



## Adding Recoverability to Your Availability Solution

### *Executive Overview*

Redundancy and other advanced computing strategies are improving availability throughout an application infrastructure. However, these strategies are not always as effective as they can be in a recovery situation.

This brief explores some the exposures lurking within new approaches to storage management, and highlights some potential strategies for success.

*White Paper*

Redundant computer systems have become extremely popular over the last several years as business continuity solutions, particularly for organizations that require uninterrupted processing for their business systems. In theory, should a failure occur, the duplicate systems would immediately assume processing responsibility with little or no disruption. Obviously, to make this work, it's not just the hardware that's duplicated, but also the information stored within the system. This concept is commonly referred to as "data mirroring".

Simply put, data mirroring is the process of copying data contained on one disk to another disk. It can be implemented with complete hardware redundancy or as a stand-alone solution. In the event of an unplanned outage, a current or near-current copy of the organization's data is safely tucked away on the redundant disk, usually at a remote location. If complete disaster recovery is required, normal business processing can resume in a minimal amount of time because restoration of complete disk volumes are usually not required.

A variety of data mirroring solutions using specialized hardware and/or software are available in the market today. These mirroring solutions can be implemented at various levels ranging from a single disk or application to the entire array of disks. Complete mirroring may be the safest alternative, but it's also the most expensive. Most of today's implementations are complete mirroring but many organizations are re-examining alternative approaches because of the cost involved.

Traditionally, data has been protected by making backup copies to some form of removable media at precise points in time. But the traditional backup process has become a significant burden for most data centers. Processing requirements have expanded to 24x7, data stores have dramatically grown in size, and the logistics

of manipulating large quantities of media have become very complex. Some organizations have limited their backup activities to full disk, or volume image backups run weekly, relying on mirroring as their principal means of backup and recovery. Although this may appear to be a reasonable compromise, it actually exposes the organization to considerable risk.

### **Mirroring is All or Nothing...Mistakes and All**

When we think about business continuity and disaster recovery, we tend to picture catastrophic events rather than "soft" failures. Soft failures are those caused by process and programming errors, systems management violations, human errors, virus infection or anything that corrupts the enterprise's data. A hard failure is a situation caused by some sort of physical problem. This could include computer equipment failures, power and HVAC (heating, ventilation and air conditioning) failures, natural disasters, and most acts of vandalism, sabotage or terrorism. It's worth noting that some malicious acts could also be categorized as soft failures if data was deleted or corrupted intentionally by someone with the knowledge to do so.

Most business disruptions are actually the direct result of soft failures. Several recent studies have shown that as many as 80% of mission-critical application processing disruptions are directly caused by people or process errors. The other 20% percent are the result of technology failures, environmental failures or catastrophic disaster. When a soft failure is encountered, processing must be halted and recovery must be initiated from a backup copy of the data, a process that can be difficult and time consuming. Because bad data is mirrored along with the good, the redundant disk must be restored as well.

If your only backup is a full disk image, your choices are either to completely restore the entire disk, possibly affecting other applications, or to selectively restore individual application files, a process subject to error. If your backups are a week old, the entire week's processing must be rerun to bring the affected application up to date. Furthermore, today's business applications tend to be highly integrated. A soft failure in a single application could have repercussions throughout the system, further complicating recovery.

Mirroring and traditional backups are not mutually exclusive solutions. They both have their role in protecting the enterprise. The mirroring technologies available today are outstanding availability solutions. Some of the more complex solutions offer multiple levels of mirroring, snapshot capabilities, and some even provide a "rollback" feature, allowing you to return to some point in time before the failure occurred.

But for the majority of common failures, mirroring solutions not effective recovery solutions. Cost is one major drawback. Enterprise-wide platform support is another. But the most significant may be that the new technology you adopted to protect your existing technology introduced yet another level of complexity to your environment—another maintenance contract to acquire, another support organization to contact, and another piece of hardware that's subject to the same kinds of failures your existing equipment systems experience.

### **Availability and Recoverability Can Exist Together**

An alternative solution can be crafted to provide both availability and recoverability protection, without adding complexity, and at a reasonable cost. This solution includes mirroring augmented by an enhanced backup approach that enables priority-managed, tiered recovery of data.

Certainly all of your corporate data is important and it all must be protected, but it's very unlikely that all of your applications are business critical. The place to start is with a critical application analysis. You need to know which applications are most important, the processing you depend on to conduct day-to-day business. You should then determine recovery time objectives for each application. This involves estimating the effect that application downtime will have on the business as a whole. It's recommended that you form three categories from the results:

1. Applications requiring continuous availability protection and immediate recoverability
2. Applications that can remain unavailable for a moderate amount of time
3. Applications that can be recovered as time permits.

Clearly the applications in the first category, probably a small subset of your entire portfolio, are your candidates for mirroring. Recovery time objectives for the other categories indicate that they don't require continuous availability and can be adequately recovered using a priority-managed, tiered recovery approach from backup media.

Disk image backups are generally unsuitable for priority-managed, tiered recovery, although it's probably best to continue their creation as a third level of protection, preserved in an off-site archive. Application level backups may appear to fit the requirements, but the files vital to their recovery may span several different applications. Typical application backup procedures tend to capture data at different times for each application, making synchronization difficult and often backing up files that haven't changed. Standard system utilities can create backup copies of anything you choose, but the identification of files, setup, monitoring and management are manual tasks.

Affordable software solutions are commercially available to assist and even control priority-managed tiered recovery. An ideal solution will support all of your operating environments and provide central control and monitoring of the process. It should identify files critical to each application, know when backup is required and dynamically schedule the process, finding windows to lessen time constraints. It should understand interdependencies among applications and capture all vital files at a common sync point. All media types, including mirrored disk, should be supported. It should also be capable of grouping or “stacking” related files. This not only reduces the amount of media required, but also minimizes media handling, thus reducing errors and promoting speedier recovery.

An essential component of the solution is the capability of generating the procedures needed for priority-managed, tiered recovery. Ideally, it should tell you which media groups are required and where they are located for each application or set of applications requiring recovery. And finally, it should provide automatic protection with little overhead, running silently and independently, yet notifying you if an exception is discovered.

Selective mirroring combined with an enhanced backup approach enables priority-managed, tiered recovery. This solution can dramatically reduce redundant hardware and minimize costs, simplifying the process, using inexpensive but reliable backup media, without compromising protection or the availability of your business critical systems.

## About 21st Century Software

21st Century Software delivers **Application-Driven Data Management (ADDMM)** solutions that retain and recover data and files required by critical enterprise applications. 21st Century Software's VFI family of software solutions are used by organizations across many industries and of all sizes to **bring intelligence to data protection**.

VFI solutions are intelligent, automated, real-time data protection from 21st Century Software. VFI constantly monitors files and data used by enterprise applications to determine which files would be most critical to recover after a disaster, hardware failure, or other calamitous event.

The VFI family of solutions can be critical elements in your enterprise backup and recovery strategies by helping companies address ongoing data management challenges:

- >> *Recovery of Critical Files:* VFI solutions monitor data usage by enterprise applications to ensure the recoverability of critical data required to run the business.
- >> *Regulatory Compliance:* VFI solutions help organizations determine which data and information needs to be retained to comply with governmental and industry regulations.
- >> *Storage Utilization:* By retaining only the most critical files and optimizing data management processes, VFI solutions deliver greater insight into data management processes and help improve storage utilization.



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