

Solution Snapshot

Modernize VMware vSAN on 4th Gen Intel® Xeon® Scalable Processors

Intel Accelerated Solution Infrastructure Modernization

Why Modernize with vSAN

Modernizing your infrastructure, improving security, and extending your environment to the hybrid cloud is more critical than ever in today's challenging environment. Upgrading hardware and software together can directly address two of the biggest IT challenges facing enterprises: infrastructure costs/OpEx and replacing outdated hardware while realizing multiple benefits:



Operational Efficiencies

Modernizing your existing vSAN solution makes it easier and more cost-effective to manage and maintain a complex hybrid cloud infrastructure. Apps running in VMs on vSphere 8.0 can leverage Intel® accelerators for AI, compression, encryption, confidential computing, and network load balancing to optimize workload efficiency.



Performance Efficiencies

Upgrading with the latest VMware software and 4th Gen Intel® Xeon® Scalable processors will lead to better server utilization capable of running more workloads with increased performance compared to solutions running on older servers.



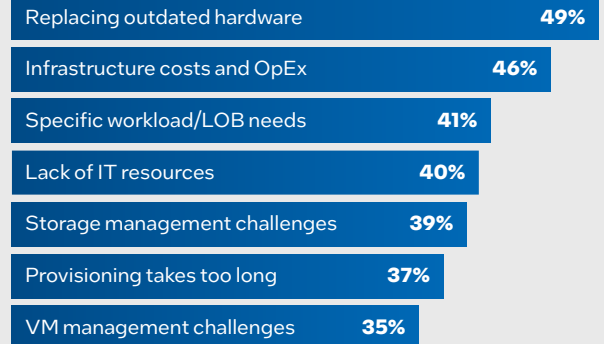
Cost Efficiencies

Once deployed, a new vSAN solution can make more efficient use of infrastructure, mitigate increasing costs for maintenance and security, and enable server consolidation for reduced space, power, and cooling costs. This can lower TCO and help meet sustainability goals.

The Challenge

Top IT Challenges Prompting the Purchase of Hyperconverged¹

Enterprises can modernize vSAN infrastructure to enable an easier transition toward a hybrid and multi-cloud environment.



¹2H'22: Hyperconverged Platforms Customer Research, Technology Business Research Inc.

Use Cases:



Infrastructure Modernization



Artificial Intelligence (AI)



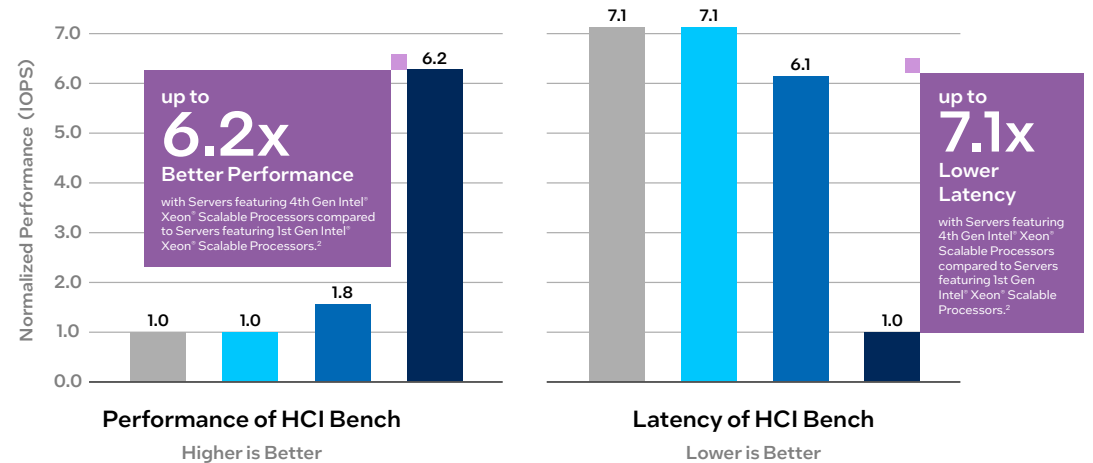
SQL Server



Virtual Desktop Infrastructure (VDI)

Performance and Latency Improvements Due to HW and SW Advancements

With vSAN ESA and 4th Gen Intel® Xeon® processors, run more mission-critical workloads on fewer hosts at performance levels previously unachievable. ESA is VMware's optional, next-generation architecture designed to take full advantage of the latest hardware technologies and deliver new levels of efficiency, scalability, and performance.



Solution with:

Scenario 8K Block Size
70% Reads 100% Random



Intel® Xeon® 6138 Gold Processor



Intel® Xeon® Gold 6230 Processor



Intel® Xeon® Gold 6330 Processor



Intel® Xeon® Gold 6448Y Processor

The Path to Infrastructure Modernization

Companies continue to drive digital transformation in their organizations to better compete, increase revenue by improving their customer experience, support their distributed workforce while securing data, innovate, and be more sustainable.

Modernizing infrastructure is intertwined with these transformation initiatives and is essential for success. Advances in hardware and software have led to significant improvements over previous generations of co-developed vSAN solutions:



vSAN Solutions with 1st Gen Intel® Xeon® Scalable Processor

Compute: 20 cores @ 2.0Ghz

Memory: DDR4 2666 Mhz

Storage: PCIe Gen3

Network: 10 GbE

vSphere: 7.0U3G

vSAN: Original Storage Architecture (OSA)



vSAN Solutions with 4th Gen Intel® Xeon® Scalable Processor

Compute: Up to 60 cores; optimized for vSphere licensing at 32 cores

Memory: DDR5 4800 Mhz

Storage: PCIe Gen4/5

Network: 100 GbE with RDMA

vSphere: 8.0 GA

vSAN: Express Storage Architecture (ESA)

Benefits of Modernizing Include:

- Supporting More Demanding Workloads
- Lower Total Cost of Operations
- Enhancing Data Center Security
- Consolidating Workloads onto Fewer Servers
- Enabling an Efficient, Sustainable Data Center

Want More Information?

[VMware and Intel® Partner Alliance](#)

[Intel and VMware Partnership](#)

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No product or component can be absolutely secure.

Your costs and results may vary.

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intel + vmware®

1 2H'22: Hyperconverged Platforms Customer Research, Technology Business Research Inc.
2 See Configurations for Details.

Intel® Xeon® Gold 6138 Processor (SKX Config): 4-node cluster, Each node: 2x Intel® Xeon® Gold 6138, Dell Server PowerEdge R640, Total Memory 384 GB (12x 32GB DDR4 2666MHz), HyperThreading: Enable, Turbo: Enabled, NUMA noSNC, Intel VMD: N/A, 2171(ucode:0x2006e05), Storage (cache): 2x 375 GB Intel® Optane™ DC SSD P4800X Series, Storage (capacity): 6x 2.00 TB Intel SSD DC P4510 Series PCIe NVMe, Network devices: 1xX710 Ethernet, Network speed: 10 GbE, OS/Software: VMware 7.0U3G, 20328353, vSAN OSA – default policy (RAID-1, 2DG), Test by Intel as of 03/13/2023 using HCI Bench 2.8, FIO3.3. Throughput test 8k profile (I/O size 8k, Read percentage 70%, Random percentage 100%, latency target mode<10ms, #VMs per cluster 16, vCPU 4, vRAM 8, # data disks per VM 4, size of disk 50GB). Latency test 8k profile (I/O size 8k, Read percentage 70%, Random percentage 100%, #VMs per cluster 16, vCPU 4, vRAM 8, # data disks per VM 8, size of disk 50GB)

Intel® Xeon® Gold 6230 Processor (CLX Config): 4-node cluster, Each node: 2x Intel® Xeon® Gold 6230, Dell Server PowerEdge R640, Total Memory 384 GB (12x 32GB DDR4 2933MHz), HyperThreading: Enable, Turbo: Enabled, NUMA noSNC, Intel VMD: Enabled, BIOS: SE5C620.86B.01.01.0006.2207150335 (ucode:0xd000375), Storage (cache): 2x 400 GB Intel® Optane™ DC SSD P5800X Series, Storage (capacity): 6x 3.84 TB Solidigm SSD D7-P5510 Series PCIe NVMe, Network devices: 1x MT27800 Family, at 25 GbE RoCE, Network speed: 25 GbE, OS/Software: VMware 7.0U3G, 20328353, vSAN OSA – default policy (RAID-1, 2DG), Test by Intel as of 03/13/2023 using HCI Bench 2.8, FIO3.3. Throughput test 8k profile (I/O size 8k, Read percentage 70%, Random percentage 100%, latency target mode<10ms, #VMs per cluster 16, vCPU 4, vRAM 8, # data disks per VM 4, size of disk 50GB). Latency test 8k profile (I/O size 8k, Read percentage 70%, Random percentage 100%, #VMs per cluster 16, vCPU 4, vRAM 8, # data disks per VM 8, size of disk 50GB)

Intel® Xeon® Gold 6330 Processor (ICX Config): 4-node cluster, Each node: 2x Intel® Xeon® Gold 6330, 1x Server Board M50CYP2SBSTD, Total Memory 512 GB (16x DDR5 32GB 2933MHz), HyperThreading: Enable, Turbo: Enabled, NUMA noSNC, Intel VMD: Enabled, BIOS: SE5C620.86B.01.01.0006.2207150335 (ucode:0xd000375), Storage (cache): 2x 400 GB Intel® Optane™ DC SSD P5800X Series, Storage (capacity): 6x 3.84 TB Solidigm SSD D7-P5510 Series PCIe NVMe, Network devices: 1x MT27800 Family, at 25 GbE RoCE, Network speed: 25 GbE, OS/Software: VMware 7.0U3G, 20328353, vSAN OSA – default policy (RAID-1, 2DG), Test by Intel as of 03/13/2023 using HCI Bench 2.8, FIO3.3. Throughput test 8k profile (I/O size 8k, Read percentage 70%, Random percentage 100%, latency target mode<10ms, #VMs per cluster 16, vCPU 4, vRAM 8, # data disks per VM 4, size of disk 50GB). Latency test 8k profile (I/O size 8k, Read percentage 70%, Random percentage 100%, #VMs per cluster 16, vCPU 4, vRAM 8, # data disks per VM 8, size of disk 50GB)

Intel® Xeon® Gold 6448Y Processor (SPR Config): 4-node cluster, Each node: 2x Intel® Xeon® Gold 6448Y, 1x Server Board M50FCP2SBSTD, Total Memory 512 GB (16x DDR5 32GB 4800MHz), HyperThreading: Enable, Turbo: Enabled, NUMA noSNC, Intel VMD: Enabled, BIOS: SE5C741.86B.01.01.0002.2212220608 (ucode:0x2b000161), Storage (data): 9x 3.84 TB SolidigmD7-P5510 Series PCIe NVMe, Network devices: 1x Intel Ethernet E810CQDA2 E810-CQDA2, fw 4.0, at 100 GbE RoCE, Network speed: 100 GbE, OS/Software: VMware 8.0, 20513097, vSAN ESA – Optimal default policy (RAID-5, flat), Test by Intel as of 03/13/2023, using HCI Bench 2.8, FIO3.3. Throughput test 8k profile (I/O size 8k, Read percentage 70%, Random percentage 100%, latency target mode<10ms, #VMs per cluster 16, vCPU 4, vRAM 8, # data disks per VM 4, size of disk 50GB). Latency test 8k profile (I/O size 8k, Read percentage 70%, Random percentage 100%, #VMs per cluster 16, vCPU 4, vRAM 8, # data disks per VM 8, size of disk 50GB)