

SPARC M8 and SPARC M7 Servers Service Manual

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Contents

Using This Documentation	17
Identifying Components	19
Server Front Components (SPARC M8-8 and SPARC M7-8 Servers)	20
Server Rear Components (SPARC M8-8 and SPARC M7-8 Servers)	21
Server Front Components (SPARC M7-16)	22
Server Rear Components (SPARC M7-16)	23
CMIOU Chassis Front Components	24
CMIOU Chassis Rear Components	25
Switch Chassis Front Components (SPARC M7-16)	27
Switch Chassis Rear Components (SPARC M7-16)	29
DIMM and eUSB Locations in a CMIOU	31
Supported Storage Devices	32
Understanding Server Cooling Zones	33
CMIOU Chassis Cooling Zones	33
Switch Chassis Cooling Zones	35
Component Service Task Reference	36
Detecting and Managing Faults	39
Checking for Faults	39
▼ Identify Faulted Components	40
▼ Identify Disabled Components	42
Component Oracle ILOM State Properties	43
Component Names Displayed by Diagnostic Software	44
Component Fault Tolerances	46
Oracle ILOM Chassis View	48
Interpreting LEDs	48
Component-Specific LEDs	49

Front Indicator Panel Controls and LEDs	50
Rear Indicator Panel Controls and LEDs	52
Performing Advanced Troubleshooting	54
▼ Display Fault Diagnostics (Message Buffer)	54
▼ View Log Files (Oracle Solaris)	55
▼ View Log Files (Oracle ILOM)	55
Checking Server and Component Health With POST	56
▼ Verify That a Fault Has Been Cleared	58
▼ Clear a Fault Manually	59
Preparing for Service	61
Safety Information	61
Safety Symbols	62
Tools Needed for Service	62
Filler Panels and Modules	63
Component Service Categories	63
▼ Find the Server Serial Number	64
▼ Locate the Server	65
▼ Prevent ESD Damage	65
▼ Attach an Antistatic Wrist Strap	66
▼ Prepare a Component for Return to Oracle	68
Controlling the Server and Domains	71
▼ Log In to Oracle ILOM (Service)	71
▼ Prepare a Component for Removal	72
Removing Power From the Server or Domain	73
▼ Prepare to Power Off the Server or Domain	73
▼ Power Off the Server or Domain (Oracle ILOM)	74
▼ Switch Off PDU Circuit Breakers	75
Returning the Server to Operation	77
▼ Switch on PDU Circuit Breakers	77
▼ Restart the Server or Host (Oracle ILOM)	78
▼ Check the Power State of the Server or Host (Oracle ILOM)	79
▼ Return a Component to Service	79
Oracle ILOM Service-Related Tools	80

Understanding Server Configurations and Failover Behavior	83
SPARC M8-8 and SPARC M7-8 Configurations and Failover Behavior (Two PDomains)	84
SPARC M8-8 and SPARC M7-8 Configurations and Failover Behavior (One PDomain)	85
SPARC M7-16 Configurations and Failover Behavior	85
Servicing CMIOUTs	87
CMIOUT Configurations (SPARC M8-8 and SPARC M7-8 With Two PDomains)	88
CMIOUT Configurations (SPARC M8-8 and SPARC M7-8 With One PDomain)	89
CMIOUT Configurations (SPARC M7-16)	89
Mixed CMIOUT Configurations	90
CMIOUT Redundancy	92
SPARC M8 CMIOUT Label	93
CMIOUT Indicators and LEDs	94
▼ Prepare a CMIOUT for Removal	95
▼ Unseat a CMIOUT	97
▼ Remove a CMIOUT	99
▼ Return a CMIOUT to Oracle	102
▼ Reseat a CMIOUT	105
▼ Install a CMIOUT	106
Servicing DIMMs	109
DIMM Configuration	110
DIMM Names	112
▼ Determine Which DIMM Is Faulty (Oracle ILOM)	113
▼ Determine Which DIMM Is Faulty (LEDs)	113
DIMM Configuration Fault Messages	116
▼ Remove a DIMM	116
▼ Install a DIMM	118
Servicing SPs	121
SP Firmware and Configuration	122
SP General Status LEDs	124
SER MGT and NET MGT Port Locations and Numbering	125
Oracle ILOM Paths for SPMs	126
▼ Prevent Automatic SP or SPP Failover	127

▼ Determine Which SP Is Managing System Activity	127
▼ Determine Which SPP Is Managing DCU Activity (SPARC M7-16)	128
▼ Change Which SP Is Managing System Activity	128
▼ Change Which SPP Is Managing DCU Activity (SPARC M7-16)	129
▼ Prepare to Remove an SP	129
▼ Prepare to Remove an SPP (SPARC M7-16)	133
▼ Remove an SP or SPP	136
▼ Install an SP or SPP	140
Servicing PCIe Cards	145
PCIe Card Slot Configuration and Numbering	146
Understanding PCIe Card Device and Service Paths	147
PCIe Card Paths (Bottom CMIOU Chassis)	147
PCIe Card Paths (Top CMIOU Chassis)	148
Supported PCIe Card Carriers and PCIe Cards	149
PCIe Card Installation Order Guidelines	149
Card Installation Bottom CMIOU Chassis (Servers With Multiple PDomains)	150
Card Installation Bottom CMIOU Chassis (SPARC M7 With One PDomain)	151
Card Installation Top CMIOU Chassis (SPARC M7-16)	152
PCIe Card Carrier LEDs and Controls	153
▼ Locate a PCIe Card in the Server	154
▼ Prepare a PCIe Card For Removal	155
▼ Remove a PCIe Card Carrier and Card From the Server	160
▼ Install a PCIe Card Into a Card Carrier	162
▼ Install a Card Carrier Into the Server	163
▼ Restore a PCIe Card Configuration on an I/O Domain	165
▼ Verify the PCIe Card	168
Servicing Power Supplies	169
Power Supply LEDs	170
▼ Remove a Power Supply	171
▼ Remove the Power Supply Shims (SPARC M8)	174
▼ Install the Power Supply Shims (SPARC M8)	176
▼ Install a Power Supply	179

Servicing Fan Modules (CMIOU Chassis)	183
Fan LEDs (CMIOU Chassis)	184
▼ Remove a Fan Module (CMIOU Chassis)	184
▼ Install a Fan Module (CMIOU Chassis)	186
Servicing Fan Modules (Switch Chassis)	187
Fan Module LED (Switch Chassis)	188
▼ Remove a Fan Module (Switch Chassis)	188
▼ Install a Fan Module (Switch Chassis)	190
Servicing Switch Units	193
Switch Unit LEDs	194
▼ Prepare a Switch Unit for Removal	195
▼ Unseat a Switch Unit	196
▼ Remove a Switch Unit	198
▼ Reseat a Switch Unit	200
▼ Install a Switch Unit	201
Servicing PDECBS	203
▼ Remove a PDECB	204
▼ Install a PDECB	206
Servicing eUSB Disks	207
▼ Remove an eUSB Disk	207
▼ Install an eUSB Disk	209
Servicing a CMIOU Chassis Fan Cable Assembly	211
▼ Remove a Fan Cable Assembly	211
▼ Install a Fan Cable Assembly	216
Servicing the Front Indicator Panel	221
▼ Remove a Front Indicator Panel	221
▼ Install a Front Indicator Panel	226
Servicing the Front Indicator Panel Cable	231

▼ Remove the Front Indicator Panel Cable	231
▼ Install the Front Indicator Panel Cable	236
Servicing Power Modules	239
▼ Remove a Power Module	239
▼ Install a Power Module	242
Servicing SP Trays	247
▼ Unseat or Remove an SP Tray	247
▼ Reseat or Install an SP Tray	250
Servicing Batteries	251
▼ Remove the Battery	251
▼ Install the Battery	254
Servicing PDUs	257
PDU and AC Connections	257
▼ Prepare a PDU for Removal	258
▼ Remove a PDU	260
▼ Install a PDU	266
Servicing the CMIOU Chassis	273
▼ Remove a CMIOU Chassis	273
▼ Install a CMIOU Chassis	279
Servicing the Switch Chassis	281
▼ Remove a Switch Chassis	281
▼ Install a Switch Chassis	287
Servicing SP Internal Interconnect Assemblies	289
▼ Remove an SP Internal Interconnect Assembly	290
▼ Install an SP Internal Interconnect Assembly	294
Servicing Internal Interconnect Assemblies	301
Internal Interconnect Assembly Configuration	302

- ▼ Remove an Internal Interconnect Assembly 303
- ▼ Install an Internal Interconnect Assembly 306

- Servicing External Interconnect Assemblies** 309
 - External Interconnect Assembly Configuration 310
 - ▼ Remove an External Interconnect Assembly 311
 - ▼ Install an External Interconnect Assembly 315

- Glossary** 321

- Index** 327

Using This Documentation

- **Overview** – Describes how to troubleshoot and maintain the SPARC M8 and SPARC M7 servers from Oracle
- **Audience** – Technicians, system administrators, and authorized service providers
- **Required knowledge** – A basic understanding of the UNIX command line, virtualization technologies, and networking and disk storage concepts

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Identifying Components

These topics identify key components of the server, including major modules and assemblies, as well as front and rear panel features.

For information about the hardware architecture and software environment, refer to [“Understanding the Hardware Architecture”](#) in *SPARC M8 and SPARC M7 Servers Installation Guide* in the *SPARC M8 and SPARC M7 Servers Installation Guide*.

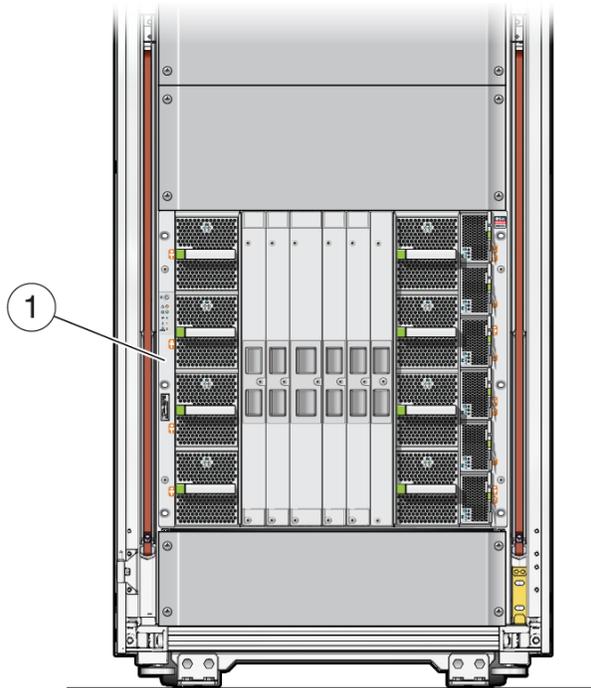
Description	Links
View server components installed in the rack.	“Server Front Components (SPARC M8-8 and SPARC M7-8 Servers)” on page 20 “Server Rear Components (SPARC M8-8 and SPARC M7-8 Servers)” on page 21 “Server Front Components (SPARC M7-16)” on page 22 “Server Rear Components (SPARC M7-16)” on page 23
View components accessed from the CMIOU chassis.	“CMIOU Chassis Front Components” on page 24 “CMIOU Chassis Rear Components” on page 25
View components accessed from the switch chassis (SPARC M7-16 server only).	“Switch Chassis Front Components (SPARC M7-16)” on page 27 “Switch Chassis Rear Components (SPARC M7-16)” on page 29
View DIMM locations and numbering.	“DIMM and eUSB Locations in a CMIOU” on page 31
Learn about supported storage devices.	“Supported Storage Devices” on page 32
Learn how components are cooled in the server rack.	“Understanding Server Cooling Zones” on page 33
Identify the names of serviceable components.	“Component Service Task Reference” on page 36

Related Information

- [“Detecting and Managing Faults”](#) on page 39
- [“Preparing for Service”](#) on page 61
- [“Controlling the Server and Domains”](#) on page 71

- [“Understanding Server Configurations and Failover Behavior” on page 83](#)

Server Front Components (SPARC M8-8 and SPARC M7-8 Servers)

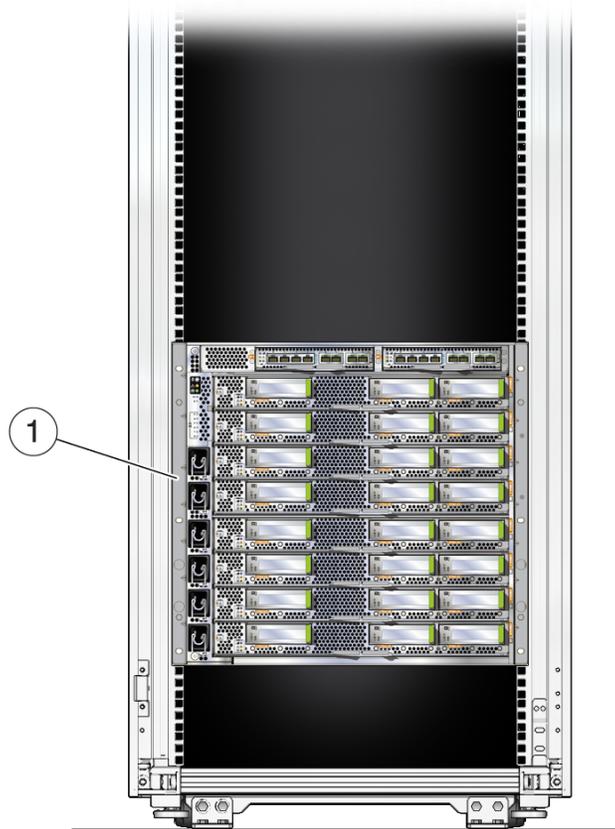


No.	Description	Links
1	Bottom CMIU chassis	“CMIU Chassis Front Components” on page 24

Related Information

- [“CMIU Chassis Front Components” on page 24](#)
- [“CMIU Chassis Rear Components” on page 25](#)

Server Rear Components (SPARC M8-8 and SPARC M7-8 Servers)

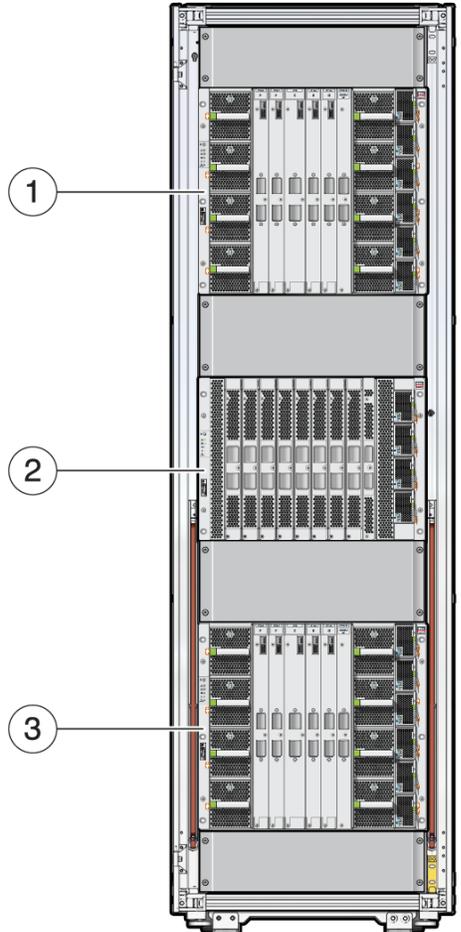


No.	Description	Links
1	Bottom CMIOU chassis	“CMIOU Chassis Rear Components” on page 25

Related Information

- [“CMIOU Chassis Rear Components” on page 25](#)
- [“CMIOU Chassis Front Components” on page 24](#)

Server Front Components (SPARC M7-16)

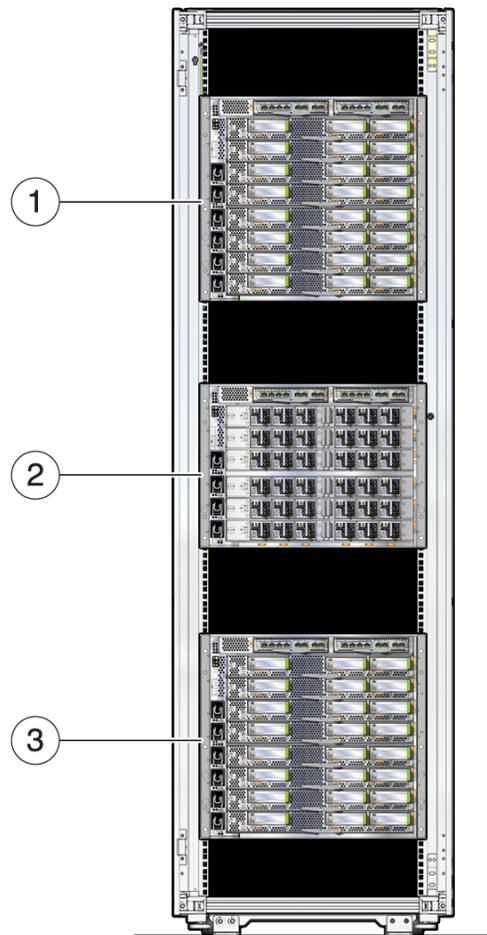


No.	Description	Links
1	Top CMIU chassis	“CMIU Chassis Front Components” on page 24
2	Switch chassis	“Switch Chassis Front Components (SPARC M7-16)” on page 27
3	Bottom CMIU chassis	“CMIU Chassis Front Components” on page 24

Related Information

- [“Server Rear Components \(SPARC M7-16\)” on page 23](#)

Server Rear Components (SPARC M7-16)



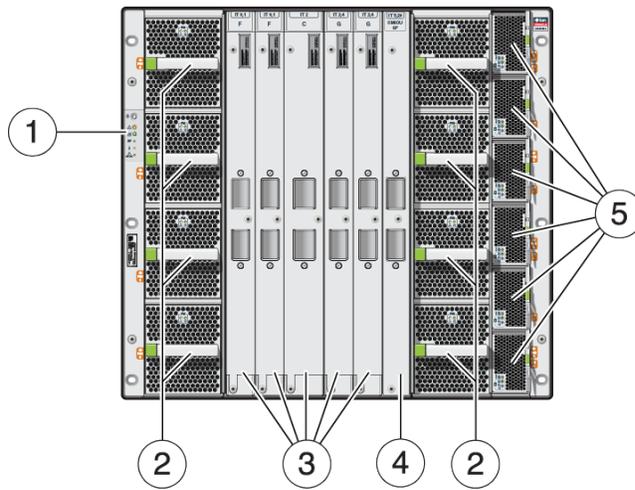
No.	Description	Links
1	Top CMIOU chassis	“CMIOU Chassis Rear Components” on page 25
2	Switch chassis	“Switch Chassis Rear Components (SPARC M7-16)” on page 29
3	Bottom CMIOU chassis	“CMIOU Chassis Rear Components” on page 25

Related Information

- [“Server Front Components \(SPARC M7-16\)” on page 22](#)

CMIOU Chassis Front Components

Access these components from the front of the server. These components are not part of the chassis. You must remove these components to access the chassis.



No.	Description	Links
1	Front indicator panel (1)	“Servicing the Front Indicator Panel” on page 221
2	Fan modules (8)	“Servicing Fan Modules (CMIOU Chassis)” on page 183
	Bottom CMIOU chassis:	
	■ Left side, top to bottom: FM_6, FM_4, FM_2, FM_0	

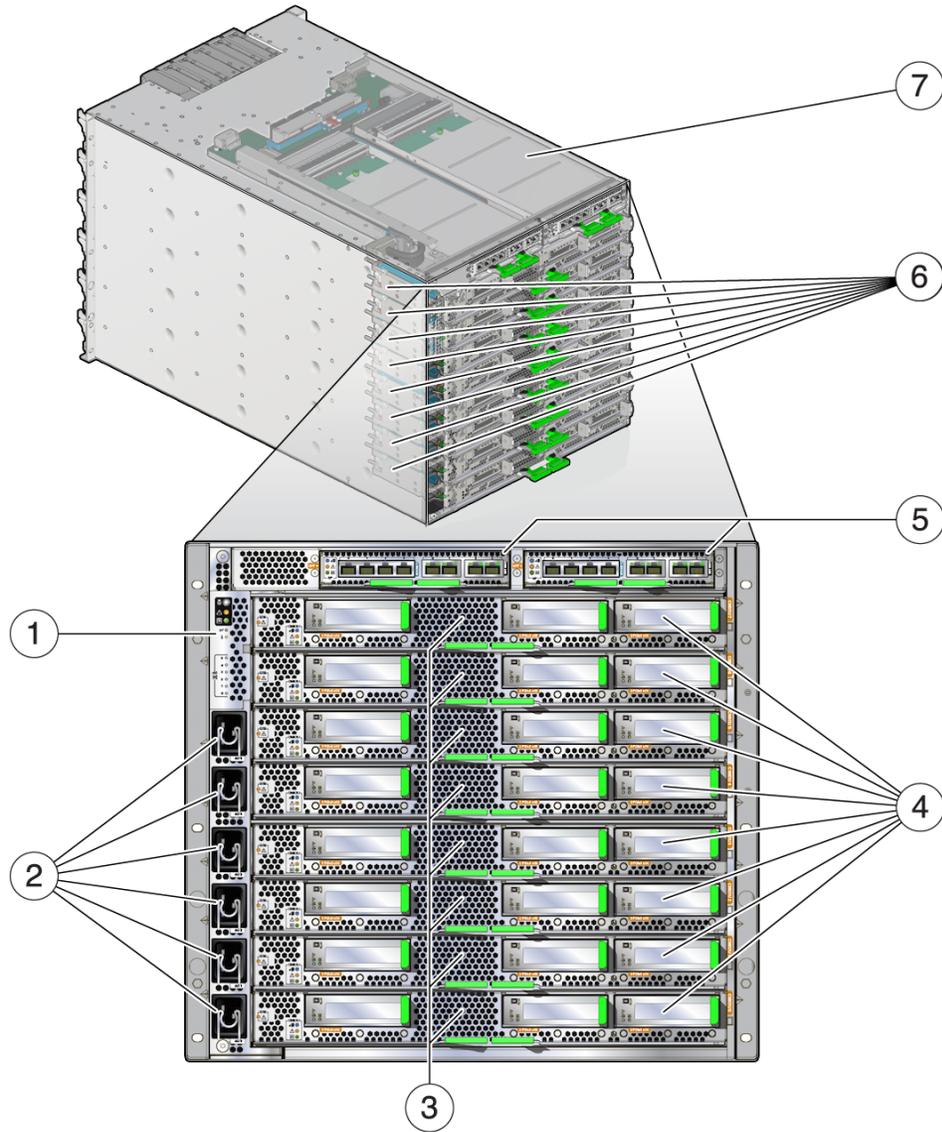
No.	Description	Links
	<ul style="list-style-type: none"> ■ Right side, top to bottom: FM_7, FM_5, FM_3, FM_1 <p>Top CMIOW chassis:</p> <ul style="list-style-type: none"> ■ Left side, top to bottom: FM_14, FM_12, FM_10, FM_8 ■ Right side, top to bottom: FM_15, FM_13, FM_11, FM_9 	
3	<p>Internal interconnects (5), left to right (SPARC M8-8 or SPARC M7-8 with two PDomains):</p> <ul style="list-style-type: none"> ■ II_N_24_L (slot IT_0) ■ II_N_24_L (slot IT_1) ■ II_W_248 (slot IT_2) ■ II_N_24_R (slot IT_3) ■ II_N_24_R (slot IT_4) <p>Internal interconnects (5), left to right (SPARC M8-8 or SPARC M7-8 with one PDomain):</p> <ul style="list-style-type: none"> ■ II_N_8_LO (slot IT_0) ■ II_N_8_LI (slot IT_1) ■ II_W_248 (slot IT_2) ■ II_N_8_RI (slot IT_3) ■ II_N_8_RO (slot IT_4) 	<p>“Servicing Internal Interconnect Assemblies” on page 301</p>
4	<p>SP internal interconnects (1 per CMIOW chassis): II_CMIOW_SP (slot CMIOW SP IT_5)</p>	<p>“Servicing SP Internal Interconnect Assemblies” on page 289</p>
5	<p>Power supplies (6 per CMIOW chassis)</p> <ul style="list-style-type: none"> ■ Bottom CMIOW chassis, top to bottom: PS5–PS0 ■ Top CMIOW chassis, top to bottom: PS15–PS10 	<p>“Servicing Power Supplies” on page 169</p>

Related Information

- [“CMIOW Chassis Rear Components” on page 25](#)

CMIOW Chassis Rear Components

Access these components from the rear of the server. These components are not part of the chassis. You must remove these components to access the chassis.



No.	Description	Links
1	Rear indicator panel (1) This component is part of the power module. ■ Bottom CMIOU chassis: ROPNL0	“Servicing Power Modules” on page 239

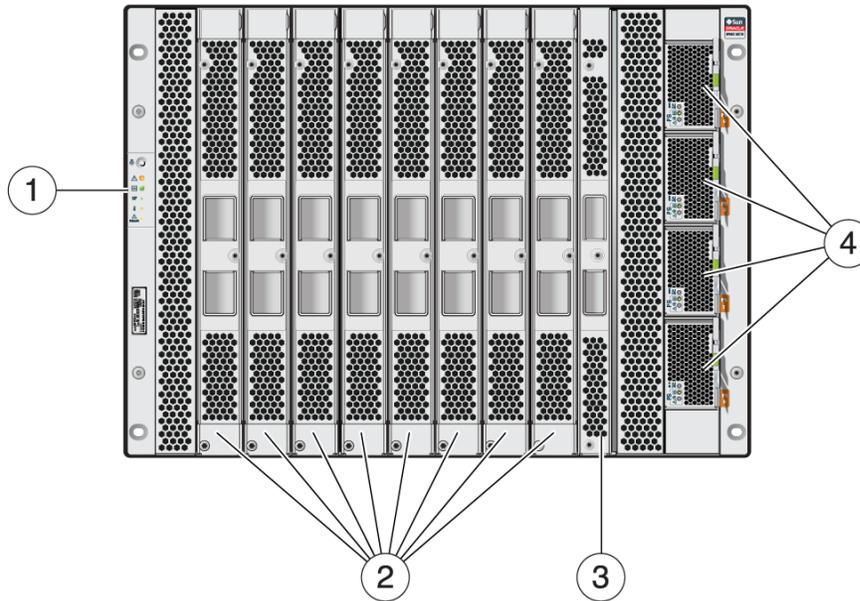
No.	Description	Links
	<ul style="list-style-type: none"> ■ Top CMIOU chassis: ROPNL2 	
2	AC inputs (1 strip, 6 outlets per CMIOU chassis) This component is part of the power module.	“Servicing Power Modules” on page 239
	<ul style="list-style-type: none"> ■ Bottom CMIOU chassis, top to bottom: AC5–AC0 ■ Top CMIOU chassis, top to bottom: AC15–AC10 	
3	CMIOUs (8)	“Servicing CMIOUs” on page 87
	<ul style="list-style-type: none"> ■ Bottom CMIOU chassis, top to bottom: CMIOU_7–CMIOU_0 ■ Top CMIOU chassis, top to bottom: CMIOU_15–CMIOU_8 	
4	PCIe x16 carriers (up to 24 cards per CMIOU chassis)	“Servicing PCIe Cards” on page 145
5	SPs (2), bottom CMIOU chassis, left to right (SPARC M8-8 and SPARC M7-8 servers): SP0,SP1 SPPs (4, SPARC M7-16 server):	“Servicing SPs” on page 121
	<ul style="list-style-type: none"> ■ Bottom CMIOU chassis, left to right: SPP0,SPP1 ■ Top CMIOU chassis, left to right: SPP2,SPP3 	
6	PDECBS (8)	“Servicing PDECBS” on page 203
	<ul style="list-style-type: none"> ■ Bottom CMIOU chassis, top to bottom: PDECB7–PDECB0 ■ Top CMIOU chassis, top to bottom: PDECB21–PDECB14 	
7	SP tray (1)	“Servicing SP Trays” on page 247

Related Information

- [“CMIOU Chassis Front Components” on page 24](#)

Switch Chassis Front Components (SPARC M7-16)

Access these components from the front of the server. These components are not part of the chassis. You must remove these components to access the chassis.



No.	Description	Links
1	Front indicator panel (1): FOPNL1	“Servicing the Front Indicator Panel” on page 221
2	External interconnects, left to right (top CMIOU chassis slot, switch chassis slot): <ul style="list-style-type: none"> ■ XI_N_4_B2T_S (slot IT_15, slot IT_6) ■ XI_N_4_B2T_S (slot IT_16, slot IT_8) ■ II_W_4 (slot IT_17) ■ XI_N_4_B2T_S (slot IT_18, slot IT_10) ■ XI_N_4_B2T_S (slot IT_19, slot IT_12) External interconnects, left to right (bottom CMIOU chassis slot, switch chassis slot): <ul style="list-style-type: none"> ■ XI_N_4_T2B_S (slot IT_0, slot IT_7) ■ XI_N_4_T2B_S (slot IT_1, slot IT_9) ■ II_W_4 (slot IT_2) ■ XI_N_4_T2B_S (slot IT_3, slot IT_11) ■ XI_N_4_T2B_S (slot IT_4, slot IT_13) 	“Servicing External Interconnect Assemblies” on page 309
3	SP internal interconnect (1): <ul style="list-style-type: none"> ■ II_CMIOU_SP (top CMIOU chassis slot, IT_20) 	“Servicing SP Internal Interconnect Assemblies” on page 289

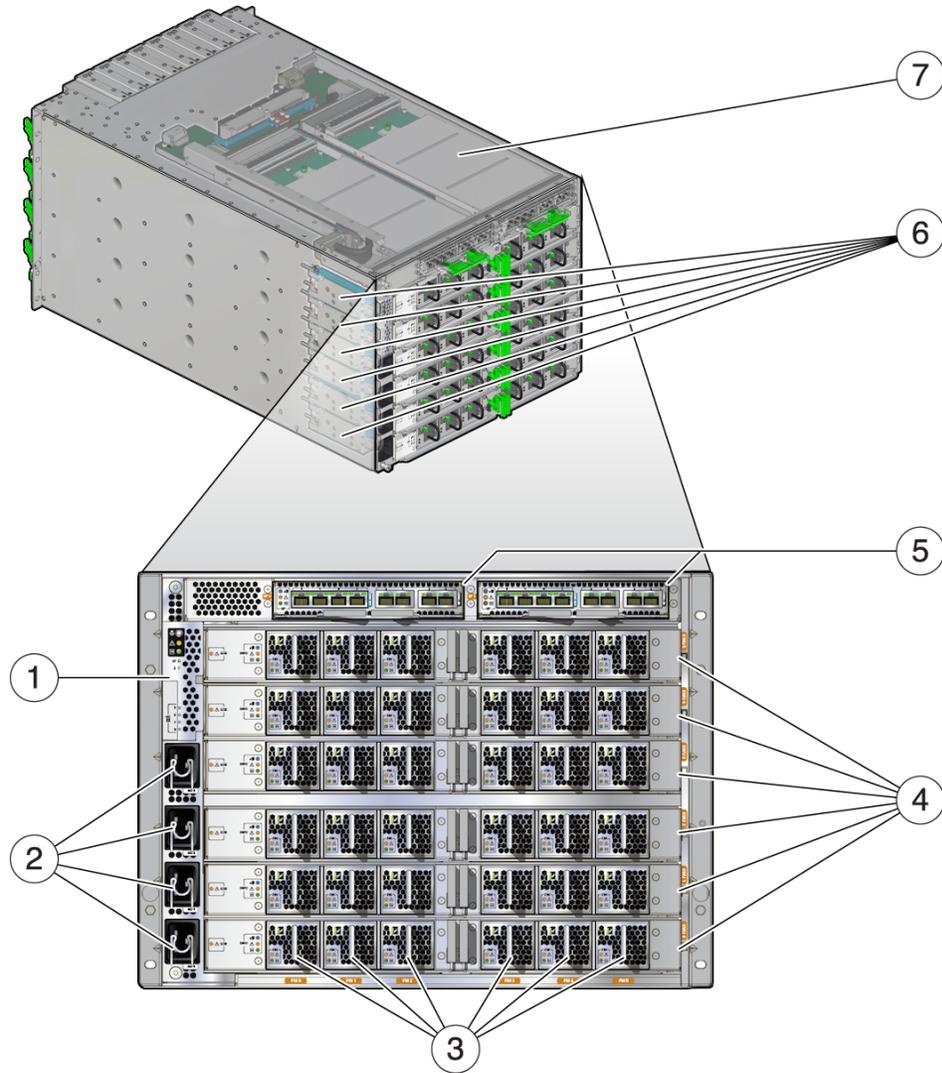
No.	Description	Links
	<ul style="list-style-type: none">■ II_SWITCH_SP (switch chassis, slot IT_14)■ II_CMIOU_SP (bottom CMIOU chassis slot, IT_5)	
4	Power supplies (4), top to bottom: PS9–PS6	“Servicing Power Supplies” on page 169

Related Information

- [“Switch Chassis Rear Components \(SPARC M7-16\)” on page 29](#)

Switch Chassis Rear Components (SPARC M7-16)

Access these components from the rear of the server. These components are not part of the chassis. You must remove these components to access the chassis.



No.	Description	Links
1	Rear indicator panel (1) This component is part of the power module. ROPNL1	“Servicing Power Modules” on page 239
2	AC inputs (1 strip, 4 outlets)	“Servicing Power Modules” on page 239

No.	Description	Links
	This component is part of the power module.	
	Top to bottom: AC9–AC6	
3	Fan modules (36), left to right: FM0–FM5 per switch unit	“Servicing Fan Modules (Switch Chassis)” on page 187
4	Switch units (6), top to bottom: SWU_5–SWU_0	“Servicing Switch Units” on page 193
5	SPs (2), left to right: SP0,SP1	“Servicing SPs” on page 121
6	PDECBS (6), top to bottom: PDECB13–PDECB8	“Servicing PDECBS” on page 203
7	SP tray (1)	“Servicing SP Trays” on page 247

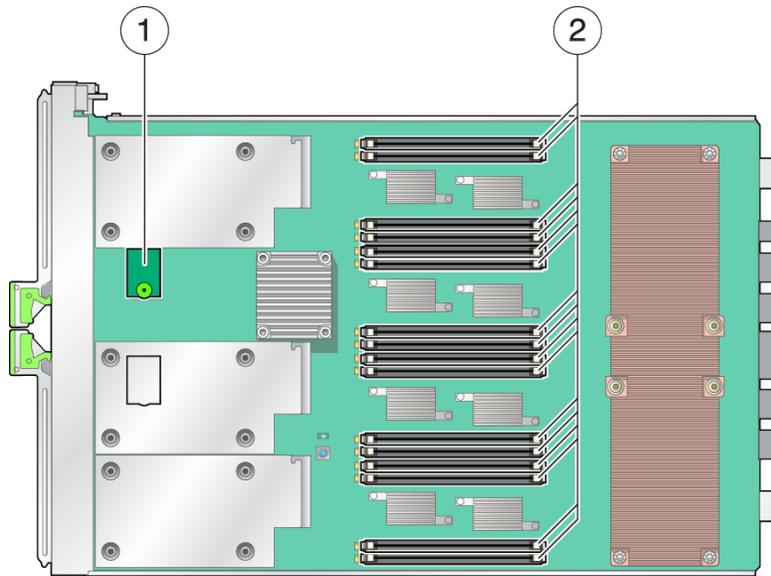
Related Information

- [“Switch Chassis Front Components \(SPARC M7-16\)” on page 27](#)

DIMM and eUSB Locations in a CMIU

DIMMs and a single eUSB disk are located in each of the CMIUs.

This figure shows a CMIU with all of the DIMM slots populated with DIMMs. All of the DIMM slots must be populated with the same size and type of DIMMs. For DIMM configuration guidelines, see [“DIMM Configuration” on page 110](#).



No.	Description	Link
1	eUSB disk	“Servicing eUSB Disks” on page 207
2	DIMMs	“Servicing DIMMs” on page 109

Related Information

- [“DIMM Configuration” on page 110](#)

Supported Storage Devices

The server supports these storage devices through FC, iSCSI, NAS, or IB protocols:

- SAN attached FC arrays
- ZFS appliances

The server supports solid state storage add-in-cards in addition to these types of tape backup and restore devices:

- TCP/IP

- Fibre channel
- SAS
- InfiniBand

You can install a mixture of storage devices, but the server requires at least one storage device to be installed and operational.

Contact your Oracle Sales representative for more information about the supported storage devices. Find the list of the supported PCIe HBAs at:

https://community.oracle.com/community/server_%26_storage_systems/systems-io/sparc-servers

Understanding Server Cooling Zones

These topics describe how components are cooled in the server rack.

Note - For information about the number of power supplies that must remain in a system for proper cooling, see [“Servicing Power Supplies” on page 169](#).

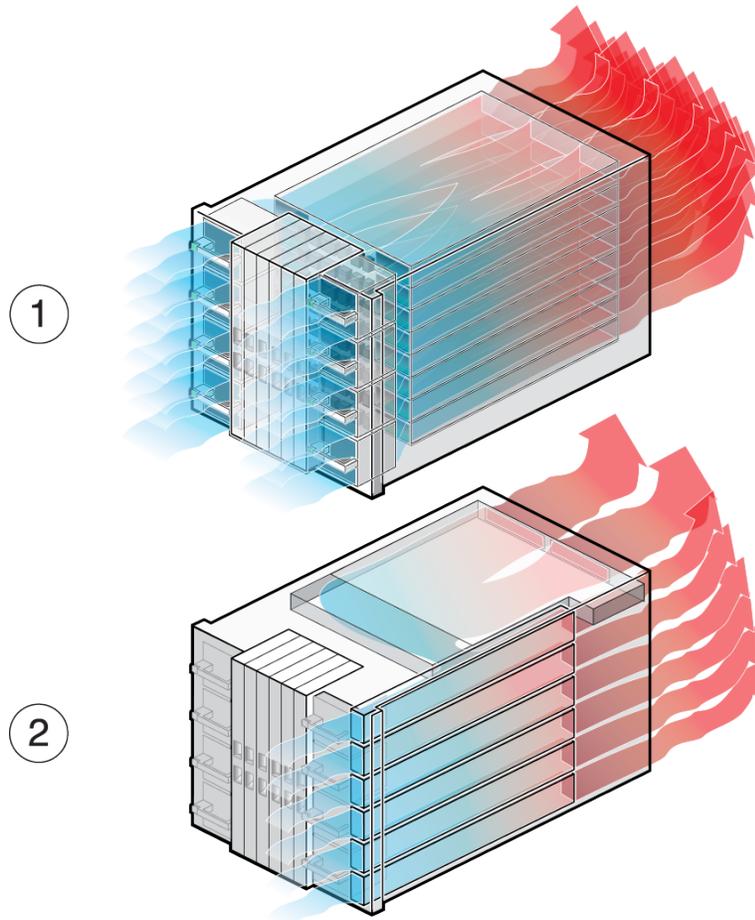
- [“CMIOU Chassis Cooling Zones” on page 33](#)
- [“Switch Chassis Cooling Zones” on page 35](#)

Related Information

- [“Preparing for Cooling” in *SPARC M8 and SPARC M7 Servers Installation Guide*](#)

CMIOU Chassis Cooling Zones

The CMIOU chassis has two cooling zones. In one cooling zone, eight fan modules push air through the CMIOUs from the front of the server and exhaust it at the rear of the server. In the other cooling zone, six fan modules push air through the power supplies and exhaust it through the chimney to the SPs and directly out the rear of the chassis.



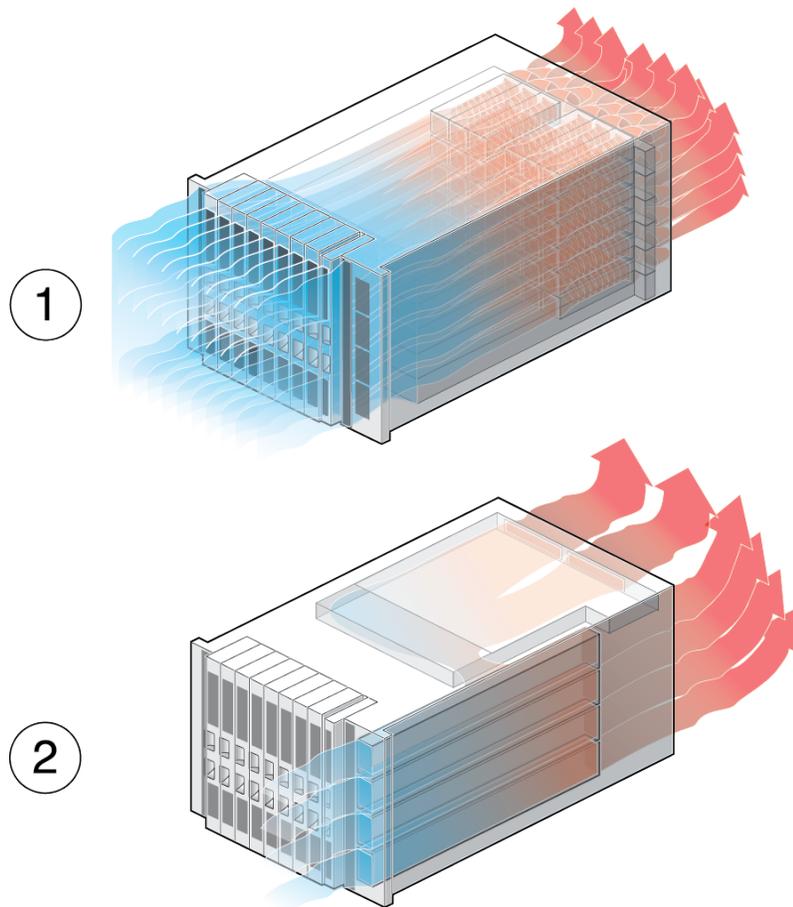
No.	Description	Link
1	Main CMIU cooling zone	“Servicing CMIUs” on page 87
2	CMIU power supply cooling zone	“Servicing Fan Modules (CMIU Chassis)” on page 183 and “Servicing Power Supplies” on page 169

Related Information

- [“Switch Chassis Cooling Zones” on page 35](#)

Switch Chassis Cooling Zones

The switch chassis has seven cooling zones. Six of the cooling zones contain a horizontal row of six fan modules each. Each of these zones pushes air through a single switch unit from the front of the server and exhausts it at the rear of the server. In the other cooling zone, four fan modules push air through the power supplies and exhaust it through the chimney to the SPs and directly out the rear of the chassis.



No.	Description	Link
1	Main switch unit cooling zones (1 through 6)	“Servicing Switch Units” on page 193

No.	Description	Link
2	Switch unit power supply cooling zone	“Servicing Fan Modules (Switch Chassis)” on page 187 and “Servicing Power Supplies” on page 169

Related Information

- [“CMIOU Chassis Cooling Zones” on page 33](#)

Component Service Task Reference

Use this table to identify the names of serviceable components and the sections that provide information about servicing them.

Component	SDM Name	Links
Battery	/SYS/SPx/BAT	“Servicing Batteries” on page 251
Chassis	Not applicable	“Servicing the CMIOU Chassis” on page 273
CMIOUs, 8 per CMIOU chassis	/System/DCUs/DCU_x/CMIOUy	“Servicing CMIOUs” on page 87
DIMMs, 16 per CMIOU	/System/Memory/DIMMs/DIMM_x	“Servicing DIMMs” on page 109
eUSB disks, 1 per CMIOU	Not applicable	“Servicing eUSB Disks” on page 207
Fan modules (CMIOU chassis); 8 per chassis	/System/Cooling/Fans/Fan_x	“Servicing Fan Modules (CMIOU Chassis)” on page 183
Fan modules (switch chassis); 36 per chassis, 6 per switch unit	/System/Cooling/Fans/Fan_x	“Servicing Fan Modules (CMIOU Chassis)” on page 183 “Servicing Fan Modules (Switch Chassis)” on page 187
Front indicator panel, 1 per server	Not applicable	“Servicing the Front Indicator Panel” on page 221
Interconnects	Not applicable	“Servicing SP Internal Interconnect Assemblies” on page 289 “Servicing Internal Interconnect Assemblies” on page 301
PCIe x16 card carriers, 24 per CMIOU chassis	Not applicable	“Servicing PCIe Cards” on page 145
PCIe cards, 3 cards per CMIOU	/Servers/PDomains/PDomain_x/system/PCI_Devices/Add-on/Device_x	“Servicing PCIe Cards” on page 145

Component	SDM Name	Links
PDECBS, 1 per CMIOU	/System/Other_Removable_Devices/ Power_Distribution_Boards/ Power_Distribution_Board_x	“Servicing PDECBS” on page 203
PDUs, 2 per rack	Not applicable	“Servicing PDUs” on page 257
Power module (rear indicator panel), 1 per chassis	Not applicable	“Servicing Power Modules” on page 239
Power supplies (CMIOU chassis); 6 per chassis	/System/Power/Power_Supplies/Power_Supply_x	“Servicing Power Supplies” on page 169
Power supplies (switch chassis); 4 per chassis	/System/Power/Power_Supplies/Power_Supply_x	“Servicing Power Supplies” on page 169
SPs (SPARC M8-8 and SPARC M7-8 servers); 2 per CMIOU chassis	/System/Other_Removable_Devices/ Service_Processors/Service_Processor_x	“Servicing SPs” on page 121
SPs (SPARC M7-16); 2 per switch chassis	/System/Other_Removable_Devices/ Service_Processors/Service_Processor_x	“Servicing SPs” on page 121
SPPs (SPARC M7-16 only); 2 per CMIOU chassis, 4 total	/System/Other_Removable_Devices/ Proxy_Service_Processors/ Proxy_Service_Processor_x	“Servicing SPs” on page 121
SP trays	Not applicable	“Servicing SP Trays” on page 247
Switch units (SPARC M7-16, only); 6 per switch chassis	/System/Other_Removable_Devices/ Scalability_Switch_Boards/ Scalability_Switch_Boards_x	“Servicing Switch Units” on page 193

Related Information

- [“Component Names Displayed by Diagnostic Software” on page 44](#)
- [“Component-Specific LEDs” on page 49](#)

Detecting and Managing Faults

These topics explain how to monitor the server status and troubleshoot faults in the server.

Step	Diagnostic Action Possible Outcome	Links
1.	Check the server for detected faults and for information about components that might require service. Identify components that require service and replace them, or continue to advanced troubleshooting.	“Checking for Faults” on page 39 “Interpreting LEDs” on page 48
2.	Perform additional troubleshooting, if needed. If log files or system messages indicate that a component requires service, replace it.	“Performing Advanced Troubleshooting” on page 54
3.	Manage faults following a service procedure. If a service procedure has cleared the fault, ensure that the server is now operational. If a fault remains following a service procedure, clear it manually.	“Verify That a Fault Has Been Cleared” on page 58
4.	Contact technical support if the problem persists.	https://support.oracle.com

Related Information

- [“Identifying Components” on page 19](#)
- [“Preparing for Service” on page 61](#)
- [“Controlling the Server and Domains” on page 71](#)
- [“Understanding Server Configurations and Failover Behavior” on page 83](#)

Checking for Faults

Use these tools to identify components that require service.

Step	Description	Links
1.	Run the <code>fmadm faulty</code> command to display information about components that require service.	“Identify Faulted Components” on page 40
2.	Run the <code>show disabled</code> command to display information about components that have been disabled either intentionally or because of a failure.	“Identify Disabled Components” on page 42 “Component Oracle ILOM State Properties” on page 43
3.	Identify the names of components that require service as reported by diagnostic software.	“Component Names Displayed by Diagnostic Software” on page 44
4.	Learn about fault tolerances that exist for specific components and guidelines for replacing them.	“Component Fault Tolerances” on page 46
5.	View the server components using the Oracle ILOM chassis view.	“Oracle ILOM Chassis View” on page 48

▼ Identify Faulted Components

The `fmadm faulty` displays a list of faults detected by PSH. You can run this command from either the host or through the Oracle ILOM fault management shell. This example shows how to check for faults through the Oracle ILOM fault management shell. You can also check for faults by typing `show faulty` at the Oracle ILOM prompt.

Note - When you examine the output generated by running the `fmadm faulty` command, identify all components that require service so they can be replaced at the same time. Doing so will minimize down time and reduce service calls.

1. **At the Oracle ILOM prompt start the fault management shell, and then type `fmadm faulty`.**

```
-> start /SP/faultmgmt/shell
Are you sure you want to start /SP/faultmgmt/shell (y/n)? y

faultmgmtsp> fmadm faulty
-----
Time                UUID                                msgid                Severity
-----
2014-10-27/10:20:25 18b66cdc-aa00-c614-a50f-eed199043bd7 SPT-8000-5X Major

Problem Status      : open
Diag Engine         : fdd 1.0
```

```

System
  Manufacturer : Oracle Corporation
  Name        : SPARC M7-x
  Part_Number : 32397701+7+1
  Serial_Number : AK00192372
-----
Suspect 1 of 1
  Fault class : fault.chassis.env.power.loss
  Certainty   : 100%
  Affects     : /SYS/PS9/SUPPLY
  Status      : faulted

```

```

FRU
  Status      : faulty
  Location    : /SYS/PS9
  Manufacturer : Power-One, Inc.
  Name        : A261_POWER_SUPPLY
  Part_Number : 7068817
  Revision    : 21
  Serial_Number : 465776G+1320B2083P
Chassis
  Manufacturer : Oracle Corporation
  Name        : SPARC M7-x
  Part_Number : 32397701+7+1
  Serial_Number : AK00192372

```

Description : A power supply AC input voltage failure has occurred.

Response : The service-required LED on the affected power supply and chassis will be illuminated.

Impact : Server will be powered down when there are insufficient operational power supplies.

Action : Please refer to the associated reference document at <http://support.oracle.com/msg/SPT-8000-5X> for the latest service procedures and policies regarding this diagnosis.

faultmgmtsp>

In this example, a fault is displayed that includes these details:

- Date and time of the fault (2014-10-27/10:20:25).
- UUID (18b66cdc-aa00-c614-a50f-eed199043bd7), which is unique to each fault.

- Message identifier (SPT-8000-5X), which can be used to obtain additional fault information from Knowledge Base articles.
2. **Use the message ID to obtain more information about this type of fault.**
 - a. **Obtain the message ID from console output.**
 - b. **Go to <https://support.oracle.com>, and search on the message ID in the Knowledge tab, or copy the URL in the Action field into a browser.**
 3. **Follow the suggested actions to repair the fault.**
 4. **If you found a fault that must be removed manually, go to “[Clear a Fault Manually](#)” on page 59.**

Related Information

- “[Log In to Oracle ILOM \(Service\)](#)” on page 71
- “[Clear a Fault Manually](#)” on page 59
- “[Component Names Displayed by Diagnostic Software](#)” on page 44

▼ Identify Disabled Components

You can run the `show disabled` command from the Oracle ILOM prompt to identify components that have been disabled either intentionally, by a user, or because of a fault.

1. **To identify disabled components, at the Oracle ILOM prompt type:**

```
-> show disabled
Target                               | Property           | Value
-----+-----+-----
...
/SYS/CMIOU0/CM/CMP/BOB31/CH0/DIMM | disable_reason    | Configuration Rules
...
```

2. **For additional information about a disabled component, type the `show - t` command and the Oracle ILOM target name:**

```
-> show -t /SYS/CMIOU0/CM/CMP/BOB31/CH0/DIMM
Target                               | Property           | Value
-----+-----+-----
...
```

```

/SYS/CMIOU0/CM/CMP/BOB31/CH0/DIMM | type | DIMM
/SYS/CMIOU0/CM/CMP/BOB31/CH0/DIMM | requested_config_state | Enabled
/SYS/CMIOU0/CM/CMP/BOB31/CH0/DIMM | current_config_state | Disabled
/SYS/CMIOU0/CM/CMP/BOB31/CH0/DIMM | disable_reason | Configuration Rules
/SYS/CMIOU0/CM/CMP/BOB31/CH0/DIMM | fru_name | 16384MB DDR4 SDRAM DIMM
...

```

Related Information

- [“Component Oracle ILOM State Properties” on page 43](#)
- [“Log In to Oracle ILOM \(Service\)” on page 71](#)
- [“Clear a Fault Manually” on page 59](#)
- [“Component Names Displayed by Diagnostic Software” on page 44](#)

Component Oracle ILOM State Properties

The following table defines the Oracle ILOM properties seen when using the Oracle ILOM show command.

Oracle ILOM Property	Definition
requested_config_state	Property can be Enabled or Disabled. When Enabled, the component is installed and accessible by the server. When Disabled, the component is installed, but the server cannot access it.
current_config_state	Property can be Enabled, Disabled, or Degraded. When Enabled, the component is installed and accessible by the server. When Disabled, the component is installed, but the server cannot access it. When Degraded, the component has faulted and requires service.
fault_state	Property can be OK or Faulted. The property will display OK when the component is working properly. When Faulted, the component has faulted and requires service.
clear_fault_action	Legacy property previously used to clear component faults. Use the <code>fnadm acquit</code> from the Oracle ILOM fault management shell to clear component faults. See “Clear a Fault Manually” on page 59 .

Related Information

- [“Identify Disabled Components” on page 42](#)
- [“Component Names Displayed by Diagnostic Software” on page 44](#)
- [“Component Service Task Reference” on page 36](#)

Component Names Displayed by Diagnostic Software

Use the information in this table to identify the name of a component that requires service.

Component	Oracle ILOM Target Name Reported
Battery	/SYS/SPx/BAT
	/SYS/SPPx/BAT
CMs	/SYS/CMIOUx/CM
CMIOUs	/SYS/CMIOUx
CMPs	/SYS/CMIOUx/CM/CMP
	SPARC M8-8: x is 0–7
	SPARC M7-8: x is 0–7
	SPARC M7-16: x is 0–15
DIMMs	/SYS/CMIOUx/CM/CMP/BOByw/CHz/DIMM
	SPARC M8-8: x is 0–7, y is 0–3, w is 0 or 1, z is 0 or 1
	SPARC M7-8: x is 0–7, y is 0–3, w is 0 or 1, z is 0 or 1
	SPARC M7-16: x is 0–15, y is 0–3, w is 0 or 1, z is 0 or 1
Fan modules (CMIOU chassis)	/SYS/FMx
	Bottom CMIOU chassis: x is 0–7
	Top CMIOU chassis: x is 8–15
Fan modules (switch chassis)	/SYS/SWUx/FMy
	x is 0–5, y is 0–5
FPGA (CMIOU)	/SYS/CMIOUx/FPGA
	SPARC M8-8: x is 0–7
	SPARC M7-8: x is 0–7
	SPARC M7-16: x is 0–15
FPGA (SP)	/SYS/SPx/FPGA
FPGA (SP) SSI links (SPARC M8-8 and SPARC M7-8)	/SYS/SPx/FPGA/SSI_LINKy
	x is 0 or 1, y is 0–7
FPGA (SPP)	/SYS/SPPx/FPGA

Component	Oracle ILOM Target Name Reported
FPGA (SPP) SSI links (SPARC M7-16)	/SYS/SPPx/FPGA/SSI_LINKy x is 0–3, y is 0–7
FPGA (switch unit)	/SYS/SWUx/FPGA x is 0–5
Front indicator panel (SPARC M8-8 and SPARC M7-8)	/SYS/FOPNL
Front indicator panel (SPARC M7-16)	/SYS/FOPNLx x is 0–2
ICID (SPARC M8-8 and SPARC M7-8)	/SYS/ICID
ICID (SPARC M7-16)	/SYS/ICIDx x is 0–2
Interconnects	/SYS/ITx/interconnect-name See “ CMIOU Chassis Rear Components ” on page 25 for SPARC M8-8 and SPARC M7-8 interconnect names. See “ Switch Chassis Rear Components (SPARC M7-16) ” on page 29 for SPARC M7-16 interconnect names.
PCIe cards	/SYS/CMIOUx/PCIEy
PCIe card carriers	/SYS/CMIOUx/PCIEy/CAR SPARC M8-8: x is 0–7, y is 1–3 SPARC M7-8: x is 0–7, y is 1–3 SPARC M7-16: x is 0–15, y is 1–3
PDECBs	/SYS/PDECBx SPARC M8-8: x is 0–7 SPARC M7-8: x is 0–7 SPARC M7-16: x is 0–21
Power supplies	/SYS/PSx SPARC M8-8: x is 0–5 SPARC M7-8: x is 0–5 SPARC M7-16: x is 0–15
Rear indicator panel (SPARC M8-8 and SPARC M7-8)	/SYS/ROPNL
Rear indicator panel (SPARC M7-16)	/SYS/ROPNLx x is 0–2

Component	Oracle ILOM Target Name Reported
SPs	/SYS/SPx x is 0 or 1
SPDB (SPARC M8-8 and SPARC M7-8)	/SYS/SPDB
SPDB (SPARC M7-16)	/SYS/SPDBx x is 0–2
SPMs (CMIOU chassis)	/SYS/SPx/SPMy SPARC M8-8 and SPARC M7-8 (two PDomains): x is 0, 1 and y is 0, 1 SPARC M8-8 and SPARC M7-8 (one PDomain): x is 0, 1 and y is 0 /SYS/SPPx/SPMy SPARC M7-16: x is 0–3, y is 0–1
SPMs (switch chassis, SPARC M7-16)	/SYS/SPx/SPMy x is 0–1, y is 0
SPPs (SPARC M7-16)	/SYS/SPPx
Switch units	/SYS/SWUx x is 0–5

Related Information

- [“Component Service Task Reference” on page 36](#)
- [“Component-Specific LEDs” on page 49](#)

Component Fault Tolerances

This topic describes the level of fault tolerance for specific components and provides guidelines for replacing these components when a fault occurs.

- **CMIOUs.** Remove a faulty CMIOU only when a replacement CMIOU is available. Install the new CMIOU as quickly as possible, within 10 minutes, if possible. You must prepare a CMIOU before removing it from the server.
- **DIMMs.** If a DIMM is diagnosed to be faulty while the system is running, the memory will dynamically switch from 16-way to 15-way interleave by distributing the contents of the faulty DIMM into the other 15 DIMMs. For more information, refer to [“DIMM Sparing” in *SPARC M8 and SPARC M7 Servers Administration Guide*](#).

- **Fan modules (CMIOU chassis).** The CMIOU chassis has eight fan modules. The server will continue to operate at full capacity with seven fan modules installed in the CMIOU chassis. The server will not operate with fewer than seven fans. If the server is operating with seven fan modules and one or more of those fans fails, the server might power down to keep from overheating.
- **Fan modules (switch chassis).** The switch chassis has 36 fan modules. Each switch unit has six dedicated fan modules. The server will continue to operate at full capacity with five of the six fans operating for each switch unit. If one of the five operating fans fails, the server might power down to keep from overheating.
- **PCIe cards.** If the PCIe card is assigned to an I/O domain on a logical domain, you must prepare the card for removal to avoid a configuration that is unsupported.
- **Power supplies.** The power supplies for the CMIOU and switch chassis are 2N redundant. If a power supply fails in either a switch or CMIOU chassis, the server can operate normally with only three power supplies in the switch chassis or five power supplies in the CMIOU chassis.

There are no restrictions into which slots the power supplies have to be installed. You can install them in any of the power supply slots as long as all power supplies are installed.

- **SPs.** Replace one SP in the server at a time. You must prepare an SP before removing it from the server.
- **Switch units.** Switch units are configured to work together as a single unit. If a switch unit fails, the server will operate in degraded mode. At least five switch units must be functioning for the server to operate. You must prepare a switch unit before removing it from the server.

Note - If you remove any of these components while the server is powered on, wait 30 seconds before installing the replacement component. Doing so ensures that Oracle ILOM has enough time to detect the new component, which is required for the software to power it on.

Related Information

- [“Component Service Task Reference” on page 36](#)
- [“Servicing CMIOUs” on page 87](#)
- [“Servicing DIMMs” on page 109](#)
- [“Servicing Fan Modules \(CMIOU Chassis\)” on page 183](#)
- [“Servicing Fan Modules \(Switch Chassis\)” on page 187](#)
- [“Servicing PCIe Cards” on page 145](#)
- [“Servicing Power Supplies” on page 169](#)
- [“Servicing SPs” on page 121](#)
- [“Servicing Switch Units” on page 193](#)

Oracle ILOM Chassis View

The web interface of Oracle ILOM provides an interactive chassis view page to view the overall health of the chassis components. The chassis view provides a visual representation of the front and rear of the server chassis to show all serviceable components and indicate where components are absent. For more information about the Oracle ILOM chassis view, refer to [“SPARC Chassis View” in Oracle ILOM User’s Guide for System Monitoring and Diagnostics Firmware Release 4.0.x](#)

Graphic indicators on the chassis view interface display the state of individual components. Some components feature graphic indicators to show their health status, such as a green power button for CMIOUs that are powered on, or a red X for components that are faulty and need service. Refer to the web interface online help for more information about health service definitions.

For instructions on using the Oracle ILOM chassis view, refer to [“View Status and Faults in Chassis View \(Oracle ILOM\)” in SPARC M8 and SPARC M7 Servers Administration Guide](#).

Related Information

- [“Interpreting LEDs” on page 48](#)
- [“Identify Faulted Components” on page 40](#)

Interpreting LEDs

Use the following information about LEDs to identify components that require service.

Step	Description	Links
1.	Use component-specific LEDs to locate a component that the <code>fmadm faulty</code> command reports as faulty.	“Component-Specific LEDs” on page 49
2.	Check the LEDs on the front and rear of the server.	“Front Indicator Panel Controls and LEDs” on page 50 “Rear Indicator Panel Controls and LEDs” on page 52

Component-Specific LEDs

This table lists component-specific fault LEDs that light when the component requires service. You can use these LEDs to help locate a component that the `fmadm faulty` command reports as faulty. Where indicated, these components also display blue Ready to Remove LEDs that must light before you can remove the component.

Note - Component LEDs might not be lit when the component is faulty. Rely on software to determine if a component is faulty. See [“Checking for Faults” on page 39](#).

Component	LEDs That Indicate Service Is Required and Allowed
Battery	LED on SP or SPP containing it
CMIOUs	<ul style="list-style-type: none"> ■ CMIOU Service Required LED ■ Blue Ready to Remove LED
DIMMs	<ul style="list-style-type: none"> ■ CMIOU Service Required LED on CMIOU containing faulted DIMM ■ DIMM Fault Remind LED, visible only when the CMIOU cover is removed and the DIMM fault remind button is pressed
eUSB disks	CMIOU Service Required LED on CMIOU containing eUSB disk
Fan modules	Fan Service Required LED on faulted fan
PCIe cards/carriers	PCIe Fault LED on PCIe carrier
PDECBs	ECB Fault LED on the CMIOU or switch chassis that contains the faulty PDECB
Power supplies	PS Service Required LED on faulted power supply
SPs	<ul style="list-style-type: none"> ■ SP Service Required LED on faulted SP ■ Blue Ready to Remove LED
Switch units	<ul style="list-style-type: none"> ■ Switch Unit Service Required LED ■ Blue Ready to Remove LED

Related Information

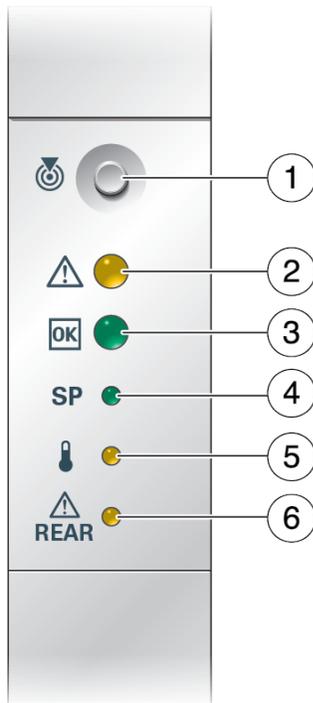
- [“Servicing CMIOUs” on page 87](#)
- [“Servicing DIMMs” on page 109](#)
- [“Servicing Fan Modules \(CMIOU Chassis\)” on page 183](#)
- [“Servicing Fan Modules \(Switch Chassis\)” on page 187](#)
- [“Servicing PCIe Cards” on page 145](#)
- [“Servicing Power Supplies” on page 169](#)
- [“Servicing SPs” on page 121](#)

- [“Servicing Switch Units” on page 193](#)

Front Indicator Panel Controls and LEDs

On SPARC M8-8 and SPARC M7-8 servers, the front indicator panel is located on the CMIOU chassis.

On the SPARC M7-16 server, the front indicator panel is located on the switch chassis.



No.	LED	Icon or Label	Description
1	Locator LED and button (white)		<p>You can turn on the Locator LED to identify a particular server. When lit, the LED blinks rapidly. Turn on the Locator LED by pressing the Locator button, or, in Oracle ILOM, type:</p> <pre>set /System locator_indicator=on</pre> <p>All lights on test: Press the Locate button three times within two seconds to test the functionality of the front and rear panel LEDs as</p>

No.	LED	Icon or Label	Description
			well as other server LEDs under Oracle ILOM control. The LEDs will light for 15 seconds and then return to normal operation. Note - Component LEDs that are not under Oracle ILOM control will not light up during this test.
2	Service Required LED (amber)		The <code>fmadm faulty</code> command provides details about any faults that cause this indicator to light. See “Identify Faulted Components” on page 40 .
3	OK LED (green)		Under most fault conditions, individual component LEDs are lit in addition to the System Service Action Required indicator. Indicates these conditions: <ul style="list-style-type: none"> ■ Off – Server is not running in its normal state. Power might be off. ■ Steady on – Server is powered on and is running in its normal operating state. ■ Short blink every three seconds – Server is running in Standby mode and can be quickly returned to full function. ■ Slow blink – A normal but transitory activity is taking place. Slow blinking might indicate that system diagnostics are running or that the server is booting.
4	SP LED	SP	Indicates these conditions: <ul style="list-style-type: none"> ■ Off – The server is not receiving power. For example, the power cords are not connected or the facility power grid circuit breakers are switched off. ■ Steady on green – One or both of the SPs have initialized and can be accessed through the Oracle ILOM CLI or web interface. ■ Blink green – SPs are initializing the Oracle ILOM firmware.
5	System Overtemp LED (amber)		Indicates these conditions: <ul style="list-style-type: none"> ■ Off – Indicates a steady state, no service action is required. ■ Steady on – Indicates that a temperature failure event has been acknowledged and a service action is required.
6	Rear Fault LED (amber)		Indicates these conditions: <ul style="list-style-type: none"> ■ Off – Indicates a steady state, no service action is required. ■ Steady on – Indicates that a failure event has been acknowledged for a component that is accessed from the rear of the server and a service action is required on at least one of the modules.

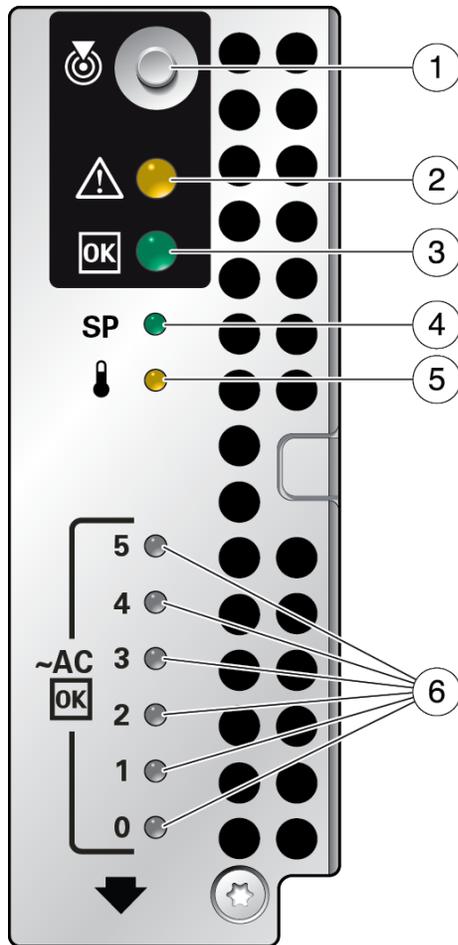
Related Information

- [“Rear Indicator Panel Controls and LEDs” on page 52](#)
- [“Locate the Server” on page 65](#)

Rear Indicator Panel Controls and LEDs

On SPARC M8-8 and SPARC M7-8 servers, the rear indicator panel is located on the CMIOU chassis. On the SPARC M7-16 server, rear indicator panels are located on both CMIOU chassis and on the switch chassis.

The front and rear indicator panel LEDs are always in sync. For example, if the green OK LED is lit on the front indicator panel, the OK LED will also be lit on the rear indicator panel.



No.	LED	Icon or Label	Description
1	Locator LED and button (white)		<p>You can turn on the Locator LED to identify a particular server. When lit, the LED blinks rapidly. Turn on the Locator LED by pressing the Locator button, or, in Oracle ILOM, type:</p> <pre>set /System locator_indicator=on</pre> <p>All lights on test: Press the Locate button three times within two seconds to test the functionality of the front and rear panel LEDs as well as other server LEDs under Oracle ILOM control. The LEDs will light for 15 seconds and then return to normal operation.</p> <p>Note - Component LEDs that are not under Oracle ILOM control will not light up during this test.</p>
2	Service Required LED (amber)		<p>The <code>fmadm faulty</code> command provides details about any faults that cause this indicator to light. See “Identify Faulted Components” on page 40.</p> <p>Under most fault conditions, individual component LEDs are lit in addition to the System Service Action Required indicator.</p>
3	OK LED (green)		<p>Indicates these conditions:</p> <ul style="list-style-type: none"> ■ Off – No AC power is present. Power might be off. ■ Steady on – Server is powered on and is running in its normal operating state. ■ Short blink every three seconds – Server is running in Standby mode and can be quickly returned to full function. ■ Slow blink – A normal but transitory activity is taking place. Slow blinking might indicate that system diagnostics are running or that the system is booting.
4	SP LED	SP	<p>Indicates these conditions:</p> <ul style="list-style-type: none"> ■ Off – No AC power is present. For example, the PDUs are not switched or the facility power grid circuit breakers are switched off. ■ Steady on green – One or both of the SPs have initialized and can be accessed through the Oracle ILOM CLI or web interface. ■ Blink green – SPs are initializing the Oracle ILOM firmware.
5	System Overtemp LED (amber)		<p>Indicates these conditions:</p> <ul style="list-style-type: none"> ■ Off – Indicates a steady state, no service action is required. ■ Steady on – Indicates that a temperature failure event has been acknowledged and a service action is required.

No.	LED	Icon or Label	Description
6	AC OK LEDs		These LEDs light only after the SP LED turns green and indicate these conditions:
	CMIOU chassis (top; SPARC M7-16): AC 15 through AC 10		<ul style="list-style-type: none"> ■ Off – No AC power is applied to the indicated power supplies. ■ Green – AC power is applied to the indicated power supplies.
	Switch chassis (SPARC M7-16): AC 9 through AC 6		
	CMIOU chassis (bottom): AC 5 through AC 0		

Related Information

- [“Front Indicator Panel Controls and LEDs” on page 50](#)
- [“Locate the Server” on page 65](#)

Performing Advanced Troubleshooting

If you are unable to diagnose faults using the methods provided in [“Checking for Faults” on page 39](#), use any of the following methods to diagnose faults on the server.

Description	Links
Generate and examine diagnostic information.	“Display Fault Diagnostics (Message Buffer)” on page 54
Examine log files for additional information about the server.	“View Log Files (Oracle Solaris)” on page 55 “View Log Files (Oracle ILOM)” on page 55
Generate and examine low-level diagnostic information generated by POST.	“Checking Server and Component Health With POST” on page 56

▼ Display Fault Diagnostics (Message Buffer)

Run the `dmesg` command on the host to check the system buffer for recent diagnostic messages and then display them.

1. **Log in as superuser.**
2. **Type:**

```
# dmesg
```

Related Information

- [“View Log Files \(Oracle Solaris\)” on page 55](#)
- [“View Log Files \(Oracle ILOM\)” on page 55](#)

▼ View Log Files (Oracle Solaris)

The error logging daemon, `syslogd`, automatically records various system warnings, errors, and faults in message files. These messages can alert you to system problems such as a device that is about to fail. For example, drive faults are usually captured by the Oracle Solaris message files.

The `/var/adm` directory contains several message files. The most recent messages are in the `/var/adm/messages` file. After a period of time (usually every week), a new messages file is automatically created. The original contents of the messages file are rotated to a file named `messages.1`. Over a period of time, the messages are further rotated to `messages.2` and `messages.3`, and then deleted.

1. **Log in to Oracle Solaris.**
2. **View log files.**
3. **To view all logged messages, type:**

```
# more /var/adm/messages
```

```
# more /var/adm/messages*
```

Related Information

- [“Display Fault Diagnostics \(Message Buffer\)” on page 54](#)
- [“View Log Files \(Oracle Solaris\)” on page 55](#)

▼ View Log Files (Oracle ILOM)

1. **View the event log.**

```
-> show /SP/logs/event/list
```

2. View the audit log.

```
-> show /SP/logs/audit/list
```

Related Information

- [“Display Fault Diagnostics \(Message Buffer\)” on page 54](#)
- [“View Log Files \(Oracle Solaris\)” on page 55](#)

Checking Server and Component Health With POST

These topics explain how to configure POST as a diagnostic tool.

- [“POST Overview” on page 56](#)
- [“Oracle ILOM Properties That Affect POST Behavior” on page 58](#)
- [“Configure POST” on page 57](#)

POST Overview

POST is a group of PROM-based tests that run when the host is powered on or reset. POST checks the basic integrity of the critical hardware components in the server.

You can also set other Oracle ILOM properties to control various other aspects of POST operations. For example, you can specify the events that cause POST to run, the level of testing POST performs, and the amount of diagnostic information POST displays. These properties are described in [“Oracle ILOM Properties That Affect POST Behavior” on page 58](#).

If POST detects a faulty component, the component is disabled automatically. If the server is able to run without the disabled component, the server boots when POST completes its tests. For example, if POST detects a faulty processor core, the core is disabled, POST completes its test sequence, and the server boots using the remaining cores.

Related Information

- [“Oracle ILOM Properties That Affect POST Behavior” on page 58](#)

- [“Configure POST” on page 57](#)

▼ Configure POST

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(Service\)” on page 71](#).

2. Set the virtual keyswitch to the value that corresponds to the POST configuration you want to run.

This example is for the SPARC M7-8 and sets the virtual keyswitch to normal, which configures POST to run according to other parameter values.

```
-> set /HOST keyswitch_state=normal
Set 'keyswitch_state' to 'Normal'
```

Note - The value of `keyswitch_state` must be `normal` when individual POST parameters are changed.

For possible values for the `keyswitch_state` parameter, see *Oracle ILOM Administrator's Guide for Configuration and Maintenance* at <http://www.oracle.com/goto/ilom/docs>.

3. If the virtual keyswitch is set to normal, and you want to define level or verbosity, set the respective parameters.

Syntax:

```
set /HOST/diag property=value.
```

For example:

```
-> set /HOST/diag default_level=max
-> set /HOST/diag default_verbosity=max
```

4. View the current values for settings.

For example:

```
-> show /HOST/diag

/HOST0/diag
Targets:

Properties:
  default_level = max
  default_verbosity = max
```

```
error_level = max
error_verbosity = max
hw_change_level = max
hw_change_verbosity = max
```

```
Commands:
  cd
  set
  show
```

->



Caution - Setting the verbosity values to max can cause POST to take more time to complete its testing of the server. For some configurations, setting the verbosity values to none will prevent POST output from displaying on the console for an extended period of time.

Related Information

- [“POST Overview” on page 56](#)
- [“Oracle ILOM Properties That Affect POST Behavior” on page 58](#)

Oracle ILOM Properties That Affect POST Behavior

There are a number of Oracle ILOM commands that you can use to perform host diagnostic tests. For details about using these commands, refer to the chapter that describes configuring host server management actions in the *Oracle ILOM Administrator's Guide for Configuration and Maintenance* for your server's version of the Oracle ILOM firmware at <http://www.oracle.com/goto/ilom/docs>.

Related Information

- [“POST Overview” on page 56](#)
- [“Configure POST” on page 57](#)

▼ Verify That a Fault Has Been Cleared

1. **After a faulted component is replaced and power is restored to the server or component, check the server LEDs.**

Verify that the OK and AC Present LEDs are lit, and that the Fault LED and front and rear Service Required LEDs are not lit.

See [“Interpreting LEDs” on page 48](#).

2. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(Service\)” on page 71](#).

3. Verify that the server is operating normally.

At the Oracle ILOM prompt, type:

```
-> start SP/faultmgmt/shell
Are you sure you want to start the faultmgmt shell (y/n)? y

faultmgmtsp> fmadm faulty
```

4. Determine your next step.

- If a fault was detected using the `fmadm faulty` command, see [“Clear a Fault Manually” on page 59](#).
- If no fault was detected, the component was installed successfully.

Related Information

- [“Identify Faulted Components” on page 40](#)
- [“Clear a Fault Manually” on page 59](#)

▼ Clear a Fault Manually

When the server detects faults, the faults are logged and displayed on the console. In most cases, after the fault is repaired, the corrected state is detected by the server, and the fault condition is repaired automatically. In cases where the fault condition is not automatically cleared, you must clear the fault manually.

1. After replacing a faulty component, power on the server, and verify that the fault for that component has cleared.

See [“Verify That a Fault Has Been Cleared” on page 58](#).

2. Determine your next step.

- If no fault was detected, you do not need to do anything else. Do not perform the subsequent steps.
- If a fault was detected, continue to the next step.

3. Clear the fault from all persistent fault records.

In some cases, even though the fault is cleared, some persistent fault information remains and results in erroneous fault messages at boot time. To ensure that these messages are not displayed, type:

```
faultmgmtsp> fmadm acquit NAC-name
```

4. If required, reset the server.

In some cases, the output of the `fmadm faulty` command might include this message for the faulty component:

```
faulted and taken out of service.
```

If this message appears in the output, you must reset the affected domain after you manually repair the fault.

```
faultmgmtsp> exit  
-> reset /Servers/PDomains/PDomain_x/HOST  
Are you sure you want to reset /System? y  
Resetting /System ...
```

5. Clear the fault in the Oracle Enterprise Manager Ops Center software, if applicable.

Clearing a fault with the `fmadm acquit` command does not clear that fault in the Oracle Enterprise Manager Ops Center software. You must manually clear the fault or incident. For more information, see "Marking an Incident Repaired" in the *Oracle Enterprise Manager Ops Center Operations Reference* at: <http://www.oracle.com/technetwork/oem/ops-center/index.html>

6. If you are servicing a component, return to the procedure for that component.

Related Information

- [“Identify Faulted Components” on page 40](#)

Preparing for Service

These topics explain how to prepare to service the server.

Step	Description	Links
1.	Review safety and handling information.	“Safety Information” on page 61
2.	Gather the tools for service.	“Tools Needed for Service” on page 62
3.	Locate the server to be serviced.	“Locate the Server” on page 65
4.	Find the server serial number.	“Find the Server Serial Number” on page 64
5.	Locate the component service information.	“Component Service Categories” on page 63
6.	Prevent ESD damage before you handle any server component.	“Prevent ESD Damage” on page 65 “Attach an Antistatic Wrist Strap” on page 66
7.	Properly prepare a component for return to Oracle.	“Prepare a Component for Return to Oracle” on page 68

Related Information

- [“Identifying Components” on page 19](#)
- [“Detecting and Managing Faults” on page 39](#)
- [“Controlling the Server and Domains” on page 71](#)
- [“Understanding Server Configurations and Failover Behavior” on page 83](#)

Safety Information

For your protection, observe the following safety precautions when setting up your equipment:

- Follow all cautions and instructions marked on the equipment and described in the documentation shipped with your server.
- Follow all cautions and instructions marked on the equipment and described in the *SPARC M7 Series Servers Safety and Compliance Guide*.

- Remove power from the server before servicing any of the components that are inside the chassis.
- Ensure that the voltage and frequency of your power source match the voltage and frequency inscribed on the equipment's electrical rating label.
- Follow the ESD safety practices as described in [“Prevent ESD Damage” on page 65](#).

Safety Symbols

Note the meanings of the following symbols that might appear in this document:



Caution - There is a risk of personal injury or equipment damage. To avoid personal injury and equipment damage, follow the instructions.



Caution - Hot surface. Avoid contact. Surfaces are hot and might cause personal injury if touched.



Caution - Hazardous voltages are present. To reduce the risk of electric shock and danger to personal health, follow the instructions.

Related Information

- [“Removing Power From the Server or Domain” on page 73](#)
- [“Tools Needed for Service” on page 62](#)

Tools Needed for Service

You will need the following tools for most service operations:

- Antistatic wrist strap
- Grounded antistatic mat large enough for the component to be serviced
- No. 2 Phillips and flathead screwdrivers
- T8, T10, T20, and T25 Torx wrench key, wrench, or driver
- Mechanical lift (for some service procedures if only one person is present)

Related Information

- [“Component Service Categories” on page 63](#)
- [“Prevent ESD Damage” on page 65](#)

Filler Panels and Modules

Depending on the configuration, the server can include the following items:

- CMIOU fillers are present in configurations that have fewer than the maximum number of CMIOUTs installed. A CMIOU filler does not need to be installed in an empty slot during a CMIOU service procedure.
- Port plugs are installed in the serial and network ports on an SP or SPP that are not used by your system's configuration. These port plugs must be transferred from an SP or SPP during the replacement of these components.
- No filler panels are required for the PCIe slots as long as the PCIe card carrier is installed.



Caution - To maintain the proper air flow, all filler panels and modules must remain in the server unless you remove one to install a functioning component at the same time.

Related Information

- [“Safety Information” on page 61](#)
- [“Component Service Categories” on page 63](#)

Component Service Categories

The following table identifies the replaceable server components.

Component	A/C Power Status for Removal	Authorized Service Personnel Only	Remove and Replace Instructions
Battery	On	X	“Servicing Batteries” on page 251
Chassis	Off	X	“Servicing the CMIOU Chassis” on page 273

Component	A/C Power Status for Removal	Authorized Service Personnel Only	Remove and Replace Instructions
			“Servicing the Switch Chassis” on page 281
CMIOUs	On or off	X	“Servicing CMIOUs” on page 87
DIMMs	On	X	“Servicing DIMMs” on page 109
eUSB disks	On	X	“Servicing eUSB Disks” on page 207
Fan modules	On or off		“Servicing Fan Modules (CMIOU Chassis)” on page 183
			“Servicing Fan Modules (Switch Chassis)” on page 187
Fan cable assembly	Off	X	“Servicing a CMIOU Chassis Fan Cable Assembly” on page 211
Front indicator panels	Off	X	“Servicing the Front Indicator Panel” on page 221
Front indicator cables	Off	X	“Servicing the Front Indicator Panel Cable” on page 231
Interconnect assemblies	Off	X	“Servicing SP Internal Interconnect Assemblies” on page 289
			“Servicing Internal Interconnect Assemblies” on page 301
			“Servicing External Interconnect Assemblies” on page 309
PCIe cards	On or off		“Servicing PCIe Cards” on page 145
PCIe card carriers	On or off		“Servicing PCIe Cards” on page 145
PDECBS	On or off	X	“Servicing PDECBS” on page 203
PDUs	Off	X	“Servicing PDUs” on page 257
Power supplies	On or off		“Servicing Power Supplies” on page 169
Power modules	Off	X	“Servicing Power Modules” on page 239
SPs	On or off	X	“Servicing SPs” on page 121
SP tray	Off	X	“Servicing SP Trays” on page 247
Switch units	On or off	X	“Servicing Switch Units” on page 193

▼ Find the Server Serial Number

If you need technical support for your server, you must to provide the server's serial number.

- Use one of the following options to find the serial number:

- a. **Locate the manufacturing sticker on the front of the server or on the sticker on the side of the server.**

- b. **At the Oracle ILOM prompt, type:**

```
-> show /System serial_number

/System
  Properties:
    serial_number = AK00239918
->
```

Related Information

- [“Locate the Server” on page 65](#)

▼ Locate the Server

1. **At the Oracle ILOM prompt, type:**

```
-> set /System locator_indicator=on
Set 'locator_indicator' to 'on'
```

The white Locator LEDs (one on the front panel and one on the rear panel) blink.

2. **After locating the server with the blinking Locator LED, turn it off by pressing the Locator button.**

Note - Alternatively, you can turn off the Locator LED by setting the value to off.

Related Information

- [“Interpreting LEDs” on page 48](#)

▼ Prevent ESD Damage

Many components housed within the chassis can be damaged by ESD. To protect these components from damage, perform the following steps before opening the chassis for service.

1. **Prepare an antistatic surface to set parts on during the removal, installation, or replacement process.**

Place ESD-sensitive components on a grounded antistatic mat large enough to fit the entire component. Properly ground the mat to a metal surface on the chassis or to an ESD grounding jack on the rack. Refer to the antistatic mat documentation for grounding instructions.

2. Attach an antistatic wrist strap.

When servicing or removing server components, attach an antistatic strap to your wrist and then to an ESD grounding jack on the rack.

See [“Attach an Antistatic Wrist Strap” on page 66](#) for the ESD grounding jack locations on Oracle racks. If you installed a stand-alone SPARC M8-8 or SPARC M7-8 server in your own rack, refer to the rack documentation for grounding instructions.

Related Information

- [“Tools Needed for Service” on page 62](#)
- [“Safety Information” on page 61](#)

▼ **Attach an Antistatic Wrist Strap**

Always wear an antistatic wrist strap connected to a metal surface on the chassis when you work on server components.

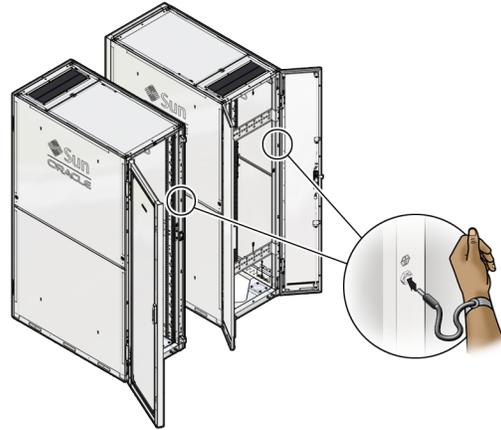
● **Attach an antistatic wrist strap to one of the ESD grounding jacks on the server.**

Rackmounted servers contain ESD grounding jacks in the front and rear of the rack.

Note - If you are installing a stand-alone server into a non-Oracle rack, refer to the rack's documentation for the ESD jack locations.

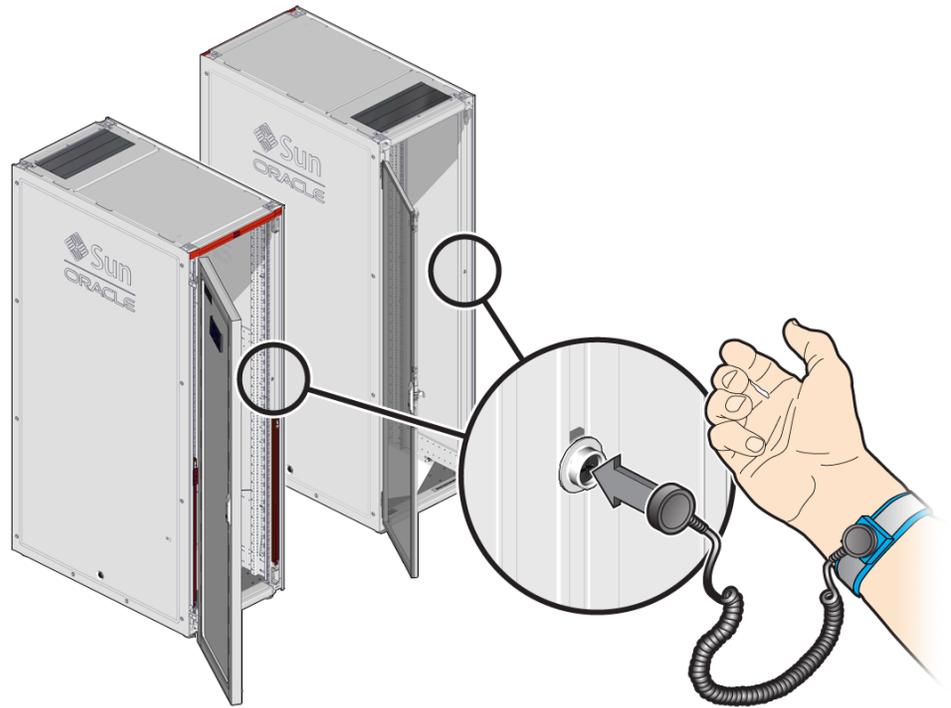
- **The Oracle Rack Cabinet 1242 contains eight ESD grounding jacks, four in the front and two in the rear of the rack.**

These grounding jacks accommodate 4-mm (0.16-in.) banana plug connectors.



- The Sun Rack II 1242 rack contains two ESD grounding jacks, one in the front and one in the rear of the rack.

These grounding jacks accommodate 10-mm (0.39-in.) snap connectors.



Related Information

- [“Safety Information” on page 61](#)
- [“Tools Needed for Service” on page 62](#)
- [“Prevent ESD Damage” on page 65](#)

▼ Prepare a Component for Return to Oracle

1. **Refer to the removal procedure for the component for any special repacking and shipping instructions.**

For example, refer to [“Return a CMIOU to Oracle” on page 102](#) for detailed information about packing and shipping a CMIOU.

2. **If the replacement included safety covers on the connectors, install the covers on the component that you are returning.**



Caution - You are required to properly install connector covers to prevent additional damage during shipping and aid Oracle in determining how the component failed. Ensure that connector covers are fully engaged and centered over connectors.

3. **In the shipping container that contained the replacement component:**
 - a. **Using the same material used to pack the replacement component, position the component so that it is not free to move.**
 - b. **Add any required paperwork or other documentation in the container.**
 - c. **Except when packing CMIOUs, include any tools that were loaned to you by Oracle. Do not place tools inside a container that is being used to return a CMIOU.**
4. **Close the shipping container and seal it with the packaging tape supplied by Oracle.**
5. **Apply the shipping label to the shipping container.**
6. **Notify Oracle or an authorized shipper that the carton container is ready for pickup.**

Controlling the Server and Domains

These topics explain how to access Oracle ILOM to service components in the server and how to power off and on the server and individual domains.

Description	Links
Log in to Oracle ILOM.	“Log In to Oracle ILOM (Service)” on page 71
Prepare a component for a hot-service procedure.	“Prepare a Component for Removal” on page 72
Remove power from the server or domain to perform a cold-service procedure.	“Removing Power From the Server or Domain” on page 73
Return a component to service after issuing the <code>prepare_to_remove</code> command, if needed.	“Return a Component to Service” on page 79
Restore power to the server or a domain following a service procedure.	“Returning the Server to Operation” on page 77

Related Information

- [“Identifying Components” on page 19](#)
- [“Detecting and Managing Faults” on page 39](#)
- [“Preparing for Service” on page 61](#)
- [“Understanding Server Configurations and Failover Behavior” on page 83](#)

▼ Log In to Oracle ILOM (Service)

- **At the terminal prompt, type:**

```
ssh root@IP-address  
Password: password
```

```
Oracle (R) Integrated Lights Out Manager  
Version 4.0.1.1 rXXXXX
```

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->

Related Information

- [“Prepare a Component for Removal” on page 72](#)
- [“Removing Power From the Server or Domain” on page 73](#)
- [“Return a Component to Service” on page 79](#)
- [“Returning the Server to Operation” on page 77](#)
- Oracle ILOM documentation (<http://www.oracle.com/goto/ilom/docs>)

▼ Prepare a Component for Removal

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(Service\)” on page 71](#).

2. Identify the component you want to remove.

See [“Detecting and Managing Faults” on page 39](#).

3. Prepare the component for removal:

a. Light the Ready to Remove LED.

```
-> cd /System/target-name  
-> set action=prepare_to_remove
```

b. Verify that the Ready to Remove LED is lit.

```
-> show /System/target-name health  
Properties:  
health = Offline
```

where *target-name* is as specified for the following components.

Component	Target Name and Values
CMIOUs	/DCUs/DCU_x/CMIOUy SPARC M8-8 and SPARC M7-8 (two PDomains): x is 0 and y is 0–3, or x is 1 and y is 4–7 SPARC M8-8 and SPARC M7-8 (one PDomain): x is 0 and y is 0–7 SPARC M7-16: x is 0 and y is 0–3, x is 1 and y is 4–7, x is 2 and y is 8–11, or x is 3 and y is 12–15

Component	Target Name and Values
SPs	/Other_Removable_Devices/Service_Processors/Service_Processor_x /Other_Removable_Devices/Service_Processors/Service_Processor_x/Service_Processor_Module_y Where x is 0 or 1 and y is 0 or 1
SPPs	/Other_Removable_Devices/Proxy_Service_Processors/ Proxy_Service_Processor_x/Service_Processor_Module_y Where x is 0–3 and y is 0 or 1
Switch units (SPARC M7-16)	/Other_Removable_Devices/Scalability_Switch_Boards/Scalability_Switch_Boards_x Where x is 0–5

Note - If you issue the `prepare_to_remove` command but decide not to remove a component, you must return the component to service. See [“Return a Component to Service”](#) on page 79.

Related Information

- [“Servicing CMIOUs”](#) on page 87
- [“Servicing SPs”](#) on page 121
- [“Servicing Switch Units”](#) on page 193
- [“Oracle ILOM Paths for SPMs”](#) on page 126

Removing Power From the Server or Domain

These topics describe different methods for removing power from the chassis.

- [“Prepare to Power Off the Server or Domain”](#) on page 73
- [“Power Off the Server or Domain \(Oracle ILOM\)”](#) on page 74
- [“Switch Off PDU Circuit Breakers”](#) on page 75

▼ Prepare to Power Off the Server or Domain

1. **Notify any affected users that the server or domain will be shut down.**

Refer to the Oracle Solaris system administration documentation (<http://www.oracle.com/goto/solaris11/docs>) for additional information.

2. Save any open files and stop programs that are running on the server or affected domain.

Refer to your application documentation for specific information for these processes.

3. Shut down all logical domains.

Refer to the Oracle VM Server for SPARC system administration documentation (<http://www.oracle.com/goto/vm-sparc/docs>) for details.

4. Shut down the Oracle Solaris OS.

Refer to the Oracle Solaris administration documentation for details.

5. Power off the server or domain.

See “Power Off the Server or Domain (Oracle ILOM)” on page 74.

Related Information

- Oracle VM Server for SPARC documentation (<http://www.oracle.com/goto/vm-sparc/docs>)
- Oracle Solaris documentation (<http://www.oracle.com/goto/solaris11/docs>)
- “Power Off the Server or Domain (Oracle ILOM)” on page 74
- “Switch Off PDU Circuit Breakers” on page 75

▼ Power Off the Server or Domain (Oracle ILOM)

You can use the SP to perform a graceful shutdown of the system. This type of shutdown ensures that all of your data is saved and that the system is ready for restart.

Refer to the *SPARC M8 and SPARC M7 Servers Administration Guide* for additional information about powering off the system.

1. Prepare to power off the server.

See “Prepare to Power Off the Server or Domain” on page 73.

2. Log in as superuser or equivalent.

Depending on the type of problem, you might want to view system status or log files. You also might want to run diagnostics before you shut down the system.

3. Switch from the system console to the Oracle ILOM prompt by typing the #. (Hash Period) key sequence.

4. Power off the server or a specific domain depending on the requirements of the component you are servicing.

- To power off the server, including all domains, at the Oracle ILOM prompt, type:

```
-> stop /System
```

- To power off a specific domain, at the Oracle ILOM prompt, type:

```
-> stop /Servers/PDomains/PDomain_x/HOST
```

Stopping the server can take some time, and you must wait until the host console displays the following message before proceeding to the next step.

```
-> SP NOTICE: Host is off
```

5. If you are servicing a cold-service component, remove power from the server.

See [“Switch Off PDU Circuit Breakers”](#) on page 75.

Related Information

- [“Log In to Oracle ILOM \(Service\)”](#) on page 71
- [“Prepare to Power Off the Server or Domain”](#) on page 73
- [“Restart the Server or Host \(Oracle ILOM\)”](#) on page 78

▼ Switch Off PDU Circuit Breakers

Switch off the circuit breakers to remove power from the server only after you have powered off the server.

Note - The sequence in this section, where power is removed first from the even numbered power supplies, and then from the odd numbered power supplies, applies to factory-installed configurations with a SPARC M8-8 or a SPARC M7-8 server in the bottom of an Oracle rack. In other configurations, where a SPARC M8-8 or SPARC M7-8 server might be installed in a different location in the rack, power is still removed first from the even numbered power supplies, and then from the odd numbered power supplies. See [“Remove a PDU”](#) on page 260 for detailed steps for various configurations.

Note - In configurations where additional equipment is installed in the rack, and you do not want to power down the additional equipment, remove power by unplugging the AC input power cords at the SPARC M8-8 or SPARC M7-8 AC inlets. First, unplug the power cords at the even numbered AC inlets 0, 2, 4. Next, unplug the power cords at the odd numbered AC inlets 1, 3, 5.



Caution - Because standby power is always present in the server, you must switch off the circuit breakers on the PDUs before servicing any component that requires the server to be powered off.

1. Ensure that you have powered off all hosts and the server.

See [“Power Off the Server or Domain \(Oracle ILOM\)”](#) on page 74.

2. Turn breakers off in the following sequence.

- For SPARC M8-8 and SPARC M7-8:
 - R6, R7, R8
 - L2, L1, L0
- For SPARC M7-16:
 - R4, R5, L5, L4
 - R0, R1, R2, L8, L7, L6
 - R6, R7, R8, L2, L1, L0

where R indicates the right PDU from the rear of the server (PDU B), L indicates the left PDU from the rear of the server (PDU A), and the number represents the PDU group number.



Caution - Because standby power is always present in the server, you must switch off the circuit breakers on the PDUs before accessing any cold-serviceable components.

3. If you are servicing a component, return to the procedure for that component.

Related Information

- [“Switch on PDU Circuit Breakers”](#) on page 77
- [“Restart the Server or Host \(Oracle ILOM\)”](#) on page 78
- [“Servicing PDUs”](#) on page 257

Returning the Server to Operation

These topics explain how to return the server to operation after you have performed service procedures.

- [“Switch on PDU Circuit Breakers” on page 77](#)
- [“Restart the Server or Host \(Oracle ILOM\)” on page 78](#)

▼ Switch on PDU Circuit Breakers

Note - The sequence in this section, where power is restored first to the odd numbered power supplies, and then to the even numbered power supplies, applies to factory-installed configurations with a SPARC M8-8 or SPARC M7-8 server in the bottom of an Oracle rack. In other configurations, where a SPARC M8-8 or SPARC M7-8 server might be installed in a different location in the rack, power is still restored first to the odd numbered power supplies (1, 3, 5), and then to the even numbered power supplies (0, 2, 4). See [“Install a PDU” on page 266](#) for detailed steps for various configurations.

1. **Notify users that you are preparing to apply power to the server.**
2. **Turn breakers on in the following sequence.**
 - For SPARC M8-8 and SPARC M7-8 servers:
 - L2, L1, L0
 - R6, R7, R8
 - For a SPARC M7-16 server:
 - R4, R5, L5, L4
 - R0, R1, R2, L8, L7, L6
 - R6, R7, R8, L2, L1, L0

where R indicates the right PDU from the rear of the server (PDU B), L indicates the left PDU from the rear of the server (PDU A), and the number represents the PDU group number.

Note - As soon as PDU circuit breakers are switched on, standby power is applied, and the SP boots.

3. **Start the system.**
See [“Restart the Server or Host \(Oracle ILOM\)” on page 78](#).

Related Information

- [“Restart the Server or Host \(Oracle ILOM\)” on page 78](#)
- [“Servicing PDUs” on page 257](#)

▼ Restart the Server or Host (Oracle ILOM)

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(Service\)” on page 71](#).

2. Connect to the host console.

Before starting the server or a specific host, connect to the host console in a separate terminal session to ensure that you can view all messages reported by the system.

At the Oracle ILOM prompt, type:

```
-> start /Servers/PDomains/PDomain_x/HOST/console
Are you sure you want to start
/Servers/PDomains/PDomain_x/HOST/console (y/n) ? y
Starting /Servers/PDomains/PDomain_x/HOST/console
```

3. Power on the server or a specific domain.

- To power on all domains, at the Oracle ILOM prompt, type:

```
-> start /System
```

Note - On multidomain servers, if one of the hosts is already running, you cannot use the `start /System` command. The server will return a message that the target is already started.

- To power on a specific domain, at the Oracle ILOM prompt, type:

```
-> start /Servers/PDomains/PDomain_x/HOST
```

4. If you are restarting the host following the replacement of a faulty component, verify that the fault has been resolved.

See [“Verify That a Fault Has Been Cleared” on page 58](#).

Related Information

- [“Log In to Oracle ILOM \(Service\)” on page 71](#)
- [“Switch on PDU Circuit Breakers” on page 77](#)

▼ Check the Power State of the Server or Host (Oracle ILOM)

1. Log in to Oracle ILOM.

See [“Log In to Oracle ILOM \(Service\)”](#) on page 71.

2. Determine if the system or domain has power.

- To check the power status of a domain on a single-domain server, at the Oracle ILOM prompt, type:

```
-> show /System power_state
```

- To show the power state for a specific domain, at the Oracle ILOM prompt, type:

```
-> show /Servers/PDomains/PDomain_x/HOST power_state
```

3. Determine your next step.

- If the system or domain is running (power_state=on), and you want to remove power, see [“Removing Power From the Server or Domain”](#) on page 73.
- If the system or domain is not running (power_state=off), and you want to power it on, see [“Returning the Server to Operation”](#) on page 77.

Related Information

- Oracle ILOM documentation (<http://www.oracle.com/goto/ilom/docs>)
- [“Log In to Oracle ILOM \(Service\)”](#) on page 71
- [“Removing Power From the Server or Domain”](#) on page 73
- [“Returning the Server to Operation”](#) on page 77

▼ Return a Component to Service

If you unseat a component but do not remove it from the server, or if you use the `prepare_to_remove` command for a component but decide not to remove it, you must return the component to service before it can be made operational.

● Return the component to service.

```
-> cd /System/target-name
```

```
-> set action=return_to_service
```

where *target-name* is as specified for the following components.

Component	Target Name and Values
CMIOUs	/DCUs/DCU_x/CMIOUy SPARC M8-8 and SPARC M7-8 (two PDomains): x is 0 and y is 0–3, or x is 1 and y is 4–7 SPARC M8-8 and SPARC M7-8 (one PDomain): x is 0 and y is 0–7 SPARC M7-16: x is 0 and y is 0–3, x is 1 and y is 4–7, x is 2 and y is 8–11, or x is 3 and y is 12–15
SPs	/Other_Removable_Devices/Service_Processors/Service_Processor_x /Other_Removable_Devices/Service_Processors/Service_Processor_x/Service_Processor_Module_y Where x is 0 or 1 and y is 0 or 1
SPPs	/Other_Removable_Devices/Proxy_Service_Processors/ Proxy_Service_Processor_x/Service_Processor_Module_y Where x is 0–3 and y is 0 or 1
Switch units (SPARC M7-16)	/Other_Removable_Devices/Scalability_Switch_Boards/Scalability_Switch_Boards_x Where x is 0–5

Related Information

- [“Oracle ILOM Paths for SPMs” on page 126](#)
- [“Servicing CMIOUs” on page 87](#)
- [“Servicing SPs” on page 121](#)
- [“Servicing Switch Units” on page 193](#)
- [“Prepare a Component for Removal” on page 72](#)

Oracle ILOM Service-Related Tools

Use these Oracle ILOM shell commands when performing service-related tasks.

Oracle ILOM Command	Description
help [command]	Displays a list of all available commands with syntax and descriptions. Specifying a command name as an option displays help for that command.
set /HOST send_break_action=break	Takes the host server from the OS to either kmdb or OpenBoot prompt (equivalent to a Stop-A),

Oracle ILOM Command	Description
	depending on the mode in which the Oracle Solaris OS was booted.
set /HOST send_break_action=coredump	Stops host server and generates a core dump file. Useful for debugging conditions when the host hangs.
start /HOST/console	Connects to the host console.
show /HOST/console/history	Displays the contents of the host's console buffer.
set /HOST/bootmode <i>property=value</i>	Controls the method of booting for the host server's firmware. The value of <i>property</i> can be <i>state</i> , <i>config</i> , <i>expires</i> , or <i>script</i> .
stop /System	Powers off the host server.
stop /Servers/PDomains/PDomain_x/HOST/	Powers off a specific domain.
start /System	Powers on the host server.
start /Servers/PDomains/PDomain_x/HOST/	Powers on a specific domain.
reset /System	Generates a hardware reset of all hosts.
reset /Servers/PDomains/PDomain_x/HOST/	Generates a hardware reset on a specific domain.
reset /SP	Reboots all SPs and SPPs.

Related Information

- Oracle ILOM documentation (<http://www.oracle.com/goto/ilom/docs>)
- “Log In to Oracle ILOM (Service)” on page 71
- “Removing Power From the Server or Domain” on page 73
- “Returning the Server to Operation” on page 77

Understanding Server Configurations and Failover Behavior

PDomains and DCUs are logical units, not physical components, that you can configure depending on how you want to isolate applications and data to satisfy particular business requirements.

These topics describe how components, particularly CMIOUs, are assigned to PDomains and DCUs, and how SPs manage system activity.

- [“SPARC M8-8 and SPARC M7-8 Configurations and Failover Behavior \(Two PDomains\)” on page 84](#)
- [“SPARC M8-8 and SPARC M7-8 Configurations and Failover Behavior \(One PDomain\)” on page 85](#)
- [“SPARC M7-16 Configurations and Failover Behavior” on page 85](#)

For information about determining DCU assignment to a PDomain, determining CMIOU membership to a DCU, or to administer DCUs and CMIOUs, refer to the [SPARC M8 and SPARC M7 Servers Administration Guide](#).

Related Information

- [“Identifying Components” on page 19](#)
- [“Detecting and Managing Faults” on page 39](#)
- [“Preparing for Service” on page 61](#)
- [“Controlling the Server and Domains” on page 71](#)

SPARC M8-8 and SPARC M7-8 Configurations and Failover Behavior (Two PDomains)

In a SPARC M8-8 or a SPARC M7-8 server that is configured with two PDomains, each static PDomain consists of four of the eight CMIOUs in the chassis; one PDomain consists of cmiou0-cmiou3, the other consists of cmiou4-cmiou7.

Two service processors (SP0 and SP1) achieve redundancy with two SPMs each that are assigned to different static PDomains. SPM0 on each SP manages one static PDomain (DCU_0) in the chassis, while SPM1 on each SP manages the other static PDomain (DCU_1).

DCU Managed	CMIOUs Assigned	Assigned SPM Pairs
DCU_0	CMIOU_0–CMIOU_3	/SYS/SP0/SPM0
		/SYS/SP1/SPM0
DCU_1	CMIOU_4–CMIOU_7	/SYS/SP0/SPM1
		/SYS/SP1/SPM1

Oracle ILOM identifies one of the SPMs from each SP as the Active SP to manage activity on the static PDomain. The other SPM on the SP runs Oracle ILOM, but remains inactive unless the Active SP can no longer manage the hardware. In this case, the inactive SPM assumes the Active SP role.

You cannot specify which SPMs will serve as the Active SP, but you can request that Oracle ILOM should assign a new SPM to serve each role. You might do this when, for example, you are replacing an SP.

Related Information

- [“Determine Which SP Is Managing System Activity” on page 127](#)
- [“Change Which SP Is Managing System Activity” on page 128](#)
- [“Oracle ILOM Paths for SPMs” on page 126](#)

SPARC M8-8 and SPARC M7-8 Configurations and Failover Behavior (One PDomain)

In a SPARC M8-8 or a SPARC M7-8 server that is configured with a single PDomain, there are eight CMIOUs in the PDomain. Each CMIOU chassis has two redundant SPs. To facilitate failover from one SP to another, one SP serves as the Active SP, and one serves as the Standby SP. The Active SP manages system resources unless it can no longer do so, in which case the Standby SP assumes its role.

Related Information

- [“Determine Which SP Is Managing System Activity” on page 127](#)
- [“Change Which SP Is Managing System Activity” on page 128](#)
- [“Oracle ILOM Paths for SPMs” on page 126](#)

SPARC M7-16 Configurations and Failover Behavior

A SPARC M7-16 server is divided into four configurable units called DCUs. These DCUs have four CMIOUs each. Two of the DCUs are in the top CMIOU chassis, and two are in the bottom CMIOU chassis. You can configure DCUs into one to four PDomains.

Each CMIOU chassis also has two service processor proxies. SPP2 and SPP3 are in the top chassis, and SPP0 and SPP1 are in the bottom chassis. These SPPs have two service processor modules each. To achieve redundancy, each SPM (SPM0 and SPM1) on an SPP is assigned to a different DCU. SPM0 on each SPP manages one DCU in the CMIOU chassis, while SPM1 on each SPP manages the other DCU in the chassis.

DCU Managed	CMIOUs Assigned	Assigned SPM Pairs
DCU_0	CMIOU_0–CMIOU_3	/SYS/SPP0/SPM0 /SYS/SPP1/SPM0
DCU_1	CMIOU_4–CMIOU_7	/SYS/SPP0/SPM1 /SYS/SPP1/SPM1
DCU_2	CMIOU_8–CMIOU_11	/SYS/SPP2/SPM0 /SYS/SPP3/SPM0
DCU_3	CMIOU_12–CMIOU_15	/SYS/SPP2/SPM1 /SYS/SPP3/SPM1

DCU Managed	CMIOUs Assigned	Assigned SPM Pairs
		/SYS/SPP3/SPM1

Oracle ILOM identifies one of these SPMs as a DCU SPM to manage DCU activity. The other SPM runs Oracle ILOM, but remains inactive unless the DCU SPM can no longer manage the hardware. In this case, the inactive SPM assumes the role of the DCU SPM.

Oracle ILOM also identifies one of the DCU SPMs from the pool of DCU SPMs on the same PDomain as the PDomain SPM to manage activity on that host.

You cannot specify which SPMs will serve as DCU SPMs or the PDomain SPM, but you can specify that Oracle ILOM should assign a new SPM to serve each role. You might do this when, for example, you are replacing an SPP.

The switch chassis in the SPARC M7-16 server contains six switch units that allow CMIOUs to communicate with each other. The switch chassis also has two SPs (SP0 and SP1) that manage system resources. Each SP in the switch chassis has a single SPM (SPM0 in each SP). The SPM that you identify as the Active SP manages system resources unless it can no longer do so, in which case the Standby SP assumes its role.

Note - SPMs are not serviceable components. If an SPM fails, you must replace the SP or SPP that contains it.

Related Information

- [“Determine Which SP Is Managing System Activity” on page 127](#)
- [“Determine Which SPP Is Managing DCU Activity \(SPARC M7-16\)” on page 128](#)
- [“Change Which SP Is Managing System Activity” on page 128](#)
- [“Change Which SPP Is Managing DCU Activity \(SPARC M7-16\)” on page 129](#)
- [“Oracle ILOM Paths for SPMs” on page 126](#)

Servicing CMIOUs

A CMIOU chassis contains up to eight CMIOUs. For the location of the CMIOUs, see [“CMIOU Chassis Rear Components” on page 25](#).



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. Follow antistatic precautions to prevent electrostatic damage. See [“Prevent ESD Damage” on page 65](#).

These topics explain how to service CMIOUs.

Description	Links
Learn about CMIOU configurations.	“CMIOU Configurations (SPARC M8-8 and SPARC M7-8 With Two PDomains)” on page 88 “CMIOU Configurations (SPARC M8-8 and SPARC M7-8 With One PDomain)” on page 89 “CMIOU Configurations (SPARC M7-16)” on page 89 “Mixed CMIOU Configurations” on page 90
Learn about CMIOU LEDs.	“CMIOU Indicators and LEDs” on page 94
Prepare to remove a CMIOU.	“Prepare a CMIOU for Removal” on page 95
Replace a CMIOU.	“Remove a CMIOU” on page 99 “Return a CMIOU to Oracle” on page 102 “Install a CMIOU” on page 106
Unseat or reseat a CMIOU as part of another component’s service operation.	“Unseat a CMIOU” on page 97 “Reseat a CMIOU” on page 105

Related Information

- [“Identifying Components” on page 19](#)
- [“Detecting and Managing Faults” on page 39](#)
- [“Preparing for Service” on page 61](#)

- [“Controlling the Server and Domains” on page 71](#)
- [“Understanding Server Configurations and Failover Behavior” on page 83](#)

CMIOU Configurations (SPARC M8-8 and SPARC M7-8 With Two PDomains)

Each PDomain in a SPARC M8-8 and SPARC M7-8 server that is configured with two static PDomains can consist of up to four of the eight CMIOUs in the chassis.

The following configurations are supported on a SPARC M8-8 and SPARC M7-8 server that has two PDomains.

- CMIOU_0 and CMIOU_1 in PDomain_0 and
CMIOU_4 and CMIOU_5 in PDomain_1
- CMIOU_0 – CMIOU_2 in PDomain_0 and
CMIOU_4 – CMIOU_6 in PDomain_1
- CMIOU_0 – CMIOU_3 in PDomain_0 and
CMIOU_4 – CMIOU_7 in PDomain_1

Note - The SPARC M7-8 server with two PDomains is the only SPARC M7 server that can support SPARC M8 CMIOUs. SPARC M8 CMIOUs are supported in PDomain_1 (CMIOU_4 to CMIOU_7) of the SPARC M7-8 server with two PDomains. SPARC M8 CMIOUs are not supported in PDomain_0 (CMIOU_0 to CMIOU_3). SPARC M7 CMIOUs are not supported in SPARC M8-8 servers. See [“Mixed CMIOU Configurations” on page 90](#) for more information.

For information about the PCIe slots that are available in each of these configurations, see [“Understanding PCIe Card Device and Service Paths” on page 147](#).



Caution - To prevent overheating, fill unused CMIOU slots with CMIOU filler panels.

Related Information

- [“SPARC M8-8 and SPARC M7-8 Configurations and Failover Behavior \(Two PDomains\)” on page 84](#)
- [“Mixed CMIOU Configurations” on page 90](#)

CMIOU Configurations (SPARC M8-8 and SPARC M7-8 With One PDomain)

A SPARC M8-8 and SPARC M7-8 server that is configured as a single PDomain can have as many as eight CMIOUs in a single CMIOU chassis, as listed in the following table.

The following configurations are supported on a SPARC M8-8 and SPARC M7-8 server that has one PDomain.

- CMIOU_0 and CMIOU_1
- CMIOU_0 – CMIOU_2
- CMIOU_0 – CMIOU_3
- CMIOU_0 – CMIOU_4
- CMIOU_0 – CMIOU_5
- CMIOU_0 – CMIOU_6
- CMIOU_0 – CMIOU_7

Note - The SPARC M7-8 server with one PDomain does not support SPARC M8 CMIOUs. SPARC M7 CMIOUs are not supported in SPARC M8-8 servers. See [“Mixed CMIOU Configurations” on page 90](#) for more information.

For information about the PCIe slots that are available in each of these configurations, see [“Understanding PCIe Card Device and Service Paths” on page 147](#).



Caution - To prevent overheating, fill unused CMIOU slots with CMIOU filler panels.

Related Information

- [“SPARC M8-8 and SPARC M7-8 Configurations and Failover Behavior \(One PDomain\)” on page 85](#)

CMIOU Configurations (SPARC M7-16)

A SPARC M7-16 server is divided into four DCUs that have two through four CMIOUs each. CMIOUs CMIOU8–CMIOU15 are in the top CMIOU chassis, and CMIOUs CMIOU0–CMIOU7 are in the bottom CMIOU chassis.

The following configurations are supported on a SPARC M7-16 server.

- CMIOU_0 and CMIOU_1 in PDomain_0,
CMIOU_4 and CMIOU_5 in PDomain_1,
CMIOU_8 and CMIOU_9 in PDomain_2, and
CMIOU_12 and CMIOU_13 in PDomain_3
- CMIOU_0 – CMIOU_3 in PDomain_0,
CMIOU_4 – CMIOU_6 in PDomain_1,
CMIOU_8 – CMIOU_10 in PDomain_2, and
CMIOU_12 – CMIOU_14 in PDomain_3
- CMIOU_0– CMIOU_3 in PDomain_0,
CMIOU_4 – CMIOU_7 in PDomain_1,
CMIOU_8 – CMIOU_11 in PDomain_2, and
CMIOU_12 – CMIOU_15 in PDomain_3

Note - The SPARC M7-16 server does not support SPARC M8 CMIOUs. See [“Mixed CMIOU Configurations” on page 90](#) for more information.

For information about the PCIe slots that are available in each of these configurations, see [“Understanding PCIe Card Device and Service Paths” on page 147](#).



Caution - To prevent overheating, fill unused CMIOU slots with CMIOU filler panels.

Related Information

- [“SPARC M7-16 Configurations and Failover Behavior” on page 85](#)

Mixed CMIOU Configurations

The SPARC M7-8 server configured with two static PDomains is the only server that supports a mixed configuration of SPARC M7 and SPARC M8 CMIOUs. In a SPARC M7-8 server with two static PDomains, SPARC M8 CMIOUs can be installed in PDomain_1 (slots CMIOU_4 to CMIOU_7). SPARC M8 CMIOUs are *not* supported in PDomain_0 (slots CMIOU_0 to CMIOU_3) of a SPARC M7-8 server with two PDomains.

Unsupported CMIOU configurations include:

- SPARC M7-8 server PDomain_1 containing both SPARC M7 and SPARC M8 CMIOUs.
There cannot be a mix of SPARC M7 and SPARC M8 CMIOUs in PDomain_1. All of the CMIOUs in PDomain_1 must only be either SPARC M7 CMIOUs or SPARC M8 CMIOUs.
- SPARC M8 CMIOUs are not supported in SPARC M7-16 servers or SPARC M7-8 servers configured as one static PDomain containing up to eight CMIOUs.
- SPARC M7 CMIOUs are not supported in the SPARC M8-8 server.

A PDomain will not power on if it contains an unsupported configuration. If the PDomain contains an unsupported configuration, the host console will display error messages and the server will generate an ereport alerting you to the unsupported configuration. You must fix the unsupported configuration by either removing or disabling the offending CMIOUs before you can power on the PDomain.

Note - If the PDomain is running and you attempt to install a CMIOU that creates an unsupported CMIOU configuration (for example, if you install SPARC M8 CMIOU in a SPARC M7-16 server), the PDomain will continue to run. The server will generate an ereport alerting you to the unsupported configuration, and the new CMIOUs will not be added to the running PDomain. You must fix the unsupported configuration by either removing or disabling the offending CMIOUs before you can restart the PDomain.

A SPARC M7-8 server with a mixed CMIOU configuration must run a system firmware version that supports both SPARC M8 and SPARC M7 CMIOUs. Additionally, the server's PDomain_1 containing the SPARC M8 CMIOUs must be running an Oracle Solaris version that supports the SPARC M8 CMIOUs. For the minimum supported versions of the supported software and firmware, refer to the [SPARC M8 and SPARC M7 Servers Product Notes](#).

Server	DCU No. (Top to Bottom)	Supported CMIOUs
SPARC M8-8 server with one PDomain	DCU0	SPARC M8 CMIOUs <i>only</i>
SPARC M8-8 server with two PDomains	DCU1 DCU0	SPARC M8 CMIOUs <i>only</i>
SPARC M7-8 server with one PDomain	DCU0	SPARC M7 CMIOUs <i>only</i>
SPARC M7-8 server with two PDomains	DCU1 DCU0	SPARC M7 CMIOUs or SPARC M8 CMIOUs Note - DCU1 (PDomain_1) must contain either all SPARC M7 CMIOUs or all SPARC M8 CMIOUs. You cannot mix both CMIOU types in the same DCU.
SPARC M7-16 server (one to four PDomains)	DCU3	SPARC M7 CMIOUs <i>only</i>

Server	DCU No. (Top to Bottom)	Supported CMIOUs
	DCU2	SPARC M7 CMIOUs <i>only</i>
	DCU1	SPARC M7 CMIOUs <i>only</i>
	DCU0	SPARC M7 CMIOUs <i>only</i>

Related Information

- [“Understanding Server Configurations and Failover Behavior” on page 83](#)
- [“CMIOU Configurations \(SPARC M8-8 and SPARC M7-8 With Two PDomains\)” on page 88](#)
- [“CMIOU Configurations \(SPARC M8-8 and SPARC M7-8 With One PDomain\)” on page 89](#)
- [“CMIOU Configurations \(SPARC M7-16\)” on page 89](#)

CMIOU Redundancy

When installed in the proper slots, CMIOUs are designed to provide redundant access to the SP. Always install two CMIOUs in the first two slots of a SPARC M8-8 and SPARC M7-8 PDomain or a SPARC M7-16 DCU. Always follow these CMIOU configuration guidelines:

- [“CMIOU Configurations \(SPARC M8-8 and SPARC M7-8 With Two PDomains\)” on page 88](#)
- [“CMIOU Configurations \(SPARC M8-8 and SPARC M7-8 With One PDomain\)” on page 89](#)
- [“CMIOU Configurations \(SPARC M7-16\)” on page 89](#)

For example, ensure that there are CMIOUs installed in slots CMIOU_0 and CMIOU_1 in a SPARC M8-8 server with one PDomain. In this example, if one of the CMIOUs has faulted, the PDomain will still be able to access the SP through the other CMIOU.

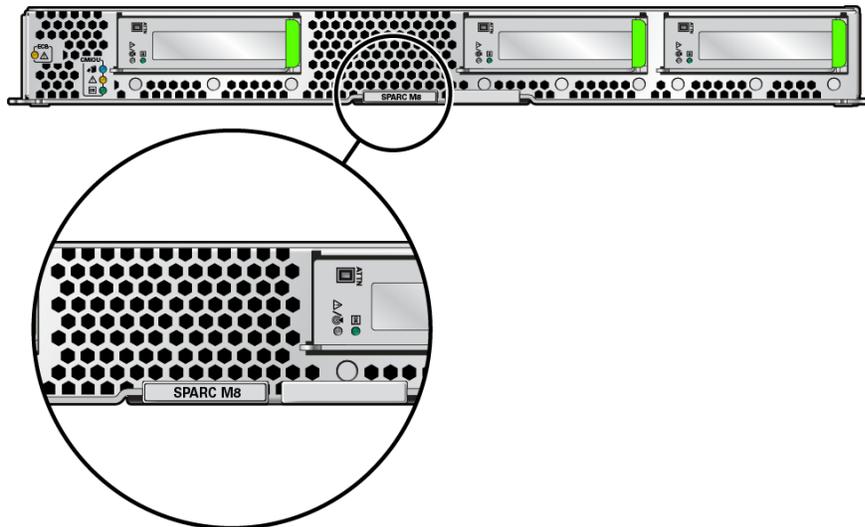
If there is only one CMIOU installed a PDomain or DCU, the communication link between the SP and the PDomain will be lost if the CMIOU faults or is taken offline. For example, if a SPARC M8-8 server with one PDomain contains one CMIOU installed in CMIOU_0, and that CMIOU goes offline or faults, the communication link between the Active SP and the CMIOU also goes down. In this example, the FMA fault information will not be synchronized between the Active SP and the PDomain host, the `prtdiag` command will not display environmental information, and the Oracle VM Server for SPARC software cannot save or read saved configuration information saved on the SP. Additionally, if the boot pool devices are on the CMIOU, the PDomain host might not be able to boot the Oracle Solaris OS.

Related Information

- [“Understanding Server Configurations and Failover Behavior” on page 83](#)
- [“Mixed CMIU Configurations” on page 90](#)
- [“Install a CMIU” on page 106](#)

SPARC M8 CMIU Label

The SPARC M8 CMIUs contain a SPARC M8 label on the left extraction lever. SPARC M7 CMIUs do not have a label.

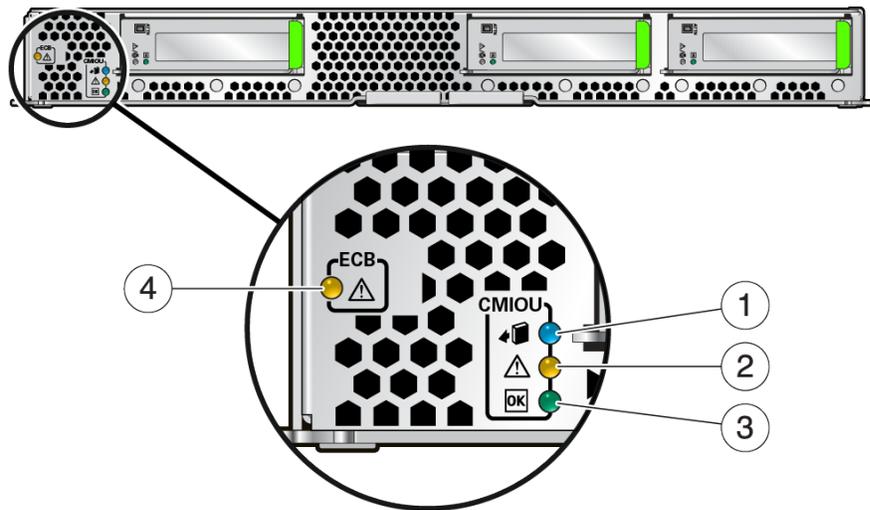


Related Information

- [“SPARC M8-8 and SPARC M7-8 Configurations and Failover Behavior \(Two PDomains\)” on page 84](#)
- [“CMIU Configurations \(SPARC M8-8 and SPARC M7-8 With Two PDomains\)” on page 88](#)
- [“CMIU Indicators and LEDs” on page 94](#)
- [“Mixed CMIU Configurations” on page 90](#)

- “Prepare a CMIU for Removal” on page 95
- “Install a CMIU” on page 106

CMIU Indicators and LEDs



No.	LED	Icon	Description
1	Ready to Remove (blue)		Indicates that a CMIU can be removed during a hot-service operation.
2	Service Required LED (amber)		Indicates that service is required. The <code>fmadm faulty</code> command provides details about any faults that cause this indicator to light.
3	OK LED (green)		Under some fault conditions, individual component fault LEDs are illuminated in addition to the Service Required LED. Indicates these conditions: <ul style="list-style-type: none"> ■ Off – CMIU is not operational. System power might be off. The SP might be running. ■ Steady on – CMIU is powered on and is running in its normal operating state. No service actions are required.
4	ECB fault (amber)		Indicates that a PDECB requires service.

Related Information

- [“Servicing PDECBs” on page 203](#)
- [“Checking for Faults” on page 39](#)
- [“Interpreting LEDs” on page 48](#)

▼ Prepare a CMIOU for Removal

This procedure can be performed by a customer while the server is running.

Replace a CMIOU when the replacement CMIOU is available.

Complete the following steps before you unseat or remove a CMIOU.



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. When you unpack the replacement part, open the package on a grounded antistatic mat. Always use an antistatic wrist strap for hardware replacements.

Note - The CMIOU replacement kit includes a plastic cover to protect the CMIOU connectors. When you unpack the new CMIOU, be sure to set the connector cover aside. You must install this cover on the CMIOU that you return to Oracle.

1. Determine which CMIOU requires service.

See [“Identify Faulted Components” on page 40](#) and [“CMIOU Indicators and LEDs” on page 94](#).

2. Determine whether the CMIOU is powered off.

```
-> show /System/DCUs/DCU_x/CMIOU_y power_state
```

3. Determine your next step.

- If the CMIOU is running (power_state=on), go to [Step 4](#).
- If the CMIOU is not running (power_state=off), go to [Step 8](#).

4. Determine to which PDomain the CMIOU is assigned.

```
-> show /System/DCUs/DCU_x host_assigned
/System/DCUs/DCU_x
```

```
Properties:
host_assigned = HOSTx
```

5. Access the host console.

Connect to the host console in a separate terminal session before stopping the host to ensure that you can view all messages reported by the system.

```
-> start /Servers/PDomains/PDomain_x/HOST/console
Are you sure you want to start
/Servers/PDomains/PDomain_x/HOST/console (y/n) ? y
Starting /Servers/PDomains/PDomain_x/HOST/console
...
->
```

6. Stop the host.

Stop the host to which the CMIOU is assigned.

```
-> stop /Servers/PDomains/PDomain_x/HOST
Are you sure you want to stop /Servers/PDomains/PDomain_x/HOST/(y/n)? y
Stopping /Servers/PDomains/PDomain_x/HOST/
->
```

7. Confirm that the host has stopped.

```
-> show /Servers/PDomains/PDomain_x/HOST status

/Servers/PDomains/PDomain_x/HOST
  Properties:
    status = Powered Off
->
```

8. Prepare the installed CMIOU for removal.

```
-> set /System/DCUs/DCU_x/CMIOU_y action=prepare_to_remove
```

where:

- SPARC M8-8 or SPARC M7-8 (with two PDomains): x is 0 and y is 0–3, or x is 1 and y is 4–7
- SPARC M8-8 or SPARC M7-8 (with one PDomain): x is 0 and y is 0–7
- SPARC M7-16: x is 0-3 and y is 0–15

Note - If you issue the `prepare_to_remove` command, but decide not to remove the CMIOU, you must return the component to service. To do this, either issue the `return_to_service` command or physically remove the CMIOU from the server and reinstall it.

9. **Verify that the CMIOU is ready to remove.**

-> `show /System/DCUs/DCU_x/CMIOU_y health`

When the CMIOU is ready to remove, this command returns `Offline`, and the blue Ready to Remove LED lights.

10. **Unpack the new CMIOU and place it on a grounded antistatic mat.**

See [“Prevent ESD Damage” on page 65](#).

Note - A CMIOU is heavy. A fully-loaded SPARC M7 CMIOU weighs 25 lbs (11.3 kg) and a fully-loaded SPARC M8 CMIOU weighs 27 lbs (12.2 kg). Use two hands when handling a CMIOU, and do not handle it by the ejectors or connectors.

11. **After you have removed it from the system, remove the plastic connector cover from the connectors on the new CMIOU and set it aside for installation on the old CMIOU connectors.**

Related Information

- [“Unseat a CMIOU” on page 97](#)
- [“Return a CMIOU to Oracle” on page 102](#)
- [“Remove a CMIOU” on page 99](#)
- [“Controlling the System, Hosts, and SPs” in *SPARC M8 and SPARC M7 Servers Administration Guide*](#)

▼ Unseat a CMIOU

Complete the following steps before you unseat or remove a CMIOU.



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. Always use an antistatic wrist strap.

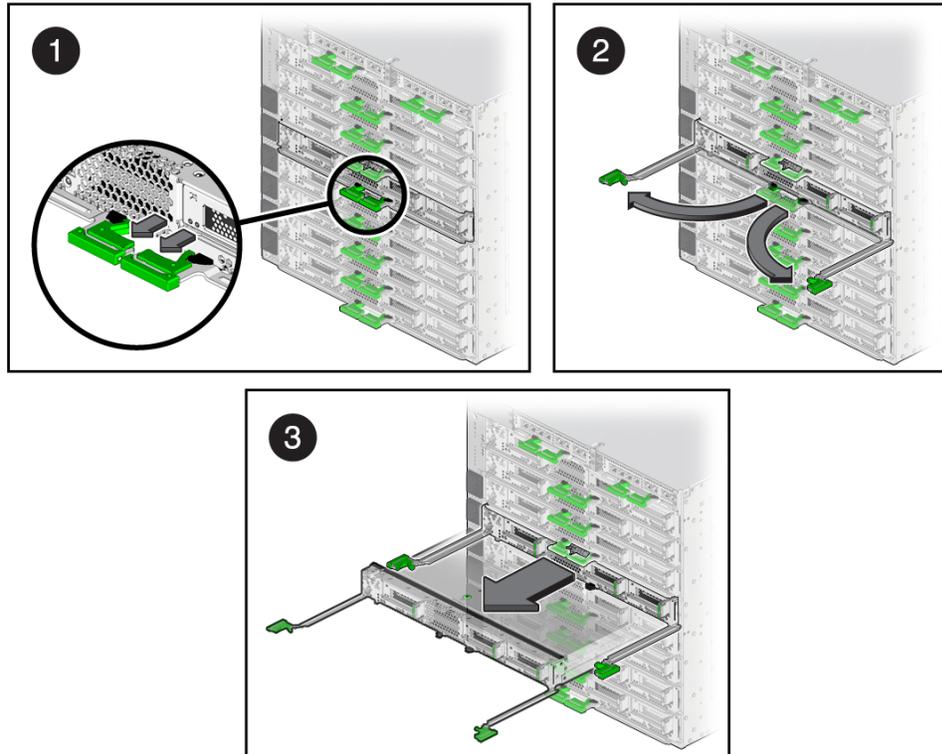
1. **Prepare the CMIOU for removal.**

See [“Prepare a CMIOU for Removal” on page 95](#).

2. **Verify that the blue Ready to Remove light on the CMIOU is on.**

See [“CMIOU Indicators and LEDs” on page 94](#).

3. Unseat the CMIU.



- a. Pinch the latches on the backs of each ejector arms (panel 1).
- b. Pull the ejector arms toward you to disengage the CMIU connectors from the server (panel 2).
- c. Grasp the ejector arms as close to the CMIU as possible and pull the CMIU one-third to halfway out of the server (panel 3).

Related Information

- [“Remove a CMIU” on page 99](#)
- [“Install a CMIU” on page 106](#)

▼ Remove a CMIOU

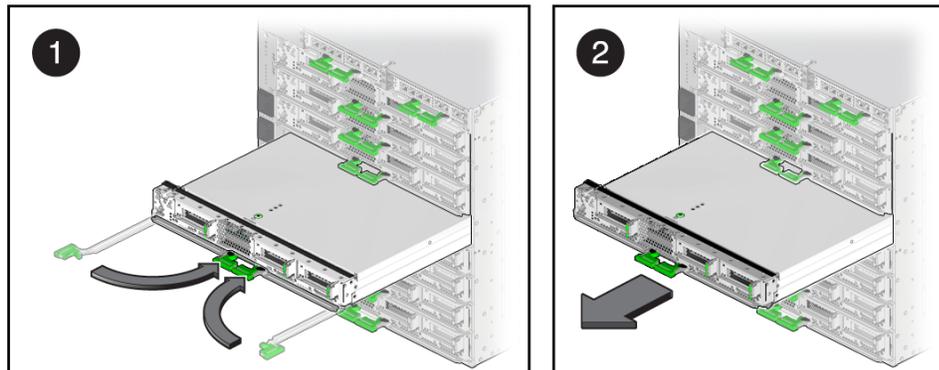
This procedure can be performed while the server is running.



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. When you unpack the replacement part, open the package on a grounded antistatic mat. Always use an antistatic wrist strap for hardware replacements.

Note - The CMIOU replacement kit includes a plastic cover to protect CMIOU connectors. Install the connector cover on the CMIOU that you return to Oracle.

1. **Ensure that you have prepared the CMIOU for removal.**
See [“Prepare a CMIOU for Removal” on page 95](#).
2. **Unseat the CMIOU.**
See [“Unseat a CMIOU” on page 97](#).
3. **Remove the CMIOU from the server.**



- a. **Fold the ejector arms back together, toward the center of the CMIOU, until they latch into place (panel 1).**

This protects the levers from damage when you pull the CMIOU out.

- b. **Carefully remove the CMIOU from the server, using two hands, and avoid bumping the rear connectors (panel 2), and place the CMIOU on a grounded antistatic mat.**



Caution - The rear of the unit is heavy. The CMIOU weighs 25 lbs (11.3 kg). Use two hands to remove the CMIOU from the chassis.

- 4. **Install the plastic cover that you removed from the connectors on the new CMIOU on the connectors of the CMIOU you are replacing.**

Ensure that the connector cover is fully engaged and centered over the connectors.

- 5. **If you are replacing DIMMs, an eUSB disk, or a faulty CMIOU (which involves removing DIMMS for installation in the new CMIOU), remove the CMIOU top cover.**

Do not remove the top cover if you are removing a CMIOU to access another component for service.

Press down on the green button at the top of the cover to disengage the cover from the CMIOU. While pressing the button, grasp the rear edge of the cover and slide it toward the rear of the CMIOU until it stops. Lift the cover off.

- 6. **Determine your next step.**

- a. **If you are replacing a faulty CMIOU, remove all of the DIMMs and PCIe carriers (including any installed PCIe cards) and transfer them to the new CMIOU.**

See [“Servicing DIMMs” on page 109](#) and [“Servicing PCIe Cards” on page 145](#).

Note - If the faulty CMIOU is the only CMIOU in a logical domain guest that uses iSCSI over IPoIB for booting, and the eUSB disk is the only disk in the boot pool, remove the eUSB disk so you can reinstall it in the new CMIOU. See [“Remove an eUSB Disk” on page 207](#).

- b. **If you are replacing faulty DIMMs, see [“Servicing DIMMs” on page 109](#).**
- c. **If you are removing a CMIOU in preparation for the replacement of another component, refer to the related replacement procedure.**

Component	Link
DIMMs	“Servicing DIMMs” on page 109

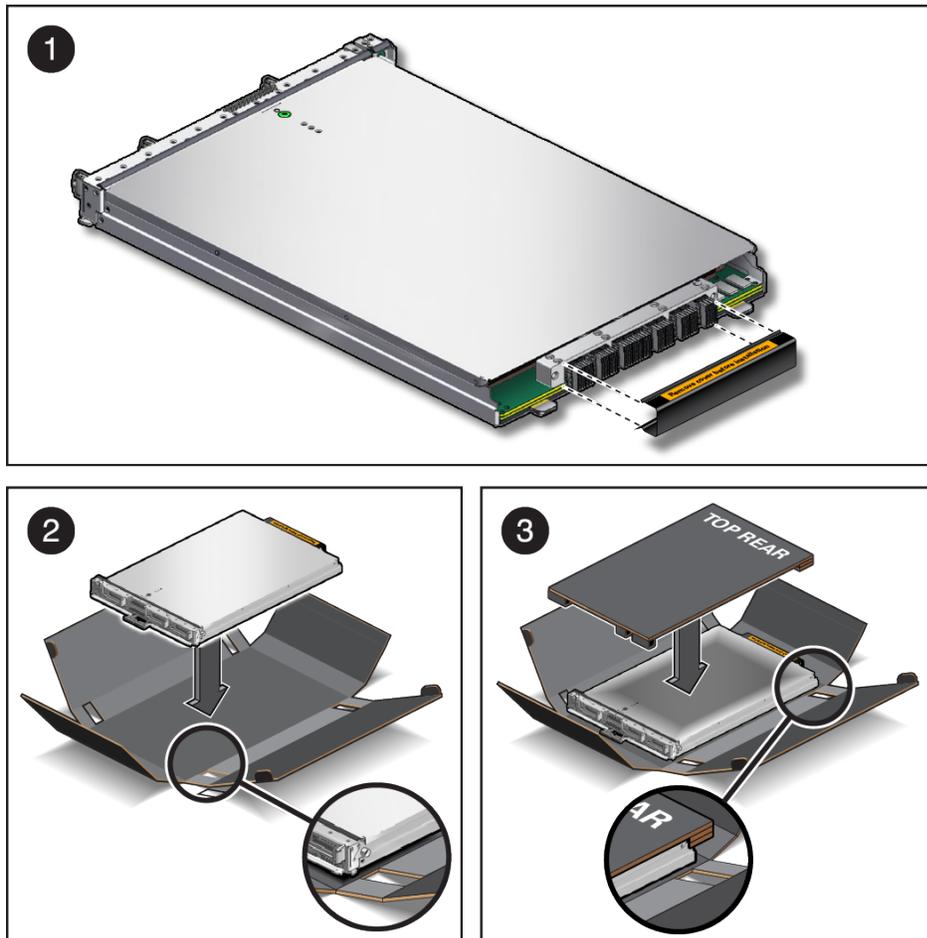
Component	Link
PCIe carriers and PCIe cards	“Servicing PCIe Cards” on page 145
eUSB disks	“Servicing eUSB Disks” on page 207
PDECBS	“Servicing PDECBS” on page 203

Related Information

- [“Reseat a CMIOU” on page 105](#)
- [“Return a CMIOU to Oracle” on page 102](#)
- [“Install a CMIOU” on page 106](#)

▼ Return a CMIU to Oracle

1. Position the CMIU in the inner container, ensuring that the connectors are properly protected.

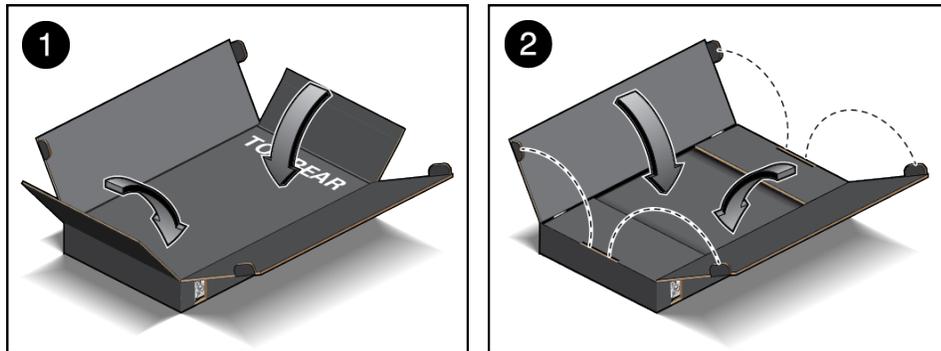


- a. Install the protective connector cover, which you removed from the replacement CMIU, on the CMIU that you are returning to Oracle. You must install this cover on the CMIU (panel 1).



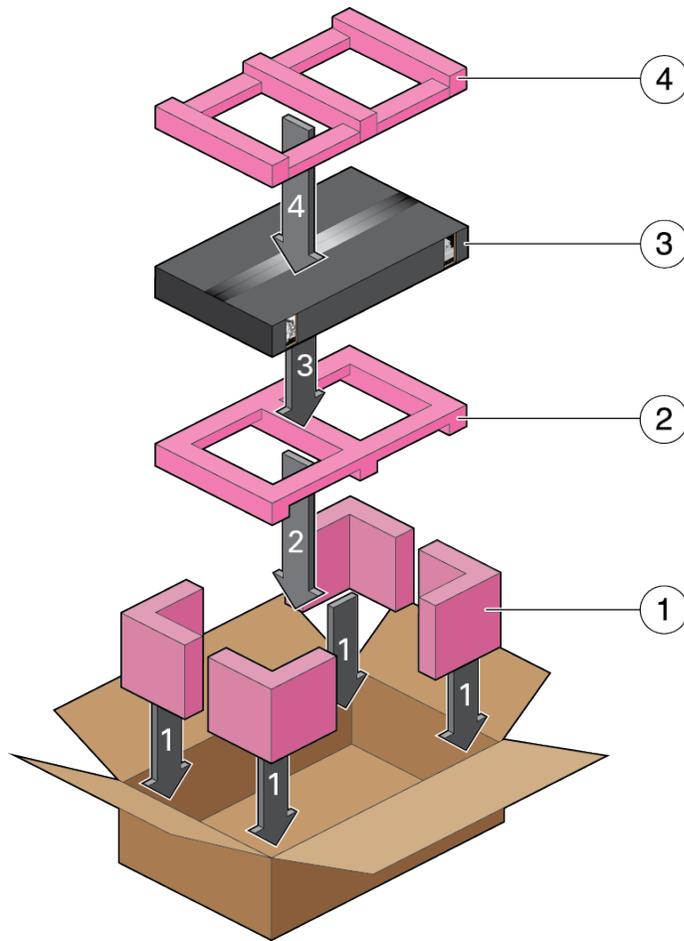
Caution - It is very important that you properly install the connector cover to prevent additional damage during shipping and aid Oracle in determining how the component failed. Ensure that the connector cover is fully engaged and centered over connectors.

- b. **Ensure that the protruding end of the CMIOU latch is centered in the window of the inner container (panel 2).**
 - c. **Place corrugated sheet on top of the CMIOU with the “Top Rear” marking on the rear of the chassis facing up. Ensure that the corrugated sheet extends over the connector (panel 3).**
2. **Close inner container and secure the container with tape.**



- a. **Fold the bottom and top flaps of the inner container over the CMIOU (panel 1).**
- b. **Fold the side flaps of the inner container over the CMIOU (panel 2).**

3. Ensure that the outer container and packing cushions are assembled in the order shown.



No.	Step
1.	Insert bottom corner cushions into outer shipping container.
2.	Insert bottom center cushion on bottom of outer shipping container.
3.	Position sealed inner shipping container on top of bottom center cushion.
4.	Insert top center cushion on top of sealed inner shipping container.

4. **Close the outer shipping container and seal it with the packaging tape supplied by Oracle.**



Related Information

- [“Reseat a CMIOU” on page 105](#)
- [“Install a CMIOU” on page 106](#)

▼ Reseat a CMIOU

Some component replacement tasks (for example, those for interconnects and PDECBS) require you to unseat a CMIOU before you perform them. After completing those tasks, you need to reseat the CMIOU.

1. **Slide the CMIOU back into the server until the levers begin to engage.**
2. **Press the levers back together toward the center of the CMIOU, and then press the levers firmly against the CMIOU to fully seat it into the server.**

The levers should click into place when the module is fully seated in the server.

Related Information

- [“Unseat a CMIOU” on page 97](#)
- [“Install a CMIOU” on page 106](#)

▼ Install a CMIOU

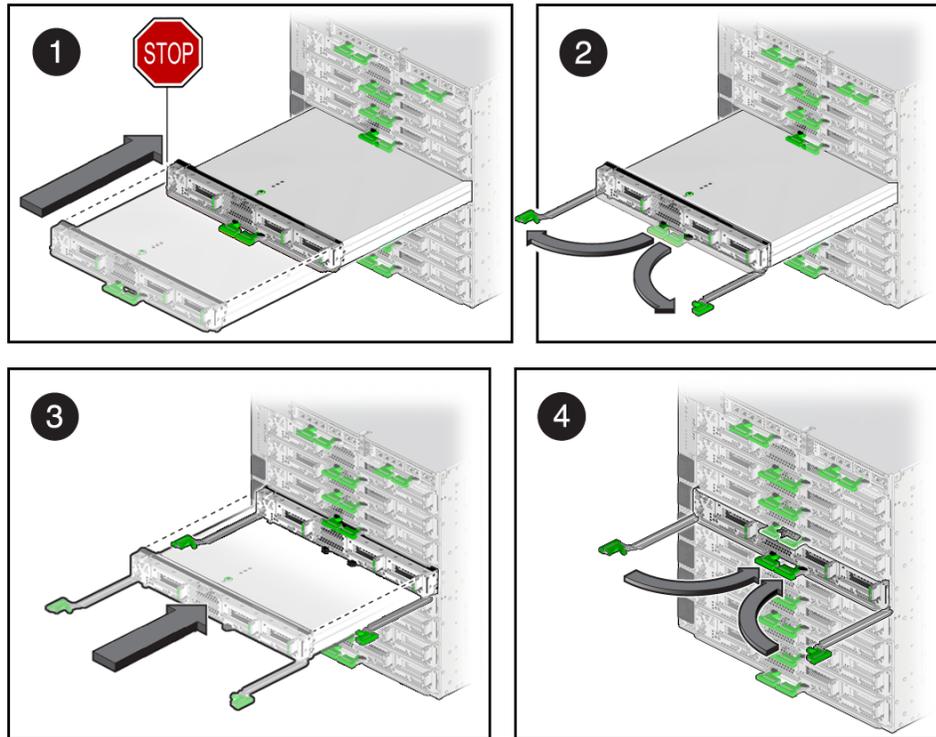


Caution - If you remove this component while the server is powered on, wait 30 seconds before installing the replacement component. Doing so ensures that Oracle ILOM has enough time to detect the new component, which is required for the software to power it on.

Note - SPARC M7 CMIOUs are not supported in SPARC M8-8 servers. SPARC M8 CMIOUs are not supported in SPARC M7-16 servers or SPARC M7-8 servers containing one static PDomain (one to eight CMIOUs). SPARC M7-8 servers with two static PDomains are the only SPARC M7 servers that support SPARC M8 CMIOUs (and only in PDomain_1). See [“Mixed CMIOU Configurations” on page 90](#) for more information.

1. **If you removed the CMIOU cover, reinstall it and slide the cover forward until the latch clicks into place.**

2. Install the CMIU.



- a. Carefully slide the CMIU less than half way into the slot, taking care to avoid bumping the connectors on the back of the CMIU (panel 1).
- b. Open the green CMIU levers so that they are fully open (panel 2).
- c. Insert the CMIU back into its slot in the server until the levers begin to engage (panel 3).
- d. Press the levers back together toward the center of the CMIU, and then press the levers firmly against the CMIU to fully seat the CMIU into the server (panel 4).

The levers should click into place when the module is fully seated in the server.

3. Determine your next step:

- a. **If you replaced DIMMs, return to the procedure for that component.**

See [“Servicing DIMMs” on page 109](#).

- b. **If you replaced the entire CMIOU, check the event logs to determine whether an FPGA update is required, update the firmware, if needed, and proceed to the next step.**

```
-> show /SP/Logs/event/list/  
Event ID   Date/Time           Class   Type   Severity  
256        Tue Dec 15 07:21:23 2015   Chassis Log   major  
/SYS/CMIOU6/FPGA update required.
```

If an FPGA update is required, refer to the [SPARC M8 and SPARC M7 Servers Product Notes](#) for information about performing the update.

- c. **If you replaced the entire CMIOU or removed a CMIOU as part of another service procedure, connect to the host console, then connect to the host and restart it.**

Connect to the host console in a separate terminal session to ensure that you can view all messages reported by the system.

```
-> start /Servers/PDomains/PDomain_x/HOST/console  
Are you sure you want to start  
/Servers/PDomains/PDomain_x/HOST/console (y/n) ? y  
Connecting /Servers/PDomains/PDomain_x/HOST/console
```

```
-> start /Servers/PDomains/PDomain_x/HOST  
Are you sure you want to start all of the configured hosts  
on the system (y/n) ? y  
hostname starting
```

4. **Verify that the fault has been cleared and the replaced component is operational.**

See [“Verify That a Fault Has Been Cleared” on page 58](#).

Related Information

- [“Reseat a CMIOU” on page 105](#)
- [“Unseat a CMIOU” on page 97](#)
- [“Remove a CMIOU” on page 99](#)

Servicing DIMMs

Each CMIOU in the server contains 8 or 16 DDR4 DIMMs. See [“DIMM and eUSB Locations in a CMIOU” on page 31](#).



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. Follow antistatic precautions to prevent electrostatic damage. See [“Prevent ESD Damage” on page 65](#).

These topics explain how to service DIMMs in the server.

Description	Links
Understand how to configure DIMMs.	“DIMM Configuration” on page 110
Understand DIMM labels or names.	“DIMM Names” on page 112
Locate a faulty DIMM.	“Determine Which DIMM Is Faulty (Oracle ILOM)” on page 113 “Determine Which DIMM Is Faulty (LEDs)” on page 113 “DIMM Configuration Fault Messages” on page 116
Replace a DIMM.	“Remove a DIMM” on page 116 “Install a DIMM” on page 118

Related Information

- [“Identifying Components” on page 19](#)
- [“Detecting and Managing Faults” on page 39](#)
- [“Preparing for Service” on page 61](#)
- [“Controlling the Server and Domains” on page 71](#)
- [“Understanding Server Configurations and Failover Behavior” on page 83](#)

DIMM Configuration

Full-population and half-population configurations are supported. The figure shows a CMIOU with all of the DIMM slots populated with DIMMs. In a half-populated configuration, DIMMs are installed only in the slots displayed in black.

Note - For a description of how the DIMM sparing functionality improves server fault tolerance, refer to [“DIMM Sparing” in SPARC M8 and SPARC M7 Servers Administration Guide](#).

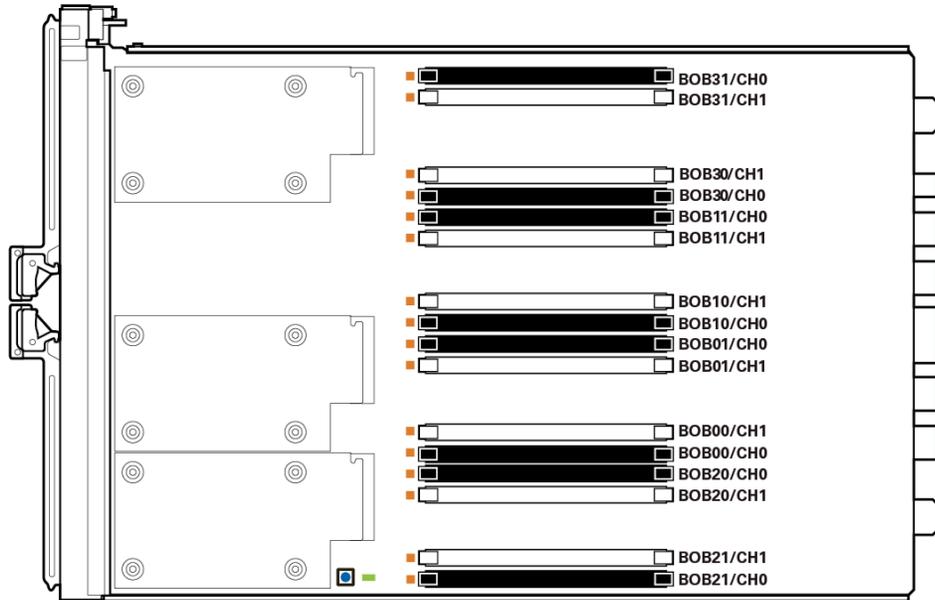
Follow these guidelines when replacing DIMMs in a CMIOU:

- **SPARC M8-8 servers:** Use either all 32-Gbyte or all 64-Gbyte DDR4 DIMMs or all 128-Gbyte DIMMs.

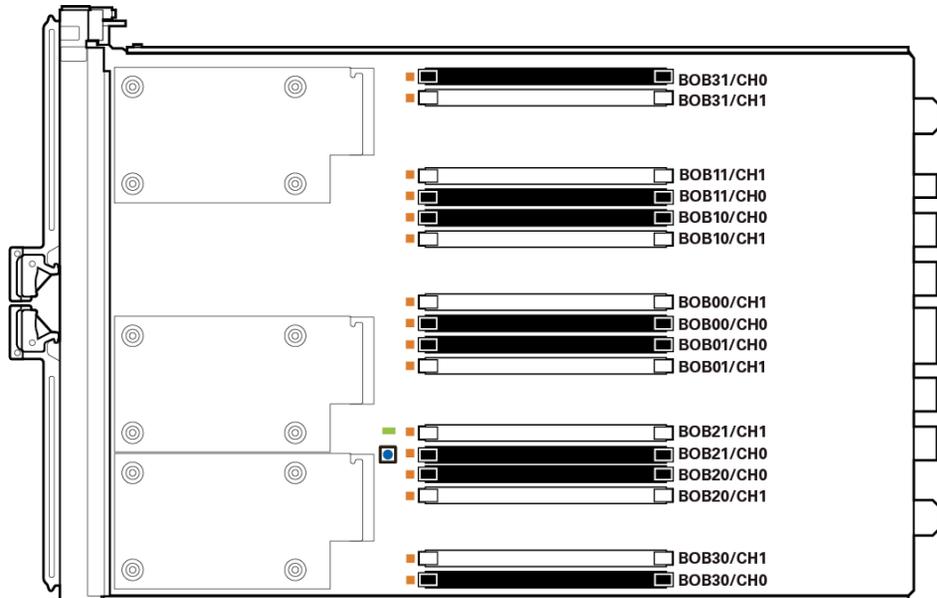
Note - As of System Firmware version 9.10.3, the configuration of 128 GB DIMMs are supported.

- **SPARC M7-8 and SPARC M7-16 servers:** Use all 16-Gbyte, all 32-Gbyte, or all 64-Gbyte DDR4 DIMMs.
- Ensure that all DIMMs in a CMIOU are the same size and type. Do not mix 32GB LRDIMMs (4R x 4Gb) and 32 GB RDIMMs (2R x 8Gb) in the same CMIOU.
- If you are using DIMMs of different capacities in the same host, ensure that all DIMMs in a CMIOU have the same capacity.
- Use only Oracle qualified DIMMs.

The SPARC M8 CMIOU DIMM locations and the buffer chip (BOB) and DDR channel (CH) numbers are as follows:



The SPARC M7 CMIU DIMM locations and the buffer chip (BOB) and DDR channel (CH) numbers are as follows:



Related Information

- [“DIMM Names” on page 112](#)
- [“Remove a DIMM” on page 116](#)
- [“Install a DIMM” on page 118](#)

DIMM Names

DIMMs follow the naming convention /SYS/CMIUx/CM/CMP/BOByw/CHz/DIMM with the following values:

- CMIU number:
 - SPARC M8-8, where x is 0 to 7
 - SPARC M7-8, where x is 0 to 7
 - SPARC M7-16, where x is 0 to 15
- Buffer chip (BOB) number (where y is 0 to 3 and w is 0 or 1)

- DDR channel (CH) number (where z is 0 or 1)

This information is useful when servicing DIMMs and when assessing error messages. For example, the following output identifies faulty DIMMs on two different SPARC M7 CMIUOs.

```
2013-09-06/17:16:20 ereport.hc.dev_fault@SYS/CMIOU1/CM/CMP/BOB11/CH1/DIMM
2013-09-06/17:16:20 ereport.hc.dev_fault@SYS/CMIOU3/CM/CMP/BOB01/CH0/DIMM
```

▼ Determine Which DIMM Is Faulty (Oracle ILOM)

- **At the Oracle ILOM prompt, type `show faulty`.**

The following output might be slightly different, depending on the server in use.

```
-> show faulty
Target                | Property      | Value
-----+-----+-----
...
/SP/faultmgmt/0       | fru           | /SYS/CMIOU1/CM/CMP/BOB11/CH1/DIMM
/SP/faultmgmt/0/faults/0 | class        | fault.memory.dim
/SP/faultmgmt/0/faults/0 | sunw-msg-id   | SPSUN4V-8000-CQ
/SP/faultmgmt/0/faults/ | component     | /SYS/CMIOU1/CM/CMP/BOB11/CH1/DIMM
/SP/faultmgmt/0/faults/ | uuid         | 99209d8f-38ce-e9dc-95fd-c0200...
/SP/faultmgmt/0/faults/ | timestamp    | 2014-09-07/13:12:35
```

The first line of the preceding output shows the CMIUO number, buffer chip number, and DDR channel number. See [“DIMM Names” on page 112](#) for information about the slot numbers on the CMIUO.

Note - If two DIMMs are reported as faulty, replace both of the DIMMs.

Related Information

- [“Identify Faulted Components” on page 40](#)
- [“Determine Which DIMM Is Faulty \(LEDs\)” on page 113](#)
- [“DIMM Configuration Fault Messages” on page 116](#)

▼ Determine Which DIMM Is Faulty (LEDs)

1. Check that the Service Required LED is lit on the front of the server.

See [“Front Indicator Panel Controls and LEDs” on page 50.](#)

2. **Check that the Service Required LED is lit on one of the CMIOU indicator panels.**

See [“CMIOU Indicators and LEDs” on page 94.](#)

3. **Remove the CMIOU with the faulty DIMM.**

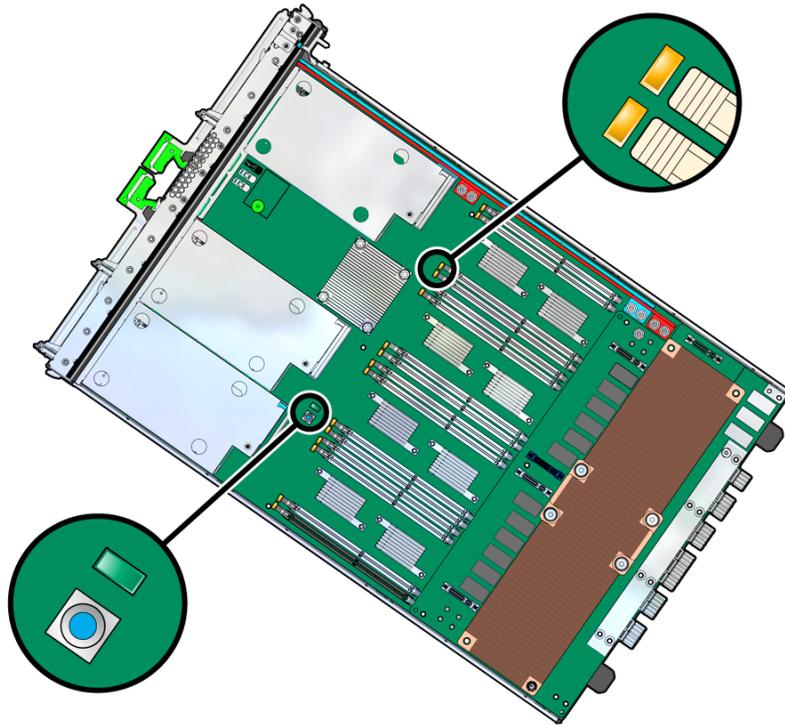
See [“Remove a CMIOU” on page 99.](#)

4. **Locate, press, and hold the blue Fault Remind button on the CMIOU.**

An illuminated green Fault Remind Power LED indicates that there is power available to light the faulty DIMM LED. Any faulty DIMM is identified by an amber LED next to the DIMM slot until you release the button.

Note - If LEDs for two DIMMs light, replace both of the DIMMs.

Note - The following illustration shows the location of the green Fault Remind Power LED and blue Fault Remind button on a SPARC M7 CMIOU. On a SPARC M8 CMIOU, the LED and button are adjacent to the bottom DIMM slot (labeled B0B21/CH0/DIMM on the board). Although their locations are different, the Fault Remind Power LED and Fault Remind Power button operate the same way on both CMIOU types.



5. **Confirm that the DIMM next to the illuminated DIMM Fault LED is the same DIMM that was reported to be faulty by the `fmadm faulty` command.**

Read the DIMM name text printed on the board next to the slot with the illuminated DIMM Fault LED (for example, B0B01/CH1/DIMM). See [“Determine Which DIMM Is Faulty \(Oracle ILOM\)”](#) on page 113, [“DIMM Names”](#) on page 112, and [“Identify Faulted Components”](#) on page 40.

6. **Visually check to ensure that all of the other DIMMs are seated properly in their slots.**

Related Information

- [“Identify Faulted Components” on page 40](#)
- [“Determine Which DIMM Is Faulty \(Oracle ILOM\)” on page 113](#)
- [“DIMM Configuration Fault Messages” on page 116](#)

DIMM Configuration Fault Messages

When the system boots, system firmware checks the memory configuration against the rules described in [“DIMM Configuration” on page 110](#). To list configuration faults that are found, you can run the `fmadm faulty` command from either the host or through the Oracle ILOM fault management shell. See [“Identify Faulted Components” on page 40](#).

▼ Remove a DIMM

DIMMs can be serviced by customers. You must remove the CMIOU from the CMIOU chassis to access the DIMMs.

Note - Do not mix 32GB LRDIMMs (4R x 4Gb) and 32GB RDIMMs (2R x 8Gb) in the same CMIOU. If you are replacing LRDIMMs with RDIMMs, replace all of the DIMMs in the CMIOU.



Caution - Before beginning this procedure, ensure that you are familiar with the cautions and safety instructions described in [“Safety Information” on page 61](#) and the information in [“DIMM Configuration” on page 110](#).



Caution - When a DIMM fails, do not remove the DIMM until a replacement is available. Removing a faulted DIMM and leaving the slot empty might deconfigure the remaining DIMMs.

1. **Take the necessary ESD precautions.**
See [“Prevent ESD Damage” on page 65](#).
2. **If you are replacing a faulty DIMM, determine which DIMM needs to be replaced.**
This task involves removing the CMIOU and its cover.

See [“Determine Which DIMM Is Faulty \(LEDs\)”](#) on page 113.

3. Remove the DIMM.



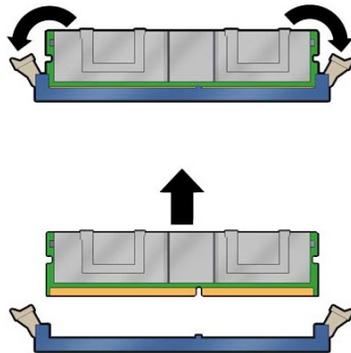
Caution - Use caution when pressing the DIMM ejector latch to ensure that you do not come into contact with the adjacent DCDC power board. Doing so might loosen, or otherwise adversely impact, the DCDC board, causing the server to report system errors.

- a. Push down on the ejector tabs on both sides of the DIMM until the DIMM is released.



Caution - DIMMs and heat sinks on the motherboard might be hot.

- b. Grasp the top corners of the faulty DIMM, lift it out of its slot, and place it on a grounded antistatic mat.



4. Repeat the previous step for any other DIMMs that you need to remove.
5. Determine your next step.
 - If you are replacing a faulty DIMM, continue to [“Install a DIMM”](#) on page 118.

Note - Confirm that the replacement DIMM is the same size and type of the faulty DIMM. See [“DIMM Configuration”](#) on page 110.

- **If you are replacing a faulty CMIOU from the chassis, remove all of the DIMMs from the faulty CMIOU so that you can install them into the replacement CMIOU.**

Place the removed DIMMs on a grounded antistatic mat, and continue to [“Install a CMIOU” on page 106.](#)

▼ Install a DIMM



Caution - Before beginning this procedure, ensure that you are familiar with the cautions and safety instructions described in [“Safety Information” on page 61](#) and the information in [“DIMM Configuration” on page 110.](#)

1. **Take the necessary ESD precautions.**
See [“Prevent ESD Damage” on page 65.](#)
2. **Ensure that you have removed either the CMIOU containing the faulted DIMM or the CMIOU filler panel.**
See [“Remove a CMIOU” on page 99.](#)
3. **If you are replacing a faulty DIMM, ensure that you have removed it.**
See [“Remove a DIMM” on page 116.](#)
4. **Unpack the replacement DIMM, and place it on a grounded antistatic mat.**



Caution - You must install the same size and capacity of DIMMs that are already in the existing CMIOU.

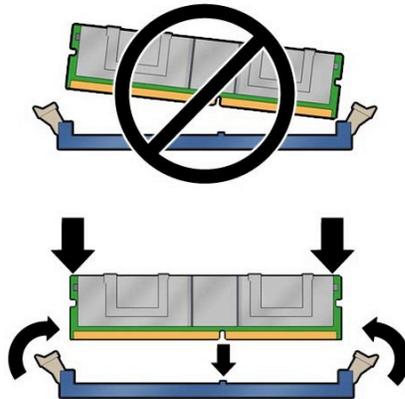
5. **Ensure that the ejector tabs on the connector that will receive the DIMM are in the open position.**
6. **Install the DIMM.**
 - a. **Align the DIMM notch with the key in the connector.**



Caution - Ensure that the orientation is correct. The DIMM might be damaged if the orientation is reversed.

- b. **Push the DIMM into the connector until the ejector tabs lock the DIMM in place.**

If the DIMM does not easily seat into the connector, check the DIMM orientation.



7. **Install the CMIOU into the server.**
See [“Install a CMIOU” on page 106.](#)
8. **Verify that the fault has been cleared and the replaced component is operational.**
See [“Verify That a Fault Has Been Cleared” on page 58.](#)

Servicing SPs

The servers have two redundant SPs: SP0 and SP1.

In SPARC M8-8 and SPARC M7-8 servers, the SPs are located in the CMIOU chassis. See [“SPARC M8-8 and SPARC M7-8 Configurations and Failover Behavior \(Two PDomains\)” on page 84](#) and [“SPARC M8-8 and SPARC M7-8 Configurations and Failover Behavior \(One PDomain\)” on page 85](#) for information about SP configurations on these servers.

In a SPARC M7-16 server, the redundant SPs (SP0 and SP1) are located in the switch chassis. These SPs manage system activity. The SPARC M7-16 also contains two SPPs in each CMIOU chassis that manage DCU activity. The top CMIOU chassis contains SPP2 and SPP3, and the bottom CMIOU chassis contains SPP0 and SPP1. For information about SP and SPP configurations on this server, see [“SPARC M7-16 Configurations and Failover Behavior” on page 85](#).

For the location of the SPs and SPPs, see [“CMIOU Chassis Rear Components” on page 25](#) and [“Switch Chassis Rear Components \(SPARC M7-16\)” on page 29](#).

Note - Replace a failed SP or SPP as soon as possible. Do not remove an SP or SPP until a replacement is available.



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. Follow antistatic precautions to prevent electrostatic damage. See [“Prevent ESD Damage” on page 65](#).



Caution - The SPARC M8-8 servers include SPs that are not compatible with the SPARC M7 servers. Never install a SPARC M8 SP in a SPARC M7 server, and never install a SPARC M7 SP in the SPARC M8-8 server. The SPARC M8 SP has a SPARC M8 label on its left extraction lever (see [“SER MGT and NET MGT Port Locations and Numbering” on page 125](#)). The SPARC M7 SPs do not have a label.

These topics explain how to service the SPs and SPPs.

Description	Links
Learn about SP and SPP firmware and configuration.	“SP Firmware and Configuration” on page 122
Learn about SP and SPP LEDs, NET MGT and SER MGT ports	“SP General Status LEDs” on page 124
Locate NET MGT and SER MGT ports.	“SER MGT and NET MGT Port Locations and Numbering” on page 125
Learn about Oracle ILOM paths to the SPs and SPPs.	“Oracle ILOM Paths for SPMs” on page 126
Prevent the SPs and SPPs from failing over automatically during a service procedure.	“Prevent Automatic SP or SPP Failover” on page 127
Manage the Active SP.	“Determine Which SP Is Managing System Activity” on page 127
	“Change Which SP Is Managing System Activity” on page 128
Manage the DCU SPM.	“Determine Which SPP Is Managing DCU Activity (SPARC M7-16)” on page 128
	“Change Which SPP Is Managing DCU Activity (SPARC M7-16)” on page 129
Prepare an SP or SPP for removal.	“Prepare to Remove an SP” on page 129
	“Prepare to Remove an SPP (SPARC M7-16)” on page 133
Replace an SP or SPP.	“Remove an SP or SPP” on page 136
	“Install an SP or SPP” on page 140

Related Information

- [“Identifying Components” on page 19](#)
- [“Detecting and Managing Faults” on page 39](#)
- [“Preparing for Service” on page 61](#)
- [“Controlling the Server and Domains” on page 71](#)
- [“Understanding Server Configurations and Failover Behavior” on page 83](#)

SP Firmware and Configuration

System firmware consists of two components: an SP component and a host component. The SP firmware component is located on the SPM within the SP. The host firmware component is located on the SP boards, and is downloaded to the CMIOU when the host is started. For the server to operate correctly, the firmware in these two components must be compatible.

Before replacing an SP, save the configuration using the Oracle ILOM backup utility. Refer to the Oracle ILOM documentation for instructions on backing up and restoring the Oracle ILOM configuration.

Note - If TPM is initialized on a SPARC M7-8 or SPARC M7-16 server, use the `tpmadm failover` command to backup TPM data and keys automatically to the Standby SP. You can use the backed up TPM data and keys on the new SP for a system migration or hardware replacement. For information about enabling failover when you initialize TPM, see [Securing Systems and Attached Devices in Oracle Solaris 11.3](#).

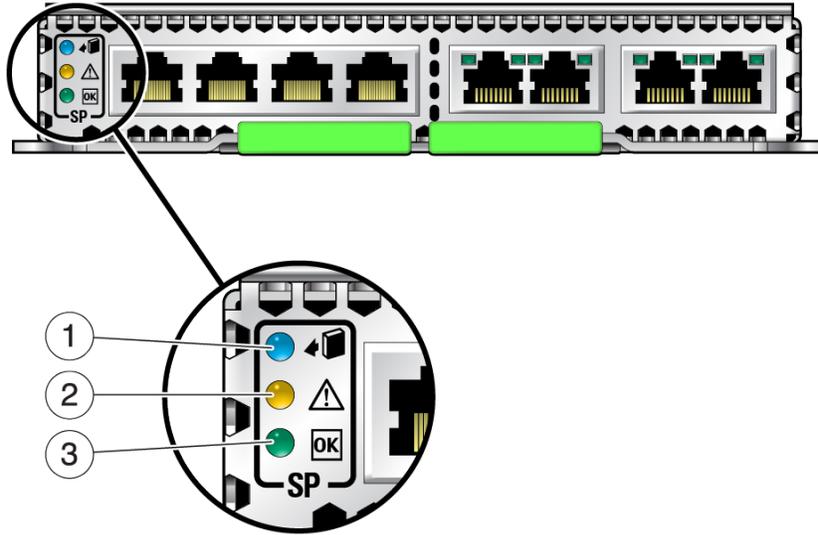
After replacing an SP, the SP firmware, the host firmware, and the configuration will be restored from the existing Active SP to the new SP.

Note - For information about firmware updates and the associated `.pkg` files that could be needed after replacing this component, go to My Oracle Support <https://support.oracle.com>

Related Information

- [“Remove an SP or SPP” on page 136](#)
- [“Install an SP or SPP” on page 140](#)
- Oracle ILOM documentation (<http://www.oracle.com/goto/ilom/docs>)

SP General Status LEDs



No.	LED	Icon	Description
1	Ready to Remove (blue)		Indicates that an component can be removed during a hot-service operation.
2	Service Required LED (amber)		Indicates that service is required for the SP or the battery contained in the component. The <code>fmadm faulty</code> command provides details about any faults that cause this indicator to light. Under some fault conditions, individual component fault LEDs are illuminated in addition to the Service Required LED.
3	OK LED (green)		Indicates these conditions: <ul style="list-style-type: none"> ■ Off – System is not running in its normal state. System power might be off. ■ Steady on – System is powered on and is running in its normal operating state. No service actions are required. ■ Slow blink – A normal but transitory activity is taking place. Slow blinking might indicate that system diagnostics are running or that the system is booting.

Related Information

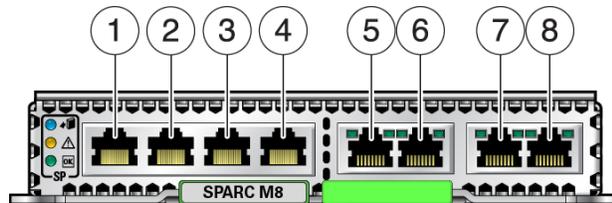
- [“SER MGT and NET MGT Port Locations and Numbering” on page 125](#)
- [“Checking for Faults” on page 39](#)
- [“Interpreting LEDs” on page 48](#)

SER MGT and NET MGT Port Locations and Numbering

The NET MGT and SER MGT ports are accessible on the SPs and SPPs from the rear of the server.

Refer to the [SPARC M8 and SPARC M7 Servers Installation Guide](#) for information about cabling the network management ports on your server.

Note - The SPARC M8 SP has a SPARC M8 label on its left extraction lever. The SPARC M7 SPs do not have a label.



No.	Description	Links
1-4	SER MGT ports (0-3)	The serial ports enable you to connect directly to the SPs and SPPs.
5-8	NET MGT ports (0-3)	The Ethernet ports enable you to connect the server to your local network so that you can manage the server from a remote location.

Related Information

- [“Servicing SPs” on page 121](#)
- [“CMIOU Chassis Rear Components” on page 25](#)
- [“Switch Chassis Rear Components \(SPARC M7-16\)” on page 29](#)

Oracle ILOM Paths for SPMs

Component	Oracle ILOM Path
	<i>All servers:</i>
SP0/SPM0	/System/Other_Removable_Devices/Service_Processors/Service_Processor_0/ Service_Processor_Module_0
SP1/SPM0	/System/Other_Removable_Devices/Service_Processors/Service_Processor_1/ Service_Processor_Module_0
	<i>SPARC M8-8 and SPARC M7-8 (with two PDomains) only:</i>
SP0/SPM1	/System/Other_Removable_Devices/Service_Processors/Service_Processor_0/ Service_Processor_Module_1
SP1/SPM1	/System/Other_Removable_Devices/Service_Processors/Service_Processor_1/ Service_Processor_Module_1
	<i>SPARC M7-16 only:</i>
	/System/Other_Removable_Devices/Proxy_Service_Processors...
DCU0	.../Proxy_Service_Processor_0/Service_Processor_Module_0
SPP0/SPM0	.../Proxy_Service_Processor_1/Service_Processor_Module_0
SPP1/SPM0	.../Proxy_Service_Processor_1/Service_Processor_Module_0
DCU1	.../Proxy_Service_Processor_0/Service_Processor_Module_1
SPP0/SPM1	.../Proxy_Service_Processor_1/Service_Processor_Module_1
SPP1/SPM1	.../Proxy_Service_Processor_1/Service_Processor_Module_1
DCU2	.../Proxy_Service_Processor_2/Service_Processor_Module_0
SPP2/SPM0	.../Proxy_Service_Processor_3/Service_Processor_Module_0
SPP3/SPM0	.../Proxy_Service_Processor_3/Service_Processor_Module_0
DCU3	.../Proxy_Service_Processor_2/Service_Processor_Module_1
SPP2/SPM1	.../Proxy_Service_Processor_3/Service_Processor_Module_1
SPP3/SPM1	.../Proxy_Service_Processor_3/Service_Processor_Module_1

Related Information

- [“Understanding Server Configurations and Failover Behavior” on page 83](#)
- [SPARC M8 and SPARC M7 Servers Administration Guide](#)

▼ Prevent Automatic SP or SPP Failover

The SPs and SPPs in the server are to failover automatically when the Oracle ILOM firmware senses a fault or when a SP or SPP is taken offline. Before preparing to service an SP or SPP, set the Oracle ILOM `/System/DCUs failover` property to `manual`. Setting the `failover` property to `manual` enables you to prepare an SP or SPP for service without interference from the Oracle ILOM firmware.



Caution - Only set the `failover` property to `manual` when servicing SPs and SPPs. After servicing the SP or SPP, set the `failover` property back to `auto` so that the components will failover properly in case of a fault or user command.

Note - This `failover` property was added to the Oracle ILOM firmware version 4.0.x. The property will not be available on SPARC M7 servers running earlier versions of the Oracle ILOM firmware. Always update your system firmware to latest available and supported version for optimal performance, security, and stability.

- **On an SP, type:**

```
-> set /System/DCUs failover>manual
```

Related Information

- [“Determine Which SP Is Managing System Activity” on page 127](#)
- [“Determine Which SPP Is Managing DCU Activity \(SPARC M7-16\)” on page 128](#)
- [“Change Which SP Is Managing System Activity” on page 128](#)
- [“Remove an SP or SPP” on page 136](#)

▼ Determine Which SP Is Managing System Activity

The SP that is identified as the Active SP manages system activity. On SPARC M8-8 and SPARC M7-8 servers, this SP is located in the CMIOU chassis. On a SPARC M7-16 server, this SP is located in the switch chassis.

The example shows that SP0 is assigned the status of the Active SP.

- **On an SP, type:**

```
-> show /SP/redundancy/  
/SP/redundancy/  
Properties:
```

```
fru_name = /SYS/SP0/SPM0
initiate_failover_action = (none)
status = Active
```

Related Information

- [“Understanding Server Configurations and Failover Behavior” on page 83](#)
- [SPARC M8 and SPARC M7 Servers Administration Guide](#)

▼ Determine Which SPP Is Managing DCU Activity (SPARC M7-16)

The following example shows that SPP0/SPM0 is assigned the status of the DCU SPM.

- **On an SP, type:**

```
-> show /System/DCUs/DCU_x sp_name
/System/DCUs/DCUx
Properties:
sp_name = /SYS/SPP0/SPM0
initiate_failover_action = (none)
```

Related Information

- [“Understanding Server Configurations and Failover Behavior” on page 83](#)
- [SPARC M8 and SPARC M7 Servers Administration Guide](#)

▼ Change Which SP Is Managing System Activity

Complete this task to change the current roles of the SP pair. For example, you might want to change the SP that is currently identified as the Active SP to be the Standby SP if you are replacing it.

- **On an SP, type:**

```
-> set /SP/redundancy initiate_failover_action=true
```

Related Information

- [“Understanding Server Configurations and Failover Behavior” on page 83](#)
- [SPARC M8 and SPARC M7 Servers Administration Guide](#)

▼ Change Which SPP Is Managing DCU Activity (SPARC M7-16)

You cannot specify which SPM will serve as the DCU SPM or PDomain SPM, but you can specify that Oracle ILOM should assign a new SPM in the pair to serve these roles. You might do this when, for example, you are replacing an SPP.

Complete this task to change the current roles of the SPMs. For example, you would need to change the SPM in the pair that is currently identified as the DCU SPM to be the Standby SPM if you are replacing it.

- **On an SP, type:**

```
-> set /System/DCUs/DCU_x initiate_sp_failover=true
```

Related Information

- [“Understanding Server Configurations and Failover Behavior” on page 83](#)
- [SPARC M8 and SPARC M7 Servers Administration Guide](#)

▼ Prepare to Remove an SP

SPARC M8-8 and SPARC M7-8 servers have two SPs in the CMIOU chassis. SPARC M7-16 servers have two SPs in the switch chassis. On all servers, one SP serves as the Active SP, and one serves as the Standby SP. The Active SP manages DCU activity and all system resources unless it can no longer do so, in which case the Standby SP assumes its role.

Note - Replace only one SP in the system at a time.

Note - If you issue the `prepare_to_remove` command for an SPM, you must also prepare the SP for removal. You must then return the SP to service for the SPM to restart. This automatically happens when an SP is physically removed and installed into the slot, but if you do not physically install an SP into the slot, you must issue the `return_to_service` command for the SP. See [“Return a Component to Service” on page 79](#).

This procedure explains how to prepare an SP for removal. For information about preparing to remove the SPPs in a SPARC M7-16 server, see [“Prepare to Remove an SPP \(SPARC M7-16\)” on page 133](#).

1. Determine which SP requires service.

See [“Identify Faulted Components” on page 40](#) and [“SP General Status LEDs” on page 124](#).

2. Ensure that the SPM on the SP is not managing hardware.

```
-> show /System/Other_Removable_Devices/Service_Processors/  
Service_Processor_x/Service_Processor_Module_0 state_sp  
Properties:  
state_sp = OffDuty
```

- If state_sp reports OffDuty, the SP is not the Active SP and you can continue to [Step 5](#).
- If state_sp reports Running, you must first change the Active SP assignment. See [“Change Which SP Is Managing System Activity” on page 128](#).

Note - For SPARC M8-8 and SPARC M7-8 servers with two PDomains, perform this step for the second SPM. For example, if you previously ran the state_sp command on Service_Processor_0/Service_Processor_Module_0, you now need to run it on Service_Processor_0/Service_Processor_Module_1.

3. For SPARC M8-8 and SPARC M7-8 servers only, verify that the PCIe devices are offline.

- **For SPARC M8-8 and SPARC M7-8 servers with two PDomains, check the state for both SPMs.**

```
-> show /System/Other_Removable_Devices/Service_Processors/  
Service_Processor_x/Service_Processor_Module_0 state_pcie  
Properties:  
state_pcie = Offline  
-> show /System/Other_Removable_Devices/Service_Processors/  
Service_Processor_x/Service_Processor_Module_1 state_pcie  
Properties:  
state_pcie = Offline
```

- **For SPARC M8-8 and SPARC M7-8 servers with one PDomain, check the state for the only SPM.**

```
-> show /System/Other_Removable_Devices/Service_Processors/  
Service_Processor_x/Service_Processor_Module_0 state_pcie  
Properties:  
state_pcie = Offline
```

If state_pcie returns a value of Online, log onto the host that contains the SPM and prepare the PCIe card for removal by taking the devices offline for the appropriate SP/SPM slot. See [“Servicing PCIe Cards” on page 145](#).

4. Determine your next step based on your server Oracle ILOM version.

SPARC M7 servers running Oracle ILOM version 4.0.x do not require you to prepare the SPM for removal. SPARC M8-8 servers ship with a minimum Oracle ILOM version of 4.0.x.

Note - Always update your system firmware to latest available and supported version for optimal performance, security, and stability.

- For servers running Oracle ILOM version 4.0.x, or a future supported version, go to [Step 6](#).
- For servers running Oracle ILOM version 3.2.x, continue to [Step 5](#).

5. (Oracle ILOM 3.2.x only) Prepare the SPM for removal.

Note - If your server is running Oracle ILOM version 4.0.x, or a future compatible version, do not perform this step.

```
-> cd /System/Other_Removable_Devices/Service_Processors/
    Service_Processor_x/Service_Processor_Module_0
-> set action=prepare_to_remove
```

This command can take several minutes to complete.

Determine your next step:

- For SPARC M8-8 and SPARC M7-8 servers with two PDomains, perform this step for the second SPM, and then go to [Step 6](#).
- For SPARC M8-8 and SPARC M7-8 servers with one PDomain, go to [Step 6](#).
- For SPARC M7-16 servers, go to [Step 7](#).

6. For SPARC M8-8 and SPARC M7-8 servers only, verify that the PCIe devices are offline.

- For SPARC M8-8 and SPARC M7-8 servers with two PDomains, check the state for both SPMs.

```
-> show /System/Other_Removable_Devices/Service_Processors/
    Service_Processor_x/Service_Processor_Module_0 state_pcie
Properties:
    state_pcie = Offline
-> show /System/Other_Removable_Devices/Service_Processors/
    Service_Processor_x/Service_Processor_Module_1 state_pcie
Properties:
    state_pcie = Offline
```

- **For SPARC M8-8 and SPARC M7-8 servers with one PDomain, check the state for the only SPM.**

```
-> show /System/Other_Removable_Devices/Service_Processors/  
      Service_Processor_x/Service_Processor_Module_0 state_pcie  
      Properties:  
      state_pcie = Offline
```

If state_pcie returns a value of Online, log onto the host that contains the SPM and prepare the PCIe card for removal by taking the devices offline for the appropriate SP/SPM slot. See [“Servicing PCIe Cards” on page 145](#).

7. **(Oracle ILOM 3.2.x only) Verify that the SPM on the SP is ready for removal.**

```
-> show /System/Other_Removable_Devices/Service_Processors/  
      Service_Processor_x/Service_Processor_Module_0 health  
      Properties:  
      health = Offline
```

Note - For SPARC M8-8 and SPARC M7-8 with two PDomains, perform this step for the second SPM.

8. **Prepare the SP for removal.**

```
-> cd /System/Other_Removable_Devices/Service_Processors/  
      Service_Processor_x  
-> set action=prepare_to_remove
```

This command powers off the SP and lights the blue Ready to Remove LED on the SP.

9. **Verify that the SP is ready for removal.**

```
-> show /System/Other_Removable_Devices/Service_Processors/  
      Service_Processor_x health  
      Properties:  
      health = Offline
```

Related Information

- [“SP General Status LEDs” on page 124](#)
- [“Remove an SP or SPP” on page 136](#)

▼ Prepare to Remove an SPP (SPARC M7-16)

SPARC M7-16 servers have two SPPs in each CMIOU chassis and two SPs in the switch chassis. SPPs have two service processor modules each. SPs have one SPM each. This procedure explains how to remove an SPP.

For information about preparing SPs in the switch chassis for removal, see [“Prepare to Remove an SP” on page 129](#).

Note - If you issue the `prepare_to_remove` command for an SPM, you must also prepare the SPP for removal. You must then return the SPP to service for the SPM to restart. This automatically happens when an SPP is physically removed and installed into the slot, but if you do not physically install an SPP into the slot, you must issue the `return_to_service` command for the SPP. See [“Return a Component to Service” on page 79](#).

To achieve redundancy, each SPM (SPM0 and SPM1) on an SPP is assigned to a different DCU. SPM0 on each SPP manages one DCU in the CMIOU chassis, while SPM1 on each SPP manages the other DCU in the chassis.

Object Managed by SPM Pair	SPM or SPM Pair
SP0	/SYS/SP0/SPM0
SP1	/SYS/SP1/SPM0
DCU0	/SYS/SPP0/SPM0
	/SYS/SPP1/SPM0
DCU1	/SYS/SPP0/SPM1
	/SYS/SPP1/SPM1
DCU2	/SYS/SPP2/SPM0
	/SYS/SPP3/SPM0
DCU3	/SYS/SPP2/SPM1
	/SYS/SPP3/SPM1

Before you remove an SPP, you must ensure that neither of the SPMs on the SPP are the DCU SPP (the SPP that manages DCU activity).

1. Determine which SPP requires service.

See [“Identify Faulted Components” on page 40](#) and [“SP General Status LEDs” on page 124](#).

2. Ensure that the SPMs on the SPP that you are removing are not managing hardware.

This example shows how to check the state of both SPMs on SPP2. See [“Oracle ILOM Paths for SPMs” on page 126](#).

```
-> show /System/Other_Removable_Devices/Proxy_Service_Processors/  
Proxy_Service_Processor_2/Service_Processor_Module_0 state_sp  
Properties:  
state_sp = OffDuty  
  
-> show /System/Other_Removable_Devices/Proxy_Service_Processors/  
Proxy_Service_Processor_2/Service_Processor_Module_1 state_sp  
Properties:  
state_sp = OffDuty
```

If the state reports OffDuty, neither of the SPMs on SPP2 are managing a DCU. Move to [Step 4](#).

If the state reports Running, you must change the DCU PDomain assignment. For example, if you want to remove SPP2 and it is currently running, you need to ensure that DCU2 is managed by /SYS/SPP3/SPM0 and that DCU3 is managed by /SYS/SPP3/SPM1. See [“Change Which SPP Is Managing DCU Activity \(SPARC M7-16\)” on page 129](#).

3. Determine your next step based on your server Oracle ILOM version.

SPARC M8-8 and SPARC M7 servers running Oracle ILOM version 4.0.x do not require you to prepare the SPM for removal or verify that the SPMs and PCIe devices are offline.

Note - Always update your system firmware to latest available and supported version for optimal performance, security, and stability.

- For servers running Oracle ILOM version 4.0.x, or a future supported version, go to [Step 6](#).
- For servers running Oracle ILOM version 3.2.x, continue to [Step 7](#).

4. (Oracle ILOM 3.2.x only) Prepare each SPM for removal.

```
-> set /System/Other_Removable_Devices/Proxy_Service_Processors/  
Proxy_Service_Processor_2/Service_Processor_Module_0  
action=prepare_to_remove  
  
-> set /System/Other_Removable_Devices/Proxy_Service_Processors/  
Proxy_Service_Processor_2/Service_Processor_Module_1  
action=prepare_to_remove
```

This command can take several minutes to complete.

5. (Oracle ILOM 3.2.x only) Verify that the SPP is ready to remove by verifying that its SPMs have stopped.

It can take up to two minutes for the SPMs to go offline. Once they are offline, you can prepare the SPP for removal.

```
-> show /System/Other_Removable_Devices/Proxy_Service_Processors/
Proxy_Service_Processor_2/Service_Processor_Module_0 health
Properties:
    health = Offline
-> show /System/Other_Removable_Devices/Proxy_Service_Processors/
Proxy_Service_Processor_2/Service_Processor_Module_1 health
Properties:
    health = Offline
```

6. (Oracle ILOM 3.2.x only) After ensuring that the SPM has been taken offline, wait a couple of minutes and then verify that the PCIe devices have been taken offline.

```
-> show /System/Other_Removable_Devices/Proxy_Service_Processors/
Proxy_Service_Processor_2/Service_Processor_Module_0 state_pcie
Properties:
    state_pcie = Offline
```

If state_pcie returns a value of OnLine, log onto the host and take the card offline for the appropriate SP/SPM slot. See [“Change Which SPP Is Managing DCU Activity \(SPARC M7-16\)” on page 129](#).

7. Prepare the SPP for removal.

```
-> set /System/Other_Removable_Devices/Proxy_Service_Processors/
Proxy_Service_Processor_2 action=prepare_to_remove
```

This command powers off the SPP and turns on the blue Ready to Remove LED on the SPP.

8. Verify that the SPP is ready for removal.

```
-> show /System/Other_Removable_Devices/Proxy_Service_Processors/
Proxy_Service_Processor_2 health
Properties:
    health = Offline
```

Related Information

- [“SP General Status LEDs” on page 124](#)

- [“Remove an SP or SPP” on page 136](#)

▼ Remove an SP or SPP

This procedure can be performed by a customer while the server is running. The procedure is the same whether you are removing an SP or an SPP.

Note - Only remove an SP or SPP when you have verified that the blue Ready to Remove LED on the SP or SPP is lit.



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. When you unpack the replacement part, open the package on a grounded antistatic mat. Always use an antistatic wrist strap for hardware replacements.

1. **Determine your first step:**
 - a. **If you cannot access the SP, go to [Step 2](#).**
 - b. **If you can access the SP, back up the configuration information as shown [here](#) and then go to [Step 2](#).**

```
-> cd /SP/config  
-> dump -destination uri target
```

where:

- *uri* is tftp, ftp, sftp, scp, http, and https
- *target* is the remote location where you want to store the configuration information

For example:

```
-> dump -destination tftp://129.99.99.99/pathname
```

2. **Take the necessary ESD precautions.**
See [“Prevent ESD Damage” on page 65](#).
3. **Locate the lit blue Ready to Remove LED.**
The component is in the rear of the server. See [“SP General Status LEDs” on page 124](#).

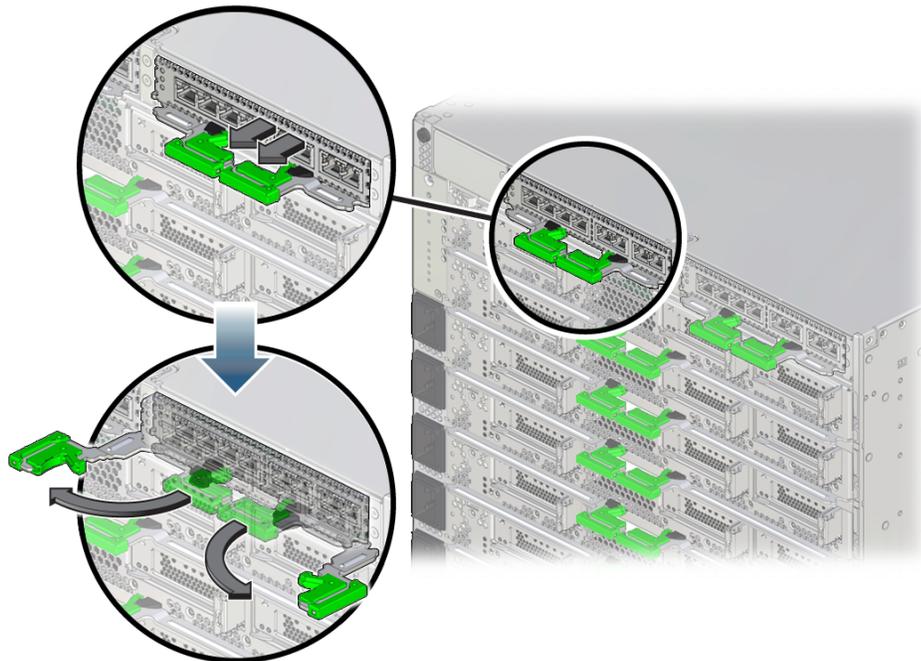
- 4. If you are replacing a faulty SP, relocate any existing NET MGT and SER MGT port plugs.**

Remove any port plugs that are installed in the NET MGT and SER MGT ports and install them in the same ports on the replacement SP or SPP.

- 5. Label and disconnect the cables attached to the NET MGT and SER MGT ports.**

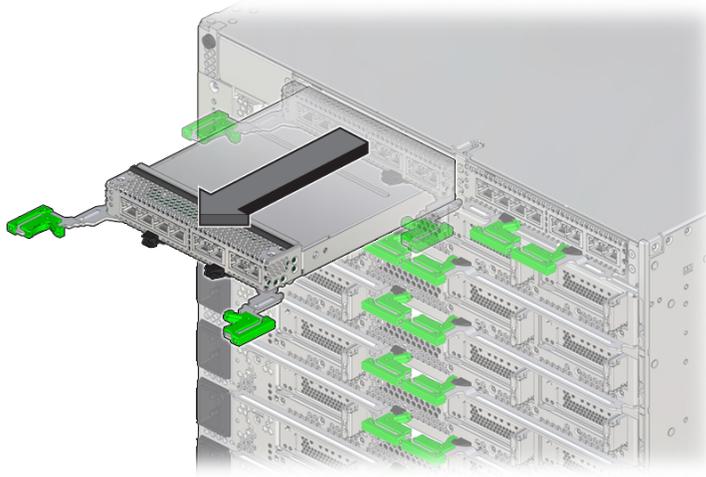
See [“CMIOU Chassis Rear Components”](#) on page 25, [“Switch Chassis Rear Components \(SPARC M7-16\)”](#) on page 29, and [“SER MGT and NET MGT Port Locations and Numbering”](#) on page 125.

- 6. Pinch the ejector latches and open the ejector arms.**



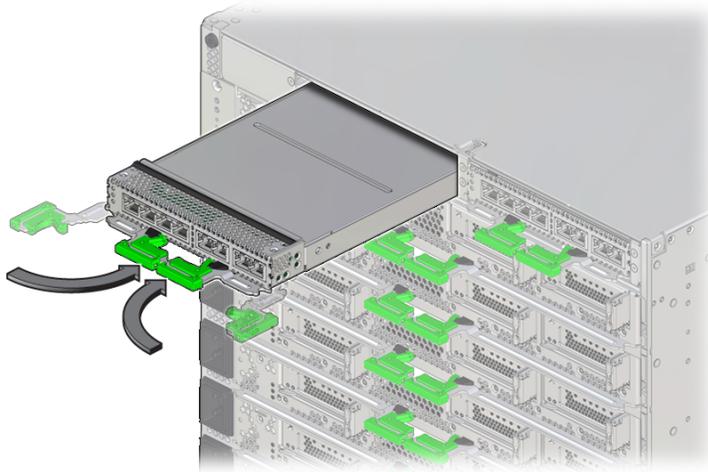
- 7. Pull the SP halfway out of the SP tray.**

8 (one PDomain) The SPs and SPPs are tightly secured in their bays. Pull firmly on the ejector latches to free the SP or SPP from the bay.



8. Close the ejector arms.

This protects the arms from damage when you pull the component out.



9. Carefully remove the component from the SP tray, using two hands, and avoid bumping the rear connectors.
10. Place the SP on a grounded antistatic mat.
11. Set the `/System/DCUs failover` property back to auto.
On an SP, type:

```
-> set /System/DCUs failover=auto
```
12. Determine your next step:
 - To replace the battery, see [“Servicing Batteries” on page 251](#).
 - To install an SP, see [“Install an SP or SPP” on page 140](#).

Related Information

- [“SP General Status LEDs” on page 124](#)
- [“Install an SP or SPP” on page 140](#)

▼ Install an SP or SPP

An SPM will automatically restart following the installation of an SP or SPP.

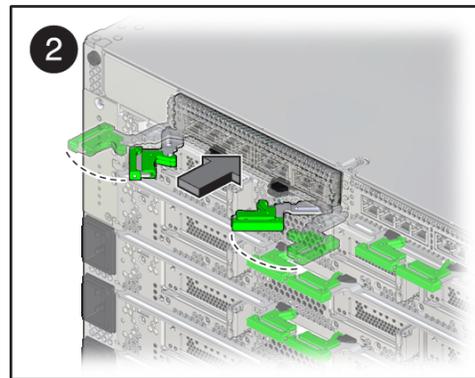
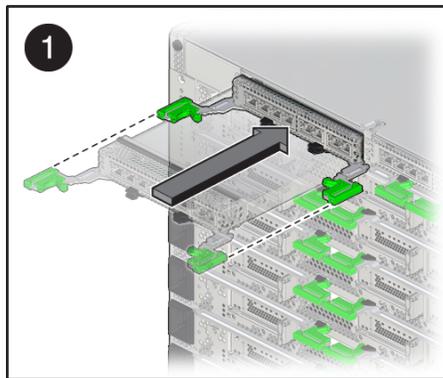


Caution - If you remove this component while the server is powered on, wait 30 seconds before installing the replacement component. Doing so ensures that Oracle ILOM has enough time to detect the new component, which is required for the software to power it on.

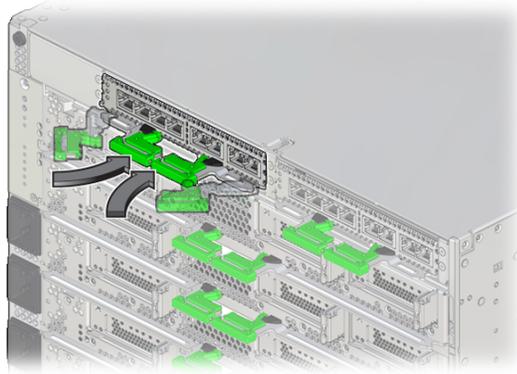


Caution - The SPARC M8-8 servers include SPs that are not compatible with the SPARC M7 servers. Never install a SPARC M8 SP in a SPARC M7 server, and never install a SPARC M7 SP in the SPARC M8-8 server.

1. **Take appropriate ESD measures.**
See [“Prevent ESD Damage”](#) on page 65.
2. **Insert the SP into the slot, and slide it in until the extraction levers start to close.**



3. **Close the extraction levers fully until they lock into place.**



4. **Determine whether an FPGA update is required and update the firmware, if needed.**

If an FPGA update is required, refer to the [SPARC M8 and SPARC M7 Servers Product Notes](#) for information about performing the update.

5. **Reinstall the cables you removed from the NET MGT and SER MGT ports.**
Ensure that you install the cables in the same ports from which you removed them.
6. **Connect a terminal or a terminal emulator (PC or workstation) to the SER MGT port.**
7. **If needed, download the system firmware.**

The Active SP will replicate the system firmware on the newly installed SP or SPP. Confirm that the correct system firmware is running. If an update is needed, update the system firmware on the Active SP (not on the newly installed SP or SPP) as follows.

- a. **Configure the network port on the Active SP to enable the firmware image to be downloaded.**

For instructions, refer to the Oracle ILOM documentation.

- b. **Download the system firmware and install it on the Active SP.**

Follow the firmware download instructions in the Oracle ILOM documentation and refer to the [SPARC M8 and SPARC M7 Servers Product Notes](#) for the current firmware version.

Note - You can load any supported system firmware version, including the firmware revision that had been installed prior to the replacement of the SP or SPP.

8. Restore the configuration information.

```
-> cd /SP/config
-> load -source uri target
```

where:

- *uri* is tftp, ftp, sftp, scp, http, and https
- *target* is the remote location where you stored the configuration information

For example:

```
-> load -source tftp://129.99.99.99/pathname
```

9. (SPARC M7 servers only) If TPM was initialized on the replaced SP, complete these steps:

- a. Reinitialize TPM and reset the `tpmadm failover` command if it was previously in use.**

For information about initializing TPM using the Oracle ILOM interface to enable failover, see [Securing Systems and Attached Devices in Oracle Solaris 11.3](#).

- b. Restore the TPM data and keys that were backed up to the Standby SP on a new SP you install.**

For information about migrating or restoring TPM data and keys, see [Securing Systems and Attached Devices in Oracle Solaris 11.3](#).

10. Verify that the fault has been cleared and the replaced component is operational.
See [“Verify That a Fault Has Been Cleared”](#) on page 58.

11. Verify that the SP date is correct.

```
-> show /SP/clock
```

```
/SP/clock
Properties:
  datetime = Tue Sep 07 08:09:59 2013
  timezone = GMT (GMT)
  uptime = 0 days, 00:01:18
  usentpserver = disabled
->
```

a. Set the `datetime` property, if necessary.

-> `set /SP/clock datetime=MMDDhhmmYYYY`

b. Set the `timezone` property, if necessary.

-> `set /SP/clock timezone=3-to-4-characters`

where the `timezone` value equals a three- or four-character timezone abbreviation, such as EST.

12. Return the replaced component to Oracle.

See [“Prepare a Component for Return to Oracle”](#) on page 68.

Related Information

- [“SER MGT and NET MGT Port Locations and Numbering”](#) on page 125
- Oracle ILOM documentation (<http://www.oracle.com/goto/ilom/docs>)

Servicing PCIe Cards

Each CMIOU in the server has three slots, each of which can hold one PCIe x16 hot-plug card carrier. Each of these carriers contains a single low-profile PCIe card. For the location of the PCIe cards, see “[Rear Indicator Panel Controls and LEDs](#)” on page 52.



Caution - To remove a PCIe card that is assigned to an I/O domain, first remove the device from the I/O domain. For more information about making hardware changes to an I/O domain, refer to the Oracle VM for SPARC documentation at <http://www.oracle.com/goto/vm-sparc/docs>.

Note - Always update PCIe card firmware to the latest supported version. Refer to the PCIe card documentation for the firmware update instructions.

These topics explain how to service the PCIe cards that are installed in the PCIe card carriers in the server.

Description	Links
Learn about CMIOU-to-PCIe card configurations.	“PCIe Card Slot Configuration and Numbering” on page 146
Learn about PCIe card device and service paths.	“Understanding PCIe Card Device and Service Paths” on page 147
Learn about the order in which to install PCIe cards in the server.	“PCIe Card Installation Order Guidelines” on page 149
Learn about supported PCIe card carrier and card versions.	“Supported PCIe Card Carriers and PCIe Cards” on page 149
Learn about PCIe card carrier LEDs.	“PCIe Card Carrier LEDs and Controls” on page 153
Locate the PCIe card in the server.	“Locate a PCIe Card in the Server” on page 154
Prepare to remove a PCIe card carrier and card.	“Prepare a PCIe Card For Removal” on page 155
Replace a PCIe card carrier or card.	“Remove a PCIe Card Carrier and Card From the Server” on page 160 “Install a PCIe Card Into a Card Carrier” on page 162 “Install a Card Carrier Into the Server” on page 163

Description	Links
Learn how to restore an I/O domain configuration on a logical domain.	“Restore a PCIe Card Configuration on an I/O Domain” on page 165
Verify that a replaced PCIe card is operational.	“Verify the PCIe Card” on page 168

Related Information

- [“Identifying Components” on page 19](#)
- [“Detecting and Managing Faults” on page 39](#)
- [“Preparing for Service” on page 61](#)
- [“Controlling the Server and Domains” on page 71](#)
- [“Understanding Server Configurations and Failover Behavior” on page 83](#)

PCIe Card Slot Configuration and Numbering

The server supports the PCIe 16-lane format. PCIe card slots connect to root complexes in CMPs that are mounted on CMIOUs. For more information about PCIe device root complexes, refer to the [SPARC M8 and SPARC M7 Servers Administration Guide](#).

Each CMIOU has three slots, each of which can hold a single PCIe x16 card carrier. The slot numbers repeat from 1 to 3 in each CMIOU, so to identify the physical location of a card you must specify the CMIOU number, as well as the card slot number. Note that the physical numbering for card slots starts at 1 (not 0) and ends at 3 (not 2).

Note - In a PDomain, if a CMIOU fails, the DCU will lose access to the failed CMIOU PCIe slots.

Related Information

- [“CMIOU Configurations \(SPARC M8-8 and SPARC M7-8 With Two PDomains\)” on page 88](#)
- [“CMIOU Configurations \(SPARC M8-8 and SPARC M7-8 With One PDomain\)” on page 89](#)
- [“CMIOU Configurations \(SPARC M7-16\)” on page 89](#)

Understanding PCIe Card Device and Service Paths

Every slot location has three unique methods of identification:

- A physical location consists of the CMIOU number and the PCIe slot.
- The device path is how the Oracle Solaris `hotplug` command identifies a slot location.
- The service path is how the Oracle ILOM `show` command identifies a slot location.
- The BUS name is the value you supply to assign a root complex to a logical domain.

Note - In half-populated configurations, PCIe slots are unused for an empty CMIOU slot.

These topics list the PCIe card paths for each CMIOU chassis in the server.

- [“PCIe Card Paths \(Bottom CMIOU Chassis\)” on page 147](#)
- [“PCIe Card Paths \(Top CMIOU Chassis\)” on page 148](#)

PCIe Card Paths (Bottom CMIOU Chassis)

These are the CMIOU numbers, device paths, and service paths for each PCIe card slot in the SPARC M8-8 server, the SPARC M7-8 server, and the SPARC M7-16 server bottom CMIOU chassis.

CMIOU No.	Device Path	Service Path	BUS Name
CMIOU7	/pci@324/pci@1	/SYS/CMIOU7/PCIE3	pci_36
CMIOU7	/pci@323/pci@1	/SYS/CMIOU7/PCIE2	pci_35
CMIOU7	/pci@326/pci@1	/SYS/CMIOU7/PCIE1	pci_38
CMIOU6	/pci@31f/pci@1	/SYS/CMIOU6/PCIE3	pci_31
CMIOU6	/pci@31e/pci@1	/SYS/CMIOU6/PCIE2	pci_30
CMIOU6	/pci@321/pci@1	/SYS/CMIOU6/PCIE1	pci_33
CMIOU5	/pci@31a/pci@1	/SYS/CMIOU5/PCIE3	pci_26
CMIOU5	/pci@319/pci@1	/SYS/CMIOU5/PCIE2	pci_25
CMIOU5	/pci@31c/pci@1	/SYS/CMIOU5/PCIE1	pci_28
CMIOU4	/pci@315/pci@1	/SYS/CMIOU4/PCIE3	pci_21
CMIOU4	/pci@314/pci@1	/SYS/CMIOU4/PCIE2	pci_20
CMIOU4	/pci@317/pci@1	/SYS/CMIOU4/PCIE1	pci_23
CMIOU3	/pci@310/pci@1	/SYS/CMIOU3/PCIE3	pci_16

CMIU No.	Device Path	Service Path	BUS Name
CMIU3	/pci@30f/pci@1	/SYS/CMIU3/PCIE2	pci_15
CMIU3	/pci@312/pci@1	/SYS/CMIU3/PCIE1	pci_18
CMIU2	/pci@30b/pci@1	/SYS/CMIU2/PCIE3	pci_11
CMIU2	/pci@30a/pci@1	/SYS/CMIU2/PCIE2	pci_10
CMIU2	/pci@30d/pci@1	/SYS/CMIU2/PCIE1	pci_13
CMIU1	/pci@306/pci@1	/SYS/CMIU1/PCIE3	pci_6
CMIU1	/pci@305/pci@1	/SYS/CMIU1/PCIE2	pci_5
CMIU1	/pci@308/pci@1	/SYS/CMIU1/PCIE1	pci_8
CMIU0	/pci@301/pci@1	/SYS/CMIU0/PCIE3	pci_1
CMIU0	/pci@300/pci@1	/SYS/CMIU0/PCIE2	pci_0
CMIU0	/pci@303/pci@1	/SYS/CMIU0/PCIE1	pci_3

PCIe Card Paths (Top CMIU Chassis)

These are the CMIU numbers, device paths, and service paths for each PCIe card slot in the SPARC M7-16 server top CMIU chassis.

CMIU No.	Device Path	Service Path	BUS Name
CMIU15	/pci@34c/pci@1	/SYS/CMIU15/PCIE3	pci_76
CMIU15	/pci@34b/pci@1	/SYS/CMIU15/PCIE2	pci_75
CMIU15	/pci@34e/pci@1	/SYS/CMIU15/PCIE1	pci_78
CMIU14	/pci@347/pci@1	/SYS/CMIU14/PCIE3	pci_71
CMIU14	/pci@346/pci@1	/SYS/CMIU14/PCIE2	pci_70
CMIU14	/pci@349/pci@1	/SYS/CMIU14/PCIE1	pci_73
CMIU13	/pci@342/pci@1	/SYS/CMIU13/PCIE3	pci_66
CMIU13	/pci@341/pci@1	/SYS/CMIU13/PCIE2	pci_65
CMIU13	/pci@344/pci@1	/SYS/CMIU13/PCIE1	pci_68
CMIU12	/pci@33d/pci@1	/SYS/CMIU12/PCIE3	pci_61
CMIU12	/pci@33c/pci@1	/SYS/CMIU12/PCIE2	pci_60
CMIU12	/pci@33f/pci@1	/SYS/CMIU12/PCIE1	pci_63
CMIU11	/pci@338/pci@1	/SYS/CMIU11/PCIE3	pci_56
CMIU11	/pci@337/pci@1	/SYS/CMIU11/PCIE2	pci_55
CMIU11	/pci@33a/pci@1	/SYS/CMIU11/PCIE1	pci_58
CMIU10	/pci@333/pci@1	/SYS/CMIU10/PCIE3	pci_51
CMIU10	/pci@332/pci@1	/SYS/CMIU10/PCIE2	pci_50

CMIOU No.	Device Path	Service Path	BUS Name
CMIOU10	/pci@335/pci@1	/SYS/CMIOU10/PCIE1	pci_53
CMIOU9	/pci@32e/pci@1	/SYS/CMIOU9/PCIE3	pci_46
CMIOU9	/pci@32d/pci@1	/SYS/CMIOU9/PCIE2	pci_45
CMIOU9	/pci@330/pci@1	/SYS/CMIOU9/PCIE1	pci_48
CMIOU8	/pci@329/pci@1	/SYS/CMIOU8/PCIE3	pci_41
CMIOU8	/pci@328/pci@1	/SYS/CMIOU8/PCIE2	pci_40
CMIOU8	/pci@32b/pci@1	/SYS/CMIOU8/PCIE1	pci_43

Related Information

- [“PCIe Card Slot Configuration and Numbering” on page 146](#)
- [“PCIe Card Installation Order Guidelines” on page 149](#)

Supported PCIe Card Carriers and PCIe Cards

SPARC M8 and SPARC M7 servers support the use of only PCIe x16 hot-plug card carriers, which are physically labeled with "x16 CAR" on the faceplate. PCIe x8 card carriers from earlier generations of Oracle servers, which are labeled with "CAR" on the faceplate, are not supported for use in SPARC M8 and M7 servers. PCIe x8 and PCIe x16 cards are supported for use in these servers.

Related Information

- https://community.oracle.com/community/server_%26_storage_systems/systems-io/sparc-servers
- [“PCIe Card Slot Configuration and Numbering” on page 146](#)
- [“Understanding PCIe Card Device and Service Paths” on page 147](#)

PCIe Card Installation Order Guidelines

These sections provide detailed information about the order in which to install PCIe cards in the server.

- [“Card Installation Bottom CMIOU Chassis \(Servers With Multiple PDomains\)” on page 150](#)
- [“Card Installation Bottom CMIOU Chassis \(SPARC M7 With One PDomain\)” on page 151](#)
- [“Card Installation Top CMIOU Chassis \(SPARC M7-16\)” on page 152](#)

Card Installation Bottom CMIOU Chassis (Servers With Multiple PDomains)

For SPARC M8-8 and SPARC M7-8 servers with two PDomains and SPARC M7-16 servers, install PCIe cards in fully populated configurations in the order shown.

No.	PDomain	CMIOU	PCIe Slot	Card to Install
1.	PDomain_0	CMIOU_0	PCI3	Storage card
2.	PDomain_0	CMIOU_1	PCI3	Network card
3.	PDomain_0	CMIOU_2	PCI3	
4.	PDomain_1	CMIOU_4	PCI3	Storage card
5.	PDomain_1	CMIOU_5	PCI3	Network card
6.	PDomain_1	CMIOU_6	PCI3	
7.	PDomain_0	CMIOU_0	PCI1	
8.	PDomain_0	CMIOU_1	PCI1	
9.	PDomain_0	CMIOU_2	PCI1	
10.	PDomain_1	CMIOU_4	PCI1	
11.	PDomain_1	CMIOU_5	PCI1	
12.	PDomain_1	CMIOU_6	PCI1	
13.	PDomain_0	CMIOU_3	PCI3	
14.	PDomain_1	CMIOU_7	PCI3	
15.	PDomain_0	CMIOU_3	PCI1	
16.	PDomain_1	CMIOU_7	PCI1	
17.	PDomain_0	CMIOU_0	PCI2	
18.	PDomain_0	CMIOU_1	PCI2	
19.	PDomain_0	CMIOU_2	PCI2	
20.	PDomain_0	CMIOU_3	PCI2	
21.	PDomain_1	CMIOU_4	PCI2	
22.	PDomain_1	CMIOU_5	PCI2	

No.	PDomain	CMIOU	PCIe Slot	Card to Install
23.	PDomain_1	CMIOU_6	PCI2	
24.	PDomain_1	CMIOU_7	PCI2	

Card Installation Bottom CMIOU Chassis (SPARC M7 With One PDomain)

For SPARC M8-8 and SPARC M7-8 servers that has one PDomain, install PCIe cards in fully populated configurations in the order shown.

No.	CMIOU	PCIe Slot	Card to Install
1.	CMIOU_0	PCI3	Storage card
2.	CMIOU_1	PCI3	Storage card
3.	CMIOU_2	PCI3	Network card
4.	CMIOU_4	PCI3	Network card
5.	CMIOU_5	PCI3	
6.	CMIOU_6	PCI3	
7.	CMIOU_0	PCI1	
8.	CMIOU_1	PCI1	
9.	CMIOU_2	PCI1	
10.	CMIOU_4	PCI1	
11.	CMIOU_5	PCI1	
12.	CMIOU_6	PCI1	
13.	CMIOU_3	PCI3	
14.	CMIOU_7	PCI3	
15.	CMIOU_3	PCI1	
16.	CMIOU_7	PCI1	
17.	CMIOU_0	PCI2	
18.	CMIOU_1	PCI2	
19.	CMIOU_2	PCI2	
20.	CMIOU_3	PCI2	
21.	CMIOU_4	PCI2	
22.	CMIOU_5	PCI2	
23.	CMIOU_6	PCI2	
24.	CMIOU_7	PCI2	

Card Installation Top CMIOU Chassis (SPARC M7-16)

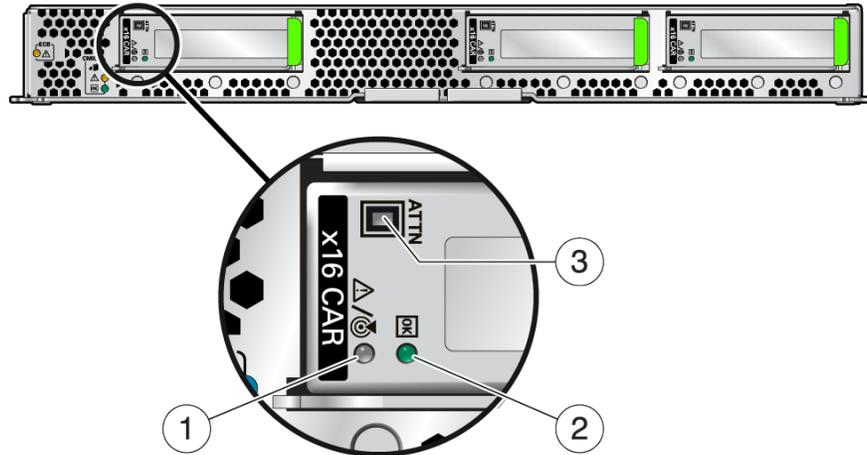
Install PCIe cards in fully populated configurations in the order shown.

No.	PDomain	CMIOU	PCIe Slot	Card to Install
1.	PDomain_2	CMIOU_8	PCI3	Storage card
2.	PDomain_2	CMIOU_9	PCI3	Network card
3.	PDomain_2	CMIOU_10	PCI3	
4.	PDomain_3	CMIOU_12	PCI3	Storage card
5.	PDomain_3	CMIOU_13	PCI3	Network card
6.	PDomain_3	CMIOU_14	PCI3	
7.	PDomain_2	CMIOU_8	PCI1	
8.	PDomain_2	CMIOU_9	PCI1	
9.	PDomain_2	CMIOU_10	PCI1	
10.	PDomain_3	CMIOU_12	PCI1	
11.	PDomain_3	CMIOU_13	PCI1	
12.	PDomain_3	CMIOU_14	PCI1	
13.	PDomain_2	CMIOU_11	PCI3	
14.	PDomain_3	CMIOU_15	PCI3	
15.	PDomain_2	CMIOU_11	PCI1	
16.	PDomain_3	CMIOU_15	PCI1	
17.	PDomain_2	CMIOU_8	PCI2	
18.	PDomain_2	CMIOU_9	PCI2	
19.	PDomain_2	CMIOU_10	PCI2	
20.	PDomain_2	CMIOU_11	PCI2	
21.	PDomain_3	CMIOU_12	PCI2	
22.	PDomain_3	CMIOU_13	PCI2	
23.	PDomain_3	CMIOU_14	PCI2	
24.	PDomain_3	CMIOU_15	PCI2	

Related Information

- [“PCIe Card Slot Configuration and Numbering” on page 146](#)
- [“Understanding PCIe Card Device and Service Paths” on page 147](#)

PCIe Card Carrier LEDs and Controls



No.	LED	Icon	Description
1	Service Required (amber) and Locator LED		<p>The Service Required LED indicates that service is required.</p> <p>The show faulty command provides details about any faults that cause this indicator to light.</p> <p>The Locator LED blinks to indicate the locate functionality.</p>
2	OK (green)		<p>Indicates these conditions:</p> <ul style="list-style-type: none"> ■ Off – PCIe card carrier is not running in its normal state. ■ Steady on – PCIe card is powered on and is running in its normal operating state. No service actions are required. You cannot remove the PCIe card.
3	Attention Required	ATTN	<p>Indicates an operational fault. You can also press this button to alert the server to a newly installed PCIe card.</p>

Related Information

- [“Checking for Faults” on page 39](#)
- [“Interpreting LEDs” on page 48](#)

▼ Locate a PCIe Card in the Server

1. **At the Oracle Solaris prompt, list all of the PCIe devices in the device tree:**

```
# hotplug list -l | grep PCIE
```

This command lists dynamically reconfigurable PCIe resources and shows their operational status. In this case, look for the status of the card you plan to remove.

This example is from a SPARC M7-8:

```
root@m78-server:~# hotplug list -l | grep PCIE
/pci@301/pci@1  [/SYS/CMI0U0/PCIE3] ENABLED
/pci@303/pci@1  [/SYS/CMI0U0/PCIE1]  ENABLED
/pci@305/pci@1  [/SYS/CMI0U1/PCIE2]  EMPTY
/pci@306/pci@1  [/SYS/CMI0U1/PCIE3]  ENABLED
/pci@308/pci@1  [/SYS/CMI0U1/PCIE1]  ENABLED
/pci@30a/pci@1  [/SYS/CMI0U2/PCIE2]  EMPTY
/pci@30b/pci@1  [/SYS/CMI0U2/PCIE3]  EMPTY
/pci@30d/pci@1  [/SYS/CMI0U2/PCIE1]  EMPTY
/pci@30f/pci@1  [/SYS/CMI0U3/PCIE2]  EMPTY
/pci@310/pci@1  [/SYS/CMI0U3/PCIE3]  EMPTY
/pci@312/pci@1  [/SYS/CMI0U3/PCIE1]  EMPTY
/pci@314/pci@1  [/SYS/CMI0U4/PCIE2]  EMPTY
/pci@315/pci@1  [/SYS/CMI0U4/PCIE3]  EMPTY
/pci@317/pci@1  [/SYS/CMI0U4/PCIE1]  EMPTY
/pci@319/pci@1  [/SYS/CMI0U5/PCIE2]  EMPTY
/pci@31a/pci@1  [/SYS/CMI0U5/PCIE3]  EMPTY
/pci@31c/pci@1  [/SYS/CMI0U5/PCIE1]  EMPTY
/pci@31e/pci@1  [/SYS/CMI0U6/PCIE2]  EMPTY
/pci@31f/pci@1  [/SYS/CMI0U6/PCIE3]  EMPTY
/pci@321/pci@1  [/SYS/CMI0U6/PCIE1]  EMPTY
/pci@323/pci@1  [/SYS/CMI0U7/PCIE2]  EMPTY
/pci@324/pci@1  [/SYS/CMI0U7/PCIE3]  EMPTY
/pci@326/pci@1  [/SYS/CMI0U7/PCIE1]  EMPTY
```

2. **The keyword (EMPTY) identifies a slot that contains a blank filler panel.**
3. **Determine the type of card that is currently in a slot.**

```
# hotplug get -o card_type path
```

4. **Determine your next step.**

- If the PCIe card is assigned to an I/O domain, see [“Prepare a PCIe Card For Removal” on page 155](#).

- If the PCIe card is not assigned to an I/O domain, see [“Remove a PCIe Card Carrier and Card From the Server” on page 160.](#)

Related Information

- [“PCIe Card Slot Configuration and Numbering” on page 146](#)
- [“Understanding PCIe Card Device and Service Paths” on page 147](#)

▼ Prepare a PCIe Card For Removal

If the PCIe card is assigned to an I/O domain on a logical domain, use these steps to avoid a configuration that is unsupported by the SR-IOV feature.

If the PCIe card is not assigned to an I/O domain on a logical domain, go to [“Remove a PCIe Card Carrier and Card From the Server” on page 160.](#)

1. Determine which PCIe card requires service.

In this example, `pci_45` represents the I/O domain name.

Note - The following example shows only an excerpt of the output.

```
# ldm ls-io -l pci_45
NAME                                TYPE  BUS      DOMAIN  STATUS
----                                -
pci_45                               BUS   pci_45   primary IOV
[pci@32d]
/SYS/CMIOU9/PCIE2                   PCIE  pci_45   primary OCC
[pci@32d/pci@1]
  SUNW,qlc@0/fp/disk
  SUNW,qlc@0/fp@0,0
  SUNW,qlc@0,1/fp/disk
  SUNW,qlc@0,1/fp@0,0/ssd@w20350080e518b846,1f
  fibre-channel@0,2
  fibre-channel@0,3
  fibre-channel@0,4
  fibre-channel@0,5
...

/SYS/CMIOU9/PCIE2/IOVFC.PF0.VF0     VF    pci_45   ldg4
[pci@32d/pci@1/SUNW,qlc@0,2]
  Class properties [FIBRECHANNEL]
    port-wwn = 10:00:00:14:4f:f8:74:85
    node-wwn = 20:00:00:14:4f:f8:74:85
```

```

        bw-percent = 0
    ...

/SYS/CMIOU9/PCIE2/IOVFC.PF0.VF3          VF      pci_45  ldg4
[pci@32d/pci@1/SUNW,qlc@0,5]
    Class properties [FIBRECHANNEL]
        port-wwn = 10:00:00:14:4f:fb:27:29
        node-wwn = 20:00:00:14:4f:fb:27:29
        bw-percent = 0
#

```

2. Save the current I/O configuration.

Before removing any virtual functions, save the original configuration in a file you can use to restore the configuration after you replace the card.

```
# ldm ls-io slot-name>file-name
```

where:

- *slot-name* is a format similar to /SYS/CMIOU9/PCIE2
- *file-name* is a format similar to /var/tmp/before_removal.txt

3. Identify the names of the virtual functions you need to remove from the I/O domains.

Display these details from the backup file you created in the previous step, for example:

```
# cat /var/tmp/before_removal.txt
```

NAME	TYPE	BUS	DOMAIN	STATUS
----	----	---	-----	-----
/SYS/CMIOU9/PCIE2	PCIE	pci_45	primary	OCC
/SYS/CMIOU9/PCIE2/IOVFC.PF0	PF	pci_45	primary	
/SYS/CMIOU9/PCIE2/IOVFC.PF1	PF	pci_45	primary	
/SYS/CMIOU9/PCIE2/IOVFC.PF0.VF0	VF	pci_45	ldg4	
/SYS/CMIOU9/PCIE2/IOVFC.PF0.VF1	VF	pci_45	ldg4	
/SYS/CMIOU9/PCIE2/IOVFC.PF0.VF2	VF	pci_45	ldg4	
/SYS/CMIOU9/PCIE2/IOVFC.PF0.VF3	VF	pci_45	ldg4	

4. Remove all virtual functions of the card from all I/O domains listed by the cat command.

Typically, a card has two or more physical functions, so you must ensure that all virtual functions from all physical functions are removed from the I/O domains. As shown in the preceding example, these virtual functions are indicated under the TYPE column as VF.

Note - You can remove virtual functions dynamically without shutting down the domains.

```
# ldm rm-io /SYS/CMIOU9/PCIE2/IOVFC.PF0.VF0 ldg4
# ldm rm-io /SYS/CMIOU9/PCIE2/IOVFC.PF0.VF1 ldg4
# ldm rm-io /SYS/CMIOU9/PCIE2/IOVFC.PF0.VF2 ldg4
# ldm rm-io /SYS/CMIOU9/PCIE2/IOVFC.PF0.VF3 ldg4
```

5. Verify that the virtual functions have been removed from the I/O domains.

```
# ldm ls-io /SYS/CMIOU9/PCIE2
NAME                                     TYPE  BUS      DOMAIN  STATUS
----                                     -
/SYS/CMIOU9/PCIE2                       PCIE  pci_45  primary OCC
/SYS/CMIOU9/PCIE2/IOVFC.PF0             PF    pci_45  primary
/SYS/CMIOU9/PCIE2/IOVFC.PF1             PF    pci_45  primary
/SYS/CMIOU9/PCIE2/IOVFC.PF0.VF0        VF    pci_45
/SYS/CMIOU9/PCIE2/IOVFC.PF0.VF1        VF    pci_45
/SYS/CMIOU9/PCIE2/IOVFC.PF0.VF2        VF    pci_45
/SYS/CMIOU9/PCIE2/IOVFC.PF0.VF3        VF    pci_45
```

In this example, the virtual functions listed under the TYPE column now display no domain name.

6. If the previous command fails, the I/O domain software is keeping the virtual functions busy. In this case, stop the I/O domain and remove each virtual function.

```
# ldm stop ldg4
LDom ldg4 stopped

# ldm rm-io /SYS/CMIOU9/PCIE2/IOVFC.PF0.VF0 ldg4
# ldm rm-io /SYS/CMIOU9/PCIE2/IOVFC.PF0.VF1 ldg4
# ldm rm-io /SYS/CMIOU9/PCIE2/IOVFC.PF0.VF2 ldg4
# ldm rm-io /SYS/CMIOU9/PCIE2/IOVFC.PF0.VF3 ldg4
```

7. Back up the virtual function properties.

If the replacement PCIe card is the same type and model as the original card, and if virtual functions were created from physical functions on that card, save the properties of any virtual function instance for the PCIe card. You can use the file you create to reproduce the original configuration on the new card.

```
# ldm ls-io -l slot-name>file-name
```

where:

- *slot-name* is a format similar to /SYS/CMIOU9/PCIE2
- *file-name* is a format similar to /var/tmp/vf_config.txt

8. Verify that the backup file stored the correct configuration information.

Display the details from the backup file you created in the previous step, for example:

```
# cat /var/tmp/vf_config.txt
NAME                                     TYPE  BUS      DOMAIN  STATUS
----
pci_45                                  BUS   pci_45   primary IOV
[pci@32d]
/SYS/CMI0U9/PCIE2                       PCIE  pci_45   primary OCC
[pci@32d/pci@1]
  SUNW,qlc@0/fp/disk
  SUNW,qlc@0/fp@0,0
  SUNW,qlc@0,1/fp/disk
  SUNW,qlc@0,1/fp@0,0/ssd@w20350080e518b846,1f
  fibre-channel@0,2
  fibre-channel@0,3
  fibre-channel@0,4
  fibre-channel@0,5
...

/SYS/CMI0U9/PCIE2/IOVFC.PF0.VF0         VF    pci_45   ldg4
[pci@32d/pci@1/SUNW,qlc@0,2]
  Class properties [FIBRECHANNEL]
    port-wwn = 10:00:00:14:4f:f8:74:85
    node-wwn = 20:00:00:14:4f:f8:74:85
    bw-percent = 0
...

/SYS/CMI0U9/PCIE2/IOVFC.PF0.VF3         VF    pci_45   ldg4
[pci@32d/pci@1/SUNW,qlc@0,5]
  Class properties [FIBRECHANNEL]
    port-wwn = 10:00:00:14:4f:fb:27:29
    node-wwn = 20:00:00:14:4f:fb:27:29
    bw-percent = 0
#
```

9. Destroy the virtual functions in all physical functions of the card.

You can do this dynamically while the root domain is running.

```
# ldm destroy-vf -n max physical-function-name
```

where *physical-function-name* is a format similar to `/SYS/CMI0U9/PCIE2/IOVFC.PF0`.

10. Verify that the virtual functions were removed from all physical functions of the card.

Display the details for the slot, for example:

```
# ldm ls-io -l /SYS/CMIOU9/PCIE2
NAME                               TYPE  BUS      DOMAIN  STATUS
----                               -
/SYS/CMIOU9/PCIE2                 PCIE  pci_45  primary OCC
[pci@32d/pci@1]
  SUNW,qlc@0/fp/disk
  SUNW,qlc@0/fp@0,0
  SUNW,qlc@0,1/fp/disk
  SUNW,qlc@0,1/fp@0,0/ssd@w20350080e518b846,1f
/SYS/CMIOU9/PCIE2/IOVFC.PF0       PF    pci_45  primary
[pci@32d/pci@1/SUNW,qlc@0]
  maxvfs = 16
/SYS/CMIOU9/PCIE2/IOVFC.PF1       PF    pci_45  primary
[pci@32d/pci@1/SUNW,qlc@0,1]
  maxvfs = 16
#
```

11. **If the previous command fails, run the destroy command under delayed-reconfiguration, for example:**

```
# ldm start-reconf primary
Initiating a delayed reconfiguration operation on the primary domain.
All configuration changes for other domains are disabled until the primary
domain reboots, at which time the new configuration for the primary domain
will also take effect.
#
# ldm destroy-vf -n max /SYS/CMIOU9/PCIE2/IOVFC.PF0
-----
Notice: The primary domain is in the process of a delayed reconfiguration.
Any changes made to the primary domain will only take effect after it reboots.
-----
# shutdown -i6 -g0 -y
```

Use the `ldm stop -r` command, instead of the `shutdown` command, to stop the other root domain.

12. **Physically remove the PCIe card from the server.**

See [“Remove a PCIe Card Carrier and Card From the Server” on page 160](#).

For more information about making PCIe hardware changes, refer to the Oracle VM Server for SPARC documentation at <http://www.oracle.com/goto/vm-sparc/docs>.

Related Information

- [“Identify Faulted Components” on page 40](#)
- [“PCIe Card Carrier LEDs and Controls” on page 153](#)

▼ Remove a PCIe Card Carrier and Card From the Server

You can replace PCIe cards at any time if the card is not currently in use.

1. **If you haven't already done so, determine which PCIe card requires service.**

See [“Identify Faulted Components” on page 40](#) and [“PCIe Card Carrier LEDs and Controls” on page 153](#).

2. **Ensure that you take proper antistatic measures.**

See [“Prevent ESD Damage” on page 65](#).

3. **Press the ATTN button on the carrier that contains the PCIe card that you wish to remove.**

The LEDs on the carrier blink for approximately 10 seconds as the PDomain disables the I/O card. When the LEDs on both the carrier and the card turn off, the carrier and card are ready to remove.

4. **Label and remove any I/O cables from the PCIe card.**

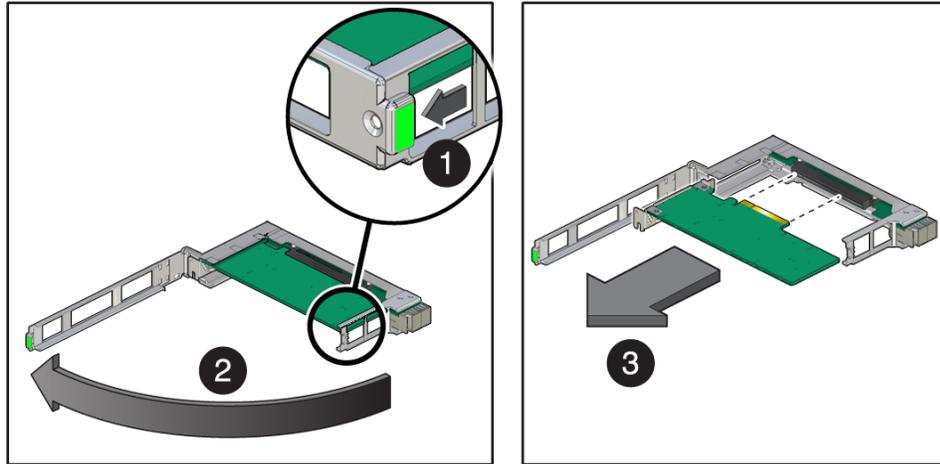
5. **Remove the carrier from the slot.**



- a. **Pull the carrier's extraction lever.**

Swing the extraction lever out 90 degrees until the far end of the lever begins to push the carrier out of the slot.

- b. Remove the carrier from the slot.
6. Carefully remove the PCIe card from the carrier.



- a. Press the green tab to unlock the carrier latch, and open the top of the PCIe card carrier (steps 1 and 2).
 - b. Slide the card from the slot (step 3).



Caution - Avoid twisting, tilting, or pulling unevenly on the PCIe card, which could damage the carrier slot or components on the PCIe card carrier circuit board.

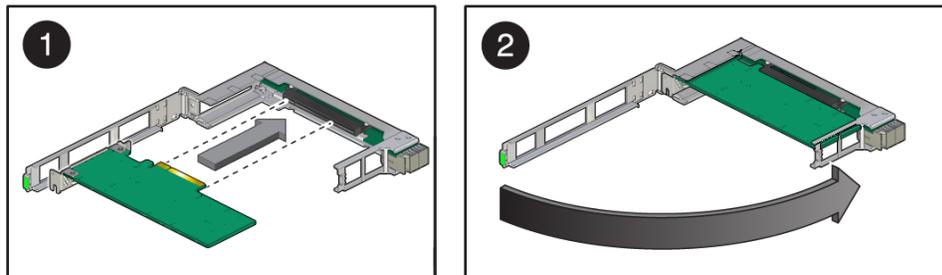
7. Place the PCIe card on a grounded antistatic mat or into its antistatic packaging.
8. Determine your next step:
 - If you are replacing the PCIe card, go to [“Install a PCIe Card Into a Card Carrier” on page 162.](#)
 - If you are removing the PCIe card, return the card carrier to the server. See [“Install a Card Carrier Into the Server” on page 163.](#)

Related Information

- [“Prepare a PCIe Card For Removal” on page 155](#)
- [“PCIe Card Carrier LEDs and Controls” on page 153](#)

▼ Install a PCIe Card Into a Card Carrier

1. **Ensure that you take proper antistatic measures.**
See [“Prevent ESD Damage” on page 65](#).
2. **Determine your next step:**
 - a. **If you are installing a new card and need an empty carrier, see [“Remove a PCIe Card Carrier and Card From the Server” on page 160](#).**
 - b. **If you are replacing a faulty card and have already removed its carrier from the server, go to the next step.**
3. **Install the PCIe card in the carrier.**



- a. **Unlatch and swing open the arm of the PCIe card carrier, and insert the new PCIe card until the bottom connector is firmly seated in the carrier's connector (panel 1).**

The card is correctly seated only when the tab on the top of the card (indicated in yellow in panel 1) is securely seated inside the receptacle on the carrier (see panel 2).



Caution - Avoid twisting, tilting, or pushing unevenly on the PCIe card as you insert it into the carrier, which could damage the carrier slot or components on the PCIe card carrier circuit board. The card's connector must be fully seated in the carrier's slot before you attempt to close the top cover.

Note - If the PCIe card includes a mounting screw, do not use the mounting screw. The carrier does not accept mounting screws.

b. Close the top of the carrier (panel 2).

The green latch should click into place. If the top is difficult to close, verify that the notch of the card bracket or filler panel fits around the guide post.

4. Install the card carrier into the server.

See [“Install a Card Carrier Into the Server” on page 163.](#)

Related Information

- [“Remove a PCIe Card Carrier and Card From the Server” on page 160](#)

▼ Install a Card Carrier Into the Server

Install only PCIe x16 hot-plug card carriers, which are physically labeled with "x16 CAR" on the faceplate, in SPARC M8 and M7 servers. Do not install PCIe x8 card carriers, which are labeled with "CAR" on the faceplate, from earlier generations of Oracle servers. See [“Supported PCIe Card Carriers and PCIe Cards” on page 149.](#)

1. Ensure that you have already taken antistatic measures.

See [“Prevent ESD Damage” on page 65.](#)

2. Ensure that the primary domain is at the Oracle Solaris prompt.

Note - Installing a PCIe card carrier while the primary domain is at the Open Boot prompt is not supported.

3. Install the carrier and I/O card into the CMI/O slot.



- a. Push evenly on both sides of the carrier so that the carrier slides straight into the slot (panel 1).**

If the carrier slides correctly into the slot, you should feel a slight resistance as the carrier starts to seat in the connector.



Caution - Do not push the extraction lever while you insert the carrier into the slot. The carrier can enter at an angle and damage the connectors.

- b. Lock the carrier's extraction lever (panel 2).**

4. Attach I/O cables to the card.

Note - Refer to the [SPARC M8 and SPARC M7 Servers Installation Guide](#) for instructions on managing and routing the PCIe card cables.

5. Press the ATTN button on the carrier to reconfigure the PCIe card into the PDomain.

The carrier's LEDs should blink for a few seconds until the PDomain enables the PCIe card. The card's LEDs will show activity when the card is enabled.

6. Verify the card's installation.

See [“Verify the PCIe Card” on page 168](#).

Related Information

- [“Install a PCIe Card Into a Card Carrier” on page 162](#)
- [“Restore a PCIe Card Configuration on an I/O Domain” on page 165](#)

▼ Restore a PCIe Card Configuration on an I/O Domain

1. **After the PCIe card has been physically replaced, verify that the card is now visible to Oracle VM Manager.**

```
# ldm ls-io pcie-slot
```

For example:

```
# ldm ls-io pci_45
NAME                                TYPE  BUS      DOMAIN  STATUS
-----
pci_45                              BUS   pci_45   primary IOV
[pci@32d]
/SYS/CMIOU9/PCIE2                   PCIE  pci_45   primary OCC
[pci@32d/pci@1]
  SUNW,qlc@0/fp/disk
  SUNW,qlc@0/fp@0,0
  SUNW,qlc@0,1/fp/disk
  SUNW,qlc@0,1/fp@0,0
/SYS/CMIOU9/PCIE2/IOVFC.PF0         PF    pci_45   primary
[pci@32d/pci@1/SUNW,qlc@0]
  maxvfs = 16
/SYS/CMIOU9/PCIE2/IOVFC.PF1         PF    pci_45   primary
[pci@32d/pci@1/SUNW,qlc@0,1]
  maxvfs = 16
```

2. **If you stopped the I/O domain to prepare it for removal, restart the domain.**

```
# ldm start ldg4
LDom ldg4 started
```

3. **Ensure that the backup file stored the correct configuration information.**

```
# cat /var/tmp/vf_config.txt
NAME                                TYPE  BUS      DOMAIN  STATUS
-----
pci_45                              BUS   pci_45   primary IOV
[pci@32d]
/SYS/CMIOU9/PCIE2                   PCIE  pci_45   primary OCC
[pci@32d/pci@1]
```

```

SUNW,qlc@0/fp/disk
SUNW,qlc@0/fp@0,0
SUNW,qlc@0,1/fp/disk
SUNW,qlc@0,1/fp@0,0/ssd@w20350080e518b846,1f
fibre-channel@0,2
fibre-channel@0,3
fibre-channel@0,4
fibre-channel@0,5
...

/SYS/CMIOU9/PCIE2/IOVFC.PF0.VF0          VF    pci_45  ldg4
[pci@32d/pci@1/SUNW,qlc@0,2]
  Class properties [FIBRECHANNEL]
    port-wnn = 10:00:00:14:4f:f8:74:85
    node-wnn = 20:00:00:14:4f:f8:74:85
    bw-percent = 0
...

/SYS/CMIOU9/PCIE2/IOVFC.PF0.VF3          VF    pci_45  ldg4
[pci@32d/pci@1/SUNW,qlc@0,5]
  Class properties [FIBRECHANNEL]
    port-wnn = 10:00:00:14:4f:fb:27:29
    node-wnn = 20:00:00:14:4f:fb:27:29
    bw-percent = 0
#

```

4. Manually create each virtual function using the properties saved in the test file you created.

Note - Because the system assigns virtual function names, you must create new virtual functions in the order of the names the system assigns. For example, if four virtual functions are created, VF0–VF3, you must create VF0 and its associated property values first so the system will assign the properties to a virtual function with a name ending in VF0.

See [“Prepare a PCIe Card For Removal” on page 155](#) for examples of the test file. Refer to the Oracle VM Server for SPARC documentation for the syntax of the create-vf command.

5. Verify that the virtual functions were created.

Note - The following example shows only an excerpt of the output.

```

# ldm ls-io -l pci_45
NAME                                TYPE  BUS    DOMAIN  STATUS
----                                -
pci_45                              BUS   pci_45 primary  IOV
[pci@32d]

```

```

/SYS/CMIOU9/PCIE2                PCIE  pci_45  primary  OCC
[pci@32d/pci@1]
  SUNW,qlc@0/fp/disk
  SUNW,qlc@0/fp@0,0
  SUNW,qlc@0,1/fp/disk
  SUNW,qlc@0,1/fp@0,0/ssd@w20350080e518b846,1f
  fibre-channel@0,2
  fibre-channel@0,3
  fibre-channel@0,4
  fibre-channel@0,5
...

/SYS/CMIOU9/PCIE2/IOVFC.PF0.VF0   VF    pci_45  ldg4
[pci@32d/pci@1/SUNW,qlc@0,2]
  Class properties [FIBRECHANNEL]
    port-wwn = 10:00:00:14:4f:f8:74:85
    node-wwn = 20:00:00:14:4f:f8:74:85
    bw-percent = 0
...

/SYS/CMIOU9/PCIE2/IOVFC.PF0.VF3   VF    pci_45  ldg4
[pci@32d/pci@1/SUNW,qlc@0,5]
  Class properties [FIBRECHANNEL]
    port-wwn = 10:00:00:14:4f:fb:27:29
    node-wwn = 20:00:00:14:4f:fb:27:29
    bw-percent = 0
#

```

6. Assign each virtual function to the same domains on the new card to which they were assigned on the replaced card.

When all virtual functions have been recreated, assign them to the same domains recorded in the file saved in [“Prepare a PCIe Card For Removal” on page 155](#), for example.

```

# ldm add-io /SYS/CMIOU9/PCIE2/IOVFC.PF0.VF0 ldg4
# ldm add-io /SYS/CMIOU9/PCIE2/IOVFC.PF0.VF1 ldg4
# ldm add-io /SYS/CMIOU9/PCIE2/IOVFC.PF0.VF2 ldg4
# ldm add-io /SYS/CMIOU9/PCIE2/IOVFC.PF0.VF3 ldg4

```

7. Verify that the virtual functions have been added to all I/O domains, for example:

```

# ldm ls-io /SYS/CMIOU9/PCIE2
NAME                                TYPE  BUS      DOMAIN  STATUS
----                                -
/SYS/CMIOU9/PCIE2                  PCIE  pci_45  primary OCC
/SYS/CMIOU9/PCIE2/IOVFC.PF0        PF    pci_45  primary
/SYS/CMIOU9/PCIE2/IOVFC.PF1        PF    pci_45  primary
/SYS/CMIOU9/PCIE2/IOVFC.PF0.VF0    VF    pci_45  ldg4
/SYS/CMIOU9/PCIE2/IOVFC.PF0.VF1    VF    pci_45  ldg4

```

```
/SYS/CMI0U9/PCIE2/IOVFC.PF0.VF2      VF      pci_45  ldg4
/SYS/CMI0U9/PCIE2/IOVFC.PF0.VF3      VF      pci_45  ldg4
```

In this example, the virtual functions listed under the TYPE column now displays a domain name.

Related Information

- Oracle VM Server for SPARC documentation (<http://www.oracle.com/goto/vm-sparc/docs>)
- “Prepare a PCIe Card For Removal” on page 155

▼ Verify the PCIe Card

Note - Always update PCIe card firmware to the latest supported version. Refer to the PCIe card documentation for the firmware update instructions.

1. **Verify that the Fault LED is not lit and that the green Power LED is lit on the card that you installed.**

See “PCIe Card Carrier LEDs and Controls” on page 153.

2. **At a terminal, use the `hotplug` command to ensure that the card is connected.**

For example:

```
# hotplug list /SYS/CMI0U0/PCIE1
[ /SYS/CMI0U0/PCIE1 ] ENABLED
network@0 <pci.0,0> ONLINE
network@0,1 <pci.0,1> ONLINE
network@0,2 <pci.0,2> ONLINE
network@0,3 <pci.0,3> ONLINE
```

Related Information

- “Identify Faulted Components” on page 40
- “Interpreting LEDs” on page 48

Servicing Power Supplies

A CMIOU chassis contains six power supplies. For the location of these power supplies, see [“CMIOU Chassis Front Components” on page 24](#).

A switch chassis contains four power supplies (SPARC M7-16). For the location of these power supplies, see [“Switch Chassis Front Components \(SPARC M7-16\)” on page 27](#).

Note - To ensure that the server is properly cooled, the switch chassis must have at least three working power supplies. If power is removed from one of the power grids for the server, which effectively removes power from two of the power supplies in the switch chassis, the remaining two active power supplies will provide power to all four power supply fans in the chassis.

The power supplies are 2N redundant. In the event that a power supply fails in either chassis, the system can operate with only three power supplies in the switch chassis or five power supplies in the CMIOU chassis.

There are no restrictions into which slots the power supplies have to be installed. You can install them in any of the power supply slots.



Caution - The SPARC M8-8 server includes power supplies that are not compatible with the SPARC M7 servers. Never install a SPARC M8 power supply in a SPARC M7 server, and never install a SPARC M7 power supply in the SPARC M8-8 server. The SPARC M8 power supplies include three shims installed on one side of the power supply (see [“Remove the Power Supply Shims \(SPARC M8\)” on page 174](#)).

These topics explain how to service the power supplies in the server.

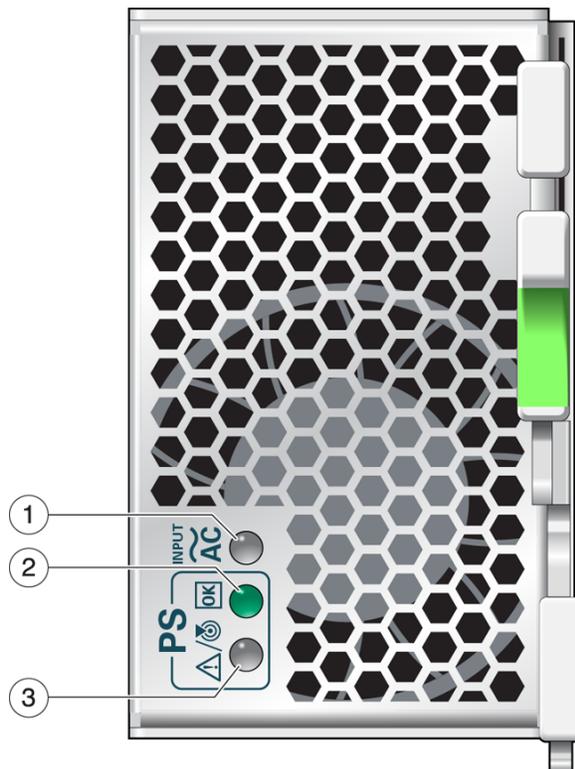
Description	Links
Learn about the power supply LEDs.	“Power Supply LEDs” on page 170
Remove the power supply.	“Remove a Power Supply” on page 171
	“Install a Power Supply” on page 179
For SPARC M8 power supplies only, move shims from faulty power supply to replacement power supply	“Install the Power Supply Shims (SPARC M8)” on page 176 “Remove the Power Supply Shims (SPARC M8)” on page 174

Description	Links
Install the power supply	“Install a Power Supply” on page 179

Related Information

- [“Identifying Components” on page 19](#)
- [“Detecting and Managing Faults” on page 39](#)
- [“Preparing for Service” on page 61](#)
- [“Controlling the Server and Domains” on page 71](#)
- [“Understanding Server Configurations and Failover Behavior” on page 83](#)

Power Supply LEDs



No.	LED	Icon	Description
1	AC Present (green)	~	Lights when the AC voltage is applied to the power supply.
2	OK (green)		Lights when the power supply DC voltage from the power supply to the server is within tolerance.
3	Service Required LED and Locator LED (amber)		The LED lights when the power supply is faulty. The show faulty command provides details about any faults that cause this indicator to light. The Locator LED blinks to indicate the locate functionality.
			

Related Information

- [“Checking for Faults” on page 39](#)
- [“Interpreting LEDs” on page 48](#)

▼ Remove a Power Supply

This procedure can be performed by a customer while the server is running.



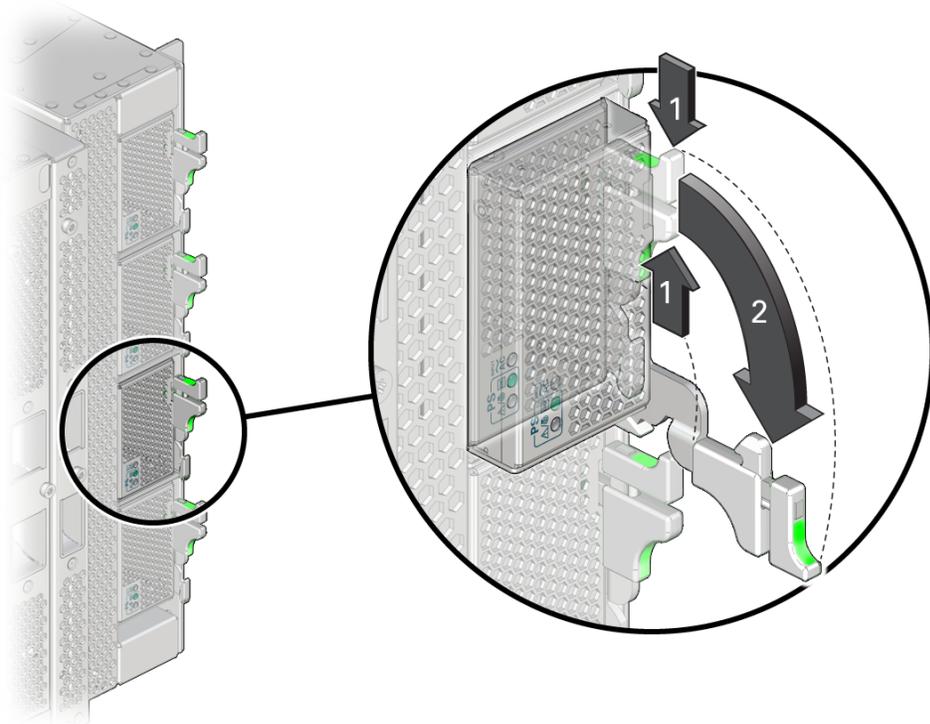
Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. When you unpack the replacement part, open the package on a grounded antistatic mat. Always use an antistatic wrist strap for hardware replacements.



Caution - If a power supply fails and you do not have a replacement available, leave the failed power supply installed to ensure proper airflow in the server.

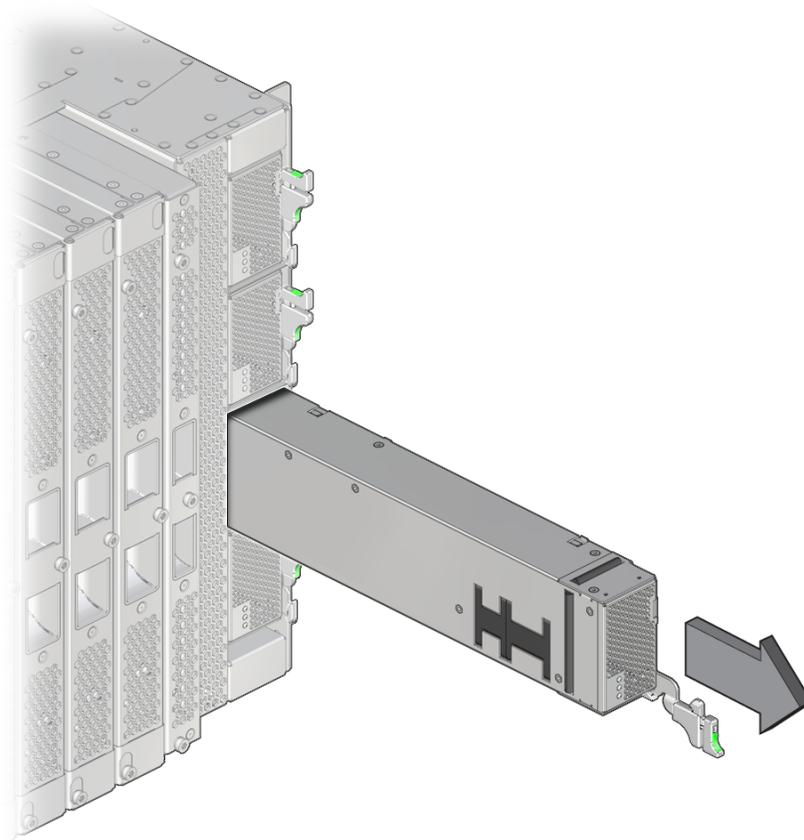
1. **Determine which power supply requires service.**
See [“Identify Faulted Components” on page 40](#) and [“Power Supply LEDs” on page 170](#).
2. **Locate the power supply that you want to remove.**
See [“CMIOU Chassis Front Components” on page 24](#) and [“Switch Chassis Front Components \(SPARC M7-16\)” on page 27](#) for the locations of the power supplies in the server.

3. **Take the necessary ESD precautions.**
See [“Prevent ESD Damage”](#) on page 65.
4. **Disengage the power supply from the server.**



- a. **At the front of the server, squeeze the green release latch on the power supply to be removed.**
Shown by the No. 1 arrows in the preceding illustration.
- b. **Pull the extraction lever toward you to disengage the power supply.**
Shown by the No. 2 arrow in the preceding illustration.

5. Remove the power supply from the server.



- a. Slide the power supply halfway out of the server.**
- b. Fold the extraction lever back toward the center of the power supply until it latches into place.**
This protects the lever from damage when you pull the power supply out.
- c. Carefully remove the power supply from the server.**

6. Determine your next step:

- If you removed a SPARC M8 power supply from a SPARC M8-8 server, continue to: [“Remove the Power Supply Shims \(SPARC M8\)” on page 174.](#)
- If you removed a SPARC M7 power supply from a SPARC M7 server, continue to: [“Install a Power Supply” on page 179.](#)

Related Information

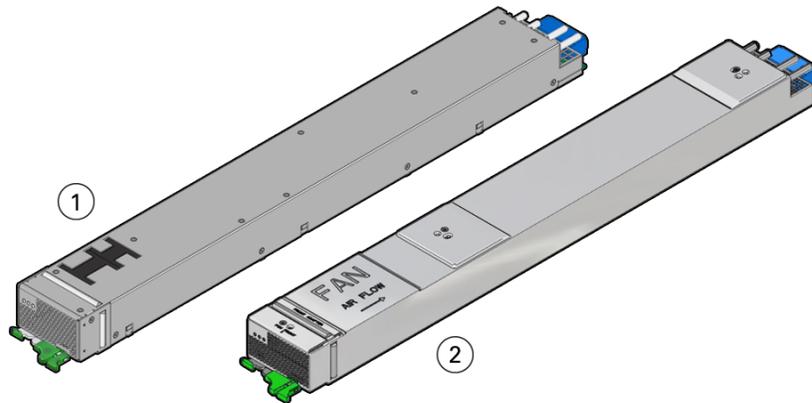
- [“Power Supply LEDs” on page 170](#)
- [“Install a Power Supply” on page 179](#)

▼ Remove the Power Supply Shims (SPARC M8)

A SPARC M8 server power supply contains three shims along its side to enable it to fit correctly in a power supply chassis bay. When replacing a SPARC M8 server power supply, you must remove these three shims from the faulty power supply and install them on the replacement power supply. Otherwise, the SPARC M8 power supply will not seat correctly in the chassis bay.

1. **Place the faulty SPARC M8 power supply on a grounded antistatic mat.**

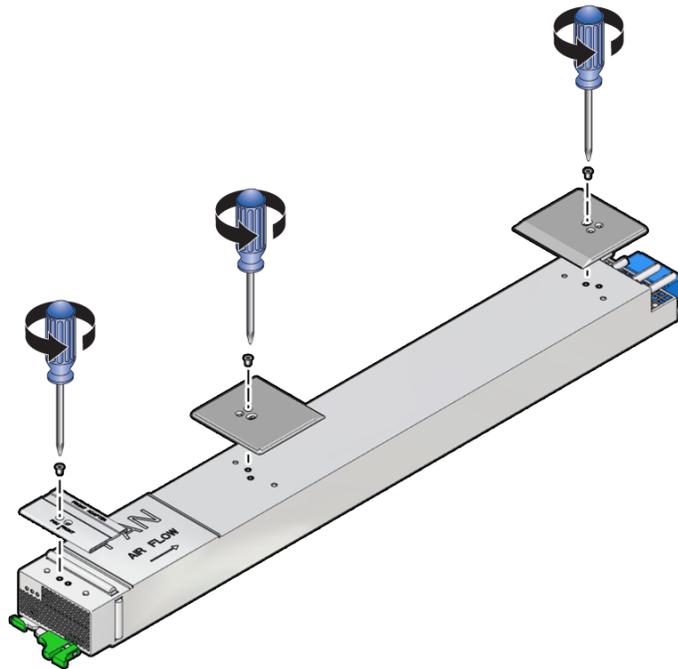
A SPARC M8 power supply will have three shims installed on one of its sides. Ensure that the three shims face upward on the mat.



No.	Description
1	SPARC M7 power supply
2	SPARC M8 power supply

2. **Using a T8 driver, remove the M3 screw from each shim. (One M3 screw secures each shim to the power supply.)**

Save these screws in a safe location.



3. **Remove the shims from the side of the power supply.**

Place these shims in a safe location.

4. **Install the shims on the replacement power supply.**

Continue to [“Install the Power Supply Shims \(SPARC M8\)”](#) on page 176.

Related Information

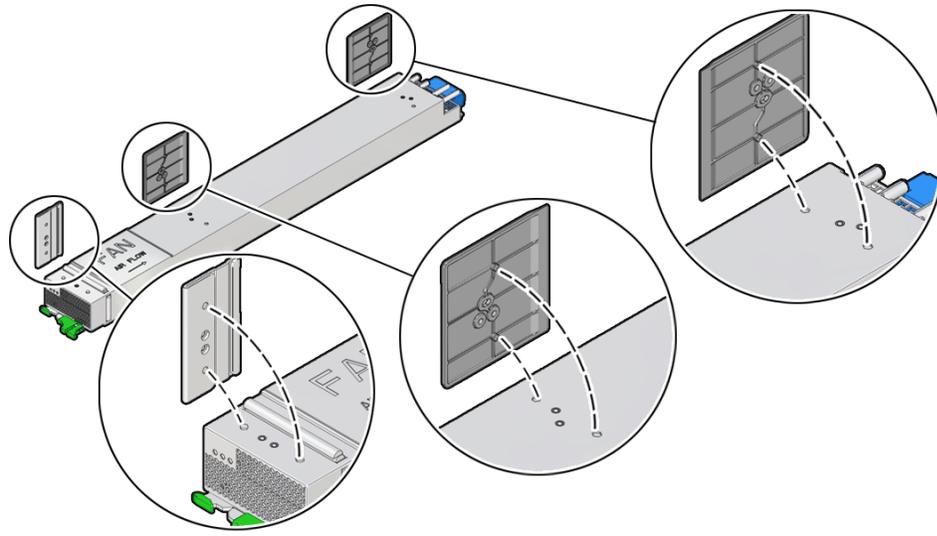
- [“Install the Power Supply Shims \(SPARC M8\)” on page 176](#)
- [“Remove a Power Supply” on page 171](#)
- [“Install a Power Supply” on page 179](#)

▼ Install the Power Supply Shims (SPARC M8)

Before installing a power supply into the SPARC M8-8 server, install three shims along one side of the power supply.

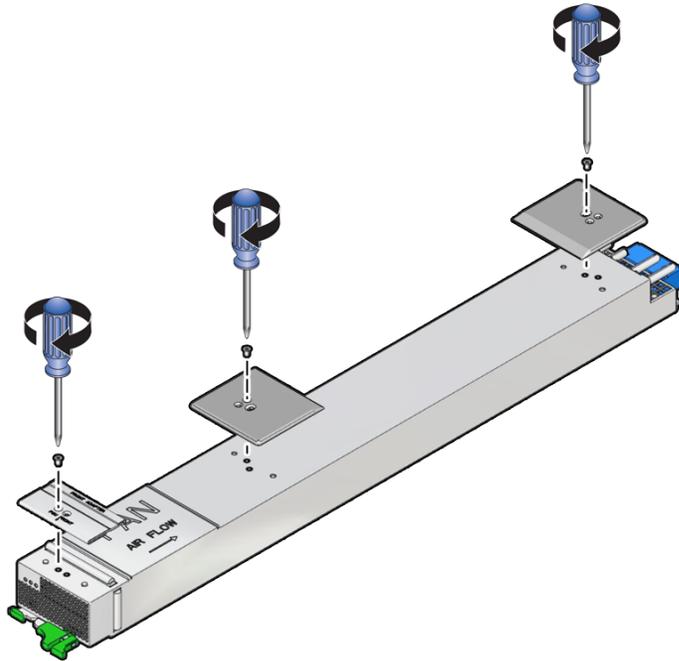
- 1. Place the replacement SPARC M8 power supply on a grounded antistatic mat.**
Ensure that the three screw holes are facing upward.
- 2. Place the shims on the side of the power supply.**
 - **Use the guides located on the underside of the shims to place the shims on the power supply correctly.**
The right side of the middle shim should slope downward and the left side of the rear shim should slope upward.
 - **Place the front metal shim to the front edge of the power supply.**

Note - Ensure that the arrow labeled PSU FRONT is pointing to the front of the power supply. The ESD foam tape should be facing upward.



3. Using a T8 driver, secure the shim to the side of the power supply with one M3 screw per shim.

Note - The screw locations might vary between SPARC M8 power supplies.



4. **Continue the procedure by installing the power supply into the server.**
See [“Install a Power Supply” on page 179](#).

Related Information

- [“Remove the Power Supply Shims \(SPARC M8\)” on page 174](#)
- [“Remove a Power Supply” on page 171](#)
- [“Install a Power Supply” on page 179](#)

▼ Install a Power Supply

Note - If you are installing a power supply in a SPARC M8-8 server, ensure that you have installed the three shims along the side of the replacement power supply. For more information, see [“Install the Power Supply Shims \(SPARC M8\)”](#) on page 176.

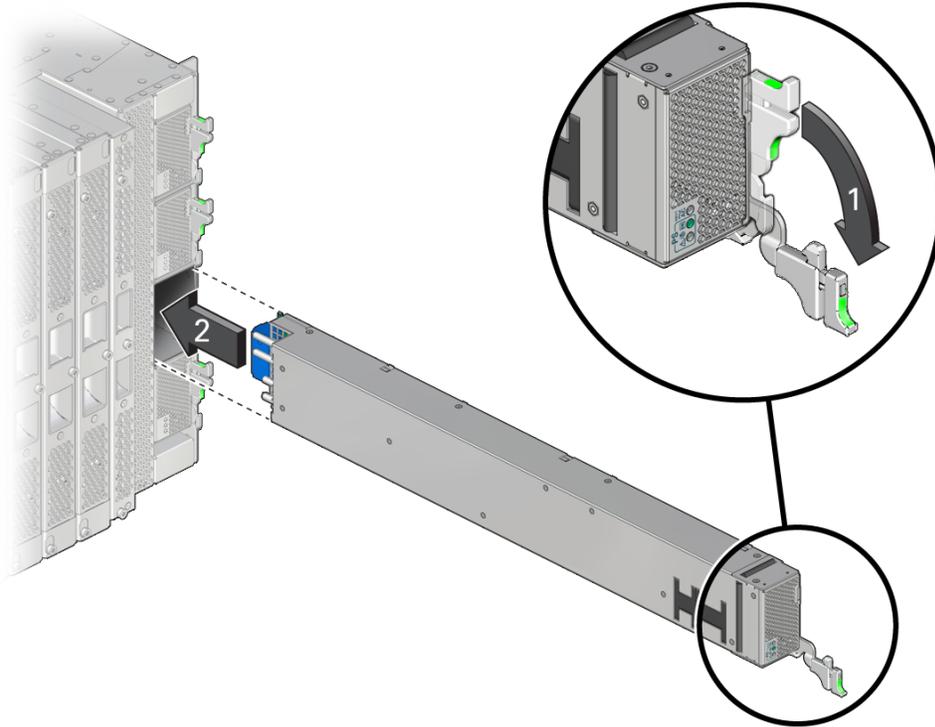


Caution - If you remove this component while the server is powered on, wait 30 seconds before installing the replacement component. Doing so ensures that Oracle ILOM has enough time to detect the new component, which is required for the software to power it on.

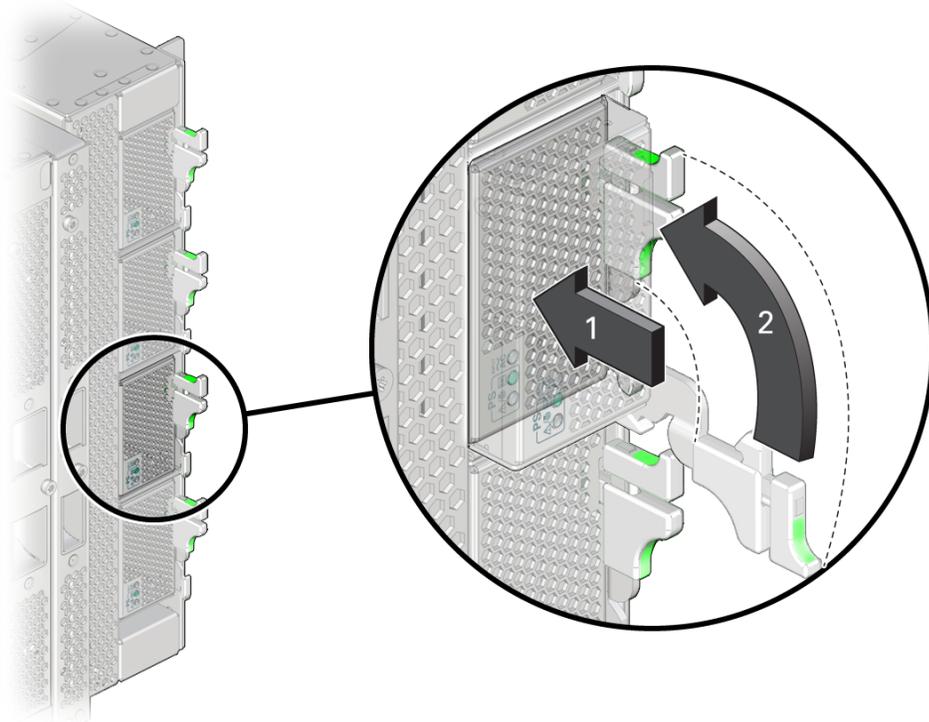


Caution - The SPARC M8-8 server includes power supplies that are not compatible with the SPARC M7 servers. Never install a SPARC M8 power supply in a SPARC M7 server, and never install a SPARC M7 power supply in the SPARC M8-8 server.

1. Install the power supply.



- a. Open the latch on the replacement power supply.**
Shown by the No. 1 arrow in the preceding illustration.
- b. Align the power supply and slide it into the empty bay.**
Shown by the No. 2 arrow in the preceding illustration.

2. Secure the power supply in the chassis.

- a. Press on the center of the power supply grill until the lowered latch lever moves upward.**
Shown by the No. 1 arrow in the preceding illustration.
- b. Lift the lever up and press the lever against the power supply to fully seat it in the server.**
Shown by the No. 2 arrow in the preceding illustration.
- 3. Verify that the fault has been cleared and the replaced component is operational.**
See [“Verify That a Fault Has Been Cleared”](#) on page 58.
- 4. Return the replaced component to Oracle.**
See [“Prepare a Component for Return to Oracle”](#) on page 68.

Related Information

- [“Power Supply LEDs” on page 170](#)
- [“Remove a Power Supply” on page 171](#)

Servicing Fan Modules (CMIOU Chassis)

A CMIOU chassis contains eight fan modules. The server can operate at full capacity with seven fan modules installed in the CMIOU chassis. The server will not operate with fewer than seven fan modules. If the server is operating with seven fan modules and one or more of those fan modules fails, the server will continue operating until defined temperature thresholds are exceeded, at which point the server will perform a graceful shutdown.

For the location of the fans in the CMIOU chassis and their respective labels, see [“CMIOU Chassis Front Components” on page 24](#).



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. Follow antistatic precautions to prevent electrostatic damage. See [“Prevent ESD Damage” on page 65](#).

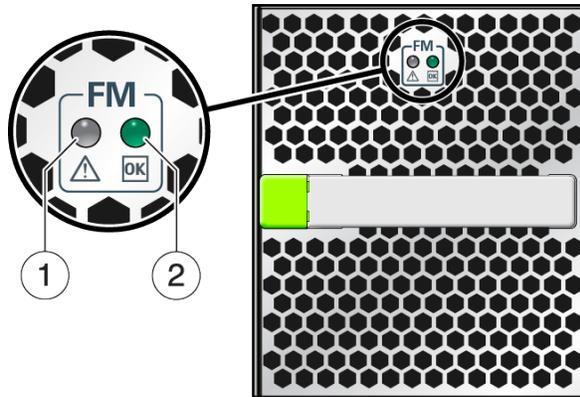
These topics explain how to service the fan modules in the CMIOU chassis.

Description	Links
Learn about fan module locations in the CMIOU chassis.	“CMIOU Chassis Front Components” on page 24
Learn about fan module LEDs.	“Fan LEDs (CMIOU Chassis)” on page 184
Replace a fan module.	“Remove a Fan Module (CMIOU Chassis)” on page 184 “Install a Fan Module (CMIOU Chassis)” on page 186

Related Information

- [“Identifying Components” on page 19](#)
- [“Detecting and Managing Faults” on page 39](#)
- [“Preparing for Service” on page 61](#)
- [“Controlling the Server and Domains” on page 71](#)
- [“Understanding Server Configurations and Failover Behavior” on page 83](#)

Fan LEDs (CMIOU Chassis)



No.	LED	Icon	Description
1	Service Required LED (amber)		Indicates that service is required. The <code>fmadm faulty</code> command provides details about any faults that cause this indicator to light.
2	OK LED (green)		Indicates these conditions: <ul style="list-style-type: none"> ■ Off – Fan module is not running in its normal state. ■ Steady on – Fan module is powered on and is running normally.

Related Information

- [“Checking for Faults” on page 39](#)
- [“Interpreting LEDs” on page 48](#)

▼ Remove a Fan Module (CMIOU Chassis)

This procedure can be performed by a customer while the server is running if there are at least seven operating fan modules.



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. When you unpack the replacement part, open the package on a grounded antistatic mat. Always use an antistatic wrist strap for hardware replacements.

1. Determine which fan module requires service.

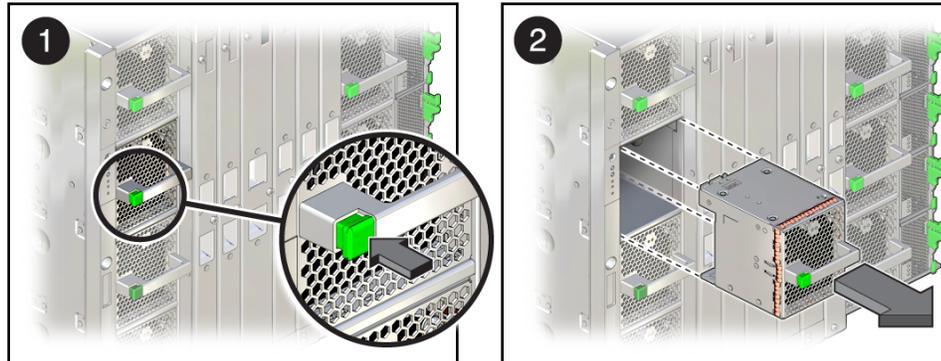
See [“Identify Faulted Components” on page 40](#) and [“Fan LEDs \(CMIOU Chassis\)” on page 184](#).

2. Take the necessary ESD precautions.

See [“Prevent ESD Damage” on page 65](#).

3. Remove the fan module.

You can remove a fan with the server running only if one fan module is faulty and if you have a replacement fan module. If more than one module is faulty, and the server is running, it will continue operating until a defined temperature is exceeded, at which point the server will perform a graceful shutdown.



a. Push the green button on the handle of the fan module to disengage the fan latch (panel 1).

b. Slide the fan module out to remove it from the server (panel 2).

Related Information

- [“Install a Fan Module \(CMIOU Chassis\)” on page 186](#)

- [“CMIOU Chassis Cooling Zones” on page 33](#)

▼ Install a Fan Module (CMIOU Chassis)



Caution - If you remove this component while the server is powered on, wait 30 seconds before installing the replacement component. Doing so ensures that Oracle ILOM has enough time to detect the new component, which is required for the software to power it on.

1. **Insert the new fan module into the empty fan slot.**
2. **Push the fan module into the slot until it clicks into place to completely seat the module into the slot.**
3. **Power on the server, if necessary.**
If the server was powered off when you installed the new fan module, see [“Returning the Server to Operation” on page 77](#).
4. **Verify that the fault has been cleared and the replaced component is operational.**
See [“Verify That a Fault Has Been Cleared” on page 58](#).
5. **Return the replaced component to Oracle.**
See [“Prepare a Component for Return to Oracle” on page 68](#).

Related Information

- [“Remove a Fan Module \(CMIOU Chassis\)” on page 184](#)
- [“CMIOU Chassis Cooling Zones” on page 33](#)

Servicing Fan Modules (Switch Chassis)

A switch chassis contains 36 fans modules. Each switch unit has 6 dedicated fan modules. The server will continue to operate at full capacity with 5 of the 6 fan modules operating for each switch unit. If the server is operating with one or more switch units that have only 5 fan modules, and one or more of those fan modules fails, the server will continue operating until defined temperature thresholds are exceeded, at which point the server will perform a graceful shutdown.

For the location of the fan modules in the switch chassis and their respective labels, see [“Switch Chassis Rear Components \(SPARC M7-16\)” on page 29](#).



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. Follow antistatic precautions to prevent electrostatic damage. See [“Prevent ESD Damage” on page 65](#).

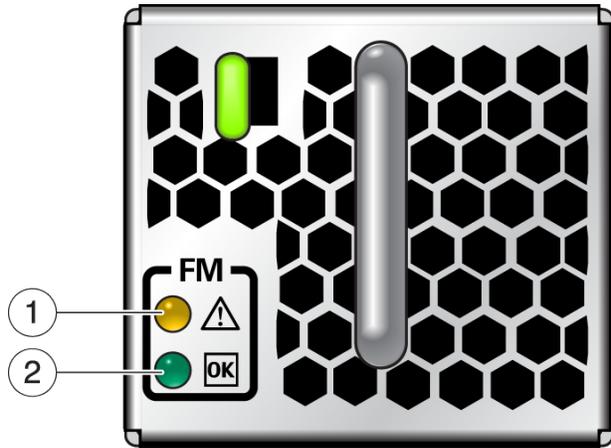
These topics explain how to service the fan modules in the switch chassis.

Description	Links
Learn about fan module locations in the switch chassis.	“Switch Chassis Rear Components (SPARC M7-16)” on page 29
Learn about fan module LEDs.	“Fan Module LED (Switch Chassis)” on page 188
Replace a fan module.	“Remove a Fan Module (Switch Chassis)” on page 188 “Install a Fan Module (Switch Chassis)” on page 190

Related Information

- [“Identifying Components” on page 19](#)
- [“Detecting and Managing Faults” on page 39](#)
- [“Preparing for Service” on page 61](#)
- [“Controlling the Server and Domains” on page 71](#)
- [“Understanding Server Configurations and Failover Behavior” on page 83](#)

Fan Module LED (Switch Chassis)



No.	LED	Icon	Description
1	Service Required LED (amber)		Indicates that service is required. The <code>fmadm faulty</code> command provides details about any faults that cause this indicator to light.
2	OK LED (green)		Indicates these conditions: <ul style="list-style-type: none"> ■ Off – Fan module is not running in its normal state. ■ Steady on – Fan module is powered on and is running normally.

Related Information

- [“Checking for Faults” on page 39](#)
- [“Interpreting LEDs” on page 48](#)

▼ Remove a Fan Module (Switch Chassis)

This procedure can be performed by a customer while the server is running if there are at least five of the six fan modules operating for each switch unit.

Note - If you are removing fan modules to reinstall them in a new switch unit, remove them while the switch unit is installed in the chassis.



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. When you unpack the replacement part, open the package on a grounded antistatic mat. Always use an antistatic wrist strap for hardware replacements.

1. Determine which fan module requires service.

See [“Identify Faulted Components” on page 40](#) and [“Fan Module LED \(Switch Chassis\)” on page 188](#).

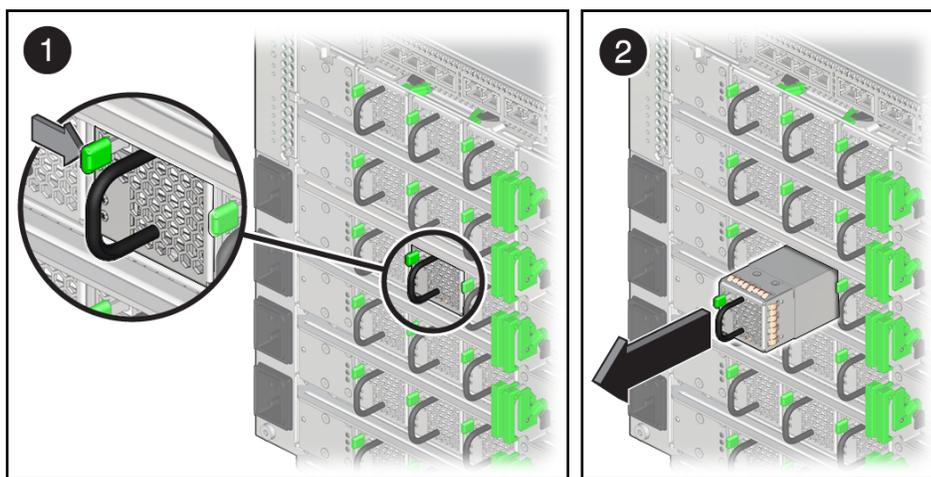
2. Identify the faulty fan module that you want to replace.

3. Take the necessary ESD precautions.

See [“Prevent ESD Damage” on page 65](#).

4. Remove the fan module.

You can remove a fan from a cooling zone with the server running only if one fan module in the cooling zone is faulty and if you have a replacement fan module. If more than one module in the cooling zone is faulty, and the server is running, the server will continue operating until a defined temperature is exceeded, at which point it will perform a graceful shutdown.



- a. Press the green latch above the LEDs to the right to disengage the fan module latch.
- b. Grasp the metal handle on the fan module and slide the module out to remove it from the server.

Related Information

- [“Install a Fan Module \(Switch Chassis\)” on page 190](#)
- [“Switch Chassis Cooling Zones” on page 35](#)

▼ Install a Fan Module (Switch Chassis)



Caution - If you remove a fan module while the server is powered on, wait 30 seconds before installing the replacement fan module. Doing so ensures that Oracle ILOM has enough time to detect the new component, which is required for the software to power on the new fan module.

1. **Insert the new fan module into the empty fan slot.**

Note - If you are installing fan modules into a new switch unit, install them while the switch unit is in the chassis.

2. **Push the fan into the slot until it clicks into place to completely seat the fan module into the slot.**
3. **Power on the server, if necessary.**
If the server powered off before you installed a new fan module, see [“Returning the Server to Operation” on page 77](#).
4. **Verify that the fault has been cleared and the replaced component is operational.**
See [“Verify That a Fault Has Been Cleared” on page 58](#).
5. **Return the replaced component to Oracle.**
See [“Prepare a Component for Return to Oracle” on page 68](#).

Related Information

- [“Remove a Fan Module \(Switch Chassis\)” on page 188](#)

- [“Switch Chassis Cooling Zones” on page 35](#)

Servicing Switch Units

In SPARC M7-16 servers, switch units are part of the scalability feature that enables a PDomain to control DCUs. Switch units are configured to work together as a single unit. If a switch unit fails, the server will operate in degraded mode. At least five switch units must be functioning for the server to operate.

Replace a failed switch unit as soon as possible.

For the location of the six switch units, see [“Switch Chassis Rear Components \(SPARC M7-16\)” on page 29](#).



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. Follow antistatic precautions to prevent electrostatic damage. See [“Prevent ESD Damage” on page 65](#).

These topics explain how to service switch units.

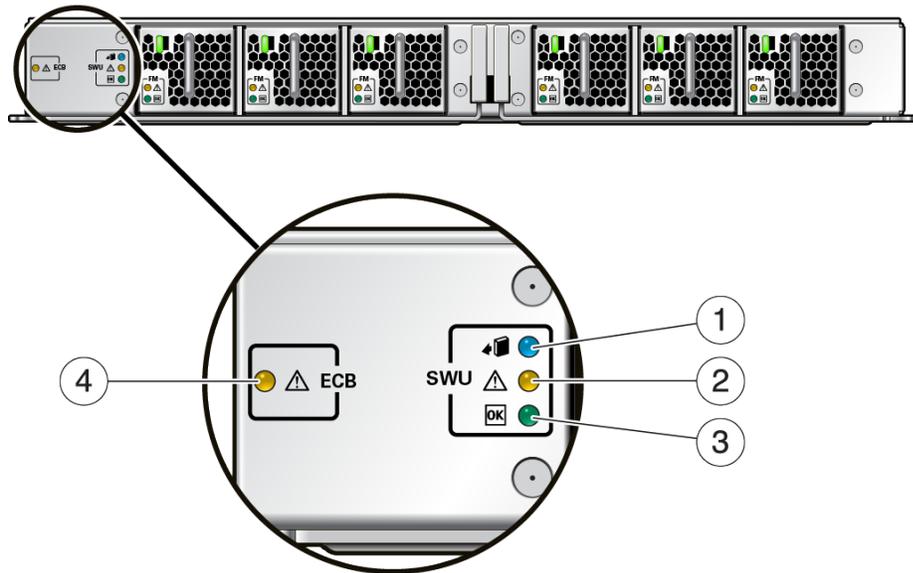
Description	Links
Learn about switch unit LEDs.	“Switch Unit LEDs” on page 194
Prepare to remove a switch unit.	“Prepare a Switch Unit for Removal” on page 195
Replace a switch unit.	“Remove a Switch Unit” on page 198 “Install a Switch Unit” on page 201
Unseat or reseat a switch unit as part of another component's service operation.	“Unseat a Switch Unit” on page 196 “Reseat a Switch Unit” on page 200

Related Information

- [“Identifying Components” on page 19](#)
- [“Detecting and Managing Faults” on page 39](#)
- [“Preparing for Service” on page 61](#)
- [“Controlling the Server and Domains” on page 71](#)

- [“Understanding Server Configurations and Failover Behavior” on page 83](#)

Switch Unit LEDs



No.	LED	Icon	Description
1	Ready to Remove (blue)		Indicates that a switch unit can be removed during a hot-service operation.
2	Service Required LED (amber)		Indicates that service is required. The <code>fmadm faulty</code> command provides details about any faults that cause this indicator to light. Under some fault conditions, individual component fault LEDs are illuminated in addition to the Service Required LED.
3	OK LED (green)		Indicates these conditions: <ul style="list-style-type: none"> ■ Off – System is not running in its normal state. System power might be off. The SP might be running. ■ Steady on – System is powered on and is running in its normal operating state. No service actions are required.

No.	LED	Icon	Description
4	ECB fault (amber)		Indicates that a PDECB requires service.

Related Information

- [“Checking for Faults” on page 39](#)
- [“Interpreting LEDs” on page 48](#)

▼ Prepare a Switch Unit for Removal

Replace a switch unit when the replacement switch unit is available.

Complete the following steps before you remove a switch unit.

Note - The switch unit replacement kit includes plastic covers to protect switch unit connectors. Return these covers to Oracle.

1. **Determine which switch unit requires service.**
See [“Identify Faulted Components” on page 40](#) and [“Switch Unit LEDs” on page 194](#).
2. **If you are replacing a switch unit, unpack the new switch unit on a grounded antistatic mat.**
See [“Prevent ESD Damage” on page 65](#).
3. **Verify that the switch unit has been removed from service.**

->

```
show /System/Other_Removable_Devices/Scalability_Switch_Boards
/Scalability_Switch_Board_x health
Properties:
health = Offline
```


Determine your next step.
 - If health returns a value of Service Required, go to [Step 4](#).
 - If health returns a value of Offline, go to [Step 5](#).
4. **Only if required, stop the server.**

```
-> stop /System
    Are you sure you want to stop /System (y/n) ? y
    Stopping /System
    ->
```

5. Prepare the switch unit for removal and verify that it is ready.

```
-> set /System/Other_Removable_Devices/Scalability_Switch_Boards
    /Scalability_Switch_Board_x action=prepare_to_remove
```

When the switch unit is ready to remove, the blue Ready to Remove LED will light.

Note - If you issue the `prepare_to_remove` command but decide not to remove the switch unit, you must return the component to service. To do this, either issue the `return_to_service` command or physically remove the switch unit from the server and reinstall it.

6. Remove the plastic covers from the connectors on the new switch unit and set them aside for installation on the old switch unit connectors, once you have removed it from the system.

Related Information

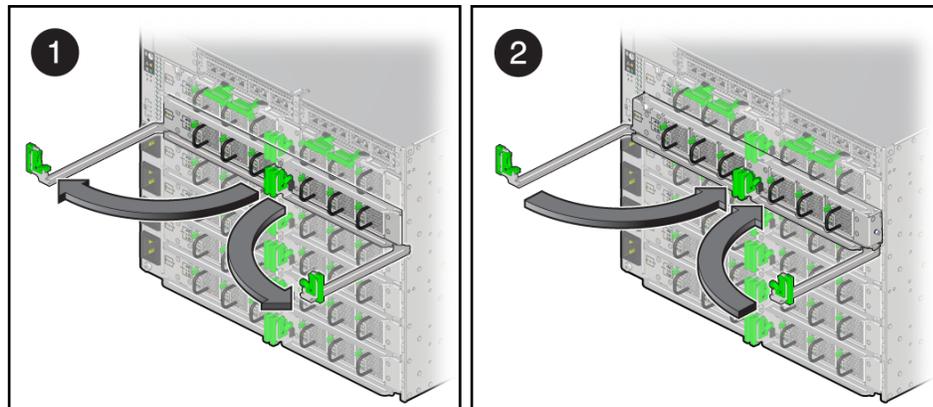
- [“Unseat a Switch Unit” on page 196](#)
- [“Remove a Switch Unit” on page 198](#)
- [“Switch Chassis Cooling Zones” on page 35](#)

▼ Unseat a Switch Unit

Some component replacement tasks (for example, those for interconnects and PDECBS) require you to unseat switch units before you perform them.

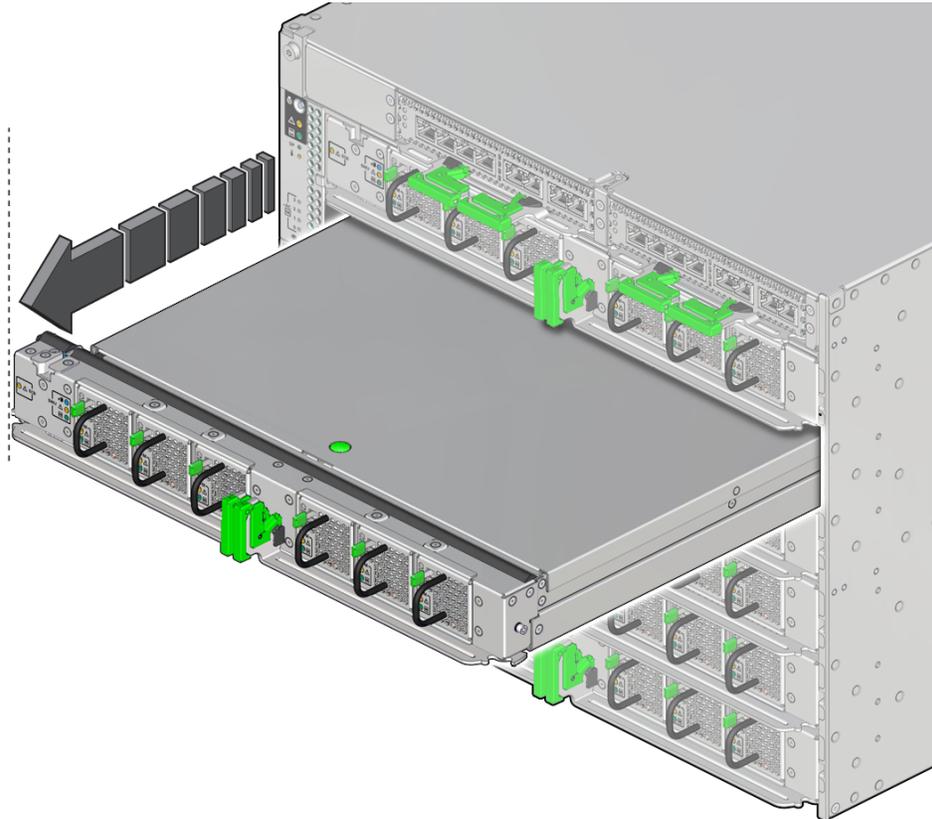
- 1. Prepare the switch unit for removal.**
See [“Prepare a Switch Unit for Removal” on page 195](#).
- 2. Verify that the blue Ready to Remove LED on the switch unit is on.**
See [“Switch Unit LEDs” on page 194](#).
- 3. Unseat the switch unit.**

Note - If you are unseating a switch unit so you can replace it with a new one, ensure that you have already removed the fan modules from the switch unit.



- a. Pull the ejector arms out to disengage the switch unit from the server.
- b. Press the arms back toward the unit to prevent them from being damaged.

4. Pull the switch unit out of the server less than halfway.



Related Information

- [“Remove a Switch Unit” on page 198](#)
- [“Reseat a Switch Unit” on page 200](#)
- [“Switch Chassis Cooling Zones” on page 35](#)

▼ Remove a Switch Unit

This procedure can be performed by a customer while the server is running.



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. When you unpack the replacement part, open the package on a grounded antistatic mat. Always use an antistatic wrist strap for hardware replacements.

Note - The switch unit replacement kit includes plastic covers to protect switch unit connectors. Return these covers to Oracle.

1. **Prepare the switch unit for removal.**
See [“Prepare a Switch Unit for Removal” on page 195.](#)
2. **Locate the switch unit in the server.**
See [“Switch Unit LEDs” on page 194.](#)
3. **Verify that the switch unit is ready to remove using one of the following methods:**
 - **Verify that the blue Ready to Remove light on the switch is on.**
See [“Switch Unit LEDs” on page 194.](#)
 - **From Oracle ILOM, type:**

```
# show /System/Other_Removable_Devices/Scalability_Switch_Boards/  
Scalability_Switch_Board_x health  
Properties:  
health = Offline
```
4. **Remove the fan modules from the switch unit for installation in the replacement switch unit.**
See [“Remove a Fan Module \(Switch Chassis\)” on page 188.](#)
5. **Unseat the switch unit.**
See [“Unseat a Switch Unit” on page 196.](#)
This protects the levers from damage when you pull the switch out.
6. **Carefully slide the switch unit out of the server to avoid bumping the rear connectors.**
7. **Place the switch unit on a large grounded antistatic mat.**

See [“Prevent ESD Damage” on page 65](#).

Install the plastic covers that you removed from the connectors on the new switch unit on the connectors of the switch unit you are replacing.

8. **If you removed a switch unit to service a PDECB, see [“Servicing PDECBs” on page 203](#).**

Related Information

- [“Install a Switch Unit” on page 201](#)
- [“Install a Fan Module \(Switch Chassis\)” on page 190](#)
- [“Switch Chassis Cooling Zones” on page 35](#)

▼ Reseat a Switch Unit

Some component replacement tasks (for example, those for interconnects and PDECBs) require you to unseat a switch unit before you perform them. After completing those tasks, you need to reseat the switch unit.

1. **Slide the switch unit back into the server until the levers begin to engage.**
2. **Press the arms back toward the switch unit, and then press the arms firmly against the switch unit to fully seat the switch back into the server.**

The lever should click into place when the switch unit is fully seated in the server.

3. **Restart the switch unit.**

```
-> set /System/Other_Removable_Devices/Scalability_Switch_Boards/  
Scalability_Switch_Board_x action=return_to_service
```

4. **Restart the server.**

```
-> start /System
```

Related Information

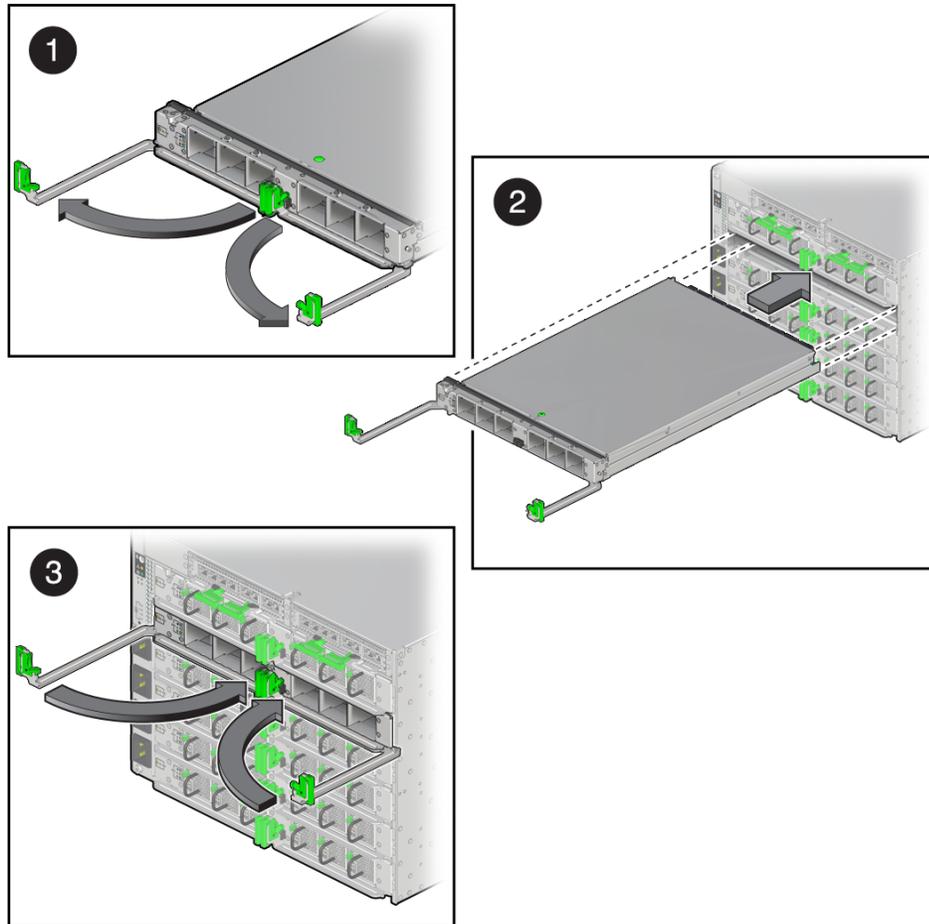
- [“Install a Switch Unit” on page 201](#)
- [“Unseat a Switch Unit” on page 196](#)
- [“Switch Chassis Cooling Zones” on page 35](#)

▼ Install a Switch Unit



Caution - If you remove this component while the server is powered on, wait 30 seconds before installing the replacement component. Doing so ensures that Oracle ILOM has enough time to detect the new component, which is required for the software to power it on.

1. Install the switch unit.



- a. **Open the ejector arms so that they are fully open (panel 1).**
- b. **Install the new switch unit into its slot in the server until the ejector arms begin to engage (panel 2).**
- c. **Press the arms back toward the switch unit, and then press the arms firmly against the switch unit to fully seat it back into the server (panel 3).**

The lever should click into place when the switch unit is fully seated in the server.

2. **Reinstall the fan modules that you removed from the faulted switch unit.**

See [“Install a Fan Module \(Switch Chassis\)”](#) on page 190.

3. **Check the event logs to determine whether an FPGA update is required and update the firmware, if needed.**

```
-> show /SP/logs/event/list/  
Event ID   Date/Time           Class   Type   Severity  
1278      Tue Dec 15 16:25:27 2015 Chassis Log    major  
/SYS/SWU0/FPGA update required.
```

If an FPGA update is required, refer to the [SPARC M8 and SPARC M7 Servers Product Notes](#) for information about performing the update.

4. **Restart the server, if needed.**

```
-> start /System
```

5. **Verify that the fault has been cleared and the replaced component is operational.**

See [“Verify That a Fault Has Been Cleared”](#) on page 58.

6. **Return the replaced component to Oracle.**

See [“Prepare a Component for Return to Oracle”](#) on page 68.

Related Information

- [“Remove a Switch Unit”](#) on page 198
- [“Remove a Fan Module \(Switch Chassis\)”](#) on page 188
- [“Switch Chassis Cooling Zones”](#) on page 35

Servicing PDECBS

There is one PDECBS for each CMIOU. For the locations of the PDECBS in the CMIOU chassis, see [“CMIOU Chassis Rear Components” on page 25](#).

There is one PDECBS for the each switch unit (SPARC M7-16). For the locations of the PDECBS in the switch chassis, see [“Switch Chassis Rear Components \(SPARC M7-16\)” on page 29](#)

The replacement procedures are the same for all PDECBS.



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. Follow antistatic precautions to prevent electrostatic damage. See [“Prevent ESD Damage” on page 65](#).

These topics explain how to service a PDECBS.

Step	Description	Links
1.	Remove the CMIOU or switch unit so that you can replace the PDECBS.	“Servicing CMIOUs” on page 87 “Servicing Switch Units” on page 193
2.	Replace a PDECBS.	“Remove a PDECBS” on page 204 “Install a PDECBS” on page 206
3.	Install the CMIOU or switch unit after you have replaced the PDECBS.	“Install a CMIOU” on page 106 “Install a Switch Unit” on page 201

Related Information

- [“Identifying Components” on page 19](#)
- [“Detecting and Managing Faults” on page 39](#)
- [“Preparing for Service” on page 61](#)
- [“Controlling the Server and Domains” on page 71](#)
- [“Understanding Server Configurations and Failover Behavior” on page 83](#)

▼ Remove a PDECB

This procedure can be performed by a customer while the server is running and after removing the component that is installed in front of it.



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. When you unpack the replacement part, open the package on a grounded antistatic mat. Always use an antistatic wrist strap for hardware replacements.

1. Determine which PDECB requires service.

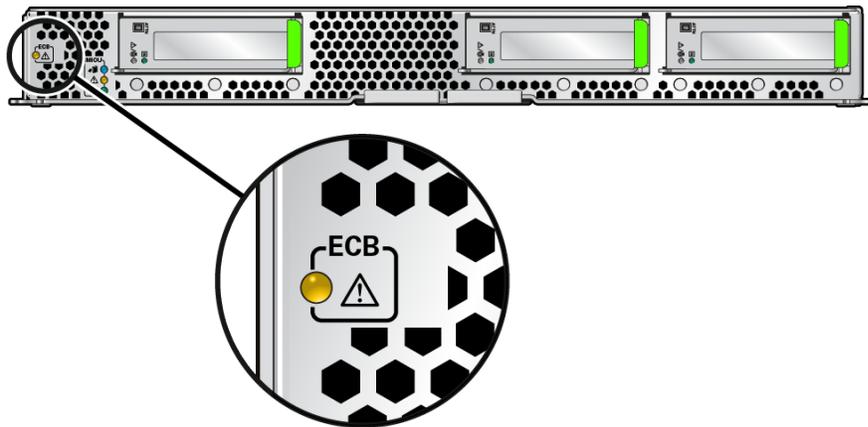
See [“Identify Faulted Components” on page 40](#), [“CMIOU Indicators and LEDs” on page 94](#), or [“Switch Unit LEDs” on page 194](#).

2. Take the necessary ESD precautions.

See [“Prevent ESD Damage” on page 65](#).

3. Ensure that the component that contains the PDECB you are removing displays an amber LED.

This illustration shows the location of the LED on a CMIOU.

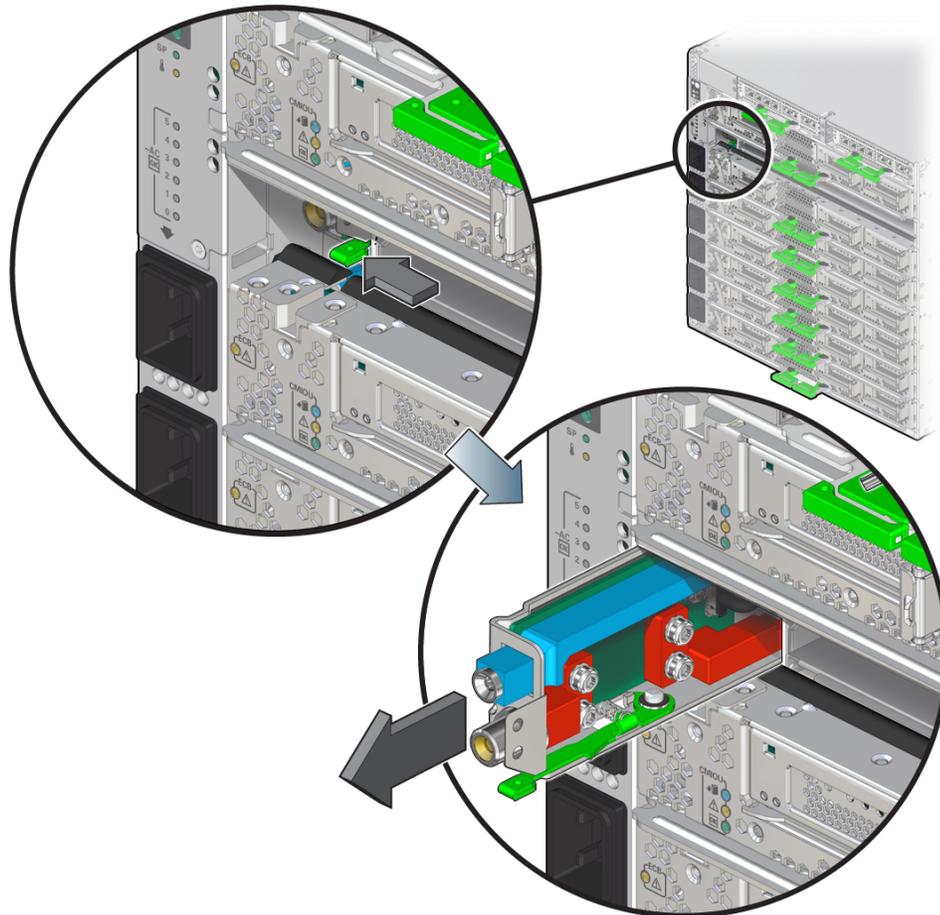


4. Remove the component that is installed in front of the failed PDECB.

For information about preparing a CMIOU for removal and for information about removing a CMIOU, see [“Servicing CMIOUs” on page 87](#).

For information about preparing a switch unit for removal and for information about removing a switch unit, see [“Servicing Switch Units” on page 193](#).

5. **Press the latch on the bottom of the PDECB to the left and slide it out of the chassis.**



Related Information

- [“Install a PDECB” on page 206](#)

▼ Install a PDECB

1. **Slide the new PDECB into the empty slot.**
2. **Install the removed component.**
See [“Install a CMIOU” on page 106](#) or [“Install a Switch Unit” on page 201](#).
3. **Verify that the fault has been cleared and the replaced component is operational.**
See [“Verify That a Fault Has Been Cleared” on page 58](#).
4. **Return the replaced component to Oracle.**
See [“Prepare a Component for Return to Oracle” on page 68](#).

Related Information

- [“Remove a PDECB” on page 204](#)

Servicing eUSB Disks

A single eUSB disk is installed in each CMIOU in the server. For the location of the eUSB disks inside a CMIOU, see [“DIMM and eUSB Locations in a CMIOU” on page 31](#).



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. Follow antistatic precautions to prevent electrostatic damage. See [“Prevent ESD Damage” on page 65](#).

These topics explain how to service the eUSB disks in the CMIOUs.

Step	Description	Links
1.	Remove the CMIOU so that you can replace an eUSB disk.	“Servicing CMIOUs” on page 87
2.	Replace an eUSB disk.	“Remove an eUSB Disk” on page 207 “Install an eUSB Disk” on page 209
3.	Install the CMIOU after you have replaced the eUSB disk.	“Install a CMIOU” on page 106

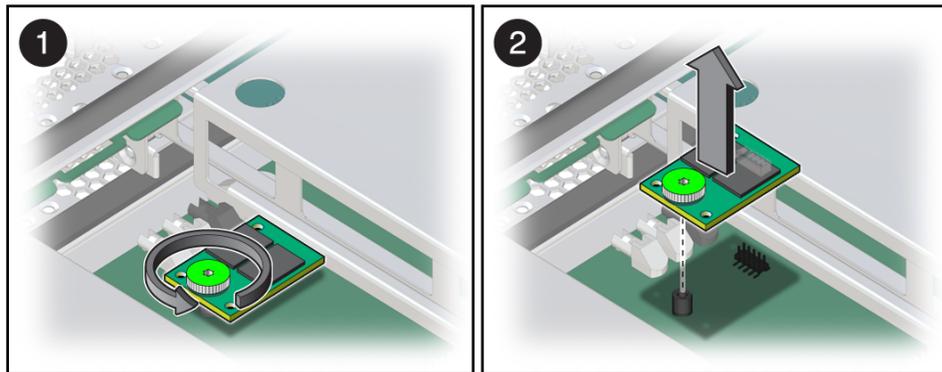
Related Information

- [“Identifying Components” on page 19](#)
- [“Detecting and Managing Faults” on page 39](#)
- [“Preparing for Service” on page 61](#)
- [“Controlling the Server and Domains” on page 71](#)
- [“Understanding Server Configurations and Failover Behavior” on page 83](#)

▼ Remove an eUSB Disk

This procedure can be performed only by qualified service personnel after removing the CMIOU that contains it.

1. **Determine which eUSB disk requires service.**
See [“Identify Faulted Components”](#) on page 40.
2. **Take the necessary ESD precautions.**
See [“Prevent ESD Damage”](#) on page 65.
3. **Prepare the CMIOU that contains the faulty eUSB disk for removal and remove it from the chassis.**
See [“Servicing CMIOUs”](#) on page 87.
4. **Remove the CMIOU top cover.**
Press down on the green button at the top of the cover to disengage the cover from the CMIOU. While pressing the button, grasp the rear edge of the cover and slide it toward the rear of the CMIOU until it stops. Lift the cover off.
5. **Remove the eUSB disk.**



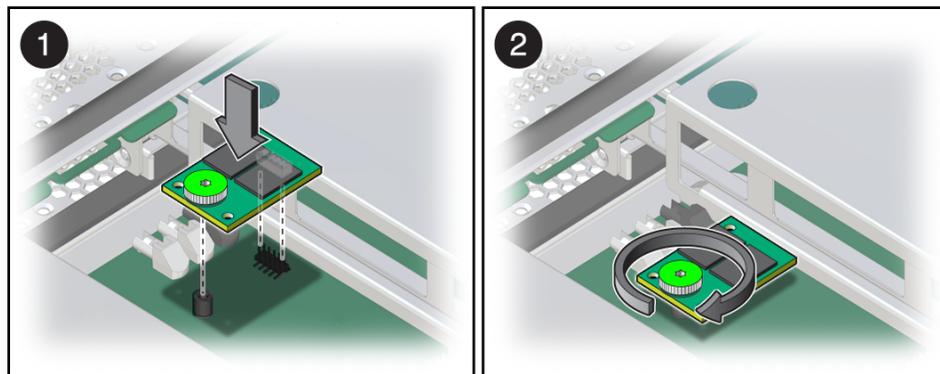
- a. **Use a T10 driver to remove the green screw that secures the eUSB disk to the CMIOU (panel 1).**
- b. **Carefully lift the eUSB disk out of the CMIOU (panel 2).**
- c. **If required, set the eUSB disk aside for installation in the new CMIOU.**
When you are replacing a CMIOU that is the only CMIOU in a logical domain guest that uses iSCSI over IPoIB for booting, and the eUSB disk in that CMIOU is the only disk in the boot pool, you must install the eUSB disk you remove in the new CMIOU.

Related Information

- [“Install an eUSB Disk” on page 209](#)

▼ Install an eUSB Disk

1. Install the new eUSB disk.



- a. **Position the new eUSB disk in the CMIU (panel 1).**
Ensure proper pin engagement with connectors before pressing the eUSB disk in place.
 - b. **Tighten the green screw to secure the eUSB disk to the CMIU (panel 2).**
2. **Reinstall the CMIU cover and slide the cover forward until the latch clicks into place.**
 3. **Reinstall the CMIU you removed to access the eUSB disk.**
See [“Install a CMIU” on page 106](#).
 4. **If you have not already done so, connect to the host and restart it.**
Connect to the host console in a separate terminal session before starting the host to ensure that you can view all messages reported by the system.

```
-> start /Servers/PDomains/PDomain_x/HOST/console
Are you sure you want to start
/Servers/PDomains/PDomain_x/HOST/console (y/n) ? y
```

```
Connecting /Servers/PDomains/PDomain_x/HOST/console
```

```
-> start /Servers/PDomains/PDomain_x/HOST
```

```
Are you sure you want to start /Servers/PDomains/PDomain_x/HOST (y/n)? y
```

```
hostname starting
```

5. Verify that the fault has been cleared and the replaced component is operational.

See [“Verify That a Fault Has Been Cleared”](#) on page 58.

6. Return the replaced component to Oracle.

See [“Prepare a Component for Return to Oracle”](#) on page 68.

Related Information

- [“Remove an eUSB Disk”](#) on page 207
- [Understanding eUSB disks](#)

Servicing a CMIOU Chassis Fan Cable Assembly

A CMIOU chassis contains two fan cable assemblies. For the location of the fan cable assembly in the CMIOU chassis, see [“CMIOU Chassis Rear Components” on page 25](#).



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. Follow antistatic precautions to prevent electrostatic damage. See [“Prevent ESD Damage” on page 65](#).

These topics explain how to service the fan cable assembly.

Step	Description	Links
1.	Remove the fans on the side of the chassis that contains the faulted assembly.	“Remove a Fan Module (CMIOU Chassis)” on page 184
2.	Replace the assembly.	“Remove a Fan Cable Assembly” on page 211 “Install a Fan Cable Assembly” on page 216

Related Information

- [“Identifying Components” on page 19](#)
- [“Detecting and Managing Faults” on page 39](#)
- [“Preparing for Service” on page 61](#)
- [“Controlling the Server and Domains” on page 71](#)
- [“Understanding Server Configurations and Failover Behavior” on page 83](#)

▼ Remove a Fan Cable Assembly

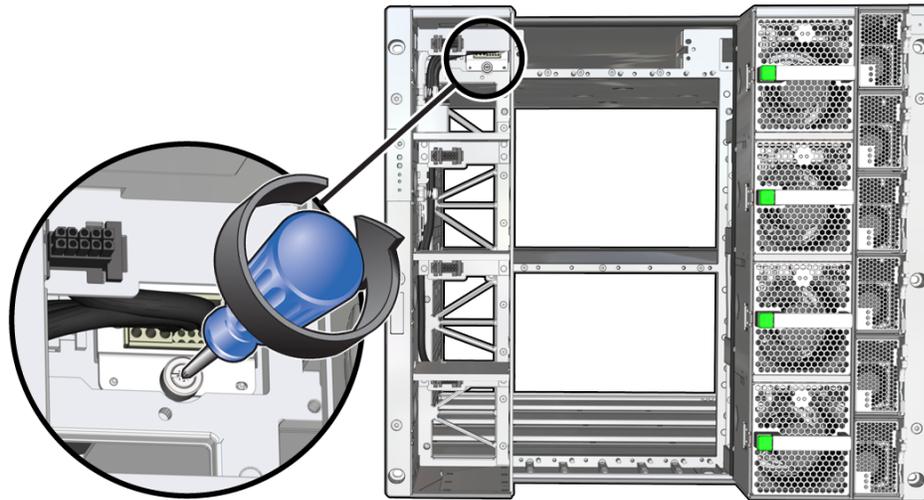
This procedure can be performed only by qualified service personnel.



Caution - Remove AC power using the circuit breakers on the appropriate PDU before performing this procedure.

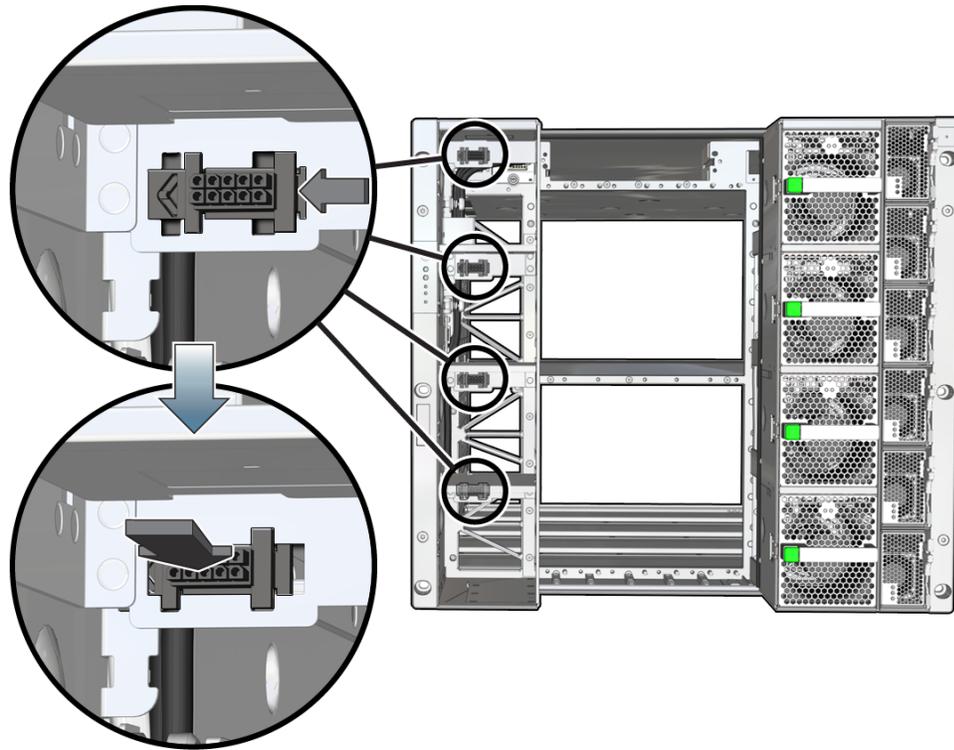
1. **Determine which fan cable assembly requires service.**
See [“Identify Faulted Components”](#) on page 40.
2. **Take the necessary ESD precautions.**
See [“Prevent ESD Damage”](#) on page 65.
3. **Power off the server and switch off the appropriate PDU circuit breakers.**
See [“Removing Power From the Server or Domain”](#) on page 73.
4. **From the front of the server, remove all fan modules from the side of the chassis that contains the failed fan cable assembly.**
See [“Remove a Fan Module \(CMIOU Chassis\)”](#) on page 184 or [“Remove a Fan Module \(Switch Chassis\)”](#) on page 188.
5. **Unseat the CMIOUs.**
See [“Unseat a CMIOU”](#) on page 97.
6. **Unseat the SP tray.**
See [“Unseat or Remove an SP Tray”](#) on page 247.
7. **Remove all of the interconnect assemblies from the front of the affected chassis.**
See [“Servicing Internal Interconnect Assemblies”](#) on page 301, [“Servicing External Interconnect Assemblies”](#) on page 309 (SPARC M7-16), and [“Servicing SP Internal Interconnect Assemblies”](#) on page 289.

8. **Unscrew the bracket at the top of the cable assembly.**

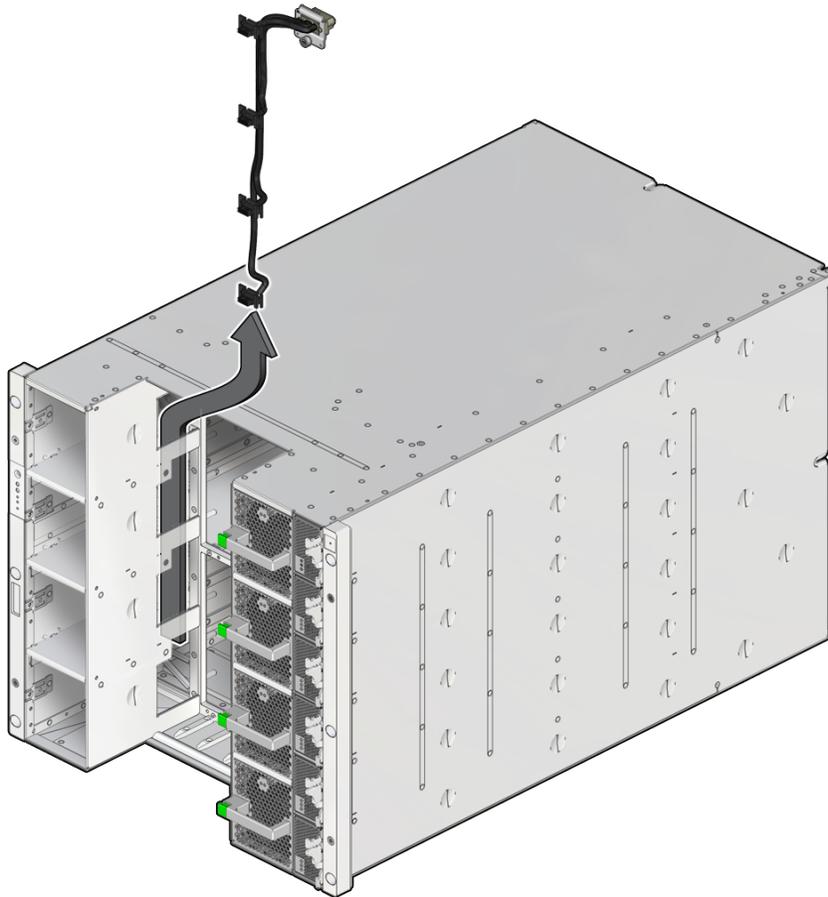


9. **Release all four panel mount connectors on each tab.**

On the black tab, push down on the arrow while sliding the tab to the left until the pegs on the tab align with the slats in the metal brace. Press the tab back to release it.



10. Remove the cable through the opening in the chassis.

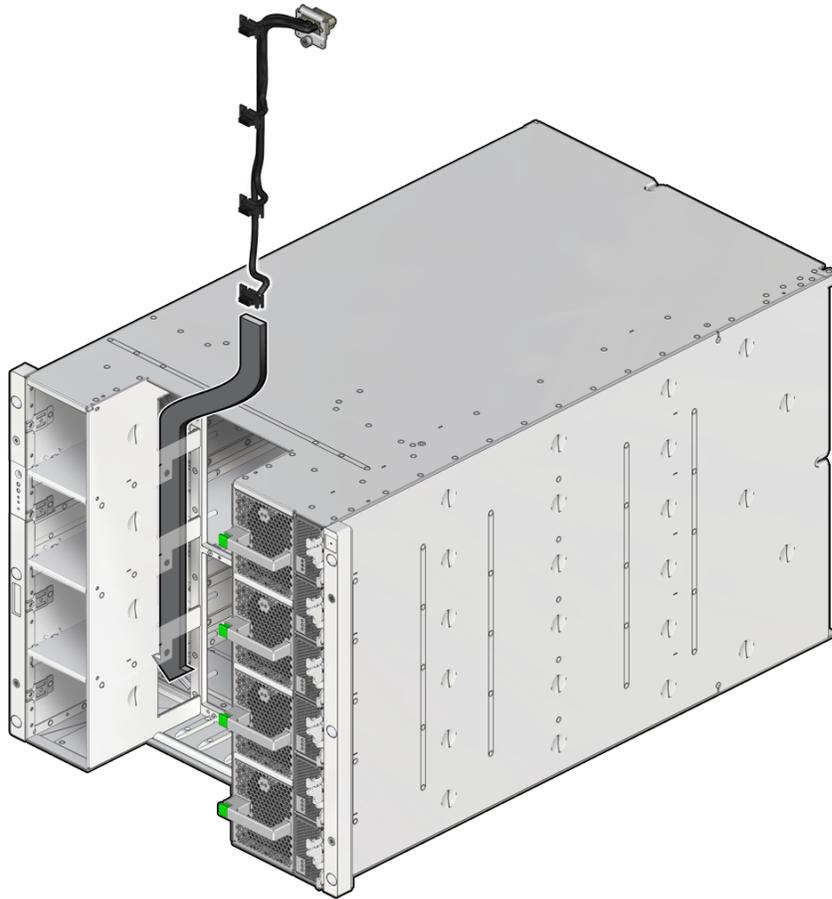


Related Information

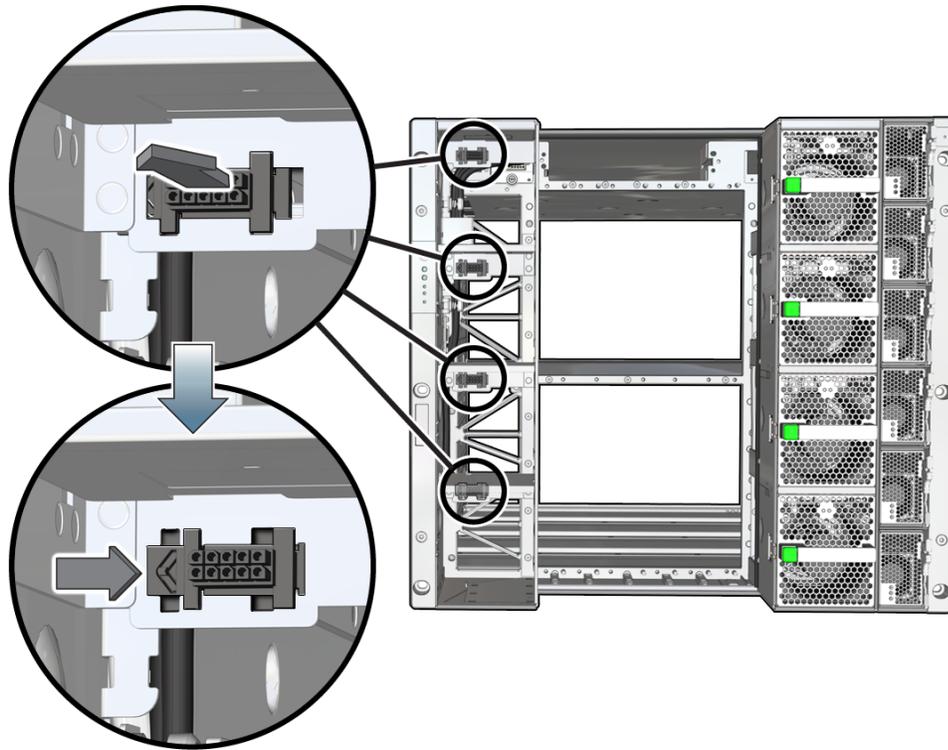
- [“Install a Fan Cable Assembly” on page 216](#)

▼ Install a Fan Cable Assembly

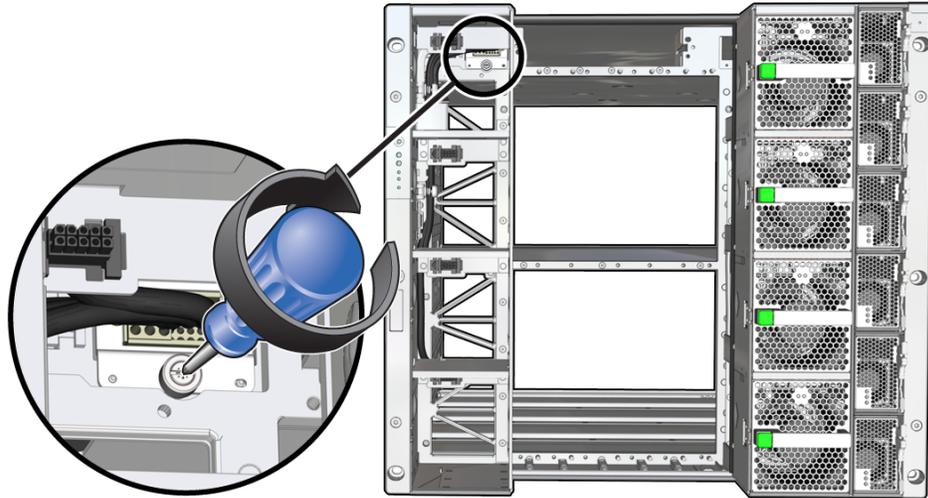
1. Slide the new cable through the opening in the chassis where the failed cable was previously installed.



2. **Insert the four panel mount connectors through each of the receiving tabs and slide the black tab to the left to secure it.**



3. **Screw the top bracket of the cable assembly to the chassis.**



4. **Reinstall the interconnects in the same slots from which you removed them.**
See [“Servicing Internal Interconnect Assemblies”](#) on page 301, [“Servicing External Interconnect Assemblies”](#) on page 309 (SPARC M7-16), and [“Servicing SP Internal Interconnect Assemblies”](#) on page 289.
5. **Reseat the SP tray.**
See [“Reseat or Install an SP Tray”](#) on page 250.
6. **Reseat the CMIOUs.**
See [“Reseat a CMIOU”](#) on page 105.
7. **Reinstall the fans in the same slots from which you removed them.**
See [“Install a Fan Module \(CMIOU Chassis\)”](#) on page 186 or [“Install a Fan Module \(Switch Chassis\)”](#) on page 190.
8. **Switch on the appropriate PDU circuit breakers and power on the server.**
[“Returning the Server to Operation”](#) on page 77.
9. **Verify that the fault has been cleared and the replaced component is operational.**
See [“Verify That a Fault Has Been Cleared”](#) on page 58.

10. Return the replaced component to Oracle.

See [“Prepare a Component for Return to Oracle”](#) on page 68.

Related Information

- [“Remove a Fan Cable Assembly”](#) on page 211

Servicing the Front Indicator Panel

The front indicator panel is located on the front of the CMIOU chassis for SPARC M8-8 and SPARC M7-8 servers, and on the front of the CMIOU chassis and switch chassis for SPARC M7-16 servers. The service procedures are the same on either chassis. For the location of the front indicator panel, see [“CMIOU Chassis Front Components” on page 24](#) or [“Switch Chassis Front Components \(SPARC M7-16\)” on page 27](#).



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. Follow antistatic precautions to prevent electrostatic damage. See [“Prevent ESD Damage” on page 65](#).

These topics explain how to service the front indicator panel.

- [“Remove a Front Indicator Panel” on page 221](#)
- [“Install a Front Indicator Panel” on page 226](#)

Related Information

- [“Front Indicator Panel Controls and LEDs” on page 50](#)
- [“Identifying Components” on page 19](#)
- [“Detecting and Managing Faults” on page 39](#)
- [“Preparing for Service” on page 61](#)
- [“Controlling the Server and Domains” on page 71](#)
- [“Understanding Server Configurations and Failover Behavior” on page 83](#)

▼ Remove a Front Indicator Panel

This procedure can be performed only by qualified service personnel.



Caution - Remove AC power using the circuit breakers on the appropriate PDU before performing this procedure.



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. When you unpack the replacement part, open the package on a grounded antistatic mat. Always use an antistatic wrist strap for hardware replacements.

- 1. Determine if a front indicator panel requires service.**
See [“Identify Faulted Components” on page 40.](#)
- 2. Take the necessary ESD precautions.**
See [“Prevent ESD Damage” on page 65.](#)
- 3. Shut down the server and switch off the appropriate PDU circuit breakers.**
See [“Removing Power From the Server or Domain” on page 73.](#)
- 4. Locate the indicator panel at the front of the server.**
See [“CMIOU Chassis Front Components” on page 24](#) or [“Switch Chassis Front Components \(SPARC M7-16\)” on page 27.](#)

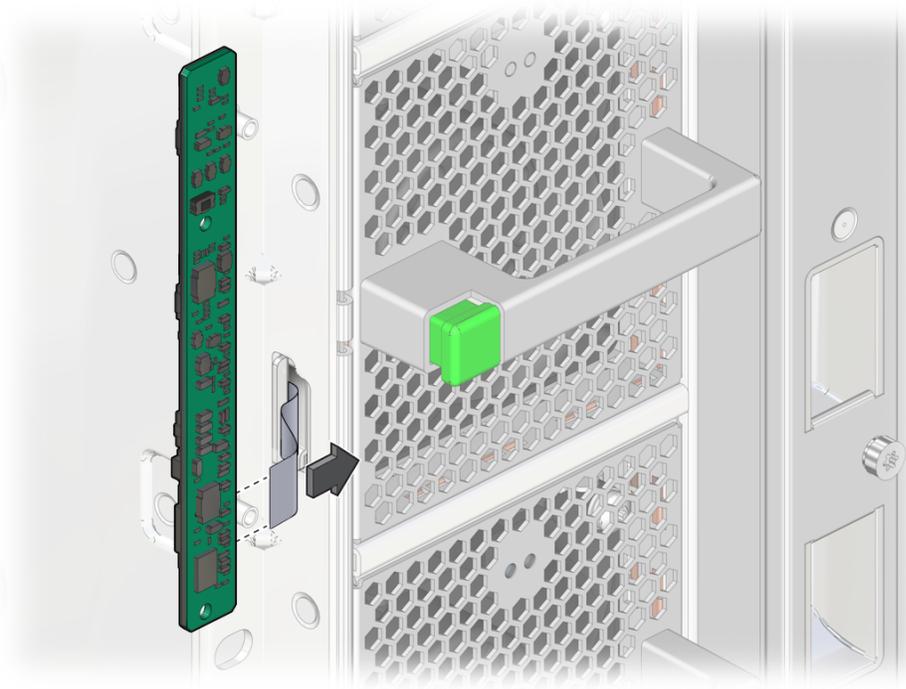
5. Remove the Torx screws and loosen the captive screws to remove the faceplate.



6. With the faceplate removed, remove the No. 1 Phillips screws to free the indicator panel from the chassis.



7. **Disconnect the small cable from the panel and remove the panel completely from the server.**

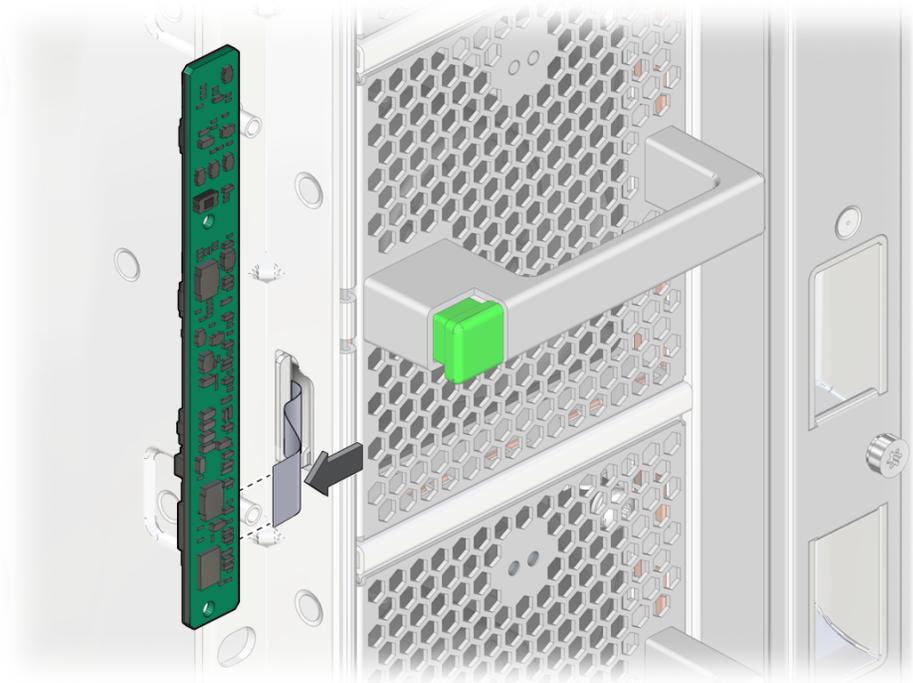


Related Information

- [“Install a Front Indicator Panel” on page 226](#)
- [“Front Indicator Panel Controls and LEDs” on page 50](#)

▼ Install a Front Indicator Panel

1. Connect the small cable from the chassis into the new indicator panel and position the panel in place.



2. Install the No. 1 Phillips screws to secure the indicator panel to the chassis.



3. **Position the faceplate over the panel, install the Torx screws, and tighten the captive screws to secure the faceplate to the panel.**



4. **Switch on the appropriate PDU circuit breakers and power on the server.**
See [“Returning the Server to Operation”](#) on page 77.
5. **Verify that the fault has been cleared and the replaced component is operational.**
See [“Verify That a Fault Has Been Cleared”](#) on page 58.
6. **Return the replaced component to Oracle.**

See [“Prepare a Component for Return to Oracle”](#) on page 68.

Related Information

- [“Remove a Front Indicator Panel”](#) on page 221
- [“Front Indicator Panel Controls and LEDs”](#) on page 50

Servicing the Front Indicator Panel Cable

The front indicator panel cable connects the front indicator panel to the chassis.



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. Follow antistatic precautions to prevent electrostatic damage. See [“Prevent ESD Damage” on page 65](#).

These topics explain how to service the front indicator panel cable.

- [“Remove the Front Indicator Panel Cable” on page 231](#)
- [“Install the Front Indicator Panel Cable” on page 236](#)

Related Information

- [“Identifying Components” on page 19](#)
- [“Detecting and Managing Faults” on page 39](#)
- [“Preparing for Service” on page 61](#)
- [“Controlling the Server and Domains” on page 71](#)
- [“Understanding Server Configurations and Failover Behavior” on page 83](#)

▼ Remove the Front Indicator Panel Cable

This procedure can be performed only by qualified service personnel.

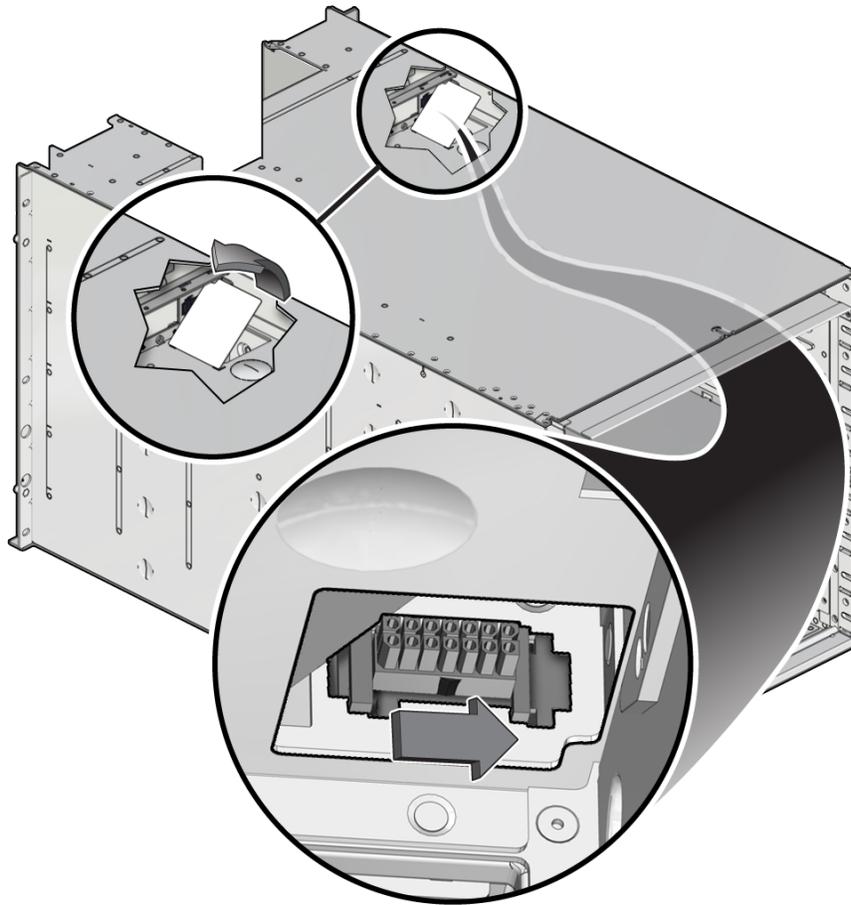


Caution - Remove AC power using the circuit breakers on the appropriate PDU before performing this procedure.

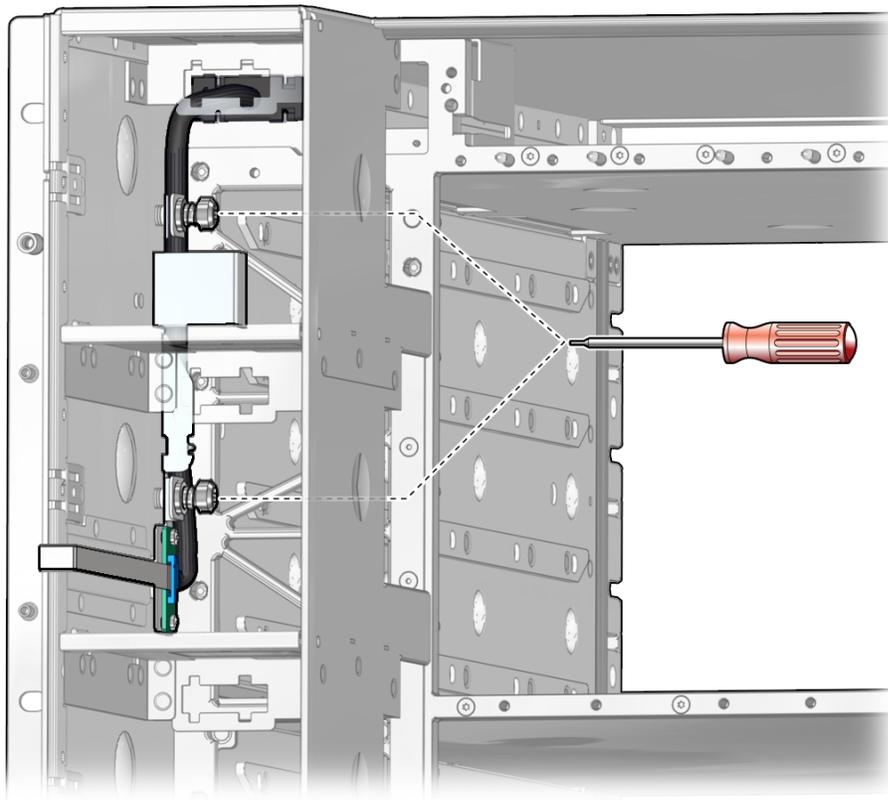
1. **Determine which front indicator panel cable requires service.**
See [“Identify Faulted Components” on page 40](#).

2. **Take the necessary ESD precautions.**
See [“Prevent ESD Damage”](#) on page 65.
3. **Power off the server and switch off the appropriate PDU circuit breakers.**
See [“Removing Power From the Server or Domain”](#) on page 73.
4. **From the rear of the server, remove the SPs, and unseat the SP tray from the impacted chassis.**
See [“Servicing SPs”](#) on page 121 and [“Servicing SP Trays”](#) on page 247.
5. **Remove and unseat the appropriate components from the impacted chassis.**
 - If the cable you are replacing is in the CMIOU chassis, remove the top four CMIOUs and unseat the lower four CMIOUs in the chassis. See [“Servicing CMIOUs”](#) on page 87.
 - If the cable you are replacing is in the switch chassis, remove the top three switch units and unseat the lower three switch units in the chassis. See [“Servicing Switch Units”](#) on page 193.
6. **Remove the required fan modules.**
If the cable you are replacing is in the CMIOU chassis, remove the four left fan modules. See [“Servicing Fan Modules \(CMIOU Chassis\)”](#) on page 183.
7. **Remove of the interconnect assemblies from the front of the affected chassis.**
See [“Servicing Internal Interconnect Assemblies”](#) on page 301, [“Servicing External Interconnect Assemblies”](#) on page 309 (SPARC M7-16), and [“Servicing SP Internal Interconnect Assemblies”](#) on page 289.
8. **Remove the front indicator panel.**
See [“Servicing the Front Indicator Panel”](#) on page 221.
9. **If the cable you are replacing is in the CMIOU chassis, remove the left CMIOU chassis fan cable assembly.**
See [“Servicing a CMIOU Chassis Fan Cable Assembly”](#) on page 211.
10. **Release the Molex connector.**

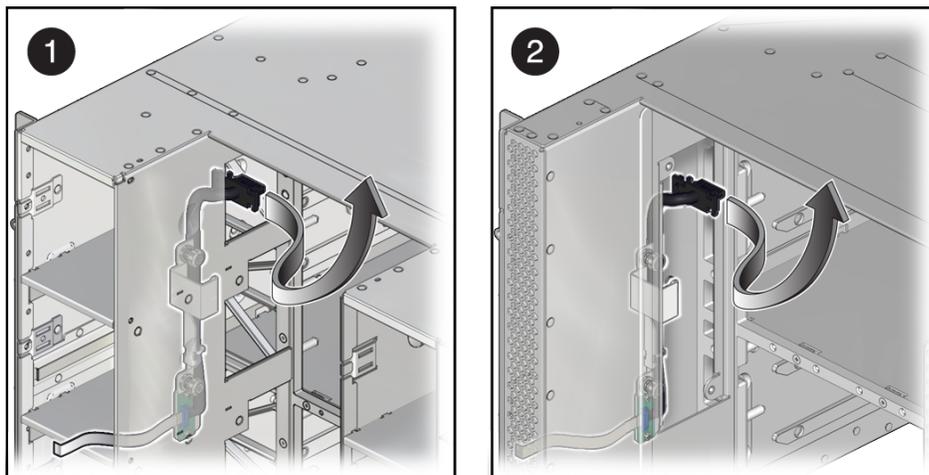
Reach through the hinging access door on the chassis divider floor where the SP tray slides to unlatch the Molex connector.



11. Remove the two captive screws that secure the cable to the chassis.



12. Remove the cable through the opening in the chassis.



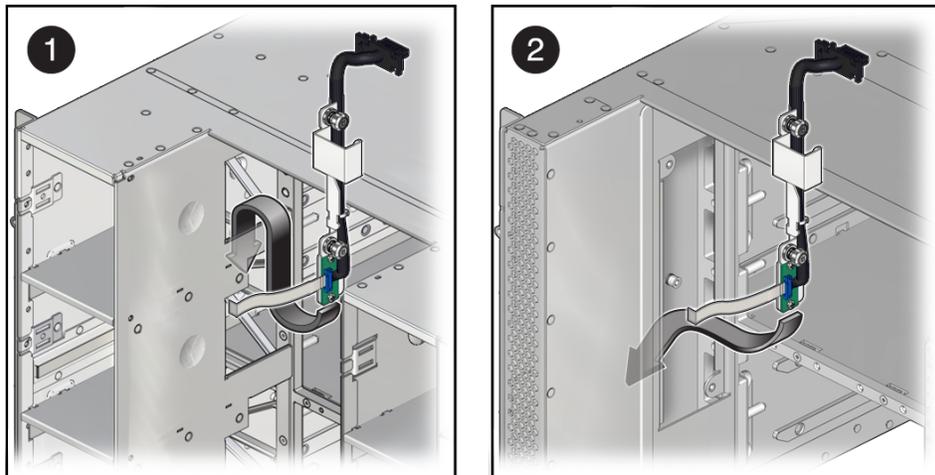
- If the cable you are replacing is in the CMIU chassis, remove the cable through the opening between the fan modules and the CMIU area (panel 1).
- If the cable you are replacing is in the switch chassis, remove the access panel on the left side of the interconnect assembly area, and slide the cable through the opening (panel 2).

Related Information

- [“Install the Front Indicator Panel Cable” on page 236](#)

▼ Install the Front Indicator Panel Cable

1. **Install the cable through the opening in the chassis and secure the Molex connector.**



- If the cable you are replacing is in the CMIOU chassis, from inside the CMIOU area, feed the cable through the area behind the fan module bays (panel 1).
 - If the cable you are replacing is in the switch chassis, feed the cable through the area where the access panel on the left side of the interconnect assembly was removed (panel 2).
2. **Reinstall the two captive screws that secure the cable to the chassis.**
 3. **If the cable you are replacing is in the switch chassis, reinstall the access panel on the left side of the interconnect assembly area.**
 4. **If the cable you are installing is in the CMIOU chassis, reinstall the left CMIOU chassis fan cable assembly.**
See [“Servicing a CMIOU Chassis Fan Cable Assembly”](#) on page 211.
 5. **Reinstall the front indicator panel.**
See [“Servicing the Front Indicator Panel”](#) on page 221.
 6. **Reinstall the interconnect assemblies in the front of the affected chassis.**

Note - You must return interconnect assemblies to their original slots in the server.

See [“Servicing Internal Interconnect Assemblies” on page 301](#), [“Servicing External Interconnect Assemblies” on page 309 \(SPARC M7-16\)](#), and [“Servicing SP Internal Interconnect Assemblies” on page 289](#).

7. Reinstall the removed fan modules.

If the cable you are replacing is in the CMIOU chassis, reinstall the four left fan modules. See [“Servicing Fan Modules \(CMIOU Chassis\)” on page 183](#).

8. Reinstall and reseal the required components from the impacted chassis.

- If the cable you are installing is in the CMIOU chassis, reinstall the top four CMIOUs and reseal the lower four CMIOUs. See [“Servicing CMIOUs” on page 87](#).
- If the cable you are installing is in the switch chassis, reinstall the top three switch units and reseal the lower three switch units. See [“Servicing Switch Units” on page 193](#).

9. Reseat the SP tray and reinstall the SP in the server.

See [“Servicing SP Trays” on page 247](#) and [“Servicing SPs” on page 121](#).

Note - If the SP is configured to synchronize with a network time server using the Network Time Protocol, the Oracle ILOM clock will be reset as soon as the server is powered on and connected to the network.

See [“Install an SP or SPP” on page 140](#).

10. Switch on the appropriate PDU circuit breakers and power on the server.

See [“Returning the Server to Operation” on page 77](#).

11. Verify that the fault has been cleared and the replaced component is operational.

See [“Verify That a Fault Has Been Cleared” on page 58](#).

12. Return the replaced component to Oracle.

See [“Prepare a Component for Return to Oracle” on page 68](#).

Related Information

- [“Remove the Front Indicator Panel Cable” on page 231](#)

Servicing Power Modules

SPARC M8-8 and SPARC M7-8 servers have a single power module that includes six AC power receptacles and the rear indicator panel. For the location of these power modules, see [“CMIOU Chassis Rear Components” on page 25](#).

The SPARC M7-16 server has three power modules: one on each CMIOU chassis that each include six AC power receptacles and a rear indicator panel, and one on the switch chassis that includes four AC power receptacles and the rear indicator panel. For the location of these power modules, see [“CMIOU Chassis Rear Components” on page 25](#) and [“Switch Chassis Rear Components \(SPARC M7-16\)” on page 29](#).



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. Follow antistatic precautions to prevent electrostatic damage. See [“Prevent ESD Damage” on page 65](#).

These topics explain how to service the power modules.

- [“Remove a Power Module” on page 239](#)
- [“Install a Power Module” on page 242](#)

Related Information

- [“Identifying Components” on page 19](#)
- [“Detecting and Managing Faults” on page 39](#)
- [“Preparing for Service” on page 61](#)
- [“Controlling the Server and Domains” on page 71](#)
- [“Understanding Server Configurations and Failover Behavior” on page 83](#)

▼ Remove a Power Module

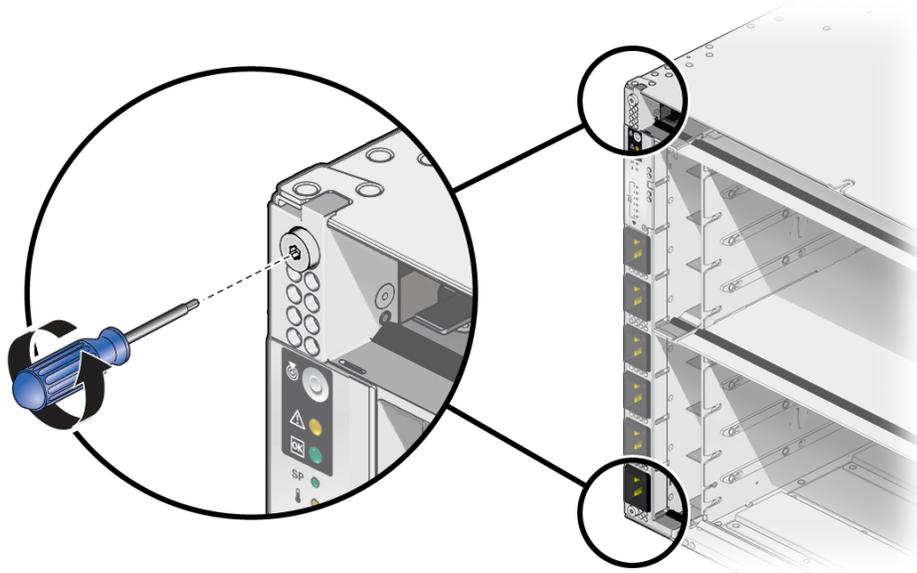
This procedure can be performed only by qualified service personnel.



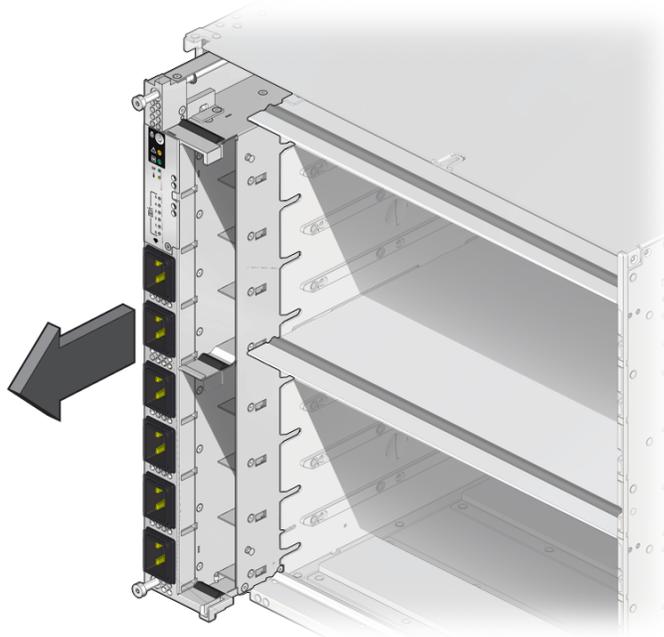
Caution - Remove AC power using the circuit breakers on the appropriate PDU before performing this procedure.

- 1. Determine which power module requires service.**
See [“Identify Faulted Components”](#) on page 40.
- 2. Take the necessary ESD precautions.**
See [“Prevent ESD Damage”](#) on page 65.
- 3. Power down the server and switch off the appropriate PDU circuit breakers.**
See [“Removing Power From the Server or Domain”](#) on page 73.
- 4. Locate the power module at the rear of the server.**
See [“CMIOU Chassis Rear Components”](#) on page 25 or [“Switch Chassis Rear Components \(SPARC M7-16\)”](#) on page 29.
- 5. Complete the following steps to gain access to the power module:**
 - a. Remove the following components from the impacted chassis.**
See [“Servicing CMIOUs”](#) on page 87 or [“Servicing Switch Units”](#) on page 193.
 - b. Remove the SPs and SP tray from the impacted chassis.**
See [“Servicing SPs”](#) on page 121 and [“Servicing SP Trays”](#) on page 247.
 - c. Unseat the power supplies in the impacted chassis.**
See [“Servicing Power Supplies”](#) on page 169.
 - d. Remove all PDECBS from the impacted chassis.**
See [“Servicing PDECBS”](#) on page 203.

6. Use a T20 driver to loosen two captive screws from the top and bottom of the power module to free it from the chassis.



7. Slide the power module out of the server.



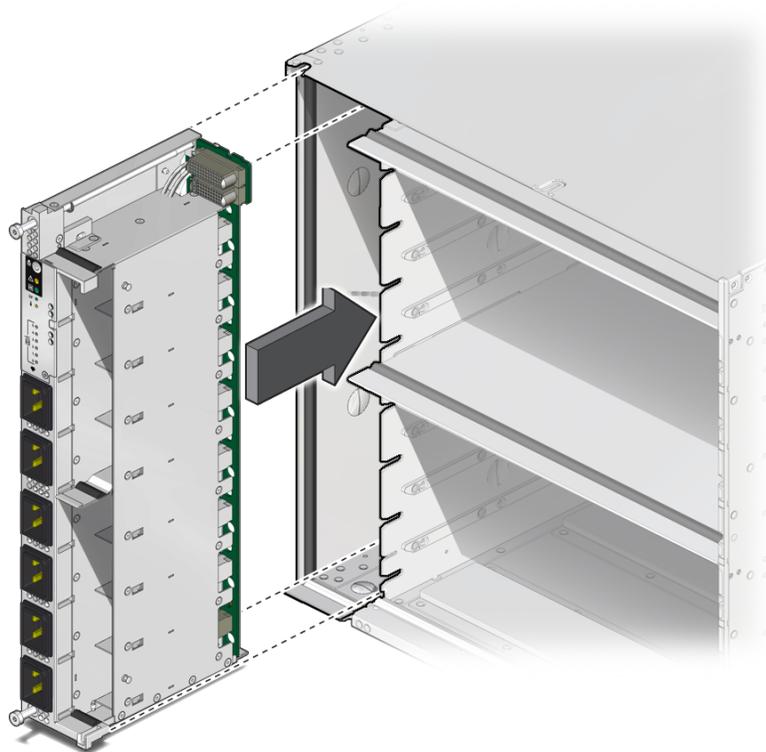
Related Information

- [“Install a Power Module” on page 242](#)

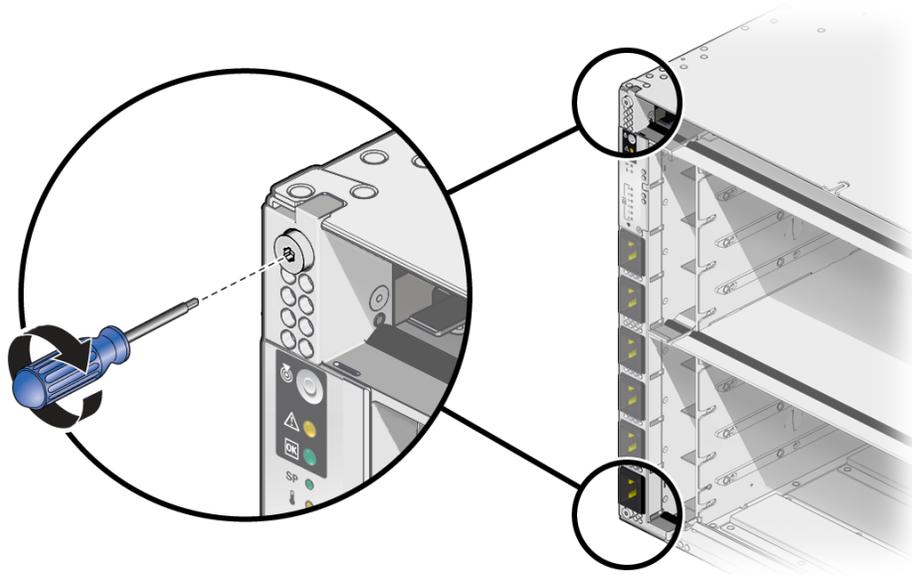
▼ Install a Power Module

1. Slide the power module part way in and position it with the slot in the side wall.

When the module is about 1 inch from being seated in the chassis, locate the spool standoff on the left side and the slot in the chassis side wall. Press the side wall while sliding the module into the chassis to ensure that the spool slides properly into the chassis slot.



2. Use a T20 driver to tighten two captive screws on the top and bottom of the power module to secure it to the chassis.



3. Complete the following steps to reinstall components you removed to service the power module:
 - a. Reinstall all PDECBS.
See [“Servicing PDECBS” on page 203.](#)
 - b. Reseat the power supplies.
See [“Servicing Power Supplies” on page 169.](#)
 - c. Reinstall the SP tray and the SPs.
See [“Servicing SP Trays” on page 247](#) and [“Servicing SPs” on page 121.](#)
 - d. Reinstall the following components.
See [“Servicing CMIOUs” on page 87](#) or [“Servicing Switch Units” on page 193.](#)
4. Return the server to operation.

See [“Returning the Server to Operation”](#) on page 77.

5. Verify that the fault has been cleared and the replaced component is operational.

See [“Verify That a Fault Has Been Cleared”](#) on page 58.

6. Return the replaced component to Oracle.

See [“Prepare a Component for Return to Oracle”](#) on page 68.

Related Information

- [“Remove a Power Module”](#) on page 239

Servicing SP Trays

There is one SP tray in each chassis. Each SP tray contains two SPs or SPPs. For the location of the SP trays, see [“CMIOU Chassis Rear Components” on page 25](#) and [“Switch Chassis Rear Components \(SPARC M7-16\)” on page 29](#).



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. Follow antistatic precautions to prevent electrostatic damage. See [“Prevent ESD Damage” on page 65](#).

These topics explain how to service an SP tray.

- [“Unseat or Remove an SP Tray” on page 247](#)
- [“Reseat or Install an SP Tray” on page 250](#)

Related Information

- [“Identifying Components” on page 19](#)
- [“Detecting and Managing Faults” on page 39](#)
- [“Preparing for Service” on page 61](#)
- [“Controlling the Server and Domains” on page 71](#)
- [“Understanding Server Configurations and Failover Behavior” on page 83](#)

▼ Unseat or Remove an SP Tray

This procedure can be performed only by qualified service personnel.



Caution - Remove AC power using the circuit breakers on the appropriate PDU before performing this procedure.

You must unseat an SP tray before you can remove the interconnects and before you can remove the SP tray.

1. **Take the necessary ESD precautions.**

See “Prevent ESD Damage” on page 65.

2. Locate the SP tray in the server.

See “CMIOU Chassis Rear Components” on page 25 or “Switch Chassis Rear Components (SPARC M7-16)” on page 29.

3. Power off the server and switch off the appropriate PDU circuit breakers.

See “Removing Power From the Server or Domain” on page 73.

4. Label and disconnect the cables attached to the NET MGT and SER MGT ports.

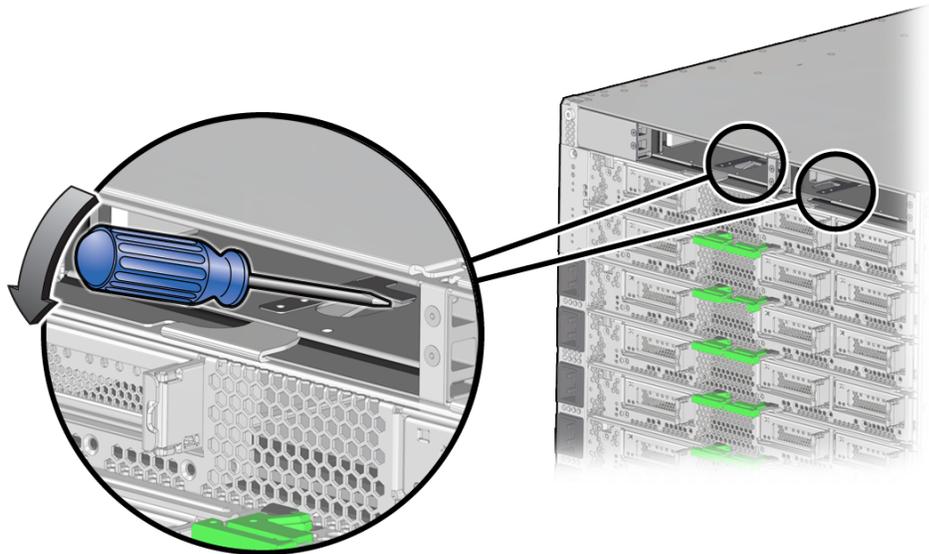
See “CMIOU Chassis Rear Components” on page 25, “Switch Chassis Rear Components (SPARC M7-16)” on page 29, and “SER MGT and NET MGT Port Locations and Numbering” on page 125.

5. Remove the SPs to gain access to the SP tray ejector locking latches.

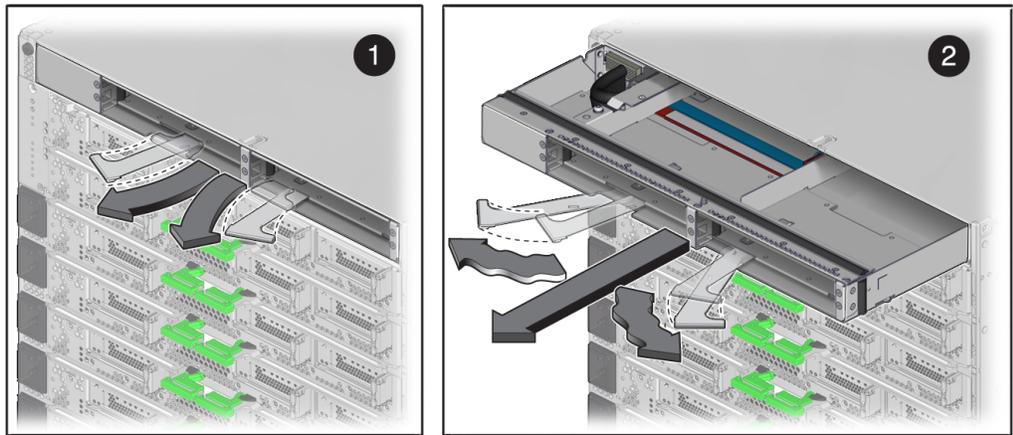
See “Servicing SPs” on page 121.

6. Press the ejector latches to release the SP tray.

Using a flat-blade screwdriver, press up on the small metal latch inside the recess of the tray to release the tray from the chassis. Repeat this step for the second latch.



7. Unseat the SP tray.



a. Disengage the SP tray (panel 1).

Open and squeeze the ejector latches together.

b. Carefully slide the tray out towards you and press the levers back together, toward the center of the SP tray (panel 2).

This will keep the levers from getting damaged while you are servicing the server.

8. Determine your next step.

a. If you are removing the SP tray, pull the ejector latches out and slide the SP tray completely out of the server.

b. If you are unseating the SP tray to service another component, refer to the service procedures for the component.

Component	Link
Interconnect assemblies	“Servicing Internal Interconnect Assemblies” on page 301
	“Servicing External Interconnect Assemblies” on page 309
	“Servicing SP Internal Interconnect Assemblies” on page 289

Related Information

- [“Reseat or Install an SP Tray” on page 250](#)
- [“Servicing SPs” on page 121](#)

▼ Reseat or Install an SP Tray

- 1. Before installing a new SP tray into an empty bay, open the ejector latches so that they are fully open.**
- 2. Slide the SP tray into its slot in the server until the ejector latches begin to engage.**

Ensure that the tray aligns with the alignment block on the left side of the chassis and the metal tab on the right side of the chassis before latching the tray in place. If you do not properly align the tray, the latch will not engage.
- 3. Press the ejector latches back together toward the center of the SP tray, and then press the latches firmly against the SP tray to fully seat the tray back into the server.**

The latches should click into place when the tray is fully seated in the server.
- 4. Reinstall the SPs you removed from the SP tray.**

See [“Servicing SPs” on page 121](#).
- 5. Reinstall the cables you removed from the NET MGT and SER MGT ports.**

Ensure that you install the cables in the same ports from which you removed them.
- 6. Switch on the appropriate PDU circuit breakers and power on the server.**

See [“Returning the Server to Operation” on page 77](#).
- 7. Verify that the fault has been cleared and the replaced component is operational.**

See [“Verify That a Fault Has Been Cleared” on page 58](#).
- 8. Return the replaced component to Oracle.**

See [“Prepare a Component for Return to Oracle” on page 68](#).

Related Information

- [“Unseat or Remove an SP Tray” on page 247](#)
- [“Servicing SPs” on page 121](#)

Servicing Batteries

A single battery is installed in each SP and SPP in the server.



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. Follow antistatic precautions to prevent electrostatic damage. See [“Prevent ESD Damage” on page 65](#).

These topics explain how to service batteries in the server.

Step	Description	Links
1.	Remove the SP or SPP so that you can replace the battery.	“Servicing SPs” on page 121
2.	Replace the battery.	“Remove the Battery” on page 251 “Install the Battery” on page 254
3.	Install the SP or SPP after you have replaced the battery.	“Install an SP or SPP” on page 140

Related Information

- [“Identifying Components” on page 19](#)
- [“Detecting and Managing Faults” on page 39](#)
- [“Preparing for Service” on page 61](#)
- [“Controlling the Server and Domains” on page 71](#)
- [“Understanding Server Configurations and Failover Behavior” on page 83](#)

▼ Remove the Battery

This procedure can be performed only by qualified service personnel after removing the SP or SPP that contains it. You do not need to power down the server before performing this procedure, but you do need to ensure that the SP or SPP that you remove is not the managing system or DCU activity.

1. Determine which battery requires service.

See [“Identify Faulted Components”](#) on page 40 and [“SP General Status LEDs”](#) on page 124.

2. Take the necessary ESD precautions.

See [“Prevent ESD Damage”](#) on page 65.

3. Prepare the component that contains the battery for removal.

Preparing an SP or SPP for removal involves ensuring that the component is not managing system or DCU activity, preparing the appropriate SPM for removal, and preparing the SP or SPP for removal. You must perform all of these steps before removing an SP or SPP to service the battery.

See [“Prepare to Remove an SP”](#) on page 129 or [“Prepare to Remove an SPP \(SPARC M7-16\)”](#) on page 133

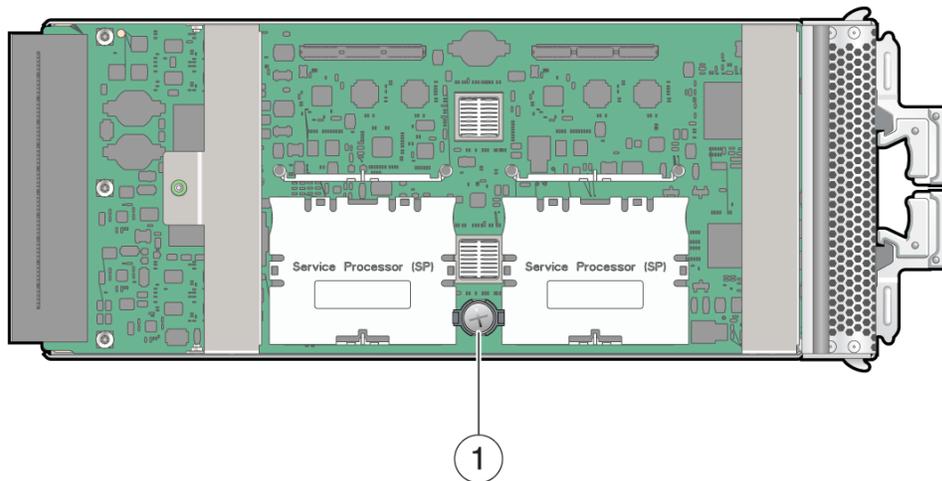
4. Remove the component that contains the faulty battery.

See [“Servicing SPs”](#) on page 121.

5. Release the thumb screw and slide the top cover of the SP to the rear.

6. Lift the top cover off of the SP.

7. Locate the system battery.



No.	Description
1	Battery location

8. **Using a flat-blade screwdriver, lift the battery out of the holder.**

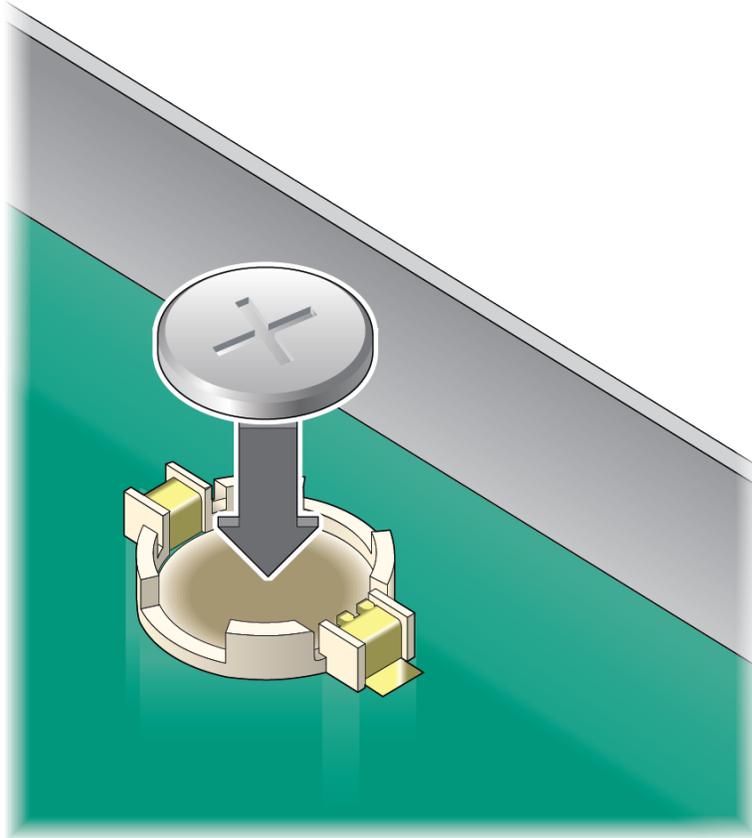
Note - Dispose of the battery properly in accordance with local regulations.

Related Information

- [“Install the Battery” on page 254](#)

▼ Install the Battery

1. Insert the new battery with the positive side facing out.



2. **Install the SP back into the server.**
See [“Install an SP or SPP” on page 140.](#)
If the SP is configured to synchronize with a network time server using the Network Time Protocol, the Oracle ILOM clock will be reset as soon as the server is powered on and connected to the network.
3. **Verify that the fault has been cleared and the replaced component is operational.**

See [“Verify That a Fault Has Been Cleared”](#) on page 58.

Related Information

- [“Remove the Battery”](#) on page 251
- Oracle ILOM documentation (<http://www.oracle.com/goto/ilom/docs>)

Servicing PDUs

There are two PDUs in the rack that contains the server. From the rear of the server, PDU-A is on the left side and PDU-B is on the right side.



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. Follow antistatic precautions to prevent electrostatic damage. See [“Prevent ESD Damage” on page 65](#).

These topics explain how to service PDUs.

Step	Description	Links
1.	Learn about PDU configurations and the AC inputs assigned to each PDU.	“PDU and AC Connections” on page 257
2.	Prepare to remove a PDU.	“Prepare a PDU for Removal” on page 258
3.	Replace a PDU.	“Remove a PDU” on page 260 “Install a PDU” on page 266

Related Information

- [“Identifying Components” on page 19](#)
- [“Detecting and Managing Faults” on page 39](#)
- [“Preparing for Service” on page 61](#)
- [“Component Service Task Reference” on page 36](#)
- [“Returning the Server to Operation” on page 77](#)

PDU and AC Connections

These servers receive power from six PDU power cords, which provide power to the two PDUs in the rack. To ensure the redundant operation of the power supplies, the server must receive

power from two separate power grids, with three power cords receiving power from one power grid and the remaining three PDU power cords receiving power from a second power grid. For example, in a SPARC M8-8 or SPARC M7-8 server, AC inputs labeled AC0, AC2, and AC4 are connected to one PDU, and AC inputs labeled AC1, AC3, and AC5 are connected to the other PDU. All six PDU power cords must be connected.

Refer to the rack documentation at <http://www.oracle.com/goto/sunrackii/docs> for more information about the PDUs and the racks used for these servers. Refer to the [SPARC M8 and SPARC M7 Servers Installation Guide](#) for information about PDU and power cord specifications.

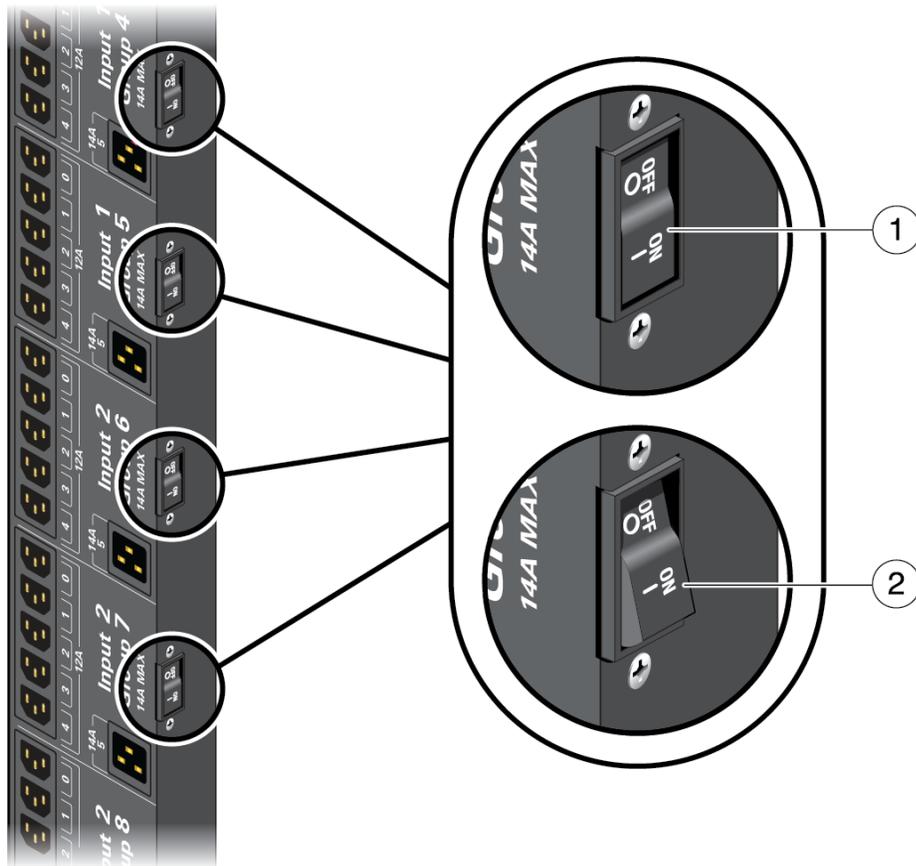
▼ Prepare a PDU for Removal



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. When you unpack the replacement PDU, open the package on a grounded antistatic mat. Always use an antistatic wrist strap for hardware replacements.

- 1. Familiarize yourself with all power specifications and requirements.**
Refer to the [SPARC M8 and SPARC M7 Servers Installation Guide](#).
- 2. Determine which PDU requires service.**
See “[Identify Faulted Components](#)” on page 40.
- 3. (Omit for factory-configured systems when the PDU will be hot serviced) Ensure that you have powered off all hosts and the server.**
See “[Power Off the Server or Domain \(Oracle ILOM\)](#)” on page 74.
- 4. Disconnect the PDU input power cords that connect the faulted PDU to the facility AC power source.**
- 5. Unpack the replacement PDU on a grounded antistatic mat, open the rear server door, and attach an antistatic wrist strap.**
See “[Prevent ESD Damage](#)” on page 65.

6. Confirm that all PDU circuit breakers on the replacement PDU are switched off.



No.	Description
1	Circuit breaker switch lies flat in the On position.
2	Circuit breaker switch is raised in the Off position.

Related Information

- [“Remove a PDU” on page 260](#)
- [“Install a PDU” on page 266](#)

▼ Remove a PDU

This procedure can be performed only by qualified service personnel after powering off the server.



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. When you unpack the replacement PDU, open the package on a grounded antistatic mat. Always use an antistatic wrist strap for hardware replacements.

1. Ensure that you have prepared the faulty PDU for removal.

See [“Prepare a PDU for Removal” on page 258.](#)

2. Shut down and power off any ancillary equipment installed in the rack.

3. From the rear of the server, switch off all of the PDU circuit breakers in the rack in the following sequence.

Press down on each of the Off (0) toggle switch to power off the PDU. These circuit breakers are at the rear of the rack cabinet.

- For SPARC M8-8 or SPARC M7-8 server, right PDU (PDU-B):
 - If one SPARC M8-8 or SPARC M7-8 server is installed: R8, R7, R6
 - If two SPARC M8-8 or SPARC M7-8 servers are installed: R8, R7, R6; R5, R4, R3
 - If three SPARC M8-8 or SPARC M7-8 servers are installed: R8, R7, R6; R5, R4, R3; R2, R1, R0
- For SPARC M8-8 or SPARC M7-8 server, left PDU (PDU-A):
 - If one SPARC M8-8 or SPARC M7-8 is installed: L2, L1, L0
 - If two SPARC M8-8 or SPARC M7-8 servers are installed: L2, L1, L0; L5, L4, L3
 - If three SPARC M8-8 or SPARC M7-8 servers are installed: L2, L1, L0; L5, L4, L3; L8, L7, L6
- For SPARC M7-16 servers, right PDU (PDU-B):
 - R4, R5
 - R0, R1, R2
 - R6, R7, R8
- For SPARC M7-16 servers, left PDU (PDU-A):
 - L5, L4
 - L8, L7, L6

- L2, L1, L0

where R indicates the right PDU from the rear of the server, L indicates the left PDU from the rear of the server, and the number represents the PDU group number.

Note - In configurations where additional equipment is installed in the rack, and you do not want to power down the additional equipment, remove power by unplugging the AC input power cords at the SPARC M8-8 or SPARC M7-8 AC inlets. First, unplug the power cords at the even numbered AC inlets 0, 2, 4. Next, unplug the power cords at the odd numbered AC inlets 1, 3, 5.



Caution - Because standby power is always present in the server, you must switch off the circuit breakers on the PDUs before servicing any component that requires the server to be powered off.

4. **Switch off the facility circuit breakers to the PDU.**



Caution - Verify that you are only de-energizing power to the faulty PDU.

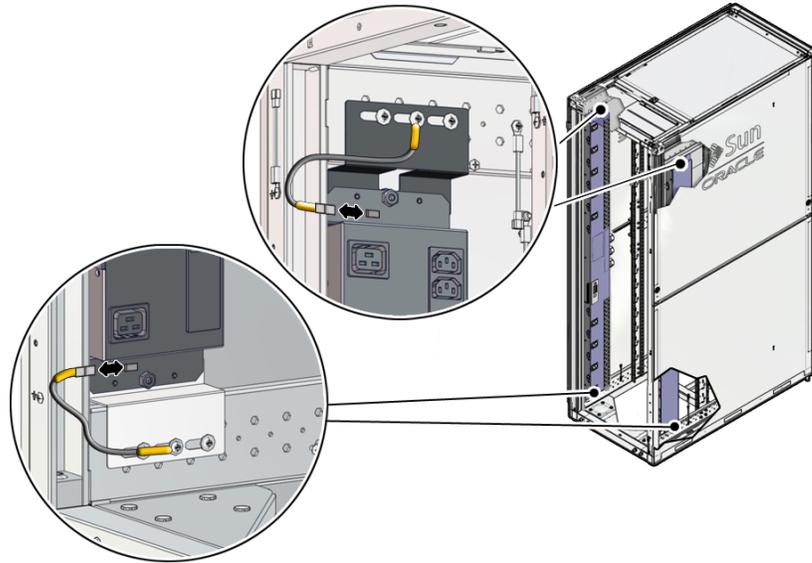
5. **Disconnect any power jumper cords connected to the faulty PDU from equipment in the rack.**

Note where these jumper cords were attached to the PDU. You will need to reinstall the jumper cords in the same locations on the new PDU.

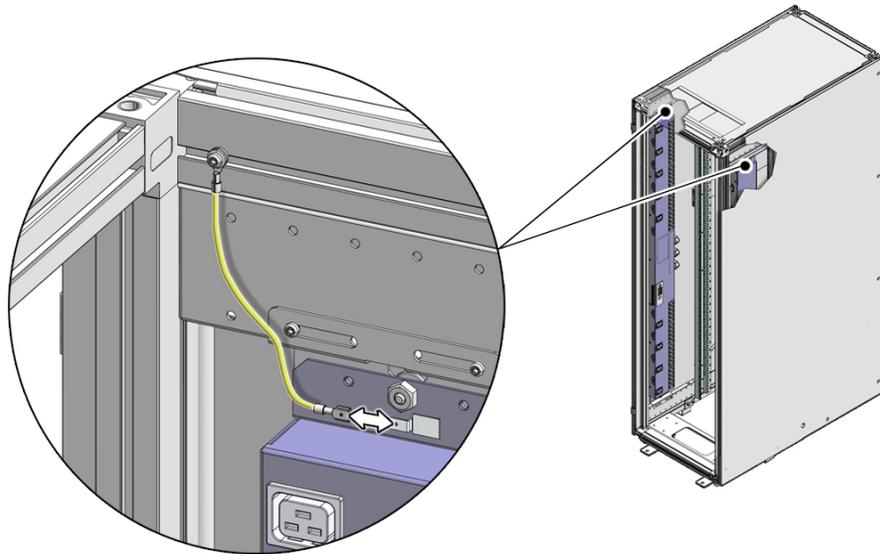
6. **Cut any tie-wraps securing the faulty PDU power input lead cords to the tie-down brackets.**
7. **Disconnect the grounding straps connected to the faulty PDU.**

The PDU grounding straps are connected in different locations in a Sun Rack II and an Oracle Rack Cabinet 1242.

- On an Oracle Rack Cabinet 1242, disconnect the two grounding straps connected at the top and the bottom of the PDU.

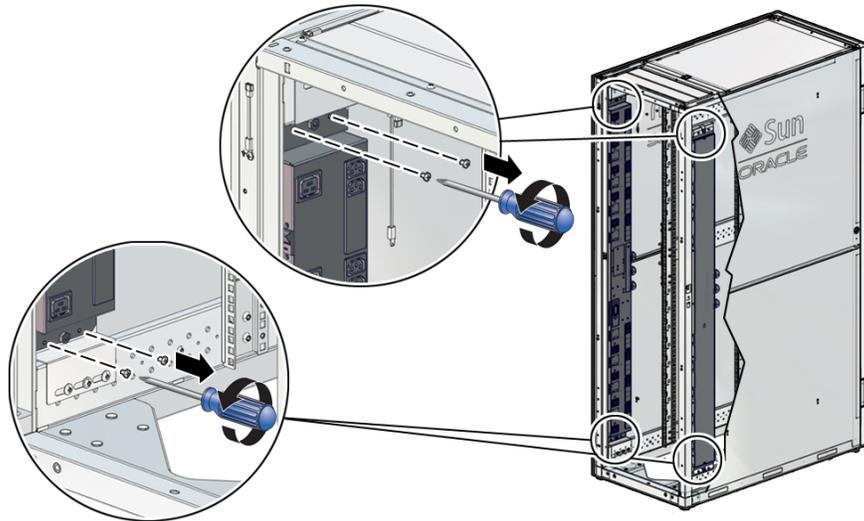


- On a Sun Rack II, disconnect the grounding strap connecting the top of the faulty PDU to the rack.



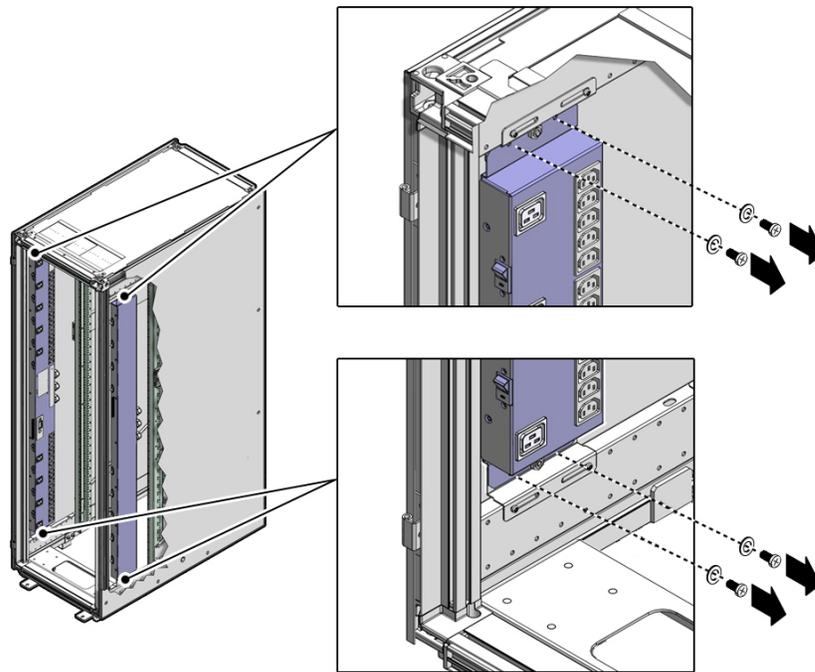
8. Remove the screws and washers securing the PDU to the mounting brackets.

- On an Oracle Rack Cabinet 1242, use a T25 wrench key to remove the four M5 screws securing the faulty PDU to the mounting brackets.



- On a Sun Rack II, use a T25 wrench key to remove the four M5 screws and washers securing the faulty PDU to the mounting brackets.

These screws secure the PDUs for shipping purposes. You might have already removed these screws when you installed the rack at the installation site.



9. Carefully lift the faulty PDU up and off the mounting brackets.

Remove the PDU from the rack and place it on a clean work table.

Related Information

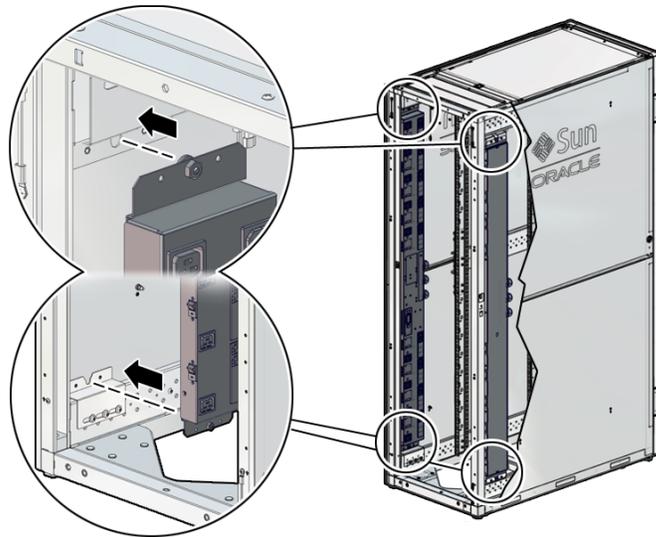
- [“Prepare a PDU for Removal” on page 258](#)
- [“Install a PDU” on page 266](#)

▼ Install a PDU

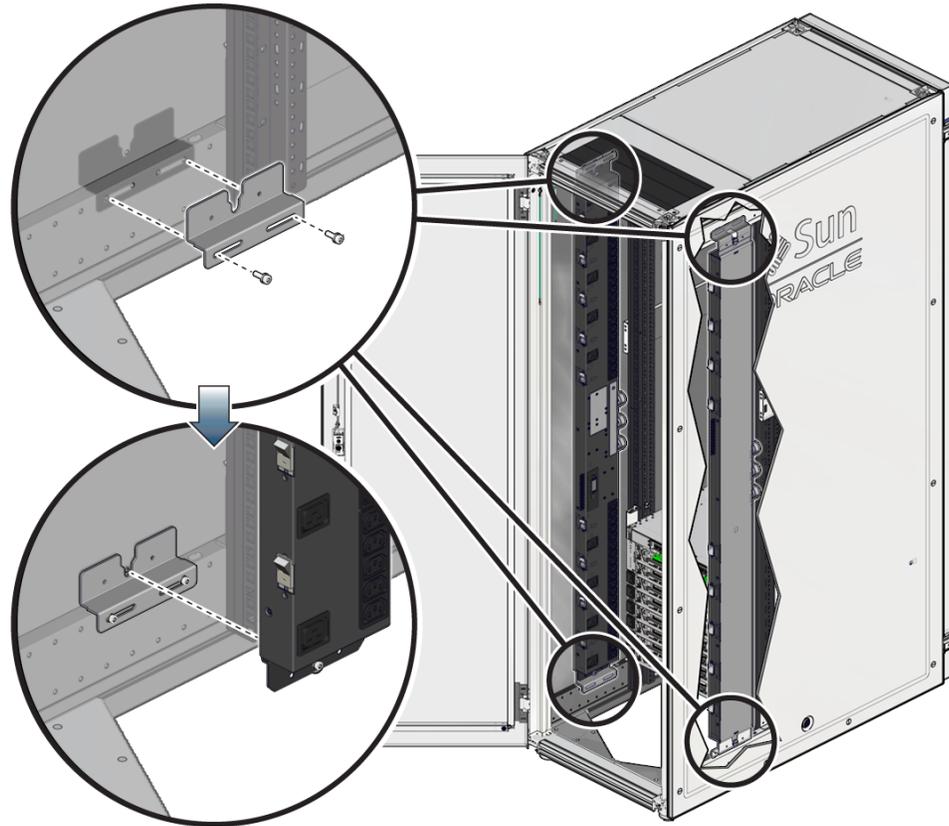
Note - Always install the replacement PDU in the same location as the original PDU. If installed closer to the center of the rack, the PDU will interfere with the installed components. If installed nearer to the rear of the rack, the PDU will interfere with the cable management hooks and you will not be able to access the PDU circuit breakers.

1. **Lift up the replacement PDU and, while ensuring that the circuit breakers are facing the rear of the rack, carefully set the replacement PDU's standoff bolts into the top and bottom bracket keyhole slots.**

Installing the PDU into an Oracle Rack Cabinet 1242:



Installing the PDU into a Sun Rack II:



Caution - You need two people to lift and secure the PDU to the rack.

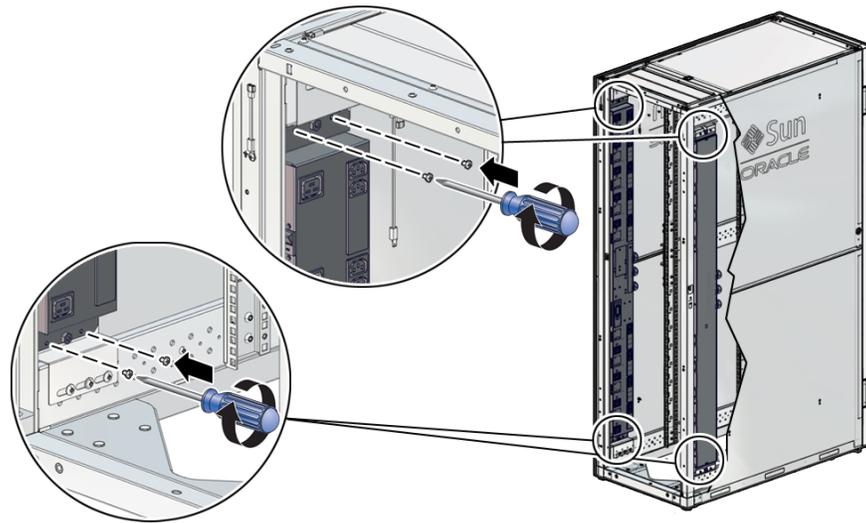
The PDU is held in the rack by gravity, with the standoff bolts resting in the mounting brackets' keyhole slots.

Note - The circuit breakers must face the rear of the rack so that you can reset a breaker if one trips.

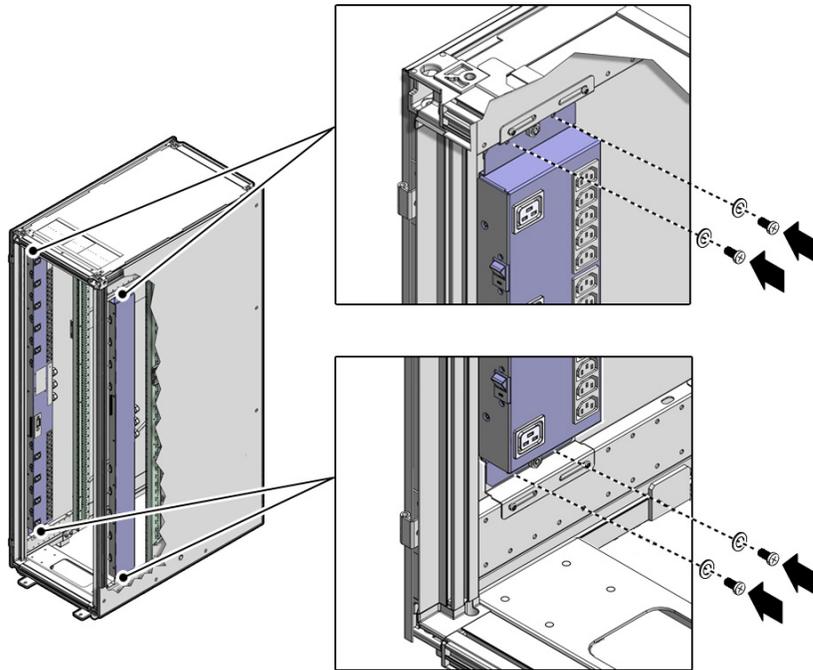
2. **Secure the PDU to the mounting brackets.**

For extra durability, secure the PDU to the mounting brackets using the shipping screws and washers (two screws and washers per bracket). If you plan to ship the rack to another location, you must secure the PDU using these shipping screws.

- **On an Oracle Rack Cabinet 1242, use a T25 Torx wrench and four M5 shipping screws to secure the replacement PDU to the mounting brackets.**



- On a Sun Rack II, use a T25 Torx wrench and four M5 shipping screws and washers to secure the replacement PDU to the mounting brackets.



3. Route the power input lead cords between the rear RETMA rail and side panel.

The replacement PDU has three power input lead cords, which you must route between the side panel and the rear RETMA rail. Route the power input lead cords either down through the bottom of the rack or up through the top of the rack, depending on where you plan to connect them to the main power source. If you are routing the cables through the bottom of the rack, refer to your rack documentation for the dimensions of the floor cutout.



Caution - Never twist, kink, or tightly bend a power input lead.

4. Using tie-wraps, secure the replacement PDU input lead cables to the cable routing brackets.

5. Ensure that you have switched off every PDU circuit breaker on the replacement PDU.

See [Step 6](#) of “[Prepare a PDU for Removal](#)” on [page 258](#).

6. Locate the replacement PDU input lead cord connectors.

Depending on how you routed the cords when you installed the PDUs, route these cords either out the bottom of the rack or out the top.

7. Connect the replacement PDU power lead cords to the facility AC power source.

If your rack contains two PDUs, ensure that each PDU is connected to different AC power source circuits, and reinstall the jumper cords in the same locations from which you removed them. For information about the installation locations for the jumper cords, refer to the [SPARC M8 and SPARC M7 Servers Installation Guide](#).

8. Turn breakers on in the following sequence.

- For SPARC M8-8 or SPARC M7-8 server, right PDU (PDU-B):
 - If one SPARC M8-8 or SPARC M7-8 server is installed: R8, R7, R6
 - If two SPARC M8-8 or SPARC M7-8 servers are installed: R8, R7, R6; R5, R4, R3
 - If three SPARC M8-8 or SPARC M7-8 servers are installed: R8, R7, R6; R5, R4, R3; R2, R1, R0
- For SPARC M8-8 or SPARC M7-8 server, left PDU (PDU-A):
 - If one SPARC M7-8 server is installed: L2, L1, L0
 - If two SPARC M8-8 or SPARC M7-8 servers are installed: L2, L1, L0; L5, L4, L3
 - If three SPARC M8-8 or SPARC M7-8 servers are installed: L2, L1, L0; L5, L4, L3; L8, L7, L6
- For a SPARC M7-16 server, right PDU (PDU-B):
 - R4, R5
 - R0, R1, R2
 - R6, R7, R8
- For a SPARC M7-16 server, left PDU (PDU-A):
 - L5, L4
 - L8, L7, L6
 - L2, L1, L0

where R indicates the right PDU from the rear of the server (PDU B), L indicates the left PDU from the rear of the server (PDU A), and the number represents the PDU group number.

Note - As soon as PDU circuit breakers are switched on, standby power is applied, and the SP boots.

See [“Switch on PDU Circuit Breakers” on page 77](#) for the order to switch the breakers.

9. Restart the server.

-> `start /System`

10. Return the replaced component to Oracle.

See [“Prepare a Component for Return to Oracle” on page 68](#).

Related Information

- [“Remove a PDU” on page 260](#)
- [“Switch on PDU Circuit Breakers” on page 77](#)

Servicing the CMIOU Chassis

SPARC M8-8 and SPARC M7-8 servers each have a single CMIOU chassis. For the location of the chassis, see [“Server Front Components \(SPARC M8-8 and SPARC M7-8 Servers\)”](#) on page 20.

SPARC M7-16 servers have two CMIOU chassis and a single switch chassis. For the locations of these chassis, see [“Server Front Components \(SPARC M7-16\)”](#) on page 22.

The steps involved in replacing either of these chassis are the same.



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. Follow antistatic precautions to prevent electrostatic damage. See [“Prevent ESD Damage”](#) on page 65.

These topics explain how to service the CMIOU chassis.

- [“Remove a CMIOU Chassis”](#) on page 273
- [“Install a CMIOU Chassis”](#) on page 279

Related Information

- [“Identifying Components”](#) on page 19
- [“Detecting and Managing Faults”](#) on page 39
- [“Preparing for Service”](#) on page 61
- [“Controlling the Server and Domains”](#) on page 71
- [“Understanding Server Configurations and Failover Behavior”](#) on page 83

▼ Remove a CMIOU Chassis

This procedure can be performed only by qualified service personnel. Remove AC power using the circuit breakers on the appropriate PDU before performing this procedure.

1. **Take the necessary ESD precautions.**
See [“Prevent ESD Damage”](#) on page 65.
2. **Power off the server and switch off the appropriate PDU circuit breakers.**
See [“Removing Power From the Server or Domain”](#) on page 73.
3. **At the front of the server, remove the power supplies.**
See [“Servicing Power Supplies”](#) on page 169.
4. **At the rear of the server, remove all of these components.**

Component	Link
Cables	Ensure that you label the cables.
SPs	“Servicing SPs” on page 121
SP tray	“Servicing SP Trays” on page 247
Fan modules (SPARC M7-16)	“Servicing Fan Modules (Switch Chassis)” on page 187
CMIUs	“Servicing CMIUs” on page 87
Switch units (SPARC M7-16)	“Servicing Switch Units” on page 193
PDECBS	“Servicing PDECBS” on page 203
Power modules	“Servicing Power Modules” on page 239

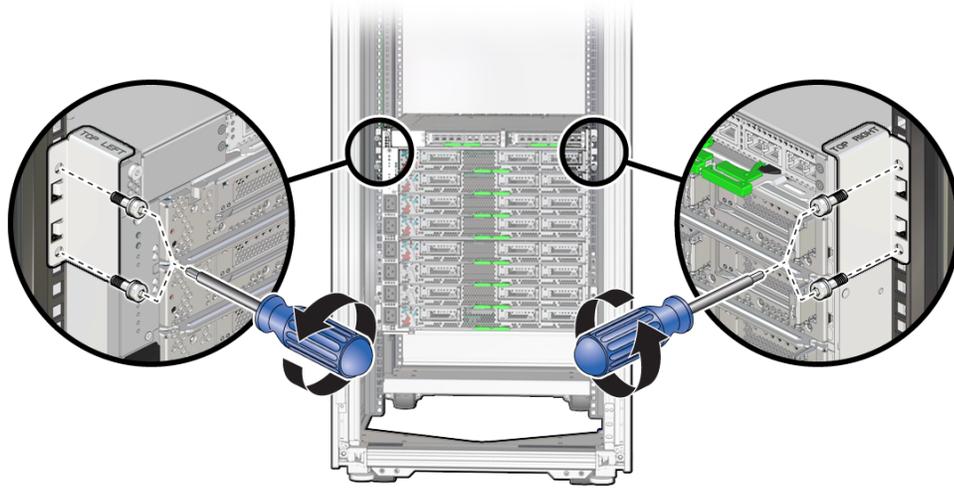


Caution - Do not attempt to remove the chassis alone without the aide of another person or a mechanical lift.

5. **At the front of the server, remove all of these components:**

Component	Link
Interconnects	“Servicing Internal Interconnect Assemblies” on page 301 (SPARC M8-8 and SPARC M7-8)
	“Servicing External Interconnect Assemblies” on page 309 (SPARC M7-16)
	“Servicing SP Internal Interconnect Assemblies” on page 289
Fan modules	“Servicing Fan Modules (CMIU Chassis)” on page 183

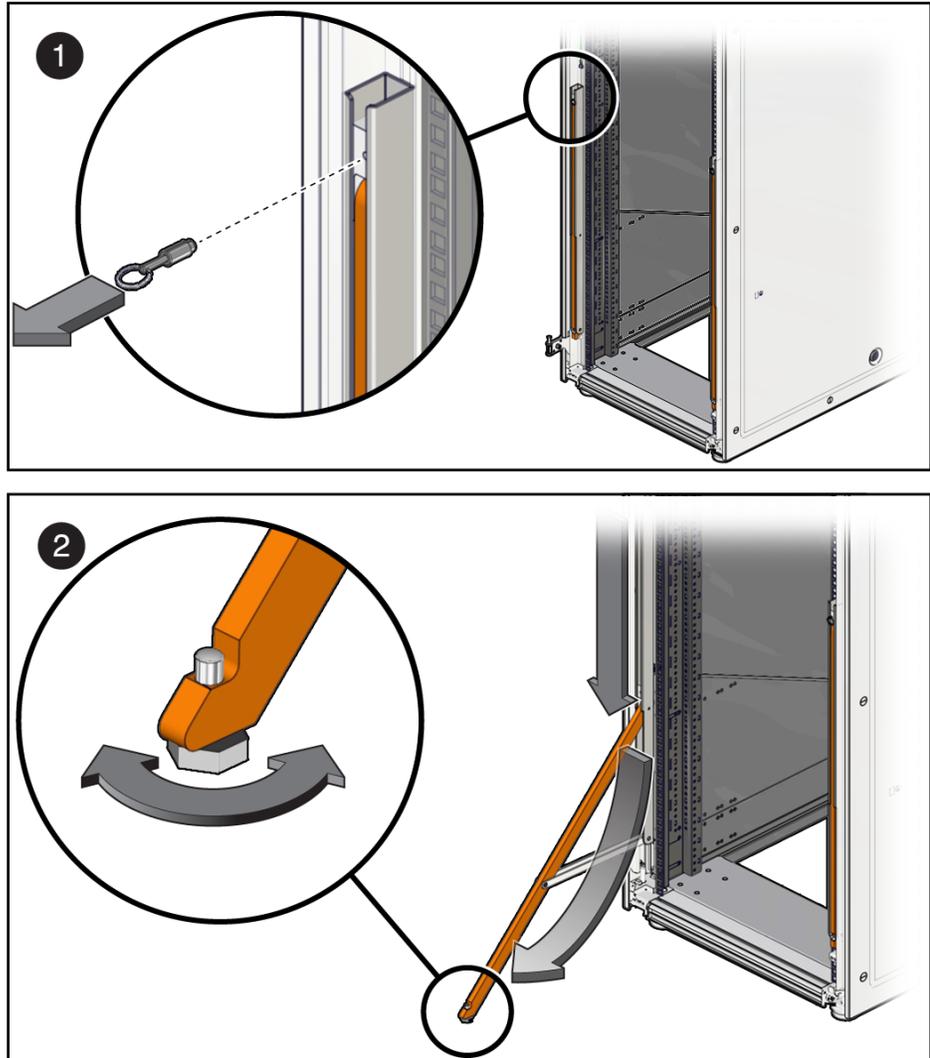
6. From the rear of the chassis, remove the top hold-down brackets.



7. From the front of the server, stabilize the rack using all anti-tilt mechanisms provided.

The following steps describe how to stabilize the Sun Rack II 1242 and the Oracle Rack Cabinet 1242. If you installed a stand-alone server in your own rack, refer to the rack documentation for instructions on stabilizing the rack.

- On a Sun Rack II, deploy the anti-tilt legs.

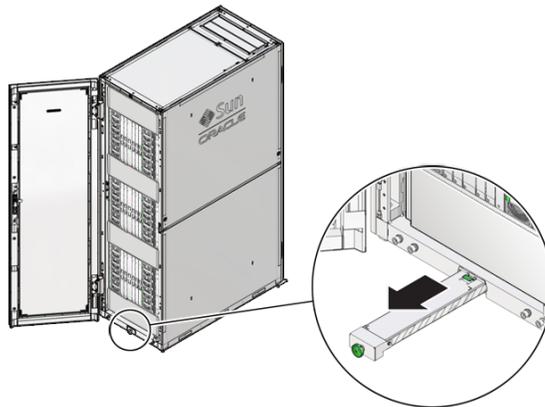


- a. **Pull the pin to release the anti-tilt leg while pulling the leg from the bottom (panel 1).**
- b. **Loosen the leveling foot until it makes solid contact with the ground (panel 2).**
- c. **Repeat these steps for the second leg.**
Both legs must be deployed.

■ **On an Oracle Rack Cabinet 1242, extend the anti-tilt bar.**

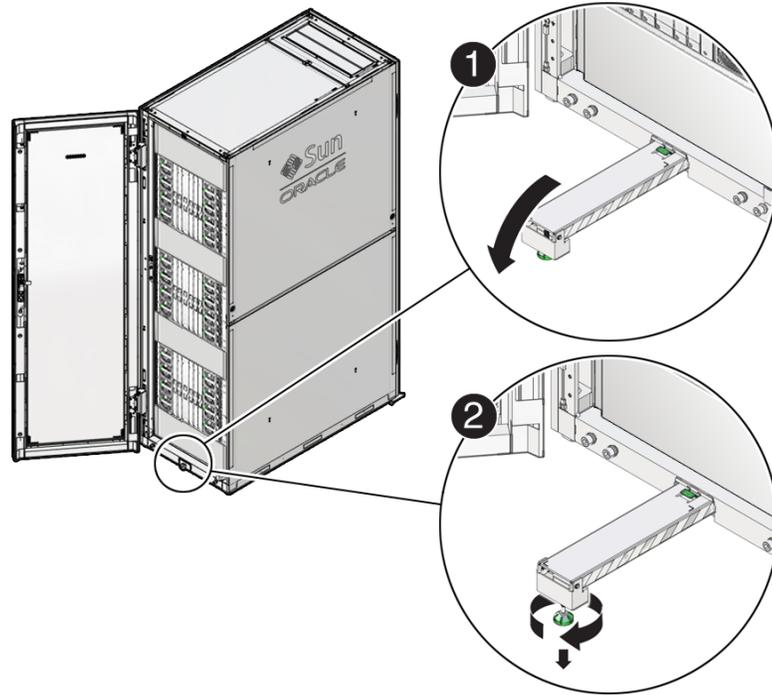
Refer to the label inside the rack for instructions on extending the anti-tilt bar.

- a. **Pull the anti-tilt bar out of the rack to the fully extended position.**



- b. **Rotate the foot of the anti-tilt bar so that it is perpendicular to the floor.**

Adjust the height of the foot so that it rests securely on the floor.



8. Determine your next step:
 - If you have another person to assist you, go to [Step 10](#).
 - If you are alone, go to [Step 9](#).
9. Place a mechanical lift under the chassis, and remove the screws that fasten it to the rack.
10. Remove the chassis from the rack, and place it on an appropriate surface.

Related Information

- [“Install a CMIOU Chassis” on page 279](#)
- [“Servicing the Switch Chassis” on page 281](#)

▼ Install a CMIOU Chassis

1. **If you have not already done so, remove the faulty CMIOU chassis.**
See [“Remove a CMIOU Chassis” on page 273](#).
2. **Determine your next step:**
 - **If you have another person to assist you, go to [Step 4](#).**
 - **If you are alone, go to [Step 3](#).**
3. **Place the chassis on a mechanical lift.**
4. **Install the chassis into the rack and secure the chassis with the five screws that were removed.**
5. **At the front of the server, install these components.**

Component	Link
Interconnects	“Servicing Internal Interconnect Assemblies” on page 301
	“Servicing External Interconnect Assemblies” on page 309
	“Servicing SP Internal Interconnect Assemblies” on page 289
Fan modules	“Servicing Fan Modules (CMIOU Chassis)” on page 183

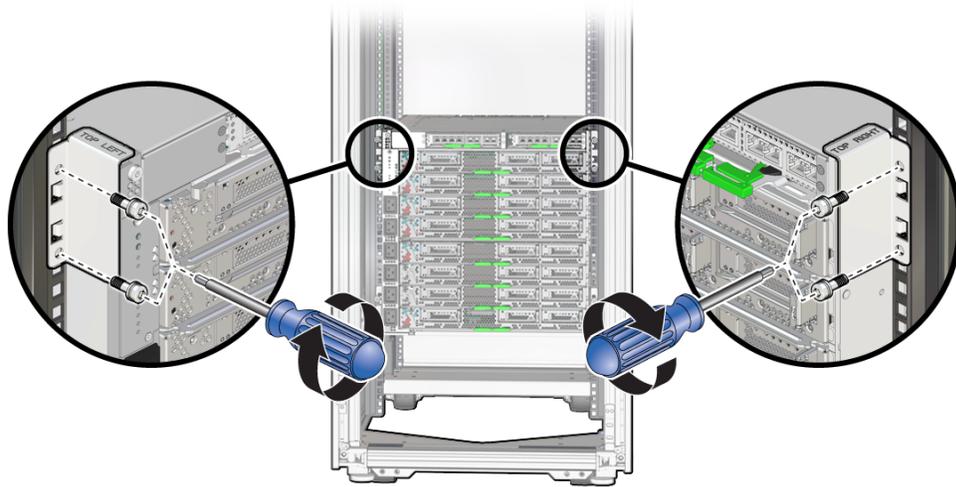
6. **At the rear of the server, install these components.**

Component	Link
Power modules	“Servicing Power Modules” on page 239
PDECBS	“Servicing PDECBS” on page 203
Switch units (SPARC M7-16)	“Servicing Switch Units” on page 193
CMIOUs	“Servicing CMIOUs” on page 87
Fan modules (SPARC M7-16)	“Servicing Fan Modules (Switch Chassis)” on page 187
SP tray	“Servicing SP Trays” on page 247
SPs	“Servicing SPs” on page 121
Cables	Ensure that you install the cables in the same slots from which you removed them.

7. **At the front of the server, install the power supplies.**

See [“Servicing Power Supplies”](#) on page 169.

8. **From the rear of the server, install the top hold-down brackets.**



9. **Switch on the appropriate PDU circuit breakers and power on the server.**
[“Returning the Server to Operation”](#) on page 77.
10. **Verify that the fault has been cleared and the replaced component is operational.**
See [“Verify That a Fault Has Been Cleared”](#) on page 58.

Related Information

- [“Remove a CMIU Chassis”](#) on page 273
- [“Servicing the Switch Chassis”](#) on page 281

Servicing the Switch Chassis

There is one switch chassis in the SPARC M7-16 server. For the location of the switch chassis, see [“Server Front Components \(SPARC M7-16\)” on page 22](#) and [“Server Rear Components \(SPARC M7-16\)” on page 23](#).



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. Follow antistatic precautions to prevent electrostatic damage. See [“Prevent ESD Damage” on page 65](#).

These topics explain how to service the switch chassis.

- [“Remove a Switch Chassis” on page 281](#)
- [“Install a Switch Chassis” on page 287](#)

Related Information

- [“Identifying Components” on page 19](#)
- [“Detecting and Managing Faults” on page 39](#)
- [“Preparing for Service” on page 61](#)
- [“Controlling the Server and Domains” on page 71](#)
- [“Understanding Server Configurations and Failover Behavior” on page 83](#)

▼ Remove a Switch Chassis

This procedure can be performed only by qualified service personnel. Power down the server completely before performing this procedure.

1. **Take the necessary ESD precautions.**
See [“Prevent ESD Damage” on page 65](#).
2. **Power off the server and switch off the appropriate PDU circuit breakers.**

See [“Removing Power From the Server or Domain”](#) on page 73.

3. At the front of the server, remove the power supplies.

See [“Servicing Power Supplies”](#) on page 169.

4. At the rear of the server, remove all of these components in the order indicated.

Component	Link
Cables	Ensure that you label the cables.
SPs	“Servicing SPs” on page 121
SP tray	“Servicing SP Trays” on page 247
Switch units	“Servicing Switch Units” on page 193
PDECBS	“Servicing PDECBS” on page 203
Power module, including AC inlet strip and front indicator panel	“Servicing Power Modules” on page 239

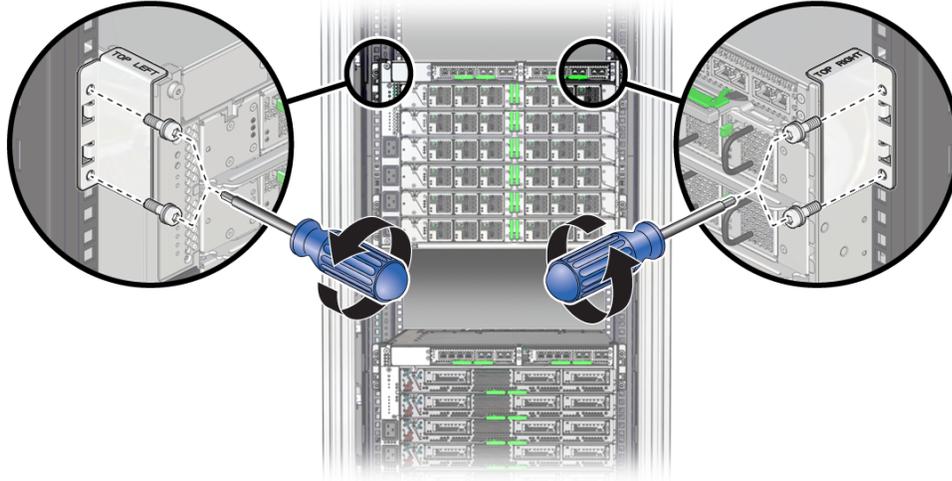


Caution - Do not attempt to remove the chassis alone without the aide of another person or a mechanical lift.

5. At the front of the server, remove all of these components:

Component	Link
External interconnects	“Servicing External Interconnect Assemblies” on page 309
SP interconnect	“Servicing SP Internal Interconnect Assemblies” on page 289

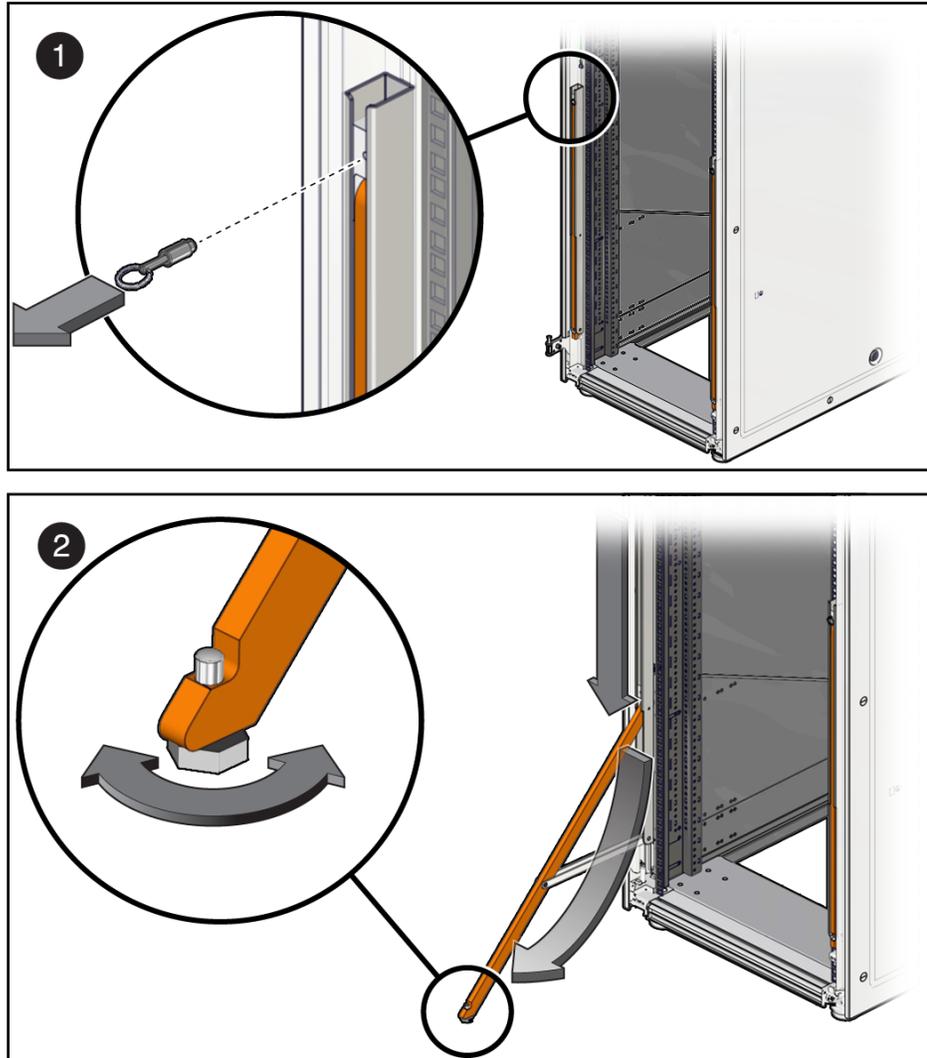
6. From the rear of the chassis, remove the top hold-down brackets.



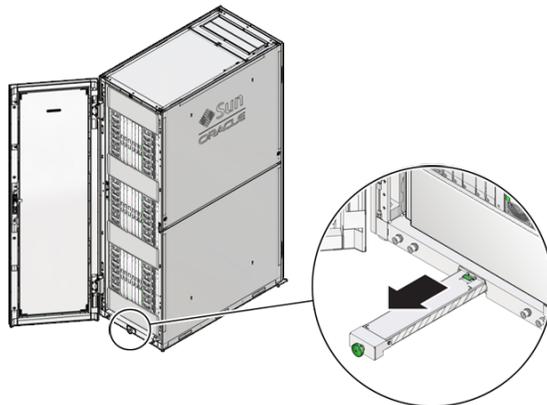
7. From the front of the server, stabilize the rack using all anti-tilt mechanisms provided.

The following steps describe how to stabilize the Sun Rack II 1242 and the Oracle Rack Cabinet 1242. If you installed a stand-alone server in your own rack, refer to the rack documentation for instructions on stabilizing the rack.

- On a Sun Rack II, deploy the anti-tilt legs.

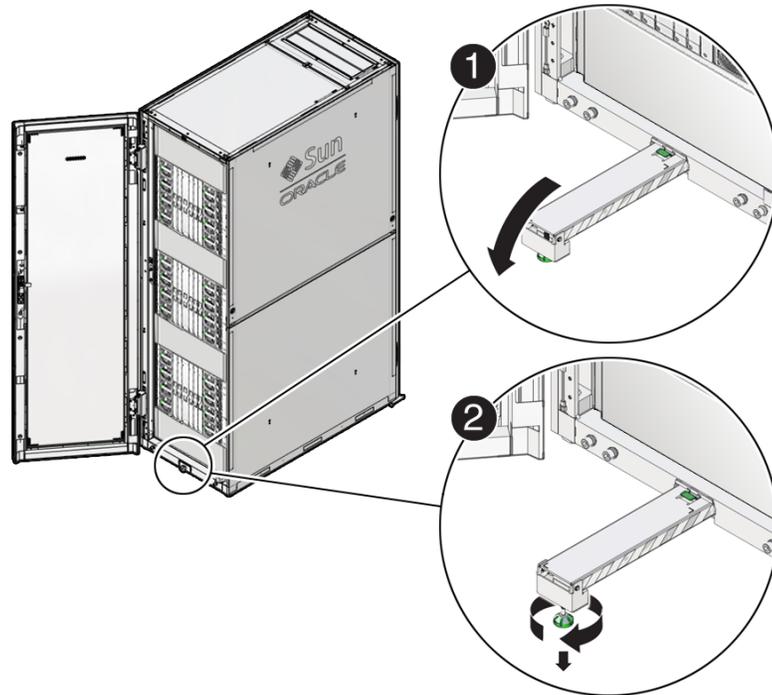


- a. Pull the pin to release the anti-tilt leg while pulling the leg from the bottom (panel 1).
 - b. Loosen the leveling foot until it makes solid contact with the ground (panel 2).
 - c. Repeat these steps for the second leg.
Both legs must be deployed.
- On an Oracle Rack Cabinet 1242, extend the anti-tilt bar.
- a. Pull the anti-tilt bar out of the rack to the fully extended position.



- b. Rotate the foot of the anti-tilt bar so that it is perpendicular to the floor.

Adjust the height of the foot so that it rests securely on the floor.



8. **Determine your next step:**
 - If you have another person to assist you, go to [Step 10](#).
 - If you are alone, go to [Step 9](#).
9. **Place a mechanical lift under the chassis, and remove the screws that fasten it to the rack.**
10. **Remove the chassis from the rack, and place it on an appropriate surface.**

Related Information

- [“Install a Switch Chassis” on page 287](#)
- [“Servicing the CMIOU Chassis” on page 273](#)

▼ Install a Switch Chassis

1. **If you have not already done so, remove the faulty switch chassis.**
See [“Remove a Switch Chassis” on page 281](#).
2. **Determine your next step:**
 - **If you have another person to assist you, go to [Step 4](#).**
 - **If you are alone, go to [Step 3](#).**
3. **Place the chassis on a mechanical lift.**
4. **Install the chassis into the rack, and secure the chassis with the five screws that were removed.**
5. **At the front of the server, install these components.**

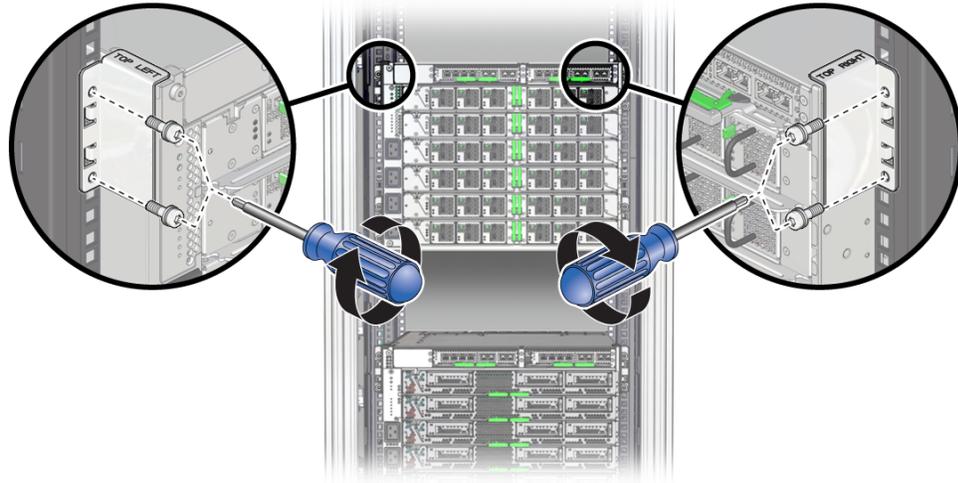
Component	Link
SP interconnect	“Servicing SP Internal Interconnect Assemblies” on page 289
External interconnects	“Servicing External Interconnect Assemblies” on page 309

6. **At the rear of the server, install these components.**

Component	Link
Power module, which includes the AC input strip and the front indicator panel	“Servicing Power Modules” on page 239
PDECBs	“Servicing PDECBs” on page 203
Switch units	“Servicing Switch Units” on page 193
SP tray	“Servicing SP Trays” on page 247
SPs	“Servicing SPs” on page 121
Cables	Ensure that you install the cables in the same slots from which you removed them.

7. **At the front of the server, install the power supplies.**
See [“Servicing Power Supplies” on page 169](#).

8. From the rear of the server, install the top hold-down brackets.



9. Switch on the appropriate PDU circuit breakers and power on the server.
[“Returning the Server to Operation”](#) on page 77.
10. Verify that the fault has been cleared and the replaced component is operational.
See [“Verify That a Fault Has Been Cleared”](#) on page 58.

Related Information

- [“Remove a Switch Chassis”](#) on page 281
- [“Servicing the CMIOU Chassis”](#) on page 273

Servicing SP Internal Interconnect Assemblies

There is one SP internal interconnect assembly in each CMIOU chassis. These assemblies connect the CMIOUs to the SPs.

There is one SP internal interconnect assembly in the switch chassis. This assembly connects switch units to the SPs.

For the location of the SP internal interconnect assemblies, see [“CMIOU Chassis Front Components” on page 24](#) and [“Switch Chassis Front Components \(SPARC M7-16\)” on page 27](#).



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. Follow antistatic precautions to prevent electrostatic damage. See [“Prevent ESD Damage” on page 65](#).

These topics explain how to service SP internal interconnect assemblies.

Step	Description	Links
1.	Understand SP internal interconnect naming.	“CMIOU Chassis Rear Components” on page 25 “Switch Chassis Rear Components (SPARC M7-16)” on page 29
2.	Replace an SP internal interconnect assembly.	“Remove an SP Internal Interconnect Assembly” on page 290 “Install an SP Internal Interconnect Assembly” on page 294

Related Information

- [“Identifying Components” on page 19](#)
- [“Detecting and Managing Faults” on page 39](#)
- [“Preparing for Service” on page 61](#)
- [“Controlling the Server and Domains” on page 71](#)

- [“Understanding Server Configurations and Failover Behavior” on page 83](#)

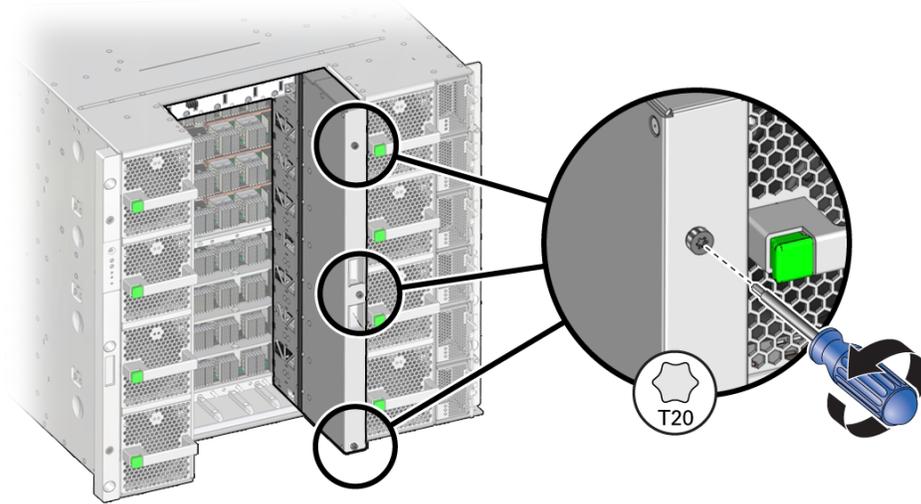
▼ Remove an SP Internal Interconnect Assembly

This procedure can be performed only by qualified service personnel. Remove AC power using the circuit breakers on the appropriate PDU before performing this procedure.

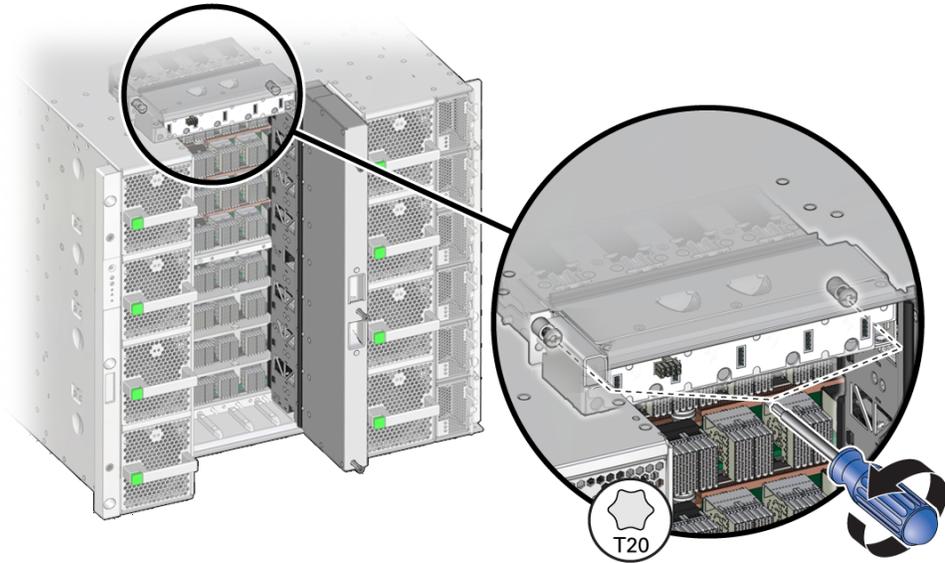
The replacement procedures are the same whether you are replacing an SP internal interconnect assembly in the CMIOU chassis or in the switch chassis.

- 1. Determine which interconnect requires service.**
See [“Identify Faulted Components” on page 40](#).
- 2. Take the necessary ESD precautions.**
See [“Prevent ESD Damage” on page 65](#).
- 3. Power off the server and switch off the appropriate PDU circuit breakers.**
See [“Removing Power From the Server or Domain” on page 73](#).
- 4. Locate the SP internal interconnect assembly at the front of the server.**
See [“CMIOU Chassis Front Components” on page 24](#) and [“Switch Chassis Front Components \(SPARC M7-16\)” on page 27](#).
- 5. Gain access to the SP internal interconnect assembly:**
 - a. From the rear of the server, remove the SPs and the SP tray from the impacted chassis.**
See [“Servicing SPs” on page 121](#) and [“Servicing SP Trays” on page 247](#).
 - b. Unseat all CMIOUs or switch units from the impacted chassis.**
See [“Servicing CMIOUs” on page 87](#) or [“Servicing Switch Units” on page 193](#).
 - c. Remove all interconnect assemblies that are installed adjacent to the SP internal interconnect assembly you are removing.**
See [“Servicing Internal Interconnect Assemblies” on page 301](#) (SPARC M8-8 and SPARC M7-8) or [“Servicing External Interconnect Assemblies” on page 309](#) (SPARC M7-16).
- 6. From the front of the server, remove the SP internal interconnect assembly.**

- a. Loosen the captive screws on the SP internal interconnect assembly to free it from the chassis.

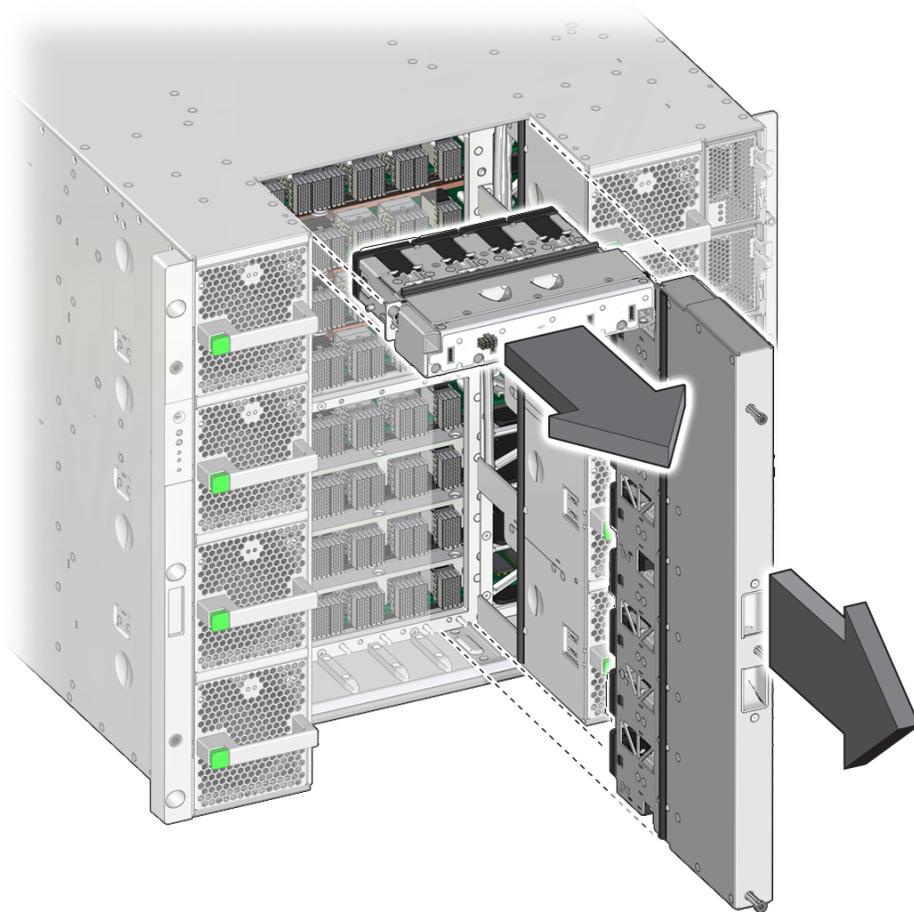


- b. Use a T20 driver to remove the two screws that are located inside the square holes on the white, horizontal strip that extends to the left of the SP internal interconnect assembly.



If you are using a screwdriver that has interchangeable bits, the bit needs to be 2 inches long because the socket on the driver does not fit through the square holes.

- c. Carefully slide the SP internal interconnect assembly out of the chassis.



7. Install the new SP internal interconnect assembly.
See [“Install an SP Internal Interconnect Assembly”](#) on page 294.

Related Information

- [“Install an SP Internal Interconnect Assembly”](#) on page 294

▼ Install an SP Internal Interconnect Assembly



Caution - If the SP internal interconnect you are installing has stirrup-shaped leaf springs that hold the inner and outer horizontal connectors in place, handle the interconnect with care to avoid damaging the floating connector housings. These housings can become damaged if they loosen and catch on the chassis, which can impact your ability to install or remove the interconnect. If you notice that these springs or the connectors are damaged, do not install the interconnect into the chassis.

1. Insert the guide pin shield to avoid damaging the connector pins on the rear of the SP internal interconnect assembly.



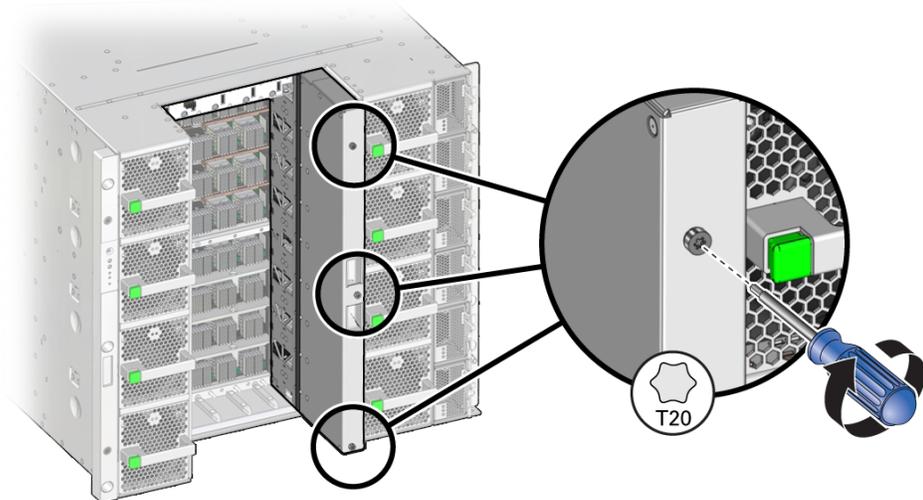
- a. If you are installing an SP internal interconnect assembly in the CMIU chassis, place the guide pin shield as shown in panel 1.
- b. If you are installing an SP internal interconnect assembly in the switch chassis, place the guide pin shield as shown in panel 2.

2. **From the front of the server, carefully slide the SP internal interconnect assembly into the chassis.**

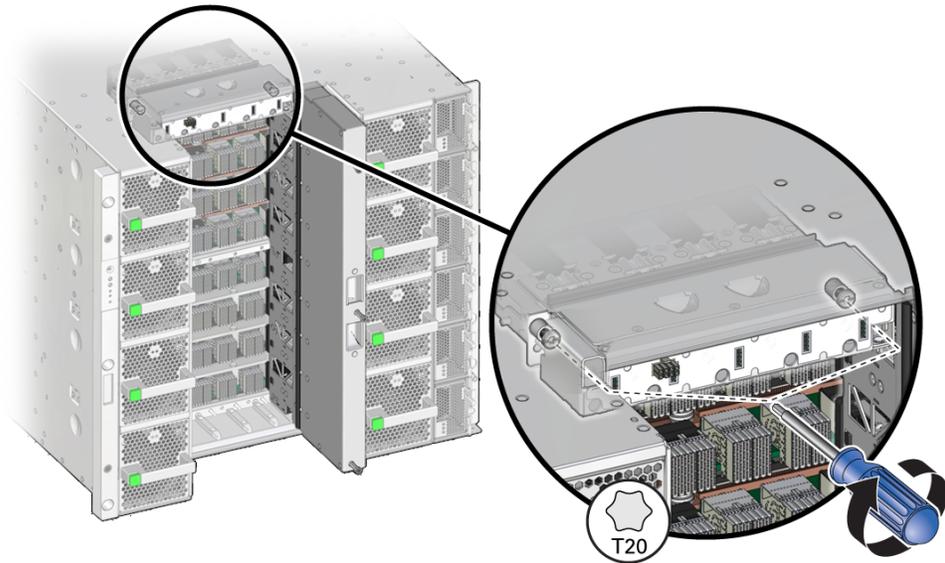


Caution - The small connector pins on the back of the assembly are susceptible to damage. Align the assembly in the chassis and install the assembly slowly to avoid bending or otherwise damaging them.

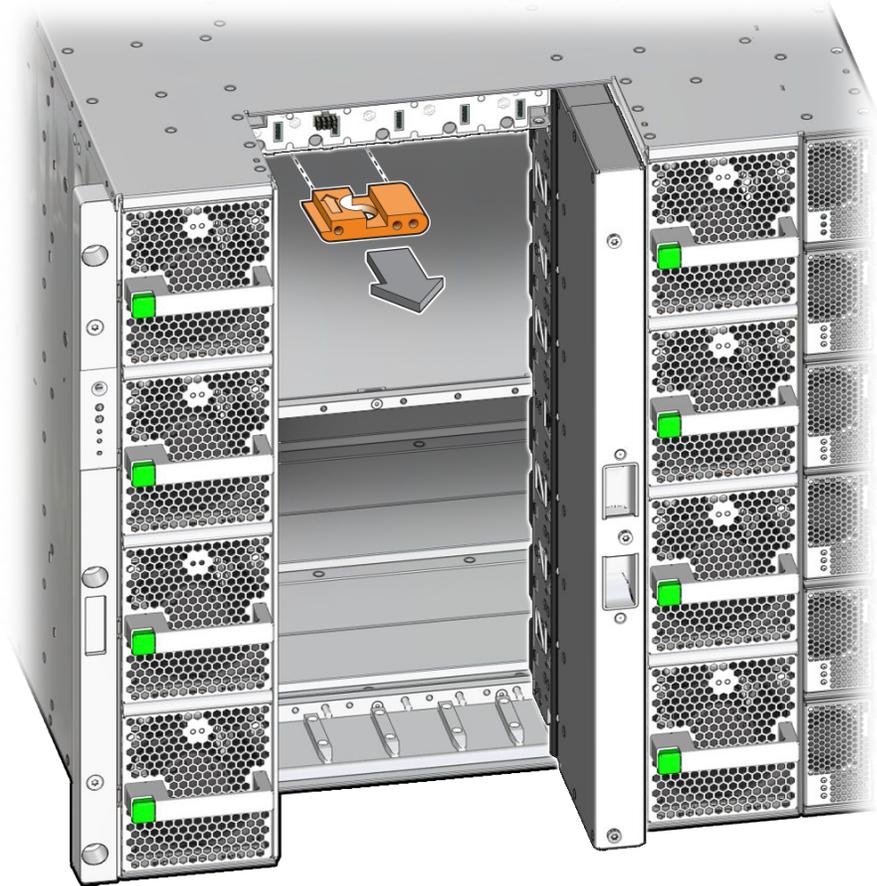
3. **Secure the SP internal interconnect assembly to the chassis.**
 - a. **Tighten the captive screws on the face of the assembly.**



- b. Use a T20 driver to install the screws in the white, horizontal strip that extends to the left of the SP internal interconnect assembly.



4. Remove the guide pin shield.



- 5. Complete the following steps to reinstall components you removed to service the assembly.**
- a. Reinstall all of the interconnect assemblies that you removed.**
See [“Servicing Internal Interconnect Assemblies” on page 301](#) or [“Servicing External Interconnect Assemblies” on page 309](#).
 - b. Reseat all CMIUOs or switch units from the impacted chassis.**
See [“Reseat a CMIUO” on page 105](#) or [“Reseat a Switch Unit” on page 200](#).

Servicing Internal Interconnect Assemblies

In SPARC M8-8 and SPARC M7-8 servers, five internal interconnect assemblies in the CMIOU chassis connect the CMIOUs to each other.

For the location of the internal interconnect assemblies, see [“CMIOU Chassis Front Components” on page 24](#).



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. Follow antistatic precautions to prevent electrostatic damage. See [“Prevent ESD Damage” on page 65](#).

These topics explain how to service internal interconnect assemblies.

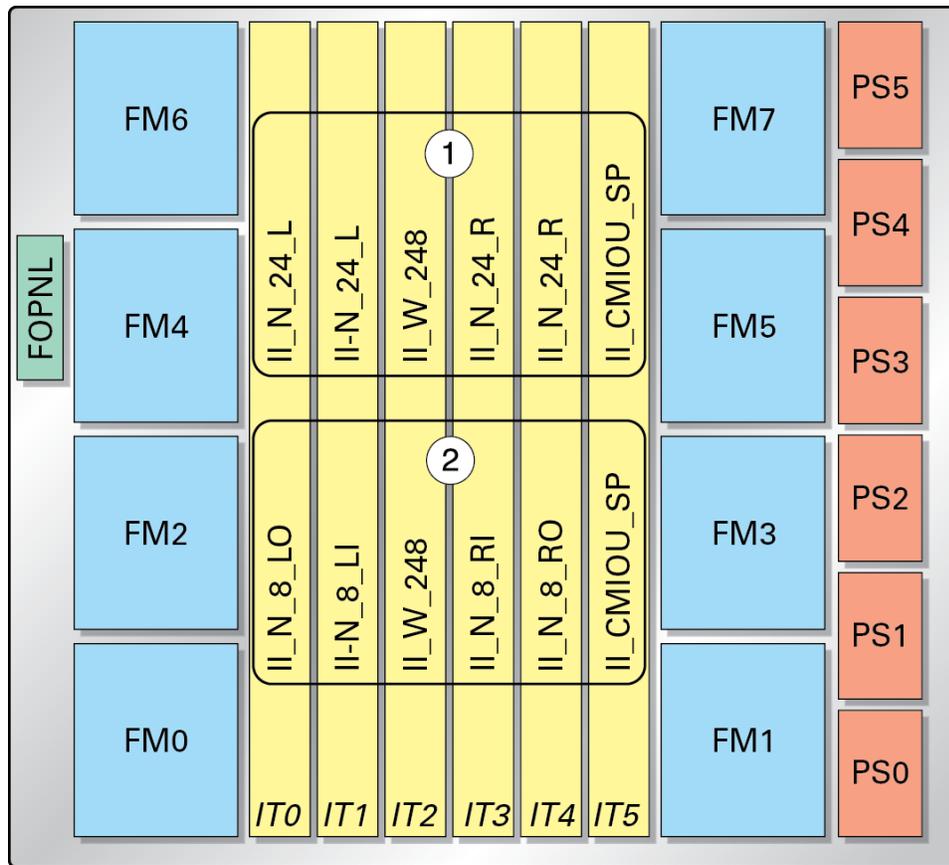
Step	Description	Links
1.	Understand interconnect slot labels and configuration.	“Internal Interconnect Assembly Configuration” on page 302
2.	Replace an internal interconnect assembly.	“Remove an Internal Interconnect Assembly” on page 303 “Install an Internal Interconnect Assembly” on page 306

Related Information

- [“Identifying Components” on page 19](#)
- [“Detecting and Managing Faults” on page 39](#)
- [“Preparing for Service” on page 61](#)
- [“Controlling the Server and Domains” on page 71](#)
- [“Understanding Server Configurations and Failover Behavior” on page 83](#)

Internal Interconnect Assembly Configuration

This figure shows the internal interconnect assembly slot labels and positions.



No.	Description
1	SPARC M8-8 and SPARC M7-8 server (two PDomain) slot labels
2	SPARC M8-8 and SPARC M7-8 server (one PDomain) slot labels

Related Information

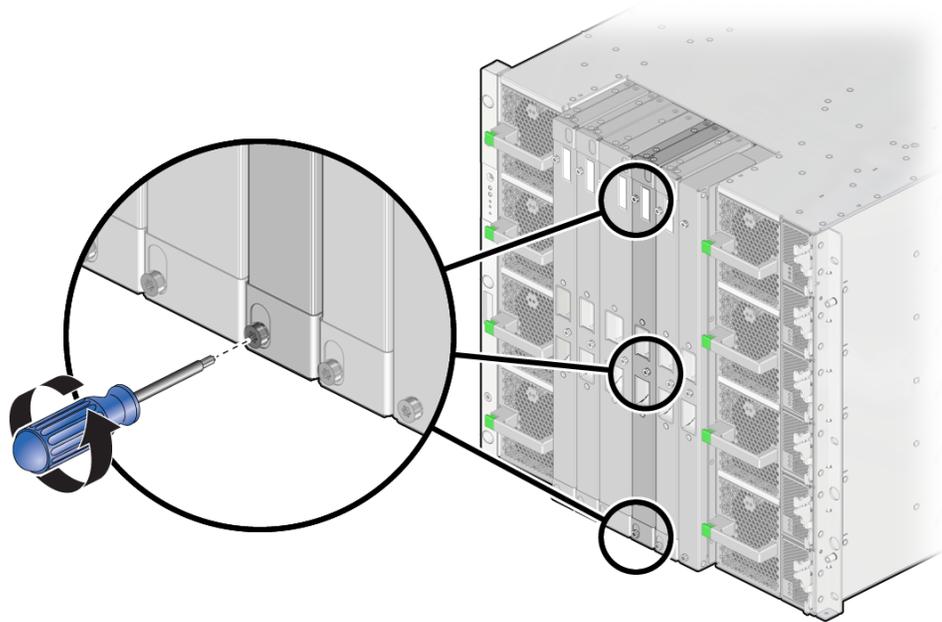
- [“Remove an Internal Interconnect Assembly” on page 303](#)
- [“Install an Internal Interconnect Assembly” on page 306](#)

▼ Remove an Internal Interconnect Assembly

This procedure can be performed only by qualified service personnel. Remove AC power using the circuit breakers on the appropriate PDU before performing this procedure.

- 1. Determine which interconnect requires service.**
See [“Identify Faulted Components” on page 40](#).
- 2. Take the necessary ESD precautions.**
See [“Prevent ESD Damage” on page 65](#).
- 3. Power off the server and switch off the appropriate PDU circuit breakers.**
See [“Removing Power From the Server or Domain” on page 73](#).
- 4. Locate the internal interconnect assembly at the front of the server.**
See [“CMIOU Chassis Front Components” on page 24](#).
- 5. (Important) Label the internal interconnect assembly slots and assemblies.**
If you are removing one or more internal interconnect assemblies and will return them to the server (for example, because you are removing them to gain access to other components), you must return them to their original locations in the server. Take care to properly label each slot and assembly to ensure that it is properly reinstalled.
- 6. From the rear of the server, remove the SPs and unseat the SP tray from the impacted chassis.**
[“Servicing SPs” on page 121](#) and [“Servicing SP Trays” on page 247](#).
- 7. Unseat all CMIOUs from the impacted chassis.**
See [“Servicing CMIOUs” on page 87](#).
- 8. From the front of the server, remove the internal interconnect assembly.**
 - a. Loosen the captive screws on the assembly.**

When the spring-loaded screw springs out, press on the upper screw to unlatch the assembly from the chassis.



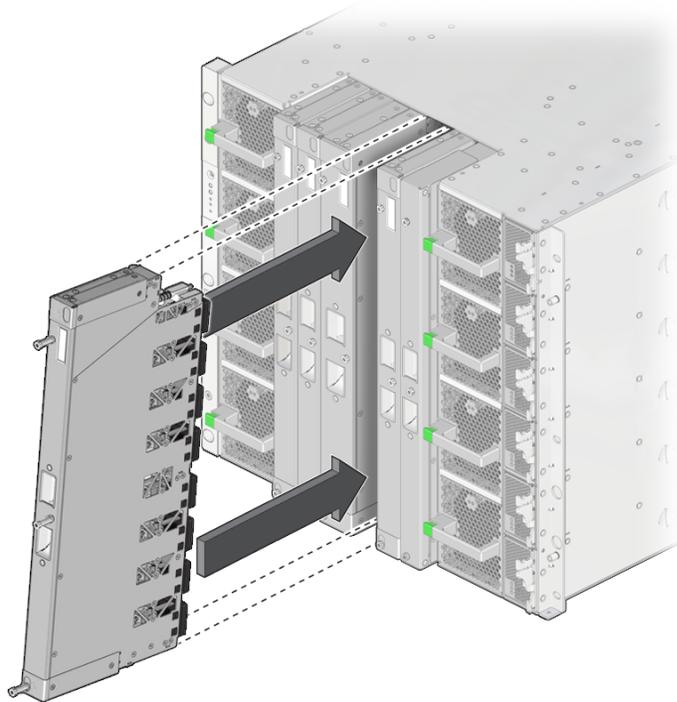
▼ Install an Internal Interconnect Assembly



Caution - You must return internal interconnect assemblies to their original slots. If you are inserting one or more previously installed internal interconnect assemblies to the server (for example, because you removed them to gain access to other components), you must return them to their original locations in the server.

- 1. From the front of the server, carefully slide the internal interconnect assembly into the chassis.**

Guide the TOP end of the assembly into place first, then guide the BOTTOM end into place. Push the TOP end in until the safety latch clicks, then push in the BOTTOM end in.





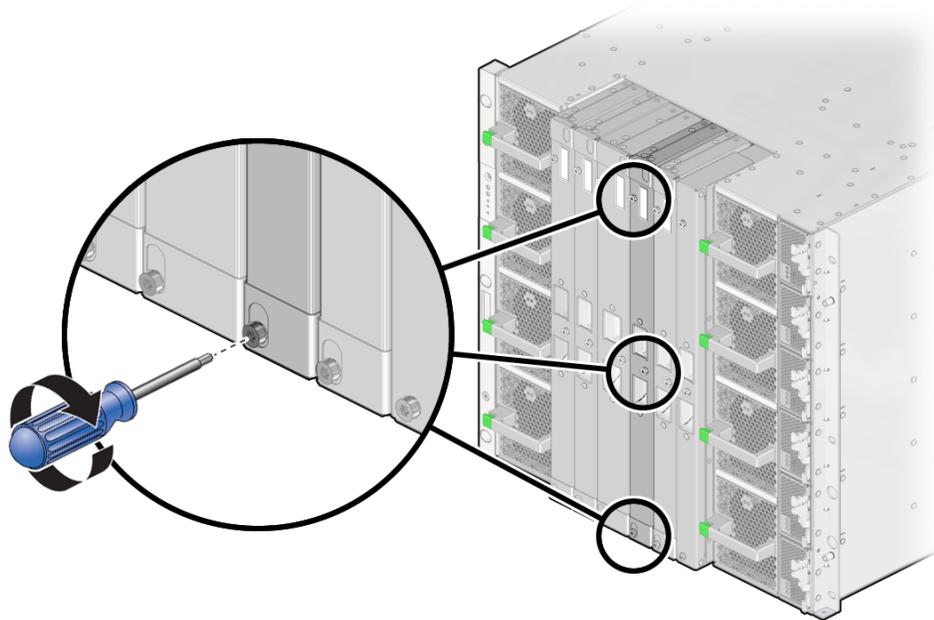
Caution - The small connector pins on the back of the assembly are susceptible to damage. It is important that you align the assembly in the chassis and install the assembly slowly to avoid bending or otherwise damaging the connector pins.

2. **Secure the internal interconnect assembly by hand tightening the three captive screws while ensuring that the screws install smoothly into the chassis.**

Install the middle screws, then the top screws, and then the bottom screws by hand. Next, use a T20 driver to hand tighten the screws, in the same order, until they are seated snugly.



Caution - Do not overtighten the screws. The screws bear down on an internal feature to secure the interconnect. The screw heads will appear to float when properly tightened. You can damage the interconnect if you overtighten the screws.



3. **Reseat all CMIUs.**
See [“Servicing CMIUs” on page 87](#).
4. **Reseat the SP tray and reinstall the SPs.**

[“Servicing SP Trays” on page 247](#) and [“Servicing SPs” on page 121](#).

5. **Switch on the appropriate PDU circuit breakers and power on the server.**
[“Returning the Server to Operation” on page 77](#).
6. **Verify that the fault has been cleared and the replaced component is operational.**
See [“Verify That a Fault Has Been Cleared” on page 58](#).

Related Information

- [“Remove an Internal Interconnect Assembly” on page 303](#)
- [“Internal Interconnect Assembly Configuration” on page 302](#)

Servicing External Interconnect Assemblies

In Oracle's SPARC M7-16 server, eight external interconnect assemblies connect the CMIOUs in the top chassis and the CMIOUs in the bottom chassis to the switch units in the switch chassis. One half of an assembly is installed in the switch chassis, and the other half of the assembly is installed in a CMIOU chassis.

For the location of the external interconnect assemblies, see [“Switch Chassis Front Components \(SPARC M7-16\)” on page 27](#).



Caution - This procedure requires that you handle components that are sensitive to electrostatic discharge. This discharge can cause server components to fail. Follow antistatic precautions to prevent electrostatic damage. See [“Prevent ESD Damage” on page 65](#).

These topics explain how to service external interconnect assemblies.

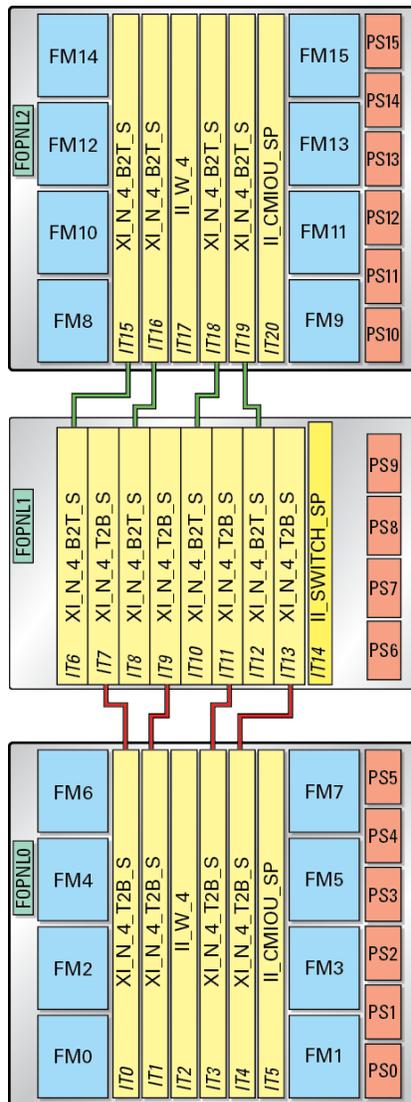
Step	Description	Links
1.	Understand external interconnect slot labels and configuration.	“External Interconnect Assembly Configuration” on page 310
2.	Replace an external interconnect assembly.	“Remove an External Interconnect Assembly” on page 311 “Install an External Interconnect Assembly” on page 315

Related Information

- [“Identifying Components” on page 19](#)
- [“Detecting and Managing Faults” on page 39](#)
- [“Preparing for Service” on page 61](#)
- [“Controlling the Server and Domains” on page 71](#)
- [“Understanding Server Configurations and Failover Behavior” on page 83](#)

External Interconnect Assembly Configuration

This figure shows the external interconnect assembly slot labels and positions.



Related Information

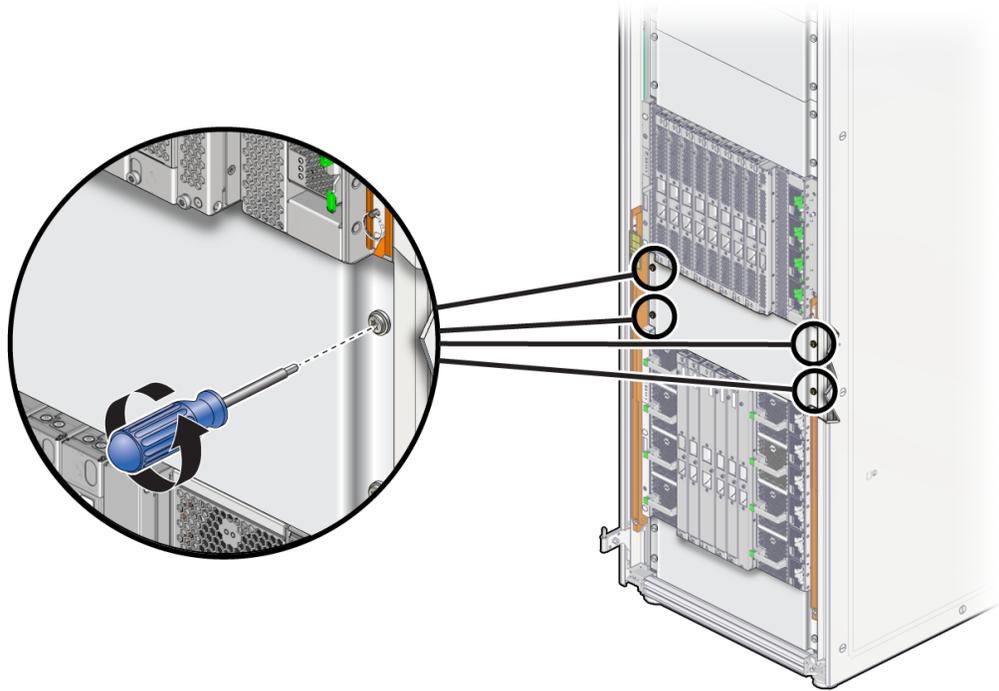
- [“Remove an External Interconnect Assembly” on page 311](#)
- [“Install an External Interconnect Assembly” on page 315](#)

▼ Remove an External Interconnect Assembly

This procedure can be performed only by qualified service personnel. Remove AC power using the circuit breakers on the appropriate PDU before performing this procedure.

- 1. Determine which interconnect requires service.**
See [“Identify Faulted Components” on page 40](#).
- 2. Take the necessary ESD precautions.**
See [“Prevent ESD Damage” on page 65](#).
- 3. Power off the server and switch off the appropriate PDU circuit breakers.**
See [“Removing Power From the Server or Domain” on page 73](#).
- 4. Locate the external interconnect assembly at the front of the server.**
See [“CMIOU Chassis Front Components” on page 24](#) and [“Switch Chassis Front Components \(SPARC M7-16\)” on page 27](#).
- 5. (Important) Label the external interconnect assembly slots and assemblies.**
If you are removing one or more external interconnect assemblies and will return them to the server (for example, because you are removing them to gain access to other components), you must return them to their original locations in the server. Take care to properly label each slot and assembly to ensure that it is properly reinstalled.
- 6. From the rear of the server, remove the SPs or SPPs, and unseat the SP tray from the impacted chassis.**
[“Servicing SPs” on page 121](#) and [“Servicing SP Trays” on page 247](#).
- 7. Unseat all CMIOUs and switch units from the impacted chassis.**
See [“Servicing CMIOUs” on page 87](#) and [“Servicing Switch Units” on page 193](#).

8. Use a T20 driver to remove the four screws that secure the interconnect cable cover to the chassis, and remove the cover.



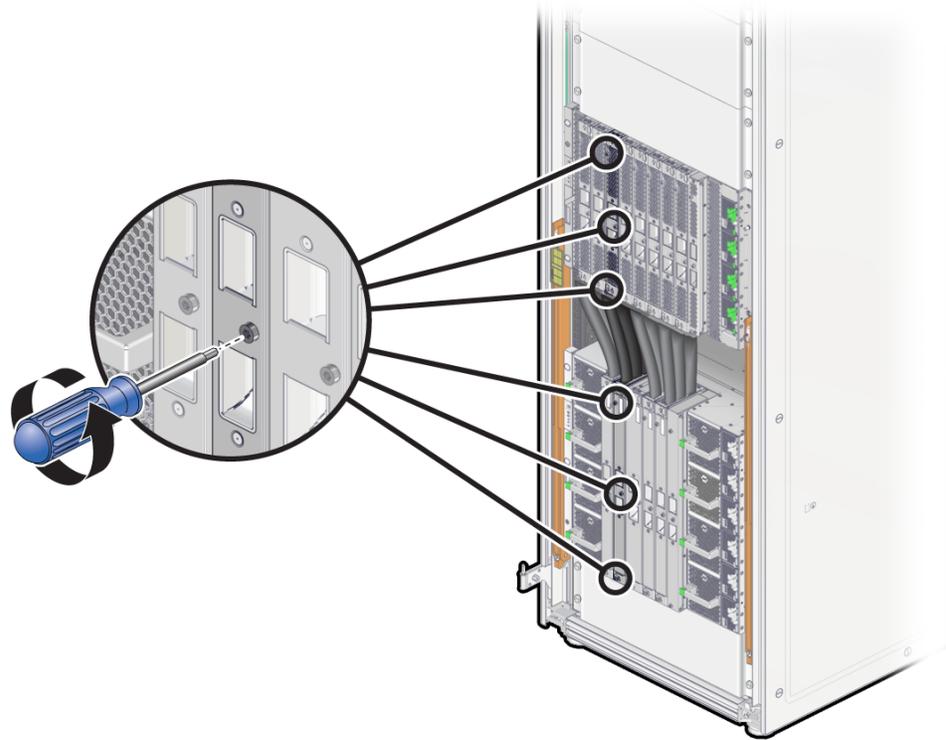
9. From the front of the server, remove the external interconnect assembly.



Caution - The small connector pins on the back of the assembly are susceptible to damage. Remove the assembly slowly to avoid bending or otherwise damaging them. In addition, take care to avoid flexing or twisting these assemblies.

- a. Loosen the captive screws on the assembly.

When the spring-loaded screw springs out, press on the upper screw at each end of the external interconnect to unlatch the assembly from the chassis.



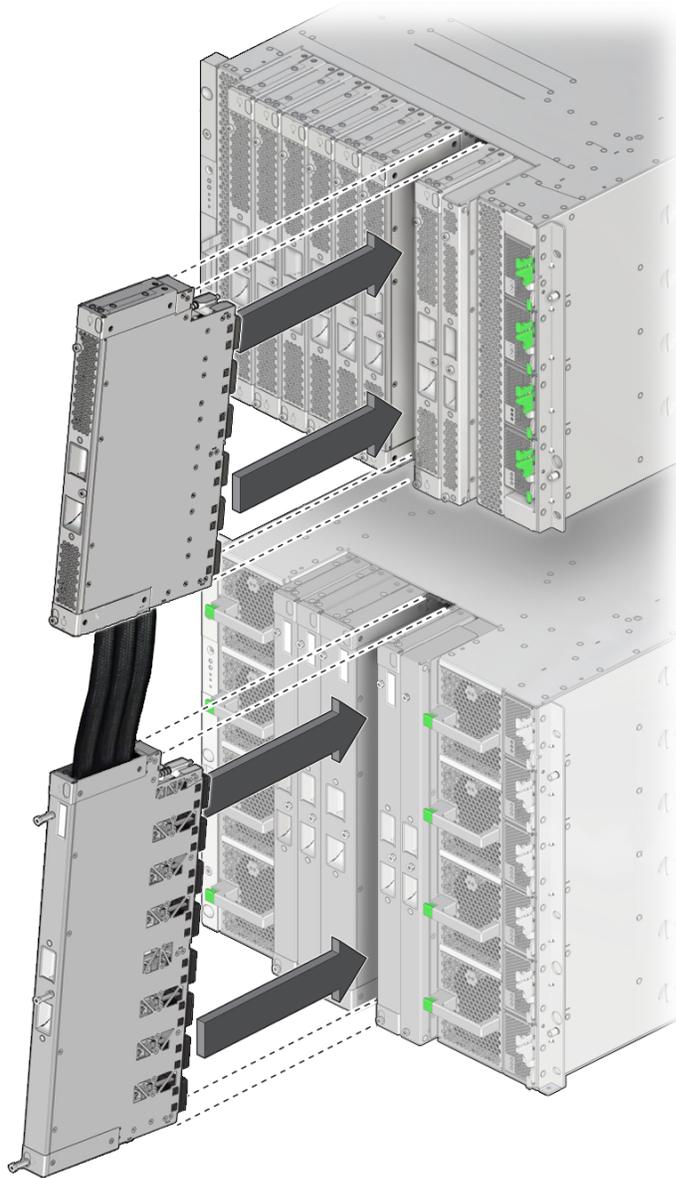
▼ Install an External Interconnect Assembly



Caution - You must return interconnect assemblies to their original slots. If you are inserting one or more previously installed assemblies to the server (for example, because you removed them to gain access to other components), you must return them to their original locations in the server.

1. **From the front of the server, have one person carefully slide the interconnect into the switch chassis while another person slides the interconnect into the CMIU chassis.**

Guide the TOP end of the assembly into place first, then guide the BOTTOM end into place. Push the TOP end in until the safety latch clicks, then push in the BOTTOM end in.





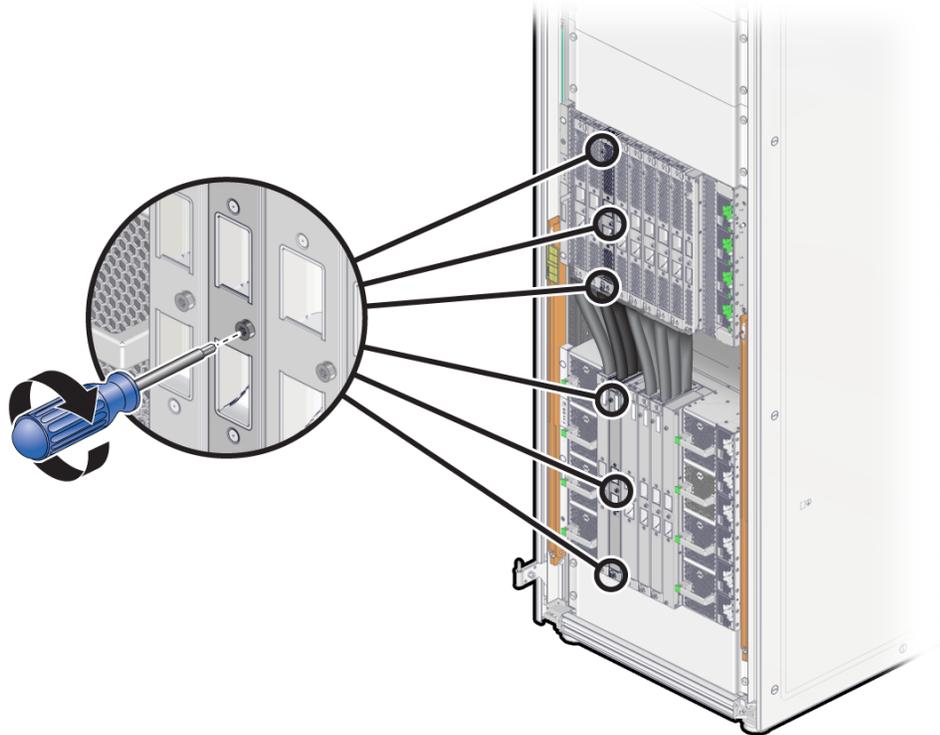
Caution - The small connector pins on the back of the assembly are susceptible to damage. Align the assembly in the chassis, and install the assembly slowly to avoid bending or otherwise damaging the connector pins. In addition, take care to avoid flexing or twisting these assemblies.

2. **Secure the external interconnect assembly by hand tightening the six captive screws while ensuring that the screws install smoothly into the chassis.**

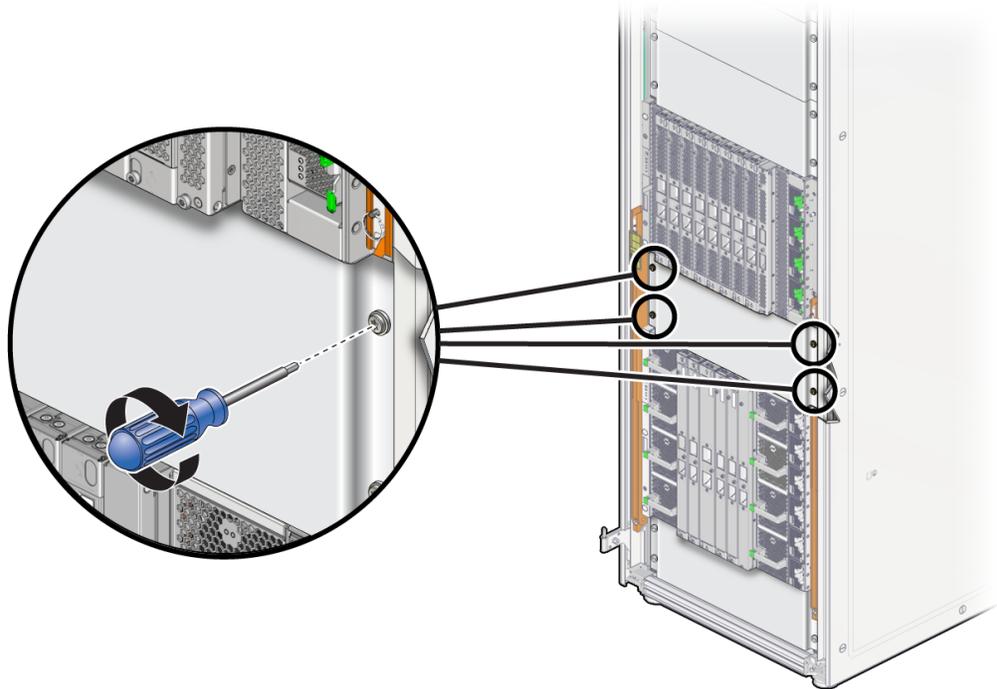
Install the middle screws, then the top screws, and then the bottom screws by hand. Next, use a T20 driver to hand tighten the screws, in the same order, until they are seated snugly.



Caution - Do not overtighten the screws. The screws bear down on an internal feature to secure the interconnect. The screw heads will appear to float when properly tightened. You can damage the interconnect if you overtighten the screws.



3. **Position the interconnect cable cover on the chassis and use a T20 driver to reinstall the four screws that secure it to the chassis.**



4. **Reseat all CMIOUs and switch units.**
See [“Servicing CMIOUs” on page 87](#) and [“Servicing Switch Units” on page 193](#).
5. **Reseat the SP tray and reinstall the SPs or SPPs.**
[“Servicing SP Trays” on page 247](#) and [“Servicing SPs” on page 121](#).
6. **Switch on the appropriate PDU circuit breakers and power on the server.**
[“Returning the Server to Operation” on page 77](#).
7. **Verify that the fault has been cleared and the replaced component is operational.**
See [“Verify That a Fault Has Been Cleared” on page 58](#).

Related Information

- [“Remove an External Interconnect Assembly” on page 311](#)
- [“External Interconnect Assembly Configuration” on page 310](#)

Glossary

A

- Active SP** An SP selected by Oracle ILOM to manage server resources. When an Active SP can no longer serve this role, the Standby SP assumes its role. See also [SP](#) and [Standby SP](#).
- ASR** Auto Service Request. Oracle software that provides the ability to notify Oracle Support automatically.

B

- BoB** Memory buffer on board. An ASIC on a CMIOU board that transfers data between a DIMM and a CMP.

C

- CAR** Label of the [PCIe hot-plug carrier](#).
- CMIOU** CPU, memory, and I/O unit. Each CMIOU contains 1 [CMP](#), 16 [DIMM](#) slots, and 1 [IOH](#) chip. Each CMIOU also hosts an [eUSB](#) device.
- CMP** Chip multiprocessing. Each CMIOU contains 1 CMP. The SPARC M8-8 and SPARC M7-8 servers can contain a maximum of 8 CMPs. The SPARC M7-16 server can contain a maximum of 16 CMPs.
- CMT** Chip multithreading. Processor technology enabling multiple hardware threads (also known as strands) to execute on the same chip, through multiple cores per chip, multiple threads per core, or through a combination of both.

D

DCU	Domain configurable unit. The smallest building block for PDomains. SPARC M8-8 and SPARC M7-8 servers with two PDomains have two DCUs, and SPARC M8-8 and SPARC M7-8 servers with one PDomain have one DCU. Those DCUs are static. Their assignment cannot be changed. The SPARC M7-16 server has four DCUs that you can assign to the host in any one of the four possible PDomains. See also PDomain .
DCU SPM	In SPARC M8 and SPARC M7 servers, Oracle ILOM identifies one SPM from an SPM pair to manage DCU activity. See also SPM , SPP , and DCU .
DHCP	Dynamic Host Configuration Protocol. Software that automatically assigns IP addresses to clients on a TCP/IP network. The SPs do not support DHCP. You must assign static IP addresses to SP components.
DIMM	Dual in-line memory module.
dynamic PDomain	A SPARC M7-16 PDomain. After stopping the host, you can assign or unassign DCUs to or from a dynamic PDomain. See also static PDomain and PDomain .

E

EMI	Electromagnetic interference.
ESD	Electrostatic discharge.
eUSB	Embedded USB. A flash-based drive designed specifically to be used as a boot device. An eUSB does not provide storage for applications or customer data.

F

FC	Fibre Channel. High-speed network technology primarily used to connect computer data storage.
FMA	Fault management architecture. Generates fault indictments from the SP . FMA provides three system activities: error handling, fault diagnosis, and response.
FRU name	Names used to identify hardware components in certain Oracle ILOM and system commands and messages.

G

GB Gigabyte. 1 gigabyte = 1024 megabytes.

GbE Gigabit Ethernet.

I

ILOM See [Oracle ILOM](#).

InfiniBand A networking communications standard that features very high throughput and very low latency.

IOH I/O hub.

IPMP IP network multipathing. An Oracle Solaris feature providing multipathing and load-balancing capabilities for IP network interfaces.

IPoIB Internet protocol over [InfiniBand](#).

iSCSI Internet small computer system interface. An IP-based storage networking standard that enables a server to access storage across a network. In an iSCSI network, the remote storage is called the iSCSI target.

iSCSI using IPoIB A boot process that enables a server to boot an [iSCSI](#) target accessible using IP over an [InfiniBand](#) network. See also [IPoIB](#).

K

KVMS Keyboard video mouse storage.

KW Kilowatt.

L

logical domain A virtual machine comprising a discrete logical grouping of resources that has its own operating system and identity within a single computer system.

M

MIB	Management information base.
MP	Multipathing. See also multipathing .
MPxIO	Multipathing I/O. An Oracle Solaris feature enabling you to configure the multipathing features of FC devices to control all supported FC HBAs.
multipathing	Multipathing software enables you to define and control redundant physical paths to I/O devices such as storage devices and network interfaces.

N

NET MGT	Network management. The NET MGT ports provide Ethernet connections to the SPs. Dedicated SPARC M7-16 server NET MGT ports connect the four SPPs to the two SPs.
NTP	Network Time Protocol.
NVMe	Non-Volatile Memory Express. A specification for accessing solid-state drives attached through the PCIe bus.

O

OpenBoot	Oracle firmware that enables a PDomain to boot the Oracle Solaris OS. Provides an interface for testing hardware and software interactively.
Oracle ILOM	Oracle Integrated Lights Out Manager. The system management firmware that is preinstalled on the server SPs.
Oracle VTS	Oracle Validation Test Suite. An application that exercises the system, provides hardware validation, and identifies possible faulty components.

P

PCIe	Peripheral Component Interconnect Express.
PCIe hot-plug carrier	An enclosure used to install and house PCIe cards in the server. See CAR .
PDECB	Power distribution electronic circuit breaker.

PDomain	Physical domain. SPARC M8-8 and SPARC M7-8 servers are configured with either two PDomains or one PDomain. These PDomains are static and cannot be reconfigured. The SPARC M7-16 server can have one to four configured PDomains. These PDomains are dynamic. With dynamic PDomains, you can assign or unassign the DCUs in the PDomains as long as you stop and start the host. See also DCU , dynamic PDomain , static PDomain , and switch unit .
PDomain SPM	The lead SPM of a PDomain. The PDomain SPM manages tasks and provides rKVMS service for that PDomain. In a SPARC M7-16 server, Oracle ILOM identifies one of the DCU SPMs from the pool of DCU SPMs on the same PDomain as the PDomain SPM to manage activity on that host. See also PDomain and SPM .
PDU	Power distribution unit.
pool	A logical group of devices describing the layout and physical characteristics of the available storage. Storage space for datasets is allocated from a pool. ZFS uses a model where storage devices are aggregated into a storage pool.
POST	Power-on self-test. Diagnostic software that runs when the server boots.
PROM	Programmable read-only memory.
PSH	Predictive self healing. A system of technologies that includes FMA, ereports, diagnosis engines, and agents that continuously monitor the health of the server and can take a faulty component offline if needed.
R	
RC	Root complex. The first element in a PCIe device path (for example, <code>/pci@300</code>).
rKVMS	Remote keyboard video mouse and storage.
root port	In a PCIe device path, the root port is always the second element (for example, <code>/pci@300/pci@0</code>).
S	
scalability	The ability to increase (or <i>scale up</i>) processing power in a server by combining the server's physical configurable hardware (see DCU) into one or more logical groups (see PDomain).
SER MGT	Serial management. The SER MGT ports provide serial connections to the SPs.

SNMP	Simple Network Mail Protocol.
SP	Service processor. For redundancy, the server contains two service processors, one active and one on standby.
SPM	Service processor module. A component of the SPs and SPPs. SPMs contain processors that enable the SPs and SPPs to manage the server resources. See also DCU SPM and PDomain SPM .
SPP	Service processor proxy. One SPP is assigned to manage each PDomain . SPPs monitor environmental sensors and manage the CMIOUs, memory controllers, and DIMMs within the DCU. See also DCU SPM and PDomain SPM .
SSH	Secure shell. A program for logging in and executing commands on a system or service processor.
Standby SP	A redundant SP that will manage server resources if the Active SP fails. See also SP and Active SP .
static PDomain	A SPARC M8-8 or SPARC M7-8 server PDomain. Static PDomains cannot be reconfigured. See also dynamic PDomain and PDomain .
switch unit	A device that enables the CMIOUs to communicate with each other. The SPARC M7-16 server switch contains six switch units.
system	In the SPARC M8 and SPARC M7 servers documentation, system refers to the /System level in the Oracle ILOM firmware.
T	
Torx	A type of screw head characterized by a 6-point star-shaped pattern.
TPM	Trusted Platform Module.
V	
VTs	See Oracle VTs .
Z	
ZFS	Zettabyte file system. A file system that uses storage pools to manage physical storage.

Index

A

- AC inputs
 - installing, 242
 - locating
 - in CMIOU chassis, 25
 - in switch chassis, 29
 - removing, 239
- AC Power OK LED, 52
- Active SP
 - changing to Standby SP, 128
 - described, 85
 - identifying, 127
- antistatic wrist strap, 66

B

- batteries
 - installing, 254
 - location, 251
 - name returned by Oracle ILOM, 44
 - removing, 251
 - SDM name, 36
- BUS names
 - identifying for root complex assignment, 147

C

- clear_fault_action property, 43
- clearing faults, 59
- CMIOU chassis
 - installing, 279
 - removing, 273
- CMIOUs

- configuration reference
 - SPARC M7-16, 89
 - SPARC M7-8 (one PDomain), 89
 - SPARC M7-8 (two PDomains), 88
- fault tolerance, 46
- installing, 106
- LEDs, 94
- locating, 25
- name returned by Oracle ILOM, 44
- preparing for removal, 95
- removing, 99
- reseating, 105
- returning to Oracle, 102
- SDM name, 36
- unseating, 97
- CMPs, name returned by Oracle ILOM, 44
- CMs, name returned by Oracle ILOM, 44
- commands
 - Oracle ILOM reference, 80
 - power_state, 79
 - prepare_to_remove, 72
 - return_to_service, 79
- components
 - A/C power status requirements for removal, 63
 - accessible from front
 - SPARC M7-16, 22
 - SPARC M7-8, 20
 - SPARC M8-8, 20
 - accessible from rear
 - SPARC M7-16, 23
 - SPARC M7-8 servers, 21
 - SPARC M8-8 servers, 21
 - authorized personnel required for service, 63
 - DIMMs, 110

- LED reference, 49
- names returned by Oracle ILOM, 44
- paths used to service, 36
- preparing for removal, 72
- returning to Oracle, 68
- returning to service, 79
- serviceability reference, 63
- state properties, 43
- configuration reference
 - CMIOUs
 - SPARC M7-16, 89
 - SPARC M7-8 (one PDomain), 89
 - SPARC M7-8 (two PDomains), 88
 - DIMMs, 110
 - external interconnect assemblies, 310
 - internal interconnect assemblies, 302
 - PCIe slots, 146
- configurations
 - I/O cards
 - restoring, 165
 - saving, 155
- configuring
 - POST, 57
- connecting to host console, 78
- cooling
 - power supplies required, 169
 - zones, 33
- current_config_state property, 43

D

- DCU SPM
 - described, 86
 - identifying, 128
- DCUs
 - described, 83
- DIMMs
 - configuration, 110
 - failures, 113
 - Fault Remind button, 113
 - fault tolerance, 46
 - general error message, 116
 - installing, 118

- locating, 31
- locating faulty
 - using DIMM Fault Remind button, 113
 - using Oracle ILOM, 113
- name returned by Oracle ILOM, 44
- naming or labeling, 112
- orientation, 118
- removing, 116
- SDM name, 36
- slots populated, 110
- disabled components
 - detecting with Oracle ILOM, 42
 - names returned by Oracle ILOM, 44
- dmesg command, 54
- domains *See* PDomains

E

- electrostatic discharge *See* ESD
- ESD
 - preventing, 65
 - wrist strap, 66
- eUSB disks
 - installing, 209
 - locating, 31
 - removing, 207
- external interconnect assemblies
 - configuration reference, 310
 - installing, 315
 - locating, 27
 - removing, 311
 - slot numbers, 27

F

- fan cable assemblies
 - installing, 216
 - removing, 211
- fan modules
 - fault tolerance, 46
 - installing
 - in CMIOU chassis, 186

- in switch chassis, 190
- LEDs
 - in CMIOU chassis, 184
 - in switch chassis, 188
- locating
 - in CMIOU chassis, 24
 - in switch chassis, 29
- name returned by Oracle ILOM, 44
- removing
 - in CMIOU chassis, 184
 - in switch chassis, 188
- SDM name, 36
- fault detection
 - names returned, 44
 - overview of methods, 39
 - with Oracle ILOM, 40
- fault_state property, 43
- firmware, 122
- fmadm command, 59
- fmadm faulty command, 40, 59
- FPGAs
 - name returned by Oracle ILOM, 44
- front components
 - SPARC M7-16, 22
 - SPARC M7-8, 20
 - SPARC M8-8, 20
- front indicator panel cables
 - installing, 236
 - removing, 231
- front indicator panels
 - installing, 226
 - locating
 - in CMIOU chassis, 24
 - in switch chassis, 27
 - name returned by Oracle ILOM, 45
 - removing, 221
- front panel system controls and LEDs, 50

H

- host console, connecting to, 78
- hosts
 - powering off, 74

- powering on, 78

I

I/O

- card configurations
 - restoring, 165
 - saving, 155
- installation guidelines
 - DIMMs, 110
 - PCIe cards, 149
- installing
 - AC inputs, 242
 - antistatic wrist strap, 66
 - batteries, 254
 - CMIOU chassis, 279
 - CMIOUs, 106
 - DIMMs, 118
 - eUSB disks, 209
 - external interconnect assemblies, 315
 - fan cable assemblies, 216
 - fan modules
 - in CMIOU chassis, 186
 - in switch chassis, 190
 - front indicator panel cables, 236
 - front indicator panels, 226
 - internal interconnect assemblies, 306
 - PCIe card carriers, 163
 - PCIe cards, 162
 - PDECBs, 206
 - PDUs, 266
 - power modules, 242
 - power supplies, 179
 - rear indicator panels, 242
 - SP internal interconnect assemblies, 294
 - SP trays, 250
 - SPPs, 140
 - SPs, 140
 - switch chassis, 287
 - switch units, 201
- internal interconnect assemblies
 - configuration reference, 302
 - installing, 306

- locating, 24
 - name returned by Oracle ILOM, 45
 - removing, 303
 - slot numbers, 24
- L**
- labels
 - of DIMMs, 112
 - of interconnect slots
 - SPARC M7-16, 27
 - SPARC M7-8, 24
 - SPARC M8-8, 24
 - of PCIe slots, 146
 - LEDs
 - CMIOUs, 94
 - component specific reference, 49
 - fan modules
 - in CMIOU chassis, 184
 - in switch chassis, 188
 - front panel, 50
 - PCIe card carriers, 153
 - power supplies, 170
 - rear panel, 52
 - SPs, 124
 - switch units, 194
 - System Locator, 50
 - System Overtemp, 50
 - System Power OK, 50
 - System Service Required, 50
 - locating
 - AC inputs
 - in CMIOU chassis, 25
 - in switch chassis, 29
 - batteries, 251
 - CMIOUs, 25
 - DIMMs, 31
 - eUSB disks, 31
 - external interconnect assemblies, 27
 - fan modules
 - in CMIOU chassis, 24
 - in switch chassis, 29
 - faults
 - with Oracle ILOM, 40
 - faulty DIMMs
 - using Fault Remind button, 113
 - using Oracle ILOM, 113
 - front indicator panels
 - in CMIOU chassis, 24
 - in switch chassis, 27
 - internal interconnect assemblies, 24
 - PCIe card carriers, 25
 - PCIe cards, 154
 - PDECBS
 - in CMIOU chassis, 25
 - in switch chassis, 29
 - power supplies
 - in CMIOU chassis, 24
 - in switch chassis, 27
 - rear indicator panels
 - in CMIOU chassis, 25
 - in switch chassis, 29
 - server, 65
 - SP internal interconnect assemblies
 - in CMIOU chassis, 24
 - in switch chassis, 27
 - SP trays
 - in CMIOU chassis, 25
 - in switch chassis, 29
 - SPs
 - in CMIOU chassis, 25
 - in switch chassis, 29
 - switch units, 29
 - Locator LED
 - lighting, 65
 - log files, viewing, 55
 - logging in to Oracle ILOM, 71
- M**
- message buffer, checking the, 54
 - message identifier, 40
- N**
- NAC path reference, 44

- names
 - of DIMMs, 112
 - of interconnect slots
 - SPARC M7-16, 27
 - SPARC M7-8, 24
 - SPARC M8-8, 24
 - of PCIe slots, 146
 - naming conventions
 - NAC component reference, 44
 - SDM component reference, 36
 - NET MGT ports
 - locations and numbering, 125
 - numbering
 - of interconnect slots
 - SPARC M7-16, 27
 - SPARC M7-8, 24
 - SPARC M8-8, 24
 - of NET MGT ports, 125
 - of PCIe slots, 146
 - of SER MGT ports, 125
- O**
- Oracle ILOM
 - command reference, 80
 - component state properties, 43
 - identifying
 - disabled components, 42
 - faulted components, 40
 - logging in to, 71
 - SPM paths, 126
 - Oracle Solaris
 - clearing faults, 59
- P**
- packing components for return to Oracle, 68
 - PCIe card carriers
 - installing, 163
 - LEDs, 153
 - locating, 25
 - name returned by Oracle ILOM, 45
 - numbering, 146
 - removing, 160
 - supported, 149
 - PCIe cards
 - BUS names, for root complex assignment, 147
 - characteristics, 146
 - configurations
 - restoring, 165
 - saving, 155
 - device and service path reference, 147
 - fault tolerance, 46
 - installation order, 149
 - installing, 162
 - locating, 154
 - name returned by Oracle ILOM, 45
 - preparing for removal, 155
 - SDM name, 36
 - supported, 149
 - verifying functionality, 168
 - PCIe slots, configuration reference, 146
 - PDECBS
 - installing, 206
 - locating
 - in CMIOU chassis, 25
 - in switch chassis, 29
 - name returned by Oracle ILOM, 45
 - removing, 204
 - SDM name, 37
 - PDomain SPM
 - changing to Standby SPM, 129
 - described, 86
 - PDomains
 - described, 83
 - powering off, 74
 - powering on, 78
 - static, described, 84
 - PDU circuit breakers
 - switching off, 75
 - switching on, 77
 - PDUs
 - AC connections, 257
 - installing, 266
 - preparing for removal, 258
 - removing, 260

POST

- configuration examples, 57
- configuring, 57
- overview, 56

power

- redundancy, 257
 - removing, 73
 - restoring, 77
- power modules**
- installing, 242
 - removing, 239
- power supplies**
- fault tolerance, 46
 - installing, 179
 - LEDs, 170
 - locating
 - in CMIOU chassis, 24
 - in switch chassis, 27
 - name returned by Oracle ILOM, 45
 - number required for cooling, 169
 - removing, 171
 - SDM name, 37

`power_state` command, 79

powering off

- with Oracle ILOM, 74
- with PDU circuit breakers, 75

powering on, 79

- with Oracle ILOM, 78
- with PDU circuit breakers, 77

`prepare_to_remove` command, 72

preparing for removal

- CMIOUs, 95
- PCIe cards, 155
- PDUs, 258
- SPPs, 133
- SPs, 129
- switch units, 195

R**rear components**

- SPARC M7-16, 23
- SPARC M7-8, 21

SPARC M8-8, 21

Rear Fault LED, 50

rear indicator panels

- installing, 242
 - locating
 - in CMIOU chassis, 25
 - in switch chassis, 29
 - name returned by Oracle ILOM, 45
 - removing, 239
- rear panel system controls and LEDs, 52**

redundancy

- of power, 257
- on SPARC M7-8 (two PDomains), 84
- on SPARC M8-8 (two PDomains), 84

removing

- AC inputs, 239
- batteries, 251
- CMIOU chassis, 273
- CMIOUs, 99
- DIMMs, 116
- eUSB disks, 207
- external interconnect assemblies, 311
- fan cable assemblies, 211
- fan modules
 - in CMIOU chassis, 184
 - in switch chassis, 188
- front indicator panel cables, 231
- front indicator panels, 221
- internal interconnect assemblies, 303
- PCIe card carriers, 160
- PDECBS, 204
- PDUs, 260
- power modules, 239
- power supplies, 171
- rear indicator panels, 239
- SP internal interconnect assemblies, 290
- SP trays, 247
- SPPs, 136
- SPs, 136
- switch chassis, 281
- switch units, 198

`requested_config_state` property, 43

reseating

- CMIOUs, 105
- SP trays, 250
- switch units, 200
- restoring I/O card configurations, 165
- return_to_service command, 79
- returning components, 68
- returning components to service, 79
- root complexes, BUS names to assign, 147

S

- safety information and symbols, 61
- saving I/O card configurations, 155
- SDM path reference, 36
- SER MGT ports
 - locations and numbering, 125
- serial number
 - identifying, 64
- server
 - lighting Locator LED, 65
 - PDU circuit breakers
 - switching off, 75
 - switching on, 77
 - powering off, 74
 - powering on, 78, 79
 - serial number, identifying, 64
- show disabled command, 42
- slot numbers
 - external interconnect assemblies
 - SPARC M7-16, 27
 - interconnect assemblies
 - SPARC M7-8, 24
 - SPARC M8-8, 24
- SP internal interconnect assemblies
 - CMIOU chassis
 - slot numbers, 24
 - installing, 294
 - locating
 - in CMIOU chassis, 24
 - in switch chassis, 27
 - name returned by Oracle ILOM, 45
 - removing, 290
 - slot numbers
 - in switch chassis, 27
- SP trays
 - locating
 - in CMIOU chassis, 25
 - in switch chassis, 29
 - reseating or installing, 250
 - unseating or removing, 247
- SPDBs
 - name returned by Oracle ILOM, 46
- SPMs
 - name returned by Oracle ILOM, 46
 - paths supplied to Oracle ILOM, 126
 - verifying removal preparedness, 129
- SPPs
 - installing, 140
 - name returned by Oracle ILOM, 46
 - preparing for removal, 133
 - removing, 136
 - SDM name, 37
- SPs
 - Active and Standby, described, 85
 - fault tolerance, 46
 - installing, 140
 - LEDs, 124
 - locating
 - in CMIOU chassis, 25
 - in switch chassis, 29
 - name returned by Oracle ILOM, 46
 - preparing for removal, 129
 - removing, 136
 - SDM name, 37
- Standby SP
 - function of, 85
- static PDomains
 - described, 84
- storage devices, 32
- switch chassis
 - installing, 287
 - removing, 281
- switch units
 - fault tolerance, 46
 - installing, 201
 - LEDs, 194

- locating, 29
- name returned by Oracle ILOM, 46
- preparing for removal, 195
- removing, 198
- reseating, 200
- SDM name, 37
- unseating, 196
- system controls, front panel, 50
- system controls, rear panel, 52
- System Locator LED, 50
- system message log files, viewing, 55
- System Overtemp LED, 50
- System Power OK LED, 50
- System Service Required LED, 50

T

- tools needed for service, 62

U

- unseating
 - CMIOUs, 97
 - SP trays, 247
 - switch units, 196

V

- /var/adm/messages file, 55
- verifying
 - fault removal, 58
 - PCIe card functionality, 168
 - PCIe cards are offline, 135
 - SPM removal preparedness, 129
- viewing
 - system message log files, 55

W

- wrist strap, installing, 66