

## Solution Snapshot

# VMware vSAN with Intel® Optane™ SSD P5800X

## The Challenge

Today's VMware vSAN deployments face data growth and performance challenges.

IT organizations can no longer afford legacy storage architecture that limits their ability to scale cost-effectively, meet service-level agreements (SLAs), and protect data from loss.



Data explosion drives need for higher IOPS and lower latency to help meet SLAs.



Budget pressures demand server consolidation and lower total cost of ownership (TCO).



Data loss can be catastrophic, so SSDs need higher endurance.

## Boost Data Center and vSAN Efficiency

with the latest generation of Intel® Xeon® Scalable processors and Intel® Optane™ SSD



Trusted Enterprise  
Virtualization



Remote and Branch  
Office and Edge



Virtual Desktop  
Infrastructure (VDI)



DevOps for  
Microservices and  
Containers



Disaster  
Recovery

## Overview + Benefits

Using Intel Optane SSDs in the VMware vSAN cache tier, along with 3rd Gen Intel Xeon Scalable processors:

- Achieves consistent high performance and low latency
- Improves TCO
- Lowers data loss risk through high endurance

**Intel Optane SSDs: A great choice for the vSAN storage cache.**



## See the Difference a Modernized Infrastructure Can Make Compared to the Previous Generation<sup>1</sup>



### IOPS

Process more data for better business insights.



### HOSTS

Server consolidation helps increase data center efficiency.



### LATENCY

The Intel Optane SSD P5800X is the world's fastest SSD.<sup>2</sup>



### COST

Using Intel Optane SSDs can improve total cost of ownership.

See endnotes for workloads and configurations. Your results may vary.



+



# Consolidate Servers with the Latest Intel Technology

By upgrading to 3rd Generation Intel Xeon Scalable processors *and* the Intel Optane SSD P5800X Series, five servers can now do the work of seven servers – helping to reduce power, cooling, and footprint costs.<sup>1</sup>



## Why Intel Optane SSDs for VMware vSAN

Intel Optane P5800X SSDs offer high IOPS per dollar with consistently low latency, resulting in breakthrough performance. VMware vSAN performs best when the cache tier uses Intel Optane SSDs instead of NAND SSDs, as shown below.



### High Performance

Up to 2.5x more throughput than NAND SSDs<sup>3</sup>



### Stable Latency

As I/O demand increases, latency does not vary as in NAND SSDs<sup>4</sup>



### High Endurance

16x better lifetime endurance compared to NAND SSDs<sup>5</sup>

Learn about doing more for less with VMware vSAN and Intel Optane SSDs.

vmware® | intel®

- 1 Testing by Intel as of May 10, 2021. Based on 280 VMs - 4 vCPUs per VM, 8 GB MEM, 125 GB usable storage capacity, up to 1,500 IOPS per VM running a 70/30 32 KB I/O load. Overheads and optimal utilization levels were considered in calculations. Results may vary. CPU cost estimated. **New Configuration:** 4 nodes, 2x Intel® Xeon® Gold 6348 processor, (28 cores, 2.6 GHz), total memory=256 GB (16 slots/32 GB/3200 MT/s), Intel® Hyper-Threading Technology=ON, Intel® Turbo Boost Technology=ON, 2x Intel® Optane™ SSD P5800X (cache) 400 GB and 8x SSD D7-P5510 3.84 TB (capacity), 1x Intel® Ethernet Adapter E810C 100 GbE, BIOS=2.1 (ucode=0x8d055260), VMware vSphere 7.0U2, vSAN 7.0U2, HCIbench 2.5.3, 8x VMs per host, 2x 150 GB vDisks per VM, 100% WSS. **Baseline Configuration:** 4 nodes, 2x Intel® Xeon® Gold 6248 processor (20 cores, 2.5 GHz), total memory=384 GB (12 slots/32 GB/2933 MT/s), Intel® Hyper-Threading Technology=ON, Intel® Turbo Boost Technology=ON, 2x Intel® Optane™ SSD DC P4800X (cache) 375 GB and 8x SSD D7-P5510 3.84 TB (capacity), 1x Intel Ethernet Adapter E810C 100 GbE, BIOS=2.1 (ucode=05003003), VMware vSphere 7.0U2, vSAN 7.0U2, HCIbench 2.5.3, 8x VMs per host, 2x 150 GB vDisks per VM, 100% WSS. Current list prices as of November 2021. Prices change frequently. [dell.com/en-us/work/shop/cty/pdp/spd/poweredge-r750/pe\\_r750\\_14794\\_vj\\_vp?configurationid=b605e5acc8b9-4578-b0e2-7d9b15772b04](https://www.dell.com/en-us/work/shop/cty/pdp/spd/poweredge-r750/pe_r750_14794_vj_vp?configurationid=b605e5acc8b9-4578-b0e2-7d9b15772b04).
- 2 Claim 14 at <https://edc.intel.com/content/www/us/en/products/performance/benchmarks/intel-optane-ssd-p5800x-series/>
- 3 Source: Intel, "Why Intel Optane SSDs Are a Better Option than NAND Flash SSDs in the Cache Tier," <https://www.intel.com/content/dam/www/central-libraries/us/en/documents/optane-ssds-in-storage-cache-tier-paper.pdf>
- 4 Testing by Intel as of May 10, 2021. **Intel® Optane™ SSD Configuration:** 4 nodes, 2x Intel® Xeon® Gold 6348 processor (28 cores, 2.6 GHz), total memory=256 GB (16 slots/16 GB/3200 MT/s), Intel® Hyper-Threading Technology=ON, Intel® Turbo Boost Technology=ON, 2x Intel® Optane™ SSD P5800X (cache) 400 GB and 8x SSD D7-P5510 3.84 TB (capacity), 1x Intel® Ethernet Adapter E810C 100 GbE, BIOS=2.1 (ucode=0x8d055260), VMware vSphere 7.0U2, HCIbench 2.5.3. **SSD D7-5600 Configuration:** 4 nodes, 2x Intel® Xeon® Gold 6248 processor (28 cores, 2.6 GHz), total memory=256 GB (16 slots/16 GB/3200 MT/s), Intel Hyper-Threading Technology=ON, Intel Turbo Boost Technology=ON, 2x SSD D7-P5600 (cache) 1.6 TB and 8x SSD D7-P5510 3.84 TB (capacity), 1x Intel Ethernet Adapter E810C 100 GbE, BIOS=2.1 (ucode=0x8d055260), VMware vSphere 7.0U2, HCIbench 2.5.3.
- 5 Source: Intel, "Why Intel Optane SSDs Are a Better Option than NAND Flash SSDs in the Cache Tier," <https://www.intel.com/content/dam/www/central-libraries/us/en/documents/optane-ssds-in-storage-cache-tier-paper.pdf>

Performance varies by use, configuration and other factors. Learn more at [intel.com/PerformanceIndex](https://www.intel.com/PerformanceIndex). No product or component can be absolutely secure. Your costs and results may vary. Intel technologies may require enabled hardware, software or service activation.

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