

VMWARE EBOOK

Easily Deployed Software-Defined Storage: A Customer Love Story

vmware®





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The Software-Defined Data Center

In the VMware software-defined storage model, storage services are dynamically composed, aligned on application boundaries, and driven by policy. This is accomplished by abstracting the underlying hardware, similar to server and network virtualization.

The complete software-defined data center brings together virtualized compute, networking and storage. This model gives you the ability to construct converged operations to provide dynamic application services.

The software-defined data center is an open architectural approach that extends the principles of virtualization—abstraction, pooling, and automation—to all data center resources and services. It's an ideal infrastructure for today's applications, because it dramatically speeds up and simplifies provisioning and management of a virtualized compute, networking, and storage infrastructure.

A core component of VMware's software-defined storage strategy is simple and efficient hyperconverged storage through VMware Virtual SAN™. In hyperconverged storage architecture, compute and shared storage resources are delivered through server hardware platform running a hypervisor.

This model shifts storage operations from today's array-based approach, to a more efficient and flexible operational model for storage in virtual environments. As a result, storage services are automatically and precisely aligned to application requirements, saving you time and money.



VMware Virtual SAN

VMware Virtual SAN is radically simple, hypervisor-converged storage for virtual machines (VMs).

The hardware-independent, scale-out architecture leverages x86 servers to drastically lower overall storage costs and provide the flexibility to scale in a linear, predictable manner. Because of its hyperconverged architecture and the fact that it's built into the VM kernel, Virtual SAN optimizes the I/O path, minimizing impact on the CPU. The distributed architecture allows elastic, non-disruptive scaling for both capacity and performance. This provides linear and granular scaling, with affordable investments distributed out over time.

By pooling server-attached flash-based storage, it can deliver high performance and predictable response times. It can also be configured as hybrid or all-flash storage.

Because Virtual SAN is built into the hypervisor, it delivers superior performance, along with better reliability, scalability and lower total cost of ownership.



A Proven Enterprise Platform

VMware Virtual SAN delivers enterprise-class storage for any virtualized application, including business-critical applications. A highly resilient datastore prevents data loss in the event of a disk, host, network, or rack failure.

Seamless integration with VMware vSphere® makes it the simplest storage platform for VMs. Because Virtual SAN is embedded directly in the hypervisor, you don't need to install any additional software and can enable it in just a few clicks. Manage Virtual SAN through the vSphere Web Client and

vCenter Server through the same interface you already know. You can control storage provisioning and day-to-day management of storage SLAs through flexible VM-level policies. Virtual SAN dynamically self-tunes and load balances to adapt to changes in workloads and ensure that each virtual machine has the storage resources it needs. This hypervisor integration and policy-driven approach automates manual storage tasks and makes storage management in virtual environments easy and seamless.



Proven Results: Oregon State University

With the increasing use of technology in the curriculum, the loads placed on the Oregon State

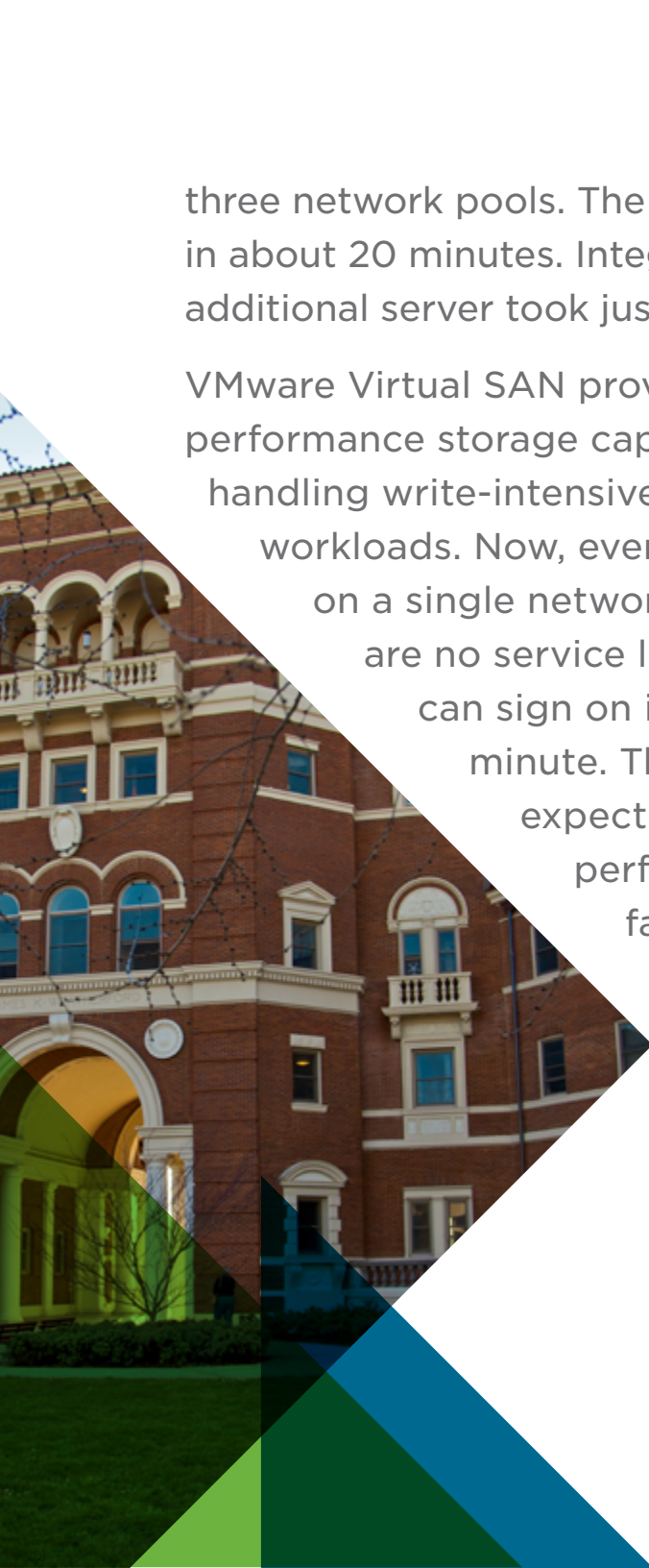
University School of Business computer lab infrastructure were outpacing bandwidth. Their existing storage just couldn't handle peak-level virtual desktop infrastructure (VDI) workload traffic.

The three-person IT department tried to manually balance the load over four servers and 12-plus network pools, but the system still experienced a loss of service during peak usage, requiring as many as 20 minutes for users to log in. Beyond that, system maintenance was extremely time-consuming, with a full reset of the virtual desktop taking as long as 10 hours.

“ Before Virtual SAN, we had no ability to scale. Now...it's a piece of cake; if I want to add additional capacity, I just add an additional server. I don't have to worry about whether my SAN can grow or not. ”

— Alan Sprague, System Administrator,
Oregon State University

The university needed a new storage system online before the Summer 2014 class session began so it could be tested and refined with lighter workloads. With help from VMware technical support and other early adopters of the product, they installed the Virtual SAN solution for more than 190 desktops over just



three network pools. The pools deployed in about 20 minutes. Integrating an additional server took just four hours.

VMware Virtual SAN provided high-performance storage capable of handling write-intensive VDI workloads. Now, even with 60 users on a single network pool, there are no service losses, and users can sign on in under a minute. The university expects the same performance this fall when the system is at its full capacity of 170 users.

Plus, students and faculty will enjoy uninterrupted service, even during peak load periods.

Managing storage is also far easier through the VMware vSphere Web Client, giving the IT team time to work on other critical tasks, such as moving the labs to a brand new facility this fall. This will be simpler because the labs can now be recomposed in less than two hours. And instead of having to do it 12 times, they can do it just three times, which means the number of human errors decreased by an order of magnitude.

Firmware upgrades will also be less risky because there is no single point of failure, unlike with a traditional SAN. Similarly, expanding the system is as easy as adding an additional server, a budget-friendly solution.



Proven Results: Doe Fund

The non-profit Doe Fund wanted to use VDI to drive cost savings in a new facility. They also wanted efficiency, ease of use, and the ability to expand quickly when needed.

“There’s definitely an ROI from a cost-savings perspective. It removes that additional layer of complexity. And it allows us to roll out—very cost-effectively—additional capacity, both in compute and in storage—really whenever we want.”

— Ryan Hoenle, Director of IT,
The Doe Fund, Inc.

They made the decision to use Virtual SAN because it allowed them to do all that, and to do it cost-effectively. Their IT director

observed that it gives them the same storage flexibility that they get in their computing environment from VMware.

With Virtual SAN, the Doe Fund got redundancy where they need it, without paying for redundancy where they don’t need it. They estimate Virtual SAN saved them as much as 65% compared to any other available storage solution. Those savings allowed them to implement VDI for their whole facility.

The rollout was simplicity itself, saving the Doe Fund time and money. They just ran through standard configuration items, clicked “VSAN,” set up the size details, specified storage SLAs, and clicked “go.” Plus they have a lot of confidence in this solution. As the IT director observed, “Every product that we’ve implemented from VMware has been a success. You just have to look at their track record.”



Proven Results: Itrica

Itrica has a long history of providing compliant solutions to the medical industry, as well as cloud hosting solutions. But to operate large multi-tenant hosting environments, they needed to deliver one storage solution that met the needs of all of their customers. They also needed a solution that was elastic and flexible so they could grow with their customers and deliver the I/O requirements that they need.

Standing in the way of that was the lack of a converged storage infrastructure.

Using VMware Virtual SAN, Itrica was able to converge storage and compute infrastructure into single servers so they could more efficiently leverage datacenter space, use less power, and less cooling.

With the modular Virtual SAN approach, Itrica gets a converged storage solution that's spread across their host machines, replicating data all the time.

By minimizing the I/O path, they're able to achieve best-in-class performance on this converged platform.

Policy-based storage management with the Virtual SAN technology lets Itrica define storage policies for each customer, and then replicate those policies over time.

“ With Virtual SAN, we now have the capability to right-size storage solutions for our customers. We can custom engineer I/O and scale on demand as their needs grow. Virtual SAN is providing the opportunity for storage that vSphere has provided for compute. ”

— David Sampson,
Chief Technical Officer, Itrica





Proven Benefits

Virtual SAN simplifies storage for virtual machines with faster provisioning and simplified storage operations through the vSphere console. Control and automation of storage service levels allow you to change parameters as application needs change. Self-tuning capabilities let Virtual SAN automatically rebuild and rebalance storage to align with assigned service levels.

It delivers predictable, high performance with sub-millisecond response times. And can scale up to 64 hosts/cluster and 200 virtual machines/host. Scale-out is accomplished directly through

the hypervisor. Plus you can easily meet workload demands by scaling elastically and linearly by adding disks, flash, or hosts.

Finally, Virtual SAN drastically lowers storage costs by using inexpensive, industry-standard server components. Because you can easily scale, you eliminate large up front investments. And simplified storage management lowers ongoing operating costs, too.

Equip Your Enterprise to Better Support Business-critical Applications

VMware Virtual SAN provides a wealth of benefits:

- » Architecture Choices: A Virtual SAN all-flash architecture tiers Software-Defined Data Centers to create a write-intensive, high-endurance caching tier for the writes; and a read-intensive, cost-effective tier for data persistence. This reduces the overall cost of the all-flash architecture. The configuration also delivers extremely high IOPs of up to 90K per host, with predictable low latencies.
- » Enterprise-level scale and performance: Virtual SAN delivers enterprise-level scale and performance, with scaling up to 64 nodes per cluster for both hybrid and all-flash configurations.

- » Improved data services: A new on-disk format enables higher performance characteristics and efficient, scalable snapshots and clones.

See How VMware Virtual SAN Can Work for You

Learn more about how VMware Virtual SAN delivers high performance and scale-out storage for enterprises like yours. See the full stories at www.vmware.com.



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