Tivoli

Tivoli® SANergy™ File Sharing

Helping You Reach Your Full SAN Potential

Highlights

Any storage area network (SAN) can provide the ability to aggregate storage in one location and allocate partitions on that storage to individual computers. Like all Tivoli SAN solutions, Tivoli SANergy File Sharing takes SAN capabilities even further. It gives you the power to simultaneously share the same storage, the same file systems, and even the same files between multiple computers connected to a SAN. Tivoli SANergy File Sharing uses the maturity, security, and inherent sharing abilities of industry-standard LANs, and enhances them with the guaranteed delivery, high bandwidth, and low-processor overhead of SANs to provide high-performance, heterogeneous file sharing.

Running on the computers connected to your SAN, Tivoli SANergy File Sharing:

- *Provides the sharing capabilities of a LAN, the speed of a SAN, and the assurance of industry standards*
- *Runs on several operating systems including Windows NT® 4.0, Windows® 2000, MacOS, Solaris™, AIX®, IRIX, Tru-64 and others*
- *Enables all your computers to simultaneously read and write the same files on the same storage*
- *Uses just one file system for all storage on the SAN—eliminating re-partitions and re-assignments of storage as your needs change, and simplifying your disk administration*
- *Increases overall network performance by routing all data over the SAN instead of the LAN*
- *Enables you to implement LAN-free and server-free backup/archive and restore programs*

Storage Device Sharing with a SAN

SANs have arrived just in time to ease the task of administering the twenty-first century's massive aggregation of storage and computers. Even the most basic SANs can enable the sharing of storage partitions through either LUN-masking or switch-zoning. With the addition of RAID sub-systems, bandwidth is increased and SAN data is protected against disk failure, while the cost of RAID is spread across multiple computers. For facilities with a homogeneous collection of computers, these capabilities alone may provide enough advantages to implement a SAN.

For businesses with a heterogeneous collection of computers, each storage partition must still contain a different file system for the different operating systems on the computers connected to the SAN. While all storage is in one location, different file-system partitions must still be maintained, such as UFS for Solaris and NTFS for Windows NT.

File System Sharing to Simplify Your Storage Administration

Tivoli SANergy File Sharing allows you to use one industry-standard file system for all storage connected to the SAN, regardless of the operating systems being used by the SAN-connected computers. Using only one file system greatly simplifies disk administration. With all data placed in one file system on a single partition, as data grows, you can add new storage space to the RAID with no need to repartition, re-format or re-assign storage. Instead, directories are set up for

computers, workgroups, or individual users. And, through standard network sharing and security, Tivoli SANergy File Sharing maintains full protection of file- and byte-level locking on the SAN storage.

SAN-speed Sharing to Free Your LAN

Tivoli SANergy File Sharing frees up the LAN by moving data over the SAN which easily handles data quantities that would otherwise slow your LAN to a crawl. And the efficiency of SAN protocols eliminates the majority of processor overhead that LAN protocols require, freeing up more processing power for applications.

Using Tivoli SANergy File Sharing, you can perform bulk data copies from one computer or RAID subsystem to another at speeds of dozens of megabytes per second. With the proper software, capabilities for LAN-free backup, archive and restore are available. Hierarchical Storage Management (HSM) data migration can occur at SAN speeds without impacting any LAN traffic.

Tivoli SANergy File Sharing provides transparent support for virtually any system service or application including Oracle, IBM®, DB2®, Microsoft® SQL Server, and Microsoft Exchange Server.

SAN-speed Sharing for Your Application Files

For many high-bandwidth applications in collaborative work environments, sneaker-net has been faster than any wire network. LANs suffer from the bandwidth-crippling overhead of network protocols.

With Tivoli SANergy File Sharing, however, multiple high-bandwidth workstations running file-sharing capable applications including CAD, 3D modeling and design; graphics, RIP engines and digital printing; animation and multimedia creation packages; or video/film editing and compositing programs can all share the same application files simultaneously, at full SAN speeds. Sneaker-net is eliminated because the network is fast enough to handle bandwidths of dozens of megabytes per second to each workstation. As a result, Tivoli SANergy File Sharing can improve collaboration, enhance operational flexibility and efficiency, simplify workflow, and increase productivity.

SAN-speed Sharing for Your Web Servers

With Tivoli SANergy File Sharing, high-bandwidth, media-rich Web sites can scale up more easily to handle increasing hits. When Web traffic increases beyond the capabilities of the Web servers, you can simply connect more servers to the SAN storage. With Tivoli SANergy File Sharing running on the servers connected to the SAN, all servers can use the same media files on the same SAN storage at the same time. This eliminates the need to buy new

storage and duplicate the same Web page materials every time a new server is brought online.

Inside Tivoli SANergy File Sharing

Using patented techniques, Tivoli SANergy File Sharing is implemented as a file system extension. It leverages the distributed data sharing capabilities embedded within the Windows NT 4.0, Windows 2000, UNIX®, and Macintosh operating systems. Tivoli SANergy redirects the data portion of standard network file I/O off the LAN and on to the SAN. Normal networking protocols (CIFS or NFS) establish access to shared files across a standard LAN. The data itself flows at much higher bandwidth over the more efficient SAN. SAN-connected storage media is formatted in either NTFS or UFS.

Tivoli SANergy File Sharing extends the standard Windows NT 4.0, Windows 2000, or Solaris file server to act as the Meta-Data Controller (MDC) for shared storage. This MDC manages the access to storage across the SAN by the computers running Tivoli SANergy client software.

The MDC manages access to common storage by providing the necessary file system metadata when requested by the client computers. Clients then access the storage directly through their SAN connection. In a heterogeneous sharing environment, this sharing of metadata is critical for ensuring the coherency of files being used across the SAN. Metadata sharing further enables the continued use of all the network-access security mechanisms already built into today's operating systems.

Enterprise-ready Availability

Tivoli SANergy High Availability is an add-on feature to the Windows NT 4.0 and Windows 2000 versions of Tivoli SANergy File Sharing. It ensures that critical data remains available in the event of an MDC failure.

If a Tivoli SANergy MDC for Windows NT 4.0 or Windows 2000 fails, the spare MDC running SANergy High Availability seamlessly assumes the duties of the failed MDC. MDC-dependent Tivoli SANergy File Sharing clients running Windows NT 4.0, Windows 2000, and UNIX automatically re-map their drives. Most network-aware applications, including database servers, carry on without interruption. Tivoli SANergy High Availability is an essential component for SANs supporting corporate databases, Web servers, and other business-critical applications.

Enterprise Management-ready

In addition to the native and HTML-based interfaces, Tivoli SANergy can be managed from any SNMP management console. A custom SANergy management information base (MIB) is included to support the use of consoles such as Tivoli NetView®, HP OpenView, or SunNet Manager™.

Supported Platforms

Intel®-based PCs
Windows NT 4.0 workstation or server with service pack 4 or later, Windows 2000
MDC supports standard Windows NT 4.0 or Windows 2000 NTFS volumes
NFS server software required to support UNIX clients

Silicon Graphics O2, Octane, and other models
Most IRIX versions with ONC3/NFS 2 or 3

Sun™ Microsystems SPARC systems
Solaris version 2.6 or later with NFS
MDC supports standard UFS volumes

IBM RS-6000 systems
AIX version 4.3.2 with NFS

Compaq UNIX systems
Tru-64 4.0F

Macintosh PowerPC series systems with PCI bus
Mac OS version 8.1 or higher
(all Macintosh systems must run the same version of MacOS)

Tivoli SANergy File Sharing Feature	What It Does	What It Means To You
Single file system	Uses NTFS, UFS or any other Tivoli SANergy-enabled third party file system.	Eliminates the need to manage multiple file systems, regardless of the number of computers connected to the SAN.
LAN-flexible	Utilizes any LAN hardware and software.	Continues using your existing LAN to handle metadata traffic and low-bandwidth data.
SAN-flexible	Utilizes any SAN hardware and software.	Works equally well with SCSI, SSA, or Fibre Channel SANs with components from any manufacturer.
Heterogeneous operation	Supports true file sharing across heterogeneous networks.	Works with the mix of computers and operating systems you use today.
Enterprise management-ready	Controlled through the Web and SNMP management.	Enables immediate control through most SAN management consoles.

Some features may be available only in a future release, and features may vary with each platform. Further, some platforms are not supported by all applications and Tivoli may make improvements and changes to the described products.

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Manage. Anything. Anywhere.™