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### Ironclad Backups

**At small businesses, data can be just as critical to operations and profitability as at larger enterprises. Augmenting traditional tape archives with disk-based backup adds extra insurance.**

By Karen D. Schwartz

With a spate of natural disasters in the not-too-distant past, exponential data growth rates, and legal and regulatory burdens steadily increasing, IT managers know full well the importance of ensuring that critical applications and data are backed up at regular intervals.

The declining cost of disk storage and its faster backup and recovery capabilities has businesses moving aggressively to disk-based backup systems, yet traditional tape backup is not dead. Many continue to rely on tape as an archival backup method, combining it with real-time disk mirroring in a three-tier architecture known as disk-to-disk-to-tape, or D2D2T. The approach combines the speed of disk-based backup with the low cost, reliability and familiarity of tape.

While adding disk mirroring to the backup mix is more expensive than a manual-loading tape system, a three-tier D2D2T system offers many benefits over traditional tape. Not only can organizations back up more applications, data and servers in much less time — especially as data volume increases — but administration is automatic and touch-free, and users can initiate their own restores. In addition, restoring from disk-based backups is much faster than searching and mounting tapes, particularly for recovering specific data that can be required in a legal or regulatory proceeding.

The cost of a D2D2T system varies greatly, depending on a variety of factors, including the type of disk technology chosen, whether the company is leveraging an existing tape infrastructure and backup software, or whether the organization chooses an integrated product from one vendor or a piece-by-piece solution by various vendors. In general, the cost of adding disk-based backup to an existing tape infrastructure ranges from about \$10,000 to more than \$200,000, analysts and buyers say.

It took a motherboard failure on a critical server, in concert with the merging of two company facilities into one large distribution center, to convince management at House of LaRose, a beer distributor in Brecksville, Ohio, to move from manual tape backup to a faster, more reliable D2D2T system. Those circumstances were all the proof that software specialist Dan Brinegar needed to convince the CEO of the 350-employee company that disk-based backup was the way to go.

"Either we had to spend the money to get a tape autoloader, which would have cost several thousand dollars, or we could pump

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more money into it and get disk-to-disk-to-tape, which would be much more reliable and automated," Brinegar says. "It was the only time since I've been with the company that the president told me to go ahead with the project before I even left the boardroom."

## Save Time and Money

As the term D2D2T suggests, the typical configuration of a three-tiered storage strategy consists of operational storage mirrored to a second disk-based "data recovery" tier, which in turn is periodically backed up to tape for the third "disaster recovery" tier, which can be stored off-site. The strategy works well for smaller businesses, which often don't have the time or staff to handle time-consuming tape backups frequently, according to Heidi Biggar, an analyst with Enterprise Strategy Group of Milford, Mass.

"Disk-to-disk-to-tape automates a lot of what SMBs have had to do manually, offering menus and automatic e-mails telling them what needs to be done," agrees Tricia Jiang, technical attaché for IBM Tivoli Storage Systems. "It makes sense for SMBs, who don't usually have a lot of resources to dedicate to worrying about backup."

Today, House of LaRose uses a combination of technology from FalconStor Software, including its IPStore storage management software with its FileSafe and DiskSafe replication agents, along with FalconStor's CDP data recovery software. The benefits, Brinegar says, have been staggering. In addition to ensuring business continuity in case of disaster, company executives now don't have to worry about whether all of the company's data will be replicated and restored.

"You almost can't measure it until a disaster occurs," says Raju Shah, information services manager for Mouser Electronics Inc., a Mansfield, Texas, electronics distributor with about 500 employees. Shah made his D2D2T case to the CEO by explaining that all of the night IT administrator's time was spent making sure backups were running and changing tapes, and that, because of time constraints, he occasionally missed a backup. "It was more about what happens when you don't have a backup. We were just flirting with disaster, and he understood that," Shah says.

Shah used data points showing that tape backups were becoming too time-intensive as data stores grew, plus an explanation that the company's distributed environment required separate tape drives for various systems, to convince the CEO to authorize a move to IBM's Tivoli Storage Manager (TSM) in 2003. Today, Mouser uses TSM to back up a multitude of applications and data, including IBM's UniVerse relational database management system, which houses the company's order entry and financial data, as well as its warehouse control system, graphics servers and file servers.

FalconStor's and IBM's Tivoli products are among many solutions that fit the bill. Others include EMC's Retrospect, Overland Storage's REO, Certance's CP-3100, IBM's Tivoli Storage Manager Express, and Hewlett-Packard's Data Protection Storage Server and iSCSI Virtual Library System.

## Finding the Right Fit

Although the benefits of D2D2T seem obvious, IT managers still must justify the investment to senior management, and choose the right vendor.

Small businesses need to find a supplier with strong engineering support and financial staying power, given the critical nature of the technology they provide, notes Michael Smith, vice president of Forbes.com, the New York-based online partner to Forbes magazine with fewer than 200 employees. "If something were to go wrong, you have to be confident that they will be there. It may even be more important than the technology itself."

Forbes.com currently uses Hewlett-Packard's MSL Tape Library in conjunction with disk-based backup from another vendor to back up a host of applications and servers hosting databases, and Enterprise Resource Planning system, Customer Relationship Management systems, ad campaign data, article archives and images — a data store Smith says is growing by 200 percent per year.

Although three-tiered backup systems tend to be more automated and easier to manage than tape backup systems alone, they require a management plan, users say. And it's best to infuse the process with a little human supervision, Shah warns. He recommends assigning an administrator to ensure that critical data is backed up properly and thoroughly. Mouser's night operator, plus an additional part-time administrator, keep their eyes on all backups as well, ensuring that new clients and servers are added to the backup routine, increasing disk pools as needed and generally fine-tuning and troubleshooting the system.

"There has to be some degree of intervention since this is critical data. You'd hate to have a disaster and find out your backups the night before weren't completed or were bad for some reason," he says. "We consider it an insurance policy."

### CEO takeaway

Adding continuous disk-based backup to archival tape systems is worth the investment for many small businesses. Here are some key considerations:

- Manual-loading tape backups are increasingly time-consuming for your IT team as the company's data volume grows. Disk-based backup is more automated, freeing IT resources for other tasks.
- Loading tapes can also be more prone to human error than automated disk-based backups, potentially creating gaps in data backups that can be costly if disaster strikes.
- Restoring from disk-based backups is much faster and easier than from tapes, which makes producing data for legal or regulatory compliance less costly.

• It's not all about the ROI, since value of complete backups and speedy recovery is difficult to measure until a disaster strikes and then it's too late. Realize that you're investing in peace of mind and business continuity.

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