

I CAN REMEMBER WHEN THERE WAS ONLY ONE WAY TO BOOST CAPACITY



Storage Virtualization: Key Questions and Answers from Sun

Storage virtualization has emerged as a powerful and practical way to get more from existing storage systems, consolidate resources, and simplify the environment. But what exactly is storage virtualization, how does it deliver the promised benefits, and how do Sun's storage virtualization solutions compare to other market offerings? This document answers these questions and more—helping you structure your thinking about the opportunities for storage virtualization in your environment.

1. What is storage virtualization?

Storage virtualization is the abstraction of the hardware resources into a virtual representation of those resources. Virtualization decouples physical storage systems from specific data-driven workloads, freeing you to allocate storage resources on demand. This includes the pooling of multiple physical storage resources into a single “virtual” storage resource that can be centrally managed or logically partitioned into virtual machines. Virtualization can also be used to have a disk device present itself to the application as a tape device.

2. What are the advantages of virtualizing storage?

The key advantage to resource pooling is the ability to consolidate multiple physical systems into a smaller number of more highly utilized, more manageable systems. Resource partitioning provides the ability to allocate a portion of the storage system's capacity and performance to certain applications to meet service level agreements. Virtual tape simplifies time-consuming tasks such as backup, recovery, and archiving, saving time and money. Storage virtualization can also increase the overall performance and availability levels of the storage environment while enabling you to manage centrally and allocate resources on the fly.

3. What are the options for storage virtualization?

There are virtualization technologies to address SAN (disk and tape), NAS, file system, and backup layers. End users have at least four control-point choices for the virtualization architecture:

- Virtualization can be provided by software installed on the host or on all application hosts
- The virtualization engine can be an “out-of-band” solution that passes the virtual volume descriptions to the application hosts
- The virtualization engine can be an “in-band” solution located in the data path so that every request travels through that device
- Virtualization can be provided by switches and array controller microcode

4. What are the key issues and considerations with these four virtualization options?

- Host based: This approach is the simplest, but can be slow and subject to failure
- Out-of-band: Could be susceptible to hacker manipulation of device drivers
- In-band: Can introduce higher overhead and latency issues as a result of trying to broker all I/O requests between many servers and storage arrays
- Switch or array-controller provided: In general, these subsystems are proprietary and work only with one vendor's products

5. How do I manage a virtualized storage environment?

Data seems to be growing faster than data management capabilities. However, virtualization consolidates many tasks under a single interface and makes it possible to close the “storage management gap.” Through virtualization, many repetitive, time-consuming tasks can be automated or centralized, including backup/recovery windows, data and file archiving, and storage resource allocation.

6. How is storage virtualization different from server virtualization?

Similar concepts, different technologies. Both server and storage virtualization technologies are designed to decouple physical systems from specific workloads; both are aimed at simplifying the environment by enabling consolidation and on-the-fly resource allocation. Server virtualization solutions typically encapsulate operating systems and application into virtual servers; storage virtualization solutions are aimed at optimizing data storage environments through storage pooling, resource partitioning, or having a disk system emulate a tape system.

7. What's the difference between a storage grid and virtualized storage?

A storage grid essentially transforms storage into a utility—a resource that any user can plug into at any time and use in any quantity. Virtualization and the storage grid concept are interconnected because the capabilities that enable you to draw from a single pool of storage are exactly the kind of capabilities that you need to use storage more as a utility. In other words, a storage grid could be a very large application of storage virtualization capabilities.

8. If I virtualize storage, won't my applications slow down?

Sun's storage experts can help you create a dynamic, tiered storage infrastructure that aligns the system resources to the value of the data as it changes over time. Frequently used data remains on high-performance systems while less frequently used data is stored on more cost-effective systems. Data can be moved from tier to tier automatically, according to user-defined policies.

9. How do I develop a plan for virtualizing storage?

Base your plan on the following questions: What do you want to accomplish and what are your biggest pain points? If they are in the disk, server, network, or tape area, prioritize where the biggest issues and expenses exist in terms of management. Whatever your priority is, Sun's virtualization experts can help you create a solution that meets your unique needs.

10. I have multiple applications and platforms in my environment. Is there a storage virtualization solution that works across heterogeneous environments?

Yes, Sun's storage virtualization solutions can work across platforms and in many cases allow you to protect and add value to your existing IT investment.

11. What is Sun's approach to storage virtualization?

Sun combines its storage expertise, a broad portfolio of hardware and software components, and strong partner relationships to create end-to-end, scalable storage virtualization solutions for companies of all types and sizes. Unlike other vendors with virtualization technologies, Sun does not have to force-fit a solution around a limited technology portfolio.

12. What distinguishes Sun's storage virtualization solutions from competitive offerings?

While other vendors provide virtualization products, services, and solutions, only Sun can deliver total storage solutions that fully deliver on the promise of virtualization technology: demonstrated expertise and market leadership; relationships with industry-leading partners; and the broadest virtualization portfolio in the marketplace.

The Sun StorageTek™ Virtual Storage Manager (VSM) system is the undisputed market-leading virtual tape solution for mainframe environments. Sun also offers an advanced disk-based virtual tape and library emulation solution. And Sun is the only vendor to offer both high-end and mid-range disk virtualization.

So when you choose Sun, you're getting more than just virtualization technology. You're getting a partner that will create the right solution for your specific requirements and provide you with choice, value, and peace of mind.

13. In what sense does Sun deliver "choice" in virtualization solutions?

Sun provides one-stop shopping for both server and storage virtualization technologies and consolidation solutions. Unlike other vendors, Sun has a wide range of options through virtualization technologies that address SAN, NAS, file system, and backup layers to provide organizations of all types and sizes with solutions to address their particular challenges.

14. What services does Sun offer to support the transition to a virtualized storage environment?

Sun can support your move to a virtualized storage environment every step of the way with assessment and readiness services, customized consulting engagements, product installation and training, and ongoing maintenance and support services.