

# STORAGE SWITZERLAND REPORT

## BACKUP VIRTUALIZATION



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Virtualization has changed the way many data centers operate today. Server virtualization has increased server resource efficiency, flexibility and reliability. Storage virtualization has had a similar effect on storage resources and storage management. Interestingly, the backup and data protection processes have been largely left out of the gains that virtualization has brought to the environment. Backup virtualization attempts to change that. It can have the same results on the backup process, bringing efficiency and cost savings to this beleaguered section of the data center.

Almost all virtualization products work in a similar manner; they abstract physical hardware from the software that is intended to run on them. Backup virtualization is no different; it abstracts the complicated maze of physical devices from the backup application that tries to manage them and then optimizes the communication between them. For example, most data centers today have deployed some form of disk to augment tape backup. The goals in doing so are to reduce backup and recovery times as well as improve the backup process's overall reliability. Many backup managers feel that the addition of disk has been more of an "out of the frying pan and into the fire" moment, rather than actually helping anything. Gains, if any, have often not lived up to expectations.

The challenge is that even though disk backup has been a reality for well over a decade, most backup applications

don't handle well, the interchange between these two distinctly different forms of storage. Many applications still struggle with the workflow, which includes: copy to disk, copy to tape, remove backup from disk when needed, store and manage only on tape, and then do all this in the most optimal fashion possible. In addition, even if one application emerges that handles the multiple storage types and their needed workflows, it's unlikely that a move to standardize will cover all operating systems and applications. Most enterprises have three or four major data protection applications running and most have more than two types of backup storage 'destinations'. Backup virtualization can help by managing this collection of backup applications and storage devices.

One of the benefits that storage and server virtualization offer is the ability to provide a 'common denominator' to a diverse hardware and software environment. Backup virtualization brings this common denominator (and simplification) into an environment populated with diverse backup applications and backup device types. Backup virtualization software is typically installed on, or supplied as, an appliance, which looks like a tape library to the backup applications and becomes their common storage hardware platform. The appliance has disk storage as well as physical tape libraries either direct attached or SAN attached. Since the system is appliance based, the disk and tape solutions can be from almost any supplier.

Backup virtualization greatly simplifies the backup process. Once implemented, all backup applications can refer to a single backup target, communicating directly to the backup virtualization appliance. The backup virtualization software handles negotiation between multiple apps sending simultaneous backup jobs. As data is sent to the backup virtualization appliance it's typically cached first to disk. Just like tape, this virtual environment can be created to present to the application multiple virtual library and drive configurations, giving the application both what it is used to seeing to maintain transparency and yet provide the policy based environment needed to improve efficiencies. For example, backups can first be cached to high speed disk for performance and reduction of backup windows. Then they can be moved by the appliance to higher capacity, compressed or even deduplicated disk for longer term retention. This can all be segmented by application or even by data set within the application. The backup virtualization appliance does all the data movement, the backup software application server no longer has to spend resources to perform these functions.

Backup virtualization also allows tape to reach its full potential. Backups can be directly transferred from the disk storage area to tape. The direct nature of this transfer allows for the extreme high performance that modern tape drives demand. The result is that tapes run at full speed, with less stopping and starting, resulting in faster moves to tape, a requirement for fewer tape drives, and increased reliability. The move to tape should be seamless and accomplished based on the storage policy requirements of the data, not requiring additional administration, moves or copy functions. Data can be made available on both disk and tape at the same time. This is a critical capability since many applications struggle with managing multiple copies of the same data set. Since the data is kept on both disk and tape, this means applications can use the most readily accessible copy of data at the time the restore request has been made. The backup virtualization software will make that decision for the application, removing the overhead from the backup server by handling the data movement between disk and tape. Vendor lock-in is eliminated with backup virtualization, allowing companies to use both existing infrastructures and new technologies that natively may not be currently supported by the application environment.

It's important to note that backup virtualization is not just VTL (Virtual Tape Library). VTLs typically are disk arrays set to act like tape libraries but become the final resting place of the data, outgrowing their capacities and not allowing seamless use of real physical tape resources. Historically they have solved few of the problems that faced the backup administrator, which was probably the reason for their limited market success. They typically have a disk vendor lock-in requirement that makes them unsuitable for the enterprise, which are more apt to have multiple backup storage platforms. Though some VTLs can accomplish a copy from disk to tape, most rely on the backup software application, which (as mentioned above) typically doesn't handle the resulting duplication of data well. VTLs would be the server virtualization equivalent to a mainframe. While it could run multiple virtual machines, all the hardware and applications would have to come from one source.

Backup virtualization technologies like those from [Tributary Systems, Inc.](#) (TSI) through their VITAL and Storage Director Appliances, allows companies to deploy a technology that leverages their investments made in current infrastructures while also allowing them to change and deploy new technologies easily and without having to make wholesale changes to the existing infrastructure. By deploying the backup virtualization appliance, it becomes a neutral target for all backup applications including legacy environments like Mainframe, HP Non-Stop, AS400, AIX, UNIX, LINUX and literally any open systems platforms.

This is critical when considering multiple backup software and hardware products are already entrenched in the data center, each typically requiring their own individual infrastructure. A solution meant to simplify this infrastructure would have to follow the virtualization model established in the server and storage markets. Providing the means to leverage, utilize and consolidate existing hardware and software while truly optimizing and simplifying management and operation through virtualization of the backup, DR, archive and compliance needs of the business. The more pieces there are in an infrastructure the greater value virtualization can bring. Backup, with its multiple software applications, multiple operating systems to protect and the wide variety of data targets typically deployed, certainly can benefit from virtualization. Given the history of success in the server and storage virtualization space, the ROI in backup virtualization should be as strong.

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