Cost-efficient data management across multiple storage tiers

By Sarah Doherty, Kris Piepho, Juan Garcia, and Camillo Vitale

Handled effectively, data is key to driving organizational growth. A reference architecture designed to integrate Dell™ hardware and CommVault® Simpana® software helps organizations automate intelligent data management across multiple storage tiers.

The tremendous amount of data accumulated and processed by organizations in the course of business has led to a high demand for storage. All too often, the complexity of managing and protecting data assets can strain staff time and budgets and slow operations.

To help reduce the cost and complexity of data protection, Dell and CommVault have defined a tiered storage reference architecture called Solving Forward by Design. This reference architecture combines the storage optimization of the Dell Fluid Data™ architecture with the data protection of CommVault Simpana software to offer comprehensive life-cycle management and retention of data. Essentially, Solving Forward by Design extends the Dell Fluid by Design approach beyond the Dell Compellent™ storage tier into protection and archiving tiers that leverage complementary Dell storage platforms.

Working across multiple tiers

Solving Forward by Design provides a unified strategy that brings together physical and virtual server protection with backup and archiving. It is designed to scale, adapt, and react to the changing IT environment. The reference architecture incorporates key elements of the Dell and CommVault modern data protection strategy:

- **Application awareness:** CommVault and Dell use their in-depth knowledge of applications and file systems based on the Microsoft® Windows® OS and

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Learn how Dell Compellent storage virtualization and CommVault Simpana SnapProtect technology provide integrated, unified, and robust end-to-end data management that is designed to seamlessly enable data protection policies in physical as well as virtual environments.

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VMware® virtualization software to help provide fine granularity of the data being protected and enable consistent, rapid copying of that data.

- **Snapshot management:** CommVault Simpana SnapProtect® technology is designed to create instant, application-aware recovery copies from Dell Compellent Data Instant Replay™ snapshots. By offloading production resources for backup operations, this snapshot integration helps minimize recovery time and improve execution on stringent data service-level agreements while enabling a dramatic reduction in backup windows.
- **Dynamic tiering:** Organizations have the flexibility to maintain copies of data on different tiers to meet specific retention and recovery needs, enhancing efficiency and helping to ensure appropriate levels of protection over time.
- **Automation:** To minimize storage and storage management costs, this modern data protection strategy is designed to eliminate manual activities through policy-based approaches and centralized administration that automate the movement of data to cost-effective storage tiers.
- **Global reporting:** Intuitive reporting helps optimize management of storage and backup-and-recovery resources, enhancing the organization's understanding of the storage environment and its ability to plan appropriately as needs evolve.
- **Recovery management:** Simpana software enables granular recovery of files and application data from any Dell storage tier to help improve recovery time objectives (RTOs) and recovery point objectives (RPOs).

As shown in Figure 1, Solving Forward by Design uses Simpana software to intelligently and automatically manage data across Dell storage platforms that are configured in three primary tiers: storage, protection, and archive. The integration of Simpana software with Dell Fluid Data architecture is designed to move data from the high-performance storage tier to cost-efficient protection and archiving tiers (see Figure 2).

The storage tier

To manage rapid data growth, many organizations are turning to automated sub-logical unit (LUN) tiering approaches, such as Dell Compellent Storage Center™ storage area network (SAN) arrays. Compellent storage facilitates hands-free data management through policy-based automation. The Dell Compellent Data Progression™ feature provides automated tiered storage functionality that is built into the virtualized storage platform. Data Progression helps organizations manage the large amounts of enterprise data in the storage tier that become inactive a few months after creation. This functionality enables granular real-time awareness of how data is used, contributing to accurate data placement.

The Dell Compellent Dynamic Capacity™ thin provisioning feature is designed to optimize enterprise storage utilization by avoiding pre-allocated, unused capacity. Thin provisioning separates allocation from utilization, enabling administrators to provision any size volume up front; disk space is consumed only when data is written.

The protection tier

The Dell PowerVault™ DL Backup to Disk Appliance – Powered by CommVault helps

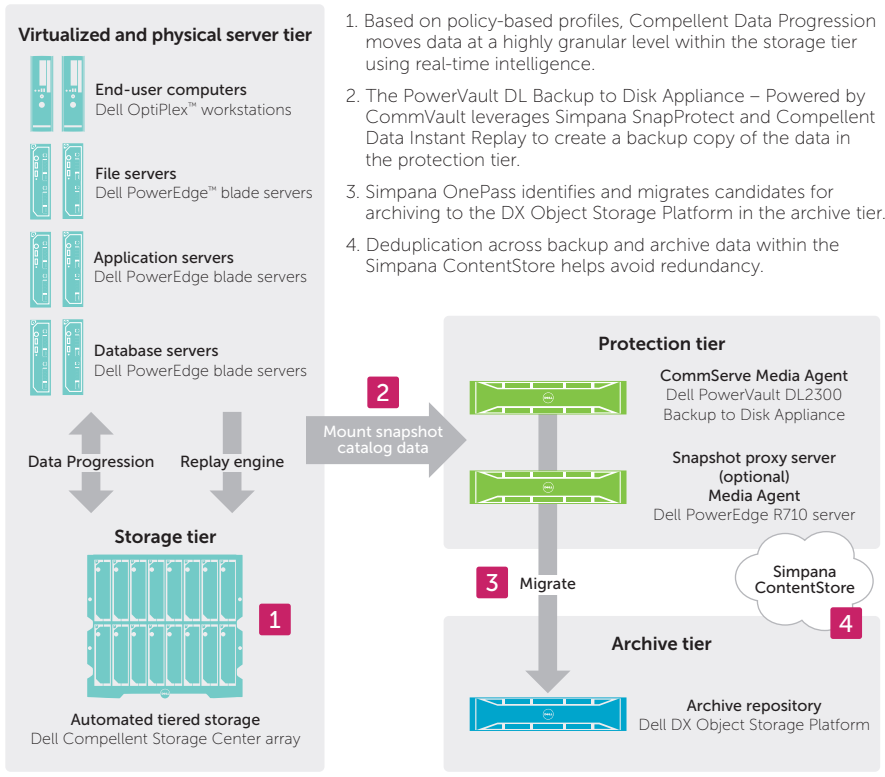

Figure 1. The reference architecture for Solving Forward by Design enables organizations to automatically move data across multiple tiers

streamline data protection by automating tasks that discover, deploy, and protect data within the IT environment. The appliance is designed to be up and running in less than 30 minutes using a single interface for the setup, management, monitoring, and reporting of the protection and archiving tiers. Built into the appliance is a source and target–based deduplication capability that avoids redundant data across consolidated backup and archive sets. The appliance is designed to deliver deduplication throughput rates up to 4.5 TB per hour, helping meet stringent protection windows.

The PowerVault DL appliance supports Simpana SnapProtect technology and its Virtual Server Agent (VSA). Through integration with Compellent and VMware application programming interfaces (APIs), SnapProtect for VSA enables administrators to create point-in-time snapshots, or replays, that can be used for various data protection operations. VSA is designed to protect unlimited virtual machines without requiring agents on each virtual machine.

Compellent and Simpana software offer a converged process for backup, archive, and reporting from a single collection of data. The PowerVault DL appliance combines the three workflows into one operation, the Simpana OnePass feature, to help reduce time for backup, archive, and reporting by up to 50 percent over isolated methods that each run as a separate cycle, such as traditional tape or remote backups. The resulting Simpana ContentStore is a virtual repository that facilitates automated tiering across the protection and archive tiers. Enabling cost-effective, long-term retention, it offers a single index that can be searched for backup or archive data.

The archive tier

Together, CommVault Simpana software and the Dell DX Object Storage Platform help improve the economics of long-term data archiving while enhancing corporate, legal, or regulatory governance.

Figure 2. Solving Forward by Design helps reduce storage costs by moving data to cost-efficient protection and archiving tiers

The Solving Forward by Design reference architecture enables organizations to reclaim valuable primary storage space by automatically moving infrequently accessed data to the cost-effective DX platform. By freeing physical storage space in the production environment, Solving Forward by Design helps cut the capacity and time requirements for backup and recovery operations, while boosting the performance of production applications.

Streamlining data management

The Solving Forward by Design reference architecture leverages Dell Fluid Data architecture and CommVault Simpana software to provide a flexible, persistent data management platform that scales up and out for virtualized data centers and cloud environments. Administrators can manage data protection, recovery, and archiving using Simpana software, which is designed to deliver application-aware, global cataloging across the Dell storage tiers for instant recovery from any tier. Simpana software also provides automated alerts, security, and search options, as well as easy-to-use storage resource management reporting to heighten an organization's understanding of the dynamic environment and to ease data and information management.

Solving Forward by Design tightly integrates Dell storage hardware and a single Simpana software platform, enabling administrators to manage, tier, analyze, replicate, protect, archive, and search data efficiently and cost-effectively. This integration also helps ensure data is protected and managed to meet corporate, regulatory, and governance requirements. The fine data granularity enabled by the reference architecture leads to the intelligence and clarity that is critical for effective management of today's chaotic data flow—contributing to low storage costs, reduced risk of data loss, and operational simplicity. PS

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