

# HP Superdome 2: The ultimate mission-critical consolidation platform

Define the next decade of mission-critical computing

Data sheet

Data center sprawl is taking business processes to the breaking point. It's the result of the way IT infrastructures have been built for 40 years: Enterprises have purchased and deployed systems to support specific applications and workloads, those systems have been connected together in a piecemeal manner, and it has taken different teams, tools, and processes to manage them. These inflexible, monolithic, hard-wired, under-utilized systems, and complex processes require excessive manpower to operate and do not scale well. This has increased complexity, which in turn inhibits flexibility, innovation, and uptime.

Tomorrow's IT will be built on a Converged Infrastructure, which tackles these problems—as well as consolidation, modernization, shared services, and business continuity initiatives—by simplifying, consolidating, and automating everything from the start. A Converged Infrastructure consists of:

- A common, modular infrastructure based on a blade design, which is a smarter way to support all of your vital applications
- A common network fabric, providing a simple, flexible way to connect systems to any network on-the-fly
- Comprehensive cross-domain control, automating operations to increase productivity and enhance utilization
- Comprehensive power and cooling management, to control energy usage and increase efficiency in real time under any workload



## Introducing the HP mission-critical Converged Infrastructure

HP has combined innovation, partnerships, and expertise to deliver the industry's first mission-critical Converged Infrastructure: new HP Integrity systems, leveraging the industry's #1 blade platform<sup>1</sup> and running HP-UX 11i v3. A unified blade architecture, from x86 to HP Superdome, simplifies environments by consolidating and delivering mission-critical applications on a highly resilient, modular bladed platform. Moreover, the architecture embodies FlexFabric, a virtual fabric that can address any workload through rapid scale up, scale out, and scale within. It delivers always-on resiliency with 100+ innovations to enable global business continuity, and managed by matrix operating environment to instantly adjust to dynamic business needs.

## HP Superdome 2: Superdome resiliency meets BladeSystem efficiency

HP Superdome 2 pioneers 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, common components, and standard racks. This also includes a common server management framework, supported now from x86 to Superdome. This new Superdome server extends the resiliency of the multiple generations of HP high-end servers with 100+ new mission-critical innovations. With breakthrough innovations such as the Superdome 2 Crossbar Fabric and Power-on-once technology coupled with rich virtualization capabilities, Superdome 2 sets the standard for the next decade of mission-critical computing.

<sup>1</sup> Source: Q4/09 IDC Quarterly Server Tracker, February 2010



## Key features and benefits

### Modular systems that are leaner and greener

HP Superdome 2 offers enhanced features to increase scalability, improve memory, and provide better compute power without compromising performance. Green efficiencies from HP blades are now engineered into Superdome 2. It can scale from 2 to 32 sockets with 4x improvement in performance in half the size. HP Superdome 2 offers:

- Support for 8 and 16 socket Superdome 2 servers in the first release.
- Up to sixteen Intel® Itanium® Processor 9300 series, providing 64 cores of compute power.
- 256 DIMM slots with up to 2 TB of DDR3 memory with double-chip spare, providing a large memory footprint for the most demanding applications.
- 32 built in 10 GbE ports.
- Full suite of Capacity on Demand capabilities: pay per use (PPU), iCAP, GiCAP, and TiCAP.
- Up to 4x the performance with a 40% lower entry price point compared to Superdome today.
- Built-in shared DVD.
- 32 socket starter package, which will be available at first release. Starter package will contain two 16 socket servers racked in a single rack. A simple upgrade kit will be available to convert this configuration to a 32s server once it is supported.

### Crossbar fabric for extreme scalability and reliability

The new Superdome 2 Crossbar fabric is both flexible and fault tolerant. This allows flexible scaling where I/O can scale independent of processors. Custom

architectures can be built to the exact customer needs—CPU intensive, I/O intensive, or anything in between. The Superdome 2 Crossbar fabric is also fault tolerant. This means that the fabric can survive a complete crossbar failure, re-route data, and recover immediately. This is done through the end-to-end transaction retry feature that self diagnoses and self-heals any errors in communication through the fabric. The key features include:

- Fault tolerance in 100% of chipset data paths
- The ability to scale I/O and processor on-demand—precisely provision and repurpose capacity where you need it most

### Power-on-once technology keeps critical applications up and running

For customers, planned downtime can be just as problematic as unplanned downtime. Power-on-once is a complete resiliency framework which keeps the system running and provides up to 4.5x boost to infrastructure reliability. The key features include:

- The ability to hot-swap fans, power supplies, without tools, and without bringing down the system
- Online replaceable crossbars, which allow you to service without powering down the system where applications keep running and no reboot is required
- Electrically-isolated, passive backplane, which is designed to remove single points of failure and active components along signal paths
- Superdome 2 Analysis Engine, which delivers predictive error-handling to reduce time and cost of error management

## Technical specification

	SD2-8s	SD2-16s	SD2-32s <sup>2</sup>
<b>Processors</b>	Intel Itanium 9350 4c Intel Itanium 9340 4c	Intel Itanium 9350 4c Intel Itanium 9340 4c	Intel Itanium 9350 4c Intel Itanium 9340 4c
<b>Processor/Cores per system</b>	16/64	16/64	32/128
<b>Processor/Cores per partition</b>	8/32	16/64	32/128
<b>Module type</b>	Quad-core processor	Quad-core processor	Quad-core processor
<b>9340 Clock speed with Turbo</b>	1.60 GHz up to 1.73 GHz	1.60 GHz up to 1.73 GHz	1.60 GHz up to 1.73 GHz
<b>9350 Clock speed with Turbo</b>	1.73 GHz up to 1.86 GHz	1.73 GHz up to 1.86 GHz	1.73 GHz up to 1.86 GHz
<b>Quick path Interconnect</b>	19.2 GB/s	19.2 GB/s	19.2 GB/s

**Technical specification (Continued)**

	SD2-8s	SD2-16s	SD2-32s <sup>2</sup>
<b>L1 cache</b>	32 KB per core	32 KB per core	32 KB per core
<b>L2 cache (instruction)</b>	512 KB per core	512 KB per core	512 KB per core
<b>L2 cache (Data)</b>	256 KB per core	256 KB per core	256 KB per core
<b>L3 cache</b>	24 MB per socket <sup>3</sup>	24 MB per socket <sup>3</sup>	24 MB per socket <sup>3</sup>
<b>L4 cache</b>	64 MB per socket	64 MB per socket	64 MB per socket
<b>Memory<sup>4</sup> minimum/maximum</b>	Minimum: 32 GB (8 x 4 GB) Maximum: 2 TB (256 x 8 GB)	Minimum: 32 GB (8 x 4 GB) Maximum: 2 TB (256 x 8 GB)	Minimum: 32 GB (8 x 4 GB) Maximum: 4 TB (512 x 8 GB)
<b>Memory type</b>	Registered PC3-10600 DDR3 1,333 MHz ECC DIMMs		
<b>Memory protection</b>	Error checking and correcting (ECC) on memory and caches; double-chip spare		
<b>Operating system supported</b>	HP-UX 11i v3		
<b>External I/O slots<sup>5</sup></b>	48 external PCIe x8 Gen2	96 external PCIe x8 Gen2	96 external PCIe x8 Gen2
<b>Internal I/O slots<sup>6</sup></b>	24 PCIe Mezzanine 16 Type II and 8 Type I, PCIe x8 Gen2	24 PCIe Mezzanine 16 Type II and 8 Type I, PCIe x8 Gen2	48 PCIe Mezzanine 32 Type II and 16 Type I, PCIe x8 Gen2
<b>Built-in networking</b>	32 10 GbE ports Pass-through or Switch interconnect module	32 10 GbE ports Pass-through or Switch interconnect module	64 10 GbE ports Pass-through or Switch interconnect module
<b>Partitioning</b>	8 socket electrically isolated nPARs, vPARs, HP-VMs, Secure Resource Partitions	16 socket electrically isolated nPARs, vPARs, HP-VMs, Secure Resource Partitions	32 socket electrically isolated nPARs, vPARs, HP-VMs, Secure Resource Partitions
<b>Capacity on Demand</b>	PPU: iCAP, TiCAP, GiCAP		
<b>Form factor</b>	18U Enclosure 4U I/O Expansion Enclosure Standard 19" rack Standard rack door	18U Enclosure 4U I/O Expansion Enclosure Standard 19" rack Superdome 2 door with active status display	2 18U Enclosures in single 19" rack 4U I/O Expansion Enclosure Superdome 2 door with active status display
<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, and service processor subsystems Fault Tolerant Crossbar Fabric built on dynamic multi-pathing and end-to-end retry technology Enhanced MCA recovery (Automated Processor Recovery) w/Intel Cache Fail-Safe Technology® ECC on caches, Memory ECC, and double-chip spare ECC, re-tries, and Link Width Reduction on data paths Automatic de-configuration of memory and processors I/O Advanced Error Recovery, PCIe OL*, and I/O isolation off Crossbar Fabric Redundant network paths Redundant Fibre Channel paths		
<b>HP Insight Dynamics – VSE for integrity</b>	Provides industry-leading workload and resource-management solutions to accelerate complex IT projects and simplify daily operations. <a href="http://www.hp.com/go/insightdynamics/integrity">www.hp.com/go/insightdynamics/integrity</a>		
<b>Interfaces</b>	VGA and 2 USB ports for local human interface; 1 RS-232 serial port and 10/100Base-T LAN for Integrity Integrated Lights-Out (iLO 3) management		
<b>Removable media</b>	Built-in DVD-ROM, accessible from all partitions		

<sup>2</sup> Only 32 socket starter package will be available at first release which can be upgraded to a 32s server in future; expected availability in 2011

<sup>3</sup> L3 cache size for the 9340 is 20 MB

<sup>4</sup> 8 GB DIMMs not supported at first release; expected availability in Q4 2010

<sup>5</sup> Maximum external I/O slots at initial release is 48 for SD2-16s and SD2-32s; expected availability in 2011

<sup>6</sup> Internal I/O slots (mezzanine cards) are not supported at initial release; expected availability in 2011

\* PCIe OL not available at initial release; expected availability in 2011

(Note all expected availability dates are subject to change without prior notice)

## Environmental Specifications—HP Superdome 2

<b>Altitude</b>	Operating: 3050m (10,000 ft)	Non Operating: 4500m (15,000 ft)
<b>Temperature</b>	Operating: +5°C to +32°C	Non Operating: -40°C to +70°C
<b>Relative humidity</b>	Operating: 20% to 80% @ 30°C	
<b>Dimensions</b>	Height: 798 mm/31.4" (18U) Width: 447 mm/17.6" Depth: 828 mm/32.6"	IOX Height: 173mm/6.8" IOX Width: 437mm/17.2" IOX Depth: 572mm/22.5"
<b>Weight</b>	Maximum 274 kg/733 lb (estimate, fully populated); IOX weight: 29.5 kg/65lb fully loaded	
<b>Power</b>	9000 VA, IOX: 535VA at PF .98 or better	
<b>Cooling Airflow</b>	800 CFM min; 1100 CFM @ 32°C; 1900 CFM max	
<b>Voltage tolerance range</b>	200-240V AC	
<b>Frequency tolerance range</b>	50/60 Hz	
<b>Regulatory model number</b>	FCLSB-1001 Enclosure, FCLSB-BB31 Blade	

## HP Financial Services

### Financing the mission-critical Converged Infrastructure

HP Financial Services provides you with the financial and asset management services you require to migrate to a mission-critical Converged Infrastructure. These services are designed to enable the migration to the

new line of HP Integrity servers, while reducing total cost of ownership (TCO) and accelerating your return on investment (ROI). For more information on these services, please contact your HP sales representative or visit

[www.hp.com/go/hpfinancialservices](http://www.hp.com/go/hpfinancialservices)

To learn how the HP Superdome 2 can help your business move to a Converged Infrastructure, please visit [www.hp.com/go/superdome2](http://www.hp.com/go/superdome2)

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