

Solution Snapshot

VMware vSphere with Intel® Optane™ Persistent Memory

The Challenge

Today's vSphere deployments face memory constraints that threaten SLAs.

With each generation of computing, performance and capacity have increased in all areas except system memory. DRAM capacity has not scaled nearly as much or as fast as compute, and DRAM is costly on a per-GB basis. It is increasingly difficult to cost-efficiently meet service-level agreements (SLAs).



DRAM capacity is not scaling to meet the needs of today's data.



Memory costs are rising.



Need more efficient memory tiers to optimize capacity, performance, and costs to meet varying VM density requirements.

Tiered Memory Use Cases (on-prem or hybrid cloud)



Trusted Enterprise Virtualization



In-Memory Databases



Virtual Desktop Infrastructure (VDI)



DevOps for Microservices and Containers



Disaster Recovery

Overview + Benefits

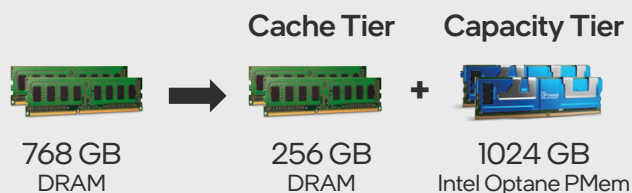
Intel® Optane™ persistent memory (PMem) provides the ability to tier memory:

- Affordably expand memory capacity
- Reduce total cost ownership
- Gain immediate benefit with no application modifications

Increase efficiency, maintain key service levels, and improve overall value

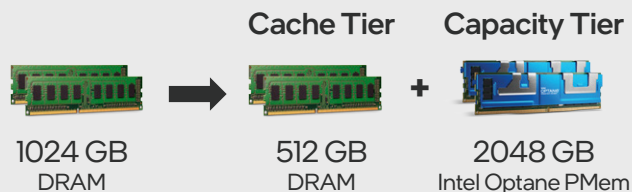


Same Memory for Less¹



Ideal for optimizing cost across existing capacity requirements

Double Memory for Same Cost¹



Ideal for affordably improving capabilities – higher capacity and more VMs

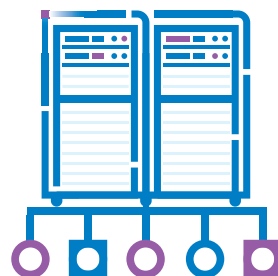
See endnotes for workloads and configurations. Your results may vary.

Why Intel Optane Persistent Memory for VMware vSphere



Up to 25% Lower Cost/VM²

Implementing tiered memory solutions with Intel Optane PMem can improve overall TCO. Savings can accrue from server consolidation, or from lower CapEx when configuring systems with lower amounts of expensive DRAM.



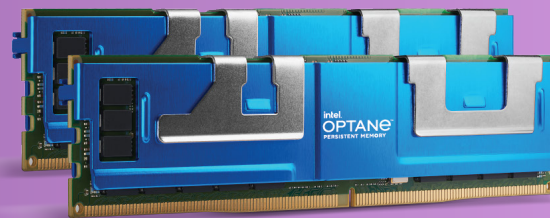
Better Efficiency

With more memory available, it's possible to add more VMs to each vSphere host, which can improve server consolidation and drive up CPU utilization for better data center efficiency. Fewer servers can lower energy usage and operational costs as well as reduce software licensing costs.

Optimize capacity, performance, and cost while doing more for less—with ultimate scalability

Learn More:

- Intel Optane PMem home page
- Tiered Memory Can Boost Virtual Machine Memory Capacity and Lower TCO
- Intel Optane PMem Quick Start Guide
- Understanding PMem blog (English or Spanish)
- Boost VMware vSphere Efficiency with Intel Optane PMem Best Practices Guide



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 Intel® 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, HClbench 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 Intel 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, HClbench 2.5.3, 8x VMs per host, 2x 150 GB vDisks per VM, 100% WSS.

Priced at current list prices as of November 2021. Prices change frequently. Your costs and results may vary. https://www.dell.com/en-us/work/shop/cty/pdp/spd/poweredge-r750/pe_r750_14794_vi_vp2-configurationid=b605e5ac-c8b9-4578-b0e2-7d9b15772b04.

² Claim [3] at <https://edc.intel.com/content/www/us/en/products/performance/benchmarks/intel-optane-persistent-memory/>

Performance varies by use, configuration and other factors. Learn more at www.Intel.com/PerformanceIndex. 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. Your costs and results may vary. Intel technologies may require enabled hardware, software or service activation. Intel does not control or audit third-party data. You should consult other sources to evaluate accuracy. © Intel Corporation. Intel, the Intel logo, and other Intel marks are trademarks of Intel Corporation or its subsidiaries. Other names and brands may be claimed as the property of others. 0322/CWAN/KC/PDF 350147-001US