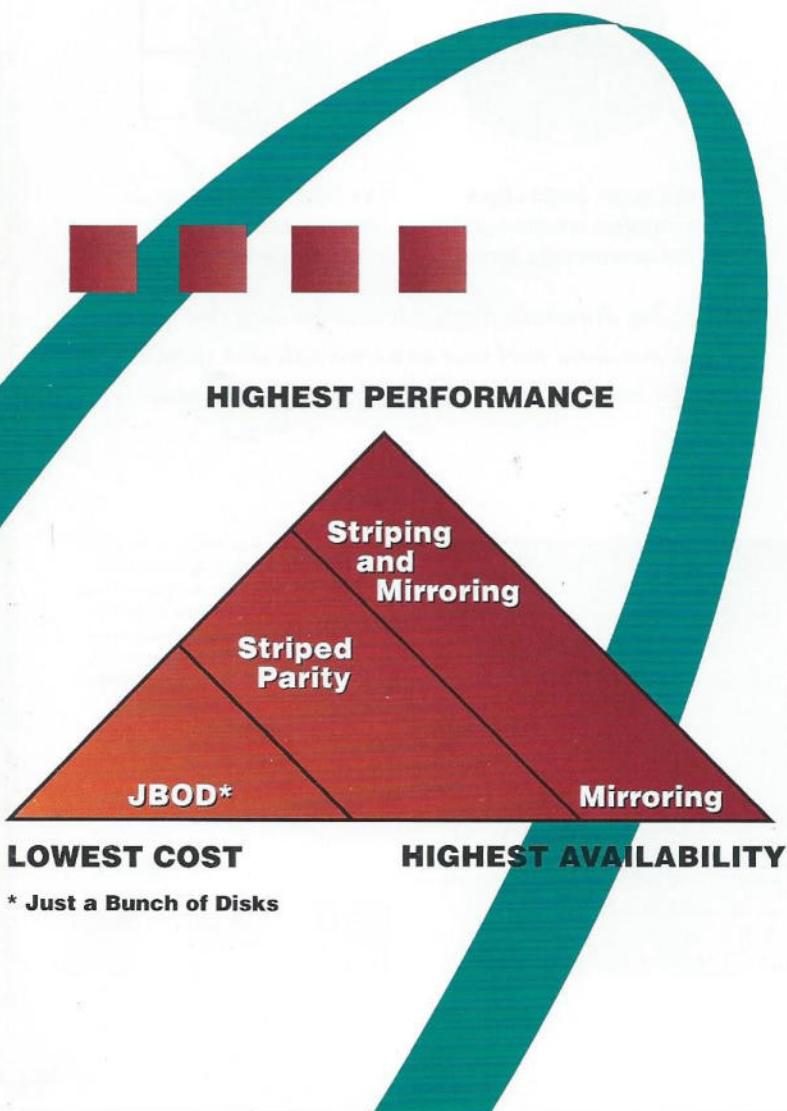# StorageWorks RAID Software for OpenVMS

Ensure data availability and performance with software-based RAID technology

*Storage W**o**rks*

Can you afford to turn off your business while you scramble to re-create lost data? Or slow it down for intensive applications such as transaction processing and customer service? StorageWorks™ RAID Software for OpenVMS™ protects the data your business depends on, while boosting application performance. And at a very affordable cost.

RAID (Redundant Array of Independent Disks) technology coordinates multiple disk drives to provide data redundancy, ensuring your data stays available if any one of your disks fails. RAID Software for OpenVMS provides RAID protection and performance enhancements:

•

Striping distributes data—and I/O workload—across multiple disk spindles, improving overall application performance.

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Parity plus striping distributes "parity data" (or check data) across the disk array. Parity data allows reconstruction of a failed disk's data, providing cost-effective data redundancy.

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Combine striping with Digital's Volume Shadowing for OpenVMS software for the highest combined performance and availability. Volume Shadowing software keeps copies of data on extra disks in "shadow sets." If any one disk fails, processing continues from its shadow set copy.

RAID software benefits

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Investment protection—Build a software-based RAID solution on existing, older systems.

•

High data availability—Keeps your data available when any one disk in an array fails.

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Better performance—disk striping balances I/O load, improving overall application performance.

•

Enhanced productivity—Your employees won't waste valuable time re-doing work lost if a disk fails.

•

Transparent to applications and end-users—Multiple disks appear as a single 'virtual' disk.

HIGHEST PERFORMANCE

Striping and Mirroring

Striped Parity

JBOD*

Mirroring

LOWEST COST   **HIGHEST AVAILABILITY**

* Just a Bunch of Disks

StorageWorks RAID Software for OpenVMS

Delivers disk striping for system performance and parity plus striping for data availability
Uses OpenVMS cluster technology for automatic failover
Protects with on-the-fly media error correction using parity data
Partitions single disks into multiple virtual disks (up to 64 parts) for easier system management

Parity with striping

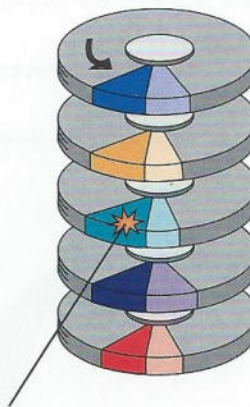| |
|---|
| Low cost data redundancy provides high data availability |
| Ensures parity integrity in the event of disk failures or system crashes |
| Parity protects all the data in an entire array using the capacity equivalent of just a single disk |

Striping

Maps data and parity across an entire disk array
I/O load balancing improves application performance
Works with Digital's Volume Shadowing for OpenVMS software for highest availability and performance

Solves storage and I/O problems—affordably

StorageWorks RAID Software for OpenVMS protects your system investment by extending RAID capability to disks not otherwise capable of RAID technology—such as older disks, direct-attached SCSI disks, disks attached via HSD05 DSSI array controllers, and arrays consisting of more than one type of device.

It also provides disk partitioning technology, which lets you subdivide arrays (or individual disks) into multiple virtual disks for easier storage management.

Boosts system performance

To maximize your system's performance, select disk striping. Striping balances the I/O workload by mapping data across an entire array. As a result, "hot spots" generated by frequently accessed data are minimized as their associated read and write requests are distributed. The result? Improved system performance.

Cost effective availability

For cost effective data availability choose parity plus striping. StorageWorks RAID software protects an array of up to 32 disks against data loss due to any single disk failure. Parity data allows reconstruction of a disk's data, should a disk fail. It requires the capacity equivalent of just a single disk for data protection—regardless of how many disks comprise the array.

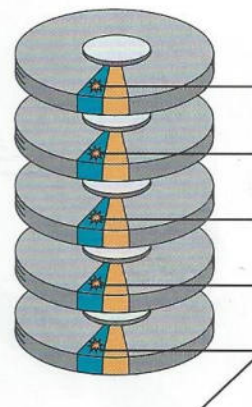## For highest data availability and performance

When you absolutely cannot afford to lose your mission-critical data, combine disk striping from StorageWorks RAID Software with Digital's Volume Shadowing for OpenVMS software. Volume Shadowing software ensures data availability by keeping up to three copies of data on fully redundant disks. It supports 24x7x52 data center uptime, letting you conduct routine backup operations without disrupting system operations and while updates continue.

Conventional Disks
(data distributed sequentially)

Striped array

"Hot Spot"; 80/20 effect. Entire system is bottlenecked by the slowest data access.

"Hot Spot" is spread across multiple disks, improving overall performance.

Striping distributes frequently accessed data (hot spots) and associated workload across multiple disk spindles, for better application and subsystem performance.