

Storage & Data Management



FRED MOORE

Serious Business: Backup Strategies for the 21st Century

In 1952, the world's first successful tape drive was delivered, the IBM 726 with 12,500 bytes of capacity per reel. In 1956, the world's first disk drive was delivered, the RAMAC 350 with 5MB of capacity. Though no one knew it at the time, two key events in the storage industry had occurred:

- The storage hierarchy was created with online and offline storage.
- The first storage management applications were born—namely backup and recovery.

Backup and recovery would become the primary storage management application for the next 50 years, as protecting data became increasingly important. Fifty years later, data center storage environments have exponentially grown and, in parallel, the value of digital data is critical to the survival of most businesses. The need to reduce the lengthy times required by traditional backup and recovery methods has never been greater.

With growing pressure to reduce the amount of time required and the amount of storage consumed, many new and improved backup methods are appearing, offering a variety of options, depending on what operating system is used, when and how the data is maintained, if compression or encryption is used, and the geographic locations involved. Backing up and later restoring potentially huge amounts of data in the least disruptive manner is becoming more difficult given the tremendous amount of digital data growth. In many cases, disk is becoming the preferred initial backup target, a role that had been exclusively filled by tape.

Globalization of the enterprise's IT operations and doing business over multiple time zones means that many businesses can no longer afford to take systems or data offline for significant periods of time, if at all, for a backup or restore operation. Today, selecting the optimal and least disruptive backup strategy for key applications can result in significant availability improvements. Leading-edge IT organizations are responding to the challenge by carefully understanding the backup/recovery choices before selecting the best solution.

Do you want faster backups or faster recoveries? There are numerous trade-offs with backup recovery choices. Disk-based backup has gained considerable momentum in the past year, offering faster backup and recovery times and has led to many varieties of virtual tape. Integrated virtual tape began on the mainframe in 1997 as an integrated

automated tape library with a disk array that appeared as multiple tape drives to the operating system. Highly successful in reducing the number of cartridges and drives, the virtual tape concept finally moved to non-mainframe computers beginning in 2004. Virtual tape without a tape library is the most common solution for smaller systems. Another form of disk-based backup is mirroring; however, it doubles the total storage expenses and protects only from hardware failures.

Incremental backup improves the backup time but takes longer to recover data than differential backup. Snapshot copies are fast but can get complex when determining the correct snapshot to recover from. Continuous Data Protection (CDP) appeared on the mainframe IMS database system in the early '70s and was called "IMS logging." CDP creates a sequential string of writes to a file but can require time to determine the precise recovery point.

De-duplication has gained considerable momentum in the past few years. De-duplication achieves data reduction by eliminating redundant data and yields very fast backup and significantly reduces the amount of backup storage required. De-duplication is compute-intensive and is available only for non-mainframe systems. Some skepticism exists over its maturity and restoration complexity.

However, the simplest approach may not provide the highest availability and severe business losses often occur. Today's IT environments are demanding a more comprehensive strategy for data protection, security, and high-availability than ever before. Businesses have often chosen the simplest approach, which has historically been doing full backups to tape subsystems. Several next-generation solutions are appearing and the time-consuming backup and recovery processes of the past are becoming obsolete. Building an IT infrastructure that's resilient to machine failures, intrusions, natural disasters, human mistakes, software errors, and the digital crime wave makes implementing the best possible data protection solution well worth the effort. The choices for backup and recovery are moving to the next level. Are you prepared? **Z**

About the Author

In 1998, **FRED MOORE** founded Horison Information Strategies, an information strategies consulting firm in Boulder, CO, that specializes in strategy and business development for emerging IT and storage networking companies. Fred began his 21-year career at StorageTek as the first systems engineer and concluded as corporate vice president of Strategic Marketing. He is a sought-after motivator and IT speaker worldwide and has published numerous papers and reports for the data storage industry. Voice: 303-417-9455; Email: fmoore@horison.com