

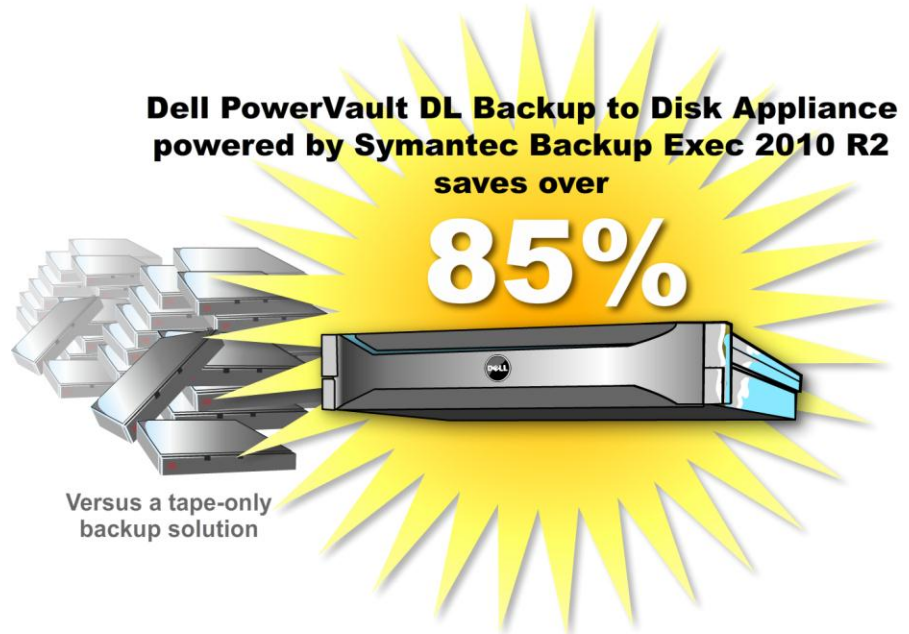
**Cost savings of disk-based  
backup using a Dell PowerVault  
DL Backup to Disk Appliance  
powered by Symantec Backup  
Exec 2010 R2 vs. tape-based  
backup**



## Executive summary

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Disk-based backup offers both cost and time savings over tape-based backup. The Dell™ PowerVault™ DL Backup to Disk Appliance powered by Symantec™ Backup Exec™ 2010 R2 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: A Dell PowerVault DL Backup to Disk Appliance powered by Symantec Backup Exec 2010 R2 saves more than 85 percent per gigabyte over a comparable tape backup solution.**



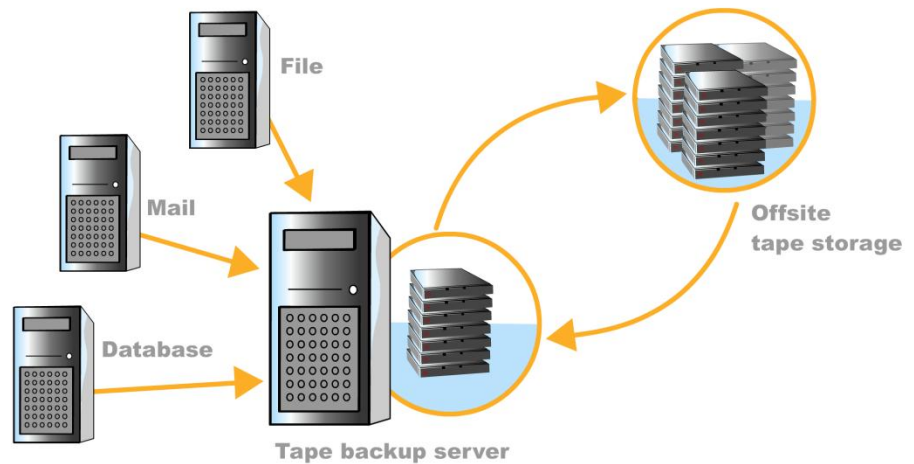
**NOTE:** If you are familiar with deduplication and the advantages of disk-based backup solutions compared to tape-based solutions and would prefer to review only the cost comparison, please see [Appendix A](#).

## Overview: Disadvantages of tape-based backups

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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 R2, 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. A Network Technology Group white paper notes that certain tape drives had annual actual failure rates ranging from 1 percent to approximately 10 percent.<sup>1</sup> In another study, which surveyed over 350 companies, nearly 40 percent of

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<sup>1</sup> [http://www.networktechnologygroup.com/files/whitepapers/NTG\\_Whitepaper.pdf](http://www.networktechnologygroup.com/files/whitepapers/NTG_Whitepaper.pdf)

respondents reported at least one instance of unrecoverable data due to tape problems within the prior year.<sup>2</sup>

- **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 DL Backup to Disk Appliance powered by Symantec Backup Exec 2010 R2 vs. traditional tape backup: A simple cost comparison

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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 DL Backup to Disk Appliance powered by Symantec Backup Exec 2010 R2, 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 DL Backup to Disk Appliance powered by Symantec Backup Exec 2010 R2 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.

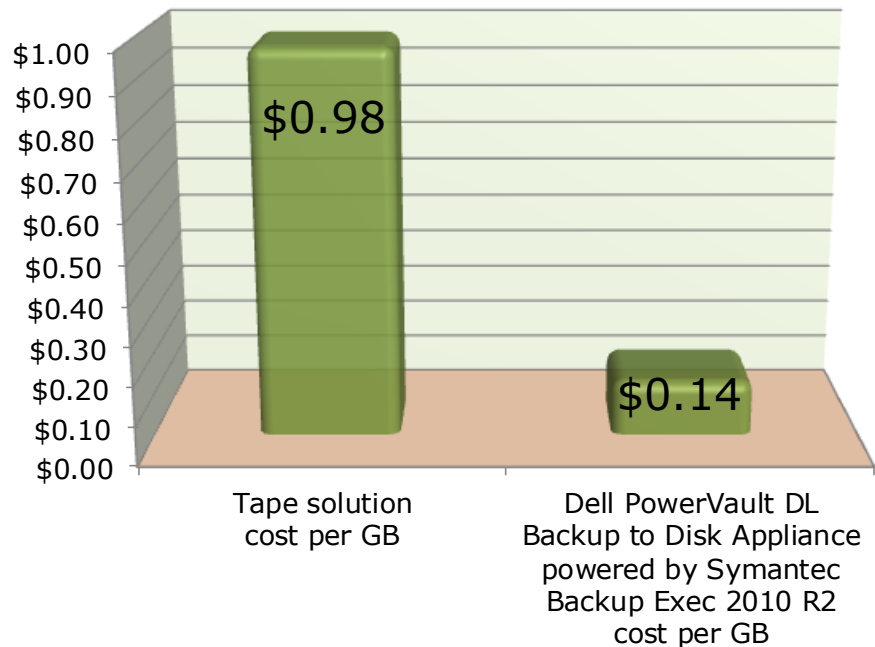
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<sup>2</sup> Yankee Group, <ftp://ftp.compaq.com/pub/products/storageworks/ECN-11396-Consulting.pdf>

In our cost analysis, we use a Dell PowerVault DL Backup to Disk Appliance powered by Symantec Backup Exec 2010 R2. Other Dell PowerVault DL Backup to Disk Appliances powered by Symantec Backup Exec 2010 R2 should yield comparable savings.

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 one PowerEdge R210 with Dell PowerVault TL2000 tape drive vs. two Dell PowerVault DL Backup to Disk Appliances powered by Symantec Backup Exec 2010 R2.**

A Dell PowerVault DL Backup to Disk Appliance powered by Symantec Backup Exec 2010 R2 using data deduplication reduces

the cost per GB by over 85 percent of the traditional tape backup scenario using a backup server and tape drive. A Dell PowerVault DL Backup to Disk Appliance 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 DL Backup to Disk Appliance to provide secure off-site disk-based storage for business continuity.

## Overview: Dell PowerVault DL Backup to Disk Appliance powered by Symantec Backup Exec 2010 R2

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The Dell PowerVault DL Backup to Disk Appliance powered by Symantec Backup Exec 2010 R2 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 DL Backup to Disk Appliance powered by Symantec Backup Exec 2010 R2 features 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 DL Backup to Disk Appliance to help reduce storage costs. Symantec Backup Exec 2010 R2 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 DL Backup to Disk Appliance powered by Symantec Backup Exec 2010 R2 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 DL Backup to Disk Appliance powered by Symantec Backup Exec 2010 R2; Dell found that a disk-based solution decreased restore times by 49 percent.<sup>3</sup> The Dell PowerVault DL Backup to Disk Appliance

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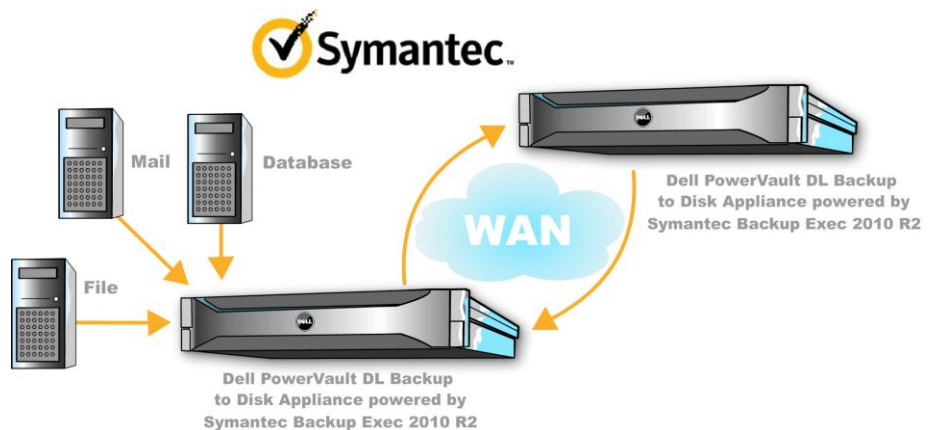
<sup>3</sup> <http://www.dell.com/in/business/p/d/shared-content~data-sheets~en/Documents~ss703-powervault-dl-backup-to-disk-appliance-symantec.pdf.aspx?layoutvariation=modal&modaltpe=box&position=center&modalwidth=600&modalheight=600&modalscroll=yes&ovrcolor=#000000&ovropac=50&modaltarget=div> (Note: At the time of this Dell publication, the R2 version of Symantec Backup Exec 2010 had not been released.)

scales from 2TB to 36TB and can further expand to 459TB with optional external storage using Dell PowerVault MD1200 arrays with 3TB drives. Given this capacity and the ability of Symantec Backup Exec 2010 R2 to dedupe data up to a factor of 15 at the source, the Dell PowerVault DL Backup to Disk Appliance 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 R2 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-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 DL Backup to Disk Appliance powered by Symantec Backup Exec 2010 R2, with deduplicated data flowing across the WAN.

Target deduplication, in which the Dell PowerVault DL Backup to Disk Appliance deduplicates the data, remains an option for businesses where WAN traffic is not a concern.



**Figure 4: A disk-based backup scenario using the Dell PowerVault DL Backup to Disk Appliance powered by Symantec Backup Exec 2010 R2.**

### **Easy setup**

By integrating the hardware, software, and services into the Dell PowerVault DL Backup to Disk Appliance, Dell and Symantec have simplified the deployment of this backup solution, reducing setup time by a factor of five.<sup>4</sup> The wizard-driven setup lets you get the Dell PowerVault DL Backup to Disk Appliance 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 R2 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 R2 console.

## **Summary**

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The efficiency advantages of the Dell PowerVault DL Backup to Disk Appliance powered by Symantec Backup Exec 2010 R2 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 with a Dell PowerVault DL Backup to Disk Appliance powered by Symantec Backup Exec 2010 R2, the immediate advantage is cost savings. With a price per gigabyte over 85 percent less than that of a tape-based solution, the Dell PowerVault DL Backup to Disk Appliance powered by Symantec Backup Exec 2010 R2 shows the value of the Dell PowerVault DL and Symantec solution, and is a logical choice for both the IT administrator and the CIO.

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<sup>4</sup> <http://www.dell.com/in/business/p/d/shared-content~data-sheets~en/Documents~ss703-powervault-dl-backup-to-disk-appliance-symantec.pdf.aspx?layoutvariation=modal&modalttype=box&position=center&modalwidth=600&modalheight=600&modalscroll=yes&ovrcolor=#000000&ovropac=50&modaltarget=div> (Note: At the time of this Dell publication, the R2 version of Symantec Backup Exec 2010 had not been released.)



## 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  | $2 * [(Backup\ storage\ today * 80\%) + Backup\ storage\ today]$  |
| 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 a Dell PowerVault DL Backup to Disk Appliance powered by Symantec Backup Exec 2010 R2 offering per-GB savings of approximately 85 percent (\$0.98 for the tape-based scenario and \$0.14 for the disk-based scenario).



**NOTE:** We base our findings on results from a Dell PowerVault DL2200 powered by Symantec Backup Exec 2010 R2; the Dell PowerVault DL2200 is the same model and base hardware as the DL Backup to Disk Appliance. You would enjoy comparable savings using other Dell PowerVault DL Backup to Disk Appliances.

Cost savings of disk-based backup using a Dell PowerVault DL Backup to Disk Appliance powered by Symantec Backup Exec 2010 R2 vs. tape-based backup

| <b>Tape-based scenario</b>       |                 |   |
|----------------------------------|-----------------|---|
| <b>Description</b>               | <b>Estimate</b> | <b>Notes</b>                                  |
| 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                             |
| <b>Cost per GB</b>               | <b>\$0.98</b>   | Total costs / Total storage                   |

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

| <b>Disk-based scenario: Dell PowerVault DL Backup to Disk Appliance powered by Symantec Backup Exec 2010 R2</b> |                 |  |
|---|-----------------|--|
| <b>Description</b>  | <b>Estimate</b> | <b>Notes</b>   |
| 2 x Dell PowerVault DL Backup to Disk Appliance powered by Symantec Backup Exec 2010 R2                         | \$21,032.14     | Priced from Dell   |
| Available storage on local media server   | 10,240 GB       | Based on 6 x 2TB disks in RAID 5 configuration<br>Estimate source: Symantec. |
| Deduplication ratio   | 15:1            | Actual number may vary based on data characteristics.                        |
| Total backup capacity after deduplication   | 153,600 GB      | Available storage * Deduplication ratio                                      |
| <b>Cost per GB</b>  | <b>\$0.14</b>   | Total costs / Total backup capacity  |

**Figure 7: Cost details for a disk-based scenario using the Dell PowerVault DL Backup to Disk Appliance powered by Symantec Backup Exec 2010 R2.**

## About Principled Technologies

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Principled Technologies, Inc.  
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When the assessment is complete, we know how to present the results to a broad range of target audiences. We provide our clients with the materials they need, from market-focused data to use in their own collateral to custom sales aids, such as test reports, performance assessments, and white papers. Every document reflects the results of our trusted independent analysis.

We provide customized services that focus on our clients' individual requirements. Whether the technology involves hardware, software, Web sites, or services, we offer the experience, expertise, and tools to help our clients assess how it will fare against its competition, its performance, its market readiness, and its quality and reliability.

Our founders, Mark L. Van Name and Bill Catchings, have worked together in technology assessment for over 20 years. As journalists, they published over a thousand articles on a wide array of technology subjects. They created and led the Ziff-Davis Benchmark Operation, which developed such industry-standard benchmarks as Ziff Davis Media's Winstone and WebBench. They founded and led eTesting Labs, and after the acquisition of that company by Lionbridge Technologies were the head and CTO of VeriTest.

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