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Five Reasons Why You Should Pair VSAN and View

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Introduction

VMware Virtual SAN (VSAN) is an extremely attractive infrastructure option for supporting your virtual desktop infrastructure (VDI) using VMware View for many reasons including:

1. **Cost Savings:** No huge SAN investment as in the past.
2. **Better Performance:** Utilizing local SSD for read cache and write buffer.
3. **Easy to Set Up:** Eliminate storage and networking errors with straightforward configuration.
4. **Scalability:** Start small and grow seamlessly.
5. **VM Protection:** Using storage policies you can achieve the desired level of protection for each VM.

Overview of Virtual SAN and VMware View

Historically, virtualization projects require expensive and complicated shared storage to achieve VMware features such as high availability (HA), Distributed Resource Scheduler (DRS), and vMotion. Now it is possible for a VSAN Cluster to be created leveraging both the local magnetic SAS/SATA hard drives as well as the local SSD on each host to be presented as shared storage for the hosts in the VSAN cluster. VSAN is a software-defined storage solution built right into the hypervisor.

This technology lends itself very well to the VDI environment from both a cost savings and performance perspective compared to the use of traditional storage solutions. In this white paper, I shall explain each of the five reasons why VSAN might be the right choice for you with your VMware View implementation.

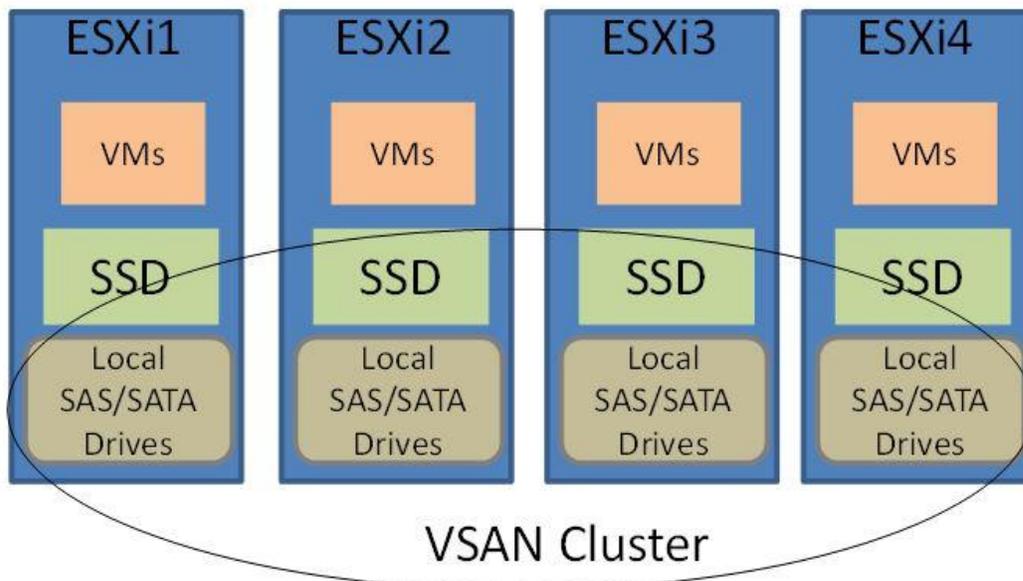


Figure 1: VSAN overview

Reason #1: Cost Savings

While each VDI implementation is unique, many factors come into play when designing and planning your VDI project. VSAN and VMware View offer an attractive solution from a financial perspective, perhaps saving you as much 50 percent compared to a traditional SAN infrastructure supporting your VDI environment.

Large, modern storage arrays are easily in the \$100,000s and into the \$1,000,000s before you know it. These complicated arrays require skilled technicians to configure and maintain and are often the source of unwanted latency, perhaps based on configuration errors or hardware limitations of the array.

The up-front investment in a traditional SAN has been an obstacle for many organizations moving forward with their VDI implementation. VSAN now makes the leap into VDI a much safer strategy than in the past as you start with as few as three ESXi hosts and scale up each cluster to thirty-two hosts. Additionally, you have a tremendous amount of flexibility for the hosts in terms RAM, CPU, networking, and disks.

In short, you will likely spend more on each host you purchase but you will save greatly on the elimination of the traditional storage requirement.

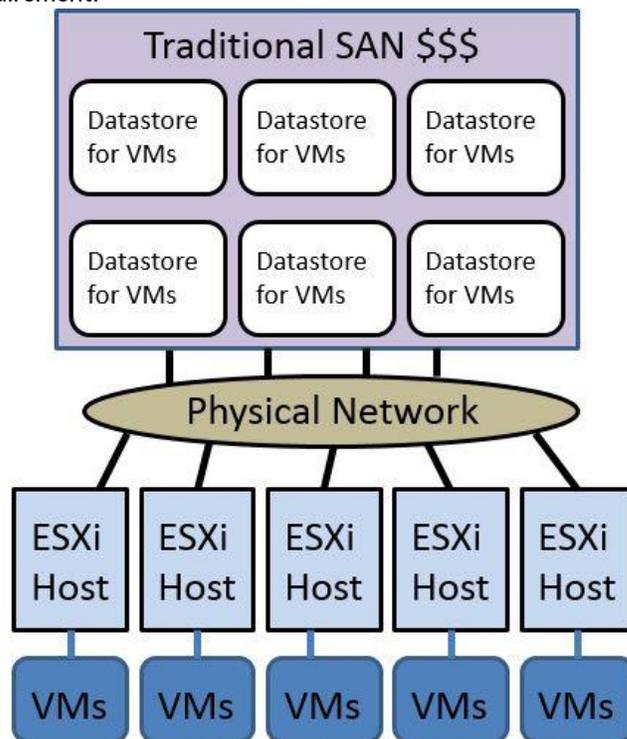


Figure 2: Expensive traditional VDI implementation using traditional SAN

Reason # 2: Better Performance

In addition to the cost savings of using traditional shared storage, there are likely performance benefits of using VSAN for VDI. Some of these benefits include:

- First and foremost, everything is "close to home." Meaning a VM is accessing its VMDK file on the local host that it is running on, eliminating latency through the network and storage array.
- Each host has a combination of traditional magnetic SATA/SAS drives as well as SSD.
- Traditional SAS and SATA drives support IOPS in the 150-200 range where SSD can be in the thousands to millions of IOPS range.
- Each host utilizes 30 percent of local SSD for read cache and 70 percent of local SSD for write buffer, which greatly improves performance in the virtual desktop environment. This unique feature also helps reduce or eliminate "boot storm" problems. Reduce the number of SAN configuration errors. Most configuration errors in your vSphere environment occur in the setting up a traditional SAN architecture.
- You have the opportunity to utilize Network I/O Control (NIOC) with distributed virtual switches. Quality of service (QoS) for types of traffic and individual VMs allow you to prioritize VM traffic under periods of network contention.

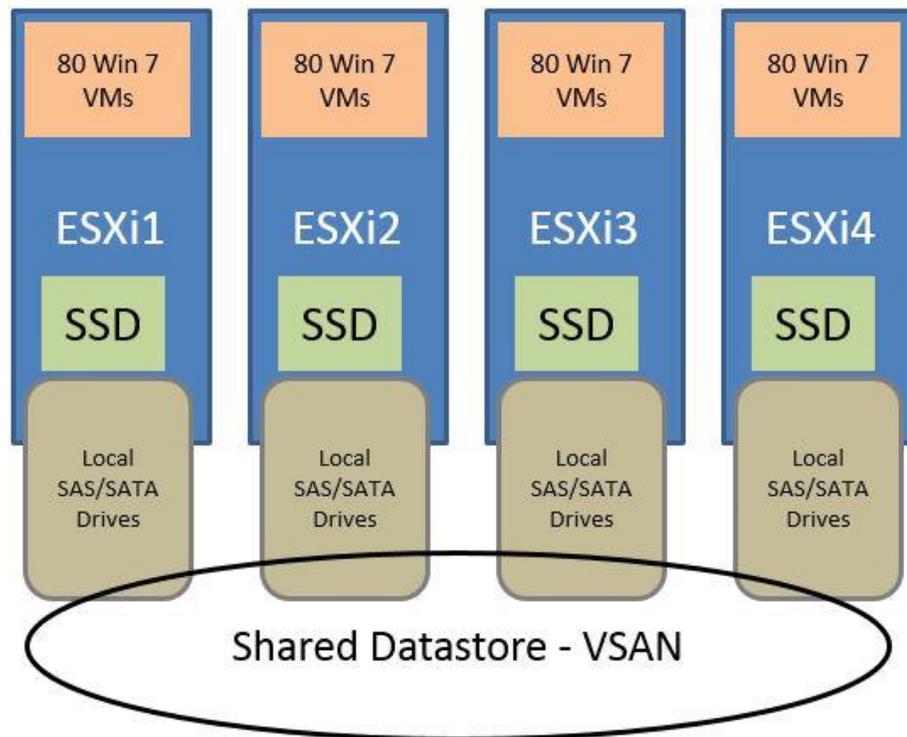


Figure 3: Performance benefits of VSAN

Reason # 3: Easy to Set Up

Setting up your VSAN is straightforward—especially when compared to a tradition SAN. Follow these steps for your implementation:

1. **Prepare cluster:** Disable HA on the cluster so that you can set up the VSAN. Then re-enable when you are finished.
2. **Networking needs:** You can use either Standard or Distributed Virtual switches. If you are using a Distributed switch for the first time create the switch, and create the port group for the VSAN. Connect the switch to the available NICs and use NIC teaming.
3. **Prepare each host:** Create a VMkernel port for each host in the cluster with the check box for VSAN and provide the appropriate IP address and subnet mask.
4. **Set up storage:** Set your RAID controller to Pass-Through Mode and select Automatic Mode for the cluster. This will automatically discover all of the local SAS/SATA and SSD storage and create a disk group from it. This will then contribute to the overall VSAN cluster to be presented as shared storage for the hosts in the cluster.
5. **QOS needs:** Additional networking features such Network I/O control and NIC teaming should be explored and configured for your needs.
6. **Storage policies:** You have the option of setting up VM Storage Policies, which allows you to provide different levels of protection (Host Failures to Tolerate) and greater performance (Disk Stripe Width 0), which will be discussed in more detail later.

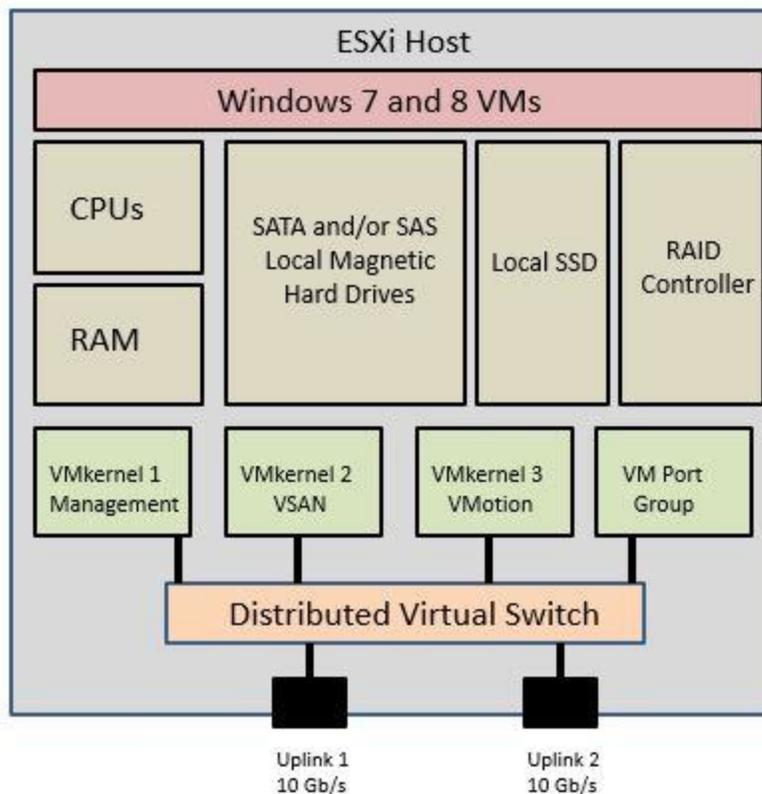


Figure 4: VSAN installations requirements

Reason # 4: Scalability

A major benefit of utilizing VSAN is the flexibility it offers your organization as your VDI project grows and changes. Some of the things to help you decide whether VSAN is right for you include:

- You can start with as few as three ESXi hosts and increase up to thirty-two hosts in a VSAN cluster.
- You can start with low amounts of storage SAS/SATA and SSD on each host and add as your needs change.
- Ideally, all of the hosts have identical hardware including: CPU, RAM, networking, SAS/SATA drives, and SSD for many reasons including planning your failover capacity for HA and maintenance headroom.
- As you define VM storage policies for both redundancy (host failures tolerated) and performance (stripe width) you can adapt your configuration for your needs as your environment evolves.
- You can also configure your local storage manually and create up to five disks groups per host to achieve your redundancy and performance requirements. A single cluster can have to 4.4 petabytes of total storage capacity for the single VSAN cluster.

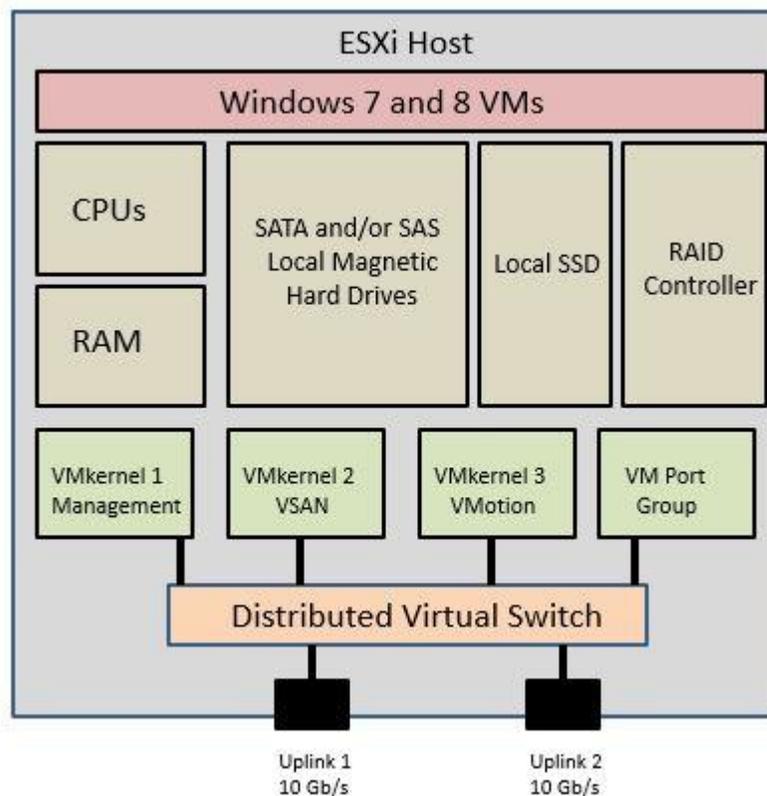


Figure 5: Your VSAN cluster can as your needs change

Reason # 5: VM Protection and Performance

VSAN offers you a tremendous amount of flexibility for your view implementation regarding redundancy and performance. You will achieve this using storage policies in VSAN. In the past you relied on the storage administrator to set up various RAID configurations to deal with hardware failures and performance requirements.

Storage Policies have the following characteristics:

- Contain one or more "rules" per storage policy, which will then be utilized when provisioning VMs.
- From a protection perspective you can decide how many "replicas" for the VMDK object. Meaning you decide how many host failures you will tolerate for the VM.
- From a performance perspective you decide how much SSD is to be allocated to a given VM and how many stripes to create for each replica.

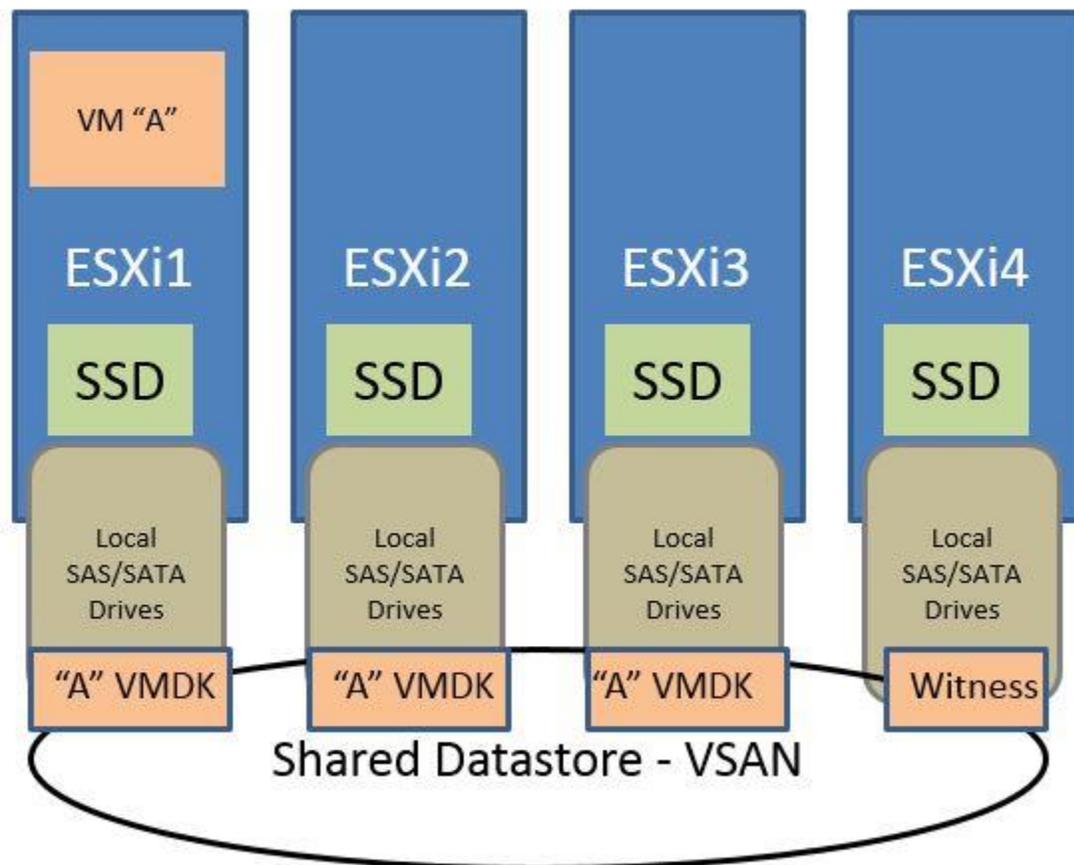


Figure 6: Protection and performance with VSAN

Conclusion

VSAN and VMware View can offer cost savings and performance benefits compared to traditional SAN implementations for VDI. If you are starting a new desktop virtualization project, it would be wise for you to take the time to explore your options and compare VSAN to other options.

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About the Author

Matt Feeney has been in the IT industry since the 1980s. Matt is currently an instructor for Global Knowledge and focuses on teaching VMware and Networking classes.