VMware vSphere®
Storage Appliance 5.1
Cluster Service (VSACS)
Deployment
Recommendations
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Introduction

The VMware vSphere® Storage Appliance Cluster Service (VSACS) is a component of VMware vSphere Storage Appliance. The VSACS is designed to function as a member of a vSphere Storage Appliance cluster, to provide availability in the event of a single cluster member failure and to ensure that the cluster remains online.

This white paper discusses the scenarios in which the VSACS is used and how one can successfully configure and deploy it in various small and midsized business (SMB) and remote office/branch office (ROBO) scenarios.

vSphere Storage Appliance Cluster Service

The VSACS is part of vSphere Storage Appliance versions 1.0 and 5.1. Typically the service is installed on the same system as the VMware® vCenter Server™ as part of the vSphere Storage Appliance manager installation process.

The service is designed to function as a member of a two-node vSphere Storage Appliance cluster, providing cluster service availability in the event of a single vSphere Storage Appliance failure. This ensures that a majority of the cluster members remain online and the vSphere Storage Appliance cluster remains in operation. The VSACS is not required in three-node cluster configurations.

The VSACS can be installed on a standalone physical system or virtual machine. Installation is supported for two operating system (OS) platforms, Windows and Linux, and a variety of their respective OS versions. Downloads for both OS platforms are available on the VMware Web site.

Frequently check the VMware Hardware Compatibility List (HCL) for the latest updates regarding supported hardware and software for vSphere Storage Appliance 5.1.

vSphere Storage Appliance Cluster Service Deployment Scenarios

New feature enhancements to the vSphere Storage Appliance 5.1 architecture enable the VSACS to be deployed in two different configuration scenarios:

• Two-node central office deployments
• Two-node ROBO deployments
Two-Node Central Office Deployments

In central office deployment scenarios, the VSACS can be deployed in a variety of ways. Users should be aware of how the deployment of the service impacts the overall vSphere Storage Appliance cluster solution from operational and cost standpoints.
The VSACS can be successfully deployed on any of the following options:

- Dedicated or shared physical system
- Dedicated or shared virtual machine
- Dedicated low-cost appliance

Each deployment option presents unique operational and cost trade-offs, but users should be aware of the limitations from a supportability standpoint.

Consider the following with regard to the installation, deployment, and supportability of the VSACS for a two-node vSphere Storage Appliance cluster configuration in central office scenarios:

- The VSACS cannot be installed on the same virtual machine that is running the vCenter Server instance if the virtual machine is hosted by any of the VMware ESXi™ hosts that are members of the vSphere Storage Appliance cluster.
- When deploying the VSACS in a virtual machine, the virtual machine should not be hosted by any member of the vSphere Storage Appliance cluster.
- When deploying the VSACS in a virtual machine, the virtual machine should not be stored on local or vSphere Storage Appliance shared storage of any of the members of the vSphere Storage Appliance cluster.

**Central Office Deployment Recommendations**

- Consider installing the VSACS on a low-cost appliance that meets the service’s software and hardware requirements.
- Consider installing the VSACS on a separate virtual machine hosted by an ESXi host that is not a member of the vSphere Storage Appliance cluster.
- Consider hosting the VSACS in a virtual machine on any system capable of running VMware Fusion® or VMware Workstation™.
- Do not install multiple instances of the VSACS on the same system.

**Two-Node Remote Office/Branch Office (ROBO) Deployments**

A new feature introduced with vSphere Storage Appliance 5.1 enables the VSACS to be decoupled from vCenter Server and installed on a separate system. The new capabilities provided by this feature enable vSphere Storage Appliance 5.1 to support ROBO deployments and to address the ROBO deployment restrictions that were present in vSphere Storage Appliance 1.0.

In ROBO scenarios, the vCenter Server instance that is located at a central site manages the vSphere Storage Appliance clusters located at remote sites. This means that the VSACS must be deployed locally at each branch office to provide optimal availability.
Figure 3. Remote Office/Branch Office Deployment Scenario

For ROBO scenarios, VSACS deployment options are identical to those supported for central office deployments:

- Dedicated or shared physical system
- Dedicated or shared virtual machine
- Dedicated low-cost appliance

Consider the following with regard to the installation, deployment, and supportability of the VSACS for a two-node vSphere Storage Appliance cluster configuration in ROBO scenarios:

- When deploying the VSACS in a virtual machine, the virtual machine should not be hosted by any member of the vSphere Storage Appliance cluster.
- When deploying the VSACS in a virtual machine, the virtual machine should not be stored on the vSphere Storage Appliance cluster shared datastore.
- The VSACS must reside on the same network segment or subnet as the other members of the vSphere Storage Appliance cluster.
- Deploying multiple instances of the VSACS for availability is not recommended or supported.

**ROBO Deployment Recommendations**

- Consider deploying the VSACS on a low-cost appliance that meets the service software and hardware requirements.
- Consider hosting the VSACS in a virtual machine on any system capable of running VMware Fusion or VMware Workstation.
- Consider maintaining an active network solution for communication between the vCenter Server instance and vSphere Storage Appliance manager located in the centralized management location.
vSphere Storage Appliance Cluster Service Requirements

As is mentioned previously in this document, the VSACS is offered as a separate download from the VMware Web site.

Much like any other software application, the VSACS contains its own set of requirements, including OSs, network communication ports, hard disk space, and CPU and memory.

This section discusses the minimum requirements for the VSACS and provides some recommendations.

Frequently check the VMware HCL for the latest updates regarding supported hardware and software for vSphere Storage Appliance 5.1, including information on the VSACS.

Operating Systems

At this time, the VSACS installation is supported on two OS platforms, Windows and Linux. Each platform contains various versions. The following versions are supported currently:

Windows

• Windows 7, 64-bit

Linux

• Red Hat Enterprise Linux, 64-bit
• SUSE Linux Enterprise Server, 64-bit
• CentOS, 64-bit

Network Communication Ports

The VSACS uses its own set of predefined network communication ports. Before starting the VSACS service, ensure that the following ports are not occupied by any other process and that they are appropriately configured on the OS and also on the local or wide area network (WAN):

TCP Port Numbers and Names

• 4330 – VSA Cluster Client Port
• 4331 – VSA Cluster Server Port
• 4332 – VSA Cluster Election Port
• 4333 – VSA RMI Port
• 4334 – VSA JMS SSL Port
• 4335 – VSA JMS Port
• 4336 – VSA HTTPS Port
• 4337 – VSA Upgrade Port1
• 4338 – VSA Upgrade Port2
• 4339 – VSA Upgrade Port3
Hard Disk Space
The VSACS is a fairly small Java Archive (JAR) program, and the majority of the space is utilized for storing logs. The following is the recommended hard disk space:

**Hard Disk Space**
- 2GB or greater local disk capacity

CPU and Memory
VSACS CPU requirements are not very demanding. Any modern, current CPU will suffice if it is based on a 64-bit architecture and has a speed greater than 500MHz. For memory-related requirements, the key is to avoid memory swapping for the system hosting the service. Memory-swapping events can cause service outages if the system pauses for more than two seconds while waiting to access memory. The following are the recommended CPU and memory configurations:

**CPU MHz**
- 500MHz Intel 64-bit architecture

**Memory**
- Between 512MB and 1GB, avoiding memory swapping

Recommendations
The VSACS can be installed on many different OS versions, but to remain in compliance with VMware support, only those listed in this document and on the VMware HCL are recommended.

If the VSACS will be deployed on a low-cost dedicated appliance, ensure that it is compatible with the software and hardware requirements.

In addition, before starting the service, ensure that no other application or network service is utilizing any of the ports required by VSACS. Also ensure that network and operating OS firewalls are configured to enable communication for the required ports. This is imperative, especially for ROBO scenarios where there is communication with the vSphere Storage Appliance manager across the WAN.

If possible, allocate more than 2GB of local storage for the system running the VSACS. The capacity is used primarily for storing logs. Access to greater capacity can be advantageous for troubleshooting purposes.

When the VSACS will be deployed on a virtual machine, reserve 100 percent of the virtual machine’s memory and at least 500MHz of the CPU time.

These reservation settings are recommended, to avoid compute resource contention events that can disconnect the service from the cluster and render the vSphere Storage Appliance cluster unavailable.
VMware vSphere Storage Appliance 5.1 Cluster Service Deployment Recommendations

Conclusion

There are a number of significant factors to consider when working with vSphere Storage Appliance 5.1 cluster deployments. Two-node deployments require the use of the VSACS. Knowing and understanding the service-supported deployment scenarios, as well as the resource requirements, are instrumental to successful implementation of the solution.

Figure 4. VSACS Virtual Machine Reservations
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