

File Sharing with the Texas Memory Systems RamSan

Texas Memory Systems' RamSan products are block-based storage devices. As such, file sharing with these systems across a cluster of servers requires additional software or hardware. Fortunately, there are a plethora of options in the market for attaching the RamSan to server clusters including: database clustering software, network attached storage, cluster file systems, and SAN file sharing software.

Database Clustering

RamSan systems are interoperable with database clustering capabilities available from leading database vendors. Oracle is a leader in creating clustered databases. Oracle RAC technology enables operating in a cluster. Starting with Oracle 10g, Oracle has introduced ASM (Automated Storage Management) that makes managing storage devices easy. Microsoft offers SQL Mirroring which creates an active:active cluster of two or more servers, however, each server has its own dedicated storage array. Alternatively, Microsoft customers can run SQL Server on a Microsoft Cluster where storage is shared between active:passive servers. Symantec also offers Veritas Cluster Services which provides server level clustering for SQL Server and Oracle.

Network Attached Storage

Network Attached Storage (NAS) filers are widely deployed to support a range of applications. Texas Memory Systems has been certified interoperable with filers from BlueArc and OnStor. NAS systems are purpose built to handle the TCP/IP stack and file system management for high-speed file serving. Existing customers have proven that these filers combined with RamSan storage can offer big performance improvements over the same filers with typical rotational storage. One of the big reasons customers implement NAS filers instead of implementing SAN shared file systems (discussed later) is that the logistics and costs associated with implementing NAS is much lower. NAS systems attach to existing Ethernet networks helping customers avoid the cost of adding Fibre Channel HBAs and switches to an environment. 10Gbit Ethernet is helping decrease some of the bottlenecks found in LAN storage environments.

Cluster File Systems

Cluster File Systems offer mechanisms for clustering servers together for reliability and performance purposes. Additionally, these system always include a file system that enables shared storage for the cluster. Texas Memory Systems is partnering with Symantec in support of their Veritas Cluster Services and also with HP's Polyserve unit. With cluster file systems, RamSan units are direct attached to the cluster via direct Fibre Channel links or through Fibre Channel switches. Cluster file systems tend to offer very high performance for small block random I/O.

SAN File Sharing

Traditional file systems are either unable or ineffective at supporting file sharing among multiple servers. Most rely on additional software to support file sharing, such as NFS or CIFS, and use the LAN for moving files to different host machines. In a collaborative environment, using the LAN for shared storage traffic can saturate your network, resulting in users that spend much of their day waiting on files to be saved or loaded to their workstation. These problems force system designers to use direct attached storage in situations where file sharing would be more efficient or to accept that the file servers will slow users down.

Web serving environments are a great opportunity for file sharing. With direct attached storage, the same files have to be copied onto every web server. The biggest problem in this environment is version control. In the event web content needs to be updated, every web server needs to be updated. At a minimum, this means that the first web server updated and the last web server spend some amount of time out of sync. Additionally, the process to load these files to multiple systems requires valuable staff time.

Fortunately, SAN file sharing software provides an alternative. Symantec's Veritas Clustered File System, Quantum's StorNext (ADIC), Red Hat's GFS, Sun's QFS and Lustre file systems, and IBM's GPFS and SANergy offer a storage area network (SAN) solution for sharing storage. SANs, unlike LANs, are optimized for handling storage traffic. For example, a SAN uses Fibre Channel interfaces to connect workstations and storage devices. Fibre Channel is capable of passing data much faster than typical LANs. Therefore, the storage traffic does not slow down your LAN and your users receive data more quickly. In this case, storage becomes the bottleneck.

The Texas Memory Systems RamSan-400 is optimized to provide fast file sharing over SANs. Key attributes of the RamSan that support file sharing are: low latency for data access (250 times faster than RAID), high

bandwidth for storage traffic (3,000 MB/sec), and the ability to handle an enormous user load. The benefit of low latency data access is that every file access begins to return data to servers in 15 microseconds, so users are no longer waiting! Each of eight Fibre Channel ports can be dedicated to one server or can be shared by many servers through a Fibre Channel switch. Even a single Fibre Channel port provides 10 times the bandwidth of a LAN. RamSan systems are frequently have a special role within SAN shared file systems of storing and accelerating metadata accesses.

With the TMS RamSan-500, a great deal more capacity can be accessed and shared across a cluster opening up these markets to dramatically higher performance at prices much more typical of enterprise hard disk systems. In clustering environments, the RamSan-500 accelerates rendering, seismic processing and storing frequently accessed file system components (ranging from metadata to other popular content).

Please contact your Texas Memory Systems representative for details on an architecture that will meet your performance requirements.



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