AMI Whitepaper

"Disk to Disk to Tape Backup Disk Staging using iSCSI"

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1. D2D2T/BACKUP DISK STAGING USING ISCSI

In a typical company, a backup solution consists of a backup server loaded with backup software that backs up data to a tape device. This is called Disk-to-Tape or D2T. Usually, a company would want to backup their database, file and mail servers to it. Depending on the backup policy of the company, backups are performed either incrementally or fully. Usually incremental backups are performed at least once a day while full backups are performed at least once a month. Tapes are stored in a secure, environmentally controlled, offsite location.

D2T backups have the following limitations:

- Each server must be backed up individually or interleaved, which has a longer recovery time.
- Large backups can span more than one tape and requires someone to be around to swap tapes, usually at night or early morning. Software and hardware for automated tape drives are expensive.
- During backup to tape, data cannot be restored.

One in five tape backups fail. The reliability of large backups can be compromised due to one bad tape, which renders all tapes in the batch useless.

Some corporations are completely eliminating conventional tape backups and backing up directly to disk. This type of backup solution is called Disk-to-Disk or D2D. All limitations to conventional tape backups can be addressed by backing up to disk and completely eliminate tape backups. Non-tape backups can easily be transmitted to an offsite location via Ethernet and stored directly to disk.

The limitations of tape are not the only reason why companies are moving exclusively to disk backups.

1. In February of 2004, a large US bank lost a single magnetic tape with information on roughly 120,000 customers while it was being shipped by truck from a data management center in Singapore. The tape held names, addresses, account numbers and balances. It was never found. In early May of 2005, the same large US bank lost an entire box of tapes from its financial division in transit by one of the largest

privately owned shipping companies. Although the tapes were encrypted and were not known to be accessed, the news of their loss created a media frenzy. Four million customer files where compromised. (Source: New York Times, The Scramble to Protect Personal Data, June 09, 2005 6:01 AM ET)

2. Also in May, a large media and entertainment company said that computer backup tapes containing data on 600,000 individuals were lost by an outside data storage firm. (Source: USA Today, Tapes with data on 3.9M missing, June 07, 2005, 7:35 AM ET)

These stories are not uncommon and could have been your company's backup tapes.

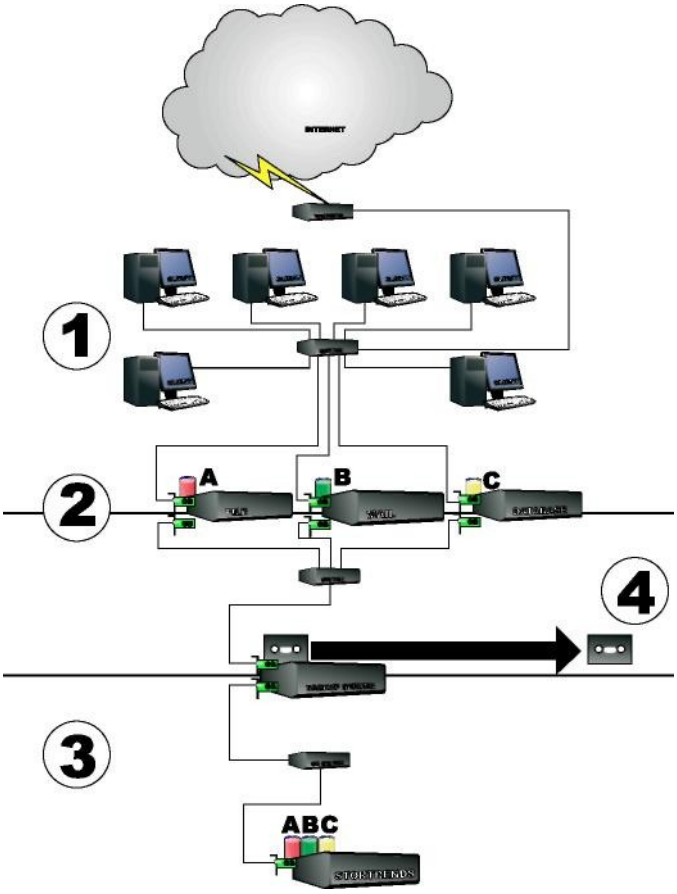
The large US bank that lost their tapes twice has stated that they will begin sending backups electronically to a secure offsite location.

Although this sounds great, most backup policies still require the use of offsite backup storage on tape. Another big reason for not going completely disk is the costs involved. Backup software companies are starting to charge an additional fee for disk only backups. Most of the money spent on their legacy tape solution is wasted.

Because of this, a practical solution would be to implement a mixture of tape and disk backups. For example, incremental backups can be to disk, while full backups can be to tape. Backups to disk can be either onsite or offsite. Backups to tape can take place during normal business hours because the data can be staged on disk prior to being backed up. This type of backup solution is commonly referred to as disk staging or Disk-to-Disk-to-Tape or D2D2T.

Benefits include the following:

- All servers can be backed up concurrently.
- Tape swapping can take place during regular business hours.
- During backup to disk, data is available and can be restored.
- Current tape backup infrastructure can remain in place with a slight modification to the company's Backup Policy and while maintaining a legal obligation to providing tape backups.
- The combination of disks and tape as storage media is more reliable than either single media type.
- Disk backups can be RAID protected.
- Tapes can be stored in a secure, environmentally controlled, offsite location.



Clients (1) can continue to access data during a backup of the servers (2). All servers (2) are incrementally backed up and staged to disk (3) at the same time. In this case an American Megatrends StorTrends iSCSI box. The disk can be physically located in another building or across the country in a satellite office. The staged incremental backups are held on disk (3) for three months. A complete backup is transferred to tape once per month. Tapes (4) are sent offsite for secure storage. This does not eliminate the problem of lost tapes; however it is a step in the right direction.

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FOR ADDITIONAL INFORMATION

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