

# Disaster DRMS Recovery Mirroring System

## Real-Time Backup and Load Balancing Solution for Stratus Computer Networks

### Product Brief

#### The Challenge

The risks and the devastating effects of disasters resulting in computer downtime are obvious and always pose a pressing issue to any business running critical applications. Business organizations demand 100% fault tolerance and continuous availability of their computing systems. Relying on traditional, full system backups means that any critical data and transactions executed after the last system backup are lost forever. The use of traditional backups also means that data at the remote site always lags behind, so that the remote computers can not be used for online production processing and can only be utilized in course of a disaster-recovery scenario. For this reason, these vital and expensive resources are idle while the primary computer, in many cases, is over-loaded and suffering from deteriorated performance.

#### What Is DRMS?

DRMS is a software solution that provides reliable, bi-directional real-time data backup and mirroring over existing Stratus networks. At any given time, all critical remote databases are identical to the primary database, which ensures rapid and reliable application recovery. Networked computers mirror each other providing flexible, scalable load-balancing solution utilizing the full computing capacity of the hardware at both the primary and remote locations. DRMS replicates sequential, fixed, relative and stream files (including transaction-protected files) as well as, one-way-server-queue and message queues. DRMS dynamically detects and replicates newly created critical files so that no configuration changes are necessary. The internal design of DRMS puts great emphasis on protecting the business application and on preserving the primary computer's current performance. DRMS is external to the business application and requires absolutely no application or any software changes - its operation is completely transparent to the user.

#### Technical expertise and Support

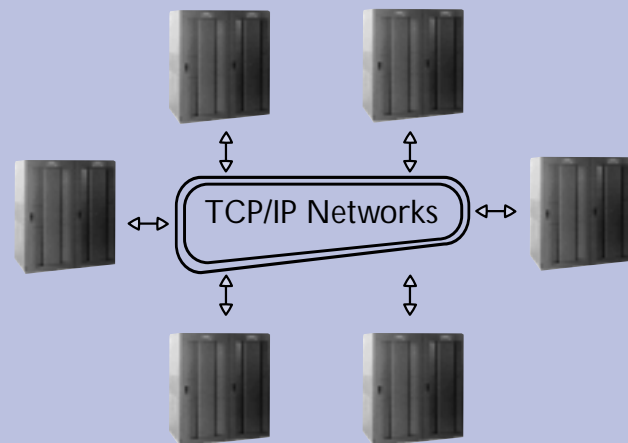
"SoftMark worked closely with Stratus to ensure their systems operated in concert to provide the highest levels of service for Tosco." Stratus Computer news brief, September 1999.

"The product's reliability and SoftMark's extraordinary responsiveness to our business needs and support questions has made the implementation of our Disaster-Recovery plans an easy, pleasant and trouble-free experience." Anders Carlsson, ICA

"We rate Application Resources (the distributor of DRMS) and SoftMark (developer/owner) as our best vendors in terms of problem/issue turnaround. Even after-hours, there is no discernible drop-off in resolution speed. It became very apparent from our discussions that they really understood the issues behind disaster recovery." Andy Orrock, Tosco Corporation

"SoftMark's technical support and responsiveness is outstanding. Their continued advice and close involvement with our project has made the integration of this product into a very large production system a manageable task." Alex Tulchinsky, AOL

"SoftMark has provided us with a high level of support and has always been responsive to our business needs." Todd Brown, Sherwood Securities



#### Hands-off operations

DRMS is designed to run 24x7 without any human intervention. DRMS dynamically manages all aspects of error detection, handling and recovery including alternate routing and communication line switching - always utilizing the entire network bandwidth.

"The DRMS product has been stable and has worked reliably since we first installed it in August 97." Anders Carlsson, ICA

## Scalability

As a software-only solution, DRMS offers total configuration flexibility and scalability. Any number of modules can mirror each other. The administrator can select and identify critical data files, directories or disks - all within DRMS' configuration. DRMS can simultaneously mirror critical data in any direction (A-to-B, B-to-A, B-to-C etc.). DRMS supports all VOS platforms and all VOS releases.

## Simplicity

DRMS requires no application changes whatsoever. It is extremely simple to learn, implement and operate on a daily basis and requires no specific training. The implementation phase of the software can be completed within a few days, once all critical data files or directories have been identified and listed in DRMS' configuration table (DRMS uses only one TIN file!). DRMS requires no additional hardware as it utilizes existing networks and supports both TCP-IP and X.25 connections.

*"The complete DRMS implementation took about 2 weeks. The installation of the product and the learning curve was done within only one day. Most of the time was spend on analyzing which critical files to mirror, fine-tuning our configuration and running benchmark tests."* Anders Carlsson, ICA

*"The product was easy to configure and implement ... there is nothing more that one table to configure and we were able to do that with simple phone support."* Andy Orrock, Tosco Corporation

## Batch Commands

DRMS replicates VOS internal commands, such as copy\_file, move\_file, rename, create\_file etc. so that any after-hours batch cycles and command-macros are also mirrored accurately at the remote site.

## Monitoring and reporting facilities

DRMS includes a robust and user-friendly administrator interface. The operator can monitor the system and all aspects of the data mirroring activities - number of I/Os, queuing operations, transaction throughput, processing rate etc. These monitors provide, at all times great sense of control over the system. DRMS maintains and reports activities both on system-level as well as on a per-file basis down to the lowest details of how many I/O operations were made on each critical file broken down by I/O type (write/update/delete etc.).

## Performance

Since most of the processing takes place at the target system, DRMS has practically no impact on performance of the primary (sending) computer.

*"Performance of DRMS is terrific - data is mirrored immediately over our 1 MB pipe. We attribute much of the gain in our performance efficiency to the fact that we deployed DRMS to replace a 'homegrown' mirroring solution that was patched together by our OLTP vendor. There is not any sign of page faulting. I rate that as very little overhead, considering that we're updating 2-3 files for each transaction and running at about 14-15 TPS when I took this measurement."* Andy Orrock, Tosco Corporation

*"We were also surprised with the results of our performance tests - during normal system load the overhead of DRMS is not noticeable at and, and during peak time (25 transactions/per second) we've measured an overhead of no more than 5%."* Anders Carlsson, ICA

## How does DRMS work?

During run-time, DRMS intercepts all I/O operations performed on files marked by the system administrator as critical. After the I/O operation is completed, DRMS passes the information to the DRMS Server for transmission to the target system. The corresponding DRMS server on the target computer collects these messages and executes the I/O operation within the remote databases. The only additional work that a mirrored operation requires is the sending of the message to the DRMS queue. The entire operation is therefore completed with minimal impact on the end-user's program.

## Open Architecture

Based on known data layouts and user-provided templates, DRMS can be used to convert any VOS data into standard text-only formats such as comma-delimited, XML etc. Such output is then transmitted to remote ODBC databases or written to local VOS files or queues for further processing.

## About SoftMark

SoftMark, a third party software vendor for Stratus since 1988 provides software solutions with emphasis on continuous availability of critical applications. Customers worldwide represents all major industries: banking, brokerage, telecommunications, healthcare, insurance, retail/distribution and gaming.

## Additional products

- **Spider** converts legacy VOS applications (FMS) into modern GUI/WEB interfaces using HTML/JavaScript
- **The SPS Suite** of management packages (alerts, automation, scheduler, monitoring, performance & security)
- **SourceVault** manages software evolution, revisions and assures the reliability, maintainability and stability of applications

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