Dispose of this equipment in accordance with the laws and regulations of your country, or reach out to a local disposal facility for assistance.

Regulatory notices

Federal Communication Commission (FCC) – USA

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and

(2) this device must accept any interference received; including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

WARNING: Any changes or modifications to this product not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

Innovation, Science and Economic Development (ISED) – Canada

CAN ICES (A) / NMB (A)

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Cet appareil numérique respecte les limites de classe A sur les émissions de bruit radioélectrique provenant d'un appareil numérique, telles que définies dans le Règlement sur le brouillage radioélectrique du ministère des Communications du Canada.

European Conformity (CE) - EU

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 adequate measures.

Simplified EU Declaration of Conformity

Hereby, Fortinet, declares that this product is in compliance with the essential requirements and other relevant provisions of Directive 2014/30/EU and 2014/35/EU. The full text of the EU declaration of conformity and detailed

compliance information is available at the following internet address: https://site.fortinet.com/ProductRegulatory/EU

Voluntary Control Council for Interference (VCCI) – Japan

この装置は、クラスA機器です。この装置を住宅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

Product Safety Electrical Appliance & Material (PSE) – Japan

日本では電気用品安全法(PSE)の規定により、同梱している電源コードは本製品の専用電源コードとして利用し、他の製品に使用しないでください。

Bureau of Standards Metrology and Inspection (BSMI) – Taiwan

The presence conditions of the restricted substance (BSMI RoHS table) are available at the link below:

限用物質含有情況表 (RoHS Table) 請到以下網址下載 :

https://www.fortinet.com/bsmi

警告 : 為避免電磁干擾, 本產品不應安裝或使用於住宅環境。

請仔細閱讀以下說明

本設備勿置於潮濕處。

連接至電源前, 請先檢查電壓。

當設備不用時, 請將所有電源線拔除, 避免電壓不穩而造成傷害。

勿將任何液體濺入設備中, 避免線路短路。

基於安全理由, 只有受到專業訓練的從業人員, 才可以打開本設備。

請勿自行調整或修理已通電的設備, 以確保您的安全。

如不小心受傷, 請立刻找急救人員給予您適當的救護, 千萬別因傷勢輕微而忽略自己的傷勢。

請依照台灣法規處置電池。

若不正確替換電池可能導致爆炸危險, 替換電池時, 請使用設備生產商推薦使用的電池。

請勿拆卸、刺穿或以其他方式損壞電池。

雷射設備非用戶維修設備，請與生產商聯繫維修事宜。

注意：要斷開電源，請將所有電源線從本機上拔下

滑軌警語：

延伸滑軌至進行安裝位置前，請閱讀安裝指示。

勿在安裝位置上放置任何負載於滑軌安裝設備上。

勿將滑軌安裝設備留置於進行安裝時之位置。

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