

# CYBERNETICS

miSAN<sup>®</sup> and iSAN<sup>®</sup> D Series  
SANDR Technology:  
iSCSI SAN Manager

Innovative New Technology Delivers Full  
Data Protection at the Disk Storage Level

May 2008

## The Evolution of Storage

Cybernetics has been in the business of innovating storage and backup solutions for more than 30 years. During that time, our advances in technology have paved the way for many of the important features commonplace in modern storage and backup devices. Today, we have just announced a new product line that promises to change forever the fundamental concepts of storage and data protection strategies. All of our miSAN® D Series and iSAN® D Series models of iSCSI SAN RAID disk storage devices now include our evolutionary, and revolutionary, new storage engine – SANDR.

SANDR is a simple, affordable storage technology that covers every aspect of data, from live data storage, to high availability, to disaster recovery, to long term archives, and it's available with every miSAN® D Series and iSAN® D Series model.

<b>miSAN® D Series</b>	<b>iSAN® D Series</b>	<b>iSAN® D Series Ultra Slim</b>
■ 2U/3U	■ 2U/3U	■ 1U
■ 1 TB - 32 TB	■ 8 TB - 32 TB	■ 640 GB - 10 TB
■ 500 MB/s Throughput	■ Up To 1.2 GB/s Throughput	■ Up To 1.2 GB/s Throughput
■ SATA/SAS	■ SATA/SAS	■ SSD/SATA/SAS
■ Five GbE Ports	■ Ten GbE Ports	■ Six GbE Ports
■ Integrated Tape Option	■ 10 GbE Option	■ 10 GbE Option
<b>miSAN® D Series and iSAN® D Series Features</b>		
■ Multi OS Compatible	■ Virtual Machine Compatible	■ Unlimited Server Support
■ Hot Swappable Disks	■ USB/eSATA Portable Disk Backup	■ Redundant Components

## Data Availability

Virtualization and the iSCSI SAN are reshaping IT. Virtual machines and virtual storage lower cost and complexity, while extending the demand for uninterrupted user access to important production servers and storage. iSCSI SAN delivers the most efficient storage and backup solutions to the small to medium businesses, where Fibre Channel is simply not viable. Cybernetics miSAN and iSAN solutions couple virtualization and iSCSI SAN for unprecedented performance, reliability, availability, and value. SANDR technology presents disk capacity to servers and virtual servers exactly as direct attached storage. A local drive letter is available to the server(s) for files, databases, or other applications.

## Data Protection

Threats to data availability lurk everywhere and there are many variations on a data disaster. However, disasters generally fall into two fundamental categories.

- Catastrophic Failure
- Data Corruption

Cybernetics' new SANDR not only delivers live storage with exceptional speed and reliability – it also protects data from every threat category.

## Catastrophic Failure

Whether it is hardware melt-down, natural catastrophe, or man-made evil, all companies must plan for disaster recovery. A full backup and/or remote access are required for recovery from catastrophic loss.

## Full Backup Protection

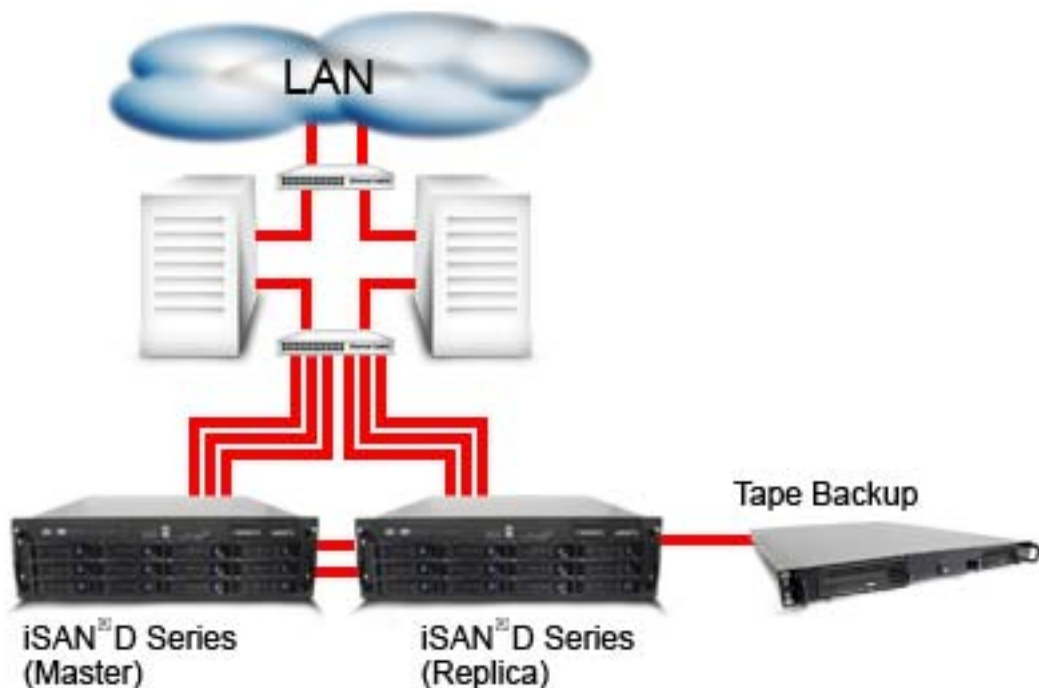
A full backup is best described as a data copy from which an entire system can be fully restored without the presence of the original data source. Catastrophic events often destroy the original disk resource, so SANDR includes full image backup, as well as high availability and remote WAN replication for full disaster recovery.

miSAN<sup>®</sup> and iSAN<sup>®</sup>D Series models are equipped with SCSI ports for direct attachment to tape backup devices. 3U models include SCSI as well as iSCSI host connectivity with SCSI and iSCSI boot capabilities for most servers, eliminating the need for any direct attached storage. A full image backup is initiated directly from SANDR in a serverless mode and sent to an integrated, SCSI attached, or iSCSI tape or virtual tape device. Data residing on the any Cybernetics D Series model can be backed up directly to a SCSI attached tape device with absolutely no requirement for a backup server, no need for third party backup software, and no traffic on the network. The backup tape is a disaster recovery image supporting bare metal restore for the fastest, most comprehensive recovery possible. Tapes are small and very easy to transport to remote locations for purposes of full system recovery, anytime, anywhere.



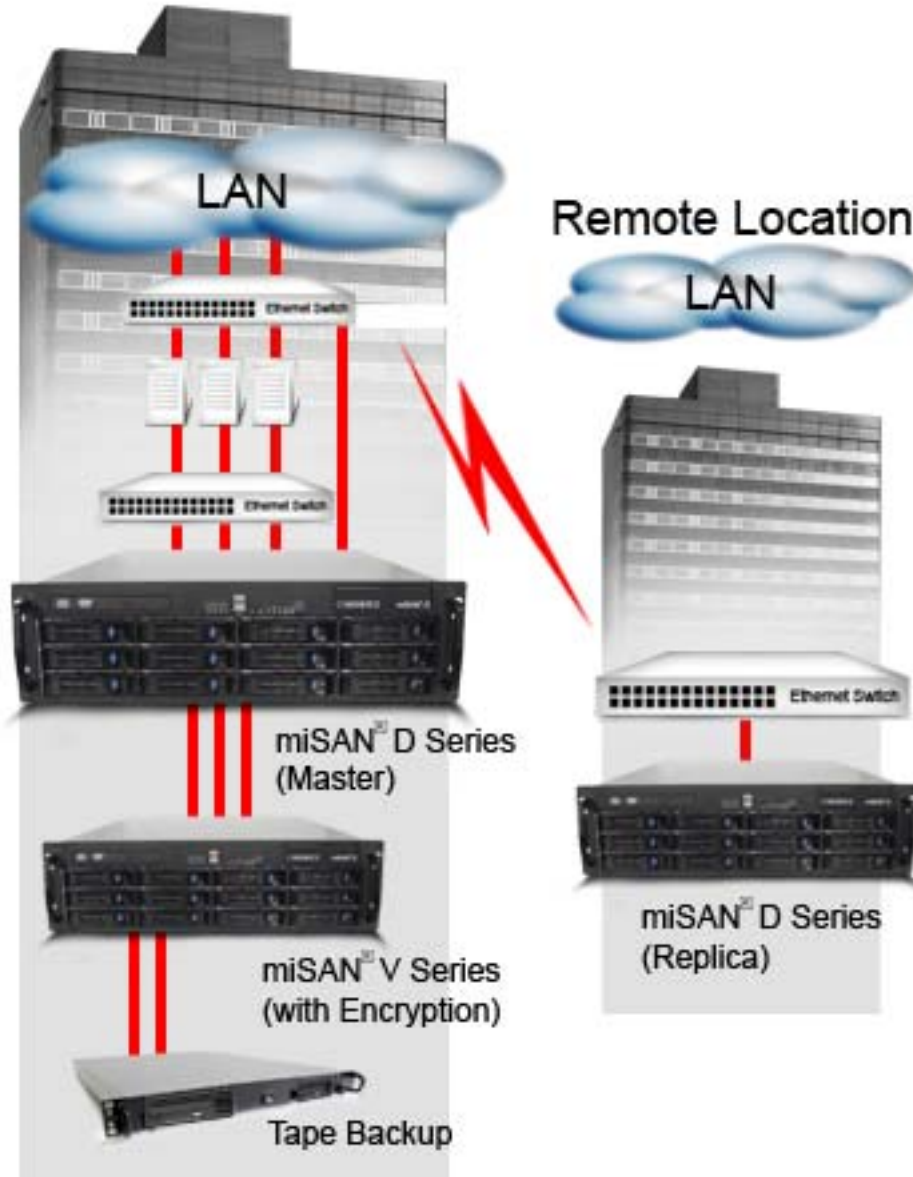
## High Availability

In a competitive, 24X7 marketplace, up time can make or break an organization. High availability combines the techniques of mirroring and fail-over to approach 100% up time for daily operations. A pair of miSAN<sup>®</sup> or iSAN<sup>®</sup>D Series units can be configured in high availability mode for hardware level mirroring across a high speed LAN. In the event of a hardware failure, the pair will initiate automatic fail-over to the live replica. Users will never notice an interruption of services.



## Remote Replication

SANDR also supports WAN synchronization and replication to a remote miSAN<sup>®</sup> or iSAN<sup>®</sup> D Series unit. In the event of any kind of disaster, from simple hardware malfunction to destruction of the primary site, the remote storage can be used to quickly resume operations from a recent synchronization point. The replica is a live, spinning version of the production master.



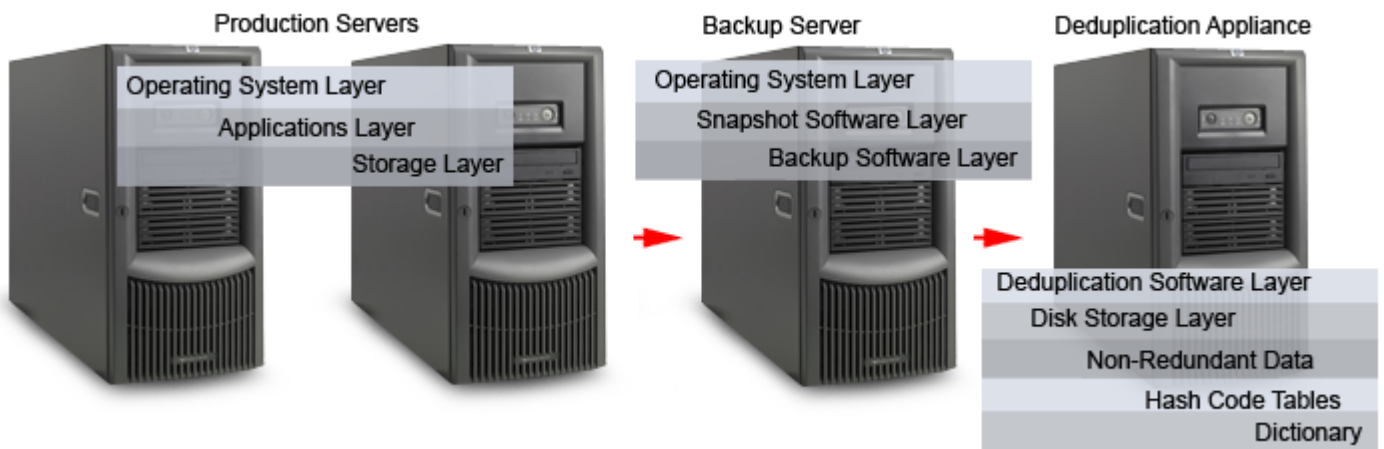
## Data Corruption

Whether malicious or accidental, data can quickly become corrupted or deleted. SANDR creates time stamped mount points, or snapshots, for the power to simply roll back to a point in time prior to the corruption.

## Active Deduplication Backup - ADB

Active Deduplication Backups (ADB) are integrated into the SANDR engine, eliminating the need for a separate, processor intensive, deduplication backup job. Most deduplication solutions rely on a deduplication server, which builds a dictionary of common data patterns. In this type of deduplication engine, all redundant data patterns are eliminated and replaced with hash codes. Ability to recover is subject to the integrity and security of a complex system of hash tables. Unfortunately, deduplication servers do not typically support easy capacity expansion or archival capability. Once full, a deduplication server becomes a locked storage pool. SANDR journals transactions, reducing snapshot backup files to the capacity of the most recently changed blocks. SANDR supports remote replication and tape archival to make the most of available capacity – and it supports capacity expansion. With SANDR, there is no precarious hash code database that is itself vulnerable to loss, corruption or failure. In fact, with SANDR, recovery is possible even if a virus is successful in deleting every block on the volume.

**Traditional deduplication backup requires many layers of software.**



**SANDR ADB Deduplication simply functions at the storage layer.**



## Snapshots

Each mount point or snapshot is a perfect view of the disk volume as it existed at a time stamped moment in time. Each snapshot can be mounted for reporting or testing operations, for backup operations, or for restoring files to the current volume. SANDR is operating system and application agnostic, compatible with any cache clearing synchronization technique. With time stamped mount points, a single volume can represent hundreds of times its actual capacity. Each historical view is fully accessible for operations or recovery. SANDR is simple yet incredibly flexible. A single unit can be configured to support volumes for both live and transaction journaling data, or multiple units can be configured to build in additional redundancy and separate live data and transaction journaling. A D2D2T solution with a zero backup window can be configured with just a pair of miSAN<sup>®</sup> or iSAN<sup>®</sup> D Series units and a tape drive.

## Value

SANDR is a breakthrough in storage technology because data protection is handled at the disk drive, disk block level. Servers with operating system and application layers can perform snapshot backups, deduplicated backups, and tape backups, but with SANDR there is no need for a backup server and there is no need for expensive backup or deduplication software – none at all. The data protection features are performed at the disk drive level. With SANDR, Cybernetics miSAN<sup>®</sup> and iSAN<sup>®</sup> D Series models are disk storage solutions that protect themselves in the most efficient and cost effective way possible. In fact, based on software savings alone, miSAN<sup>®</sup> D Series with SANDR can pay for itself on day 1.

### miSAN<sup>®</sup> D Series with SANDR Pays for Itself with cost savings in backup software.

	Upfront Cost Savings
<b>Backup Software</b>	<b>\$900</b>
<b>Bare Metal Restore</b>	<b>\$785</b>
<b>Server Backup Agents (4)</b>	<b>\$1,200</b>
<b>SQL Agent (1)</b>	<b>\$1,140</b>
<b>Exchange Agent (1)</b>	<b>\$1,140</b>
<b>Snapshot Server Agents (5)</b>	<b>\$4,790</b>
<b>Total</b>	<b>\$9,955</b>

Cost for small network with five windows servers

## Conclusion

Cybernetics' innovative SANDR Technology is nothing short of a revolution in storage because it provides live disk storage with its own integral protection against every conceivable threat to the information it represents. SANDR answers the challenge to meet the ever-increasing demand for high availability, wide compatibility, and certifiable ROI. Cybernetics miSAN<sup>®</sup> and iSAN<sup>®</sup> D Series solutions with SANDR outclass every previous data protection strategy.

**For more information call today at (757) 833-9000.**