



# Dell Data Protection Point of View: Recover Everything. Every time. On time.

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Dell Data Protection White Paper | May 2013

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## Executive summary

Organizations today are experiencing tremendous data growth, with data volumes increasing anywhere from 40 to 60 percent a year.<sup>1</sup> Many organizations are looking to leverage that data to address key business goals. By applying business intelligence and analytics to data, organizations can improve the customer experience, increase operational efficiency, and reduce risks.

IT groups need to provide sufficient storage capacity to accommodate growth. The need to back up data faster and more frequently, without degrading performance for users. If and when a system fails, IT needs to restore data and applications rapidly, without significant service interruptions and without loss of information. On average, however, it takes organizations eighteen and a half hours to recover data after an outage.<sup>2</sup> To make matters worse, 50 percent of data restores fail and organizations lose critical information.<sup>3</sup> Considering that the average cost of downtime is approximately \$5,600 per minute, the stakes are extremely high.<sup>4</sup>

At Dell, we have a clear and compelling point of view on how organizations can improve their data protection without excessive costs or added complexity. We've built a broad portfolio of data protection products and solutions that can enable organizations of any size to protect their applications and data and ensure timely data recovery.

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<sup>1</sup> IDC, "Worldwide Data Protection and Recovery Software 2011–2015 Forecast," July 2011, <http://www.idc.com/getdoc.jsp?containerId=229395#.UPiIoKWwNVs>.

<sup>2</sup> Forrester Research, "Wake-Up Call: You Aren't Ready For A Disaster," February 9, 2011.

<sup>3</sup> Uptime Institute, 2011

<sup>4</sup> Ponemon Institute, "Calculating the Cost of Data Center Outages," February 2011, [http://www.ponemon.org/local/upload/file/2011%20Cost\\_of\\_Data\\_Center\\_Outages.pdf](http://www.ponemon.org/local/upload/file/2011%20Cost_of_Data_Center_Outages.pdf)

## **The Dell point of view on data protection**

Dell takes a pragmatic approach to data protection and restoration. The backup methodology we recommend depends on the organization's data classification, recovery objectives, and IT infrastructure.

The question is not what type of backup to use, but when to use each, and how these options should be combined with testing to meet the overall business cost, performance and availability goals.

## **Protecting physical, virtual, and cloud environments**

Dell offers a broad portfolio of scalable solutions to protect data and deliver rapid recoverability across physical, virtual, and cloud environments. With Dell solutions, organizations can back up data and applications continuously, so there are never more than a few minutes of data at risk. Data can be restored near-instantaneously. And automated processes for validating and verifying the integrity of data help to ensure the success of each and every recovery.

## **Matching solutions to specific needs**

For organizations with data sets from a few gigabytes to a few terabytes, running a daily full backup provides a high level of protection without much additional storage space cost. Larger organizations or those with more data find that running a weekly full backup, coupled with either daily incrementals or differentials, provides a better option. Using differentials provides a higher level of data protection with less restore time for most scenarios, with a small increase in storage capacity. Finally, Dell sees many of our customers with strict recovery point objectives and recovery time objectives (RPOs and RTOs) turning to advanced backup options such as synthetic full, mirror, reverse incremental, and continuous data protection (CDP) that require disk storage as the backup target.

For organizations with large amounts of distributed data and stringent RTO and RPO, we recommend fast disk-to-disk backup, inline deduplication and compression, and frequent snapshot intervals (as frequently as every five minutes). Using this approach, an organization can restore several terabytes of data in moments.

Organizations of any size should be able to choose their desired protection granularity as well as their backup model. While we believe enterprise customers will more openly embrace incremental forever or synthetic full snapshots going forward, we want to ensure our enterprise customers can maintain adequate copies of their various data sets for regulatory compliance.

## Data protection and virtualization

More than 50 percent of all installed workloads today are running as virtual machines (VMs), according to one estimate.<sup>5</sup> Increasingly, virtualized environments include mission-critical applications, databases, enterprise resource planning (ERP), and key line-of-business applications in addition to messaging, collaboration, and other business applications.

Organizations need solutions that can support multiple hypervisors and efficiently manage the backup of virtualized environments alongside physical environments. These solutions must be robust enough to adequately protect critical enterprise data while meeting RTOs and RPOs.

The Dell Data Protection portfolio has a broad array of capabilities to fit the largest virtual shops in the world, with unique technology such as changed block tracking for physical and virtual (or cloud) machines, and block level restore for fast and flexible VM recovery. Dell Data Protection offers organizations the means to back up anywhere and restore anything, including individual files and objects.

### Your virtual machine profile

Dell believes virtual machines fall into three distinct SLA profiles, each with its own discrete RPO/RTO requirement:

- **Mission-critical** – To adequately protect mission-critical data, choose a solution that lets you measure RPOs in minutes and RTOs in just seconds, practically eliminating the need to do a restore in case of a failure or disaster.
- **Dynamic** – For VMware users, we advise agentless technology that takes advantage of VMware's native API's. Frequently this environment is overseen by a virtualization administrator who is expert in managing this environment, so tools aligned with this expertise make the most sense.
- **Compliance-based** – This class of application is the most sensitive. Backup programs require more traditional protection while benefiting from progressive approaches to accommodate macro-changes in modern IT environments—for instance, cost and staff reductions—and growing data sets subject to governmental or industry oversight. These VMs, typically running specialized applications and requiring longer-term retention policies, require direct-to-tape targets or NDMP. Organizations can achieve retention compliance by backing up individual VMs or Virtual Data Centers to tape devices, including tape libraries, VTL, stand-alone tape drives, as well as disk based targets such as the Dell DR Storage Appliances.

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<sup>5</sup> Gartner, "Magic Quadrant for x86 Server Virtualization," 2012, <http://www.gartner.com/technology/reprints.do?id=1-1B2IRYF&ct=120626&st=sg>.

## Protecting the cloud

According to one estimate, 84 percent of companies are running at least some infrastructure or applications in the cloud.<sup>6</sup> Some organizations hope to use public cloud-based storage as a tier in their backup strategy or as an alternative to physical off-site disaster recovery sites. These organizations need cloud-friendly solutions that ensure data security and privacy. They should also be aware of, and prepare for, data retrieval challenges in the event their service provider becomes insolvent.

Organizations searching for efficient and effective ways to back up applications running in private clouds face many of the same backup challenges found in virtualized environments.

The Dell strategy is to enable customers to efficiently move data between local environments and public and private clouds, providing high availability and failover capabilities while optimizing bandwidth via compression and deduplication.

Dell can leverage all variations of cloud infrastructure—for instance, storage-only clouds plus storage-with-compute clouds. Whether the customer is utilizing an MSP, private cloud, or public cloud service, Dell offers backup and replication options, migration to the cloud, and disaster recovery in the cloud.

## Change for the better

A modern data protection strategy needs to scale to handle continuing data growth. Dell Data Protection software offers a variety of methods to reduce the footprint of stored data. These include a combination of compression and deduplication. Features to consider include:

- Incremental-forever, changed-block tracking that captures only changed blocks from the protected disk volumes and transmits them to the backup server at pre-configured intervals
- Deduplication, compression, and encryption done during the backup process, reducing the data footprint prior to reaching the storage target
- Software that has the ability to target deduplication appliances

Look, too, for ease-of-use features such as automation that frees administrators from having to 'babysit' backups and restores; and management functionality compatible with multiple operating systems that enables administrators to work in the environment in which they are most comfortable.

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<sup>6</sup> IDC, Research Survey, Executive Dossier, "Wanted: A Trusted Provider for Public Cloud Services," <http://content.dell.com/us/en/enterprise/d/business~solutions~whitepapers~en/Documents~idc-survey-trusted-cloud-providers.pdf.aspx>.

Dell Data Protection offers a broad range of solutions for commonly experienced pain points:

- **Eliminating the backup window** – For organizations using LAN-based backup, compression and deduplication technology can reduce the amount of data that needs to be transmitted, dramatically reducing backup windows. Using snapshots (up to 288 per day with Dell Data Protection) can provide five-minute backup windows during peak business hours without performance impact.
- **Identifying new or modified files fast** – Dell Data Protection software features Smart Agents that track changes on a disk at all times, identifying the logical blocks that must be transmitted to the AppAssure Core server.
- **Restoring data to meet SLAs** – Dell Data Protection offers a variety of features that can help organizations consistently achieve aggressive service levels. Live Recovery metadata restore can be used to quickly recover large amounts of file-system data or application objects, and for any physical, virtual, or cloud machines. Restoring metadata first makes the volume and its contents instantly available to the system and its applications; meanwhile, the data is restored in the background. For any size volume this metadata restore happens in seconds.

Virtual Standby is a feature that makes recovery as simple as turning on a VM. A Virtual Standby is a virtual replica of a remote system that waits in a powered-off state at a primary or secondary location. Dell Data Protection software continuously updates changed blocks from a physical, virtual, or cloud machine to the Virtual Standby, ensuring that IT can meet its most aggressive RPOs and RTOs in the event of a system failure.

Dell also recommends disk-based backup for recently used data. This eliminates the need to find the right tapes, mount those tapes, and move to the correct tape position; the data is coming from random access storage on disk.

- **Knowing everything is protected** – Dell believes that reporting should be comprehensive, intuitive, and customizable. Dell Data Protection enables dynamically created reports for all protected machines—virtual or physical—across all of an organization’s sites. The generated reports are available in a variety of formats.

Many organizations don’t have the ability to tell whether all of their data is protected. To address this, Dell offers software that detects the presence of Microsoft Exchange and SQL and its respective databases and log files and automatically groups the volumes with dependency for comprehensive protection and rapid recovery. It also tests the backup to determine if it is 100 percent recoverable, and issues a notification if the test fails. This ensures complete backups for 100 percent successful recoveries.

## The Dell Data Protection portfolio

Dell offers an extensive data protection software portfolio that can address today's key data protection challenges. We enable organizations to recover anything, every time, on time.

### **Dell NetVault solutions: complete, integrated solutions spanning virtual and physical environments**

Dell NetVault™ backup and recovery products are cross-platform solutions that safeguard data and applications in both physical and virtual environments. Comprehensive platform and application support provides enterprise-class data protection. With NetVault solutions, organizations can protect a full range of mission-critical data and applications—such as Oracle Database, Microsoft SQL Server®, Microsoft Exchange, MySQL, and IBM® DB2®—running on any major physical and virtual operating systems and processor architectures.

NetVault solutions support a wide range of disk- and tape-based storage devices, enabling organizations to make the most of existing resources. Data deduplication helps enhance efficiency, minimizing the capacity required for backups and reducing backup windows.

Real-time, continuous backups enable instant recovery. FlashRestore™ technology lets users resume work before the full recovery is complete, minimizing downtime.

NetVault solutions are designed to simplify backup and recovery. Administrators can manage data protection across environments from a single, well-thought-out administrative interface.

Granular recovery capabilities enable administrators to retrieve a single file, conduct a complete restoration, or choose anything in between. Data can be restored to the original host, a new host, or even a desktop.

### **Dell vRanger: simple, fast, scalable protection for virtual and physical environments**

Dell vRanger™ software provides simple, fast, and scalable data protection for VMware virtualized environments as well as Windows physical servers and files. vRanger can deliver high-speed backups while minimizing disruption to production systems. Multi-threaded processing executes multiple operations in parallel to minimize backup and replication windows. To accelerate performance, Active Block Mapping technology reduces the amount of data backed up, transferring only changed blocks. vRanger File Level Recovery engine enables administrators to browse archives and recover files directly from VM images in the archives. It offers comprehensive protection of virtual and physical environments from a single, wizard-driven interface. Administrators can locate VMs, Windows servers, and even individual files quickly and restore them with a single click. The agentless architecture eliminates the need for administrators to install agents on each VM—vRanger automatically discovers and protects newly deployed VMs.

vRanger offers an excellent solution for organizations that need to protect an environment ranging in size from a few VMs to tens of thousands.

## **Dell AppAssure: a unified approach to protecting physical, virtual, and cloud environments**

Dell AppAssure™ software protects data across physical, virtual, and cloud environments. It supports VMs running on Microsoft® Hyper-V®, VMware®, and Citrix® hypervisors.

AppAssure is hardware-agnostic—organizations can recover data to physical or virtual machines regardless of the original machine's configuration. Disk-image level snapshots and changed block tracking effectively eliminate backup windows. Business-critical virtual or physical machines can be backed up as frequently as every five minutes for near-continuous system, data, and application protection. Integrated global data deduplication and compression reduces backup storage requirements by up to 80 percent compared with legacy backup technologies.

Live Recovery™ technology delivers near-zero RTOs by recovering users' access to an application in minutes, even if hundreds of gigabytes or several terabytes of data are being restored. Administrators can set up an automatically updated warm Virtual Standby in any location, including off-site or in the cloud. The standby is ready to be turned on within seconds after a failure has been detected.

Working from a single backup pass, administrators can choose anything from a highly granular restore of individual application elements or files all the way to a complete system recovery.

AppAssure can be broadly applied to environments ranging in size from a few servers to thousands. It supports data storage requirements that scale to exabyte levels.

AppAssure is also available as a fully configured 1U backup appliance—the Dell PowerVault™ DL4000 powered by AppAssure. The DL4000 integrates 5.5 TB of storage capacity and two standby VMs with AppAssure software. The appliance can be scaled to 35.5 TB with a PowerVault MD1200 option. This appliance offers all the benefits of AppAssure software for Windows® and Linux® operating systems in a preconfigured, set-and-forget Dell hardware-based appliance.

