

# STORAGE SWITZERLAND REPORT

## REDUCING AS/400 DR EXPENSES



In a previous article, “Reducing Costs by Bringing AS/400 into the Backup Mainstream” we described the inefficiency of historical AS/400 backup. As it turns out, the tape-heavy nature of these systems also have the unwelcome side effect of increasing disaster recovery expenses. Using the same backup virtualization solutions discussed in the previous article can also help reduce AS/400 Disaster Recovery expenses.

Most AS/400 environments are protected by locally attached tape drives or autoloaders. After each night’s backup, tapes are manually collected, packed into tape containers and transported off-site for storage. This one-server-to-one tape-device architecture is tremendously inefficient and adds to DR costs just as it does to backup costs.

### Reducing Drive Count

Thus the first challenge with the typical AS/400 environment is to consolidate backup devices. The solution can come from implementing a backup virtualization system like ~~Clariis~~ Storage Director from [Tributary Systems Inc.](#) Virtualization can consolidate AS/400 backups to a single tape library eliminating multiple stand-alone tape devices. Because the initial backup goes to disk and subsequent automatic replication of data can be queued to keep drives spinning more of the time, the number of drives required is substantially reduced. This can mean

additional drives can be freed up for use at the DR site or if there is a backup virtualization appliance in place in the DR site, tape reduction could occur in both locations.

### The Truth About Media Consolidation

Ideally one of the ways to reduce DR expenses is to consolidate multiple AS/400 backups onto a single or a very few tape devices. However in the AS/400 world each server’s backups have to be on its own tape volume. This makes it challenging to consolidate backups across servers. Some backup solutions will utilize a capability called tape stacking to consolidate backups.

When a real disaster occurs, flexibility is the order of the day and application compatible tape is a must. While tape stacking does save tape expense it also increases risk, especially at the DR site because the software or appliance that “stacked” the tapes is required at the remote location. The cost savings is often outweighed by this complexity. Backup virtualization’s goal is to act purely as an abstraction layer between the backup source, in this case AS/400, and the final backup target, in most cases tape. That final target should be readable by the creating application or OS backup function without the need for another appliance or application. The goal in essence is to create application compatible tape and that is exactly what backup virtualization appliances like ~~TTI’s Clariis~~ Storage Director accomplish.

Although tape media consolidation via tape stacking is often undesirable even when it can be implemented using technologies like TTI's Claret Storage Director, backup virtualization allows for greater flexibility whether or not stacking is implemented and delivers cost savings. An AS/400 environment armed with backup virtualization may be able to select more feature rich or competitively priced backup targets as opposed to limping along with older tape technology. Alternatively front ending an existing library with backup virtualization can extend the life of that library. Either way it provides the ability to optimize that backup target and reduce drive counts.

Depending on how much data each system is backing up the freedom to move to higher capacity drives sooner may mean that fewer pieces of media will be required per AS/400. This reduction in tapes per AS/400 leads to less tape media being purchased, boxed up, transported, stored and eventually recalled. Reduced physical tape count because of backup virtualization helps in reducing AS/400 DR expenses by reducing the amount of time spent packing up these tapes and transporting them. All of these parameters can each reduce the cost of DR.

### **Protected Tapes**

Tape media is often the form that data takes when being moved to the disaster recovery site. Protection of these tapes is critical. Backup Virtualization appliances like TTI's also

deliver tape encryption even to tape drives that do not currently encrypt data. This can prevent a customer from being forced to upgrade tape formats just to have access to encryption. This is important because all but eleven states now require that if customer's data is lost for whatever reason, that loss must to be reported publicly, unless the data was encrypted. This public disclosure of a data loss event can damage the organization's reputation, lead to monetary fines and cause people to be fired. Tape encryption is 'cheap insurance' against this kind of risk, especially when with backup virtualization it is one of the built in capabilities. This once again delays the need for additional drives in both the main data center and the DR site.

### **Tape Replication**

Another cost reduction capability that backup virtualization brings is the ability to replicate the backup data directly to a remote facility eliminating the need for physical transport of tapes and the risks involved with that process.

Backup virtualization replicates the backup job as it is stored on disk and the entire job is then sent to another backup virtualization appliance at the remote site. Afterward the job can be sent to tape at each respective location, if desired. For further cost reduction, the creation of tapes could be limited to just the DR site and the primary site would be disk only for critical latest data copy restores.

This eliminates the transport issues associated with physical tape movement and provides an additional layer of security because the replication job can be set up to never go outside the organization's firewall. In some cases tape backup at the primary site can be eliminated altogether, using disk for recoveries from the most recent backup copy.

Archive types of recalls can then be pulled from the backup virtualization appliance at the remote site. While pulling data across a WAN segment is slower, these types of recalls are typically not as time sensitive nor as large as a full system recovery.

Today the entire backup job will be copied by the backup virtualization appliance and sent to the remote site. This can require significant WAN bandwidth (or patience). Backup virtualization because of its abstracted nature, can integrate data deduplication devices where high compression is required because of low bandwidth availability.

In the future, backup virtualization will include a WAN deduplication-like functionality, which will sync up the data set sent to the DR site with the data at the primary site and then only send net new data. This will cause a significant reduction in WAN bandwidth use but still store the complete copy of data at the DR site. This technique is ideal for DR and eliminates the 'rehydration' issues that plague some deduplication-only backup systems.

Deduplication increases storage efficiency by using a full backup as a baseline and then comparing subsequent backups to that baseline. If there is redundant data in the backup only the new or changed data is stored. While this is very efficient for storing days or weeks worth of backups, those subsequent backups are totally dependent on the previous baseline. Most organizations will want to create a stand-alone backup set, especially for DR. This process is called rehydration and can be time consuming and eliminating the need to do it where it matters most; DR, has significant value.

Although it's implied in this discussion, it should be clear that backup virtualization with replication can eliminate the need to contract with an outside DR facility altogether. If sufficient bandwidth exists, the remote location mentioned could be another corporate facility and replace a contract with a tape vaulting service.

Cost reduction and DR are often at odds with each other; adding a DR capability seldom comes at a lower cost.

However, implementing backup virtualization can reduce DR costs as it reduces backup costs.

This solution can also be extended to the rest of the enterprise data protection strategy. While as with the AS/400 environment, backup virtualization technologies such as from ~~FFA~~ can provide cost savings and improvement in recoverability for other platforms as well. In this way, an investment to reduce AS/400 DR costs can reduce DR costs throughout the enterprise.

### **About Storage Switzerland**

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