

Sun StorEdge 6920 System

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Abstract: The Sun StorEdge 6920 is an impressive midrange storage system and the latest revision adds Enterprise-class remote replication and storage virtualization of heterogeneous storage systems. This ESG brief provides our view of the StorEdge 6920 as part of an increasingly impressive storage portfolio from Sun.

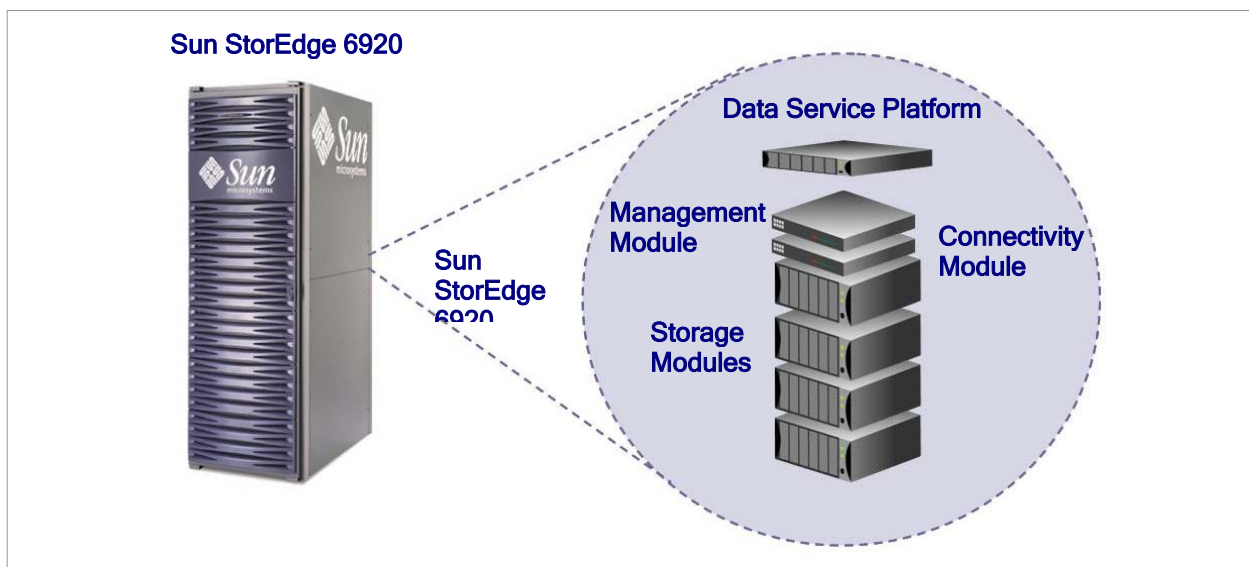
Sun StorEdge 6920 System Overview

Midrange storage systems today have greater functionality, performance, and reliability and customers are increasingly using them to replace more expensive Enterprise-class solutions. The Sun StorEdge 6920 further blurs the line between Enterprise-class and midrange storage systems. It is extremely scalable, provides a comprehensive set of data management software including snapshots and remote mirroring, and provides storage virtualization that manages internal and external storage systems.

The Sun StorEdge 6920 is a unique solution that consists of four major components including the Data Service Platform (DSP), storage modules, a management module and a connectivity module. The Sun StorEdge 6920 hardware resources eclipse other midrange storage systems from leading storage vendors. For example, if we compare the Sun StorEdge 6920 with the EMC CX700 the difference becomes apparent: the Sun StorEdge 6920 supports up to 20 processors versus four processors within the CX700; the Sun StorEdge 6920 can scale from 2 GB to 28 GB of cache memory versus a maximum of 8 GB for the CX700; and Sun supports up to 28 FC host ports compared to the CX700 with a maximum of eight FC host ports.

Having this level of scalability is important to improve application performance as the demands of the customer's environment grow. The good news is that while the Sun StorEdge 6920 has a tremendous amount of hardware resources it is competitively priced compared to other leading storage system solutions.

Figure One: Inside the Sun StorEdge 6920



Storage Virtualization

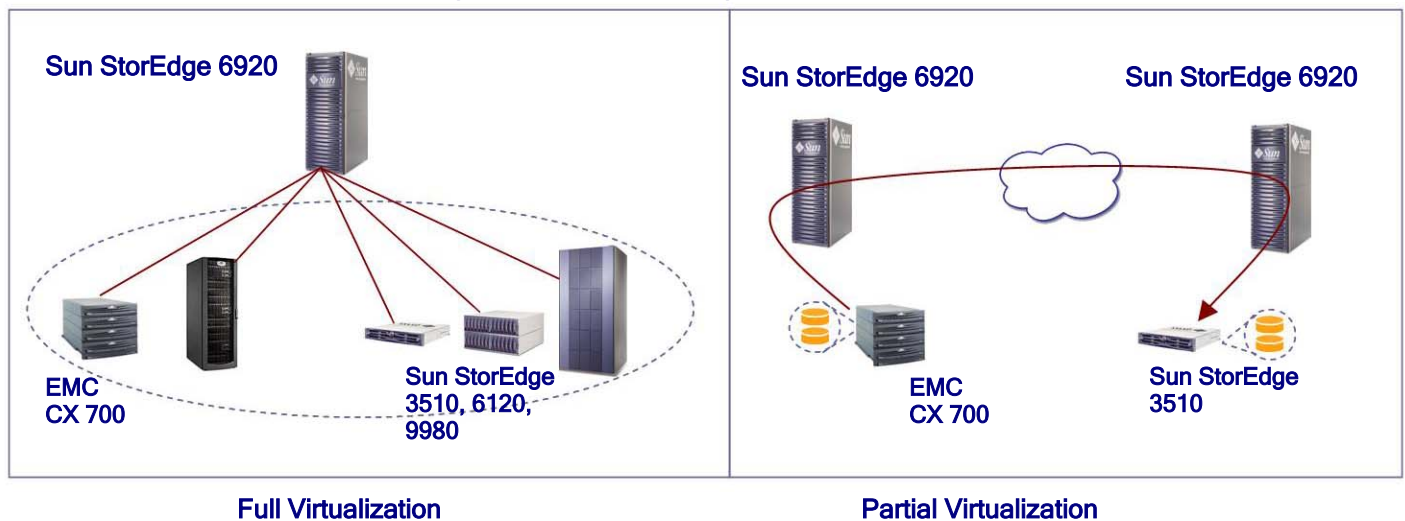
The DSP is the brains of the Sun StorEdge 6920 and is a storage virtualization platform that manages the internal Sun storage modules as a single pool or many pools of storage without being bounded by the physical disks. Storage Containers are logical partitions that electronically separate storage dedicated to different applications, consolidating resources while retaining the security and simplicity of direct-attach storage. This approach creates a massively parallel storage system that does not increase in management complexity as it scales. The Sun StorEdge 6920 can support from as little as 500GB to as much as 65 TB of internal storage.

The Sun StorEdge 6920 can also use the DSP to manage external heterogeneous storage systems from EMC, HP and its own StorEdge solutions. These heterogeneous storage systems can be fully managed by the Sun StorEdge 6920 as a single storage pool with the DSP providing data services including volume management, storage provisioning, snapshots, local and remote mirroring.

The Sun StorEdge 6920 can manage a total of 256 TB including its own internal capacity (Figure Two - Full Virtualization). The benefits of using the Sun StorEdge 6920 to manage heterogeneous storage systems include:

- Simplifies the management of storage resources
- Reduces overall storage hardware spending
- Improves storage utilization rates
- Enables an intelligent tiered storage environment
- Reduces overall storage software spending
- Enables storage services between heterogeneous storage systems
- Improves the customer's ability to provision storage capacity

Figure Two: Sun StorEdge 6920 Virtualization



Customers can also use the Sun StorEdge 6920 to partially manage external heterogeneous storage systems. With this option the heterogeneous storage system uses its own controllers for the majority of its management but customers can utilize the Sun StorEdge 6920 to provide remote mirroring to another heterogeneous storage system. As illustrated in Figure Two (Partial Virtualization), the Sun StorEdge 6920 has established an asynchronous remote mirror between a volume on the EMC CX700 and a lower cost Sun 3510 at another location. Additionally, customers can reduce software costs by consolidating all replication services to the Sun StorEdge 6920 versus having discrete licenses per storage system. The economics of using the Sun StorEdge 6920 to remote mirror to less expensive storage systems and consolidate remote mirroring licenses can potentially save customers hundreds of thousands of dollars.

Data Management Services

The Sun StorEdge 6920 provides a number of data management services including differential snapshot copies, full volume copies, and remote replication. One of the most popular data services used by customers is differential snapshots. These point-in-time copies are used to recover files that have been corrupted, deleted or overwritten.

Differential snapshots only copy changes and therefore minimize the amount of storage capacity required - typically about 20 percent of the full data set. Snapshots are scheduled by the system administrator and can happen at different time intervals (e.g. every minute, every hour, once a day, etc).

Another popular data service is full volume local mirroring, which is a real time copy that is an exact replica of the primary data. Full volume mirroring ensures that there is no data loss, but comes at a higher (capacity) cost than snapshots since a full copy of the data is kept. Some customers may not want to risk any data loss and are willing to pay the extra price. Full volume mirrors are also used to perform backups - in other words a system administrator will split the mirror, mount the volume and then execute a backup against that copy of data. Another use for local mirrors is application testing or data analysis so as not to interrupt production environments.

Remote mirroring is another data service that is used for data protection. This capability creates a copy of data from the primary storage system to a remote storage system. The Sun StorEdge 6920 supports two methods of remote mirroring referred to as synchronous and asynchronous. The synchronous method is a real-time mirror that provides 100 percent data integrity but is typically limited to a finite distance (up to 200 miles). Asynchronous remote mirroring allows for theoretically unlimited distances but doesn't guarantee 100 percent data integrity and in the event of a disaster some data may be lost. Additionally, the Sun StorEdge 6920 supports remote mirroring over FC or Ethernet. Customers typically like using Ethernet to perform remote mirroring since it eliminates the need for costly channel extenders required with FC.

The Sun StorEdge 6920 supports very sophisticated remote mirroring capabilities that are typically found in Enterprise-class storage systems. For example, the Sun StorEdge 6920 remote mirroring supports a concept called consistency groups. If the customer has a database application that spans multiple database servers data will be sent from the various servers to the storage system. The Sun StorEdge 6920 is intelligent enough to keep track of which server the data is coming from and the order it came in as it mirrors the data to a target Sun StorEdge 6920, ensuring data integrity.

The Sun StorEdge 6920 remote mirroring software also supports many-to-one capability. Customers can have multiple Sun StorEdge 6920 systems remote mirror data to a single target Sun StorEdge 6920. This is useful for customers that have multiple remote branch offices that want to consolidate data protection. For example, the customer may have offices in New York, Chicago and Boston. Using the Sun StorEdge 6920 they can set up a remote mirroring configuration from all three locations to their main data center in New Jersey. This allows the IT group in New Jersey to manage the application data from all three remote branch offices performing centralized backups.

ESG's View

The Sun StorEdge 6920 is an impressive product that is part of an increasingly comprehensive storage lineup from Sun. For example, the Sun StorEdge 9990 is a leading Enterprise-class storage system that effectively supports mission-critical applications with its ability to scale to 1152 disks and deliver unprecedented performance with up to two million IOPS. The Sun 9990 also supports storage virtualization and can manage up to 32 PB of internal and external capacity. The combination of the Sun StorEdge 6920 and 9990 represent a very powerful and competitive midrange and Enterprise-class product offering. The Sun StorEdge Enterprise Storage Manager (ESM) is a best-in-class storage management suite that provides customers with tools to better manage their heterogeneous storage environments and can reduce tasks that previously took months to complete to a few simple mouse clicks. The deep application-level provided by ESM enables administrators to more effectively plan and troubleshoot, and should significantly lessen the time and resources required to solve SAN-related problems.

The Sun StorEdge 6920 provides scalability, advanced copy services, intelligent tiered-storage, and can manage heterogeneous storage systems creating an intelligent storage network. The StorEdge 6920 is an innovative and competitive storage solution that should impress even skeptics and is part of a greater portfolio of compelling storage products from Sun.