

VTLs – A Credible Alternative to Tape?

January 2009

Replacing physical tape with a disk-based virtual tape library can bring significant operational, performance and technology benefits – however there are certain areas where tape may be a more appropriate solution. This business brief gives an independent overview of the pros and cons of VTL technology in comparison to a physical tape backup infrastructure.

1 - VTL introduction

Virtual Tape Libraries were developed to provide an easy way to integrate backup-to-disk technology into legacy backup solutions. VTLs promise improved read/write performance and enhanced data storage reliability via the use of RAID technology. In addition, by emulating the physical tape infrastructures that VTLs replace, organisations can implement this new technology without any changes to existing tape practices, policies and procedures. Their strength lies in the ability to emulate multiple tape drives and cartridges within a single disk infrastructure – delivering perceived cost savings when compared to the acquisition costs of multiple tape drives and media.

2 - VTLs today

From a technology perspective, VTLs have made dramatic advances over the last few years and the latest power-saving, replication and deduplication technologies are now available in VTL solutions. These new technologies help to provide an improved business case for VTL adoption by lowering the initial capital outlay and improving running costs.

Deduplication

Corporate data sets contain, at file, record and block levels, a high degree of duplicated information, therefore it is desirable to reduce this duplicated data to lower the disk space required to store backups and archives. VTL deduplication technology looks for repeated data (generally at a block level) and when found, creates pointers to the repeated instances and removes the copies - often resulting in an equivalent compression ratio of greater than 10:1. Depending on the choice of VTL, deduplication is performed either inline, (taking place whilst the backup is running) or as a post process scheduled once the backup has completed. Both methods introduce significant latency - inline will impact the backup window whereas post process deduplication will affect VTL system

availability outside the main backup window and require additional disk space as the original backup is non-compressed.

'Spin-down' disks

Disk technology has recently been developed that allows hard drives to be individually spun up/down as needed - enabling dramatically increased drive densities whilst keeping the cost, power and cooling levels traditionally associated with hard disk drives to a minimum. Using this technology within a VTL solution enhances the business case for storing persistent data for longer on a disk-based VTL environment.

Replication

Replication at a tape level has typically meant a second post-backup process within the backup application to migrate the data to an alternate location. VTLs can support native IP-based replication thus enabling backup data to be replicated either on a one-to-one or many-to-one basis. When combined with deduplication, only the 'compressed' data is transferred - reducing bandwidth requirements.

Migration to tape

Many organisations operate a hybrid backup environment with VTL and physical tape infrastructures. Various new VTLs have in-built support for migrating backup data directly to physical tape cartridges - enabling IT departments to either free up capacity on the VTL or provide improved resilience of backup data with a second copy on tape – with zero impact on the backup server.

3 – The Tape vs VTL question

Conventional wisdom clearly states that owning and operating a disk subsystem is more costly than a physical tape backup infrastructure. A recent report found that the energy cost of running SATA drives was 26 times greater than a tape system and the acquisition cost was 6.5 times greater.

The main advantage of a VTL platform is the speed of deployment and the flexibility it gives to backup operations. This is especially important where; 1) the backup window is too short for physical tape; 2) data replication is a key business requirement, or; 3) a large number of tape drives are required in a LAN-free backup environment.

There is a perception that VTLs can provide answers to the issues faced by legacy tape infrastructures – notably performance, reliability and flexibility – but the solution on its own is undoubtedly a more expensive platform to acquire and operate. However,

the business case is improved by the addition of new VTL features such as deduplication and 'spin-down' technology that lower acquisition and running costs – but potentially impact performance. In fact, the performance of VTLs in general is based on throughput of the VTL engine and its underlying disks. A common misconception is that VTLs always outperform physical tape infrastructures – something we've found may not be the case, particularly when using the latest tape drive technology.

Your organisation's data retention policy may also determine the selection of either VTL or physical tape infrastructure – or both. Environments with shorter term data retention and rapid restore requirements are typically more suited to VTLs, whereas physical tape is more cost effective for longer term data storage.

Another issue to consider is compliance. Tape is an accepted medium for backups and archives, however technologies like deduplication plus the archiving of long-term backup data on a VTL platform is yet to be proven as totally compliant.

4 - Conclusion

It is our belief that issues such as cost, retention periods, compliance and power/cooling may prevent organisations from taking a VTL-only route for their backups and archives. We are finding that many organisations favour a hybrid approach utilising both VTL and tape backup infrastructures. In this environment the feature, cost and performance model is optimised and each platform can be utilised to maximise ROI by managing costs, SLAs and backup policies more effectively.

Ring us on 01372 365071 to discuss how we can advise you on your backup strategy.

VTL VS TAPE – WHAT'S RIGHT FOR YOU?

- Need to reduce cost?
- SLA improvements needed?
- Deduplication required?
- Local or remote replication?
- Is VTL part of your strategy?

It's likely that there is no single right answer to these questions. Why not take advantage of our **Backup Strategy Workshop** to help determine the best backup solution for your organisation?