

### Overview

## HPE Integrity Superdome 2

### The Ultimate Mission-Critical Platform

HPE Superdome 2 (SD2) is an HPE Integrity server that represents a new category of modular, mission-critical systems that scale up, out, and within to consolidate all tiers of critical applications on a common platform. Engineered with trusted Superdome reliability, Superdome 2 includes a modular, bladed design, and common components to other HPE c-Class BladeSystems. This also includes a common server management framework, supported from x86 to Superdome. This latest generation Superdome server extends the resiliency of multiple generations of HPE high-end servers with 100+ mission critical innovations. With breakthrough innovations such as the Superdome 2 Crossbar Fabric and Superdome 2 Analysis Engine coupled with rich virtualization capabilities, Superdome 2 sets the standard for the next decade of mission-critical computing.

### Key features and benefits

HPE Superdome 2 offers enhanced features to increase scalability, improve memory, and provide better compute power without compromising performance. Green efficiencies from HPE blades are now engineered into Superdome 2. It can scale from 2 to 32 sockets. HPE Superdome 2 offers:

- Support for 8 socket (8s), 16 socket (16s), and 32 socket (32s) Superdome 2 servers
- The Intel® Itanium® Processor 9700 series 8c, with up to 32 sockets, provides up to 256 cores of compute power
- 512 DIMM slots with up to 8 TB of memory with double-chip spare, providing a large memory footprint for the most demanding applications
- 64 built in 10 GbE ports
- Full suite of Capacity on Demand capabilities: iCAP, GiCAP, and TiCAP
- Built-in shared DVD
- Upgrade paths from SD2-8s to SD2-16s and SD2-16 to SD2-32s socket SMP



HPE Integrity Superdome 2

## Overview



HPE Superdome 2 enclosure front



HPE Superdome 2 enclosure back



HPE Superdome 2 IOX



HPE Superdome 2 Server Blade (CB900s i6)

### Standard Features

#### Superdome 2 product family - Maximum Capabilities

	Superdome 2-8s	Superdome 2-16s	Superdome 2-32s
	16s with 8 socket SMP	16s with 16 socket SMP	32s with 32 socket SMP
<b>Max</b>	4 max IOX (4U)	8 max IOX (4U)	8 max IOX (4U)
<b>Sockets</b>	16 (8 per nPartition)	16	32
<b>Cores</b>	128	128	256
<b>Memory</b>	4TB*	4TB*	8TB*
<b>10 GbE</b>	32 Internal	32 Internal	64 Internal
<b>PCIe</b>	48 IOX	96 IOX	96 IOX

**NOTE:** \*w/16 GB DIMMs

#### Intel Itanium 9700 series

##### General

The Superdome 2 compute enclosure is the building block of the 8s, 16s, and 32s systems. Each Superdome 2 compute enclosure supports 15 fans, 12 power supplies, associated power cords, and four HPE Crossbar Fabric Modules (XFM).

The product names for Superdome 2 are:

- Superdome 2 8 socket /SD2-8s/8s
- Superdome 2 16 socket / SD2-16s/16s
- Superdome 2 32 socket / SD2-32s/32s

##### Superdome 2 - 8s

The SD2-8s system can support up to eight Superdome 2 server blades (CB900s i6). The SD2-8s compute enclosure is physically the same compute enclosure as the SD2-16s, but the SD2-8s system is limited to up to four blades per nPartition. Although the computer enclosure for both systems is the same, the product number for each system (SD2-8s and SD2-16s) is different. The OS licensing is different between the SD2-8s and SD2-16s. A minimum of one and maximum of four Superdome 2 IOX enclosures per SD2-8s system is supported. The IOX enclosures must be physically located in the same rack as the SD2-8s system it is connected to.

The SD2-8s system is different from the SD2-16s system in that the SD2-8s system has a unique product number, a lower hardware price-point, lower HP-UX pricing with tier-3 pricing, does not include the Superdome 2 active status door display (even if factory integrated into a rack), and has restrictions on its partition size (maximum 4 blades/nPartition).

##### Superdome 2 - 16s

The SD2-16s system can support up to eight Superdome 2 server blades (CB900s i6). A minimum of one and up to eight Superdome 2 IOX enclosures per SD2-16s system is supported. The Superdome 2 active status door display is included when the SD2-16s is ordered factory integrated into a rack.

##### Superdome 2 - 32s

The SD2-32s system is comprised of two compute enclosures. The system supports up to 16 Superdome 2 server blades (CB900s i6 and/or CB900si4) - eight Superdome 2 server blades per compute enclosure. A minimum of one and up to eight Superdome 2 IOX enclosures per SD2-32s system is supported. The Superdome 2 active status door display is included when the SD2-32s is ordered factory integrated into a rack.

#### HP-UX 11iv3 Operating Environments and software

The supported operating environment for HPE Superdome 2 is HP-UX 11iv3. HP-UX 11i v3 comes with a set of features that can provide more value for your investment. HP-UX 11i v3 is designed to simplify and unify IT, and deliver the always-on resiliency, dynamic optimization of resources, and investment protection

### Standard Features

and stability demanded in mission-critical computing. It integrates proven UNIX® functionality with advances in high availability, security, partitioning, workload management, and instant-capacity-on-demand. This is delivered within the industry's first mission-critical Converged Infrastructure, to drive up flexibility, while reducing risk, and delivering compelling value.

For more detail, please see the HP-UX QuickSpecs at: <https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111649>

<b>HPE Superdome 2 Server Blade</b> (CB900s i6) (CB900s i4)	<b>Processors</b>	The Superdome 2 CB900s i6 server blade is popular Intel® Itanium® Processor 9760 8c Intel® Itanium® Processor 9740 8c
		The Superdome 2 CB900s i4 server blade is popular Intel® Itanium® Processor 9560 8c Intel® Itanium® Processor 9540 8c
	<b>Chipset</b>	HPE sx3000
	<b>Upgradability and scalability</b>	Superdome 2 is scalable from 8 socket configuration
	<b>Cache Memory</b>	For Intel® Itanium® Processor 9760/9560 and 9740/ L1 cache 16 KB per core (instr) L1 cache 16 KB per core (data) L2 cache 512 KB per core (instr) L2 cache 256 KB per core (data) L3 cache 24 MB per socket shared by 8 cores (9740) L3 cache 32 MB per socket shared by 8 cores (9760) L4 cache 64 MB per socket SD2-8s: minimum: 32 GB (4 x 8 GB) / maximum: 4T SD2-16s: minimum: 32 GB (4 x 8 GB) / maximum: 4 SD2-32s: minimum: 64 GB (4 x 8 GB per enclosure) <b>NOTE: 8GB and 16GB LV DIMMs are supported in C</b>
	<b>Memory type Registered</b>	8 GB Single Rank PC3L-12800R DDR3 ECC memor CB900s i4. 16 GB Dual Rank PC3L-12800R DDR3 ECC memor CB900s i4.
	<b>Memory protection</b>	Error checking and correcting (ECC) on memory and
	<b>Operating system</b>	HP-UX 11i v3 <b>NOTE: licensing is on a per-socket basis</b>
	<b>I/O slots - External</b>	SD2-8s: 48 external PCIe 8x Gen2 SD2-16s: 96 external PCIe 8x Gen2 SD2-32s: 96 external PCIe 8x Gen2
	<b>Built in Networking</b>	SD2-8s: 32 10GbE NIC ports max (4 per blade) SD2-16s: 32 10GbE NIC ports max (4 per blade) SD2-32s: 64 10GbE NIC ports max (4 per blade) <b>NOTE: Ethernet Pass-through, Ethernet Switch inte (stand-alone only)</b>
	<b>Partitioning</b>	SD2-8s            8 socket electrically isolated nPars SD2-16s        16 socket electrically isolated nPars SD2-32s        32 socket electrically isolated nPars
	<b>Capacity on Demand</b>	iCAP, TiCAP, GiCAP

### Standard Features

<b>Form factor</b>	SD2-8s	18U Enclosure 4U IOX Enclosure HPE SD2 G2 42U 600x1200 Enterp
	SD2-16s	18U Enclosure 4U IOX Enclosure HPE SD2 G2 42U 600x1200 Enterp and active status display
	SD2-32s	Two 18U Enclosures in single HPE Rack with the Superdome 2 door ar 4U IOX Enclosures in a separate HF
<b>High availability-standard server features</b>		2N (N+N) redundant power supplies N+1 fans (or greater depending on the load) Online, replaceable, and redundant OA, utilities, clock Fault Tolerant Crossbar Fabric built on dynamic mult Enhanced MCA recovery (Automated Processor Rec ECC on caches, Memory ECC, and double-chip spa ECC, re-tries, and Link Width Reduction on data pat Automatic de-configuration of memory and process I/O Advanced Error Recovery, and I/O isolation off C Redundant network paths Redundant Fibre Channel paths
<b>I/O</b>		Interfaces VGA and 2 USB ports for local human inte 10/100Base-T LAN for Integrity Integrated Lights-Out
<b>Standard Warranty</b>		Removable media built-in DVD-ROM, accessible from One year, onsite hardware support

### Service and Support

#### Warranty

Hewlett Packard Enterprise branded hardware and options qualified for Superdome 2 servers are covered by a global limited warranty and supported by HPE Services and a worldwide network of Hewlett Packard Enterprise Authorized Channel Partners. The Hewlett Packard Enterprise branded hardware and options diagnostic support and repair is available for one year from date of purchase, or the length of the server they are attached to, whichever is greater. Additional support may be covered under the warranty or available for an additional fee. Enhancements to warranty services are available through HPE Pointnext operational services or customized service agreements.

Additional information regarding worldwide limited warranty and technical support is available at: <http://h17007.www1.hpe.com/us/en/enterprise/servers/warranty/>

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#### Support Services

##### HPE Technology Services for Integrity Servers

HPE Technology Services delivers confidence, reduces risk and helps customers realize agility and stability. Connect to HPE to help prevent problems and solve issues faster. Our support technology lets you to tap into the knowledge of millions of devices and thousands of experts to stay informed and in control, anywhere, any time.

##### Protect your business beyond warranty with HPE Pointnext operational services

HPE Pointnext operational services enable you to order the right service level, length of coverage and response time as you purchase your new server, giving you full entitlement for the term you select.

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#### Recommended HPE Pointnext operational services for optimal satisfaction with Superdome 2:

##### Optimized Care

##### HPE Proactive Care Advanced - Call to Repair, three year HPE PointNext Service

Achieve a higher return on your product investment with the personal attention from a locally assigned Account Support Manager who delivers recommendations designed to improve availability and performance. Leverage your system's ability to connect to HPE for automated problem detection and rapid critical event management to increase stability and reduce unplanned downtime. This recommendation provides a local customer engineer for onsite hardware repair if required within 6 hours and two-hour callback for supported software. Collaborative call management comes with Proactive Care Advanced or you may choose full support from HPE where we own all cases through to resolution.

<https://www.hpe.com/h20195/V2/GetDocument.aspx?docname=4AA5-3259ENW&cc=us&lc=en>

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##### Standard Care

##### HPE Proactive Care Advanced - 24x7 coverage, three year PointNext Service

Achieve a higher return on your product investment with the personal attention from a locally assigned Account Support Manager who delivers recommendations designed to improve availability and performance. Leverage your system's ability to connect to HPE for automated problem detection and rapid critical event management to increase stability and reduce unplanned downtime. This recommendation provides 24x7 coverage with four-hour response for hardware and two-hour callback for supported software. Collaborative call management comes with Proactive Care Advanced or you may choose full support from HPE where we own all cases through to resolution.

<https://www.hpe.com/h20195/V2/GetDocument.aspx?docname=4AA5-3259ENW&cc=us&lc=en>

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### Service and Support

#### Related Services

##### **HPE Datacenter Care service**

HPE Datacenter Care helps you improve IT stability and security, increase the value of IT, and enable agility and innovation. It is a structured framework of repeatable, tested, and globally available services "building blocks." You can deploy, operate, and evolve your datacenter wherever you are on your IT journey. With HPE Datacenter Care, you benefit from a personalized relationship with HPE via a single point of accountability for HPE and others' products. For more information, visit

<http://www.hpe.com/services/datacentercare>

##### **HPE Server Hardware Installation**

Provides for the basic hardware installation of Hewlett Packard Enterprise branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN.pdf>

##### **Factory Express for Servers and storage**

HPE Factory Express offers configuration, customization, integration and deployment services for Hewlett Packard Enterprise servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed. For more information on Factory Express services for your specific server model please contact your sales representative or go to:

<https://www.hpe.com/us/en/services/factory-express.html>.

##### **Data Privacy Services**

Protect your data through better media management. HPE Data privacy services help manage and protect sensitive data to reduce the risk of unauthorized access to private information and help meet compliance requirements. Our retention services allow you to keep drives and other devices upon failure, our removal services provide convenient data sanitization and our recovery services allow you to safely retire IT assets and capture any remaining value from the hardware. <https://www.hpe.com/us/en/storage/data-protection-solutions.html>.

Additional HPE Pointnext operational services can be found at: <http://www.hpe.com/info/cpc>

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#### eSupport

##### **Get connected to HPE to improve your support experience**

Prevent problems with innovative, automated monitoring tools and proactive services. Combining Proactive Care Services with our remote support technology such as Insight Online provides you with expert advice and personalized, cloud-based automated IT support, helping to prevent unplanned down time and solve problems quickly. For more information, visit: <http://www.hpe.com/info/insightonline>

##### **HPE Support Center**

Personalized online support portal with access to information, tools and experts to support Hewlett Packard Enterprise business products. Submit support cases online, chat with Hewlett Packard Enterprise experts, access support resources or collaborate with peers. Learn more

<https://support.hpe.com/hpesc/public/home>

The HPE Support Center Mobile App\* allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalized IT support anywhere, anytime.

HPE Insight Remote Support and HPE Support Center are available at no additional cost with a HPE warranty, HPE PointNext or Hewlett Packard Enterprise contractual support agreement.

**NOTE:** \*The Hewlett Packard Enterprise Support Center Mobile App is subject to local availability

### Service and Support

#### **Parts and Materials**

Hewlett Packard Enterprise will provide HPE-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by Hewlett Packard Enterprise due to malfunction.



### Configuration Information

Superdome 2 products are comprised of two main components: HPE Superdome 2 Enclosure and HPE Superdome 2 Compute Enclosure.

#### HPE Superdome 2 Enclosure

The SD2-8s (AH352A) is an entry level offering of the SD2-16s (AH337A) system. The SD2-8s has a different OS licensing than larger systems. It supports a maximum of four IOXs which from a perspective, the SD2-8s enclosure is exactly the same as the SD2-16s.

The SD2-8s and SD2-16s systems and IOXs can be field racked. However, it is recommended that the customer provides the benefit of extensive system testing and avoids possible premature failure. To note about field racked units: field racked units are limited to single blade configuration and must be separate items and will be shipped along with the enclosure. Field racked units will not be supported. SD2 requires the use of an appropriate material lift capable of lifting 400 lbs. The RONI lift is a Genie Material Lift GL8 <http://www.genielift.com/>.

Model No.	Description	Overall L x W	Base Dimensions	Maximum Lifting Height	Width - stowed	Capacity
GL-8	Standard Base GL-8	5'-7.5" x 35"	2' 10.75" L Operating / 2' 0.75" W Outside	10 ft. 5 in	2 ft. 0.75 in	400 lbs

The SD2-32s system consists of two 16 socket compute enclosures in a single rack with immediately adjacent to each in order for the side panels to be removed to connect the compute enclosure (to go out the bottom of the rack and through the floor). Field racking is not an option for SD2-32s.

Superdome 2 systems are supported in the HPE SD2 G2 42U 600x1200 Enterprise Shared Rack.

Non-Superdome 2 product may be placed in the same rack as Superdome 2 product. Please refer to the product documentation for more information.

All racks in the same order must be the same height and width.

	Superdome 2 Hardware Configuration			
	SD2-8s (AH352A)	SD2-16s (AH337A)	SD2-32s (AH353A)	IOX (AH338A)
Number of Compute enclosures	1	1	2	NA
Number of Superdome 2 Blades (min/max) per compute enclosure	1 to 8	1 to 8	1 to 16	NA
Number of CAMnet Completer modules (CCMs)	0 to 1	0 or 1	0 to 3	NA
Number of processor modules per compute enclosure (min/max)	2 to 16	2 to 16	2 to 32	NA
Number of DIMMs (increments of 8 DIMMs per blade - min/max)	8 to 256	8 to 256	8 to 512	NA
Number of XFMs	4	4	8	NA

### Configuration Information

Number of Ethernet NIC ports	4 to 32	4 to 32	4 to 64	NA
Number of I/O slots	NA	NA	NA	12 per IOX (6 per I/O bay)
Number of IOX enclosures	1 to 4	1 to 8	1 to 8	NA
Number of supported external I/O slots	48 max	96 max	96 max	NA
Number of OAs	2	2	4	NA
Number of GPSMs (Global Partition Services module)	2	2	4	NA
DVD module	1	1	2	NA
Fans	15	15	30	4
Power Supplies	<=4 blades, N: 6, 2N: 12	2N: 12	2N: 24	2N: 2
SUV Dongle cable	1	1	2	0

**NOTE:** The SUV dongle cable is HPE part number 409496. It connects to the SUV port on the front of each blade how a crash cart or a direct-attached USB DVD is connected for debugging the system.

Superdome 2 is supported in the HPE 600mm 42U wide Intelligent Series rack. A SD2-8s system integrated into included with the SD2-16 and SD2-32s systems has unique industrial design features: an active LCD status display. Although the door with the racked SD2-8s systems does not have the Superdome 2 door with the active LCD status display to the standard rack door when upgrading from a SD2-8s to a SD2-16s.

Each Superdome 2 blade is populated with two Agents, two processor modules, and eight Intel Scalable Memory

Detailed partitioning rules are included in the configuration rules for each system. However, general rules are as follows:

1. Load the largest partitions first
2. Odd/even slot loading for Superdome 2 blades in the same partition is recommended for improved performance; is most important for 2 & 3 blade partitions. For instance, a four blade partition should have blades loaded in slots 1, 3, 2, 4.
3. A Superdome 2 blade must be in slot 1 of enclosure 1
4. A Superdome 2 blade or filler blade (HPE CAMnet Completer module aka CCM) must be in slot 1 of enclosure 1
5. A Superdome 2 blade or filler blade (HPE CAMnet Completer module) must be in slot 2 or 3 of enclosure 1
6. P= indicates preferred partition arrangements (from a performance perspective).
7. A = indicates alternative partition arrangements (provided to accommodate c-Class blades)

The following configurations are currently supported:

- SD2-8s with up to four IOXs
- SD2-16s with up to eight IOXs
- SD2-32s with up to eight IOXs

### HPE Superdome 2 IOX enclosure

The Superdome 2 I/O Expansion enclosure (IOX) is used across the entire Superdome 2 system (IOHs). Each IOH supports up to six 8x PCI-Express cards.

It is important to note that the I/O subsystem in Superdome 2 products is different than that of the SD2-8s. It supports the external IOX. The I/O bays in IOXs are connected directly to the crossbar fabric. The number of partitions is independent of the assignment of blades. Also, a blade can be removed from the system without affecting the IOX bays.

IOX bays are assigned at a partition level. For multi-enclosure systems, IOX bays are assigned to a specific enclosure.

### Configuration Information

Each IOX consists of two I/O bays. Each I/O bay has a single IOH chip and six I/O slots, independently of the other I/O bay. There are several ways to partition the I/O subsystem:

- One nPartition per IOX
- Distribute redundant I/O cards across IOXs for higher availability
- Combine partitions within a IOX for lowered cost
- Distribute I/O cards across both IOHs and across the root complexes for best bandwidth rather than populating all 6 I/O cards off IOH 0 (slots 1-6), place three of the cards on each IOH and the cards across all three root complexes within a single IOH (i.e. use slots 1, 3 and 5)

### HPE Superdome 2 - 8s

#### 8s Configuration Rules

SD2-8s uses the same compute enclosure as the SD2-16s

Any blade and any IOH bay can be used to create an nPartition.

- Blades can be ordered in single or multiple quantities. A minimum of one blade must be ordered. A CAMnet Completer Module (CCM) must be populated in slot 2. The CCM provides network connectivity (GPSM) to the OA. The CCMs are automatically included in the enclosure configuration.
- All blades are populated with two processor modules
- SD2-8s contains four Crossbar Fabric Modules (XFM's)
- SD2-8s can have up to eight Superdome 2 blades. However, no single partition can have more than four blades.
- SD2-8s can support up to four IOXs.
- SD2-8s can be upgraded to a SD2-16s. This would be required if partitions larger than 4 blades are required. For more details, please see the upgrade section.
- Each SD2-8s has two OA boards
- Two GPSMs are included with the SD2-8s.
- There are single phase and three phase power distribution options.
- AH389A (Power Boost Option) must be ordered if the SD2-8s system will have more than 4 blades.

#### 8s Racking Choices

The SD2-8s enclosure is 18U high and can be racked in a HPE SD2 G2 42U 600x1200 rack. The enclosure is located 2U from the bottom of a 42U rack to allow for PDUs and cooling.

**NOTE:** Mixing of SD2-8s and SD2-16s systems in the same rack - either from the factory or field is not supported.

**NOTE:** The TFT7600 rack mountable display is not supported on SD2.

#### 8s Partitioning Choices

A SD2-8s may be partitioned into several partitions. The configurations recommended here are based on the number of recommended, useful, and allowed partitions.

The compute enclosure's midplane has been routed such that there is more bandwidth available to each partition. A partition will have better performance when all four of the blades are in odd (1, 3, 5, 7) or even (2, 4, 6, 8) positions.

**NOTE:** Superdome 2 enforces the maximum of four blades per partition in the SD2-8s enclosure.

Below are the configurations when shipped from the factory.

#### SD2-8s blade loading

### Configuration Information

nPartition Size	ENCLOSURE 1 Slot Number							
	1	2	3	4	5	6	7	8
1	1	2	3	4	5	6	7	8
2P	1	2	1	2	3	4	3	4
2A	6	6	8	8	7	7	5	5
2A				9				9
3P	1	2	1	2	1	2		
3A	3	3	3		4	4	4	
4P	1	2	1	2	1	2	1	2
4A	3	3	3	3	4	4	4	4

**NOTE:** The alternative 2-blade partition with blades in slots 7 & 8 is provided to allow two enclosure. The alternative 2-blade partition in slots 4 & 8 is provided to support a 2-blade

### Superdome 2 - 16s 16s Configuration Rules

The SD2-16s enclosure is the basic building block for Superdome 2.

Any blade and any IOH can be assigned to any nPartition.

- Blades can be ordered in single or multiple quantities. A minimum of one Superdome 2 SD2-16s enclosure and populated in slot 1. If only one blade is ordered, a CCM module are automatically included in the enclosure when there are less than two blades.
- All blades are populated with two processor modules
- SD2-16s can have up to eight Superdome 2 server blades
- A SD2-16s system contains four Crossbar Fabric Modules (XFM)
- A SD2-16s has two OA boards populated
- Two GPSMs are included
- There are single phase and three phase power distribution options.
- Up to eight IOXs may be ordered independently to provide additional I/O capability

**16s Racking Choices** The SD2-16s has some basic racking rules as the SD2-8s, and is very configurable. The G2 42U 600x1200 Enterprise Shock Rack. The SD2-16s may be ordered field racked, b

The default assumption is that enclosures are loaded in the rack starting at the bottom. It provide PDU and cabling exit space.

The default configuration is a single rack for a SD2-16s with up to four IOXs in the same

IOXs can be configured in an adjacent rack. A customer may want to consider this config in the future or 2) order four or fewer IOXs now but want to add IOXs in the future and order by selecting the "adjacent rack" option. The "adjacent rack" option can be used r

Two SD2-16s systems may be ordered in the same rack. A customer may want to consider one rack with more directed cooling and all the IOXs in the adjacent rack that has lower c IOX or in an adjacent rack. The HDD cannot be "nested" within the IOXs due to cable ler

Systems that consist of multiple racks (i.e. SD2-16s with IOX in adjacent rack) must be f from the compute enclosure to the IOXs is from the side (not down through the floor). R: depth.

**NOTE:** Mixing of SD2-8s and SD2-16s systems in the same rack - either from the factor  
**NOTE:** The TFT7600 rack mountable display is not supported on SD2.

### Configuration Information

#### 16s Partitioning Choices

A SD2-16s system may be partitioned into many different mixes of partitions. The config SD2-16s into the maximum number of recommended, useful, and allowed nPartitions.

The enclosure's midplane has been routed such there is more bandwidth across odd slots for better performance when all four of the blades are in odd (1, 3, 5, 7) or even (2, 4, 6, 8) slots.

Below are the configurations when shipped from the factory

#### SD2-16s partition loading

nPartition Size	ENCLOSURE 1 Slot Number							
	1	2	3	4	5	6	7	8
1	1	2	3	4	5	6	7	
2P	1	2	1	2	3	4	3	
2A	6	6	8	8	7	7	5	
2A				9				
3P	1	2	1	2	1	2		
3A	3	3	3		4	4	4	
3A				5		5		
4P	1	2	1	2	1	2	1	
4A	3	3	3	3	4	4	4	
5P	1	1	1		1		1	
5A	2	2	2	2	2			
6P	1	1	1	1	1			1
6A	2	2	2	2	2	2		
7	1	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1	1

**NOTE:** The alternative 2-blade partition with blades in slots 7 & 8 is provided to allow two partitions to co-exist in the enclosure. The alternative 2-blade partition in slots 4 & 8 is provided to support a 2-blade partition. A 3-blade partition in slots 4, 6 and 8 allows both a 5-blade and 3-blade partition to co-exist in the enclosure.

#### Superdome 2 - 32s 32s Configuration Rules

The SD2-32s consists of two 16 socket compute enclosures cabled together. At least one blade in each enclosure must be in the same rack.

Any blade and any IOX/IO bay can be assigned to any nPartition.

- Blades can be ordered in single or multiple quantities. A minimum of one Superdome 2 blade is required in enclosure 1, slot 1. If only 1 Superdome 2 blade is ordered, a CCM must be populated in slot 1 and CCMs must be populated in slots 1 and 2 in the second enclosure. The CCMs must be populated in two compute blades.
- Each blade must have both processor modules populated.
- A SD2-32s system contains four XFMs populated in slots X1, X2, X3 & X4 in each enclosure.
- A SD2-32s must have two OAs in each compute enclosure for a total of four OAs per SD2-32s system.
- Two GPSMs per compute enclosure are included for a total of four per SD2-32s system.
- There are 1-phase and 3-phase power distribution options. Only the 2N option is available.
- Up to eight IOXs may be ordered independently to provide additional IO capability for the system.

The OAs in enclosure #1 are the master and failover OAs for the system.

- The configuration guidelines direct partitions to be loaded such that the blades are in the same enclosure as I/O Bays. IOXs are assigned at a partition level such that each partition has its own IOX.

### Configuration Information

resources is minimized. A rule was created to maximize performance but can be "c

**32s Racking Choices** Each compute enclosure is 18U high and can be racked in a HPE SD2 G2 42U 600x1200mm rack. Hewlett Packard Enterprise will not support field racking SD2-32s systems. The same rack. It is recommended that 2U is left at the bottom of the 42U rack to provide PDU and

Complexes that consist of multiple racks must be fully adjacent to each other, i.e. no space between racks. No air IOXs goes through the side (not down through the floor). Going through the floor would require multiple racks must be the same height, width, and depth.

**NOTE:** The TFT7600 rack mountable display is not supported on SD2.

**32s Partitioning Choices** A SD2-32s complex may be partitioned into many different mixes of nPartitions. The complex is partitioned into the maximum number of recommended, useful, and allowed nPartitions.

The enclosure's midplane has been routed such there is more bandwidth across odd slots than even slots for better performance when all four of the blades are in odd (1, 3, 5, 7) or even (2, 4, 6, 8) slots.

These are the configurations as they will be shipped from CTO. The partition table should be used for the creation of two partitions using the table, it is possible that remaining partitions would not have had as extensive testing done on them, may not have the best performance. For example, it is legal for a two blade partition to be populated in slots 1 & 2 vs. 1 & 3. Extra partitions per enclosure is kept to a minimum.

SD2-32s partition loading	Size	ENCLOSURE 1								ENCLOSURE 2					
		1	2	3	4	5	6	7	8	1	2	3	4	5	6
1	1	3	5	7	9	11	13	15	17	2	4	6	8	10	12
2P	1	3	1	3	5	7	5	7	7	2	4	2	4	6	8
2A	11	11	15	15	13	13	9	9	9	12	12	16	16	14	14
2A				17				17					18		
3P	1	3	1	3	1	3				2	4	2	4	2	4
3A	5	5	5		7	7	7			6	6	6		8	8
3A				9		9		9					10		10
4P	1	3	1	3	1	3	1	3		2	4	2	4	2	4
4A	5	5	5	5	7	7	7	7		6	6	6	6	8	8
5P	1	1	1		1		1			2	2	2		2	
5A	3	3	3	3	3					4	4	4	4	4	
6P	1	1	1	1	1		1			2	2	2	2	2	
6A	3	3	3	3	3	3				4	4	4	4	4	4
7	1	1	1	1	1	1	1			2	2	2	2	2	2
8	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2
9	1	1	1	1	1	1	1	1	1	1					
10P	1	1	1	1	1	1	1	1	1	1		1			
10A	2	2	2	2	2	2	2	2	2	2	2				
11P	1	1	1	1	1	1	1	1	1	1		1		1	
11A	2	2	2	2	2	2	2	2	2	2	2	2			
12P	1	1	1	1	1	1	1	1	1	1		1		1	
12A	2	2	2	2	2	2	2	2	2	2	2	2	2		
13P	1	1	1	1	1	1	1	1	1	1	1	1		1	

### Configuration Information

<b>13A</b>	2	2	2	2	2	2	2	2	2	2	2	2	2	2
<b>14P</b>	1	1	1	1	1	1	1	1	1	1	1	1	1	1
<b>14A</b>	2	2	2	2	2	2	2	2	2	2	2	2	2	2
<b>15</b>	1	1	1	1	1	1	1	1	1	1	1	1	1	1
<b>16</b>	1	1	1	1	1	1	1	1	1	1	1	1	1	1

IOX bays are assigned at a nPartition level. For multi-enclosure systems, the assignment of resources and IO resources is minimized. Therefore, IOX configurations cannot be limited to IOX6, IOX7, IOX8, IOX9, IOX10, IOX11, and IOX12. It is very dependent on the number of blades in the enclosure.

For partitions larger than 8 blades, IOXs would be loaded in the following order:

- 9 blade nPartition: IOX5, IOX6, IOX7, IOX9, IOX8, IOX10, IOX11, IOX12
- 10 blade nPartition: IOX5, IOX6, IOX7, IOX9, IOX8, IOX10, IOX11, IOX12
- 11 blade nPartition: IOX5, IOX6, IOX9, IOX7, IOX8, IOX10, IOX11, IOX12
- 12 blade nPartition: IOX5, IOX6, IOX9, IOX7, IOX8, IOX10, IOX11, IOX12
- 13 blade nPartition: IOX5, IOX9, IOX6, IOX7, IOX10, IOX8, IOX11, IOX12
- 14 blade nPartition: IOX5, IOX9, IOX6, IOX10, IOX7, IOX8, IOX11, IOX12
- 15 blade nPartition: IOX5, IOX9, IOX6, IOX10, IOX7, IOX11, IOX8, IOX12
- 16 blade nPartition: IOX5, IOX9, IOX6, IOX10, IOX7, IOX11, IOX8, IOX12

**NOTE:** The rules above were constructed to meet "most" conditions and provide future flexibility.

### Power Distribution Options

The Superdome 2 compute enclosure power supply is an 80 PLUS Platinum Rated 2400W supply. **NOTE:** Mixed power supplies within the same compute enclosure is not supported.

The IOX power supply is an 80 PLUS Platinum Rated 750w supply. **NOTE:** Mixed power supplies within the IOX is not supported.

Superdome 2 is designed to support N+N redundancy of the power supplies. To retain full redundancy of Superdome 2, it is necessary to connect all six power supplies located left side of center (three top and three bottom) to the other source.

There are nine AC power connection options offered in Superdome 2 enclosures. These

- Single Phase only (16A/20A, single phase cords that plug directly into wall sockets)
  - Connectors on back of the compute enclosure are IEC60320-C19
  - A total of 12 single phase power cords are necessary to power the 12 power supplies in the Superdome 2 enclosure.
  - To limit the number of power cords exiting the rack (decrease from 12 cords to 6), you can use Power Distribution Units (PDUs) for power cord aggregation. (power option #006)
  - Power option #010 is only available in Japan. There are 6 NEMA L6-30P single phase power cords. **NOTE:** power option #010 is not available with the 36u rack. A manual overview of the 32s SMP
  - In the HPE Superdome 2 enclosure back photo you see the rear of a Superdome 2 enclosure with power modules installed, they are visible at the extreme top and bottom of the enclosure.
- Single and Three Phase mix (single phase cables within the rack connected to the three phase power source)
  - The power interface modules used are the single phase units shown above.
  - PDUs used have:
    - 4 wire, IEC 309 60A connector, qty. 2 needed. (power option #004)
    - 5 wire, IEC309 32A connector, qty. 2 needed. (power option #005)
- Three Phase only (three phase cords that connect directly to customer provided rack)
  - 4 wire version utilizes NEMA L15-30R connectors: (power option #002)
  - 5 wire version utilizes IEC309 16A 5 pin connectors: (power option #003)
  - A total of 4 cords are necessary to power the 12 power supplies in the Superdome 2 enclosure.

### Configuration Information

– In the HPE Superdome 2 enclosure back photo you see the rear of a Superdome 2 modules installed.

**All these options are offered for all Superdome 2 products.**

All PDUs supported in Superdome 2 are half depth such that two can fit in 1U (one in the horizontally mounted) and 0U (side-mounted) options. The three phase PDU's for the SI PDU's are either 252663-D74 or 252663-B33.

Specifying power option #007 in conjunction with any of the others (#001 - #006) routes 1

The IOX also supports N+N power supply redundancy with 2 power supplies. Dual source and the other to a different source. Power cord connections on the IOX are IEC 6

**HPE Power Advisor** The HPE power Advisor is a tool provided by Hewlett Packard Enterprise to assist in the level.

Available at: <https://www.hpe.com/in/en/integrated-systems/rack-power-cooling.htm>

**HPE Superdome2 Server Blades** HPE Superdome 2 CB900s i6 Itanium 9760 (2.67GHz/16-core/32MB/170W) Cell Blade  
 HPE Superdome 2 CB900s i6 Itanium 9740 (2.13GHz/16-core/24MB/170W) Cell Blade

**HPE Superdome 2 CPU / CPU module Support** Superdome 2 CB900s i6 blades include the Intel Itanium Processor 9700 series 8c. See I/O frequencies.

Support for the various speed bins is as follows:

Processor	Superdome 2 supported Intel® Itanium® Processor 9500 and 9700 Series					
	Processor # of cores per processor	Frequency	L1 CPU cache	L2 CPU cache	L3 CPU cache	L4 chipset cache
Intel Itanium Processor 9740	8c	2.13 Ghz	16 KB /core (instr) 16 KB /core (data)	512 KB /core (instr) 256 KB /core (data)	24MB per socket - shared by 8 cores	64 MB per socket
Intel Itanium Processor 9760	8c	2.66 Ghz	16 KB /core (instr) 16 KB /core (data)	512 KB /core (instr) 256 KB /core (data)	32MB per socket - shared by 8 cores	64 MB per socket

Intel® Itanium® Processo



### Configuration Information

	Processor # of cores per processor	Frequency	L1 CPU cache	L2 CPU cache	L3 CPU cache	L4 chipset cache
Intel Itanium Processor 9540	8c	2.13 Ghz	16 KB /core (instr) 16 KB /core (data)	512 KB /core (instr) 256 KB /core (data)	24MB per socket - shared by 8 cores	64 MB per socket
Intel Itanium Processor 9560	8c	2.53 Ghz	16 KB /core (instr) 16 KB /core (data)	512 KB /core (instr) 256 KB /core (data)	32MB per socket - shared by 8 cores	64 MB per socket

- CPU Mixing Support** Superdome 2 governing rules for mixing processors are as follows:
- No mixing of processor families or blade types within a nPartition
  - No support for processors running at different frequencies or different cache sizes
  - Processor modules on a blade must be the same revision, frequency, & cache size
  - Mixing of processors with different frequencies and/or cache sizes will be NOT allowed
  - Mixing of CB900s i2, CB900s i4 and CB900s i6 blades within a complex is allowed;

### HPE Superdome 2 Memory Support

Superdome 2 systems will use the Intel® Scalable Memory Buffer chip to translate between the Scalable Memory Interconnect (SMI) technology on the memory controller and the DDR3 R-DIMMs.

The following Memory modules are supported on CB900s i6 and CB900s i4 blades:

- HPE CB900s 32GB (4x8GB) Single Rank PC3L-12800 (DDR3-1600) Registered CAS-11 Memory Module
- HPE CB900s 64GB (4x16GB) Dual Rank PC3L-12800 (DDR3-1600) Registered CAS-11 Memory Module

Only DIMMs that Hewlett Packard Enterprise has qualified on Superdome 2 are supported in Superdome 2 products.

The Superdome 2 blade supports 32 RDIMMs and eight Intel® Scalable Memory Buffer chips. This breaks down to eight R-DIMMs and two Scalable Memory Buffer chips per memory controller.

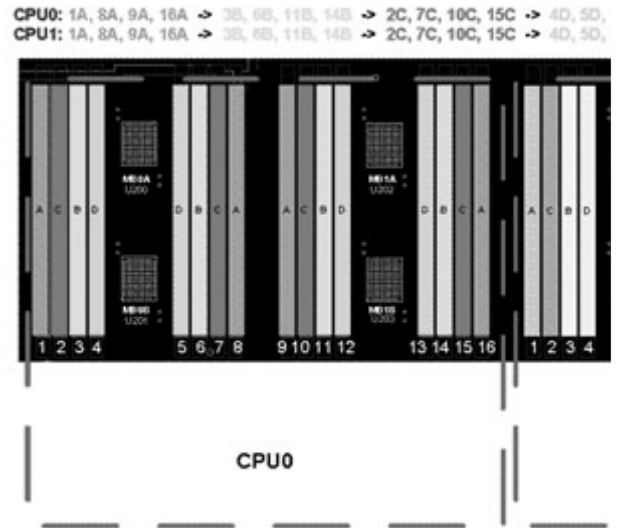
General memory configuration rules:

- For best performance it is recommended to use the 16GB DIMMs
- For best performance, the amount of memory on each blade within the partition should be the same.
- Use the most number of DIMMs to get the best bandwidth. For instance, using 16 4GB DIMMs per blade rather than 8 8GB DIMMs will load both busses off the memory controller resulting in better bandwidth.
- Use the same amount of memory on each processor module within a partition.

Superdome 2 DDR3 DIMM loading rules and numbering (top-down view of blade)

### Configuration Information

The DIMM groups must be loaded in the following order:  
A -> B -> C -> D



### Superdome 2 blade DIMM

**NOTE:** Per the commonality guidelines, the first DIMMs to be loaded will have white DIMM will be white. Connectors in slot positions "C" and "D" will be black.

The following table shows the supported configurations as shipped from the factory.

**NOTE:** Mixing different DIMM sizes (eg. AT127B and AT128A) or densities (eg. AT127A

**NOTE:** However individual Blades may have DIMMs of different sizes or densities (eg. or 16GB DIMMs)

**NOTE:** 8GB and 16GB LV DIMMs are supported on CB900s i6 blades.

### Recommended Configurations per Superdome 2 i4 or i6 server blade

Total Memory per Blade (Gbytes)	Number of DIMMS		Echelon A	Echelon B	Echelon C	Echelon D
	8GB	16GB				
64	8		8G			
128	16		8G	8G		
128		8	16G			
192	24		8G	8G	8G	
256	32		8G	8G	8G	8G
256		16	16G	16G		
384		24	16G	16G	16G	
512		32	16G	16G	16G	16G

Superdome 2 i4 and i6 DIMM configurations shipped from the factory

### Configuration Information

**HPE Superdome 2 Storage Support** For HPE Storage solutions, please see: <http://www.hpe.com/storage/spock>

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**HPE Superdome 2 Interconnect Module Support** Superdome 2 will support some of the same interconnect modules as the c-7000 and c-3000 enclosures.

A supported Ethernet interconnect module must be ordered for bay 1 of all enclosures.

The LOMs on the blade are supported running at 10GbE. The interconnect modules supported in the Superdome 2 enclosure are:

HPE 6125XLG Ethernet Blade Switch  
HPE Cisco B22HP Fabric Extender for BladeSystem c-Class  
HPE Cisco B22HP Fabric Extender with 16 FET for BladeSystem c-Class  
HPE 10GbE Ethernet Pass-Thru Module II for c-Class BladeSystem  
HPE 10GbE Ethernet Pass-Thru Module for c-Class BladeSystem  
**NOTE:** The HPE Integrity Cisco B22HP Fabric Extender with 16 FET - (PN 657787-B21) is packaged with 16 Cisco Fabric Extender Transceivers.

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**HPE Networking Options**

The following cards are currently supported:

**Converged Networking**

HPE Integrity CN1100E Dual Port Converged Network Adapter

**Networking**

HPE PCIe 2-port 1000Base-T LAN Adapter

HPE PCIe 2-port 1000Base-SX LAN Adapter

HPE Integrity PCIe 2-port 10GbE-SR Fabric Adapter

HPE Integrity PCIe 2-port 10GbE-LR Fabric Adapter

HPE Integrity PCIe 2-port 10GbE-CR Copper Adapter

HPE Ethernet 10Gb 2-port 561T Adapter for Integrity Servers

HPE 1Gb 4p 366T Adptr for Integrity

**Storage**

HPE Integrity SN1000Q 1-port 16Gb Fibre Channel Host Bus Adapter

HPE Integrity SN1000Q 2-port 16Gb Fibre Channel Host Bus Adapter

HPE Integrity Smart Array P411/256 2-port External PCIe 6Gb SAS Controller

HPE Integrity Smart Array P812/1GB PCIe SAS Controller

**Infiniband (Quad Data Rate)**

HPE Integrity PCIe 2-port 4X QDR Infiniband Host Channel Adapter

**PCIe Workload Accelerator**

HPE 750GB PCIe x4 Lanes Write Intensive HHHL 3yr Wty Digitally Signed Firmware Card

**NOTE:** 878038-H21 is supported only SD2 i6 servers.

**NOTE:** Maximum of eight (8) cards are supported

### Configuration Information

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#### HPE Superdome 2 Boot Support

##### Boot From "Local" SAN

**NOTE:** Information pertains to boot requirement only.

##### HPE Fibre Channel Switch(s)

- HPE Storage 8/24 Base SAN Switch (AM868A) is Watson default switch
- 8Gb switches recommended

##### Considerations for "Local" SAN

- Minimum configuration: one P2000 G3 FC and one SAN switch
  - One P2000 G3 FC would support up to sixteen partitions
    - Supplies only a single dedicated boot-path for each partition
    - P2000 G3 FC firmware upgrades require taking down the partition
- Optimal configuration: one or multiple P2000 G3 FC and two SAN switches
  - Configure redundant boot-paths to separate controllers with each boot path
    - P2000 G3 FC and SAN switch firmware updates do NOT require taking
  - One P2000 G3 FC array/ two SAN switches would support up to 16 partition
  - Two P2000 G3 FC arrays/ two SAN switches would support up to 32 partition

##### Boot From External SAN

**NOTE:** Information pertains to boot requirement only.

SAN Provides essentially unlimited LUNs

##### Considerations for SAN boot

- Two hops or less strongly recommended
- Dedicated "local SAN" switch(s) not required
- Redundant paths to SAN/storage recommended for all partitions
  - Allows online updates of switch and array firmware
- No factory installation of operating environment
  - nPar and vPar definition is available and independent of installation of opera

##### Local Boot From SAS storage - D2x00

**NOTE:** Information pertains to boot requirement only.

- One D2x00 can support one partition (nPar or vPar)
  - D2x00 can be cascaded to expand storage
  - Smart Array P411 supports a maximum of 100 drives (25 may be solid state)
  - Smart Array P411 can be used as a RAID controller or can be put into "HBA"
- Considerations for local boot
  - Minimum configuration: one D2x00
    - One D2x00 can support one partition
      - Supplies only a single dedicated boot path for each partition
      - Multiple single points of failure
      - D2x00 firmware upgrades require taking down the partition
    - Dual-domain not supported with Smart Array P411 controller
    - Smart Array P812 not supported in this release
    - Serviceguard multi-initiator not supported in this release

##### Local Boot From SAS storage - MDS600

**NOTE:** Information pertains to boot requirement only.

- One MDS600 can support up to two partitions (nPar or vPar)
  - MDS600 is a high density storage array
  - Smart Array P411 can be used as a RAID controller or can be put into "HBA"
- Considerations for local boot

### Configuration Information

- Minimum configuration: one MDS600
  - Dual-domain not supported with Smart Array P411 controller
  - Zoning not supported with MDS600 direct attach to a Smart Array contro
  - Smart Array P812 not supported with SD2
  - Serviceguard multi-initiator not supported in this release

#### Local Boot From SAS storage - P2000

**NOTE:** Information pertains to boot requirement only.

- One P2000 SAS can support up to eight partitions (nPar or vPar), or four partitions
  - P2000 Arrays are expandable storage systems
  - Smart Array P411 is used in "HBA mode" for use with P2000 arrays
  - Smart Array P411 supports multi-initiator and Serviceguard with P2000 SAS

**NOTE:** Supported FW version for P411 is 5.78 and higher. Supported FW
- Considerations for local boot
  - Minimum configuration: one P2000
    - Dual-domain not supported with Smart Array P411 controller
    - Smart Array P812 not supported with SD2
    - Serviceguard multi-initiator supported mid 2011 for P411, P2000 SAS, a

### OS & Default Configuration Settings

This section describes OS limitations and default configuration settings

**HP-UX Settings** HP-UX 11iv3 will be supported on Superdome 2. HP-UX 11iv2 or early versions will NOT be supported on Superdome 2. Licensing is on a per-socket basis.

HP-UX will support up to 32 sockets, 256 cores and 512 threads up to 8TB of memory per Operation Environment image.

Default HP-UX memory configuration: 87.5% socket local memory, 12.5% interleaved memory.

Default is hyperthreading is turned on.

Hyperthreading with HPVM is not supported. Error messages will be sent if one attempts to set up HPVMs with hyperthreading turned on.

Hewlett Packard Enterprise recommends that the same percentage of SLM vs. ILM be configured for every blade within an nPartition. Configurations with different percentages of SLM vs. ILM on blades within an nPartition could experience performance anomalies.

### HPE Instant Capacity (iCAP)

Some customers require the ability to configure their server environment with instant capacity resources (cores/memory). For a complete description of how to configure Instant Capacity, please refer to the following URL:

<https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04123435>

<b>HPE Superdome2 iCAP Blades (RTA / RTU)</b>	HPE Superdome 2 CB900s i6 Itanium 9760 (2.67GHz/16-core/32MB/170W) iCAP RTA Cell Blade	AT123B
	HPE Superdome 2 CB900s i6 Itanium 9740 (2.13GHz/16-core/24MB/170W) iCAP RTA Cell Blade	AT124B

### Configuration Information

HPE Superdome 2 CB900s i6 Itanium 9760 2.67GHz 32MB iCAP RTU Cell Blade	AT125B
HPE Superdome 2 CB900s i6 Itanium 9740 2.13GHz 24MB iCAP RTU Cell Blade	AT126B
HPE Superdome 2 CB900s i4 Itanium 9560 Cell Blade CPU Activation RTU	AT125A
HPE Superdome 2 CB900s i4 Itanium 9540 Cell Blade CPU Activation RTU	AT126A

#### Configuring HPE Superdome 2 blades (Cores)

Blades will be classified as "Active" or "iCAP". The Superdome 2 CB9000s i6 and i4 blades have 16 cores on a single blade (two sockets with eight cores per socket). Ordering an active Blade will result in 16 cores being activated and licensed. Ordering an iCAP blade provides customers the "right to access" (RTA's) for 16 cores. Customers have the option to purchase "right to use" (RTU's) which provide the capability to use eight cores.

There is an ordering requirement for each nPartition to have either at least one active blade or, if all iCAP blades, one RTU. During deployment, usage rights can be redistributed among the nPartitions, but at least one core must be active in each nPartition. To determine the number HP-UX License to Use (LTU's) required, multiply the number of active blades by 2 and add the number of iCAP enablements (RTU's). Unique product numbers are used to differentiate the speed and activation level for Superdome 2 blades.

#### Configuring HPE Superdome 2 blades (Memory)

Blades can be configured with different memory sizes and memory type (iCAP Memory). iCAP memory is only available on an iCAP blade. Memory on an iCAP blade must be all active or all iCAP. A blade with iCAP memory will not be available for a customer to use and is considered "off" until enablements are purchased. A blade can be configured with up to 8 memory product units (active/iCAP). It is possible to mix both active/iCAP memory within an nPartition. All active memory on an iCAP blade is accessible even if none of the cores on the blade are in use. The customer will need to purchase multiple 4GB enablement SKUs to activate each memory product on the blade with iCAP to activate all of the iCAP memory. Consult the iCAP ordering and configuration guide for more details.

#### iCAP functionality on HPE Superdome 2 servers

Usage of iCAP components will be enforced through codewords. Inventory management will be automatic and this iCAP version will be integrated with gWLM for automated workload management. A separate GiCAP Group Manager will also be made available to manage Superdome 2 groups. iCAP components would be turned "off" at the factory at the time of shipping with the factory release of the new iCAP version.

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### Platform and Partition Management

Superdome 2 delivers partition administration and control and platform management both in easy-to-use graphical management tools and also in a comprehensive and concise command-line interface.

The Superdome 2 Onboard Administrator is a unique OA option specific to the SD2 systems. It is based on HPE BladeSystem OA, but adds more memory, more firmware control, and tools uniquely designed for the SD2 platform. The benefit of using the SD2 OA is lowered administration costs along with improved platform and partition management, all within a familiar graphical or command line interface (CLI).

In a major advancement over prior Superdome systems, Superdome 2 has a built-in and always available platform and partition management system. By integrating the management into the server platform, Hewlett Packard Enterprise ensures that every Superdome 2 comes with the full set of management features, and simplifies the task of integrating Superdome 2 into the data center. At the same time, the rich set of capabilities available through the Onboard Administrator's secure network interface enables data-center-level management tools such as HPE Systems Insight Manager (HPE SIM) and others to add value at the data-center level.

The purpose of the Superdome 2 management system is to:

### Configuration Information

- Provide built-in tools to manage hardware and provide mission-critical system availability (inventory, monitor, diagnose, configure, maintain, and self-healing)
- Make it easier for users and applications to manage partitions (create, modify, inventory, start, stop, connect console, and so on)

The new SD2 manageability system provides the most user-friendly Superdome experience yet. The Superdome 2 OA makes managing a Superdome much easier than before by centralizing the control and building the management into the hardware and firmware of the system. It provides the following features:

- Intuitive GUI interface makes it easier for system administrators to navigate the intricacies of Superdome management. GUI status displays update automatically when system status changes (dynamic Web technology).
- CLI for easy scripting and power user convenience
- Console for each nPartition and vPar, simultaneously available from OA GUI or CLI. The Control-A to switch between vPar consoles has been replaced with direct access. vPars behave much more like fine-grained nPars than on previous Superdome platforms.
- Sharable enclosure DVD or remotely connected iLO virtual media can be used to attach a DVD-ROM to nPartitions or vPars.
- HPE-SIM for data-center level management support. HPE-SIM subscribes to alerts from the SD2 OA.
- Insight software plug-in tools for power management can display power consumption for the entire server or for individual nPartitions.

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#### Onboard Firmware Manager

This is all-new functionality which can scan a partition and report components with incompatible firmware versions. A firmware mismatch can arise through changes in the field that is parts replacements, or partitions which were not upgraded at the same time and then later reconfigured, moving resources around. Partitions with consistent firmware levels in all components run more reliably. Whole partitions, or the entire Superdome 2 system, can have firmware updated to a consistent level with just a click of a button.

#### Onboard Partition Manager

The Onboard Partition Manager is a set of commands built into the SD2 OA GUI and command line to manage partitions. With these new tools, partitions can be fully configured BEFORE they have to be booted (major improvement over older Superdome systems.)

There are three main aspects of partition management:

1. Partition configuration and re-configuration
2. Partition start/stop
3. Management of the OS running on the partition

The Onboard Partition Manager focuses on the first two aspects, partition configuration and partition start/stop. The partition management architecture has changed on SD2 systems to adapt to the new hardware and firmware architecture. The core of partition management functionality now resides on the built-in Superdome 2 Onboard Administrator (SD2 OA).

The new OA-based partition management architecture supports a unified nPar and vPar management model based on the fact that partitioning (both nPars and vPars) is now entirely firmware functionality. There are no longer any dependencies on software tools, no need for an external management station or a special partition to run tools. The result is faster, easier, partition configuration and partition start/stop. Both graphical user interface (GUI) and command line interface (CLI) are supported on the OA to manage partitions.

**NOTE:** On servers prior to Superdome 2, partition configuration management software primarily ran on the system processors on the partition side. Hence, in order to ease the transition to the new management model, legacy partition management command interfaces with minor modifications are still supported from the partition side.

### Configuration Information

**There are primarily three ways users can do partition management on SD2 servers.**

1. From the Superdome 2 Onboard Administrator
  - OA GUI for all nPar and many vPar uses
  - OA CLI for all nPar and all vPar commands
2. From the partitions
  - Legacy (SD1 and earlier) partition management command interfaces are still supported from the partition side.
3. From a datacenter management environment such as HPE SIM
  - Get health information for the entire SD2 complex and each partition
  - Click down into the SD2 OA to access the SD2 partition management tools

New with SD2 are "ParSpecs" which are away to save, create, and build partitions from resource definitions. ParSpec definitions allow you to have overlapping resources as long as the partitions booted do not all claim the same resources at the same time. One way to use ParSpecs is to create one set for "end of month" jobs, and another set for "daily work". ParSpec commands are built into the OA CLI at first release.

**Technical Whitepapers are available for additional information on the new platform and partition management features of Superdome 2:**

- HPE Superdome 2 Platform Management
- New Features in Superdome 2 Partition Management
- Getting Started with Partitions

See: <https://www.hpe.com/info/hpuxvirtualization> ("nPartitions" tab)

#### HPE Startup VSE gWLM w/VM SVC

**For customers who need help setting up a virtualized environment for HPE Integrity and HPE 9000 servers.**

HPE Installation and Startup Services Suite for HP-UX Virtualization and infrastructure management will provide you with the help you need to set up a virtualized environment for HPE Integrity and HPE 9000 servers. These services provide all of the deliverables required to install the HP-UX Virtualization and infrastructure management software, and configure physical servers into multiple virtual servers as well as set up the infrastructure management tools that can help you manage this type of virtual environment. Hewlett Packard Enterprise will conduct a pre-delivery planning session with you to review your specific requirements and make recommendations on the best mix of HP-UX Virtualization and infrastructure management services (within this suite) to address your particular goals. Hewlett Packard Enterprise will then install and configure the software, perform verification tests, and conduct a knowledge-transfer session with you.

**The services within this suite are as follows:**

- HPE Startup gWLM Service: Installation of HP-UX Global Workload Manager on the central management server
- HPE Startup vPar or Virtual Machine SVC: Creation of up to two virtual partitions or up to two virtual machines
- HPE Startup Capacity Advisor Service: Installation of Capacity Advisor Tool

HPE Startup Insight Dynamic Configuration Mgmt SVC - Installation of Insight Dynamics infrastructure orchestration (IO) tool

<https://www.hpe.com/h20195/v2/getpdf.aspx/4aa1-4067enw.pdf>

Scalability is a core part of the Superdome 2 value. Customers can start small and grow their Superdome 2 systems as needed to support changing business needs.

**The following basic system configurations are orderable as upgrades:**

- SD2-8s to SD2-16s
- SD2-16s to SD2-32s

#### SD2-8s to SD2-16s Upgrade



### Configuration Information

- The SD2-8s to SD2-16s upgrade package includes a firmware update, new labels, and the door display kit. The server ID and labels on the SD2-8s system must be updated to AM222A. Installation of the door display and door trim are performed at the customer site. Customers must order Tier 4 OE licenses. A credit is given for Tier 3 OE licenses already purchased. Tier 2 HA/DC-OE + SMS licenses covers SD2-8s and SD2-16s servers. Therefore, no additional licenses are required. Ordering this upgrade triggers a new PointNext for SD2-16s. Installation services are required for this upgrade (HA113A1#5MG).

#### **SD2-16s to SD2-32s Upgrade**

- The SD2-16s to SD2-32s upgrade package includes a firmware update, an additional 16s enclosure, and new labels. The server ID and labels must be updated to AM223A. Installation of the door display and door trim are performed at the customer site. Customers must order Tier 5 OE licenses for their SD2-32 server and will receive credit for their existing Tier 4 OE licenses. If a customer has licenses for the OE Storage Mgmt Suite bundles, then they need to purchase Tier 3 of these bundles for their SD2-32 server and will receive credit for their existing Tier 2 OE Storage Mgmt Suite bundles. Customers must purchase the appropriate PointNext for the SD2-32 and will receive credit for their existing SD2-16 PointNext. PointNext Installation services are required for this upgrade (HA114A1#5RE).

### Technical Specifications

This section describes the physical and environmental information.

Physical Information	Superdome 2	IOX
Site planning and installation included	Yes	Yes
Maximum Heat dissipation (fully populated system)	30,076 BTU/hr / 8820W	1,790 BTU/hr / 525 W
Depth	828 mm / 32.6"	572mm / 22.5"
Width	447 mm / 17.6"	437mm / 17.2"
Height	798 mm / 31.4" (18U)	173mm / 6.8" (4U)
Weight - Minimum (empty chassis with midplane assembly and rear chassis cage)	108 kg / 237 lb (empty chassis with midplane assembly and rear chassis cage)	22.1 kg / 48.7 lb
Weight - Typical (half populated)	254 kg / 559 lb	23.6kg / 51.9 lbs
Weight - Maximum (fully populated)	314 kg / 692 lb	29.5 kg / 65.0 lb
Electrical Characteristics	Superdome 2	IOX
AC input power: 3-phase	2N Dual Power input modules with two 5-wire cords each: IEC309 16A or two 4-wire cords each: NEMA L15-30P 30A. 5 wire: 12.26A per cord. 4wire: 23.3A per cord	N/A
AC input power: Single-Phase	2N Dual Power input modules with 6 Input Receptacles each: IEC-C19, 16/20A.	2N Dual power receptacles, IEC-C14, 10A (1 per power supply)
Maximum Input Current: Single Phase (200V)	13.45A per C19 cord	3.00A per C14 cord
Maximum Input Power total	9,000 VA at PF .98 or greater	535 VA at PF .98 or greater
Cooling airflow	800 CFM min; 1100 CFM@32 deg. C; 1900 CFM max	180 CFM min. 230 CFM max
Environmental Characteristics	Superdome 2	IOX
Acoustics	<= 8.3 bels LwA <sup>d</sup> (Sound Power)	< 7.4 bels LwA <sup>d</sup> (Sound Power)
Temperature - Recommended Operating Range <sup>1,2</sup>	+18°C to +27°C	+18°C to +27°C
Temperature - Allowable Operating Range <sup>1,2</sup>	+5°C to +40°C	+5°C to +40°C
Maximum rate of temperature change	20°C/hr	20°C/hr
Non operating temperature	-40°C to +80°C	-40°C to +80°C
Air quality	Gaseous contaminants must be at the G1 level or less as defined by ISA Standard ISA-71.04-1985	Gaseous contaminants must be at the G1 level or less as defined by ISA Standard ISA-71.04-1985
Humidity - Recommended Operating Range (non-condensing) <sup>1</sup>	+5.5 °C dew point minimum, 60%RH and +15°C dew point maximum	+5.5 °C dew point minimum, 60% RH and +15°C dew point maximum

### Technical Specifications

Humidity - Allowable Operating Range (non-condensing) <sup>1</sup>	8%RH and -12°C dew point minimum, 85%RH and +24°C dew point maximum	8%RH and -12°C dew point minimum, 85%RH and +24°C dew point maximum
Operating relative humidity	20% to 80% @ 30°C	20% to 80% @ 30°C
Maximum Operating altitude	3050m (10,000 ft)	3050m (10,000 ft)
Maximum Non operating altitude	4500m (15,000 ft)	4500m (15,000 ft)
Voltage tolerance range	200-240 VAC	200-240 VAC

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

<sup>2</sup> All temperature ratings shown are for sea level. An altitude de-rating of 1°C per 300 m above 900 m is applicable. No direct sunlight allowed. Upper operating limit is 3,048 m (10,000 ft).

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**Environmental Info** Regulatory model numbers:  
 AH337A (Superdome 2 Enclosure), RMN: FCLSB-1001  
 AH338A (Superdome 2 IOX), RMN: FCLSB-1002  
 AH352A (CB900s i2, i4, and i6), RMN: FCLSB-BB31

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**Additional Power Data** The maximum power figures given were developed with the maximum configuration running applications designed to draw the maximum power possible. It is highly unlikely that any real-world application will result in this amount of power use for any significant time period.

### Summary of Changes

Date	Version History	Action	Description of Char
02-Dec-2019	Version 29	Changed	Configuration Informa
03-Jun-2019	Version 28	Added	Configuration section
01-Oct-2018	Version 27	Changed	Configuration section
		Added	SKUs added in Config
02-July-2018	Version 26	Added	SKU added in Configu
05-Mar-2018	Version 25	Changed	Changed the note for
		Removed	PCIe Workload Accel
04-Dec-2017	Version 24	Changed	Overview, Standard F
23-Oct-2017	Version 23	Changed	Care Pack naming an
25-Sep-2017	Version 22	Changed	Configuration section
		Added	SKUs added in Config 641146-B21, 657787-
		Removed	SKUs deleted in Conf AT135A, AT136A.
14-Aug-2017	Version 21	Added	SKUs added in Config 803197-B21, 803195- AT126A, AT127B, AT
07-Aug-2017	Version 20	Added	SKUs added in Config 803197-B21, 803195- AT126A, AT127B, AT
11-Jul-2017	Version 19	Changed	Configuration section
		Added	SKUs added in Config AD337A, AD338A, AC
05-Jun-2017	Version 18	Changed	Overview, Standard F sections were update
		Removed	Obsolete SKUs were AD337A, AD338A, AC AD222A, AD393A.
27-Mar-2017	Version 17	Added	Overview, Standard F
26-Oct-2016	Version 16	Changed	Rebranding edition. F
10-Jul-2015	Version 15	Added	SKU added in Orderir
		Changed	Information in Stand
05-Dec-2014	Version 14	Changed	Standard Features, S Core Options and Me
		Added	SKU Added on HP Su
13-Mar-2014	Version 13	Changed	Power Distribution Op
30-Sep-2013	Version 12	Added	HP Integrity SN1000C
19-Aug-2013	Version 11	Changed	Updated the Superdo
			Changes made to the Standard Features. Changes made to the Changes made to the
03-Jul-2013	Version 10	Changed	Physical and environr
13-May-2013	Version 9	Changed	Standard Features: L Configuration Informa Configuration, 8s Rac Physical and environr Information section.
04-Dec-2012	Version 8	Changed	Revisions were made
28-Mar-2012	Version 7	Changed	Revisions were made
18-Nov-2011	Version 6	Changed	Revisions were made
18-Aug-2011	Version 5	Changed	Changes made throu

### Summary of Changes

06-Apr-2011	Version 4	Changed	Superdome 2 Storage SAS Ctrlr was added t
09-Feb-2011	Version 3	Changed	Changes made throu
20-Dec-2010	Version 2	Changed	Changes made throu
01-Sep-2010	Version 1	New	Initial version..

     
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