VMware vSAN for Cloud Providers

The hyperconverged infrastructure solution of choice for cloud providers

Market Opportunity

Multi-cloud is complex for both cloud providers and enterprises. For cloud providers, delivering services across many clouds for a multitude of customers can be complicated and redundant. Enterprises attempting to deploy, manage, and operate multi-cloud architectures without the proper systems and advisors can become very difficult and result in failures. Pivotal to multi-cloud architectures is the design and operation of the data plane. Any robust data plane design starts with a purpose-built storage solution. To that end, customers are increasingly looking to find faster, more reliable and natively-integrated storage.

An efficient storage solution touches all parts of your customer’s data strategy. This includes resiliency, replication, space efficiency, cost reduction, data protection, data management, analytics, and so on. Your customer’s business processes influence performance of workloads, be it VMs, containers, functions, or data-heavy applications such as, analytics, big data processing, video and audio, and more.

Challenges of traditional storage in multi-cloud

Poor Cost Optimization and Efficiency

With traditional storage systems, cloud providers face challenges managing large, upfront capex costs without the benefits of multi-tenant infrastructure. In addition, providers suffer from significant financial burn due to constraints with performing maintenance, support, training, lifecycle management, personnel, and more.

Performance Risk and Management Complexity

Implementing a storage system that is resource intensive requires cloud providers to manually run maintenance tools and solve interoperability problems. With traditional storage, cloud providers are forced to manage an infrastructure from multiples vendors Unpredictable application performance resulting from fundamental challenges with legacy architectures increases support requests, and may undermine the true value of a cloud platform to the customer and the cloud provider.

Inhibits Flexible and Future-Ready Infrastructure

Legacy, three-tier infrastructure with high costs inhibits businesses’ abilities to adapt to new market conditions and adopt new application deployment models. The need of today is cloud-native, container-ready storage to deploy next-gen applications.
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Why VMware vSAN?
Hyperconverged Infrastructure (HCI) provides a path to a secure and modern infrastructure that simplifies management, consolidates resources and reduces costs by combining compute, storage, and networking into a single system. The industry-leading HCI software stack from VMware, powered by VMware vSAN and vSphere, enables cloud provider-specific capabilities such as native automation, multitenancy, built-in analytics, and easy integration with cloud platforms.

Benefits of VMware vSAN for Cloud Providers

Cost Effectiveness and Operational Efficiency
VMware vSAN is a cost-effective solution that gives providers flexibility and agility, smoothing capex planning and improving opex as virtualization and storage teams converge, and allowing business processes to become more streamlined. VMware vSAN lowers the complexity of design and reduces infrastructure footprints, while improving deployment, utilization, and serviceability by IT and support teams. Providers benefit from lower upfront investment and incremental costs associated with granular scaling that can be closely aligned with sales motions.

Improved Performance and Manageability
By choosing VMware vSAN, you can benefit from the many performance and management optimizations of a modern storage solution in a complete end-to-end software stack – from storage to compute to networking. With simplified architecture, policy-based management, and tight integration with VMware cloud services such as VMware Cloud Director, Tanzu, NSX, Usage Meter, and vRealize, providers will see higher staff productivity, simple and reliable self-service delivery, optimized resource utilization, and improved customer satisfaction through achieving faster times to deployment.

Building a Future-Proof Cloud Infrastructure
VMware vSAN provides a common operational model for managing compute, storage, and networking by abstracting the underlying infrastructure. Delivering extensible storage accessible through APIs and cmdlets, providers can offer scalable solutions in private and multi-tenant public cloud, extend to the customer edge, and even integrate with hyperscaler public clouds. Providers also benefit from a consolidated vendor model that alleviates interoperability complications with other technologies and drastically reduces the time to production. These capabilities make VMware vSAN the ideal platform for managing traditional virtual machines (VMs) as well as next-generation application deployments.

These core benefits are delivered by the strong set of innovations and features in VMware vSAN. VMware vSAN powered HCI is the #1 HCI solution that delivers a differentiated set of features that can specifically help you build a competitive cloud offering, whether multi-tenant or private cloud. With these benefits, you can deliver new storage-as-a-service capabilities.
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“When we chose to build our new Cloud Director environment, we wanted to reduce our capital expenditure and the complexity of our storage platform. Our traditional platform has been reliable, but we’re always looking towards continual improvement and faced some challenges with it. For example, finding labor to implement and manage it has been a challenge and it takes significantly longer for resources to be competent with the deployment and management of it at a service provider scale. vSAN is easy to implement, support, train, and, most importantly, costs nothing until it’s used, making the ROI much faster than our traditional storage platforms.”

TIM GROSSHUESCH
SYSTEMS ARCHITECT
ATOMIC DATA

Services you can offer with VMware vSAN

Private cloud
Providers can offer VMware vSAN-backed private clouds to customers that need higher security and sovereignty. Private cloud remains one of the most critical cloud services as more enterprises transition to cloud. Providers can easily start delivering private cloud to customers in highly regulated industries, then expand to more value-added services such as disaster recovery, network security and monitoring as your customers’ needs evolve.

Flexential, a VMware Cloud Provider based in North Carolina and focused on datacenter solutions, ensures customer data is protected with reliable and modern VMware Cloud infrastructure in order to provide customers in legal services with private cloud solutions.

Multi-tenant public cloud
VMware vSAN has seamless integration with VMware Cloud Director, allowing providers to leverage multitenancy capabilities of VMware Cloud Director to offer shared and securely isolated pools of storage resources to multiple customers from the same infrastructure. This allows you to optimize your investments and easily scale your cloud offerings as your customer base increases.

Virtual desktop infrastructure (VDI)
Simple virtualized storage powered by VMware vSAN for VMware Horizon enables you to offer a highly performant VDI service. With enterprises shifting towards distributed workforces, providers have the opportunity to enable resiliency and productivity with vSAN-backed VDI and VMware Horizon.

Dizzion, based in Colorado and focused on end-user computing solutions, delivers secure, high-performant virtual workspace experiences to its customers, leveraging a combination of vSAN and Horizon running on a complete VMware Cloud infrastructure stack.

Remote office branch office (ROBO) / Edge
Extend and deploy hyperconverged cloud storage to edge environments and remote branches with VMware vSAN. This is another fast-growing use case as enterprises continue to embrace highly distributed and remote workforces.

High Availability
With VMware vSAN, you can provide a secondary site with a high level of availability as part of a secure disaster recovery offering to your customers. This helps you manage both datacenters under the same UI, stretched clusters between them, and optimize your recovery time and recovery point objectives. This is ideal for management clusters, where critical core systems like Active Directory, DNS, and vCenter need to always be highly available.
T-Mobile, in the Czech Republic, uses VMware vSAN to power their automated disaster recovery solution, providing them with low downtime and enterprise resiliency when they need it most.

Key Features of VMware vSAN for Cloud Providers

- **Full SDDC stack integration with VMware Cloud Director** – Adding vSAN completes the full software-defined datacenter stack and tightly integrates with Cloud Director to converge compute, storage, and network into one shared system for multiple customers. Providers using NSX base and Cloud Director in the Flex Core Bundle can benefit from the end-to-end stack with vSAN. This helps optimize the data I/O path to provide the highest levels of performance with minimal impact on CPU and memory in a multi-tenant capacity.

- **Cloud native storage** – vSAN cloud native storage supports all key storage API objects within Kubernetes. Developers can easily provision storage to allow containerized applications to use these persistent volumes in an automated, self-service manner. vSAN supports block and the most common file protocols, as well as persistent volumes for Tanzu Kubernetes Grid.

- **VM-centric policy-based management** – vSAN is part of the larger VMware Cloud Foundation stack that uniquely delivers consistent, VM-centric operations through policy-based management. Storage Policy Based Management (SPBM) lets you define and prescribe outcomes in resilience and performance on a per-VM or even per-VMDK basis for the highest levels of flexibility and ease in management. Using simple policies, common tasks are automated and storage resources are optimally balanced to reduce management time and maximize HCI efficiency.

- **Unified management** – vSAN natively integrates with VMware Cloud Foundation, removing the need for training and operating specialized storage interfaces. vSAN uses a modern HTML5-based web client. VMware vRealize Operations within vCenter enables rapid visibility into a vSAN deployment with broad monitoring and deep analytics, all from vCenter.

- **Lifecycle management** – vSAN uses VMware vSphere Lifecycle Manager to provide lifecycle management for vSAN powered HCI solutions and its full stack of drivers and firmware, reducing the effort to monitor compliance for individual components across vSAN clusters and maintaining a consistent production state for all vSAN clusters.

- **VMware HCI Mesh™** – VMware HCI Mesh is a unique, software-based approach for disaggregation of compute and storage resources to enable native capacity utilization across clusters. HCI Mesh allows you to easily borrow storage resources from one vSAN cluster over to another vSAN or vSphere cluster using native protocols.

- **Deduplication and compression** – vSAN offers two cluster-wide space efficiency features for the ultimate in flexibility. Deduplication & Compression
LEARN MORE
To get started with VMware vSAN or learn more about the solution, refer to the following resources:
- VMware vSAN product page
- VMware vSAN on YouTube
- VMware vSAN Blog
- VMware vSAN technical resources on Core
- VMware vSAN Sizer Tool

Key Features of VMware vSAN for Cloud Providers (cont.)

combines two space efficiency techniques for the highest levels of space efficiency, and “Compression-Only” provides space efficiency while minimizing any impact on performance in more resource intensive environments.

• vSAN Encryption Services – vSAN Encryption Services provide for a fully integrated approach to encrypt data in transit, at rest, or both. These services use the FIPS 140-2 validated cryptographic modules in vSphere and work with KMIP compliant key managers, as well as vSphere’s own Native Key Provider.

• Stretched clusters with local protection – Robust stretched clusters with site and local protection replicating data between two separate sites enable enterprise-level availability and near zero downtime. Users can set granular protection on a per-VM basis and nondisruptive change policies resulting in 50% lower costs than the leading traditional solution.

• Integrated file services – Easily provision a file share with a single workflow and use vSAN as a unified storage control plane for both block and file storage. vSAN file services integrate Active Directory, support Kerberos authentication, offer common protocols – NFS v3, NFS v4.1, SMB v2.1, SMB v3 – and support cloud native applications orchestrated by Kubernetes.

• 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.

• Flexible, automated failure tolerance – vSAN uses several data placement schemes that offer supreme levels of resilience and efficiency for critical data. Easily store data redundantly using multiple copies of data across hosts, or distribute the data with resilience using RAID-5/6 erasure codes.

• vSAN Data Persistence platform – VMware vSAN Direct Configuration™ provides an alternative option for modern stateful services to interface directly with the underlying direct-attached storage for optimized I/O and storage efficiency. Platform and application development teams can use Kubernetes APIs and developer tools for self-service provisioning and scaling of persistent volumes, while IT operators can easily deploy and manage these modern stateful services in vCenter.

For a full list of features, refer to the VMware vSAN Datasheet.