

VMWARE vSAN

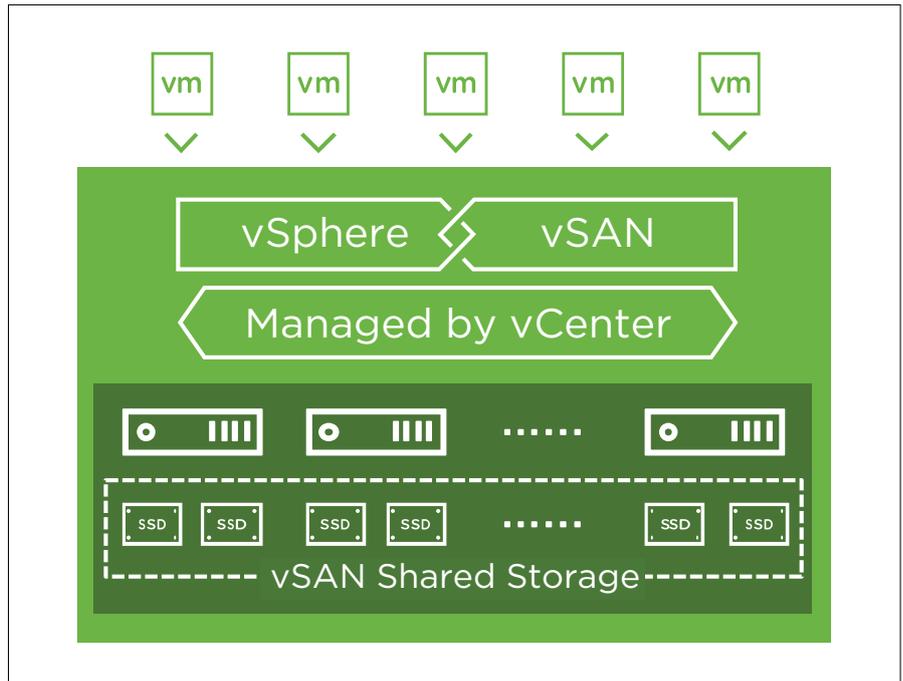
VMware HCI supports the most hybrid cloud use cases¹

AT A GLANCE

Accelerate infrastructure modernization with VMware vSAN™ to make IT a strategic, cost-effective advantage for your company. By powering the leading Hyper-Converged Infrastructure (HCI) solutions, vSAN helps organizations evolve their data center without risk, control IT costs and scale to address tomorrow's business needs.

vSAN delivers flash-optimized, secure shared storage with the simplicity of an experience native to VMware vSphere® for all your critical virtualized workloads. vSAN runs on industry-standard x86 servers and components that help lower TCO by up to 50% versus traditional storage. It delivers the agility to easily scale IT with a comprehensive suite of software solutions and offers the first native software-based, FIPS 140-2 validated HCI encryption.

The latest vSAN release makes it easy to adopt HCI with simplified operation to quickly build and extend cloud infrastructure, efficient infrastructure that automatically reclaims capacity, and rapid support resolution with vSAN ReadyCare quick diagnosis tools.



Why VMware vSAN?

Organizations are looking to IT to help them stay competitive in a rapidly evolving marketplace. Businesses have looked to public cloud to increase agility while lowering costs, but they have found it hasn't replaced the need for a private cloud for many workloads due to cost, data governance and risk mitigation. They need multiple clouds.

Hybrid cloud, a multi-cloud operational model, is the next phase of IT evolution. Organizations are evaluating solutions to help them solve the challenges of integrating multiple clouds, and the VMware Digital Foundation—a ubiquitous control plane from edge to core to cloud—provides a solution that can enable hybrid cloud today. In fact, Gartner recently acknowledged that VMware HCI supports the most hybrid cloud use cases right now.¹

VMware-powered HCI offers organizations a natural next step to the Digital Foundation by quickly building and integrating cloud infrastructure. IT teams experience simplified operations that increase business agility through consistent infrastructure, processes and tools from edge to core to cloud. Policies and automation reduce management to a few easy clicks, allowing IT personnel to devote their time to strategic IT projects rather than routine operations.

¹ Gartner, Inc. "Four Factors That Will Shape The Future of Hyperconverged Infrastructure." Aru Chandrasekaran, Santhosh Rao, Joe Skorupa, and George J. Weiss, March 20, 2018.

KEY BENEFITS

- **Seamless Evolution** – Extend virtualization to storage with a secure, integrated hyper-converged solution that simply works with your VMware environment:
 - Native to your hypervisor and leading public clouds
 - Use existing tools for compute and storage
 - Protect and optimize current investments
- **Leading Flexibility** – Deploy software defined infrastructure across your data center with the industry's largest HCI ecosystem:
 - Extend to full stack HCI and Digital Foundation
 - Use certified solutions with your preferred vendor
 - Unify resources under policy-based management
- **Cloud Ubiquity** – Evolve to a Digital Foundation—a common control plane from edge to core to cloud—built on HCI:
 - Consistent operations from edge to core to cloud
 - Intrinsic security for data-at-rest and in-flight
 - Hundreds of public cloud providers

Simplified Operations

Businesses need to increase agility to respond to a constantly evolving marketplace. They need a cloud operating model—provisioning IT resources to projects on demand—which requires simplified operations from automation. vSAN 6.7 allows customers to quickly build and integrate cloud infrastructure with guided, exhaustive instructions for complex tasks, which makes it easy to get started with HCI. It also keeps infrastructure stable and secure with automated patching and upgrades. vSAN ensures consistent application performance and resiliency during maintenance operations and reduces time spent troubleshooting maintenance issues.

Efficient Infrastructure

Businesses are under constant pressure to manage costs; data grows significantly each year, and storage constitutes a major expense for IT organizations. Also, many IT teams buy large amounts of storage up front or overprovision, which leaves resources idle for long periods of time. vSAN automates space reclamation, dynamically reducing application storage usage over time, freeing up valuable resources as well as enhancing application performance. It also enables admins to size capacity needs correctly and incrementally to improve capacity management and planning.

Rapid Support Resolution

Data center complexity continues to grow, but at the same time, more IT organizations employ unified teams that may not have deep expertise with all the infrastructure or applications they manage. Businesses need to rapidly identify issues as they arise, as well as simplify and streamline processes to reduce their burden when resolving support issues. vSAN ReadyCare introduces a simplified support process that reduces customer requirements to resolve deployment problems in some situations. vSAN also expedites self-help with centralized health monitoring,

Data Protection that Lowers TCO

IT managers need resilient solutions that can guard against data loss from a wide variety of failures—from a single drive to an entire site. Stretch clusters provide local and site protection between two geographically separate sites, synchronously replicating data. Users get granular protection on a per-VM basis, all for 50% less than the leading traditional solution. vSAN utilizes distributed RAID and cache mirroring, and can use erasure coding to achieve high levels of protection efficiently, reducing utilized storage capacity by up to 50%. vSAN protects easily and seamlessly with just a few clicks.

Key Features and Capabilities

Tightly Integrated with vSphere: vSAN is built into the vSphere kernel, optimizing the data I/O path to provide the highest levels of performance with minimal impact on CPU and memory.

VM-centric Policy-based Management: vSAN is part of the larger VMware SDDC stack that uniquely delivers consistent, VM-centric operations through policy-based management. Using simple policies, common tasks are automated and storage resources are balanced to reduce management time and optimize HCI efficiency.

Single Pane of Glass Management: vSAN natively integrates with the user interface of the SDDC stack, removing the need for training and operating specialized storage interfaces. vSAN uses a modern HTML5-based web client. VMware vRealize® Operations™ within VMware vCenter® enables rapid visibility into a vSAN deployment with broad monitoring and deep analytics, all from vCenter.

Flash-optimized: vSAN minimizes storage latency with built-in caching on server-side flash devices delivering up to 50% more IOPS than previously possible. vSAN all-flash can be deployed for less than a \$1 per GB of usable capacity — over 50% less than the cost of competing hybrid hyper-converged solutions.

Granular Non-disruptive Scale-up or Scale-out: Non-disruptively expand capacity and performance by adding hosts to a cluster (scale-out) or just grow capacity by adding disks to a host (scale-up).

Deduplication and Compression: Software-based deduplication and compression optimizes all-flash storage capacity, providing as much as 7x data reduction with minimal CPU and memory overhead.

Erasure Coding: Erasure Coding increases usable storage capacity by up to 100% while keeping data resiliency unchanged. It is capable of tolerating one or two failures with single parity or double parity protection.

vSAN Encryption: Native to vSAN, vSAN Encryption provides data-at-rest security at the cluster level and supports all vSAN features, including space efficiency features like deduplication and compression. Enabled with a few clicks, vSAN Encryption is built for compliance requirements and offers simple key management with support for all KMIP compliant key managers, such as CloudLink, Hytrust, SafeNet, Thales and Vormetric. vSAN Encryption is FIPS 140-2 validated, meeting stringent US Federal Government standards.

Stretched Clusters with Local Protection: Create a robust stretched cluster with site and local protection between two geographically separate sites, synchronously replicating data between sites. It enables enterprise-level availability where an entire site failure can be tolerated as well as local component failures, with no data loss and near zero downtime. Users can set granular protection on a per-VM basis and non-disruptively change policies—all for 50% lower costs than the leading traditional solution.

Quality of Service (QoS): Now available in all editions of vSAN, QoS controls, limits and monitors the IOPS consumed by specific virtual machines, eliminating noisy neighbor issues.

vSAN Health Service: Health Service provides integrated hardware compatibility checks, performance monitoring, storage capacity reporting and diagnostics directly from VMware vCenter Server.

iSCSI Access: New to vSAN 6.7, vSAN can now support Windows Server Failover Cluster (WSFC) technology, reducing data center silos by managing more Business Critical Applications through a single HCI solution. vSAN storage can be presented as an iSCSI target for physical workloads. All core functionality continues to be available and managed through vCenter.

vSAN Support Insight: vSAN Support Insight helps keep vSAN running in an optimal state, saving monitoring and troubleshooting time, by providing real-time support notifications and actionable recommendations. The analytics tool can also optimize performance for certain scenarios with recommended settings.

2-Node Direct Connect: Save up to 20% per site by eliminating the need for any switches between servers in a 2-node deployment. Use crossover cables to simply and reliably connect the servers directly.

Full-Featured PowerCLI: vSAN provides the ease and scalability of enterprise-class automation with a set of full-featured PowerCLI cmdlets. New SDK and API updates enable more enterprise-class automation by supporting REST APIs.

Built-in Failure Tolerance and Advanced Availability: vSAN leverages distributed RAID and cache mirroring to ensure that data is never lost if a disk, host, network or rack fails. It seamlessly supports vSphere availability features like vSphere Fault Tolerance, vSphere High Availability, etc. vSphere Replication™ for vSAN provides asynchronous VM replication with RPOs of up to 5 minutes. New always-on features deliver a highly-available management stack, independent of vCenter, and intelligent rebuilds accelerate recovery.

Project Hatchway: Persistent Storage for Containers

Organizations want to take advantage of container technology for running stateful, data intensive applications such as databases and modern cloud native applications. One of the significant barriers is the lack of out-of-the box persistent storage solutions in the container ecosystem since it requires building a robust, elastic, and programmable storage infrastructure with same level of security, data integrity, high availability, and storage services that are expected in a modern IT infrastructure.

Project Hatchway addresses this gap in vSphere environments by delivering persistent storage for container environments deployed on hyper-converged infrastructure (HCI) powered by VMware vSAN. It offers tight integration between vSAN and container orchestrators, such as Docker Swarm and Kubernetes, to meet the needs of the DevOps community.

LEARN MORE

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5000), visit [http://www.vmware.com/
products](http://www.vmware.com/products), or search online for an
authorized reseller. For detailed product
specifications and system requirements,
refer to the vSphere documentation.

System Requirements

Hardware Host

- 1GB NIC; 10GB NIC recommended
- SATA/SAS HBA or RAID controller
- At least one flash caching device and one persistent storage disk (flash or HDD) for each capacity-contributing node

Cluster Size

- Min. 2 hosts – Max. 64 hosts

vSAN Ready Nodes and Hardware Compatibility List

Available at [http://www.vmware.com/resources/compatibility/search.
php?deviceCategory=vsan](http://www.vmware.com/resources/compatibility/search.php?deviceCategory=vsan).

Software

- VMware vSphere 6.7 Update 1
- VMware vSphere with Operations Management™ 6.1 (any edition)
- VMware vCloud Suite 6.0 (any edition updated with 6.5)
- VMware vCenter Server 6.7 Update 1

