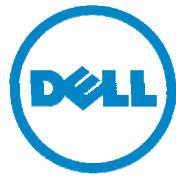


**Cost savings of disk-based
backup using the Dell
PowerVault DL2100 powered by
Symantec Backup Exec 2010 vs.
tape-based backup**



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Executive summary

Disk-based backup offers both cost and time savings over tape-based backup. The Dell™ PowerVault™ DL2100 powered by Symantec™ Backup Exec™ 2010 lets IT administrators leverage powerful new deduplication features, shorten recovery times, and realize immediate cost savings over a more traditional tape backup. (See Figure 1.)

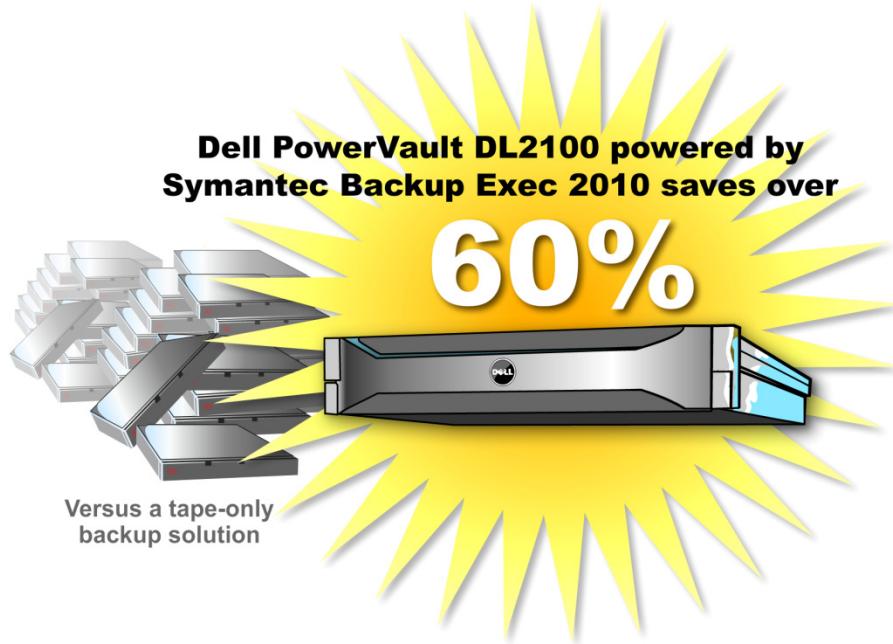


Figure 1: The Dell PowerVault DL2100 powered by Symantec Backup Exec 2010 saves more than 60 percent per gigabyte over a comparable tape backup solution.

Overview: Disadvantages of tape-based backups

Tape has long been the backup method choice for companies of all sizes. A typical scenario for a small or medium-sized business with several branch offices would require backup servers at each location, with multiple media sets consisting of dozens of tapes, requiring grandfather-father-son (GFS) or another type of rotation schedule. To ensure business continuity, the business must also store some number of tapes from each location in secure offsite locations. Figure 2 shows a traditional business backup scheme.

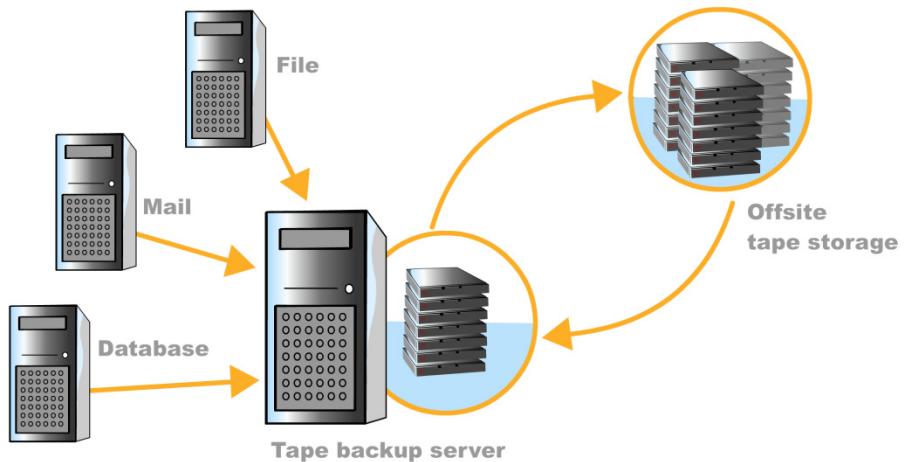


Figure 2: Historical tape-based backup scenario with off-site storage.

While tape backup is relatively reliable, few companies would call it quick or efficient. Until recently, companies tolerated the many disadvantages of tape backup because of the prohibitive cost of newer and faster disk methods. However, the falling price per gigabyte of disk storage and the new technologies available in backup software, such as source and target deduplication available with Symantec Backup Exec 2010, make the superior disk technologies more affordable.

The main disadvantages of tape backup include the following:

- **Personnel.** Regardless of the number of branch offices or locations, a tape backup system creates certain administrative tasks. Staff must strictly adhere to tape rotation schedules, and machines and tape drives inevitably require human maintenance.
- **Media and drive reliability.** Although tape drives and tapes are fairly reliable, they still fail at a noticeable rate. Over the past years, several studies and surveys have shown these failures should still be a concern. An Imation whitepaper¹ notes that certain tape drives had annual actual failure rates ranging from 1 percent to 11 percent. In another study, which surveyed over 350 companies,² nearly 40 percent of respondents reported at least one instance of

¹ Imation,

http://www.imation.ca/en_CA/whitepaper/pdfs/IMN_LinearHelical_WP.pdf

² Yankee Group, <ftp://ftp.compaq.com/pub/products/storageworks/ECN-11396-Consulting.pdf>

unrecoverable data due to tape problems within the prior year.

- **Recovery time.** Depending on the location of the tape media—on or off site—the typical tape recovery can range from several hours to several days. For a small to medium-sized business, this downtime can be particularly damaging to daily operations.
- **Regulatory requirements.** Legislation such as Sarbanes-Oxley (SOX) and the Health Insurance Portability and Accountability Act (HIPAA) has placed a huge burden on IT departments when it comes to the handling of data. Such legislation has not only altered retention schedules and increased media requirements, but it also imposes regulations on what enterprises must do with the data and who can access it. Tape media travels offsite and is handled by multiple parties, creating more management headaches.

Dell PowerVault DL2100 powered by Symantec Backup Exec 2010 vs. traditional tape backup: A simple cost comparison

As disk and related hardware costs have dramatically decreased in recent years, organizations have begun to see the benefit of newer disk-based backup options, such as the Dell PowerVault DL2100 powered by Symantec Backup Exec 2010, over more traditional tape backup methods. Tape backup methods have many time and financial costs. Tape backup hardware and software are expensive, and staff at each backup location must devote time to tape maintenance and rotation. Perhaps the biggest potential cost is downtime while waiting for data recovery.

For simplicity, we quantify here only the initial outlay cost of the new back up to tape or disk solution. We use the comparison below to show the immediate financial advantages of choosing the Dell PowerVault DL2100 powered by Symantec Backup Exec 2010 over a more traditional backup server with tape library and tape drive. Additionally, we do not include any employee-related costs for managing the remote tape related tasks.

In our example, we assume a small to medium-sized business considering the purchase of a backup solution. Their current backup data usage sits at 500 GB, with an estimate of 80 percent growth; this means they would need 1,620 GB of backup capacity after only 2 years. On a typical GFS rotation scheme, the business would at any given time have a maximum of 17 full copies of their data stored (1 yearly, 12 monthly, and 4 weekly), plus incremental

daily and weekly tapes. To handle the initial storage needs and those of the projected growth over 2 years would require an up-front purchase of approximately 26 tapes.

Figure 3 shows the company's final tape vs. disk cost per gigabyte. See [Appendix A](#) for details on our price comparison and the assumptions we make.

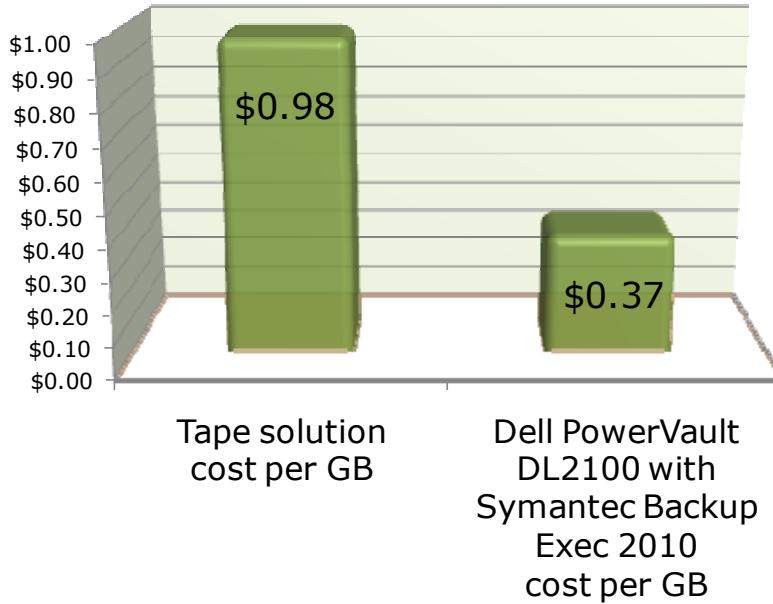


Figure 3: Cost per GB of hardware and software of a PowerEdge R210 with Dell PowerVault TL2000 tape drive vs. two Dell PowerVault DL2100s powered by Symantec Backup Exec 2010.

The Dell PowerVault DL2100 powered by Symantec Backup Exec 2010 using data deduplication reduces the cost per GB by over 60 percent of the traditional tape backup scenario using a backup server and tape drive. The Dell PowerVault DL2100 requires no tape or offsite storage costs, and the source and media server deduplication feature expands available capacity by a factor of 15 to satisfy the growth needs of the business even at 2 years. Our comparison includes a second Dell PowerVault DL2100 to provide secure off-site disk-based storage for business continuity.

Overview: Dell PowerVault DL2100 powered by Symantec Backup Exec 2010

The Dell PowerVault DL2100 powered by Symantec Backup Exec 2010 offers new and exciting features in the backup arena. Slow tape backup and administrative-heavy rotation schedules are no longer an issue with the Dell and Symantec disk-based solution. The Dell PowerVault DL2100 powered by Symantec Backup Exec 2010 introduces source deduplication, which dramatically reduces LAN/WAN traffic from the backup source to final destination. In addition, target-based deduplication offloads the deduplication processing to the Dell PowerVault DL2100 to help reduce storage costs. Symantec Backup Exec 2010 also integrates directly with Dell EqualLogic™ Auto Snapshot Manager and includes features that assist in managing your virtual environment, on either the VMware® vSphere™ or Microsoft® Hyper-V™ platforms.

Elimination of tapes

For many businesses, the Dell PowerVault DL2100 powered by Symantec Backup Exec 2010 eliminates the need for tape backup, thereby eliminating the inconvenience and costs associated with storing tapes off site. While tape remains a relatively low-cost storage medium, disk storage costs paired with deduplication features make disk backup storage a much more attractive option. Also, given the speed differential in tape vs. disk, recovery windows decrease when moving to the Dell PowerVault DL2100 powered by Symantec Backup Exec 2010; Dell found that a disk-based solution decreased restore times by 49 percent.³ The Dell PowerVault DL2100 includes disk configuration options for 1.5 TB, 3 TB, or 6 TB of raw backup storage. Given this capacity and the ability of Symantec Backup Exec 2010 to dedupe data up to a factor of 15 at the source, the Dell PowerVault DL2100 contains more than enough room for significant future growth in a small to medium-sized business scenario. Tape rotations, labeling, and offsite storage all become headaches of the past.

Source and target deduplication

Symantec Backup Exec 2010 introduces a source deduplication feature, which deduplicates data before sending it to the backup server. This dramatically increases storage capacity on the media server and reduces bandwidth on your local area network (LAN) or, more importantly, your wide area network (WAN). Branch offices and remote locations are often connected by a relatively low-

³ <http://www.dell.com/downloads/global/products/pvaul/en/storage-dl2100-symantec-specsheet.pdf>

bandwidth WAN; source deduplication capabilities save significant amounts of bandwidth and time, accomplishing some backups in minutes instead of hours. Figure 4 shows a typical scenario of the Dell PowerVault DL2100 powered by Symantec Backup Exec 2010, with deduplicated data flowing across the WAN.

Target deduplication, in which the Dell PowerVault DL2100 deduplicates the data, remains an option for businesses where WAN traffic is not a concern.

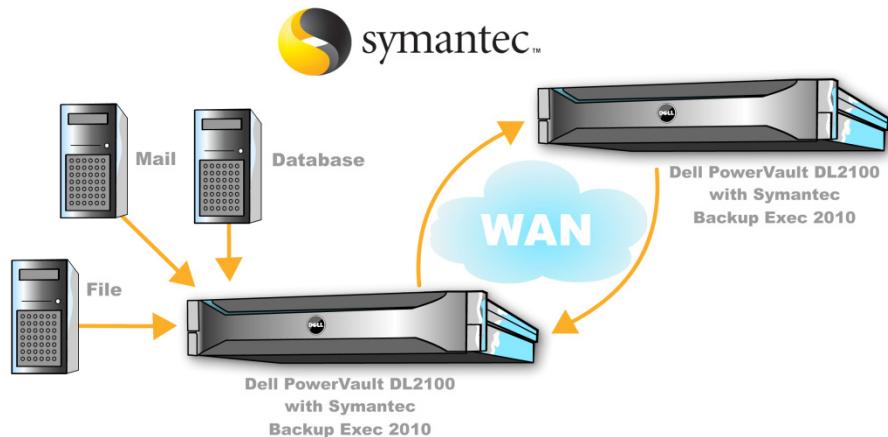


Figure 4: Diagram of disk-based backup scenario using the Dell PowerVault DL2100 powered by Symantec Backup Exec 2010.

Easy setup

By integrating the hardware, software, and services into the Dell PowerVault DL2100, Dell and Symantec have simplified the deployment of this backup solution, reducing setup time by a factor of five.⁴ The wizard-driven setup lets you get the Dell PowerVault DL2100 up and running in as little as 18 minutes.

Granular Recovery

In addition to Granular Recovery for Microsoft® Exchange, SharePoint® and Active Directory® Servers, Symantec Backup Exec 2010 extends Granular Recovery to include the vSphere and Hyper-V virtual environments running virtualized instances of these Microsoft applications. Instead of the tedious recovery processes these more detailed applications have required in the past, you can execute recovery at a finer level from within the Symantec Backup Exec 2010 console.

⁴ <http://www.dell.com/downloads/global/products/pvaul/en/storage-dl2100-symantec-specsheet.pdf>

Summary

The efficiency advantages of the Dell PowerVault DL2100 powered by Symantec Backup Exec 2010 disk-based backup solution are many: no more tape rotations, no more tape media failures, faster recovery windows, less WAN traffic thanks to source deduplication and storage savings on the back end with target deduplication. However, as we have demonstrated, the immediate advantage is cost savings. With a price per gigabyte over 60 percent less than that of a tape-based solution, the Dell PowerVault DL2100 powered by Symantec Backup Exec 2010 is a logical choice for both the IT administrator and the CIO.

Appendix A – Cost comparison details

Figure 5 presents in more detail the storage needs summary for the small to medium-sized business scenario we used in our earlier example.

Description	Estimate	Notes
Backup storage required today	500 GB	
Growth rate over 2-year period	80%	
Storage needs at 2 years	1,620 GB	$2 * [(Backup\ storage\ today * 80\%) + \text{Backup storage today}]$
Maximum number of full backup copies stored	17	1 yearly; 12 monthly; 4 weekly
Daily change in data	3%	
Compression	25%	
Tape size	800 GB	Based on LTO4-120 tape media
Total backup media required at 2 years	20,801 GB	$[(Copies\ stored * Total\ storage) + 4\ daily\ incrementals\ (Daily\ delta * total\ storage)] * (1 - compression)$
Number of tapes required	26	(Total backup media in GB)/ Tape size

Figure 5: Typical storage needs for the small to medium-sized business scenario we use in our example.

Figures 6 and 7 present the cost comparison details for both the tape-based and disk-based scenarios, with the disk-based scenario using the Dell PowerVault DL2100 powered by Symantec Backup Exec 2010 offering a per GB savings of 62 percent (\$0.98 for the tape-based scenario and \$0.37 for the disk-based scenario).

Cost savings of disk-based backup using the Dell PowerVault DL2100 powered by Symantec Backup Exec 2010 on vs. tape-based backup

Tape-based scenario		
Description	Estimate	Notes
Backup server cost	\$3,265	Priced from Dell.com
Backup software cost	\$1,000	Estimate from Dell.com
Backup tape drive cost	\$10,438	Priced from Dell.com
Tape cost	\$2,004	Priced from Dell.com, 26 tapes and label sets
24 months off-site storage costs	\$3,600	Estimate
Total storage	20,800 GB	26 tapes * 800 GB
Cost per GB	\$0.98	Total costs / Total storage

Figure 6: Cost details for a tape-based scenario.

Disk-based scenario: Dell PowerVault DL2100 powered by Symantec Backup Exec 2010		
Description	Estimate	Notes
2 x Dell PowerVault DL2100 powered by Symantec Backup Exec 2010	\$17,200	Priced from Dell
Available storage on local media server	3,072 GB	Based on 4 x 1TB disks in RAID 5 configuration Estimate source: Symantec.
Deduplication ratio	15:1	Actual number may vary based on data characteristics.
Total backup capacity after deduplication	46,080 GB	Available storage * Deduplication ratio
Cost per GB	\$0.37	Total costs / Total backup capacity

Figure 7: Cost details for a disk-based scenario using the Dell PowerVault DL2100 powered by Symantec Backup Exec 2010.

About Principled Technologies



Principled Technologies, Inc.
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