SAFEGUARDING DATA WITH DELL POWERVAULT DATA PROTECTION SOLUTIONS

Dell and Microsoft have worked together to create unified disk-to-disk-to-tape systems—Dell™ PowerVault™ Data Protection Solutions—that help avoid the drawbacks of traditional tape- and disk-based data protection. Optimized for Microsoft® software-based workloads, these systems can provide versatile, comprehensive protection for environments built with Dell PowerVault servers and Microsoft System Center Data Protection Manager 2007.

Over the past several years, Dell and Microsoft have worked together to bring advanced storage platforms into the mainstream by combining cost-effective, standards-based Dell servers and storage with the Microsoft Windows® Storage Server platform. The combination of Dell hardware and Microsoft software expanded with the introduction of Microsoft Windows Unified Data Storage Server (WUDSS), which offers not only optimized file sharing and storage management features but also block-level Internet SCSI (iSCSI) functionality, helping provide efficient and easy-to-manage storage while avoiding some of the costs and complexities of Fibre Channel networks. Dell and Microsoft continue to bring advanced storage technologies to the mainstream with the introduction of data protection appliances designed for improved backups.

Although nightly tape backups are still a standard practice, many organizations have found that they also need more comprehensive protection than these nightly systems can provide—and have realized that tape is not an ideal medium for many data recovery situations. To help meet the needs of these enterprises, Dell and Microsoft have again teamed up to deliver unified disk-to-disk-to-tape Data Protection Solutions based on Dell PowerVault servers and Microsoft System Center Data Protection Manager (DPM) 2007.1 Designed for ease of use and simplified deployment, these Dell PowerVault systems are preconfigured with the Microsoft Windows Storage Server OS, management functions, and DPM 2007. They provide a combination of disk-based continuous data protection (CDP) and traditional tape backup specifically designed to protect major Microsoft workloads such as Microsoft Exchange, Microsoft SQL Server®, Microsoft Office SharePoint® Server, and Microsoft Virtual Server software as well as file services in the Microsoft Windows Server® 2003, Windows Server 2008 (code-named “Longhorn”), Windows XP, and Windows Vista® operating systems.

CHALLENGES OF TRADITIONAL DATA PROTECTION APPROACHES

Tape is still an integral component of data protection infrastructure, and often a good choice for whole-server

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recoveries and long-term archiving. However, it also has key disadvantages:

- Organizations can lose up to a full day’s worth of data depending on when a server fails: if it fails early in the morning, they may lose very little or no data, while if it fails at the end of the day, they may lose a full day’s worth of data. Typically, administrators must assume that they will lose half a day’s worth of data each time a server fails.
- Data recovery can be time-consuming, often requiring administrators to restore a full backup, then each differential backup (or perhaps just the latest incremental backup). In addition, if the tape fails during this process, they must then take additional time to retry with the previous tape. And if the failed tape was a weekly full backup, they not only must take that additional time, but may have lost additional data as well.
- Tape typically provides poor performance when restoring individual files, folders, databases, and mailboxes—operations that usually constitute a majority of data recovery tasks.

Various disk-to-disk approaches can help overcome these problems, including virtual tape libraries (VTLs), real-time replication (RTR), and CDP.

**Virtual tape libraries.** VTLs use disk-based storage as simulated tape, which can provide higher performance than real tape. In addition, because traditional tape backup systems see VTLs as high-performance tape devices, they can typically begin utilizing VTLs immediately. VTLs can often serve as a bridge technology suitable for very large enterprises that are already heavily invested in their backup infrastructure. When those enterprises upgrade their backup software, they can also replace their VTLs with fully integrated backup-to-disk technologies.

The downside of this type of system is that the tape backup methodology remains the same, utilizing traditional full, incremental, and differential backups and typically restricting backup frequency to once per day. In addition, the virtual tape still behaves as a large sequential repository, rather than the random access medium that disk actually is.

**Real-time replication.** While VTLs use disk as a substitute for tape, RTR treats disk as disk, usually by asynchronously replicating data from primary production disks to secondary disks in an application-agnostic way. RTR can capture data changes as they occur—typically with low latencies—and send them to a secondary server, often with the goal of increasing system availability. If the primary server fails, the secondary server has a near-current copy of the data and can easily take over the primary role.

RTR is particularly useful when core enterprise applications do not incorporate high-availability features. But because RTR focuses on maintaining a near-current copy of production data for failover, rather than past iterations for data recovery, it is actually providing high availability rather than true data protection.

**Continuous data protection.** As the name suggests, CDP is designed to provide continuous protection (through replication, synchronization, or mirroring), but also includes multiple previous restore points. By definition, it typically includes the ability to restore to any previous point in time or operational transaction (depending on workload). Some currently available CDP solutions offer these extremely granular recovery points. For many enterprises, however, choosing between 10:48:23 or 10:48:24 or 10:48:25, and so on, may be a burden more than a useful feature, and the administrator may not even know whether these recovery points are consistent. Instead, using DPM to create continuous, predictable, and consistent recovery points every 15 minutes or every hour can help simplify matters for both end users and IT staff. Moreover, because CDP software often focuses on a single application, enterprises using this approach may need to invest in different software for different applications, increasing complexity and introducing different levels of coverage.

One challenge with all three of these data protection approaches is that they often come from vendors other than traditional tape backup companies. Enterprises often must look at a tape backup system for long-term retention and an advanced disk-to-disk system (such as RTR or CDP) for rapid recovery, and may later discover that the two do not interoperate, and might not even be able to coexist on certain systems.

**DATA PROTECTION SOLUTIONS BASED ON DELL POWERVAULT AND DPM 2007**

Many enterprises use some form of nightly tape backup, but also recognize the need for more comprehensive data protection than these nightly backups can provide. To help meet this need, Dell and Microsoft have created unified disk-to-disk-to-tape systems based on Dell hardware and DPM 2007 (see Figure 1). These comprehensive
systems are optimized for core Microsoft workloads and can offer multiple advantages:

- **Consistent design and support:** Because the Data Protection Solutions utilize Dell hardware and Microsoft software and are designed expressly for Microsoft workloads, enterprises can take advantage of technical support from the company that created the applications themselves, without relying on a third party.

- **Comprehensive capabilities:** The DPM 2007-based Data Protection Solutions are designed to provide both disk-based CDP and traditional tape backup. And while they may not protect every niche application, they can provide broad support for the primary Microsoft workloads.

- **Cost-effectiveness and flexibility:** By creating multiple systems with different storage capacities based on cost-effective software, Dell and Microsoft have helped reduce the cost barrier to using disk-based protection for enterprises of all sizes.

- **Simplified management:** DPM 2007 is designed to simplify management through intuitive user interfaces and wizards.

  The Data Protection Solutions are preconfigured to help simplify deployment. Administrators can deploy them simply by powering them on, joining them to the appropriate Microsoft Active Directory® domain, and installing the DPM 2007 agent on each server running Windows by using the DPM 2007 Administrator Console, deployment software such as Microsoft System Center Configuration Manager 2007, Microsoft Systems Management Server 2003, or even a Group Policy within Microsoft Active Directory.

  After deployment, DPM 2007 creates an initial copy and then monitors data as it changes. It then periodically creates snapshots to build multiple disk-based copies designed for rapid and reliable recovery. By storing only the block-level differences between one instance and the next, the DPM 2007 server can efficiently maintain several recovery points on disk that can be supplemented with long-term tape-based archives. When necessary, administrators can simply select a restore point to roll back data to a previous point in time.

**Figure 1.** Comprehensive disk-to-disk-to-tape backup system based on Dell hardware and Microsoft System Center Data Protection Manager 2007 software

**UNIFIED DATA PROTECTION FROM DELL AND MICROSOFT**

Although still a good choice for some purposes, traditional tape- and disk-based data protection can have disadvantages, including poor performance and a lack of flexibility. Dell PowerVault Data Protection Solutions built with Microsoft System Center Data Protection Manager 2007 combine disk and tape backups to create versatile, easy-to-use data protection systems for Microsoft workloads.

Sanjeet Singh is a global product marketing manager in the Dell Enterprise Storage Group. He has eight years of experience in developing and delivering business-critical technologies, including databases and data protection. Sanjeet has an M.S. in Computer Engineering from Purdue University and an M.B.A. from the University of Texas.

Jason Buffington is the senior technical product manager for Data Protection Manager and other storage solutions at Microsoft. He has more than 16 years of experience in data protection and business continuity, and studied Computer Science at Texas A&M University.

**Quick Links**


Dell storage: DELL.COM/Storage

Microsoft System Center Data Protection Manager 2007: www.microsoft.com/dpm