



Hewlett Packard Enterprise

HPE vSAN READY NODE SOLUTIONS

Delivering best-in-class software-defined storage solutions with Intel® Optane™ Technology

HPE vSAN READY NODE SOLUTIONS

KEY TAKEAWAY

By adding just 2 Intel® Optane™ SSDs to HPE Gen10 servers, customers could boost storage performance with minimal effort - increasing ROI, reducing cost, and leading to increased profitability.

Up to **35% more IOPS** with this Intel-HPE solution¹:

Configuration with NVMe SSDs + Intel® Optane™ SSDs with NVMe

256,543 IOPS

Configuration with NVMe SSDs

189,765 IOPS

Up to **34% more Throughput** with this Intel-HPE solution²:

Configuration with NVMe SSDs + Intel® Optane™ SSDs with NVMe

2,728 MB/s

Configuration with NVMe SSDs

2,025 MB/s

Based on independent, 3rd party testing by Principled Technologies, Inc. commissioned by HPE. Running VMware vSAN on a HPE ProLiant DL380 GEN10 Server with 2 Intel® Optane™ SSDs in the caching layer



HIGHER EFFICIENCIES AND REDUCED COSTS

Support more VMs in smaller footprint leading to drastic reduction in compute \$/user



INCREASE BUSINESS PRODUCTIVITY

Fast transactions leading to key strategic decisions quickly



IMPROVE USER EXPERIENCE

Deliver faster response times elevating workforce productivity

INTEL® OPTANE™ SSD ON HPE PLATFORMS

Product	Capacity	HPE Model # PN	HPE Description	Qualified Platforms
Intel® Optane™ SSD DC P4800X	375GB	878014-B21	HPE 375GB NVMe x4 WI SFF SCN DS SSD	Gen 9 & Gen 10 ProLiant DL380, DL360, DL580, DL560, ML350, Gen 9 & Gen 10 Apollo 4000, 6000
	750GB	878038-B21 P06952-B21	HPE 750GB PCIe x4 WI HH DS Card HPE 750GB NVMe x4 WI SFF SCN DS SSD	Gen 9 & Gen 10 HPE Blade 8L460c, BL660c (Note: HH Cards not supported) Gen 9 & Gen 10 HPE Synergy 480, 680 (Note: HH Cards not supported) Gen 9 & Gen 10 HPE Integrity Superdome 2 i6 Server & HPE Integrity rz2800 i6 Server Gen 10 Apollo 2000 (XL170r, XL190r)

THE IDEAL CACHING SOLUTION WITH INTEL® OPTANE™ TECHNOLOGY

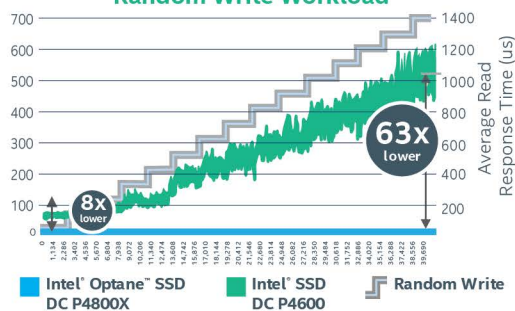
INTEL® OPTANE™ DC SSD FOR CACHING TIER

With an industry-leading combination of high throughput, low latency, high QoS, and high endurance, the Intel® Optane™ SSD DC P4800X provides a new data storage tier that allows you to execute larger datasets faster than ever, while reducing system DRAM to significantly lower data center cost.



LOWER AND MORE CONSISTENT LATENCY

Average Read Latency Under Random Write Workload⁵



MORE EFFICIENT

Cache as a % of Storage Capacity⁶



Intel® Optane™ SSD DC P4800X cache



Intel® SSD DC P4600 (3D NAND) cache



HIGHER ENDURANCE

Drive Writes Per Day (DWPD)⁷

Intel® Optane™ SSD DC P4800X UP TO **30 DWPD**

Intel® SSD DC P4600 (3D NAND) **3.0 DWPD**

1-2. Source - "Get More VMware vSAN database performance with Intel Optane SSDs and HPE ProLiant DL380 servers", a Principled Technologies report, commissioned by HPE, May 2019: <https://www.pricedtechnologies.com/hpe/intel-optane-hpe-proliant-vmware-vsan-oracle-workload-testing-infographic-0519.pdf>

3. Supercharge your SQL Server: <http://www.vmware.com/content/dam/digitalmarketing/vmware/en/pdf/casestudy/vmware-northrim-reference-implementation-study.pdf>

4. Solution Reference Implementation Case Study: <https://www.vmware.com/content/dam/digitalmarketing/vmware/en/pdf/casestudy/vmware-northrim-reference-implementation-study.pdf>

5. Source - Intel-tested. Average read latency measured at queue depth 1 during 4k random write workload. Measured using FIO 3.1. Common Configuration - Intel ZU Server System, OS CentOS 7.5, kernel 4.17.6-1.el7.x86_64, CPU 2 x Intel® Xeon® 6154 Gold @ 3.0GHz (18 cores), RAM 256GB DDR4 @ 2666MHz, Configuration - Intel® Optane™ SSD DC P4800X 375GB and Intel® SSD DC P4600 1.6TB. Latency - Average read latency measured at QD1 during 4K Random Write operations using FIO 3.1. Intel Microcode: 0x2000043; System BIOS: 00.01.0013; ME Firmware: 04.00.04.294; BMC Firmware: 1.43.91f76953; FRUSDR: 1.43. SSDs tested were commercially available at time of test. Performance results are based on testing as of July 24, 2018 and may not reflect all publicly available security updates. See configuration disclosure for details. No product can be absolutely secure.

6. Source - Intel. General proportions shown for illustrative purposes.

7. Source - Intel. Endurance ratings available at <https://www.intel.com/content/www/us/en/products/docs/memory-storage/solid-state-drives/data-center-ssds/optane-ssd-dc-p4800x-p4801x-brief.html>

No product or component can be absolutely secure. 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. © Intel Corporation. Intel, the Intel logo, and Intel Optane are trademarks of Intel Corporation in the U.S. and/or other countries.

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