Sun Network QDR InfiniBand Gateway Switch

Service Manual for Firmware Version 2.1

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Using This Documentation

This service manual provides detailed procedures that describe the service of the Sun Network QDR InfiniBand Gateway Switch from Oracle. This document is written for technicians, system administrators, and users who have advanced experience servicing InfiniBand fabric hardware.

- "Product Notes" on page vii
- "Related Documentation" on page vii
- "Feedback" on page viii
- "Access to Oracle Support" on page viii

Product Notes

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

http://docs.oracle.com/cd/E36256_01

Related Documentation

Documentation	Links
Sun Network QDR InfiniBand Gateway Switch Firmware Version 2.1	http://docs.oracle.com/cd/E36256_01

Documentation	Links
Oracle Solaris 11 OS	http://www.oracle.com/goto/Solaris11/docs
Oracle Integrated Lights Out Manager (ILOM) 3.0	http://docs.oracle.com/cd/E19860-01
All Oracle products	http://docs.oracle.com

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Provide feedback on this documentation at:

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Access to Oracle Support

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 http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs visit if you are hearing impaired.

Detecting and Managing Faults

These topics explain how to use various diagnostic tools to find and troubleshoot faults and alarms in the gateway.

Note – A *fault* identifies a failure of a component. An *alarm* identifies an abnormal condition of a component or system, as reported by a sensor.

Description	Links
Investigate whether there is a fault condition.	"Interpreting Status LEDs" on page 1 "Managing Faulty Components" on page 7 "Identify Faults in the Oracle ILOM Event Log" on page 12
Investigate whether there is an alarm condition.	"Determining the Alarm State of a Component or System" on page 13 "Evaluating Sensor Alarms" on page 17

Related Information

- "Understanding Service Procedures" on page 37
- "Servicing Power Supplies" on page 41
- "Servicing Fans" on page 55
- "Servicing Data Cables" on page 65
- "Servicing the Battery" on page 75

Interpreting Status LEDs

Use these topics to interpret LEDs to determine if a component has failed.

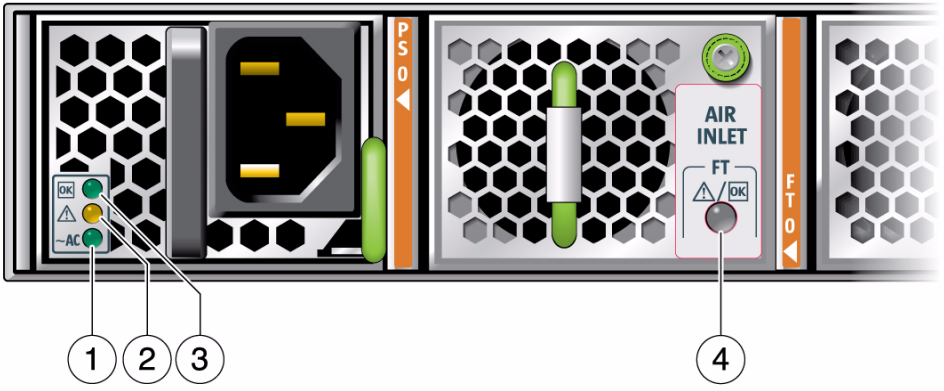
- "Front Panel LEDs" on page 2
- "Rear Panel LEDs" on page 3

- "Check Chassis Status LEDs" on page 4
- "Check NET MGT Port Status LEDs" on page 4
- "Check Link Status LEDs" on page 5
- "Check Power Supply Status LEDs" on page 6
- "Check Fan Status LEDs" on page 7

Related Information

- "Interpreting Status LEDs" on page 1
- "Managing Faulty Components" on page 7
- "Identify Faults in the Oracle ILOM Event Log" on page 12
- "Determining the Alarm State of a Component or System" on page 13
- "Evaluating Sensor Alarms" on page 17
- "Accessing CLI Prompts" on page 34

Front Panel LEDs

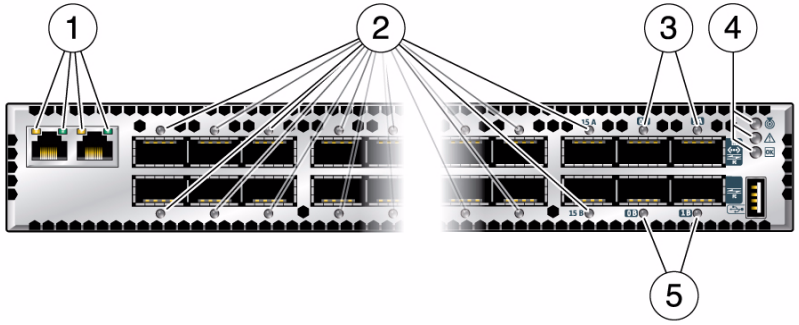


No.	LED	Link
1	Power supply AC LED	"Check Power Supply Status LEDs" on page 6
2	Power supply Attention LED	"Check Power Supply Status LEDs" on page 6
3	Power supply OK LED	"Check Power Supply Status LEDs" on page 6
4	Fan Attention LED	"Check Fan Status LEDs" on page 7

Related Information

- “Rear Panel LEDs” on page 3
- “Check Chassis Status LEDs” on page 4
- “Check NET MGT Port Status LEDs” on page 4
- “Check Link Status LEDs” on page 5
- “Check Power Supply Status LEDs” on page 6
- “Check Fan Status LEDs” on page 7

Rear Panel LEDs



No.	LED	Link
1	NET MGT status LEDs	“Check NET MGT Port Status LEDs” on page 4
2	InfiniBand link status LEDs	“Check Link Status LEDs” on page 5
3	Ethernet link status LEDs	“Check Link Status LEDs” on page 5
4	Chassis status LEDs	“Check Chassis Status LEDs” on page 4
5	Not used	

Related Information

- “Front Panel LEDs” on page 2
- “Check Chassis Status LEDs” on page 4
- “Check NET MGT Port Status LEDs” on page 4
- “Check Link Status LEDs” on page 5
- “Check Power Supply Status LEDs” on page 6
- “Check Fan Status LEDs” on page 7

▼ Check Chassis Status LEDs

The chassis status LEDs are located on the left side of the rear panel. See "Rear Panel LEDs" on page 3.

1. **Visually inspect the chassis status LEDs.**
2. **Compare what you see to this table.**

Glyph	Location	Name	Color	State and Meaning
	Top	Locator	White	On – No function. Off – Disabled. Flashing – The gateway is identifying itself.
	Middle	Attention	Amber	On – Normal fault detected. Off – No faults detected. Flashing – No function.
	Bottom	OK	Green	On – Gateway is functional without fault. Off – Gateway is off or initializing. Flashing – No function.

3. **If the Attention LED is lit, there is a fault present.**
   See "Managing Faulty Components" on page 7.

Related Information

- "Front Panel LEDs" on page 2
- "Rear Panel LEDs" on page 3
- "Check NET MGT Port Status LEDs" on page 4
- "Check Link Status LEDs" on page 5
- "Check Power Supply Status LEDs" on page 6
- "Check Fan Status LEDs" on page 7

▼ Check NET MGT Port Status LEDs

The NET MGT port status LEDs are located on the NET MGT connector of the rear panel. See "Rear Panel LEDs" on page 3.

1. **Visually inspect the NET status LEDs.**
2. **Compare what you see to this table.**

Name	Location	Color	State and Meaning
Link speed	Left	Amber or green	Amber on – 100BASE-T link. Green on – 1000BASE-T link. Off – No link or link down. Flashing – No function.
Activity	Right	Green	On – No function. Off – No activity. Flashing – Packet activity.

3. **If the Activity LED is off, there might be a problem with the communication to the management controller.**

   Refer to *Gateway Administration*, network management troubleshooting guidelines.

Related Information

- "Front Panel LEDs" on page 2
- "Rear Panel LEDs" on page 3
- "Check Chassis Status LEDs" on page 4
- "Check Link Status LEDs" on page 5
- "Check Power Supply Status LEDs" on page 6
- "Check Fan Status LEDs" on page 7

▼ Check Link Status LEDs

The link status LEDs are located at the data cable connectors of the rear panel. See "Rear Panel LEDs" on page 3.

1. **Visually inspect the link status LEDs.**
2. **Compare what you see for a particular link to this table.**

Name	Color	State and Meaning
Link	Green	On – Link established. Off – No link or link down. Flashing – Symbol errors.

3. **If the Link LED flashes, there might be a problem with the data cable.**

   See "Servicing Data Cables" on page 65.

Related Information

- “Front Panel LEDs” on page 2
- “Rear Panel LEDs” on page 3
- “Check Chassis Status LEDs” on page 4
- “Check NET MGT Port Status LEDs” on page 4
- “Check Power Supply Status LEDs” on page 6
- “Check Fan Status LEDs” on page 7

▼ Check Power Supply Status LEDs

The power supply status LEDs are located on the power supply at the front of the chassis. See “Front Panel LEDs” on page 2.

1. **Visually inspect the power supply’s status LEDs.**
2. **Compare what you see on the power supply to this table.**

Glyph	Location	Name	Color	State and Meaning
OK	Top	OK	Green	On – 12 VDC is supplied. Off – No DC voltage is present. Flashing – No function.
⚠	Middle	Attention	Amber	On – Fault detected, 12 VDC shut down. Off – No faults detected. Flashing – No function.
~ AC	Bottom	AC	Green	On – AC power present and good. Off – AC power not present. Flashing – No function.

Caution – If a power supply has shut down because of a thermal or overcurrent condition, signified by the amber Attention LED lighting, remove the respective power cord from the chassis. Allow the power supply to completely cool for at least 15 minutes. A shorter cooling time might cause damage to the power supply when the power cord is reattached. If the Attention LED lights amber upon reattaching the power cord, replace the power supply.

3. **If the Attention LED is lit, there is a fault with that power supply.**

   See “Servicing Power Supplies” on page 41.

Related Information

- “Front Panel LEDs” on page 2
- “Rear Panel LEDs” on page 3
- “Check Chassis Status LEDs” on page 4
- “Check NET MGT Port Status LEDs” on page 4
- “Check Link Status LEDs” on page 5
- “Check Fan Status LEDs” on page 7

▼ Check Fan Status LEDs

The fan status LEDs are located in the lower right corner of the fans at the front of the gateway chassis. See “Front Panel LEDs” on page 2.

1. **Visually inspect the fan status LEDs.**
2. **If the LED is lit, there is a fault with that fan.**

   See “Servicing Fans” on page 55.

Related Information

- “Front Panel LEDs” on page 2
- “Rear Panel LEDs” on page 3
- “Check Chassis Status LEDs” on page 4
- “Check NET MGT Port Status LEDs” on page 4
- “Check Link Status LEDs” on page 5
- “Check Power Supply Status LEDs” on page 6

Managing Faulty Components

If Oracle ILOM has detected a fault with a component, you can display and clear that fault with these topics:

- “Display Faulty Components (fault_state)” on page 8
- “Display Faulty Components (/SP/faultmgmt)” on page 9
- “Clear a Fault Manually” on page 10
- “Clearable Fault Targets” on page 11

Related Information

- "Interpreting Status LEDs" on page 1
- "Identify Faults in the Oracle ILOM Event Log" on page 12
- "Determining the Alarm State of a Component or System" on page 13
- "Evaluating Sensor Alarms" on page 17
- "Accessing CLI Prompts" on page 34

▼ Display Faulty Components (`fault_state`)

You can identify faulty components by their fault state.

1. **Access the Oracle ILOM CLI.**

   See "Access the Oracle ILOM CLI (NET MGT Port)" on page 35.

2. **Display the fault state of components.**

```
-> show / -a -l 4 -o table fault_state
Target               | Property                | Value
---------------------+-------------------------+-------
/SYS/MB              | fault_state             | OK
/SYS/PSU0            | fault_state             | OK
/SYS/PSU1            | fault_state             | OK
/SYS/FAN0            | fault_state             | OK
/SYS/FAN1            | fault_state             | OK
/SYS/FAN2            | fault_state             | Faulted
/SYS/FAN3            | fault_state             | OK
/SYS/FAN4            | fault_state             | OK
->
```

3. **Look in the `Value` column for `Faulted`.**

4. **Look in the same row under the `Target` column, to find the Oracle ILOM target of the faulty component.**

   For example, `/SYS/FAN2`.

5. **Identify the component that has faulted and might need to be replaced.**

   See "Clearable Fault Targets" on page 11.

Related Information

- "Display Faulty Components (/SP/faultmgmt)" on page 9
- "Clear a Fault Manually" on page 10
- "Clearable Fault Targets" on page 11

▼ Display Faulty Components (/SP/faultmgmt)

1. **Access the Oracle ILOM CLI.**

   See "Access the Oracle ILOM CLI (NET MGT Port)" on page 35.

2. **Display any faulty components.**

```
-> show -d targets /SP/faultmgmt
 /SP/faultmgmt
  Targets:
      x  (faulted_target)
->
```

   where:

   - *x* is the target sequence number (starting at 0).
   - *faulted_target* is the Oracle ILOM target of the faulty component.

Note – If there are several faulty components, then their respective targets are listed with increasing target sequence numbers.

Note – If no number is displayed, there are no faulty components.

   For example:

```
-> show -d targets /SP/faultmgmt
 /SP/faultmgmt
  Targets:
      0 (/SYS/PSU0)
->
```

3. **Display details of the fault.**

```
-> show -d properties /SP/faultmgmt/x/faults/y
```

   where:

   - *x* is the target sequence number (starting at 0).

- *y* is the fault sequence number (starting at 0) for the target *x*.

For example:

```
-> show /SP/faultmgmt/0/faults/0
 /SP/faultmgmt/0/faults/0
  Properties:
      class = fault.chassis.device.psu.fail
      sunw-msg-id = DCSIB-8000-23
      uuid = e8f7a292-62ab-43a2-9f32-30991cf8fbd5
      timestamp = 2012-04-01/10:34:18
      fru_part_number = 3002234
      fru_serial_number = 006541
      product_serial_number = AK00022680
      chassis_serial_number = AK00022680
->
```

The `class` property provides a general reason for the fault.

4. **Use *faulted_target* to identify the component that has faulted and might need to be replaced.**

   See "Clearable Fault Targets" on page 11.

Related Information

- "Display Faulty Components (fault_state)" on page 8
- "Clear a Fault Manually" on page 10
- "Clearable Fault Targets" on page 11

▼ Clear a Fault Manually

If Oracle ILOM detects a fault and consequential component replacement, Oracle ILOM automatically clears the fault. However, you can manually clear the fault after replacing the component, if necessary.

1. **Access the Oracle ILOM CLI.**

   See "Access the Oracle ILOM CLI (NET MGT Port)" on page 35.

2. **Clear the fault.**

```
-> set target clear_fault_action=true
```

where *target* is from "Clearable Fault Targets" on page 11.

For example, to clear a fault with power supply 0, type.

```
-> set /SYS/PSU0 clear_fault_action=true
Are you sure you want to clear /SYS/PSU0 (y/n)? y
Set 'clear_fault_action' to 'true'
->
```

Related Information

- "Display Faulty Components (fault_state)" on page 8
- "Display Faulty Components (/SP/faultmgmt)" on page 9
- "Clearable Fault Targets" on page 11

Clearable Fault Targets

This table lists the components, their Oracle ILOM targets that are clearable, and links to servicing procedures.

Component	Target	Links
Battery	/SYS/MB	"Servicing the Battery" on page 75
SSD drive	/SYS/MB	Replace the gateway. See "Remove the Gateway From the Rack" on page 77.
Fan *x*, where *x* is 0 to 4	/SYS/FAN*x*	"Servicing Fans" on page 55
Power supply *x*, where *x* is either 0 or 1	/SYS/PSU*x*	"Servicing Power Supplies" on page 41

Use this table for these procedures:

- "Display Faulty Components (/SP/faultmgmt)" on page 9
- "Clear a Fault Manually" on page 10
- "Identify Faults in the Oracle ILOM Event Log" on page 12

Related Information

- "Display Faulty Components (fault_state)" on page 8
- "Display Faulty Components (/SP/faultmgmt)" on page 9

■ "Clear a Fault Manually" on page 10

▼ Identify Faults in the Oracle ILOM Event Log

1. **Access Oracle ILOM.**

   See "Access the Oracle ILOM CLI (NET MGT Port)" on page 35.

2. **Display the Oracle ILOM event log.**

```
-> show /SP/logs/event/list Class==class Type==type
```

   where you choose *class* and *type* from the table in *Gateway Administration*, log entry filters.

   For example, to display log entries pertaining to all faults, type.

```
-> show /SP/logs/event/list Class==Fault
```

Note – If you want to display log entries pertaining to only component failure, use the `show /SP/logs/event/list Class==Fault Type==Fault` command.

3. **Identify the faulty components in the output.**

   The Oracle ILOM targets of the faulty components follow the word component. For example:

```
-> show /SP/logs/event/list Class==Fault
Event
ID     Date/Time                  Class     Type      Severity
-----  -------------------------  --------  --------  --------
18820  Tue Sep 25 13:44:56 2012  Fault     Fault     critical
     Fault detected at time = Tue Sep 25 13:44:56 2012. The suspect component:
     /SYS/PSU0 has fault.chassis.device.psu.fail with probability=100. Refer
     to http://support.oracle.com/msg/DCSIB-8000-23 for details.
18569  Tue Sep 18 16:43:13 2012  Fault     Repair    minor
     Component /SYS/PSU0 repaired
18567  Tue Sep 18 15:51:48 2012  Fault     Fault     critical
     Fault detected at time = Tue Sep 18 15:51:48 2012. The suspect component:
     /SYS/PSU0 has fault.chassis.device.psu.fail with probability=100. Refer
```

```
      to http://support.oracle.com/msg/DCSIB-8000-23 for details.
.
.
.
->
```

Note – The most recent events are listed at the top of the log.

In this example, Event ID `18567` on September 18, at 15:51, indicated that a critical fault occurred in the component with Oracle ILOM target `/SYS/PSU0`. This is power supply 0 as identified in "Clearable Fault Targets" on page 11. Following the Oracle ILOM target is the reason for the fault. A URL is provided for more information about the fault.

Moving up the output, Event ID `18569` on September 18, at 16:43, indicated that a repair action was taken on the component with Oracle ILOM target `/SYS/PSU0`. The power supply was `repaired`. The term `repaired` can mean either repaired or replaced. In either case, the power supply in slot 0 was now functional.

Continuing up the output, Event ID `18820` on September 25 indicated that a critical fault occurred again in the component with Oracle ILOM target `/SYS/PSU0`.

4. **Depending on the severity of the fault, replace the component.**

   See "Clearable Fault Targets" on page 11 for servicing links.

Related Information

- "Interpreting Status LEDs" on page 1
- "Managing Faulty Components" on page 7
- "Determining the Alarm State of a Component or System" on page 13
- "Evaluating Sensor Alarms" on page 17
- "Accessing CLI Prompts" on page 34

Determining the Alarm State of a Component or System

When a component or system of components experiences a condition which triggers an alarm, the condition might affect the operation of the gateway. These topics enable you to display alarm states.

- "Display the General Alarm State of Systems and Components" on page 14

- "System Alarm Targets" on page 15
- "Component Alarm Targets" on page 15
- "Oracle ILOM Target Alarm States" on page 16

Related Information

- "Interpreting Status LEDs" on page 1
- "Managing Faulty Components" on page 7
- "Identify Faults in the Oracle ILOM Event Log" on page 12
- "Evaluating Sensor Alarms" on page 17
- "Accessing CLI Prompts" on page 34

▼ Display the General Alarm State of Systems and Components

1. **Access the Oracle ILOM CLI.**

   See "Access the Oracle ILOM CLI (NET MGT Port)" on page 35.

2. **Type.**

```
-> show target alarm_status
```

   where *target* is from the tables in "System Alarm Targets" on page 15 and "Component Alarm Targets" on page 15.

   For example, to display the general alarm state of fan 1, type.

```
-> show /SYS/FAN1 alarm_status
 /SYS/FAN1
  Properties:
      alarm_status = cleared
->
```

3. **Compare the value displayed to the alarm states.**

   See "Oracle ILOM Target Alarm States" on page 16.

4. **If the alarm state is `major` or `critical`, you might need to replace the component.**

   See "Clearable Fault Targets" on page 11 for servicing links.

Related Information

- "System Alarm Targets" on page 15
- "Component Alarm Targets" on page 15
- "Oracle ILOM Target Alarm States" on page 16

System Alarm Targets

This table lists systems that have the ability to report an alarm and their Oracle ILOM targets.Use these targets for the procedure, "Display the General Alarm State of Systems and Components" on page 14.

System	Target
Cooling system	`/SYS/COOLING_ATTN`
Signal cable monitoring	`/SYS/CABLE_ATTN`
Power system	`/SYS/POWER_ATTN`
Power redundancy	`/SYS/POWER_REDUN`
Cooling redundancy	`/SYS/COOLING_REDUN`
Signal cable connections	`/SYS/CABLE_CONN_STAT`
Temperature monitoring	`/SYS/TEMP_ATTN`
InfiniBand devices within the gateway	`/SYS/IBDEV_ATTN`
Entire gateway	`/SYS/CHASSIS_STATUS`

Related Information

- "Display the General Alarm State of Systems and Components" on page 14
- "Component Alarm Targets" on page 15
- "Oracle ILOM Target Alarm States" on page 16

Component Alarm Targets

This table lists components or sensors that have the ability to report an alarm, and their Oracle ILOM targets. Use these targets for the procedure "Display the General Alarm State of Systems and Components" on page 14.

Component	Target
ECB alarm	/SYS/MB/V_ECB
3.3v main voltage alarm	/SYS/MB/V_3.3VMainOK
5v alarm	/SYS/MB/V_5VOK
1.0v alarm	/SYS/MB/V_1.0VOK
I4 switch chip voltage alarm	/SYS/MB/V_I41.2VOK
2.5 v alarm	/SYS/MB/V_2.5VOK
Digital power alarm	/SYS/MB/V_V1P2DIG
Analog power alarm	/SYS/MB/V_V1P2ANG
BridgeX chip voltage alarm	/SYS/MB/V_BX1.2VOK
1.8V alarm	/SYS/MB/V_1.8VOK
I4 switch chip boot alarm	/SYS/MB/BOOT_I4A
SSD drive alarm	/SYS/MB/DISK_FAULT
Battery alarm	/SYS/MB/BAT_FAULT
Individual power supply alarm, where *x* is either 0 or 1	/SYS/PSU*x*/FAULT
Individual power supply alert, where *x* is either 0 or 1	/SYS/PSU*x*/ALERT
Individual power supply mains voltage presence, where *x* is either 0 or 1	/SYS/PSU*x*/AC_PRESENT
Individual fan alarm, where *x* is 0 to 4	/SYS/FAN*x*/FAULT

Related Information

- "Display the General Alarm State of Systems and Components" on page 14
- "System Alarm Targets" on page 15
- "Oracle ILOM Target Alarm States" on page 16

Oracle ILOM Target Alarm States

Use this table to clarify alarm states as seen in the `alarm_status =` *alarm_state* parameter of Oracle ILOM targets and in the output of the procedure "Display the General Alarm State of Systems and Components" on page 14.

Alarm State	Description
`cleared`	The component or system has recovered from an alarmed condition and is fully operational.
`warning`	An alarm has identified a condition that is abnormal, but does not affect any individual component.
`minor`	An alarm has identified a condition that might affect an individual component.
`major`	An alarm has identified a condition that affects only the individual component. The condition might affect a system, but not enough to compromise the operation of the gateway.
`critical`	An alarm has identified a condition that affects both individual components and systems. The operation of the gateway is compromised or at risk.
`indeterminate`	Oracle ILOM is unable to provide an alarm state for this component.
`(none)`	The component or its alarm is not available to Oracle ILOM. (The component might have been removed.)

Related Information

- "Display the General Alarm State of Systems and Components" on page 14
- "System Alarm Targets" on page 15
- "Component Alarm Targets" on page 15

Evaluating Sensor Alarms

These topics enable you to evaluate sensor information, to determine if an unfavorable condition has occurred or will happen.

Step	Description	Links
1.	Identify a suspect sensor and display its value.	"Display Oracle ILOM Sensor Status" on page 18
2.	Determine the sensor target and alarm type.	"Determine Oracle ILOM Sensor Target Types" on page 20
3.	Evaluate the sensor type alarm.	"Evaluating a Voltage Sensor Alarm" on page 20 "Evaluating a Temperature Sensor Alarm" on page 23 "Evaluating a Speed Sensor Alarm" on page 26 "Evaluating a State Sensor Alarm" on page 29 "Evaluating a Presence Sensor Alarm" on page 30 "Evaluating an Indicator State" on page 32

Related Information

- "Interpreting Status LEDs" on page 1
- "Managing Faulty Components" on page 7
- "Identify Faults in the Oracle ILOM Event Log" on page 12
- "Determining the Alarm State of a Component or System" on page 13
- "Accessing CLI Prompts" on page 34

▼ Display Oracle ILOM Sensor Status

1. **Access the Oracle ILOM CLI.**

   See "Access the Oracle ILOM CLI (NET MGT Port)" on page 35.

2. **Type.**

```
-> show / -a -l 4 -o table alarm_status
Target               | Property               | Value
---------------------+------------------------+----------
/SYS/MB/V_ECB        | alarm_status           | cleared
/SYS/MB/V_3.3VMain   | alarm_status           | cleared
/SYS/MB/             | alarm_status           | cleared
 V_3.3VMainOK        |                        |
/SYS/MB/V_3.3VStby   | alarm_status           | minor
.
.
.
/SYS/FAN3/PRSNT      | alarm_status           | cleared
```

```
/SYS/FAN3/TACH       | alarm_status          | cleared
/SYS/FAN3/FAULT      | alarm_status          | cleared
->
```

3. **Look in the `Value` column for `minor`, `major`, or `critical`.**

   For example, `minor`. For more information about alarm states, see "Oracle ILOM Target Alarm States" on page 16.

4. **Look in the same row under the `Target` column, to find the Oracle ILOM sensor target.**

   For example, `/SYS/MB/V_3.3VStby`.

5. **Display the value of the sensor target.**

```
-> show target value
```

   where *target* is the Oracle ILOM target for the sensor from Step 4. For example:

```
-> show /SYS/MB/V_3.3VStby value
 /SYS/MB/V_3.3VStby
  Properties:
      value = 3.490 Volts
->
```

6. **Record the target and value.**

   For example, `/SYS/MB/V_3.3VStby` and 3.490 volts.

7. **Determine the sensor type.**

   See "Determine Oracle ILOM Sensor Target Types" on page 20.

Related Information

- "Determine Oracle ILOM Sensor Target Types" on page 20
- "Evaluating a Voltage Sensor Alarm" on page 20
- "Evaluating a Temperature Sensor Alarm" on page 23
- "Evaluating a Speed Sensor Alarm" on page 26
- "Evaluating a State Sensor Alarm" on page 29
- "Evaluating a Presence Sensor Alarm" on page 30
- "Evaluating an Indicator State" on page 32

▼ Determine Oracle ILOM Sensor Target Types

- **Use this table to determine the sensor type from its target and go to the corresponding link.**

  The word *string* represents any string of characters, numbers, and symbols.

Sensor Target	Sensor Type	Links
/SYS/FAN*x*/*string*	• Fan state • Fan speed • Fan presence	• "Evaluating a State Sensor Alarm" on page 29 • "Evaluating a Speed Sensor Alarm" on page 26 • "Evaluating a Presence Sensor Alarm" on page 30
/SYS/I_*string*	Indicator	"Evaluating an Indicator State" on page 32
/SYS/MB/T_*string*	Main board temperature	"Evaluating a Temperature Sensor Alarm" on page 23
/SYS/MB/V_*string*OK	Main board voltage state	"Evaluating a State Sensor Alarm" on page 29
/SYS/MB/V_*string*	Main board voltage	"Evaluating a Voltage Sensor Alarm" on page 20
/SYS/MB/*string*	Main board system state	"Evaluating a State Sensor Alarm" on page 29
/SYS/PSU*x*/*string*	• Power supply state • Power supply presence	• "Evaluating a State Sensor Alarm" on page 29 • "Evaluating a Presence Sensor Alarm" on page 30
/SYS/*string*	System state	"Evaluating a State Sensor Alarm" on page 29

Related Information

- "Display Oracle ILOM Sensor Status" on page 18
- "Evaluating a Voltage Sensor Alarm" on page 20
- "Evaluating a Temperature Sensor Alarm" on page 23
- "Evaluating a Speed Sensor Alarm" on page 26
- "Evaluating a State Sensor Alarm" on page 29
- "Evaluating a Presence Sensor Alarm" on page 30
- "Evaluating an Indicator State" on page 32

Evaluating a Voltage Sensor Alarm

These topics help you resolve voltage sensor alarms.

- "Evaluate a Voltage Sensor" on page 21
- "Voltage Sensor Values" on page 22

- "Voltage Out of Range" on page 22

Related Information

- "Display Oracle ILOM Sensor Status" on page 18
- "Determine Oracle ILOM Sensor Target Types" on page 20
- "Evaluating a Temperature Sensor Alarm" on page 23
- "Evaluating a Speed Sensor Alarm" on page 26
- "Evaluating a State Sensor Alarm" on page 29
- "Evaluating a Presence Sensor Alarm" on page 30
- "Evaluating an Indicator State" on page 32

▼ Evaluate a Voltage Sensor

1. **Display the sensor status and determine the target type.**

   See:

   - "Display Oracle ILOM Sensor Status" on page 18
   - "Determine Oracle ILOM Sensor Target Types" on page 20

2. **Compare the displayed value with a known good range.**

   See "Voltage Sensor Values" on page 22.

3. **Learn why a voltage sensor might alarm.**

   See "Voltage Out of Range" on page 22.

4. **Determine your next step.**

Voltage Sensor Target	Action	Links
• `/SYS/MB/V_3.3VMain` • `/SYS/MB/V_3.3VStby` • `/SYS/MB/V_12V`	Replace the power supply.	"Servicing Power Supplies" on page 41
`/SYS/MB/V_BAT`	Replace the battery.	"Servicing the Battery" on page 75
All other voltage sensor targets.	Replace the gateway.	"Remove the Gateway From the Rack" on page 77

Related Information

- "Voltage Sensor Values" on page 22
- "Voltage Out of Range" on page 22

Voltage Sensor Values

This table lists typical values and acceptable ranges for the voltage sensors. You use this table in conjunction with the target and value you recorded in "Display Oracle ILOM Sensor Status" on page 18. If your voltage sensor's value is near a boundary or outside of the acceptable range, refer to "Voltage Out of Range" on page 22.

Voltage Sensor Target	Typical Value	Acceptable Range
/SYS/MB/V_3.3VMain	3.266V	3.112 to 3.403V
/SYS/MB/V_3.3VStby	3.420V	3.112 to 3.403V
/SYS/MB/V_12V	11.966V	11.346 to 12.338V
/SYS/MB/V_5V	4.992V	4.498 to 5.486V
/SYS/MB/V_BAT	3.136V	2.746V to N/A
/SYS/MB/V_1.0V	1.006V	0.877 to 1.158V
/SYS/MB/V_I41.2V	1.217V	1.041 to 1.392V
/SYS/MB/V_2.5V	2.504V	2.387 to 2.586V
/SYS/MB/V_V1P2DIG	1.170V	1.135 to 1.392V
/SYS/MB/V_V1P2ANG	1.170V	1.135 to 1.392V
/SYS/MB/V_BX1.2V	1.217V	1.041 to 1.392V
/SYS/MB/V_1.8V	1.785V	1.697 to 1.891V
/SYS/MB/V_1.2VStby	1.193V	1.048 to 1.387V

Related Information

- "Evaluate a Voltage Sensor" on page 21
- "Voltage Out of Range" on page 22

Voltage Out of Range

Even though all voltages within the chassis are regulated, situations can arise where a voltage drifts outside of the acceptable range and goes too high or too low.

When a voltage is too high, it can be caused by:

- The load for which the voltage is provided, is missing – A component has failed or has been removed from the electrical connection.
- The regulator for that voltage has failed.

For example, if the voltage at sensor target `/SYS/MB/V_I41.2V` is too high, then either the regulator is failing, or the I4 switch chip is no longer requiring the supplied voltage. This latter situation can occur transitionally if the I4 switch chip is reset or if all of its ports are disabled. If the I4 switch chip has a catastrophic failure, such as from overheating, the voltage at the sensor target might go too high.

When a voltage is too low, it can be caused by:

- The load for which the voltage is provided, has increased beyond that supported by the regulator - A component has either been overresourced or internally electrically shorted, internal maximum temperature has been exceeded, or the electrical connection has been shorted.
- The regulator for that voltage has failed.

For example, if the voltage at sensor target `/SYS/MB/V_I41.2V` is too low, then either the regulator is failing, or the I4 switch chip is under very heavy throughput loading, quite possibly in conjunction with overheating.

Because both types of voltage extremes for the `/SYS/MB/V_I41.2V` sensor target can be indicative of a thermal problem with the I4 switch chip, it follows that a check of the temperature at sensor target `/SYS/MB/T_I4A`, is in order.

Note – The 3.3VMain, 3.3VStby, and the 12V are provided by the power supplies redundantly. If one of these voltages is either too high or too low, one or both of the power supplies could be at fault, as the voltages are provided by the power supplies in parallel. Because of this configuration, you must recheck the 3.3VMain, 3.3VStby, and 12V with only one power supply operational at a time. Re-perform "Display Oracle ILOM Sensor Status" on page 18 with only the power cord for PSU0 disconnected, and then again with only the power cord for PSU1 disconnected.

Related Information

- "Evaluate a Voltage Sensor" on page 21
- "Voltage Sensor Values" on page 22

Evaluating a Temperature Sensor Alarm

These topics help you resolve temperature sensor alarms.

- "Evaluate a Temperature Sensor" on page 24
- "Temperature Sensor Values" on page 24
- "Temperature Out of Range" on page 25

Related Information

- "Display Oracle ILOM Sensor Status" on page 18
- "Determine Oracle ILOM Sensor Target Types" on page 20
- "Evaluating a Voltage Sensor Alarm" on page 20
- "Evaluating a Speed Sensor Alarm" on page 26
- "Evaluating a State Sensor Alarm" on page 29
- "Evaluating a Presence Sensor Alarm" on page 30
- "Evaluating an Indicator State" on page 32

▼ Evaluate a Temperature Sensor

1. **Display the sensor status and determine the target type.**

   See:

   - "Display Oracle ILOM Sensor Status" on page 18
   - "Determine Oracle ILOM Sensor Target Types" on page 20

2. **Compare the displayed value with a known good range.**

   See "Temperature Sensor Values" on page 24.

3. **Learn why a temperature sensor might alarm and take action.**

   See "Temperature Out of Range" on page 25.

Related Information

- "Temperature Sensor Values" on page 24
- "Temperature Out of Range" on page 25

Temperature Sensor Values

This table lists typical values and acceptable ranges for the temperature sensors. You use this table in conjunction with the target and value you recorded in "Display Oracle ILOM Sensor Status" on page 18. If your temperature sensor's value is near a boundary or outside of the acceptable range, refer to "Temperature Out of Range" on page 25.

Temperature Sensor Target	Typical Value	Acceptable Range
/SYS/MB/T_BACK	30°C	25 to 70°C
/SYS/MB/T_FRONT	29°C	25 to 70°C

Temperature Sensor Target	Typical Value	Acceptable Range
/SYS/MB/T_SP	45°C	25 to 60°C
/SYS/MB/T_I4A	39°C	25 to 70°C
/SYS/MB/T_B0	48°C	25 to 70°C
/SYS/MB/T_B1	49°C	25 to 70°C

Related Information

- "Evaluate a Temperature Sensor" on page 24
- "Temperature Out of Range" on page 25

Temperature Out of Range

Temperatures within the chassis are regulated by the fans. For the fan cooling to be effective, the intake room air temperature must be below 25°C.

When a temperature is too high, it can be caused by:

- **Air flow is insufficient** – The fan speeds are too slow, the fans have stopped spinning, or the fan is missing altogether.
- **Cooling air temperature is too high** – No component can be cooled to a temperature lower than the cooling medium itself. Additionally, as the cooling air temperature increases, the air's ability to remove heat diminishes.
- **Heat generated within a component is greater than that removed** – The cooling system was designed for a certain power dissipated by the components. When those components experience high computing or throughput loads, or are subjected to overvoltage situations when a voltage regulator fails, they generate more heat.

For example, if the temperature at sensor target /SYS/MB/T_I4A is too high, then the fans speeds (/SYS/FAN*x*/TACH) are collectively too low, the cooling air temperature (/SYS/MB/T_FRONT) is too high, the voltage powering the I4 switch chip (/SYS/MB/V_I41.2V) is too high, or the loading on the switch chip is too high.

When a temperature is too low, it is rarely a detrimental situation. There is an exception, when the temperature of a component is the same as room temperature or lower, there is a great possibility that the component is not functioning as expected.

For example, if the temperature at sensor target /SYS/MB/T_I4A is too low, as compared to the cooling air temperature (/SYS/MB/T_FRONT), then the I4 switch chip is being held in a state of reset, the voltage for the I4 switch chip (/SYS/MB/V_I41.2V) is not being provided, or the I4 switch chip has catastrophically failed.

Note – The gateway is not fitted with an air filter. Therefore, contaminants can enter the gateway and adhere to cooling surfaces. The effect is two-fold, the contaminants prevent the flow of cooling air to the components, and the contaminants behave as insulators, retaining waste heat dissipated by the components. If supplied voltages, cooling air temperatures, and fans speeds are within acceptable values, yet component temperatures are high, the extent of contamination is severe.

When temperatures are out of range, the suggested action is to check the fans and replace any that are not operating properly. See "Servicing Fans" on page 55. If new fans do not resolve the problem, then replace the gateway.

Related Information

- "Evaluate a Temperature Sensor" on page 24
- "Temperature Sensor Values" on page 24

Evaluating a Speed Sensor Alarm

These topics help you resolve speed sensor alarms.

- "Evaluate a Speed Sensor" on page 26
- "Speed Sensor Values" on page 27
- "Speed Out of Range" on page 27

Related Information

- "Display Oracle ILOM Sensor Status" on page 18
- "Determine Oracle ILOM Sensor Target Types" on page 20
- "Evaluating a Voltage Sensor Alarm" on page 20
- "Evaluating a Temperature Sensor Alarm" on page 23
- "Evaluating a State Sensor Alarm" on page 29
- "Evaluating a Presence Sensor Alarm" on page 30
- "Evaluating an Indicator State" on page 32

▼ Evaluate a Speed Sensor

1. **Display the sensor status and determine the target type.**

   See:

- "Display Oracle ILOM Sensor Status" on page 18
- "Determine Oracle ILOM Sensor Target Types" on page 20

2. **Compare the displayed value with a known good range.**

   See "Speed Sensor Values" on page 27.

3. **Learn why a speed sensor might alarm and take action.**

   See "Speed Out of Range" on page 27.

Related Information

- "Speed Sensor Values" on page 27
- "Speed Out of Range" on page 27

Speed Sensor Values

This table lists typical values and acceptable ranges for the speed sensors. You use this table in conjunction with the target and value you recorded in "Display Oracle ILOM Sensor Status" on page 18. If your speed sensor's value is near a boundary or outside of the acceptable range, refer to "Speed Out of Range" on page 27.

Speed Sensor Target	Typical Value	Acceptable Range or Value
/SYS/FAN*x*/TACH	12099 RPM	6322 to 26705 RPM

Related Information

- "Evaluate a Speed Sensor" on page 26
- "Speed Out of Range" on page 27

Speed Out of Range

The speed of the fans is varied by the management controller. The management controller uses an algorithm that considers the cooling air temperature, the number of fans spinning, and the temperatures within the chassis, to set the speed of the fans.

Note – The management controller sets all fans of identical type to identical speeds, and their speeds should not vary more than 2000 RPMs from each other. If one fan's speed varies more than 2000 RPMs than the average of the remaining identical fans, that fan will fail soon and should be replaced.

When a fan speed is too high, it is an indication of the condition of the fan, which if gone unchecked can be detrimental to the operation of the gateway. A too-high fan speed can be caused by:

- **Internal failure** – To regulate their speed, the fans use hall-effect sensors in an internal feedback loop. If the sensor fails, the feedback loop opens, and the motor overspeeds uncontrollably.
- **Other fan failure** – The algorithm used by the management controller compensates for a fan failure by increasing the speed of the remaining functional fans.
- **Fan obstruction** – If the fan intake is blocked, load on the fan is reduced, and the fan overspeeds.
- **Temperatures too high** – If any component temperatures are too high, the fans spin faster.
- **Supply voltage too high** – If the voltage at sensor target `/SYS/MB/V_12V` is too high, the fans spin faster.

If a fan overspeeds for an extended time, it will fail. Consequently, insufficient cooling air will be provided and the gateway will overheat.

When a fan speed is too low, it also is an indication of the condition of the fan, which directly affects the operation of the gateway. A too-low fan speed can be caused by:

- **Coil failure** – The fan motor uses alternating electromagnetic fields to spin the fan impeller. Depending upon the fan motor design, if the coil that creates a magnetic field fails, the fan might spin much slower, or not at all.
- **Controller failure** – The controller alternates the electromagnet fields to spin the fan impeller. If the controller fails, the fan might not spin at all.
- **Bearing failure** – The fan impeller is balanced on a bearing around which it spins. The bearing is lubricated with an oil. If the bearing fails or the lubricant degrades, the fan speed is reduced greatly.
- **Supply voltage too low** – If the voltage at sensor target `/SYS/MB/V_12V` is too low, the fans spin slower.

If the fans speed is too low, insufficient cooling air will be provided and the gateway will overheat.

When fan speeds are out of range, the suggested action is to replace any fan that is not operating properly. See "Servicing Fans" on page 55. If new fans do not resolve the problem, then replace the gateway.

Related Information

- "Evaluate a Speed Sensor" on page 26
- "Speed Sensor Values" on page 27

Evaluating a State Sensor Alarm

These topics help you resolve state sensor alarms.

- "Evaluate a State Sensor" on page 29
- "State Sensor Alarm Conditions" on page 30

Related Information

- "Display Oracle ILOM Sensor Status" on page 18
- "Determine Oracle ILOM Sensor Target Types" on page 20
- "Evaluating a Voltage Sensor Alarm" on page 20
- "Evaluating a Temperature Sensor Alarm" on page 23
- "Evaluating a Speed Sensor Alarm" on page 26
- "Evaluating a Presence Sensor Alarm" on page 30
- "Evaluating an Indicator State" on page 32

▼ Evaluate a State Sensor

1. **Display the sensor status and determine the target type.**

   See:

   - "Display Oracle ILOM Sensor Status" on page 18
   - "Determine Oracle ILOM Sensor Target Types" on page 20

2. **Learn why a state sensor might alarm.**

   See "State Sensor Alarm Conditions" on page 30

3. **Determine your next step.**

State Sensor Target	Action	Links
`/SYS/CHASSIS_STATUS`	Check other targets.	"Display Oracle ILOM Sensor Status" on page 18
• `/SYS/CABLE_ATTN` • `/SYS/CABLE_CONN_STAT`	Replace the cable.	"Servicing Data Cables" on page 65
`/SYS/MB/BAT_FAULT`	Replace the battery.	"Servicing the Battery" on page 75

State Sensor Target	Action	Links
• /SYS/MB/V_3.3VMainOK • /SYS/POWER_ATTN • /SYS/POWER_REDUN • /SYS/PSU*x*/ALERT • /SYS/PSU*x*/AC_PRESENT • /SYS/PSU*x*/FAULT	Replace the power supply.	"Servicing Power Supplies" on page 41
• /SYS/TEMP_ATTN • /SYS/COOLING_ATTN • /SYS/COOLING_REDUN • /SYS/FAN*x*/FAULT	Replace the fan.	"Servicing Fans" on page 55
• /SYS/MB/BOOT_I4A • /SYS/IBDEV_ATTN	Check the I4 switch chip.	Refer to *Gateway Administration*, resetting a port.
All other state sensors.	Replace the gateway.	"Remove the Gateway From the Rack" on page 77

Related Information

- "State Sensor Alarm Conditions" on page 30

State Sensor Alarm Conditions

The gateway has many sensors that check the state of a voltage, component, or system fault, or voltage presence. In an acceptable state, the state sensors report a value of `State Deasserted`, meaning no error. When a voltage, component, or system goes to a detrimental state, the state sensors report a value of `State Asserted`.

For example, when the state of sensor target `/SYS/FAN1/FAULT` is `State Asserted`, there is a problem with fan 1.

Related Information

- "Evaluate a State Sensor" on page 29

Evaluating a Presence Sensor Alarm

These topics help you resolve presence sensor alarms.

- "Evaluate a Presence Sensor" on page 31
- "Presence Sensor Alarm Conditions" on page 31

Related Information

- "Display Oracle ILOM Sensor Status" on page 18
- "Determine Oracle ILOM Sensor Target Types" on page 20
- "Evaluating a Voltage Sensor Alarm" on page 20
- "Evaluating a Temperature Sensor Alarm" on page 23
- "Evaluating a Speed Sensor Alarm" on page 26
- "Evaluating a State Sensor Alarm" on page 29
- "Evaluating an Indicator State" on page 32

▼ Evaluate a Presence Sensor

1. **Display the sensor status and determine the target type.**

   See:

   - "Display Oracle ILOM Sensor Status" on page 18
   - "Determine Oracle ILOM Sensor Target Types" on page 20

2. **Learn why a presence sensor might alarm and take action.**

   See "Presence Sensor Alarm Conditions" on page 31.

Related Information

- "Presence Sensor Alarm Conditions" on page 31

Presence Sensor Alarm Conditions

The presence sensors for the power supplies and fans indicate that the component is physically installed. The sensors do not provide status or health of a component.

During the boot process, the management controller looks for presence sensors to build a list of Oracle ILOM targets. If the presence sensor cannot be read, yet the component is physically installed, the management controller does not propagate the component to the list of targets. Even if the component powers up, so long as it is invisible to the management controller, the component cannot be used.

If a presence sensor alarms while a component is functional, the management controller functions as if the component were removed from the chassis. This situation might cause a fault on the component. If the lack of the component violates a configuration rule, the chassis Attention LED might illuminate.

When a component is identified as not present, but it is installed, the suggested action is to replace that component. See "Servicing Fans" on page 55, "Servicing Power Supplies" on page 41. If the known good component is still identified as not present, replace the gateway.

Related Information

- "Evaluate a Presence Sensor" on page 31

Evaluating an Indicator State

These topics help you resolve Indicator state alarms.

- "Evaluate an Indicator State" on page 32
- "Indicator State Values" on page 33
- "Indicator State Conditions" on page 33

Related Information

- "Display Oracle ILOM Sensor Status" on page 18
- "Determine Oracle ILOM Sensor Target Types" on page 20
- "Evaluating a Voltage Sensor Alarm" on page 20
- "Evaluating a Temperature Sensor Alarm" on page 23
- "Evaluating a Speed Sensor Alarm" on page 26
- "Evaluating a State Sensor Alarm" on page 29
- "Evaluating a Presence Sensor Alarm" on page 30

▼ Evaluate an Indicator State

1. **Display the sensor status and determine the target type.**

   See:

   - "Display Oracle ILOM Sensor Status" on page 18
   - "Determine Oracle ILOM Sensor Target Types" on page 20

2. **Compare the displayed value with a known good range.**

   See "Indicator State Values" on page 33.

3. **Learn why an indicator might change state and take action.**

   See "Indicator State Conditions" on page 33

Related Information

- "Indicator State Values" on page 33
- "Indicator State Conditions" on page 33

Indicator State Values

This table lists typical values and acceptable ranges for the indicator targets. The indicator targets report the state of the chassis status LEDs. You use this table in conjunction with the value you recorded in "Display Oracle ILOM Sensor Status" on page 18. If your indicator target's value is outside of the acceptable range, refer to "Indicator State Conditions" on page 33.

Indicator Target	Typical Value	Acceptable Value
/SYS/I_LOCATOR	Off	On or Off
/SYS/I_ATTENTION	Off	Off
/SYS/I_POWER	On	On

Related Information

- "Evaluate an Indicator State" on page 32
- "Indicator State Conditions" on page 33

Indicator State Conditions

Three primary LED indicators provide management controller status, general chassis status, and identification. The table correlates the indicator target with the LED that represents that target.

Indicator Sensor Target	LED
/SYS/I_LOCATOR	Locator
/SYS/I_ATTENTION	Attention
/SYS/I_POWER	OK

When the locator LED is on, it is actually flashing. If the gateway is installed into a relatively dense rack, the flashing action makes the gateway more conspicuous for identification.

When the Attention LED is on, it indicates a fault within the gateway chassis. There is no single fault type that causes the Attention LED to light, so when it is illuminated, you must determine why.

When the OK LED is off, it indicates a gateway start up condition or the gateway is completely powered off. If the gateway is in neither state, yet the OK LED is off, there is a fault with the management controller, and the situation requires further investigation.

See "Check Chassis Status LEDs" on page 4 and "Display Oracle ILOM Sensor Status" on page 18 to help determine the alarm condition of the gateway.

Related Information

- "Evaluate an Indicator State" on page 32
- "Indicator State Values" on page 33

Accessing CLI Prompts

These tasks enable you to issue Oracle ILOM and restricted shell commands on the management controller.

- "Access the Oracle ILOM CLI (NET MGT Port)" on page 35
- "Enter the Restricted Linux Shell" on page 35
- "Exit the Restricted Linux Shell" on page 36

Related Information

- "Interpreting Status LEDs" on page 1
- "Managing Faulty Components" on page 7
- "Identify Faults in the Oracle ILOM Event Log" on page 12
- "Determining the Alarm State of a Component or System" on page 13
- "Evaluating Sensor Alarms" on page 17

▼ Access the Oracle ILOM CLI (NET MGT Port)

1. **If you have not already done so, configure the DHCP server with the MAC address and new host name of the management controller inside of the gateway.**

   The MAC address is printed on the customer information (yellow) sheet on the outside of the gateway shipping carton and on the pull-out tab on the left side front of the gateway, adjacent to power supply 0.

2. **Open an SSH session and connect to the management controller by specifying the controller's host name.**

   For example:

```
% ssh -l ilom-admin nm2name
ilom-admin@nm2name's password: password
->
```

   where *nm2name* is the host name of the management controller. Initially, the password is `ilom-admin`.

Note – You can change the *password* at a later time. Refer to *Gateway Remote Management*, changing a user role or password, for instructions on how to change Oracle ILOM user passwords.

   The Oracle ILOM shell prompt (`->`) is displayed.

Related Information

- "Enter the Restricted Linux Shell" on page 35
- "Exit the Restricted Linux Shell" on page 36

▼ Enter the Restricted Linux Shell

1. **Access the Oracle ILOM CLI.**

   See "Access the Oracle ILOM CLI (NET MGT Port)" on page 35.

2. **Enter the restricted Linux shell.**

```
-> show /SYS/Fabric_Mgmt
NOTE: show on Fabric_Mgmt will launch a restricted Linux shell.
 User can execute switch diagnosis, SM Configuration and IB
 monitoring commands in the shell. To view the list of commands,
 use "help" at rsh prompt.

 Use exit command at rsh prompt to revert back to
 ILOM shell.
FabMan@gateway_name->
```

The restricted shell prompt (`FabMan@`*gateway_name*`->`) is displayed, and you can now issue hardware and InfiniBand commands.

When you want to leave the restricted shell, type the `exit` command.

Related Information

- "Access the Oracle ILOM CLI (NET MGT Port)" on page 35
- "Exit the Restricted Linux Shell" on page 36

▼ Exit the Restricted Linux Shell

When you want to leave the restricted shell, use the `exit` command.

- **On the management controller, type.**

```
FabMan@gateway_name->exit
exit
->
```

Related Information

- "Access the Oracle ILOM CLI (NET MGT Port)" on page 35
- "Enter the Restricted Linux Shell" on page 35

Understanding Service Procedures

Servicing the gateway means a component addition, replacement, or subtraction.

A component addition means installing a component to increase the functionality of the gateway. Component replacement means removing a failed component and installing a functional one. Component subtraction means removing a component.

Once a failed part is identified, it can be replaced. The topics listed here help you service gateway chassis components.

- "Replaceable Components" on page 37
- "Suggested Tools for Service" on page 39
- "Antistatic Precautions for Service" on page 39

Related Information

- "Detecting and Managing Faults" on page 1
- "Servicing Power Supplies" on page 41
- "Servicing Fans" on page 55
- "Servicing Data Cables" on page 65
- "Servicing the Battery" on page 75

Replaceable Components

This illustration identifies the replaceable components of the gateway.

FIGURE: Replaceable Components

Figure Legend

1	Battery
2	Fan
3	Power supply

Related Information

- "Servicing Power Supplies" on page 41
- "Servicing Fans" on page 55
- "Servicing Data Cables" on page 65
- "Servicing the Battery" on page 75
- "Suggested Tools for Service" on page 39
- "Antistatic Precautions for Service" on page 39

Suggested Tools for Service

These tools are necessary or beneficial for servicing the gateway:

- Antistatic wrist strap
- Antistatic mat
- No. 2 Phillips screwdriver
- No. 1 Phillips screwdriver
- Flashlight
- Gloves
- Magnifying glass

Related Information

- "Replaceable Components" on page 37
- "Antistatic Precautions for Service" on page 39

Antistatic Precautions for Service

When installing the gateway chassis, take care to follow antistatic precautions:

- Use an antistatic mat as a work surface.
- Wear an antistatic wrist strap that is attached to either the mat or a metal portion of the gateway chassis.

Related Information

- "Replaceable Components" on page 37
- "Suggested Tools for Service" on page 39

Servicing Power Supplies

These topics provide procedures for servicing the power supplies.

Description	Links
Add a power supply.	"Inspecting a Power Supply" on page 43 "Install a Power Supply" on page 49 "Power On a Power Supply" on page 51
Replace a power supply.	"Determine If a Power Supply Is Faulty" on page 41 "Power Off a Power Supply" on page 46 "Remove a Power Supply" on page 47 "Inspecting a Power Supply" on page 43 "Install a Power Supply" on page 49 "Power On a Power Supply" on page 51
Subtract a power supply.	"Power Off a Power Supply" on page 46 "Remove a Power Supply" on page 47

Related Information

- "Detecting and Managing Faults" on page 1
- "Understanding Service Procedures" on page 37
- "Servicing Fans" on page 55
- "Servicing Data Cables" on page 65
- "Servicing the Battery" on page 75

▼ Determine If a Power Supply Is Faulty

You must determine which power supply is faulty before you replace it.

1. **Check to see if any System Service Required LEDs are lit or flashing.**

   See "Check Chassis Status LEDs" on page 4.

2. **Visually inspect the power supplies to see if any of their status LEDs are lit or flashing.**

   See "Check Power Supply Status LEDs" on page 6.

   If a power supply is faulty, replace it. See "Remove a Power Supply" on page 47.

3. **Access the Oracle ILOM CLI.**

   See "Access the Oracle ILOM CLI (NET MGT Port)" on page 35.

4. **Verify that a power supply is faulty.**

```
-> show -d targets /SP/faultmgmt
```

   If a power supply is faulty, you will see `/SYS/PSU`*x* listed in the output under `Target:`, where *x* is `0` (left power supply) or `1` (right power supply).

   For example:

```
-> show -d targets /SP/faultmgmt
 /SP/faultmgmt
  Targets:
      0 (/SYS/PSU0)
->
```

   If a power supply is faulty, replace it. See "Remove a Power Supply" on page 47.

   If a FRU value in addition to or different from `/SYS/PSU`*x* is displayed, see "Clearable Fault Targets" on page 11 to identify which component is faulty.

   In no Oracle ILOM targets are listed, go to Step 5.

5. **If you are unable to determine if a power supply is faulty, seek further information.**

   See "Detecting and Managing Faults" on page 1.

Related Information

- "Determine If a Fan Is Faulty" on page 55
- "Determine If the Battery Is Faulty" on page 75

Inspecting a Power Supply

Before installing a power supply, perform these tasks to verify its suitability for installation.

Step	Description	Links
1.	Identify the Power Supply.	"Identify the Power Supply" on page 43
2.	Inspect the hardware.	"Inspect the Power Supply Hardware" on page 45
3.	Inspect the connectors.	"Inspect the Power Supply Connectors" on page 45

Related Information

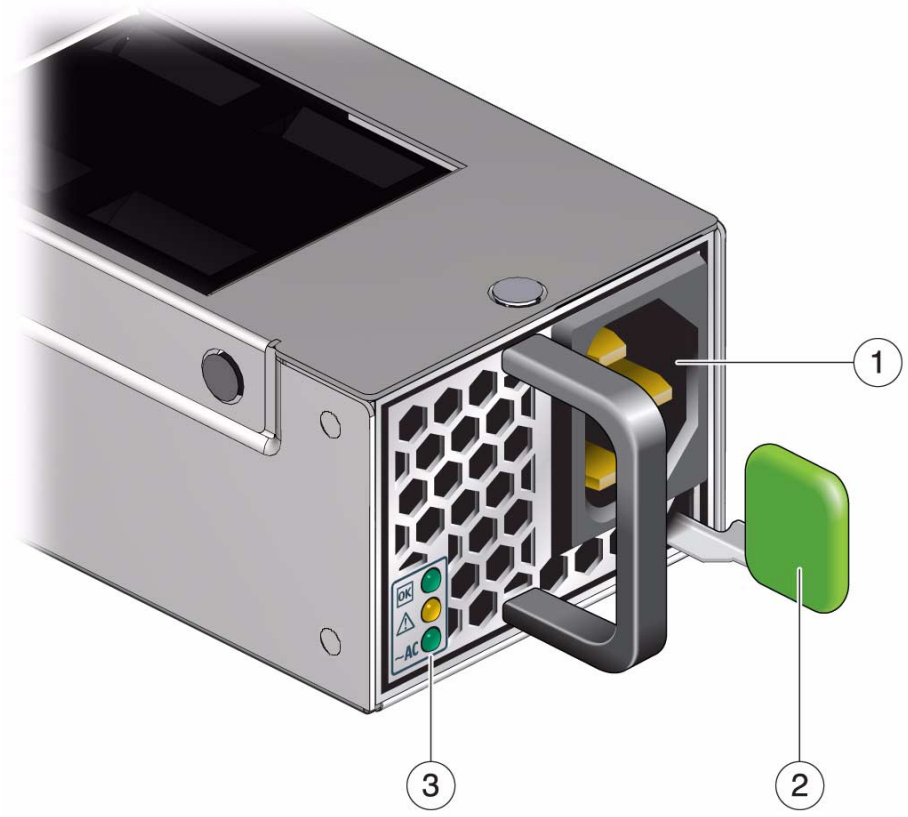
- "Inspecting a Fan" on page 57
- "Inspecting the Data Cables" on page 65

▼ Identify the Power Supply

1. **Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.**

   See "Inspecting a Power Supply" on page 43.

2. **Use this illustration to identify the various features of a power supply.**



1	AC connector
2	Release tab
3	Status LEDs

3. **Inspect the power supply hardware.**

   See "Inspect the Power Supply Hardware" on page 45.

Related Information

- "Identify the Fan" on page 57
- "Identify the Data Cable" on page 66

▼ Inspect the Power Supply Hardware

1. **Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.**

   See "Inspecting a Power Supply" on page 43.

2. **Unwrap the replacement power supply from its antistatic packaging.**
3. **Verify that there is no visible damage to the power supply chassis.**
4. **Verify that the release tab moves freely and smoothly.**
5. **Inspect the power supply connectors.**

   See "Inspect the Power Supply Connectors" on page 45.

Related Information

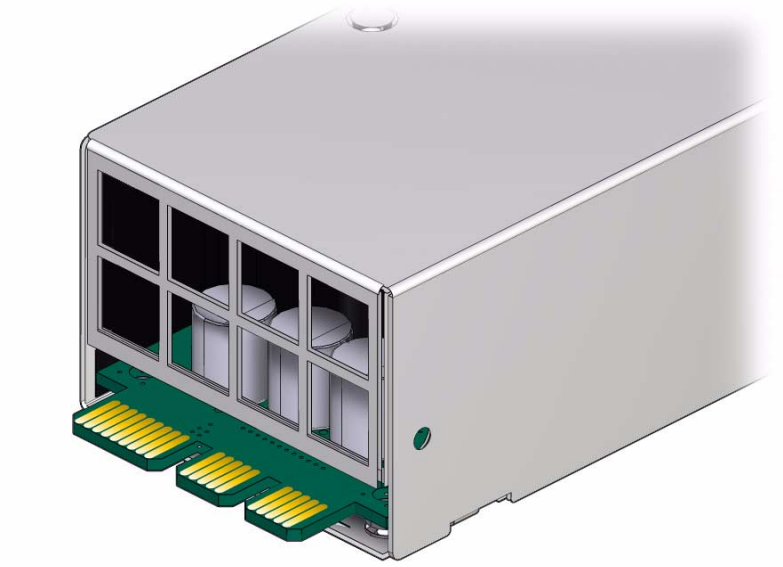
- "Inspect the Fan Hardware" on page 58
- "Inspect the Data Cable Hardware" on page 67

▼ Inspect the Power Supply Connectors

1. **Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.**

   See "Inspecting a Power Supply" on page 43.

2. **Verify that the connectors are clean and without damage.**



3. **The power supply is ready for installation.**

   See "Install a Power Supply" on page 49.

Related Information

- "Inspect the Fan Connector" on page 59
- "Inspect the Data Cable Connectors or Transceivers" on page 67

▼ Power Off a Power Supply

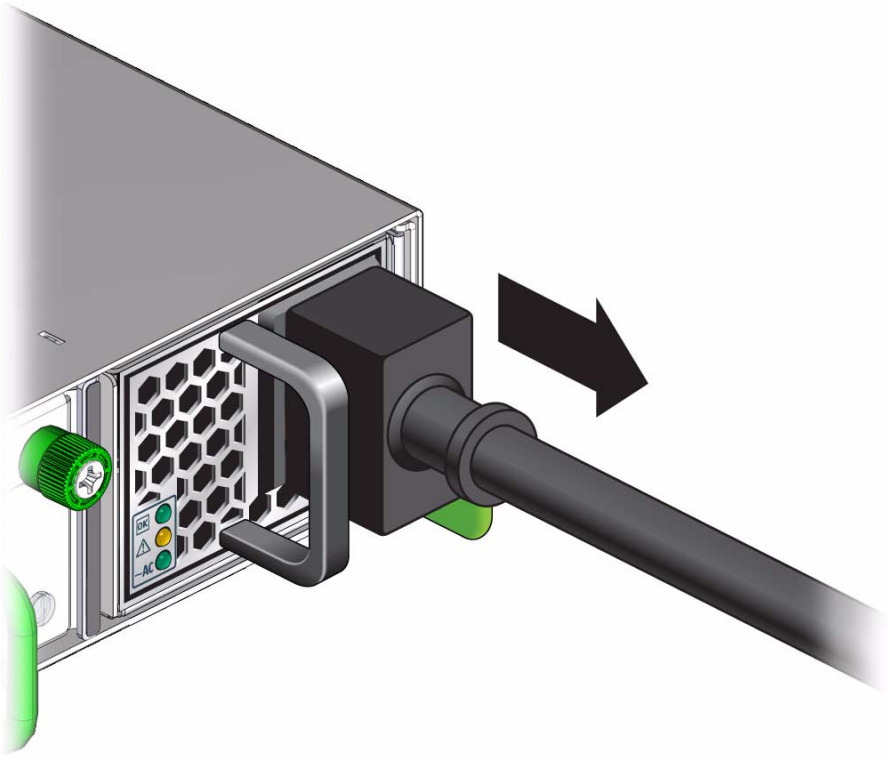
Note – Powering off both power supplies powers off the gateway.

1. **Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.**

   See "Servicing Power Supplies" on page 41.

2. **Determine which power supply is to be removed.**

3. **At the front of the gateway chassis, 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 47.

Related Information

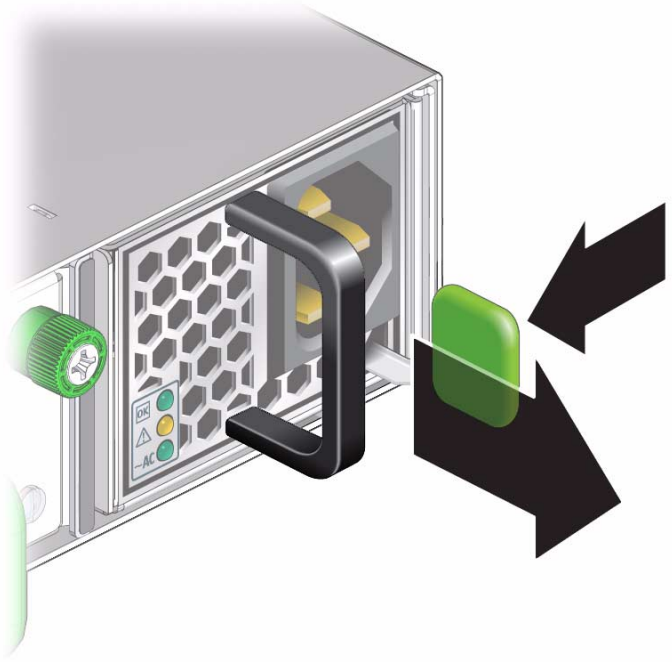
- “Power On a Power Supply” on page 51

▼ Remove a Power Supply

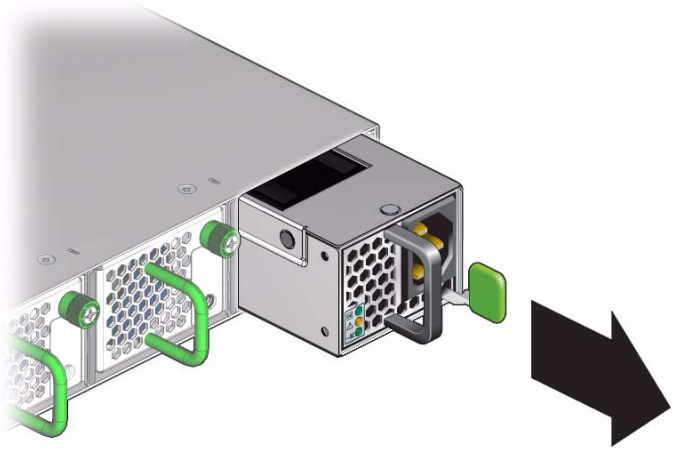
1. **Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.**

   See “Servicing Power Supplies” on page 41.

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



4. **Continue to pull the handle of the power supply to remove it from the chassis.**



5. **Set the power supply aside.**

6. **Install a replacement power supply.**

   See "Install a Power Supply" on page 49.

Related Information

- "Remove a Fan" on page 60
- "Remove a Data Cable" on page 68
- "Remove the Gateway From the Rack" on page 77
- "Replace the Battery" on page 78

▼ Install a Power Supply

Note – For residual power discharge, the power supply slot must remain vacant for at least one minute before installing a power supply.

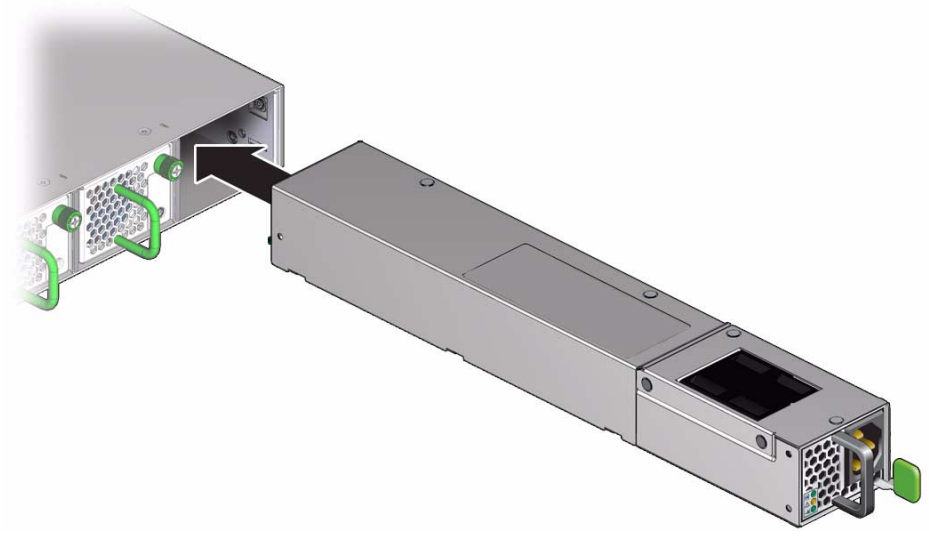
1. **Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.**

   See "Servicing Power Supplies" on page 41.

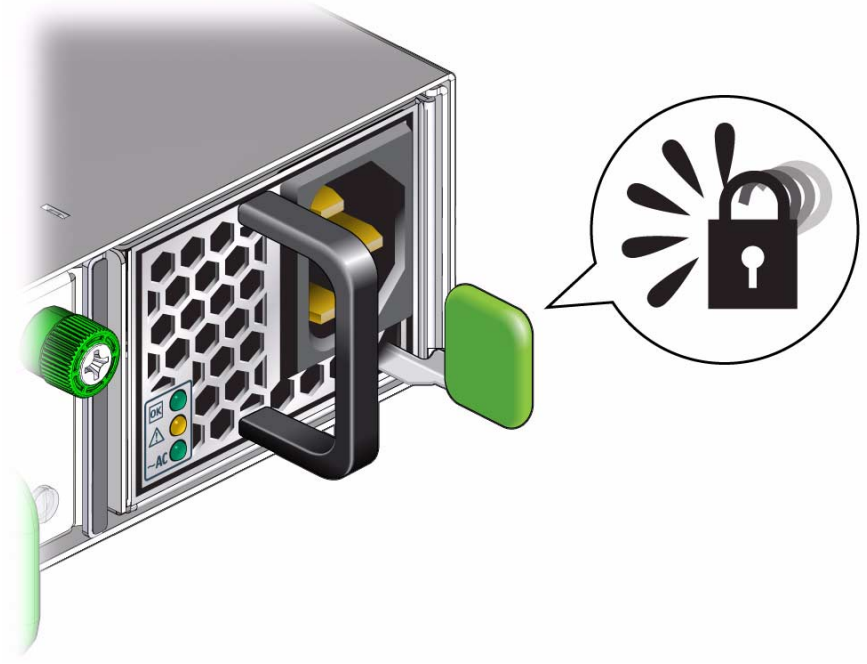
2. **Inspect the replacement power supply.**

   See "Inspecting a Power Supply" on page 43.

3. **Verify that the slot where the power supply installs is clean and free of debris.**
4. **Verify that the slot connector pins are straight and not missing.**
5. **Verify that the slot connector receptacles are free from obstructions.**
6. **Orient the power supply to the opening in the gateway chassis with the status LEDs on the left and the release tab on the right.**
7. **Slide the power supply into the open slot, pushing at the handle.**



8. **When the power supply seats, push firmly so that the release tab clicks to secure the power supply into the chassis.**



9. **Power on the power supply.**

   See "Power On a Power Supply" on page 51.

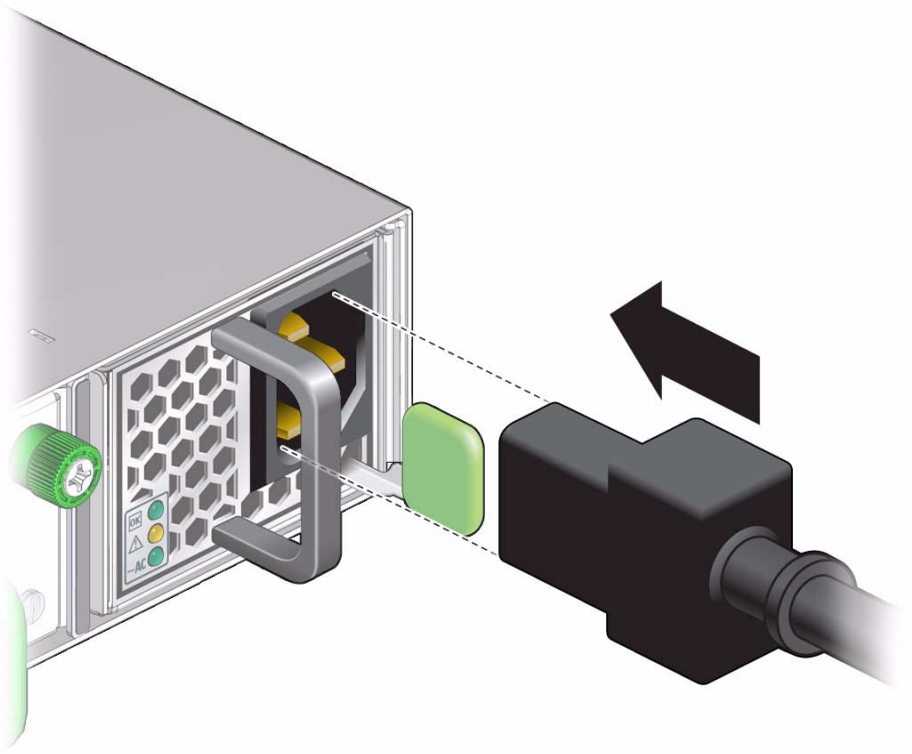
Related Information

- “Install a Fan” on page 61
- “Install a Data Cable” on page 72
- “Replace the Battery” on page 78

▼ Power On a Power Supply

1. **For residual power discharge, the power cord must remain unattached to the power supply for at least one minute before powering on a power supply.**
2. **Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.**

   See “Servicing Power Supplies” on page 41.
3. **Reconnect the power cord to the power supply.**



The AC LED lights green to indicate that the power supply is connected to facility power. A moment later, the OK LED lights green to indicate the power supply is at full power.

4. **Access the Oracle ILOM CLI.**

   See "Access the Oracle ILOM CLI (NET MGT Port)" on page 35.

5. **Enter the restricted Linux shell.**

   See "Enter the Restricted Linux Shell" on page 35.

6. **Verify the power supply's operation with the `checkpower` and `checkvoltages` commands on the management controller.**

   For example, to check the power supplies:

```
FabMan@gateway_name->checkpower
PSU 0 present status: OK
PSU 1 present status: OK
All PSUs OK
FabMan@gateway_name->
```

```
FabMan@gateway_name->checkvoltages
Voltage ECB OK
Measured 3.3V Main = 3.30 V
Measured 3.3V Standby = 3.42 V
Measured 12V = 12.06 V
Measured 5V = 5.03 V
Measured VBAT = 3.17 V
Measured 1.0V = 1.01 V
Measured I4 1.2V = 1.22 V
Measured 2.5V = 2.51 V
Measured V1P2 DIG = 1.18 V
Measured V1P2 ANG = 1.18 V
Measured 1.2V BridgeX = 1.22 V
Measured 1.8V = 1.80 V
Measured 1.2V Standby = 1.20 V
All voltages OK
FabMan@gateway_name->
```

Related Information

- *Gateway Reference*, `checkpower` command
- *Gateway Reference*, `checkvoltages` command
- "Power Off a Power Supply" on page 46

Servicing Fans

These topics provide procedures for servicing the fans.

Description	Links
Add a fan.	“Inspecting a Fan” on page 57 “Install a Fan” on page 61
Replace a fan.	“Determine If a Fan Is Faulty” on page 55 “Remove a Fan” on page 60 “Inspecting a Fan” on page 57 “Install a Fan” on page 61
Subtract a fan.	“Remove a Fan” on page 60

Related Information

- “Detecting and Managing Faults” on page 1
- “Understanding Service Procedures” on page 37
- “Servicing Power Supplies” on page 41
- “Servicing Data Cables” on page 65
- “Servicing the Battery” on page 75

▼ Determine If a Fan Is Faulty

You must determine which power supply is faulty before you replace it.

1. **Check to see if any System Service Required LEDs are lit or flashing.**
   See “Check Chassis Status LEDs” on page 4.

2. **Visually inspect the fans to see if any of their status LEDs are lit.**

   See "Check Fan Status LEDs" on page 7.

   If a fan is faulty, replace it. See "Remove a Fan" on page 60.

3. **Access the Oracle ILOM CLI.**

   See "Access the Oracle ILOM CLI (NET MGT Port)" on page 35.

4. **Verify that a fan is faulty.**

```
-> show -d targets /SP/faultmgmt
```

   If a fan is faulty, you will see `/SYS/FAN`*x* listed in the output under `Target:`, where *x* is `0` (left fan) to `4` (right fan).

   For example:

```
-> show -d targets /SP/faultmgmt
 /SP/faultmgmt
  Targets:
      0 (/SYS/FAN2)
->
```

   If a fan is faulty, replace it. See "Remove a Fan" on page 60.

   If a FRU value in addition to or different from `/SYS/FAN`*x* is displayed, see "Clearable Fault Targets" on page 11 to identify which component is faulty.

   If no Oracle ILOM targets are listed, go to Step 5.

5. **Within the Oracle ILOM interface, verify the fan speed.**

```
-> show /SYS/FANx/TACH value
```

   where *x* is `0` (left fan) to `4` (right fan). For example:

```
-> show /SYS/FAN2/TACH value
 /SYS/FAN2/TACH
  Properties:
      value = 12317.000 RPM
->
```

6. **Compare the value seen with the typical value and range provided in** "Speed Sensor Values" on page 27**.**

   If the fan is faulty, replace it. See "Remove a Fan" on page 60.

7. **If you are unable to determine if a fan is faulty, seek further information.**

   See "Detecting and Managing Faults" on page 1.

Related Information

- "Determine If a Power Supply Is Faulty" on page 41
- "Determine If the Battery Is Faulty" on page 75

Inspecting a Fan

Before installing a fan, inspect its hardware and connector to verify its suitability for installation.

Step	Description	Links
1.	Identify the fan.	"Identify the Fan" on page 57
2.	Inspect the hardware.	"Inspect the Fan Hardware" on page 58
3.	Inspect the connector.	"Inspect the Fan Connector" on page 59

Related Information

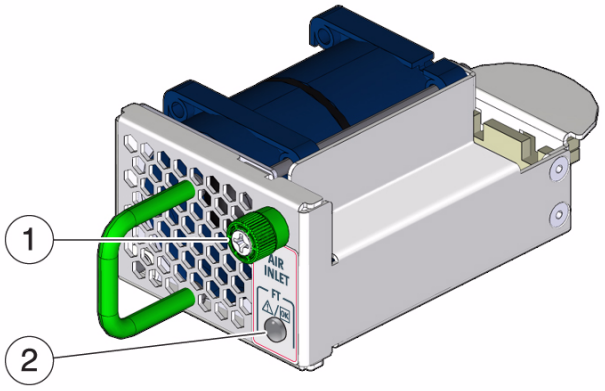
- "Inspecting a Power Supply" on page 43
- "Inspecting the Data Cables" on page 65

▼ Identify the Fan

1. **Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.**

   See "Inspecting a Fan" on page 57.

2. **Use this illustration to identify the various features of a fan.**



1	Thumbscrew
2	Status LED

3. **Inspect the fan hardware.**

   See "Inspect the Fan Hardware" on page 58.

Related Information

- "Identify the Power Supply" on page 43
- "Identify the Data Cable" on page 66

▼ Inspect the Fan Hardware

1. **Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.**

   See "Inspecting a Fan" on page 57.

2. **Unwrap the replacement fan from its antistatic packaging.**
3. **Verify that there is no visible damage to the fan chassis.**
4. **Verify that the thumbscrew spins freely and smoothly.**
5. **Inspect the fan connector.**

   See "Inspect the Fan Connector" on page 59.

Related Information

- "Inspect the Power Supply Hardware" on page 45

- "Inspect the Data Cable Hardware" on page 67

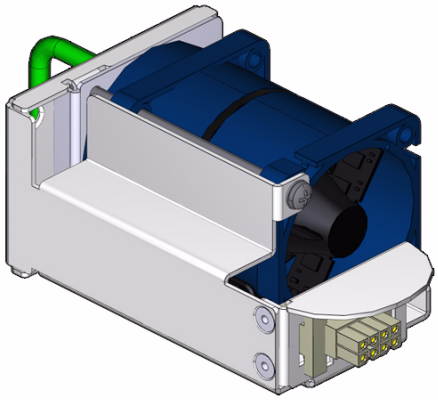
▼ Inspect the Fan Connector

1. **Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.**

   See "Inspecting a Fan" on page 57.

2. **Verify that the connector is clean and without damage.**

3. **Verify that the connector receptacles are free from obstructions.**



4. **Verify that the connector freely floats in its mounting.**

5. **The fan is ready for installation.**

   See "Install a Fan" on page 61.

Related Information

- "Inspect the Power Supply Connectors" on page 45
- "Inspect the Data Cable Connectors or Transceivers" on page 67

▼ Remove a Fan

Note – Fans are hot-swappable and do not require powering off. Additionally, if there are fewer than two operational fans, the gateway shuts down to prevent thermal overload.

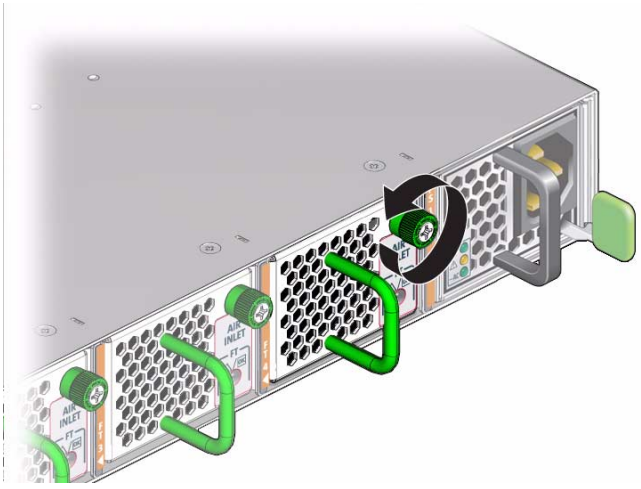
1. **Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.**

   See "Servicing Fans" on page 55.

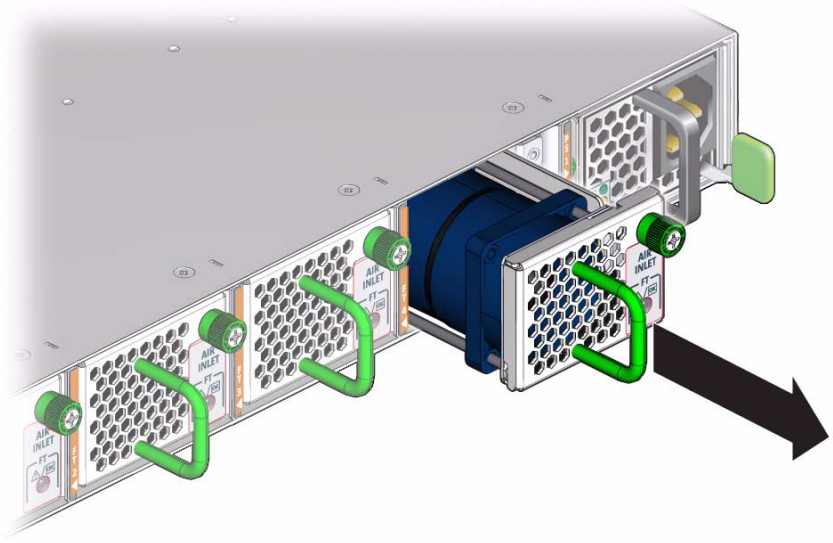
2. **Determine which fan is to be removed.**

   If a fan has failed, its Attention LED lights.

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



4. **Grasp the handle and pull the fan straight out.**



5. **Set the fan aside.**
6. **Consider your next steps:**
   - If you are removing the fan for replacement, install a new fan.
     See "Install a Fan" on page 61.
   - If you are removing the fan as a subtractive action, you are finished.

Related Information

- "Remove a Power Supply" on page 47
- "Remove a Data Cable" on page 68
- "Remove the Gateway From the Rack" on page 77
- "Replace the Battery" on page 78

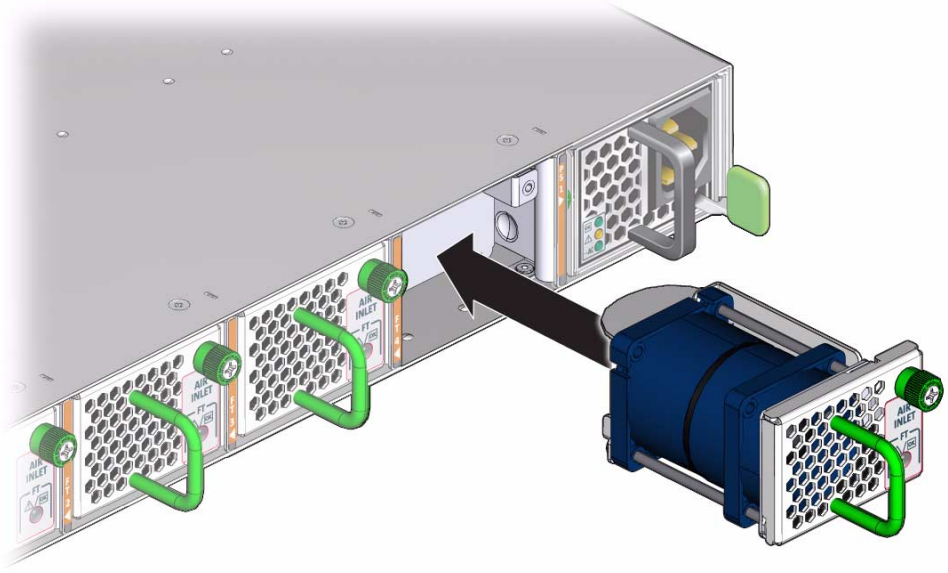
▼ Install a Fan

1. **Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.**
   See "Servicing Fans" on page 55.

2. **Inspect the replacement fan.**

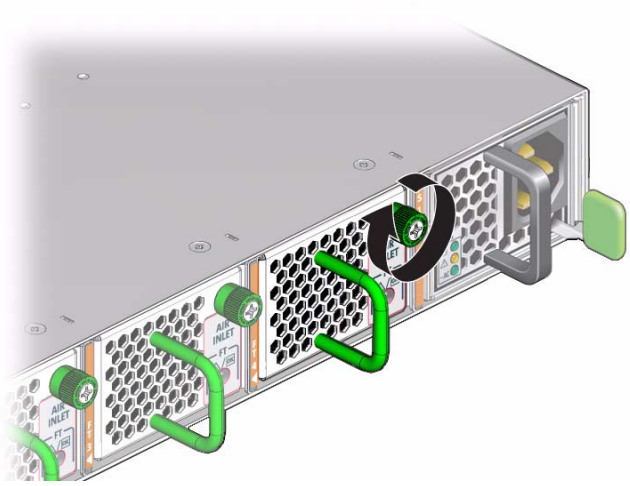
   See "Inspecting a Fan" on page 57.

3. **Verify that the slot where the fan installs is clean and free of debris.**
4. **Verify that the slot connector pins are straight and not missing.**
5. **Orient the fan to the opening in the gateway chassis with the thumbscrew on the right.**
6. **Firmly slide the fan into the chassis until the fan stops.**



   The fan might immediately power on.

7. **Tighten the captive thumbscrew to secure the fan in the gateway chassis.**



8. **Verify that the fan Attention LED goes out.**
9. **Access the Oracle ILOM CLI.**

   See "Access the Oracle ILOM CLI (NET MGT Port)" on page 35.

10. **Enter the restricted Linux shell.**

    See "Enter the Restricted Linux Shell" on page 35.

11. **Use the `getfanspeed` command on the management controller to verify the fan's operation.**

Note – You should see a fan speed for the fan you just installed.

For example, to check the fans:

```
FabMan@gateway_name->getfanspeed
Fan 0 not present
Fan 1 running at rpm 11212
Fan 2 running at rpm 11313
Fan 3 running at rpm 11521
Fan 4 not present
FabMan@gateway_name->
```

Related Information

- *Gateway Reference*, `getfanspeed` command
- "Install a Power Supply" on page 49
- "Install a Data Cable" on page 72
- "Replace the Battery" on page 78

Servicing Data Cables

These topics provide procedures for servicing the data cables.

Description	Links
Add a data cable.	"Inspecting the Data Cables" on page 65 "Install a Data Cable" on page 72
Replace a data cable.	"Remove a Data Cable" on page 68 "Inspecting the Data Cables" on page 65 "Install a Data Cable" on page 72
Subtract a data cable.	"Remove a Data Cable" on page 68

Related Information

- "Detecting and Managing Faults" on page 1
- "Understanding Service Procedures" on page 37
- "Servicing Power Supplies" on page 41
- "Servicing Fans" on page 55
- "Servicing the Battery" on page 75

Inspecting the Data Cables

Before installing a data cable, inspect its hardware and connectors to verify its suitability for installation.

Step	Description	Links
1.	Identify the cable.	"Identify the Data Cable" on page 66

Step	Description	Links
2.	Inspect the hardware.	"Inspect the Data Cable Hardware" on page 67
3.	Inspect the connectors	"Inspect the Data Cable Connectors or Transceivers" on page 67

Related Information

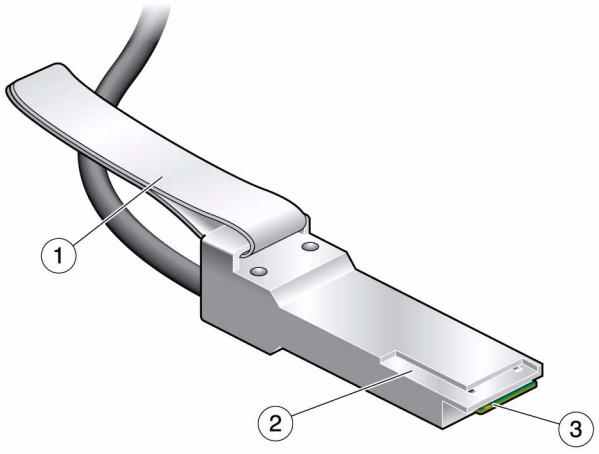
- "Inspecting a Power Supply" on page 43
- "Inspecting a Fan" on page 57

▼ Identify the Data Cable

1. **Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.**

   See "Inspecting the Data Cables" on page 65.

2. **Use this illustration to identify the various features of the data cable.**



1	Retraction strap
2	L groove
3	Paddle board

3. **Inspect the data cable hardware.**

   See "Inspect the Data Cable Hardware" on page 67.

Related Information

- "Identify the Power Supply" on page 43
- "Identify the Fan" on page 57

▼ Inspect the Data Cable Hardware

1. **Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.**

   See "Inspecting the Data Cables" on page 65.

2. **Verify that the cable is not cut or damaged.**
3. **Verify that the cable is not kinked or has a fold.**
4. **Verify that the cable is of the correct type from its label.**
5. **Inspect the cable connectors or transceivers.**

   See "Inspect the Data Cable Connectors or Transceivers" on page 67.

Related Information

- "Inspect the Power Supply Hardware" on page 45
- "Inspect the Fan Hardware" on page 58

▼ Inspect the Data Cable Connectors or Transceivers

1. **Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.**

   See "Inspecting the Data Cables" on page 65.

2. **Verify that the shell is not bent and is parallel to the inner boards.**
3. **Verify that there are no contaminants inside of the connector or transceiver.**
4. **Verify that the retractor strap or latch is adequate to remove the connector or transceiver from the receptacle.**
5. **Identify the reference surface by the L groove in the surface at the connector tip.**

6. **The cable or transceiver is ready for installation.**

   See "Install a Data Cable" on page 72.

Related Information

- "Inspect the Power Supply Connectors" on page 45
- "Inspect the Fan Connector" on page 59

▼ Remove a Data Cable

This procedure describes how to remove the cables from the gateway chassis, so that the cable can be replaced. If you are removing all cables for gateway replacement, start removing the cables from the left side of the gateway, working your way to the right.

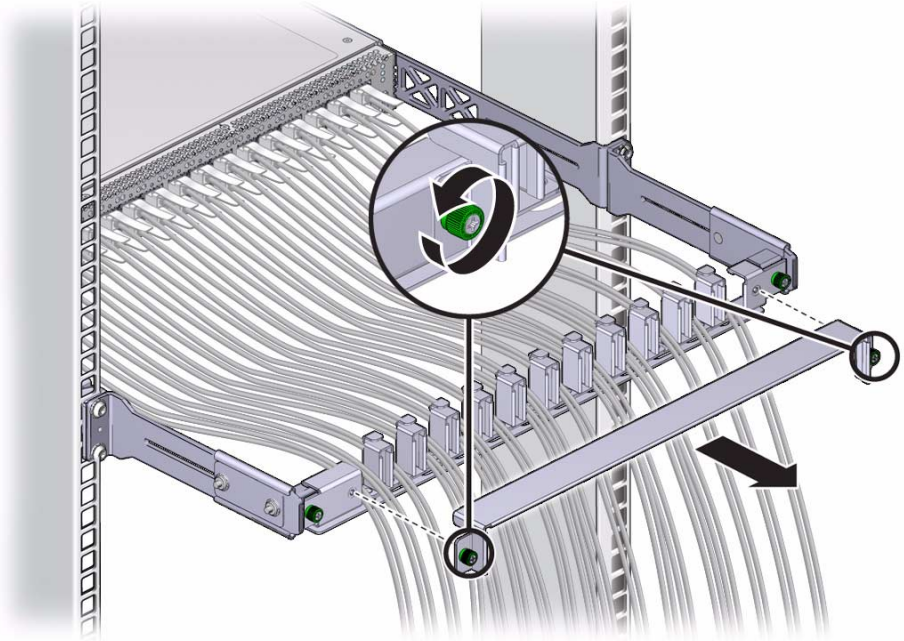
Note – These instructions are valid for both InfiniBand and Ethernet data cables.

---

1. **Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.**

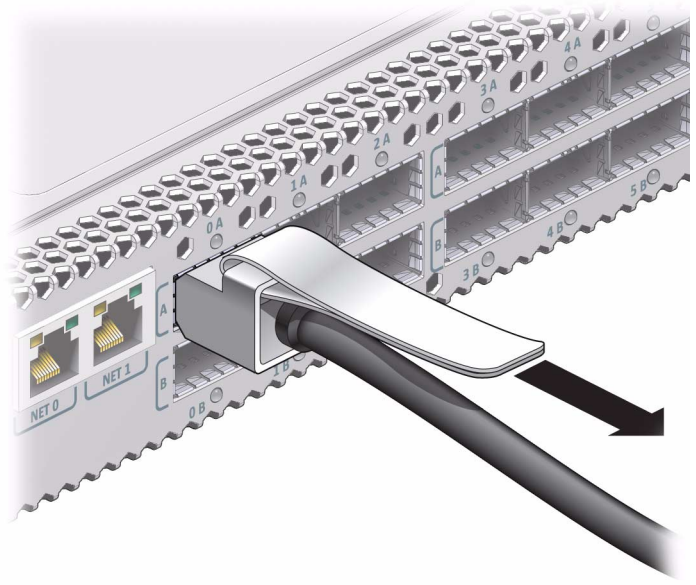
   See "Servicing Data Cables" on page 65.

2. **Loosen the thumbscrews and remove the cover for the cable management bracket.**



3. **Locate the cable to be removed.**
4. **Consider your next steps:**
   - If the cable is a one-piece data cable, follow these steps:
     a. **Grasp the cable connector to support its weight and apply the removal force.**
     b. **Pull on the retractor strap while simultaneously pulling on the cable connector.**

        The cable connector comes free.

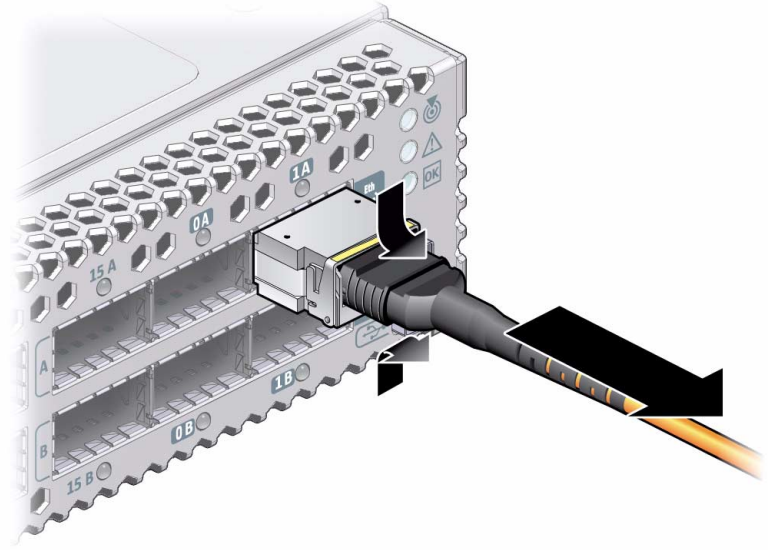


c. Carefully move the cable out of the cable management hardware.

d. Continue to Step 5**.**

- If the cable is an assembled data cable, follow these steps:

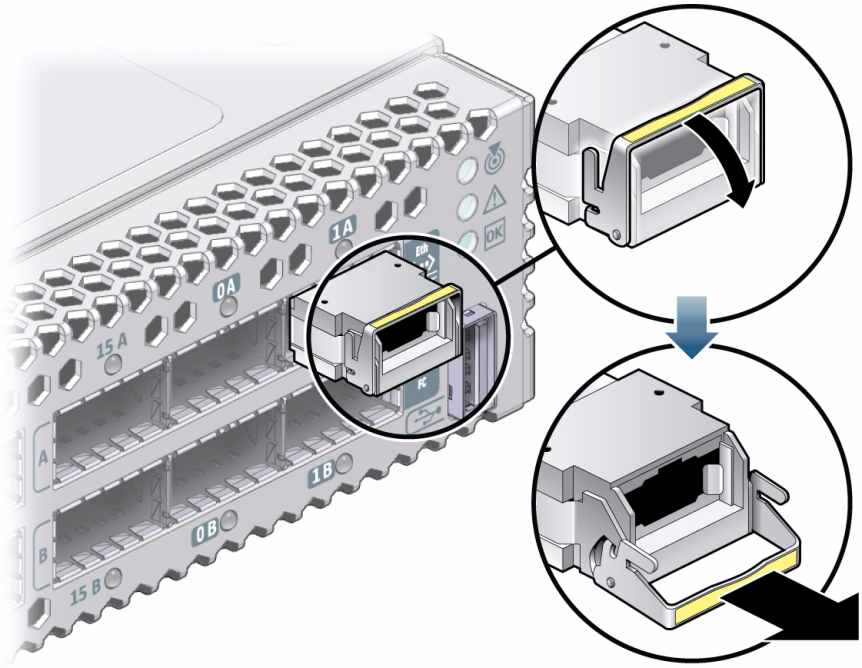
a. Grasp the release collar on the MTP connector and pull back.



The MTP connector and fiber optic cable come free of the transceiver.

b. Carefully move the fiber optic cable out of the cable management hardware.

c. Release the latch on the QSFP transceiver and pull on the latch to remove the transceiver.



The transceiver comes free.

d. Set the transceiver aside.

e. Continue to Step 5**.**

5. **Open hook-and-loop fasteners from bundles and securing hard points to gently lower the cable to the floor.**

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

6. **Consider your next steps:**
   - If you are removing a single cable for replacement, install the new cable.
     See "Install a Data Cable" on page 72.

- If you are disconnecting all cables for gateway replacement, repeat from Step 4 for all cables.

Related Information

- "Remove a Power Supply" on page 47
- "Remove a Fan" on page 60
- "Remove the Gateway From the Rack" on page 77
- "Replace the Battery" on page 78

▼ Install a Data Cable

Note – These instructions are valid for InfiniBand and Ethernet data cables. Refer to *Gateway Installation*, assembling the optical fiber data cables, for instructions how to assemble InfiniBand and Ethernet data cables that require assembly.

1. **Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.**

   See "Servicing Data Cables" on page 65.

2. **Determine your next steps:**
   - If you are cabling an entire gateway after a replacement procedure, locate the cable for the connector 0B and go to Step 6.
   - If you are installing a replacement cable to the gateway, start the procedure at Step 3.

3. **If necessary, assemble the data cable.**

   Refer to *Gateway Installation*, assembling the optical fiber data cables.

4. **Inspect the replacement data cable.**

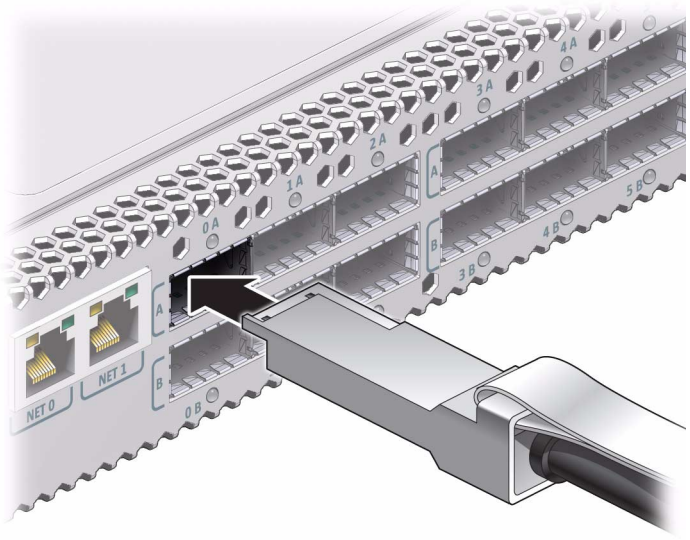
   See "Inspecting the Data Cables" on page 65.

5. **Bring the replacement cable to the gateway.**

6. **Feed the cable through the cable management hardware.**

7. **Orient the cable connector to the QSFP receptacle squarely and horizontally.**

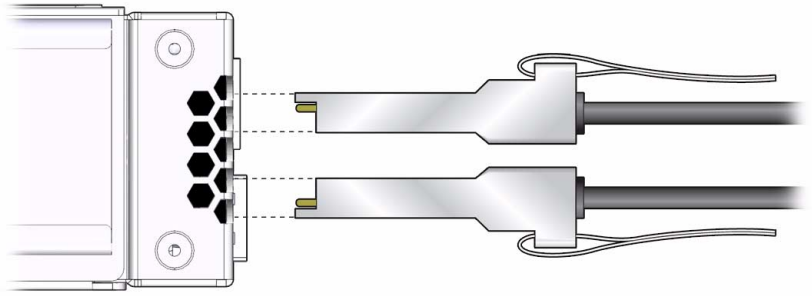
   Ensure that the L groove is up for the top row of receptacles, or that the L groove is down for the bottom row of receptacles.



Note – On some QSFP cable connectors, there is a retraction strap. Both the retraction strap and L groove indicate the reference surface for the connector. When installing QSFP cables in the top row receptacles (0A, 1A, 2A, and so on), ensure that the L groove and retraction strap are up. When installing QSFP cables in the bottom row receptacles (0B, 1B, 2B, and so on) ensure that the L groove and retraction strap are down. See "Identify the Data Cable" on page 66.

8. **Slowly move the connector in.**

   As you slide the connector in, the shell should be in the center of the QSFP receptacle.

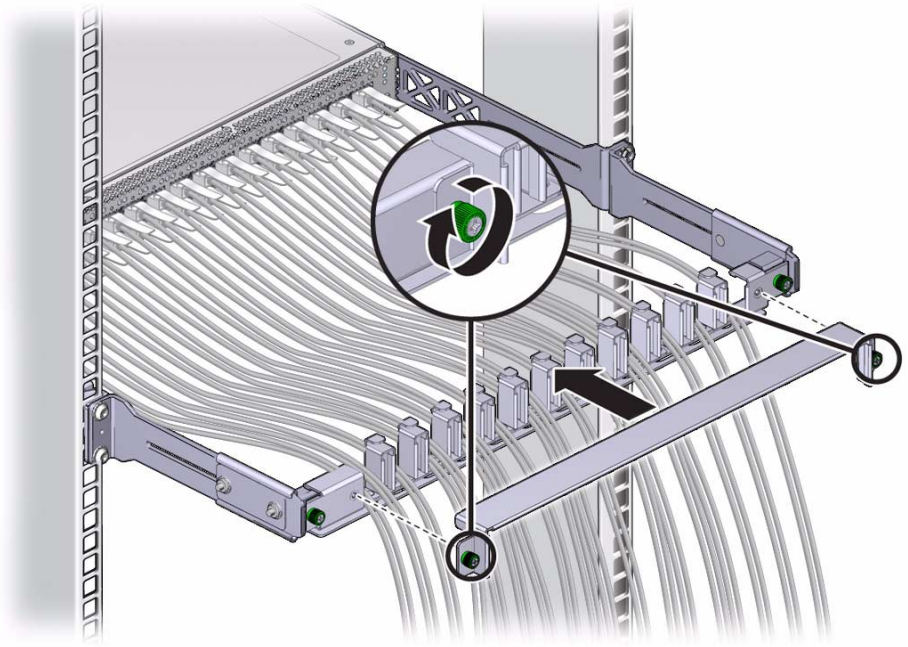


- If the connector stops or binds after about 1/4 in. (5 mm) travel, back out and repeat from Step 7.

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

9. **Continue to push the connector in until you feel a detent.**
10. **Secure the cable into the cable management hardware.**

    Close hook-and-loop fasteners at bundles and securing hard points.
11. **If you are installing all cables as part of a gateway replacement procedure, repeat from Step 6 for all cables, including the Ethernet data cables at connectors 0A and 1A on the right side of the rear panel.**
12. **Replace the cover for the cable management bracket and tighten the thumbscrews.**



Related Information

- "Install a Power Supply" on page 49
- "Install a Fan" on page 61
- "Replace the Battery" on page 78

Servicing the Battery

The gateway has a battery on the main board that supports the management controller. You can only replace the battery because the management controller is dependent upon the battery. You cannot add or subtract the battery. Perform these tasks in order to replace the battery:

Step	Description	Links
1.	Determine if the battery is faulty.	"Determine If the Battery Is Faulty" on page 75
2.	Remove all data cables.	"Remove a Data Cable" on page 68
3.	Power off both power supplies.	"Power Off a Power Supply" on page 46
4.	Remove the gateway from the rack.	"Remove the Gateway From the Rack" on page 77
5.	Replace the battery.	"Replace the Battery" on page 78
6.	Install the gateway in the rack.	*Gateway Installation*, installing the gateway

Related Information

- "Detecting and Managing Faults" on page 1
- "Understanding Service Procedures" on page 37
- "Servicing Power Supplies" on page 41
- "Servicing Fans" on page 55
- "Servicing Data Cables" on page 65

▼ Determine If the Battery Is Faulty

You must determine if the battery is faulty before you replace it.

1. **Check to see if any System Service Required LEDs are lit or flashing.**

   See "Check Chassis Status LEDs" on page 4.

2. **Access the Oracle ILOM CLI.**

   See "Access the Oracle ILOM CLI (NET MGT Port)" on page 35.

3. **Verify that the battery is faulty.**

   a. **Type.**

```
-> show -d targets /SP/faultmgmt
```

   If the battery is faulty, you will see `/SYS/MB` listed in the output under `Target:`.

   For example:

```
-> show -d targets /SP/faultmgmt
 /SP/faultmgmt
  Targets:
      0 (/SYS/MB)
->
```

   b. **Note the number to the left of** `/SYS/MB`**.**

   c. **Type.**

```
-> show -d properties /SP/faultmgmt/number/faults/0
```

   where *number* is the number to the left of `/SYS/MB`. For example:

```
-> show -d properties /SP/faultmgmt/0/faults/0
 /SP/faultmgmt/0/faults/0
  Properties:
      class = fault.chassis.device.battery.low
      sunw-msg-id = DCSIB-8000-45
      uuid = 82e90599-8650-47dc-b613-1e602607441b
      timestamp = 2002-01-01/00:07:27
      fru_part_number = 3002234
      fru_serial_number = 006541
      product_serial_number = AK00022680
      chassis_serial_number = AK00022680
->
```

d. Look for the word `battery` in the output for the `class` property.

If the battery is faulty, replace it. See "Replace the Battery" on page 78.

If you do not see the word `battery`, or if a FRU value in addition to or different from `/SYS/MB` is displayed in Step a, see "Clearable Fault Targets" on page 11 to identify which component is faulty.

If no Oracle ILOM targets are listed in Step a, go to Step 4.

4. **Within the Oracle ILOM interface, verify the battery voltage.**

```
-> show /SYS/MB/V_BAT value
 /SYS/MB/V_BAT
  Properties:
      value = 3.136 Volts
->
```

5. **Compare the value seen with the typical value and range provided in** "Voltage Sensor Values" on page 22**.**

   If the battery is faulty, replace it. See "Replace the Battery" on page 78.

6. **If you are unable to determine if the battery is faulty, seek further information.**

   See "Detecting and Managing Faults" on page 1.

Related Information

- "Determine If a Power Supply Is Faulty" on page 41
- "Determine If a Fan Is Faulty" on page 55

▼ Remove the Gateway From the Rack

Note – This procedure assumes that you have removed all data cables from the gateway and have powered down both power supplies by removing both power cords. If not, see "Remove a Data Cable" on page 68 and "Power Off a Power Supply" on page 46.

1. **Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.**

   See "Servicing the Battery" on page 75.

2. **Disconnect the management cables.**

3. **Use a No. 2 Phillips screwdriver to remove the four screws that secure the front of the gateway into the rack.**
4. **Slide the gateway out of the front of the rack.**
5. **Set the gateway chassis onto a stable work surface.**

Related Information

- *Gateway Installation*, installing the gateway into the rack
- "Remove a Power Supply" on page 47
- "Remove a Fan" on page 60
- "Remove a Data Cable" on page 68
- "Replace the Battery" on page 78

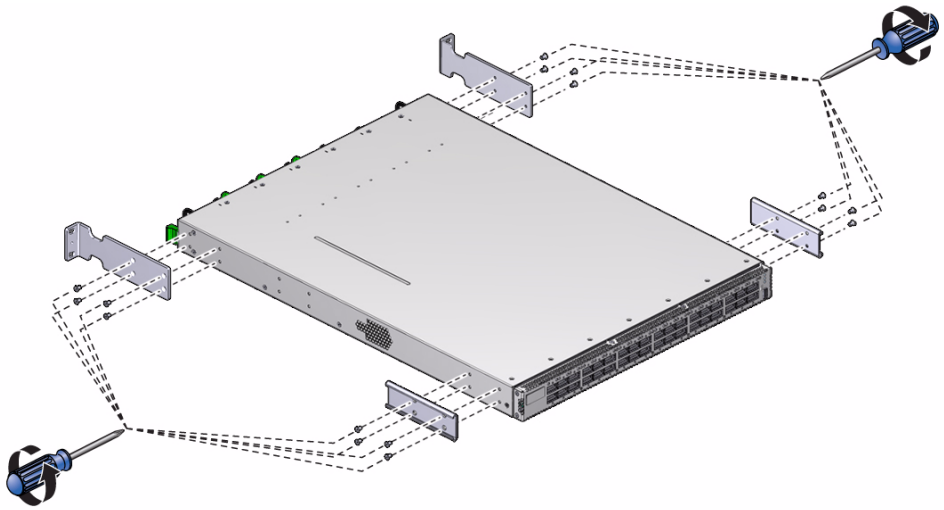
▼ Replace the Battery

Note – This procedure assumes that you have removed the Sun Network QDR InfiniBand Gateway Switch from Oracle from the rack. If not, see "Remove the Gateway From the Rack" on page 77.

1. **Identify the prerequisite and subsequent service tasks you must perform in conjunction with this procedure.**

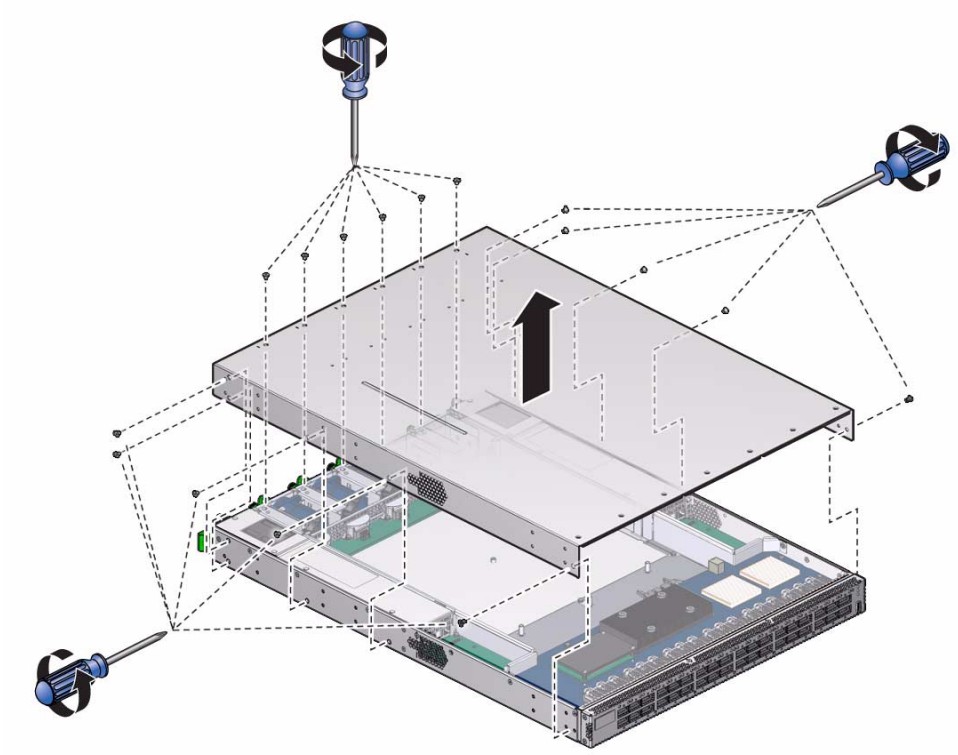
   See "Servicing the Battery" on page 75.

2. **Use a No. 1 Phillips screwdriver to remove the eight screws that secure the C-shaped brackets at the rear sides of the gateway chassis.**

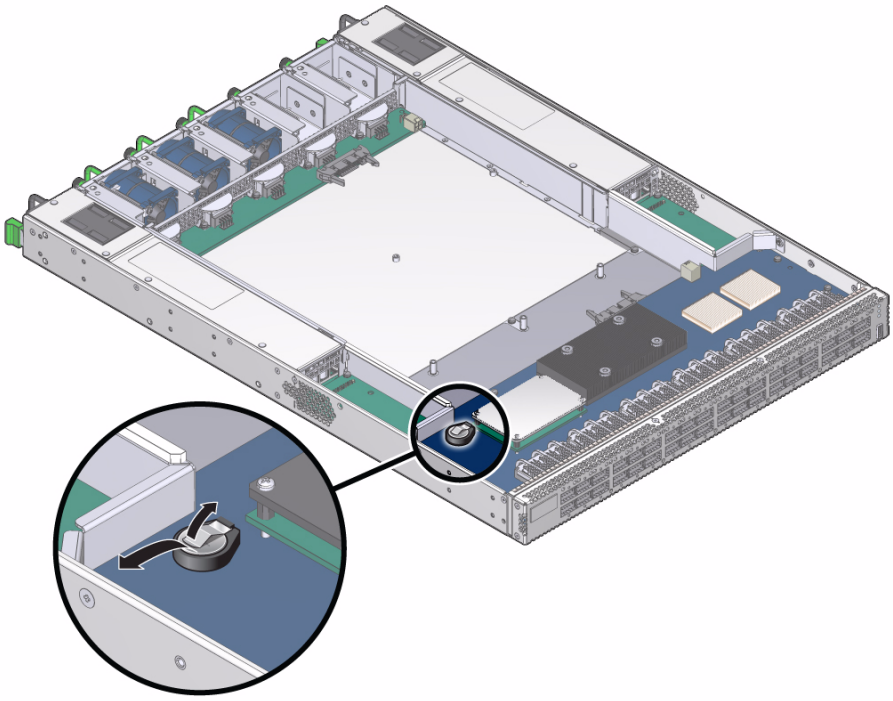


3. **Remove the eight screws that secure the long front brackets at the front sides of the gateway chassis.**
4. **Remove the 16 screws that secure the top cover to the chassis.**

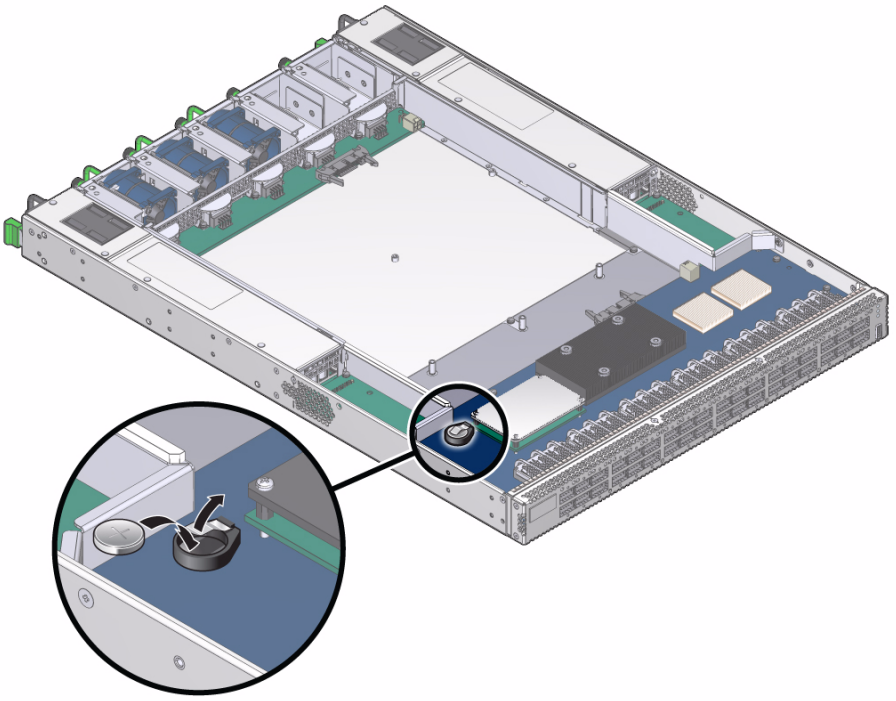
   There are five screws on each side and six screws across the top front of the cover.



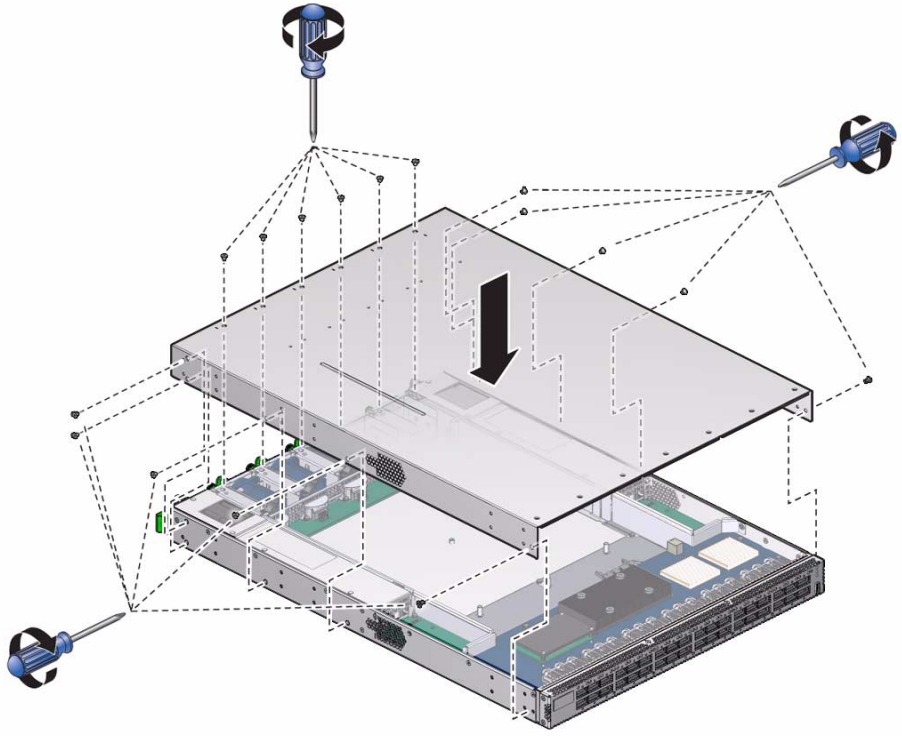
5. **Slide the cover forward and lift it off.**
6. **Depress the clip that retains the battery and release the battery from the main board.**



7. **Properly dispose of the old battery.**
8. **Unwrap the replacement battery from its antistatic packaging.**
9. **Install the replacement battery into the main board with the + side up.**

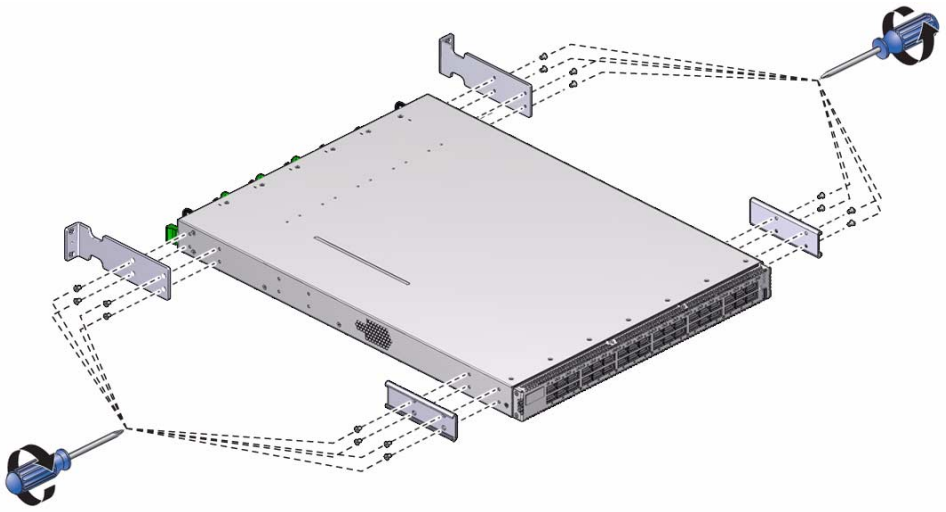


10. **Orient the cover over the chassis and lower it in place.**
11. **Slide the cover rearward so that it engages at the rear panel.**
    Ensure that the screw holes in the cover align with the holes in the chassis.



12. **Use a No. 1 Phillips screwdriver to install the 16 screws that secure the cover to the chassis.**

13. **Use eight screws to attach the two front brackets to the front sides of the chassis.**



14. **Use eight screws to attach the two C-shaped brackets to the rear sides of the chassis.**

15. **Install the gateway into the rack.**

    Refer to *Gateway Installation*, installing the gateway into the rack.

Related Information

- "Install a Power Supply" on page 49
- "Install a Fan" on page 61
- "Install a Data Cable" on page 72

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