



Hewlett Packard
Enterprise

HPE Integrity Superdome 2 User Service Guide

Abstract

This document contains specific information that is intended for users of this Hewlett Packard Enterprise product.

Part Number: AH337-9004K
Published: May 2016
Edition: 10

© Copyright 2010, 2016 Hewlett Packard Enterprise Development LP

The information contained herein is subject to change without notice. The only warranties for Hewlett Packard Enterprise products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. Hewlett Packard Enterprise shall not be liable for technical or editorial errors or omissions contained herein.

Confidential computer software. Valid license from Hewlett Packard Enterprise required for possession, use, or copying. Consistent with FAR 12.211 and 12.212, Commercial Computer Software, Computer Software Documentation, and Technical Data for Commercial Items are licensed to the U.S. Government under vendor's standard commercial license.

Links to third-party websites take you outside the Hewlett Packard Enterprise website. Hewlett Packard Enterprise has no control over and is not responsible for information outside the Hewlett Packard Enterprise website.

Acknowledgments

Intel®, Itanium®, Pentium®, Intel Inside®, and the Intel Inside logo are trademarks of Intel Corporation in the United States and other countries.

Microsoft® and Windows® are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

Java and Oracle are registered trademarks of Oracle and/or its affiliates.

UNIX® is a registered trademark of The Open Group.

"Genie" is a registered trademark of Genie Industries in the USA and many other countries.

Revision History

HPE Part Number	Edition	Publication Date
AH337-9004A	First	August 2010
AH337-9004B	Second	August 2011
AH337-9004C	Third	December 2011
AH337-9004D	Fourth	February 2012
AH337-9004E	Fifth	May 2012
AH337-9004F	Sixth	September 2012
AH337-9004G	Seventh	December 2012
AH337-9004H	Eighth	October 2013
AH337-9004J	Ninth	April 2014
AH337-9004K	Tenth	May 2016

Contents

1 HPE Integrity Superdome 2 system overview	7
Complex components.....	7
Power subsystem.....	7
Powering off the compute enclosure	8
Manageability subsystem.....	8
Server blades.....	8
Server blades and partitions.....	8
I/O subsystem.....	9
Server blade-based I/O.....	9
I/O expansion enclosure.....	9
Component overview.....	10
Compute enclosure overview.....	10
Compute enclosure front components.....	10
Power supply bay numbering.....	12
Server Blade slot numbering.....	12
HPE Integrity Superdome 2 Insight Display components.....	14
Compute enclosure rear components.....	15
Fan bay numbering.....	17
Interconnect bay numbering.....	17
Superdome 2 cabling best practices.....	19
XFM Module cables.....	20
32s system cabling.....	22
IOX cabling.....	23
Server blade overview.....	27
Server blade components.....	27
SUV cable and ports.....	28
IOX enclosure overview.....	29
IOX enclosure components.....	29
2 System specifications	31
Dimensions and weights.....	31
Component dimensions.....	31
Component weights.....	31
Rack specifications.....	32
Internal and external site door requirements for G2 racks.....	32
Internal and external site door requirements for Intelligent Series racks.....	32
Electrical specifications.....	33
Environmental specifications.....	36
Temperature and humidity specifications.....	36
Cooling requirements.....	36
Air quality specifications.....	39
Acoustic noise specifications.....	39
Sample Site Inspection Checklist for Site Preparation.....	40
3 HPE Integrity Superdome 2 Insight Display	43
Insight Display overview.....	43
Running the Insight Display installation.....	43
Navigating the Insight Display.....	47
Health Summary screen.....	49
Enclosure Settings screen.....	50
Enclosure Info screen.....	51
Blade and Port Info screen.....	52
Turn Enclosure UID On/Off screen.....	53

View User Note screen.....	53
Chat Mode screen.....	54
Insight Display errors.....	54
Power errors.....	55
Cooling errors.....	55
Location errors.....	55
Configuration errors.....	55
Device failure errors.....	56
4 Booting and shutting down the operating system.....	57
Operating systems supported on the server blade.....	57
Booting and shutting down the operating system for HP-UX.....	57
HP-UX standard boot.....	57
Booting HP-UX from the UEFI Boot Manager.....	57
Booting HP-UX from the UEFI Shell.....	57
Booting HP-UX in single-user mode.....	58
Booting HP-UX in LVM-maintenance mode.....	58
Shutting down HP-UX.....	58
5 Troubleshooting.....	59
Methodology.....	59
General troubleshooting methodology.....	59
LED status information.....	59
OA access.....	59
CLI.....	59
Gathering power related information (overview).....	60
Gathering cooling related information (overview).....	62
Gathering failure information (overview).....	64
Recommended troubleshooting methodology.....	65
Troubleshooting tools.....	65
Superdome 2 LEDs and components.....	65
Server blade front panel components.....	65
Power supply LEDs.....	67
Fan LED.....	68
Onboard Administrator LEDs and buttons.....	68
XFM LEDs and components.....	69
GPSM LEDs and components.....	70
IOX LEDs and components.....	72
IOX enclosure front.....	72
IOX enclosure rear.....	73
PCIe slot LEDs and components.....	74
HPE Integrity Superdome 2 Onboard Administrator module LEDs and components.....	75
DVD module LEDs and components.....	76
OA GUI.....	76
Diagnostics.....	76
Online diagnostics.....	76
Health Repository viewer.....	78
Indictment Records.....	78
Acquitting indictments.....	78
Viewing the list of indicted components.....	79
Viewing deconfigured components.....	80
Viewing indictment acquittals.....	80
Viewing recent service history.....	81
Physical Location installation and health history.....	81
Subcomponent isolation and deconfiguration displays.....	82
Using event logs.....	82

Live viewer.....	82
SEL and FPL viewers.....	84
Core Analysis Engine.....	87
HPE Integrity Superdome 2 Onboard Administrator.....	89
Remotely accessing the Onboard Administrator.....	89
Locally accessing the Onboard Administrator.....	90
Troubleshooting processors.....	91
Processor module behaviors.....	91
Firmware.....	91
System firmware.....	91
FRU replacement firmware update procedures.....	92
I/O firmware.....	93
Interconnect module firmware.....	94
Identifying and troubleshooting firmware issues.....	94
Verifying and installing the latest firmware version.....	94
Troubleshooting partitions.....	95
Troubleshooting the network.....	95
Troubleshooting CAMNet issues	96
Troubleshooting fabric issues.....	96
Troubleshooting clock related issues.....	97
Troubleshooting MCAs.....	98
Troubleshooting the blade interface (system console).....	98
Troubleshooting the environment.....	98
6 Support and other resources.....	99
Accessing Hewlett Packard Enterprise Support.....	99
Accessing updates.....	99
Websites.....	100
Customer self repair.....	100
Remote support.....	100
Documentation feedback.....	100
A Utilities.....	101
UEFI.....	101
UEFI Shell and HPE POSSE commands.....	101
Using the Boot Maintenance Manager.....	104
Boot Options.....	104
Add Boot Option.....	105
Delete Boot Option.....	105
Change Boot Order.....	105
Driver Options.....	106
Add Driver Option.....	106
Delete Driver Option.....	107
Change Driver Order.....	107
Console Options.....	108
Boot From File.....	108
Set Boot Next Value.....	108
Set Time Out Value.....	109
Reset System.....	109
Onboard Administrator.....	109
B Warranty and regulatory information.....	111
Warranty information.....	111
Regulatory information.....	111
Belarus Kazakhstan Russia marking.....	111
Turkey RoHS material content declaration.....	112

Ukraine RoHS material content declaration.....	112
Standard terms, abbreviations, and acronyms.....	113
Index.....	115

1 HPE Integrity Superdome 2 system overview

The HPE Integrity Superdome 2 is a blade-based, high-end server platform supporting the Intel Itanium 9300 and 9500 processor family. Superdome 2 incorporates a modular design to enable increased scalability through the addition of server blades and external I/O enclosures. Superdome 2 complexes use the sx3000 crossbar fabric to interconnect CPU, memory and I/O resources into hard (nPartition) and/or virtual (vPar) partitions. Superdome 2 also includes remote system management functionality through the HPE Onboard Administrator, which helps monitor and manage complex resources, including partitioning.

NOTE: Integrity Superdome 2 is not an upgrade to existing Superdome sx1000 and sx2000 systems. Integrity Superdome 2 incorporates all new components, including server blades and blade enclosures.

Complex components

A Superdome 2 complex consists of the following components:

- Minimum of one Superdome 2 compute enclosure—The compute enclosure contains the server blades, I/O interconnect modules (for blade-based I/O), manageability modules of the complex, and an integrated LCD Insight Display that can be used for basic enclosure maintenance and displays the overall enclosure health. An SD2-8s complex is a single compute enclosure capable of supporting up to eight Superdome 2 server blades, but is limited to maximum of four server blades per partition. An SD2-16s complex is a single compute enclosure supporting up to eight server blades with a maximum of 8 server blades per partition. A SD2-32s complex consists of two compute enclosures each supporting up to eight server blades with a maximum of 16 server blades per partition.
- Two Intel Itanium 9300 or 9500 series processors and 32 DDR3 DIMM memory sockets per blade.

NOTE: A minimum of one Superdome 2 server blade is required in the first Blade slot of compute enclosure 1 in a Superdome 2 complex. All enclosures must have either a Superdome 2 server blade or a CAMnet completer module installed in the first and second Blade slots to ensure CAMnet interconnect redundancy.

- Up to eight Superdome 2 I/O expansion enclosures for SD2-16s and SD2-32s complexes or up to four IOX enclosures for SD2-8s complexes.

HPE Integrity Superdome 2 SD2-16s and SD2-32S complexes that are factory-integrated also include an LCD touchscreen display on the rack door that displays the overall complex health and can be used to access basic complex information.

Power subsystem

Superdome 2 compute enclosures support two power input modules, using either single phase or 3-phase power cords. Connecting two ac sources to each power input module provides 2N redundancy for ac input and dc output of the power supplies. SD2-32s, SD2-16s, and SD2-8s complexes contain 12 power supplies per compute enclosure to provide a fully loaded system with the required power. SD2-8s complexes can contain a minimum of six power supplies if less than four server blades are present and redundant power grids are not required. Twelve power supplies give 2N redundancy, which can support the failure of a power supply or an ac power source (but not simultaneously). Six power supplies are installed in the upper section of the enclosure, and six power supplies are installed in the lower section of the enclosure.

Superdome 2 IOX enclosures support two ac power supplies with a minimum of one power supply required to provide all necessary power to the enclosure and two power supplies providing 2N redundancy.

To power off the enclosure, disconnect the power cables from lower power supplies first. (then upper power supplies)

Powering off the compute enclosure

To service any internal compute enclosure component, complete the following actions:

1. Power off partition.
2. Power off all XFMs.
3. Disconnect the power cables from lower power supplies.
4. Disconnect the power cables from upper power supplies.

Manageability subsystem

Superdome 2 is managed by two Superdome 2 OAs that monitor both individual complex components and complex health. This information can be accessed one of two ways:

- A GUI using a remote terminal.
- A CLI using a remote or local terminal.

NOTE: Only one OA is required for operation, the second OA provides redundancy and automatic failover capabilities.

Two GPSMs in each compute enclosure manage CAMnet distribution to all server blades, XFMs and IOX enclosures in the complex and provide the redundant global clock source for the complex. Fans and power supplies in the upper section of the compute enclosure are monitored and controlled by the OA through the GPSMs. Also, the GPSMs provide power for the rack door display as well as USB connectivity for the compute enclosure DVD module.

Each compute enclosure supports four XFMs that provide the Superdome 2 crossbar fabric, which carries blade-to-blade (within an enclosure and between enclosures in a complex) and blade-to-IOX data transfer packets.

Server blades

HPE Integrity Superdome 2 CB900s i2 Server Blades support two Quad-Core Intel Itanium 9300 series processor modules and up to 32 DDR3 DIMMs.

HPE Integrity Superdome 2 CB900s i4 Server Blades support two Eight-Core Intel Itanium 9500 series processor modules and up to 32 DDR3 DIMMs.

Server blades and partitions

An nPartition comprises one or more server blades working as a single system. I/O bays in IOX enclosures are assigned to nPartitions and any I/O component of a server blade such as LOMs are assigned to the nPartition containing the server blade.

In the complex, each nPartition has its own dedicated portion of the complex hardware, which can run a single instance of an operating system. Each nPartition can boot, reboot, and operate independently of any other nPartitions and hardware within the same complex.

An nPartition includes all hardware assigned to the nPartition: all IOX I/O bays, I/O devices, and server blades.

A complex can contain one or more nPartitions, enabling the hardware to function as a single system or as multiple systems.

NOTE: For more information, see the *HPE Integrity Superdome 2 Partitioning Administrator Guide*.

I/O subsystem

Integrity Superdome 2 complexes provides I/O through PCIe devices based on individual server blades as well as through IOX enclosures that are connected to the complex.

Server blade-based I/O

Each Superdome 2 server blade contains two dual port 10Gb Ethernet LOMs. Connectivity to the LOMs is provided through the interconnect modules in the rear of the compute enclosure.

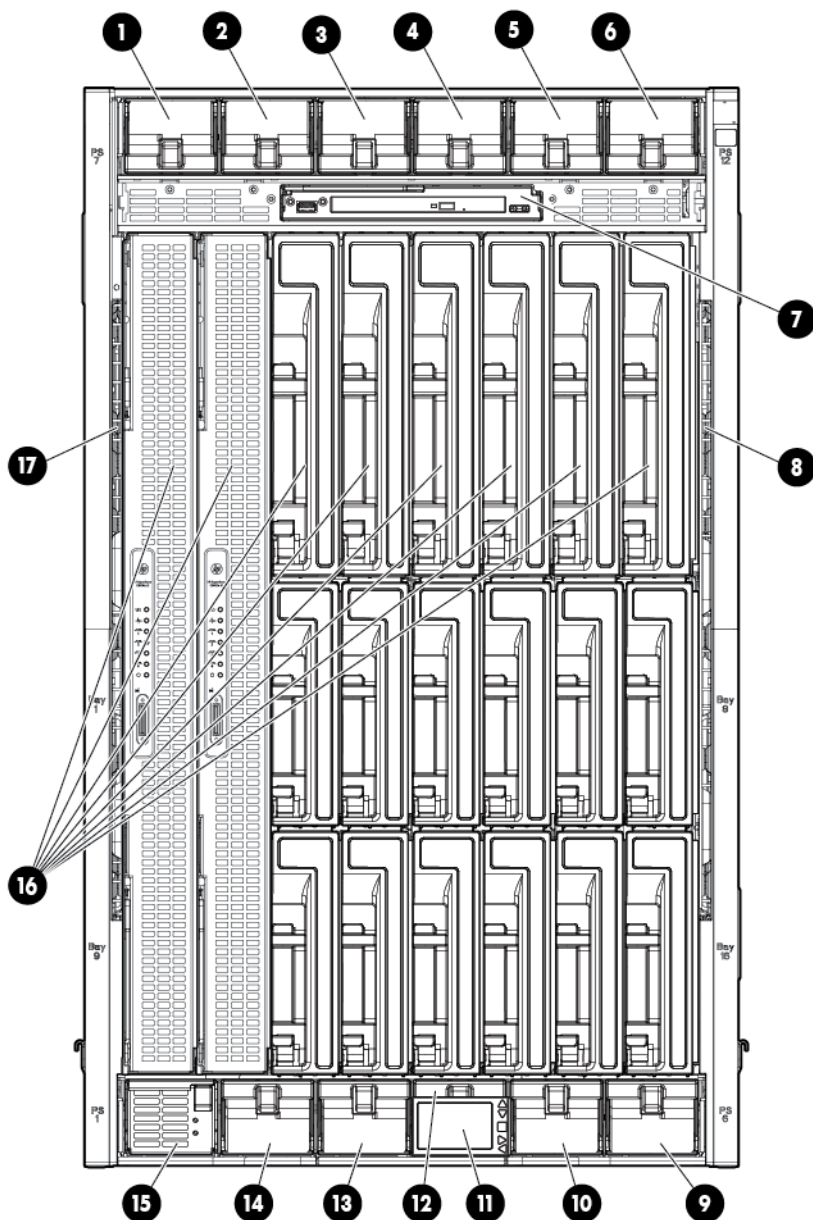
I/O expansion enclosure

Integrity Superdome 2 complexes support up to eight IOX enclosures (four in SD2-8s complexes) to provide additional I/O for server blades through Superdome 2 crossbar fabric cables from the XFMs in the compute enclosure to IOX enclosures. In addition, CAMnet interconnection is provided through standard CAT6 cables from the GPSMs to the IOX enclosures. An IOX contains two I/O bays each supporting up to six PCIe cards (for a total of 12 PCIe cards per IOX). I/O bays are assigned to an nPartition through the partitioning tools that reside on the OA.

Component overview

Compute enclosure overview

Compute enclosure front components



Item	Description
1	Power supply bay 7
2	Power supply bay 8
3	Power supply bay 9
4	Power supply bay 10
5	Power supply bay 11
6	Power supply bay 12

Item	Description
7	DVD module
8	Air intake slot (<i>Do not block</i>)
9	Power supply bay 6
10	Power supply bay 5
11	Insight Display
12	Power supply bay 4
13	Power supply bay 3
14	Power supply bay 2
15	Power supply bay 1
16	Superdome 2 Blade slots ¹
17	Air intake slot (<i>Do not block</i>)

¹ For more information, see “Server Blade slot numbering” (page 12).

Power supply bay numbering

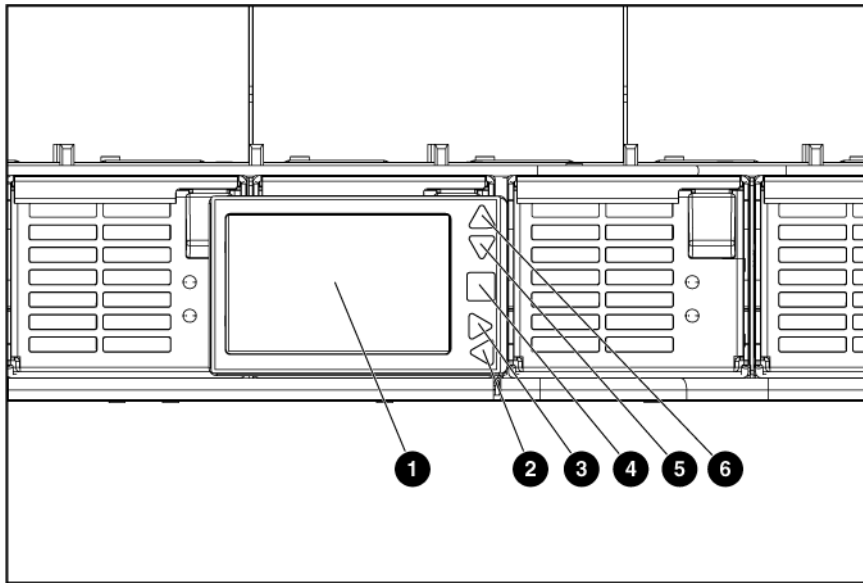


Server Blade slot numbering

- ⓘ **IMPORTANT:** When looking at the rear of the enclosure, Blade slot numbering is reversed.

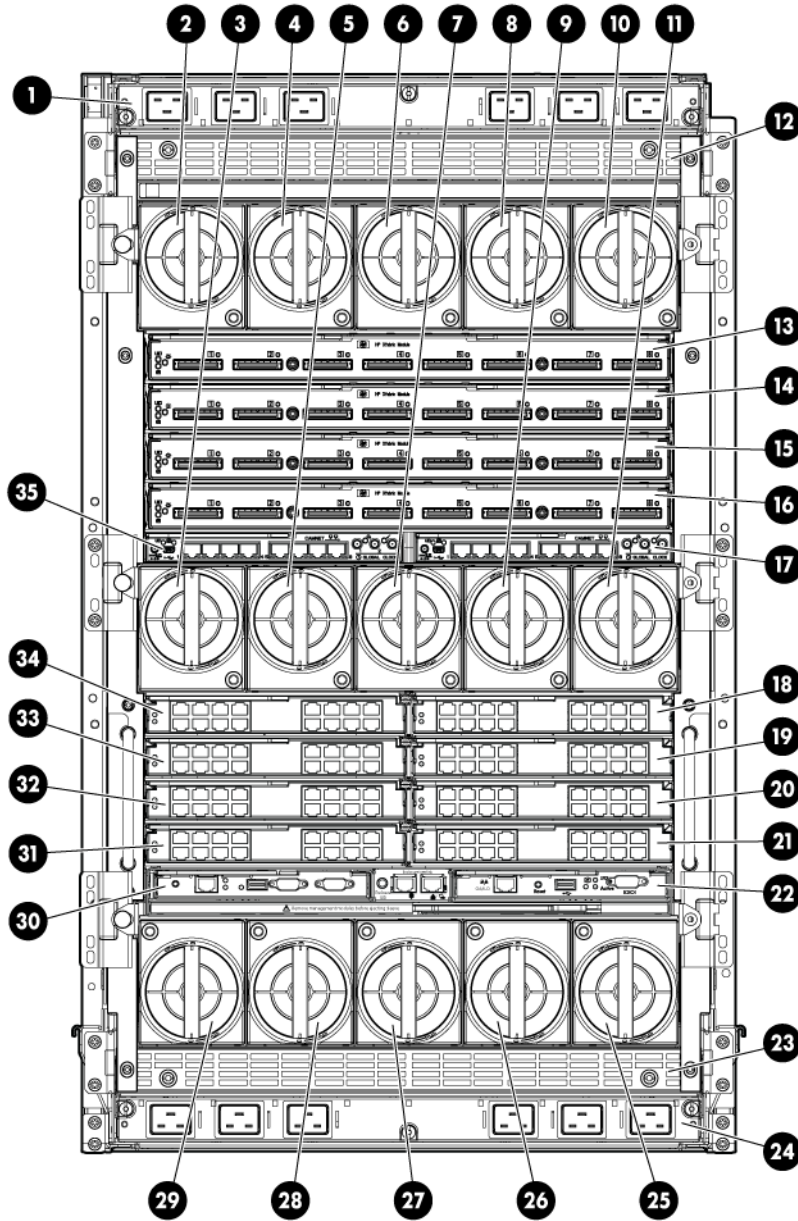


HPE Integrity Superdome 2 Insight Display components



Item	Description	Function
1	Insight Display screen	Displays Main Menu error messages and instructions
2	Left arrow button	Moves the menu or navigation bar selection left one position
3	Right arrow button	Moves the menu or navigation bar selection right one position
4	OK button	Accepts the highlighted selection and navigates to the selected menu
5	Down arrow button	Moves the menu selection down one position
6	Up arrow button	Moves the menu selection up one position

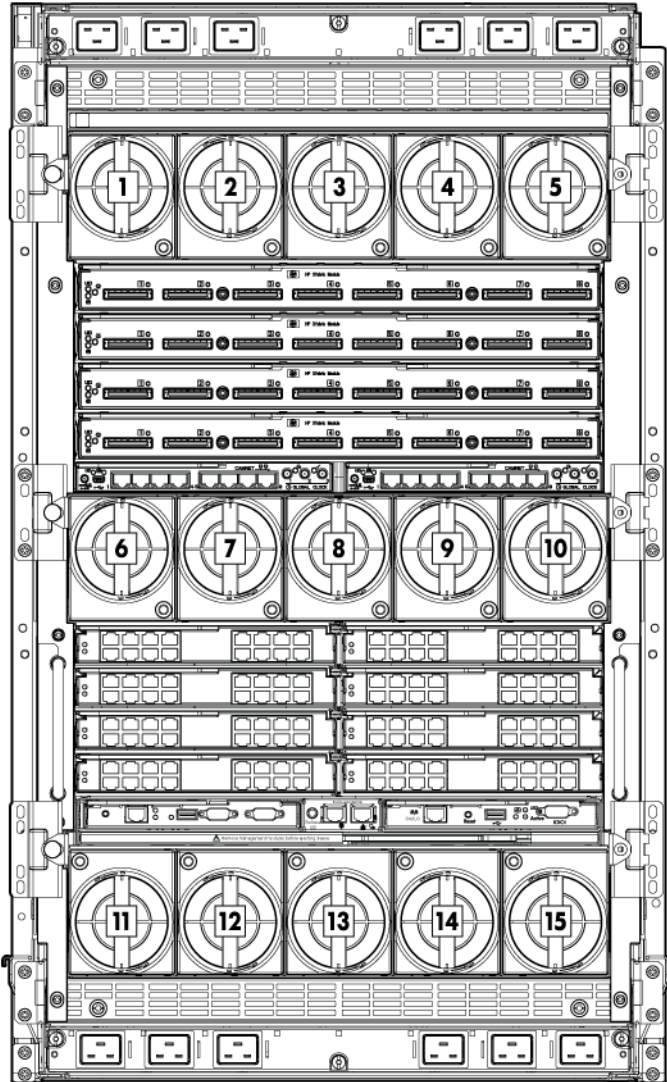
Compute enclosure rear components



Item	Description
1	ac power connectors (upper)
2	Fan bay 1
3	Fan bay 6
4	Fan bay 2
5	Fan bay 7
6	Fan bay 3
7	Fan bay 8
8	Fan bay 4
9	Fan bay 9

Item	Description
10	Fan bay 5
11	Fan bay 10
12	Power supply exhaust vent (<i>Do not block</i>)
13	XFM bay 1
14	XFM bay 2
15	XFM bay 3
16	XFM bay 4
17	GPSM bay 2
18	Interconnect bay 2
19	Interconnect bay 4
20	Interconnect bay 6
21	Interconnect bay 8
22	Onboard Administrator bay 2
23	Power supply exhaust vent (<i>Do not block</i>)
24	ac power connectors (lower)
25	Fan bay 15
26	Fan bay 14
27	Fan bay 13
28	Fan bay 12
29	Fan bay 11
30	Onboard Administrator bay 1
31	Interconnect bay 7
32	Interconnect bay 5
33	Interconnect bay 3
34	Interconnect bay 1
35	GPSM bay 1

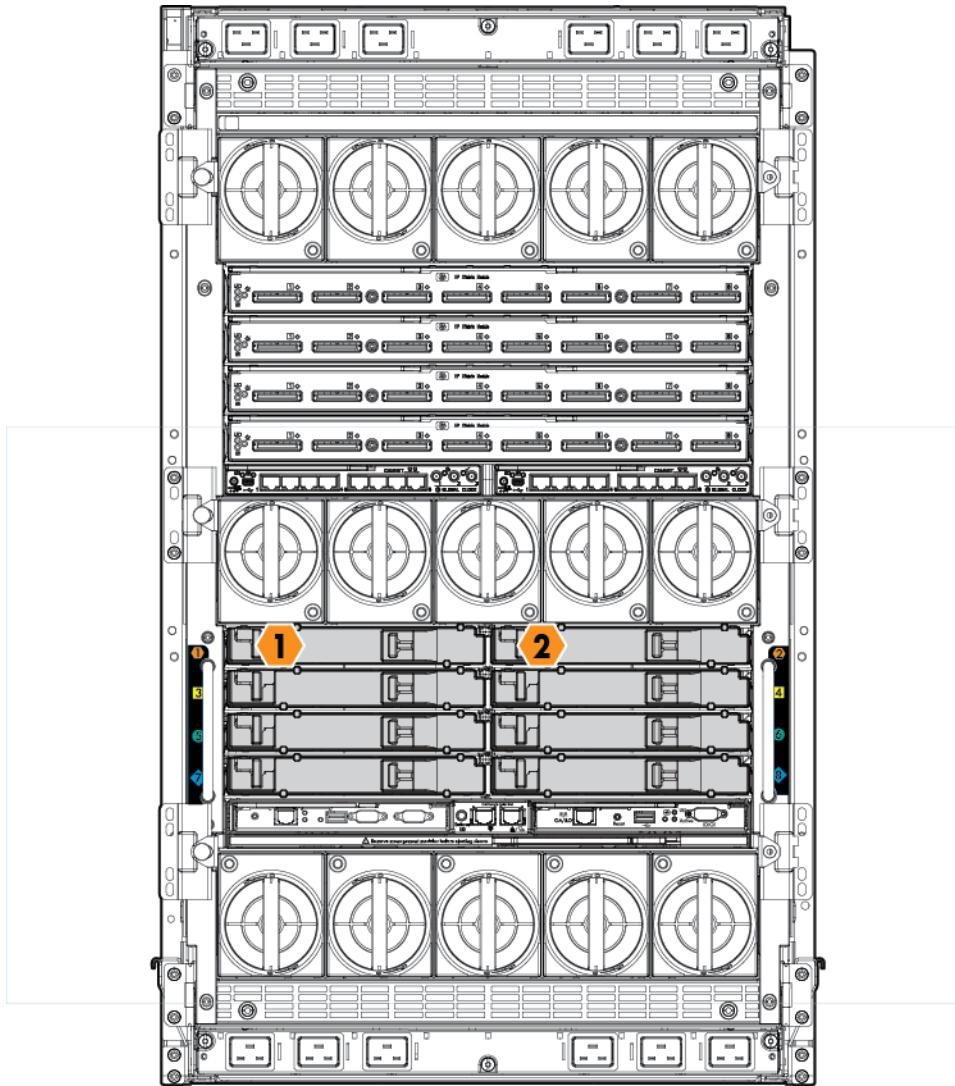
Fan bay numbering







Interconnect bay numbering

Each compute enclosure requires interconnect modules or IOX enclosures to provide network access for data transfer. Interconnect modules reside in bays located in the rear of the enclosure. Be sure to review Blade slot numbering to determine which external network connections on the interconnect modules are active. The IOX enclosures are external and connected to the XFMs in compute enclosures through Superdome 2 crossbar fabric cables.

To support server blade LOM network connections for specific signals, install the interconnect module into the appropriate bay.



To support network connections for specific signals, install an interconnect module in the bay corresponding to the embedded NIC or mezzanine signals.

Server blade signal	Compute enclosure interconnect bay	Interconnect bay labels
NIC 1 (Embedded)	1	
NIC 2 (Embedded)	2	
NIC 3 (Embedded)	1	
NIC 4 (Embedded)	2	

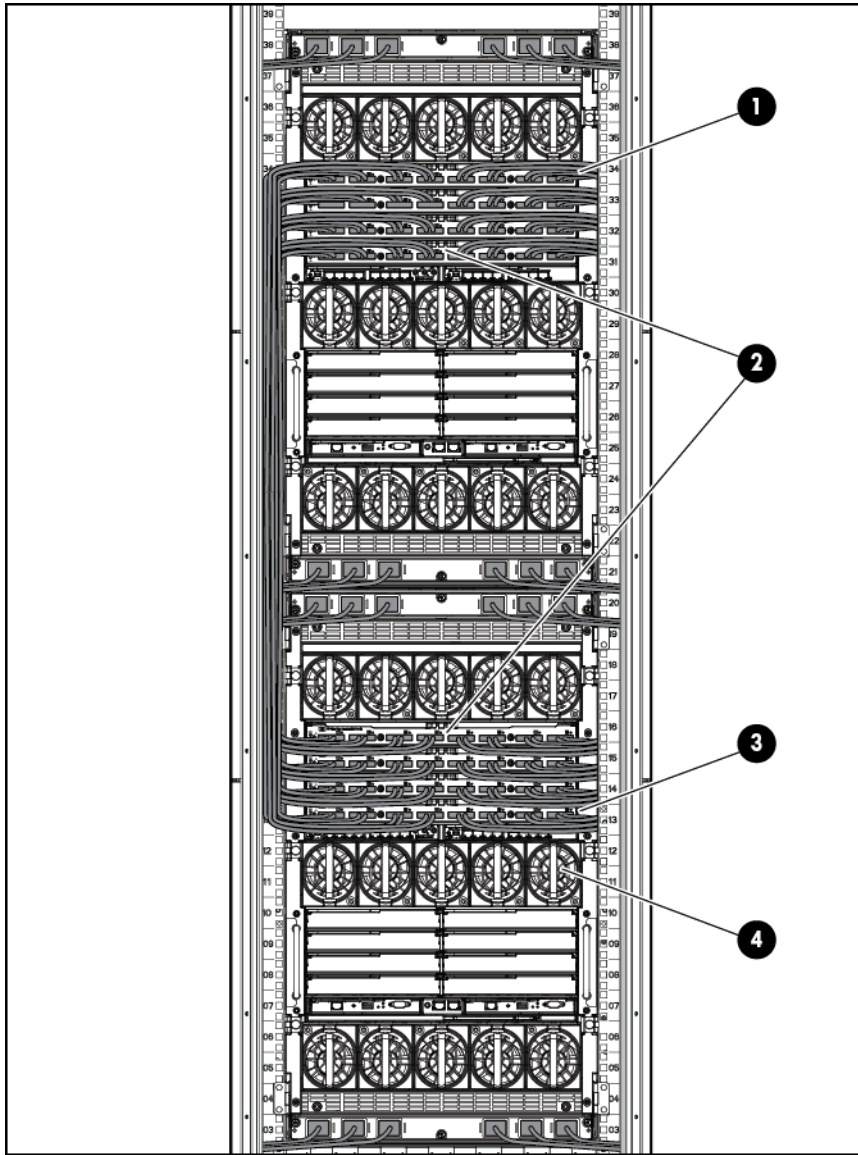
NOTE: For information on the location of LEDs and ports on individual interconnect modules, see the documentation that ships with the interconnect module.

Superdome 2 cabling best practices

Proper cable routing is essential for:

- **Strain relief** — When cables are left to hang from interconnected modules the effect of weight on the cables, especially when a cable is physically combined with other cables, places additional stress on electrical connectors.
- **Connector cycling** — The more times a cable is disconnected and reconnected the more likely it is that damage will occur to the connectors. The connectors are only rated for 50 cycles so repeated cycling of the connectors will increase the risk of link failures.
- **Thermal reliability** — When cables are left overlapping as they route vertically at the rear of a rack they can obstruct the flow of air out the rear of the product, causing abnormal heating.
- **FRU access** — The cable routing has been designed to provide ease of access to the field replaceable units. A FRU should be replaced with little or no disturbance of the neighboring cables. When replacing an XFM, only the cables attached to the XFM being replaced should be disturbed. If the routing is such other cables are significantly moved during the service event, the cables are improperly routed.

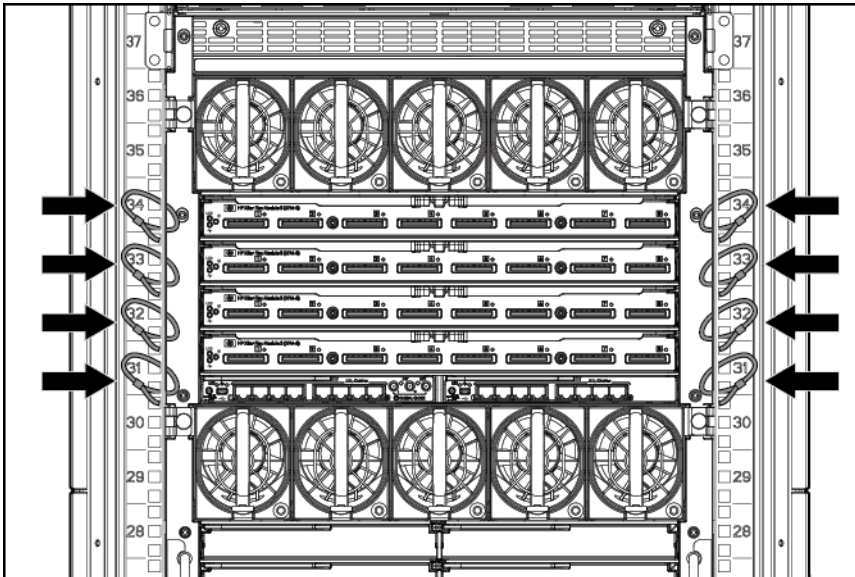
A Superdome 2 with proper cable routing should look like the image below:



Item	Best practice
1	Horizontal cable routing to the XFMs
2	The cables on the left and right are split down the middle between the left and right positioned XFMs.
3	No cables are hanging by the connector.
4	Ready access to the fans and other FRUs without disturbing the neighboring cables.

XFM Module cables

Prior to cable installation, attach strong tie wraps to rack. This provides a secure connection point for Velcro wraps and allows you to adjust the cable height by tightening the tie wrap as necessary.

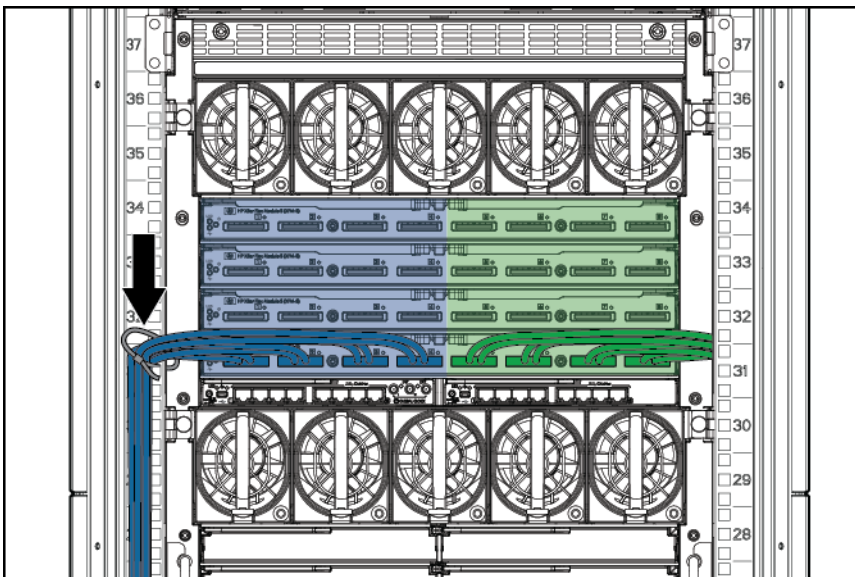


During cabling, XFM module cables should be split into horizontal rows that fan out to the sides of the rack. This configuration allows for easy access to each XFM module.

1. Starting with XFM 4 (the bottom XFM), secure four XFM cables to the side of the rack directly to the side of the module using a tie wrap or Velcro tie.
2. Bend the secured cables downward in the rack cable trunk space.
3. Moving from outside to inside, repeat steps 1 and 2 for each XFM module, forming four horizontal layers of fan-out cables behind the XFM module area.



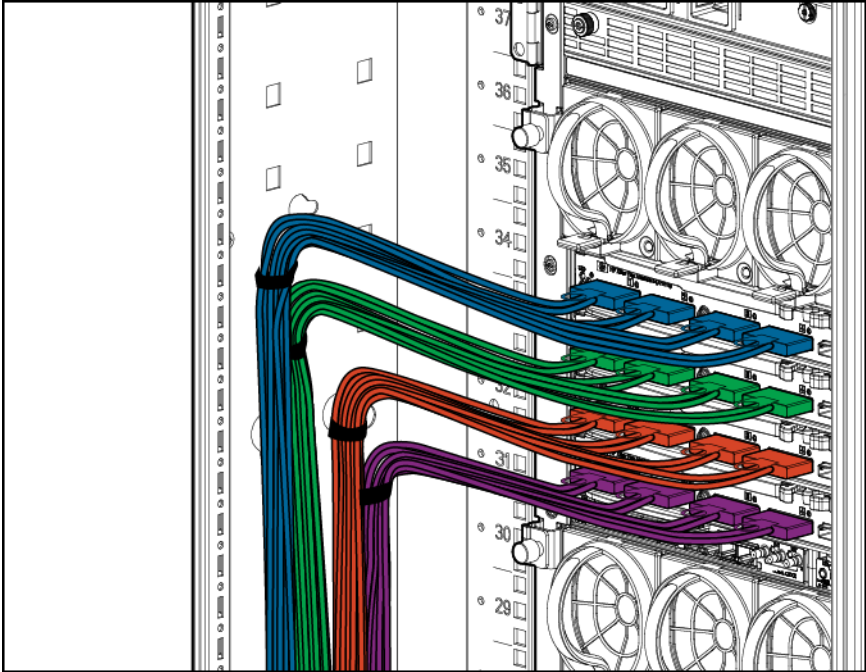
TIP: Starting at XFM 4 and cabling from outside to inside will allow you to easily see all subsequent cable connections.



TIP: When cabling, begin with XFM 4 (the Bottom XFM) and cable from the outside towards the inside. This allows you to see all subsequent cable connections. Cabling from the outside toward the inside will also allow you to see and access the next cable connection easily.

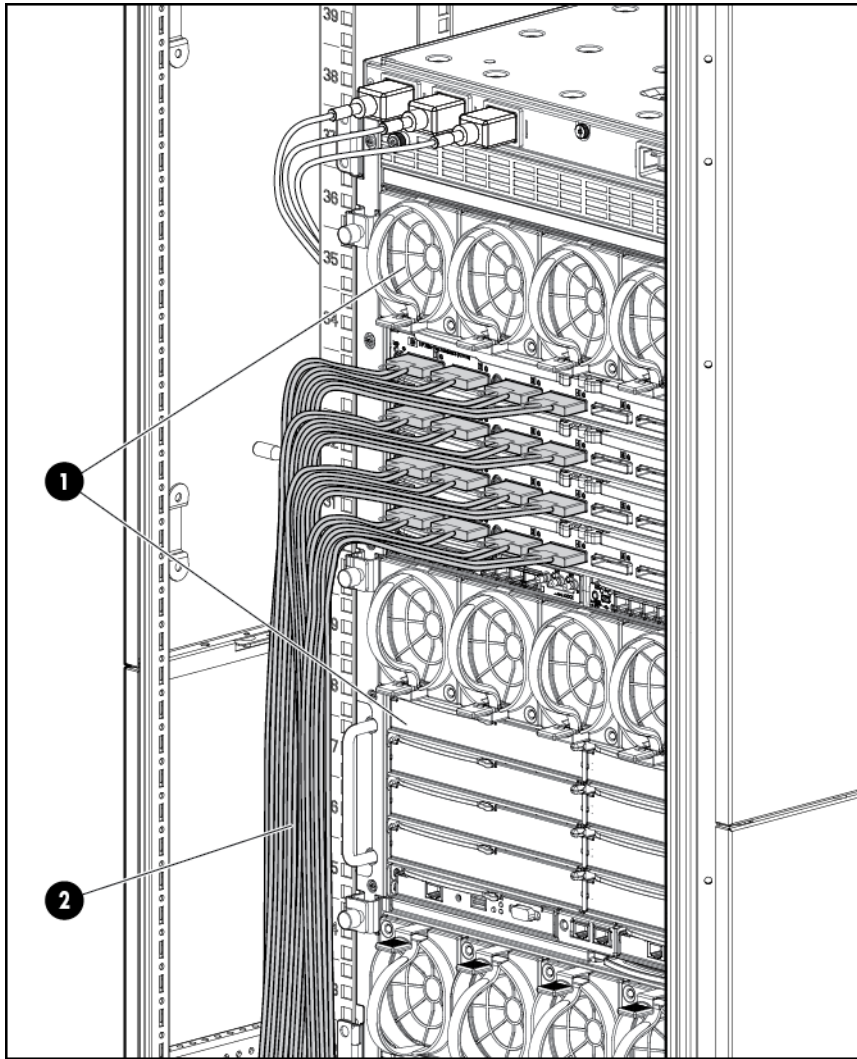
After cabling is complete, all XFM cables should be attached to the rack using one tie per each bundle of four cables.

In a Deep Rack, each group of four cables is secured to cable management column in the rear trunk space of the rack.



32s system cabling

For 32s systems containing two SD2 enclosures in a single rack, XFM cables must clear fan modules and rear I/O switches as the cables travel vertically. This is done by flattening the cable bulk against the sides of the rear rack space in the rack.



Item	Best practice
1	Fans and I/O switches can be accessed without moving cables.
2	The cables are flattened against the inside of the rack.

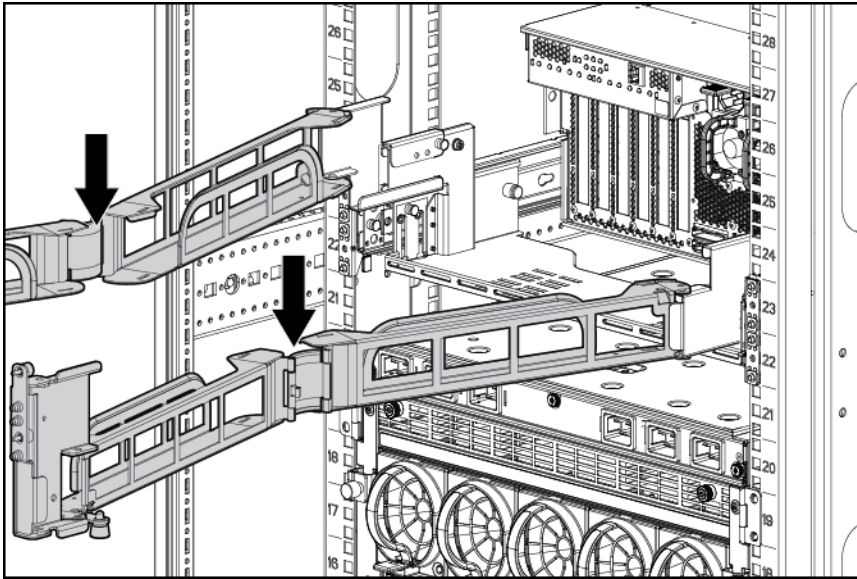
IOX cabling

⚠ CAUTION: To avoid damage to cables or IOXs from excessive cable movement:

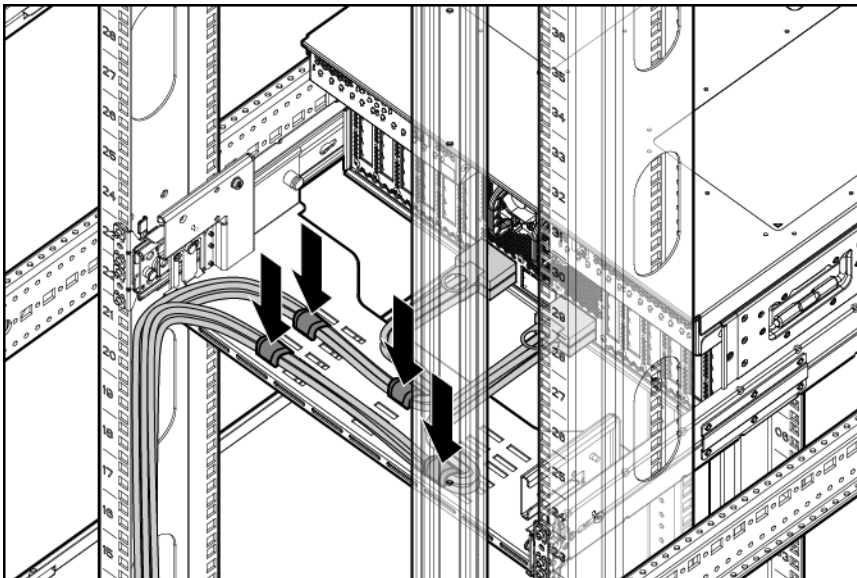
- Always provide adequate cable length for CMA articulation, and tightly secure cables to the IOX cable tray to prevent cable movement at the PCIe card interface.
- Always provide XFM cable service loops at the shoulder of each CMA before routing cables vertically in the rack.

The IOX uses cable management arms that allow the IOX chassis to pull out the front of the rack for PCIe card access. There are two arms per IOX chassis, with one arm folding from the left and one arm folding from the right. When the CMAs are extended, cable length requirements are the longest. When initially installing cables, make sure that the IOX chassis is fully extended out the front of the rack and lay cables into the arms while they are extended. Once the CMAs are populated with cables and the cables secured, XFM cables can then be tied to the rack.

1. Fully extend the IOX chassis to the front of the rack

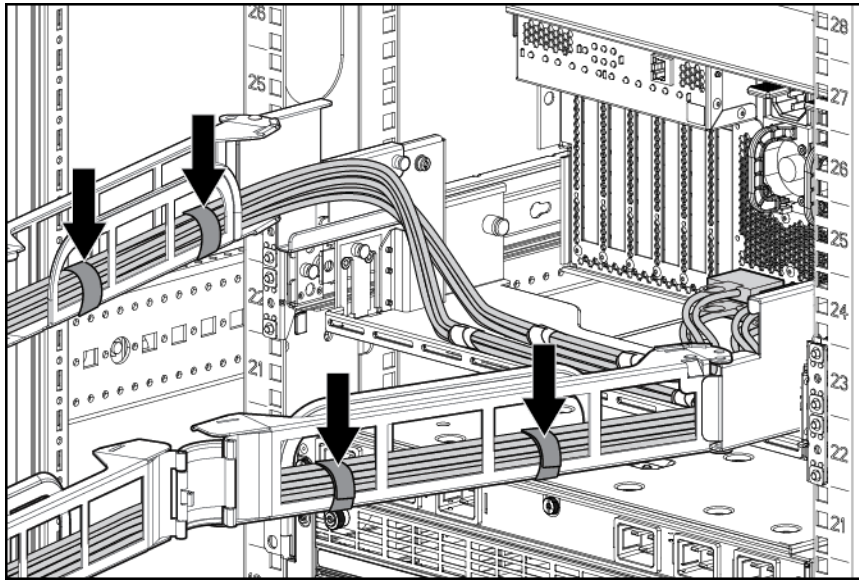


2. Connect the XFM cables to the IOX.
3. Secure the cables to the cable tray using two Velcro straps per bundle. This prevent the cables from being pulled out during extension and collapse of the IOX.



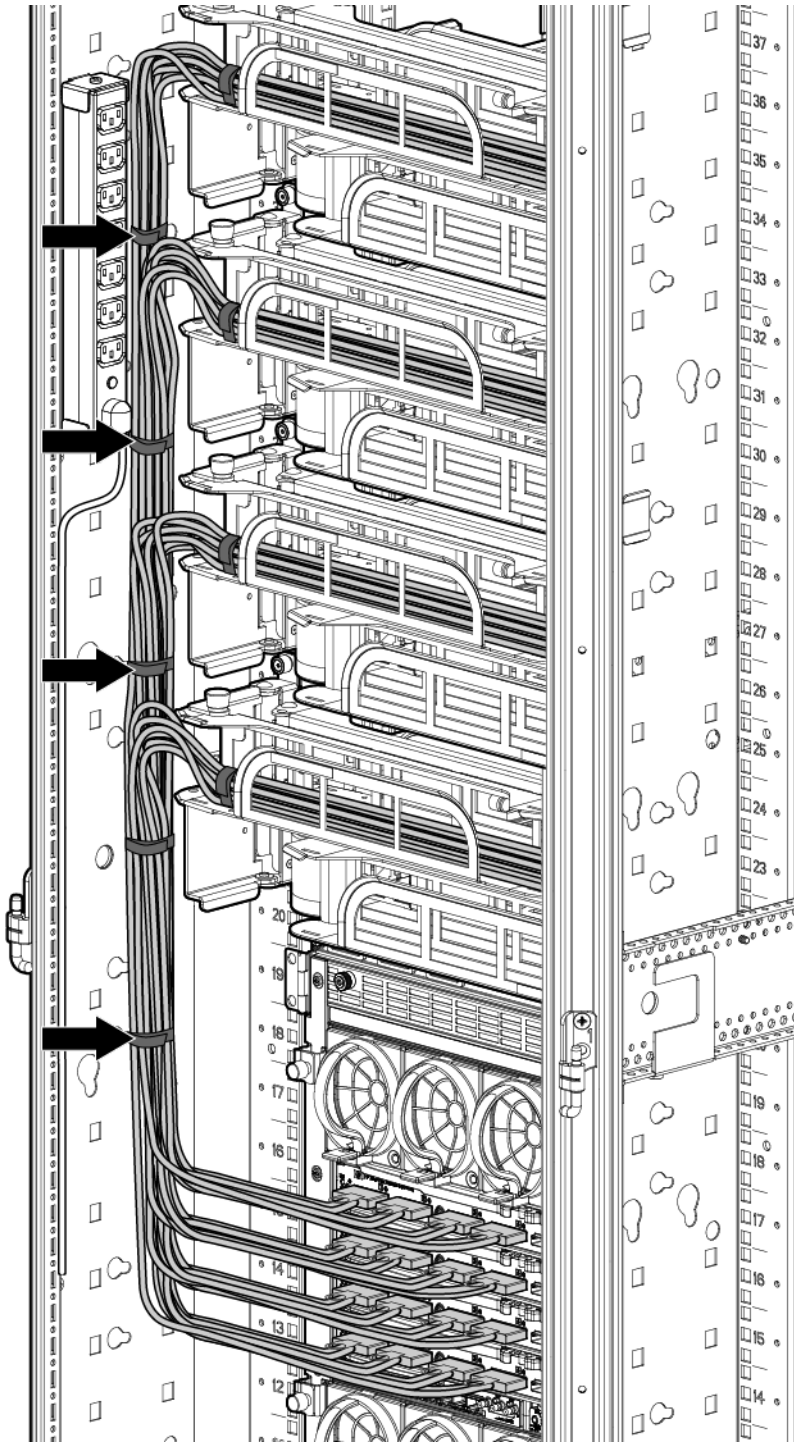
CAMNet, power, and I/O cables should be similarly secured.

4. Lay the XFM cables into the left CMA sleeve and apply Velcro ties to at least 4 locations along both sides of the CMA.
-
- ① **IMPORTANT:** Be sure that each Velcro tie clamps the cable bundle to the CMA sheet metal.
-



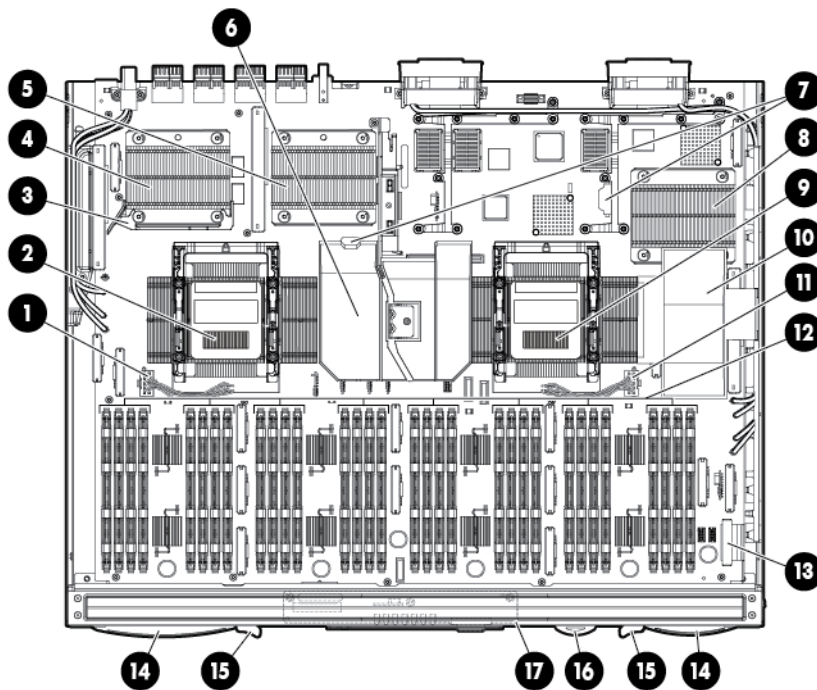
5. Push the IOX back into the rack until it locks in place.
6. Secure the XFM cables to the rear trunk space of rack, leaving the excess cable to loop back near the entrance of each cable management arm.

Repeat this procedure for the right cable management arm. Once complete, verify that the cable management arms extend and collapse properly without issue.



Server blade overview

Server blade components



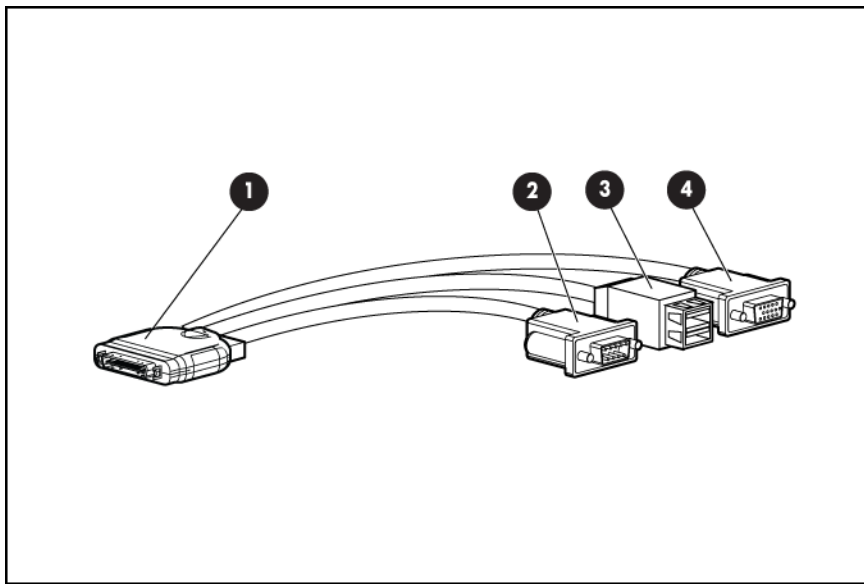
Item	Description
1	CPU 1 socket power connector
2	CPU 1 socket
3	Agent baffle
4	Agent ASIC 1
5	Agent ASIC 0
6	Center air baffle
7	Battery sockets (PDH battery on left, iLO Battery on right)
8	IOH ASIC
9	CPU 0 socket
10	Lower air baffle
11	CPU 0 socket power connector
12	DDR3 DIMM slots (32)
13	SUV connector
14	Server blade release levers (2)
15	Server blade release buttons (2)
16	Serial label pull tab
17	SUV board

SUV cable and ports

The SUV port on the front of the server blade is used with an SUV cable to connect the blade to external devices such as a terminal emulator or monitor.

CAUTION: The SUV cable is not designed to be used as a permanent connection, be careful when walking near the server blade. Hitting or bumping the cable might cause the port on the server blade to break and damage the system board.

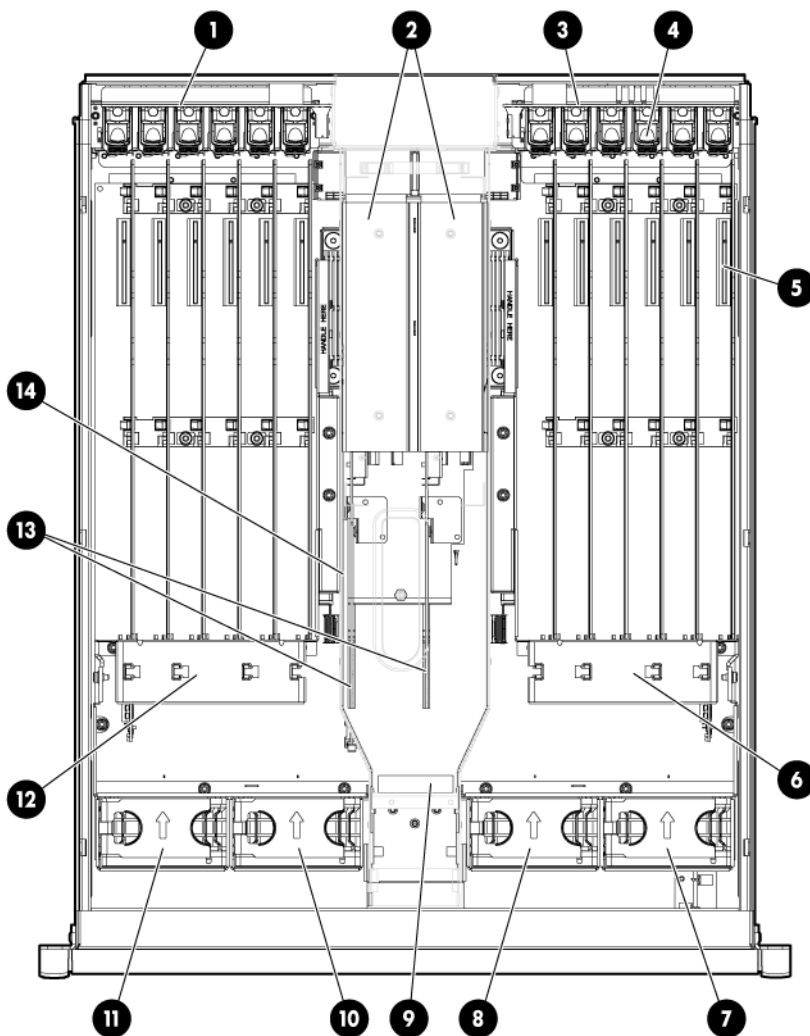
IMPORTANT: The SUV port does not provide console access.



Item	Description
1	Server blade
2	Video
3	USB ports (2)
4	Serial

IOX enclosure overview

IOX enclosure components



Item	Description
1	I/O bay 2 OL* board
2	Power supplies (2)
3	I/O bay 1OL* board
4	PCIe slot release latches (12)
5	PCIe card slots (12)
6	SAS battery location
7	Fan 4
8	Fan 3
9	I/O backplane release lever
10	Fan 2
11	Fan 1

Item	Description
12	SAS battery location
13	ac transfer boards (2)
14	PSU tunnel

2 System specifications

Dimensions and weights

Component dimensions

Table 1 Component dimensions

Component	Width (in/cm)	Depth (in/cm)	Height (in/cm)
Compute enclosure	17.6/44.7	32.6/82.8	31.4/79.8
Server blade	2.02/5.13	19.69/50.01	24.48/62.18
I/O expansion enclosure	17.2/43.7	22.5/57.2	6.8/17.3

Component weights

Table 2 Compute enclosure weights

Component	Weight (lb/kg)	Max quantity per enclosure
Compute enclosure chassis ¹	143.0/64.9	1
I/O chassis ²	48.7/22.1	1
Midplane Brick	41.5/18.8	1
Onboard Administrator tray	8.0/3.6	1
Active Cool Fan	2.7/0.9	15
Power supply module	5.0/2.3	12
DVD module	4.7/2.1	1
Onboard Administrator module	1.8/0.8	2
GPSPM	2.6/1.2	2
XFM	7.3/3.3	4
I/O interconnect module ³	2.9/1.3	8

¹ Does not include I/O chassis or Midplane Brick.

² Part of the enclosure assembly the XFM and I/O switch modules install into

³ Maximum weight for an interconnect module.

Table 3 Other component weights

Component	Weight (lb/kg)
IOX enclosure ¹	65.0/29.5
CB900s i2 or CB900s i4 Server Blade ²	35.0/15.9

¹ Fully loaded with all PCIe cards

² Fully loaded with all DIMMs

For more information about general site preparation guidelines, see the *Generic Site Preparation Guide*.

Rack specifications

Table 4 Compute enclosure weights

Rack	Total cabinet area with packing materials (HxDxW)	U height	Width	Depth	Dynamic load (gross)	Static load
HPE 10642 G2	219 x 121.92 x 90.3 cm (86.22 x 48 x 35.56 in)	42U	600 mm (23.8 in)	1,000 mm (47.2 in)	907.2 kg (2,000 lb)	1,360.8 kg (3,000 lb)
HPE 10636 G2 36U 600 mm (23.6 in) Universal Rack	191.14 x 121.92 x 81.28 cm (75.25 x 48 x 32 in)	36U	600 mm (23.8 in)	1,000 mm (39.4 in)	689.5 kg (1,520 lb)	907.2 kg (2,000 lb)
HPE 10642 G2 42U 600 mm (23.8 in) 1200mm Rack	218.44 x 147.06 x 90.42 cm (86 x 57.90 x 35.60 in)	42U	600 mm (23.8 in)	1,200 mm (47.2 in)	1,134 kg (2,500 lb)	1,360.8 kg (3,000 lb)
HPE 642 1075mm Intelligent Rack	246.80 x 129.20 x 90 cm (85.35 x 50.87 x 35.43 in)	42U	597.8 mm (23.54 in)	1,085.63 mm (42.74 in)	1,134 kg (2,500 lb)	1,360.8 kg (3,000 lb)
HPE 642 1200mm Shock Intelligent Rack	85.82 x 57.87 x 35.43 in (218.00 x 147.00 x 90 cm)	42U	597.8 mm (23.54 in)	1,300.2 mm (51.19 in)	1,460.11kg (3,219 lb)	1,360.78 kg (3,000 lb)

ⓘ **IMPORTANT:** Racks in the same complex must be the same height and depth.

Internal and external site door requirements for G2 racks

Internal site doorways must obey the following height requirements:

- For a 1m deep, 42U tall rack — no less than 2004 mm (78.8 in) in height.
- For a 1200mm deep, 42U rack — no less than 2007 mm (79.01 in) in height.

External doorways should not be less than 2215mm (87.20 in) in height to account for the lifted height of the pallet.

Internal and external site door requirements for Intelligent Series racks

Internal site doorways must obey the following height requirements:

- For the 642 1075 — no less than 200.19 cm (78.816 in)
- For the 642 1200 — no less than 200.66 cm (79.00 in)

External doorways should not be less than 216.80 cm (85.35 in) for the 642 1075, and 215.00 cm (84.65 in) for the 642 1200 to account for the lifted height of the pallet.

Electrical specifications

Table 5 Compute enclosure power options

Source type	Source voltage (nominal)	Plug or connector type	Circuit type	Power receptacle required	Number of power cords required (per enclosure)
3-phase	200–220 VAC line-to-line (phase-to-phase), 3-phase 50Hz/60Hz	NEMA L15-30p, 3-Pole, 4-wire, 3m (10ft) power cord	30A 3-phase	L15-30R. 3-pole, 4-wire	4
3-phase	220 VAC to 240 VAC line-to-neutral 3-phase 50Hz/60Hz	IEC 309, 4-pole, 5-wire, Red, 3m (10ft) power cord	16A	IEC 309, 4-pole, 5-wire, red	4
Single-phase	200V to 240V ac 50Hz/60Hz	IEC 320 C19-C20	16A/20A Single-phase	IEC 320 C19	12

NOTE: When wiring a 3-phase enclosure, phase rotation is unimportant.

Table 6 Single-phase power cords

Part number	Description	Where used
8120-6895	Stripped end, 240 V	International - other
8120-6897	Male IEC309, 240 V	International
8121-0070	Male GB-1002, 240 V	China
8120-6903	Male NEMA L6-20, 240 V	North America/Japan

Table 7 Compute enclosure single-phase HPE 2400 W power supply specifications

Specification	Value
Power cord	IEC-320 C19-C20
Output	2400 W per power supply
Input requirements	
Rated input voltage	200 VAC to 240 VAC
Rated input frequency	50-60 Hz
Rated input current per power supply (maximum)	13.8 A at 200 VAC 13.3 A at 208 VAC 12.6 A at 220 VAC
Maximum inrush current	100 A for 10 ms
Ground leakage current	1.16 mA
Power factor correction	0.98

Table 8 Compute enclosure 3-phase HPE 2400 W power supply specifications (North America/Japan)

Specification	Value
Power cords (4)	NEMA L15-30p 3.0m (10ft)
Max input current per line cord	24.0 A at 200 VAC 23.1 A at 208 VAC
Input requirements	
Rated input voltage	200 VAC to 240 VAC line-to-line 3-phase
Rated input frequency	50–60 Hz
Maximum inrush current	100 A for 10 ms
Ground leakage current	3.5 mA
Power factor correction	0.98

Table 9 Compute enclosure 3-phase HPE 2400 W power supply specifications (International)

Specification	Value
Power cords (4)	IEC-309 220–240V, 5-pin, 16 A 3.0m (10ft)
Max input current per line cord	12.1 A at 220 VAC 11.1 A at 240 VAC
Input requirements	
Rated input voltage	200 VAC to 240 VAC line-to-neutral 3-phase
Rated input frequency	50-60 Hz
Maximum inrush current	100 A for 10 ms
Ground leakage current	3.5 mA
Power factor correction	0.98

Table 10 Compute enclosure power requirements

Power required (50–60 Hz)	Watts	VA
User expected maximum power ¹	8820	9000

¹ Typical maximum Power or User expected maximum power (Input power at the ac input expressed in Watts and Volt-Amps.) This figure was developed with the absolute maximum configuration running applications designed to draw the maximum power possible. It is highly unlikely that any real-world application will result in this amount of power use for any significant time period.

Table 11 Compute enclosure PDU power options

Source/Circuit type	Source voltage (nominal)	Plug or connector type	Power receptacle required	Number of power cords required (per enclosure leaving the rack)
3-phase 60A	200–220 VAC line-to-line (phase-to-phase), 3-phase 50Hz/60Hz	IEC 309 60A 3-Pole, 4 wire, Blue, 3.6m (11.8ft) power cord	IEC 309 60A 3-Pole, 4 wire, Blue	2
3-phase 32A	220 VAC to 240 VAC line-to-neutral 3-phase 50Hz/60Hz	IEC 309 32A 4-Pole, 5 wire, Red, 3.6m (11.8ft) power cord	IEC 309 32A 4-Pole, 5 wire, Red	2
Single-phase 63A	200V to 240V ac 50Hz/60Hz	IEC 309 63A Single Phase Blue , 3.6m (11.8ft) power cord	IEC 309 63A Single Phase, Blue	4
Single-phase 30A	200–240 VAC 50Hz/60Hz	NEMA L6-30P Single Phase, 3.6m (11.8ft) power cord	NEMA L6-30R Single Phase	6

Table 12 IOX ac power specifications

Requirements	Value
Nominal input voltage	200–240 VAC
Frequency range (minimum - maximum)	50–60 Hz
Number of phases	Single-phase
Rated line current	3 A
Maximum inrush current	30 A for 20ms
Power factor correction	0.97
Ground leakage current	1 mA

Table 13 IOX PDU power options

Source/Circuit type	Source voltage (nominal)	Plug or connector type	Power receptacle required	Number of power cords required (per enclosure leaving the rack)
Single-phase 30A	200-240 VAC 50Hz/60Hz	NEMA L6-30P Single Phase, 3.6m (11.8ft) power cord	NEMA L6-30R Single Phase	2
Single-phase 32A	200-240 VAC 50Hz/60Hz	IEC 309 32A Single Phase Red, 3.6m (11.8ft) power cord	IEC 309 32A Single Phase, Red	2

Table 14 IOX enclosure power requirements

Power Required (50–60 Hz)	Watts	VA
User Expected Maximum Power ¹	525	535

¹ Typical maximum power or User expected maximum power (Input power at the ac input expressed in Watts and Volt-Amps.) This figure is developed with the absolute maximum configuration running applications designed to draw the maximum power possible. It is highly unlikely that any real-world application will result in this amount of power use for any significant time period.

For more information about general site preparation guidelines, see the *Generic Site Preparation Guide*.

Environmental specifications

Temperature and humidity specifications

The following table contains the allowed and recommended temperature and humidity limits for both operating and non-operating Superdome 2 systems.

Specification	Value
Temperature range¹	
Allowable Operating Range ²	+5°C to +40°C (41°F to 104°F)
Recommended Operating Range ²	+18°C to +27°C (64°F to 81°F)
Non-operating (powered off)	5°C to 45°C (41°F to 113°F)
Non-operating (storage)	-40°C to +80°C (-40°F to 176°F)
Humidity Range (non-condensing)	
Allowable Operating Range ²	-12°C DP and 8% RH to +24°C DP and 85% RH
Recommended Operating Range ²	+5.5°C DP to +15°C DP and 65% RH
Non-operating (powered off)	8% RH to 90% RH and 29°C DP
Non-operating (storage)	8% RH to 90% RH and 32°C DP

¹ All temperature ratings shown are for sea level. An altitude derating of 1°C per 300 m above 900 m is applicable. No direct sunlight allowed. Upper operating limit is 3,048 m (10,000 ft) or 70 Kpa/10.1 psia. Upper non-operating (storage) limit is 9,144 m (30,000 ft) or 30.3 KPa/4.4 psia.

² The Recommended Operating Range is recommended for continuous operation. Operating within the Allowable Operating Range is supported but may result in a decrease in system performance.

For more information about general site preparation guidelines, see the *Generic Site Preparation Guide*.

Cooling requirements

Integrity Superdome 2 is a rack mounted system that cools by drawing air in the front and exhausting it out the rear. General ASHRAE best practices must be followed when installing Superdome 2 in a data center:

- Hot/cold aisle layout
- Appropriate blanking panels in any unused space in the rack.
- No gaps exist between adjacent racks, which ensures minimal air recirculation.
- An adequate hot-air return path to the computer room air conditioners (CRAC) or computer room air handlers (CRAH), which minimizes the flow of hot air over any rack.

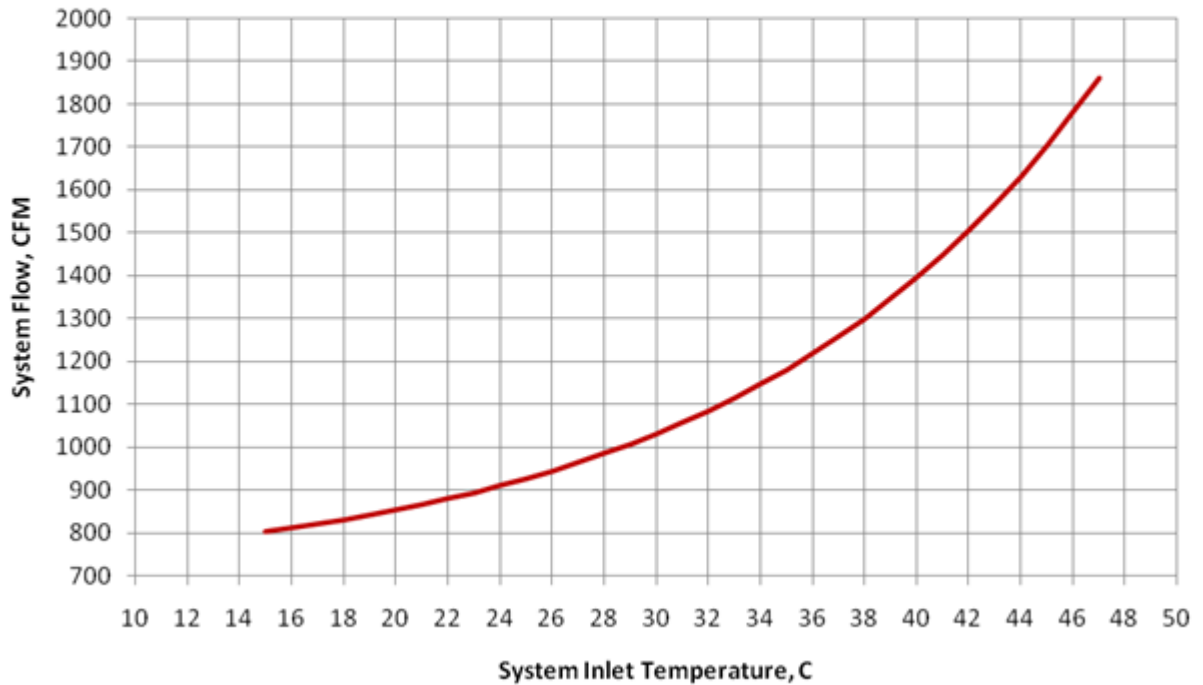
Integrity Superdome 2 utilizes variable speed fans to realize the most efficient use of air. The volume of air required varies with the temperature of the air supplied to the inlet of Integrity Superdome 2. The following table and chart illustrate the necessary volume of air to enable proper operation.

- ① **IMPORTANT:** Equipment orientation will best be served in a parallel fashion to the air flow supply and return. Supply air will flow down cold aisles which are parallel to equipment rows, and return air to CRAC through parallel air flow. Perpendicular air flow causes too much room mixing, places higher electrical loads on room, and can lead to unexpected equipment problems.

Table 15 Required airflow for inlet temperature

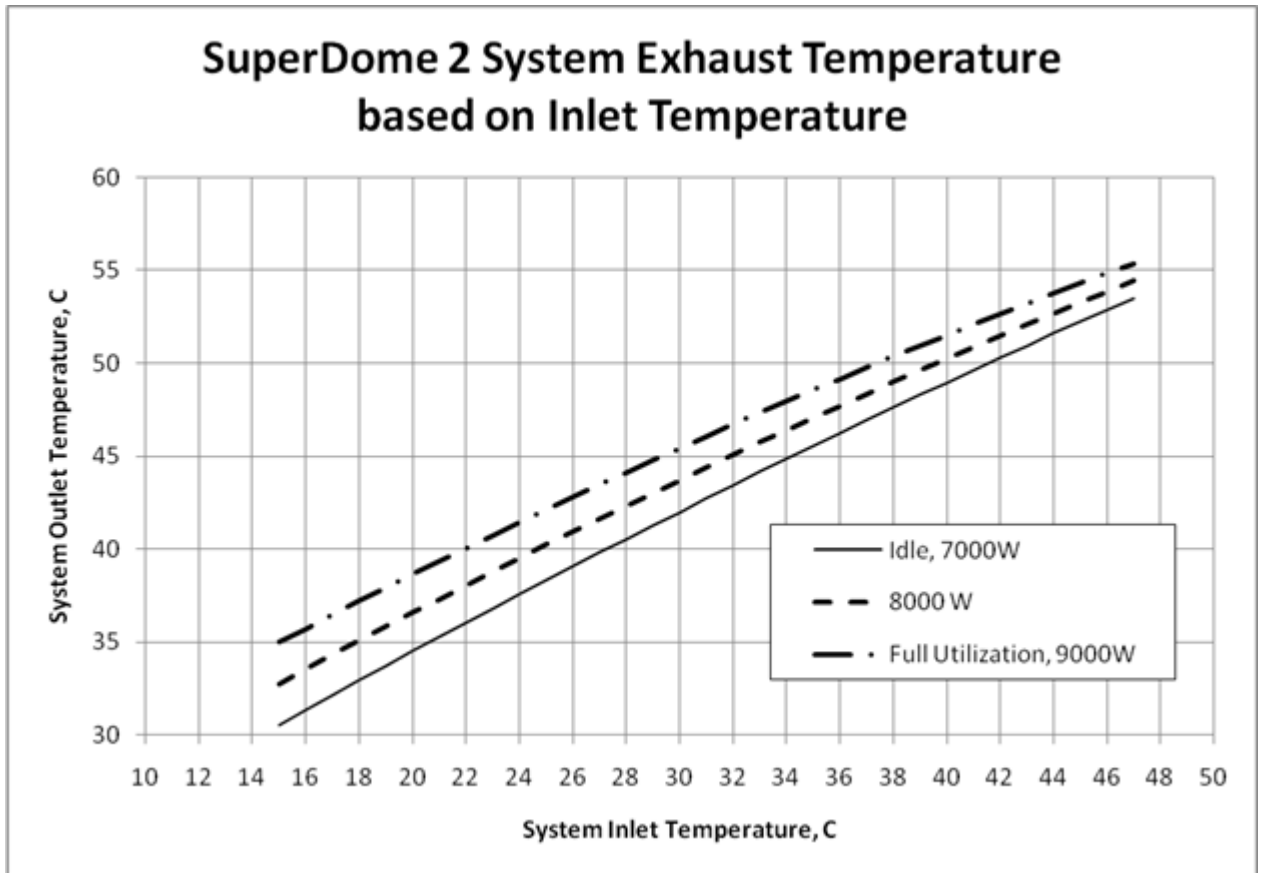
Inlet air temperature (°C)	Required airflow (CFM)
15	803
16	812
17	821
18	831
19	842
20	854
21	866
22	880
23	894
24	910
25	927
26	945
27	964
28	985
29	1007
30	1031
31	1057
32	1085

SuperDome 2 System Airflow based on Inlet Temperature



NOTE: While this chart shows airflow volumes for temperatures exceeding the specified inlet air temperature maximum of 32° C, proper operation above this point is not guaranteed.

Because the airflow/watt is quite low for Superdome 2, the exhaust air temperature is, by design, quite high. The following is a chart that shows exhaust air temperature versus inlet air temperature.



Because these temperatures might be significantly higher than the temperatures of the other equipment in the data center, to not over-cool the air, you might have to adjust the set-points of the CRACs or CRAHs higher. Most standalone CRACs and CRAHs use return side temperature regulation rather than supply side. Since the supply side air temperature is the parameter of interest to meet the 15-32 °C limits for the proper operation of Superdome2, you might have to increase the return air set-points to maximize the capacity of the CRACs or CRAHs.

- ⓘ **IMPORTANT:** When adjusting the set-point of any CRAC or CRAH, you must be careful so that you do not exceed the actual inlet temperature specified for any equipment.

For more information about general site preparation guidelines, see the *Generic Site Preparation Guide*.

Air quality specifications

Chemical contaminant levels in customer environments for Hewlett Packard Enterprise hardware products must not exceed G1 (mild) levels of Group A chemicals at any time, as described in the current version of *ISA-71.04 Environmental Conditions for Process Measurement and Control Systems: Airborne Contaminants*.

See <http://www.isa.org/> for more information.

For more information about general site preparation guidelines, see the *Generic Site Preparation Guide*.

Acoustic noise specifications

The acoustic noise specifications are 8.6 bel (86 dB) (sound power level).

- ⓘ **IMPORTANT:** Hewlett Packard Enterprise recommends that anyone in the immediate vicinity of the product for extended periods of time wear hearing protection or use other means to reduce noise exposure.

This level of noise is appropriate for dedicated computer room environments, not office environments.

You must understand the acoustic noise specifications relative to operator positions within the computer room when adding Integrity Superdome 2 systems to computer rooms with existing noise sources.

For more information about general site preparation guidelines, see the *Generic Site Preparation Guide*.

Sample Site Inspection Checklist for Site Preparation

See [Table 16 \(page 40\)](#) and [Table 17 \(page 40\)](#). You can use these tables to measure your progress.

Table 16 Customer and Hewlett PAckard Enterprise Information

Customer Information	
Name:	Phone number:
Street address:	City or Town:
State or province:	Country
Zip or postal code:	
Primary customer contact:	Phone number:
Secondary customer contact:	Phone number:
Traffic coordinator:	Phone number:
Hewlett PAckard Enterprise information	
Sales representative	Order number:
Representative making survey	Date:
Scheduled delivery date	

Table 17 Site Inspection Checklist

Check either Yes or No. If No, include comment number or date.				Comment or Date
Computer Room				
Number	Area or condition	Yes	No	
1.	Do you have a completed floor plan?			
2.	Is adequate space available for maintenance needs? Front 36 inches (91.4 cm) minimum and rear 36 inches (91.4 cm) minimum are recommended clearances.			
3.	Is access to the site or computer room restricted?			
4.	Is the computer room structurally complete? Expected date of completion?			
5.	Is a raised floor installed and in good condition? What is the floor to ceiling height? [7.5 ft (228 cm) minimum]			
6.	Is the raised floor adequate for equipment loading?			
7.	Are channels or cutouts available for cable routing?			
8.	Is a network line available?			
9.	Is a telephone line available?			

Table 17 Site Inspection Checklist (continued)

Check either Yes or No. If No, include comment number or date.				Comment or Date
10.	Are customer-supplied peripheral cables and LAN cables available and of the proper type?			
11.	Are floor tiles in good condition and properly braced?			
12.	Is floor tile underside shiny or painted? If painted, judge the need for particulate test.			
Power and Lighting				
Number	Area or Condition	Yes	No	
13.	Are lighting levels adequate for maintenance?			
14.	Are ac outlets available for servicing needs (for example, laptop)?			
15.	Does the input voltage correspond to equipment specifications?			
15a.	Is dual source power used? If so, identify types and evaluate grounding.			
16.	Does the input frequency correspond to equipment specifications?			
17.	Are lightning arrestors installed inside the building?			
18.	Is power conditioning equipment installed?			
19.	Is a dedicated branch circuit available for equipment?			
20.	Is the dedicated branch circuit less than 75 feet (22.86 m)?			
21.	Are the input circuit breakers adequate for equipment loads?			
Safety				
Number	Area or Condition	Yes	No	
22.	Is an emergency power shutoff switch available?			
23.	Is a telephone available for emergency purposes?			
24.	Does the computer room have a fire protection system?			
25.	Does the computer room have antistatic flooring installed?			
26.	Do any equipment servicing hazards exist (loose ground wires, poor lighting, and so on)?			
Cooling				
Number	Area or Condition	Yes	No	
27.	Can cooling be maintained between 5°C (41°F) and 35°C (95°F) (up to 1,525 m/5,000 ft)? Derate 1°C/305 m (34°F/1,000 ft) above 1,525 m/5,000 ft and up to 3,048 m/10,000 ft.			
28.	Can temperature changes be held to 5°C (41°F) per hour with tape media? Can temperature changes be held to 20°C (68°F) per hour without tape media?			

Table 17 Site Inspection Checklist (continued)

Check either Yes or No. If No, include comment number or date.				Comment or Date
	<p>The following are examples of different types of temperature change.</p> <ul style="list-style-type: none"> • Unidirectional changes — Storage to operating temperature in excess of 20°C (68°F). This is not within tolerance, allow an hour per 20°C (68°F) to acclimate. • Multidirectional spurious changes — Operating temperatures that increase 10°C (50°F) and then decrease 10°C (50°F). This is within tolerance as a 20°C (68°F) change per hour. • Repetitive changes — Every 15 minutes, there is a repetitive, consistent 5°C (41°F) up and down change. This is a 40°C (104°F) change per hour and not within tolerance. <p>Also note that rapid changes to temperature over a short period are more damaging than gradual changes over time.</p>			
29.	Can humidity level be maintained at 40% to 55% at 35°C (95 °F) noncondensing?			
30.	Are air-conditioning filters installed and clean?			
Storage				
Number	Area or Condition	Yes	No	
31.	Are cabinets available for tape and disc media?			
32.	Is shelving available for documentation?			
Training				
Number	Area or Condition			
33.	Are personnel enrolled in the System Administrator's Course?			
34.	Is on site training required?			

For more information about general site preparation guidelines, see the *Generic Site Preparation Guide*.

3 HPE Integrity Superdome 2 Insight Display

Insight Display overview

The Insight Display enables the rack technician to initially configure the enclosure. It also provides information about the health and operation of the enclosure. The color of the Insight Display varies with the condition of the enclosure health:

- **Blue**— The Insight Display illuminates blue when the enclosure UID is active.
The enclosure UID automatically turns on when the enclosure is powered up for the first time, and can be turned on by selecting **Turn Enclosure UID On** from the Main Menu or by pressing the enclosure UID button on the management interposer.
When the enclosure UID is on, the Insight Display flashes after two minutes of inactivity. Pressing any button on the Insight Display stops the blinking and reactivates the screen.
- **Green**— The Insight Display illuminates green when no error or alert conditions exist, and the enclosure is operating normally.
After two minutes of inactivity, the Insight Display light turns off. Pressing any button on the Insight Display reactivates the screen.
- **Amber**— The Insight Display illuminates amber when the Onboard Administrator detects an error or alert condition. The screen displays the details of the condition.
After two minutes of inactivity, the Insight Display flashes amber indicating that an error or alert condition exists. If the enclosure UID is on and an error or alert condition exists, the Insight Display illuminates blue as the enclosure UID takes priority over the alert. Pressing any button on the Insight Display reactivates the screen.
- **Dark (no power)**— The Insight Display has a two-minute inactivity period. If no action is taken and no alert condition exists, then the screen light turns off after two minutes. Pressing any button on the Insight Display reactivates the screen.

The Enclosure Health icon is located at the bottom-left corner of every screen, indicating the condition of the enclosure health. Navigate the cursor to the Enclosure Health icon and pressing **OK** to access the Health Summary screen from any Insight Display screen.

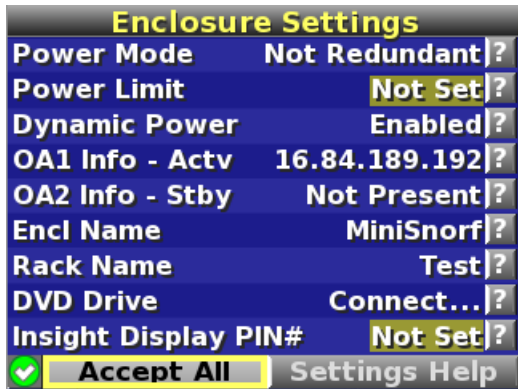
Running the Insight Display installation

When the enclosure is powered up for the first time, the Insight Display launches an installation wizard to guide you through the configuration process. After configuring the enclosure, the Insight Display verifies that no installation or configuration errors are present. If errors are present, the Insight Display guides you through the process of correcting the errors.


To identify the enclosure, the rear enclosure UID light and the background of the Insight Display glow blue when the enclosure is powered on initially.

The Installation Wizard turns on the enclosure UID at the beginning of the installation and turns it off after the installation is complete.

The Enclosure Settings screen is the first screen that appears. The background is blue, because the enclosure UID is active when this screen appears.

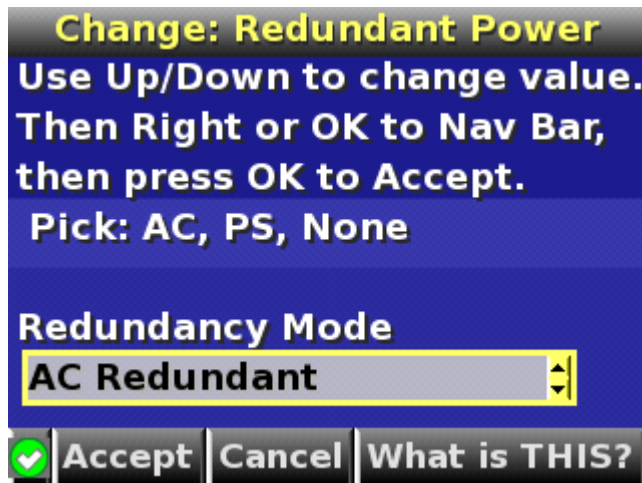


1. Review each setting on the Enclosure Settings screen for accuracy.
To change any value, navigate the cursor to the menu option to be edited, and press the **OK** button.
2. Change the setting to the appropriate value, navigate the cursor to **Accept**, and then press the **OK** button to return to the Enclosure Settings menu. Repeat this step until all options on the Enclosure Settings menu are accurate.

 **TIP:** Select the ? icon to access detailed help information about each setting or topic.

TIP: Within any menu option, navigate the cursor to **What is This**, and press the **OK** button to view additional information about each setting, option, or alert.

3. When all settings on the Enclosure Settings menu are accurate, navigate the cursor to **Accept All**, and then press the **OK** button to accept the current settings.
4. You can change the following options in the Enclosure Settings screen:
 - **Power Mode**—The default setting is AC Redundant. The following selections are valid:
 - AC Redundant
 - Power Supply Redundant
 - None



- **Power Limit**—The default setting is Not Set. The Power Limit Watts ac setting can be changed in increments of 50 Watts.

NOTE: When calculating the Power Limit Watts ac value, derate the circuit to 80% of the maximum to prevent tripping the circuit breaker (United States only).

NOTE: If your facility cannot support the calculated peak Watts ac, set the Power Watts ac value to match the capability of your facility.

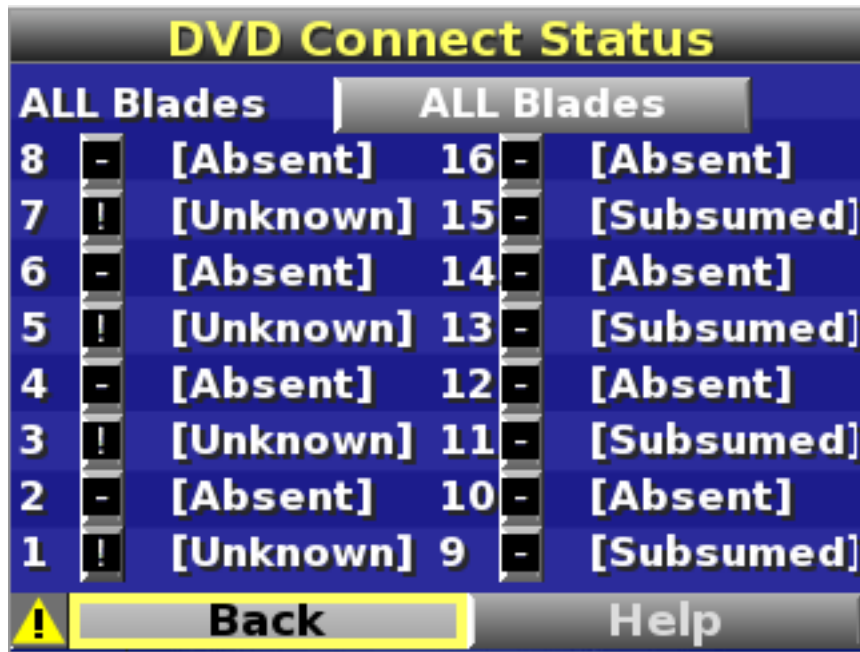
- **Dynamic Power** —The default setting is Enabled. The following selections are valid:
 - **Enabled** —Some of the power supplies can be automatically placed on standby to increase overall enclosure power subsystem efficiency.
 - **Disabled** —All power supplies share the load; the power subsystem efficiency varies based on load.
- **OA1 IP Addr**— The default setting is DHCP; if no IP address is received, the IP address is 0.0.0.0. The IP address, mask, and gateway are set within this option.
- **OA2 IP Addr**— If this module is present, the default setting is DHCP; if no IP address is received, the IP address is 0.0.0.0. If only one Onboard Administrator module is installed, then the screen displays “Not Present”.
- **Enclosure Name**— The default setting is a unique factory-assigned name. The accepted character values are 0-9, A-Z, a-z, -, _, and the box character. The box character is used to signal the end of the name.

NOTE: Do not use the box character in the middle of a text box. Entries in text boxes are truncated to the last character before the box character.



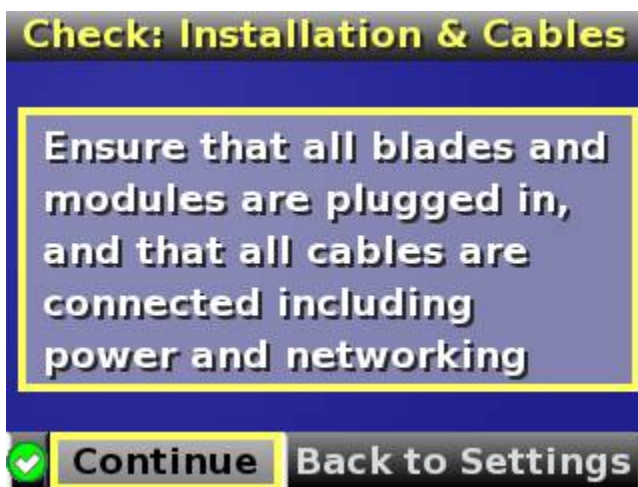
TIP: Select **Clear** from the navigation bar to quickly clear entries in text boxes up to the symbol.

- **Rack Name** — The default setting is UnnamedRack. The accepted character values are 0-9, A-Z, a-z, -, _, and the box character. The box character is used to signal the end of the name.
- **DVD Drive**— The DVD connection Settings screen is a table of all the servers with the status of DVD Connection and blade name for that blade.



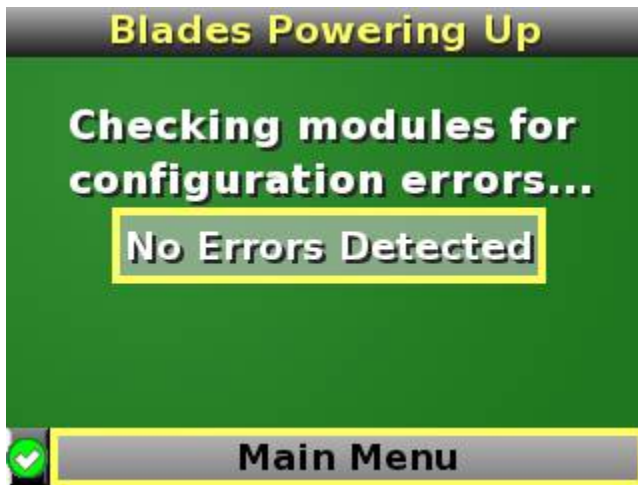
- **Detach/Attach**—Each blade can be individually attached to or detached from the enclosure DVD drive by navigating to that bay and pressing the **OK** button.
 - **Change**—Navigates to the **Attach:Enclosure DVD** menu where you can attach, attach and reboot, or detach all bays from the DVD drive.
 - Navigate to the DVD icon for a blade and press the **OK** button to change the settings for an individual server.
 - Navigate to All Blades and then press **OK** to change the settings for all servers in the enclosure.
 - The server name appears next to each DVD icon limited to the first ten characters.
5. Navigate to the **Accept All** button at the bottom of the Enclosure Settings screen, and then press the **OK** button to accept all the settings and continue.

The installation wizard displays the Check: Installation and Cables screen.



6. Be sure that all components are installed and cabled before continuing. Select **Continue**, and press the **OK** button to begin checking for configuration and installation errors. When **Continue** is selected, the enclosure UID automatically turns off.

7. If no errors are detected, the rear enclosure UID turns off, and the Insight Display screen illuminates green. Press the **OK** button to return to the Main Menu. Enclosure and blade hardware setup and configuration is complete.



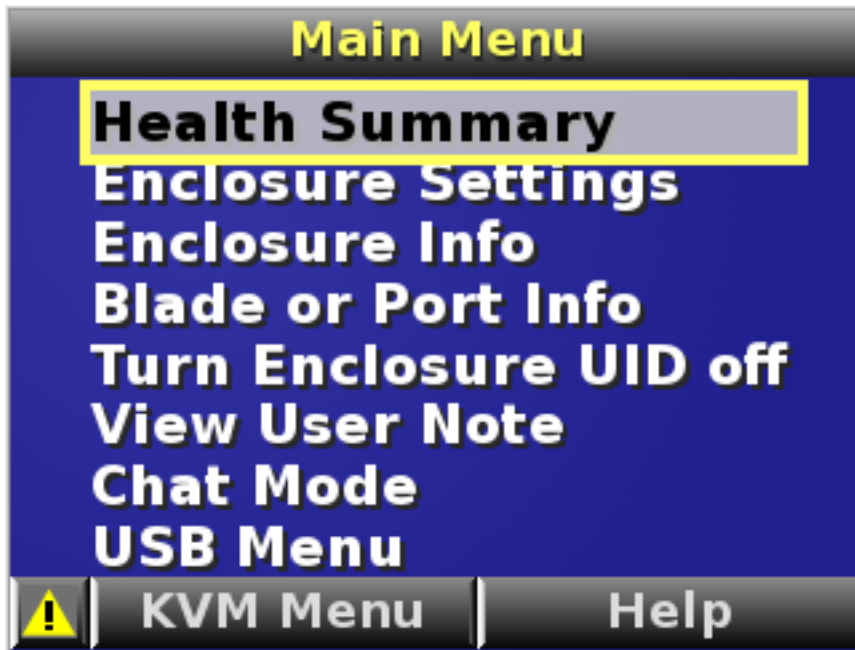
If errors are detected, then the Insight Display screen glows amber, and the Health Summary screen appears. For more information on troubleshooting, see [“Insight Display errors” \(page 54\)](#).

NOTE: Any configuration error prevents the operation of the enclosure and must be corrected immediately.

8. Open a browser and connect to the active Onboard Administrator module using the Onboard Administrator IP address that is configured during the Insight Display Installation Wizard process.
9. To access the remote Onboard Administrator web interface and complete the Onboard Administrator First Time Installation Wizard, enter the user name and password from the tag supplied with the Onboard Administrator module.

Navigating the Insight Display

Navigate the menus and selections by using the arrow buttons on the Insight Display panel. The first menu displayed is the Main Menu:



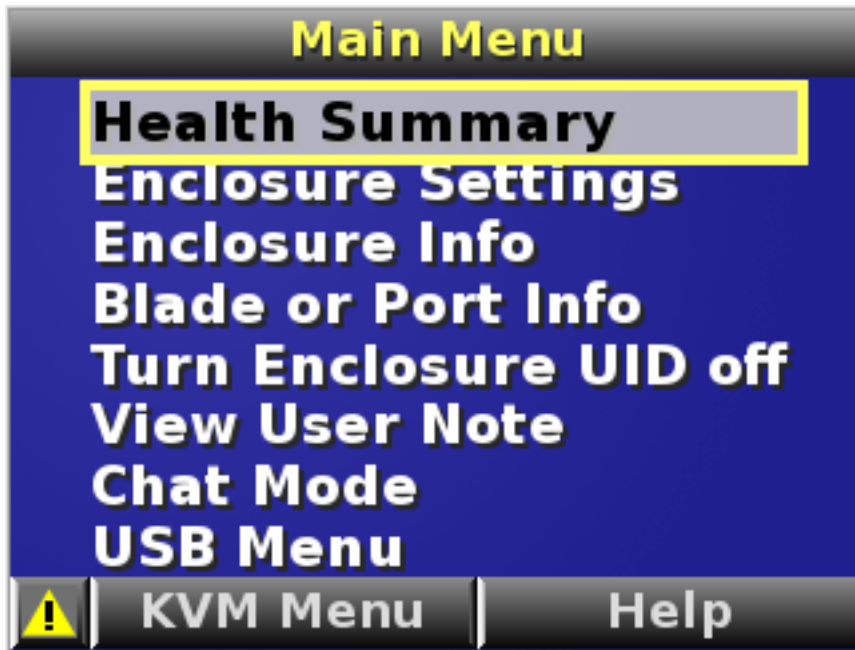
The Main Menu of the Insight Display has the following menu options:

- Health Summary
- Enclosure Settings
- Enclosure Info
- Blade or Port Info
- Turn Enclosure UID on/off
- View User Note
- Chat Mode

If the active Onboard Administrator detects a USB key drive with any *.ROM , *.CFG or *.ISO files, a USB menu item appears at the bottom of the Main Menu.

If the active Onboard Administrator detects KVM capability, a KVM menu button appears on the navigation bar of the Main Menu. Selecting **KVM Menu** causes the Insight Display to go blank and activate the VGA connection of Onboard Administrator.

A USB key drive with the appropriate files and KVM capability is present in the Main Menu:



TIP: Within any menu option, navigate the cursor to **What is This**, and press the **OK** button to view additional information about each setting, option, or alert.

The navigation bar contains options to:

- Navigate forward and backward through alert screens
- Return to the main menu
- Accept changes to current settings
- Cancel changes to current settings
- Access the Health Summary screen from any screen by selecting the **Health Summary** icon on the navigation bar

Health Summary screen

The Health Summary screen displays the current status of the enclosure. The Health Summary screen can be accessed by:

- Selecting **Health Summary** from the Main Menu
- Selecting the **Health Summary** icon from any Insight Display screen

When an error or alert condition is detected, the Health Summary screen displays the total number of error conditions and the error locations.

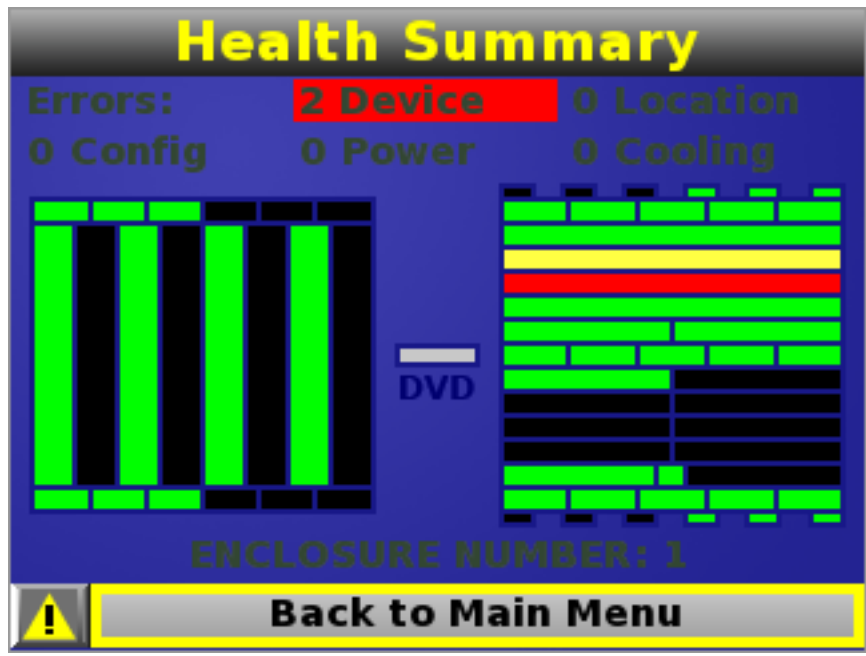
Select **Next Alert** from the navigation bar, and then press the **OK** button to view each individual error condition. The Insight Display displays each error condition in the order of severity. Critical alerts display first (if one exists), followed by caution alerts.

When the enclosure is operating normally, the Health Summary screen displays green. The bright green rectangles are components that are installed and are on. A light green rectangle represents a component that is installed, but powered off with no errors.

When the enclosure is operating normally, the Health Summary screen displays green. The bright green rectangles are components that are installed and on. A dark green rectangle represents a component that is installed, but powered off with no errors. A black rectangle represents an empty bay.

NOTE: A black DVD rectangle indicates no DVD drive is connected to the Onboard Administrator while a dark gray rectangle indicates the DVD drive is present, but that no media is present. A dark green rectangle indicates that media is present, but not actively connected to any server or that all connected servers have issued a disk eject command, so the disk can be removed from the drive. A bright green rectangle indicates that the media is present in the drive and actively connected to at least one server in the enclosure, and the drive tray is locked.

If an error occurs, the Health Summary screen background changes from green to amber and the error is highlighted with yellow rectangles for caution and red rectangles for failures. Overall enclosure health icons at the bottom-left corner of the Insight Display screens indicate the overall enclosure health.



To display the errors, select **View Alert** , and then press the **OK** button.

To view the details of the error, select **Details** .

Enclosure Settings screen

The Enclosure Settings screen displays the following setting information about the enclosure:

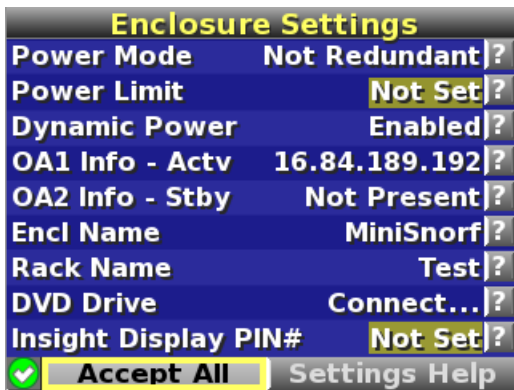
- Power Mode setting
- Power Limit setting
- Dynamic Power setting
- Active and Standby OA IP addresses
- Enclosure Name
- Rack Name
- DVD Drive
- Insight Display PIN#

NOTE: The DVD Drive setting can attach or detach a CD or DVD loaded in the DVD drive to any or all partitions in the enclosure. This feature can be used to install an operating system or software on the partitions.



TIP: Set a PIN to protect the enclosure settings from changes.

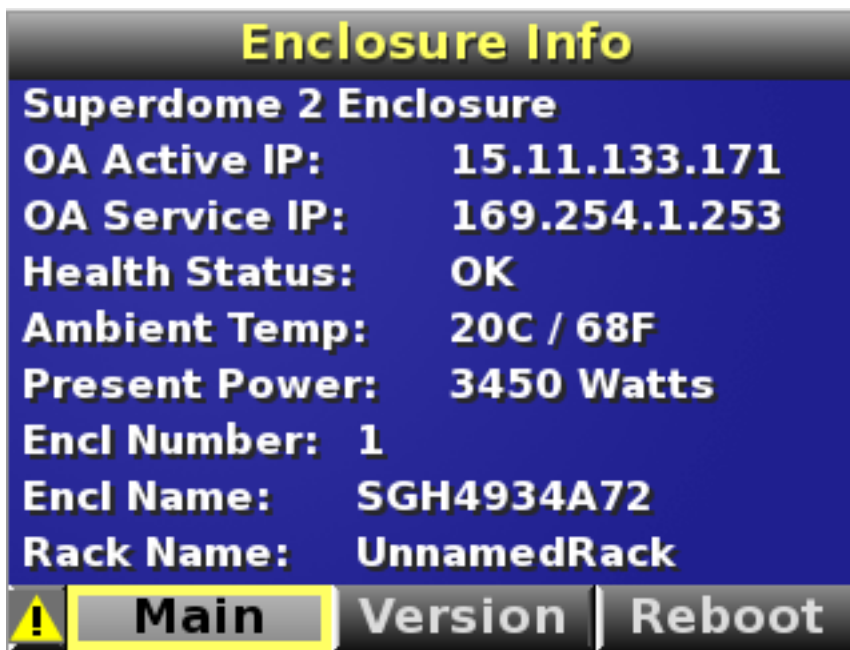
Navigate the cursor to a setting or to ?, and press **OK** to change the setting or get help on that setting.



Enclosure Info screen

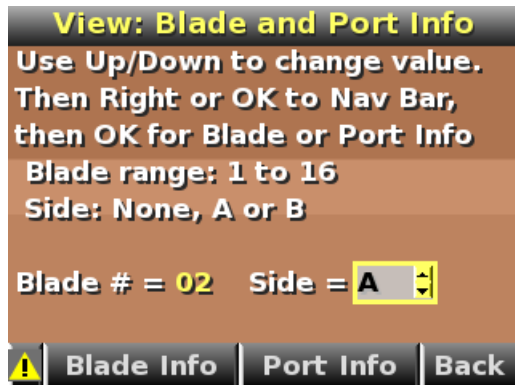
The Enclosure Info screen displays information about the enclosure, including:

- Active OA IP address
- Active OA Service IP address
- Current health status of the enclosure
- Current enclosure ambient temperature
- Current ac input power to the enclosure
- Enclosure name
- Rack name

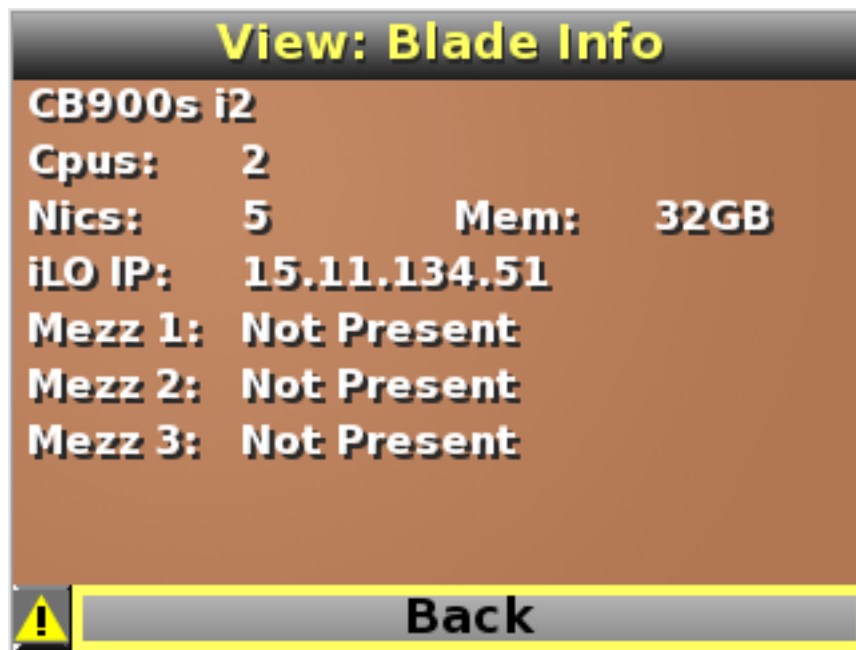


Blade and Port Info screen

The Blade and Port Info screen displays information about a specific server blade. On the first screen, select the server blade number, and then press the **OK** button. Select **Blade Info** or **Port Info**, and press the **OK** button.



To view information about the server blade, select **Blade Info** and press the **OK** button.



To view the ports used by a specific server blade, select **Port Info** and press the **OK** button.

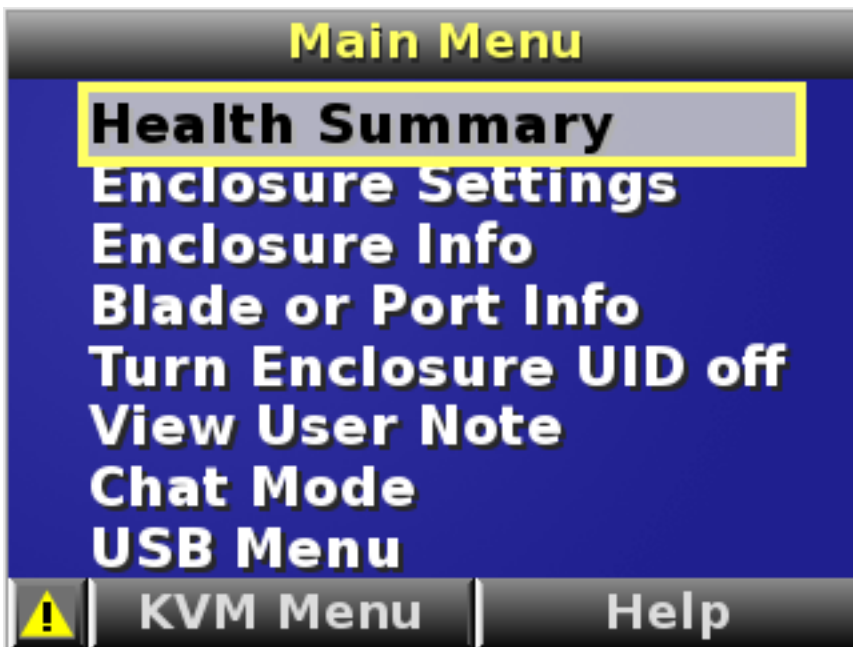
The following screen shows a server blade with four embedded NICs. The other interconnect bays are empty. The four embedded NICs are connected to particular port numbers on the interconnect modules.



Turn Enclosure UID On/Off screen

The Main Menu displays **Turn Enclosure UID Off** when the enclosure UID is active, and displays **Turn Enclosure UID on** when the enclosure UID is off.

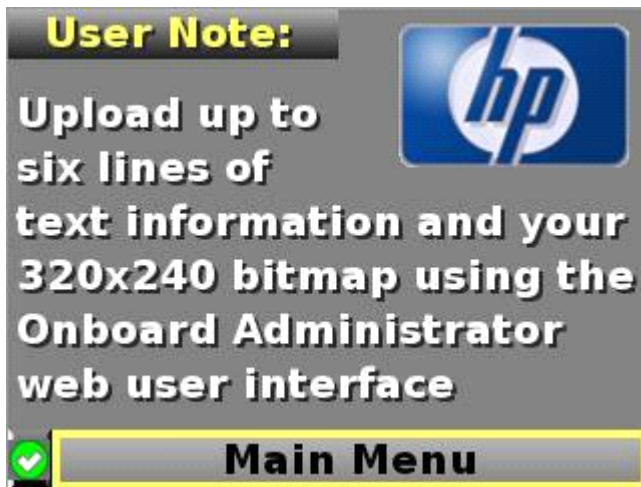
Selecting **Turn Enclosure UID On** from the main menu turns on the rear enclosure UID LED and changes the color of the Insight Display screen to blue.



Selecting **Turn Enclosure UID Off** from the main menu turns off the rear enclosure UID LED and changes the color of the Insight Display screen to the current alert condition.

View User Note screen

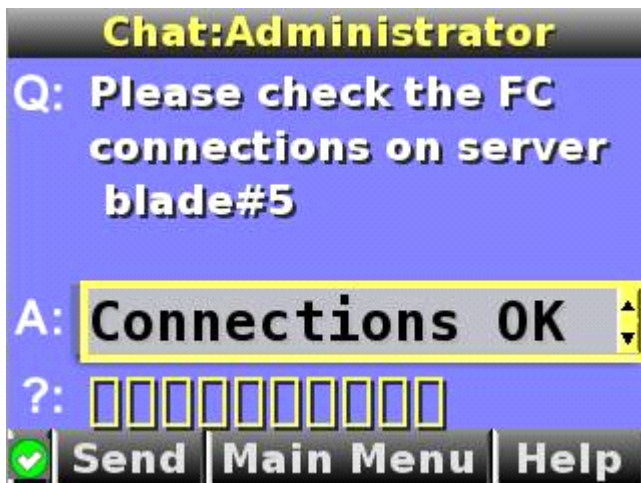
The View User Note screen displays six lines of text, each containing a maximum of 16 characters. Use this screen to display helpful information such as contact phone numbers. Change this screen using the remote Onboard Administrator user web interface. Both the background bitmap and the text can be changed.



Chat Mode screen

The Chat Mode screen is used by the remote administrator who uses the web interface to send a message to an enclosure Insight Display. The technician uses the Insight Display buttons to select from a set of prepared responses, or dials in a custom response message on the ? line. To send a response back to the Administrator, navigate the cursor to **Send**, then press the **OK** button.

The Chat Mode screen has top priority in the Insight Display and remains on the screen until you select **Send**. The technician can leave this chat screen temporarily and use the other Insight Display screens, then return to the Chat Mode screen from the Main Menu to send a response. After the response, the Chat Mode screen is cleared. Both the A and ? responses then appear to the remote Administrator on the LCD Chat web interface.



Insight Display errors

The enclosure installation is successful when all errors are corrected. The errors in the following sections are specific to installation and initial configuration of the enclosure.

The following types of errors can occur when installing and configuring the enclosure:

- Power errors
- Cooling errors
- Location errors
- Configuration errors
- Device failure errors

When the enclosure UID LED is off, the Insight Display is illuminated amber when any error condition exists. The navigation bar displays the following selections when an error condition exists:

- **Health summary icon**— Displays the Health Summary screen
- **Fix This**— Suggests corrective action to clear the current error
- **Next Alert**— Displays the next alert, or if none exist, displays the Health Summary screen
- **Previous Alert**— Displays the previous alert

Power errors

Power errors can occur because of insufficient power to bring up an enclosure. Power errors can occur on server blades, storage blades, or interconnect modules.

To correct a power error:

1. Use the arrow buttons to navigate to **Fix This**, and press **OK**.
2. Review and complete the corrective action suggested by the Insight Display. In most cases, you must either add power supplies to the enclosure or remove the indicated components.

Cooling errors

Cooling errors occur when too few fans are installed in the enclosure or when the existing fans are not installed in an effective configuration. Cooling errors can occur on server blades, storage blades, or interconnect modules.

To correct a cooling error:

1. Use the arrow buttons to navigate to **Fix This**, and press **OK**.
2. Review and complete the corrective action suggested by the Insight Display. In most cases, you must either add fans to the enclosure, correct the fan configuration, or remove the indicated components.

Location errors

Location (installation) errors occur when the component is not installed in the appropriate bay. Location errors can occur on server blades, storage blades, power supplies, and fans.

To correct a location error:

1. Use the arrow buttons to navigate to **Fix This**, and press **OK**.
2. Review and complete the corrective action suggested by the Insight Display. Remove the indicated component, and install it into the correct bay. The Insight Display will indicate the correct bay number.

Configuration errors

Configuration errors can occur if the interconnect modules are installed in the wrong bays or if mezzanine cards are installed in the wrong connectors in the server blade. Configuration errors can occur on server blades and interconnect modules.

To correct a configuration error:

1. Use the arrow buttons to navigate to **Fix This**, and press **OK**.
2. Review and complete the corrective action suggested by the Insight Display. Depending on the error received, do one of the following:
 - Remove the indicated interconnect module and install it into the correct bay (the Insight Display indicates the correct bay).
 - Remove the server blade to correct the mezzanine card installation (the Insight Display will indicate the correct bay). For information on installing the mezzanine card, see the server-specific user guide on the Documentation CD.

Device failure errors

Device failure errors occur when a component has failed. Device failure errors can occur on all components, including:

- Server blades
- Storage blades
- Power supplies
- Interconnect modules
- Onboard Administrator modules
- Fans
- ac power inputs

To correct a device failure error:

1. Use the arrow buttons to navigate to **Fix This**, and press **OK**.
2. Review and complete the corrective action suggested by the Insight Display. In most cases, you must remove the failed component to clear the error.
3. Replace the failed component with a spare, if applicable.

NOTE: If the device failure error is an ac power input failure error, you must have the failed ac input repaired to clear the error.

4 Booting and shutting down the operating system

Operating systems supported on the server blade

- HP-UX 11i v3 HWE 1009

Booting and shutting down the operating system for HP-UX

HP-UX standard boot

Use either of the following procedures to boot HP-UX:

- [“Booting HP-UX from the UEFI Boot Manager” \(page 57\)](#)
- [“Booting HP-UX from the UEFI Shell” \(page 57\)](#)

Booting HP-UX from the UEFI Boot Manager

From the **UEFI Boot Manager** menu, choose an item from the boot options list to boot HP-UX.

1. Access the **UEFI Boot Manager** menu for the partition on which you want to boot HP-UX.
Log on to the OA CLI and enter `co` to choose the system console.
Confirm you are at the **UEFI Front Page**. If you are at another UEFI menu, choose the **Exit** option or press **X** or **x** to exit the menu. Exit until you return to the screen that lists the keys that can be pressed to launch various Managers. Press **B** or **b** to launch the Boot Manager.
2. At the **UEFI Boot Manager** menu, choose an item from the boot options list.
Each item in the boot options list references a specific boot device and provides a specific set of boot options or arguments you use when booting the device.
3. Press **Enter** to initiate booting using the chosen boot option.
4. Exit the console and OA CLI interfaces when done.
Press **Ctrl-B** to exit the system console and return to the OA CLI. To exit the OA CLI, use the `EXIT` command.

Booting HP-UX from the UEFI Shell

1. Access the UEFI Shell.
2. From the **UEFI Front Page**, press **S** or **s** to launch the UEFI shell.
3. Use the `map` command to list the file systems (`fs0`, `fs1`, and so on) that are known and have been mapped.
4. To select a file system to use, enter its mapped name followed by a colon (`:`). For example, to operate with the boot device that is mapped as `fs0`, enter `fs0:` at the UEFI Shell prompt.
5. Enter `HPUX` at the UEFI Shell command prompt to launch the `HPUX.EFI` loader from the now selected boot device.
If needed, specify the loader's full path by entering `\EFI\HPUX\HPUX` at the UEFI Shell command prompt.
6. Allow the `HPUX.EFI` loader to proceed with the boot command specified in the `AUTO` file, or manually specify the boot command.
By default, the `HPUX.EFI` loader boots using the loader commands found in the `\EFI\HPUX\AUTO` file on the UEFI System Partition of the selected boot device. The `AUTO` file typically contains the boot `vmunix` command.
To interact with the `HPUX.EFI` loader, interrupt the boot process (for example, enter a **space**) within the time-out period provided by the loader. To exit the loader, use the `exit` command; this takes you back to UEFI.

Booting HP-UX in single-user mode

1. Use steps 1–5 from “[Booting HP-UX from the UEFI Shell](#)” (page 57) to access the UEFI shell and launch the HPUX.EFI loader.
2. Access the HP-UX Boot Loader prompt (HPUX>) by pressing any key within the 10 seconds given for interrupting the HP-UX boot process. Use the HPUX.EFI loader to boot HP-UX in single-user mode in the next step.

After you press a key, the HPUX.EFI interface (the HP-UX Boot Loader prompt, HPUX>) launches. For help using the HPUX.EFI loader, enter the help command. To return to the UEFI Shell, enter `exit`.

3. At the HPUX.EFI interface (the HP-UX Boot loader prompt, HPUX>), enter the `boot -is vmunix` command to boot HP-UX (the /stand/vmunix kernel) in single-user (-is) mode.

Booting HP-UX in LVM-maintenance mode

The procedure for booting HP-UX in LVM maintenance mode is the same as for booting into single-user mode (“[Booting HP-UX in single-user mode](#)” (page 58)), except use the `-lm` boot option instead of the `-is` boot option:

```
HPUX> boot -lm vmunix
```

Shutting down HP-UX

To shut down HP-UX running on a blade:

1. Log on to the OA CLI and enter the `co` command to access the system console for your partition. Accessing the console through OA CLI enables you to maintain console access to the partition after HP-UX has shut down.
2. Issue the `shutdown` command with the appropriate command-line options.

The command-line options you specify dictate the way in which HP-UX shuts down, and whether the blade is rebooted.

Use the following list to choose an HP-UX shutdown option for your blade:

- Shut down HP-UX and halt (power off) the blade using `shutdown -h`.
Reboot a halted blade by powering on the blade using the `pc` command at the OA CLI Command menu.
- Shut down HP-UX and reboot the blade by issuing `shutdown -r`.

For more information, see the `shutdown (1m)` manpage.

5 Troubleshooting

The purpose of this chapter is to provide a preferred methodology (strategies and procedures) and tools for troubleshooting complex error and fault conditions.

Methodology

General troubleshooting methodology

The system provides several sources of information for troubleshooting:

- LED status information
- Front door display/insight display
- The OA CLI
- The OA GUI

LED status information

The LEDs provide initial status and health information. LED information should be verified by the other sources of status information.

See [“Superdome 2 LEDs and components” \(page 65\)](#) for more information.



TIP: The CLI is the most efficient way to verify the information provided from LEDs.

OA access

You can access the Superdome 2 OA by using either a telnet session or a ssh connection. This can be done by connecting a laptop to the eSwitch using a standard LAN cable using telnet.



IMPORTANT: Only use the OA serial port for initial system setup. Once the network is configured, the OA should be always be accessed using telnet or ssh.

CLI

Superdome 2 troubleshooting tools differ from both Superdome and other IA64 blade systems. The central point of communication for gaining system status is the active OA.

Hewlett Packard Enterprise recommends checking the system status information using `show complex status` before continuing with troubleshooting:

```
sd-oal> show complex status

Status: OK
Enclosure ID: OK
Enclosure: OK
Robust Store: OK
CAMNET: OK
Product ID: OK
Xfabric: OK
Diagnostic Status:
    Thermal Danger      OK
    Cooling              OK
    Device Failure      OK
    Device Degraded     OK
    Firmware Mismatch   OK
```

If no issues are seen in the command output, then more troubleshooting information is required.

Gathering power related information (overview)

Gather the power information for all of the system components.

Compute enclosure (enclosure 1 and enclosure 2 – if present)

Use the `show enclosure status` and `show enclosure powersupply all` commands.

```
sd-oa1> show enclosure status
```

Enclosure 1:

```
Status: OK
Enclosure ID: OK
Unit Identification LED: Off
Diagnostic Status:
    Internal Data          OK
    Thermal Danger        OK
    Cooling                OK
    Device Failure         OK
    Device Degraded       OK
    Redundancy             OK
    Indicted               OK
```

Onboard Administrator:

```
Status: OK
```

Standby Onboard Administrator:

```
Status: OK
```

Power Subsystem:

```
Status: OK
Power Mode: Not Redundant
Power Capacity: 14400 Watts DC
Power Available: 2270 Watts DC
Present Power: 6024 Watts AC
```

Cooling Subsystem:

```
Status: OK
Fans Good/Wanted/Needed: 15/15/15
Fan 1: 10760 RPM (60%)
Fan 2: 10758 RPM (60%)
Fan 3: 10760 RPM (60%)
Fan 4: 10760 RPM (60%)
Fan 5: 10759 RPM (60%)
Fan 6: 8600 RPM (48%)
Fan 7: 8600 RPM (48%)
Fan 8: 8600 RPM (48%)
Fan 9: 8599 RPM (48%)
Fan 10: 8599 RPM (48%)
Fan 11: 8602 RPM (48%)
Fan 12: 8601 RPM (48%)
Fan 13: 8600 RPM (48%)
Fan 14: 8597 RPM (48%)
Fan 15: 8600 RPM (48%)
```

```
sd-oa1> show enclosure powersupply all
```

Power Supply #1 Information:

```
Status: OK
AC Input Status: OK
Capacity: 2400 Watts
Current Power Output: 855 Watts
Serial Number: 5AGUD0AHLZD25E
Product Name: HP 2400W HE PSU
Part Number: 499253-B21
Spare Part Number: 500242-001
Product Ver: 01
```

```
Diagnostic Status:
  Internal Data      OK
  Device Failure    OK
  Power Cord        OK
  Indicted          OK
```

Similar information will be displayed for all other power supplies.

Collecting power status information for components at the compute enclosure

Use the `show xfm status all`, `show blade status all`, and `show interconnect status all` commands to gather information on compute enclosure component power:

NOTE: Similar information should be displayed for XFMs 2 through 4.

```
sd-oal> show xfm status all
```

```
Bay 4 XFM Status:
  Health: OK
  Power: On
  Unit Identification LED: Off
  Diagnostic Status:
    Internal Data      OK
    Management Processor OK
    Thermal Warning    OK
    Thermal Danger     OK
    Power              OK <<<<
    Firmware Mismatch  OK
    Indicted          OK
  Link 1: OK
  Link 2: OK
  Link 3: OK
  Link 4: OK
  Link 5: OK
  Link 6: OK
  Link 7: OK
  Link 8: OK
```

```
sd-oal> show blade status all
```

```
Blade #1 Status:
  Power: On
  Current Wattage used: 1325 Watts
  Health: OK
  Unit Identification LED: Off
  Diagnostic Status:
    Internal Data      OK
    Management Processor OK
    Thermal Warning    OK
    Thermal Danger     OK
    I/O Configuration  OK
    Power              OK <<<
    Cooling            OK
    Device Failure     OK
    Device Degraded    OK
    Device Info        OK
    Firmware Mismatch  OK
    PDHC               OK
    Indicted          OK
```

```
sd-oal> show interconnect status all
```

```
Interconnect Module #1 Status:
  Status: OK
  Thermal: OK
  CPU Fault: OK
  Health LED: OK
```

```
UID: Off
Powered: On
Diagnostic Status:
    Internal Data          OK
    Management Processor  OK
    Thermal Warning       OK
    Thermal Danger        OK
    I/O Configuration     OK
    Power                 OK <<<
    Device Failure        OK
    Device Degraded       OK
```

IOX enclosures

Use the `show IOX power all` command to gather information on IOX enclosure power:

```
sd-oa1> show iox power all

IOX 5:
    No IOX Installed

IOX 6:
    No IOX Installed

IOX 7:
    No IOX Installed

IOX 8:
    No IOX Installed

IOX 9:
    Present Power: 189 Watts AC

IOX 10:
    Present Power: 222 Watts AC

IOX 11:
    No IOX Installed

IOX 12:
    No IOX Installed
```

Gathering cooling related information (overview)

Use the following commands to gather all complex cooling information:

- `show enclosure fan all`

```
sd-oa1> show enclosure fan all
Fan #1 Information:
    Status: OK
    Speed: 60 percent of Maximum speed
    Maximum speed: 18000 RPM
    Minimum speed: 10 RPM
    Power consumed: 32 Watts
    Product Name: Active Cool 200 Fan
    Part Number: 412140-B21
    Spare Part Number: 413996-001
    Version: 2.9
    Diagnostic Status:
        Internal Data          OK
        Location              OK
        Device Failure        OK
        Device Degraded       OK
```

```
Missing Device      OK
Indicted            OK
```

- show blade status all

```
sd-oa1> show blade status all
Blade #1 Status:
  Power: On
  Current Wattage used: 1325 Watts
  Health: OK
  Unit Identification LED: Off
  Diagnostic Status:
    Internal Data      OK
    Management Processor OK
    Thermal Warning    OK <<<<
    Thermal Danger     OK <<<<
    I/O Configuration  OK
    Power              OK
    Cooling            OK <<<<
    Device Failure     OK
    Device Degraded    OK
    Device Info        OK
    Firmware Mismatch  OK
    PDHC               OK
    Indicted           OK
```

- show xfm status all

```
Bay 4 XFM Status:
  Health: OK
  Power: On
  Unit Identification LED: Off
  Diagnostic Status:
    Internal Data      OK
    Management Processor OK
    Thermal Warning    OK <<<
    Thermal Danger     OK <<<
    Power              OK
    Firmware Mismatch  OK
    Indicted           OK

  Link 1: OK
  Link 2: OK
  Link 3: OK
  Link 4: OK
  Link 5: OK
  Link 6: OK
  Link 7: OK
  Link 8: OK
```

- show interconnect status all

```
Interconnect Module #1 Status:
  Status: OK
  Thermal: OK
  CPU Fault: OK
  Health LED: OK
  UID: Off
  Powered: On
  Diagnostic Status:
    Internal Data      OK
    Management Processor OK
    Thermal Warning    OK <<<<
    Thermal Danger     OK <<<<
    I/O Configuration  OK
```

```
Power OK
Device Failure OK
Device Degraded OK
```

Gathering failure information (overview)

To obtain information about failures recorded by the system, use the following commands:

- Show cae -L (within HR, run show HR to enter the HR submenu)

```
sd-oal> show cae -L
```

```
Sl.No Severity   EventId EventCategory PartitionId  EventTime          Summary
#####
71   Critical    3040   System Coo... N/A          Fri May 18 06:26:34 2012 XFM air intake or exhaust
    temperatur...
70   Critical    3040   System Coo... N/A          Fri May 18 04:56:22 2012 XFM air intake or exhaust
    temperatur...
```

- show CAE -E -n <CAE-ID>

Use show CAE -E -n <CAE-ID> to obtain more details about specific events.

```
oal> show cae -E -n 70
```

```
Alert Number : 70
```

```
Event Identification :
```

```
Event ID : 3040
Provider Name : CPTIndicationProvider
Event Time : Fri May 18 04:56:22 2012
Indication Identifier : 8304020120518045622
```

```
Managed Entity :
```

```
OA Name : sd-oal
System Type : 59
System Serial No. : USExxxxxs
OA IP Address : aa.bb.cc.dd
```

```
Affected Domain :
```

```
Enclosure Name : lc-sd2
RackName : sd2
RackUID : 02SGHxxxxxAVY
Impacted Domain : Complex
Complex Name : SD2
Partition ID : Not Applicable
```

```
Summary :
```

```
XFM air intake or exhaust temperature is too hot
```

```
Full Description :
```

```
The air temperature measured at one of the XFM air intakes or exhausts is too hot to allow normal operation. Measures are being taken to increase the cooling ability of the box, and to reduce heat generation. If the temperature continues to increase, however, partitions may be shut down to prevent hardware damage.
```

```
Probable Cause 1 :
```

```
Data center air conditioning is not functioning properly
```

```
Recommended Action 1 :
```

```
Fix the air conditioning problem
```

```
Probable Cause 2 :
```

```
The system air intake is blocked
```

```
Recommended Action 2 :
```

```
Check and unblock air intakes
```

```
Replaceable Unit(s) :
```

```
Part Manufacturer : HP
Spare Part No. : AH341-67001
Part Serial No. : MYJaaaaWV
Part Location : 0x0100ff02ff00ff51 enclosure1/xfm2
Additional Info : Not Applicable
```

```
Additional Data :
```

```
Severity : Critical
Alert Type : Environmental Alert
Event Category : System Cooling
```



```

Event Subcategory : Unknown
Probable Cause : Temperature Unacceptable
Event Threshold : 1
Event Time Window (in minutes): 0
Actual Event Threshold : 1
Actual Event Time Window (in minutes): 0
OEM System Model : NA
Original Product Number : AH337A
Current Product Number : AH337A
OEM Serial Number : NA

```

```

Version Info :
Complex FW Version : 2.52.2
Provider Version : 3.47

```

```

Error Log Data :
Error Log Bundle : 4000000000000e41

```

Recommended troubleshooting methodology

The recommended methodology for troubleshooting a complex error or fault is as follows:

1. Consult the system console for any messages, emails, or other items pertaining to a server blade error or fault.
2. Check the Insight Display for any error messages.
3. View the front panel LEDs (power and health), locally or remotely by using the OA CLI **SHOW STATUS** commands, such as **SHOW ENCLOSURE STATUS**, **SHOW COMPLEX STATUS**, or **SHOW BLADE STATUS**.

[Table 18 \(page 65\)](#) provides the corresponding subsection or location title for the various entry points (for example, to start by examining the logs, go directly to [“Using event logs” \(page 82\)](#)).

Table 18 Troubleshooting entry points

Entry point	Subsection or location
Front panel LEDs	See “Troubleshooting tools” (page 65) , and “Server blade front panel components” (page 65) .
Insight Display	See “HPE Integrity Superdome 2 Insight Display” (page 43) .
Log viewers	See “Using event logs” (page 82) .
Offline and Online Diagnostics	See “Troubleshooting tools” (page 65) .
System Event Analyzer	See http://www.hpe.com/support/WEBES for more information about this tool).

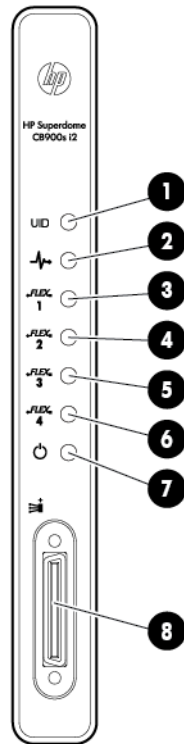
Troubleshooting tools

HPE Integrity server blades use LEDs and other tools to help troubleshoot issues that occur in the server blade, see [“Server blade overview” \(page 27\)](#) for more information on LED locations and states.

Superdome 2 LEDs and components

Server blade front panel components

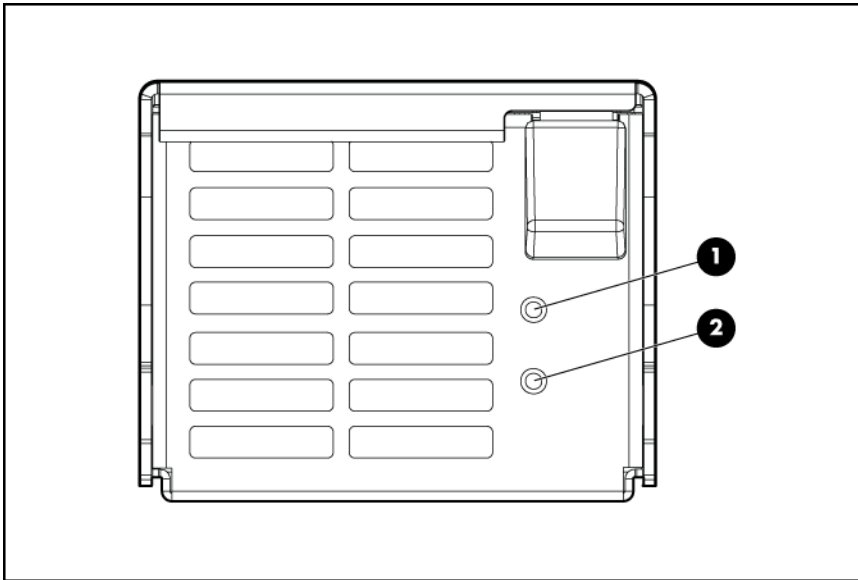
NOTE: The following image and table also apply to the CB900s i4 Server Blade



Item	Name	Description
1	UID LED	Blue = UID on
2	Health LED	Green = OK Flashing yellow = Degraded Flashing red = Critical error
3	NIC LED 1	Indicates the status of the NIC. Solid green = Network linked, no activity Flashing green = Network linked, activity
4	NIC LED 2	Indicates the status of the NIC. Solid green = Network linked, no activity Flashing green = Network linked, activity
5	NIC LED 3	Indicates the status of the NIC. Solid green = Network linked, no activity Flashing green = Network linked, activity
6	NIC LED 4	Indicates the status of the NIC. Solid green = Network linked, no activity Flashing green = Network linked, activity

Item	Name	Description
7	Power LED	Indicates if the server blade is powered on and active. Green = Powered on and active Flashing yellow = Powered on, not active
8	SUV connector	

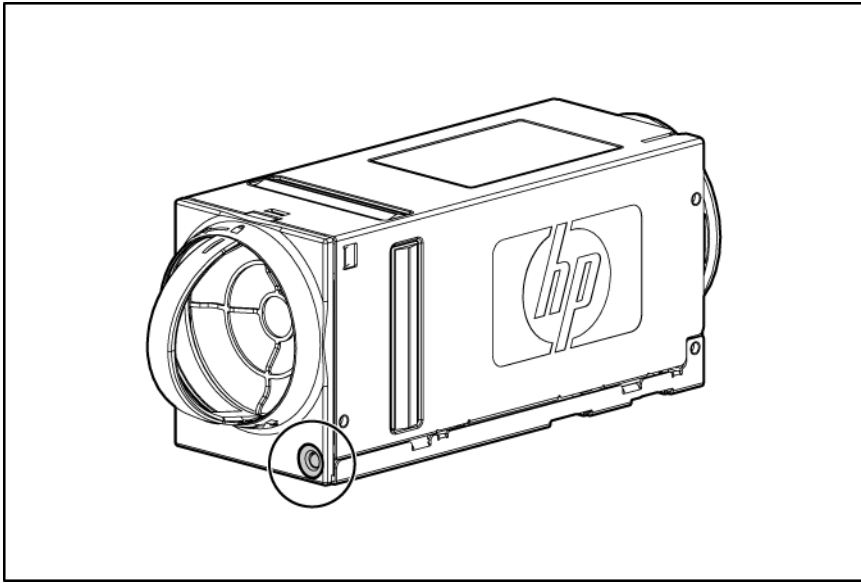
Power supply LEDs



NOTE: The power supplies at the top of the enclosure are upside down.

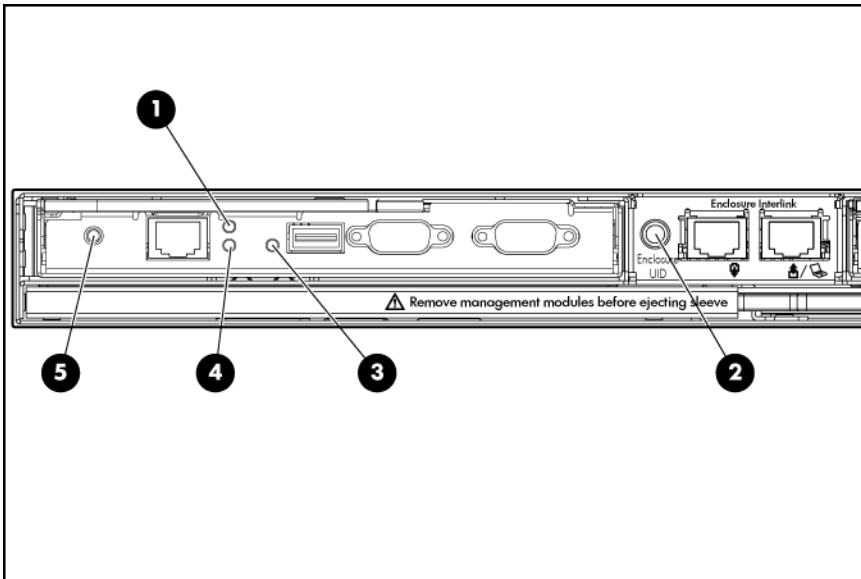
Power LED 1 (green)	Fault LED 2 (amber)	Condition
Off	Off	No ac power to the power supply
On	Off	Normal
Off	On	Power supply failure

Fan LED



LED color	Fan status
Solid green	The fan is working.
Solid amber	The fan has failed.
Flashing amber	See the Insight Display screen.

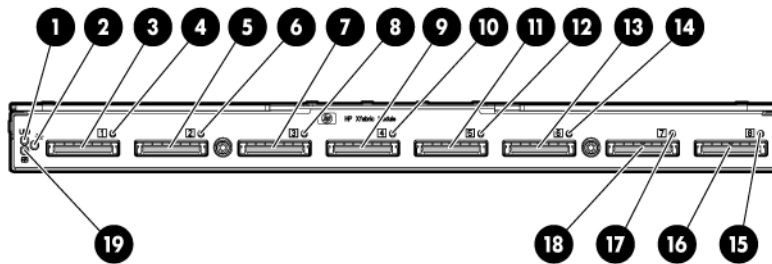
Onboard Administrator LEDs and buttons



Item	Description
1	Onboard Administrator UID LED
2	Enclosure UID LED and UID button
3	Onboard Administrator health LED

Item	Description
4	Onboard Administrator active LED
5	Onboard Administrator reset button

XFM LEDs and components



Item	Name	Description
1	UID LED	Blue = UID on
2	Power LED	Indicates if the module is powered on. Green = On
3	XFM crossbar fabric port 1	
4	Link Cable Status LED 1	Indicates the status of the Xbar Fabric link. ¹
5	XFM crossbar fabric port 2	
6	Link Cable Status LED 2	Indicates the status of the Xbar Fabric link. ¹
7	XFM crossbar fabric port 3	
8	Link Cable Status LED 3	Indicates the status of the Xbar Fabric link. ¹
9	XFM crossbar fabric port 4	
10	Link Cable Status LED 4	Indicates the status of the Xbar Fabric link. ¹
11	XFM crossbar fabric port 5	
12	Link Cable Status LED 5	Indicates the status of the Xbar Fabric link. ¹
13	XFM crossbar fabric port 6	
14	Link Cable Status LED 6	Indicates the status of the Xbar Fabric link. ¹
15	XFM crossbar fabric port 7	
16	Link Cable Status LED 7	Indicates the status of the Xbar Fabric link. ¹

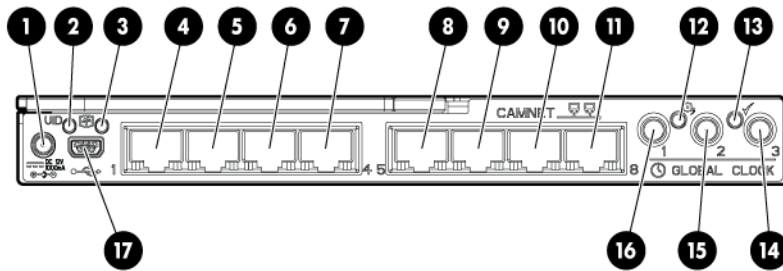
Item	Name	Description
17	XFM crossbar fabric port 8	
18	Link Cable Status LED 8	Indicates the status of the Xbar Fabric link. ¹
19	Health LED	Flashing yellow = Degraded, indicted Off = Ok Flashing red = Deconfigured

¹ Solid green = Link OK, transmitting at full bandwidth. Alternating green/yellow = Link in service, safe to remove. Flashing yellow = Deconfigured link, safe to remove.

CAUTION: Always use the HR user interface `stop link` command before disconnecting the Superdome 2 crossbar fabric cable. The stop link will allow safe servicing and set the LED endpoints for easy location.

After servicing, the HR `start link` command will enable re-use of the link.

GPSSM LEDs and components



Item	Name	Description
1	Door display power connector	
2	UID LED	Blue = UID on
3	Health LED	Flashing yellow = Degraded, indicted Off = Ok Flashing red = Deconfigured
4	CAMNet port 1	Link and Activity LEDs detailed below.
5	CAMNet port 2	Link and Activity LEDs detailed below.
6	CAMNet port 3	Link and Activity LEDs detailed below.
7	CAMNet port 4	Link and Activity LEDs detailed below.
8	CAMNet port 5	Link and Activity LEDs detailed below.
9	CAMNet port 6	Link and Activity LEDs detailed below.
10	CAMNet port 7	Link and Activity LEDs detailed below.

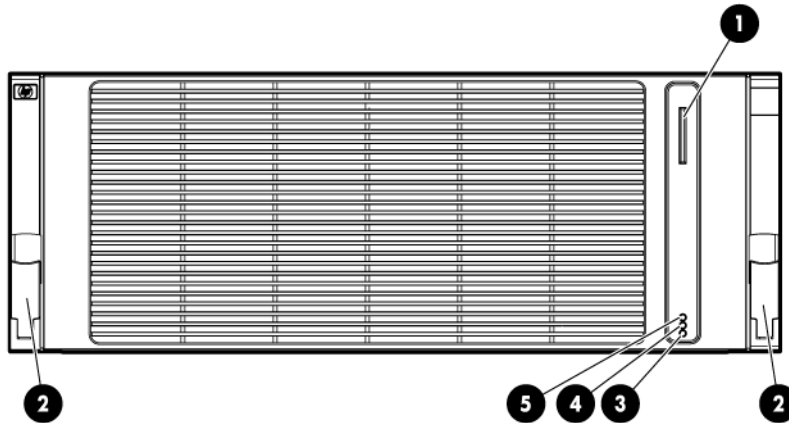
Item	Name	Description
11	CAMNet port 8	Link and Activity LEDs detailed below.
12	Local Clock Distribution LED	Indicates the status of the global clock signal distributed to blades in the enclosure. Green = OK Flashing yellow = Critical error
13	External Clock Input LED	Indicates the status of the global clock signal distributed to connected enclosures. Flashing green = No clock signal expected Green = OK Flashing yellow = Input fault, cable not connected or connected incorrectly
14	Global clock connector 3	
15	Global clock connector 2	
16	Global clock connector 1	
17	Enclosure DVD module USB port	NOTE: To ensure proper system functionality, you must connect the USB cable between the OA module and the GPSM.

Each CAMNet connector has a Link LED and an Activity LED.

Link LED	Activity LED	Status
Off	Off	<ul style="list-style-type: none"> • Power off • No link • Cable disconnected
Steady green	Steady green	Link OK, no activity.
Steady green	Flashing green	Link OK, established with activity.

IOX LEDs and components

IOX enclosure front

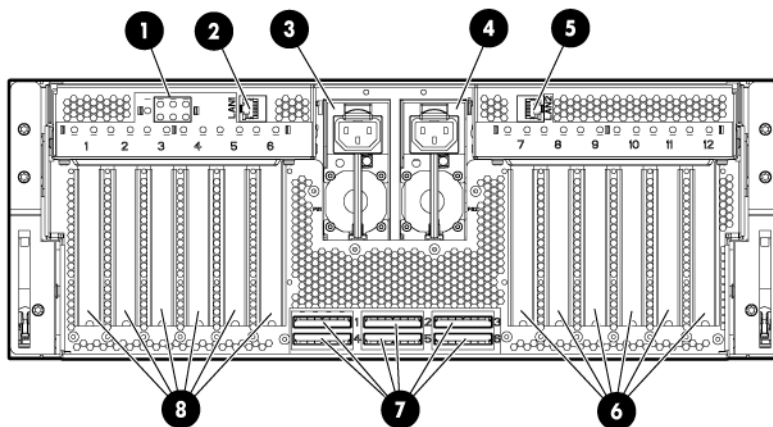


Item	Name	Description
1	Serial label pull tab	
2	Rack release latch (2)	
3	Power LED	Indicates if the IOX enclosure is powered on. Green = On
4	Health LED	Green = OK Flashing yellow = Degraded Flashing red = Critical error
5	UID LED	Blue = UID on

Each CAMNet connector has a Link LED and an Activity LED.

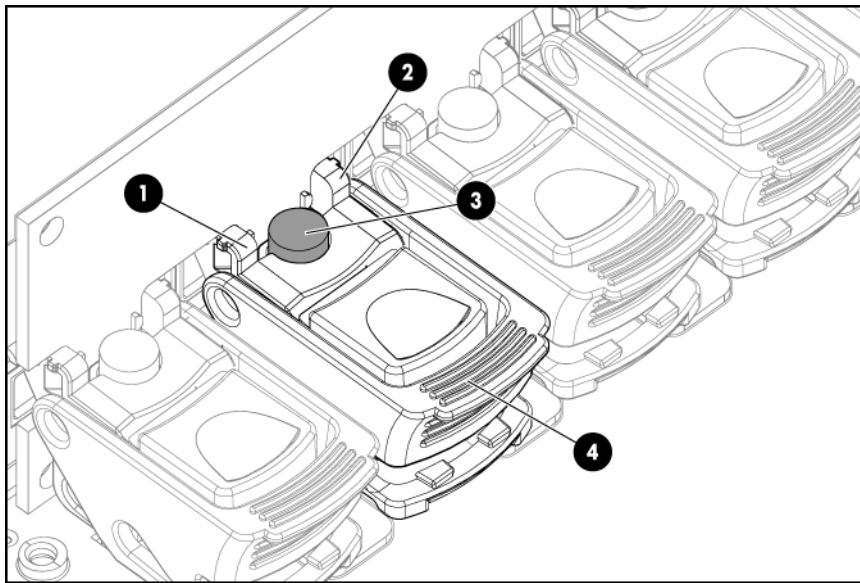
Link LED	Activity LED	Status
Off	Off	<ul style="list-style-type: none"> Power off No link Cable disconnected
Steady Green	Steady green	Link established, no activity
Steady green	Flashing green	Link established with activity

IOX enclosure rear



Item	Name	Description
1	Link Cable Status LEDs	<p>Indicates the status of the Xbar Fabric link.</p> <p>Solid green = Link OK, transmitting at full bandwidth</p> <p>Alternating green/yellow = Link in service, safe to remove.</p> <p>Flashing yellow = Deconfigured link, safe to remove.</p> <p>CAUTION: Always use the HR user interface <code>stop link</code> command before disconnecting the Superdome 2 crossbar fabric cable. The <code>stop link</code> command will allow safe servicing and set the LED endpoints for easy location.</p> <p>After servicing, the HR <code>start link</code> command will enable re-use of the link.</p>
2	CAMNet port 1	See following table.
3	Power supply 1	<p>LED indicates status:</p> <p>Green = OK</p> <p>Off = No ac or failed</p>
4	Power supply 2	<p>LED indicates status:</p> <p>Green = OK</p> <p>Off = No ac or failed</p>
5	CAMNet port 2	See following table.
6	I/O bay 2 PCIe slots	
7	IOX crossbar fabric connectors	
8	I/O bay 1 PCIe slots	

PCIe slot LEDs and components



Item	Name
1	Attention LED
2	Power LED
3	PCIe Hot Plug button
4	Slot release latch

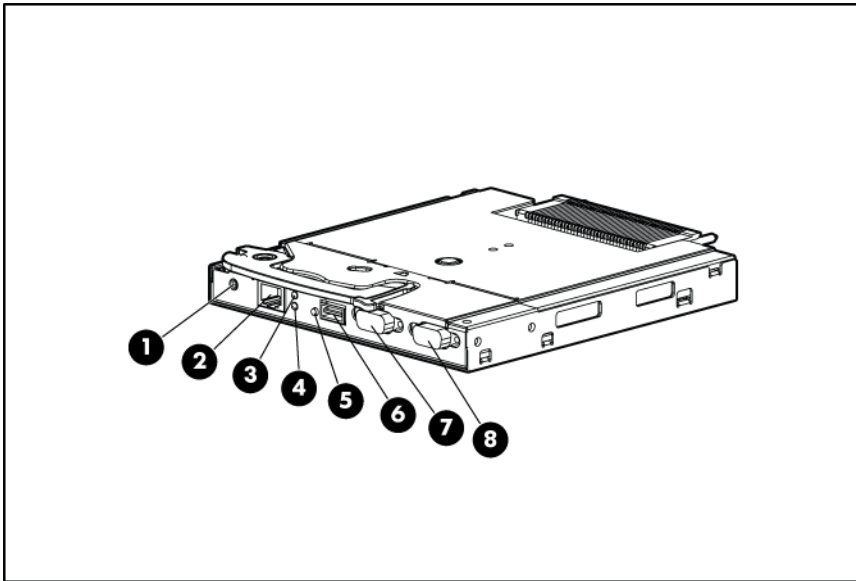
Each PCIe slot has two LEDs that indicate the status of the PCIe slot:

Power LED	Attention LED	Status
Off	Off	Slot is powered off
Green	Off	Slot is powered on and normal
Green	Flashing yellow	Slot is powering down

CAUTION: If the Power LED is lit, do not open the latch or attempt to install or remove a PCIe card.

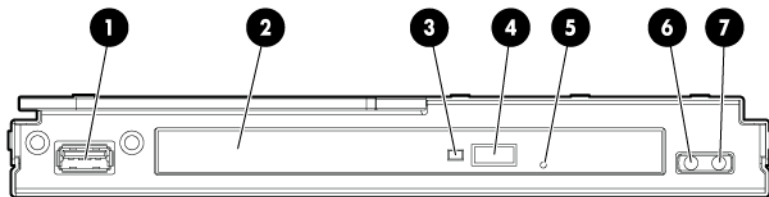
NOTE: The Power and Attention LEDs are also visible from the rear of the IOX enclosure.

HPE Integrity Superdome 2 Onboard Administrator module LEDs and components



Item	Name	Description
1	Reset button	—
2	OA management LAN port	Standard CAT5e (RJ-45) Ethernet port (100/1000Mb) which provides access to Superdome 2's management subsystem. Access to the OA's CLI and GUI interfaces, interconnect modules, and iLO features, such as vMedia, require connection to this port.
3	UID LED	Blue = UID on
4	Active Onboard Administrator LED	Indicates which Onboard Administrator is active
5	Health LED	Green = OK Red = Critical error
6	USB	USB 2.0 Type A connector used for connecting the Enclosure DVD module. Connects to the USB mini-A port on the GPSM. NOTE: You must connect the USB cable between the OA module and the GPSM to ensure proper system functionality.
7	Serial debug port	Serial RS232 DB-9 connector with PC standard pinout. IMPORTANT: This port is for OA debug use only, and should not be connected during normal system operation.
8	VGA	VGA DB-15 connector with PC standard pinout. To access the KVM menu or Onboard Administrator CLI, connect a VGA monitor or rack KVM monitor for enclosure KVM.

DVD module LEDs and components



Item	Name	Description
1	USB connector	
2	DVD tray	
3	DVD activity LED	
4	Tray open/close button	
5	Manual tray release	
6	Health LED	Green = OK Flashing yellow = Critical error
7	UID LED	Blue = UID on

OA GUI

The OA GUI provides partition status and FRU information. For more information on using the OA GUI, see the *HPE Integrity Superdome 2 Onboard Administrator User Guide*.

NOTE: CAE events and `errdump` information is not available using the GUI. You must use the command line for this information.

Diagnostics

Online diagnostics

A suite of offline and online support tools are available to enable manufacturing, field support personnel, and you to troubleshoot server blade issues. In general, if the operating system (HP-UX) is already running, it is best not to shut it down. Use online support tools such as `cprop`.

The following HP-UX commands can be used to troubleshoot system issues:

- `cprop - list` - Displays a list of all of the components on the system.

```
# cprop -list
*****
      STATUS | COMPONENT NAME
=====
      No status | Software Bundles
      No status | Software Products
      Normal | Enclosure Information
      Normal | Cell Blade
      No status | System Summary
      No status | Complex Information
      Normal | Processors
```

```

No status | Firmware Information
Normal   | Memory
Normal   | Management Processor
No status | Partition Information
No status | Memory Utilization
No status | Process Information
No status | Boot Device Configuration
No status | Crash Dump Configuration
Normal   | FC HBA
Normal   | IOTree
Minor    | Network Information
*****
#

```

- `cprop - summary -c component` – Displays summary information for all the instances of all the components.

```

# cprop -summary -c Memory

[Component]: Memory

[Table]: Logical memory information
-----
[Partition Management]: Enclosure Partition Management
(http://16.119.65.247/?view=npartition&nparid=1&tab=cpu_and_memory)
[Total Available Memory]: 127.78 GB
-----

[Table]: Physical memory information
-----
[Device Bay Information]: Bay 1
For detailed information , see <link>.:http://16.119.65.247/?view=blade&encid=1&bladeid=1
[Device Bay Information]: Bay 2
For detailed information , see <link>.:http://16.119.65.247/?view=blade&encid=1&bladeid=2
-----
#

```

- `- cprop -listtest` – Lists all available basic tests available.
- `- cprop -listtest -c component` – Lists all test available to the component.

```

cprop -listtest -c Processors

*****
[Hash ID]: Processors:80fe8671xbf8a74ad

[Test Name]: HP:CpuDiag
[Description]: The CpuDiag is a diagnostic to do CPU Test.
*****

```

`cprop -runtest`
Runs the basic test on all the instances of all of the supported components.

Example:

```

# cprop -runtest

[Component]: Software Bundles
Health test is not supported.
.
.
[Component]: Processors
-----
[Instance]: 1
*****
[Hash ID]: Processors:b67cbfdcx3041aa68

[Test Name]: HP:CpuDiag
[Job ID]: 20120713105142-0
[Status]: Complete
*****

[Instance]: 2
*****

```

Health Repository viewer

The Health Repository User Interface displays the information from the HR database. The HR database contains current state and history covering both service events and the results of error events analysis.

The following information is available in the HR display:

- Description of each failure event on the system that results in a service request, even after a component is removed or replaced.
- History of component identities installed in the system.

Information in the HR database is stored as installation and action records. These records are organized with component physical location as the key.

Indictment Records

Indictment refers to a record specifying that a component requires service. The component or a subcomponent may or may not be deconfigured as a result. Each indictment record contains the following information:

- The time of the error.
- The cause of the error.
- The subcomponent location of the error (when analysis allows).

In cases when the failing component cannot be identified with certainty, analysis indicts the most probable component that will need to be replaced to solve the problem. Other components that may have been responsible can be identified as suspects by writing a suspicion record. A suspicion record contains the same fields as an indictment record.

Deconfiguration is the act of disabling a component in the system. This happens when analysis finds that a component has a serious fault. A components deconfiguration status is composed of two parts:

- “requested state” – What the user or Analysis Engine would like to have the component set to.
- “current state” – How the component is actually configured in the system.

ⓘ **IMPORTANT:** Deconfiguration requests for components in active nPars can not be acted on until the nPar experiences a power-off/power-on cycle.

Acquitting indictments

Acquitting refers to clearing the component indictment and deconfiguration statuses, and is done when the part is serviced. Acquittals happen automatically in the following situations:

- Component insertion — HR will assume that a component inserted into the system has received any required service. This applies to any components contained within the inserted unit as well. For example, DIMMs and CPU sockets on an inserted blade will be acquitted. Any deconfigurations will be reversed.
- AC power cycle or CLI poweron xfabric command — HR will assume that the required service has been accomplished for the entire complex. All FRUs and sub-FRUs will be acquitted and reconfigured.

- Cohort acquittal — When analysis of a single fault event results in indictment or suspicion records against multiple components, the records are linked together. If one is acquitted, the acquittal will be passed to the cohort FRUs as well.
For example, if a cabled fabric link between the XFM and IOX has failed, the analysis engine will indict the cable connectors physical locations (representing the cable as the most likely component failure), and suspect the end points (XFM and IOX). Each will have the subFRU locality of the related port identified and deconfigured to prevent subsequent use of the link. Acquittal of the fabric cable connectors after cable service will acquit all for records.
- HR test commands — The test camnet and test clocks commands will acquit all indictments specific to the test to be executed. Resources that fail the test will be re-indicted as the test completes. The test fabric command acquits each type (fabric, CAMNet, Global Clock) of indictment before initiating the test.

NOTE: Indictments indicating faults in subcomponents not targeted by the tests will not be acquitted. For example, a blade indictment for CPU fault will not be acquitted by any of these test commands.

- Start Link — Attempting to service a cabled link while in use will result in an indictment. The stop link command prevents these indictments and alerts caused by service actions and lights the appropriate LINK health LEDs to help identify the physical cable needing service. The start link command clears the link health LEDs, acquits, and attempts link retraining.
- Manual Acquittal – The HR UI includes an acquit command that uses the component physical location or resource path as a parameter. Like other acquittals, the acquittal will act on all indictments for that component.
- Component resumes normal function.
In most cases resumption of function will not cause automatic acquittal. Component replacement, complex AC power cycle or manual acquittal is required. Examples are:
 - BPS indicted for loss of AC input regains power input.
 - Environmental temperature returns to within acceptable bounds.
 - Enclosure regains sufficient power due to BPS replacement.
 - Enclosure regains sufficient cooling due to fan replacement.

Viewing the list of indicted components

The show indict command will list the currently indicted components for the complex describing the type, physical location, indication of the cause for indictment, and timestamp.

```
myhost HR> show indict
```

```
System Indictment List - Mon May 18 16:06:03 2009
```

```
-----
FRU Type: Blade DIMM
Location: 0x0100FF0200160A74 enclosure1/blade2/socket0/dimm16
Timestamp: Mon May 18 15:51:12 2009
      Indictment State: Indicted
Requested Deconfig State: Configured
      Current Deconfig State: Configured
```

```
FRU Type: CPU Socket
Location: 0x0100FF01FF00FF11 enclosure1/blade1/socket0
Timestamp: Mon May 18 16:05:57 2009
```

```
Indictment State: Indicted
Requested Deconfig State: Configured
Current Deconfig State: Configured
```

```
--- end report --- 2 records shown
```

Viewing deconfigured components

The show deconfig will list all components in the complex which are deconfigured or have a pending request to be deconfigured. The output includes the type, physical location, indication of the cause for indictment, and timestamp.

```
myhost HR> show deconfig
System Acquittal History - Mon May 18 16:11:28 2009
-----

FRU Type: Blade DIMM
Location: 0x0100FF0200160A74 enclosure1/blade2/socket0/dimm16
Timestamp: Mon May 18 16:11:19 2009
Indictment State: Indicted
Requested Deconfig State: Configured
Current Deconfig State: Deconfigured

FRU Type: CPU Socket
Location: 0x0100FF01FF00FF11 enclosure1/blade1/socket0
Timestamp: Mon May 18 16:11:19 2009
Indictment State: Indicted
Requested Deconfig State: Configured
Current Deconfig State: Deconfigured
```

```
--- end report --- 2 records shown
```

NOTE: The requested and current deconfiguration states shown in the examples above are not the same. This can happen when requested deconfiguration changes are not be acted on until the n-Par containing the component in question is rebooted.

NOTE: DIMMs may be deconfigured without being indicted or even suspected. Some faults isolated to CPU sockets or blades may require deconfiguration of whole or portions of memory subsystems by physically deconfiguring the DIMMs supported by that resource.

Viewing indictment acquittals

The show acquit command will list all components in the complex which have had indictments acquitted. The output includes the type, physical location, indication of the cause for indictment, and timestamp.

```
myhost HR> show acquit
System Acquittal History - Mon May 18 16:11:28 2009
-----

FRU Type: Blade DIMM
Location: 0x0100FF0200160A74 enclosure1/blade2/socket0/dimm16
Timestamp: Mon May 18 16:11:19 2009
Indictment State: Acquitted
Requested Deconfig State: Configured
Current Deconfig State: Deconfigured

FRU Type: CPU Socket
Location: 0x0100FF01FF00FF11 enclosure1/blade1/socket0
Timestamp: Mon May 18 16:11:19 2009
Indictment State: Acquitted
Requested Deconfig State: Configured
```


Current Deconfig State: Deconfigured

--- end report --- 2 records shown

NOTE: The requested and current deconfiguration states shown in the examples above are not the same. This can happen when requested deconfiguration changes are not be acted on until the n-Par containing the component in question is rebooted.

Viewing recent service history

You can view the recent service history using the show acquit command. To view the installation history for the acquitted locations, enter show <physical location>|<resource path>

Physical Location installation and health history

The show <physical location>|<resource path> command returns the entire stored installation and health history of a physical location. This includes up to two previous components installed at this location. The history will include previous indictments, with or without acquittals, rather than just the indictments.

```
2009-11-18 21:50 hps118-4 HR> show 0x0B00FFFF01FFFF69
```

```
Location Installation/Health History - Sat Nov 18 21:51:04 2009
```

```
-----  
FRU Type: IO Expander Midplane  
Location: 0x0B00FFFF01FFFF69 enclosure11/midplane0  
Timestamp: Thu Sep 10 18:34:11 2009  
Indictment State: Indicted  
Requested Deconfig State: Configured  
Current Deconfig State: Configured  
--- Install History 1 ---  
Discovery: Startup (| Runtime Insertion | Indictment)  
Timestamp: Thu Sep 10 18:34:12 2009  
Serial Num: MYJ84901ZH  
Parent Serial: 1Z34AB7890  
Part Num: AH342-60003  
Spare Part Num: AH342-60003  
Manufacturer: HP  
Product Name: CB900s i2  
Board Serial Num: MYJ84901ZH
```

```
- FRU Data Extension -  
Name: value  
Name2: Value2
```

(Detailed info about FRU is provided here if it exists. E.g. For CPUs max freq will be provided here. If no data, entire section omitted.)

```
--- Action - Indict ---  
Event No: 4000  
Provider: some_provider_name  
Reason: Text reason of problem from WS-Man alert.  
Reason: 3:1
```

Description: Text description of problem from ws-man Alert.

```
Bundle ID: 0x400000000000010D  
Alert ID: 7400020091023220043  
- Indicted / Acquitted -
```

Type	Timestamp	Entity	Reason
Ind	Thu Sep 10 18:34:11 2009	CAE	See reason above.
Acq	Thu Sep 10 18:34:11 2009	User	User request

```
---  
- Supporting Symptoms -  
Reason: Text reason of supporting symptom** (not from ws-man).
```

```
- SubFru Isolation -  
SubFRUs requiring service shown here. If none, section omitted.
```

```
- SubFru Deconfiguration -  
Deconfig'ed subFRUs shown here. If none, section omitted.
```

```
- Related Locations -  
0x0B00FFFF03FFFF54 (Cohorts. If none, section omitted.)
```

Subcomponent isolation and deconfiguration displays

Subcomponent isolation refers to the subcomponents of a part that can require service. In these cases, the component is indicted because the only way the subcomponent can be serviced is by removing and servicing the entire component.

Subcomponent deconfigurations are also possible. These are indications of subcomponent failures.

The show <location> and show fru command output may contain “SubFru Isolation” and “SubFru Deconfiguration” sections to communicate subcomponent health information. If a subcomponent deconfiguration event occurs, the corresponding subcomponent Isolation will also be set, which triggers an indictment of the parent component.

The sections below show examples of how the subcomponent isolation sections look.

NOTE: The format of the deconfiguration sections look identical to those for Isolation so are not shown in the following sections.

Using event logs

Event logs are generated by software or firmware when an event is detected. Some events that cause event records to be generated are:

- Hardware-related.
 - Example: fan or power supply failure.
- Software-related.
 - Example: indicating that software reached a certain point in the code, or that a certain amount of time has passed.

The OA can timestamp and filter events, then store and transfer them to event log readers. Log entries can be read by management applications in:

- Operating Systems
- OAs
- SEL viewers
- FPL viewers
- Live Event viewers
- EAE

Log entries can be cleared by OS management applications or by the OA itself.

Events are classified into a number of severity levels, ranging from critical failure to non-error forward progress notification. The severity level is encoded in the **alert level** data field on an event record. Different system actions may result from generation of an event record, depending on alert level.

Live viewer

The live event viewer provides a way for you to see records as they occur. The OA supports multiple simultaneous live event viewers that are created and destroyed dynamically when requested. The maximum number of simultaneous live event viewers is limited by the number of connections supported by the OA.

Each live event viewer works independently from any other event viewer, meaning that each live event viewer can select its own filter and format options without affecting other live event viewers.

The log can be filtered using the following items:

- blade number
- partition number
- alert level

The following format options are also available:

- **Keyword** – This is the default format for all viewers. The keyword format supplies the following information about an event:
 - log number
 - reporting entity type
 - reporting entity ID
 - alert level
 - hexadecimal dump of event records
 - event ID keyword
- **Raw hex** – The raw hex format supplies following information about an event:
 - hexadecimal dump of event records
- **Text** – The text format supplies the following information about an event:
 - log number
 - timestamp
 - alert level
 - event ID keyword
 - brief text description
 - reporting entity type
 - reporting entity ID
 - hexadecimal dump of event records
- **Problem/Cause/Action** - The Problem/Cause/Action format displays a problem/cause/action statement in addition to the summary and other fields displayed by the text formatter.

To connect to the live log viewer, enter the `SHOW LIVELOGS` command on the monarch OA.

NOTE: The option **C** can be used to display column header information at any point of time while in the Live viewer. The column header corresponding to the event viewer format currently active will be displayed

```
Welcome to the Live Event Viewer

WARNING: Due to connection speed and/or to the number
of events being generated and/or to the format
option selected, the live event viewer may
silently drop events.

The following event format options are available:
K: Keyword
E: Extended Keyword
R: Raw hex
T: Text
S: Cause/Action
```

The following alert filter options are available:
 Alert filter will cause events at the selected alert filter
 and below to be shown
 0: Minor Forward Progress
 1: Major Forward Progress
 2: Informational
 3: Warning
 5: Critical
 7: Fatal

The following event filter options are available:
 B: Blade
 P: Partition
 V: Virtual Partition
 U: Unfiltered

Current alert threshold: Alert threshold 0
 Current filter option: Unfiltered
 Current format option: Extended Keyword

Select new filter/format option, or <ctrl-b> to exit or <cr> to
 resume display of live events, or H/? for help or 'C' to
 display column header information

Location: Enclosure, Device Bay, Socket, Core, Thread AL: Alert Level

Rep Ent	Location	nPar: vPar	AL	Encoded Field	Data Field	Keyword Timestamp
SFW	1,1,0,1,0	255:255	1	23000ba105e10000	0000000000000004	PAL_EXIT_SELFTEST_STATUS
PDHC	1,2	14:3	1	27801ed800e10000	0000000000000001	POWERING_NPAR 04/24/2012 06:39:05
OA	1,1	None	2	4480201a00e10000	0100ff01ffffff94	OA_HWMGR_DAEMON_BLADE_POWER_ON_WAITING 04/24/2012 06:39:05
ILO	1,2	None	2	4b00260300e10000	010000004f96acf9	OA_REQUESTS_POWER_CHANGE 04/24/2012 06:39:05
ILO	1,2	None	1	2980256100e10000	20202020494d5049	SYS_CTL_REQ_MOMENT_BTN 04/24/2012 06:39:05
SFW	1,1,0,1,1	255:255	1	23000ba107e10000	0000000000000004	PAL_EXIT_SELFTEST_STATUS
SFW	1,1,0,2,0	255:255	1	23000ba109e10000	0000000000000004	PAL_EXIT_SELFTEST_STATUS
SFW	1,1,0,2,1	255:255	1	23000ba10be10000	0000000000000004	PAL_EXIT_SELFTEST_STATUS

SEL and FPL viewers

Both the SEL and FPL viewers provide a way for OA users to view stored event records. The OA supports multiple simultaneous viewers. The maximum number of viewers is limited by the number of connections supported by the OA. Each viewer works independently from any other viewer, meaning each viewer can select its own filter options without affecting other viewers.

The logs can be filtered using the following items:

- blade number
- cabinet number
- partition number
- alert level

The following format options are also available:

- Keyword – This is the default format for all viewers. The keyword format supplies the following information about an event:
 - log number
 - reporting entity type
 - reporting entity ID
 - alert level

- hexadecimal dump of event records
- event ID keyword
- Raw hex – The raw hex format supplies following information about an event:
 - hexadecimal dump of event records
- Text – The text format supplies the following information about an event:
 - log number
 - timestamp
 - alert level
 - event ID keyword
 - brief text description
 - reporting entity type
 - reporting entity ID
 - hexadecimal dump of event records
- Problem/Cause/Action - The Problem/Cause/Action format displays the problem/cause/action statement in addition to the summary and other fields displayed by the text format.

NOTE: The display of column headers can be turned on or off using toggle option **C**. By default, the column header will be on.

To connect to the FPL viewer, enter the `SHOW FPL` command on the monarch OA.

```

Welcome to the Forward Progress Log (FPL) Viewer

The following FPL navigation commands are available:
  D: Dump log starting at current block for capture and analysis
  F: Display first (oldest) block
  L: Display last (newest) block
  J: Jump to specified entry and display previous block
  +: Display next (forward in time) block
  -: Display previous (backward in time) block
<cr>: Repeat previous +/- command
<sp>: Repeat previous +/- command
  /: Search forward for input string
  \: Search backwards for input string
  I: Changes between case sensitive and insensitive search
  N: Perform previous search using last input string
  ?/H: Display help
  C: Toggle display of column header
<Ctrl-b>: Exit viewer

The following event format options are available:
  K: Keyword
  E: Extended Keyword
  R: Raw hex
  T: Text
  S: Cause/Action

The following alert threshold options are available:
Alert thresholds will cause events at the selected threshold
and below to be shown
  0: Minor Forward Progress
  1: Major Forward Progress
  2: Informational
  3: Warning
  5: Critical
  7: Fatal

The following event filter options are available:
  B: Blade
  P: Partition
  V: Virtual Partition
  U: Unfiltered

```

Current alert threshold: Alert threshold 0
 Current filter option: Unfiltered
 Current format option: Extended Keyword
 MP:VWR (<cr>,<sp>,+,-,?,H,C,F,I,L,J,D,K,E,R,T,B,P,V,U,/, \,N,0,1,2,3,5,7,<Ctrl-b>) >

Location: Enclosure, Device Bay, Socket, Core, Thread AL: Alert Level

Event#	Rep Ent	Location	nPar: vPar	AL	Encoded Field	Data Field	Keyword Timestamp
848	SFW	1,1,0,0,0	255:255	0	030026a701e10000	0000000000050014	EFI_DRIVER_VERSION
847	SFW	1,1,0,0,0	255:255	0	03001af101e10000	01010000165014e4	EFI_DRIVER_LOCATION
846	SFW	1,1,0,0,0	255:255	0	0300232501e10000	00001041ba552000	BOOT_LOAD_FW_ADDR
845	SFW	1,1,0,0,0	255:255	0	0300232401e10000	652e69646e757665	BOOT_LOAD_FW_MODULE
844	OA	1,1	1	1	368022ef00e10000	199b000000000000	PARCON_VPAR_POWERON_COMPLETE 04/24/2012 06:29:50
843	OA	1,1	1	0	1680264000e10000	199b000200010000	PARCON_VPAR_OPERATION 04/24/2012 06:29:50
842	OA	1,1	1	1	34801f4400e10000	0610000000000000	PARCON_NPAR_STATE_CHANGE 04/24/2012 06:29:45
841	OA	1,1	1	0	1680264000e10000	1998000200160000	PARCON_VPAR_OPERATION 04/24/2012 06:29:44
840	OA	1,1	1	0	1680263f00e10000	19980007002f0000	PARCON_NPAR_OPERATION 04/24/2012 06:29:44
839	PDHC	1,2	14:3	0	07801eb800e10000	0000000019000000	FHW_NOTIFY_CFW 04/24/2012 06:29:42
838	SFW	1,1,0,0,0	1	1	3480020b01e10000	0000000000000006	EFI_LAUNCH_BOOT_MANAGER 04/24/2012 06:29:42
837	SFW	1,1,0,0,0	1	0	000025db01e10000	0000000000000000	VC_HANDOFF_TO_BOOTMGR
836	SFW	1,1,0,0,0	1	0	0300232501e10000	00001041ba696000	BOOT_LOAD_FW_ADDR
835	SFW	1,1,0,0,0	1	0	0300232401e10000	66652e6177737066	BOOT_LOAD_FW_MODULE
834	SFW	1,1,0,0,0	1	0	0300232501e10000	00001041ba8ba000	BOOT_LOAD_FW_ADDR

To connect to the SEL viewer, enter the SHOW SEL command on the monarch OA.

Welcome to the System Event Log (SEL) Viewer

The following SEL navigation commands are available:

D: Dump log starting at current block for capture and analysis
 F: Display first (oldest) block
 L: Display last (newest) block
 J: Jump to specified entry and display previous block
 +: Display next (forward in time) block
 -: Display previous (backward in time) block
 <cr>: Repeat previous +/- command
 <sp>: Repeat previous +/- command
 /: Search forward for input string
 \: Search backwards for input string
 I: Changes between case sensitive and insensitive search
 N: Perform previous search using last input string
 ?/H: Display help
 C: Toggle display of column header
 <Ctrl-b>: Exit viewer

The following event format options are available:

K: Keyword
 E: Extended Keyword
 R: Raw hex
 T: Text
 S: Cause/Action

The following alert threshold options are available:

Alert thresholds will cause events at the selected threshold and below to be shown
 2: Informational
 3: Warning
 5: Critical
 7: Fatal

The following event filter options are available:

B: Blade
 P: Partition
 V: Virtual Partition
 U: Unfiltered

Current alert threshold: Alert threshold 2
 Current filter option: Unfiltered
 Current format option: Extended Keyword
 MP:VWR (<cr>,<sp>,+,-,?,H,C,F,I,L,J,D,K,E,R,T,B,P,V,U,/, \,N,2,3,5,7,<Ctrl-b>) >

Location: Enclosure, Device Bay, Socket, Core, Thread AL: Alert Level

Event#	Rep Ent	Location	nPar: vPar	AL	Encoded Field	Data Field	Keyword Timestamp
21	SFW	1,1,0,0,0	255:255	2	43801f4f01e10029	0000000000000000	SET_SECURE_MODE 04/24/2012 06:29:23
20	SFW	1,1,0,0,0	255:255	2	4480223a01e10027	0100ff01ffffff94	MEM_DIMM_ENABLE_DONE 04/24/2012 06:28:54
19	PDHC	1,2	14:3	2	4480223800e10025	0100ff01ffffff94	DIMM_LOADING_ORDER_DONE

```

19
18      OA      1,1      None      2 4480201f00e10023 0100ff01ffffff94 04/24/2012 06:28:03
18      OA      1,1      None      2 4480201f00e10023 0100ff01ffffff94 OA_HWMGR_DAEMON_BLADE_POWER_ON_SUCCESS
18      PDHC     1,2      14:3     2 438028d300e10021 0000000000000150 04/24/2012 06:27:51
17      PDHC     1,2      14:3     2 438028d300e10021 0000000000000150 BLADE_DIMM_VOLTAGE
17      PDHC     1,2      14:3     2 438028d300e10021 0000000000000150 04/24/2012 06:27:49
16      OA      1,1      None      2 4480201d00e1001f 0100ff01ffffff94 OA_HWMGR_DAEMON_BLADE_POWER_ON_CONTINUE
16      OA      1,1      None      2 4480201d00e1001f 0100ff01ffffff94 04/24/2012 06:27:49
15      ILO      1,1      None      2 4b00260300e1001e 010000004f96aa53 OA_REQUESTS_POWER_CHANGE
15      ILO      1,1      None      2 4b00260300e1001e 010000004f96aa53 04/24/2012 06:27:47
14      OA      1,1      None      2 4480201a00e1001c 0100ff01ffffff94 OA_HWMGR_DAEMON_BLADE_POWER_ON_WAITING
14      OA      1,1      None      2 4480201a00e1001c 0100ff01ffffff94 04/24/2012 06:27:47
13      OA      1,1      1         2 448025a900e1001a 0100ff03ffffff94 PARCON_NPAR_RSRC_ACTIVATION_SKIPPED
13      OA      1,1      1         2 448025a900e1001a 0100ff03ffffff94 04/24/2012 06:27:45
12      OA      1,1      None      2 44801ff800e10018 0100ff01ffffff94 BLADE_STATUS_DEGRADED
12      OA      1,1      None      2 44801ff800e10018 0100ff01ffffff94 04/24/2012 06:26:56
11      ILO      1,1      None      2 4b00260300e10017 010000004f96aa1e OA_REQUESTS_POWER_CHANGE
11      ILO      1,1      None      2 4b00260300e10017 010000004f96aa1e 04/24/2012 06:26:54

```

Core Analysis Engine

The Core Analysis Engine is a diagnostic tool that analyzes system errors and generates events that provide exhaustive details in terms of severity, probable cause, recommended action, replaceable units and much more. It also initiates self healing corrective actions.

CAE provides an event viewer so you can visualize each event and its details. To access the event viewer:

1. Access the OA CLI command prompt.

2. Run the **SHOW CAE** command with options:

```
SHOW CAE {-L <arguments> | -E <arguments> | -C <arguments>}
```

To see CAE event viewer options:

```
[MFG Shell Enabled] > SHOW CAE -h

SHOW CAE : This command can be used to view/clear the indications using the following options
(-L) [(-e) ([eq:|ne:|le:|ge:] (0|1|2|3|4|5|6|7))] |
(-L) [(-e) ([bw: (0|1|2|3|4|5|6|7),] (0|1|2|3|4|5|6|7))] : Search based on severity values:

Unknown(0),Other(1),Information(2),Degraded/Warning(3),
Minor(4),Major(5),Critical(6),Fatal/NonRecoverable(7)
(-L) [(-i) (<Event ID> [,<Event ID>])] : Search based on Event Id
(-L) [(-v) (<EventCategory Name>[,<EventCategory Name>] | all)] : Search based on event category name
  or view all category names
(-L) [(-p) (<npar[:vpar]>|complex)] : Search based on partition id or
complex
(-L) [(-t) ([eq:|le:|ge:]<mm:dd:yyyy:hh:mi:ss> ) |
(-L) [(-t) ([bw:<mm:dd:yyyy:hh:mi:ss>],<mm:dd:yyyy:hh:mi:ss>)] : Search based on time of event generation
(-L) [(-r) ([%] <summary> [%])] : Search based on summary string
(-L) [(-s) [asc:|desc:] (id|time|severity|category)] : Sort on eventId,time,severity or
category
(-L) [(-o) <offset>] : Display from offset <offset>
(-L) [(-c) <count>] : Display <count> number of events
(-E) (-n) <Sl.No> : Display event details with serial
number equal to <Sl.No>
(-E) (-a) <alert id> : Display event details with Indication
  Identifier/Alert Id equal to <alert id>
(-C) (-p) (<npar[:vpar]>|complex) : Clear events based on partition id
or complex
(-G) [on|off|alert|device|status] : Enable/Disable/Enable
HP_AlertIndication/Enable HP_DeviceIndication/Display status for Athena One
Stop Fault Management
(-L) [(-b)] : Display archived events
(-E) [(-b)] (-n) <Sl.No> : Display archived event details with
  serial number equal to <Sl.No>
[-h] : Display usage of this command
```

To view the list of events generated and analyzed:

```
[MFG Shell Enabled] > SHOW CAE -L

Sl.No Severity      EventId EventCategory PartitionId  EventTime          Summary
#####
2      Fatal        2013      System Int... N/A              Tue Nov 26 01:56:42 2006 A crossbar fabric went down
and caus...
1      Major         100905    Processor    N/A              Mon Oct 2 23:33:40 2006 A uncorrectable error
indication occ...
(...) indicates truncated text. For complete text see event details
```

To see the details for each event:

```
[MFG Shell Enabled] > SHOW CAE -E -n 2
Alert Number : 2

Event Identification :
  Event ID           : 2013
  Provider Name      : FabricIndicationProvider
  Event Time         : Tue Sep 26 01:56:42 2006
  Indication Identifier : 4201320060926015642

Managed Entity :
  OA Name           : OAname1
  System Type       : 59
  System Serial No. : 1Z34AB7890
  OA IP Address     : 192.168.100.130

Affected Domain :
  Enclosure Name    : OA-00A1B2C3D4E5
  RackName          : SD2-RACKONE
  RackUID           : 091Z34AB7890
  Impacted Domain   : Complex
  Complex Name      : Complex 1
  Partition ID      : Not Applicable

Summary :
  A crossbar fabric went down and caused a partition to Machine Check Abort

Full Description :
  A crossbar fabric link went down and there was no alternate path available for the transaction.
  This could occur when the system was already routing around previously failed links or, on the first link
  failure in entry level systems that have only two crossbar fabric switches.
  If the system has at least four crossbar fabric switches, there are likely several failures on several
  different FRUs for this failure to cause an MCA. There might be previous alerts for other failures that
  were detected in the crossbar fabric
  Probable Cause 1 :
  The crossbar (XFabric) links have failed to the point where redundancy was lost. The link that caused the
  MCA might have retrained correctly, but the system MCA'ed because of the lack of a redundant path that
  could be used while the link was retrained
```


Recommended Action 1 :
Check the XFabric links. The FRU's used to implement the link that caused the MCA is included as a reference. Check for physical damage on the FRU connection points and ensure proper mating/seating occurs.
Check the system error logs for other events describing previous XFabric link failures. If the problem persists, replace only one FRU at a time in the order given below. Test the system between each FRU replacement

```
Replaceable Unit(s) :
  Part Manufacturer      : HP
  Spare Part No.        : AH341-60301
  Part Serial No.       : MYJ01503SK
  Part Location         : 0x0100ff01ff00ff51 enclosure1/xfm1
  Additional Info       : XFabric Link Id : 5

  Part Manufacturer      : HP
  Spare Part No.        : AH341-60301
  Part Serial No.       : MYJ01503SK
  Part Location         : 0x0100ff01ff00ff51 enclosure1/xfm1
  Additional Info       : XFabric Link Id : 4

Additional Data :
  Severity              : Fatal/NonRecoverable
  Alert Type            : Device Alert
  Event Category        : System Interconnect
  Event Subcategory     : Other
  Probable Cause        : Transmit Failure
  Other Event Subcategory : Fabric Interconnect
  Event Threshold       : 1
  Event Time Window     : 0 (minutes)
  Actual Event Threshold : 1
  Actual Event Time Window : 0 (minutes)
  LinkType              : CONNECTOR
  Local Link Id         : 5
  Remote Link Id        : 4
  Redundancy status     : REDUNDANT
  Suspected FRU         : 0x0100ffff01ffff69 enclosure1/midplane0
  OEM System Model      : NA
  Original Product Number : AH337A
  Current Product Number : AH337A
  OEM Serial Number     : NA

Version Info :
  Complex FW Version    : 3.5.24
  Provider Version      : 5.71

Error Log Data :
  Error Log Bundle      : 072
```

See the HPE Integrity Superdome 2 Onboard Administrator Command Line Interface User Guide for the correct and detailed command syntax. The HR Viewer can also provide help in visualizing component issues.

HPE Integrity Superdome 2 Onboard Administrator

The OA provides diagnostic and configuration capabilities. See the *HPE Integrity Superdome 2 Onboard Administrator Command Line Interface User Guide* for more information on the OA CLI commands. You can access the OA CLI either from a remote system or locally.

The status logs consist of:

- System Event
- Forward Progress
- Live Events

❗ **IMPORTANT:** The XFABRIC should be powered off prior to removing all blades by using the Onboard Administrator CLI commands `POWEROFF XFABRIC` followed by `POWERON XFABRIC` after re-inserting any blade to ensure they are detected by the OA.

See the *HPE Integrity Superdome 2 Onboard Administrator Command Line Interface User Guide* for more information on the OA CLI commands.

Remotely accessing the Onboard Administrator

The Onboard Administrator CLI can be accessed remotely through any Telnet or SSH session.

Procedure 1 Telnet session

1. From a network-connected client, open a command-line window.
2. At the prompt, enter `telnet <OA IP address>` and then press **Enter**.
For example, `telnet 192.168.100.130`.
3. Enter a valid user name and press **Enter**.
4. Enter a valid password and press **Enter**. The CLI command prompt appears.
5. Enter commands for the Onboard Administrator.
6. To end the remote access telnet session, at the CLI command prompt, enter **Exit**, **Logout**, or **Quit**.

Procedure 2 SSH session

1. Using any SSH client application, start a SSH session to the Onboard Administrator.
2. When prompted, enter the assigned IP address or DNS name of the Onboard Administrator, and then press **Enter**.
3. Enter a valid user name and press **Enter**.
4. Enter a valid password and press **Enter**. The CLI command prompt displays.
5. Enter commands for the Onboard Administrator.
6. To end the remote access SSH session, at the CLI command prompt, close the communication software or enter **Exit**, **Logout**, or **Quit**.

Locally accessing the Onboard Administrator

The Onboard Administrator can be accessed locally through a serial port connector on the rear of the Onboard Administrator module. Use a laptop or another computer as a serial console to communicate with the Onboard Administrator. A laptop or PC connected to the Onboard Administrator serial port requires a null-modem cable. The minimum connection to an external console is pins 2, 3, and 5.

1. Connect a serial cable between the serial port on the computer and the corresponding serial port on the Onboard Administrator module. The following table is for the DB9 serial (RS232) port and shows the pinout and signals for the RS232 connector. The signal direction is DTE (computer) relative to the DCE (modem).

Pin	Name	Signal direction	Description
1	CD	<<--	Carrier detect
2	RXD	<<--	Receive data
3	TXD	-->>	Transmit data
4	DTR	-->>	Data terminal ready
5	GND		System ground
6	DSR	<<--	Data set ready
7	RTS	-->>	Request to send
8	CTS	<<--	Clear to send
9	RI	<<--	Ring indicator

2. Use any standard communication software to launch a terminal emulation session with the following parameters.

Parameter	Value
Transmission rate	9600 bps
Data bits	8
Parity	None
Stop bits	1
Protocol	None

3. When prompted, enter a valid user name, and then press **Enter**.
4. Enter a valid password, and then press **Enter**. The CLI command prompt appears.
5. Enter commands for the Onboard Administrator.
6. To end the terminal session, enter **Exit** at the prompt.

NOTE: If the serial session is not closed properly using the `exit` command, it can cause the console to respond slowly.

Troubleshooting processors

Processor module behaviors

All physical processors become functional after blade power is applied. Each processor is in a race to fetch their instructions from their processor instruction and data caches to complete early self test and rendezvous.

Double-bit data cache errors in any physical processor core can cause a local MCA event, which can have one of the following results:

- The entire system crashes.
- The failure is corrected and the processor is restarted.
- The failure is corrected, but the processor is disabled if it has experienced a local MCA within a certain time span.

❗ **IMPORTANT:** L4 cache errors are the result of blade failure.

Firmware

There are three different firmware systems on Superdome 2:

- System firmware bundle.
- IO firmware (PCIe and LOM)
- Interconnect module firmware.

All firmware systems can be updated.

System firmware

The Superdome 2 complex system firmware bundle includes firmware for complex components including:

- Server blade firmware (not including LOMs)
- Partition firmware for each server blade

- OA firmware
- Manageability module firmware, including GPSMs and XFMs
- Compute enclosure firmware
- IOX enclosure firmware

System firmware can be updated if the complex is already running firmware bundle 2.2.27 or higher. For any firmware bundle release of 1.x.y a complex outage is required. System firmware will be updated through the OA (either a USB key is inserted in the USB slot at the DVD assembly or using an FTP server).

❗ **IMPORTANT:** Always use the `all` option when updating firmware on a SD2 system. For example:

```
OA1> update firmware usb://d2/hpsd2-2.xx.xxx-fw.bundle all
OA1> update firmware ftp://user:passwd@Hostname/sd2/hpsd2-2.xx.xxx-fw.bundle all
```

If the `all` option is not used only the complex firmware will be updated and you will have to update the partition firmware separately. This will create additional down time.

Always follow the update instructions for each firmware release.

FRU replacement firmware update procedures

❗ **IMPORTANT:** Always use the `all` option when updating firmware on a SD2 system. For example:

```
OA1> update firmware usb://d2/hpsd2-2.xx.xxx-fw.bundle all
OA1> update firmware ftp://user:passwd@Hostname/sd2/hpsd2-2.xx.xxx-fw.bundle all
```

If the `all` option is not used only the complex firmware will be updated and you will have to update the partition firmware. This will create additional down time.

NOTE: Since system firmware release 1.2.67 or greater, it is no longer required to power off all partitions and the xfabric to update the firmware on a newly replaced FRU.

With the newer firmware, the `update firmware` command checks the installed FRUs and will only update FRUs that do not match the complex firmware version.

The following table explains the steps to take, and the overall impact each FRU replacement will have on system operation:

FRU	Process
Blade – Requires a nPar outage	<ol style="list-style-type: none"> 1. Power OFF the partition the blade is assigned too. (See Note below this table) 2. Remove/Replace the suspect blade following the instructions in the service guide. 3. Check the firmware revision of the new FRU with the <code>show updated firmware</code> or <code>checkrevs</code> command. 4. Use the <code>update firmware</code> command, pointing it to a bundle file that matches what is currently installed on the complex. 5. Check for indicts. 6. Power on the partition.
IOX Backplane – Requires a nPar outage	<ol style="list-style-type: none"> 1. Power OFF the partition the IOX is assigned too. (See Note below this table). 2. Remove/Replace the suspect IOX Backplane following the instructions in the service guide.

FRU	Process
	<ol style="list-style-type: none"> 3. Check the firmware revision of the new FRU with the <code>show updated firmware</code> or <code>checkrevs</code> command. 4. Use the <code>update firmware</code> command, pointing it to a bundle file that matches what is currently installed on the complex. 5. Check for indicts. 6. Power on the partition.
XFM — Requires a Complex outage	<ol style="list-style-type: none"> 1. Power OFF all partitions. 2. Remove/Replace the suspect XFM following the instructions in the service guide. 3. Check the firmware revision of the new FRU with the <code>show updated firmware</code> or <code>checkrevs</code> command. 4. Use the <code>update firmware</code> command, pointing it to a bundle file that matches what is currently installed on the complex. 5. Check for indicts. 6. Power ON all partitions.
OA — No outage required	<ol style="list-style-type: none"> 1. Ensure the suspect OA is the standby OA, use the <code>force takeover</code> command if needed. 2. Remove/Replace the suspect OA. 3. Check the firmware revision of the new FRU with the <code>show updated firmware</code> or <code>checkrevs</code> command. 4. Use the <code>update firmware</code> command, pointing it to a bundle file that matches what is currently installed on the complex. 5. Check for indicts.
GPSM — No Outage required	<ol style="list-style-type: none"> 1. Ensure you are replacing the indicted GPSM. 2. Disconnect the cables from the GPSM being replaced. 3. Remove/Replace the suspect GPSM. 4. Check the firmware revision of the new FRU with the <code>show updated firmware</code> or <code>checkrevs</code> command. 5. Use the <code>update firmware</code> command, pointing it to a bundle file that matches what is currently installed on the complex. 6. Check for indicts. <p>NOTE: You will see indicts related to the loss of redundancy of the CAMNet.</p> <ol style="list-style-type: none"> 7. Acquit the indictments related to the loss of redundancy of the CAMNet.

NOTE: For Blade and IOX Backplane replacement: If the FRU failed in a way that made it unable to join the partition after the failure, you may not need to shutdown the partition at the time of the replacement. The FRU can be replaced and the firmware updated. When the partition is rebooted, the replacement FRU will rejoin the partition.

I/O firmware

Every LOM and PCIe card supported in Superdome 2 requires its own UEFI driver and some also require card specific ROM firmware. The firmware as well as the installation instructions can be found at www.hpe.com. Installing I/O firmware requires the SUV dongle for each partition in case of offline installation using the USB stick.

Interconnect module firmware

Superdome 2 currently supports the LAN Pass-Thru Module as well as the ProCurve 6120XG. The Pass-Thru Module does not require any firmware updates.

Symptoms of possible firmware issues include erratic server blade, enclosure or other component operation, or unsuccessful boot to the UEFI boot manager or UEFI shell.

The ProCurve 6120XG requires a minimum firmware version of Z.14.27 for Superdome 2. The latest firmware can be obtained at the Hewlett Packard Enterprise Support Center website : <http://www.hpe.com/support/hpesc>.

Identifying and troubleshooting firmware issues

NOTE: Firmware issues are relatively rare. Look for other issue causes first.

Probable firmware failure areas are:

- Unsupported firmware installation
- Corrupt firmware installation

To troubleshoot firmware issues:

1. Be sure that all server blade firmware components are from the same release (use the OA CLI `update show firmware` command, or check the Complex Firmware version through the OA GUI).
2. Reinstall complex firmware.

Verifying and installing the latest firmware version

Hewlett Packard Enterprise recommends that all firmware on all devices be updated to the latest version after hardware installation is complete. Hewlett Packard Enterprise also encourages you to check back often for any updates that may have been posted.

The most recent versions of software drivers and firmware are available on the support page.

1. Go to <http://www.hpe.com/support/hpesc>.
 2. In the Search field on the right-hand side of the page, enter the exact product name.
 3. Select your product.
 4. Select your operating system or Cross operating system (BIOS, Firmware, Diagnostics, etc.). This takes you to the product download page.
 5. Select the appropriate download, and follow the instructions.
-

NOTE: If the Superdome 2 system already has firmware bundle 2.2.27 or later installed, then it is possible to update firmware without taking all the partitions down at once.

The complex (or management side) firmware can be updated while all the partitions remain online, and then the partition (or system side) firmware can be applied to one nPartition at a time.

It is possible that some firmware updates will be released which do not require partition firmware updates, these firmware bundles can be installed without requiring any nPartition downtime.

See the detailed instructions provided in the firmware download bundle for more information.

Troubleshooting partitions

Use the following commands to troubleshoot partitions:

- Use the OA commands `parstatus` and `vparstatus -N <nPar-ID>` to determine which resources belong to the failing nPar or vPar.
- Use the `HR> show indict` and `show deconfig` commands to determine if any of the resources belonging to the nPar or vPar of interest are deconfigured, indicted or in any failure state.

If any issues are reported, use the `show CAE` command for more information.

- Use the `show syslog OA 1` command to check the syslog file for the active OA. For example:

```
oal> show syslog oa 1

Dec 11 10:26:03 vparboot: vparboot -p 1:9
Dec 11 10:26:03 parcon: Note: nPartition 1: vPar 9: Attempting to Power On Virtual Partition: 9 in
nPartition: 1
Dec 11 10:26:03 icapd: Error: Authorization failed for 2 core(s) for vPartition 1 : 9. Only 0 usage rights
are available.
Dec 11 10:26:03 parcon: Error: nPartition 1: vPar 9: Power On of Virtual Partition failed. Error: iCAP
authorization failed.
Dec 11 10:26:03 parcon: Error: nPartition 1: vPar 9: Power On of Virtual Partition: 9 in nPartition:1
failed. Error: iCAP authorization failed.

Jun 27 09:10:39 parcon: Note: nPartition 1: Attempting Power On of nPartition
Jun 27 09:10:39 parcon: Error: nPartition 1: Power On of nPartition failed. Err
or: Specified partition is active.
Dec 11 10:30:09 vparmodify: vparmodify -p 1:6 -d cpu::2
```

NOTE: All partition-related messages in OA syslog contain the string "parcon:".

Troubleshooting the network

An incorrect setup for the enclosure and complex wide internal network can lead to issues with the following tasks:

- Powering on/off partitions
- Update firmware
- Gathering status information

Each iLO and OA in the complex must have a unique IP address set up. The IP addresses will be obtained by either using a DHCP server or defining the IP addresses using EBIPA.

Use the `show ebipa` and `show OA network all` commands to check the network settings for iLO and the OA:

```
SHOW EBIPA
```

```
EBIPA Settings - Device Bay iLO Processors
```

```
Domain:
```

```
Subnet Mask: 255.255.255.0      Gateway: 172.22.aaa.bbb
DNS Server1: 0.0.0.0          Server2: 0.0.0.0
Server3: 0.0.0.0
```

Bay	Enabled	EBIPA Address	Current Address	Device Type
1	Yes	172.22.a.b	172.22.a.b	Server Blade
1A	No		N/A	[Absent]
1B	No		N/A	[Absent]
2	Yes	172.22.a.b	172.22.a.b	Server Blade

```
.
```

```
.
```

```
SHOW OA NETWORK ALL
```

```
Onboard Administrator #1 Network Information:
Name: OA-1
DHCP: Disabled
IP Address: 172.22.aaa.bbb
Netmask: 255.255.255.0
Gateway Address: 172.22.aaa.bbb
Primary DNS: 0.0.0.0
Secondary DNS: 0.0.0.0
MAC Address: 9C:8E:99:29:xy:yx
Link Settings: Auto-Negotiation, 1000 Mbit, Full Duplex
Link Status: Active
Enclosure IP Mode: Disabled
```

```
Onboard Administrator #2 Network Information:
Name: OA-2
DHCP: Disabled
IP Address: 172.22.aaa.bbb
Netmask: 255.255.255.0
Gateway Address: 172.22.aaa.bbb
Primary DNS: 0.0.0.0
Secondary DNS: 0.0.0.0
MAC Address: 9C:8E:99:29:xy:xy
Link Settings: Auto-Negotiation, 1000 Mbit, Full Duplex
Link Status: Active
Enclosure IP Mode: Disabled
```

Troubleshooting CAMNet issues

Check the proper cabling between all the enclosures within a complex using the `HR> test camnet <location> command`:

```
OA1> show hr
OA1 HR> test camnet enclosure9/midplane0
```

```
Invoke CAMNet Test on location 0x0900FFFF01FFFF69
CAMNet test has executed without finding faults
Success: CAMNet test completed with no errors
```

Test complete

```
OA1 HR> test camnet enclosure1/blade1
```

```
Invoke CAMNet Test on location 0x0100FF01FFFFFF94
CAMNet test has executed without finding faults
Success: CAMNet test completed with no errors
```

Test complete

NOTE: The `Test camnet` command can be used on a single FRU while all partitions are running.

Troubleshooting fabric issues

The Superdome 2 system has fabric connections between the following major components:

- Blade and XFM modules using the enclosure upper backplane.
- IOX and XFM modules using J-LINK cables
- XFM and XFM modules using J-LINK cables (B32s only)

To determine the healthy status for all crossbar connections, use the command `HR> test fabric`:

❗ **IMPORTANT:** The `HR> test fabric` requires complex outage. Before running `HR> test fabric`, all indicted and deconfigured parts must be cleared and the partitions (nPar and vPar) must be powered off.

NOTE: Test fabric includes both test camnet and test clocks.

```
OA1 HR> test fabric
```

```
Begin test 1: System Fabric Components
```

```
  Acquitting any current fabric and CAMNet indictments, and deconfigurations.
```

```
  Beginning fabric test
```

```
SUCCESS: System Fabric test complete
```

```
System Fabric routed successfully.
```

```
Begin test 2: Management Network Components
```

```
CAMNet test has executed without finding faults
```

```
Management connectivity test complete
```

```
Begin test 3: Global Clock Components
```

```
Clocks test started...
```

Blade	Sys Clk 0	Sys Clk 1
=====	=====	=====
Blade 1/1	OK	OK
Blade 1/2	OK	OK
Blade 1/3	OK	OK
Blade 1/4	OK	OK
Blade 1/5	OK	OK
Blade 1/6	OK	OK
Blade 1/7	OK	OK
Blade 1/8	OK	OK

GPSPM	Int Clk	Ext Clk
=====	=====	=====
GPSPM 1/1 *	OK	----
GPSPM 1/2 *	OK	----

```
SUCCESS: Clocks test passed.
```

```
Clocks test complete.
```

```
Success: Fabric, CAMNet, and Global Clock tests completed with no errors
```

Troubleshooting clock related issues

Clocks are provided by the GPSPM module and are redundant within a complex. Use the command `HR> test clocks` to check for clock related issues:

NOTE: This command can be run while the partitions are active.

```
HR> test clocks
```

```
Clocks test started...
```

Blade	Sys Clk 0	Sys Clk 1
=====	=====	=====
Blade 1/1	OK	OK
Blade 1/2	OK	OK
Blade 1/3	OK	OK
Blade 1/4	OK	OK
Blade 1/5	OK	OK
Blade 1/6	OK	OK
Blade 1/7	OK	OK
Blade 1/8	OK	OK

GPSPM	Int Clk	Ext Clk
=====	=====	=====

```
GPSM 1/1 *      OK      ----
GPSM 1/2 *      OK      ----
```

SUCCESS: Clocks test passed.
Clocks test complete.

Any clock failures will also be detected and reported by CAE. To obtain these failures, run `show CAE -L`, and then use the command `show CAE -E -n <ID>` to obtain more details for the CAE event.

Troubleshooting MCAs

In general, MCAs are partition-based crashes and are detected and reported by CAE. To obtain a general overview about an MCA event, run `show CAE -L`, and then use the command `show CAE -E -n <ID>` to obtain more details for the CAE event.

MCA data is also stored at the OA and can be retrieved by running the OA command `show errdump dir mca:`

```
OA1 > show errdump dir all
```

```
Logtype:  MCA (Machine Check Abort)
Bundle           nPar          vPar          time
0x0150000000000b62      5            0      Thu Jun 14 17:59:06 GMT+4 2012
0x0150000000000b61      5            0      Thu Jun 14 17:50:56 GMT+4 2012
0x0150000000000b60      5            0      Thu Jun 14 17:42:48 GMT+4 2012
0x0150000000000b5f      5            0      Thu Jun 11 13:54:38 GMT+4 2012
```

Troubleshooting the blade interface (system console)

All system console connections are made through the OA CLI either through the management network or through the port connectors on the OA module (local RS-232).

HP-UX uses the RS-232 serial text connection to a dumb terminal, or to terminal emulator software running on a PC, to control server blade operations locally. All other connections are unsupported.

HP-UX alternatively uses the OA 10/100 BT LAN connection over a private network, to control one or more server blade operations — locally through Telnet or SSH, or remotely over a public network through a web GUI.

Troubleshooting the environment

Ambient intake air temperature is often different from ambient room temperature. Measure the operating temperature and humidity directly in front of the cabinet cooling air intakes 10mm from the center of the intake, rather than measuring only ambient room conditions.

Temperature sensors are found on:

- I/O baseboard, where the processors provide an integrated temperature sensor.
- Status panel, where a thermal sensor detects the ambient room temperature. This sensor reading is the main parameter used to regulate fan speed, under normal conditions.

For detailed environmental specifications, see [“Environmental specifications” \(page 36\)](#).

6 Support and other resources

Accessing Hewlett Packard Enterprise Support

- For live assistance, go to the Contact Hewlett Packard Enterprise Worldwide website:
www.hpe.com/assistance
- To access documentation and support services, go to the Hewlett Packard Enterprise Support Center website
www.hpe.com/support/hpesc

Information to collect

- Technical support registration number (if applicable)
- Product name, model or version, and serial number
- Operating system name and version
- Firmware version
- Error messages
- Product-specific reports and logs
- Add-on products or components
- Third-party products or components

Accessing updates

- Some software products provide a mechanism for accessing software updates through the product interface. Review your product documentation to identify the recommended software update method.
- To download product updates, go to either of the following:
 - Hewlett Packard Enterprise Support Center **Get connected with updates from HP** page:
www.hpe.com/support/e-updates
 - Software Depot website:
www.hpe.com/support/softwaredepot
- To view and update your entitlements, and to link your contracts, Care Packs, and warranties with your profile, go to the Hewlett Packard Enterprise Support Center **More Information on Access to Support Materials** page:
www.hpe.com/support/AccessToSupportMaterials

ⓘ **IMPORTANT:** Access to some updates might require product entitlement when accessed through the Hewlett Packard Enterprise Support Center. You must have a Hewlett Packard Enterprise Passport set up with relevant entitlements.

Websites

Website	Link
Hewlett Packard Enterprise Information Library	www.hpe.com/info/enterprise/docs
Hewlett Packard Enterprise Support Center	www.hpe.com/support/hpesc
Contact Hewlett Packard Enterprise Worldwide	www.hpe.com/assistance
Subscription Service/Support Alerts	www.hpe.com/support/e-updates
Software Depot	www.hpe.com/support/softwaredepot
Customer Self Repair	www.hpe.com/support/selfrepair
Insight Remote Support	www.hpe.com/info/insightremotesupport/docs
Serviceguard Solutions for HP-UX	www.hpe.com/info/hpux-serviceguard-docs
Single Point of Connectivity Knowledge (SPOCK) Storage compatibility matrix	www.hpe.com/storage/spock
Storage white papers and analyst reports	www.hpe.com/storage/whitepapers

Customer self repair

Hewlett Packard Enterprise customer self repair (CSR) programs allow you to repair your product. If a CSR part needs to be replaced, it will be shipped directly to you so that you can install it at your convenience. Some parts do not qualify for CSR. Your Hewlett Packard Enterprise authorized service provider will determine whether a repair can be accomplished by CSR.

For more information about CSR, contact your local service provider or go to the CSR website:

www.hpe.com/support/selfrepair

Remote support

Remote support is available with supported devices as part of your warranty, Care Pack Service, or contractual support agreement. It provides intelligent event diagnosis, and automatic, secure submission of hardware event notifications to Hewlett Packard Enterprise, which will initiate a fast and accurate resolution based on your product's service level. Hewlett Packard Enterprise strongly recommends that you register your device for remote support.

For more information and device support details, go to the following website:

www.hpe.com/info/insightremotesupport/docs

Documentation feedback

Hewlett Packard Enterprise is committed to providing documentation that meets your needs. To help us improve the documentation, send any errors, suggestions, or comments to Documentation Feedback (docsfeedback@hpe.com). When submitting your feedback, include the document title, part number, edition, and publication date located on the front cover of the document. For online help content, include the product name, product version, help edition, and publication date located on the legal notices page.

A Utilities

UEFI

UEFI is an OS and platform-independent boot and preboot interface. UEFI resides between the OS and platform firmware, allowing the OS to boot without having details about the underlying hardware and firmware. UEFI supports boot devices, uses a flat memory model, and hides platform and firmware details from the OS.

NOTE: Unified EFI Forum, Inc. defines the specification used to implement UEFI. POSSE is an HPE extension to UEFI, which provides a common user interface architecture to better serve Hewlett Packard Enterprise customers, service, and manufacturing.

UEFI consolidates boot utilities similar to those found in PA-RISC-based servers, such as the BCH, and platform firmware into a single platform firmware. UEFI allows the selection of any UEFI OS loader from any boot medium that is supported by UEFI boot services. An UEFI OS loader supports multiple options on the user interface.

UEFI supports booting from media that contain an UEFI OS loader or an UEFI-defined server partition. An UEFI-defined system partition is required by UEFI to boot from a block device.

The UEFI boot manager loads UEFI applications (including the OS first-stage loader) and UEFI drivers from an UEFI-defined file system or image loading service. NVRAM variables point to the file to be loaded. These variables contain application-specific data that is passed directly to the UEFI application. UEFI variables provide system firmware a boot menu that points to all the operating systems; even multiple versions of the same operating systems.

The UEFI boot manager allows you to control the server's booting environment. Depending on how you have configured the boot options, after the server is powered up, the boot manager presents you with different ways to bring up the server. For example, you can boot to the UEFI shell, to an operating system located on the network or residing on media in the server, or the Boot Maintenance Manager. See [“Using the Boot Maintenance Manager” \(page 104\)](#) for more information.

UEFI Shell and HPE POSSE commands

For more information about these commands, enter helpcommand at the UEFI Shell prompt.

Table 19 UEFI Shell commands

UEFI Shell command	Definition
?	Displays the UEFI Shell command list or verbose command help
alias	Displays, creates, or deletes UEFI Shell aliases
attrib	Displays or changes the attributes of files or directories
autoboot	Sets or displays autoboot timeout and retries
bcfg	Displays or modifies the driver/boot configuration
boottest	Turns specific speedyboot bits on or off
cd	Displays or changes the current directory
cls	Clears standard output and optionally changes background color
comp	Compares the contents of two files
conconfig	Configures consoles and sets or displays primary operating system console
connect	Connects one or more UEFI drivers to a device
cp	Copies one or more files or directories to another location

Table 19 UEFI Shell commands *(continued)*

UEFI Shell command	Definition
date	Displays or changes the current system date
dblk	Displays one or more blocks from a block device
dbprofile	Manages direct boot profiles
default	Sets default values
devices	Displays the list of devices managed by UEFI drivers
devtree	Displays the UEFI Driver Model-compliant device tree
dh	Displays UEFI handle information
disconnect	Disconnects one or more UEFI drivers from a device
dmem	Displays the contents of memory
dmpstore	Displays all UEFI NVRAM variables
drivers	Displays the UEFI driver list
drvcfg	Initiates the Driver Configuration Protocol
drvdiag	Initiates the Driver Diagnostics Protocol
echo	Controls batch file command echoing or displays a message
edit	Displays full screen editor for ASCII or UNICODE files
eficompress	Compresses a file
efidecompress	Decompresses a file
exit	Exits the UEFI Shell environment
for	Executes commands for each item in a set of items
ftp	Performs FTP operation
goto	Forces batch file execution to jump to specified location
guid	Displays all registered UEFI GUIDs
help	Displays the UEFI Shell command list or verbose command help
hexedit	Displays full screen hex editor
if	Executes commands in specified conditions
ifconfig	Modifies the default IP address of UEFI network stack
info	Displays hardware information
input	Takes user input and places it in the UEFI variable
ioconfig	Deconfigures or reconfigures I/O components or settings
lanaddress	Displays LAN devices
lanboot	Performs LAN boot
load	Loads and optionally connects one or more UEFI drivers
loadpcirom	Loads a PCI Option ROM
ls	Displays a list of files and subdirectories in a directory
map	Displays or defines mappings

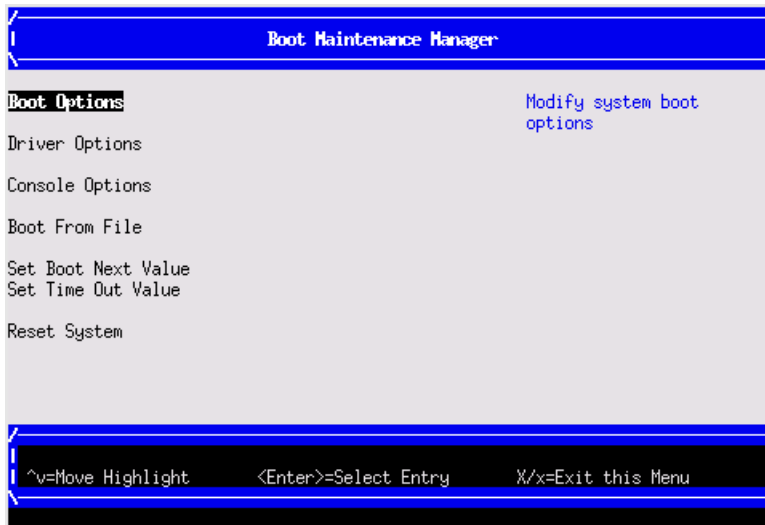
Table 19 UEFI Shell commands *(continued)*

UEFI Shell command	Definition
memmap	Displays the memory map
mkdir	Creates one or more directories
mm	Displays or modifies MEM/MMIO/IO/PCI/PCIE address space
mode	Displays or changes the console output device mode
mount	Mounts a file system on a block device
mv	Moves one or more files or directories to another location
openinfo	Displays the protocols and agents associated with a handle
palproc	Makes a PAL procedure call
pause	Prints a message and waits for keyboard input
pci	Displays PCI device list or PCI function configuration space
ping	Pings a target machine with UEFI network stack
reconnect	Reconnects one or more UEFI drivers to a device
reset	Resets the system
rm	Deletes one or more files or directories
salproc	Makes a SAL procedure call
search	Connects drivers for bootable devices
sermode	Sets serial port attributes
set	Displays or modifies UEFI Shell environment variables
setsize	Sets the size of a file
shift	Shifts batch file input parameter positions
smbiosview	Displays SMBIOS information
stall	Stalls the processor for the specified number of microseconds
tapeboot	Boots from tape
tftp	Performs TFTP operation
time	Displays or changes the current system time
timezone	Displays or sets time zone information
touch	Updates filename timestamp with current system date and time
type	Displays file contents
unload	Unloads a UEFI driver
ver	Displays UEFI firmware version information
vol	Displays or changes a file system volume label
xchar	Turns on/off extended character features

Using the Boot Maintenance Manager

This menu allows you to change various boot options. The Boot Maintenance Manager contains the following submenus:

- Boot Options
- Driver Options
- Console Options
- Boot From File
- Set Boot Next Value
- Set Time Out Value
- Reset System



Boot Options

The Boot Options menu contains the following options:

- Add Boot Option
- Delete Boot Option
- Change Boot Order



Add Boot Option

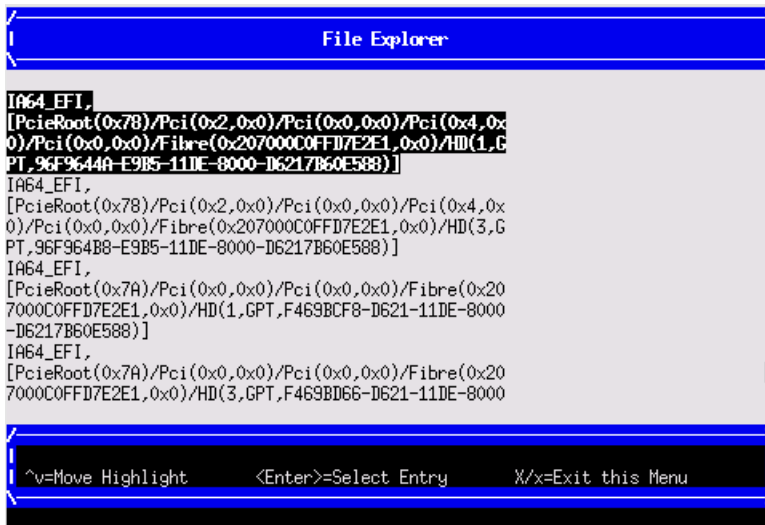
Use this option to add items to the Boot Options list.

To add a boot option:

1. Select a boot device type.



2. Use the File Explorer menu to locate the correct boot device.



Delete Boot Option

Use this option to delete boot options from the Boot Options list.

NOTE: This does not delete any files, applications, or drivers from your server.

To delete items from the boot list:

1. Press **spacebar** to toggle the check box for each boot option that you want to delete.
2. Select **Commit Changes and Exit** to save the new settings and return to the Boot Maintenance Manager.

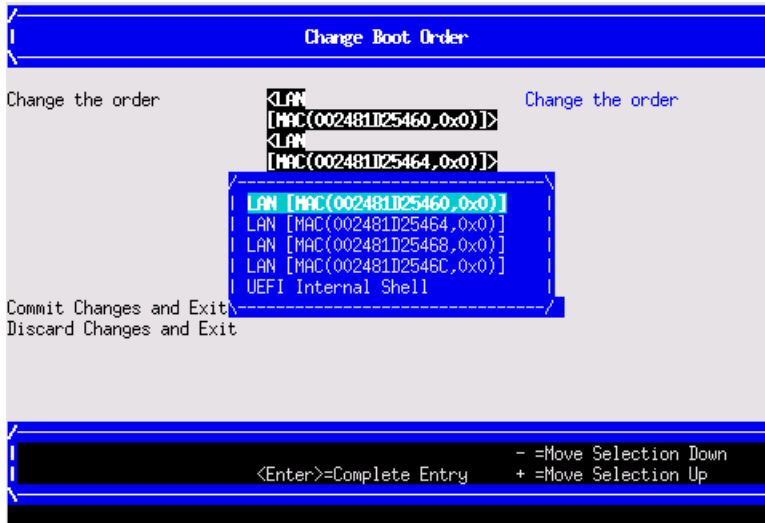
Change Boot Order

Use this option to change the order of boot options. If the first boot option fails, the server tries booting the second, then the third, and so forth, until a boot option succeeds or until all options have failed.

For example, if you normally boot using a configuration on your LAN, but want to boot from a local hard drive if the LAN is unavailable, move the LAN boot option to the top of the list, followed by the hard drive boot option.

To change the boot order:

1. Select an item on the boot order list.
2. Using the + and - keys, move the selection to the preferred position in the boot order list.



3. Press **Enter** when the item is in the preferred position.
4. Select **Commit Changes and Exit** to save the new settings and return to the Boot Maintenance Manager.

Driver Options

The Driver Options menu contains the following options:

- Add Driver Option
- Delete Driver Option
- Change Driver Order

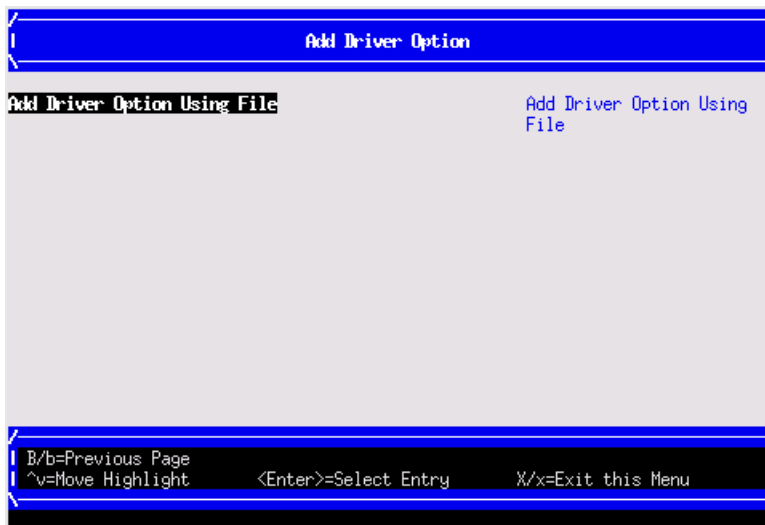


Add Driver Option

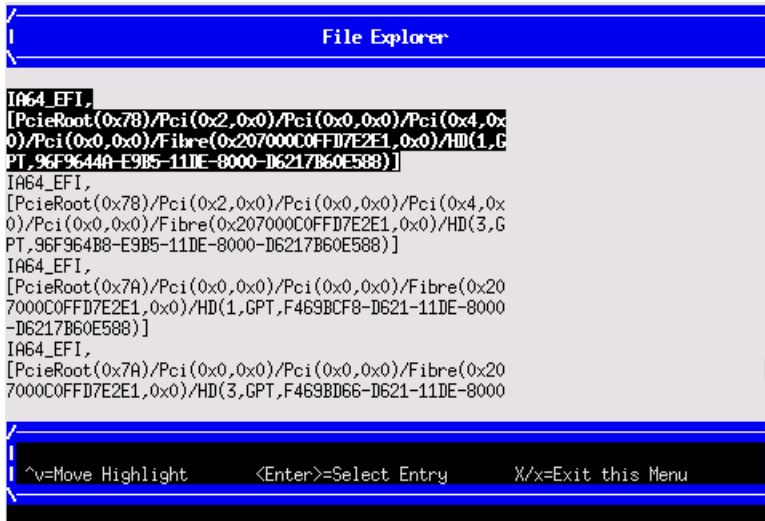
Use this option to add driver options.

To add a driver option:

1. Select **Add Driver Using File**.



2. Use the File Explorer menu to locate the correct driver.



Delete Driver Option

Use this option to delete driver options.

NOTE: This does not delete any files, applications, or drivers from your server.

To delete driver options:

1. Press **spacebar** to toggle the check box for each driver that you want to delete.
2. Select **Commit Changes and Exit** to save the new settings and return to the Boot Maintenance Manager.

Change Driver Order

Use this option to change the load order of the driver options.

To change the driver load order:

1. Select an item on the driver list.
2. Using the **+** and **-** keys, move the selection to the preferred position in the boot order list.
3. Press **Enter** when the item is in the preferred position.

4. Select **Commit Changes and Exit** to save the new settings and return to the Boot Maintenance Manager.

Console Options

The Console Options menu is now disabled. Use the `conconfig` command from the UEFI Shell to set console options.

Boot From File

Use this option to manually run a specific application or driver.

NOTE: This option boots the selected application or driver only once. When you exit the application, you return to this menu.

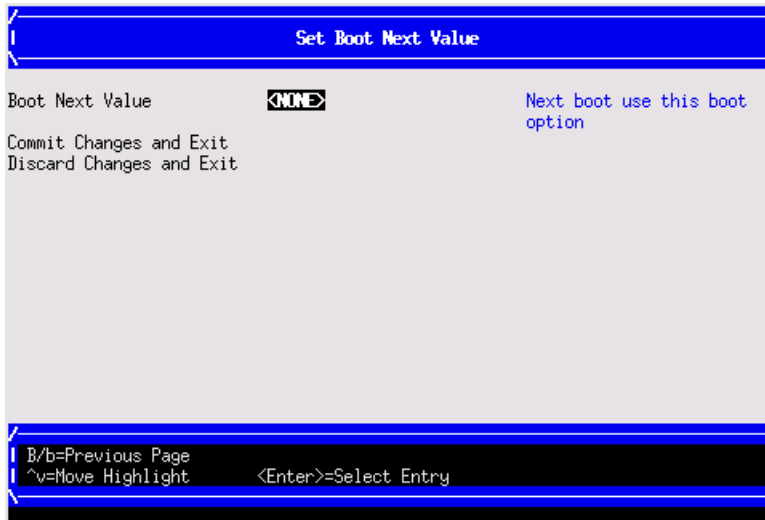
1. Select a boot device type.



2. Use the File Explorer menu to locate the correct driver or file.

Set Boot Next Value

Use this option to run the selected boot option immediately upon entering the main Boot Manager menu. This option is useful for booting an option that only needs to be booted once, without changing any other setting in the main Boot Manager menu. This is a one-time operation and does not change the permanent server boot settings.



Set Time Out Value

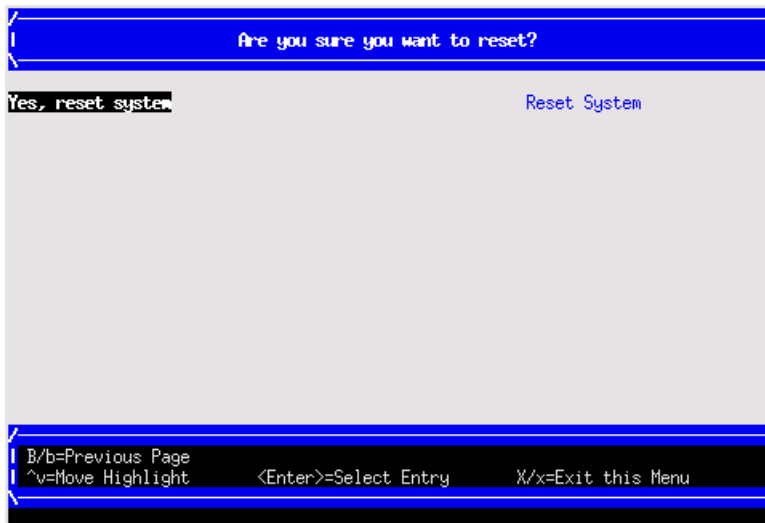
Use this option to set the duration for which the server pauses before attempting to launch the first item in the Boot Options list.

Interrupting the timeout during the countdown stops the Boot Manager from loading any boot options automatically. If the countdown does not occur, boot options must be selected manually. To set the auto boot timeout value in seconds, select **Set Timeout Value** and enter the preferred value.



Reset System

Use this option to perform a system reset.



Onboard Administrator

The Onboard Administrator is an independent support system for the server. It provides a way for you to connect to a complex and perform administration or monitoring tasks for the complex hardware.

The OA controls power, reset, and ToC capabilities; provides console access; displays and records system events; and displays detailed information about the various internal subsystems. The OA GUI also provides a virtual front panel used to monitor server status and the state of front panel LEDs. All OA commands are available through the LAN and the local RS-232 port.

The OA is available whenever the server is connected to a power source.

Access to the OA can be restricted by user accounts. User accounts are password protected and provide a specific level of access to the server (not OS) and OA CLI commands.

For more information on the Onboard Administrator, see the *HPE Integrity Superdome 2 Onboard Administrator User Guide*.

B Warranty and regulatory information

For important safety, environmental, and regulatory information, see *Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products*, available at www.hpe.com/support/Safety-Compliance-EnterpriseProducts.

Warranty information

HPE ProLiant and x86 Servers and Options

www.hpe.com/support/ProLiantServers-Warranties

HPE Enterprise Servers

www.hpe.com/support/EnterpriseServers-Warranties

HPE Storage Products

www.hpe.com/support/Storage-Warranties

HPE Networking Products

www.hpe.com/support/Networking-Warranties

Regulatory information

Belarus Kazakhstan Russia marking



Manufacturer and Local Representative Information

Manufacturer information:

- Hewlett Packard Enterprise, 3000 Hanover Street, Palo Alto, CA 94304, U.S.

Local representative information Russian:

- **Russia:**

ЗАО «Хьюлетт-Паккард А.О.», 125171, Россия, г. Москва, Ленинградское шоссе, 16А, стр.3, тел./факс: +7 (495) 797 35 00, +7 (495) 287 89 05

- **Belarus:**

ИООО «Хьюлетт-Паккард Бел», 220030, Беларусь, г. Минск, ул. Интернациональная, 36-1, офис 722-723, тел.: +375 (17) 392 28 18, факс: +375 (17) 392 28 21

- **Kazakhstan:**

ТОО «Хьюлетт-Паккард (К)», 050040, Казахстан, г. Алматы, Бостандыкский район, ул. Тимирязева, 28В, 1 этаж, тел./факс: +7 (727) 355 35 50, +7 (727) 355 35 51

Local representative information Kazakh:

- **Kazakhstan:**

ЖШС «Хьюлетт-Паккард (К)», Қазақстан, Алматы қ., Бостандық ауданы,
Тимирязев к-сі, 28В, тел./факс: +7 (727) 355 35 50, +7 (727) 355 35 51

Manufacturing date:

The manufacturing date is defined by the serial number.

CCSYWWZZZZ (serial number format for this product)

Valid date formats include:

- YWW, where Y indicates the year counting from within each new decade, with 2000 as the starting point; for example, 238: 2 for 2002 and 38 for the week of September 9. In addition, 2010 is indicated by 0, 2011 by 1, 2012 by 2, 2013 by 3, and so forth.
- YYWW, where YY indicates the year, using a base year of 2000; for example, 0238: 02 for 2002 and 38 for the week of September 9.

Turkey RoHS material content declaration

Türkiye Cumhuriyeti: EEE Yönetmeliğine Uygundur

Ukraine RoHS material content declaration

Обладнання відповідає вимогам Технічного регламенту щодо обмеження використання деяких небезпечних речовин в електричному та електронному обладнанні, затвердженого постановою Кабінету Міністрів України від 3 грудня 2008 № 1057

Standard terms, abbreviations, and acronyms

A

ASCII	American standard code for information interchange.
ASIC	Application-specific integrated circuit.

B

BCH	Boot console handler.
------------	-----------------------

C

CPE	Corrected platform errors.
CRAC	Computer room air conditioner.
CRAH	Compute room air handler.

D

DHCP	Dynamic host configuration protocol.
DNS	Domain name system.

E

EFI	Extensible firmware interface. <i>See also</i> UEFI.
EIA	Electronic Industries Association.
ESD	Electrostatic discharge.

F

FPL	Forward progress log.
FRU	Field replaceable unit.

G

GPSM	Global partition services module.
-------------	-----------------------------------

I

iLO 3	Integrated Lights-Out 3.
IOX	I/O expansion enclosure.

L

LOM	LAN on motherboard.
LVM	Logical volume manager.

O

OA	Onboard Administrator.
-----------	------------------------

P

PA-RISC	Precision Architecture-Reduced Instruction Set Computing.
PCI	Peripheral component interface.
PCIe	Peripheral component interconnect express.

POSSE	Pre-OS system start-up environment.
R	
RETMA	Radio Electronics Television Manufacturers Association
S	
SAL	System abstraction layer.
SDRAM	Synchronous dynamic random access memory.
SEL	System event log.
SIM	System insight manager.
SMBIOS	System management BIOS.
SSH	Secure Shell.
T	
TLB	Translation look-aside buffer.
ToC	Transfer of control.
U	
UEFI	Unified extensible firmware interface, replaces EFI.
UID	Unit identification.
UPS	Uninterruptible power supply.
USB	Universal serial bus.
V	
vMedia	Virtual media.
X	
XBar	Crossbar.
XFM	Crossbar fabric module.

Index

A

- accessing
 - updates, 99
- alerts
 - Configuration errors, 55
 - Cooling errors, 55
 - Device failure errors, 56
 - Insight Display errors, 54
 - Location errors, 55
 - Power errors, 55

B

- Belarus Kazakhstan Russia EAC marking, 111
- Blade slot
 - numbering, 12
- boot option
 - add, 105
 - change boot order, 105
 - delete, 105
 - Set Boot Next Value, 108
- boot option maintenance manager menu, 104
- booting
 - from file, 108
 - HP-UX (LVM maintenance mode), 58
 - HP-UX (UEFI boot manager), 57
 - HP-UX in single-blade mode, 58
 - UEFI boot manager, 101

C

- cabling
 - best practices, 19
- cautions, 54
- complex
 - component overview, 10
- complex components, 7
- components
 - IOX enclosure, 29
- components, Onboard Administrator
 - Superdome 2 Onboard Administrator components, 75
- compute enclosure
 - dimensions, 31
 - electrical specifications, 33
 - front view, 10
 - rear view, 10
 - weight, 31
- contacting Hewlett Packard Enterprise, 99
- customer self repair, 100

D

- diagnostics, 76
 - Core Analysis Engine, 87
 - Health Repository viewer, 78
- documentation
 - providing feedback on, 100
- driver option
 - add, 106

- delete, 107
 - driver boot order, 107
- DVD module LED, 76

E

- EAC marking
 - Belarus Kazakhstan Russia, 111
- EFI *see* UEFI
- environmental specifications, 36
- errors
 - errors and error logs, 82
 - Insight Display, 54
- EuroAsian Economic Commission (EAC), 111

F

- Fan bay
 - numbering, 17
- Fan bay numbering, 17
- fan LED, 68
- firmware
 - updates, 94
- firmware, troubleshooting, 91

G

- GPSSM
 - overview, 70

H

- Health Repository viewer, 78
 - acquitting, 78
 - history, 81
 - indicted list, 79
 - indictment acquittals, 80
 - indictment records, 78
 - subcomponent isolation, 82
 - viewing defconfigured, 80
- HP-UX
 - booting in LVM maintenance mode, 58
 - booting in single-user mode, 58
 - shutting down, 58
 - standard boot, 57

I

- Insight Display
 - Blade and Port Info screen, 52
 - Chat Mode screen, 54
 - Enclosure Info screen, 51
 - Enclosure Settings screen, 50
 - Health Summary screen, 49
 - navigating, 47
 - overview, 43
 - running the installation, 43
 - Turn Enclosure UID On/Off screen, 53
 - View User Note screen, 53
- interconnect bay numbering, 17
- IOX enclosure
 - dimensions, 31

- electrical specifications, 33
 - front view, 29
 - rear view, 73
 - weight, 31
- L**
- LEDs
 - DVD module, 76
 - Enclosure UID, 68
 - fan, 68
 - GPSM, 70
 - Onboard Administrator, 68
 - XFM, 69
 - LEDs, power supply, 67
 - local access, 90
- O**
- Onboard Administrator, 109
 - local access, 90
 - remote access, 89
 - Onboard Administrator components
 - Superdome 2 Onboard Administrator components, 75
 - overview
 - I/O subsystem, 9
 - Insight Display, 14
 - manageability subsystem, 8
 - partitioning, 8
 - power subsystem, 7
 - rear components, 15
 - server blade, 8
 - system, 7
- P**
- PCIe slot
 - LEDs, 74
 - power supply bay
 - numbering, 12
 - power supply LEDs, 67
- R**
- regulatory information, 111
 - Turkey RoHS material content declaration, 112
 - Ukraine RoHS material content declaration, 112
 - remote access, 89
 - remote support, 100
- S**
- serial port, 90
 - server blade
 - components, 27
 - dimensions, 31
 - front view, 27
 - weight, 31
 - shutting down
 - HP-UX, 58
 - site inspection checklist, 40
 - specifications
 - acoustic noise, 39
 - air quality, 39
 - cooling, 36
 - electrical, 33
 - environmental, 36
 - SSH session, 89
 - status log, 89
 - support
 - Hewlett Packard Enterprise, 99
 - SUV cable, 28
 - SUV cable port, 28
 - system event log, 59
- T**
- telnet session, 89
 - terminal emulator session, 90
 - troubleshooting
 - environment, 98
 - firmware, 91
 - methodology, 65
 - overview, 59
 - processors, 91
 - system console, 98
 - troubleshooting tools, 65
 - Turkey RoHS material content declaration, 112
- U**
- UEFI, 101
 - commands, 101
 - Ukraine RoHS material content declaration, 112
 - Unified Extensible Firmware Interface see UEFI
 - updates
 - accessing, 99
- W**
- warranty information, 111
 - HPE Enterprise servers, 111
 - HPE Networking products, 111
 - HPE ProLiant and x86 Servers and Options, 111
 - HPE Storage products, 111
 - websites, 100
 - customer self repair, 100
- X**
- XFM LED, 69