Oracle® Switch ES2-72 and Oracle Switch ES2-64 Service Manual

Part No: E60187-01
April 2015

Part No: E60187-01

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc.

Access to Oracle Support

Oracle customers that have purchased support 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.

Référence: E60187-01

Accessibilité de la documentation

Pour plus d'informations sur l'engagement d'Oracle pour l'accessibilité à la documentation, visitez le site Web Oracle Accessibility Program, à l'adresse `http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc`.

Accès au support électronique

Les clients Oracle qui ont souscrit un contrat de support ont accès au support électronique via My Oracle Support. Pour plus d'informations, visitez le site `http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info` ou le site `http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs` si vous êtes malentendant.

Contents

Using This Documentation

- **Overview –** Describes how to troubleshoot and maintain the Oracle Switch ES2-72 and Oracle Switch ES2-64
- **Audience –** Enterprise network and system administrators with experience installing network hardware and software
- **Required knowledge –** Advanced experience working with hardware and software

Product Documentation Library

Late-breaking information and known issues for this product are included in the documentation library at http://www.oracle.com/goto/es2-72_es2-64/docs.

Feedback

Provide feedback about this documentation at http://www.oracle.com/goto/docfeedback.

Detecting and Managing Faults

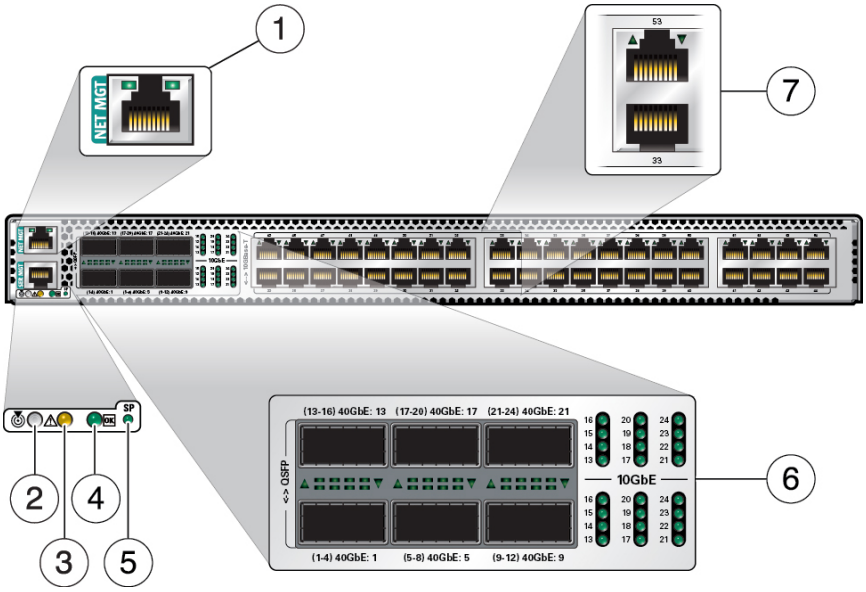
These topics describe how to detect and manage faults.

Related Information

- “Preparing for Service”
- “Servicing Power Supplies”
- “Servicing Fan Modules”

Front Panel LEDs

The network management status, link status, and switch status LEDs are located at the front 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	Link (left): ■ **On** – 10 or 100BASE-T link. ■ **Off** – No link or link down. Activity (right): ■ **Off** – No activity. ■ **Flashing** – Packet activity.
2	Locate	White	Helps locate the switch: ■ **Off** – No `locate` command invoked. ■ **Fast blink** – Occurs one second after the `locate` command is invoked.
3	Attention	Yellow	Has two states: ■ **Off** – No fault. ■ **On solid** – A fault in the system is present and service action is required.
4	OK	Green	Has three states: ■ **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

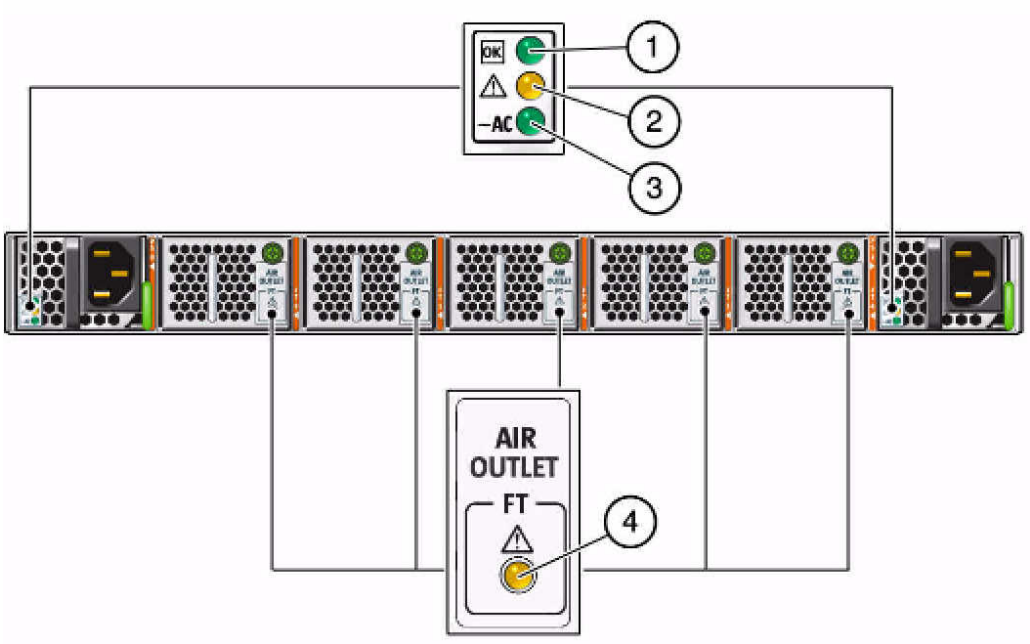
No.	Name	Color	Description
			operational with only one power supply, but this LED is changed to the off state when one power supply is unplugged or not functioning correctly.
5	Service Processor		
6	QSFP+ port Ethernet Link Status/ Activity for 40GbE connection	Green	Has three states: ■ **Off** – No link or activity on the QSFP+ port. ■ **On** – A link has been established on the QSFP+ port. ■ **Blinking** – There is activity on the QSFP+ port.
7	(Oracle Switch ES2-64 only) 10GBaseT port Ethernet Link Status/Activity	Green	Has three states: ■ **Off** – No link or activity on the port. ■ **On** – A link has been established on the port. ■ **Blinking** – There is activity on the port.

Related Information

- “Rear Panel LEDs” on page 11
- “Check Switch Status (LEDs)” on page 12

Rear Panel LEDs

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



No.	Name	Color	State and Meaning
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.
1	Fan Module Attention	Yellow	**On** – Fan module has a fault. **Off** – No faults detected.

Related Information

- “Front Panel LEDs” on page 9
- “Check Switch Status (LEDs)” on page 12

▼ Check Switch Status (LEDs)

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

See “Front Panel LEDs” on page 9 and “Rear Panel LEDs” on page 11.

Related Information

- “Check Switch Status (Oracle ILOM)” on page 13

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 13

▼ Check Switch Status (Oracle ILOM)

1. **Log into Oracle ILOM.**

   Refer to the *Oracle Switch ES2-72 and Oracle Switch ES2-64 Installation Guide* for instructions.

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 14 or "Motherboard Sensor Targets" on page 15.

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 14
- "Motherboard Sensor Targets" on page 15
- "Check Switch Status (LEDs)" on page 12

Component Sensor Targets

Use the targets from this table to check the switch status. See "Check Switch Status (Oracle ILOM)" on page 13. Some sensors indicate the state of LEDs. See "Rear Panel LEDs" on page 11.

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/FM*x*/SERVICE	where *x* is 0 or 1, state of fan Attention LED
Fan presence	/SYS/FM*x*/PRSNT	where *x* is 0 or 1
Fan speed	/SYS/FM*x*/FAN*y*/TACH	where *x* is 0 or 1 and *y* is 0 or 1
Power supply fault	/SYS/PS*y*/SERVICE	where *y* is 0 or 1, state of power supply Attention LED
Power supply presence	/SYS/PS*y*/PRSNT	where *y* is 0 or 1
Power supply OK	/SYS/PS*y*/OK	where *y* is 0 or 1, state of power supply OK LED

Related Information

- "Check Switch Status (Oracle ILOM)" on page 13
- "Motherboard Sensor Targets" on page 15

Motherboard Sensor Targets

Use the targets from this table to check the switch status. See “Check Switch Status (Oracle ILOM)” on page 13.

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`
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 13
- “Component Sensor Targets” on page 14

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 17
2.	Gather tools for service.	“Tools Needed for Service” on page 18
3.	Familiarize yourself with the location of the replaceable components.	“Replaceable Components” on page 18

Related Information

- “Detecting and Managing Faults”
- “Servicing Power Supplies”
- “Servicing Fan Modules”

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 18

- “Replaceable Components” on page 18

Tools Needed for Service

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

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

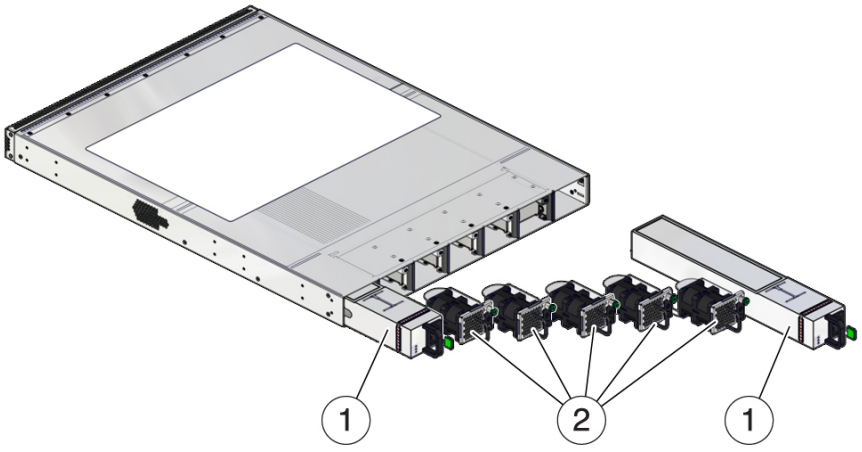
In addition, you must provide a system console device, such as:

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

Related Information

- “ESD Precautions” on page 17
- “Replaceable Components” on page 18

Replaceable Components



	Description	Links
1	Fan modules	“Servicing Fan Modules”
2	Power supplies	“Servicing Power Supplies”

Related Information

- “ESD Precautions” on page 17
- “Tools Needed for Service” on page 18

Servicing Power Supplies

Perform these tasks in order.

- "Preparing for Service"
- "Power Off a Power Supply" on page 21
- "Remove a Power Supply" on page 22
- "Install a Power Supply" on page 24
- "Power On a Power Supply" on page 26

Related Information

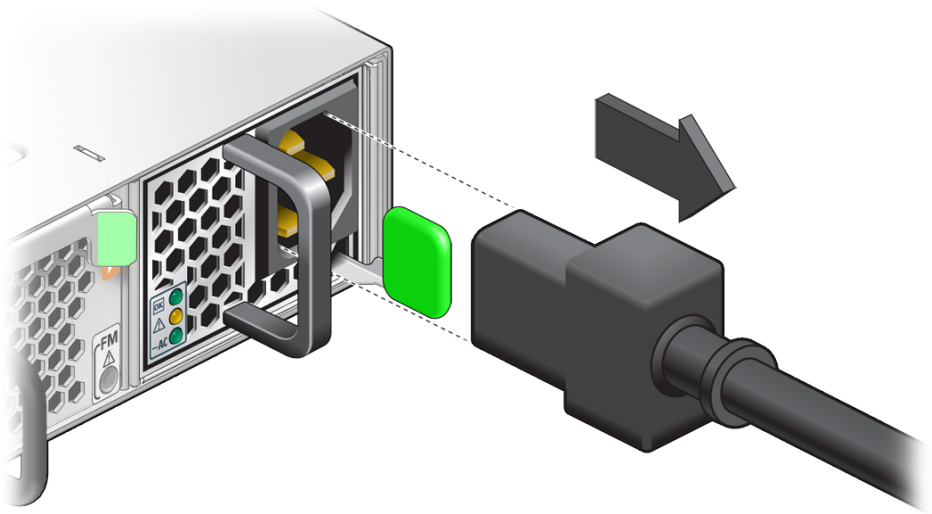
- "Detecting and Managing Faults"
- "Preparing for Service"
- "Servicing Fan Modules"

▼ 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".
2. **Determine which power supply to remove.**
   - **See "Check Switch Status (LEDs)" on page 12**
   - **See "Check Switch Status (Oracle ILOM)" on page 13**
3. **Remove the power cord from the respective power supply.**



The power supply is completely powered off.

4. **Remove the power supply.**

   See “Remove a Power Supply” on page 22.

Related Information

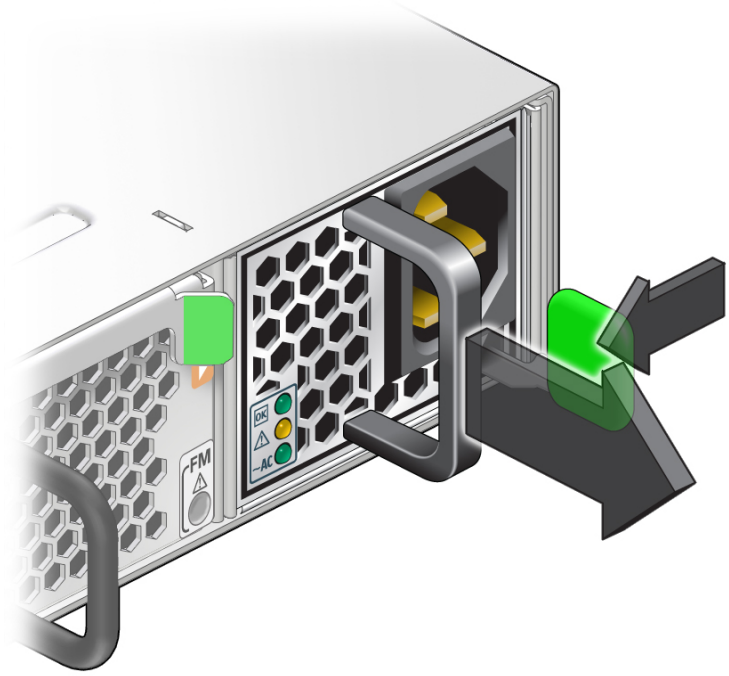
- “Remove a Power Supply” on page 22
- “Install a Power Supply” on page 24
- “Power On a Power Supply” on page 26

▼ Remove a Power Supply

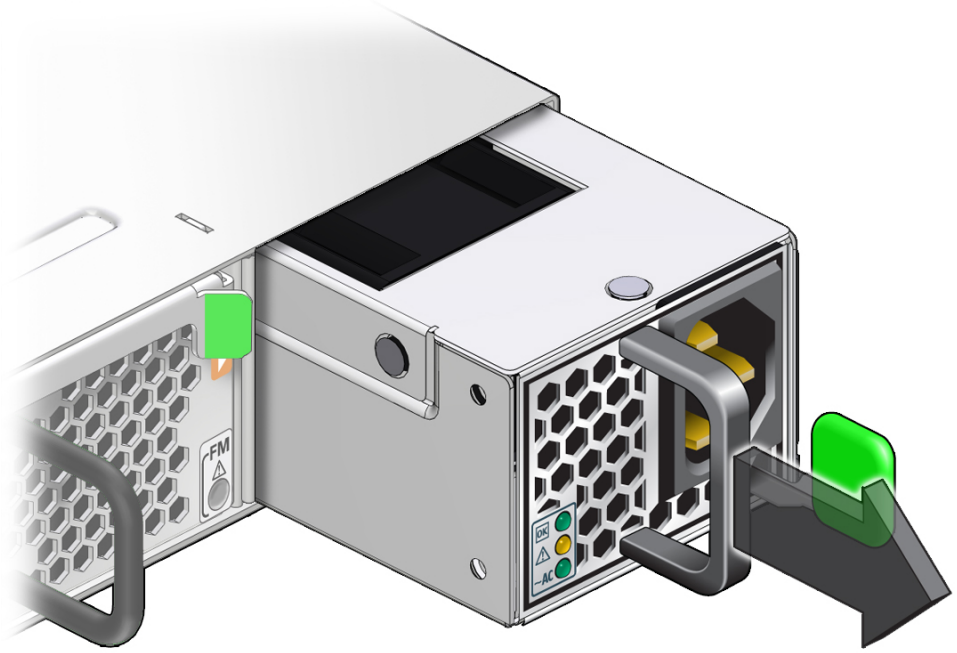
1. **Identify which power supply to remove and power off the power supply.**

   See “Power Off a Power Supply” on page 21.

2. **Press and hold the release tab to the left and pull on the handle of the power supply.**



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



4. **Set the power supply aside on the antistatic mat.**
   See “ESD Precautions” on page 17.

5. **Install a replacement power supply.**
   See “Install a Power Supply” on page 24.

Related Information

- “Power Off a Power Supply” on page 21
- “Install a Power Supply” on page 24
- “Power On a Power Supply” on page 26

▼ Install a Power Supply

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

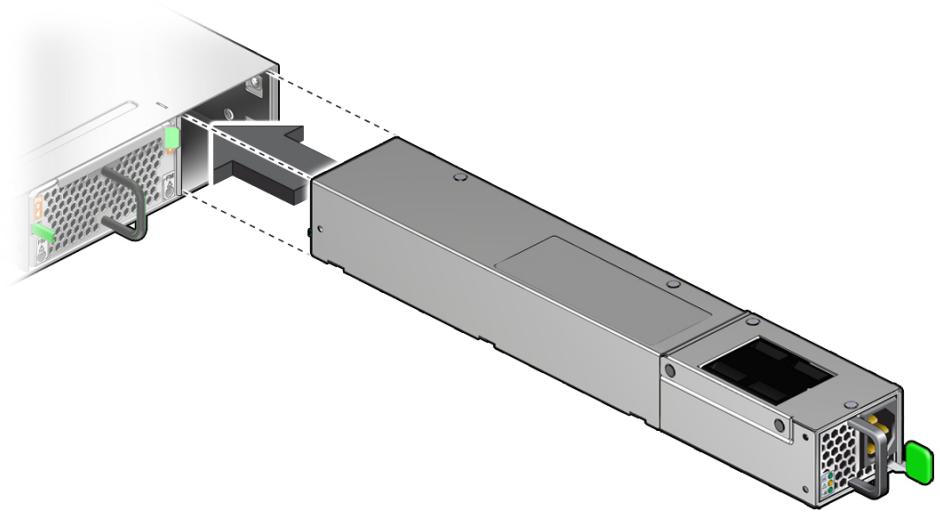
   - “Power Off a Power Supply” on page 21

- “Remove a Power Supply” on page 22

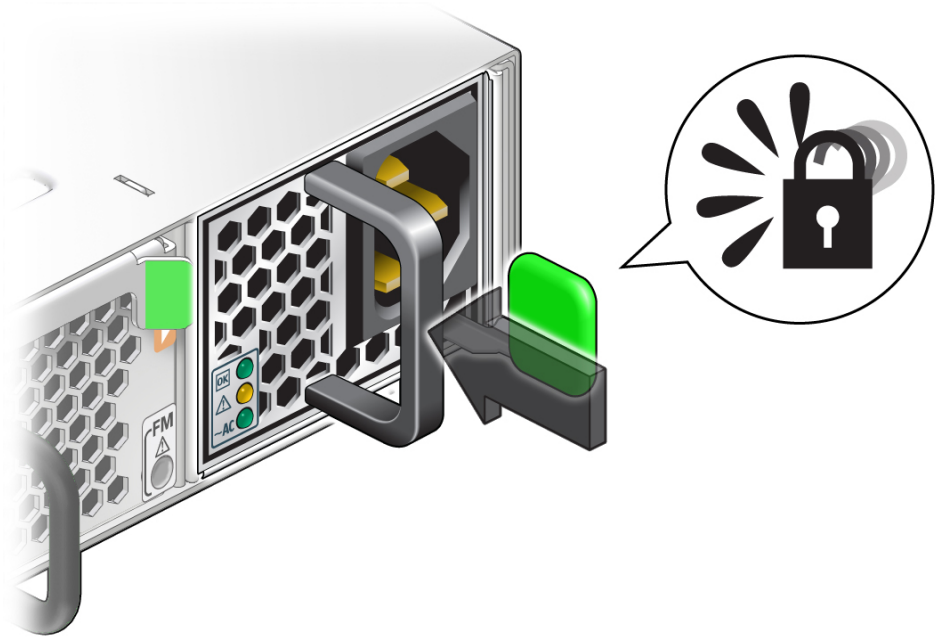
2. **Verify that the slot where you are installing the power supply is clean and free of debris.**

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.**

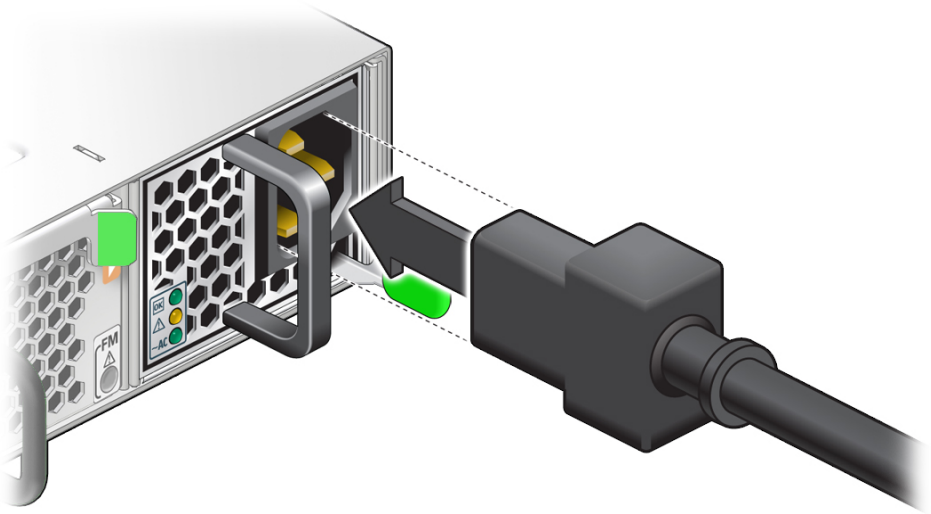
   See “Power On a Power Supply” on page 26.

Related Information

- “Power Off a Power Supply” on page 21
- “Remove a Power Supply” on page 22
- “Power On a Power Supply” on page 26

▼ 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 12.

Related Information

- “Power Off a Power Supply” on page 21
- “Remove a Power Supply” on page 22
- “Install a Power Supply” on page 24

Servicing Fan Modules

Perform these tasks in order.

- "Preparing for Service"
- "Remove a Fan Module" on page 29
- "Install a Fan Module" on page 31

Related Information

- "Detecting and Managing Faults"
- "Preparing for Service"
- "Servicing Power Supplies"

▼ Remove a Fan Module

Note - The fan module is hot-swappable and does not require powering down. The fan module has five fan units and requires a minimum of four to be functional to meet specification.

Caution - The switch can continue to run safely with one failed fan. If a fan fails, replace it as soon as possible. The system might overheat if more than one fan fails.

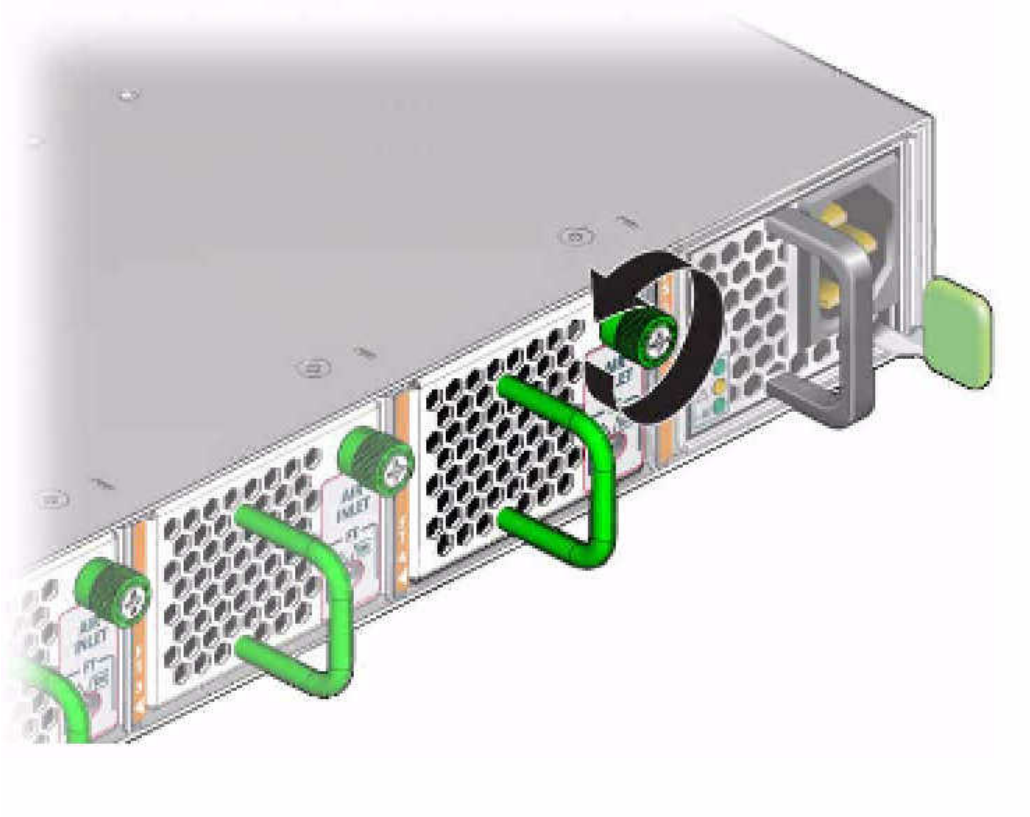
1. **Prepare for service.**

   See "Preparing for Service".

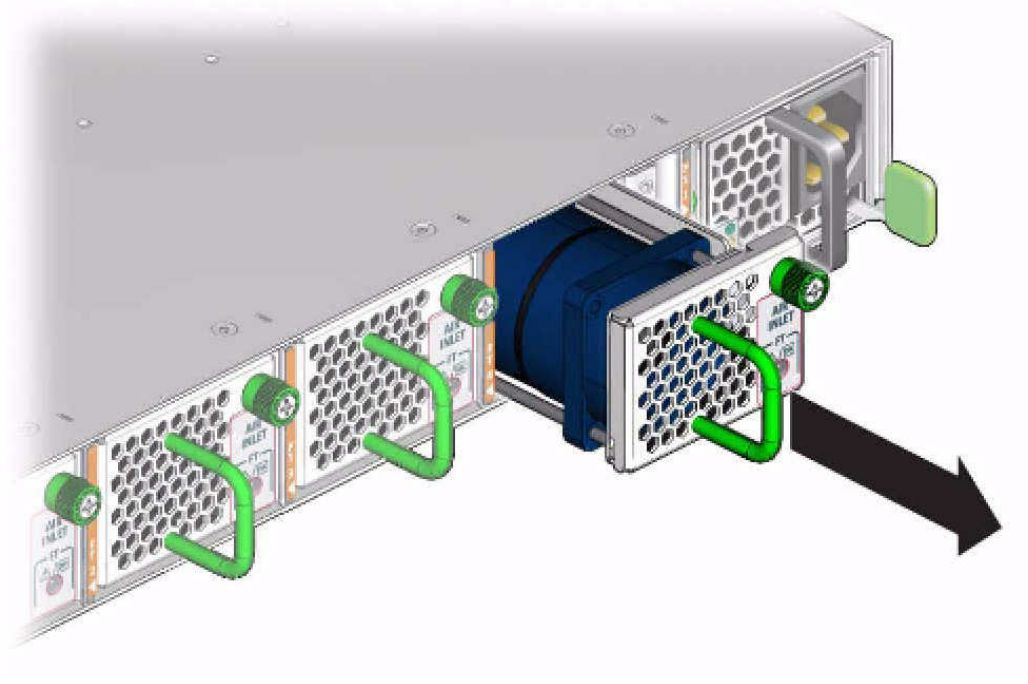
2. **Determine which fan is to be removed.**

   - See "Check Switch Status (LEDs)" on page 12.
   - See "Check Switch Status (Oracle ILOM)" on page 13.

3. **Loosen the green captive thumbscrew at the right side of the fan.**



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



5. **Set the fan module aside on an antistatic mat.**
   See “ESD Precautions” on page 17.

6. **Install a replacement fan module.**
   See “Install a Fan Module” on page 31.

Related Information

- “Remove a Power Supply” on page 22
- “Install a Fan Module” on page 31

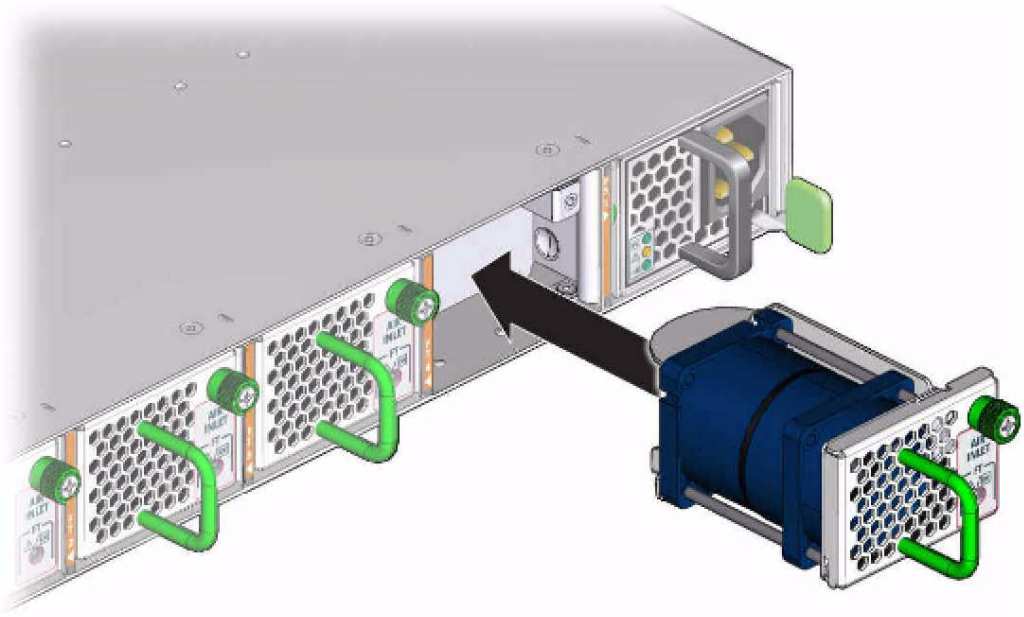
▼ Install a Fan Module

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 21.

1. **Remove a fan.**

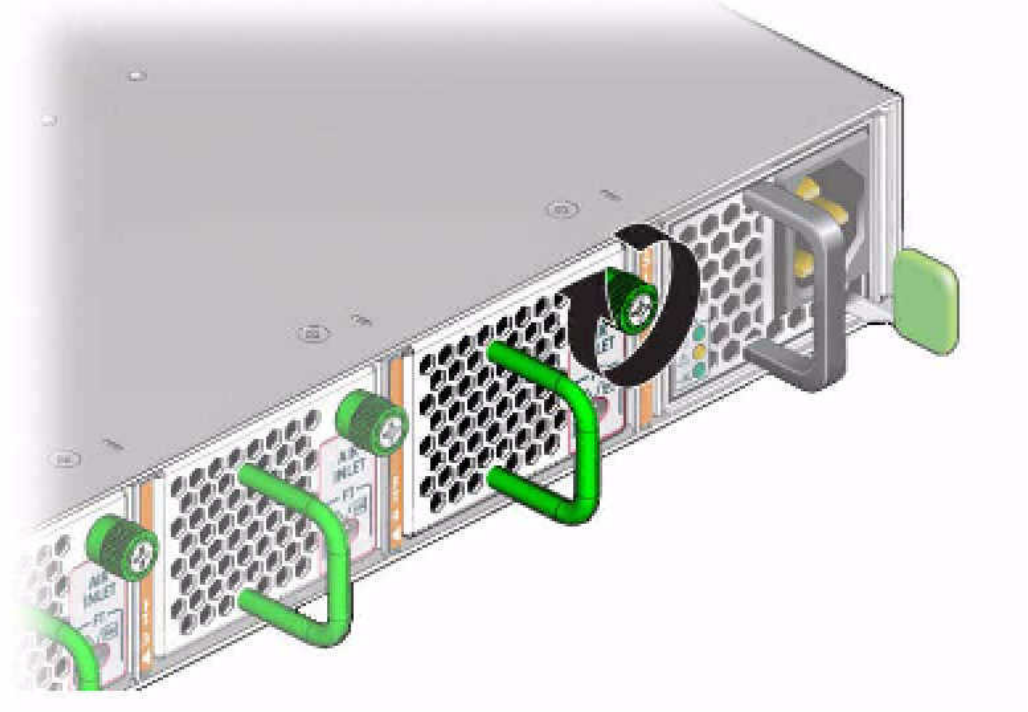
See “Remove a Fan Module” on page 29.

2. **Verify that the slot where the fan module installs is clean and free of debris.**
3. **Orient the fan module with the thumbscrew on the right.**
4. **Firmly slide the fan into the switch until the fan stops.**



The fan should immediately power on.

5. **Tighten the captive thumbscrew to secure the fan in the switch chassis.**



6. **Verify that air is moving through the fan module.**

7. **Verify that the fan Attention LEDs are no longer illuminated.**
   See “Rear Panel LEDs” on page 11.

Related Information

- “Remove a Fan Module” on page 29
- “Install a Power Supply” on page 24

Servicing Data Cables

These topics describe how to service data cables.

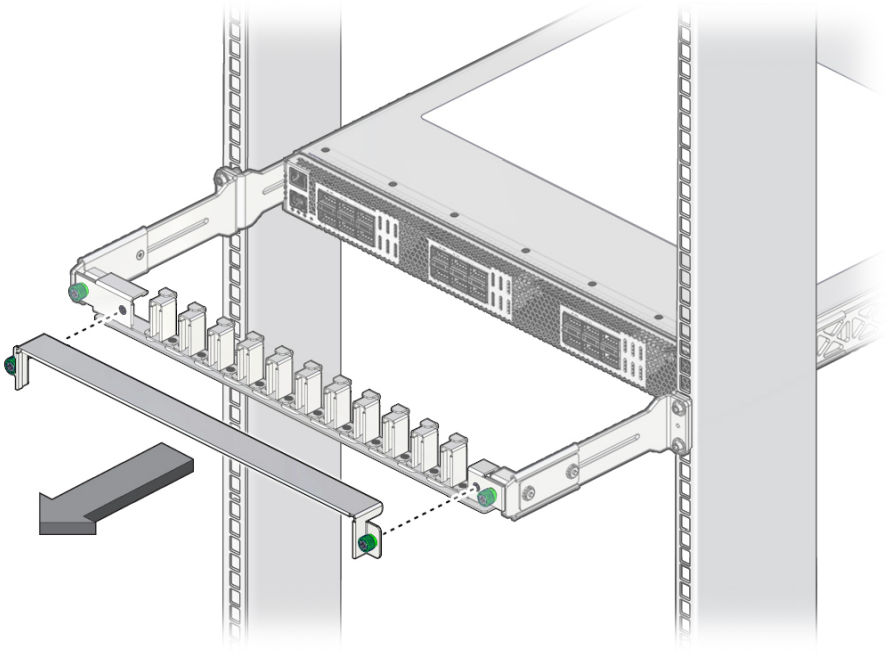
Related Information

- “Detecting and Managing Faults”
- “Preparing for Service”

▼ Remove a Data Cable

This procedure describes how to remove the cables from the switch chassis, so that a cable can be replaced. If you are removing all cables for switch replacement, label each cable with its socket number, then start removing the cables from the left side of the switch, working your way to the right.

1. **If the switch has a CMA, loosen two thumbscrews to remove the CMA cover.**



2. **Locate the cable to be removed.**
3. **Grasp the cable connector to support its weight and apply the removal force.**
4. **Disconnect the cable from the connector.**
   - **For a dual-part QSFP+ cable assembly, pull the optical cable connector retraction handle and gently pull out the optical cable.**
   - **For a single-part passive copper QSFP+ cable, pull on the retractor strap while simultaneously pulling on the cable connector.**
5. **Carefully move the cable out of the cable management hardware.**
6. **Gently lower the cable to the floor.**

Caution - Do not allow the cable to drop or strike the floor. Jerking, bending, pulling on, or dropping the cable can damage the cable.

7. **For a dual-part QSFP+ module assembly, remove the optical transceiver module from the slot.**

a. **Replace the protective end cap if you plan to store the module.**

b. **Slide out the optical transceiver module.**

c. **Replace the protective end cap if you plan to store the module.**

8. **Consider your next step:**

   - **If you are removing a single cable for replacement, install the new cable.**
     See "Install a Data Cable" on page 37.
   - **If you are disconnecting all cables for switch replacement, repeat from Step 2 for all cables.**

Related Information

- *Switch Installation*, understanding data cabling

▼ Install a Data Cable

1. **Remove a data cable.**
   See "Remove a Data Cable" on page 35.
2. **Bring the replacement cable to the switch.**
3. **Feed the cable through the CMA.**
4. **Attach a cable to the switch.**

   a. **Visually inspect the cable connector.**
      The shell should not be bent and should be parallel to the inner boards. If the connector is bent or damaged, use a different cable.

   b. **Ensure that the retraction strap/lever is in the attached position.**

   c. **Determine if you are installing a dual-part assembly or a single-part assembly.**
      Some optical transceiver modules are dual-part assemblies, where the module and the cable are two separate pieces, while other optical transceiver modules are single-part assemblies, where the module and the cable are a single combined unit.

      - **If you are installing a dual-part module, go to Step 5.**

- **If you are installing a single-part module, go to Step 6.**

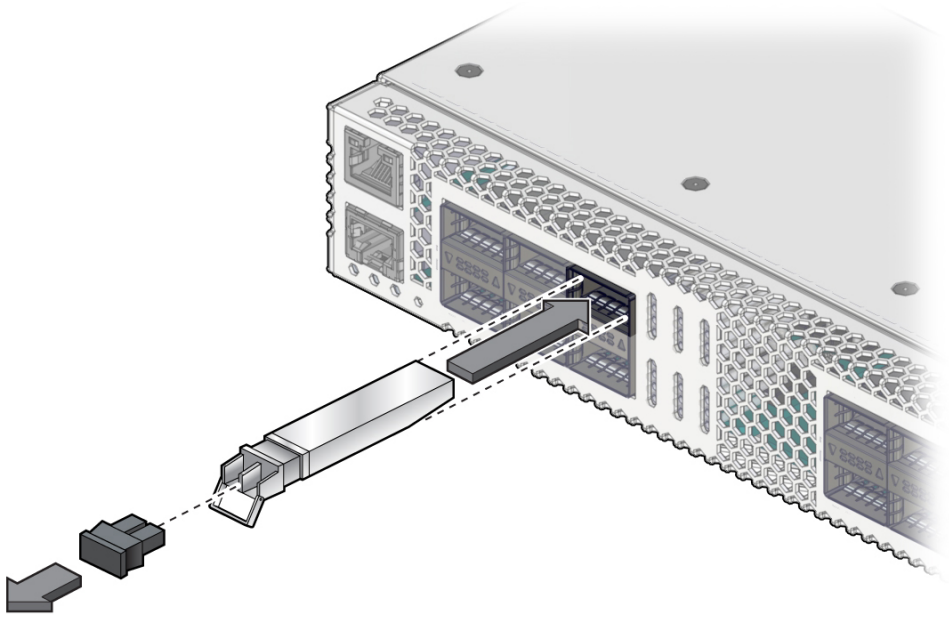
5. **Install the dual-part optical transceiver module.**

   a. **Remove the protective end cap from the module.**

   b. **Pull the locking handle into the full horizontal position until you feel the handle click into position.**

   c. **Verify that you have the transceiver module in the correct alignment before inserting it into the slot.**

      The following figure shows the correct alignment for the transceiver module.

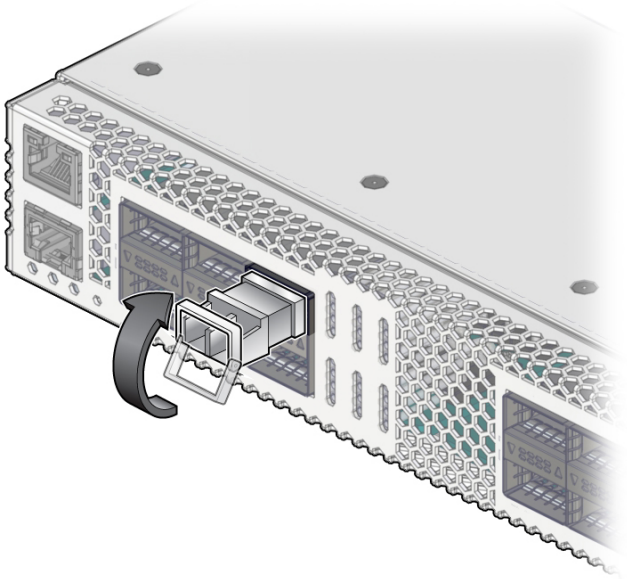


   d. **Holding the optical transceiver module by the edges, align the optical transceiver module with the slot in the switch and slide it into the opening.**

   e. **Applying even pressure at both corners of the optical transceiver module, push the module until it is firmly seated in the slot.**

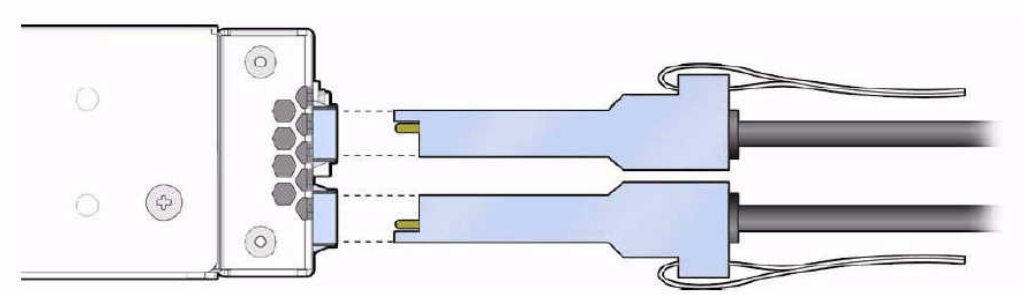
   f. **Push the handle closed to lock the optical transceiver module in place.**

Note - If you pull the locking handle down when the QSFP+ optical transceiver module is installed, you should remove the optical transceiver module entirely and reinstall it. The handle operates an internal lock. Pulling the handle down can disconnect the module, even though it might appear to be connected.



6. **If you are plugging in a single-part cable assembly (transceiver and cable combined), orient the cable connector horizontally.**

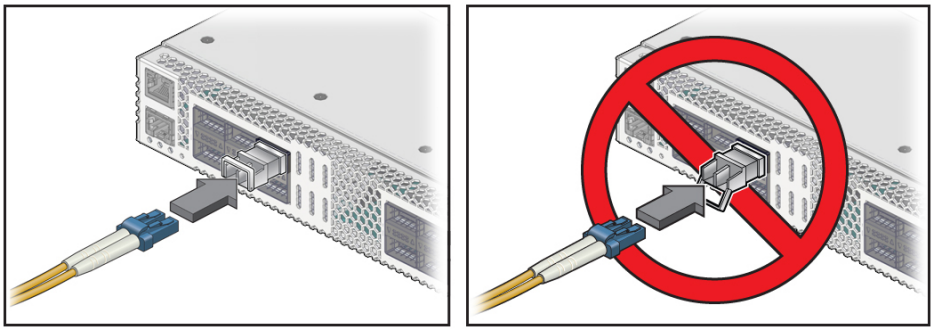
   Ensure that the L groove is up for the top row of receptacles, or that the L groove is down for the bottom row of receptacles.



7. **Plug the cable into the connector.**

Note - The optical transceiver handle must be closed before attaching the cable to the transceiver. The handle locks the transceiver in place in the switch port.

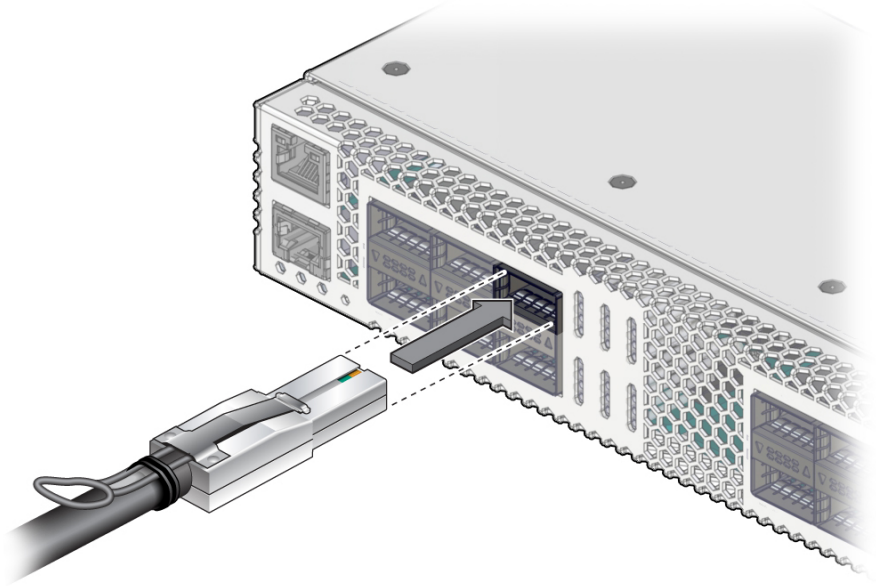
- **If you are plugging in a fiber dual-part cable assembly (transceiver and cable separate), verify that the handle is in the locked position and connect the cable to the optical transceiver. If the handle is in the unlocked position, you must push it up into the locked position before attaching the cable.**



- **If you are plugging in a single-part assembly, slowly slide the connector into the receptacle.**

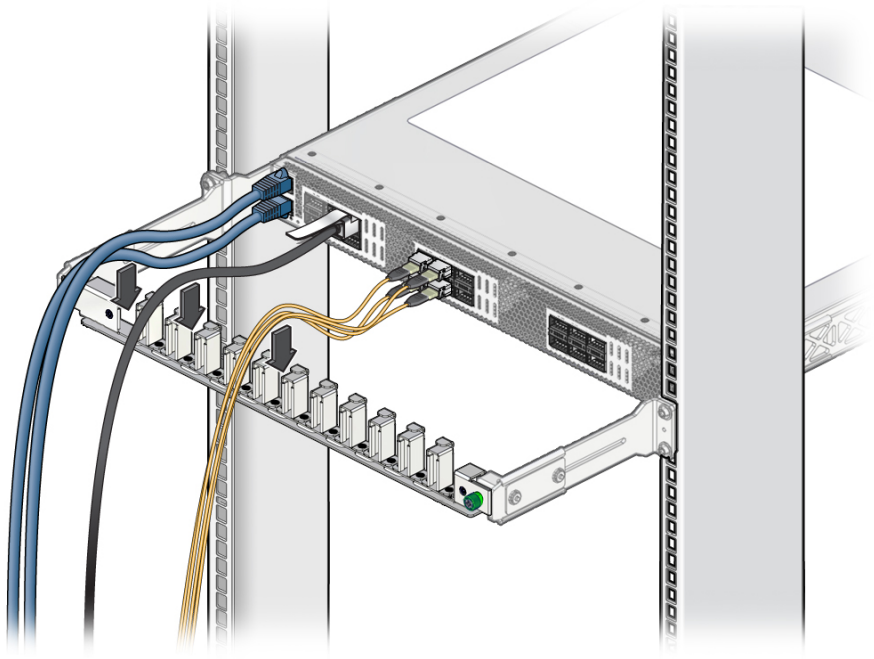
  a. **If the cable stops or binds after about 1/4 in. (5 mm) travel, back out and repeat.**

b. **If the connector stops or binds with about 1/8 in. (2 mm) still to go, back out and repeat.**



8. **Continue to push the connector in until you feel a detent.**

9. **If the switch has a CMA, place the cable into an open slot.**



10. **Route the data cables so that they do not interfere with other cables, with servicing the switch, or with other systems.**

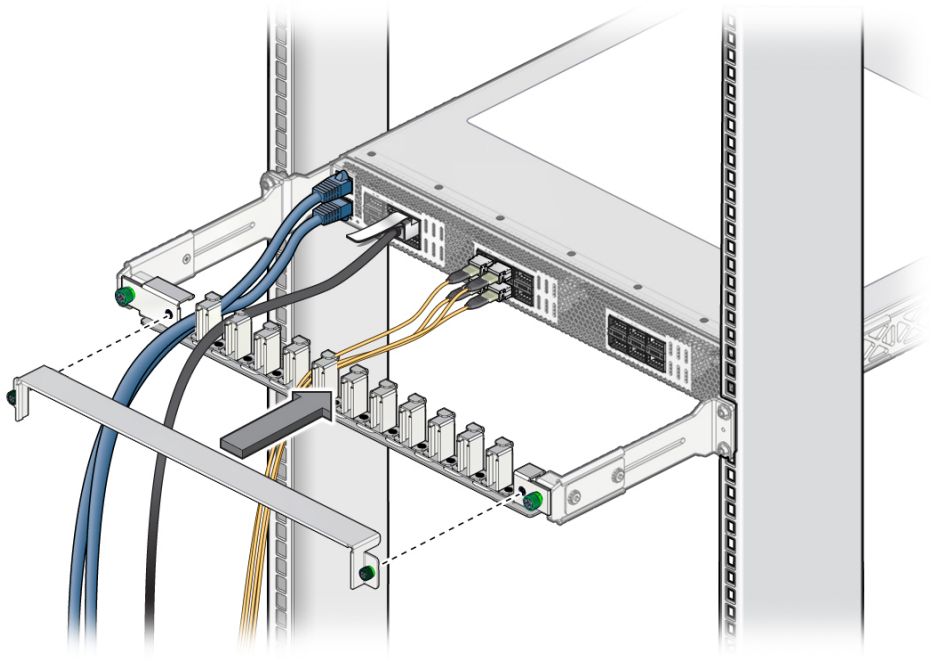
    Use hook and loop fastener straps to bundle and secure the cables.

Caution - Do not use cable zip ties to bundle or secure the cable, because the ties damage the wires inside the cable.

11. **Check that the Link LEDs for cabled links are lit green.**

    If the Link LED is off, the link is down. If the Link LED flashes, there are errors. See "Front Panel LEDs" on page 9.

12. **If the switch has a CMA, replace the CMA cover and tighten the screws.**



Related Information

- *Switch Installation*, understanding data cabling
- *Switch Installation*, data cable guidelines

Glossary

10

10GbE 10 Gigabit Ethernet.

A

ACL Access control list.

C

CMA Cable management assembly.

D

DHCP Dynamic Host Configuration Protocol.

G

GARP Generic Attribute Registration Protocol.

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.

Oracle Switch ES2-64 An Ethernet switch by Oracle. Oracle Switch ES2-64 provides six QSFP+ ports and 40 10GBASE-T RJ-45 ports. See also switch.

Oracle Switch ES2-72 An Ethernet switch by Oracle. Oracle Switch ES2-72 provides 18 QSFP+ ports. See also switch.

OSPF Open Shortest Path First Protocol.

Q

QSFP+ Quad small form-factor pluggable. QSFP+ is a hot-pluggable transceiver that provides 40 Gb/s or 4 x 10 Gb/s of data transfer.

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.

SR Short range. A short range optical transceiver module.

STP Spanning-Tree Protocol.

switch Shortened name for the Oracle Switch ES2-64 and Oracle Switch ES2-72. See also Oracle Switch ES2-64 and Oracle Switch ES2-72.

Index

R

S

T