Hewlett Packard Enterprise

HPE Integrity Superdome 2 i6 User Service Guide

Abstract

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

Notices

Acknowledgements

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Revision History

Hewlett Packard Enterprise Part Number	Edition	Publication Date
881354-001	First	June 2017

Contents

HPE Integrity Superdome 2 system overview

The Integrity Superdome 2 is a blade-based, high-end server platform supporting the Intel Itanium 9300, 9500, and 9700 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, 9500 or 9700 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.

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.

HPE Integrity Superdome 2 CB900s i6 Server Blades support two Eight-Core Intel Itanium 9700 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* at **www.hpe.com/info/superdome2-partitioning-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
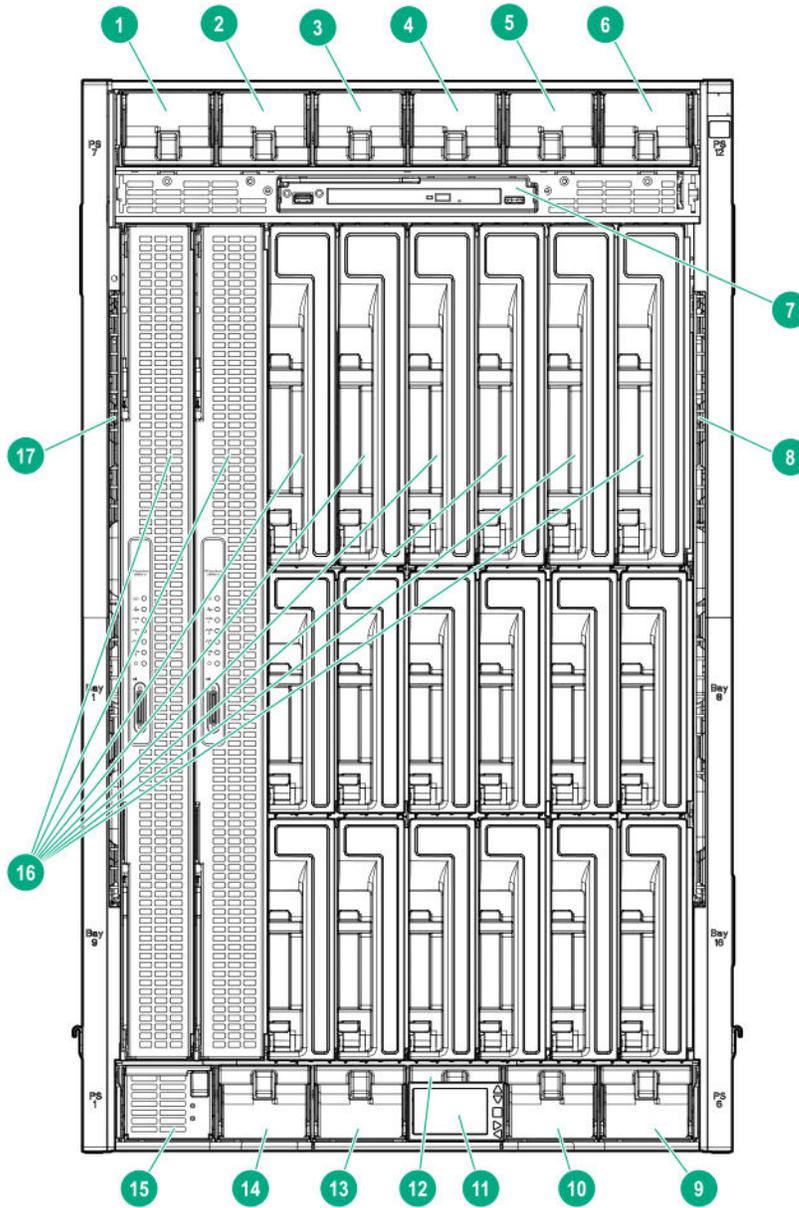
Item	Description
1	Power supply bay 7
2	Power supply bay 8
3	Power supply bay 9
4	Power supply bay 10
5	Power supply bay 11

Table Continued

Item	Description
6	Power supply bay 12
7	DVD module
8	Air intake slot (**Do not block**)
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 (**Do not block**)

[1] For more information, see **Server Blade slot numbering** on page 10.

Power supply bay numbering
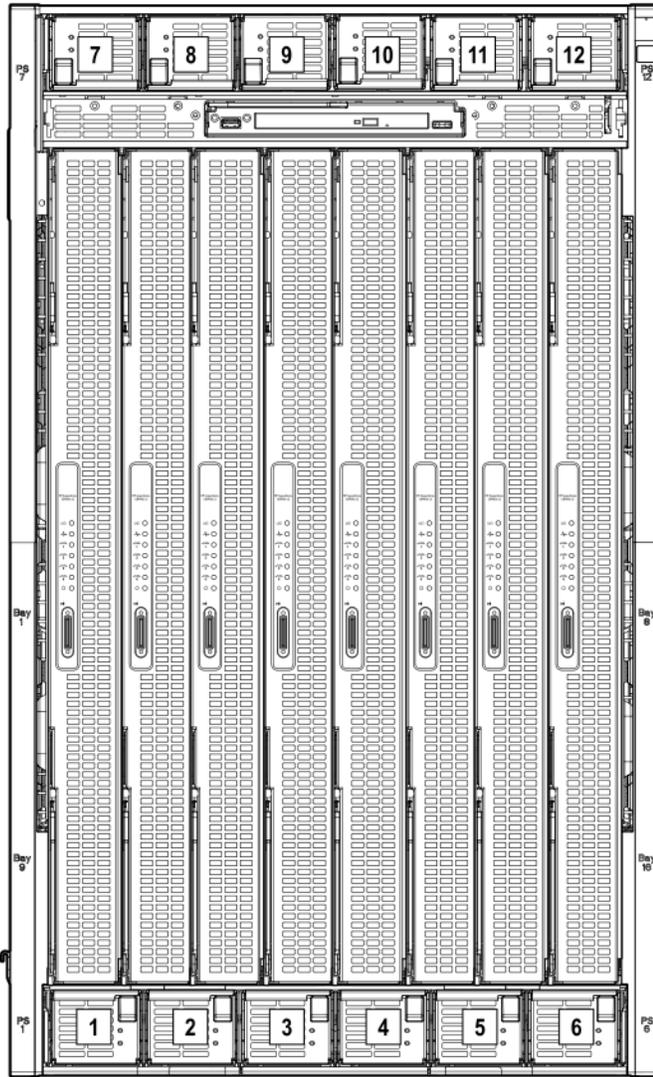
Server Blade slot numbering

> **IMPORTANT:**
> When looking at the rear of the enclosure, Blade slot numbering is reversed.
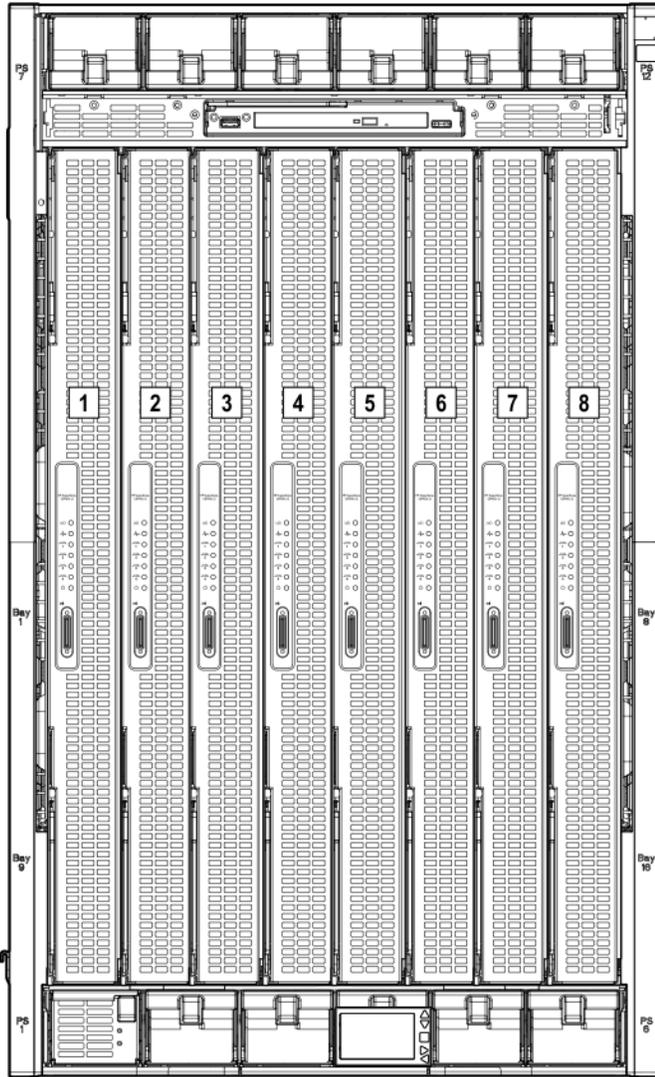
Integrity Superdome 2 Insight Display components
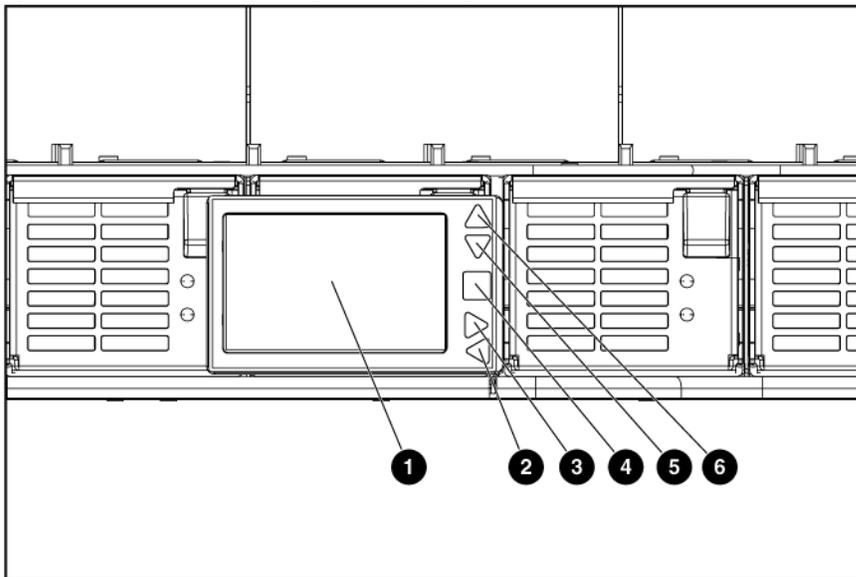
Item	Description	Function
1	Insight Display screen	Displays Main Menu error messages and instructions
2	Left arrow button	Moves the menu or navigation bar selection left one position
3	Right arrow button	Moves the menu or navigation bar selection right one position
4	OK button	Accepts the highlighted 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
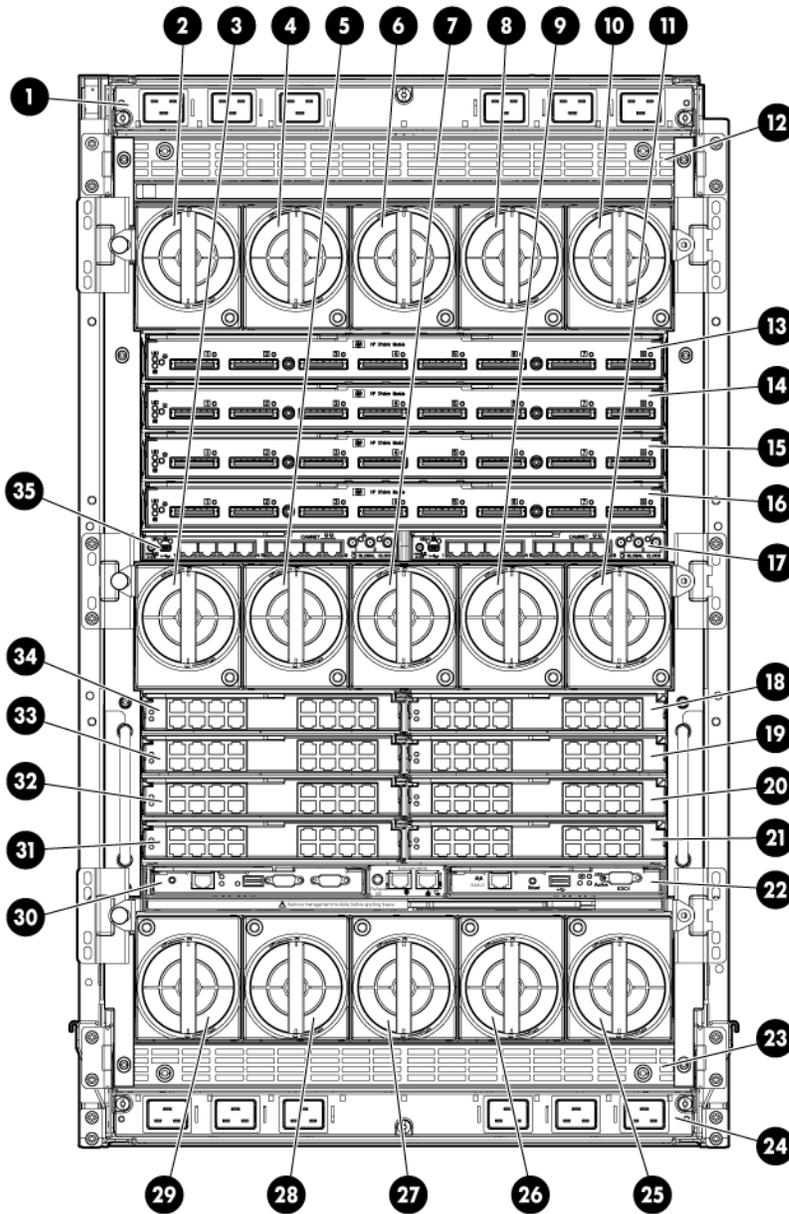
Item	Description
1	ac power connectors (upper)
2	Fan bay 1
3	Fan bay 6
4	Fan bay 2
5	Fan bay 7

Table Continued

Item	Description
6	Fan bay 3
7	Fan bay 8
8	Fan bay 4
9	Fan bay 9
10	Fan bay 5
11	Fan bay 10
12	Power supply exhaust vent (**Do not block**)
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 (**Do not block**)
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

Table Continued

Item	Description
31	Interconnect bay 7
32	Interconnect bay 5
33	Interconnect bay 3
34	Interconnect bay 1
35	GPSM bay 1

Fan bay numbering
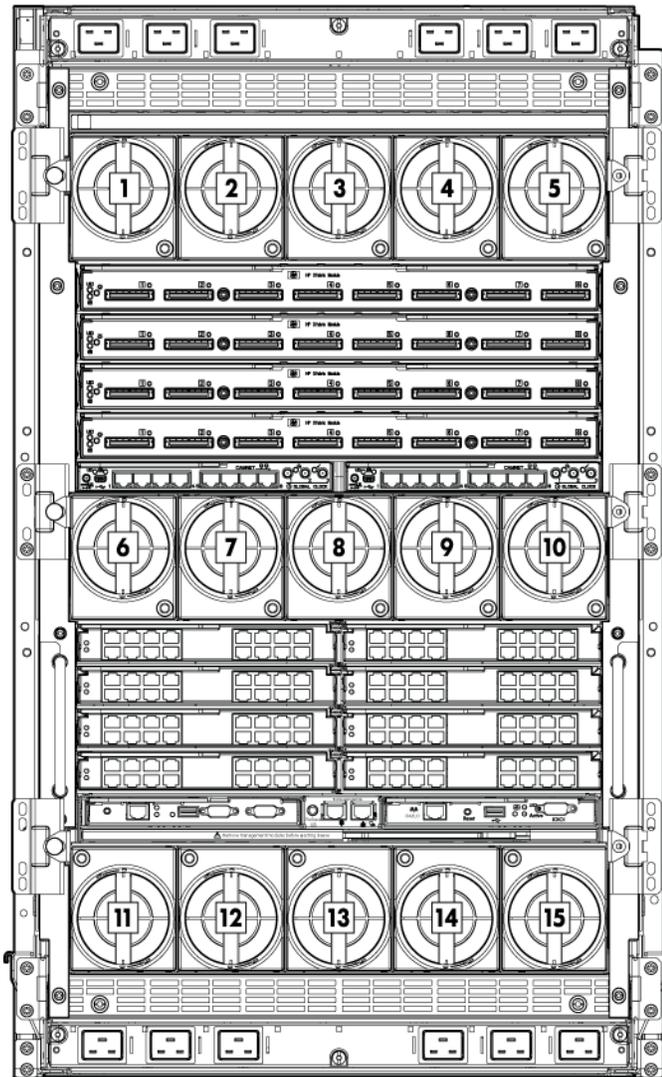
Interconnect bay numbering

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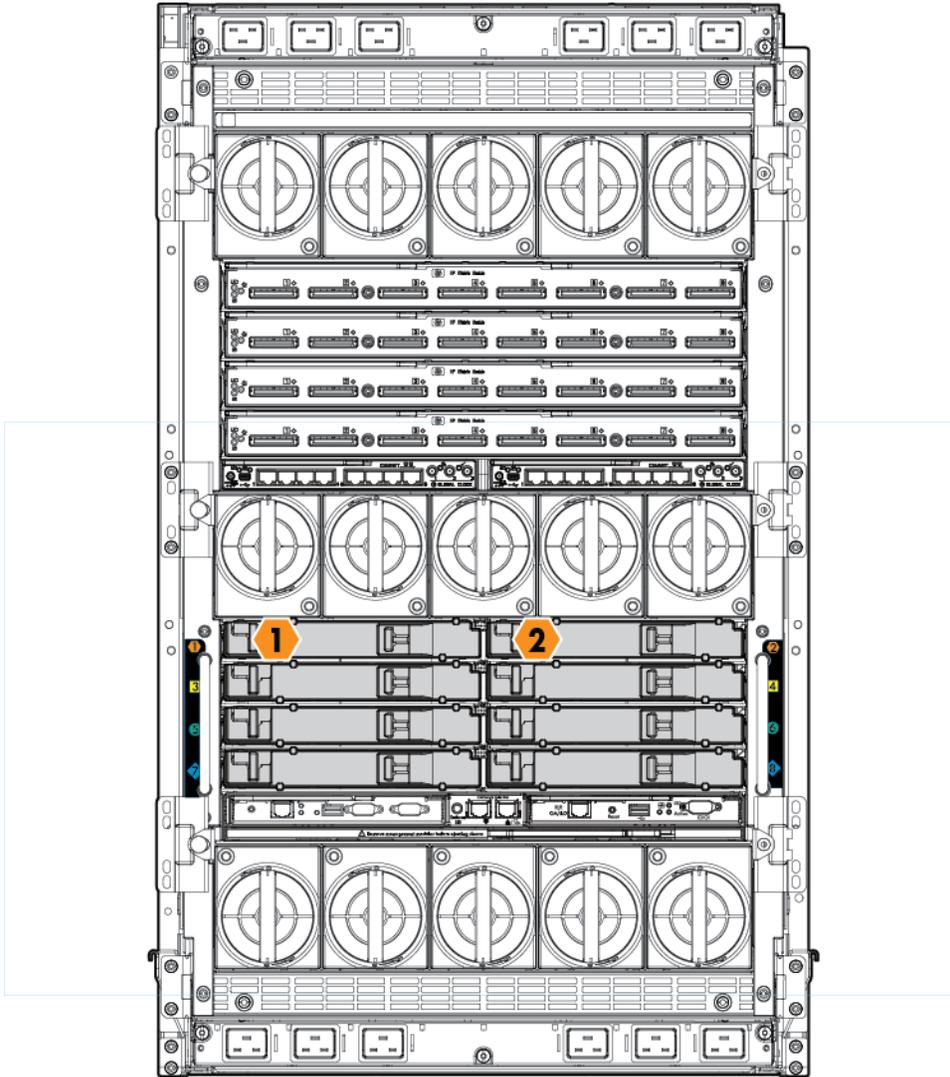
To support network connections for specific signals, install an interconnect module in the bay corresponding to the embedded NIC.

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

Table Continued

Server blade signal	Compute enclosure interconnect bay	Interconnect bay labels
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 32s with proper cable routing should look like the image below:
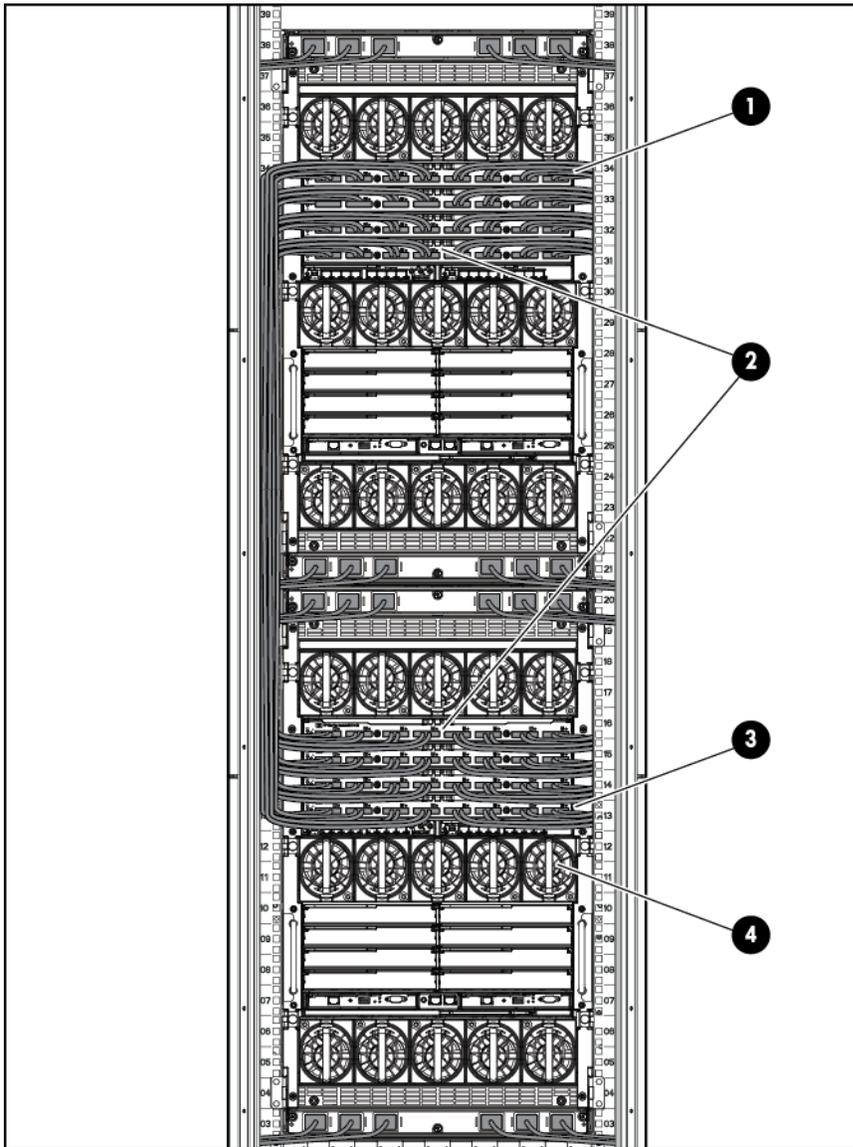
Item	Best practice
1	Horizontal cable routing to the XFMs
2	The cables on the left and right are split down the middle between the left and right positioned XFMs.
3	No cables are hanging by the connector.
4	Ready access to the fans and other FRUs without disturbing the neighboring cables.

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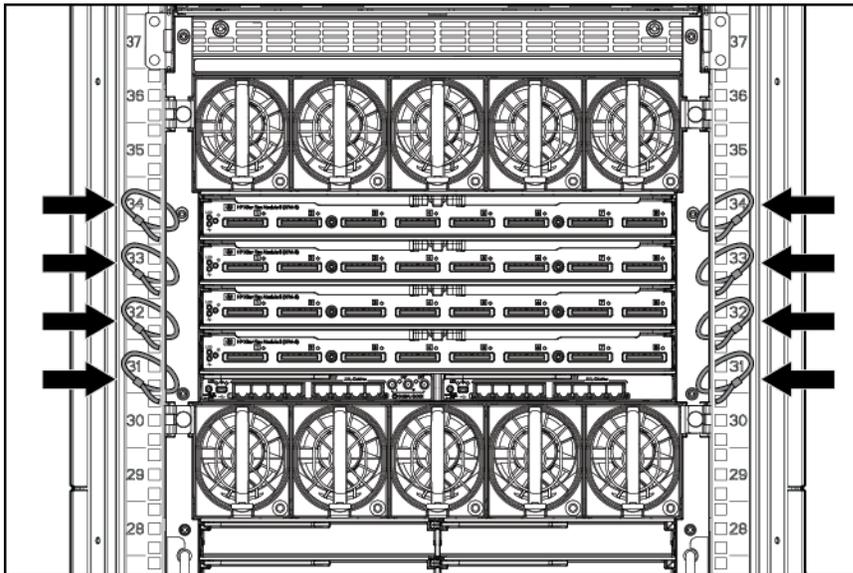
During cabling, XFM module cables should be split into horizontal rows that fan out to the sides of the rack. This configuration allows for easy access to each XFM module.

Procedure

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 Velcro strap attached to the tie wrap.

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.

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.
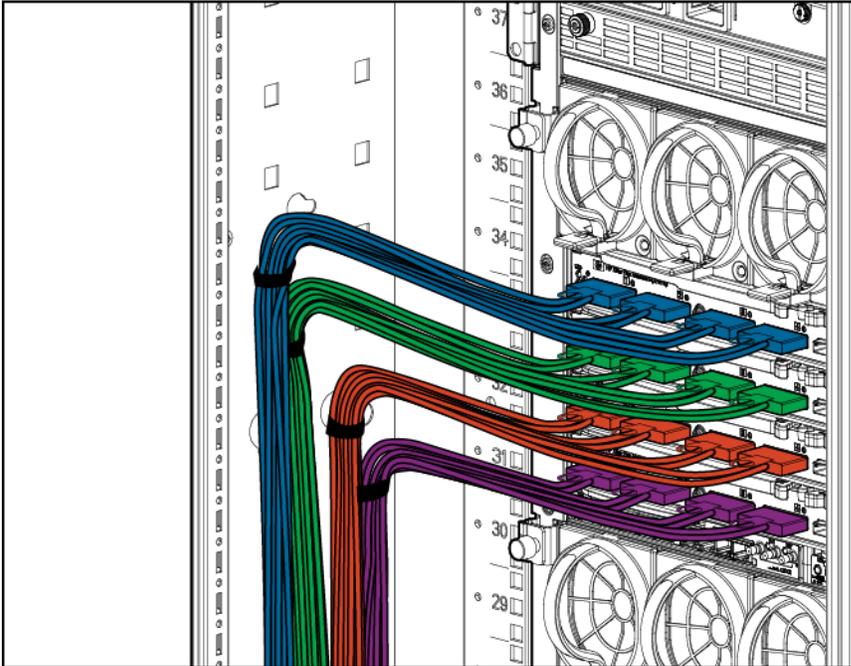
32s system cabling

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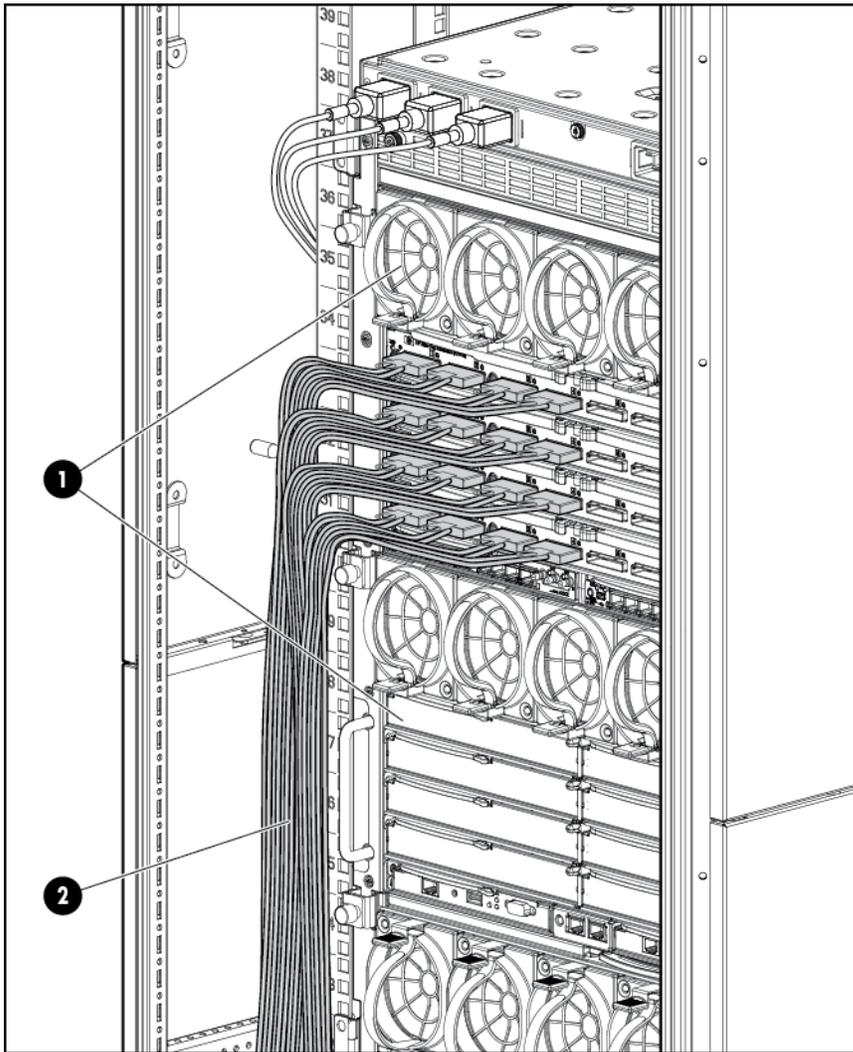
Item	Best practice
1	Fans and I/O switches can be accessed without moving cables.
2	The cables are flattened against the inside of the rack.

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.

Procedure

1. Fully extend the IOX chassis to the front of the rack.
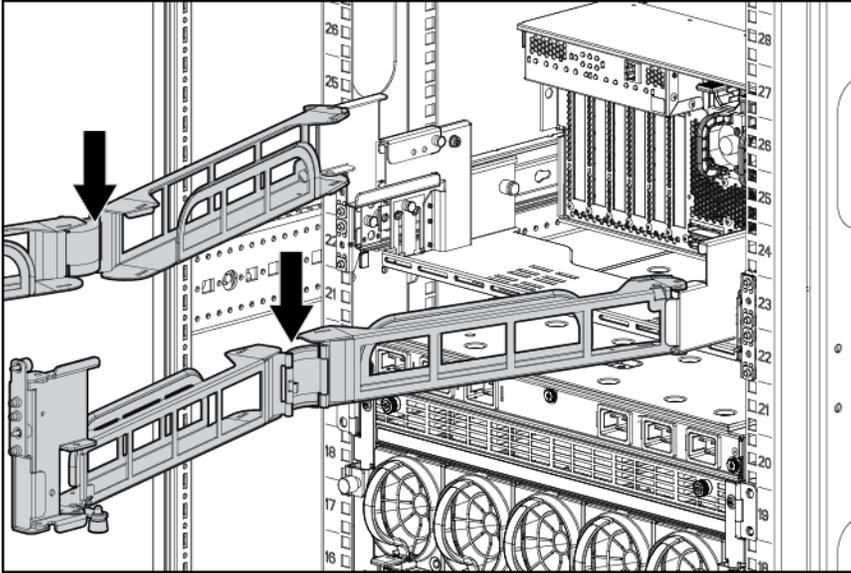
2. Connect the XFM cables to the IOX.

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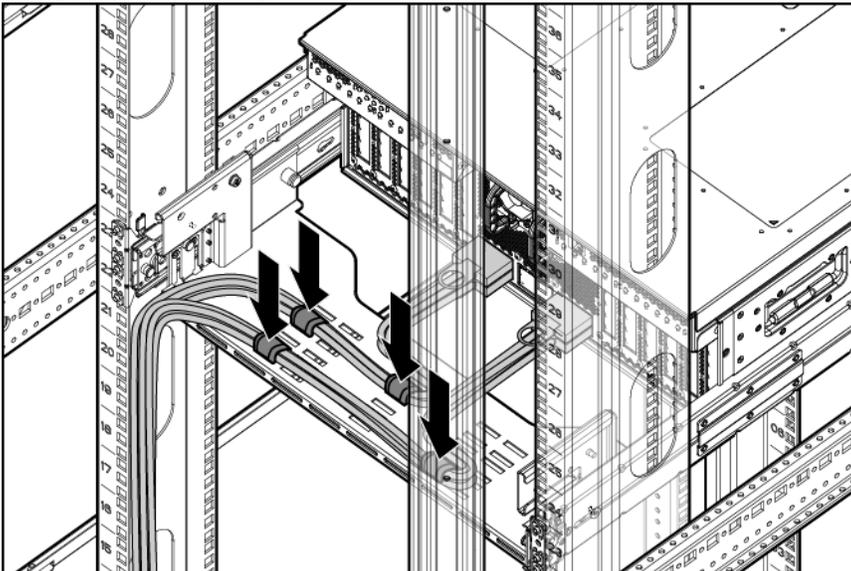
4. CAMNet, power, and I/O cables should be similarly secured.

5. Lay the XFM cables into the left CMA sleeve and apply Velcro ties to at least 4 locations along both sides of the CMA.

IMPORTANT:

Be sure that each Velcro tie clamps the cable bundle to the CMA sheet metal.
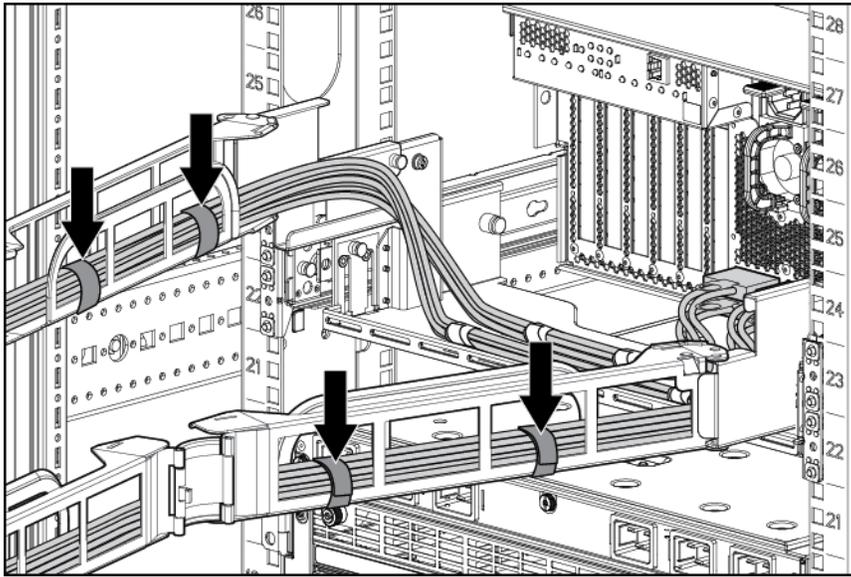
6. Push the IOX back into the rack until it locks in place.

7. 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.
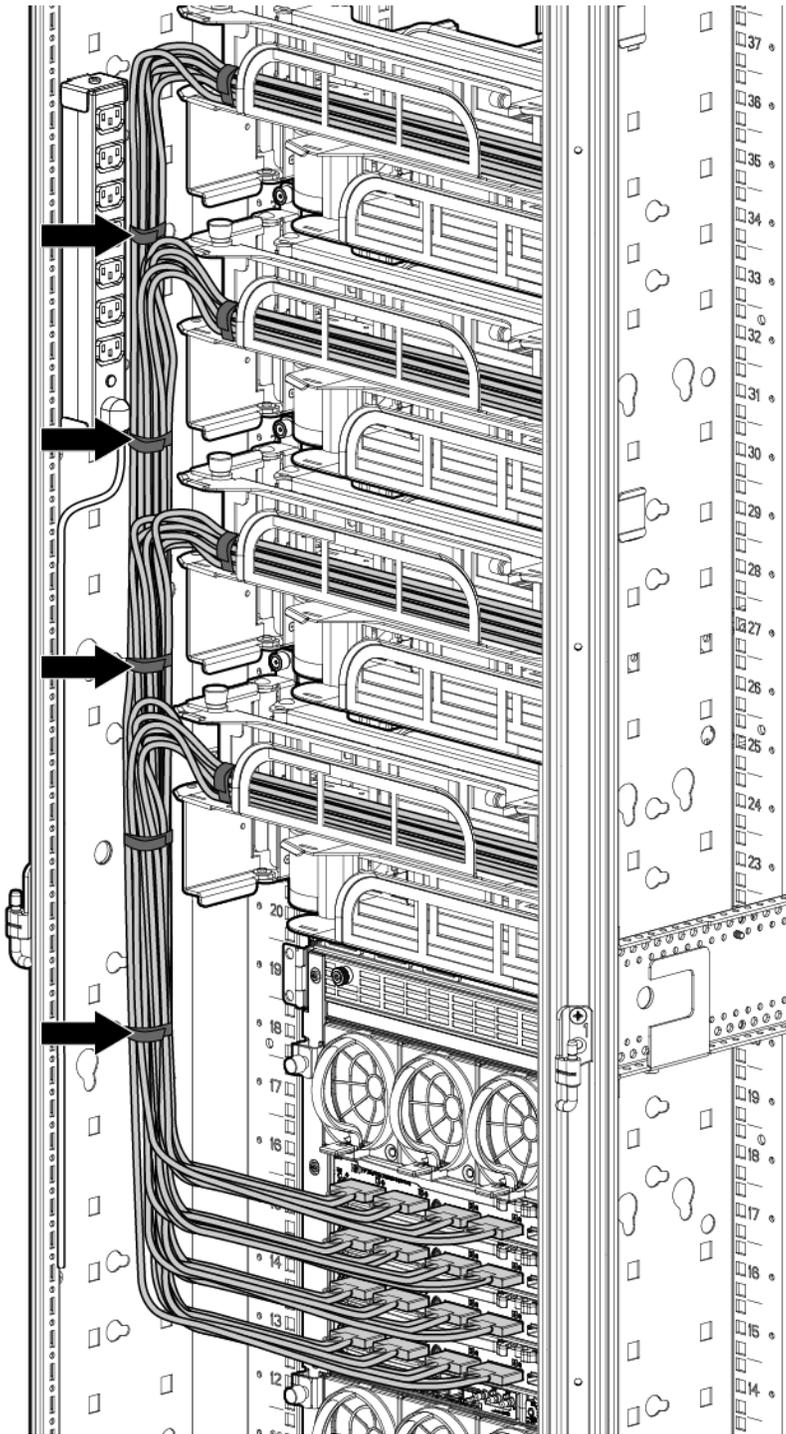
Server blade overview

Server blade components
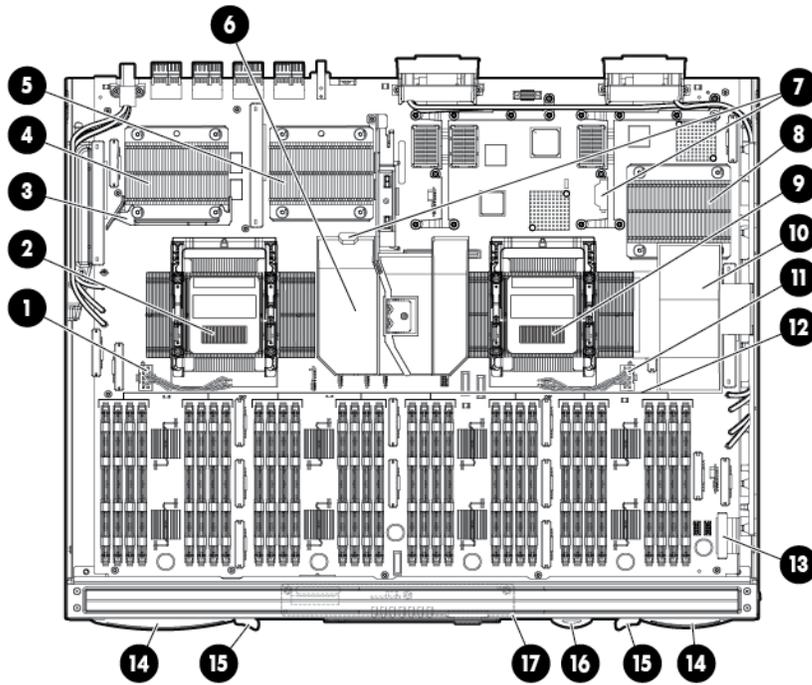
Item	Description
1	CPU 1 socket power connector
2	CPU 1 socket
3	Agent baffle
4	Agent ASIC 1
5	Agent ASIC 0
6	Center air baffle
7	Battery sockets (PDH battery on left, iLO Battery on right)
8	IOH ASIC
9	CPU 0 socket
10	Lower air baffle
11	CPU 0 socket power connector
12	DDR3 DIMM slots (32)
13	SUV connector

Table Continued

Item	Description
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, monitor or USB device.

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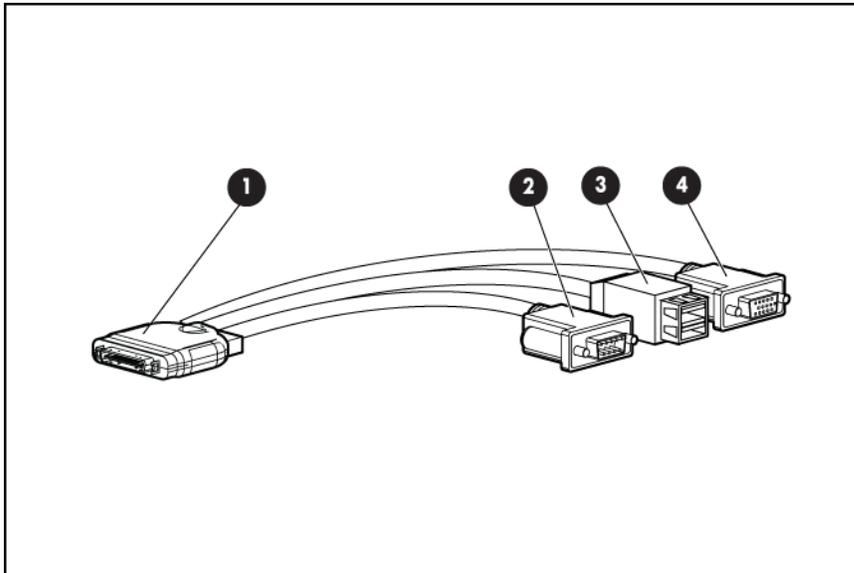
Item	Description
1	Server blade
2	Video
3	USB ports (2)
4	Serial

IOX enclosure overview

IOX enclosure components
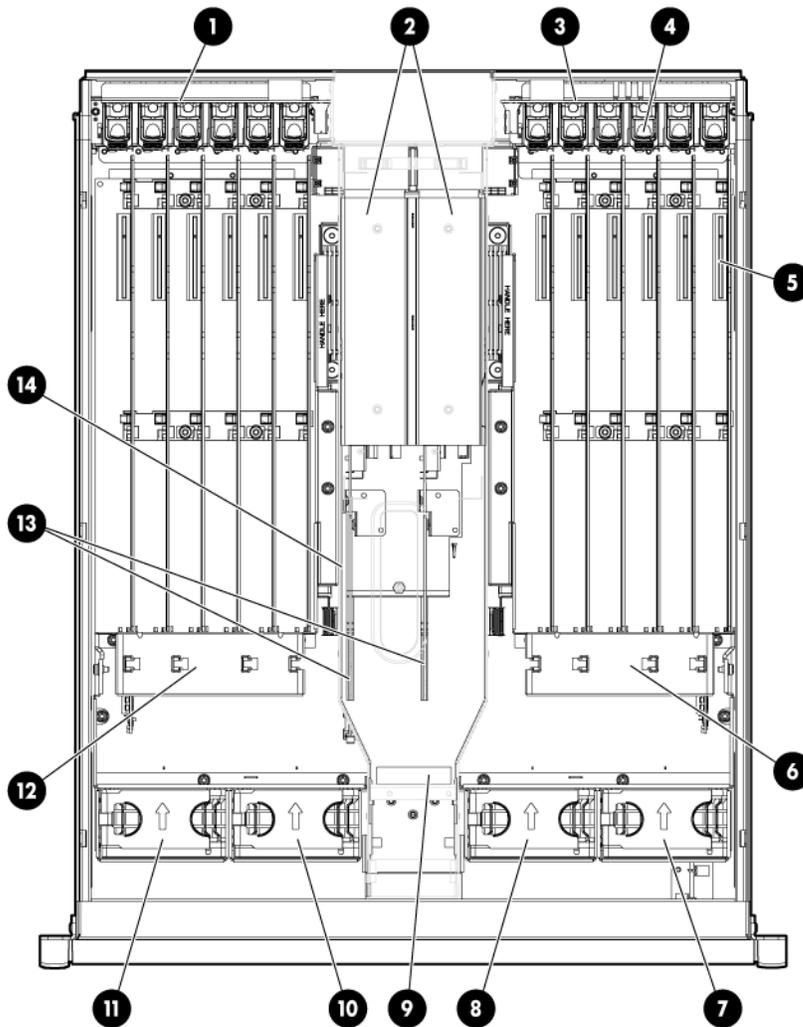
Item	Description
1	I/O bay 2 OL* board
2	Power supplies (2)
3	I/O bay 1OL* board
4	PCIe slot release latches (12)
5	PCIe card slots (12)
6	SAS battery location
7	Fan 4

Table Continued

Item	Description
8	Fan 3
9	I/O backplane release lever
10	Fan 2
11	Fan 1
12	SAS battery location
13	ac transfer boards (2)
14	PSU tunnel

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
GPSM	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, CB900s i4 or CB900s i6 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

Table Continued

Requirements	Value
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 range[1]	
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)

Table Continued

Specification	Value
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.

> (!) **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
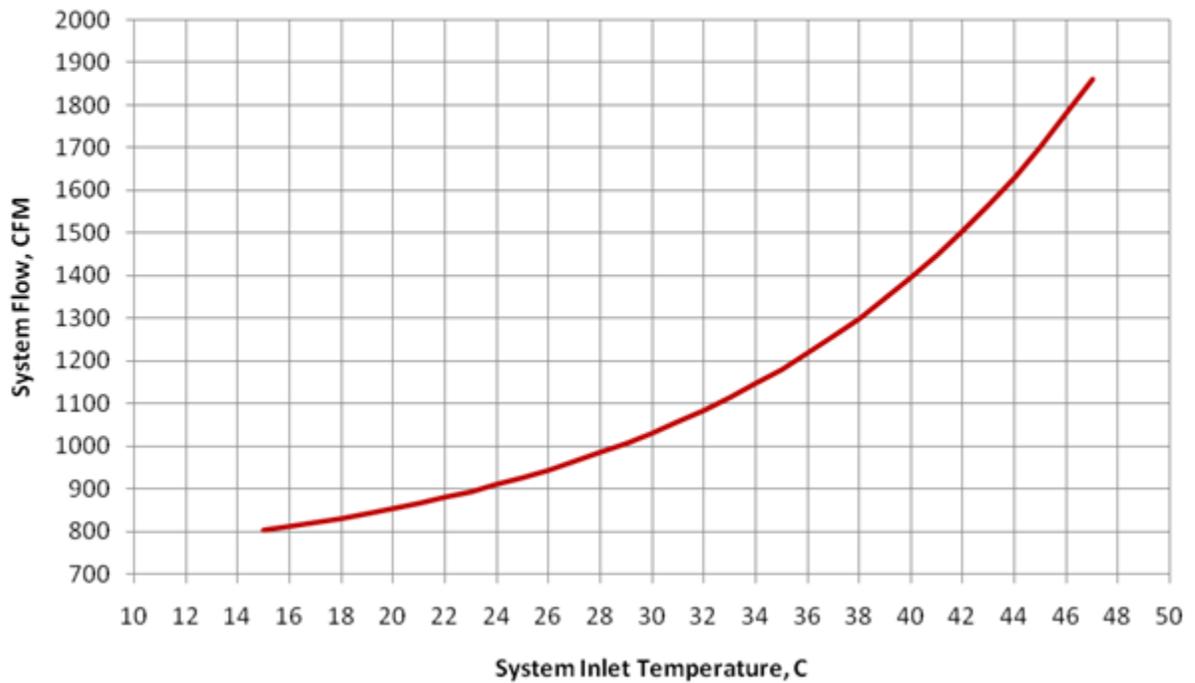
NOTE:

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.

SuperDome 2 System Exhaust Temperature based on Inlet Temperature
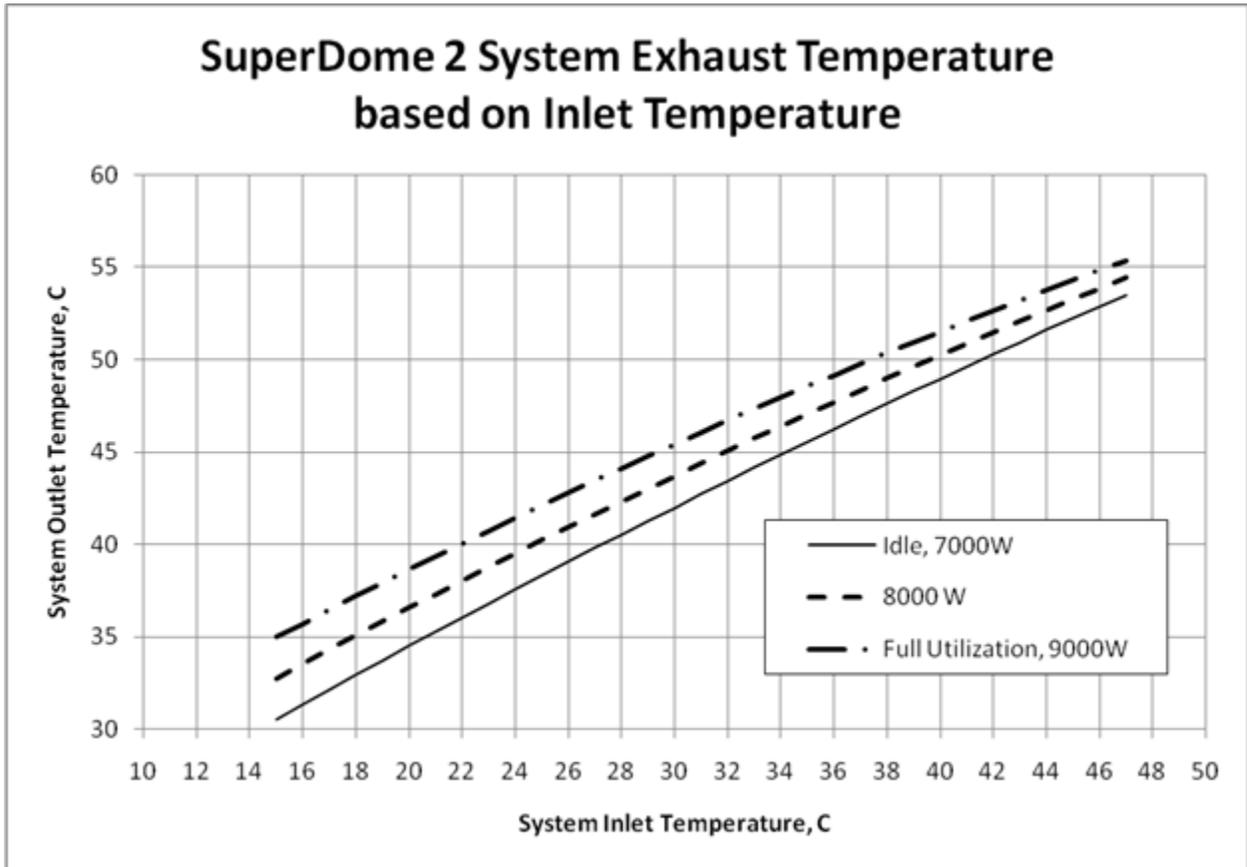
Because these temperatures might be significantly higher than the temperatures of the other equipment in the data center, to not over-cool the air, you might have to adjust the set-points of the CRACs or CRAHs higher. Most standalone CRACs and CRAHs use return side temperature regulation rather than 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 Superdome 2, 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** and **Table 17**. 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?			

Table Continued

Check either Yes or No. If No, include comment number or date.				Comment or Date
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?			
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?			

Table Continued

Check either Yes or No. If No, include comment number or date.				Comment or Date
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.			

Table Continued

Check either Yes or No. If No, include comment number or date.				Comment or Date
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? The following are examples of different types of temperature change. • **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. Also note that rapid changes to temperature over a short period are more damaging than gradual changes over time.			
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*.

Unsupported rack evaluation

Rack-mounting of Superdome 2 compute enclosures and IOX enclosures in an unsupported rack is not provided as a factory-integrated solution. To place these products in an unsupported rack, field-installation is required. As a result, much more time and effort is required to deploy and implement this solution as compared to a Hewlett Packard Enterprise Factory-Express order that comes integrated in a supported Superdome 2 rack. Hewlett Packard Enterprise strongly recommends the Hewlett Packard Enterprise Factory-Express integrated solution instead of field deployment in an unsupported rack, for a number of reasons, including:

- Factory integrated racks are fully tested at the factory as a system, which results in a much faster and reliable installation, as well as more reliable operation after installation.

- You do not have to investigate the compatibility of the rack and gain approval for a nonsupported environment.

  (!) **IMPORTANT:**

  For the product warranty for Superdome 2 compute enclosures and IOX enclosures to remain valid, you must follow unsupported rack requirements and you must obtain approval for unsupported rack solutions.

- The Hewlett Packard Enterprise Factory-Express solution requires much less staging room and detrash at the customer site.

- The customer receives the Superdome 2 rack with the informational LCD on the door along with high-end embellishments.

(!) **IMPORTANT:**

DISCLAIMER and WARNING:

When following these requirements for potential use of Superdome 2 compute enclosures and IOX enclosures in an unsupported rack, the resulting implementation must be reviewed and approved of by Hewlett Packard Enterprise before proceeding with the installation. Hewlett Packard Enterprise reserves the right to disapprove any unsupported rack implementation, even when based upon the requirements that are herein stated. This set of requirements is intended to serve only as a guideline for potential use of these products in an unsupported rack, and is not to be considered as an all-inclusive set of requirements. Be sure that Hewlett Packard Enterprise engineering is consulted and approval provided for any non-supported and nonstandard installations of Superdome 2 compute enclosures and IOX enclosures in an unsupported rack. This will ensure that all safety and regulatory requirements are met, and that a customer does not encounter issues later on as the installation and operation of equipment ensues.

The following table lists the requirements for an unsupported rack to support Superdome 2 compute enclosures and IOX enclosures.

Use the following checklist to gather information about the unsupported rack under evaluation for installation of Superdome 2 enclosures.

Table 18: Rack evaluation checklist

Item	Rack information	Superdome 2 requirements
1	Column-to-hole spacing (center-to-center across width of rack)	465.3 mm (EIA standard)
2	Type and size of holes in the rack columns	9.1 to 10.0 mm square holes or 6.6 to 7.5 mm dia round holes
3	Spacing of front column to rear column (outside-to-outside)	742–767 mm
4	Spacing of front column to front of door	62 mm (minimum)
5	Spacing of rear column to rear of rack.	160 mm (minimum)
6	Side to side clearance at narrowest point between the front and rear	484 mm (minimum)
7	Rack load capacity	2000 lbs (minimum)
8	Rack door airflow requirements	60% perforation open area (minimum)

(!) **IMPORTANT:**

Hewlett Packard Enterprise approval must be obtained for all unsupported accessories used in an unsupported rack, accessories include PDUs, cable management arms, and any items interfering with airflow.

Hewlett Packard Enterprise is not liable for any safety issues resulting from use of non supported accessories.

Superdome 2 systems mounted using the Universal Rails are not intended to be transported in unsupported racks.

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.

Enclosure Settings

Power Mode	Not Redundant	?
Power Limit	Not Set	?
Dynamic Power	Enabled	?
OA1 Info - Actv	16.84.189.192	?
OA2 Info - Stby	Not Present	?
Encl Name	MiniSnorf	?
Rack Name	Test	?
DVD Drive	Connect...	?
Insight Display PIN#	Not Set	?

✓ Accept All   Settings Help
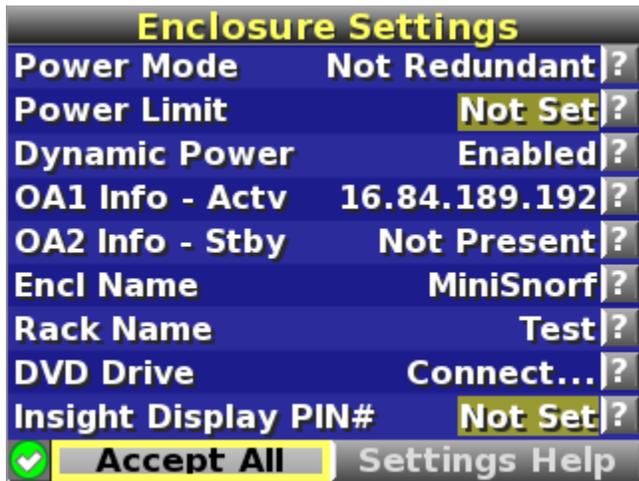
Procedure

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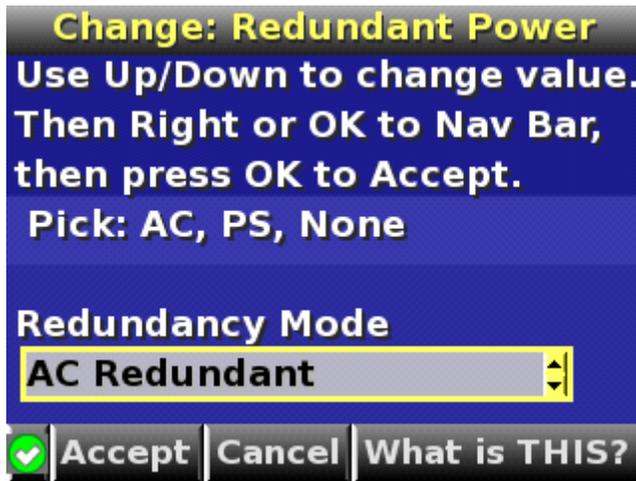
- **Power Limit** — The default setting is Not Set. The Power Limit Watts ac setting can be changed in increments of 50 Watts.

  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.

- **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 10 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.
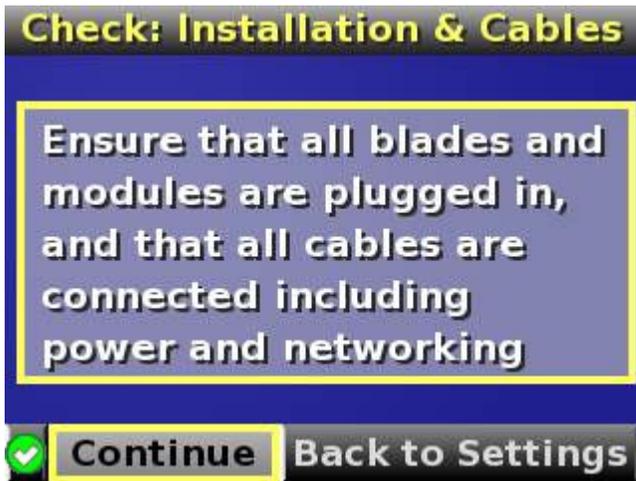
6. Be sure that all components are installed and cabled before continuing. Select **Continue**, and press the **OK** button to begin checking for configuration and installation errors. When **Continue** is selected, the enclosure UID automatically turns off.

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** on page 58.

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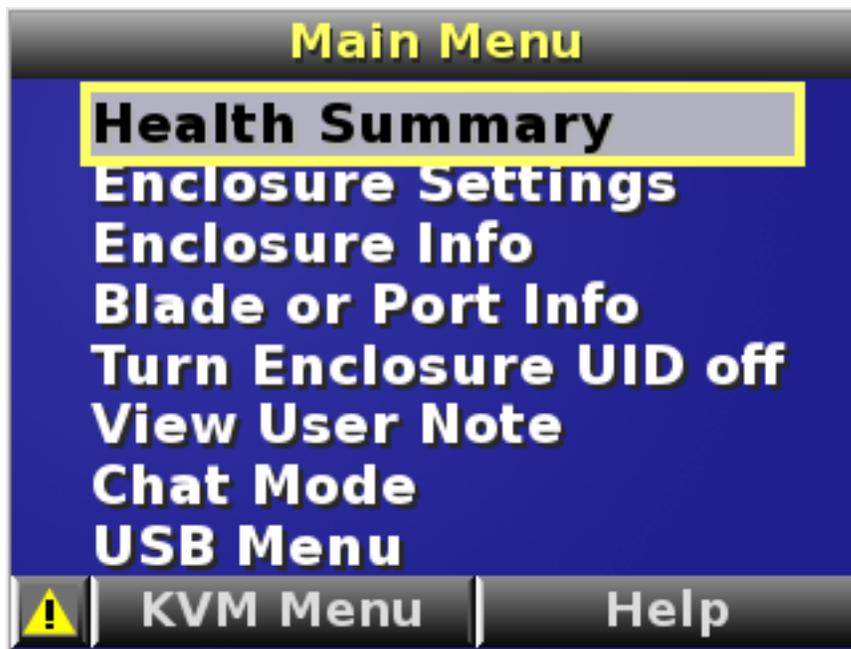
The Main Menu of the Insight Display has the following menu options:

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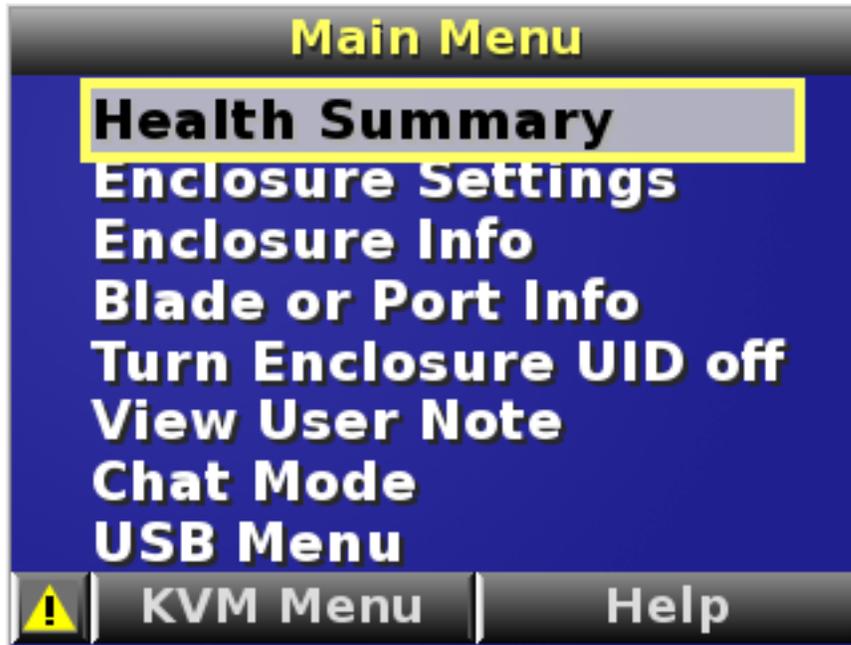
> **TIP:**
> Within any menu option, navigate the cursor to **What is This**, and press the **OK** button to view additional information about each setting, option, or alert.

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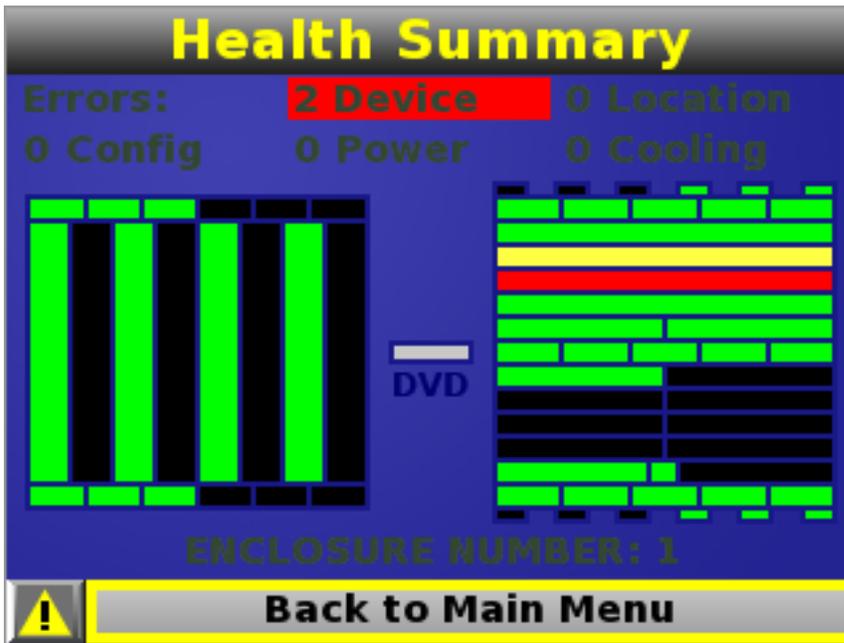
To display the errors, select **View Alert**, and then press the **OK** button.

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

Enclosure Settings screen

The Enclosure Settings screen displays and modifies 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.
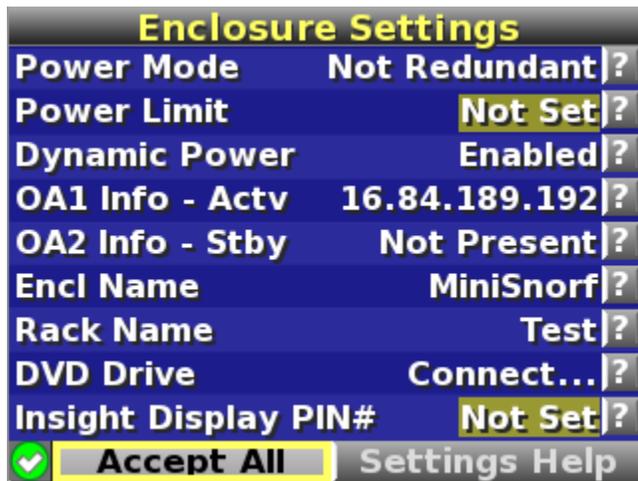
Enclosure Info screen

The Enclosure Info screen only 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

Enclosure Info

Superdome 2 Enclosure
OA Active IP: 15.11.133.171
OA Service IP: 169.254.1.253
Health Status: OK
Ambient Temp: 20C / 68F
Present Power: 3450 Watts
Encl Number: 1
Encl Name: SGH4934A72
Rack Name: UnnamedRack

⚠ | **Main** | Version | Reboot
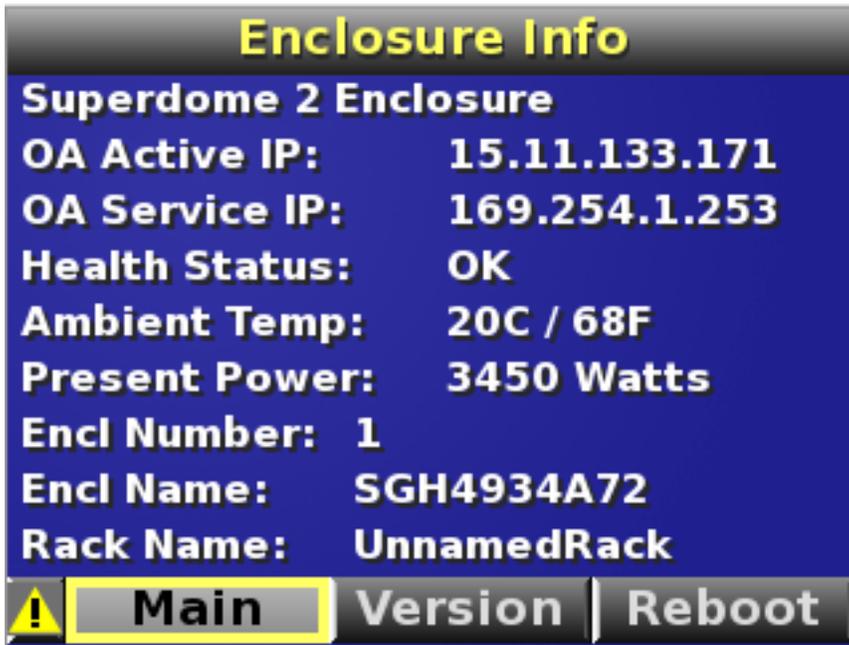
Blade and Port Info screen

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.

View: Blade and Port Info

Use Up/Down to change value.
Then Right or OK to Nav Bar,
then OK for Blade or Port Info
Blade range: 1 to 16
Side: None, A or B

Blade # = 02   Side = A ▲▼

⚠ | Blade Info | Port Info | Back
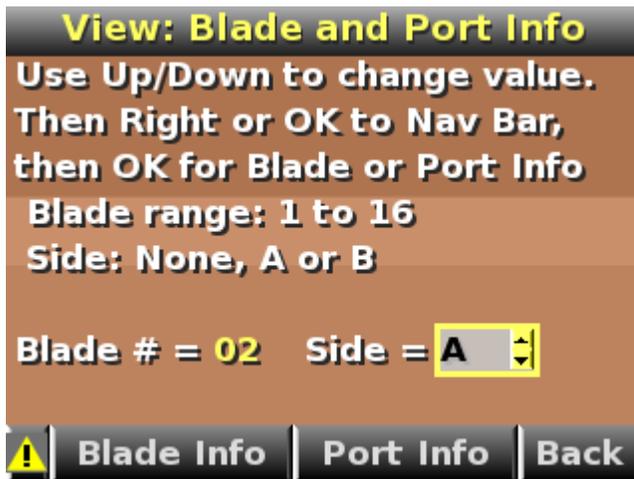
To view information about the server blade, select **Blade Info** and press the **OK** button.
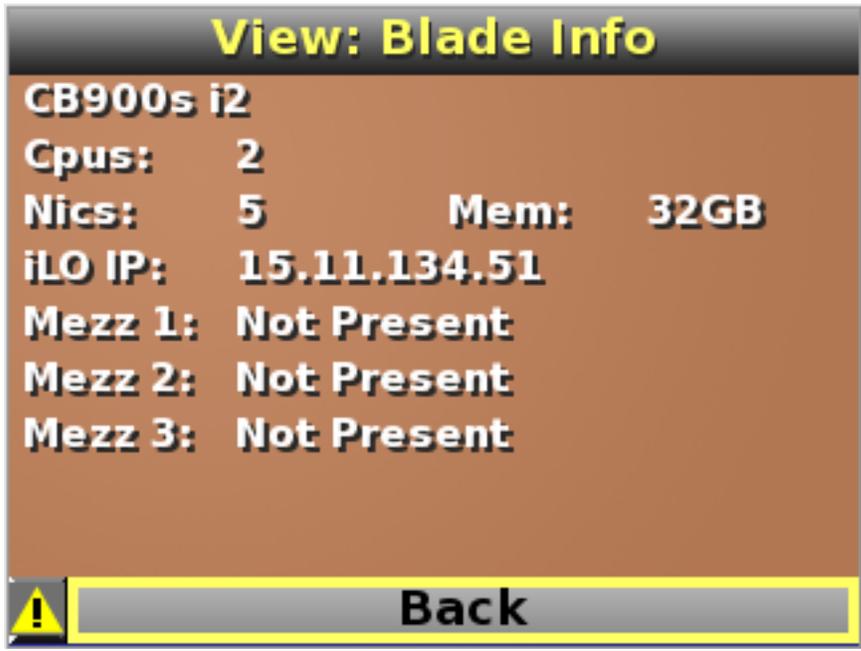
To view the ports used by a specific server blade, select **Port Info** and press the **OK** button.

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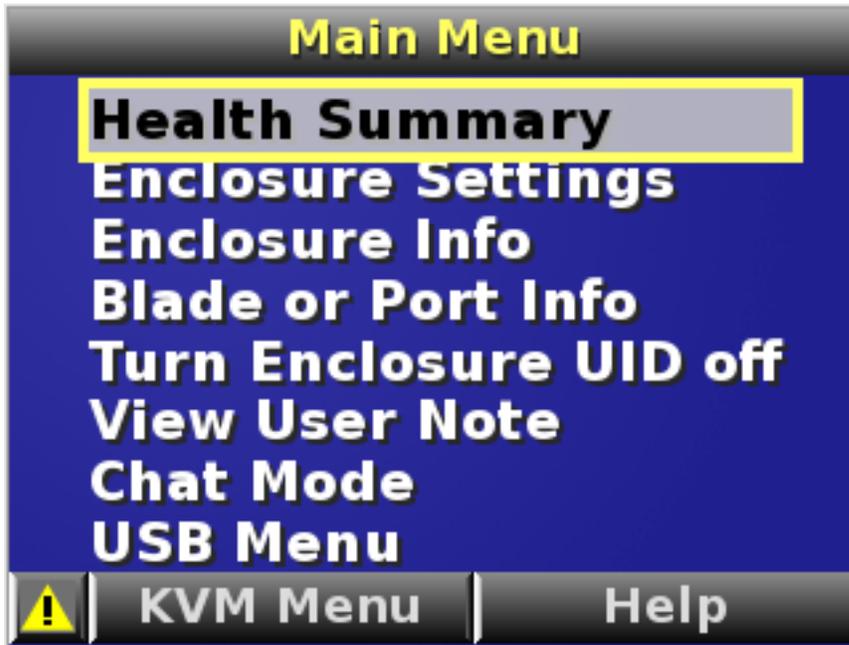
Selecting **Turn Enclosure UID Off** from the main menu turns off the rear enclosure UID LED and changes the color of the Insight Display screen to the current alert condition.

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.
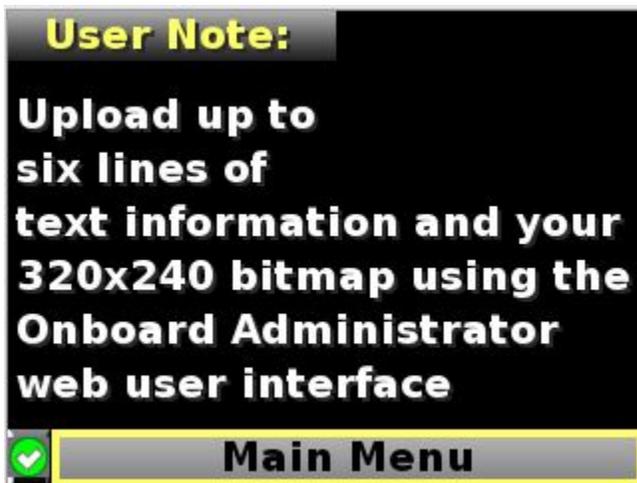
Chat Mode screen

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:

Procedure

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:

Procedure

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:

Procedure

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:

Procedure

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:

Procedure

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.

Booting and shutting down the operating system

Operating systems supported on the server blade

- HP-UX 11i v3 HWE 1009
- HP-UX 11i v3 Update 2017 for CB900s i6

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** on page 61
- **Booting HP-UX from the UEFI Shell** on page 62

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.

Procedure

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

Procedure

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

Procedure

1. Use steps 1–5 from **Booting HP-UX from the UEFI Shell** on page 62 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** on page 62), 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:

Procedure

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.

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 a Hewlett Packard Enterprise 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** on page 68 for more information.

UEFI Shell and HPE POSSE commands

For more information about these commands, enter `help` command 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

Table Continued

UEFI Shell command	Definition
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
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

Table Continued

UEFI Shell command	Definition
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
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

Table Continued

UEFI Shell command	Definition
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 Maintenance Manager        |
\‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾/

Boot Options                      Modify system boot
                                  options
Driver Options

Console Options

Boot From File

Set Boot Next Value
Set Time Out Value

Reset System
                                                  ▮

/‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾\
| ^v=Move Highlight    <Enter>=Select Entry    X/x=Exit this Menu |
\‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾/
```
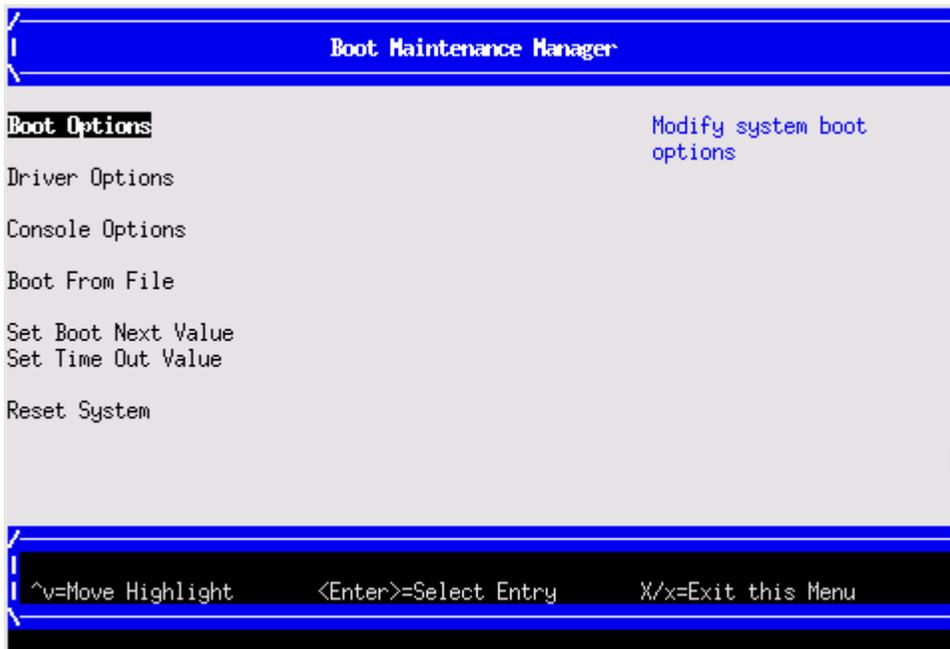
Boot Options

The Boot Options menu contains the following options:

- Add Boot Option

- Delete Boot Option

- Change Boot Order
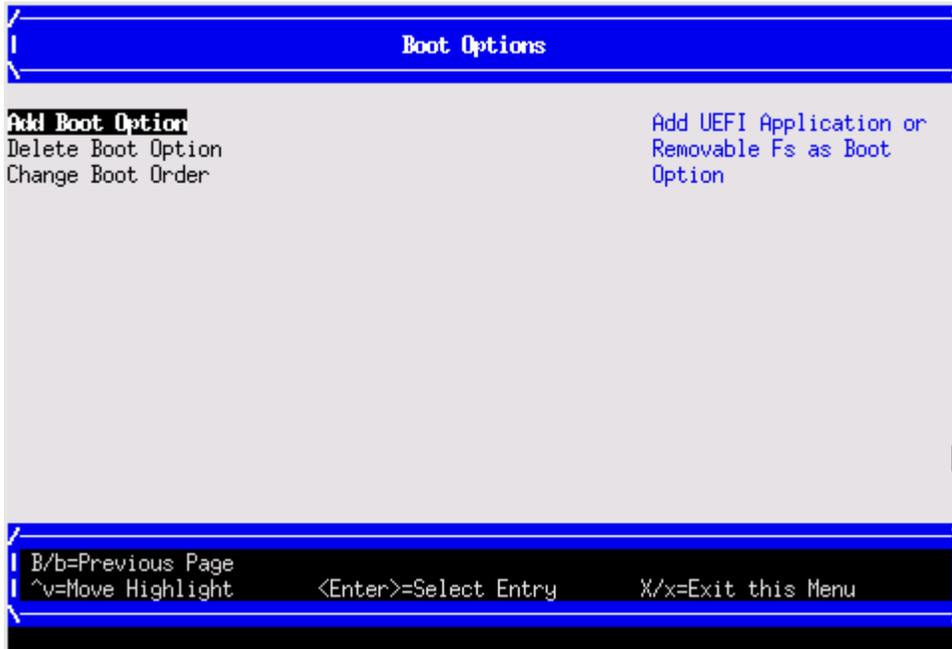
Add Boot Option

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

To add a boot option:

Procedure

1. Select a boot device type.

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

```
/                                                           \
|                      File Explorer                        |
\                                                           /
 IA64_EFI,
 [PcieRoot(0x78)/Pci(0x2,0x0)/Pci(0x0,0x0)/Pci(0x4,0x
 0)/Pci(0x0,0x0)/Fibre(0x207000C0FFD7E2E1,0x0)/HD(1,G
 PT,96F9644A-E9B5-11DE-8000-D6217B60E588)]
 IA64_EFI,
 [PcieRoot(0x78)/Pci(0x2,0x0)/Pci(0x0,0x0)/Pci(0x4,0x
 0)/Pci(0x0,0x0)/Fibre(0x207000C0FFD7E2E1,0x0)/HD(3,G
 PT,96F964B8-E9B5-11DE-8000-D6217B60E588)]
 IA64_EFI,
 [PcieRoot(0x7A)/Pci(0x0,0x0)/Pci(0x0,0x0)/Fibre(0x20
 7000C0FFD7E2E1,0x0)/HD(1,GPT,F469BCF8-D621-11DE-8000
 -D6217B60E588)]
 IA64_EFI,
 [PcieRoot(0x7A)/Pci(0x0,0x0)/Pci(0x0,0x0)/Fibre(0x20
 7000C0FFD7E2E1,0x0)/HD(3,GPT,F469BD66-D621-11DE-8000
/                                                           \
|                                                           |
\                                                           /
| ^v=Move Highlight       <Enter>=Select Entry     X/x=Exit this Menu |
\                                                           /
```

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:

Procedure

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:

Procedure

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.

```
/                                                                                    \
|                          Change Boot Order                                          |
\                                                                                    /

Change the order          <LAN                          Change the order
                          [MAC(002481D25460,0x0)]>
                          <LAN
                          [MAC(002481D25464,0x0)]>
                     /-----------------------------------\
                     | LAN [MAC(002481D25460,0x0)]       |
                     | LAN [MAC(002481D25464,0x0)]       |
                     | LAN [MAC(002481D25468,0x0)]       |
                     | LAN [MAC(002481D2546C,0x0)]       |
Commit Changes and Exit| UEFI Internal Shell             |
Discard Changes and Exit\---------------------------------/


/                                                                                    \
|                                              - =Move Selection Down                 |
|                        <Enter>=Complete Entry + =Move Selection Up                  |
\                                                                                    /
```

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:

Procedure

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

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

```
/                                                                \
I                          File Explorer                          I
\                                                                /

IA64_EFI,
[PcieRoot(0x78)/Pci(0x2,0x0)/Pci(0x0,0x0)/Pci(0x4,0x
0)/Pci(0x0,0x0)/Fibre(0x207000C0FFD7E2E1,0x0)/HD(1,G
PT,96F9644A-E9B5-11DE-8000-D6217B60E588)]
IA64_EFI,
[PcieRoot(0x78)/Pci(0x2,0x0)/Pci(0x0,0x0)/Pci(0x4,0x
0)/Pci(0x0,0x0)/Fibre(0x207000C0FFD7E2E1,0x0)/HD(3,G
PT,96F964B8-E9B5-11DE-8000-D6217B60E588)]
IA64_EFI,
[PcieRoot(0x7A)/Pci(0x0,0x0)/Pci(0x0,0x0)/Fibre(0x20
7000C0FFD7E2E1,0x0)/HD(1,GPT,F469BCF8-D621-11DE-8000
-D6217B60E588)]
IA64_EFI,
[PcieRoot(0x7A)/Pci(0x0,0x0)/Pci(0x0,0x0)/Fibre(0x20
7000C0FFD7E2E1,0x0)/HD(3,GPT,F469BD66-D621-11DE-8000

/                                                                \
I  ^v=Move Highlight      <Enter>=Select Entry     X/x=Exit this Menu
\                                                                /
```

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:

Procedure

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.
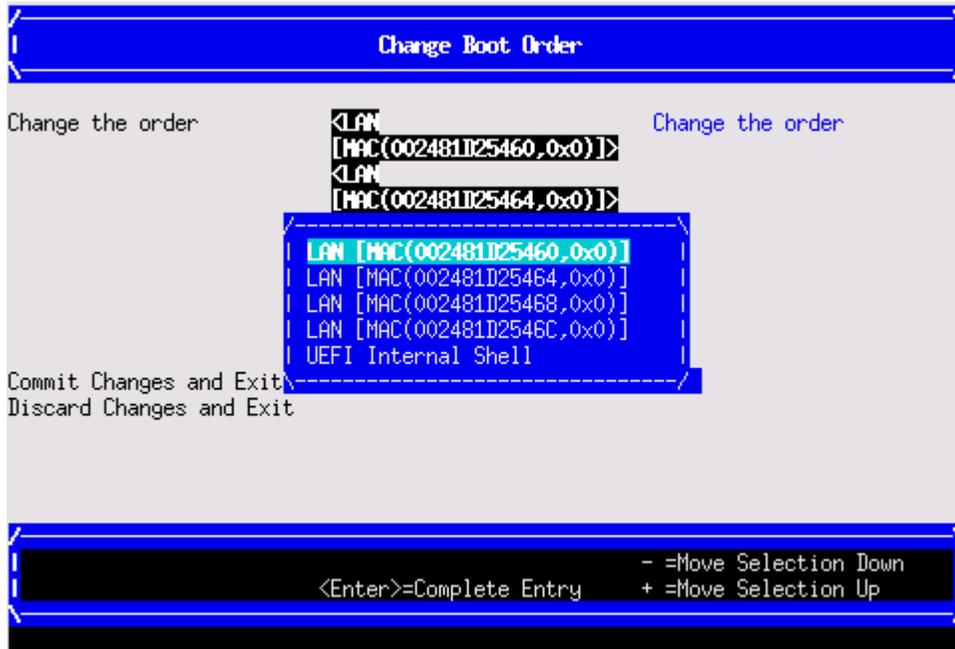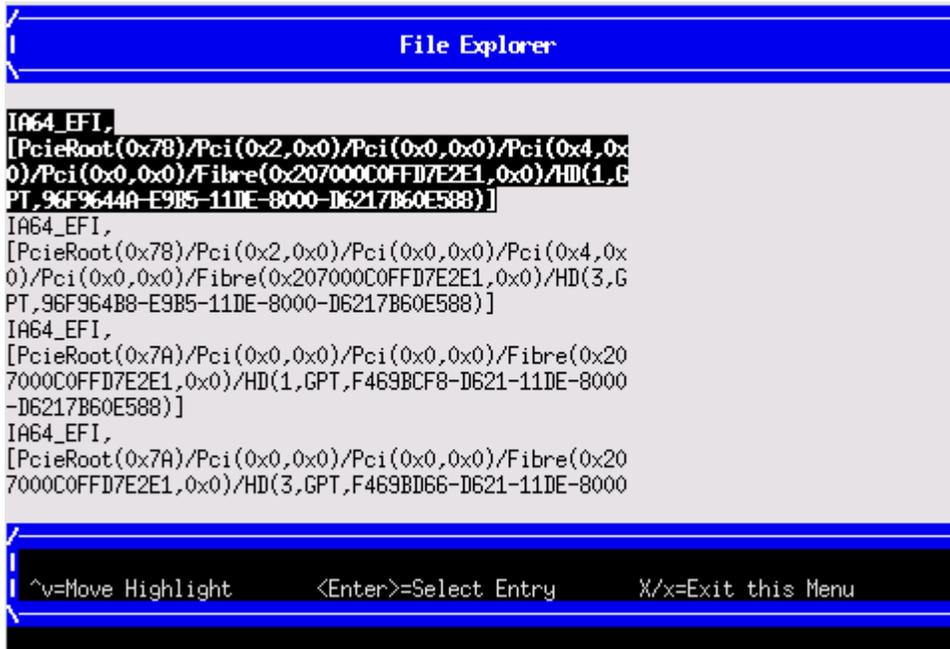
Change Driver Order

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

To change the driver load order:

Procedure

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.

Procedure

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 Boot Next Value                  │
├─────────────────────────────────────────────────────┤
│                                                     │
│  Boot Next Value        ◄NONE►        Next boot use this boot
│                                       option
│  Commit Changes and Exit
│  Discard Changes and Exit
│
│
│
│
│
│
│
│                                                 ■
│
├─────────────────────────────────────────────────────┤
│  B/b=Previous Page                                  │
│  ^v=Move Highlight        <Enter>=Select Entry      │
└─────────────────────────────────────────────────────┘
```

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.

```
┌─────────────────────────────────────────────────────┐
│                Set Time Out Value                   │
├─────────────────────────────────────────────────────┤
│                                                     │
│  Auto Boot Time-out       [7]        Range: 0 to 65535
│                                       seconds, 0 means no
│  Commit Changes and Exit              wait, 65535 means
│  Discard Changes and Exit             waiting for key
│
│
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│                                                 ■
│
├─────────────────────────────────────────────────────┤
│  B/b=Previous Page                                  │
│  ^v=Move Highlight        <Enter>=Select Entry      │
└─────────────────────────────────────────────────────┘
```

Reset System

Use this option to perform a system reset.
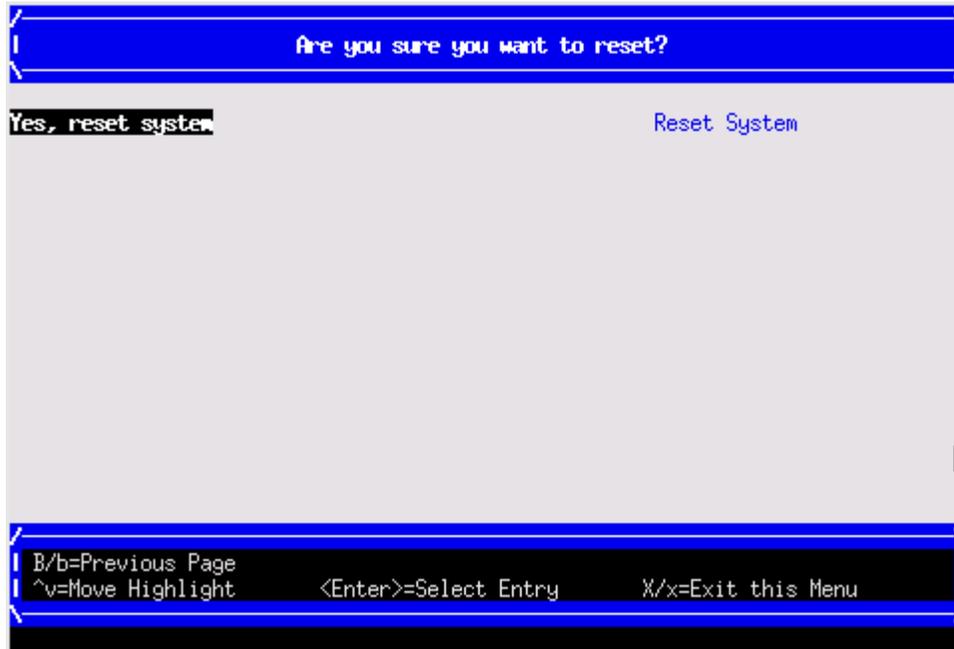
Onboard Administrator

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*.

Support and other resources

Accessing Hewlett Packard Enterprise Support

- For live assistance, go to the Contact Hewlett Packard Enterprise Worldwide website:

  http://www.hpe.com/assistance

- To access documentation and support services, go to the Hewlett Packard Enterprise Support Center website:

  http://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:

  Hewlett Packard Enterprise Support Center
      www.hpe.com/support/hpesc
  Hewlett Packard Enterprise Support Center: Software downloads
      www.hpe.com/support/downloads
  Software Depot
      www.hpe.com/support/softwaredepot

- To subscribe to eNewsletters and alerts:

  www.hpe.com/support/e-updates

- To view and update your entitlements, and to link your contracts 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 an HPE Passport set up with relevant
entitlements.

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:

http://www.hpe.com/support/selfrepair

Remote support

Remote support is available with supported devices as part of your warranty 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.

If your product includes additional remote support details, use search to locate that information.

Remote support and Proactive Care information
HPE Get Connected
    www.hpe.com/services/getconnected
HPE Proactive Care services
    www.hpe.com/services/proactivecare
HPE Proactive Care service: Supported products list
    www.hpe.com/services/proactivecaresupportedproducts
HPE Proactive Care advanced service: Supported products list
    www.hpe.com/services/proactivecareadvancedsupportedproducts

Proactive Care customer information
Proactive Care central
    www.hpe.com/services/proactivecarecentral
Proactive Care service activation
    www.hpe.com/services/proactivecarecentralgetstarted

Warranty information

To view the warranty for your product or to view the *Safety and Compliance Information for Server,
Storage, Power, Networking, and Rack Products* reference document, go to the Enterprise Safety and
Compliance website:

www.hpe.com/support/Safety-Compliance-EnterpriseProducts

Additional 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

To view the regulatory information for your product, view the *Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products*, available at the Hewlett Packard Enterprise Support Center:

www.hpe.com/support/Safety-Compliance-EnterpriseProducts

Additional regulatory information

Hewlett Packard Enterprise is committed to providing our customers with information about the chemical substances in our products as needed to comply with legal requirements such as REACH (Regulation EC No 1907/2006 of the European Parliament and the Council). A chemical information report for this product can be found at:

www.hpe.com/info/reach

For Hewlett Packard Enterprise product environmental and safety information and compliance data, including RoHS and REACH, see:

www.hpe.com/info/ecodata

For Hewlett Packard Enterprise environmental information, including company programs, product recycling, and energy efficiency, see:

www.hpe.com/info/environment

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.