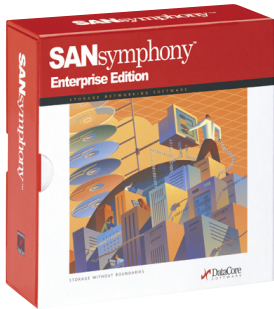


# SANsymphony™

## Storage Virtualization Software



### Ideal Solutions for:

- Mid-size and Large Scale Storage Area Networks (SANs)**  
 Enable high-performance, cached iSCSI and Fibre Channel connections to popular disk arrays, including those incapable of connecting directly to SANs.
- Server & Desktop Virtualization**  
 Share storage from existing disk drives over SANs to facilitate the migration, load balancing and failover of workloads between clusters of servers.
- Business Continuity**  
 Supplement the native attributes of drives and arrays to make them highly-available and suitable for offsite disaster recovery.
- Storage Upgrades & Expansion**  
 Expand storage capacity and migrate data to new disks in the background without disrupting applications. Repurpose older drives for less demanding requirements.
- IT Consolidation**  
 Combine different makes and models of disks under a common, centrally-managed, tiered storage architecture.

### Benefits

- Avoid Risks.** Keep storage from becoming a major source of disruptions or a single point of failure.
- Boost Productivity.** Speed up disk performance while eliminating storage-related downtime.
- Contain Costs.** Take advantage of existing drives and lower cost devices in a SAN to significantly reduce capital expenditures. Defer spending on capacity expansion through SAN-wide thin provisioning and low-impact snapshots.
- Protect Investments.** Maintain the same SAN-wide functions across multiple generations of hardware and manufacturers. Move the software to faster platforms when desired to increase performance, scalability and overall value.

### High Availability

DataCore™ software fulfills business continuity objectives by preventing storage-related maintenance, upgrades, reconfiguration, expansion and failures from disrupting IT operations. The manufacturer-independent software automatically updates identical copies of virtual disks stored on separate drives. Either half of a synchronously mirrored disk may fail or be taken out of service without causing server or application downtime. Transparent failover occurs automatically. Once the equipment is back in service, the software automatically resynchronizes the mirrored set before restoring the original I/O paths.

Splitting the disk mirror between different rooms, different floors or different buildings provides considerably higher availability than a top-of-the-line, internally redundant array packaged in a single enclosure. The physical segregation shields one half of the mirror from disruptive firmware upgrades, technician errors, water leaks, power outages and other location-specific risks.

### Disaster Recovery

DataCore safeguards against large scale IT outages that disrupt access to critical online storage assets within a metropolitan area. It enables organizations to quickly switch operations to remote contingency locations hundreds or thousands of kilometers away by regularly transmitting disk updates between sites. The software uses standard IP connections to asynchronously replicate between like or unlike storage devices without increasing the load on hosts or slowing down applications.

Snapshots of the replicas maintain the identity of source volumes so that restoration at the remote end is not complicated by different virtual disk assignments. Bidirectional remote replication makes it easy to establish reciprocal arrangements where each side can serve as the recovery location for the other. SANsymphony also supports one-to-many, many-to-one and many-to-many relationships well suited to address central IT operations with smaller remote branches. Advanced Site Recovery features automate much of the controlled cut-over to disaster recovery locations along with the resumption of services at the central IT site.

Highest Availability

Fastest Performance

Fullest Utilization

Greatest ROI

Lowest TCO

### Supported Environments

- **Midsized to Large SANs:**  
Physical storage pools ranging from a few terabytes (TB) to petabytes of disk space\*
- **Disks:** Any disk drive or disk array accessible from the server chosen to host the DataCore software. These include IDE, ATA, SCSI, SATA, SAS, iSCSI, FireWire, Fibre Channel (FC) interfaces.\*\*
- **SAN Protocols:** iSCSI, Fibre Channel, InfiniBand and Fibre Channel over Ethernet (FCoE)\*\*\*
- **Client Operating Systems:** Windows, AIX, HP-UX, Solaris, RedHat & SUSE Linux, Mac OS X and NetWare on physical or virtual machines
- **Hypervisors & OS Virtualization:**  
All of the popular server virtualization products, including those from Citrix, Microsoft, Parallels and VMware.

\*For smaller requirements in the range of 500 gigabytes (GBs) to 32 TBs, please refer to DataCore SANmelody™ software.

\*\*SANsymphony virtualizes block storage devices. It does not provide file services or Network Attached Storage (NAS). However, file servers and NAS gateways may use storage provisioned by SANsymphony for their block storage needs.

\*\*\* When FCoE host-bus adapters become generally available.

<sup>1</sup>Round-trip network latencies govern the maximum distance between synchronously mirrored nodes. Current technologies support inter-node distances up to 35 kilometers.

For additional information,  
please visit: [www.datacore.com](http://www.datacore.com)  
or e-mail: [info@datacore.com](mailto:info@datacore.com)

### Storage Pools - Combine Different Models & Brands

DataCore provides a uniform set of advanced, SAN-wide functions to eliminate device and manufacturer-specific shortcomings of storage hardware. The portable software package compensates for deficiencies and incompatibilities introduced by different brands, models and generations of disk subsystems, allowing dissimilar equipment to be fully leveraged as a distributed, yet centrally-managed, storage pool. The physical composition of the pool can expand and change over time to accommodate new needs without disrupting storage consumers. Organizations are free to choose the suppliers and devices that offer the best alternatives at the time without concern that they will be locked-in to a specific hardware vendor.

### Virtual Disks - Match Performance & Availability Requirements

The system administrator in charge of the DataCore nodes shapes groups of “virtual disks” according to the specific capacity, availability and performance needs of each application, much as one defines different virtual machines for various workloads. The fluid, software-defined characteristics of virtual disks make them indispensable. Behind the scenes, DataCore lines up the resources, replicates data and caches requests to satisfy the desired volume requirements, data protection and I/O characteristics. Hardware variables and their physical limitations are intentionally hidden from the SAN clients, who perceive only well-behaved LUNs. Virtual disks can be provisioned, shared, backed-up, and expanded without hardware changes or downtime.

### Prerequisites

- DataCore software runs on standard x86 and x64 Windows servers (physical or virtual). An organization’s I/O workloads, availability requirements and brand preferences determine what type and how many servers will be configured to operate exclusively as “DataCore storage controllers.”
- The physical storage pool is composed of the internal disk drives and external disk arrays attached to DataCore nodes.
- SAN-wide I/O cache is carved out of high-speed memory on the DataCore nodes. A minimum of 4 GB RAM per node up to 1 TB/each may be configured. Multiple terabytes of high-performance cache may be configured across several nodes.
- For **High-Availability (HA)**, synchronously mirror between two or more DataCore nodes using Fibre Channel or iSCSI inter-node links.<sup>1</sup> SANsymphony supports N+1 redundant nodes.
- For **Disaster Recovery (DR)**, asynchronously replicate virtual disks between two or more DataCore nodes over unlimited distances using standard IP connections.
- Computers needing access to the virtual storage pool connect to the DataCore nodes using iSCSI or Fibre Channel SAN connections.
- 1 GB of disk space is needed per node for installation.
- Use switches to simplify cabling and zoning.

### SAN-wide Features Work Across Unlike and Incompatible Storage Devices

