Introducing vSAN Express Storage architecture

Adapting to changes in business demands and hardware innovation

vSAN Original Storage Architecture

vSphere ⟷ vSAN

SSD SSD ••• SSD SSD

Cache
Capacity

Disk groups | Disk groups | Disk groups

vSAN OSA Datastore
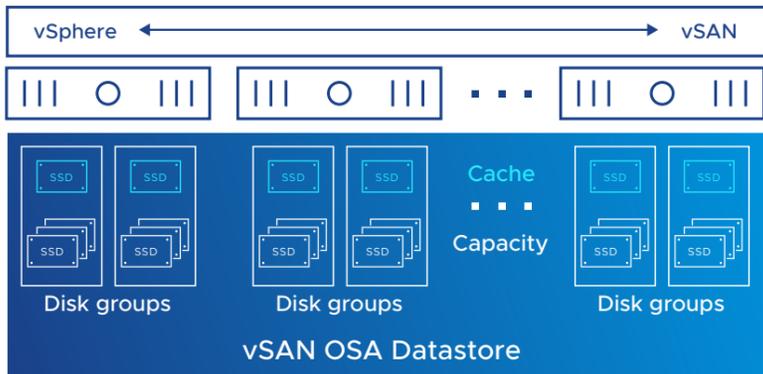
The original storage architecture of vSAN is a two-tier architecture designed to accommodate a wide-ranging set of SATA/SAS devices

- Designed to support HDDs and SSDs, wide ranging storage devices
- Uses disk group to provide performance through caching and capacity

Optional transition to

Change driving vSAN ESA creation

1. More performant hardware devices
2. New data security demands
3. New complex multi-tier applications powered by large VMs and containers
4. Workloads running not only on-premises but on public and private clouds

vSAN Express Storage Architecture

vSphere ⟷ vSAN ESA

Storage pool | Storage pool ••• Storage pool

vSAN ESA Datastore
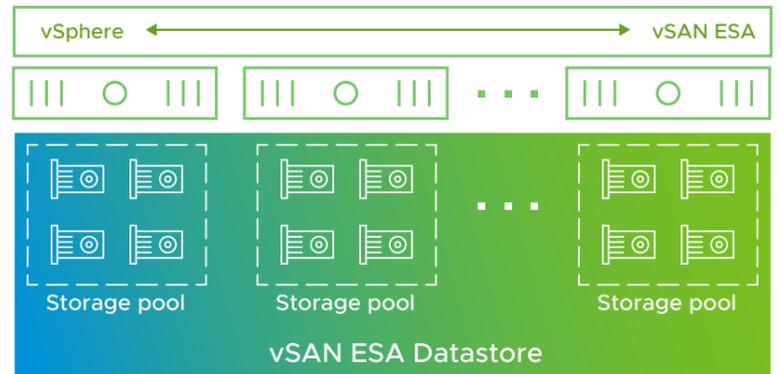
vSAN ESA is a new architecture designed to leverage multiple tiers of devices. Optimized for high performance NVMe-based TLC flash devices for both on-premises environments, and for the public cloud hyperscalers.

- Optimized for high performance NVMe-based TLC flash devices
- No disk groups. All devices contribute to performance and capacity

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New Benefits

Performance without tradeoff
- Up to 4x higher performance, consistent and scalable
- High performant RAID - stores data in RAID-5/6 format at the performance of RAID-1
- Enterprise-grade snapshots with no trade-offs, negligible performance impact even with deep chains

Supreme resource and space efficiency
- Up to 70% more usable capacity, and up to 40% lower TCO *
- RAID-6 at RAID-1 performance: – 150% less capacity overhead over similarly protected RAID-1 VMs *
- Enable/disable data services on a per-VM/object basis

Ready-for-anything resilience
- Reduced failure domains improve availability upon failure
- Scalable native snapshots for improved backups and business workflows

Intuitive, agile operations
- Improved storage policies for simplified operations
- Simplified storage device provisioning and servicing
- Proactive Insights detects anomalies to prevent potential issues

With vSAN 8
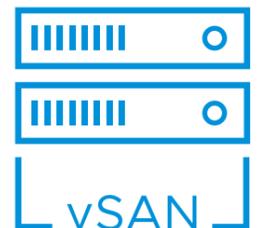
vSAN

An innovate way of delivering new capabilities for environments using modern hardware.

What makes vSAN ESA special

Fast & efficient data path
- New patented log-structured file system – A new layer that writes data quickly with minimal overhead
- Optimized data structure and I/O engine - stores data and metadata in an extremely fast and efficient way

Simplified administration
- Removes the concept of disk groups - makes adding and removing or servicing storage devices easy and efficient
- Adaptive RAID-5 policies and native snapshot capability – high performance snapshots

Ease of management
- vSAN Proactive insights -seamless and fast troubleshooting
- Adaptive network traffic shaping for resynchronizations - properly prioritize VM I/O over resynchronization activity

Top Use Case

- Mission-Critical Applications
- Databases
- Online Transaction Processing (OLTP)
- Edge

Here's Why:

- **High performance** from a new data path
- **Space efficient**: get the performance of RAID 1 with RAID 6, plus reduce total storage used with up to 8x data reduction via compression
- All storage devices contribute to performance and capacity so you can get the most out of your investment

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