Introducing vSAN Express Storage architecture
Adapting to changes in business demands and hardware innovation

vSAN Original Storage Architecture

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

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

vSAN Express Storage Architecture

- Optional transition to vSAN ESA
- 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 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.

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

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

* Compared to vSAN OSA
* Based on VMware internal performance benchmarks, Aug 2022