Efficient, High-Performance Data Storage for Virtual Machines

Challenge Summary

VMware ESXi servers require high performance data storage devices to store and run virtual machines. VMware is deployed in a variety of scenarios with different connectivity and capacity requirements.

Benefits Summary

- VMware Certified Storage for ESXi
- Efficient and dense – requires lower power and less rack space
- Low-cost storage platform to build on for VMware
- High performance and scalability along with built-in data protection

Seagate storage systems combined with VMware ESXi create efficient, high-performance data solutions in a dense package to comply with modern data center space and power limitations.

Seagate storage systems have been certified by VMware as VMware Ready for use as primary data storage with their very popular ESXi server software. Seagate storage systems provide an efficient, low-cost storage platform to build on for VMware ESXi. These systems also deliver high performance and scalability along with built-in data protection.

Say Hello to Versatile VMware ESXi Storage

Seagate® is a VMware Technology Alliance Partner and offers a variety of SAN (Storage Area Network) and DAS (Direct Attached Storage) enterprise storage systems ideally suited for use as primary VMware ESXi storage. The Seagate Nytro™ E product line is a high-performance SAS-based All Flash Array. The Seagate Exos™ X product line is comprised of a family of either 2U or 5U form-factor chassis using one of Seagate's hardware RAID controllers to enable Fibre Channel or iSCSI SAN solutions. The Seagate Exos E product line offers a family of either 2U or 5U form-factor chassis with high-performance 12Gb/s SAS interfaces to enable Direct Attached Storage (DAS) for JBOD (Just-a-Bunch-of-Disk) server-attached solutions. The Seagate Exos E and Exos X product lines support Seagate's capacity-leading nearline disk drives and can also be configured as hybrid storage by adding Seagate's high-performance enterprise SSDs.

Seagate enterprise storage systems are available from selected distributors worldwide with a variety of Seagate's enterprise nearline capacity-optimized disk drives and high performance SSD's pre-integrated.

The Seagate Solution

Seagate offers a variety of SAN (storage area network) and DAS (direct-attached storage) enterprise storage systems that are ideal solutions for VMware, delivering high performance, scalability, and built-in data protection. Available from selected distributors worldwide, they feature a variety of Seagate's enterprise nearline capacity-optimized hard drives and high-performance SSDs pre-integrated. Seagate enterprise storage systems are available from selected distributors worldwide with a variety of Seagate's enterprise nearline capacity-optimized disk drives and high performance SSD's pre-integrated.

The Seagate Exos® X system series offers families of 2U and 5U form-factor chassis using one of Seagate's hardware RAID controllers, enabling Fibre Channel or iSCSI SAN solutions. These capacity-optimized disk and hybrid disk/flash SAN arrays enable up to 84 drives and 1.3PB of raw data storage with integrated Seagate hardware-based data protection using RAID and Seagate ADAPT erasure coding technology.

The Seagate Exos E system series offers families of 2U and 5U form-factor chassis with high-performance interfaces to enable DAS for JBOD (just a bunch of disks) server-attached solutions. These disk and hybrid disk/flash DAS JBODs in 2U and 5U form factors support up to 84 drives and 1.3PB of raw data storage with a 12Gb/s SAS interface for up to 28.8GB/s throughput in a dual controller configuration.

The Seagate Nytro X eatures SAN controllers (3005, 4005, and 5005) that use Seagate's proven RAID and erasure coding ASICs and Seagate ADAPT (Autonomic Distributed Allocation Protection Technology) next-gen erasure coding technology to enable rebuilds that are up to 95% faster than traditional solutions. As capacity grows, rebuild times can be cut from many hours or days to minutes using ADAPT. These controllers also provide thin provisioning, snapshots, asynchronous replication, and allow capacity expansion beyond the chassis by adding Seagate's optional expansion disk arrays (EBODs).

The Seagate Nytro® E 2U24 system is a high-performance SAS-based all-flash array that supports up to 24 SSDs and provides throughput of 28.8GB/s with dual 12Gb/s SAS controllers for maximum throughput and expansion to up to 16 enclosures and up to 384 drives.

All of Seagate's enterprise storage systems are built for demanding data centers and include active-active redundant components (hot-standby spare) with automatic failover and redundant hot-swap of key components. Enterprise system management features ensure they're simple to maintain while Seagate's patented AcousticShield™ technology in certain models enables maximum performance from every drive. Additionally, they've been certified by VMware as primary data storage solutions for their popular ESXi server software, offering an efficient, low-cost storage platform to build upon.

Seagate Drive and System Benefits

Seagate storage systems provide the following storage benefits to VMware ESXi servers:

- Support for VMware features include VMware vSphere® Storage APIs – Array Integration (VAAI) compliant, storage space reclamation with SCSI UNMAP support
- High-density performance and scalability that complies with rack space and power constraints of modern data centers and server closets
- Cost-effective JBOD-SAS models
- High-performance, flexible connectivity options for any VMware environment with SAS, iSCSI, and Fibre Channel
- High-density solutions built for modern data center or server closet
- Unfettered data access with dual-redundant controllers capable of achieving up to 7GB/s sequential read, 5.5GB/s sequential write performance
- Seamless data center scalability with single enclosures that host up to 1.3PB of data
- Thin provisioning saves on storage costs by dedicating storage only when needed
- Virtual storage pools streamline management
- Improved performance for read-intensive workloads while minimizing SSD cost
- SED- and FIPS-capable devices extend data security with array-based data-at-rest encryption
- Auto tiering (with optional software bundle) accelerates performance with SSDs while providing the cost and capacity benefits of HDD
- Snapshots (with optional software bundle) reduces RPO and RTO with efficient, bock-based hardware snapshots
- Asynchronous replication (with optional software bundle) replicates data between arrays for business continuity and disaster recovery
- Easy setup, maintenance, and expansion

Why Seagate ADAPT Makes a Difference with VMware

Seagate Exos X series provides flexible iSCSI and Fibre Channel storage solutions to ESXi and delivers data protection through RAID 5/6/10 as well as Seagate ADAPT.

- Automatic rebalancing of stripe health (REFT) allows more drive failure protection
- Avoids idle spare drives (all drives provide performance and spare capacity is distributed evenly)
- Allows mixed drive sizes and easy capacity expansion
- Supports from 12 up to 128 drives per disk group
- Works with SSD and HDD groups

Compatibility Validation Tests

VMware ESXi versions tested and certified with Seagate systems:
7.0 U2, 7.0 U1, 7.0, 6.7 U3, 6.7 U2, 6.7 U1, 6.7, 6.5 U3, 6.5 U2, 6.5 U1, 6.5, 6.0 U3, 6.0 U2, 6.0 U1, 6.0, 5.5 U3, 5.5 U2, 5.5 U1, 5.5

These Seagate systems have been certified for use with VMware ESXi:

- 4525 (2U24 enclosure with 4005 controller - SAS)
- 4535 (2U12 enclosure with 4005 controller - SAS)
- 4565 (5U84 enclosure with 4005 controller - SAS)
- 4825 (2U24 enclosure with 4005 controller - CNC FC)
- 4835 (2U12 enclosure with 4005 controller - CNC iSCSI)
- 4865 (5U84 enclosure with 4005 controller - CNC iSCSI)
- 4865 (5U84 enclosure with 4005 controller - CNC FC)
- 5535 (2U12 enclosure with 5005 controller - SAS)
- 5825 (2U24 enclosure with 5005 controller - CNC FC)
- 5835 (2U12 enclosure with 5005 controller - CNC iSCSI)
- AssuredSAN 3534 (2U12 enclosure with 3005 controller - SAS)

For the most up to date listing and more detailed VMware version support, please consult the **VMware compatibility database directly.**

Ready to Learn More?

Visit us at Seagate.com

For more information on Seagate Exos Systems, visit:
www.seagate.com/enterprise-storage/systems/exos

For more information on Seagate Nytro Systems, visit:
www.seagate.com/enterprise-storage/systems/nytro

In Conclusion

Partnering with VMware ESXi, Seagate is able to offer an extensive menu of high-density systems that act as primary VMware ESXi storage so that data centers can increase efficiency and reduce TCO while harnessing enormous capacity, performance, and security.

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