

# VMWARE vSAN 6.7

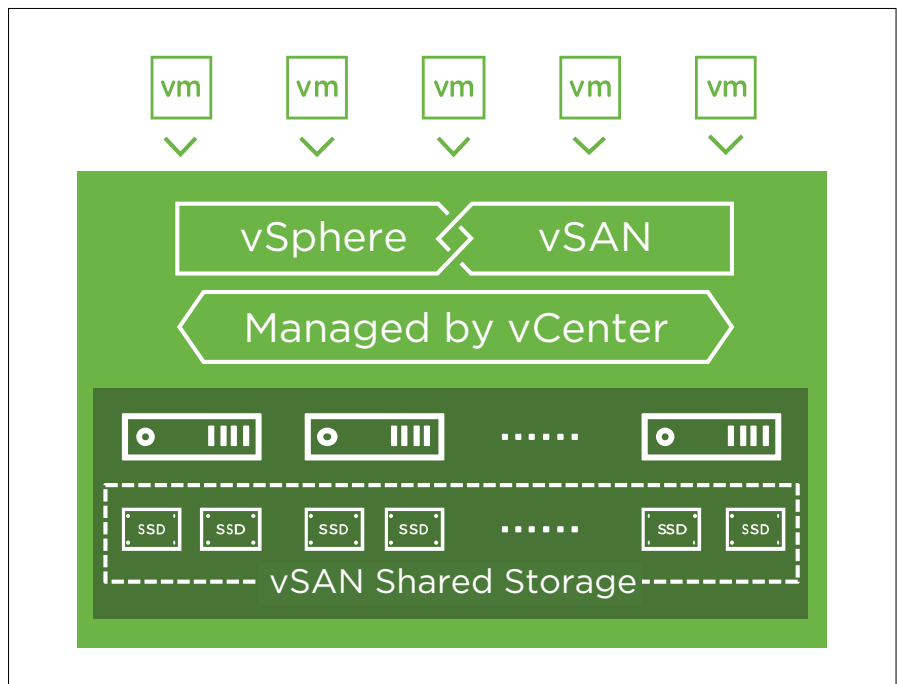
#1 with Cloud Providers<sup>1</sup>

## 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 a VMware vSphere®-native experience 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.

vSAN 6.7 delivers a new HCI experience architected for the hybrid cloud with operational efficiencies that reduce time to value through a new, intuitive user interface, and provides consistent application performance and availability through advanced self-healing and proactive support insights. Seamless integration with VMware's complete software-defined data center (SDDC) stack and leading hybrid cloud offerings makes it the most complete platform for platform for virtual machines—whether running business-critical databases, virtual desktops or next-generation applications.



## Why VMware vSAN?

Modern businesses expect IT to deliver a competitive advantage through digital transformation, even as IT administrators are tied down with legacy infrastructure that is time-consuming to acquire and install, costly to maintain, and inflexible in expanding to a hybrid cloud environment. At the same time, budgets are stagnant or shrinking, while demands keep growing.

As a natural step to the industry's most complete SDDC offering, hyper-converged infrastructure (HCI) powered by vSAN helps businesses evolve without risk while lowering IT costs and providing an agile solution ready for future hardware, cloud and application changes. IT teams enjoy a consistent operating environment from cloud to edge that simplifies operations from Day 0 to Day 2.

Businesses demand an architecture that allows them to scale to tomorrow. vSAN delivers flash-optimized storage that offers that offers predictable, secure application performance for any virtualized workload, from business-critical apps to next generation applications. vSAN is the most deployed HCI software solution by cloud providers: over 250 cloud providers rely on vSAN to dynamically deliver HCI-as-a-Service at scale. One provider has deployed over 10 petabytes of all-flash vSAN in production, and vSAN is used by two of the four largest public cloud providers today.<sup>2</sup>

<sup>1</sup> Most deployed HCI software solution by cloud providers

<sup>2</sup> Internal VMware analysis

## KEY BENEFITS

- **Evolve without Risk:** Seamlessly extend virtualization to storage with a secure, integrated hyper-converged solution that simply works with your VMware environment.
  - Use existing management tools, skillsets and hardware platform of choice
  - Capitalize on VMware's large, proven ecosystem for complementary software solutions
  - Secure data with the industry's first native, FIPS 140-2 validated HCI encryption solution
- **Reduce TCO:** Make limited budgets go farther with 50% lower total cost of ownership by consolidating core data center functions on the broadest choice of industry-standard x86 hardware and the most proven hypervisor.
  - Shift infrastructure to low-cost, high-volume server economics
  - Simplify management with one integrated software stack
  - Deploy robust, flexible stretched clusters for affordable site protection
- **Scale to Tomorrow:** Prepare for tomorrow's IT needs in the cross-cloud era with software-defined infrastructure that leverages the latest hardware technologies, supports next-gen applications and provides a stepping stone to the cloud.
  - Rapidly support the latest hardware technology
  - Built for modern enterprise applications and containers
  - One platform architected for the multi-cloud era

Organizations can confidently accelerate their evolution to a modern data center with vSAN by choosing the right deployment option for their needs. IT leaders can deploy HCI powered by vSAN in private cloud or edge computing with VMware Cloud Foundation™, Dell EMC VxRail™, Dell EMC VxRack™ SDDC, or vSAN ReadyNodes™, or on demand in the public cloud with 100s of cloud partners, like Amazon with VMware Cloud™ for AWS—all at a fraction of the cost of traditional, purpose-built storage or less efficient HCI solutions.

## Unified management with the Software-Defined Data Center (SDDC)

IT leaders oversee more sprawling resources than ever, and need technology to simplify management and reduce time-to-value. vSAN helps customer evolve without risk and reduces time to value through an intuitive, simple to use interface that natively integrates with the rest of the SDDC stack. vSAN is so simple to use that over half of vSAN users report they are experts within thirty days of adoption.<sup>3</sup> vSAN can be ready to use in minutes by a few simple clicks from an existing vSphere Web Client. It offers rapid visibility into cloud to edge infrastructure with broad monitoring and deep analytics from a single pane of glass with natively integrated vRealize Operations within vCenter.

## Industry Leading Deployment Options

IT managers are wary of vendor lock-in, and want to customize deployments for performance and financial requirements. vSAN offers the greatest breadth of options for deploying HCI, allowing customers to choose the deployment that best meets their performance and budget needs. Customers using vSAN in private cloud or edge computing can choose to deploy with VMware Cloud Foundation, VxRail™, VxRack SDDC™, or over 500 vSAN ReadyNodes™. vSAN can reduce lumpy, capital expenditure purchases to grow-as-you-go, non-disruptive scaling from two to sixty-four nodes. Customers can also use HCI on demand in public cloud with VMware Cloud for AWS.

## Industry-first Native Security

Business leaders need confidence that their data is well protected, but also need to keep their costs low. Traditionally, enterprises would need to purchase additional security, such as self-encrypting drives or third party security software. vSAN offers the industry's first native software based, FIPS 140-2 validated HCI data-at-rest encryption. Built right into vSAN, vSAN encryption supports customer's choice of standard drives (SSDs and HDDs), avoiding the limited options and pricing premium of self-encrypting drives (SEDs). Designed for compliance requirements, vSAN supports 2-factor authentication (SecurID and CAC), and offers the first DISA-approved STIG for HCI.

## Proactive Support

Due to increasing data center complexity, businesses require solution vendor support more than ever to keep their environments running at peak performance, and to expedite time to resolution. VMware has more than doubled the number of support technicians in the last year, and created technology that reports valuable data to support, reducing time to resolution by days. vSAN offers proactive support through Support Insight; algorithms review thousands of vSAN deployments, develop intelligent insights and deliver alerts before an issue arises. Also, vSAN simplifies problem spotting with enhanced Health Services, or automatic health checks, which are incorporated into over 50 workflows.

<sup>3</sup> vSAN TechValidate Customer Survey, 2017.

### 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. Stretched 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.

**Erasur 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

Learn how others are using vSAN:  
[Customer Stories](#).

Try online for free: [vSAN Hands-on Lab](#).

Request a free [vSAN Assessment](#)  
for your data center.

For more information or to purchase  
VMware products, call 877-4-VMWARE  
(outside North America, +1-650-427-  
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
- 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

