VMware vSAN

The premier hyperconverged storage software for VMware Cloud Foundation

VMware Cloud Foundation™

- VMware Cloud Foundation provides a flexible and simplified private cloud platform with public cloud extensibility that integrates leading components including vSphere (compute), vSAN (storage), NSX (networking), and management into a single solution.
- VCF is a platform that enables you to modernize infrastructure, accelerate developer productivity and provide greater resilience and security.
- VCF provides access to high-value advanced add-on services for Application and Network Security, App Platforms, Ransomware Recovery and Private AI.

As companies of all sizes embrace digital transformation, digitize new areas of the business, and adopt AI initiatives, they face a surge in demand for IT resources. They need agility, so they can adapt to changing business requirements. They also need high levels of performance, resilience and scale to accelerate business outcomes. Organizations across industries rely on cloud operational models to drive digital transformation. VMware, a pioneer in virtualization and cloud computing, offers a comprehensive suite of solutions designed to help organizations modernize their infrastructure and embrace a cloud operational model with confidence. Powering these digital transformations are VMware Cloud Foundation(TM) and VMware vSphere Foundation(TM) with VMware vSAN, the hyperconverged storage component.

Modernize your infrastructure with vSAN

VMware Cloud Foundation is a full-stack, private cloud solution that supports digital transformation initiatives by enabling organizations to accelerate developer productivity—embracing cloud native and AI technologies to deliver apps and services to market faster. vSAN is VMware's market-leading hyperconverged storage software for VMware Cloud Foundation, enabling a cloud operational model for storage within VMware's premier private cloud platform. vSAN, as a part of VMware vSphere Foundation (VVF), enables management of compute and storage with a single, integrated platform. vSAN delivers the agility, scalability, and performance essential for today's dynamic applications and workloads. With direct integration into VCF and VVF, vSAN ensures unmatched storage efficiency, performance, and operational simplicity. vSAN empowers organizations to build, manage, and optimize private clouds using standardized storage building blocks, with the added flexibility to integrate seamlessly with public and hybrid cloud environments.

vSAN at a Glance

By combining vSphere Foundation with vSAN, you can create a hyperconverged solution, combining compute, storage, and storage networking resources on industry-standard x86 servers. vSAN enables you to use software to abstract and pool cluster resources with unified management software. Go further by virtualizing every component of the infrastructure – compute, storage, and networking, with advanced management – to build a private cloud with VMware Cloud Foundation.

Regardless of whether you choose VVF or VCF, with vSAN, you can increase business agility with automation, reducing the need for manual intervention for common tasks, while eliminating silos and accelerating decision-making. You can also increase the performance of business-critical applications because vSAN supports the latest storage technologies.

vSAN provides a common operational model for managing compute and storage by abstracting the underlying infrastructure. It is the ideal storage solution for managing traditional virtual machines (VMs) and next-generation application deployments on vSphere Foundation and VCF.

Leveraging industry-standard x86 servers for compute and storage, vSAN reduces costs by avoiding expensive, purpose-built storage and storage networking investments. As vSAN scales linearly, your organization can avoid large, upfront purchases and scale incrementally as additional resources are needed.

Key vSAN Capabilities

Consistent, high performance across workloads

vSAN delivers high throughput and low latency storage for your most mission-critical applications. With the added power of vSAN Express Storage Architecture, you can expect to meet or exceed workload SLAs without tradeoff; you can also maximize space efficiency and protect data.

Agile scaling for deployments of all sizes

vSAN offers flexible scaling ranging from clusters as small as two nodes (plus witness) to up to 64 nodes. Whether scaling out by adding nodes to a cluster, scaling up by adding nodes to drives, or scaling compute and storage resources independently with disaggregation, vSAN enables you to customize performance and capacity to optimize storage resources and drive down costs.

Unified operations and lifecycle management

vSAN provides operational consistency from edge to cloud, with complete visibility and lifecycle management of compute and storage from a single UI. Customers have experienced up to 77% faster new storage deployments with vSAN[1].

Cost-efficient capital and operating expenses

vSAN lowers storage device and support costs by up to 70% and lowers OPEX by over 75% as compared to traditional storage[2]. Additionally, vSAN eliminates the need for costly, proprietary technologies like fibre channel networking, further reducing costs.

Greater storage capacity and efficiency

vSAN helps get the most out of your storage investment with innovative storage efficiency technologies built in. Boost storage efficiency with advanced compression methods that deliver up to 4x better compression ratios and up to 70% more usable capacity than the previous architecture. A single-tier architecture eliminates the need for a cache tier, enabling every device to contribute to capacity. vSAN enables you to store data using RAID5/6 for efficiency with performance at the speed of RAID1, eliminating a trade-off. Global deduplication reduces capacity needs further by up to 8x for some workloads[3].

Integrated data protection

VMware vSAN offers a comprehensive set of capabilities to protect your data. vSAN includes integrated snapshots that require minimal resources and deliver consistent performance. vSAN Data Protection includes a simple-to-use snapshot manager to protect and recover VMs locally. In VCF 9.0, we introduce vSAN-to-vSAN Replication to replicate vSAN ESA snapshots

to any remote vSAN ESA datastore, HCI or disaggregated. vSAN-to-vSAN Replication is a lower-cost, highly performant solution for asynchronous replication, and it simplifies and accelerates recovery. vSAN-to-vSAN Replication integrates with VMware Live Recovery (VLR) for an automated failover and failback experience.

VM-centric, policy-based management

As part of the larger VMware Cloud Foundation stack, vSAN uniquely delivers consistent, VM-centric operations through policy-based management. Within the vSAN Express Storage Architecture™, per-VM policies increase flexibility of management, enabling compression policies, or customize data services on a per-VM basis. Provision storage to a VM in minutes with a simple, guided workflow, or adjust policies and let the software implement the changes.

Learn More

Visit the VMware Resource Center to take a technical deep dive into vSAN.

Try vSAN online for free with VMware Hands-on Labs

Visit the vSAN and VCF product pages.

Sources:

1. IDC Business Value White Paper, sponsored by VMware by Broadcom. The Business Value of VMware vSAN Storage for Hyperconverged Infrastructure. November 2024. IDC#US527050242.

Lewis, Mitch. The Economics of Disaggregated Private Cloud Storage. Signal65. July 2024.

3. VMware Internal Analysis, November 2024.

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