

MIXED WORKLOADS ON VMWARE VSAN

Deployment, Management, and Monitoring for Mixed Workloads on VMware vSAN™

Mixed Workloads on vSAN Infrastructure

Workload consolidation on VMware vSAN, within a single cluster.

VMware vSAN provides Hyperconverged Infrastructure (HCI) for administrators and application owners to deploy and run their solutions tailored to the needs of the application. vSAN has been proven to accommodate various workloads; business-critical applications like Oracle, Exchange, and SAP; Virtual Desktop Infrastructure, Remote Office and Branch Office, with both performance and high availability considerations. Both homogeneous and heterogeneous applications can be consolidated together within single cluster on VMware vSAN platform, which helps simplify management, improve operational flexibility, optimize resource utilization and reduce total TCO.

Why Mixed Workloads on Single vSAN Cluster

Mixed workloads are usually managed using separate physical infrastructures based on the type of workload. By consolidating these mixed workloads on a single vSAN cluster configuration, it helps minimize both operational and management overhead during the workload deployment and maintenance stages. Different workload VMs can achieve VMware vSphere® vMotion® within a single larger vSAN datastore, with better flexibility and efficiency for VMware vSphere High Availability implementation. Single vSAN cluster also helps multiple workloads to be managed under the unified vSAN data services. With the one-time setup for vSAN data-at-rest-encryption, the workload VMs and user data are consistently protected.

Agility through Storage Policy Based Management (SPBM)

Storage Policy Based management (SPBM) allows for an administrator to manage their storage related settings on a per VM, or even per virtual disk basis, and therefore at an application level. Tailored with different demands for mixed workloads, each virtual machine or virtual disk could be assigned with the specific storage configuration in terms of the demand of the running workloads/applications. An administrator could adjust the storage policy seamlessly to accommodate the workload changes at any time and under any circumstance. Multiple workloads may have different requirements of failure levels to tolerate, and administrator can limit the I/O resource with the storage policy on some of the workload VMs to ensure the performance for other mission-critical applications.

Built-in Monitoring for Mixed Workloads on vSAN

vSAN provides a built-in feature within vCenter, VMware vRealize® Operations™, which is easy to deploy and requires no additional licensing:

- vRealize Operations delivers continuous performance optimization based on intent, efficient capacity management, proactive planning and intelligent remediation for mixed workloads running on vSAN.
- vRealize Operations provides a unified management platform with application-to-storage visibility, especially for multiple workloads.
- Using the data collected in vRealize Operations, users can use the rich analytical tools inside to reveal the hidden issues, investigate complex technical problems, identify trends, and adjust resource allocation for different workloads respectively.
- vRealize Operations also frequently suggests corrective actions to help fix problems right away.

UNIQUE CAPABILITIES

CONSOLIDATE WORKLOADS ON SINGLE VSAN CLUSTER

- Simplified deployment and unified management with minimum operational overhead in single vSAN HCI environment.
- Tailor your application demand and adjust with Storage Policy Based Management.
- Better resource utilization through workload consolidation, from both performance and capacity considerations.
- Protect all of your application workloads with rich vSAN data services and high availability configurations.

TOP 5 BENEFITS

- Minimum deployment and operational overhead through a single vSAN cluster.
- Agility through the SPBM management.
- Built-in monitoring for application workloads.
- Scalability with on-demand mixed workloads.
- Reduced TCO through the HCI architecture.

Scalability Plan for Mixed Workloads on vSAN

If the existing vSAN cluster is servicing a single workload, it is much easier to scale up or scale out for mixed workloads running under the same cluster. vSAN is designed for close-to-linear scalability and administrators can plan for adding similar workloads with simple building block methodology. For workloads with different I/O patterns, administrators should plan for both performance and capacity considerations. It is recommended to prioritize the infrastructure resources for business-critical applications, and configure vSphere and vSAN limitations for VMs, wherever applicable.

Resiliency Plan for Mixed Workloads on vSAN

vSAN provides different storage levels of resiliency to protect the mixed workloads running on vSAN. The default vSAN storage policy will store two replicas for each component with tolerance of one point of failure. Whenever a disk failure happens in the cluster, vSAN will automatically handle the issue without the need of user interference, and there is minimal performance impact on the mixed workloads. Depending on the protection requirement of the workload, user can customize the failure level to tolerate. When a failure happens in the cluster, the resynchronization operation performed by vSAN is both automatic and intelligent, while maintaining a fair balance of resynchronization and guest VM traffic to ensure sufficient levels of performances of the mixed workloads during these resynchronization operations.

Sample Reference Architecture

Administrators can have mixed workloads on vSAN with appropriate planning and design. I/O-intensive applications, such as database OLTP workloads, can be mixed with applications with capacity-oriented workloads; or bandwidth focused application, such as database OLAP workloads, with I/O limitations configured in vSAN storage policy. Note that vSAN has no limitation on mixed workloads running upon the environment.

In this solution overview, we provide a sample reference architecture for mixed workloads of Microsoft SQL Server and Exchange Database running together on a single vSAN cluster. As shown in Figure 1, two SQL Server VMs are running separately on two nodes of the vSAN cluster, while two other VMs are servicing Exchange mailbox services on two other nodes. Two domain controllers (primary and secondary) provide the active directory service for both applications. Administrators can customize the workloads, either the level of performance, or protection, in the vSAN storage policy individually. As the workload demands increase, SQL Server OLTP workloads may require more IOPS and lower latency, or Exchange mailbox grows in capacity, administrators can easily scale up or scale out to meet the performance demand and increase the total capacity.

LEARN MORE ABOUT MYSQL AND VSAN

- [Virtual Blocks](#) – VMware's blog site for all topics related to storage and availability.
- [StorageHub](#) – The one-stop location for all documentation on storage and availability.

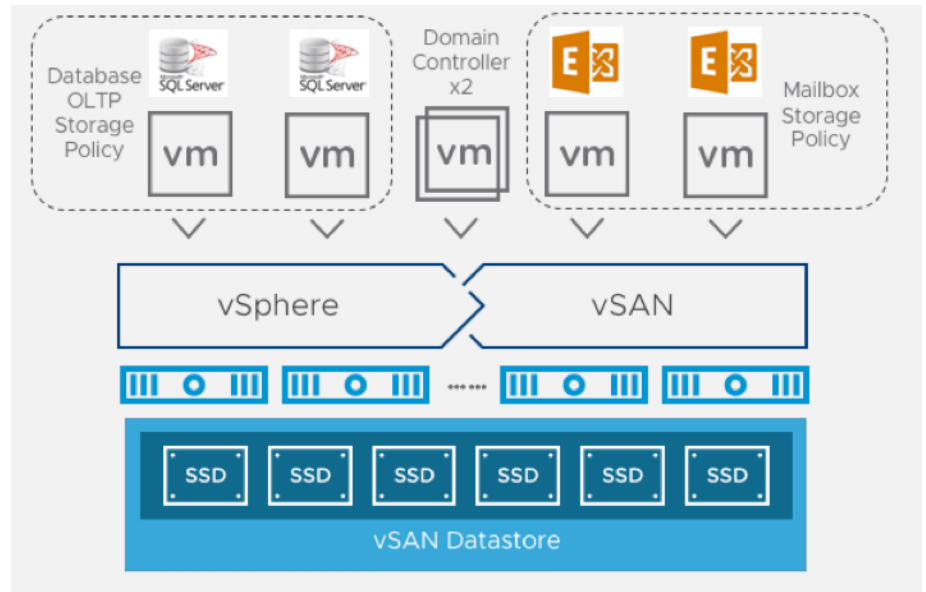


Figure 1. Sample Mixed Workloads on vSAN

Summary

Mixed workloads on VMware vSAN allows workload consolidation with agility in management, scalability in performance, resiliency in protection, and reduction in TCO. vSAN provides flexible high availability options and rich data services for multiple workloads running on a single cluster. Administrators can easily scale up and scale out for future business demands with vSAN, and achieve balance of performance and protection for different workloads using vSAN SPBM.

See the [solution reference architecture](#) for further details about the mixed workloads on vSAN.