

WORLD-RECORD PERFORMANCE FOR YOUR SAP HANA PLATFORM

The data growth that enterprises are grappling with shows no sign of slowing

5.8 BILLION IOT ENDPOINTS BY END OF 2020¹

38 EXABYTES PER MONTH²

Global total mobile data traffic is expected to reach around 38 exabytes per month by the end of the year, and is projected to grow by a factor of 4 to reach 160 exabytes per month in 2025³

Real-time analytics is essential to make sense of it all

For this, many organizations rely on SAP HANA

But the software needs an optimized hardware foundation to deliver the best results

Enter HPE Superdome Flex powered by Intel® Xeon® Scalable processors

WORLD RECORD PERFORMANCE

HPE Superdome Flex powered by Intel Xeon Scalable processors with Intel® Optane™ persistent memory (PMem) set overall and 16-processor world records on SAP Business Warehouse Edition for SAP HANA Standard Application Benchmark V3

AT **41.6** INITIAL RECORDS⁴

SCALABILITY

- ✓ Scales from 4-32 processors in 4S increments as a single system
- ✓ Broad range of CPU and memory configurations—including those based on 2nd generation Intel Xeon Scalable processors—for both scale-up and scale-out use cases
- ✓ SAP-certified scalability for online transaction processing (eg SAP S/4HANA) and online analytical processing (eg SAP BW/4HANA) workloads

HPE Superdome Flex Compute Block for SAP HANA Scale-up Configurations (S/4HANA/BWoH/BW/4HANA)⁵

Total Maximum System Memory	
32 Sockets	24 TB
28 Sockets	21 TB
24 Sockets	18 TB
20 Sockets	15 TB
16 Sockets	24 TB
12 Sockets	18 TB
8 Sockets	12 TB
4 Sockets	6 TB

- A minimum of SAP HANA 2.0 SPS03 is required for all configurations up to 8 sockets. 12 socket configurations or larger require a minimum of SAP HANA 2.0 SPS04
- Configurations up to 32 sockets are also available for S/4HANA scale-out use cases
- Under TDI Phase 5 rules, Gold CPU are all allowed in production for configurations up to 16 sockets. For Scale-out configurations, only the Platinum 8280 and 8276 CPUs are allowed
- 128 GB DIMMs are allowed only up to 16s. Configurations larger than 16s must use 64 GB DIMMs only

HPE Superdome Flex Compute Block for SAP HANA Scale-out Configurations (BWoH/BW/4HANA)⁶

Memory per Node	Maximum Scale-out system size
32 Sockets	24 TB 288TB 12 Nodes
28 Sockets	21 TB 288TB 12 Nodes
24 Sockets	18 TB 288TB 12 Nodes
20 Sockets	15 TB 288TB 12 Nodes
16 Sockets	12 TB 288TB 12 Nodes
12 Sockets	9 TB 288TB 12 Nodes
8 Sockets	6 TB 288TB 12 Nodes
4 Sockets	3 TB 288TB 12 Nodes

- A minimum of SAP HANA 2.0 SPS03 is required for all configurations up to 8 sockets. 12 socket configurations or larger require a minimum of SAP HANA 2.0 SPS04
- Configurations up to 32 sockets are also available for S/4HANA scale-out use cases
- Under TDI Phase 5 rules, Gold CPU are all allowed in production for configurations up to 16 sockets. For Scale-out configurations, only the Platinum 8280 and 8276 CPUs are allowed

FLEXIBILITY

- ✓ Thousands of configuration choices to meet every requirement, with the ability to repurpose as needs change

2x deployment models to grow as you need, without compromising performance or scalability

OPTION 1

As an appliance, with all required hardware and software pre-installed and configured

OPTION 2

SAP HANA Tailored Datacenter Integration (TDI), enabling customization and use of existing data center resources

LARGE MEMORY CAPACITY

Deliver from **768GB TO 48TB** of shared memory⁷

Architected to scale to vast capacities for SAP HANA platform

-39%

Reduce infrastructure costs by 39 percent in SAP consolidation with Intel Optane persistent memory's higher capacity compared to DRAM alone⁸

13 FASTER DATABASE RESTART

Achieve up to 13x faster database restart time (compared to DRAM alone)⁹

RELIABILITY

- ✓ Extreme reliability, availability and serviceability (RAS) features offer peace of mind for critical SAP HANA workloads

Intel, HPE and SAP have a long history of collaboration and commitment to helping our customers innovate and succeed. Learn more about this latest milestone in the white paper [Unleash the Power of your SAP HANA Platform](#)

¹ Gartner, August 2019, [gartner.com/en/newsroom/press-releases/2019-08-29-gartner-says-5-8-billion-enterprise-and-automotive-iot](#)
² Ericsson Mobility Report, November 2019 [ericsson.com/en/mobility-report/reports/november-2019](#)
³ Ericsson Mobility Report, November 2019 [ericsson.com/en/mobility-report/reports/november-2019](#)
⁴ [community.hpe.com/5/serve-the-right-compute/scale-up-and-up-with-sap-hana-and-persistent-memory/ba-p/7085474#XqIV48KIUk](#)
⁵ The SAP HANA Hardware Directory, [sap.com/dmc/exp/2014-09-02-hana-hardware/en/appliances-certified%2Chewlett%20Packard%20Enterprise](#). TB capacities shown are max. capacities begin at 1.5 TB for 4-socket system.
⁶ HPE Superdome Flex QuickSpecs, [http://h20195.www2.hp.com/v2/getdocument.aspx?docname=00026242emw](#)
⁷ Based on Intel testing as of March 1, 2019. Columnar store entire reload into DRAM for 1.3 TB dataset is 20 mins. Entire system restart before is 32 minutes and with Intel® Optane™ persistent memory is 13.5 minutes (12 mins for OS + 1.5 mins). Configuration details: baseline: 45 Intel® Xeon® Platinum 8280M processor (28 cores), 6 TB memory (48 x 128 GB DDR4 at 2.666 megatransfers per second [MT/s]), 10Gb Intel® Ethernet Converged Network Adapter X520, 60 x 480 GB Intel® SSD DC S4600 Serial ATA (SATA), BIOS: WW4818, SUSE 15¹, Intel® IT workload, 3 TB SAP HANA database, security mitigations variants 1, 2, 3 enabled. AD 2-2-2 config: 45 Intel Xeon Platinum 8280L processor (28 cores), 9 TB memory (24 x 256 GB Intel® Optane™ DC persistent memory, 24 x 128 GB DDR4 at 2.666 MT/s), 10Gb Intel Ethernet Converged Network Adapter X520, 90 x 480 GB Intel SSD DC S4600, BIOS: WW4818, SUSE 15, Intel IT workload, 6 TB SAP HANA database, security mitigations variants 1, 2, 3 enabled.
⁸ Based on Intel testing as of March 1, 2019. Columnar store entire reload into DRAM for 1.3 TB dataset is 20 mins. Entire system restart before is 32 minutes and with Intel® Optane™ persistent memory is 13.5 minutes (12 mins for OS + 1.5 mins). Configuration details: baseline: 45 Intel® Xeon® Platinum 8280M processor (28 cores), 6 TB memory (48 x 128 GB DDR4 at 2.666 megatransfers per second [MT/s]), 10Gb Intel® Ethernet Converged Network Adapter X520, 60 x 480 GB Intel® SSD DC S4600 Serial ATA (SATA), BIOS: WW4818, SUSE 15¹, Intel® IT workload, 3 TB SAP HANA database, security mitigations variants 1, 2, 3 enabled. AD 2-2-2 config: 45 Intel Xeon Platinum 8280L processor (28 cores), 9 TB memory (24 x 256 GB Intel® Optane™ DC persistent memory, 24 x 128 GB DDR4 at 2.666 MT/s), 10Gb Intel Ethernet Converged Network Adapter X520, 90 x 480 GB Intel SSD DC S4600, BIOS: WW4818, SUSE 15, Intel IT workload, 6 TB SAP HANA database, security mitigations variants 1, 2, 3 enabled.
⁹ Based on testing as of May 30, 2018. SAP HANA simulated workload for SAP BW edition for SAP HANA Standard Application Benchmark Version 2 as of 30 May 2018. Baseline configuration with traditional DRAM: Lenovo ThinkSystem SR950 server with 8 x Intel® Xeon® Platinum 8176M processors (28 cores, 165 watt, 2.1 GHz). Total memory consists of 48x 16 GB TruDDR4 2.666 MHz RDIMMs and 5x ThinkSystem 2.5" PM1633a 3.84 TB capacity SAS 12 Gb hot-swap solid-state drives (SSDs) for SAP HANA storage. The operating system is SUSE® Linux® Enterprise Server 12 SP3 and uses SAP HANA 2.0 SPS 03 with a 6 TB dataset. Average start time for all data finished after table preload for 10 iterations 50 minutes.
⁸ New configuration with a combination of DRAM and Intel® Optane™ persistent memory: Lenovo ThinkSystem SR950 server with 8 x Intel Xeon Platinum 8176M processors (28 cores, 165 watt, 2.1 GHz). Total memory consists of 48 x 16 GB TruDDR4 2.666 MHz RDIMMs and 48 x 128 GB Intel Optane persistent memory modules (PMMs), and 5x ThinkSystem 2.5" PM1633a 3.84 TB capacity SAS 12 Gb hot-swap solid-state drives (SSDs) for SAP HANA storage.

Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors.
 Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more complete information visit [www.intel.com/benchmarks](#).
 Performance results are based on testing as of dates shown in configurations and may not reflect all publicly available updates. See backup for configuration details. No product or component can be absolutely secure.
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