Hewlett Packard Enterprise

Superdome Flex Server

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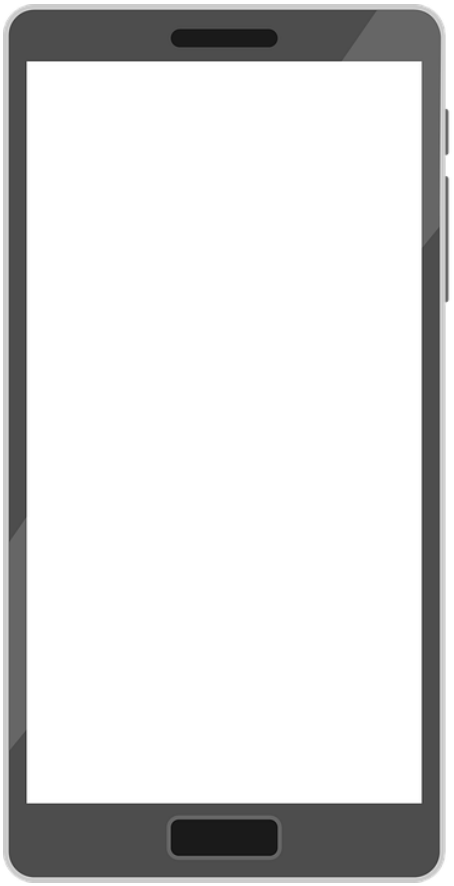
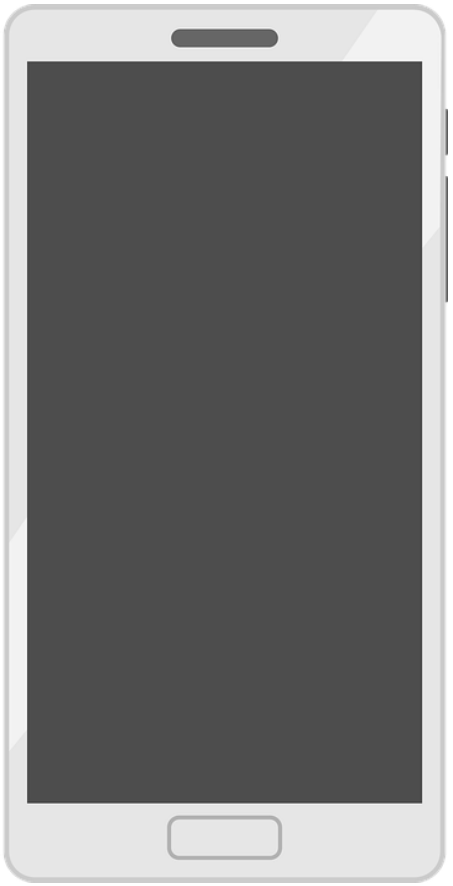
Presales - WSI

April 25, 2017





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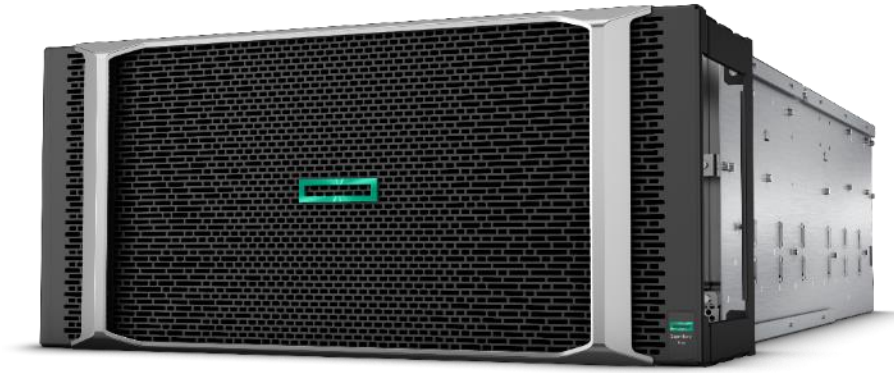
Agenda

- History of Superdome Flex
- Design for Memory Driven Server
- SD Flex Most Application use
- 32 socket Architecture
- Single Cluster and NPAR
- RAS
- Specification
- Q&A



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Advancing the real-time enterprise journey

Empowering the data-driven enterprise...

SAP HANA in-memory

Project “Kraken”
Co-innovation with SAP

Extreme scalability for transactions & analytics

Superdome X

High performance Data analytics

Acquisition

sgi

Platform for the next decade of in-memory computing

NEW

HPE Superdome Flex

Memory Driven

.... Accelerating real-time business insights

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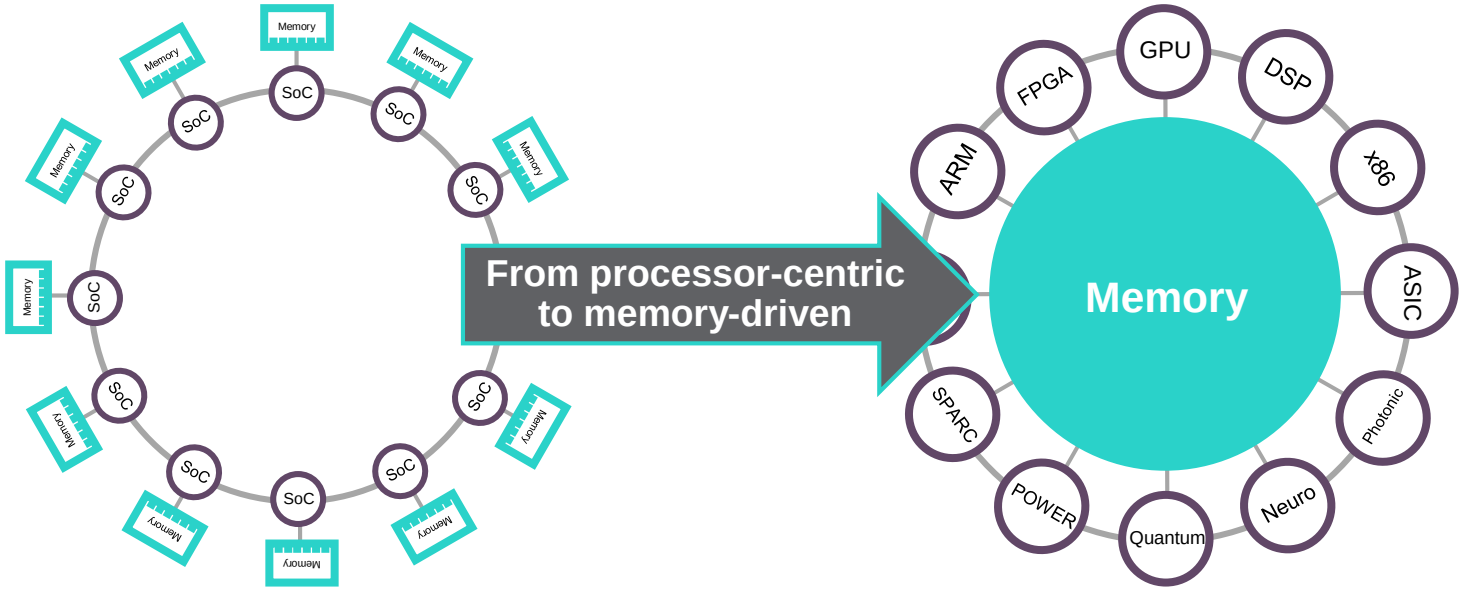
Transforming the digital core to run at the speed of memory

HPE is the leader in Memory-Driven Computing



Leading database vendors transform to in-memory software

SAP HANA

ORACLE DATABASE 12c

Microsoft SQL Server 2016

Massive data with unpredictable growth, conventional systems can´t keep up

Harnessing the full value of in-memory computing

HPE Superdome Flex Use Cases

SAP HANA

- SAP non HANA to SAP HANA
- SAP BW/4HANA
- SAP S/4HANA
- SAP HANA on Cloud

- Market leadership, over 12K systems shipped
- Unrivaled HANA portfolio
- SAP co-innovation and expertise

ORACLE DATABASE 12c

- Reduce licensing costs
- Unix migrations
- Exadata replacement
- Mix OLTP and analytics

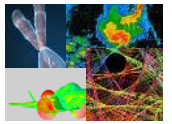
- Over 140K Oracle enterprise customers run on HPE
- #1 in scale-up capacity for Oracle DB in-memory
- Consolidation, migration svcs

Microsoft SQL Server

- Mission critical SQL Server workloads
- Scale-up SQL Server
- SQL Server on Linux

- Co-engineering with Microsoft
- Broadest SQL Server solutions
- Over 29K joint partners

In-memory HPC



- Genomics
- Computer-aided engineering
- Computational chemistry
- Cyber security
- Financial risk management
- Fraud prevention
- Large data visualization

- Innovation leadership with SGI and HPE IP
- 20+ yrs in-memory experience
- Deep workload expertise

NEW

HPE Superdome Flex
Turn critical data into real-time business insights

Turn data into actionable insights in real time
- Unparalleled scale 4-32 sockets, 768GB-48TB memory
- Highly expandable for growth; ultra-fast fabric

Keep pace with evolving business demands
- Unique modular 4-socket building block, 45% lower cost at 4s entry point
- Open management and hard partitioning for hybrid IT consumption

Safeguard mission-critical workloads
- Proven Superdome RAS with 99.999% single system availability
- Mission critical expertise with HPE Pointnext services

Designed with Memory-Driven Computing principles

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The performance and scale you need to turn critical data into real-time insights

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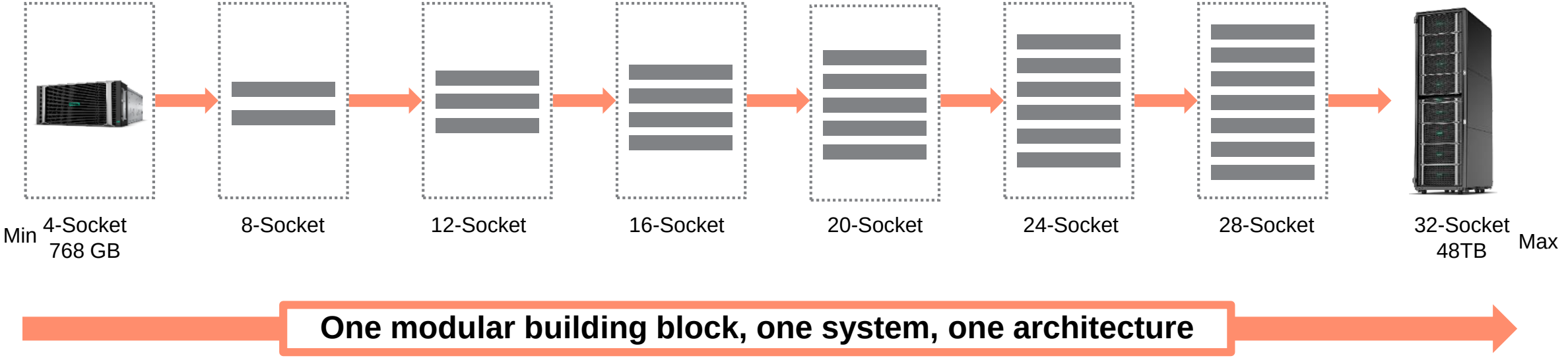
Turn massive amounts of data into business-fueling insights

– Scale easy and economically, regardless of your business size

– Start small and grow seamlessly at your own pace

– Avoid over-provisioning and disruptive upgrades

– Add compute power without sacrificing performance



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Unique point-to-point design maximizes performance

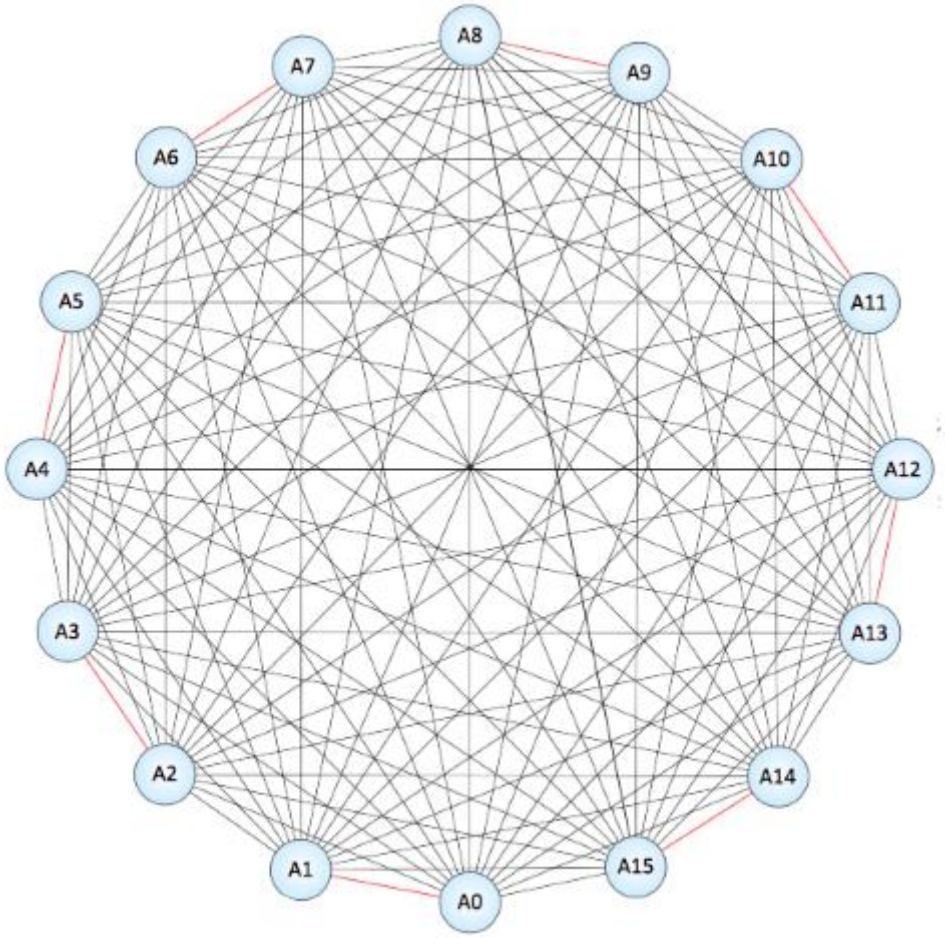
Extreme processing speed at scale

Scales from 4 to 32 sockets

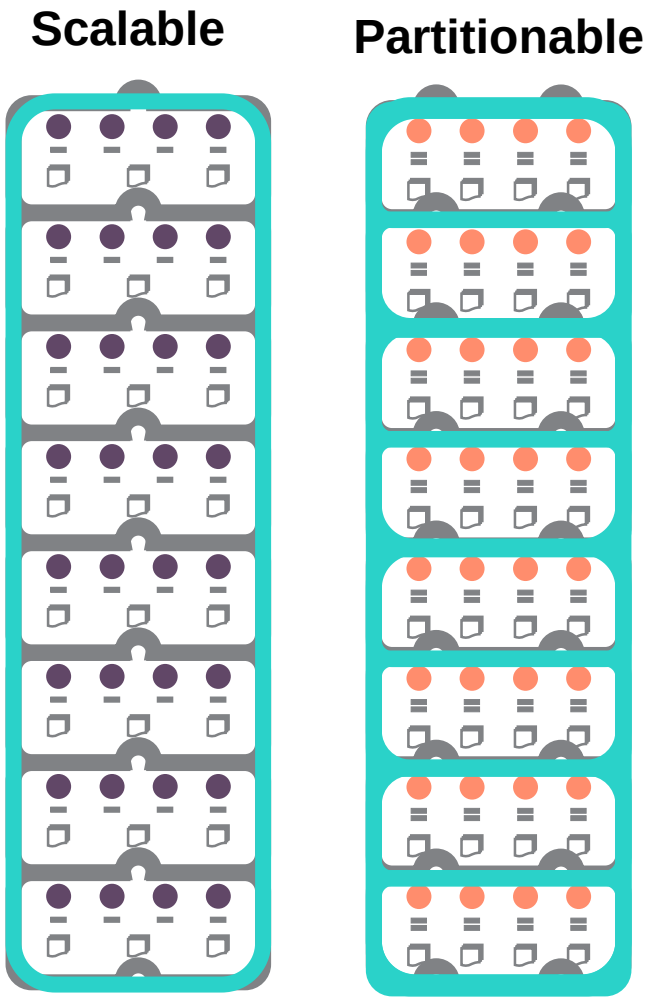
- Supports up to 8 chassis, with 4 sockets per chassis
- Includes 16 Flex ASICs
- Point-to-point, ‘all-to-all’ Grid link between system ASICs – unique in the industry
- Lower latency and increased Bandwidth over previous solutions, and competitive systems - delivering extreme performance

Compute resources provided

- 32 sockets
- 384 DIMM slots: up to 48 TB with 128 GB DIMMs
- 128 PCIe Gen3 card slots (56 x16, 72 x8) maximum



Deployment choice with scalable or partitionable configurations



Scalable for single instance workloads

- Support a single, scalable system in 4 socket increments from 4 to 32 sockets with a **single OS instance**

Partitionable to deploy separate environments in the same system

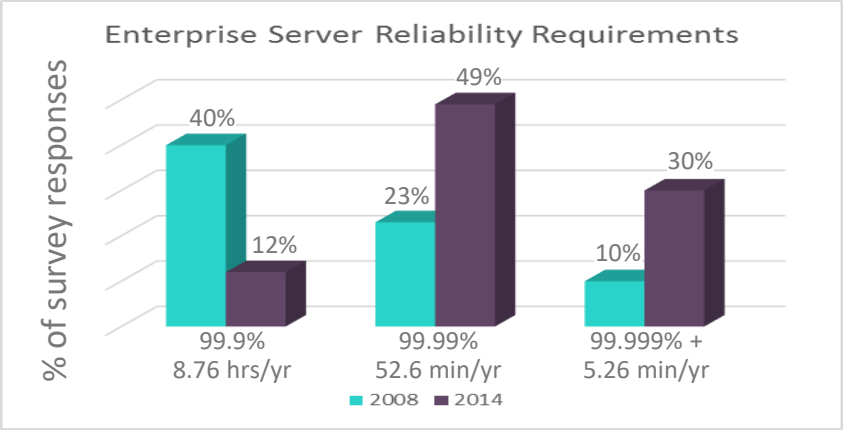
- Support multiple, independent hard partitions (**HPE nPars**) within a single system
- Hard partitions are configured in varying 4s (per chassis) increments from 4s to 32s
- Each hard partition runs its own OS instance, independently from other hard partitions

Reliability and expertise to safeguard your critical workloads

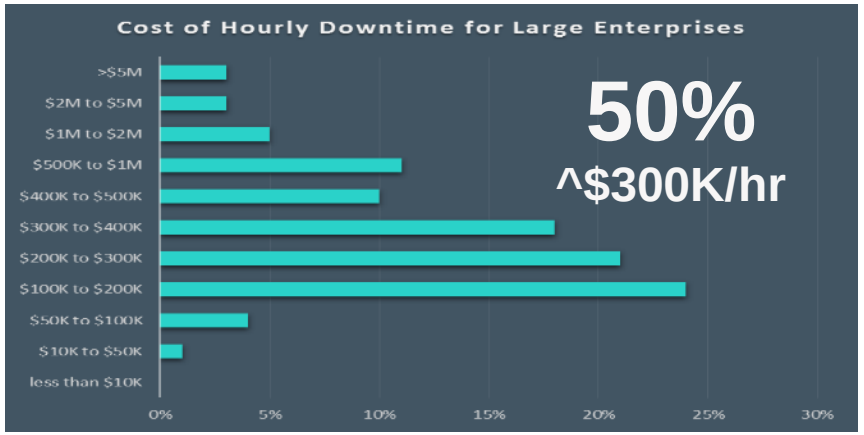
Reliability, Availability and Serviceability

Server RAS capabilities are of critical importance

- **Reliability** – refers to the ability of a computer system to consistently perform according to its specifications
- **Availability** – the ratio of time a system or component is functional to the total time it is required or expected to function
- **Serviceability** – concerns the ease with which a component, device, or system can be maintained and repaired



Source: ITIC 2014, Global Server Hardware & Server OS Reliability Survey



Source: ITIC 2013, Global Server Hardware & Server OS Reliability Survey

More and more, our customers find their server uptime is a critical component of their entire IT infrastructure, and demand solutions keep running – all the time

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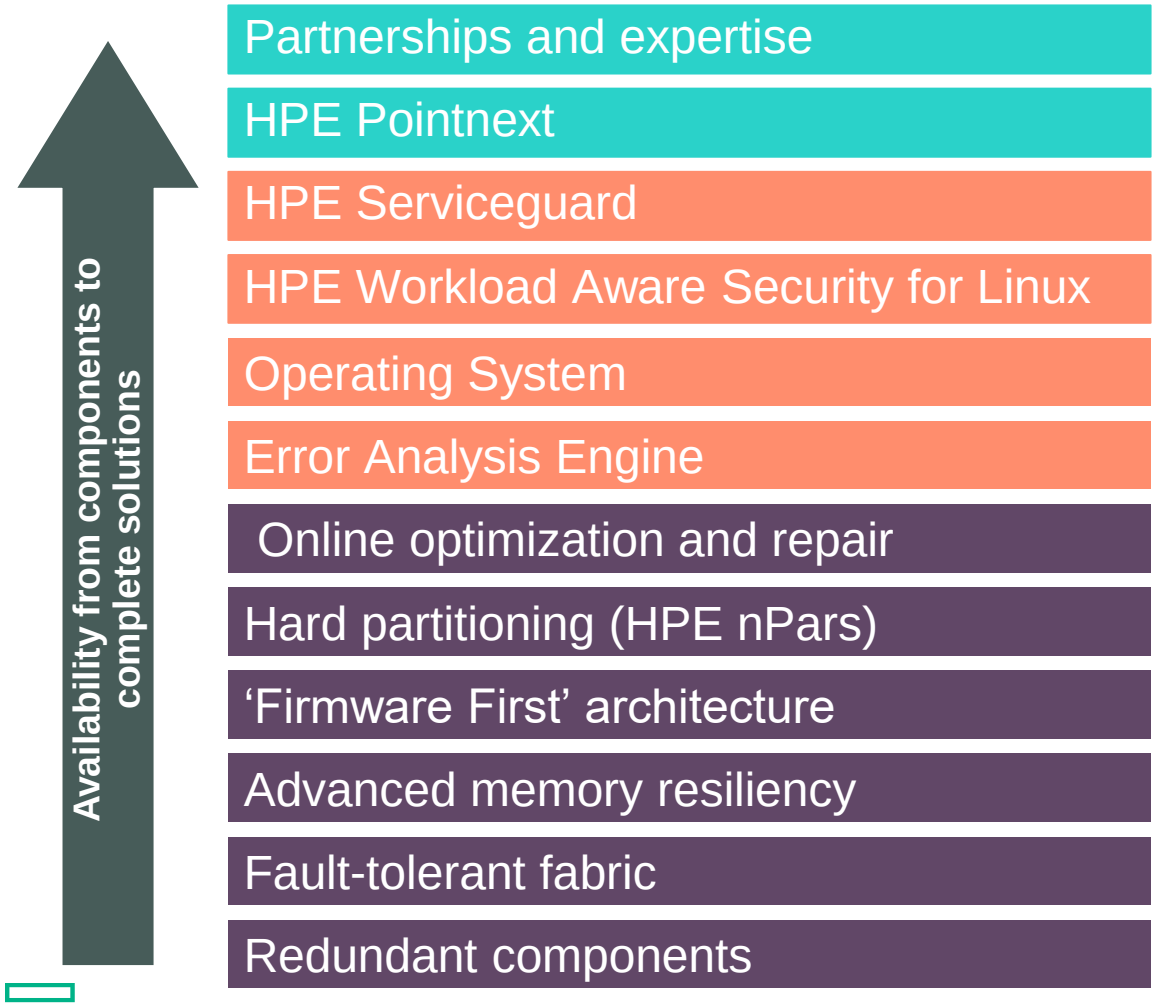
Safeguarding your critical workloads with HPE Superdome Flex

Proven Superdome Reliability framework delivers mission-critical availability



Up to 100% application availability

- Deep HPE mission-critical expertise, co-engineering with software partners and comprehensive HPE Pointnext services portfolio provide full solution availability

Error identification, reporting, recovery

- Best-in-class predictive fault handling initiates self-repair without operator assistance. Expanded protection with Serviceguard for Linux HA/DR clustering software

Five nines (99.999%) single-system availability

- HPE IP augments Intel base code to protect from and contain many errors, including memory errors, before interruption occurs at the OS layer.

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End-to-end RAS protects high value applications and data

HPE Superdome Flex RAS features at a glance

Chassis-Level features

- Firmware
- Redunda
- Flex Grid negotiati
- Adaptive
- CRC pro
- Systemic
- Socket in
- Chassis
- Hard Par

Process

- Enhance
- Integer p
- ECC cov
- Register/
- Improved
- UPI link-
- UPI rollin
- Core leve
- Poison D

Memory features

- PCIe link retraining and recovery

HPE Superdome Flex: key areas of RAS superiority

RAS	SD Flex	Standard x86
Firmware-first	✓	x
Automatic error logging	✓	x
Auto self-healing (Analysis Engine)	✓	x
Disabling / deconfiguration of failed FRUs	✓	x
Onboard fault analyzer	✓	x
Automatic restart	✓	x
Advanced processor error handling (eMCA Gen2)	✓	x
Advanced memory resiliency (ADDDC)	✓	x
Enhanced fabric resiliency (Adaptive routing)	✓	x
Advanced PCIe error recovery (LER)	✓	x
Hard Partitions (nPars)	✓	x

needs

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Superdome Flex Specification

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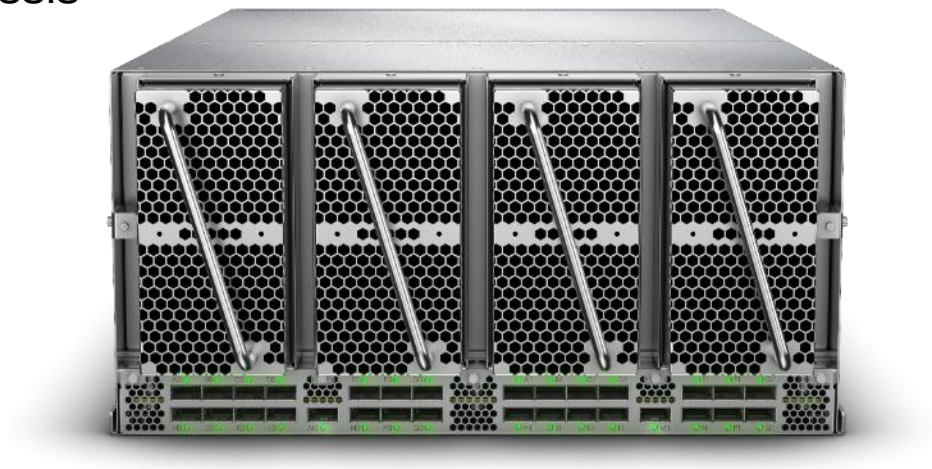
Superdome Flex Specifications

	Description	
System	1 or 2 chassis; each supports four (4) Intel® Xeon® Scalable processors; future support for 8 chassis (32s)	
Processors (Available at initial release)	Intel Xeon Platinum 8180 processor Intel Xeon Platinum 8176 processor Intel Xeon Platinum 8156 processor Intel Xeon Platinum 8158 processor Intel Xeon Gold 6154 processor Intel Xeon Gold 6132 processor	28-cores/2.5GHz/205W/38.5M 28-cores/2.1GHz/165W/38.5M 4-cores/3.6GHz/105W/16.5M 12-cores/3.0GHz/150W/24.75M 18-cores/3.0GHz/200W/24.75M 14-cores/2.6GHz/140W/19.25M
Memory	48 DDR4 DIMM slots per chassis Maximum memory: 3 TB (48x 64 GB DIMMs) per chassis 32 GB and 64 GB DDR4 DIMMs loaded in groups of 12 DIMMs	
Base IO (base chassis)	2x 10GbE ports, 2x 1GbE ports, 4x USB 3.0 ports, serial and MGMT ports	
Internal drive slots	Up to four (4) 2.5” SATA/SAS HDD or SSD with option for hardware RAID	
IO expansion options	16 PCIe 3.0 low-profile slots; 7 x16 slots and 9 x8 slots 12 PCIe 3.0 slots; 8 full-height slots (4 x16 & 4 x8) + 4 low-profile slots (1 x16 and 3 x8) Zero (0) slot, compute only	
Management	Optional 1U Rack Management Controller (RMC) for CLI; Redfish® API	
Operating systems	SUSE® Linux® Enterprise Server 12, Red Hat® Enterprise Linux 7, Oracle Linux 7	
Form Factor	5U server chassis; width: 17.5” (44.5cm); depth: 32.5” (82.6cm)	

HPE Superdome Flex Server: Chassis

Superdome Flex
Chassis



Superdome Flex Chassis
(front – no bezel)

Superdome Flex
Full rack
(32-socket configuration)

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Superdome Flex supported storage

- **Internal storage:** Four (4) 2.5” drive bays to support SATA SSDs or SAS HDDs/SSDs.
  - 6G SATA SSDs use embedded chip (Intel RSTe) with SW RAID (w/boot support)
  - 12G SAS HDDs/SSDs use PCIe RAID card (internal) with HW RAID (w/boot support)
- **SAS**: HPE SAS JBOD (e.g. D3700) are supported with PCIe RAID card (external) (w/boot support)
- **Fibre Channel**: HPE FC arrays (e.g. 3PAR, XP, MSA) are supported with PCIe FC HBAs (w/boot support)
- **Third party storage**: Storage vendor takes the lead in documenting interoperability
- Superdome Flex to be added to SPOCK in the near future

Superdome Flex Base Chassis (rear)
with 16-slot PCIe riser

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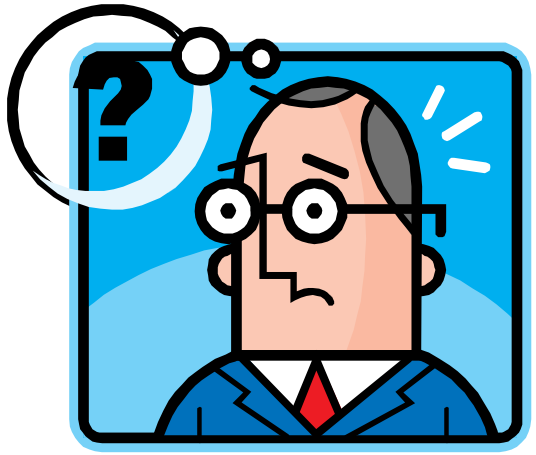

QUESTIONS?

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Thank you

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