

Veritas™ Flexible Storage Sharing



A “shared nothing” or hybrid approach

Overview

Veritas InfoScale™ enables customers to take their distributed, high performance, and highly available file systems and combine them with the latest storage and networking technologies with its Flexible Storage Sharing (FSS) feature. Flexible Storage Sharing allows customers to unlock the true potential of Direct Attached Storage (DAS), without sacrificing performance or availability to drive up to 4x the performance at less than 20 percent of the cost of a traditional Storage Area Network (SAN) environment. FSS is not limited to a “DAS-only” deployment but can be used in conjunction with SAN in a hybrid deployment allowing the existing SAN hardware to also be used.

The Storage Cycle

Enterprise class storage, like many other businesses, is cyclical. New cycles are generally kicked off by either massive innovation or a major limitation in the existing resources. In the 1990’s as networks increased in performance, storage increased in capacity, and the data center exploded with data and applications, the Storage Area Network (SAN) slowly phased out the purpose built machines of the early data centers. SANs became the best, and default, means to meet the storage, compute, and availability needs of the majority of applications run in the enterprise.

The next cycle in data center architectures, which brings the storage back to the server, is under way. The re-introduction of DAS as enterprise storage started in some of the largest Internet companies that provide an extraordinary amount of data blindingly fast. And while these companies have different audiences and uses, one commonality is the relative lack of traditional SAN storage in favor of software controlled DAS and scale-out computing. By combining faster DAS, in the form of Solid-State Drives (SSD), with faster networking, increased computing power, and more advanced software, data centers can realize the same benefits of shared storage without the complexity and cost of typical SAN environments.

What is Flexible Storage Sharing

Flexible Storage Sharing is built into the core components of InfoScale Storage and seamlessly combines shared and direct-attached storage under a common storage virtualization solution. Flexible Storage Sharing allows server administrators to “export” any disk to any node in the cluster, providing a “shared nothing” architecture. With Flexible Storage Sharing, Server Administrators can quickly add storage or compute nodes, or both, to an existing cluster.

A key driver in the DAS revival is the increasing adoption of SSDs due to their higher performance and reduced latency capabilities compared to spinning disk. To take more advantage of these characteristics, enterprises are putting SSDs directly inside the server to bring the storage as close to the compute as possible. However moving to internal SSD introduces challenges around data availability and disaster recovery as the storage is now “locked” into a single node, rather than being shared and protected within the SAN.

Flexible Storage Sharing removes these barriers to in-server solid state by enabling full redundancy and high availability of both data and applications with the full data management, optimization, and disaster recovery (DR) capabilities within Cluster File System. Flexible Storage Sharing also takes advantage of remote direct memory access (RDMA) capabilities introduced in Storage Foundation 6.1. Using RDMA with high bandwidth interconnects, such as 10 gigabit Ethernet or InfiniBand, enables near-local read and write performance to and from remote disks. The faster bandwidth enables full control of the storage layout to meet needs around resiliency (mirroring) or speed (striping) to provide complete performance flexibility.

Any existing SAN infrastructure is not rendered redundant as a result of adopting FSS. Instead, SAN storage can be incorporated within the FSS shared pool in a hybrid deployment allowing continued use of legacy hardware.

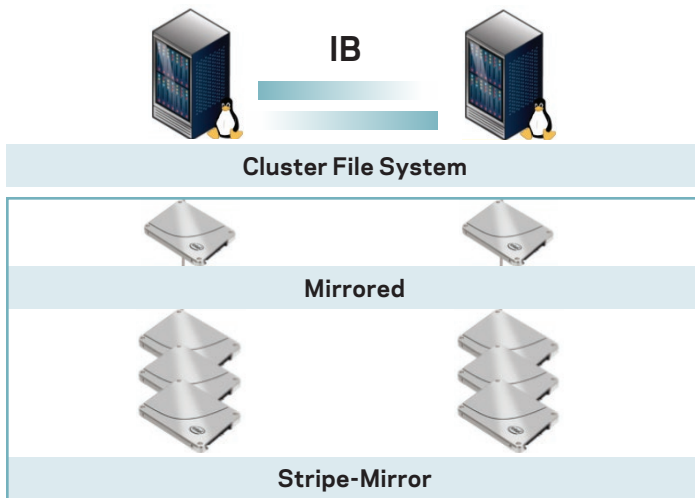


Figure 1: DAS Cluster

Higher Performance and Lower Cost

The combination of Flexible Storage Sharing, Solid State Drives, and RDMA brings a full storage management stack to the server administrator, removes the need for SAN storage, and provides full flexibility for a server based approach to storage management. Using high performance storage and interconnects, Flexible Storage Sharing enables application owners to move from redundant to performance focused architectures, and switch between mixed and read-only workloads, all utilizing the same system hardware. Flexible Storage Sharing can be configured for:

- A fully redundant OLTP configuration that gives 4x the performance at **20 percent** the cost of Tier-1 SAN.
- A high performance OLTP configuration that gives 6x the performance at **15 percent** the cost of Tier-1 SAN.
- A fully redundant data warehouse (DW) configuration that reduces query times by **50 percent**, completes **5x** the queries per hour at **11 percent** the cost of Tier-1 SAN.

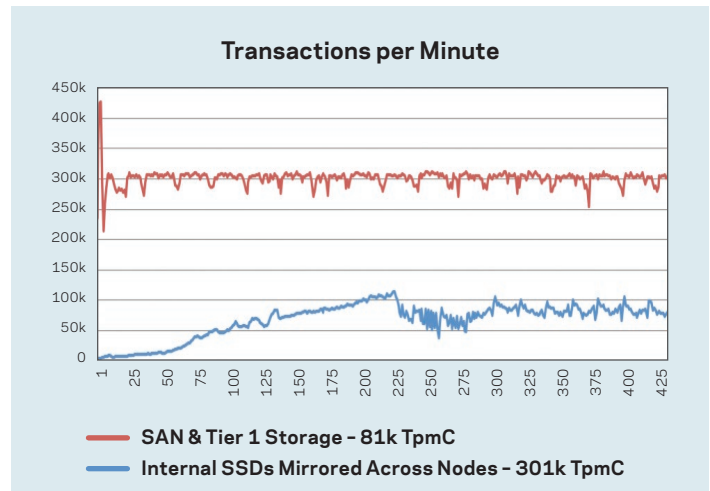


Figure 2: Transactions per minute

OPEX Improvements

When you examine the numbers above, they include completely different workload and data protection capabilities. When working with traditional storage, what's the effort to add additional performance capabilities? How quickly and easily can data and applications be protected in case of a disaster?

With Flexible Storage Sharing all of the above results were achieved on the same set of hardware, software and infrastructure components. The capabilities as a full storage and application management system allows Veritas™ Cluster File System full control of performance and availability through standardized, intelligent software. With Flexible Storage Sharing, server and application administrators can use software to tune their applications based on their service and performance level agreements rather than require long, complex architectural planning and implementation. Veritas Cluster File System and Flexible Storage Sharing enables software based:

- Addition of Storage or Compute Nodes
- File or Volume based replication
- Fast-failover of mission-critical applications
- Storage optimization through tiering, de-duplication, and compression

Summary

As DAS storage continues to increase in performance and capacity, server and application architects look to take advantage of the performance gains that come from storage being closer to the application. Moving to internal storage, however, presents challenges around data management, reliability, and high-availability (HA) and disaster-recovery (DR) scenarios. Veritas Cluster File System addresses these challenges with the Flexible Storage feature. With Flexible Storage Sharing, Cluster File System provides managed performance for mission critical applications. Customers can run in any storage configuration, manage performance and redundancy needs through software, and drive out CAPEX and OPEX costs with a shared-nothing configuration.

More Information

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