



Virtual Data Recovery Provides a Seamless Dual-Copy & Recovery Solution for AAA Michigan's Virtual Tape Data

Like AAA motor clubs nationwide, the Michigan/Wisconsin organization provides a wide range of important and potentially life saving services to its large and growing membership. To ensure the quality and reliability of those services, AAA Michigan has invested in a new generation of computing technology designed to store and protect its crucial member information.

This story reflects how one service-oriented organization enhanced its Disaster Recovery systems for virtual tape data to improve its virtual tape operations.

AAA Michigan

Founded in 1916, AAA Michigan has in the subsequent years grown to become one of the nations most active and successful motor clubs. As of December 1999, the club signed papers allowing AAA-Chicago Motor Club to join Michigan and Wisconsin clubs and to be known as the Auto Club Group.

AAA Michigan/Wisconsin responded to 1,194,738 emergency road service calls in 1999. The club's popular travel services booked more than 50,000 tour reservations, over a quarter million airline tickets, and some 11,000 cruise cabins. The Association also distributed more than 1.5 million maps and customized trip planning documents.

To support those impressive services, the Club has built and refined an advanced Information Technology infrastructure. An integral part of AAA Michigan's IT systems is a sophisticated and flexible Disaster Recovery Plan (DRP).

Migration and DRP Challenges

AAA Michigan operates an IT department consisting of an OS/390 Mainframe with IMS, DB2, and CICS, an IBM 3494 Virtual Tape Server (VTS) with attached Native 3590 tape drives, as well as A UNIX, AS400, and Windows NT platforms.

Prior to deploying the IBM 3494 VTS, the Club had used a series of IEBGENER steps to copy files for disaster recovery purposes. The Club had also used a 50,000-cartridge tape library supported by 3480 tape drives with IDRC. This library employed older technologies that resulted in higher maintenance costs when compared to current, newer technologies.

For example, when IMS and DB2 image copies were required, the last image copy of each daily application was given a unique DR DSN qualifier and stored offsite. Primary copies of DB2 logs were kept onsite, with secondary copies sent to offsite storage.

While this dual, onsite/offsite procedure worked for a time, but is also presented a point of exposure if a recovery was needed. "A waiting game would result if we needed to recover data using one of those tapes," explains senior storage analyst, Scott Chamberlin. "And delays to production processing in any environment are not acceptable".

On top of eliminating recovery delays, the club also felt it was necessary to reduce offsite storage costs by converting from 3480 tapes to higher -capacity 3590 Magstar cartridges. This means that one method was needed to copy DR data from a new VTS system to the Magstar tapes, and another method was required to migrate data from the legacy 3480 library to the VTS while performing the same task selectively for the new 3590 drives.

"We needed a storage migration procedure that was faster, more reliable and more cost-efficient," says Chamberlin.

The club launched what eventually evolved into a two phase effort: It first worked to migrate its tapes into a Virtual Tape System environment using advanced tape migration technologies. Then, as part of an overall Disaster Recovery program, the club used a sophisticated Virtual Data Recovery solution to enhance its enterprise data security.

Backup Options

Organizations of all kinds face data challenges similar to those of AAA Michigan. Today, IT departments have a number of options when faced with the need to generate and archive important data for operational and disaster recovery uses.

Historically, IT departments created a tape backup that was then physically transferred and stored in an off-site location. This traditional method was simple and easy to track, but it required a costly investment in multiple tape drives, racks and media at the disaster recovery site.

The good news for AAA Michigan and other organizations that need a productive D/R solution for virtual tape is that a new and highly effective approach has now emerged.

AAA Michigan's Virtual Tape Deployment

AAA Michigan recognized its need for a new and more effective tape data solution. As part of its move to the IBM 3494 VTS environment, AAA Michigan needed a reliable and efficient way to move tape data from its legacy systems to the VTS and 3590s. Of AAA Michigan's 50,000 3480 cartridges, approximately 30,000 were active during the Club's Virtual Tape project, and were to be migrated to save floor space and manual tape mounts.

To meet this challenge, the Club deployed OpenTech Systems' Tape/Copy solution to improve its tape stacking & migration process. A previous technology had allowed files with mixed retentions to be stacked together, making it difficult to expire older files stuck

on volumes with longer retention. Tape/Copy's MOVE and UNSTACK features allowed the Club to copy stacked 3480 tape files to individual virtual volumes and let expired datasets scratch.

The Tape/Copy solution is designed for migrating, consolidating and providing location management of tape datasets. This tape migration technology allowed AAA Michigan to load its new Virtual Tape System with datasets from their existing library in a time and cost efficient way.

Because all of the Club's 3480 tape mounts were manual mounts, the tapes were copied in groups and it took an average of about four hours to convert each group of 50 tapes. The entire process was completed in three months.

Before converting to the VTS using the Tape/Copy solution, AAA Michigan sent about 2,500 3480 tapes to the vault. After the implementation, the Club vaults about 65 3590 tapes. The Club was also able to reduce the number of 3480 tape drives it needed from 24 before the VTS implementation to just four after this deployment.

The Club's VDR Deployment

Then, as AAA Michigan evaluated its broader Disaster Recovery plans, they discovered that an extension to OpenTech's Tape/Copy solution called Virtual Data Recovery could yield substantial DR benefits.

Virtual Data Recovery (VDR) is an innovative new approach that uses a virtual tape system and a dual copy technique to create backup copies for operational and disaster recovery purposes.

Under this system, system administrators identify what types of data should be duplicated, and the VDR technology then automatically maintains a dual copy of the original under a target data name. The user also designates the frequency with which data will be duplicated.

VDR uses Tape/Copy's batch processing copying capability to create dual copies of critical data and continuously manages the relationship between the dual copy and the primary backup. Built-in VDR intelligence is used to build lists of data sets to copy, to process the duplex procedure, and to continuously track the integrity of the relationship between the primary backup and the dual copy.

VDR is ideally suited to a wide range of Disaster Recovery requirements. This approach can be deployed to create a backup of critical application data for secure storage. In this situation, a Virtual Tape System is used to store the primary backup, thus providing fast data access for all active applications. By using this VTS/VDR system, dual copies can be created using a minimum number of native tape drives, thus dramatically reducing the number of concurrent native tape drives used to ensure optimal Disaster Recovery protection.

In the event of a data center failure, administrators can invoke the VDR recovery function to switch from the dual copy to the primary backup, which includes all VDR-generated

files and volumes. Recovery of dual copy data can be managed through “in place recovery” of all data, or through the recovery to targeted media. Each method has its advantages and drawbacks, and selection of a recovery method will depend on cost, potential processing conflicts and other variables.

AAA Michigan deployed the OpenTech Systems’ solution to streamline and strengthen its DR-related vaulting system. Chamberlin’s team identified legacy tapes that were candidates for offsite storage, and then identified the frequency with which various files were created. Tape/Copy jobs were created at various intervals to copy tapes shortly after they were created. The Tape/Copy process was configured to ensure that all daily datasets were compiled, then coordinated and forwarded to the Club’s updated vaulting location.

Chamberlin and his team worked with OpenTech Systems personnel to customize the sorting and flow of files and copies.

By moving to this cost effective solution, AAA Michigan helped ensure the safety and integrity of its valuable member data.

Benefits of VDR

The VDR method offers significant advantages to organizations that need reliable, cost-efficient virtual tape data disaster recovery protection.

VDR is a dual copy system, under which the system creates a cataloged data copy while mirroring the retention of the primary backup copy at the Virtual Tape System level. This method ensures both an on-site copy and a copy at a secured, often off-site facility, thereby measurably improving the integrity of the entire D/R process.

Because VDR is by its nature a selective data process, this method provides optimal disaster recovery protection while using a minimal amount of tape media. VDR creates copies directly from the Virtual Tape Device, reducing the number of native drives needed to create daily vaulted data. VDR can also stack backups to high-density media, further reducing backup media requirements.

Under the VDR scheme, data centers are not required to retrieve D/R cartridges until all files are eligible to return, a feature that serves to ensure the integrity of all dual copy data. If more than one vault is used in the D/R process, VDR assures the appropriate backup data is placed in the correct vault location. The VDR solution continually tracks the relationships between primary copies and dual copies, ensuring DR integrity and reducing administrative burdens.

At AAA Michigan, the OpenTech Systems solution yielded a number of measurable improvements.

By using the Tape/Copy MOVE option to transfer 3480 tape data to the new 3494 tape library, the Club reduced its floor storage rack library from 50,000 to fewer than 1,000 tapes. The VDR system, in combination with 3590 tape capacity, allowed the Club to reduce its offsite storage requirements from over 3,000 slots to less than 300. Chamberlin

also reports his team was also able to remove hundreds of IEBGENER steps from application batch jobs, thereby substantially reducing runtimes.

According to AAA Michigan, the Tape/Copy VDR component is easy to use and understand. Tape/Copy parms related intuitively to their functions. Exception reports are clear and detailed, and the operating system's scheduling package makes it easy to create and manage backup jobs. JCL generated from panels can be modified for another type of run without regeneration. Jobs can also be simulated before they are actually run through the VDR process.

By removing the application file backups from the batch cycle with VDR, AAA Michigan saved about 1.5 hours in batch processing.

"The OpenTech Systems solution performed all the functions we required and achieved the results we expected," Chamberlin now says. "When we experienced a difficulty during our initial VDR test, OpenTech Systems responded within 15 minutes on a Saturday afternoon and faxed us a solution in less than an hour. We are very satisfied with this technology."

Virtual Disaster Recovery gave AAA Michigan the copy/backup speed, reliability and efficiency it needed, without disrupting the Club's existing vaulting scheme. It yielded measurable reductions in media and media handling expenses.

Most of all, this new VDR technology helps ensure the Club has fast and reliable access to its most critical information.