Electronic Vaulting:
Facilitating the New Era of Rapid Recovery

By John Lindeman

Among the many paradigm shifts sweeping across corporate America, one of the most dramatic is unfolding in the business continuity industry. It is a recovery option few companies would have considered even three to five years ago – electronic vaulting.

Traditionally employed for only the highest-end solutions, electronic vaulting is emerging as a viable option for all environments.

The concept of electronic vaulting in the disaster recovery industry is becoming an increasingly popular subject for several reasons:

• Massive Amounts of Data to Manage
As Enterprise Systems continue to grow and proliferate, the cost per megabyte of storage drops. IS departments are finding themselves with massive amounts of data to manage and back up. The larger the storage complex, the longer it takes to restore.

• New Regulatory Demands
These demands have been placed on businesses regarding the amount of time by law they need to be back "on-line." For example, the SEC places severe time frame limitations on firms and businesses that are trading in the market. Other governmental restrictions may fall on hospitals or utility companies. Because of these new restrictions, all companies – those who have planned for unplanned outages and those who have not, are finding themselves behind the timeline of traditional disaster recovery. They are looking for some form of mirrored environment where recovery may be only minutes away.

• Competitive Pressures
These pressures are causing organizations to look deeper into their business continuity programs. Critical systems are being examined not only from a pure recovery perspective, but also from what it means to the organization as they relate to their stakeholders and competition.

Before the arrival of electronic vaulting, all other changes in recovery methodology had been incremental – small but nonetheless significant improvements in slowly reducing the recovery window. The shift to electronic vaulting signifies a leapfrog in the way companies handle, protect and recover information. In order to better understand electronic vaulting and assess its relevance for a particular company, it is helpful to understand the factors causing this new view of recovery options.

WHAT IS ELECTRONIC VAULTING?

Electronic vaulting is the quickest recovery process now available in the IS environment. Its goal is to reduce recovery time by protecting information and enhancing its recovery. Various forms of electronic vaulting accomplish this by pre-staging operating systems, applications software, and transactional data, and then updating the information frequently.

The appeal of electronic vaulting is apparent: By maintaining duplicate data and systems at a recovery site, electronic vaulting can dramatically shorten the recovery window and, in some cases, close it entirely.

A NEW WAY OF PROTECTING INFORMATION

For most companies, basic decisions about electronic vaulting will depend on their assessment of the importance of the data that needs to be preserved. However, remote storage shadowing or mirroring is

responsible for the dramatic change in existing recovery practices. Traditionally considered to be exclusive and high-end recovery options for only the largest of companies, shadowing and mirroring solutions are being reconsidered. There are several converging factors contributing to the shift in the recovery paradigm. They include:

• Escalating customer needs, both in end-user expectations and information as a competitive advantage
• Continuous technological advances
• Emerging telecommunication solutions
• Declining cost of ownership
• Impact that the information-centric era is having on IS shops

GROWING STORAGE – INCREASED AVAILABILITY REQUIREMENTS

Information storage across heterogeneous platforms is growing by 20-30 percent annually. On top of that, application availability requirements are continually increasing, so that the typical IS environment is in a losing battle with the typical backup window.

Users lose too much time backing up their information by traditional means and cannot afford to lose access to their databases for that amount of time. Electronic vaulting has emerged as the only viable option to remedy this situation.

Remote Storage Shadowing or Mirroring
Shadowing and mirroring replicate information as it is created, transaction by transaction. The information is simultaneously transmitted via high-speed fiber optic circuits to a remote site, effectively storing transactions at two locations. Once information is stored and protected at a second site, it becomes immediately available in the event of a processing interruption at the originating site. Shadowing and mirroring close the recovery window for mission-critical applications and can eliminate the need for a duplicate and costly processing center.

Although the terms shadowing and mirroring are often used interchangeably, there is a subtle distinction between the two.

Shadowing implies an asynchronous process in which updates to the remote storage unit can lag – or shadow – the production storage unit to some degree, usually a matter of a single action.

A mirrored storage unit is a dual data entry – or synchronous process – in which the two storage units are exact duplicates – mirrors – of one another at all times.

Hardware and Software Requirements for Shadowing and Mirroring
Information shadowing and mirroring can be done in a number of ways, although not all will provide the same level of performance or cost effectiveness. The two basic choices are to use redundant processing platforms – dual CPUs linked by specialized software – or, to use an intelligent storage solution.

The other option, intelligent storage, is where the storage itself is responsible for keeping the two sites in a mirroring or shadowing mode. This relieves the process of requiring a second CPU and the cost associated with that requirement.

The New Paradigm of Continuous Availability
Obviously, the one thing missing from the latter is the CPU, and in the event of a failure, having the information instantaneously available without a processor is of little use. However, if the model is expanded to include a recovery provider's processor, then the components required for discontinuous change to existing recovery programs are in place.

Operationally, as information is created at the production site, it is electronically vaulted to the recovery site. In the event of an outage, the recovery provider's processor is immediately attached to the shadowed storage, the critical application activated, and the end-user network can fail-over.

Another extension of the new recovery paradigm is in the area of heterogeneous storage access. As companies begin to share information between platforms on the same storage device, the ability to recover the information becomes centric to the organization's recovery program. Information from an open system platform that is out of synchronization with information from other enterprise systems is of little use. With heterogeneous shadowing or mirroring, the recovery process becomes even more encompassing.

The model can also be expanded to include work-load compression. With work-load compression, the entire tape backup operation is changed and integrated into the new storage paradigm. For example, by off-loading the backup process to the recovery provider, application availability becomes continuous at the production site while necessary backups are still performed.

The final area to consider when designing a shadowing solution is the network requirements. Major enhancements to networking services have enabled shadowing and mirroring solutions. The biggest sizing area is matching the company's transaction rate against the communication circuit required. In shadowing and mirroring operations only the "update" transaction is transmitted across the network. In a typical IS environment this accounts for 30-35% of the transaction rates.

THE FUTURE IS NOW

When thinking about implementing an electronic vaulting solution, remember it is a very flexible process. Companies can implement the solutions in phases: target mission critical applications and migrate their enterprise systems, and then target workload compression. The key is to identify the need, move to an information centric environment, and work with your storage provider and your recovery provider to integrate your storage, recovery and availability needs.

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