

Brochure

HP StoreVirtual Storage

For server and client virtualization with VMware vSphere





Storage designed to help you increase the benefits of virtualization

Businesses are embracing server and end-user workload virtualization to reduce costs and increase agility, efficiency, and availability. VMware vSphere has proven its ability to deliver these benefits while providing the scalability, ease of management, and flexibility demanded by businesses today, thus making it a world-leading virtualization platform.

However, with improved resource utilization and the ability to dynamically create and move virtual machines across the network, management complexity and the load on the storage infrastructure drastically increases. Virtualization concentrates workloads onto a smaller hardware footprint—single points of failure need to be removed. At the same time, high availability, disaster recovery, and fault tolerance capabilities are critical. Virtualized environments typically require high-performance shared storage systems. To get the most from vSphere, organizations need a storage system that is qualified and designed to work with vSphere, and will support the key features today and in the future. Finally, the storage infrastructure needs to do all this cost-effectively, so that organizations get the cost benefits they expect from their virtualization initiatives.

Enhance, simplify, and save in VMware vSphere environments



Enhance:
Improve application availability



Simplify:
Streamline solution deployment and management



Save:
Cut storage TCO

Reduce planned and unplanned downtime

- Network RAID
- Multi-site SAN cluster with VMware Metro Storage Cluster certification
- Peer Motion data mobility with Cluster Swap
- Capacity and performance scaling without disruption

Spend less time on system management

- vSphere Storage API array integration (VAAI, VASA)
- VMware vCenter Server storage management
- LeftHand Application Aware Snapshot Manager
- Replication adapter for VMware vCenter Site Recovery Manager

Reduce storage deployment costs

- Pay-as-you-grow, scaling capacity, and performance as needed
- Space-efficient thin provisioning
- All-inclusive SAN management software suite
- Virtual Storage Appliance

Boost VMware ROI: Enhance, simplify, and save with HP StoreVirtual Storage

Federated HP StoreVirtual Storage is highly customized for application virtualization in general—and for VMware virtualization in specific. The HP StoreVirtual portfolio offers affordable enterprise functionality with a comprehensive feature set and simplified central management for all locations. Superior application availability and disaster recovery features are integrated into HP StoreVirtual Storage for comprehensive failover and failback protection in any situation.

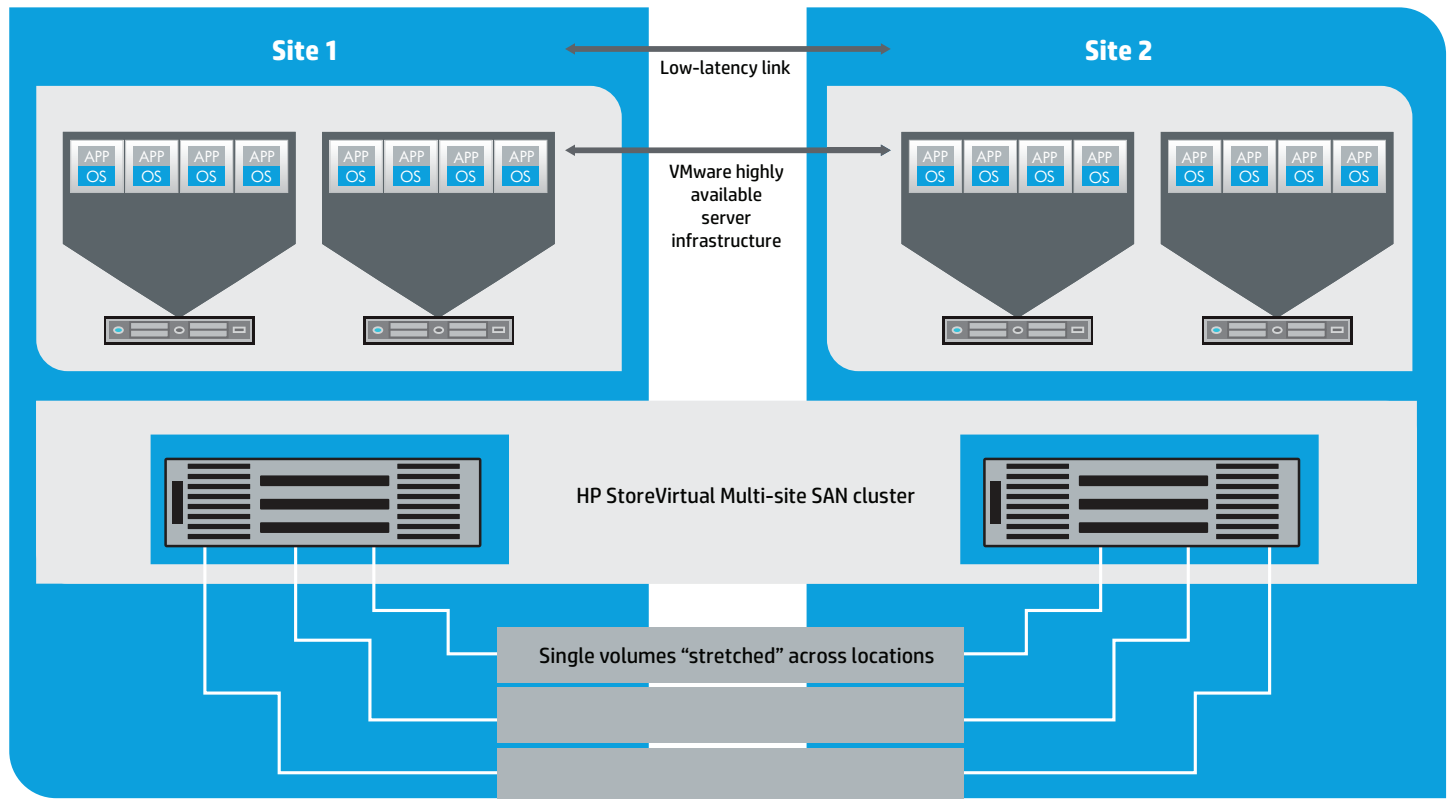
HP StoreVirtual is customized for virtualized environments with VMware vSphere integration, including centralized management through vSphere Server or HP Centralized Management Console. With StoreVirtual arrays, you can provide nearly continuous data availability to users and applications, meeting the demand in real time.

Enhance: Improve application availability

Failures in virtual environments, due to their consolidated nature, can be highly disruptive, compared to physical environments, and the availability of individual components is highly critical to ensure user availability. Storage is designed to maximize application availability in virtualized environments. It does this through built-in protection against data faults and site failures, as well as the ability to scale non-disruptively.

Network RAID stripes and protects multiple copies of data across a cluster of storage nodes, eliminating any single point of failure. Network RAID is configured on a per-volume basis, and dictates how a logical volume's blocks are laid out across the cluster, providing reliability that can be configured to best meet the performance and capacity requirements for specific applications and data. This configuration can be done without taking the system offline.

HP StoreVirtual Multi-Site SAN cluster allows data to be seamlessly stretched across remote data centers



Multi-site SAN clusters, certified for use with vSphere, provides users with the ability to assign storage nodes in the cluster to different sites including racks, rooms, buildings, and cities. Based on this assignment, the software automatically makes the appropriate configuration and operational decisions to protect data from site failure. With HP StoreVirtual, when the failed site comes back online, its storage nodes automatically obtain any changed data blocks, so failback is automatic and transparent to the application servers.

Peer Motion data mobility with Cluster Swap migrates data from one cluster to another, without disruption and without taking systems offline. Using the Cluster Swap feature, users can replace or upgrade entire storage clusters with almost no downtime or disruption to applications. These capabilities increase the agility of virtualized IT to meet changing resource demands in real time, update software, and enhance resource utilization—all while maintaining appropriate service levels.

Non-disruptively scale capacity and performance with a grow-on-demand model, where nodes can be added to the cluster as needed without disrupting application availability. Applications remain online during maintenance events, such as adding nodes and updating software or firmware, for nearly continuous availability.

VSA: Shared storage for VMware without the SAN complexity

HP StoreVirtual VSA Software transforms server disk drives and external Fibre Channel (FC), iSCSI, or DAS storage into a virtual iSCSI SAN. Based on the exact same LeftHand OS as HP StoreVirtual Storage, VSA Software contains the full LeftHand OS feature set, including application-aware snapshot integration and multi-site capabilities, and includes such features as 10GbE and jumbo frame support with scalable performance up to 16 nodes per cluster. The VSA was the first certified virtual appliance for storage on the VMware SAN Hardware certification list.



HP StoreVirtual VSA Software for remote office or branch office scenarios

Branch offices often need the same IT services found in headquarters, but deploying physical SANs can be cost prohibitive.

HP StoreVirtual VSA Storage enables you to create a fully featured, shared SAN inside your VMware vSphere environment. By creating a virtual storage pool on existing servers or on direct-attached storage, VSA Software supports high availability, disaster recovery, and remote management for branch offices without requiring additional storage systems, onsite IT staff, or large capital investments. Remote office solutions with VSA software can also leverage the LeftHand Remote Copy feature to replicate data back to HP StoreVirtual Storage at a central office location.

Simplify: Streamline solution deployment and management

Scalability requires a system to scale without increasing complexity—especially management complexity. HP StoreVirtual enables organizations to deploy and scale virtualization solutions with streamlined, centralized management—whether you want to use HP StoreVirtual Centralized Management Console, or integrate storage management with VMware vCenter Server.

Testing performed by HP demonstrated the following performance benefits when using VAAI for the tasks listed

vSphere Storage API integration provides support for advanced storage operations introduced in VMware vSphere to improve virtual infrastructure performance, agility, capacity efficiency, and scalability in the virtualized and private cloud data centers. vStorage API for array integration (VAAI) functionality supported by HP StoreVirtual includes:

- Hardware-assisted locking removes virtual machine scalability and performance bottlenecks by locking storage at the block level instead of the logical unit number (LUN).
- Full copy off-loads virtual machine deployment, expedited cloning, and VMware Storage vMotion operations to the storage array for faster performance.
- Block zero off-loads large, block-level write operations of zeros from virtual servers to the StoreVirtual array, boosting efficiency during several common vSphere operations.

Table 1. VAAI performance improvements with HP StoreVirtual Storage compared to storage without VAAI support

	Time to completion reduced by	SAN load reduced by	vSphere Hypervisor Server Offload reduced by
Full copy	85%	94%	100%
Block zero	95%	92%	100%
Assisted locking	83%	N/A	N/A

vSphere Storage APIs for Storage Awareness (VASA) detects the capabilities of the storage array volumes and exposes them to the vCenter environment, providing a foundation for quality-of-service-based profile management. VASA support is enabled for HP StoreVirtual Storage through HP Insight Control Storage Module for VMware vCenter Server.

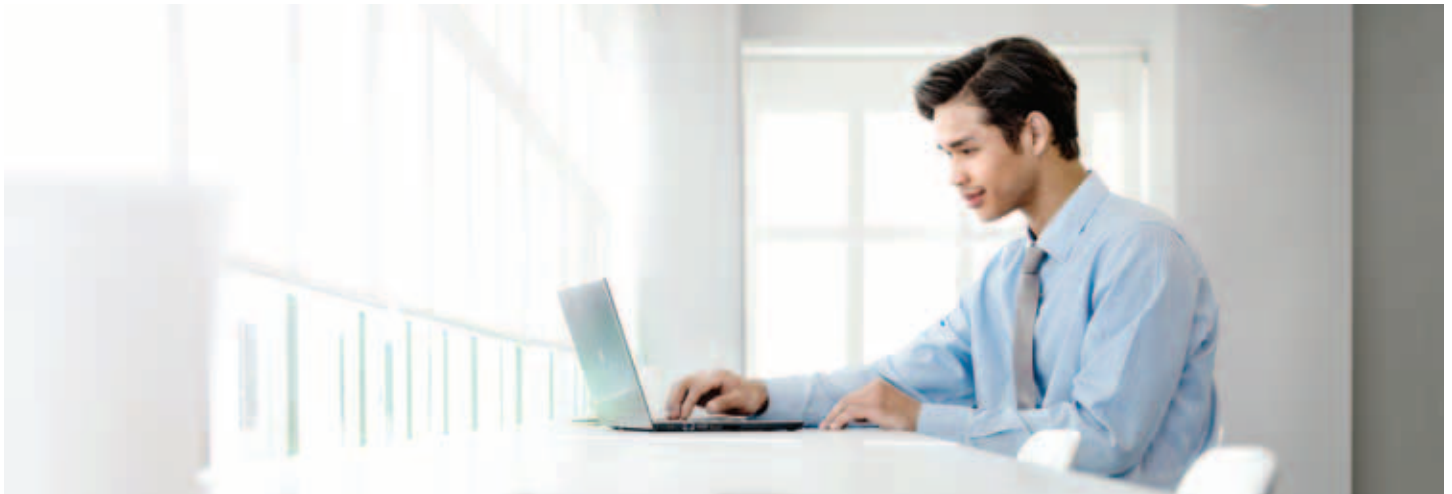
Manage storage through VMware vCenter Server—The HP Insight Control Storage Module for vCenter Server plug-in works with StoreVirtual Storage to enable integrated monitoring and provisioning of HP storage arrays. The HP Insight Control plug-in for VMware vCenter Server delivers powerful HP hardware management capabilities to virtualization administrators, enabling comprehensive deployment, provisioning, monitoring, remote control, and power enhancement directly from vSphere Client, connected to vCenter Server.

Functions such as creating new virtual machines or cloning existing ones can be accomplished through the vSphere Client graphical user interface right alongside host and virtual machine management. Also, the HP Insight Control plug-ins for vCenter Server uniquely provide unified information and management across HP servers, networking, and storage in a VMware environment.

- Combined physical and virtual view in vSphere Client connected to vCenter Server enables you to monitor the virtual machine and HP StoreVirtual Storage status.
- Comprehensive visibility makes storage capability, RAID level, thin or thick LUN provisioning, and replication states visible in vCenter Server.
- Integrated troubleshooting delivers pre-failure and failure alerts from HP StoreVirtual Storage.
- Provisioning from within vCenter Server supports adding, deleting, and resizing volumes, as well as cloning.

LeftHand Application Aware Snapshot Manager introduced with HP LeftHand OS 9.5 supports one-click, application-consistent, point-in-time snapshots for VMware VMFS datastores to enable fast and reliable virtual machine recovery. This feature combines the benefits of native VMware snapshots with the functional advantages of LeftHand hardware-based snapshots, and is fully integrated with LeftHand Remote Copy.

LeftHand Storage Replication Adapter, included with HP StoreVirtual Storage, works with LeftHand Remote Copy and VMware vCenter Site Recovery Manager (SRM) to stage and automate the process of failing over VMs to a remote site. SRM enables you to create recovery plans using vCenter Server, extend recovery plans with custom scripts, perform non-disruptive testing, automate the execution of recovery plans with a single command, and reconfigure virtual machine networking at the recovery site. HP StoreVirtual Storage and SRM work together to help ensure that virtual machines are replicated between sites and can properly failover and failback as needed.



Deploy virtualized infrastructure with the flip of a switch

HP VirtualSystem for VMware is a portfolio of precision-tuned converged systems, tightly integrated with VMware vSphere and VMware vCenter Server to deliver the fastest path to agile and efficient virtualized application solutions. These solutions integrate host servers, management servers, network switches, and storage into a single rack for rapid deployment of an enhanced, easy-to-manage virtual infrastructure. By integrating infrastructure, VMware virtualization software, and services into a turnkey solution, customers across all segments can harness the full potential of virtualization faster than ever before.

HP VirtualSystem solutions provide:

- Fastest time-to-value: Customized for improving VMware performance availability and scalability
- Low risk: Single vendor, single solution with proven VMware technologies across the virtualization stack

Simplify client virtualization with HP Converged Solutions

More businesses are implementing client virtualization to provide users with anywhere access to applications and data, reduce desktop deployment costs, and simplify desktop management. While a typical client virtualization (CV) installation can take six to twelve months from conception to production, our proven methodology and tested blueprints make it possible to shorten that time considerably without compromising performance, operating costs, information security, or user experience.

The HP Client Virtualization reference architectures explain how to integrate all the components you need to support desktop virtualization, including servers, storage, HP Virtual Connect, HP Insight Control, VMware vSphere, VMware View, and plug-ins for VMware vCenter Server. HP CV reference architectures for VMware View capitalize on HP storage, and all the benefits of integrating with VMware virtualization.

Customize your IT lifecycle management, from acquisition of new IT, management of existing assets, and removal of unneeded equipment. hp.com/go/hpfinancialservices

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Save: Cut storage total cost of ownership

In today's competitive business environment, costs are usually a key part of IT decision-making. HP StoreVirtual Storage is designed to be cost-effective from the start, enabling you to buy what you need, and scale seamlessly in the future.

Pay-as-you-grow by scaling capacity and performance as needed. Unlike traditional SAN storage architectures, HP StoreVirtual scales capacity and performance linearly to seamlessly grow with your business. All HP StoreVirtual Storage nodes are pre-customized to balance performance and capacity resources within the node, so customers can start with what they need today, and easily grow by adding storage nodes to their clusters without taking systems offline.

Space-efficient thin provisioning works in conjunction with VMware vStorage Thin Provisioning at a virtual disk level. Thin provisioning efficiencies underlie every SAN function including snapshots, remote copy, volume migration, and asynchronous replication, providing excellent capacity utilization with the potential for significant storage cost savings.

The all-inclusive management suite included with HP StoreVirtual Storage delivers the latest LeftHand OS platform, Centralized Management Console, Failover Manager for VMware, and more—an array of value-added tools required to integrate your HP StoreVirtual Storage with your VMware environment. This removes the need to purchase additional software and services to get your solution up and running, helping to drive down TCO.

Boost your ROI with a SAN enhanced for vSphere

Organizations are rapidly adopting vSphere for server and end-user computing virtualization to increase efficiency, reduce cost and complexity, and support new business capabilities. By increasing server utilization and concentrating business-critical workloads onto hardware, vSphere raises the bar for storage performance and high availability. At the same time, to realize the cost benefits of virtualization, organizations require the flexibility to purchase only as much storage as they truly need at one time, and get a storage solution that reduces management complexity. HP StoreVirtual Storage is designed to deliver on all counts—supporting frictionless scalability, simplified and consolidated management, and powerful features for increasing server and storage utilization.

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