



Citrix and Sanbolic Collaborate to Deliver Cost, Security, Productivity Benefits for the Department of Energy

Sanbolic Case Study



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Citrix and Sanbolic products have been successfully integrated and deployed within the U.S. Department of Energy (DOE), delivering significant cost savings and productivity gains while meeting important security objectives.

The Citrix and Sanbolic solution enabled the DOE to:

- eliminate local storage at the desktop – Classified Removable Electronic Media – thereby improving data security
- eliminate the cumbersome, time-consuming requirement of checking hard drives in and out
- insure that desktops are consistently and automatically backed up
- simplify desktop application deployments and operating system updates
- reduce IT desktop support costs and time by centralizing management and administration of all desktop applications, data, and operating system images
- guarantee that desktop PCs remain highly available
- preserve users' system compatibility, functionality and performance.

With a multi-billion annual budget, the DOE is involved in a range of national security research and development projects. Faced with numerous desktop data and security management issues, the DOE has placed a priority on moving to diskless workstations in classified environments by 2009. Enabling diskless workstations was an aspect of the Citrix/Sanbolic solution.

SOLUTION OVERVIEW: CITRIX PROVISIONING SERVER®, SANBOLIC MELIO FILE SYSTEM AND SAN STORAGE

The Citrix Provisioning Server(PVS®), together with Sanbolic's Melio FS and a SAN storage component, provided an end-to-end secure, high availability diskless desktop solution that leveraged the DOE's existing and new storage area network (SAN) investments. The solution provided easy scalability of data storage, improved data security, and better manageability of the operating system, applications and data, leading to reduced support burden and reduced costs.

Citrix PVS streams operating systems and applications from network storage, providing centralized, secure management and administration of all desktop user data, applications, and OS components. Citrix's High Availability feature insures that users have fault-tolerant access at all times. This capability is provided by working with highly available, extremely reliable SAN storage with the redundant native Citrix server cluster, eliminating all single points-of-failure and by using Citrix software features that provide real-time failover at the desktop client. In the event of an active component failure, the systems will automatically failover to alternate components to ensure uninterrupted, transparent operations at the desktop.

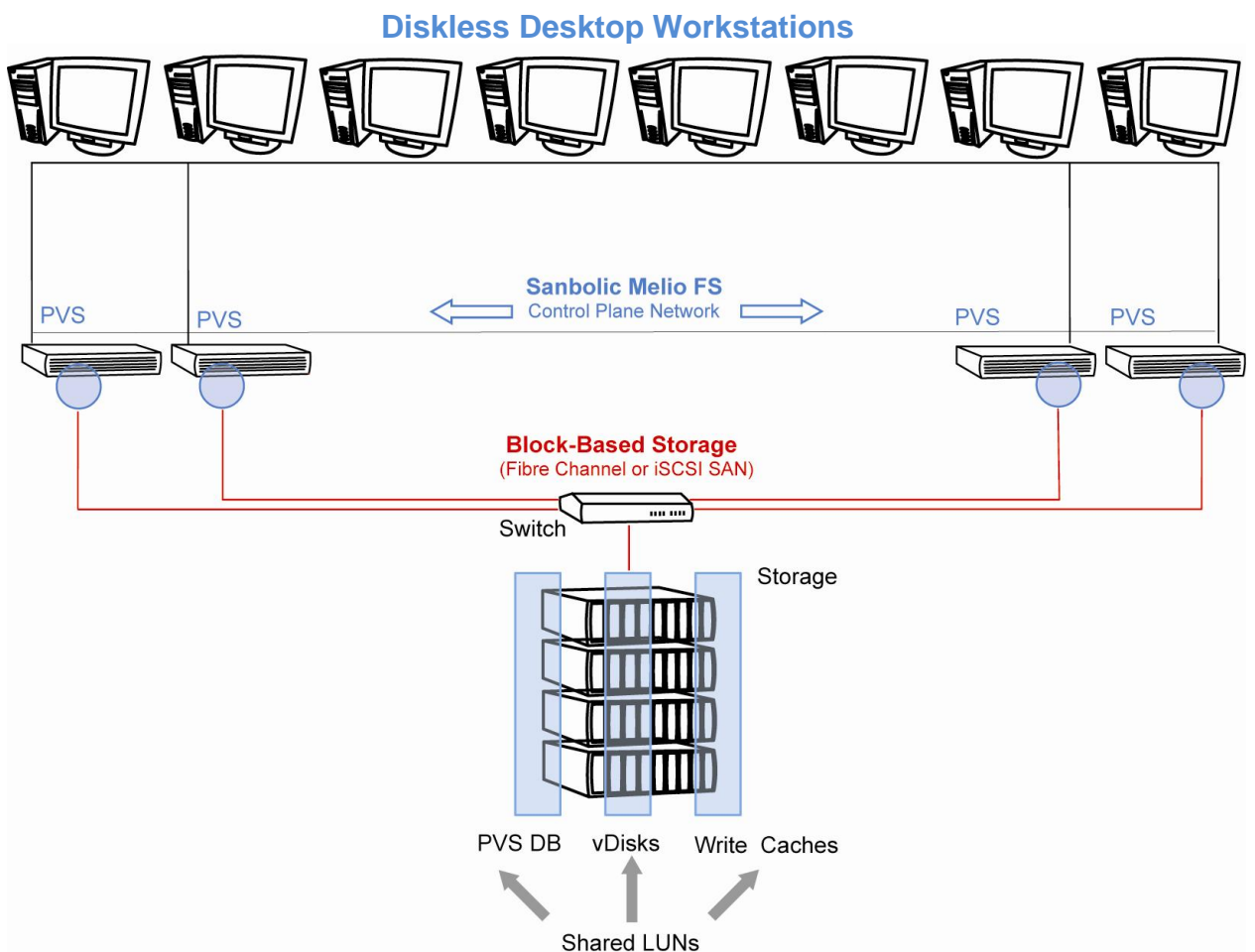
Sanbolic Melio FS shared file system efficiently manages access to high availability storage required by redundant Citrix servers. Sanbolic Melio FS removes the traditional one-to-one relationship that exists between a storage partition (LUN) on the SAN and a server, allowing multiple servers to access a partition as a large, shared read/write volume simultaneously. As a result, Citrix servers can all share this large, high-performance highly available partition for the Citrix configuration database, Virtual Disks, and WriteCache for the desktop machines.

Sanbolic enables an active-active shared connection to storage, thus ensuring that all server hardware is able to support Citrix system storage operations simultaneously and at all times. Additionally, Sanbolic helps strengthen data security and isolation by enabling storage to be separated into separate volumes.

Each volume can be managed for access only by pre-defined clients and servers, preventing access by unauthorized personnel. In the event one of these servers fails, an administrator can easily reassign access to the secure volume, guaranteeing high availability capabilities remain intact.

Utilizing the features of the Citrix and Sanbolic solution, the DOE has improved the security of its data without complicating the day-to-day work of employees. Previously, security procedures required that computer hard drives be checked in and out each time a user moved to/from a PC. The collaborative solution allows a PC's hard drive to be permanently removed and its data stored on a SAN without any impact on the PC's processing power or functionality. As a result, data is secured without any impact on employee productivity, incompatibilities or performance issues with applications.

Delivering a Highly-Available Citrix PVS using Melio FS



OVERVIEW OF CITRIX SOLUTION

Citrix PVS software enables client computers to network boot a server or desktop into Windows 2000, XP, Vista, Server 2003, or Server 2008 and streams operating systems and applications on-demand to the client. Clients utilize the full performance of their local processors and peripherals while simultaneously reaping the benefits of centralized operating-system and application delivery and management. Citrix PVS is a patented, software-only solution requiring no modifications to the computer and is transparent to the OS, applications and system architecture. Citrix enables equipment to operate without the need for local persistent storage devices such as hard drives, RAM disk, or bootable CDs. Instead, virtual disk images (VDisks) are created on a centrally located server and data (operating systems and applications) is streamed to the client. Citrix PVS provides options that allow for read-only and locally or network-cached VDisk images. The Citrix Software-Streaming Platform allows organizations to improve employee productivity, increase the dependability of their PCs and servers and simplify the day-to-day management of their systems.

OVERVIEW OF SANBOLIC SOLUTION

Sanbolic's Melio File System provides high-performance, shared access to SAN storage. Multiple servers have simultaneous read and write access to a common file system. Sanbolic's products enhance the Citrix solution by enabling an active cluster of Citrix servers; each server with its own file image or shared access to a common file image. In the event of a server failure, any server can continue to provide service while accessing the image. Melio is a symmetrical architecture that runs on each host, so there is no additional hardware required and there is no single point of failure. Each host is an equal member of a dynamic cluster. Melio FS has no file size limitations, and is very intuitive for any Windows administrator. Sanbolic also provides LaScala SAN volume manager that can centrally manage storage across arrays, the volume structure, and host access to volumes. Volume access rights can be assigned using Windows native security tools. Volumes can be expanded on the fly without re-booting and the storage and bandwidth of multiple storage arrays can be aggregated into a single pool of centrally managed storage..

For additional information about the Sanbolic Melio File System please visit www.Sanbolic.com or email info@sanbolic.com

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