

Oracle[®] Switch ES1-24

Service Manual



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Using This Documentation

This guide describes how to remove and replace serviceable components of the Oracle Switch ES1-24.

These instructions are designed for enterprise network and system administrators with experience installing network hardware and software.

- “Product Notes” on page v
- “Related Documentation” on page vi
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Product Notes

For late-breaking information and known issues about this product, refer to the product notes at:

<http://www.oracle.com/goto/ES1-24/docs>

Related Documentation

Documentation	Links
All Oracle products	http://docs.oracle.com
Oracle Switch ES1-24	http://www.oracle.com/goto/ES1-24/docs
Oracle Integrated Lights Out Manager (Oracle ILOM) 3.0	http://www.oracle.com/pls/topic/lookup?ctx=ilom30

For detailed information about the commands and options described in this document, refer to the *Sun Ethernet Fabric Operating System CLI Base Reference Manual*.

CLI Command Modes

The following table lists the configuration modes used in this document with their access and exit methods.

Command Mode	Access Method	Prompt	Exit Method
User EXEC	Access SEFOS from Oracle ILOM with read-only rights (privilege level 1).	SEFOS>	Use the <code>logout</code> or <code>exit</code> command to return to the Oracle ILOM prompt.
Privileged EXEC	Access SEFOS from Oracle ILOM with full administrative rights (privilege level 15).	SEFOS#	Use the <code>logout</code> or <code>exit</code> command to return to the Oracle ILOM prompt.
Global Configuration	From User EXEC mode, use the <code>enable</code> command.	SEFOS(config)#	Use the <code>end</code> command to return to Privileged EXEC mode.
Interface Configuration	From Global Configuration mode, use the <code>interface interface-type interface-id</code> command.	SEFOS(config-if)#	Use the <code>exit</code> command to return to Global Configuration mode, or use the <code>end</code> command to return to Privileged EXEC mode.

Feedback

Provide feedback on this documentation at:

<http://www.oracle.com/goto/docfeedback>

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Oracle customers have access to electronic support through My Oracle Support. For information visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> or visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> if you are hearing impaired.

Detecting and Managing Faults

These topics describe how to detect and manage faults.

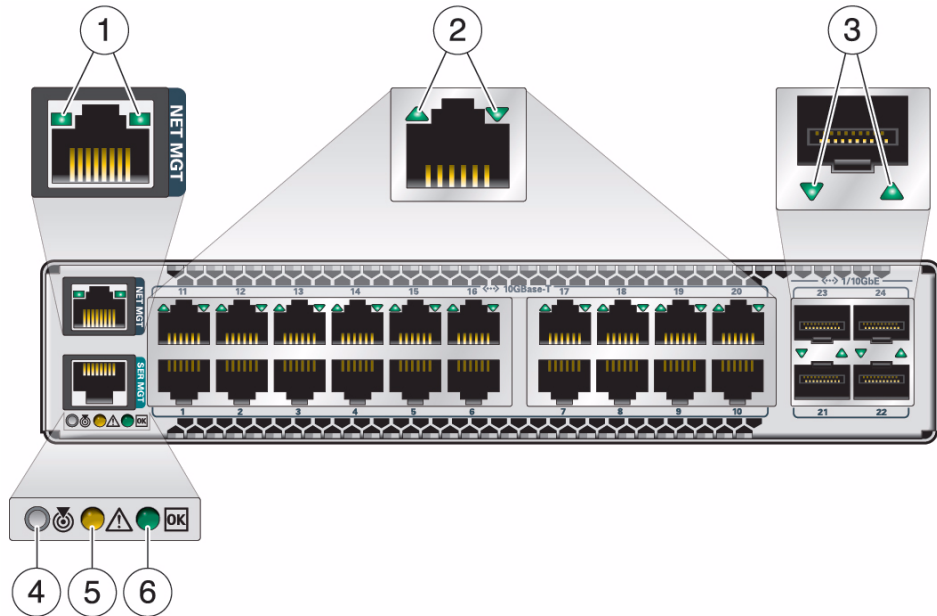
- [“Front Panel LEDs”](#) on page 2
- [“Rear Panel LEDs”](#) on page 4
- [“Check Switch Status \(LEDs\)”](#) on page 5
- [“Sensors Overview”](#) on page 5
- [“Check Switch Status \(Oracle ILOM\)”](#) on page 6
- [“Component Sensor Targets”](#) on page 6
- [“Motherboard Sensor Targets”](#) on page 7

Related Information

- [“Preparing for Service”](#) on page 9
- [“Servicing Power Supplies”](#) on page 19
- [“Servicing the Fan Module”](#) on page 27

Front Panel LEDs

The network management status, link status, and switch status LEDs are located at the rear of the switch.



Note – The System Fault/Alarm (Yellow) and System OK (Green) LEDs cannot be on at the same time.

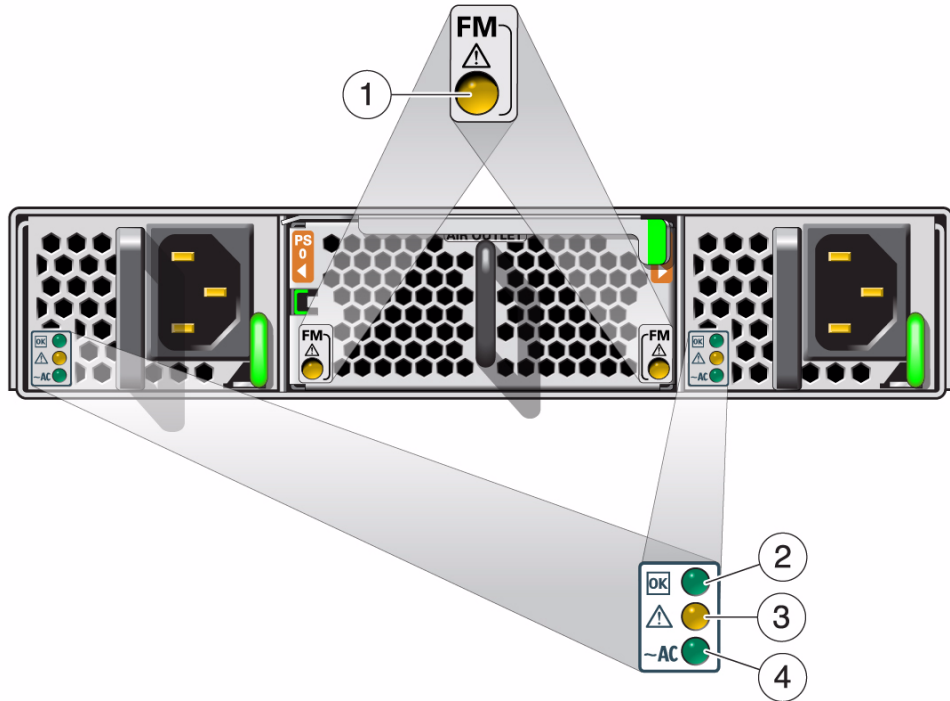
No.	Name	Color	Description
1	Network Management Link and Activity	Green	<p>Link (left):</p> <ul style="list-style-type: none"> • On – 10 or 100BASE-T link. • Off – No link or link down. <p>Activity (right):</p> <ul style="list-style-type: none"> • Off – No activity. • Flashing – Packet activity.
2	10GBaseT port Ethernet Link Status/Activity	Green	<p>Has three states:</p> <ul style="list-style-type: none"> • Off – No link or activity on the port. • On – A link has been established on the port. • Blinking – There is activity on the port.
3	SFP+ port Ethernet Link Status/Activity for 10GbE connection	Green	<p>Has three states:</p> <ul style="list-style-type: none"> • Off – No link or activity on the SFP+ port. • On – A link has been established on the SFP+ port. • Blinking – There is activity on the SFP+ port.
4	Locate	White	<p>Helps locate the switch:</p> <ul style="list-style-type: none"> • Off – No <code>locate</code> command invoked. • Fast blink – Occurs one second after the <code>locate</code> command is invoked.
5	Attention	Yellow	<p>Has two states:</p> <ul style="list-style-type: none"> • Off – No fault. • On solid – A fault in the system is present and service action is required.
6	OK	Green	<p>Has three states:</p> <ul style="list-style-type: none"> • Slow blink – During startup and shutdown sequences. • On solid – System normal and operational. • Off – Power interruption or system fault. Note: The off state could be triggered by one power supply being unplugged. The switch is still fully operational with only one power supply, but this LED is changed to the off state when one power supply is unplugged or not functioning correctly.

Related Information

- [“Rear Panel LEDs” on page 4](#)
- [“Check Switch Status \(LEDs\)” on page 5](#)

Rear Panel LEDs

The power supply and fan status LEDs are located at the front of the switch.



No.	Name	Color	State and Meaning
1	Fan Module Attention	Yellow	On – Fan module has a fault. Off – No faults detected.
2	Power Supply OK	Green	On – Power supply is functional without fault. Off – Power supply is off or initializing.
3	Power Supply Attention	Yellow	On – Fault detected, 12 VDC shut down. Off – No faults detected.
4	Power Supply AC	Green	On – AC is functional without fault. Off – AC is off or initializing.

Related Information

- [“Front Panel LEDs” on page 2](#)
- [“Check Switch Status \(LEDs\)” on page 5](#)

▼ Check Switch Status (LEDs)

- **Check the LEDs to verify the switch status.**

See [“Front Panel LEDs” on page 2](#) and [“Rear Panel LEDs” on page 4](#).

Related Information

- [“Check Switch Status \(Oracle ILOM\)” on page 6](#)

Sensors Overview

The switch uses several configurable sensors and indicators to monitor switch power, voltage, and temperature.

The switch includes a sensor for each replaceable component. These sensors generate entries in the SEL when sensor thresholds are exceeded. Many of these readings are used to adjust the fan speeds and perform other actions, such as illuminating LEDs and powering off the switch.

You can also configure these sensors to generate IPMI PET and SNMP traps, as described in the *Sun Integrated Lights Out Manager (ILOM) CLI Procedures Guide*.



Caution – Do not use any interface other than the Oracle ILOM CLI or web interface to alter the state or configuration of any sensor or LED. Doing so could void your warranty.

You can view the system monitoring sensors and indicator parameters from the Oracle ILOM CLI or web interface.

Related Information

- [“Check Switch Status \(Oracle ILOM\)” on page 6](#)
- *Sun Integrated Lights Out Manager (ILOM) Concepts Guide*

▼ Check Switch Status (Oracle ILOM)

1. Log into Oracle ILOM.

Refer to the *Oracle Switch ES1-24 Installation Guide*.

2. Display the status of parameters of switch components or the motherboard.

```
-> show target value
```

where *target* is the Oracle ILOM target name of the component or motherboard sensor in [“Component Sensor Targets”](#) on page 6 or [“Motherboard Sensor Targets”](#) on page 7.

For example, to display the status of the fan 0 Attention LED, type.

```
-> show /SYS/FM0/SERVICE value
/SYS/FM0/SERVICE
Properties:
  value = Off
```

Related Information

- [“Component Sensor Targets”](#) on page 6
- [“Motherboard Sensor Targets”](#) on page 7
- [“Check Switch Status \(LEDs\)”](#) on page 5

Component Sensor Targets

Use the targets from this table to check the switch status. See [“Check Switch Status \(Oracle ILOM\)”](#) on page 6. Some sensors indicate the state of LEDs. See [“Rear Panel LEDs”](#) on page 4.

Component Sensor	Target	Notes
Switch fault	/SYS/SERVICE	State of chassis Attention LED
Switch locator	/SYS/LOCATE	State of chassis Locator LED
Switch OK	/SYS/OK	State of chassis OK LED
Fan fault	/SYS/FMx/SERVICE	where <i>x</i> is 0 or 1, state of fan Attention LED
Fan presence	/SYS/FMx/PRSNT	where <i>x</i> is 0 or 1
Fan speed	/SYS/FMx/FANy/TACH	where <i>x</i> is 0 or 1 and <i>y</i> is 0 or 1
Power supply fault	/SYS/PSy/SERVICE	where <i>y</i> is 0 or 1, state of power supply Attention LED
Power supply presence	/SYS/PSy/PRSNT	where <i>y</i> is 0 or 1
Power supply OK	/SYS/PSy/OK	where <i>y</i> is 0 or 1, state of power supply OK LED

Related Information

- [“Check Switch Status \(Oracle ILOM\)” on page 6](#)
- [“Motherboard Sensor Targets” on page 7](#)

Motherboard Sensor Targets

Use the targets from this table to check the switch status. See [“Check Switch Status \(Oracle ILOM\)” on page 6](#).

Motherboard Sensor	Target
CPU temperature	/SYS/MB/T_AMB
I4 temperature	/SYS/MB/T_SWITCH
12V input	/SYS/MB/V_+12V
5V output	/SYS/MB/V_+5V
1.25V for switch chips 1, 2, & 3	/SYS/MB/V_1V25_SW123
1.25V for switch chips 4, 5, & 6	/SYS/MB/V_1V25_SW456
1.25V for switch chips 7, 8, & 9	/SYS/MB/V_1V25_SW789

Motherboard Sensor	Target
1.5V output	/SYS/MB/V_1V5
2.5V output	/SYS/MB/V_2V5
3.3V input	/SYS/MB/V_3V3
Battery output	/SYS/MB/V_BAT
Core voltage	/SYS/MB/V_CORE
DDR memory	/SYS/MB/V_DDR

Related Information

- [“Check Switch Status \(Oracle ILOM\)”](#) on page 6
- [“Component Sensor Targets”](#) on page 6

Preparing for Service

These topics describe how to prepare the switch for power supply or fan module replacement.

Step	Description	Links
1.	Review the ESD precautions.	“ESD Precautions” on page 9
2.	Gather tools for service.	“Tools Needed for Service” on page 10
3.	Familiarize yourself with the location of the replaceable components.	“Replaceable Components” on page 11
4.	If the component to replace is located on the cold aisle, remove the front support and air duct.	“Remove the Front Support and Air Duct” on page 11
4.	If the component to replace is located on the hot aisle, remove the CMA.	“Remove the CMA” on page 14

Related Information

- [“Detecting and Managing Faults” on page 1](#)
- [“Servicing Power Supplies” on page 19](#)
- [“Servicing the Fan Module” on page 27](#)

ESD Precautions

A grounded antistatic wrist strap is shipped with your switch. Electronic equipment is susceptible to damage by static electricity. Use a grounded antistatic wrist strap, foot strap, or equivalent safety equipment to prevent ESD when you install or service the switch.



Caution – To protect electronic components from electrostatic damage, which can permanently disable the switch or require repair by service technicians, place components on an antistatic surface, such as an antistatic discharge mat, an antistatic bag, or a disposable antistatic mat. Wear an antistatic grounding strap connected to a metal surface on the switch when you work on switch components.

Related Information

- [“Tools Needed for Service” on page 10](#)
- [“Replaceable Components” on page 11](#)

Tools Needed for Service

To install or service the switch, you must have these tools:

- No. 2 Phillips screwdriver
- ESD mat and grounding strap

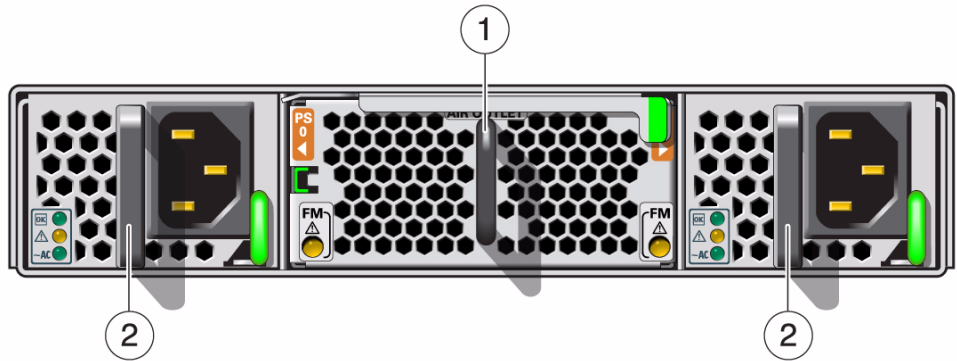
In addition, you must provide a system console device, such as:

- ASCII terminal
- Workstation
- Terminal server
- Patch panel connected to a terminal server

Related Information

- [“ESD Precautions” on page 9](#)
- [“Replaceable Components” on page 11](#)

Replaceable Components



Description	Links
1 Fan module (one)	“Servicing the Fan Module” on page 27
2 Power supplies (two)	“Servicing Power Supplies” on page 19

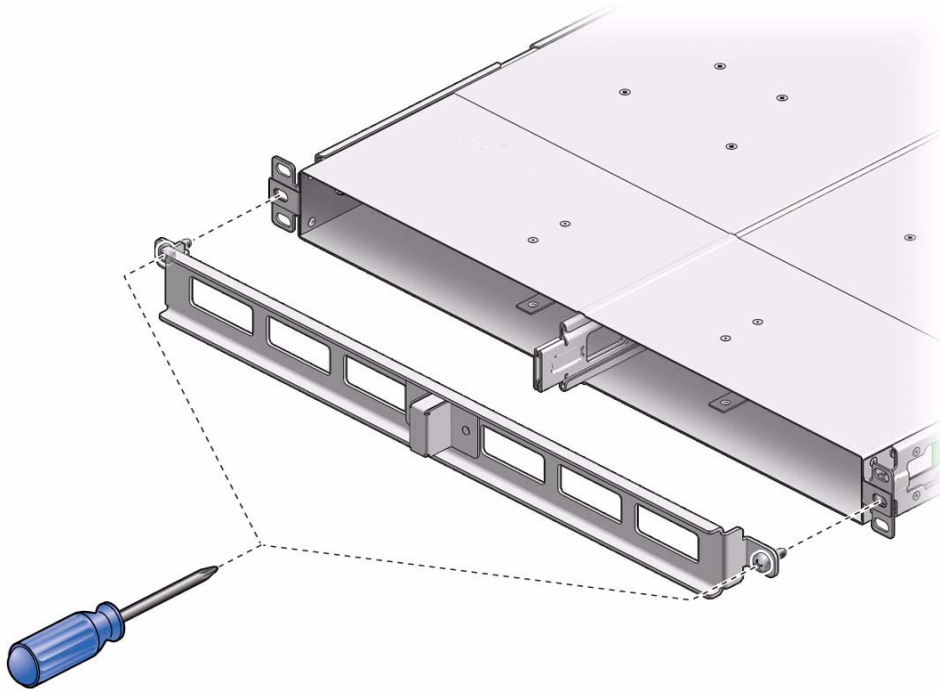
Related Information

- [“Remove the Front Support and Air Duct” on page 11](#)
- [“Remove the CMA” on page 14](#)

▼ Remove the Front Support and Air Duct

Note – If you are removing the front support and air duct from a switch with the data cables on the cold aisle, the procedure is the same, however the illustrations differ slightly from your situation.

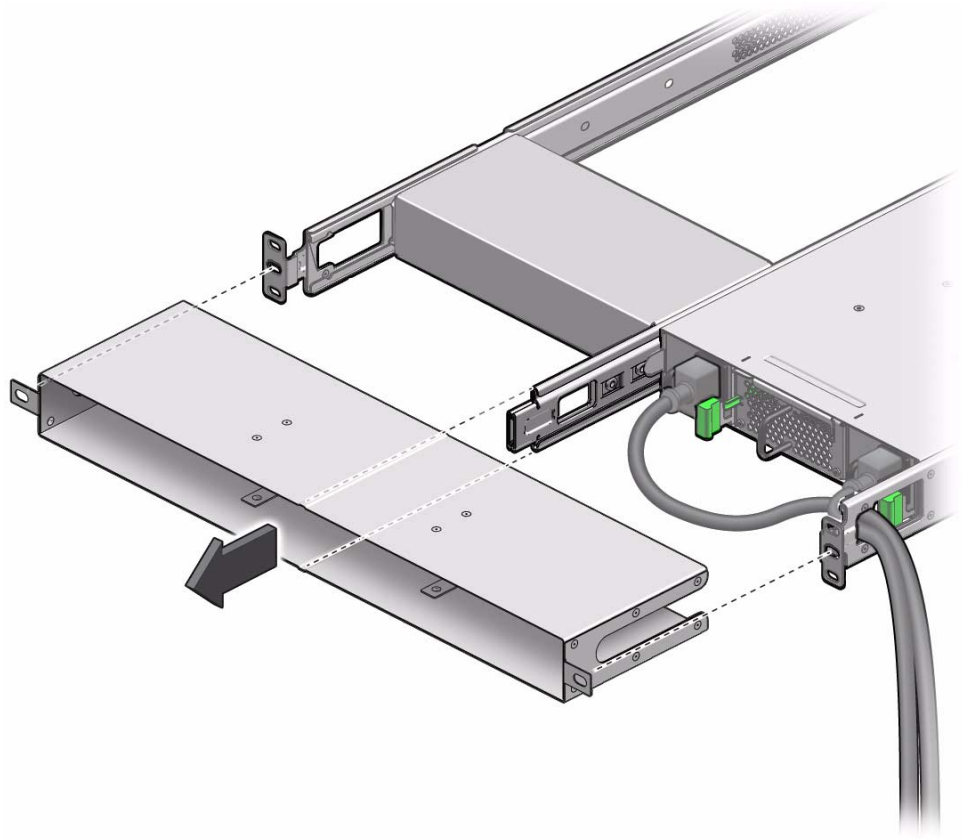
1. Using a No. 2 Phillips screwdriver, remove the two M6x14 screws securing the front support.



2. Remove the front support and set it aside.

Note – If the switch is installed with the data cables on the cold aisle, slide the front support off onto the data cables.

3. Slide the air duct off of the center rail and center slide, and set it aside.



Note – If the switch is installed with the data cables on the cold aisle, slide the air duct off onto the data cables.

4. Consider your next step.

- If you are servicing power supplies, return to the procedure, [“Power Off a Power Supply”](#) on page 19.
- If you are servicing the fan module, return to the procedure, [“Remove the Fan Module”](#) on page 27.

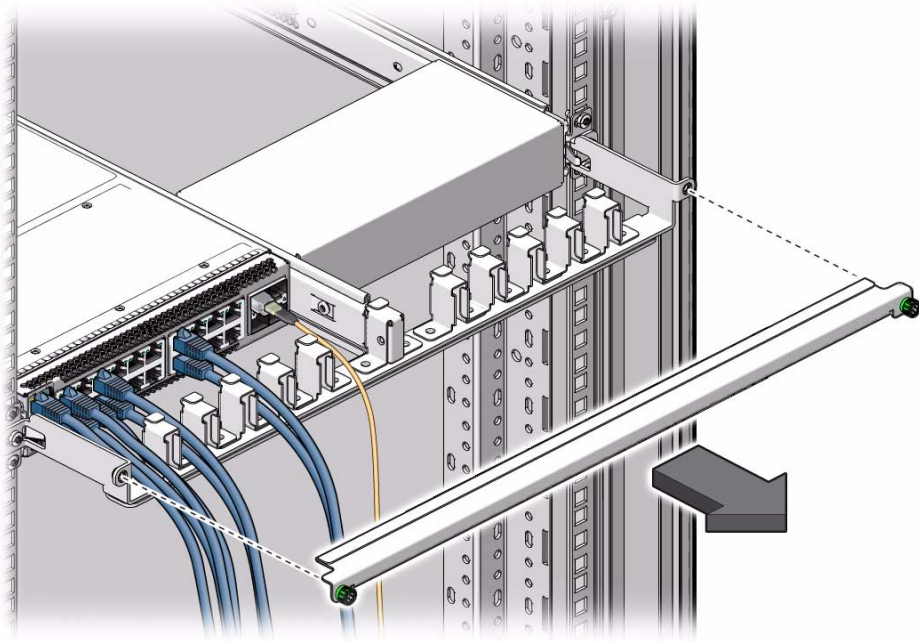
Related Information

- [“Remove the CMA”](#) on page 14
- [“Servicing Power Supplies”](#) on page 19
- [“Servicing the Fan Module”](#) on page 27

▼ Remove the CMA

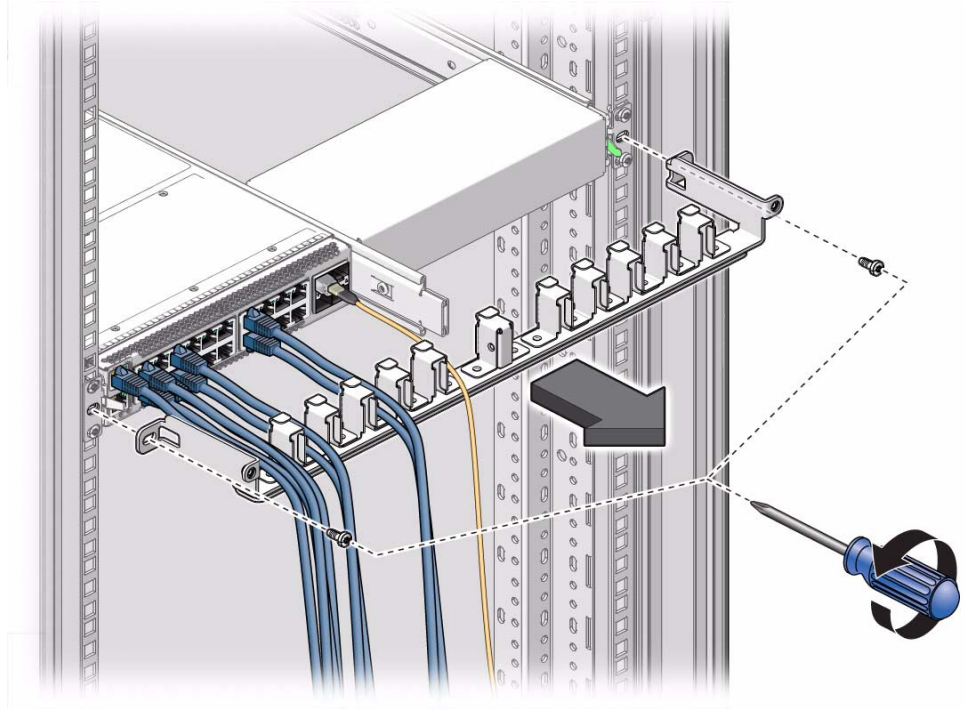
Note – If you are removing the CMA from a switch with the data cables in the cold aisle, the procedure is the same, however the following illustrations differ slightly from your situation.

1. Loosen the green captive thumbscrews and remove the cover from the CMA.



2. Set the cover aside.

3. Using a No. 2 Phillips screwdriver, remove the two M6x14 screws securing the CMA.



4. Lower the CMA out from under the cables, and set it aside.
5. Consider your next step.
 - If you are servicing power supplies, return to the procedure, “Power Off a Power Supply” on page 19.
 - If you are servicing the fan module, return to the procedure, “Remove the Fan Module” on page 27.

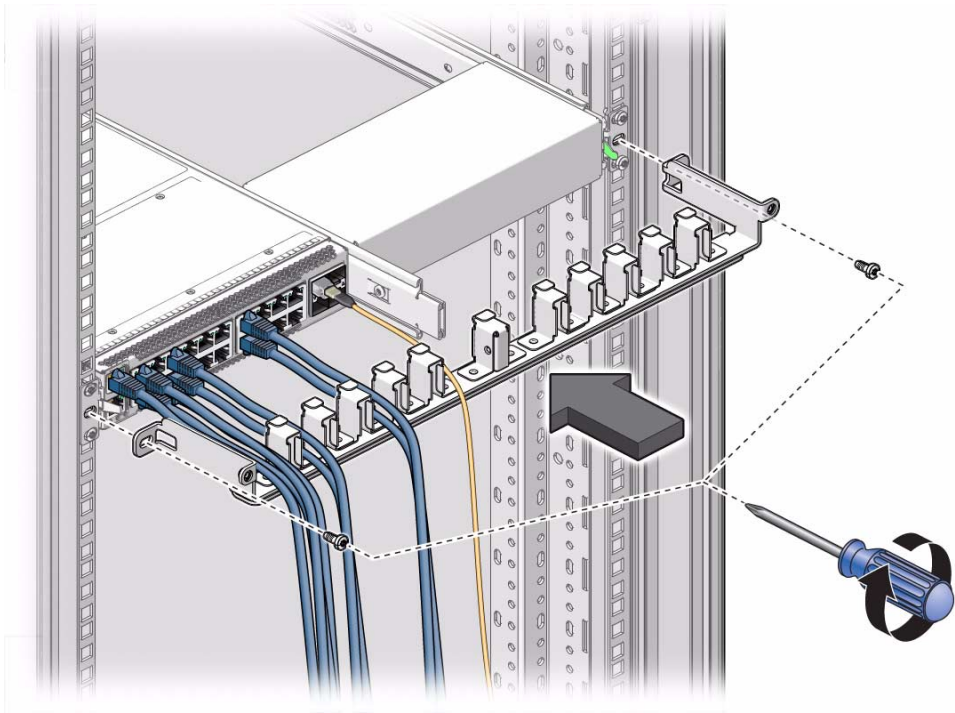
Related Information

- “Install the CMA” on page 16
- “Remove the Front Support and Air Duct” on page 11
- “Servicing Power Supplies” on page 19
- “Servicing the Fan Module” on page 27

▼ Install the CMA

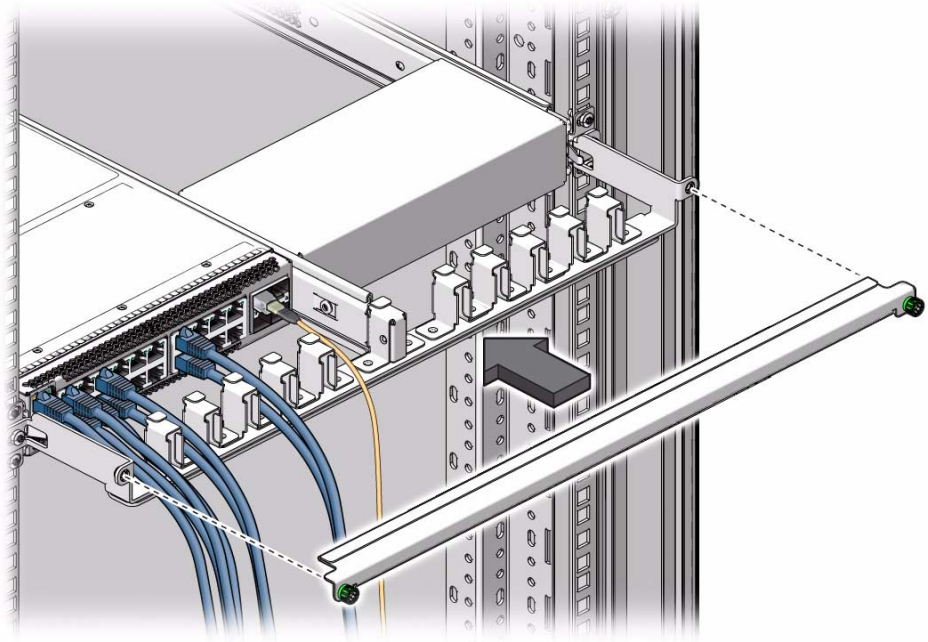
Note – If you are installing the CMA onto a switch with the data cables in the cold aisle, the procedure is the same, however the following illustrations differ slightly from your situation.

1. Bring the CMA up from under the cables, and align the CMA to where it installs to the rack slides.



2. Using a No. 2 Phillips screwdriver, secure the CMA to the rack with two M6x14 screws.
3. Organize the cables into the slots of the CMA.

4. Replace the CMA cover, and tighten the green captive thumbscrews.



Related Information

- [“Remove the CMA”](#) on page 14
- [“Servicing Power Supplies”](#) on page 19
- [“Servicing the Fan Module”](#) on page 27

Servicing Power Supplies

Perform these tasks in order to service power supplies.

- [“Preparing for Service” on page 9](#)
- [“Power Off a Power Supply” on page 19](#)
- [“Remove a Power Supply” on page 20](#)
- [“Install a Power Supply” on page 22](#)
- [“Power On a Power Supply” on page 24](#)

Related Information

- [“Detecting and Managing Faults” on page 1](#)
- [“Preparing for Service” on page 9](#)
- [“Servicing the Fan Module” on page 27](#)

▼ Power Off a Power Supply

Note – Powering off both power supplies powers off the switch.

Note – Power supplies are hot-swappable.

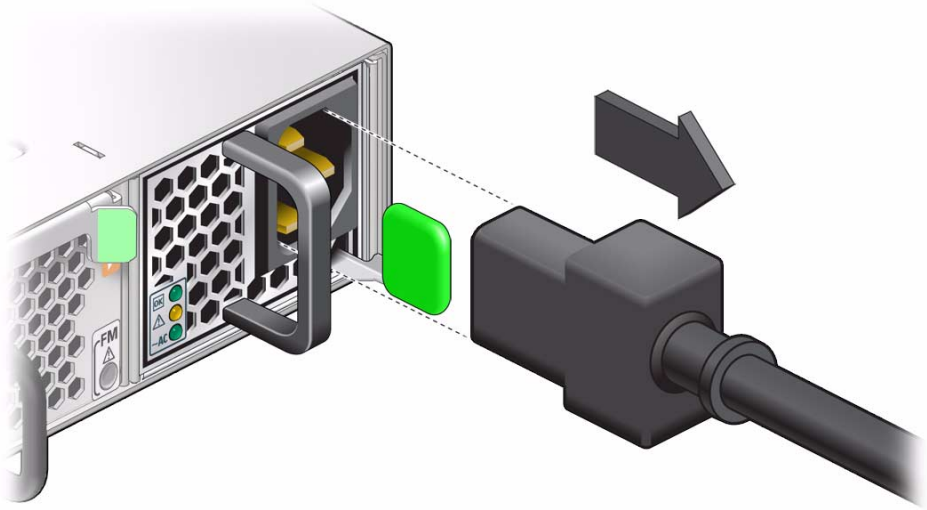
1. Prepare for Service.

See [“Preparing for Service” on page 9](#).

2. Consider your next step.

- If you are removing a power supply from the cold aisle, remove the front support and air duct. See [“Remove the Front Support and Air Duct” on page 11](#).

- If you are removing a power supply from the hot aisle, remove the CMA. See [“Remove the CMA”](#) on page 14.
3. **Determine which power supply to remove.**
 4. **Remove the power cord from the respective power supply.**



The power supply is completely powered off.

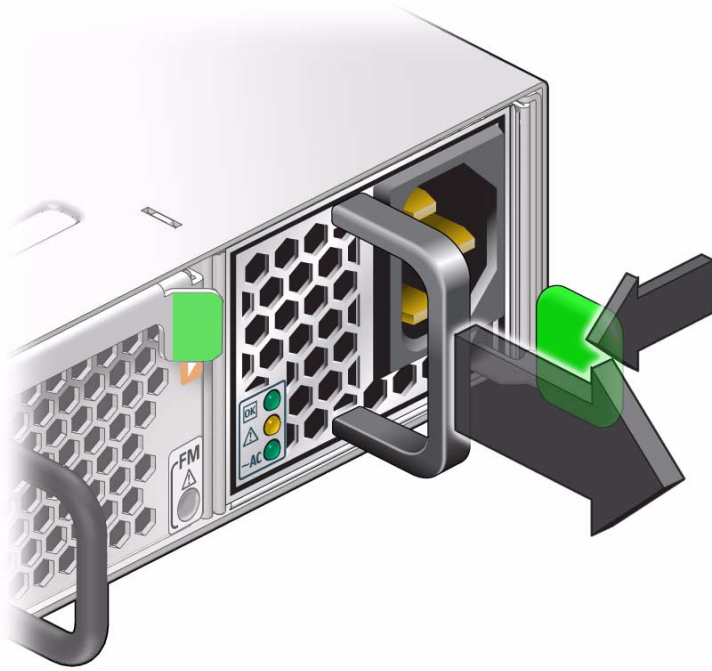
5. **Remove the power supply.**
See [“Remove a Power Supply”](#) on page 20.

Related Information

- [“Remove a Power Supply”](#) on page 20
- [“Install a Power Supply”](#) on page 22
- [“Power On a Power Supply”](#) on page 24

▼ Remove a Power Supply

1. **Identify which power supply to remove and power off the power supply.**
See [“Power Off a Power Supply”](#) on page 19.
2. **Press and hold the release tab to the left and pull on the handle of the power supply.**



3. Continue to pull the power supply handle to remove it from the switch.



4. **Set the power supply aside on the antistatic mat.**
See “ESD Precautions” on page 9.

5. **Install a replacement power supply.**
See “Install a Power Supply” on page 22.

Related Information

- “Power Off a Power Supply” on page 19
- “Install a Power Supply” on page 22
- “Power On a Power Supply” on page 24

▼ Install a Power Supply

1. **Power off and remove the power supply to be replaced.**

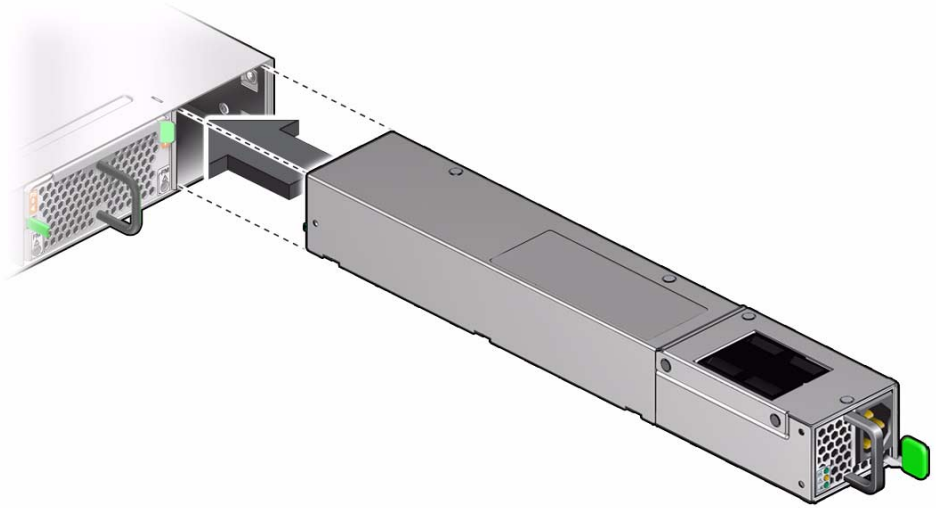
See:

- “Power Off a Power Supply” on page 19
- “Remove a Power Supply” on page 20

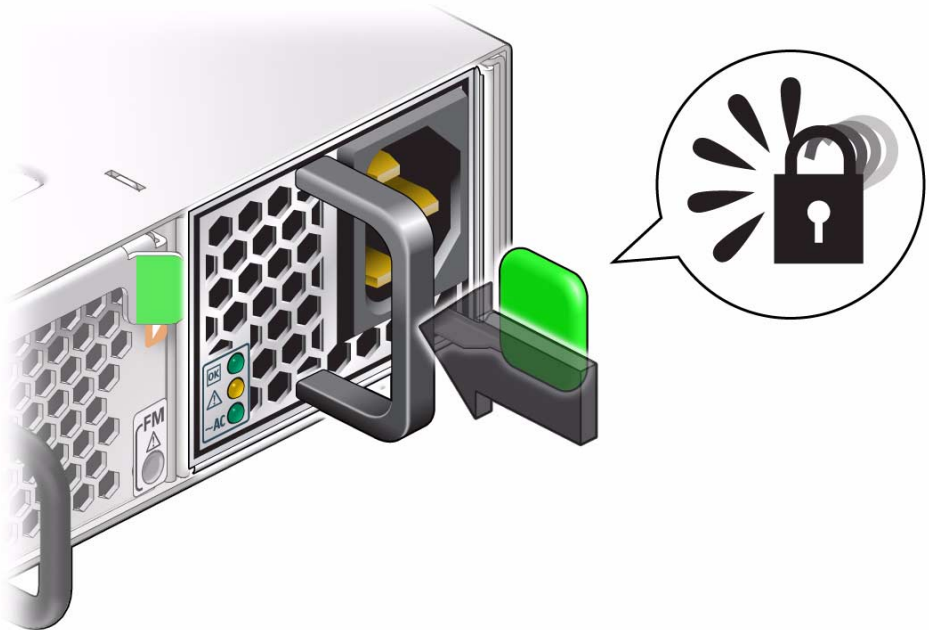
2. **Verify that the slot where you are installing the power supply is clean and free of debris.**

3. **Orient the power supply with the status LEDs on the left and the release tab on the right.**

4. **Slide the power supply into the open slot, pushing at the handle.**



5. When the power supply seats, push firmly so that the release tab clicks to secure the power supply into the switch.



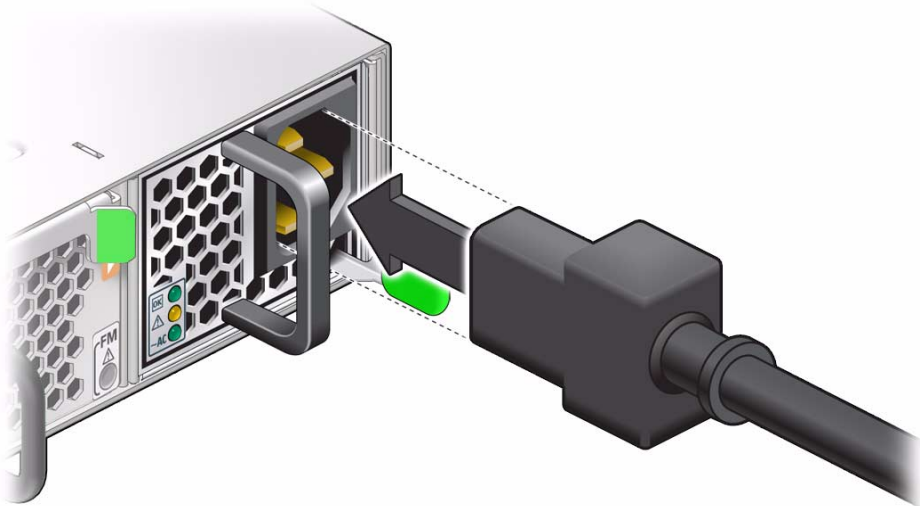
6. Power on the power supply.
See "Power On a Power Supply" on page 24.

Related Information

- “Power Off a Power Supply” on page 19
- “Remove a Power Supply” on page 20
- “Power On a Power Supply” on page 24

▼ Power On a Power Supply

1. Reconnect the power cord to the power supply.



The AC LED lights green to indicate the power supply is connected to line power. A moment later, the OK LED lights green to indicate the power supply is fully operational.

2. Verify that the switch has power.
See “Check Switch Status (LEDs)” on page 5.
3. Consider your next step.
 - If you installed a power supply from the cold aisle, install the air duct and front support. Refer to *Switch Installation*, installing the air duct and front support.
 - If you installed a power supply from the hot aisle, install the CMA. See “Install the CMA” on page 16.

Related Information

- “Power Off a Power Supply” on page 19
- “Remove a Power Supply” on page 20
- “Install a Power Supply” on page 22

Servicing the Fan Module

Perform these tasks in order to service the fan module.

- [“Preparing for Service” on page 9](#)
- [“Remove the Fan Module” on page 27](#)
- [“Install the Fan Module” on page 31](#)

Related Information

- [“Detecting and Managing Faults” on page 1](#)
- [“Preparing for Service” on page 9](#)
- [“Servicing Power Supplies” on page 19](#)

▼ Remove the Fan Module

Note – The fan module is hot-swappable and does not require powering off the switch. The fan module has four fan units and requires a minimum of three to be functional to meet specification.



Caution – Failure to replace the fan module within 30 seconds could result in the switch powering down due to overheating. If you cannot perform a hot-swap replacement the fan module within 30 seconds, power off the switch by powering off both power supplies. See [“Power Off a Power Supply” on page 19](#)

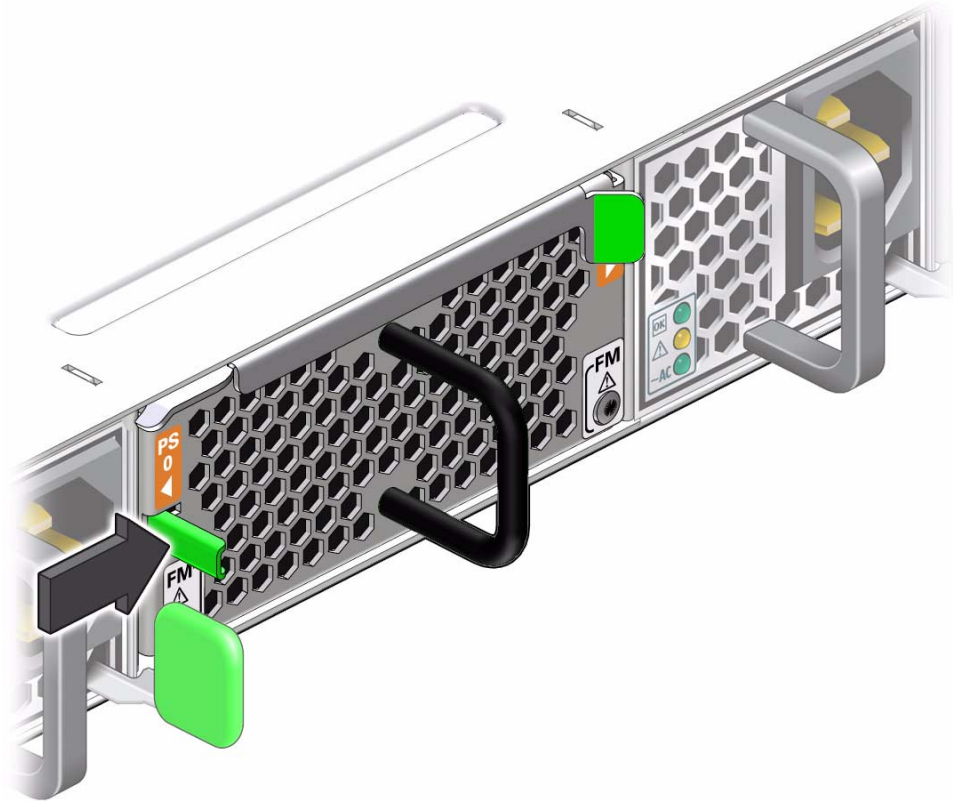
1. Prepare for service.

See [“Preparing for Service” on page 9](#).

2. Consider your next step.

- If you are removing a power supply from the cold aisle, remove the front support and air duct. See “Remove the Front Support and Air Duct” on page 11.
- If you are removing a power supply from the hot aisle, remove the CMA. See “Remove the CMA” on page 14.

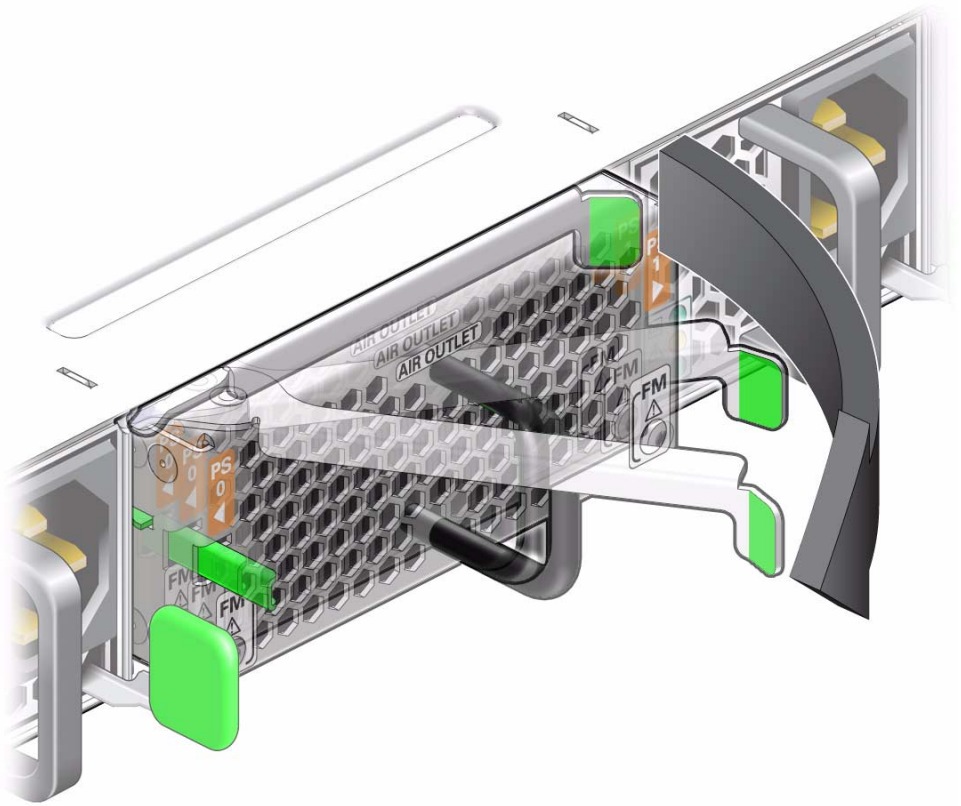
3. Actuate the fan module release tab by pressing it toward the handle.



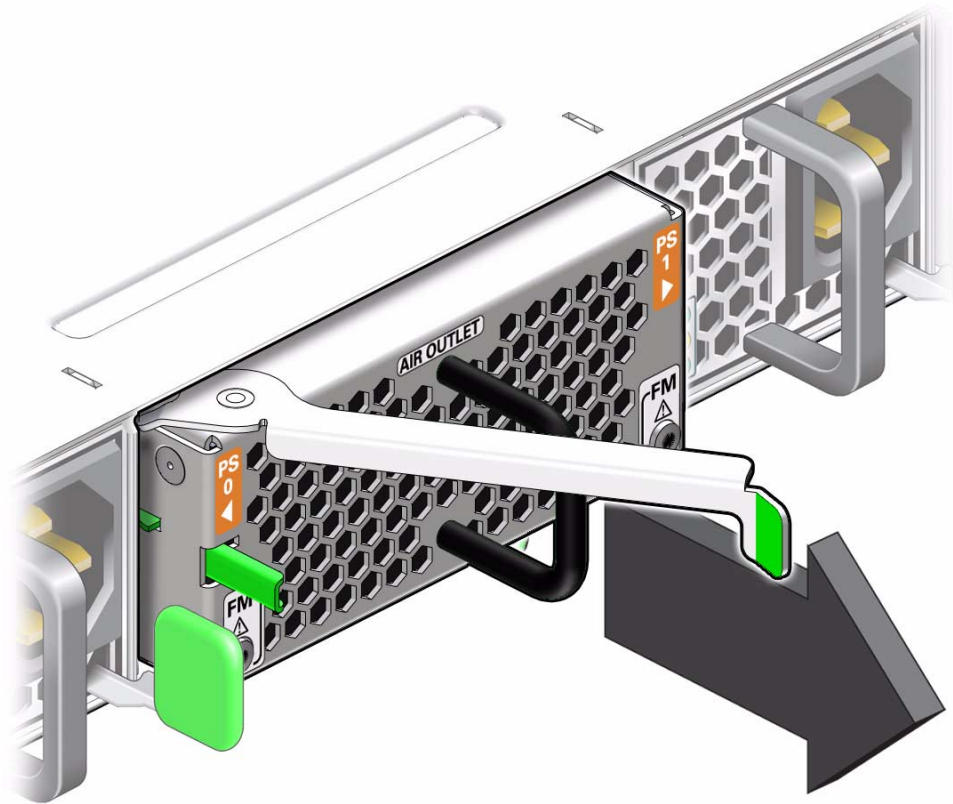
4. Pull the eject lever out 50 to 60 degrees to unseat the fan module.



Caution – Do not over extend the eject lever.



5. Grasp the black handle and gently pull the fan module out of the switch.



6. Set the fan module aside on an antistatic mat.

See “ESD Precautions” on page 9.

7. Install a replacement fan module.

See “Install the Fan Module” on page 31.

Related Information

- “Remove a Power Supply” on page 20
- “Install the Fan Module” on page 31

▼ Install the Fan Module



Caution – In a hot-swap replacement, you must install the replacement fan module within 30 seconds of removing the faulted fan module. If this is not possible, first power off the switch by powering off both power supplies. See [“Power Off a Power Supply”](#) on page 19.

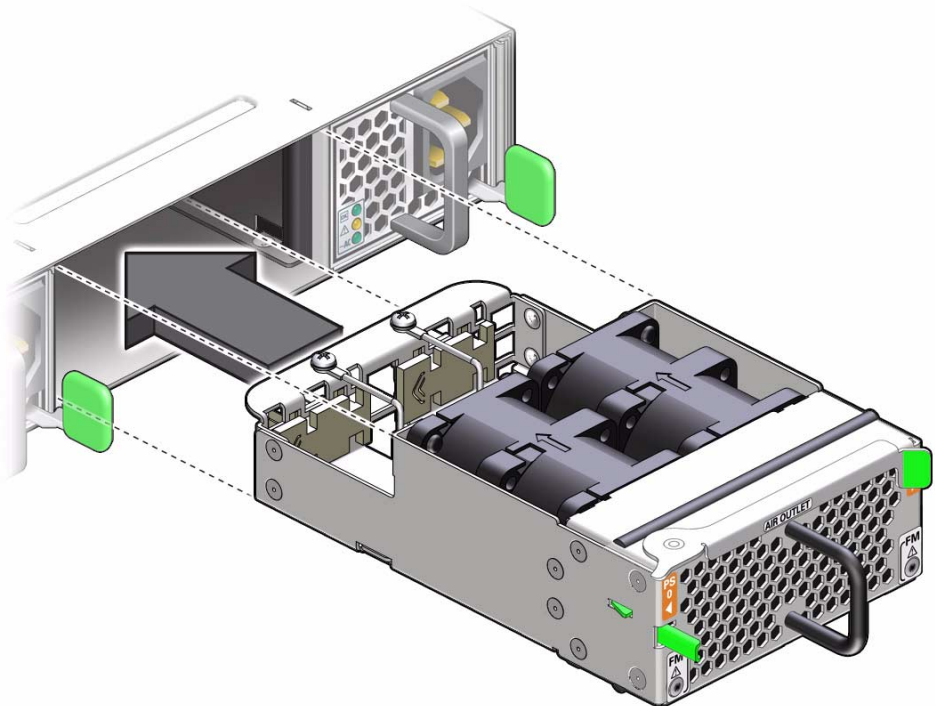
1. Remove the fan module.

See [“Remove the Fan Module”](#) on page 27.

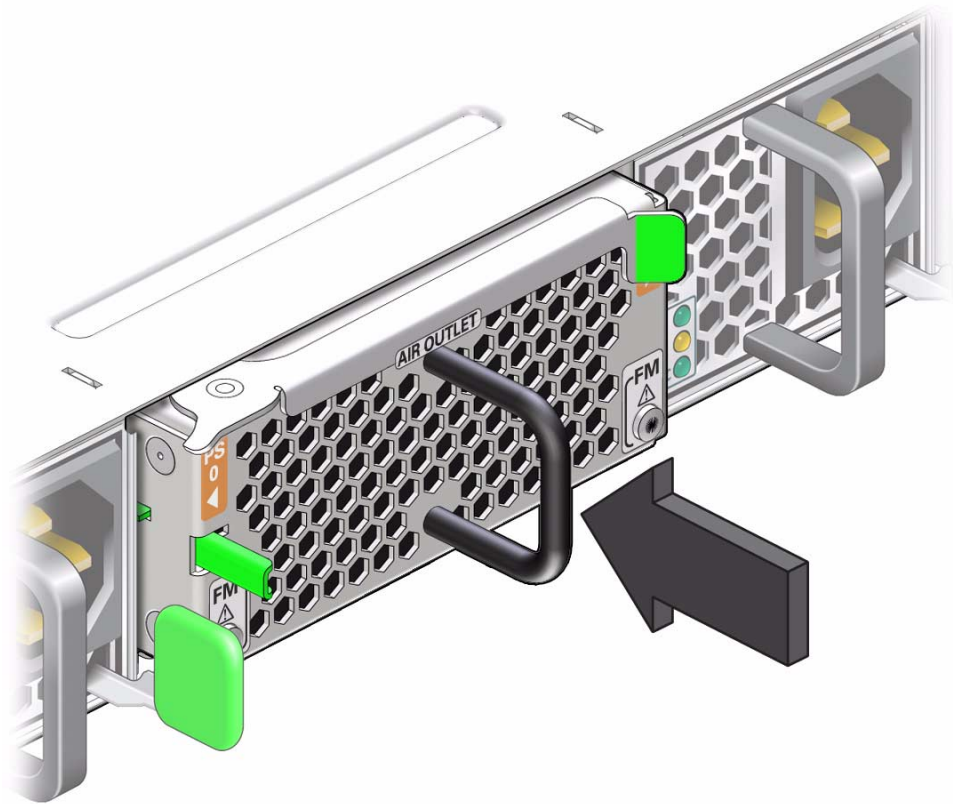
2. Verify that the slot where the fan module installs is clean and free of debris.

3. Orient the fan module over the opening in the switch.

4. With the eject lever closed, slide the fan module into the switch.



5. Slide the fan module in until it clicks securely into place



The fan should immediately power on.

6. Verify that the fan Attention LEDs are no longer illuminated.

See [“Rear Panel LEDs”](#) on page 4.

7. Verify that air is moving through the fan module.

8. Consider your next step.

- If you installed the fan module from the cold aisle, install the air duct and front support. Refer to *Switch Installation*, installing the air duct and front support.
- If you installed the fan module from the hot aisle, install the CMA. See [“Install the CMA”](#) on page 16.

Related Information

- [“Remove the Fan Module”](#) on page 27
- [“Install a Power Supply”](#) on page 22

Glossary

10

10GbE 10 Gigabit Ethernet.

A

ACL Access control list.

G

GMRP GARP Multicast Registration Protocol.

GVRP GARP VLAN Registration Protocol.

L

LA Link aggregation.

O

- Oracle ILOM** Oracle Integrated Lights Out Manager. ILOM provides advanced server processor hardware and software to manage and monitor servers.
- OSPF** Open Shortest Path First protocol.

R

- RIP** Routing Information Protocol.
- RSTP** Rapid Spanning tree protocol.

S

- SEFOS** Sun Ethernet Fabric Operating System. A full-featured fabric and switch management software package for configuring and monitoring the switches network infrastructure.
- SEL** System event log. The switch includes a number of replaceable component sensors that generate entries in the SEL when the sensor crosses a threshold. Many of these readings are used to adjust the fan speeds and perform other actions, such as illuminating LEDs and powering off the switch.
- SFP+** Small form-factor, pluggable. A transceiver module specification for several physical layer technologies. In this document, SFP+ refers to Gigabit Ethernet, or 10GE, modules.
- SR** Short range. A short range SFP+ optical transceiver module.
- STP** Spanning-Tree Protocol.

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