VMware vSAN

Integrated, multi-purpose storage for the premier private cloud platform, 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. As IT moves to rapidly modernize to meet the needs of the business, organizations of all sizes and across industries are struggling with a common set of storage challenges: the need to store, serve and recover data faster and more efficiently, achieve greater flexibility and scale, secure data from an evolving threat landscape and control costs. Customers are discovering that a cloud operating model Is imperative to their modernization initiatives, as it delivers the flexibility, scale, resiliency and time-to-market required. Broadcom, with VMware software, offers a comprehensive suite of solutions designed to help organizations modernize their infrastructure and embrace a cloud operational model with confidence. VMware vSAN is the storage component powering the VMware private cloud portfolio, VMware Cloud Foundation(TM) and VMware vSphere Foundation(TM).

Integrated Storage for Your Private Cloud

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 integrated, multi-purpose storage in the premier private cloud platform, VMware Cloud Foundation. 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,

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.

manage, and optimize private clouds using standardized storage building blocks, with the added flexibility to integrate seamlessly with public and hybrid cloud environments.

Key vSAN Capabilities

Consistent, high performance across workloads

vSAN delivers high throughput and low latency storage for your most mission-critical applications. With the latest generation of vSAN, vSAN Express Storage Architecture, you can meet or exceed workload SLAs without tradeoff - vSAN has consistent performance regardless of deduplication, compression or fault tolerance method. vSAN can deliver up to 300K IOPS per node with sub-millisecond latency under peak conditions, and it outperforms legacy storage during hardware failure thanks to Its distributed, scale-out architecture. With vSAN, you can scale storage performance and capacity in a linear fashion, avoiding the technical and financial challenges of legacy, scale-up architecture.

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 drives to nodes, 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 data center to the edge, with complete visibility and lifecycle management of compute and storage from a single UI. From guided workflows that simplify deployment to unified hardware and software updates, VCF customers spend less time at every step of storage operations than competitive solutions. Because vSAN is a part of VCF, users don't have to worry about interoperability challenges during updates. Customers have experienced up to 77% faster new storage deployments with vSAN[1].

Cost-efficient capital and operating expenses

vSAN lowers storage hardware and support costs by up to 70% and lowers OPEX by over 75% as compared to traditional storage[2]. vSAN runs on industry-standard servers from every server OEM, enabling customers to source servers and drives that best meet their needs of performance, endurance, support and cost. vSAN eliminates the need for costly, proprietary technologies like fibre channel networking, further reducing costs. Every vSAN ReadyNode can take advantage of vSphere Memory Tiering to further reduce server 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 our latest compression techniques that, when combined with global deduplication and other capital savings, can reduce storage TCO by 39% compared to legacy, external arrays. A single-tier architecture eliminates the need for a cache tier, enabling every device to contribute to capacity. vSAN automatically adjusts resilience levels to maximize efficiency.

Integrated data protection and recovery

VMware vSAN offers a comprehensive set of capabilities to protect your data, starting with vSAN Express Storage Architecture's native snapshots. vSAN snapshots are immutable by default, require minimal resources and deliver consistent VM performance, regardless of the number of snapshots. vSAN includes a simple-to-use interface to schedule snapshots and guided workflows to protect, revert and restore VMs locally. vSAN now includes flexible scheduling to support long term retention use cases, such as cyber recovery. VCF customers can protect any virtual machine from any storage with replication by replicating the VM to a vSAN-powered recovery target or cyber recovery cluster. Replication integrates with VMware Site Recovery Manager for an automated failover and failback experience. Customers can also create a vSAN-powered cyber recovery cluster. Guided workflows assist deployment, and cyber recovery-specific health alerts ensure the cluster Is running properly. Customers can use VMware Advanced Cyber Compliance (ACC) to replicate their VMs to the cyber recovery cluster, and in the event of a cyber event, establish an Isolated Recovery Environment (IRE) and rapidly recover.

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.

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

3. VMware Internal Analysis, November 2024.

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