

Hewlett Packard
Enterprise

# HPE Integrity Superdome X Service Guide for Users

**Abstract**

This guide describes the HPE Integrity Superdome X and provides user service information.

Part Number: 794235-009
Published: November 2018
Edition: Ninth

# Contents


**HPE Integrity Superdome X overview..... 8**
- Complex components..... 8
- Power subsystem..... 8
  - Powering off the compute enclosure..... 8
- Manageability subsystem..... 9
- Server blades..... 9
- I/O subsystem..... 9
- Compute enclosure overview..... 10
- Server blade overview..... 20

**System specifications..... 23**
- Dimensions and weights..... 23
- Rack specifications..... 24
- Internal and external site door requirements..... 24
- Electrical specifications..... 25
- Environmental specifications..... 28
  - Temperature and humidity specifications..... 28
  - Cooling requirements..... 29
  - Air quality specifications..... 29
  - Acoustic noise specifications..... 29
- Sample site inspection checklist for site preparation..... 30

**Updating firmware..... 34**
- Prerequisites..... 34
- Installing the latest complex firmware using SUM..... 34
- Manually updating the complex firmware..... 34
  - Download firmware bundle..... 35
  - Update the complex firmware..... 35
  - I/O firmware and drivers..... 36
  - SMH and WBEM providers..... 36
  - Drivers and firmware for other devices..... 36

**Superdome X operating systems..... 37**
- OSs supported..... 37
- Using Microsoft Windows Server..... 38
- Using VMware..... 38
- Using Red Hat Linux..... 38
- Using SuSE Linux..... 38

**Partitioning..... 39**
- Partition Identification..... 39
- Partition Number..... 39
- Partition Name..... 39
- Partition Power Operations..... 39
- PARSTATUS..... 40

UUID for nPartitions....40
nPartition states....40
nPartition runstate....41
nPartition and resource health status....42

**Troubleshooting....44**
General troubleshooting methodology....44
LED status information....44
OA access....44
OA CLI....44
Gathering power related information....45
Gathering cooling related information....47
Gathering failure information....49
Recommended troubleshooting methodology....50
Developer log collection....51
Troubleshooting tables....52
Troubleshooting tools....57
LEDs and components....57
OA GUI....65
Health Repository viewer....65
Indictment Records....65
Acquitting indictments....66
Viewing the list of indicted components....67
Viewing deconfigured components....67
Viewing indictment acquittals....68
Viewing recent service history....68
Physical Location installation and health history....68
Subcomponent isolation and deconfiguration displays....70
Using event logs....75
Live viewer....75
SEL and FPL viewers....77
Core Analysis Engine....80
OA....82
Troubleshooting processors....84
Troubleshooting memory....85
Troubleshooting cards and drivers....87
Troubleshooting compute enclosure events....87
Troubleshooting firmware....88
Identifying and troubleshooting firmware issues....88
Verifying and installing the latest firmware version....89
System firmware....89
FRU replacement firmware update procedures....90
I/O firmware....92
Interconnect module firmware....93
Troubleshooting partitions....94
Troubleshooting the network....94
Troubleshooting fabric issues....96
Troubleshooting clock-related issues....97
Troubleshooting MCAs....97
Troubleshooting the blade interface (system console)....98

**Websites....100**

**Support and other resources.....101**
Accessing Hewlett Packard Enterprise Support..... 101
Accessing updates.....101
Customer self repair.....102
Remote support..... 102
Warranty information.....102
Regulatory information.....103
Documentation feedback..... 103

**Utilities..... 104**
UEFI.....104
UEFI Shell and POSSE commands.....104
Boot Maintenance Manager.....108
Onboard Administrator..... 110

**Connecting to the OA with a local PC..... 111**
Connecting a PC to the OA service port.....111
Connecting a PC to the OA serial port..... 112
Modifying the serial connection baud rate.....113

**Insight Display.....114**
Insight Display overview.....114
Navigating the Insight Display.....114
Health Summary screen.....116
Enclosure Settings screen.....117
Enclosure Info screen.....117
Blade and Port Info screen.....118
Turn Enclosure UID On/Off screen.....119
View User Note screen.....120
Chat Mode screen.....120
Insight Display errors..... 121
Power errors.....121
Cooling errors.....122
Location errors..... 122
Configuration errors..... 122
Device failure errors..... 122

**Warranty and regulatory information.....124**
Warranty information.....124
Regulatory information.....124
Belarus Kazakhstan Russia marking..... 124
Turkey RoHS material content declaration.....125
Ukraine RoHS material content declaration..... 125

**Standard terms, abbreviations, and acronyms..... 126**

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## Revision History

| HPE Part Number | Edition | Publication Date | Changes |
|---|---|---|---|
| 794235–001 | First | December 2014 | |
| 794235–002 | Second | March 2015 | |

*Table Continued*

| HPE Part Number | Edition | Publication Date | Changes |
|---|---|---|---|
| 794235–003 | Third | September 2015 | • Added BL920s Gen9 blade support<br>• Added SLES 11 SP4 and SLES 12 OS support<br>• Added RHEL 6.6, RHEL 6.7, and RHEL 7.1 OS support<br>• Added Windows 2012 R2 OS support (Gen8)<br>• Added ESXi OS support (Gen8)<br>• Moved firmware update information from installation chapter to dedicated chapter. Refer to firmware matrix and release notes for correct information.<br>• Removed detailed SLES boot/shutdown information and add reference to Linux and Windows white papers.<br>• Minor text changes and clarifications throughout |
| 794235–004 | Fourth | January 2016 | |
| 794235–005 | Fifth | July 2016 | • Added details for safely powering off an enclosure<br>• Added BL920s Gen9+ blade support<br>• Added FlexFabric 20 Gb 2P 650FLB and 650M adapter support<br>• Added note about scrolling the Insight Display<br>• Added instructions to save EFI variables to disk<br>• Added sections on troubleshooting the OA battery<br>• Updated illustrations for new HPE standards.<br>• Updated Insight Display screens.<br>• Added troubleshooting scenario where PXE fails to find the boot file.<br>• Updated references to the new XFM2 crossbar modules. |

*Table Continued*

| HPE Part Number | Edition | Publication Date | Changes |
|---|---|---|---|
| 794235–006 | Sixth | September 2016 | • Updated access to OS white papers for firmware updates<br>• Updated Insight Display screenshots<br>• Included component ID for both XFM and XFM2 modules<br>• Added notes that both XFM and XFM2 modules are referred to as XFM in this document and not to mix module types in the same system |
| 794235–007 | Seventh | November 2016 | • Updated OS support list<br>• Added links to current OS and spare parts information |
| 794235–008 | Eighth | April 2017 | • Added vSphere 6.0U3 and RHEL 6.9 in **OSs supported**<br>• Added XFM2 firmware version in **FRU replacement firmware update procedures** |
| 794235-009 | Ninth | November 2018 | Updated Health LED in **LEDs and components** |

# HPE Integrity Superdome X overview

HPE Integrity Superdome X is a blade-based, high-end server platform supporting the x86 processor family which incorporates a modular design and uses the sx3000 crossbar fabric to interconnect resources. The system also includes remote system management functionality through the HPE Onboard Administrator (OA), which helps monitor and manage complex resources.

Integrity Superdome X supports the SuSE Linux Enterprise Server, Red Hat Enterprise Linux, and Microsoft Windows OSs, as well as VMware ESXi. For the latest list of supported OSs, see the *HPE Integrity Superdome X Operating System Reference* at **http://www.hpe.com/info/enterprise/docs** (**Servers** > **Integrity Servers** > **Integrity Superdome X**) or **Firmware Matrix for HPE Integrity Superdome X servers**.

## Complex components

Integrity Superdome X consists of a single compute enclosure containing one to eight BL920s Gen8 or Gen9 blades. It also includes interconnect modules, manageability modules, fans, power supplies, and an integrated LCD Insight Display. The Insight Display can be used for basic enclosure maintenance and displays the overall enclosure health. The compute enclosure supports four XFMs that provide the crossbar fabric which carries data between blades.

**NOTE:** HPE Integrity Superdome X systems may contain XFM or XFM2 crossbar modules. Unless specifically stated otherwise, this document refers to all crossbar modules as XFMs, but the information will generally apply to either XFM or XMF2 modules.

**More information**

**Integrity Superdome X QuickSpecs**

## Power subsystem

The Integrity Superdome X compute enclosure supports 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.

There are 12 power supplies per Integrity Superdome X compute enclosure. 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.

**More information**

**Integrity Superdome X QuickSpecs**

### Powering off the compute enclosure

**IMPORTANT:** To power off the enclosure, disconnect the power cables from the **lower** power supplies first, and then disconnect the power cables from the **upper** power supplies.

To service any internal compute enclosure component, complete the following steps in order:

**Procedure**

1. Power off the partition.
2. Power off all XFMs.

3. Disconnect the power cables from the lower power supplies.
4. Disconnect the power cables from the upper power supplies.

# Manageability subsystem

The Integrity Superdome X is managed by two OAs that monitor both individual components and complex health. This information can be accessed in the following 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 the Integrity Superdome X enclosure manage CAMNET distribution to all server blades and XFMs in the complex and provide the redundant global clock source for the complex. Fans and power supplies in the upper section of the enclosure are monitored and controlled by the OA through the GPSMs.

### More information

**Integrity Superdome X QuickSpecs**

# Server blades

Each BL920s server blade contains two x86 processors and up to 48 DIMMs.

### Server blades and partitions

Integrity Superdome X supports multiple nPartitions of 2, 4, 6, 8, 12, or 16 sockets (1, 2, 3, 4, 6, or 8 blades). Each nPartition must include blades of the same type but the system can include nPartitions with different blade types.

### More information

**Integrity Superdome X QuickSpecs**

# I/O subsystem

Integrity Superdome X provides I/O through mezzanine cards and FlexLOMs on individual server blades. Each BL920s blade has two FLB slots and three Mezzanine slots.

FLB slots can contain any of these cards:

- HPE FlexFabric 10 Gb 2–port 534FLB Adapter (BL920s Gen8)
- HPE Ethernet 10 Gb 2–port 560FLB
- HPE FlexFabric 20 Gb 2P 630FLB (BL920s Gen9)
- HPE FlexFabric 20 Gb 2P 650FLB (BL920s Gen9)

Mezzanine slots can contain any of these cards:

- HPE FlexFabric 10 Gb 2–port 534M Adapter (BL920s Gen8)
- HPE Ethernet 10 Gb 2–port 560M

- HPE FlexFabric 20 Gb 2P 630M (BL920s Gen9)
- HPE FlexFabric 20 Gb 2P 650M (BL920s Gen9)
- HPE QMH2672 16 Gb 2P FC HBA
- Infiniband HPE IB FDR 2P 545M (BL920s Gen9)

Not all types of cards are supported on Gen8 and Gen9 blades. For a complete list of supported I/O cards and firmware requirements, see the *Firmware Matrix for HPE Integrity Superdome X servers* at **http://www.hpe.com/info/superdomeX-firmware-matrix**.

Fibre channel and LAN connectivity are supported by the interconnect modules in the rear of the compute enclosure. For more information, see

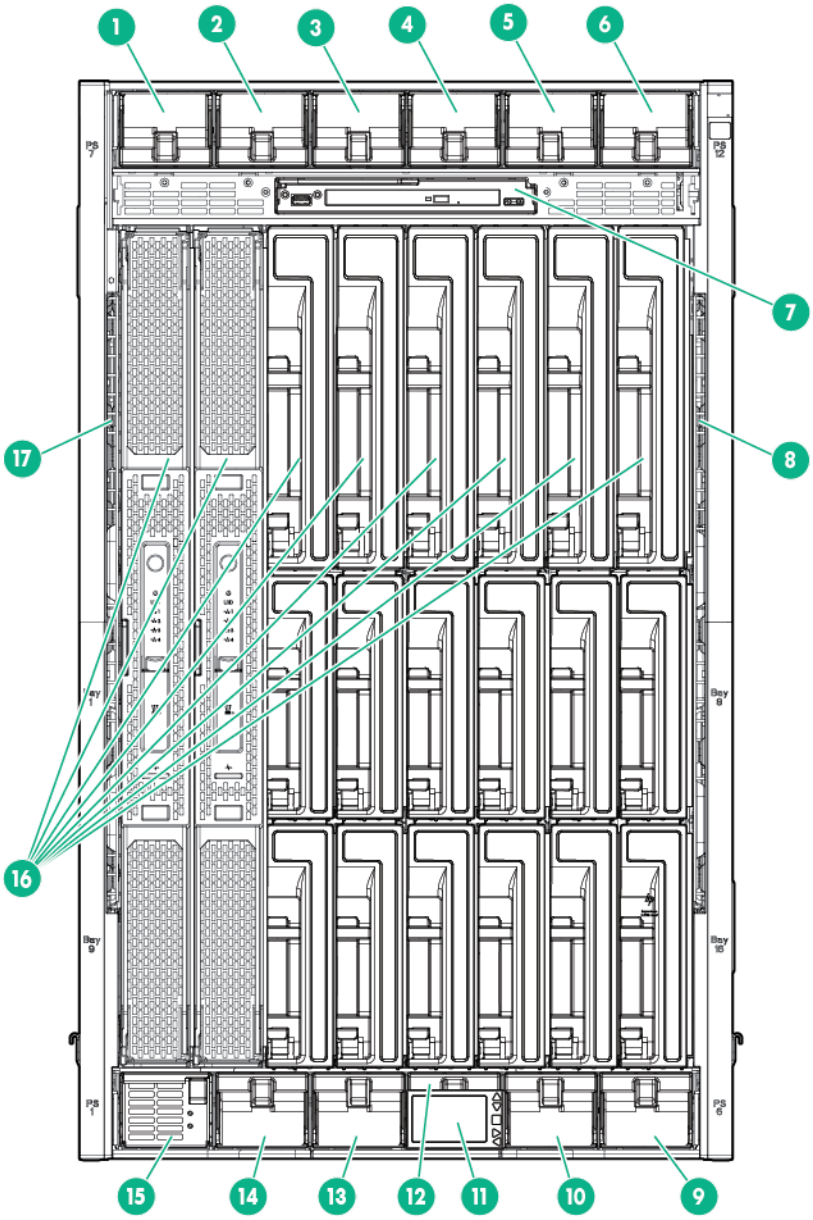
**More information**

- **Interconnect bay numbering**
- **Integrity Superdome X QuickSpecs**
- **Firmware Matrix for HPE Integrity Superdome X servers**
- **Connecting a PC to the OA service port**

# Compute enclosure overview

### Compute enclosure front components

**NOTE:** Images might not represent supported configurations.

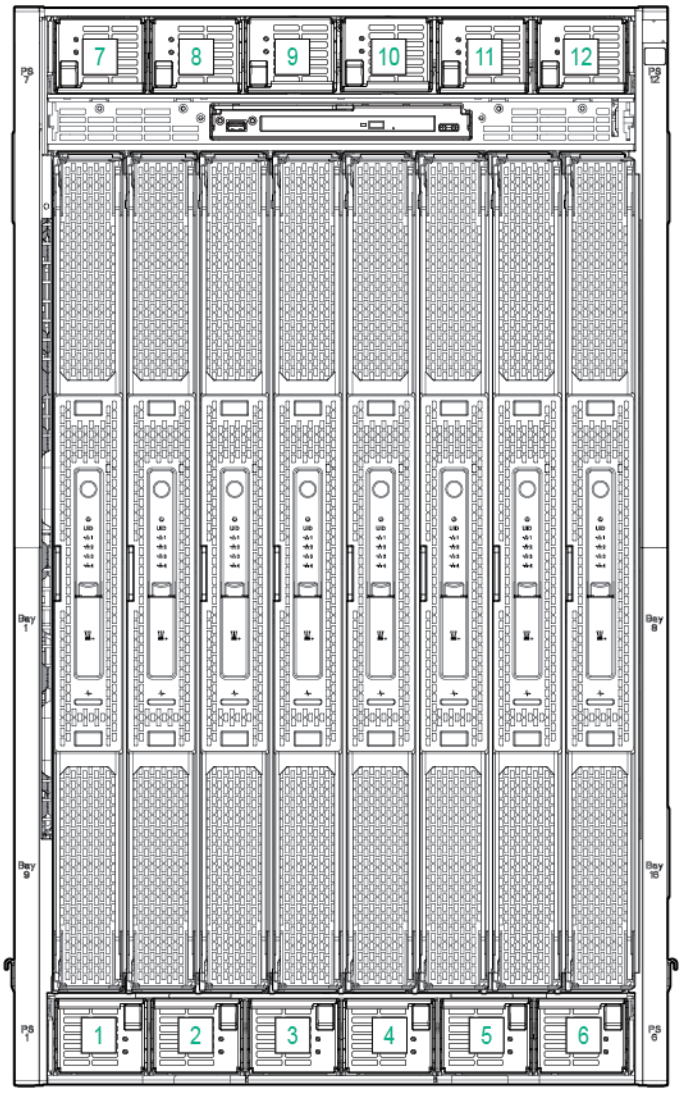



| Item | Description |
|---|---|
| 1 | Power supply bay 7 |
| 2 | Power supply bay 8 |
| 3 | Power supply bay 9 |
| 4 | Power supply bay 10 |
| 5 | Power supply bay 11 |
| 6 | Power supply bay 12 |

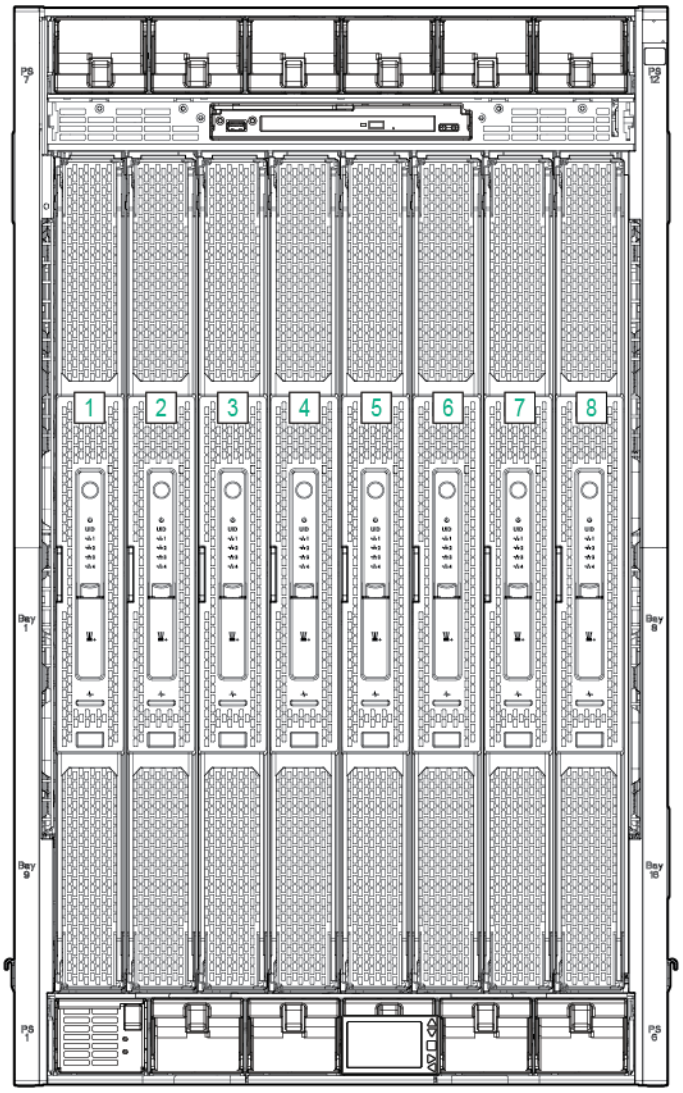
*Table Continued*

| Item | Description |
|---|---|
| 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 | Blade slots |
| 17 | Air intake slot (**Do not block**) |

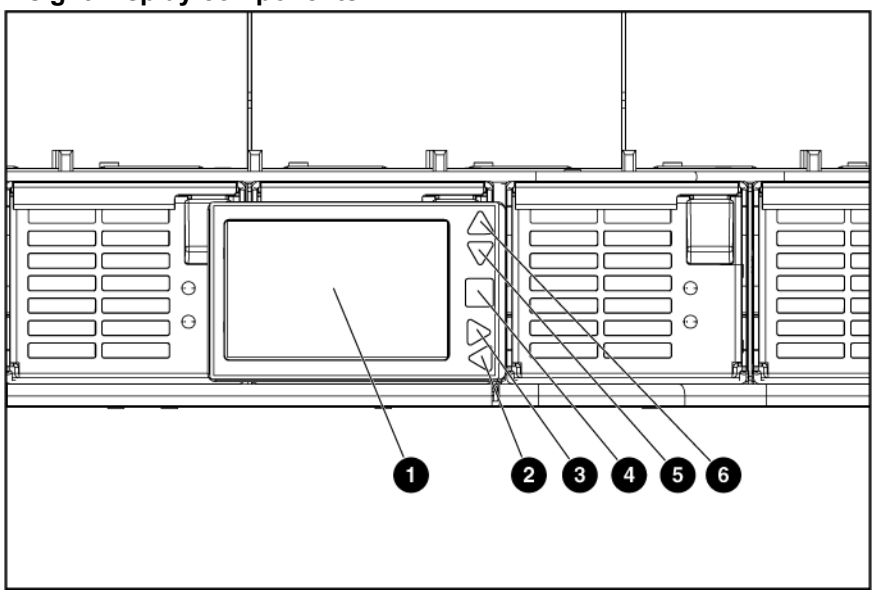
### Power supply bay numbering



### Server blade slot numbering

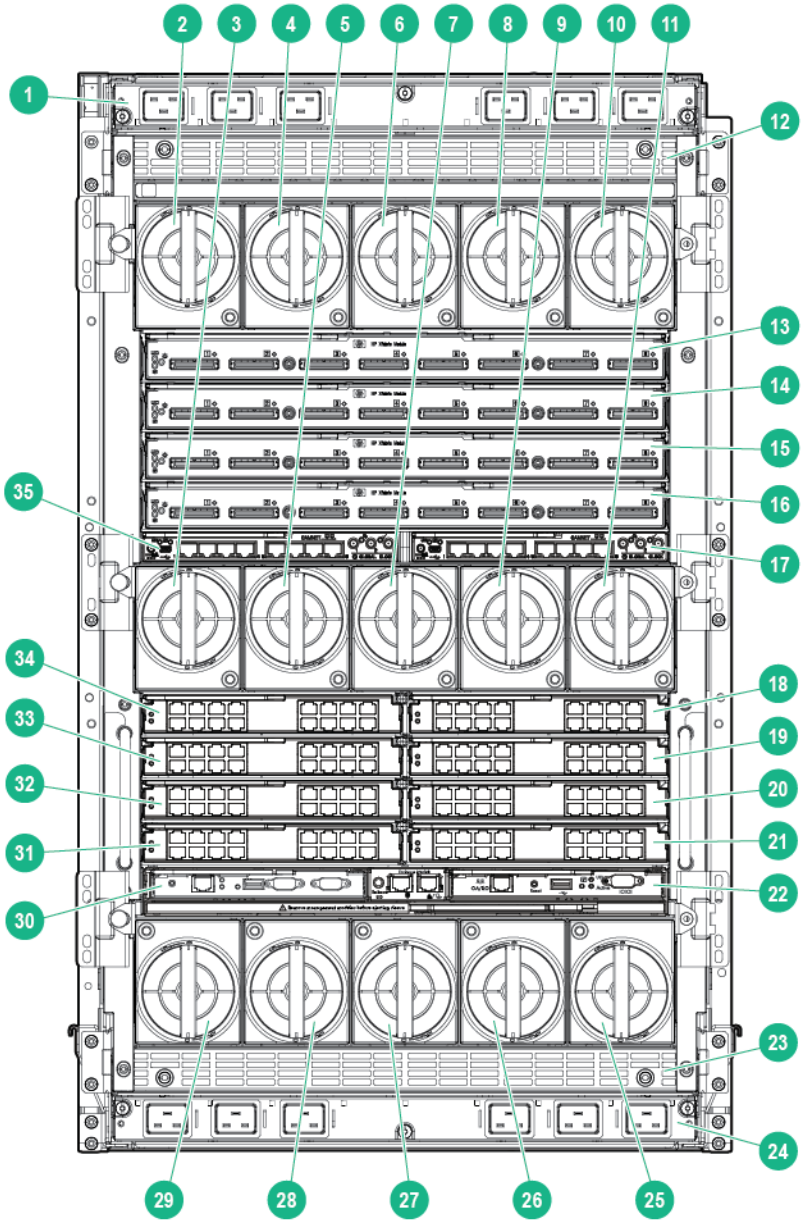


**Insight Display components**




| 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 up the menu selection 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 |

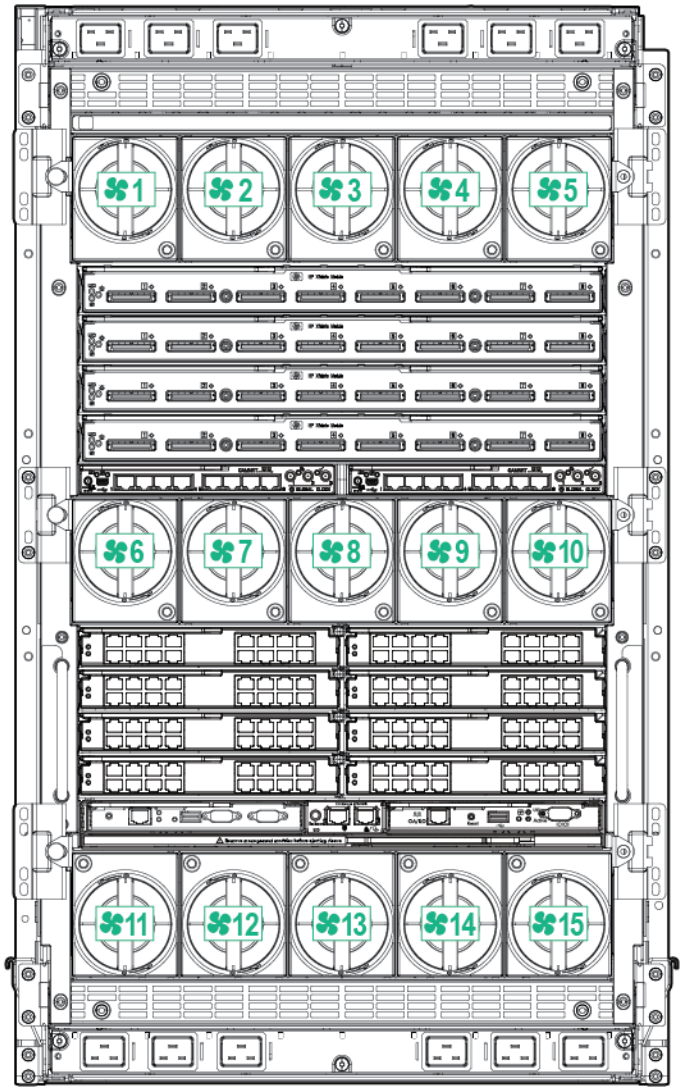
*Table Continued*

| 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 | OA 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 | OA 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 |

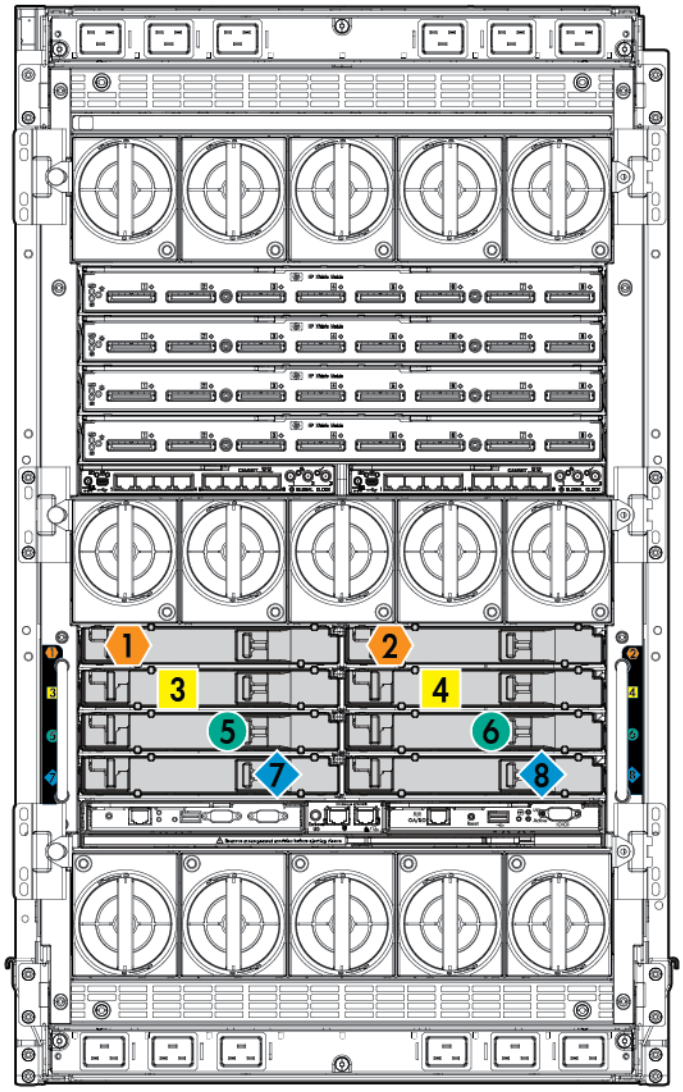
### Fan bay numbering




### Interconnect bay numbering

Each Integrity Superdome X enclosure requires interconnect modules to provide network access for data transfer. Interconnect modules reside in bays located in the rear of the enclosure. Review blade slot numbering to determine which external network connections on the interconnect modules are active.

To support server blade LAN and Fibre Channel I/O connections, an appropriate type of interconnect module is installed according to bay location.




| Server blade port | Compute enclosure interconnect bay | Interconnect bay label |
|---|---|---|
| FlexLOM 1 port 1 | 1 | 1 |
| FlexLOM 1 port 2 | 2 | 2 |
| FlexLOM 2 port 1 | 1 | 1 |
| FlexLOM 2 port 2 | 2 | 2 |
| Mezzanine 1 port 1 | 3 | 3 |

*Table Continued*

| Server blade port | Compute enclosure interconnect bay | Interconnect bay label |
|---|---|---|
| Mezzanine 1 port 2 | 4 |  |
| Mezzanine 1 port 3 | 3 |  |
| Mezzanine 1 port 4 | 4 |  |
| Mezzanine 2 port 1 | 5 |  |
| Mezzanine 2 port 2 | 6 |  |
| Mezzanine 2 port 3 | 7 |  |
| Mezzanine 2 port 4 | 8 |  |
| Mezzanine 3 port 1 | 7 |  |
| Mezzanine 3 port 2 | 8 |  |
| Mezzanine 3 port 3 | 5 |  |
| Mezzanine 3 port 4 | 6 |  |

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

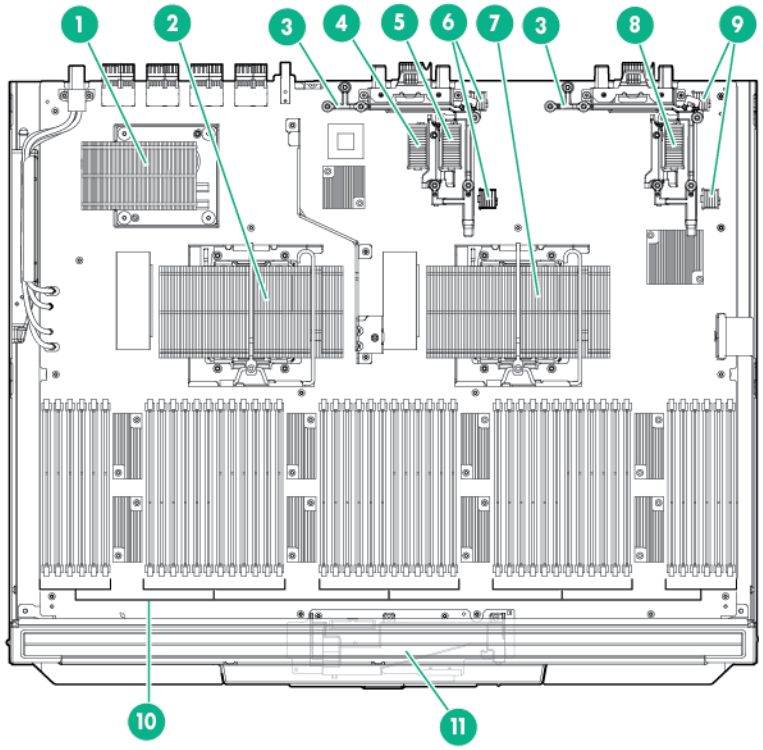
**More information**

**Integrity Superdome X QuickSpecs**

# Server blade overview

| Product | Processors | DIMM slots | Supported DIMM size | PCIe I/O Mezzanine card capacity | PCI I/O FlexLOM card capacity |
|---|---|---|---|---|---|
| BL920s Gen8<br>BL920s Gen9 | 2 | 48 | 16 GB and 32 GB (Gen8)<br>16 GB, 32 GB, and 64 GB (Gen9) | 3 | 2 |

### Server blade components



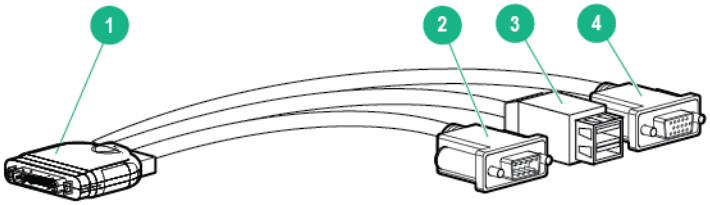

| Item | Description |
|---|---|
| 1 | sx3000 crossbar fabric ASIC (referred to as XNC by the Health Repository and in event logs) |
| 2 | CPU 1 |
| 3 | Mezzanine bracket |
| 4 | Mezzanine connector 1 Type A |
| 5 | Mezzanine connector 2 Type A/B |
| 6 | FlexLOM slot 2 |
| 7 | CPU 0 |
| 8 | Mezzanine connector 3 Type A/B |
| 9 | FlexLOM slot 1 |
| 10 | DDR3 DIMM slots (48) — BL920s Gen8<br>DDR4 DIMM slots (48) — BL920s Gen9<br>LR DIMM slots (48) — BL920s Gen9 |
| 11 | 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 (serial terminal or monitor) or USB devices. The SUV port is located behind a door that stays closed when an SUV cable is not installed.

**CAUTION:** The SUV cable is not designed to be used as a permanent connection; therefore 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 blade.

**IMPORTANT:** The SUV port does not provide console access and the serial port is unused.




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

### More information

**Integrity Superdome X QuickSpecs**

# System specifications

## Dimensions and weights

### Component dimensions

#### Table 1: Component dimensions

| Component | Width | Depth | Height |
|---|---|---|---|
| Compute enclosure | 44.7 cm<br>17.6 in | 82.8 cm<br>32.6 in | 79.8 cm<br>31.4 in |
| Server blade | 5.13 cm<br>2.02 in | 52.25 cm<br>20.60 in | 62.18 cm<br>24.48 in |

### Component weights

#### Table 2: Compute enclosure weights

| Component | Weight | Max. quantity per enclosure |
|---|---|---|
| Compute enclosure chassis | 64.9 kg<br>143.0 lb | 1 |
| I/O chassis | 22.1 kg<br>48.7 lb | 1 |
| Midplane Brick | 18.8 kg<br>41.5 lb | 1 |
| OA tray | 3.6 kg<br>8.0 lb | 1 |
| Active Cool Fan | 0.9 kg<br>2.7 lb | 15 |
| Power supply module | 2.3 kg<br>5.0 lb | 12 |
| Enclosure DVD module | 2.1 kg<br>4.7 lb | 1 |
| OA module | 0.8 kg<br>1.8 lb | 2 |

*Table Continued*

| Component | Weight | Max. quantity per enclosure |
|---|---|---|
| GPSM | 1.2 kg<br>2.6 lb | 2 |
| XFM | 3.3 kg<br>7.3 lb | 4 |
| I/O interconnect module | 1.3 kg<br>2.9 lb | 8 |
| Server blade | 12-16 kg<br>26-35 lb | 8 |

**More information**
**Generic Site Preparation Guide**

# Rack specifications

### Table 3: Rack specifications

| Rack | Total cabinet area with packing materials<br>(H x D x W) | U height | Width | Depth | Dynamic load<br>(gross) | Static load |
|---|---|---|---|---|---|---|
| HPE 642 1075 mm Intelligent Rack | 246.80 x 129.20 x 90 cm<br>(85.35 x 50.87 x 35.43 in) | 42U | 597.8 mm<br>(23.54 in) | 1,085.63 mm<br>(42.74 in) | 1,134 kg<br>(2,500 lb) | 1,360.8 kg<br>(3,000 lb) |
| HPE 642 1200 mm Shock Intelligent Rack | 218.00 x 147.00 x 90 cm<br>(85.82 x 57.87 x 35.43 in) | 42U | 597.8 mm<br>(23.54 in) | 1,300.2 mm<br>(51.19 in) | 1,460.11 kg<br>(3,219 lb) | 1,360.78 kg<br>(3,000 lb) |

**More information**

**Generic Site Preparation Guide**

# Internal and external site door requirements

Internal site doorways must obey the following height requirements:

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

To account for the lifted height of the pallet, external doorways must obey the following height requirements:

- For the 642 1075 mm rack — no less than 216.80 cm (85.35 in)
- For the 642 1200 mm rack — no less than 215.00 cm (84.65 in)

**More information**

**Generic Site Preparation Guide**

# Electrical specifications

### Table 4: 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 VAC to 240 VAC line-to-line (phase-to-phase), 3-phase<br>50/60 Hz | NEMA L15-30p, 3-Pole, 4-wire, 3 m (10 ft) power cord | 30 A 3-phase | L15-30R. 3-pole, 4-wire | 4 |
| 3–phase | 220 VAC to 240 VAC line-to-neutral 3-phase<br>50/60 Hz | IEC 309, 4-pole, 5-wire, Red, 3 m (10 ft) power cord | 16 A | IEC 309, 4-pole, 5-wire, red | 4 |
| Single-phase | 200 VAC to 240 VAC<br>50/60 Hz | IEC 320<br>C19-C20 | 16/20 A Single-phase | IEC 320<br>C19 | 12 |

### Table 5: 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 6: Enclosure single-phase HPE 2400 W power supply specifications

| Specification | Value |
|---|---|
| Power cord | IEC-320 C19-C20 |
| Output | 2450 W per power supply |
| **Input requirements** | |
| Rated input voltage | 200–240 VAC |
| Rated input frequency | 50-60 Hz |
| Rated input current per power supply (maximum) | 13.8 A at 200 VAC<br>13.3 A at 208 VAC<br>12.6 A at 220 VAC |
| Maximum inrush current | 100 A for 10 ms |
| Ground leakage current | 3.5 mA |
| Power factor correction | 0.98 |

### Table 7: Enclosure 3-phase 2400 W power supply specifications (North America/ Japan)

| Specification | Value |
|---|---|
| Power cords (4) | NEMA L15-30p<br>3.0 m (10 ft) |
| Max input current per line cord | 24.0 A at 200 VAC<br>23.1 A at 208 VAC |
| Output | 2450 W per power supply |
| **Input requirements** | |
| Rated input voltage | 200–240 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 8: Enclosure 3-phase 2400 W power supply specifications (International)

| Specification | Value |
|---|---|
| Power cords (4) | IEC-309 220–240 VAC, 5-pin, 16 A<br>3.0 m (10 ft) |
| Max input current per line cord | 12.1 A at 220 VAC<br>11.1 A at 240 VAC |
| Output | 2450 W per power supply |
| **Input requirements** | |
| Rated input voltage | 200–240 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 9: Enclosure power requirements

| Power required (50–60 Hz) | Watts | VA |
|---|---|---|
| User expected maximum power | 9065 | 9250 |

### Table 10: 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 60 A | 200–240 VAC line-to-line (phase-to-phase), 3–phase<br>50/60 Hz | IEC 309 60 A 3-Pole, 4 wire, Blue, 3.6 m (11.8 ft) power cord | IEC 309 60 A 3-Pole, 4 wire, Blue | 2 |
| 3–phase 32 A | 220–240 VAC line-to-neutral 3–phase<br>50/60 Hz | IEC 309 32 A 4-Pole, 5 wire, Red, 3.6 m (11.8 ft) power cord | IEC 309 32 A 4-Pole, 5 wire, Red | 2 |

*Table Continued*

| 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 63 A | 200–240 VAC<br>50/60 Hz | IEC 309 63 A Single Phase Blue, 3.6 m (11.8 ft) power cord | IEC 309 63 A Single Phase, Blue | 4 |
| Single-phase 30 A | 200–240 VAC<br>50/60 Hz | NEMA L6-30P Single Phase, 3.6 m (11.8 ft) power cord | NEMA L6-30R Single Phase | 6 |

**More information**

**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 nonoperating Integrity Superdome X systems.

| Specification | Value |
|---|---|
| **Temperature range** | |
| 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) |
| Nonoperating (powered off) | +5° C to +45° C (41° F to 113° F) |
| Nonoperating (storage) | -40° C to +80° C (-40° F to 176° F) |
| **Humidity Range (noncondensing)** | |
| 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 |
| Nonoperating (powered off) | 8% RH to 90% RH and 29° C DP |
| Nonoperating (storage) | 8% RH to 90% RH and 32° C DP |

[1] The Recommended Operating Range is recommended for continuous operation. Operating within the Allowable Operating Range is supported but might result in a decrease in system performance.

**More information**

**Generic Site Preparation Guide**

## Cooling requirements

Integrity Superdome X 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 the system 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 X 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.

**IMPORTANT:** The optimal equipment orientation is a parallel layout 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 the room, and can lead to unexpected equipment problems.

**More information**

**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. These contaminant levels are described in the current version of *ISA–71.04 Environmental Conditions for Process Measurement and Control Systems: Airborne Contaminants*.

**More information**

- **Generic Site Preparation Guide**
- **ISA–71.04 Environmental Conditions for Process Measurement and Control Systems: Airborne Contaminants**

## 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.

Understand the acoustic noise specifications relative to operator positions within the computer room when adding Integrity Superdome X systems to computer rooms with existing noise sources.

**More information**

**Generic Site Preparation Guide**

# Sample site inspection checklist for site preparation

See **Customer and Hewlett Packard Enterprise Information** and **Site inspection checklist**. You can use these tables to measure your progress.

### Table 11: 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 12: Site inspection checklist

**Check either Yes or No. If No, include comment or date.**

**Computer Room**

| Number | Area or condition | Yes | No | Comment or Date |
|---|---|---|---|---|
| 1. | Do you have a completed floor plan? | | | |
| 2. | Is adequate space available for maintenance needs?<br>Front 91.4 cm (36 inches) minimum and rear 91.4 cm (36 inches) 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? | | | |

*Table Continued*

**Check either Yes or No. If No, include comment or date.**

**Computer Room**

| Number | Area or condition | Yes | No | Comment or Date |
|---|---|---|---|---|
| 5. | Is a raised floor installed and in good condition?<br>What is the floor to ceiling height? [228 cm (7.5 ft) 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?<br>If painted, judge the need for particulate test. | | | |
| **Power and Lighting** | | | | |
| 13. | Are lighting levels adequate for maintenance? | | | |
| 14. | Are AC outlets available for servicing needs (for example, laptop usage)? | | | |
| 15. | Does the input voltage correspond to equipment specifications? | | | |
| 15a. | Is dual source power used? If so, identify types and evaluate grounding. | | | |
| 16. | Does the input frequency correspond to equipment specifications? | | | |
| 17. | Are lightning arrestors installed inside the building? | | | |
| 18. | Is power conditioning equipment installed? | | | |
| 19. | Is a dedicated branch circuit available for equipment? | | | |
| 20. | Is the dedicated branch circuit less than 22.86 m (75 ft)? | | | |
| 21. | Are the input circuit breakers adequate for equipment loads? | | | |
| **Safety** | | | | |
| 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? | | | |

*Table Continued*

| Check either Yes or No. If No, include comment or date. | | | | |
|---|---|---|---|---|
| **Computer Room** | | | | |
| **Number** | **Area or condition** | **Yes** | **No** | **Comment or Date** |
| 25. | Does the computer room have anti-static flooring installed? | | | |
| 26. | Do any equipment servicing hazards exist (loose ground wires, poor lighting, and so on)? | | | |
| **Cooling** | | | | |
| 27. | Can cooling be maintained between 5° C (41° F) and 40° C (104° F) up to 1,525 m (5,000 ft)? Derate 1° C/ 305 m (1.8° F/1,000 ft) above 1,525 m (5,000 ft) and up to 3,048 m (10,000 ft). | | | |
| 28. | Can temperature changes be held to 5° C (9° F) per hour with tape media? Can temperature changes be held to 20° C (36° F) per hour without tape media?<br>The following are examples of different types of temperature changes.<br>• **Unidirectional changes**<br>— Storage operating temperature changes in excess of 20° C (36° F) is not within tolerance. Allow one hour per 20° C (36° F) to acclimate.<br>• **Multidirectional spurious changes**<br>— Operating temperatures that increase 10° C (18° F) and then decrease 10° C (18° F). This temperature change Is within tolerance as a 20° C (36° F) change per hour.<br>• **Repetitive changes**<br>— Every 15 minutes, there is a repetitive, consistent 5° C (9° F) up and down change. This repetitive temperature change is a 40° C (72° F) change per hour and not within tolerance.<br>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** | | | | |
| 31. | Are cabinets available for tape and disc media? | | | |
| 32. | Is shelving available for documentation? | | | |

*Table Continued*

| Check either Yes or No. If No, include comment or date. | | | | |
|---|---|---|---|---|
| **Computer Room** | | | | |
| **Number** | **Area or condition** | **Yes** | **No** | **Comment or Date** |
| **Training** | | | | |
| 33. | Are personnel enrolled in the System Administrator Course? | | | |
| 34. | Is on-site training required? | | | |

**More information**

**Generic Site Preparation Guide**

# Updating firmware

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

There are two methods for updating the complex firmware; using SUM or manually.

## Prerequisites

Before updating firmware, Hewlett Packard Enterprise strongly recommends implementing these security best practices:

- Isolate the management network by keeping it separate from the production network and not putting it on the open internet without additional access authentication.
- Patch and maintain LDAP and web servers.
- Run latest virus and malware scanners in your network environment.

## Installing the latest complex firmware using SUM

The SUM utility enables you to deploy firmware components from either an easy-to-use interface or a command line. It has an integrated hardware discovery engine that discovers the installed hardware and the current versions of firmware in use on target servers. SUM contains logic to install updates in the correct order and ensure that all dependencies are met before deployment of a firmware update. It also contains logic to prevent version-based dependencies from destroying an installation and ensures that updates are handled in a manner that reduces any downtime required for the update process. SUM does not require an agent for remote installations.

SUM is included in the downloadable firmware bundles.

For more information about SUM, see the *Smart Update Manager User Guide* (**http://www.hpe.com/info/sum-docs**).

**NOTE:** You can also update firmware manually. There are different firmware bundles for each method. See the detailed instructions provided in the release notes for the firmware bundle for more information about manually updating firmware. Also see **Manually updating the complex firmware** on page 34.

## Manually updating the complex firmware

To update the complex firmware manually, you will:

**Procedure**

1. Download the firmware bundle.
2. Update the complex and nPartition firmware.
3. Update I/O firmware and SMH and WBEM providers.
4. Be sure to use only the recommended I/O firmware to avoid incompatibility with other system firmware.
5. Check for driver and firmware updates for other devices.

To use SUM to update the complex firmware, see **Installing the latest complex firmware using SUM** on page 34.

## Download firmware bundle

Hewlett Packard Enterprise recommends running only approved firmware versions. For the latest approved firmware versions, see the *Firmware Matrix for HPE Integrity Superdome X servers* at **http://www.hpe.com/info/superdomeX-firmware-matrix**. Follow the instructions provided in the bundle Release Notes.

For special OS requirements, see the Superdome X firmware bundle Release Notes and these OS white papers:

- *Running Linux on HPE Integrity Superdome X* white paper at **http://www.hpe.com/support/superdomeXlinux-whitepaper**
- *Running Microsoft Windows Server on HPE Integrity Superdome X* white paper at **http://www.hpe.com/support/superdomeXwindows-whitepaper**
- *Running VMware vSphere on HPE Integrity Superdome X* white paper at **http://www.hpe.com/support/superdomeXvmware-whitepaper**

## Update the complex firmware

To manually update the complex firmware:

**Procedure**

1. Refer to the *Firmware Matrix for HPE Integrity Superdome X servers* document at **http://www.hpe.com/info/superdomeX-firmware-matrix**.
2. Select the complex firmware version for your OS to download and extract the latest HPE Integrity Superdome X firmware bundle. Follow the instructions provided in the bundle Release Notes.
3. Copy the bundle to a media accessible from the OA.
4. Connect a PC to OA over Telnet or SSH and login to the CLI. For more information, see **Connecting a PC to the OA service port**.
5. At the CLI prompt, use the `connect blade <blade#>` command to connect to each blade, and then use the `exit` command to return to the OA prompt.

   For example:

   ```
   OA> connect blade 1
   </>hpiLO-> exit
   ```

   **IMPORTANT:** This will ensure that there is communication between OA and all blades. The firmware update will fail if communication from OA to any blade is not working.

6. Use the Health Repository to discover currently indicted and deconfigured components.

   Launch the Health Repository viewer with the `SHOW HR` command on the Monarch OA. List indicted and deconfigured components with the `SHOW INDICT` and `SHOW DECONFIG` commands.

   Address all indicted and deconfigured components before proceeding. Replace a deconfigured blade or OA before starting the firmware update.

7. To start the firmware update, use the `UPDATE FIRMWARE` command; for example **`update firmware <uri> all`** , where <*uri*> is the path to the firmware bundle. The "all" option must be used to update complex AND partition firmware.

   The Firmware update process can take up to 1 hour to complete. During this process, you might notice no progress for long periods of time and connection to OA will be lost when OA reboots between updates.

   **NOTE:** For more information about using the `UPDATE FIRMWARE` command, see the *HPE Integrity Superdome X and Superdome 2 Onboard Administrator Command Line Interface User Guide*.

8. After OA is rebooted, reconnect to OA and login to confirm successful updates. Run the `UPDATE SHOW FIRMWARE` command to display the complex bundle version and the firmware versions installed.

   Example:

   ```
   Configured complex firmware bundle version: 7.6.0
   Firmware on all devices matches the complex configured bundle version
   ```

   **NOTE:** The bundle contains firmware for the complex and npartition. The bundle does **not** contain I/O card drivers or firmware.

9. Verify that all partitions are ready for use with the `parstatus -P` command.

## I/O firmware and drivers

It is important that you install the recommended I/O adapter firmware and drivers for the appropriate complex firmware bundle. For information about supported firmware and drivers for supported I/O cards, see *Firmware Matrix for HPE Integrity Superdome X servers* at **http://www.hpe.com/info/superdomeX-firmware-matrix**. Use the information provided in this document to download the correct firmware bundle and drivers.

**IMPORTANT:** Installing incorrect or unsupported firmware can cause unpredictable behavior. The latest IO device firmware versions might not be supported for your system. Be sure to use **only** the firmware versions that are qualified and recommended for your system. Do **not** use the SPP as a source of device firmware for Superdome X systems.

## SMH and WBEM providers

Hewlett Packard Enterprise recommends that you install the latest versions of the SMH and WBEM providers for your OS.

**NOTE:** You must install the SMH package before the WBEM providers or in the same session.

Use the information provided in the **Firmware Matrix for HPE Integrity Superdome X servers** document to download the correct WBEM providers.

Reboot is not required for SMH and WBEM providers changes to take effect.

## Drivers and firmware for other devices

Interconnect modules also contain firmware which can be updated.

Before installing any firmware or drivers, be sure to see the *Firmware Matrix for HPE Integrity Superdome X servers* at **http://www.hpe.com/info/superdomeX-firmware-matrix**. Use only the specified firmware and drivers. Use the information provided in this document to download the correct versions. Also see the Linux and Windows white papers for additional updates that might be needed.

# Superdome X operating systems

This is the current OS support information for Superdome X systems.

## OSs supported

Integrity Superdome X supports these operating systems:

- Microsoft Windows Server
  - 2012 R2 (BL920s, all versions)
  - 2016 (BL920s, all versions)
- VMware
  - vSphere 5.5 U2 (BL920s Gen8 up to 8 sockets)
  - vSphere 5.5 U3 (BL920s Gen8 and Gen9 v3 up to 8 sockets)
  - vSphere 6.0 (BL920s Gen8 up to 8 sockets)
  - vSphere 6.0 U1 (BL920s Gen8 up to 16 sockets and Gen9 v3 up to 8 sockets)
  - vSphere 6.0 U2 (BL920s Gen8 up to 16 sockets and Gen9 v3 & v4 up to 8 sockets)
  - vSphere 6.0 U3 (BL920s Gen8 up to 16 sockets and Gen9 v3 & v4 up to 8 sockets)
- Red Hat Linux
  - RHEL 6.5 (BL920s Gen8)
  - RHEL 6.6 (BL920s Gen8 and Gen9 v3)
  - RHEL 6.7 (BL920s, all versions)
  - RHEL 6.8 (BL920s, all versions)
  - RHEL 6.9 (BL920s, all versions)
  - RHEL 7.0 (BL920s Gen8)
  - RHEL 7.1 (BL920s Gen8 and Gen9 v3)
  - RHEL 7.2 (BL920s, all versions)
  - RHEL 7.3 (BL920s, all versions)
- SuSE Linux
  - SLES 11 SP3 (BL920s Gen8 and Gen9 v3)
  - SLES 11 SP3 for SAP (BL920s Gen8 and Gen9 v3)
  - SLES 11 SP4 (BL920s, all versions)
  - SLES 12 (BL920s Gen8 and Gen9 v3)
  - SLES 12 SP1 (BL920s, all versions)
  - SLES 12 SP2 (BL920s, all versions)

Support for some OSs requires a minimum firmware version. For the minimum required firmware versions, see the *Firmware Matrix for HPE Integrity Superdome X servers* at **http://www.hpe.com/info/superdomeX-firmware-matrix**.

For the latest list of supported OSs, see the *HPE Integrity Superdome X Operating System Reference* at **http://www.hpe.com/info/enterprise/docs** (**Servers** > **Integrity Servers** > **Integrity Superdome X**) or the *Firmware Matrix for HPE Integrity Superdome X servers* at **http://www.hpe.com/info/superdomeX-firmware-matrix**.

# Using Microsoft Windows Server

For detailed information about using the Windows OS on Integrity Superdome X systems, see the *Running Microsoft Windows Server on HPE Integrity Superdome X* white paper at **http://www.hpe.com/support/superdomeXwindows-whitepaper**.

# Using VMware

For detailed information about using VMware on Integrity Superdome X systems, see the *Running VMware vSphere on HPE Integrity Superdome X* white paper at **http://www.hpe.com/support/superdomeXvmware-whitepaper**.

# Using Red Hat Linux

For detailed information about using RHEL on Integrity Superdome X systems, see the *Running Linux on HPE Integrity Superdome X* white paper at **http://www.hpe.com/support/superdomeXlinux-whitepaper**.

# Using SuSE Linux

For detailed information about using SLES on Integrity Superdome X systems, see the *Running Linux on HPE Integrity Superdome X* white paper at **http://www.hpe.com/support/superdomeXlinux-whitepaper**.

# Partitioning

This chapter provides information on partition identification and operations.

## Partition Identification

Every partition has two identifiers: a partition number (the primary identifier from an internal perspective) and a partition name (a more meaningful handle for administrators).

## Partition Number

- A numeric value that is well suited for programmatic use and required by the hardware for configuring routing, firewalls, etc. related to nPartitions.
- Once a partition has been created, its partition number cannot be changed. In effect, a different partition number implies a different partition.
- Only one instance of an nPartition with a given partition number can exist within a complex.
- The range of partition numbers for nPartitions is 1 – 255.

## Partition Name

- A partition name is a string value which directly conveys meaning.
- The name of a partition can be changed; this includes after the partition has been created and even if a partition is active (such is the nature of an alias).
- A partition name should at least have one of the following non-numeric characters:
  - a-z
  - A-Z
  - - (dash)
  - _ (underscore)
  - . (period)

  Any other non-numeric character is not allowed in a partition name.
- nPartition names are unique within a complex.

## Partition Power Operations

To activate an inactive nPartition, use the `poweron partition` command on the OA CLI.

To make an active partition inactive, use the `poweroff partition` command on the OA CLI.

To reboot an active nPartition, use the `reboot partition` command on the OA CLI.

To do a TOC on the nPartition and obtain a core dump, use the `toc partition` command from the OA CLI.

To list all the nPartitions and their boot states and runstates (active or inactive states), use the `parstatus -P` command on the OA CLI.

For more information on the usage of these commands, see “Partition commands” in the *HPE Integrity Superdome X and Superdome 2 Onboard Administrator Command Line Interface User Guide*.

# PARSTATUS

The status of a partition and its assigned resources can be obtained by exercising various options available with the OA CLI command `parstatus`. For more information on the `parstatus` command, see “Partition commands” in the *HPE Integrity Superdome X and Superdome 2 Onboard Administrator Command Line Interface User Guide*.

# UUID for nPartitions

The partition firmware subsystem will generate an unique nPar UUID when a user creates an nPartition. The UUID will be communicated to system firmware, which places the UUID on the SMBIOS for the OS and the management applications to pick up and use this as “Universally Unique Identifiers” of the partition. The UUID would also be available for the manageability and the deployment tools and applications through established SOAP interfaces that can query UUID. Customers can view the UUID of the nPartition by issuing `parstatus -p <npar_id> -V` under the field `"Partition UUID"`.

# nPartition states

The nPartition state indicates whether the nPartition has booted and represents the power state of nPartition. The nPartitions will have one of the following states:

- Active nPartition
- Inactive nPartition
- Unknown

### Active nPartition

An nPartition is active when a `poweron` operation is initiated on the nPartition and the firmware boot process is started.

### Inactive nPartition

An nPartition is considered inactive when it is not powered on. An nPartition is in inactive state after it has been created or shut down.

### Unknown nPartition

An nPartition might report a partition state of “Unknown” and a runstate of “DETACHED” after an OA restart. This state is possible when the firmware is not able to identify the correct nPartition state due to internal firmware errors at OA startup. The state is persistent and can only be cleared by force powering off the nPartition from the OA. A partition in this state will not accept any partition operation for the nPartition, except `parstatus` and force `poweroff`. Any active OS instances continue to run unhindered even when the nPartition is in an Unknown state.

If any attempts are made to issue partition administration operations, the following error occurs:

```
Error: Partition state unavailable due to firmware errors. All OS instances
running in this partition will continue unimpacted.
```

**NOTE:** To clear this partition state:

1. Shut down all OS instances in the nPartition.
2. Force power off the nPartition from the OA.
3. Power on the nPartition from the OA.

This is an example of `parstatus` output for a partition in the DETACHED state:

**`parstatus -P`**

```
[Partition]
Par State/RunState  Status* # of  # of  ILM/(GB)**    Partition Name
=== ============== ======= ==== ==== ============= ==============
1   Unknown/DETACHED  OK    8    0   0.0/8192.0     nPar0001
*  D-Degraded
** Actual allocated for Active and User requested for Inactive partitions
```

To list all the nPartitions and their boot states and runstates (active or inactive states), use the `parstatus -P` command on the OA CLI.

**`parstatus -P`**

```
[Partition]
Par State/RunState  Status* # of  # of  ILM/(GB)**    Partition Name
=== ============== ======= ==== ==== ============= ==============
1   Inactive/DOWN     OK    4    0    0.0/4096.0    nPar0001
2   Active/EFI        OK    4    0    0.0/4096.0    nPar0002
*  D-Degraded
** Actual allocated for Active and User requested for Inactive partitions
```

# nPartition runstate

The partition runstates displayed by the status commands show the actual state of the partition varying from a firmware boot state to a state where an OS has successfully booted in a partition. The following table lists the runstates for an nPartition.

| State | Description |
|---|---|
| DOWN | The partition is inactive and powered off. |
| ACTIVATING | A boot operation has been initiated for this partition. |
| FWBOOT | The boot process is in the firmware boot phase for this partition and the partition has transitioned into the active status. |
| EFI | The partition is at the EFI shell. |
| OSBOOT | The boot process has started booting the OS in this partition. |
| UP | The OS in this partition is booted and running.[1] |
| SHUT | A shutdown/reboot/reset operation has been initiated on this partition. |

*Table Continued*

| State | Description |
|---|---|
| DEACTIVATING | The partition is being deactivated (powered down) as part of a shutdown or reboot operation. |
| RESETTING | A partition reset is in progress. |
| MCA | A machine check (MCA) has occurred in the partition and is being processed. |
| DETACHED | The status is not known. This might reflect an error condition or a transitional state while partition states are being discovered. |

[1] OS WBEM drivers must be installed to see this runstate.

# nPartition and resource health status

The nPartition and resource status reveals the current health of the hardware. The nPartition resources can have one of the following usage status:

| Resource Usage | Description |
|---|---|
| Empty | The slot has no resource. |
| Inactive | Resource is inactive. |
| Unintegrated | Firmware is in the process of discovering or integrating the resource. It cannot be used for partition operations. |
| Active | The resource is active in the partition. |

The partition resources might display one of the following health status:

| Resource health | Meaning | Comment |
|---|---|---|
| OK | Okay/healthy | Resource is present and usable. |
| D | Deconfigured | Resource has been deconfigured. |
| I | Indicted | Resource has been indicted. |
| PD | Parent Deconfigured | A parent resource has been deconfigured. An example is the status of a memory DIMM which is healthy when the blade in which it is located is deconfigured. The DIMM status is then PD. |
| PI | Parent Indicted | Similar to PD except the parent resource has been indicted. |
| I D | Indicted and Deconfigured | A resource has been indicted and deconfigured |
| PI PD | Parent Indicted and Parent Deconfigured | A parent resource has been indicted and deconfigured. |

The health of an nPartition depends on the health of its own resources. If there are unhealthy resources, the health of the partition is marked as Degraded. If all the resources in the partition are healthy, the health of the partition is reported as OK.

# Troubleshooting

**Symptom**

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

This section is not intended to be a comprehensive guide to all of the tools that can be used for troubleshooting the system. See the *HPE Integrity Superdome X and Superdome 2 Onboard Administrator User Guide* and the *HPE Integrity Superdome X and Superdome 2 Onboard Administrator Command Line Interface User Guide* for additional information on troubleshooting using the OA.

# General troubleshooting methodology

The system provides the following sources of information for troubleshooting:

- LED status information
- Insight Display
- OA CLI, Health Repository (HR) and Core Analysis Engine (CAE)
- OA GUI

**NOTE:**

Examples in this section might reflect other systems and not the currently supported configuration of the Integrity Superdome X system.

## LED status information

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

See **LEDs and components** on page 57 for more information.

**TIP:**

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

## OA access

You can access the OA by entering the 169.254.1.x address using either a Telnet session or a SSH connection. This can be done by connecting a laptop to the **service** port on the OA tray using a standard LAN cable using Telnet or by using a system which has access to the OA-management LAN (customer LAN connected to the OA RJ45–port). See **Connecting a PC to the OA service port** for more information about connecting to the OA service port.

**IMPORTANT:** The OA service (Link Up) port is not to be confused with the serial port. The OA serial port is only used for initial system setup. Once the network is configured, the OA should be always be accessed using Telnet or SSH connection to the Service port.

## OA CLI

The central point of communication for gaining system status is the active OA.

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

```
sd-oa1> show complex status

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

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

## Gathering power related information

Gather the power information for all of the system components.

**Compute enclosure**

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

```
sd-oa1> show enclosure status

Enclosure 1:
        Status: OK
        Enclosure ID: OK
        Unit Identification LED: Off
        Diagnostic Status:
                Internal Data        OK
                Thermal Danger       OK
                Cooling              OK
                Device Failure       OK
                Device Degraded      OK
                Redundancy           OK
                Indicted             OK

Onboard Administrator:
        Status: OK

Standby Onboard Administrator:
        Status: OK

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

Cooling Subsystem:
        Status: OK
        Fans Good/Wanted/Needed: 15/15/15
        Fan 1:  10760 RPM (60%)
        Fan 2:  10758 RPM (60%)
        Fan 3:  10760 RPM (60%)
        Fan 4:  10760 RPM (60%)
```

```
        Fan 5:  10759 RPM (60%)
        Fan 6:  8600 RPM (48%)
        Fan 7:  8600 RPM (48%)
        Fan 8:  8600 RPM (48%)
        Fan 9:  8599 RPM (48%)
        Fan 10:  8599 RPM (48%)
        Fan 11:  8602 RPM (48%)
        Fan 12:  8601 RPM (48%)
        Fan 13:  8600 RPM (48%)
        Fan 14:  8597 RPM (48%)
        Fan 15:  8600 RPM (48%)



sd-oa1> show enclosure powersupply all
Power Supply #1 Information:
        Status: OK
        AC Input Status: OK
        Capacity: 2450 Watts
        Current Power Output: 918 Watts
        Serial Number: 5BGXF0AHL4B0S6
        Product Name: HPE 2400W 80 PLUS PLATINUM
        Part Number: 588603-B21
        Spare Part Number: 588733-001
        Product Ver: 07
        Diagnostic Status:
                Internal Data        OK
                Device Failure       OK
                Power Cord           OK
                Indicted             OK
```

Similar information will be displayed for all other power supplies.

**Collecting power status information for components at the compute enclosure**

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

**NOTE:** OA displays XFM2 information as SXFM.

**NOTE:** Similar information should be displayed for XFMs 1 through 3.

```
sd-oa1> show xfm status all

Bay 4 SXFM Status:
        Health: OK
        Power: On
        Unit Identification LED: Off
        Diagnostic Status:
                Internal Data        OK
                Management Processor OK
                Thermal Warning      OK
                Thermal Danger       OK
                Power                OK <<<<
                Firmware Mismatch    OK
                Indicted             OK
        Link 1: Dormant
        Link 2: Dormant
        Link 3: Dormant
        Link 4: Dormant

sd-oa1> show blade status all
```

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

sd-oa1> show interconnect status all

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

## Gathering cooling related information

Use the following commands to gather all complex cooling information:

- `show enclosure fan all`

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

```
                Missing Device       OK
                Indicted             OK
```

- `show blade status all`

```
sd-oa1> show blade status all
Blade #1 Status:
        Power: On
        Current Wattage used: 1100 Watts
        Health: OK
        Unit Identification LED: Off
        Virtual Fan: 36%
        Diagnostic Status:
                Internal Data        OK
                Management Processor OK
                Thermal Warning      OK
                Thermal Danger       OK
                I/O Configuration    OK
                Power                OK
                Cooling              OK
                Location             OK
                Device Failure       OK
                Device Degraded      OK
                iLO Network          OK
                Device Info          OK
                Firmware Mismatch    OK
                Mezzanine Card       OK
                Deconfigured         OK
                PDHC                 OK
                Indicted             OK
```

- `show xfm status all`

```
sd-oa1> show xfm status all
Bay 4 SXFM Status:
        Health: OK
        Power: On
        Unit Identification LED: Off
        Diagnostic Status:
                Internal Data        OK
                Management Processor OK
                Thermal Warning      OK  <<<
                Thermal Danger       OK  <<<
                Power                OK
                Firmware Mismatch    OK
                Indicted             OK
        Link 1: Dormant
        Link 2: Dormant
        Link 3: Dormant
        Link 4: Dormant
```

- `show interconnect status all`

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

```
                Thermal Danger       OK <<<<
                I/O Configuration    OK
                Power                OK
                Device Failure       OK
                Device Degraded      OK
```

## Gathering failure information

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

- `Show cae –L`

```
sd-oa1> show cae -L

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

- `show CAE –E -n <SI.No>`

  Use `show CAE –E -n <SI.No>` to obtain more details about specific events.

```
oa1> show cae -E -n 70

Alert Number : 70

Event Identification :
   Event ID : 3040
Server blade appears non-functional
   Provider Name : CPTIndicationProvider
   Event Time : Fri May 18 04:56:22 2014
   Indication Identifier : 8304020120518045622

Managed Entity :
   OA Name : sd-oa1
   System Type : 59
   System Serial No. : USExxxxxS
   OA IP Address : aa.bb.cc.dd

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

Summary :
   XFM air intake or exhaust temperature is too hot

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

Probable Cause 1 :
   Data center air conditioning is not functioning properly
Recommended Action 1 :
   Fix the air conditioning problem

Probable Cause 2 :
   The system air intake is blocked
```

```
Recommended Action 2 :
   Check and unblock air intakes

Replaceable Unit(s) :
   Part Manufacturer : HPE
   Spare Part No. : AH341-67001
   Part Serial No. : MYJaaaaaWV
   Part Location : 0x0100ff02ff00ff51  enclosure1/xfm2
   Additional Info : Not Applicable

Additional Data :
   Severity : Critical
   Alert Type : Environmental Alert
   Event Category : System Cooling
   Event Subcategory : Unknown
   Probable Cause : Temperature Unacceptable
   Event Threshold : 1
   Event Time Window (in minutes): 0
   Actual Event Threshold : 1
   Actual Event Time Window (in minutes): 0
   OEM System Model : NA
   Original Product Number : AH337A
   Current Product Number : AH337A
   OEM Serial Number : NA

Version Info :
   Complex FW Version : 7.4.2
   Provider Version : 8.34

Error Log Data :
   Error Log Bundle : 4000000000000e41
```

# Recommended troubleshooting methodology

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

**Procedure**

1. Consult the system console for any messages, emails, or other items pertaining to a server blade error or fault.
2. Use the `SHOW PARTITION CONSOLELOG <nPar ID>` on the Monarch OA to view information about a particular partition.
3. Check the Insight Display for any error messages.
4. View the front panel LEDs (power and health), locally or remotely by using the OA CLI **`SHOW STATUS`** commands, such as **`SHOW ENCLOSURE STATUS`**, **`SHOW COMPLEX STATUS`**, or **`SHOW BLADE STATUS`**.
5. Use the Core Analysis Engine and Health Repository to discover faults, indictments, and deconfigurations.

   Use the `SHOW CAE -L`, `Show CAE -En ####` , and `SHOW HR` (and `SHOW INDICT` and `SHOW DECONFIG`) from HR commands.
6. Perform the actions specified in the Action column.
7. If more details are required, see the Action column of the relevant table provided in this chapter. The Action you are directed to perform might be to access and read one or more error logs (the event log and/or the FPL).

You can follow the recommended troubleshooting methodology and use **Basic troubleshooting** and **Advanced troubleshooting**, or go directly to the subsection of this chapter which corresponds with your chosen entry point. The *Troubleshooting entry points* table below provides the corresponding subsection

or location title for the various entry points (for example, to start by examining the logs, go directly to **Using event logs** on page 75).

### Table 13: Troubleshooting entry points

| Entry point | Subsection or location |
|---|---|
| Front panel LEDs | See **Troubleshooting tables** on page 52, **Troubleshooting tools** on page 57, and **LEDs and components**. |
| Insight Display | See **Insight Display** on page 114. |
| Log viewers | See **Using event logs** on page 75. |
| Offline and Online Diagnostics | See **Troubleshooting tools** on page 57. |
| Analyze events | For information about using HPE Insight Remote Support to analyze system events, see **http://www.hpe.com/info/insightremotesupport**. |

## Developer log collection

The OA will automatically save a set of debug logs when it notices daemon failures on the PDHC or OA.

**Retrieving existing developer logs**

Existing developer logs can be copied to a USB thumb drive or FTP site.

**Procedure**

1. Set up an FTP server or insert a USB thumb drive into the enclosure DVD module USB port.
2. `SHOW USBKEY`
3. `SHOW ARCHIVE`

   **NOTE:** Archives beginning with `CH-` are the automatically collected logs.

   - For USB — enter **`COPY archive://CH-<archive name> USB <USB path>`**
   - For FTP — enter **`COPY archive://CH-<archive name> FTP://<ftp path>`**

   **NOTE:** The `COPY` command also supports additional protocols: TFTP, HTTP, HTTPS, SCP, and SFTP. For more information about the `COPY` command, see the *HPE Integrity Superdome X and Superdome 2 Onboard Administrator Command Line Interface User Guide*.

4. `CLEAR ARCHIVE`

USB example:

```
zany-oa> SHOW ARCHIVE
Debug Logs                                          Time
_________________________________________________    ____________________
archive://CH-zany-oa-20140529_1555-logs.tar.gz      May 29, 2014 15:55

zany-oa> COPY archive://CH-zany-oa-20140529_1555-logs.tar.gz
```

```
    USB/dec/CH-zany-oa-20140529_1555-logs.tar.gz
The file archive://CH-zany-oa-20140529_1555-logs.tar.gz was successfully copied
to usb://d2/dec/CH-zany-oa-20140529_1555-logs.tar.gz.
```

**Generating a debug archive**

Use this procedure to generate a new debug archive, and then copy to a USB thumb drive or FTP site.

1. `UPLOAD DEBUG ARCHIVE <customer name>`
2. Set up an FTP server or insert a USB thumb drive into the enclosure DVD module USB port.
3. `SHOW USBKEY`
4. `SHOW ARCHIVE`
   - for USB — enter **`COPY archive://<archive name> USB <USB path>`**
   - for FTP — enter **`COPY archive://<archive name> FTP://<ftp path>`**
5. `CLEAR ARCHIVE`

FTP example:

```
zomok-oa? UPLOAD DEBUG ARCHIVE dec

zomok-oa> SHOW ARCHIVE
Debug Logs                                          Time
__________________________________________________  ____________________
archive://dec/zomok-oa-20140529_1513-logs.tar.gz    May 29, 2014 15:13
archive://CH-zomok-oa-20140527_1605-logs.tar.gz     May 27, 2014 16:05
archive://CH-zomok-oa-20140525_0534-logs.tar.gz     May 25, 2014 05:34

zomok-oa> COPY archive://dec/zomok-oa-20140529_1513-logs.tar.gz
ftp://user:pass@16.114.160.113/zomok-oa-20140529_1513-logs.tar.gz
The file archive://dec/zomok-oa-20140529_1513-logs.tar.gz was successfully copied to
ftp://16.114.160.113/zomok-oa-20140529_1513-logs.tar.gz.
```

# Troubleshooting tables

**Cause**

Use these troubleshooting tables to determine the symptoms or condition of a suspect server blade. Be aware that the state of the front panel LEDs can be viewed locally or remotely using the **`SHOW BLADE STATUS`** command from the OA CLI.

## Table 14: Basic troubleshooting

| Step | Condition | Action |
|---|---|---|
| 1 | Server blade appears non-functional – no front panel LEDs are on and no fans are running. OA CLI is running. | Nothing is logged for this condition.<br>**1.** For new blade installations, review the installation procedures.<br>**2.** Check the CAE to see if any issues have been reported.<br>**3.** Re-seat the server blade. It may take more than a minute for the blade to fully power on.<br>**4.** As the last option, replace the server blade. The issue is fixed when the front panel power icon is in one of the following states:<br>• Flashing amber = Powered on, not active<br>• Green = Powered on and active<br>and the front panel Health icon LED is in one of the following states:<br>• Off = Server blade not active; health is good.<br>• Green = Server blade active; health is good. |
| 2a | OA is not running; Health LED is OFF and power icon is ON or flashing (Only one OA is installed).<br>**NOTE:** A single OA is not a supported configuration. | **NOTE:** You cannot access the OA at this time.<br>**1.** Verify that at least one upper and one lower power supply has the following normal LED status:<br>• The power supply power LED is on.<br>• The power supply fault LED is off.<br>**2.** If the OA tray has a single OA installed, reseat the OA and the OA tray.<br>**3.** If two OAs are installed, locate the OA with the Active LED illuminated and either reset the active (not responding) OA, or login to the standby OA CLI issued the `FORCE TAKEOVER` command.<br>**4.** If the second (non-suspect) OA operates properly, then replace the suspect OA.<br>The issue is fixed when OA CLI logs can be read and the front panel OA Health LED is green. |

*Table Continued*

| Step | Condition | Action |
|---|---|---|
| 2b | Blade Health LED is flashing amber and OA CLI is running. | A warning or critical failure has been detected and logged while booting or running system firmware. Examine the OA CLI logs for events and perform corrective actions indicated.<br><br>The issue is fixed when the front panel Health icon LED is in one of the following states:<br><br>• Off = Server blade not active; health is good.<br>• Green = Server blade active; health is good. |
| 3a | Cannot see UEFI prompt on system console. UEFI is running. | Nothing can be logged for this condition.<br><br>**1.** If the blade was able to join the partition but didn't reach the UEFI prompt, then the issue might be I/O related. Check the CAE for any issues with PCIe card drivers.<br>**2.** If the blade was not able to join the partition, then open the Health Repository from the OA CLI using `show hr` followed by the `show indict` and `show deconf` commands to check for entries related to processors, processor power modules, shared memory, and core I/O devices.<br>**3.** If this is a console issue and no other hardware problems are indicated, replace the Monarch blade.<br><br>The issue is fixed when the UEFI menu appears on the system console. |
| 3b | Cannot find a boot disk. UEFI is running. | Nothing might be logged for this condition.<br><br>**1.** Search for the boot disk path using the UEFI shell (**`reconnect -r`** and **`map -r`**) command.<br>**2.** Check the I/O card driver settings in the UEFI Device Manager Menu.<br>**3.** Examine the OA CLI logs for entries related to processors, processor power modules, shared memory, and core I/O devices. See **Using event logs** on page 75.<br>**4.** Review the `OA SHOW ALL` section for the `SHOW SERVER PORT MAP{bay}` to verify that the SAN port is connected. Then check the SAN switch for failures and verify the correct configuration. |

*Table Continued*

| Step | Condition | Action |
|---|---|---|
| 3c | PXE fails to find the boot file on the network. UEFI is running. | Nothing can be logged for this condition.<br>1. Verify that the network interface is connected (**`ifconfig –l`**). Verify that the `Media State:` is `Media present.`<br>2. If the network interface is connected, configure an IP address using DHCP (**`ifconfig –s eth0 dhcp`**), check the network interface again (**`ifconfig –l`**), and ping the PXE server (**`ping <PXE IP>`** ).<br>If you are able to ping the PXE server, then the PXE boot failure is probably a software issue and not related to the system hardware. |
| 4 | Cannot see OS prompt on system console. OA CLI is running. | Nothing can be logged for this condition.<br>Examine the OA CLI logs for entries related to OA modules, processors, processor power modules, shared memory, and core I/O devices. See **Using event logs** on page 75.<br>IRC or KVM can also be used.<br>The issue is fixed when the OS prompt appears on the system console. |

## Table 15: Advanced troubleshooting

| Step | Symptom/condition | Action |
|---|---|---|
| 5 | Cannot read SEL. | SEL logging has stopped (health is steady green and power is steady green).<br>1. Examine console messages for any UEFI errors or warnings about operation or communications.<br>2. Ensure that the Robust Store is functioning properly. Try to read the FPL. If all Fans are green and reported as OK in response to an OA CLI `SHOW ENCLOSURE FAN ALL` command, then as a test, re-seat a single fan and verify that this has generated a FPL and SEL entry.<br>The issue is fixed when the SEL resumes logging. |
| 6 | OS is nonresponsive after boot | Front panel LEDs indicate that the server blade's power is turned on, and it is either booting or running the OS (for example, health is steady green and power is steady green).<br>Nothing can be logged for this condition.<br>1. Examine the OA CLI logs for entries related to processors, processor power modules, shared memory, and core I/O devices. Make sure there are no indictments or any hardware issue or known firmware issue. See **Using event logs** on page 75.<br>2. Use the OA CLI `TC` command to initiate a TOC to reset the partition.<br>3. Reboot the OS and escalate.<br>4. Obtain the system software status dump for root cause analysis.<br>The issue is fixed when the OS becomes responsive and the root cause is determined and corrected. |
| 7a | MCA occurs during partition operation; the server blade reboots the OS.<br>**NOTE:** Partition reboots OS if enabled. | Front panel LEDs indicate that the server blade detected a fatal error that it cannot recover from through OS recovery routines (for example, health is flashing red and power is steady green).<br>1. Capture the MCA dump with the OA CLI command, `show errdump all` or `show errdump dir mca`, and then `show errdump bundle_ID <id>` for the bundle of interest.<br>2. Examine the OA CLI logs for entries related to processors, processor power modules, shared memory, and core I/O devices (See **Using event logs** on page 75 for more details).<br>The issue is fixed when the root cause is determined and corrected. |

*Table Continued*

| Step | Symptom/condition | Action |
|---|---|---|
| 7b | MCA occurs during partition operation; server blade reboot of OS is prevented.<br><br>**NOTE:** The troubleshooting actions for this step are identical to those in Step 7a, except that the server blade in this step must be powered off, reseated and/or powered back on, then rebooted. (Server blade reboots OS automatically if enabled.) | Front panel LEDs indicate that the server blade detected a Critical (catastrophic or viral) bus error.<br><br>System firmware is running to gather and log all error data for this MCA event.<br><br>1. Capture the MCA dump with the OA CLI command, `show errdump all` or `show errdump dir mca`, and then `show errdump bundle_ID <id>` for the bundle of interest.<br>2. Examine the OA CLI logs for entries related to processors, processor power modules, shared memory, and core I/O devices. See **Using event logs** on page 75 for more details.<br><br>The issue is fixed when the root cause is determined and corrected. |
| 8 | The OA CLI and GUI display this message:<br><br>`Data stored in the OA and DVD module do not match that in the enclosure.`<br><br>`The complex is unusable. To recover, fix this problem and reboot the OA.` | Consult the Hewlett Packard Enterprise Support Center to troubleshoot and fix this Rstore failure. |

# Troubleshooting tools

### Cause

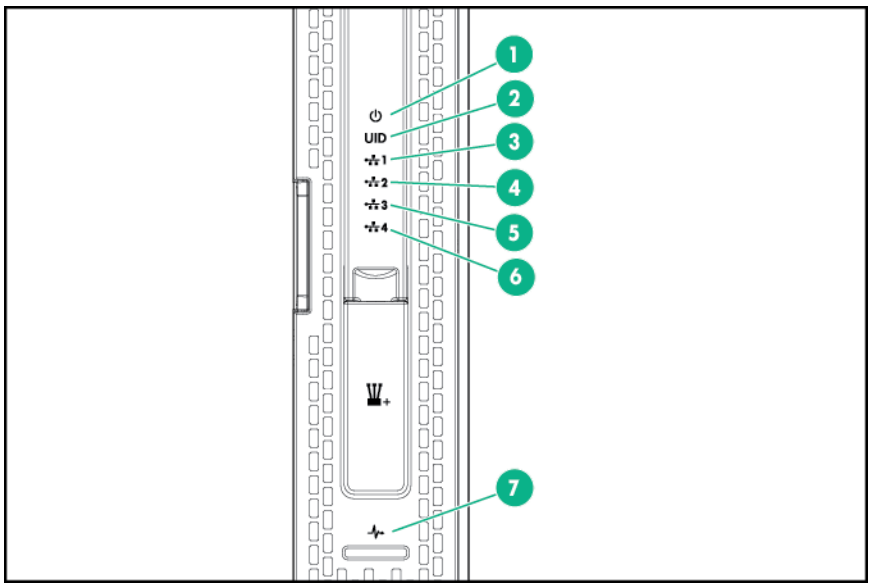
Server blades use LEDs and other tools to help troubleshoot issues that occur in the server blade.

## LEDs and components

### Server blade front panel components

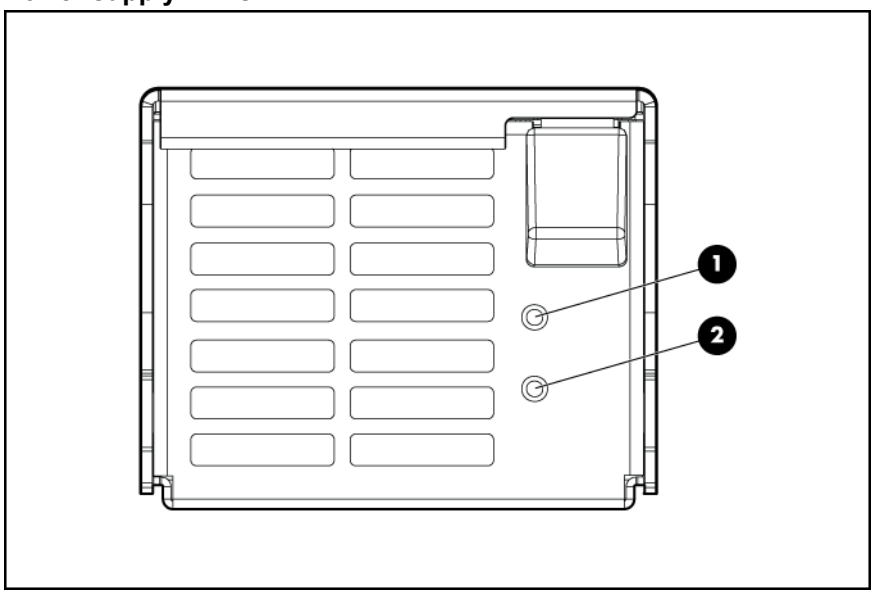
Front panel icons are not visible unless the blade is powered on and the LEDs are lit.

In the following table, the Power and Health icons refer to an Active state. A blade is considered Active when the partition containing this blade is booting or booted.




| Item | Name | Description |
|---|---|---|
| 1 | Power icon | Indicates if the server blade is powered on and active.<br>Green = Powered on; active<br>Flashing amber = Powered on; not active<br>Off = No power supplied to the server blade |
| 2 | UID icon | Blue = UID on |
| 3 | NIC icon 1 | Indicates the status of the NIC.<br>Solid green = Network linked; no activity<br>Flashing green = Network linked, activity |
| 4 | NIC icon 2 | Indicates the status of the NIC.<br>Solid green = Network linked; no activity<br>Flashing green = Network linked; activity |
| 5 | NIC icon 3 | Indicates the status of the NIC.<br>Solid green = Network linked; no activity<br>Flashing green = Network linked; activity |
| 6 | NIC icon 4 | Indicates the status of the NIC.<br>Solid green = Network linked; no activity<br>Flashing green = Network linked; activity |
| 7 | Health icon | Off = Server blade not active; health good<br>Green = Server blade active; health good<br>Flashing amber = Degraded<br>Flashing red = Critical error |

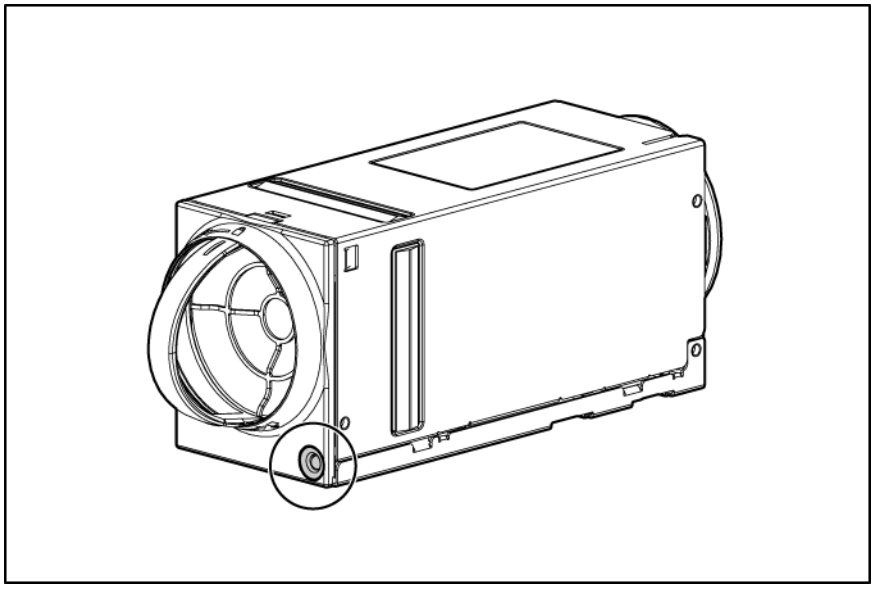
**Power supply LEDs**




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

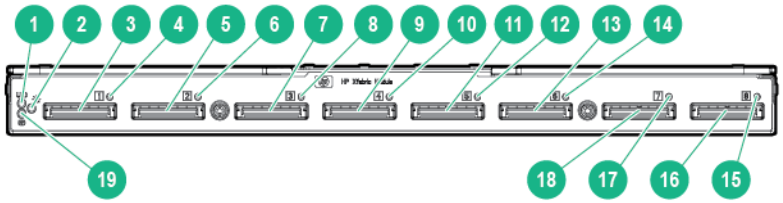
| Power LED 1 (green) | Fault LED 2 (amber) | Condition |
|---|---|---|
| Off | Off | No AC power to the power supply |
| On | Off | Normal |
| Off | On | Power supply failure |

**Fan LED**



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

### XFM LEDs and components

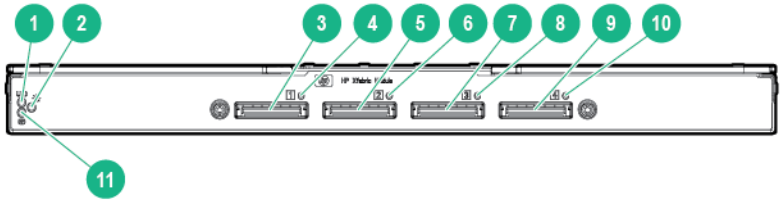



| Item | Name | Description |
|---|---|---|
| 1 | UID LED | Blue = UID on |
| 2 | Power LED | Indicates if the module is powered on.<br>Green = On |
| 3 | XFM crossbar fabric port 1 | |
| 4 | Link Cable Status LED 1 | N/A for Integrity Superdome X |
| 5 | XFM crossbar fabric port 2 | |
| 6 | Link Cable Status LED 2 | N/A for Integrity Superdome X |
| 7 | XFM crossbar fabric port 3 | |
| 8 | Link Cable Status LED 3 | N/A for Integrity Superdome X |
| 9 | XFM crossbar fabric port 4 | |
| 10 | Link Cable Status LED 4 | N/A for Integrity Superdome X |
| 11 | XFM crossbar fabric port 5 | |
| 12 | Link Cable Status LED 5 | N/A for Integrity Superdome X |
| 13 | XFM crossbar fabric port 6 | |
| 14 | Link Cable Status LED 6 | N/A for Integrity Superdome X |

*Table Continued*

| Item | Name | Description |
|---|---|---|
| 15 | XFM crossbar fabric port 7 | |
| 16 | Link Cable Status LED 7 | N/A for Integrity Superdome X |
| 17 | XFM crossbar fabric port 8 | |
| 18 | Link Cable Status LED 8 | N/A for Integrity Superdome X |
| 19 | Health LED | Flashing yellow = Degraded; indicted<br>Off = The power is not turned on<br>Green = OK<br>Flashing red = Deconfigured |

**XFM2 LEDs and components**

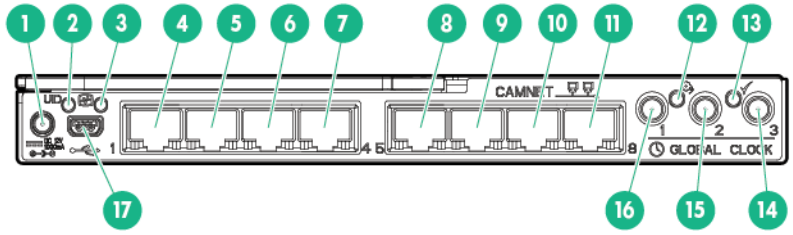



| Item | Name | Description |
|---|---|---|
| 1 | UID LED | Blue = UID on |
| 2 | Power LED | Indicates if the module is powered on.<br>Green = On |
| 3 | XFM crossbar fabric port 1 | |
| 4 | Link Cable Status LED 1 | N/A for Integrity Superdome X |
| 5 | XFM crossbar fabric port 2 | |
| 6 | Link Cable Status LED 2 | N/A for Integrity Superdome X |
| 7 | XFM crossbar fabric port 3 | |
| 8 | Link Cable Status LED 3 | N/A for Integrity Superdome X |
| 9 | XFM crossbar fabric port 4 | |

*Table Continued*

| Item | Name | Description |
|---|---|---|
| 10 | Link Cable Status LED 4 | N/A for Integrity Superdome X |
| 11 | Health LED | Flashing yellow = Degraded; indicted<br>Off = The power is not turned on<br>Green = OK<br>Flashing red = Deconfigured |

**GPSM LEDs and components**

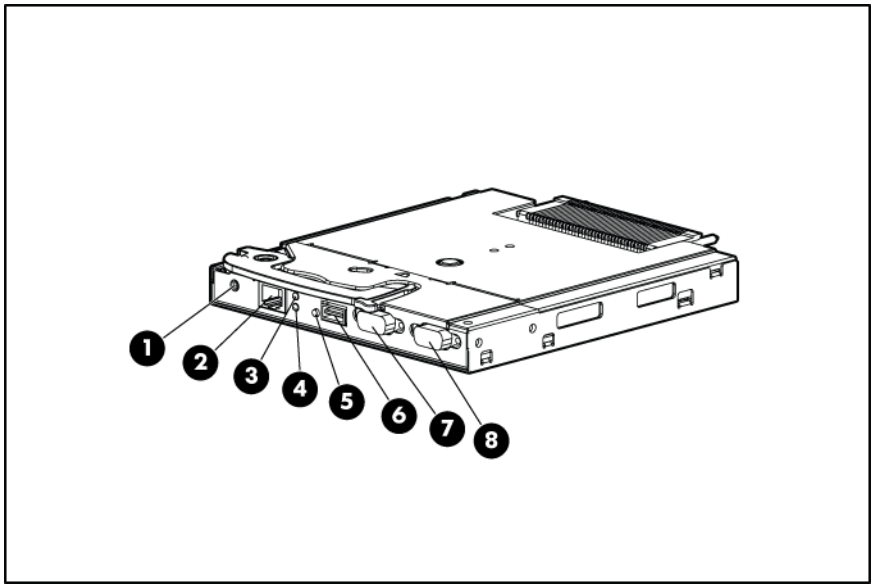



| Item | Name | Description |
|---|---|---|
| 1 | Door display power connector | Unused for Integrity Superdome X systems |
| 2 | UID LED | Blue = UID on |
| 3 | Health LED | Flashing yellow = Degraded; indicted<br>Off = The power is not turned on<br>Green = OK<br>Flashing red = Deconfigured |
| 4 | CAMNet port 1 | N/A for Integrity Superdome X |
| 5 | CAMNet port 2 | N/A for Integrity Superdome X |
| 6 | CAMNet port 3 | N/A for Integrity Superdome X |
| 7 | CAMNet port 4 | N/A for Integrity Superdome X |
| 8 | CAMNet port 5 | N/A for Integrity Superdome X |
| 9 | CAMNet port 6 | N/A for Integrity Superdome X |
| 10 | CAMNet port 7 | N/A for Integrity Superdome X |
| 11 | CAMNet port 8 | N/A for Integrity Superdome X |

*Table Continued*

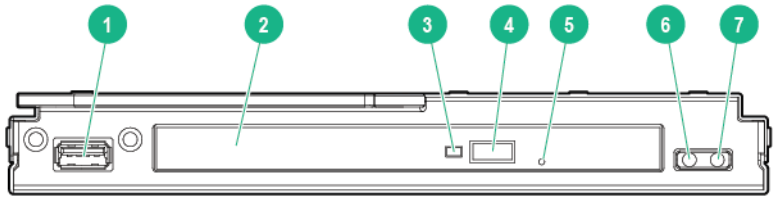
| Item | Name | Description |
|---|---|---|
| 12 | Local Clock Distribution LED | Indicates the status of the global clock signal distributed to blades in the compute enclosure.<br>Green = OK<br>Flashing yellow = Critical error |
| 13 | External Clock Input LED | Indicates the status of the global clock signal distributed to connected enclosures.<br>Flashing green = No clock signal expected<br>Unused for this release of the system. |
| 14 | Global clock connector 3 | |
| 15 | Global clock connector 2 | |
| 16 | Global clock connector 1 | |
| 17 | Enclosure DVD module USB port | **NOTE:** To ensure proper system functionality, you must connect the USB cable between the OA module and the GPSM. |

**OA module LEDs and components**



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

**DVD module LEDs and components**




| Item | Name | Description |
|---|---|---|
| 1 | USB connector | |
| 2 | DVD tray | |

*Table Continued*

| Item | Name | Description |
|---|---|---|
| 3 | DVD activity LED | |
| 4 | Tray open/close button | |
| 5 | Manual tray release | |
| 6 | Health LED | Green = OK<br>Flashing yellow = Critical error |
| 7 | UID LED | Blue = UID on |

## OA GUI

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

**NOTE:**

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

# Health Repository viewer

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

The following information is available in the HR display:

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

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

## Indictment Records

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

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

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

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

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

**IMPORTANT:**

Deconfiguration requests for components in active nPars cannot be acted on until the nPar experiences a power-off/power-on cycle.

## Acquitting indictments

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

- Component insertion—HR will assume that a component inserted into the system has received any required service. This applies to any components contained within the inserted unit as well. For example, DIMMs and CPU sockets on an inserted blade will be acquitted. Any deconfigurations will be reversed.
- AC power cycle or CLI `poweron xfabric` command — HR will assume that the required service has been accomplished for the entire complex. All FRUs and sub-FRUs will be acquitted and reconfigured.
- Cohort acquittal—When analysis of a single fault event results in indictment or suspicion records against multiple components, the records are linked together. If one is acquitted, the acquittal will be passed to the cohort FRUs as well.
- HR test commands—The `test camnet` and `test clocks` commands will acquit all indictments specific to the test to be executed. Resources that fail the test will be re-indicted as the test completes. The test fabric command acquits each type (fabric, CAMNet, Global Clock) of indictment before initiating the test.

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

- Manual Acquittal—The HR UI includes an acquit command that uses the component physical location or resource path as a parameter. Like other acquittals, the acquittal will act on all indictments for that component.
- Component resumes normal function.

  In most cases resumption of function will not cause automatic acquittal. Component replacement, complex AC power cycle or manual acquittal is required. Examples are as follows:

  - BPS indicted for loss of AC input regains power input.
  - Environmental temperature returns to within acceptable bounds.
  - Enclosure regains sufficient power.
  - Enclosure regains sufficient cooling.

## Viewing the list of indicted components

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

```
myhost HR> show indict

System Indictment List - Wed Oct 29 08:06:03 2014
-------------------------------------------------

 FRU Type: Blade DIMM
 Location: 0x0100FF0101180B74  enclosure1/blade1/cpusocket1/dimm18
Timestamp: Wed Oct 29 09:11:12 2014
        Indictment State: Indicted
Requested Deconfig State: Configured
  Current Deconfig State: Configured
  dimm-1/1/1/18 Location: 18B

Status: OK No Errors Logged.
```

## Viewing deconfigured components

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

```
myhost HR> show deconfig

System Deconfiguration List - Fri Jun 26 16:54:36 2015
------------------------------------------------------

 FRU Type: Blade DIMM
 Location: 0x0100FF0600010A74  enclosure1/blade6/cpusocket0/dimm1
Timestamp: Fri Jun 26 16:34:59 2015
        Indictment State: Indicted
Requested Deconfig State: Deconfigured
  Current Deconfig State: Deconfigured
  dimm-1/6/0/1 Location: 1A

Status: OK No Errors Logged.

 FRU Type: Blade DIMM
 Location: 0x0100FF0600060A74  enclosure1/blade6/cpusocket0/dimm6
Timestamp: Fri Jun 26 16:35:24 2015
        Indictment State: Indicted
Requested Deconfig State: Deconfigured
  Current Deconfig State: Deconfigured
  dimm-1/6/0/1 Location: 6A

Status: OK No Errors Logged.

---end report --- 2 records shown
To see details about a specific FRU, use 'show <loc>|<path>'
To see additional deconfiguration details, use 'show deconfig alldata'

Items listed as "Configured" may have deconfigured sub components

myhost HR>
```

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

DIMMs might be deconfigured without being indicted or even suspected. Some faults isolated to CPU sockets or blades might require deconfiguration of whole or portions of memory subsystems by physically deconfiguring the DIMMs supported by that resource. Only indicted components should be replaced. Additional DIMMs that are deconfigured without being indicted are not faulty components and should not be replaced.

## Viewing indictment acquittals

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

```
myhost HR> show acquit
System Acquittal History - Mon May 18 16:11:28 2014
-------------------------------------------------

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

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

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

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

## Viewing recent service history

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

## Physical Location installation and health history

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

**NOTE:**

The following example illustrates BL920s Gen8 blades. The history display for BL920s Gen9 blades is equivalent but will include different hardware.

```
2014-03-17 14:12 hpsl18-4 HR> show 0x0100FF0100060A74

Location Installation/Health History - Mon Mar 17 14:12:52 2014
------------------------------------------------
                          FRU Type: Blade DIMM
                 Location: 0x0100FF0100060A74  enclosure1/blade1/cpusocket0/
dimm6

                Timestamp: Mon Mar 17 07:42:28 2014
        Indictment State: Indicted
Requested Deconfig State: Deconfigured
  Current Deconfig State: Deconfigured
   dimm-1/1/0/6 Location: 6A
                  Status: OK No Errors Logged.

--- Install History 1 ---
        Discovery: Indictment
        Timestamp: Mon Mar 17 04:42:18 2014

(Detailed info about the FRU is provided here if it exists. E.g., for CPUs,
max freq will be provided here. If no data, the section is omitted.)
       Serial Num: 1X123456
    Parent Serial: MYJ245041R
         Part Num: XXX12AB3CDE4A-F5
   Spare Part Num: XXX12AB3CDE4A-F5
  Manufacturer ID: XX (manufacturer_name)
     Product Name: DDR3 DIMM
        DIMM size: 8192 MB
          HPE DIMM: None

--- Action - Deconfigure ---
         Event No: 7004
         Provider: MemoryIndicationProvider
(Text reason and description of problem from WS-Man alert.)
           Reason: Memory Uncorrectable Error.
      Description: Memory Uncorrectable Error - An uncorrectable memory
error has
 occurred most likely in the server's memory DIMMs, or the blade.
        Bundle ID: 0x011000000000AF3D
         Alert ID: 2700420140317074056
       Serial Num: 1X123456
     Product Name: DDR3 DIMM
  - Indicted / Acquitted -
  Type Timestamp                 Entity       Reason
   Ind Mon Mar 17 07:40:52 2014  CAE          See reason above.
  ---
(SubFRUs requiring service are shown here. If none, the section is omitted.)
  - SubFru Isolation -
    Entire FRU indicted.
  ---
(Deconfigured SubFRUs are shown here. If none, the section is omitted.)
  - SubFru Deconfiguration -
    Entire FRU deconfigured.
  ---
(Cohorts are shown here. If none, the section is omitted.)
  - Related Locations -
        0x0100FF0100010A74 Path: dimm-1/1/0/1
        0x0100FF01FF00FF11 Path: cpusocket-1/1/0
        0x0100FF01FFFFFF94 Path: blade-1/1
  ---

--- Action - Acquit ---
         Event No: 7004
         Provider: MemoryIndicationProvider
```

```
          Reason: Memory Uncorrectable Error.
     Description: Memory Uncorrectable Error - An uncorrectable memory
error ha
s occurred most likely in the server's memory DIMMs, or the blade.
       Bundle ID: 0x011000000000AF3A
        Alert ID: 2700420140317044214
      Serial Num: 1X123456
    Product Name: DDR3 DIMM
  - Indicted / Acquitted -
  Type Timestamp                 Entity       Reason
   Ind Mon Mar 17 04:42:10 2014  CAE          See reason above.
   Acq Mon Mar 17 07:02:28 2014  User         User request.
  ---
  - SubFru Isolation -
    Entire FRU indicted.
  ---
  - SubFru Deconfiguration -
    Entire FRU deconfigured.
  ---
  - Related Locations -
       0x0100FF0100010A74 Path: dimm-1/1/0/1
       0x0100FF01FF00FF11 Path: cpusocket-1/1/0
       0x0100FF01FFFFFF94 Path: blade-1/1
  ---

--- end report --- 1 records shown
```

## Subcomponent isolation and deconfiguration displays

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

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

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

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

**NOTE:**

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

### Blade subcomponent displays

There are several different types of subcomponent displays which can be provided for blades.

#### DIMMs

The DIMM subFru Isolation display is different from other subFru Isolation displays in that it communicates DIMM loading order issues rather than faults in the subFRUs. A “1” in the display below means the DIMM is present but not used due to a loading order issue and “0” means there is no problem with that DIMM location. This display along with the OA CLI show blade info command output can be used to determine which DIMMs are present and which are associated with DIMM loading errors.

```
  - SubFru Isolation -
      - Blade -
         - DIMM Loading Status -
                CPU0: 1A - 6A - 19A - 24A
```

```
                  0    0     0     1    <- Indicates loading error for DIMM 24A
                  7B - 12B - 13B - 18B   (DIMMS 1A, 6A, 19A are OK)
                  0     0     0     0
                  2C -  5C - 20C - 23C
                  0     0     0     0
                  8D - 11D - 14D - 17D
                  0     0     0     0
                  3E -  4E - 21E - 22E
                  0     0     0     0
                  9F - 10F - 15F - 16F
                  0     0     0     0

        CPU1:     1A -  6A - 19A - 24A
                  0     0     0     1
                  7B - 12B - 13B - 18B
                   0    0     0     0
                  2C -  5C - 20C - 23C
                   0     0    0     0
                  8D - 11D - 14D - 17D
                   0    0     0     0
                  3E -  4E - 21E - 22E
                   0     0    0     0
                  9F - 10F - 15F - 16F
                   0    0     0     0
```

**Manageability HW**

```
- SubFru Isolation -
      - Blade -
       - Manageability HW -
                     -0- -1- -2-
            CamNet:   0   0   .
               LOM:   0   0   0
    ----------------------------
    COMPONENT: Fault
---
```

**NOTE:**

For Integrity Superdome X, there are FlexLOMs instead of LOMs. Each FlexLOM has its own physical location. Therefore, indictments against FlexLOMs are issued against the FlexLOM physical location, rather than indicting the blade and setting one of the LOM bits. The blade SubFru isolation display will continue to show LOM bits, but these should always have a value of 0.

Components supported by this display are as follows:

- PDHC
- OA_LAN
- USB
- NAND_Flash
- NOR_Flash
- SRAM
- PDH_FPGA
- LPM_FPGA
- RTC

- PDH_SRAM
- iLO

**Agent fabric**

```
- SubFru Isolation -
       - Blade -
       - XNC -
       -------------------------------
       Entity name: Fault   [Only the flagged entity is listed.]
  ---
```

Where *Entity name* is one of the following:

**XNC**

XNC is flagged

**WJ Port *n***

Entire port is flagged

**WJ Port *n***

Link Upper Half (Upper port flagged)

**WJ Port *n***

Link Lower Half (Lower port flagged)

**QPI Link *n***

Entire link is flagged

**QPI Link *n* Reduced Width**

Link is running at some reduced width

Where *n* for WJ links can range from 0 to 7 and for QPI links can range from 0 to 2.

The SubFRU deconfiguration display section has the same layout as the SubFru Isolation display.

**Memory subsystem**

```
  - SubFru Isolation -
       - Blade -
       - Memory Subsystem -
       Socket: 0  Memory Controller: 0
       Memory     SMI      DDR
       Buffer     Channel  Channel
                  -0--1-   -0--1-
       0:  0       0  0     0  0
       1:  0       0  0     0  0
```

The SubFRU deconfiguration display section has the same layout as the SubFru Isolation display.

**Connections for I/O components**

```
- SubFru Isolation -
     - Blade -
     - IO -
     -------------------------------
            Component: Fault
```

Possible values of *Component* are:

- LOM1-DC
- LOM2-DC
- Mezz 1
- Mezz 2
- Mezz 3
- FPGA
- PDHC
- PCH
- iLO
- VRD

**NOTE:**

LOM#-DC == FlexLOM#.

The OA CLI SHOW CAE command can identify specific VRDs associated with these faults. See **Core Analysis Engine** on page 80 for more information.

The SubFRU deconfiguration display section has the same layout as the SubFru Isolation display.

## CPU socket subcomponent displays

There are three different sets of CPU subcomponent data, contained in three different displays.

**CPU core**

```
 - SubFru Isolation -
       - Processor Module: Intel Xeon (R) E7-8800 processor -
       - Core 0 -
                    FLD   FLI   MLD   MLI   LL
           Cache:    0     0     0     0     0
             TLB:    0     0     0     0     .
```

- FL indicates ‘First Level’ and corresponds to the L1 cache.
- ML indicates ‘Mid Level’ and corresponds to the L2 cache.
- LL indicates ‘Last Level’ and corresponds to the L3 cache.
- I indicates ‘Instruction.’ For example, the FLI cache is the First Level Instruction cache.
- D indicates ‘Data.’ For example, the MLD cache is the Mid Level Data cache.

VRMs supported by this display are as follows:

- FP_regs
- GP_regs
- other (an unspecified fault has been identified within the processor core)

**CPU memory**

```
- SubFru Isolation -
      - Processor Module: Intel Xeon (R) E7-8800 processor -
      - Memory -
                -0-   -1-
          Mbox:  0     0
```

**CPU Uncore**

```
  - SubFru Isolation -
      - Processor Module: Intel Xeon (R) E7-8800 processor -
      - Uncore -
                  -0-   -1-   -2-
         R-QPI:    0     0     0
      UBOX/PMU:    0     .     .
```

**CPU integrated I/O ports**

```
  - SubFru Isolation -
       - Processor Module: Intel Xeon (R) E7-8800 processor -
      - IIO -
          Root Port ID 0x0 (DMI):    0
          Root Port ID 0x3  (2A):    0
          Root Port ID 0x5  (2C):    0
          Root Port ID 0x7  (3A):    0
          Root Port ID 0x9  (3C):    0
                             IIO:    Fault
```

The last line is printed only when an I/O error occurs that is unrelated to any port.

## GPSM subcomponent displays

```
- SubFru Isolation -
    - GPSM -
      - CAMNet Ports -
                  1 - 2 - 3 - 4 - 5 - 6 - 7 - 8
      SW Port:   0   0   0   0   0   0   0   0
        Blade:   0   0   0   0   0   0   0   0
           OA:   0   0   .   .   .   .   .   .
          XFM:   0   0   0   0   .   .   .   .
   Other GSPM:   0   .   .   .   .   .   .   .
         FPGA:   0   .   .   .   .   .   .   .
     ---
```

## OA subcomponent display

```
- SubFru Isolation -
   - OA -
     - CAMNet Ports -
             -A- -B-
       Port:  0   1
     ---
```

## XFM subcomponent display

```
   - SubFru Isolation -
     - XFM -
       - Fabric Ports -
          0- 1- 2- 3- 4- 5- 6- 7- 8- 9-10-11-12-13-14-15-16-17-18-19
   Upper: 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0
   Lower: 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0
   ------------------------------------------------------------------
```

```
VRM: Fault
 ---
```

VRMs reported by this display are as follows:

- V3P3_STBY
- V2P5_STBY
- V1P2_STBY
- V1P8_0
- V1P8_1
- V1P2
- CAMNET_A
- CAMNET_B

# Using event logs

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

- Hardware-related.
  - Example: DIMM, CPU, VRM, XNC, or PCI-BUS failures.
- Software-related.
  - Example: indicating that firmware or software reached a certain point in the code, or that a certain amount of time has passed, for example when a QPI LINK has a timeout.

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

- OSs
- OAs
- SEL viewers
- FPL viewers
- Live Event viewers
- EAE

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

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

## Live viewer

The live event viewer provides a way for you to see records as they occur. The OA supports multiple simultaneous live event viewers that are created and destroyed dynamically when requested. The

maximum number of simultaneous live event viewers is limited by the number of connections supported by the OA.

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

The log can be filtered using the following items:

- blade number
- partition number
- alert level

The following format options are also available:

- Keyword—This is the default format for all viewers. The keyword format supplies the following information about an event:
  - log number (not for livelogs)
  - reporting entity type
  - reporting entity ID
  - alert level
  - hexadecimal dump of event records
  - event ID keyword
- Raw hex—The raw hex format supplies the following information about an event:
  - hexadecimal dump of event records
- Text—The text format supplies the following information about an event:
  - log number (not for livelogs)
  - timestamp
  - alert level
  - event ID keyword
  - brief text description
  - reporting entity type
  - reporting entity ID
  - hexadecimal dump of event records
- Problem/Cause/Action—The Problem/Cause/Action format displays a problem/cause/action statement in addition to the summary and other fields displayed by the text formatter.

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

**NOTE:**

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

```
              Welcome to the Live Event Viewer

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

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

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

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

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

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


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

Rep   Location    nPar:    AL Encoded Field    Data Field       Keyword
Ent               vPar                                        Timestamp

PDHC  1,1         1         1 36801d1000e10000 0400087c0efa0321 MFW_CONSOLE_VUARTD_START
                                                               03/17/2014 14:26:49
PDHC  1,1         1         1 2b001edd00e10000 0140000153274c79 LAUNCHING_PARTITION
                                                               03/17/2014 14:26:49
PDHC  1,1         1         0 07801eb800e10000 0000000010000000 FHW_NOTIFY_CFW
                                                               03/17/2014 14:26:49
SFW   1,1,0,0,0   1         0 0100232501e10000 000000006f452000 BOOT_LOAD_FW_ADDR
SFW   1,1,0,0,0   1         0 0900232401e10000 652e6c7049657844 BOOT_LOAD_FW_MODULE
PDHC  1,1         1         1 36801df200e10000 0000000000000000 ELS_START_PARTITION
                                                               03/17/2014 14:26:50
OA    1,1         None      0 168024b600e10000 0000000000000000 ELS_OA_SAVE_RECOV_FILE
                                                               03/17/2014 14:26:50
```

## SEL and FPL viewers

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

The logs can be filtered using the following items:

- blade number
- cabinet number (not applicable for this release)

- partition number
- alert level

The following format options are also available:

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

---

**NOTE:**

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

---

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

```
         Welcome to the Forward Progress Log (FPL) Viewer

The following FPL navigation commands are available:
        D: Dump log starting at current block for capture and analysis
        F: Display first (oldest) block
        L: Display last (newest) block
        J: Jump to specified entry and display previous block
        +: Display next (forward in time) block
        -: Display previous (backward in time) block
     <cr>: Repeat previous +/- command
     <sp>: Repeat previous +/- command
        /: Search forward for input string
        \: Search backwards for input string
```

```
          I: Changes between case sensitive and insensitive search
          N: Perform previous search using last input string
        ?/H: Display help
          C: Toggle display of column header
   <Ctrl-b>: Exit viewer

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

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

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

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

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

Event#  Rep   Location    nPar:    AL Encoded Field    Data Field       Keyword
        Ent               vPar                                        Timestamp

5512567 SFW   1,1,0,0,0   1        0 160024d301e10000 0000010300000000 IO_PROCESS_OPTION_ROM
5512566 SFW   1,1,0,0,0   1        0 16002af201e10000 000000000005211b IO_UEFI_DRIVER_VERSION
5512565 SFW   1,1,0,0,0   1        0 0100232501e10000 0000000078376000 BOOT_LOAD_FW_ADDR
5512564 SFW   1,1,0,0,0   1        0 16002ad601e10000 0000000010000000 BOOT_LOAD_FW_ADDR_PREF
5512563 SFW   1,1,0,0,0   1        0 160024d301e10000 0000010200000000 IO_PROCESS_OPTION_ROM
5512562 SFW   1,1,0,0,0   1        0 0100232501e10000 00000000783d0000 BOOT_LOAD_FW_ADDR
5512561 SFW   1,1,0,0,0   1        0 16002ad601e10000 0000000010000000 BOOT_LOAD_FW_ADDR_PREF
5512560 SFW   1,1,0,0,0   1        0 160024d301e10000 0000010100000000 IO_PROCESS_OPTION_ROM
5512559 SFW   1,1,0,0,0   1        0 16002af201e10000 000000000004900a9 IO_UEFI_DRIVER_VERSION
5512558 SFW   1,1,0,0,0   1        0 0100232501e10000 0000000078436000 BOOT_LOAD_FW_ADDR
5512557 SFW   1,1,0,0,0   1        0 16002ad601e10000 0000000010000000 BOOT_LOAD_FW_ADDR_PREF
5512556 SFW   1,1,0,0,0   1        0 160024d301e10000 0000010000000000 IO_PROCESS_OPTION_ROM
5512555 SFW   1,1,0,0,0   1        0 160024d901e10000 0000000000000000 IO_STARTING_PCIE_DEVIcES
5512554 OA    1,1         1        1 368022ef00e10000 2143000000000000 PARCON_VPAR_POWERON_COMPLETE

5512554                                                                 03/17/2014 14:28:02
5512553 OA    1,1         1        0 1680264000e10000 2143000200010000 PARCON_VPAR_OPERATION
5512553                                                                 03/17/2014 14:28:02
5512552 OA    1,1         1        1 34801f4400e10000 0610000000000000 PARCON_NPAR_STATE_CHANGE
5512552                                                                 03/17/2014 14:27:57
5512551 OA    1,1         1        0 1680264000e10000 213a000200170000 PARCON_VPAR_OPERATION
5512551                                                                 03/17/2014 14:27:57
```

To connect to the SEL viewer, enter the `SHOW SEL` command.

```
          Welcome to the System Event Log (SEL) Viewer


   The following SEL navigation commands are available:
          D: Dump log starting at current block for capture and analysis
          F: Display first (oldest) block
          L: Display last (newest) block
          J: Jump to specified entry and display previous block
          +: Display next (forward in time) block
          -: Display previous (backward in time) block
       <cr>: Repeat previous +/- command
       <sp>: Repeat previous +/- command
          /: Search forward for input string
          \: Search backwards for input string
          I: Changes between case sensitive and insensitive search
```

```
          N: Perform previous search using last input string
        ?/H: Display help
          C: Toggle display of column header
   <Ctrl-b>: Exit viewer

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

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

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

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

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

Event#  Rep   Location    nPar:    AL Encoded Field    Data Field       Keyword
        Ent               vPar                                        Timestamp

62384   SFW   1,3,0,0,0   3         2 43882ae601e17833 0000000000000044 MEM_ADDRESS_WIDTH
62384                                                                   03/17/2014 13:41:20
62383   SFW   1,3,0,0,0   3         2 43882adc01e17831 0000000000000002 MEM_RAS_MODE_ENABLED
62383                                                                   03/17/2014 13:41:19
62382   SFW   1,3,0,0,0   3         2 5188297a01e1782f 0000000000000709 CPU_MICROCODE_REVISION
62382                                                                   03/17/2014 13:41:18
62381   SFW   1,3,0,0,0   3         2 5188252501e1782d 0000001202450231 BOOT_ROM_REVISION
62381                                                                   03/17/2014 13:41:18
62380   SFW   1,3,0,0,0   3         2 43882ae601e1782b 0000000000000044 MEM_ADDRESS_WIDTH
62380                                                                   03/17/2014 13:41:13
62379   SFW   1,3,0,0,0   3         2 43882adc01e17829 0000000000000002 MEM_RAS_MODE_ENABLED
62379                                                                   03/17/2014 13:41:13
62378   SFW   1,3,0,0,0   3         2 5188297a01e17827 0000000000000709 CPU_MICROCODE_REVISION
62378                                                                   03/17/2014 13:41:11
62377   SFW   1,3,0,0,0   3         2 5188252501e17825 0000001202450231 BOOT_ROM_REVISION
62377                                                                   03/17/2014 13:41:11
62376   OA    1,1         None      2 438026d700e17823 40000000000266f6 HR_ELS_WRITE_LOG
62376                                                                   03/17/2014 13:40:59
62375   PDHC  1,3         3         2 4480223820e17821 0100ff03ffffff94 DIMM_LOADING_ORDER_DONE
62375                                                                   03/17/2014 13:40:58
62374   OA    1,1         None      2 43801fa300e1781f 413000000000101f CAE_FRU_INDICTMENT
62374                                                                   03/17/2014 13:40:54
```

## Core Analysis Engine

The CAE is a diagnostic tool that analyzes system errors and generates events that provide detailed descriptions of severity, probable cause, recommended action, replaceable units, and more. It also initiates self healing corrective actions.

Run the **SHOW CAE** command with the following options:

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

To see CAE event viewer options, run the following:

```
OA-CLI> SHOW CAE -h
```

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

Unknown(0),Other(1),Information(2),Degraded/Warning(3),

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

To view the list of events generated and analyzed, run the following:

```
OA-CLI> SHOW CAE -L

Sl.No  Severity    EventId EventCategory PartitionId  EventTime               Summary
################################################################################################
1      Degraded    12270   Support Fi... 3           Fri Mar 28 15:53:56 2014  SFW test of SMIF over CHIF interface...

(...) indicates truncated text. For complete text see event details
```

To see the details for each event, run the following:

```
OA-CLI> SHOW CAE -E -n 1
Alert Number : 1

Event Identification :
   Event ID                      : 12270
   Provider Name                 : FPL_IndicationProvider
   Event Time                    : Fri Mar 28 15:53:56 2014
   Indication Identifier         : 11227020140328155356

Managed Entity :
   OA Name                       : hawk039oa1
```

```
   System Type                      : 59
   System Serial No.                : SFP1236002
   OA IP Address                    : 15.242.4.234

Affected Domain :
   Enclosure Name                   : hawk039
  RackName                         : hawk039
   RackUID                          : 02SGH5141AE2
   Impacted Domain                  : Partition
   Complex Name                     : hawk039
   Partition ID                     : 3
   SystemGUID                       : 00000000-0000-0000-0000-000000000000

Summary :
   SFW test of SMIF over CHIF interface to Gromit iLO fails on the indicated blade.

Full Description :
   SFW test of SMIF over CHIF interface to Gromit iLO using SMIF command ILO_STATUS_REQUEST fails, indidicating
   the interface is not functional. The logical (nPar) Blade ID is sent as EventData, with 0xFFFF sent if the
   blade ID cannot be determined.

Probable Cause 1 :
   SMIF over CHIF interface to Gromit iLO fails selftest; resulting SMBIOS records that consume this data are
   default values.

Recommended Action 1 :
   Reboot the system which attempts to reinitialize the interface.

Probable Cause 2 :
   Reboot of the system fails to restore SFW communication to Gromit iLO via the SMIF over CHIF interface

Recommended Action 2 :
   Power off the system. Reset the offending Gromit iLO(s) in the system with one of the following:
   1) destroy and recreate the partition 2) reset the blade using 'reset blade X' then confirm 'yes'
   3) reset iLO and reboot the system.

Replaceable Unit(s) :
   Part Manufacturer                : Not Applicable
   Spare Part No.                   : Not Applicable
   Part Serial No.                  : Not Applicable
   Part Location                    : Not Applicable
   Additional Info                  : Not Applicable

Additional Data :
   Severity                         : Degraded/Warning
   Alert Type                       : Communications Alert
   Event Category                   : Support Firmware
   Event Subcategory                : Other
   Probable Cause                   : Communications Protocol Error
   Other Event Subcategory          : Gromit iLO Configuration Error
   Event Threshold                  : 1
   Event Time Window                : 0 (minutes)
   Actual Event Threshold           : 1
   Actual Event Time Window         : 0 (minutes)
   Record ID                        : 0x0
   Record Type                      : E1
   Reporting Entity                 : 0x0100ff03ff000017  enclosure1/blade3/cpusocket0/cpucore0
   Alert Level                      : 0x3
   Data Type                        : 0x16
   Data Payload                     : 0x1
   Extended Reporting Entity ID     : 0x2
   Reporting Entity ID              : 0x1
   IPMI Event ID                    : 0x2b05
   OEM System Model                 : NA
   Original Product Number          : AH337A
   Current Product Number           : AT147A
   OEM Serial Number                : NA

Version Info :
   Complex FW Version               : 7.6.0
   Provider Version                 : 5.111

Error Log Data :
   Error Log Bundle                 : 400000000001e86c
```

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

# OA

The OA provides diagnostic and configuration capabilities. See the *HPE Integrity Superdome X and Superdome 2 Onboard Administrator Command Line Interface Guide* for more information on the OA CLI commands. You can access the OA CLI through the network.

The status logs consist of the following:

- System Event
- Forward Progress
- Live Events

## Remotely accessing the OA

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

### Telnet session

#### Procedure

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

### SSH session

1. Start an SSH session to the OA.
2. Enter **`ssh -l <username> <IP-address>`** .

   Example:

```
ssh -l Administrator 16.113.xx.yy

The authenticity of host '16.113.xx.yy(16.113.xx.yy)' can't be established.
DSA key fingerprint is ab:5e:55:60:2b:71:8f:0c:55:3e:79:3e:a2:93:ea:13
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '16.113.xx.yy' (DSA) to the list of known hosts.

-------------------------------------------------------------------------------
-------------
This is a private system.  Do not attempt to login unless you are an
authorized user.  Any authorized or unauthorized access and use may be
monitored and can result in criminal or civil prosecution under applicable
law.
-------------------------------------------------------------------------------
-------------

Firmware Bundle Version: 5.73.0
Enclosure Number:        1
OA Number:               1
OA Role:                 Active
Administrator@16.113.xx.yy's password: <Administrator password>
```

3. At the CLI command prompt, enter OA commands.
4. To end the remote access SSH session, at the CLI command prompt, close the communication software or enter **`Exit`**, **`Logout`**, or **`Quit`**.

### Locally accessing the OA

If needed for debugging purposes, the OA can be accessed locally through a serial port connector on the rear of the OA module. Use a laptop or another computer as a serial console to communicate with the OA.

**NOTE:** Use of this interface is only for OA debugging purposes and to reset the OA password. This connection cannot be maintained under normal server operations

#### Procedure

1. Connect a serial cable between the computer and the serial port on the OA module. See **Connecting a PC to the OA serial port** for detailed information on this connection and launching the OA CLI.
2. When prompted, enter a valid user name, and then press **Enter**.
3. Enter a valid password, and then press **Enter**. The CLI command prompt appears.
4. Enter commands for the OA.
5. To end the terminal session, enter **`Exit`** at the prompt.

**NOTE:** If the serial console session for a partition is not closed properly, it will impact the speed of the associated partition console.

# Troubleshooting processors

#### Cause

There are several type of errors concerning the processor environment.

- EFI—typically occur during boot or runtime.
- Boot errors—typically related to a core failing self test, a QPI link not initializing to full speed, or a core or socket not coming out of reset.
- Runtime errors—can be due to a hardware or software defect that appears in either a core or uncore.
- I/O and XNC errors—consult the CAE error logs. Most common I/O errors are surprise down and completion timeouts.
- Uncore errors—result in the entire socket indicted and the blade deconfigured, since these errors affect all cores. If an uncore error is specific to a core, then the core can be deconfigured on the next boot and the rest of the cores on the socket are unaffected. The most common uncore errors are errors in the last level cache, firmware errors, or timeouts.
- Core errors—typically first or mid-level cache errors, core-level time-outs, and hardware defects.
- SMI/SMI2 errors

To troubleshoot processor errors, use the OA `SHOW CAE-L` command. Use the HR `SHOW INDICT` command to check for indications that a component might be failing.

```
show cae -L
```

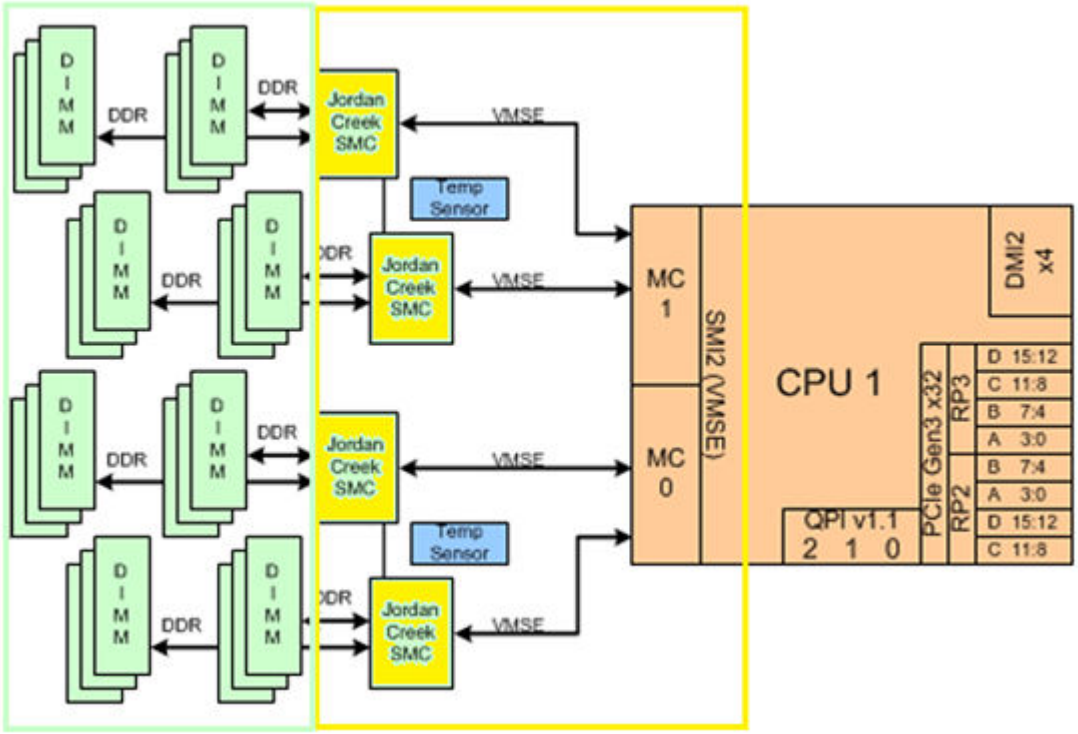
```
SI.No Severity  EventId EventCategory PartitionId EventTime                Summary
################################################################################################
1568  Critical  100900  Processor     5           Tue Aug 26 17:32:07 2014 Uncorrectable cache errors observed...
```

# Troubleshooting memory

### Symptom

Memory errors can be separated into two categories depending on where they originate:

- CPU to memory buffer errors — outlined in yellow below
- Memory buffer to DIMM errors — outlined in green below




### Solution 1

### Cause

### CPU to memory buffer errors

The link between the CPU and the memory buffer is the SMI2 or VMSE link. An SMI2 failure can manifest as reduced memory size, reduced memory throughput, or machine checks. However, other issues can result in the same symptoms. CAE will analyze the failure to determine whether SMI2 is at fault.

For errors related to SMI2, suspect the CPU, the memory buffer, or the traces between them. The memory buffer is permanently attached to the blade, so it cannot be indicted independently. Therefore, the CPU and/or blade are indicted for an SMI2 error.

If an error occurs on SMI2, replacing DIMMs is unlikely to correct the problem. DIMMs reside on a separate DDR bus and changes to the DDR bus will not affect the SMI2 bus.

**IMPORTANT:** Do **not** move or replace DIMMs for an `SMI2_TRAINING_FAILURE` event.

**Solution 2**

**Cause**

**Memory buffer to DIMM errors**

The channel between the memory buffer and the DIMM is the DDR channel. Because up to three DIMMs reside on the same DDR channel and two DDR channels might be configured in lockstep (RAS mode enabled), up to six DIMMs can be affected by a single faulty DIMM. It is important to distinguish faulty or suspect DIMMs from healthy DIMMs that happen to reside on the same bus.

On a new installation, DDR training failures can result from DIMMs being partially unseated during shipping. A common symptom of a partially unseated DIMM is a MEM_DIMM_NO_VALID_DELAY event. If the machine is still in the installation phase and has not been released to the customer, before replacing a DIMM, try removing and reinstalling all the DIMMs on that DDR channel. A DIMM that has been in use for some time is unlikely to be spontaneously unseated.

If a DIMM suffers a correctable or uncorrectable error at runtime and must be replaced, a DIMM pair might be identified and indicted. A DIMM pair will be two DIMMs on the same memory buffer with the same loading letter, such as 19A and 24A. In this case, replace both DIMMs in the pair.

CAE generates error events for faulty or suspect DIMMs as indicted. Replace these DIMMs.

Health Repository, the EFI `info mem` command, and IPMI events might also identify additional deconfigured DIMMs, sometimes called partner-deconfigured DIMMs, lockstep-disabled DIMMs, or sibling-disabled DIMMs. These DIMMs are healthy and should not be replaced.

To identify a possible faulty DIMM, use the HR `SHOW INDICT` command. Replace DIMMs that are indicted. Do not replace DIMMs that are deconfigured unless there are other indications of a faulty DIMM, such as being identified with DIMMERR.

**Solution 3**

**Cause**

**Using DIMMERR**

If there are memory errors that do not clearly indicate which hardware is at fault, the HR `dimmerr` command can be used to look for patterns of memory failures.

You can use DIMMERR as follows:

- To corroborate other errors that correspond to a specific DIMM or blade.
- To indicate memory training faults.
- To look for DIMM errors in newly installed or replaced DIMMs.
- To look for DIMM errors during partition boot as part of a system installation.

**IMPORTANT:** DIMMERR will show memory events that were **correctable**. It is important to note that correctable errors are expected on large memory systems and all systems will show several correctable errors over time. Correctable errors only result in indictment after reaching a certain threshold.

Do **not** replace DIMMS for normal correctable errors.

From the Health Repository viewer, enter **`dimmerr <location>`**, where <*location*> is the DIMM slot or a blade.

Example: `dimmerr blade-1/1` returns information about all DIMMs for a server blade in slot 1 of cabinet 1.

```
DIMM INFO for Cabinet: 1 Board Slot: 1
   dimm-1/1/0/1 Location: 1A
                  Status: OK No Errors Logged.
   dimm-1/1/0/2 Location: 2C
                  Status: OK No Errors Logged.
   dimm-1/1/0/3 Location: 3B
   Row  Bank Col Type Errors     First Detected              Last Detected
   ---- ---- --- ---- ------  --------------------    ----------------------------
      0  256   0    0     1     Fri Feb 11 18:10:51   2011 Fri Feb 11 18:10:51 2011

   dimm-1/1/0/4 Location: 4D
                    Status: OK No Errors Logged.
   dimm-1/1/0/5 Location: 5D
                    Status: OK No Errors Logged.
```

# Troubleshooting cards and drivers

**Cause**

If driver issues are suspected, use the UEFI driver bypass option to bypass loading the suspected driver. This could occur if a card is transferred from another system with an old driver and is placed in a new system and connecting drivers results in failure to boot.

The UEFI driver loading bypass option only appears and is effective during system firmware boot. It does not appear if the UEFI Front Page is re-entered later.

Normally, system firmware will proceed with automatic boot entry execution (default is seven seconds). To configure UEFI driver loading bypass, you must press **P** before the countdown completes to access the UEFI Driver Loading Bypass Configuration menu.

After pressing the key, a submenu will appear. Select the desired bypass option by pressing a key as the following indicates:

```
      UEFI Driver Loading Bypass Configuration
Press: 1 — Bypass loading UEFI drivers from I/O slots
       2 — Bypass loading UEFI drivers from I/O slots and blade LOMs
       N / n  -  Normal loading of UEFI drivers
          Q / q  -  Quit
Waiting for user input.
```

The Bypass loading UEFI drivers from I/O slots and blade LOMs option might be useful when a bad FlexLOM and/or mezzanine card UEFI driver is preventing partition boot. USB drivers can still be used at the UEFI Shell to help with FlexLOM update.

**NOTE:** There is no quick reset ability to save time when you are running the bypass option several times in a row.

After selecting an option, control returns to the UEFI Front Page.

You can then proceed with I/O firmware update (SUM from DVD/Virtual Media .iso).

# Troubleshooting compute enclosure events

**Cause**

**Loss of enclosure settings**

The OA battery preserves the Integrity Superdome X enclosure settings, such as users and network settings. When the battery is low, there is a risk of losing these enclosure settings if the OA is removed or if AC power is interrupted.

When the OA detects a low battery, the battery diagnostic status in `SHOW OA STATUS` will be marked as `Failed`.

```
sdx-oa> show oa status

Onboard Administrator #1 Status:
     Name:   sdx-oa
     Role:   Active
     UID:    Off
     Status: Degraded

     Diagnostic Status:
          Internal Data   OK
          Device Failure  OK
          Missing Device  OK
          Firmware Mismatch  OK
          OA Battery      Failed
          Indicted        OK
```

If the above error occurs, the battery should be replaced. The OA will also log an entry in `syslog` advising the battery be replaced.

```
The OA battery is low or has failed. Configuration settings may be lost if the OA loses power.
Replace the OA Battery with spare part #708907-001.
```

# Troubleshooting firmware

**Cause**

There are three different firmware systems.

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

All firmware systems can be updated.

System firmware recipe can be updated using SUM or manually using OA CLI. There are different bundles for each method.

For instructions to update firmware and drivers, see **Manually updating the complex firmware** on page 34 and **Installing the latest complex firmware using SUM** on page 34.

For more information about installing firmware updates, see the detailed instructions provided in the firmware download bundle. Always follow the update instructions for each firmware release.

## Identifying and troubleshooting firmware issues

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

Probable firmware failure areas are:

- Unsupported firmware installation
- Corrupt firmware installation

To troubleshoot firmware issues:

**Procedure**

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

## Verifying and installing the latest firmware version

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

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

**Procedure**

1. Go to **http://www.hpe.com/support/hpesc**.
2. Enter the product name or browse to the product.
3. Select **drivers, software & firmware** under the **Download options** tab.
4. Select the product download type.
5. Select a language and then your OS.
6. Select the appropriate download, and then follow the instructions.

---

**NOTE:**

The complex (or management side) firmware can be updated while the partition remains online, and then the partition (or system side) firmware can be applied to the nPartition.

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

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

---

## System firmware

System firmware bundle includes firmware for complex components including the following:

- Server blade firmware (not including LOMs)
- Partition firmware for each server blade and OA
- OA firmware
- Manageability module firmware, including GPSMs and XFMs

**IMPORTANT:**

Always use the `all` option when updating firmware using the OA CLI. For example:

```
 OA1> update firmware usb://d2/BL920sGen<x.x>.xx.xxx-fw.bundle all
```

```
 OA1> update firmware ftp://user:passwd@Hostname/HPx86/BL920sGen<x-x>.<xx.xxx>-
fw.bundle all
```

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

**NOTE:** The `update firmware` command checks the installed FRUs and will only update FRUs that do not match the complex firmware version.

## FRU replacement firmware update procedures

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

**IMPORTANT:** Check for indicts before and after each firmware update.

| FRU | Process |
|---|---|
| Blade – Requires a nPar outage | 1. Power OFF the partition the blade is assigned to. (See Note following this table)<br>2. Remove/Replace the suspect blade following the instructions in the service guide.<br>3. Use the `update firmware <uri> all` command, pointing it to the <*uri*> of a bundle file that matches what is installed on the complex. This command checks the current firmware version of all installed FRUs and will only update FRUs that do not match the complex firmware version.<br>4. Check for indicts.<br>5. Power on the partition. |
| XFM — Requires a Complex outage | 1. Power OFF all partitions.<br>2. Remove and replace the suspect XFM following the instructions in the service guide.<br>**IMPORTANT:** Do not mix XFM and XFM2 crossbar modules in the same system.<br>3. Use the `update firmware <uri> all` command, pointing it to the <*uri*> of a bundle file that matches what is installed on the complex. This command checks the current firmware version of all installed FRUs and will only update FRUs that do not match the complex firmware version.<br>**NOTE:** The minimum firmware bundle for XFM2 is v8.2.106.<br>4. Check for indicts.<br>5. Power on all partitions. |

*Table Continued*

| FRU | Process |
|---|---|
| OA — No outage required | 1. Ensure that the suspect OA is the standby OA; use the `force takeover` command if needed.<br>2. Remove and replace the suspect OA.<br>3. Use the `update firmware <uri> all` command, pointing it to the <*uri*> of a bundle file that matches what is installed on the complex. This command checks the current firmware version of all installed FRUs and will only update FRUs that do not match the complex firmware version.<br>4. Check for indicts. |
| GPSM — No outage required | 1. Ensure that you are replacing the indicted GPSM.<br>2. Disconnect the cables from the GPSM being replaced.<br>3. Remove and replace the suspect GPSM.<br>4. Use the `update firmware <uri> all` command, pointing it to the <*uri*> of a bundle file that matches what is installed on the complex. This command checks the current firmware version of all installed FRUs and will only update FRUs that do not match the complex firmware version.<br>5. Check for indicts.<br>**NOTE:** You will see indictments related to the loss of redundancy of the CAMNet.<br>6. Acquit the indictments related to the loss of redundancy of the CAMNet. |

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

## I/O firmware

Every FlexLOM and mezzanine card supported requires its own UEFI driver and some also require card specific ROM firmware.

For a complete list of supported I/O cards and related firmware, see the *Firmware Matrix for HPE Integrity Superdome X servers* document at **http://www.hpe.com/info/superdomeX-firmware-matrix**.

The following are minimum required firmware versions for supported I/O cards.

| Card | Gen8 minimum firmware version | Gen9 minimum firmware version |
|---|---|---|
| HPE Ethernet 10Gb 2-port 560FLB / 560M Adapter | Boot: 3.0.24<br>UEFI: 4.5.19 | Boot: 2.3.45<br>UEFI: 4.9.10 |
| HPE QMH2672 16Gb 2P FC HBA | Multiboot: 2.02.47 & 4.0.0.0–1<br>FW: 7.04.00<br>BIOS: 3.28<br>UEFI: 6.21 | Multiboot: 2.02.47 & 4.0.0.0–1<br>FW: 7.04.00<br>BIOS: 3.31<br>UEFI: 6.37 |
| Infiniband HPE IB FDR 2P 545M Adapter | | FW: 10.10.50.52<br>UEFI: 14.6.27<br>Flexboot: 3.4.306 |
| HPE FlexFabric 20Gb 2P 630FLB / 630M Adapter | | MFW: 7.10.72<br>MBA: 7.10.71<br>EFI: 7.12.83<br>UEFI: 7.12.31<br>iSCSI Boot: 7.10.33<br>CCM: 7.10.71<br>L2FW: 7.10.31 |
| HPE FlexFabric 20Gb 2P 650FLB / 650M Adapter | | FW: 10.7.110.34<br>iSCSI Boot EFI: 10.7.110.15<br>UEFI: 10.7.110.34<br>iSCSI BIOS: 107.00a9 |
| HPE FlexFabric 10 Gb 2–port 534FLB / 534M Adapter | Boot: 7.10.37<br>UEFI: 7.10.54 | Boot: 7.12.83<br>7.12.31 |

## Interconnect module firmware

The system supports the LAN Pass-Thru Module, the HPE ProCurve 6120XG and 6125XLG blade switches, and the HPE 4X FDR Infiniband Switch.

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

The following are minimum required firmware versions for supported Interconnect modules.

| Interconnect module | Firmware version |
|---|---|
| ProCurve 6125XLG blade switch | 6125-CMW520-R2112 |
| ProCurve 6120G/XG Ethernet Blade Switch | Z.14.52 |

*Table Continued*

| Interconnect module | Firmware version |
|---|---|
| 10 GB Ethernet Pass-Thru | 1.0.11.0 |
| Brocade 16Gb SAN switch | 7.3.1a or later |
| 4X FDR Infiniband Switch | 3.4.0008 |

# Troubleshooting partitions

**Cause**

Use the following commands to troubleshoot partitions:

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

  If any issues are reported, use the `show CAE` command for more information.
- Use the `show syslog OA 1` command to check the `syslog` file for the active OA. For example:

```
OA-CLI> show syslog oa 1

Mar 28 17:20:59  mgmt: Blade 8 has been allocated 1100 watts but iLO is reportin
g the blade is powered off.
Mar 28 17:21:24  mgmt: Blade 1 Ambient thermal state is OK.
Mar 28 17:21:24  mgmt: Blade 3 Ambient thermal state is OK.
Mar 28 17:21:24  mgmt: Blade 5 Ambient thermal state is OK.
Mar 28 17:21:44  mgmt: Blade 7 Ambient thermal state is OK.
Mar 28 17:26:31  parcon: Note: Partition Controller has initialized all partition
permissions to the default behavior
Mar 28 17:28:53  parcon: Note: nPartition 2: Power On of nPartition completed
Mar 28 17:29:37  mgmt: Blade 2 Ambient thermal state is OK.
Mar 28 17:29:37  mgmt: Blade 4 Ambient thermal state is OK.
Mar 28 17:29:37  mgmt: Blade 6 Ambient thermal state is OK.
Mar 28 17:29:58  mgmt: Blade 8 Ambient thermal state is OK.
Mar 28 17:33:12  -cli: Administrator logged out of the Onboard Administrator
Mar 28 17:33:14  -cli: Administrator logged out of the Onboard Administrator
Mar 28 17:33:16  -cli: Administrator logged out of the Onboard Administrator
Mar 28 17:33:22  -cli: Administrator logged out of the Onboard Administrator
Mar 28 17:33:24  -cli: Administrator logged out of the Onboard Administrator
```

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

See the *HPE Integrity Superdome X and Superdome 2 Onboard Administrator Command Line Interface User Guide* for information on uploading and downloading partition specification files and runtime configuration files. These actions are not typically needed, but it is recommended to keep a valid copy of the configuration available for disaster recovery.

# Troubleshooting the network

**Cause**

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

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

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

**Supported IP address ranges for EBIPA**

Supported IP address ranges for EBIPA include all IP addresses except those in the ranges of 169.254.x.y and 10.254.x.y, which are reserved for the internal management network. The non-restricted ranges may be used for iLOs and OAs as long they are not duplicated (generate IP address conflicts). In addition, all the IP addresses must be within the same subnet defined by netmask and IP address so that all OAs as well as all iLOs fit into that subnet.

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

```
SHOW EBIPA

EBIPA Device Server Settings
Bay Enabled EBIPA/Current   Netmask         Gateway         DNS             Domain
--- ------- --------------- --------------- --------------- --------------- ------
  1   Yes   10.67.52.166    255.255.254.0   10.67.52.1
            10.67.52.166
1A    No
1B    No
  2   Yes   Link Local      255.255.254.0   10.67.52.1
            10.67.52.165
2A    No
2B    No

SHOW OA NETWORK ALL

Onboard Administrator #1 Network Information:
        Name: OA-1
        DHCP: Disabled
        IP Address: 10.67.52.bbb
        Netmask: 255.255.254.0
        Gateway Address: 10.67.52.aaa
        Primary DNS: 0.0.0.0
        Secondary DNS: 0.0.0.0
        MAC Address: 9C:8E:99:29:xy:yx
        Link Settings: Auto-Negotiation, 1000 Mbit, Full Duplex
        Link Status: Active
        Enclosure IP Mode: Disabled

Onboard Administrator #2 Network Information:
        Name: OA-2
        DHCP: Disabled
        IP Address: 10.67.52.ccc
        Netmask: 255.255.254.0
        Gateway Address: 10.67.52.aaa
        Primary DNS: 0.0.0.0
        Secondary DNS: 0.0.0.0
        MAC Address: 9C:8E:99:29:xy:xy
        Link Settings: Auto-Negotiation, 1000 Mbit, Full Duplex
        Link Status: Active
        Enclosure IP Mode: Disabled
```

# Troubleshooting fabric issues

### Cause

The Integrity Superdome X has fabric connections between all the blades installed in the compute enclosure.

### Test fabric

To determine the healthy status for all crossbar connections, use the `HR> test fabric` command. This is a valuable test during installation when all partitions can be taken down at the same time. During normal operation when some or all partitions can't be taken down at the same time, use the procedure described in *Show complex status* below.

**IMPORTANT:** The `HR> test fabric` requires a complex outage. Before running `HR> test fabric`, all indicted and deconfigured parts must be cleared and the partition must be powered off.

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

```
OA1 HR> test fabric

Begin test 1: System Fabric Components
  Acquitting any current fabric and CAMNet indictments, and deconfigurations.

  Beginning fabric test
SUCCESS: System Fabric test complete
System Fabric routed successfully.

Begin test 2: Management Network Components
CAMNet test has executed without finding faults
Management connectivity test complete

Begin test 3: Global Clock Components
Clocks test started...

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

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

SUCCESS: Clocks test passed.
Clocks test complete.

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

### Show complex status

Use this procedure to test for fabric issues when some or all partitions can't be taken down at the same time.

### Action

1. Run `SHOW XFM STATUS all` to check the health and power status of the XFM modules.
2. Run `SHOW COMPLEX STATUS` and check the `Xfabric status` entry for the status.
3. Check `SHOW CAE –L` and check for any xfabric routing issues and fabric link failures.

# Troubleshooting clock-related issues

### Cause

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

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

```
HR> test clocks

Clocks test started...

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

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

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

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

# Troubleshooting MCAs

### Cause

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

To view problem action statements about the MCA event, use the `show cae –L –c 10` command and note the `Sl.No`. Then display detailed information about the bad FRU including probable cause and recommended action by using the `show cae -E -n xxxx` command, where *xxxx* is the Sl.No.

```
show cae -L -c 10
Sl.No Severity    EventId EventCategory PartiionId  EventTime                Summary
################################################################################
72294 Fatal       9645    System Fir... 1           Wed Aug 13 07:10:57 2014 The nPartitions
72287 Degraded    100142  System Int... 1           Wed Aug 13 06:35:0^ 2014 PCIe Link
```

```
show cae -E -n 72287
Alert Number : 72287

Event Identification :
   Event ID                       : 100142
   Provider Name                  : PCIeIndicationProvider
   Event Time                     : Wed Aug 13 06:35:06 2014
   Indication Identifier          : 310014220140813063506

Managed Entity :
   OA Name                        :
   System Type                    :
   System Serial No.              :
   OA IP Address                  :

Affected Domain :
   Enclosure Name                 :
   RackName                       :
   RackUID                        :
   Impacted Domain                :
   Complex Name                   :
   Partition ID                   :
   SystemGUID                     :

Summary :
   PCIE Link Bandwidth Reduction

Full Description :
   The system has experienced an error on PCIe link. The data has been successfully retransmitted,
   but the link is now operating at a lower bandwidth.

Probable Cause 1 :
   The PCIe link hardware is not functioning properly.

Recommended Action 1 :
   The PCIe link might be part of a single FRU, or might be technology that connects through multiple
   FRU's. The FRU list is included as a reference. Check for physical damage (bent pins, cracked
   traces, contamination or corrosion) on the FRU connection points and ensure proper mating/
   seating occurs. If the problem persists, replace only one FRU at a time in the order given
   below. Test the system between each FRU replacement.

Replaceable Units(s) :
   ...
   ...
   ...
```

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

```
OA-CLI> show errdump dir mca

Logtype:  MCA (Machine Check Abort)
Bundle                  nPar        vPar    time
0x011000000000aae6        1               Mon Jan 20 10:30:31 CET 2014
0x011000000000aae5        1               Fri Jan 17 12:23:49 CET 2014
0x011000000000aae4        1               Fri Jan 17 10:51:06 CET 2014
0x011000000000aae3        1               Thu Jan 16 21:43:45 CET 2014
0x011000000000aae2        1               Mon Jan 13 11:44:30 CET 2014
0x011000000000aae1        1               Mon Jan 13 11:43:27 CET 2014
0x011000000000aadf        1               Tue Dec 10 01:07:39 CET 2013
0x013000000000aac0        1               Sun Dec  8 01:12:08 CET 2013
0x011000000000aadd        1               Sat Dec  7 01:58:05 CET 2013
0x011000000000aadc        1               Sat Dec  7 01:57:02 CET 2013
```

If an MCA of interest is found, it can be captured by running the command `show errdump mca bundle <ID>`.

# Troubleshooting the blade interface (system console)

**Cause**

All system console connections are made through the OA CLI via the management network.

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

# Websites

**General websites**

**Hewlett Packard Enterprise Information Library**

**www.hpe.com/info/EIL**

**Single Point of Connectivity Knowledge (SPOCK) Storage compatibility matrix**

**www.hpe.com/storage/spock**

**Storage white papers and analyst reports**

**www.hpe.com/storage/whitepapers**

For additional websites, see **Support and other resources**.

# 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 information for your product, see the links provided below:

**HPE ProLiant and IA-32 Servers and Options**

**www.hpe.com/support/ProLiantServers-Warranties**

**HPE Enterprise and Cloudline 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.

# 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 allows the selection of any UEFI OS loader from any boot medium that is supported by UEFI boot services. A UEFI OS loader supports multiple options on the user interface.

UEFI supports booting from media that contain a UEFI OS loader or a UEFI-defined system partition. A 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 a 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 OSs, even multiple versions of the same OSs.

The UEFI System Utilities allows you to control the server's booting environment. Depending on how boot options are configured after the server is powered up, the Boot Manager presents you with different boot options to select. For example, you can boot to the UEFI Shell, or to an OS located on the network or residing on media in the server. The Device Manager presents devices to configure. The Boot Maintenance Manager presents menus to configure different settings. See **Boot Maintenance Manager** on page 108 for more information.

## UEFI Shell and POSSE commands

For more information about these commands, enter **`help`** or **`help <command>`** at the UEFI Shell prompt.

### Table 16: UEFI Shell commands

| UEFI Shell command | Definition |
|---|---|
| ? | Displays the UEFI Shell command list or verbose command help |
| alias | Displays, creates, or deletes UEFI Shell aliases |
| attrib | Displays or changes the attributes of files or directories |
| autoboot | Sets or displays autoboot timeout and retries |
| bcfg | Displays or modifies the driver/boot configuration |
| boottest | Turns specific speedyboot bits on or off |

*Table Continued*

| UEFI Shell command | Definition |
|---|---|
| cd | Displays or changes the current directory |
| cls | Clears standard output and optionally changes background color |
| comp | Compares the contents of two files |
| 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 |
| exit | Identifies the code executed when 'if' is FALSE |
| endfor | Ends a 'for' loop |
| endiff | Ends the block of a script controlled by an 'if' statement |

*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 |
| getmtc | Gets the MTC from BootServices and displays it |
| goto | Forces batch file execution to jump to specified location |
| 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 IPv4 network stack |
| ifconfig6 | Displays or modifies IPv6 configuration for network interface |
| info | Displays hardware information |
| input | Take user input and place in 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 |
| 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 |
|---|---|
| parse | Retrieves a value from a record output in a standard format |
| pause | Prints a message and waits for keyboard input |
| pci | Displays PCI device list or PCI function configuration space |
| ping | Pings a target machine using the UEFI IPv4 network stack |
| ping6 | Pings a target machine using the UEFI IPv6 network stack |
| reconnect | Reconnects one or more UEFI drivers to a device |
| reset | Resets the system |
| rm | Deletes one or more files or directories |
| 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 |
| setvar | Changes the value of a UEFI variable |
| shift | Shifts batch file input parameter positions |
| smbiosview | Displays SMBIOS information |
| stall | Stalls the processor for the specified number of microseconds |
| svrconfig | Controls server settings |
| 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 |

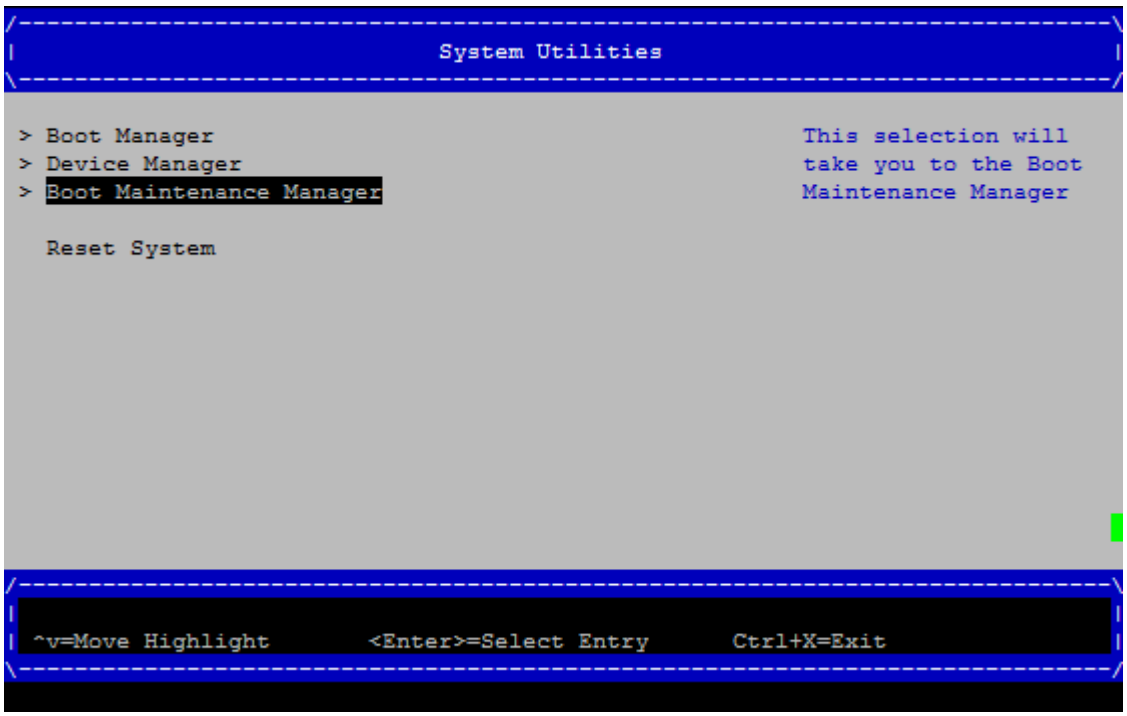
*Table Continued*

| UEFI Shell command | Definition |
|---|---|
| vol | Displays or changes a file system volume label |
| xchar | Turns on/off extended character features |

# Boot Maintenance Manager

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

- Boot Options Menu
- Driver Options Menu
- Boot From File
- Set Boot Next Value Menu
- Set Time Out Value Menu

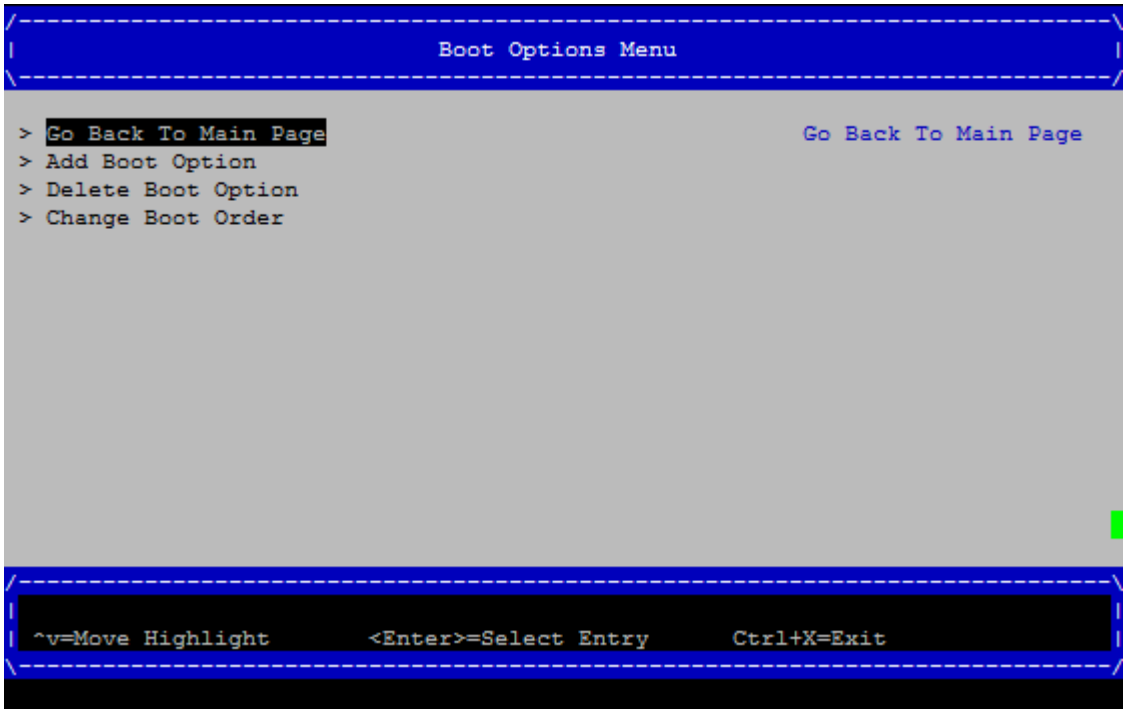





**Boot Options**

The Boot Options menu contains the following options:

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




**Driver Options**

The Driver Options menu contains the following options:

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

**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.

**Set Boot Next Value**

Use this option to launch the selected boot option upon entering the initial UEFI Front Page and after the automatic boot countdown completes. This option is useful for booting an option that only needs to be booted once, without changing any other setting. This is a one-time operation and does not change the permanent server boot settings.

**Set Time Out Value**

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

Interrupting the timeout during the countdown stops UEFI from loading any boot options automatically. If the countdown does not occur, boot options must be selected manually.

**Save EFI variables**

After setting up redundant paths to OS boot disks and installing the OS, boot entries are created. These boot entries are stored in a UEFI variable and held in NVRAM. As a best practice, EFI variables should also be stored in a disk file as a backup in case they are lost (parremove/parcreate, corrupted NVRAM).

To save the NVRAM variables onto the redundant disks, use the UEFI command `dmpstore -all -s <filename>`

To restore the EFI variables, use `dmpstore -all -l <filename>`

**NOTE:** Redundant paths to disks might not be seen by default at EFI without boot entries. You might need to use `reconnect -r` and `map -r` to locate all of the disks to find the saved NVRAM file.

# Onboard Administrator

The OA is an independent support system for the server. It provides a way 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 OA, see the *HPE Integrity Superdome X and Superdome 2 Onboard Administrator User Guide*.

# Connecting to the OA with a local PC

A PC might be connected directly to the OA module in the following two ways:

- Using a terminal emulator through the OA service port (Ethernet). Use this port for normal communication with the OA. See **Connecting a PC to the OA service port**.
- Using a standard serial connection through the OA serial port (RS232). This is used for debugging purposes only and is not used for monitoring or modifying OA settings. See **Connecting a PC to the OA serial port**.

## Connecting a PC to the OA service port

The OA service port is the compute enclosure link-up connector which also has a laptop icon next to the up arrow. This port is a 100BaseT Ethernet jack and might be directly connected to a PC RJ45 Ethernet connector using a standard CAT5 patch cable as the wiring on the link-up connector is crossed over to allow direct connect to a PC 100BaseT connector.

The Service Port provides direct connection to the active OA module in the compute enclosure. The network connection is private to the enclosure and cannot be used to access any device outside the internal enclosure management network. Use the connection to directly access the active OA at the active service IP address, located on the enclosure Insight Display, **Enclosure Info** screen.

The laptop or PC connected to the enclosure service port must have DHCP enabled its network connection. The laptop or PC gets a zero-conf IP address in the range of after a DHCP timeout if the laptop or PC is running Windows. If the laptop or PC is running Linux, you must probably manually set the network port to 169.254.2.1 with a netmask of 255.255.0.0.

**Procedure**

1. Connect a laptop or PC 100/1000Mb Ethernet port to the enclosure service (link-up) port on the OA interposer using a standard CAT5e patch cable.
2. Access an active OA as follows:
   - **To access an active OA GUI**: Use the active OA service IP address from the Insight Display on that enclosure as the web address in your laptop or PC browser.
   - **To access an active OA CLI**: Use a Telnet or Secure Shell program based on the configured network access settings and connect to the active OA service IP address.
3. Log into the OA with the "Administrator" user account and the OA default password located on the OA toe tag.

   For information on using the OA CLI, see the *HPE Integrity Superdome X and Superdome 2 Onboard Administrator Command Line Interface User Guide*.

Because none of the configured device bay iLOs have an IP address in the zero-conf IP address range, you must manually add a network route on the laptop or PC to access the iLO IP address from the service port. The syntax for using a Windows laptop or PC command shell is as follows:

```
route add iLO_IP_address mask 255.255.255.255 <OA_service_IP_address>
```

After the route to an iLO has been added to the laptop or PC, the iLO can be accessed from the OA GUI or directly using Secure Shell.

The active OA does not support routing from the service port to an interconnect module management processor. However, if the interconnect module supports the serial connection to the OA, then the OA CLI `CONNECT INTERCONNECT` command can be used to connect to an interconnect module.

The service port connection is intended only as a temporary Ethernet connection to the enclosure private network to eliminate disconnecting the management port from the external management network for access to the OA during a maintenance event.

# Connecting a PC to the OA serial port

If needed for debugging purposes, the OA can be accessed locally through a serial (debug) port connector on the rear of the OA module. Use a laptop or another computer as a serial console to communicate with the OA.

**IMPORTANT:** Use this interface only for OA debugging purposes or during initial setup for assigning active OA network information. This connection cannot be maintained under normal server operations.

**Procedure**

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

   **NOTE:** A laptop or PC connected to the OA serial port requires a null-modem cable. The minimum connection to an external console is pins 2, 3, and 5.

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

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

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

3. Log into the OA with the "Administrator" user account and the OA default password located on the OA toe tag.

   For information on using the OA CLI, see the *HPE Integrity Superdome X and Superdome 2 Onboard Administrator Command Line Interface User Guide*.

# Modifying the serial connection baud rate

**NOTE:** This information applies only to Integrity Superdome X systems.

If the serial baud rate must be adjusted from the OA to match the serial baud rate coming from the OS, modify the OS serial console from the default 9600 baud using `HPONCFG` command from the OA CLI. Set the baud rate (serial speed) by entering the *value* shown in the table below.

```
SET SCRIPT MODE ON
HPONCFG <bay#> << EOF
<RIBCL VERSION="2.0">
   <LOGIN USER_LOGIN="adminname" PASSWORD="password">
      <RIB_INFO MODE="write">
         <MOD_GLOBAL_SETTINGS>
               <SERIAL_CLI_SPEED value="1"/>
         </MOD_GLOBAL_SETTINGS>
      </RIB_INFO>
   </LOGIN>
</RIBCL>
EOF
```

| SERIAL_CLI_SPEED | Value |
|---|---|
| 9600 | 1 |
| 19200 | 2 |
| 38400 | 3 |
| 57600 | 4 |
| 115200 | 5 |

**NOTE:** For Linux systems, a CLI speed of 115200 baud (`value="5"`) is recommended.

# Insight Display

**NOTE:**

Images in this section might not accurately reflect Integrity Superdome X displays.

## 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 OA 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.

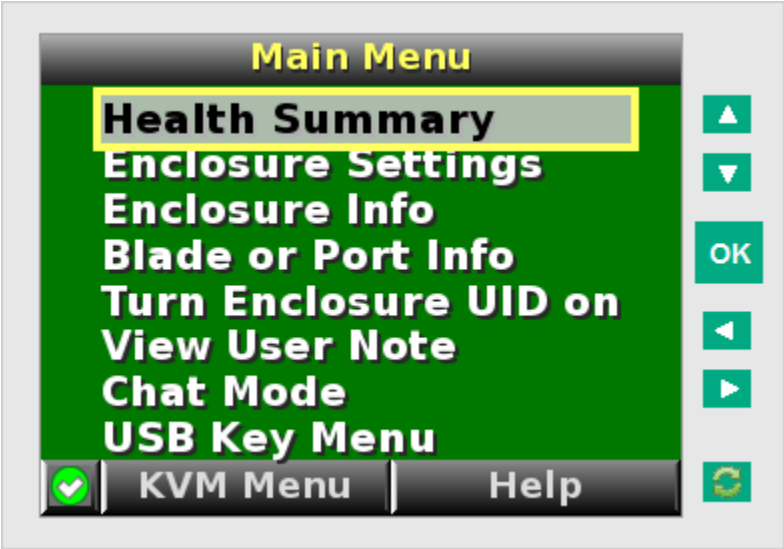
- **Dark (no power)**—The Insight Display has a two-minute inactivity period. If no action is taken and no alert condition exists, then the screen light turns off after two minutes. Pressing any button on the Insight Display reactivates the screen.

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.

## 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 OA 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 OA 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 OA.

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 do the following:

- 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 the following methods:

- 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.

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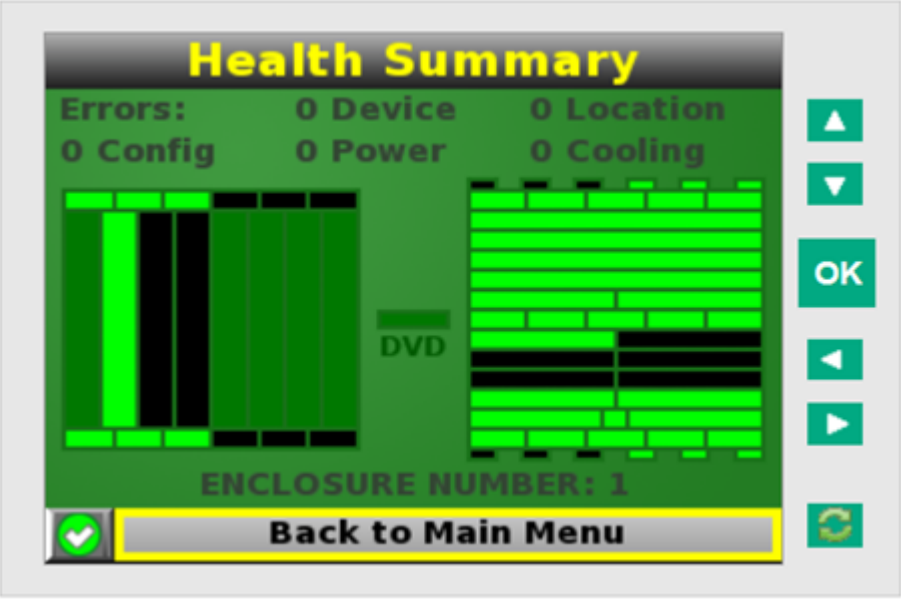
**NOTE:** A black DVD rectangle indicates no DVD is connected to the OA while a dark gray rectangle indicates the DVD drive is present, but that no media is present. A dark green rectangle indicates that media is present, but not actively connected to any server or that all connected servers have issued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

---

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




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

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

## Enclosure Settings screen

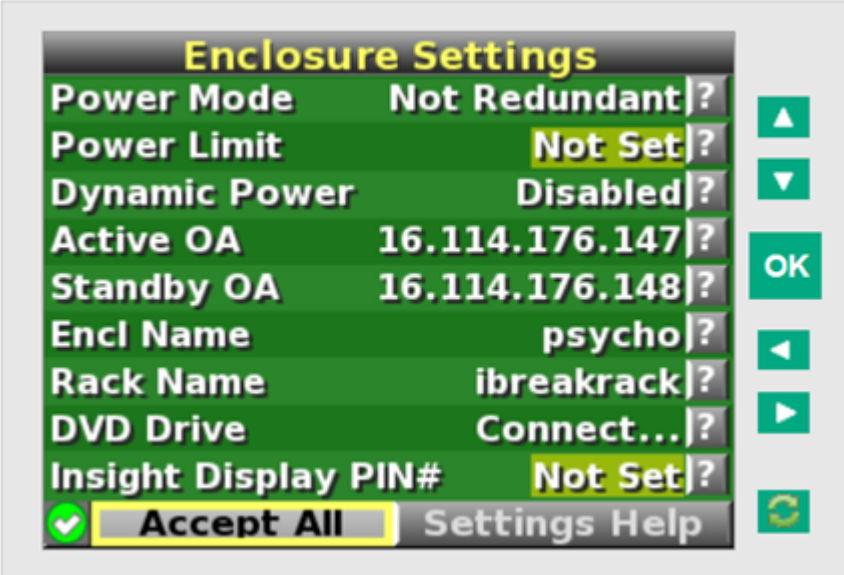
The Enclosure Settings screen displays the following setting information about the enclosure:

- Power Mode settings
- Power Limit settings
- Dynamic Power settings
- 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 OS or software on the partitions.

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

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

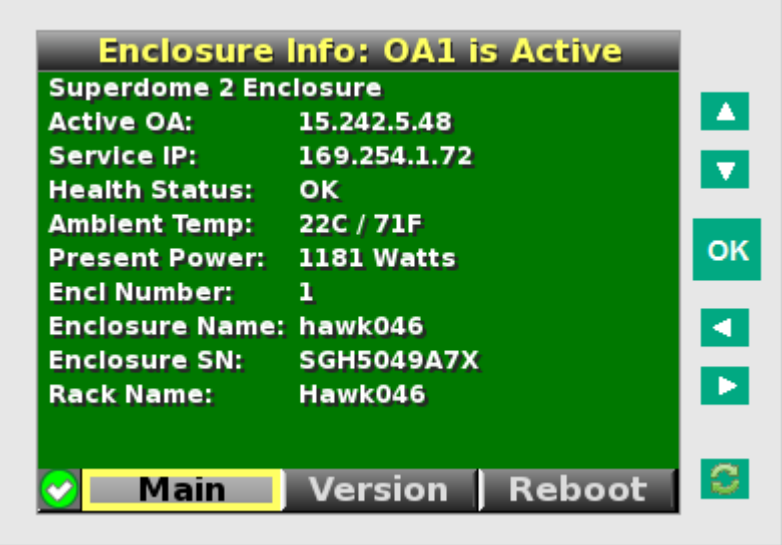



## Enclosure Info screen

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

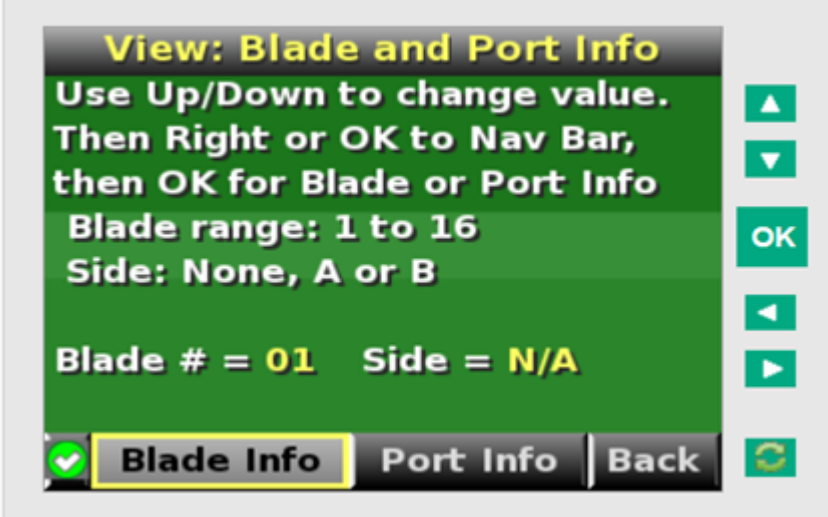
- Active OA IP address
- Active OA Service IP address
- Current health status of the enclosure
- Current enclosure ambient temperature
- Current AC input power to the enclosure

- Enclosure number
- Enclosure name
- Enclosure serial number (Integrity Superdome X)
- Rack name



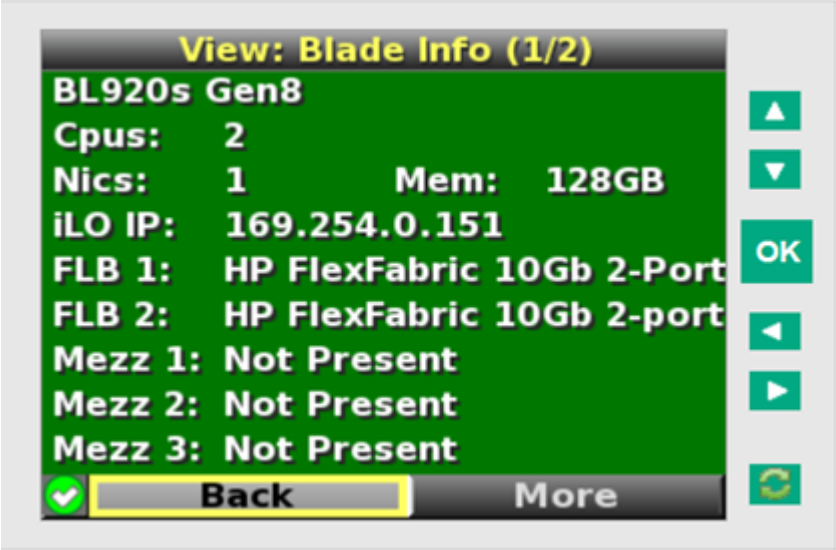

## Blade and Port Info screen

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



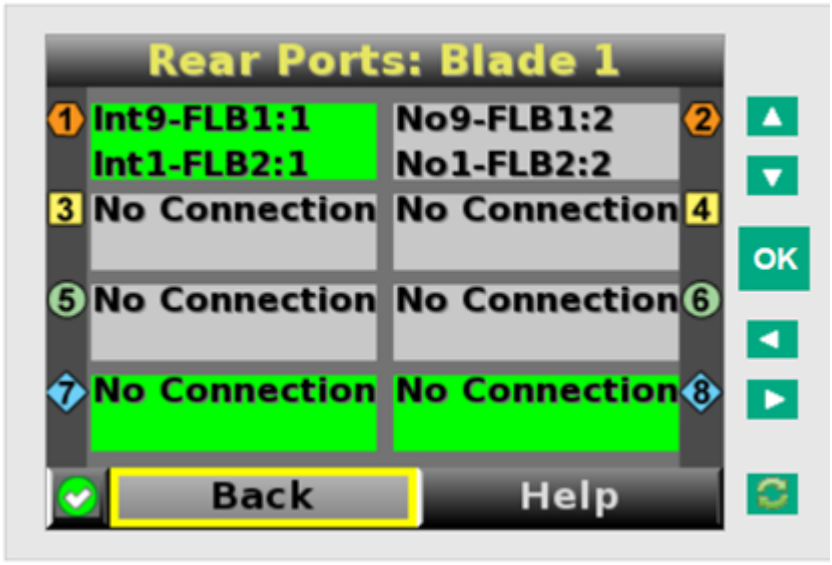

To view information about the server blade, select **Blade Info** and press the **OK** button.

**NOTE:** The screen below does not depict the fully loaded blade supported for this release.




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

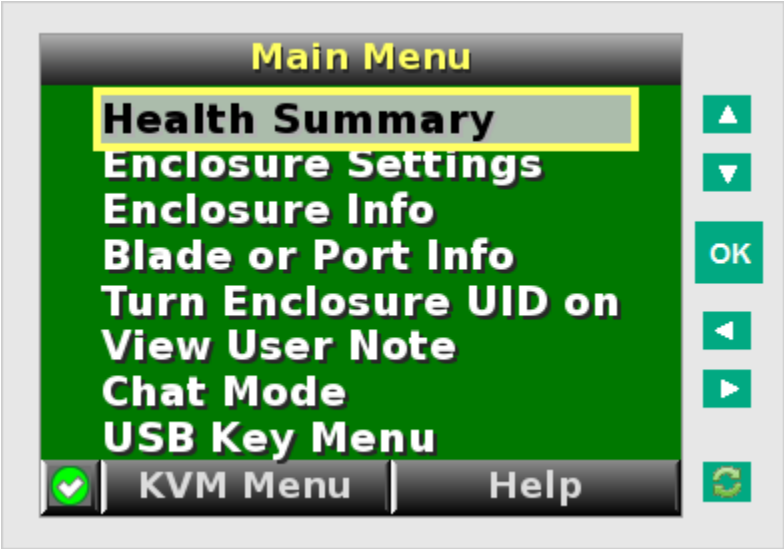
The following screen shows a server blade with four embedded NICs. The other interconnect bays are empty. The four embedded NICs are connected to particular port numbers on the interconnect modules.




## 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.

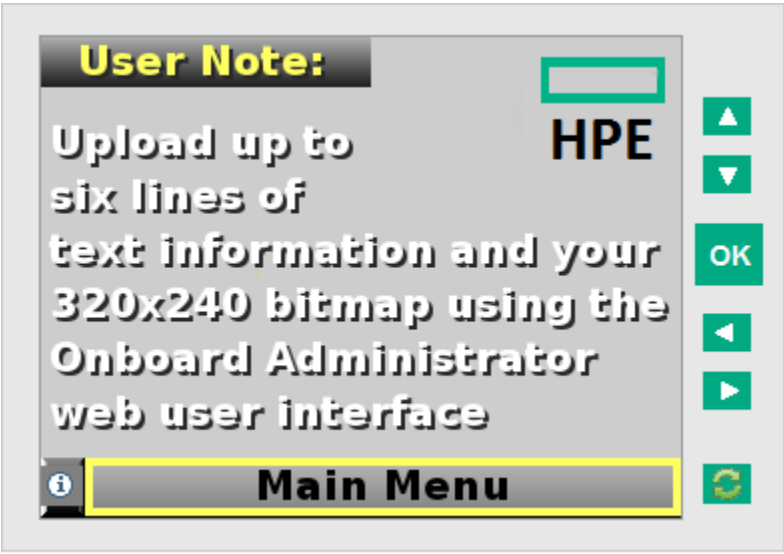
Selecting **Turn Enclosure UID On** from the main menu turns on the rear enclosure UID LED and changes the color of the Insight Display screen to blue.




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 OA 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 or interconnect modules.

To correct a power error, do the following:

**Procedure**

1. Use the arrow buttons to navigate to **Fix This**, and then press **OK**.
2. Review and complete the corrective action suggested by the Insight Display. Use the OA tools for additional troubleshooting.

## Cooling errors

Cooling errors occur when fans are missing from the enclosure, or when the existing fans are not installed in an effective configuration. Cooling errors can occur on server blades, interconnect modules, XFMs, and OAs.

To correct a cooling error, do the following:

**Procedure**

1. Use the arrow buttons to navigate to **Fix This**, and then 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, power supplies, and fans. Integrity Superdome X systems are configured such that these errors should not occur unless the components have been moved.

To correct a location error, do the following:

**Procedure**

1. Use the arrow buttons to navigate to **Fix This**, and then press **OK**.
2. Review and complete the corrective action suggested by the Insight Display. Remove the indicated component, and then 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. Integrity Superdome X systems are configured such that these errors should not occur unless the components have been moved.

To correct a configuration error, do the following:

**Procedure**

1. Use the arrow buttons to navigate to **Fix This**, and then 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 then 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 the following:

- Server blades
- Power supplies
- Interconnect modules
- OA modules
- Fans
- ac power inputs

To correct a device failure error, do the following:

**Procedure**

1. Use the arrow buttons to navigate to **Fix This**, and then 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.

# Warranty and regulatory information

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

# Warranty information

**HPE ProLiant and x86 Servers and Options**

**www.hpe.com/support/ProLiantServers-Warranties**

**HPE Enterprise Servers**

**www.hpe.com/support/EnterpriseServers-Warranties**

**HPE Storage Products**

**www.hpe.com/support/Storage-Warranties**

**HPE Networking Products**

**www.hpe.com/support/Networking-Warranties**

# Regulatory information

## Belarus Kazakhstan Russia marking

EAC

**Manufacturer and Local Representative Information**

**Manufacturer information:**

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

**Local representative information Russian:**

- **Russia**:

  ООО «Хьюлетт Паккард Энтерпрайз», Российская Федерация, 125171, г. Москва, Ленинградское шоссе, 16А, стр.3, Телефон/факс: +7 495 797 35 00

- **Belarus**:

  ИООО «Хьюлетт-Паккард Бел», Республика Беларусь, 220030, г. Минск, ул. Интернациональная, 36-1, Телефон/факс: +375 17 392 28 18

- **Kazakhstan**:

  ТОО «Хьюлетт-Паккард (К)», Республика Казахстан, 050040, г. Алматы, Бостандыкский район, проспект Аль-Фараби, 77/7, Телефон/факс: + 7 727 355 35 50

**Local representative information Kazakh**:

- **Russia**:

  ЖШС "Хьюлетт Паккард Энтерпрайз" Ресей Федерациясы, 125171,
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- **Belarus**:

  «HEWLETT-PACKARD Bel» ЖШС, Беларусь Республикасы, 220030, Минск қ.,
  Интернациональная көшесі, 36/1, Телефон/факс: +375 17 392 28 18

- **Kazakhstan**:

  ЖШС «Хьюлетт-Паккард (К)», Қазақстан Республикасы, 050040, Алматы к.,
  Бостандық ауданы, Әл-Фараби даңғ ылы, 77/7, Телефон/факс: +7 727 355 35 50

**Manufacturing date:**

The manufacturing date is defined by the serial number.

CCSYWWZZZZ (serial number format for this product)

Valid date formats include:

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

## Turkey RoHS material content declaration

Türkiye Cumhuriyeti: EEE Yönetmeliğine Uygundur

## Ukraine RoHS material content declaration

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

# Standard terms, abbreviations, and acronyms

**ACPI**

Advanced configuration and power interface.

**ASCII**

American standard code for information interchange.

**ASIC**

Application-specific integrated circuit.

**BBRAM**

Battery-backed RAM.

**BBWC**

Battery-backed write cache.

**BCH**

Boot console handler.

**BEN**

Blade Entitlement Number

**CAE**

Core Analysis Engine

**CCM**

CAMnet completer module.

**CE**

Customer engineer.

**CEC**

Core electronics complex.

**CMA**

Cable management arm.

**CMC**

Corrected machine check.

**CNA**

Converged Network Adapter.

**CPE**

Correctable platform error.

**CRAC**

Computer room air conditioner.

**CRAH**

Compute room air handler.

**CRU**

Customer replaceable unit.

**CSR**

Control status registers.

**DDNS**

Dynamic domain name system.

**DHCP**

Dynamic host configuration protocol.

**DLL**

Dynamic-link library.

**DMA**

Direct memory access.

**DMDC**

Data multiplexer/demultiplexer controller.

**DNS**

Domain name system.

**EBIPA**

Enclosure Bay IP Addressing

**EFI**

Extensible firmware interface.

See also: UEFI

**EIA**

Electronic Industries Association.

**EMS**

Event management service.

**ESD**

Electrostatic discharge.

**FC**

Fibre channel.

**FPL**

Forward progress log.

**FRU**

Field replaceable unit.

**FTP**

File Transfer Protocol.

**GPSM**

Global partition services module.

**HBA**

Host bus adapter.

**HR**

Health Repository

**IDC**

Integrity Data Collector.

**iLO 4**

Integrated Lights-Out 4.

**IRC**

Integrated Remote Console.

**IRS**

Insight Remote Support.

**KVM**

Keyboard, Video, and Mouse.

**LAN**

Local Area Network.

**LDAP**

Lightweight directory access protocol.

**LOM**

LAN on motherboard.

**LVM**

Logical volume manager.

**MCA**

Machine check abort.

**MPS**

Maximum payload size.

**NVRAM**

Nonvolatile RAM.

**OA**

Onboard Administrator.

**PA-RISC**

Precision Architecture-Reduced Instruction Set Computing.

**PCA**

Printed circuit assembly.

**PCI**

Peripheral component interface.

**PCIe**

Peripheral component interconnect express.

**POL**

Point-of-load.

**POSSE**

Pre-OS system start-up environment.

**POST**

Power-on self-test.

**QPI**

Intel QuickPath Interconnect.

**RETMA**

Radio Electronics Television Manufacturers Association

**SAS**

Serial attached SCSI.

**SATA**

Serial ATA.

**SBA**

System bus adapter.

**SDRAM**

Synchronous dynamic random access memory.

**SEL**

System event log.

**SFM**

System fault management.

**SFP**

Small form-factor pluggable.

**SFW**

System Firmware.

**SIM**

System insight manager.

**SMBIOS**

System management BIOS.

**SMH**

System management home page.

**SGPIO**

Serial general purpose input/output.

**SSH**

Secure Shell.

**STM**

Support tool manager.

**SUV**

Serial, USB, Video. A single board containing these three functions. A single connector attaches to the SUV board and has three ends, one for Serial (DB9), one for USB, and one for video (DB15).

**SXFM**

x86 enhanced performance crossbar fabric module.

**TFTP**

Trivial file transfer protocol.

**TLB**

Translation look-aside buffer.

**ToC**

Transfer of control.

**TPM**

Trusted platform module.

**UART**

Universal asynchronous receiver-transmitter.

**UEFI**

Unified extensible firmware interface, replaces EFI.

**UID**

Unit identification.

**UPS**

Uninterruptible power supply.

**USB**

Universal serial bus.

**VRM**

Voltage regulator module.

**WBEM**

Web-based enterprise management.

**XBar**

Crossbar.

**XFM**

Crossbar Fabric Module.

**XFM2**

Crossbar Fabric 2 Module. Displayed as SXFM by the OA.

**XPF**

x86/x64 Processor Family.