

Dell Technologies™, Micron, AMD, and VMware® VMmark® 4: World Record Reference Architecture

Dell™ PowerEdge™ R7725 with VMware vSAN™ Express Storage Architecture™ (ESA) Version 9.0 vs. Prior vSAN ESA 8.0 Update 3 Recordholder

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Executive Summary

Dell, Micron, and AMD achieved a VMmark 4 world record of 12.42 @ 15.4 tiles using vSAN 9.0 ESA on January 20th, 2026.

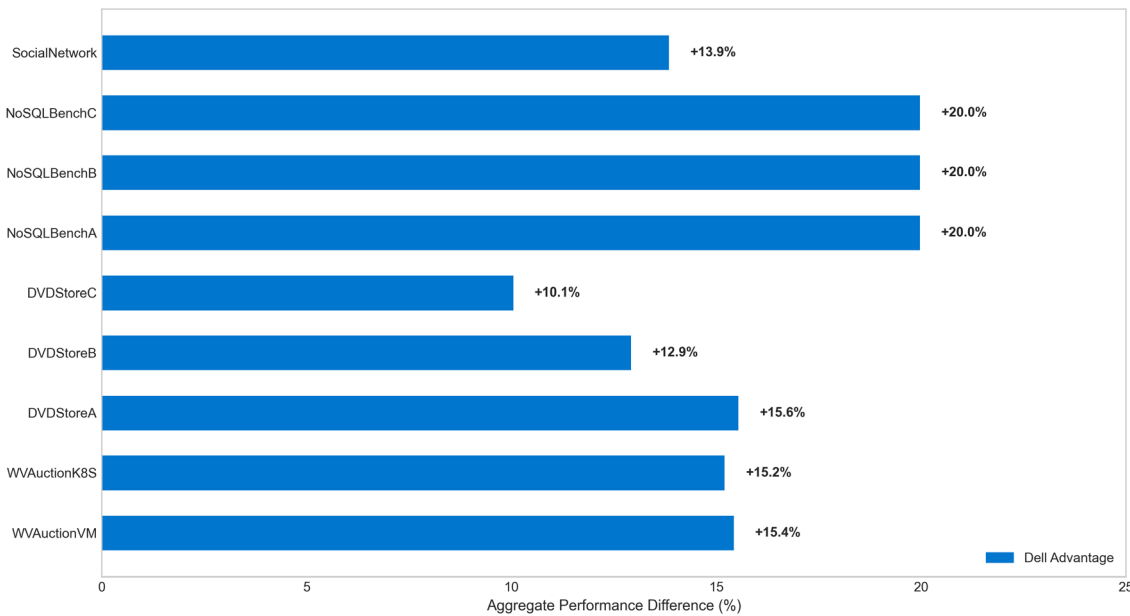
This reference architecture document provides a comprehensive comparison of VMware VMmark 4 benchmark performance between two enterprise-class hyperconverged infrastructure (HCI) solutions:

Configuration	VMmark Score	Tiles	Total VMs
Dell PowerEdge R7725	12.42	15.4	334
Prior vSAN recordholder	10.52	13.0	286

Key finding: In this VMmark 4 benchmark result, the Dell solution achieved an **18.1% higher overall VMmark score** while running **18.5% more tiles** and **48 additional VMs** (334 vs. 286). This result was consistent with observed benchmark results for the configuration differences summarized below. The key attributes of this platform are:

- AMD EPYC™ 9965 processors (192 cores/socket vs. 160 cores/socket).
- vSAN Express Storage Architecture (9.0 vs. 8.0 Update 3).
- Micron 9550 PRO NVMe SSDs (PCIe Gen5 vs. Gen4).
- Faster DDR5 memory (6400 MT/s vs. 6000 MT/s).

Aggregate Tile Performance: Dell (15.4 tiles, 334 VMs) vs. Prior Recordholder (13 tiles, 286 VMs)
(Sum of Median Scores, Positive = Dell advantage)



1. System configuration comparison

1.1 Server hardware overview

Component	Dell PowerEdge R7725	Prior vSAN Recordholder
Cluster size	4 hosts	4 hosts
Total sockets	8	8
Total cores	1,536	1,280
Total threads	3,072	2,560
Cores per socket	192	160
Processor	AMD EPYC 9965	AMD EPYC 9845
Base/boost clock	2.25 / 3.70 GHz	2.10 / 3.70 GHz
L3 cache	384MB	320MB

1.2 Memory configuration

Specification	Dell PowerEdge R7725	Prior vSAN Recordholder
Memory per host	3,072GB	3,072GB
Total cluster memory	12,288GB	12,288GB
DIMM configuration	24x 128GB	24x 128GB
Memory type	DDR5 RDIMM	DDR5 RDIMM
Memory speed	6400 MT/s	6000 MT/s
Memory manufacturer	Micron	Not specified
Memory bandwidth advantage	+6.7%	Baseline

Dell Micron DDR5 Memory Specifications

The Dell configuration utilizes Micron 128GB DDR5-6400 RDIMMs based on a 32Gb monolithic die with improved energy efficiency:

Capacity: 128GB per module (24 modules per host).

Speed: 6400 MT/s (PC5-51200).

Bandwidth per module: 51.2 GB/s.

Total memory bandwidth per host: ~614 GB/s (12 channels × 51.2 GB/s).

1.3 Storage configuration (vSAN)

Specification	Dell PowerEdge R7725	Prior vSAN Recordholder
VMware vSAN version	9.0	8.0 Update 3
Storage architecture	Express Storage Architecture	Express Storage Architecture
RDMA support	Enabled	Enabled
On-disk format	Version 22	Version 21
NVMe SSDs per host	8	8
SSD capacity	7.68TB	6.4TB
Total raw storage per host	61.44TB	51.2TB
Total cluster raw storage	245.76TB	204.8TB
Storage capacity advantage	+20%	Baseline

Data center SSD specifications and performance comparison

Specification	Dell	Prior Recordholder	Dell Advantage
SSD model name	Micron 9550 PRO SSD	Samsung PM1735a	—
SSD part number	MTFDLBQ7T6THA-1BK1JABDA	M0006400KYDND	—
Capacity	7.68TB	6.4TB	+20%
Form factor	E3.S 7.5mm	U.3 2.5"	—
Interface	PCIe Gen5 x4 NVMe 2.0	PCIe Gen4 x4 NVMe	2x bandwidth
Sequential read	Up to 14,000 MB/s	Up to 8,000 MB/s	+75%
Sequential write	Up to 5,000 MB/s	Up to 3,800 MB/s	+32%
Random read IOPS	Up to 3,300,000	Up to 1,500,000	+120%
Random write IOPS	Up to 290,000	Up to 250,000	+16%
Endurance	3 DWPD	3 DWPD	—

The Micron 9550 PRO SSD, a PCIe Gen5 SSD in the Dell configuration, showed higher published specification values than the prior recordholder Samsung’s PM1735a Gen4 drives (see the table above). Within the scope of this benchmark, these differences were consistent with the observed storage-related results.

- **PCIe Gen5** interface was listed as 2x bandwidth vs. Gen4 in the specification comparison.
- **3.3M** random read IOPS (as listed in the specification comparison) was more than double the prior recordholder configuration.
- **14 GB/s** sequential read throughput (as listed in the specification comparison) was 75% higher than the prior recordholder.

1.4 Network configuration

Component	Dell PowerEdge R7725	Prior vSAN Recordholder
Management NIC	Broadcom 100 GbE	Mellanox ConnectX-6 Dx
vSAN NIC	Mellanox ConnectX-6 Dx 100 GbE	Mellanox ConnectX-6 Dx 100 GbE
vSAN network speed	100 Gb/s	100 Gb/s
RDMA protocol	RoCE v2	RoCE v2

1.5 Software stack

Component	Dell PowerEdge R7725	Prior vSAN Recordholder
Hypervisor	VMware ESX 9.0.1.0	VMware ESXi 8.0 Update 3
Build number	24957456	24022510
vCenter version	9.0.1.0	8.0 Update 3
VMmark version	4.0.3	4.0.2

2. VMmark 4 benchmark

VMmark is a free tool used by hardware vendors and others to measure the performance and scalability of virtualization platforms. The VMmark benchmark:

- Allows accurate and reliable benchmarking of virtual data center performance.
- Allows comparison of the performance of different virtualization platforms.
- Can be used to determine the performance effects of changes in hardware, software, or configuration within the virtualization environment.

2.1 Application workloads

2.1.1 Weathervane auction VM (WVAuctionVM) – Web application workload

Description: Weathervane Auction VM (WVAuctionVM) is a multi-tier web application workload that simulates an online auction platform. It consists of multiple VMs running web servers, application servers, and database backends, representing a typical enterprise web application deployment.

Components:

- Frontend web servers (load balanced).
- Application tier with business logic.
- Backend database servers.
- Simulated user load generators.

Performance sensitivities:

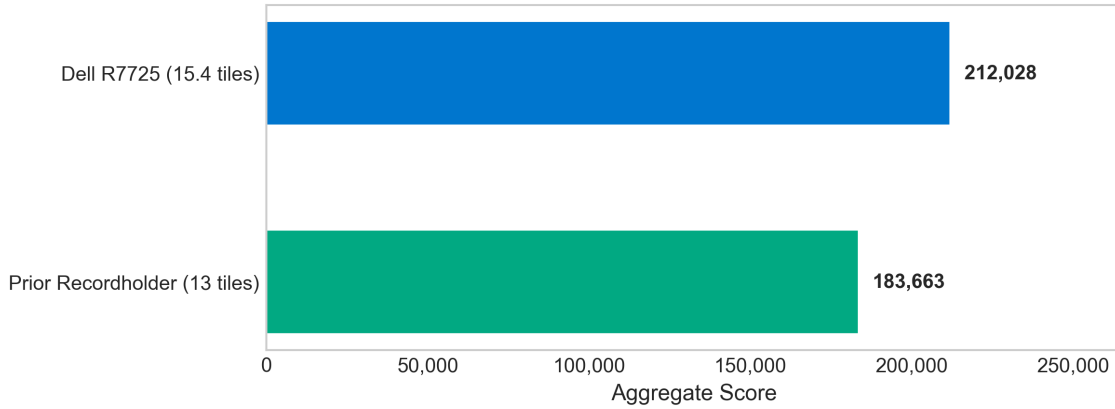
Resource	Sensitivity	Impact
CPU	High	Transaction processing, request handling
Memory	Medium-high	Application caching, session management
Storage latency	Medium	Database query response times
Storage IOPS	Medium	Database read/write operations
Network	Medium	Inter-tier communication

Key metrics: Transactions per second, response time percentiles.

Aggregate tile performance (sum of median scores):

Metric	Dell PowerEdge R7725	Prior vSAN Recordholder	Difference
Aggregate Score	212,027.56	183,662.72	+15.4%

WVAuctionVM Aggregate Tile Performance
(Sum of Median Scores, Dell Advantage: +15.4%)



Analysis: The Dell configuration achieved **15.4% higher aggregate performance**. The configuration differences below were consistent with observed benchmark results for WVAuctionVM's resource sensitivities:

- **CPU** (high sensitivity): The Dell configuration used AMD EPYC 9965 processors with 192 cores per socket (vs. 160), which was consistent with the higher workload capacity observed for transaction processing and request handling in this benchmark run.
- **Memory** (medium-high sensitivity): The Dell configuration used Micron 128GB DDR5-6400 memory with 6.7% higher bandwidth, which was consistent with the aggregate performance differences observed for caching- and database-related activity in this benchmark.
- **Storage** (medium sensitivity): The Dell configuration used Micron 9550 PRO PCIe Gen5 SSDs. Within the scope of this benchmark, the storage subsystem differences were consistent with the observed results for database query response time sensitivity.

2.1.2 Weathervane Auction Kubernetes (WVAuctionK8S) – Kubernetes web application workload

Description: Weathervane Auction Kubernetes (WVAuctionK8S) runs the same auction workload as WVAuctionVM but is deployed on Kubernetes (K8s) clusters running on VMware vSphere. This workload measures the performance of containerized workloads in a virtualized environment.

Components:

- Kubernetes control plane nodes.
- Worker nodes running containerized services.
- Container networking (CNI).
- Persistent volume storage.

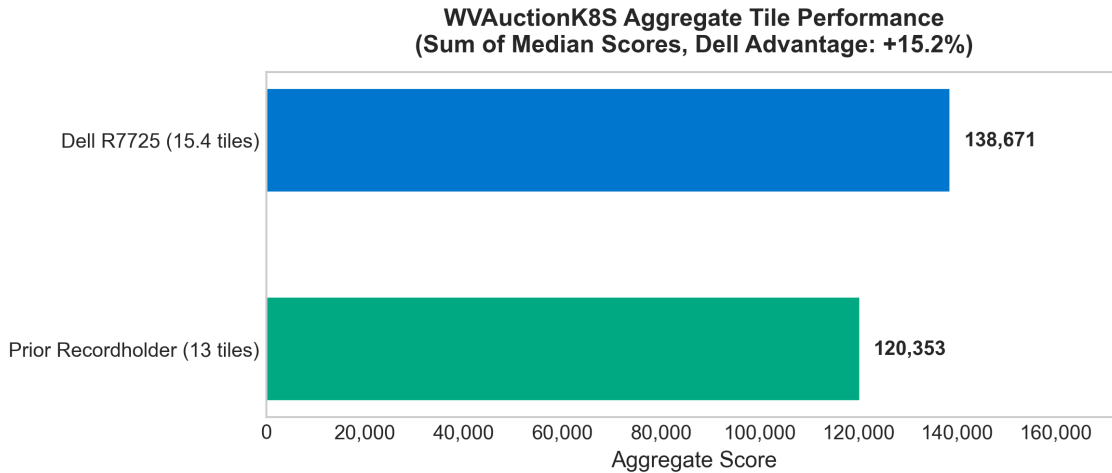
Performance Sensitivities:

Resource	Sensitivity	Impact
CPU	High	Container scheduling, pod execution
Memory	High	Container memory limits, node capacity
Storage latency	Medium-high	Persistent volume operations
Storage IOPS	Medium	etcd operations, PV read/write
Network	High	Pod-to-pod communication, service mesh

Key metrics: Transactions per second, pod scheduling latency.

Aggregate tile performance (sum of median scores):

Metric	Dell PowerEdge R7725	Prior vSAN Recordholder	Difference
Aggregate Score	138,671.46	120,352.64	+15.2%



Analysis: The Dell configuration achieved **15.2% higher aggregate performance**. The configuration differences below were consistent with observed benchmark results for WVAuctionK8S's resource sensitivities:

- CPU (high sensitivity): The Dell configuration used AMD EPYC 9965 processors with 192 cores per socket, which was consistent with the Kubernetes scheduling and pod execution behavior observed during the benchmark run.
- Memory (high sensitivity): The Dell configuration used DDR5-6400 memory with higher bandwidth, which was consistent with the container memory and node-capacity behavior observed in this benchmark.
- Network (high sensitivity): Both configurations used 100 GbE networking. The benchmark results were consistent with the Dell configuration having additional available compute resources during the network-intensive workload.
- Storage (medium-high sensitivity): The Dell configuration used Micron 9550 PRO SSDs (PCIe Gen5). Within the scope of this benchmark, the storage configuration was consistent with the observed persistent volume and etcd behavior.

2.1.3 DVD store - E-Commerce database workload

Description: DVD Store is an OLTP (Online Transaction Processing) benchmark simulating an e-commerce DVD store. It tests database performance with a mix of browse, search, and purchase transactions. VMmark 4 runs three instances (A, B, C) to increase load diversity.

Components:

- Database server (PostgreSQL).
- Simulated customer transactions.
- Inventory management operations.
- Order processing workflows.

Performance sensitivities:

Resource	Sensitivity	Impact
CPU	High	Query processing, transaction commits
Memory	Very high	Database buffer pool, query caching
Storage latency	Critical	Transaction commit latency, query response
Storage IOPS	Critical	Random read/write for database pages
Network	Low-medium	Client connections

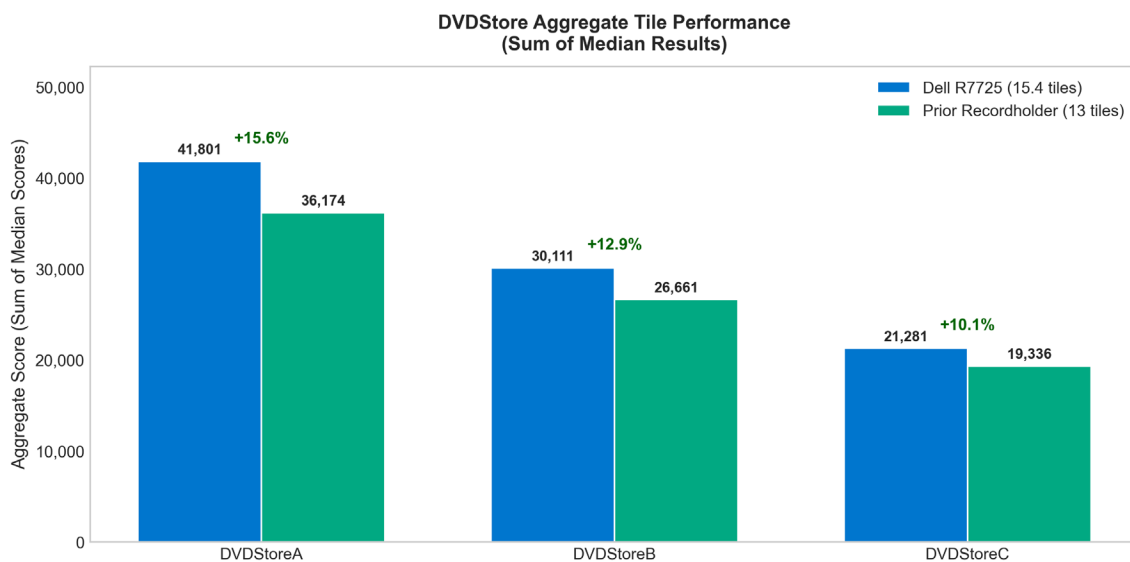
Key metrics: Orders per minute (OPM), average response time.

Storage optimization notes:

- Benefits significantly from low-latency NVMe storage.
- Write-ahead logging (WAL) requires consistent write performance.
- Random 4K IOPS directly impacts transaction throughput.

Aggregate tile performance (sum of median scores):

Instance	Dell PowerEdge R7725	Prior vSAN Recordholder	Difference
DVDStoreA	41,800.97	36,173.71	+15.6%
DVDStoreB	30,110.51	26,661.08	+12.9%
DVDStoreC	21,281.28	19,335.67	+10.1%
Combined Aggregate	93,192.76	82,170.46	+13.4%



Analysis: The Dell configuration achieved **13.4% higher combined aggregate score** across all DVD Store instances. The configuration differences below were consistent with observed benchmark results for DVD Store's performance sensitivities:

- **Storage IOPS (critical sensitivity):** The Dell configuration used Micron 9550 PRO SSDs with a listed 3.3M random read IOPS value—120% higher than the prior recordholder's Gen4 drives—which was consistent with the aggregate differences observed for storage-intensive operations in this benchmark.
- **Storage Latency (critical sensitivity):** The Dell configuration used an E3.S PCIe Gen5 backplane. Within the scope of this benchmark, the storage path differences were consistent with the observed behavior for transaction commit and query response sensitivity.
- **Memory (very high sensitivity):** The Dell configuration used DDR5-6400 memory with higher bandwidth, which was consistent with the benchmark behavior observed for database buffer pool and query caching sensitivity.
- **CPU (high sensitivity):** The Dell configuration used AMD EPYC 9965 processors with 192 cores per socket, which was consistent with the workload behavior observed for query processing and transaction commits in this benchmark.

2.1.4 NoSQLBench – NoSQL database workload

Description: NoSQLBench measures the performance of NoSQL database operations using Apache Cassandra. It simulates high-throughput, low-latency data operations typical of modern distributed applications. VMmark 4 runs three instances (A, B, C).

Components:

- Apache Cassandra cluster nodes.
- Read/write workload generators.
- Distributed data replication.
- Compaction and repair operations.

Performance sensitivities:

Resource	Sensitivity	Impact
CPU	Very high	Compaction, query processing, encryption
Memory	Very high	Mentables, key cache, row cache
Storage latency	High	SSTable reads, commit log writes
Storage IOPS	Critical	Compaction I/O, read amplification
Network	High	Inter-node replication, consistency

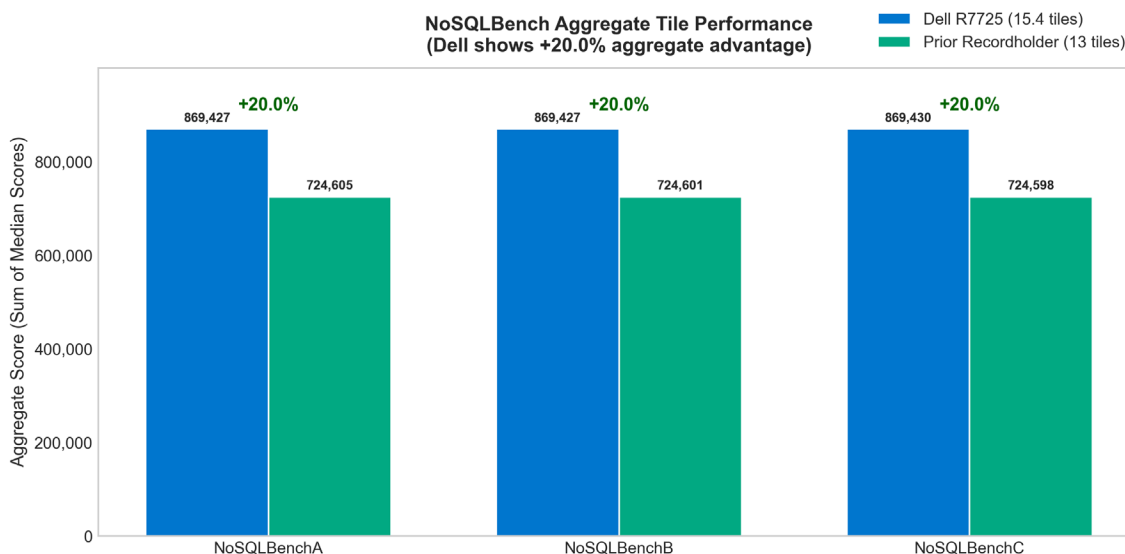
Key Metrics: Operations per second, read/write latency percentiles

Storage Optimization Notes:

- Cassandra is extremely I/O-intensive during compaction.
- Separate commit log and data directories benefit from NVMe.
- High sequential write throughput improves compaction speed.
- vSAN ESA's single-tier architecture reduces write amplification.

Aggregate tile performance (sum of median scores):

Instance	Dell PowerEdge R7725	Prior vSAN Recordholder	Difference
NoSQLBenchA	869,426.95	724,605.32	+20.0%
NoSQLBenchB	869,426.76	724,600.70	+20.0%
NoSQLBenchC	869,429.64	724,597.71	+20.0%
Combined aggregate	2,608,283.35	2,173,803.73	+20.0%



Analysis: Dell achieved a **20.0% higher combined aggregate score** across all NoSQLBench instances. The configuration differences below were consistent with observed benchmark results for storage- and memory-intensive behavior in this benchmark.

- **Micron 9550 PRO SSD:** The configuration used a PCIe Gen5 interface, which was consistent with the observed behavior during storage-intensive portions of the benchmark.
- **vSAN 9.0 ESA:** The Dell benchmark configuration used vSAN 9.0 ESA. Within the scope of this benchmark, the software-stack differences were consistent with the observed results for the NoSQLBench workload mix.
- **Higher Memory Bandwidth:** The Dell configuration used DDR5-6400 vs. DDR5-6000, which was consistent with the observed behavior for memory-intensive portions of the benchmark.
- **AMD EPYC 9965:** The Dell configuration used 192 cores per socket, which was consistent with the observed capacity differences for CPU-intensive portions of the benchmark.

The NoSQLBench results were consistent with storage-intensive NoSQL workloads benefiting from the benchmark configuration's storage subsystem characteristics.

2.1.5 SocialNetwork – Microservices workload

Description: SocialNetwork simulates a social media platform using a microservices architecture. It tests the performance of distributed, containerized applications with complex inter-service dependencies.

Components:

- Multiple microservices (user, post, timeline, etc.).
- Service mesh for inter-service communication.
- Caching layers (Redis/Memcached).
- Message queues for async processing.

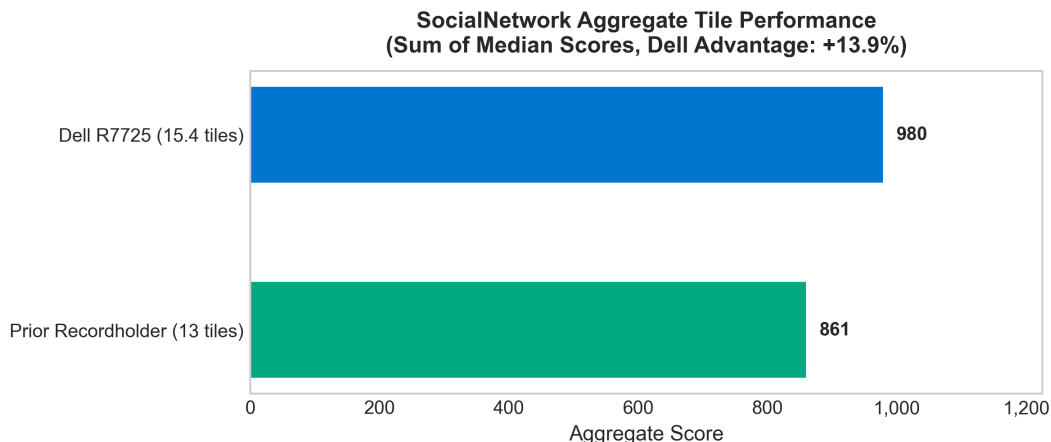
Performance sensitivities:

Resource	Sensitivity	Impact
CPU	High	Service processing, serialization
Memory	High	In-memory caching, service instances
Storage latency	Medium	Database operations, logging
Storage IOPS	Medium	Distributed state management
Network	Critical	Service-to-service latency, API calls

Key metrics: Requests per second, end-to-end latency.

Aggregate tile performance (sum of median scores)

Metric	Dell PowerEdge R7725	Prior vSAN Recordholder	Difference
Aggregate Score	979.98	860.67	+13.9%



Analysis: The Dell configuration achieved **13.9% higher aggregate score**. The configuration differences below were consistent with observed benchmark results for SocialNetwork's performance sensitivities:

- **Network (critical sensitivity):** Both configurations used 100GbE networking. The benchmark results were consistent with the Dell configuration having additional available compute resources during network-intensive portions of the workload.
- **CPU (high sensitivity):** The Dell configuration used AMD EPYC 9965 processors with 192 cores per socket (vs. 160), which was consistent with the observed workload capacity differences for service processing in this benchmark.
- **Memory (high sensitivity):** The Dell configuration used DDR5-6400 memory with higher bandwidth, which was consistent with the observed behavior for caching layers and concurrent service instances in this benchmark.

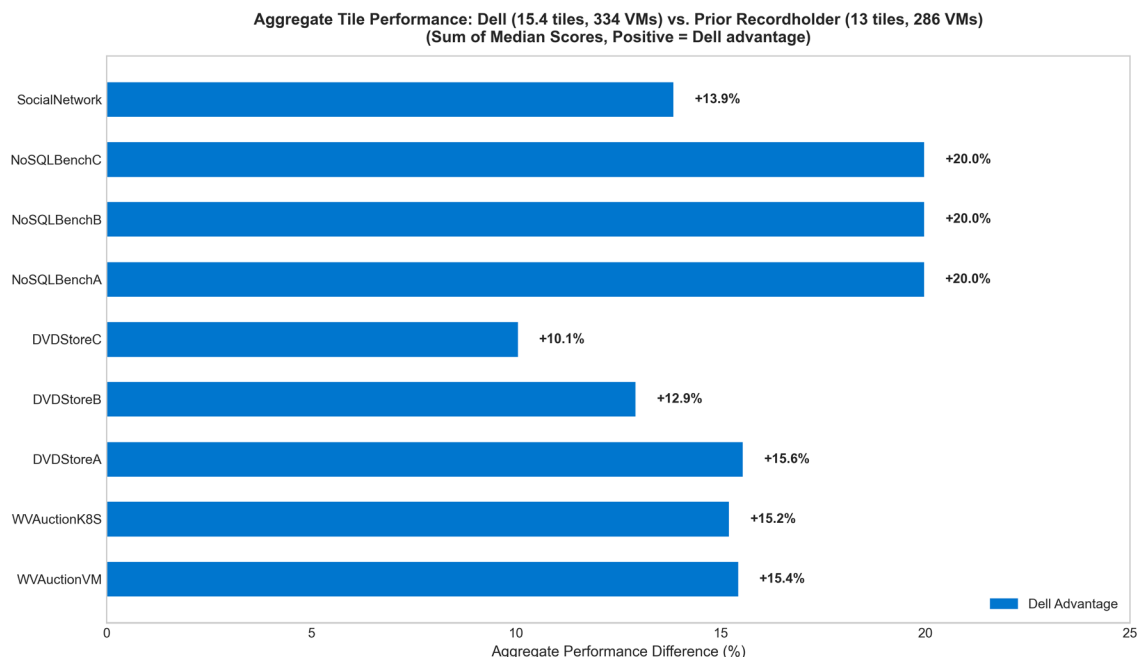
2.2 Performance summary

This section provides a comprehensive summary of aggregate tile performance across all workloads.

Aggregate tile performance

The aggregate tile performance metric (sum of median scores) provides a comprehensive view of total workload capacity, accounting for both per-tile performance and the number of tiles each configuration can run.

Workload	Dell (15.4 tiles, 334 VMs)	Prior Recordholder (13 tiles, 286 VMs)	Dell Advantage
WVAuctionVM	212,027.56	183,662.72	+15.4%
WVAuctionK8S	138,671.46	120,352.64	+15.2%
DVDStoreA	41,800.97	36,173.71	+15.6%
DVDStoreB	30,110.51	26,661.08	+12.9%
DVDStoreC	21,281.28	19,335.67	+10.1%
NoSQLBenchA	869,426.95	724,605.32	+20.0%
NoSQLBenchB	869,426.76	724,600.70	+20.0%
NoSQLBenchC	869,429.64	724,597.71	+20.0%
SocialNetwork	979.98	860.67	+13.9%



Performance analysis

The Dell configuration's performance differences were consistent with key hardware and software configuration differences in this benchmark:

- **AMD EPYC 9965 Processors:** The Dell configuration used 192 cores per socket (vs. 160), and it ran 15.4 tiles (334 VMs) vs. the Prior Recordholder's 13 tiles (286 VMs). Within the scope of this benchmark, these differences were consistent with higher VM consolidation and tile count.
- **Micron 9550 PRO SSDs:** The Dell configuration used PCIe Gen5 storage, and the specification comparison listed 2x bandwidth and 120% higher random read IOPS. Within the scope of this benchmark, these storage differences were consistent with the observed results for storage-sensitive workloads such as NoSQLBench and DVD Store.
- **Micron DDR5-6400 Memory:** The Dell configuration used DDR5-6400 memory with 6.7% higher bandwidth. Within the scope of this benchmark, this difference was consistent with the observed behavior for memory-intensive operations.
- **vSAN 9.0 ESA:** The Dell benchmark configuration used vSAN 9.0 ESA. Within the scope of this benchmark, the software stack was consistent with the observed results.

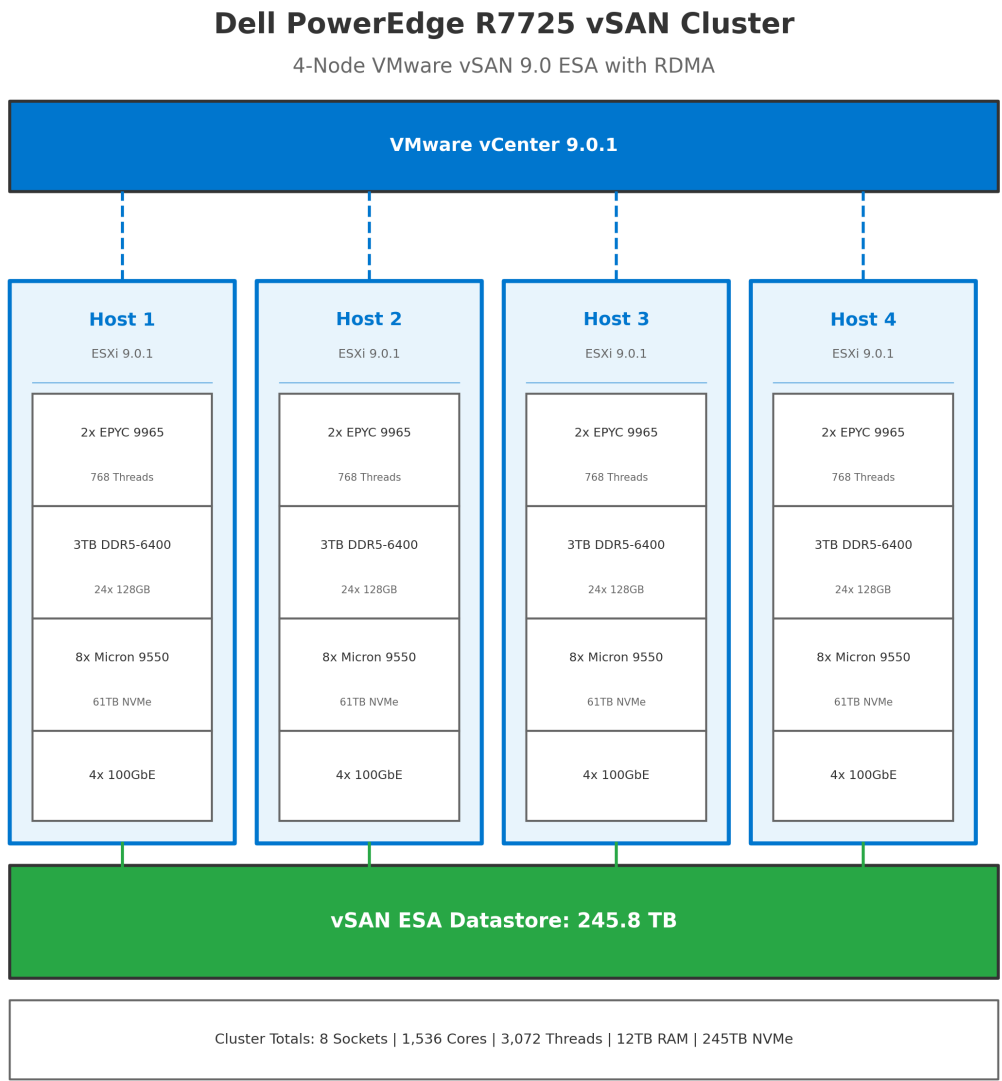
Within the scope of this VMmark 4 benchmark, these configuration differences were consistent with the observed results, including an 18.1% higher overall VMmark score and the ability to run 48 additional VMs.

3. Dell PowerEdge R7725 system architecture

This section provides detailed architecture diagrams of the Dell vSAN 9.0 ESA solution, highlighting the Micron, Dell, and AMD components.

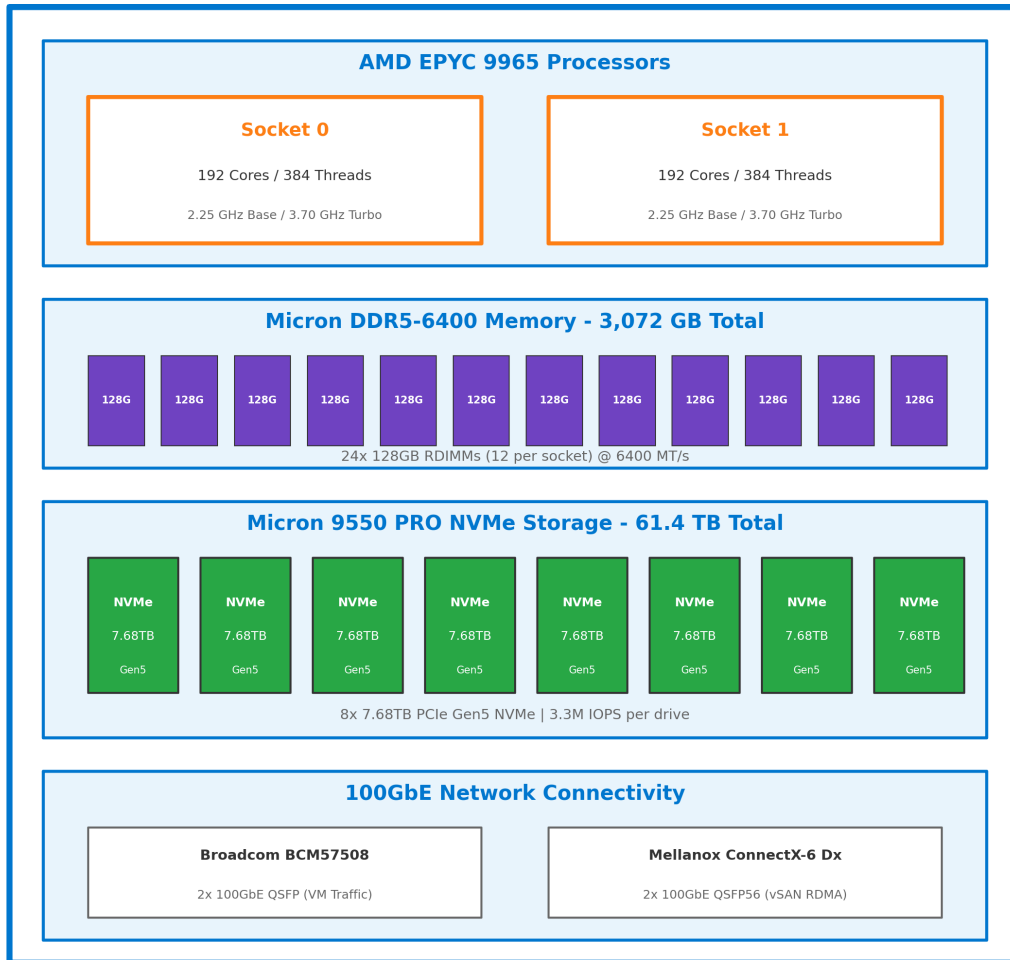
3.1 High-level cluster architecture

This section includes the architecture figures referenced in the following subsections: Section 3.1 (high-level cluster architecture), Section 3.2 (single host component architecture), Section 3.3 (vSAN network architecture), and Section 3.4 (storage I/O path).



3.2 Single host component architecture

Dell PowerEdge R7725 - Single Host Architecture

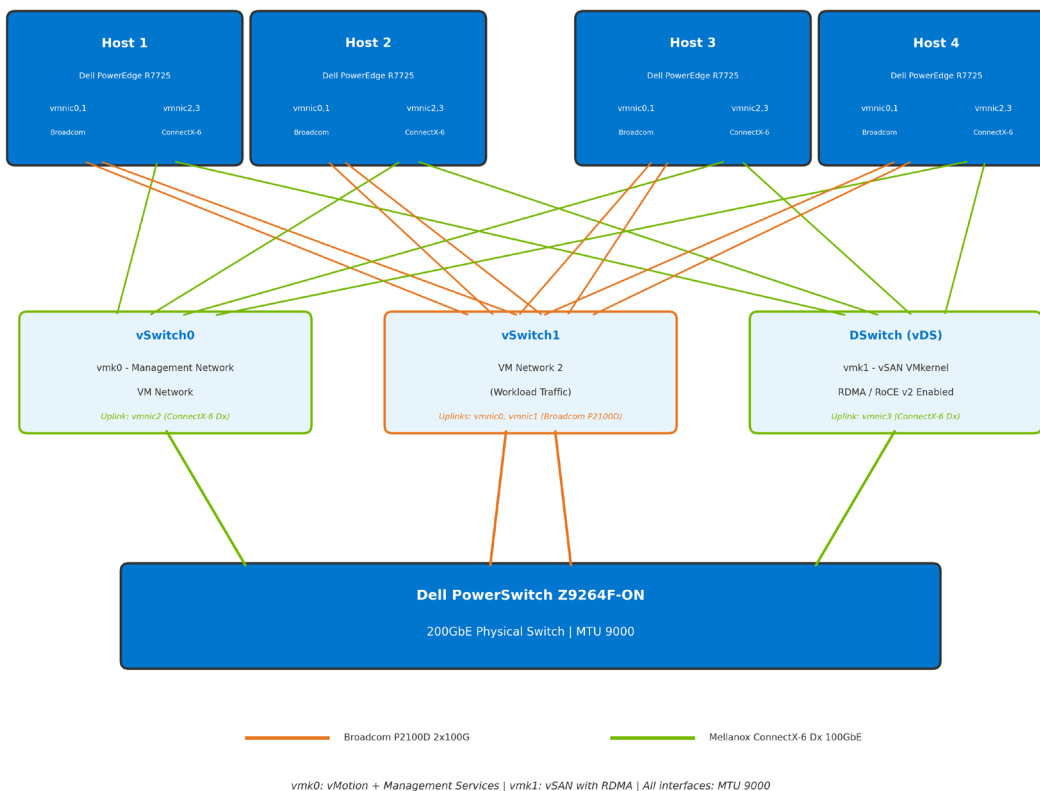


Power: 2x 3200W PSU (208V AC) | Cooling: Air Cooled | BIOS: 1.5.3

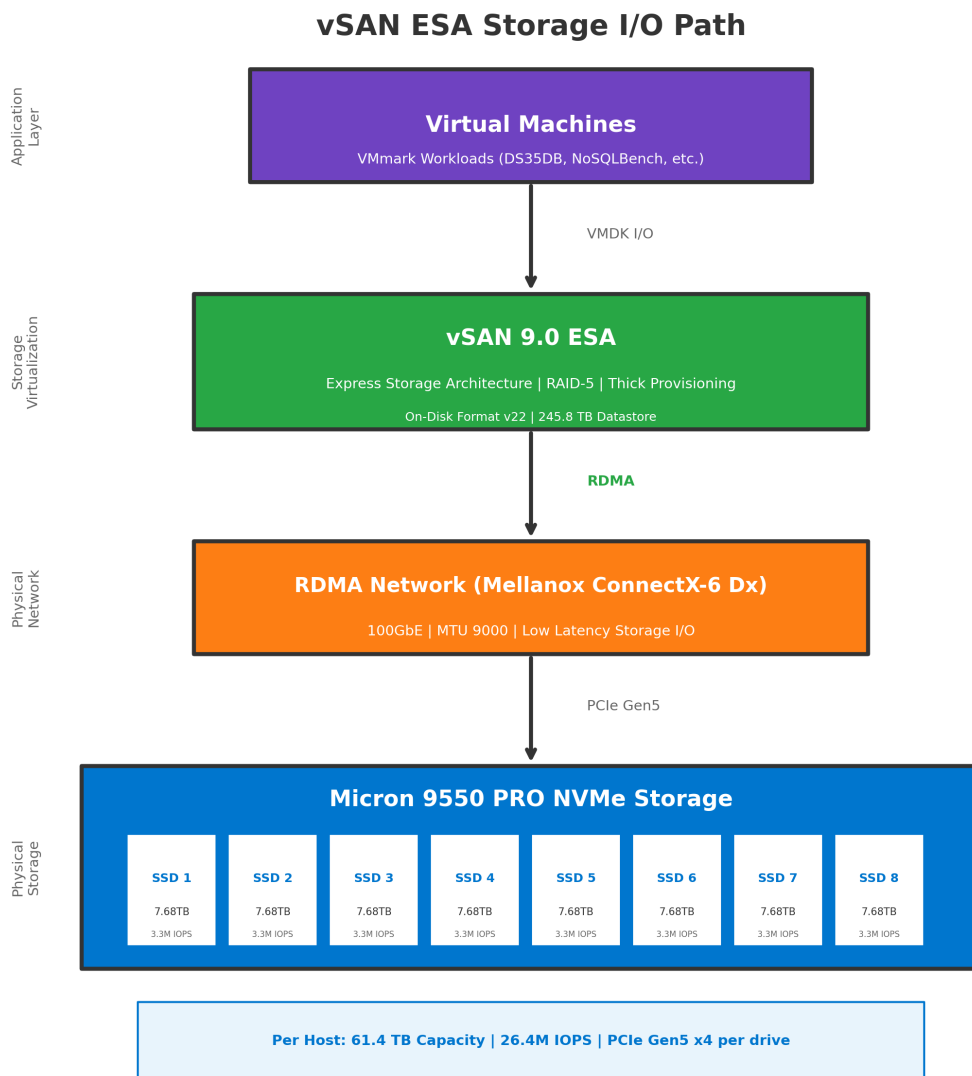
3.3 vSAN network architecture

vSAN 9.0 ESA Network Architecture

4x Dell PowerEdge R7725 Hosts



3.4 Storage I/O path



3.5 Detailed component specifications table

Component	Vendor	Model/Part Number	Specifications
Server	Dell	PowerEdge R7725	2U, Dual Socket, AMD EPYC
Processor	AMD	EPYC 9965	192 cores/socket, 2.25/3.70 GHz, 384MB L3
Memory	Micron	DDR5-6400 RDIMM	24x 128GB, 6400 MT/s, ECC
Boot Drive	Dell	M.2 NVMe	2x 480GB (RAID-1 mirrored)
vSAN SSD	Micron	9550 PRO SSD (MTFDLBQ7T6THA)	8x 7.68TB, PCIe Gen5, 3 DWPD
Management NIC	Broadcom	100GbE Adapter	Dual-port, 100 Gb/s
vSAN NIC	Mellanox	ConnectX-6 Dx	100GbE, RoCE v2, RDMA
Hypervisor	VMware	ESX 9.0.1.0	Build 24957456
vSAN	VMware	vSAN 9.0 ESA	RDMA, On-Disk Format v22

4. Conclusions and recommendations

4.1 Overall Performance Summary

Metric	Dell R7725	Prior Recordholder	Advantage
VMmark score	12.42	10.52	Dell +18.1%
Tiles completed	15.4	13.0	Dell +18.5%
Total VMs	334	286	Dell +17
Total cores	1,536	1,280	Dell +20%
Memory speed	6400 MT/s	6000 MT/s	Dell +6.7%
vSAN storage	245.76 TB	204.8 TB	Dell +20%

4.2 Technology advantages

Dell PowerEdge R7725 platform

The benchmark configuration used the Dell PowerEdge R7725 platform. Public product documentation describes this system as a 2U dual-socket server that supports AMD EPYC processors and PCIe Gen5 expansion, which aligned with the processor, memory, and storage choices used for the VMmark 4 submission.

AMD EPYC 9965 processors

The benchmark configuration used AMD EPYC 9965 processors. As configured in the benchmark, the system used 192 cores per socket. Within the scope of this VMmark 4 result, the core-count difference relative to the prior configuration was consistent with the observed tile count and VM density outcomes.

VMware vSAN 9.0 ESA was the storage software used for the benchmark configuration. Based on publicly available product documentation, the submission used the Express Storage Architecture (ESA), RDMA support enabled via RoCE v2, and On-Disk Format Version 22 as listed in the software and storage configuration tables. Within the scope of this benchmark, these software configuration choices were consistent with the observed results for the workload mix.

Micron components

The benchmark configuration used Micron DDR5-6400 memory and Micron 9550 PRO SSDs, as shown in the configuration tables. Within the scope of this VMmark 4 submission, the DDR5-6400 (vs. DDR5-6000) and PCIe Gen5 (vs. Gen4) configuration differences were consistent with the observed results across the included workload mix.

4.3 Return on investment analysis

Within the scope of the VMmark 4 benchmark results in this document, the measured differences (score, tile count, VM count, and configured capacity) can be used as inputs when discussing relative capacity for similar benchmark-style workload mixes.

Metric	Dell advantage	Business impact
18.1% higher VMmark score	More workload capacity per cluster	Reduced infrastructure costs
17% more application VMs	Higher VM density	Better resource utilization
20% more storage capacity	245.76 TB vs. 204.8 TB	Reduced storage expansion costs
PCIe Gen5 storage	2x bandwidth headroom	Future-proof investment
vSAN 9.0 ESA	Latest optimizations	Improved operational efficiency

Total cost of ownership (TCO) considerations:

- **Consolidation Ratio:** In this VMmark 4 result, the Dell configuration ran 18.5% more tiles. For benchmark-style comparisons, tile count and total VM count were reasonable proxies for relative consolidation under this workload mix.
- **Storage Efficiency:** The benchmark configuration listed vSAN 9.0 ESA features such as compression and deduplication. Any impact on effective capacity or costs was outside the direct measurements reported in this benchmark summary.
- **Operational Simplicity:** This reference architecture described an integrated configuration using components from multiple vendors. Operational outcomes depended on implementation choices and were outside the scope of the benchmark measurements.

4.4 Sizing guidelines

Based on the VMmark 4 results summarized in this document, the following sizing guidance was applicable for the benchmark workload mix and configuration assumptions used for the submission:

Workload type	VMs per host	Memory per VM	Storage IOPS per VM
Web/app tier	80-100	8-16 GB	1,000-2,000
Database (OLTP)	20-30	32-64 GB	500-1,000
NoSQL/Cassandra	15-25	64-128 GB	10,000-20,000
Microservices	100-150	4-8 GB	200-1,000
Kubernetes nodes	10-15	64-128 GB	200-1,000

4.5 Best practices

- **Enable vSAN RDMA** when using compatible NICs, consistent with the benchmark configuration described in this document.
- **Use PCIe Gen5 NVMe SSDs** when benchmarking configurations similar to those evaluated here, as this setting aligned with the benchmark configuration.
- **Configure DDR5** at the maximum supported speed used for the benchmark configuration when attempting to reproduce similar benchmark behavior.
- **Deploy vSAN 9.0 ESA** if aligning with the software stack used for the VMmark 4 benchmark configuration described in this document.
- **Size for 70-80% utilization** if using utilization headroom as an assumption for reproducing the benchmark-style workload behavior; production utilization targets depended on workload and operational requirements.
- **Monitor storage latency** using workload-appropriate targets; latency objectives depended on workload requirements and were not established by VMmark 4 results alone.

4.6 Final recommendation

Within the scope of the VMmark 4 benchmark results summarized in this document, the evaluated configuration (Dell PowerEdge R7725 with AMD EPYC 9965 processors, Micron memory and storage, and vSAN 9.0 ESA) demonstrated the reported performance and scalability outcomes.

This reference architecture delivers:

- **World record performance:** In this benchmark result, the configuration achieved an 18.1% higher VMmark score than the Prior vSAN Recordholder and ran 17% more application VMs on the same cluster size.
- **Scalability:** In this benchmark configuration, AMD EPYC 9965 processors with 192 cores per socket were consistent with the observed tile count and VM density results.

- **Storage characteristics:** The configuration used Micron 9550 PRO SSDs with listed values of 3.3 million IOPS and up to 14 GB/s throughput; within the scope of this benchmark, these characteristics were consistent with the observed results for storage-sensitive workloads.
- **Memory configuration:** The configuration used Micron DDR5-6400 memory with 6.7% higher bandwidth than the prior DDR5-6000 configuration; within the scope of this benchmark, this difference was consistent with the observed results for memory-intensive portions of the workload mix.
- **Software configuration:** The benchmark used vSAN 9.0 ESA with RDMA enabled as listed in the configuration tables; within the scope of this benchmark, these settings were consistent with the observed results.

The combination of Dell's enterprise-grade server platform, AMD's industry-leading EPYC processors, Micron's cutting-edge memory and storage technology, and VMware's advanced vSAN 9.0 ESA software creates a hyperconverged infrastructure solution that sets the standard for performance, reliability, and value.

5. Appendix

5.1 References

- [Dell VMmark 4 world record](#)
- [Prior VMmark 4 vSAN recordholder](#)
- [VMware VMmark 4 benchmark documentation](#)
- [Dell PowerEdge R7725 technical specifications](#)
- [AMD EPYC 9965 processor datasheet](#)
- [Micron 9550 PRO SSD technical product specification](#)
- [Micron DDR5 RDIMM specifications](#)
- [VMware Cloud Foundation 9.0 vSAN documentation](#)
- [VMware Cloud Foundation 9.0](#)

5.2 Document information

Field	Value
Document version	1.0
Created	March 2026
Classification	Reference architecture
Scope	VMmark 4 performance comparison

This document compares the top VMmark benchmark results using vSAN 9.0 ESA storage as of March 2, 2026. Actual performance may vary based on workload characteristics, configuration, and environmental factors. VMmark® is a product of VMware LLC.

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