

Sun Storage 7000 Unified Storage Systems: The Core of an Accelerated MCAE Workflow

A family of appliances that radically simplifies storage with breakthrough price/performance.

The challenge

Mechanical Computer Aided Engineering (MCAE), Analysis and Simulation in product development is facing ever more complexity. With data-sets doubling every year, growing model sizes and fidelity, and complex coupled physics techniques, engineering organizations around the world are under increasing pressure to deliver innovation cost effectively and on schedule—often with no more resources. Today's modern HPC clusters consisting of hundreds of multi-core processors provide ever more computational power, but conventional disk-based storage architectures have fallen far behind in providing access to the data these data

model updates. Completed simulation datasets are available immediately for subsequent post processing and visualization by all entities in the workflow, facilitating collaboration amongst design teams and shortening design time. Parallel Cluster Computing and high performance access to shared filesystems greatly enhance this solution. Sun Storage 7000 Unified Storage also simplifies storage management and protects vital data with elegant Snapshot data protection, providing quick and easy recovery of deleted or corrupted files, and shortening back-up windows.

Highlights

- Superior performance and lower energy consumption at up to 75% less the cost of competitive solutions
- Active-active architecture option enables high performance and high availability
- Optimized storage hierarchy with Hybrid Storage Pools containing DRAM, SSD, and HDD drives
- Scalability in multiple dimensions to adapt to your changing business needs by increasing compute power, storage capacity, or performance independently
- Eco-efficiency due to reduced power consumption of SSD and HDD disk drives rather than high RPM drives

Sun Storage 7000 Unified Storage Systems accelerate MCAE workflow by speeding data to processors and then providing shared data access to all.

hungry processors require. In addition, competitive pressures driving time to market make accelerating workflow productivity an imperative—driving shared access to model data, simulation and results files among all constituents in the MCAE workflow.

Sun Storage 7000 Unified Storage Solutions accelerate MCAE workflow by first; accelerating I/O between processors in the cluster and stored data, and second; providing shared access to all stored data. All cluster nodes see the same file system allowing real time data

Closing the critical processor-storage latency gap on demanding MCAE data access patterns

Today's high performance multi core processors are capable of accessing and consuming data far in excess of what conventional disk-based storage architectures can provide. Modern CPUs are capable of processing nearly one million Input/Output Operations Per Second (IOPS), far outstripping today's fastest disk drives which are only capable of 300-400 IOPS—creating a gaping latency gap. A latency gap that starve these blazingly fast multi core microprocessors for data.

Sun has developed an innovative storage architecture specifically optimized to keep up—the Sun Storage 7000 Unified Storage System with ground breaking Hybrid Storage Pool technology. The Sun Storage 7000 Hybrid Storage Pool (available on 7210 and 7410 models) deftly combines strategically positioned lightning-fast flash-based Solid State Drives (SSD) with the advanced data placement capabilities of the Zettabyte File system (ZFS) to dramatically improve application performance and operating efficiency at substantially reduced cost compared to conventional storage systems. The ZFS file system transparently manages data placement, directing frequently used data to fast SSDs and less-frequently used data to slower mechanical disks. The application data set can now be completely isolated from slower

mechanical disk drives, unlocking new levels of performance and cost effectiveness. Requiring no administrator intervention, ZFS transparently caches data on SSDs, dramatically reducing latency and I/O performance bottlenecks. Sun Storage 7000 Unified Storage System utilizing Hybrid Storage Pool technology and the ZFS filesystem provide the high performance shared storage and throughput today’s MCAE parallel computational cluster require.

packaged, Hybrid Storage Pool Architecture enabled, 7220 Unified Storage Appliance scalable to 48 TB, up to the high performance, high capacity, Hybrid Storage Pool Architecture enabled 7410 Unified Storage Appliance scalable to 288 TB capacity.

Real-time visibility radically simplifies the way you manage data

Sun Storage 7000 Unified Storage provides an intuitive environment for administration tasks, visualizing concepts and analyzing performance data. DTrace analytics capabilities include real time statistical graphs to help locate and isolate problems, and optimize storage performance and capacity utilization. DTrace drill down analytics quickly narrow the focus to the most likely troubled areas (network bytes/sec, NFS ops/sec, disc ops/sec, CPU utilization) while an easy to read dashboard summarizes the status of the appliance software and hardware and displays status for disk usage, main memory usage, appliances services (NFS, CIFS, http, etc.), hardware, activities statistics, and recent appliance alerts.

Sun’s Open Storage architecture spurs innovation and lowers costs

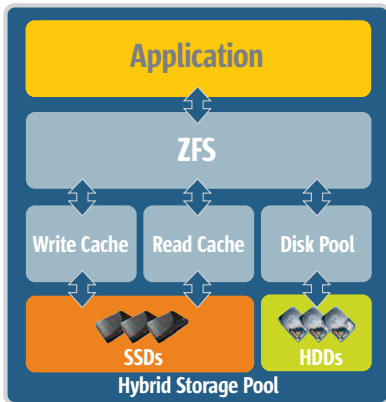
Traditional storage architectures have been closed and proprietary, creating vendor “lock-in” to a slowly innovating technology platform and creating a huge barrier to exit when attempting respond quickly to market forces with alternative solutions. Sun Open Storage combines open-source software with industry standard hardware, enabling you to reduce your reliance on high-priced systems and save up to 90% on storage costs.

A scalable family of appliances meeting every MCAE shared storage need

The Sun Storage 7000 Unified Storage System family of products provide an open, non-proprietary, affordable solution that utilizes SSD enabled Hybrid Storage Pool technology, Storage Analytics and Fault Management Architecture with the ZFS filesystem to provide highly reliable, file based, high performance I/O services for MCAE applications running on a high performance computational cluster. The family ranges from the extremely cost effective 7110 Unified Storage Appliance scaling to 2 TB to the extremely densely

Services and support

Sun’s deep technical expertise and proven implementation and migration tools makes it easy to deploy the Sun Storage 7000 Unified Storage System and help you architect, implement, manage and support your entire network infrastructure. Sun Services mitigate the risk of downtime, data loss, and costly delays and provide the expertise to help ensure that your systems are running at an optimal level right from the start.



In the Series 7000 Hybrid Storage Pool, SSDs are used to store actively used data, making the entire storage infrastructure appear as fast as flash storage to applications.