Dell Technology Perspective: Intelligent Data Management

A Dell Point of View

Dell Storage Solutions

The power to do more

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Contents

Introduction – It's all about information

Information is the lifeblood of companies. And yet, today there are significant challenges in data management that make it difficult for business to efficiently store, retrieve, sort through and make sense of their data, when and where they need it. In fact, an Accenture study[1] underscores the point, reporting that 61 percent of executives surveyed felt there was no good data available to them to make informed business decisions.

The data landscape changes

Several key data landscape trends are creating the challenges that can keep organizations from transforming data from an operational burden into a valuable strategic asset. Dell's Intelligent Data Management (IDM) approach can help address each of these challenges.

An explosion in the amount and type of data being generated

Traditionally, companies have been primarily concerned with the management of structured data such as transactional data stored in a database. Going forward, however, unstructured data is driving massive growth, to an expected 35 trillion gigabytes of digital information by 2020, driven by the journey from analog to digital of all major forms of media – voice, TV, radio, print[2]. These kinds of unstructured data often lack the context and metadata structure necessary to activate its strategic value. It is also larger, more static and is a prime target for theft and litigation. Yesterday's data management approaches are simply ill-equipped for dealing with today's growth realities.

Changing consumption models

Data is increasingly generated and consumed across a geographically distributed and mobile infrastructure of people, processes and tools. IDC estimates, for example, that the number of mobile workers worldwide has now reached over 1 billion and will continue to grow to 1.19 billion by 2013[3], through the use of devices such as smart phones, laptops and tablet computers.

Rising regulatory and litigation risks

The costs of compliance have skyrocketed as regulatory agencies attempt to encourage data transparency and governance through complex requirements and financial penalties. Additionally, litigation continues to rise across the public and private sectors. The bottom line is that organizations require more efficient and cost effective approaches for proactively mitigating information risks.

The balancing act

These data landscape changes present complex and risk-laden data management challenges for business leaders and IT managers who aspire both to maximize the utilization and efficiency of infrastructure investments while gaining greater insight to the business value of data. Specifically, these challenges are:

How to enable growth while curbing operational expenses

Data may be growing fast, but storage budgets are not. Additionally, constrained budgets make it difficult to hire the skills necessary to deploy and integrate new technologies. In particular, though, constrained budgets make it important for IT organizations to:

- Optimize existing storage infrastructures for investment protection
- Avoid costly generation-to-generation forklift upgrades and data migrations
- Maximize the ROI of newly implemented solutions

How to optimize the strategic value of data while mitigating the risks of having it

Given the difficulties in understanding the content and context of unstructured data, a significant challenge for IT organizations is to:

- Know how much data they have and what resources it is consuming
- Understand the changing business value and risk profile of their data throughout its lifecycle
- Ensure unstructured data is assigned to the proper storage tier throughout its useful life
- Define and execute data retention, preservation and deletion policies based on business value and compliance requirements
- Retrieve information to support strategic business decisions, litigation requests, or to demonstrate compliance with regulations

How to ensure distributed data is both accessible and protected

Sensitive company data is now generated, stored and distributed across a large footprint of geographically dispersed mobile devices. These devices are outside the protective confines of the company's brick and mortar, introducing new challenges IT organizations must address, including:

- Ensuring storage systems are scalable and extensible enough to handle a large number of geographically distributed hosts and clients
- Providing methods for data synchronization to prevent data loss, theft and corruption
- Providing end-to-end business continuity and disaster recovery capabilities

In combination, these challenges make it difficult for IT organizations to operationally manage data, unlock the information value of data, and ensure that decision makers can obtain data when they need it. One key reason for this is that the legacy storage infrastructures available to most IT organizations are inadequate for these new data management challenges.

A tipping point

Many legacy approaches to data storage are rigid and ill-equipped to enabled customers to deal with these new data management challenges. These legacy approaches are often characterized by:

- Disparate workload-centric applications with siloed indexes, file systems and storage devices
- Multiple namespaces designed to manage data's physical storage location but lacking valuable descriptive metadata, workflow management, or data governance
- Proprietary scale-up storage tiers that must be continually upgraded
- Single-tier data storage that manages all data as if it were equal in value to the business

And, these characteristics manifest themselves as significant IT resource burdens such as:

- Storing redundant or otherwise unnecessary data
- Storing an inordinate amount of data on expensive high performance storage devices
- Cyclical and disruptive data migrations
- An inability to provide constituents with timely access to the right data
- Little automated control of data usage, access, creation, deletion, and retention

Without a new approach to data management, these burdens threaten to keep businesses and their IT departments overly focused on the operational burden of managing storage instead of on unlocking the full strategic value of their information assets.

How can Dell help?

IDM is Dell's overall approach to help enable IT organizations to evolve from managing the storage of their data, to managing and delivering the data as strategic information. IDM comprises a set of *hardware and software solution technologies and services frameworks* that offer organizations *the optimal balance* between storage infrastructure cost efficiency, performance, and scalability, while *enabling tight alignment* between business processes and supporting applications, so that enterprise information can be managed, protected and optimally utilized throughout its useful life.

According to SNIA in 2004; the definition of Information Lifecycle Management was:

> ***Information Lifecycle Management comprises the policies, processes, practices, and tools used to align the business value of information with the most appropriate and cost effective IT infrastructure from the time information is conceived through its final disposition. Information is aligned with business processes through management policies and service levels associated with applications, metadata, information, and data.***

This vision of what IT organizations are seeking to achieve still holds true, however no single provider has yet been able to deliver on that vision for its customers. Dell believes that an IDM approach to these complex set of issues can make this vision a reality for many organizations, by focusing not only on what the vision comprises, but more importantly on how these sets of technologies and processes can be implemented in an efficient, phased approach that is right for each organization.

Dell's IDM Point of View

Dell's approach to IDM approach is focused on helping enable IT organizations to:

- Stay ahead of storage growth while controlling budgets
- Solve the management challenges of unstructured data and exponential storage growth through proper planning and storage tiering
- Increase operational efficiencies through rationalizing data creation, consumption and retention, using metadata driven policies to automate content management
- Make data easily searchable so that the intellectual property within it can be easily retrieved
- Deliver information to their stakeholders anytime, anywhere, on any device

Dell believes that there is no "one size fits all" IDM approach. Instead, Dell believes the right IDM approach will depend upon a customer's existing infrastructure and business objectives.

However, Dell believes that fully customized, service-heavy piece-meal solutions may be cost prohibitive for many organizations. Dell also believes that a low-touch "self-service" model can expose other organizations to risk. Instead, Dell's IDM approach asserts that the best balance is to provide proven, pre-integrated solutions that are nonetheless extensible, along with proven consulting best practices to accommodate unique needs.

Dell's strategy for implementing IDM solutions for customer organizations is based on a phased approach:

Develop a connected storage infrastructure based on latest storage technologies such as storage virtualization and scale-out to simplify management, lower costs, and enable data to be managed across the enterprise.

Leverage the information content within data to determine how it can be optimally managed to create operational and cost efficiencies. Data is placed on the right tier so that the value of the data is aligned with the cost of the storage, and can be managed through predefined policies throughout its useful life.

Achieve a service model approach to deliver data to end users. Dell's Fluid Data™ architecture will enable this to be done in the most efficient way for customers through the ability to categorize, index, search, optimize, and move data throughout the infrastructure, and can enable a combination of private, public or hybrid cloud models.

When implementing IDM solutions, Dell believes investments should be protected to the extent possible, and that "forklift" data migrations should be avoided. To achieve this, Dell has designed solutions to be flexible so that they can work with existing infrastructure and applications. Dell has also designed solutions to be "future ready" to seamlessly incorporate future technologies. To further protect customers' investments, Dell enables organizations to take an incremental approach, based on their current perspective, to eventually implement a full IDM solution, all in the timeframe right for them.

In summary, Dell believes IDM provides organizations with the right technologies, services, and processes to evolve from managing storage, to managing information and then leveraging information intelligently. With IDM, Dell believes IT organizations can play a more strategic role in driving growth and competitive advantage.

Core capabilities underlying IDM

Three core sets of Dell capabilities enable delivery of IDM solutions:

1. **An efficient storage infrastructure**

   Dell's storage infrastructure is designed to simplify management, ensure performance scales with capacity, and, importantly, protect existing customer investments.

   Virtualized storage: Assets for primary storage, retention, backup and archiving will become increasingly virtualized. These assets can be within the customer's data center as a private cloud, or part of a public cloud, or hybrid models. The aggregation of storage assets enables greater efficiencies in capacity utilization, and in simplifying management of those assets as a unified set of resources.

   Scale-out: Peer scaling technology ensures performance is not compromised with capacity growth. This enables pay-as-you-grow expansion of storage capacity and resources aligned to business needs.

   Investment protection: By continuing to support platforms across multi generations of hardware and software, Dell seeks to maximize organizations' utilization of investments, rather than force frequent "forklift migrations" of data from legacy systems to new solutions.

2. A Fluid Data architecture

This architecture weaves together data across the enterprise to enable an automated intelligent way to:

Align the value of the data with the right storage tier and protection level: Not all data has the same value to a company, which means data should be stored and protected differently. For example, being able to distinguish between images of an employee's vacation versus images of a vendor's new product designs, allows the organization to assign business value and thus assign different retention and archive policies. Similarly, "active" data should be placed in production systems, while data that has transitioned to an "inactive" state can be sent to archival systems. By understanding the information value of data, IDM assigns data to the right tier and protection level, increasing the efficiency of data storage.

Optimize capacity: Content-aware data deduplication and compression will dramatically reduce the number and size of files, the amount of data transported through the network, the footprint of the data that needs to be stored, and then facilitate the speed and integrity at which those files are brought back to useable state for the end user. This will become a key capability integrated into the storage architecture and infrastructure to address the explosive growth in data.

Automate management: Metadata attached to each data file contains information on that file's content and context, allowing storage management policies to be automatically applied. The architecture enables the systematic capture of this metadata across all file types and ingestion points, so that data across the enterprise can be taken under management of this automated policy and data movement engine.

Enable information retrieval and delivery: The metadata attached to each file, across the enterprise, also has the advantage of making data searchable with greater speed and accuracy. With this fluid data architecture, e-discovery searches become more effective due to each file having been assigned detailed metadata at the initial point of ingest, and thus later enabling more precise delivery of information with specified search attributes. Ability to assign and thus later search based on metadata across the enterprise also enables information to be delivered to end users across diverse locations and devices.

3. Services

An IDM approach also involves providing IT organizations with the technical and business process expertise to determine how to implement solutions based on their specific requirements. Dell has developed a portfolio of end-to-end services that support customers in making these technology decisions with maximum ROI efficiency. These services include:

Consulting workshops, assessments, design, implementation and support services to help customers understand the best approach to IDM given their current perspective and legacy infrastructure and future requirements.

Assessment services that help IT organizations make informed decisions by understanding the solution ROI. In addition the assessment provides a guide to efficiently and rapidly adopting the proposed solution.

Design services that help IT organizations avoid "one-size-fits all" solutions. This service provides a tailored solution with specific product recommendations, service recommendations, and implementation plans.

Implementation services that help IT organizations efficiently deploy validated designs into production. The services include on site deployment and full production rollout, with comprehensive project management, as well as reporting and next steps.

Support services both on site and remotely for all Dell hardware components as well as integrated ISV solutions where Dell is the primary service provider.

Software-as-a-Service, remote delivery and cloud technologies to provide alternative service delivery models, to enable both ease of doing business and efficiencies to reduce service costs.

A phased approach to IDM

Dell recognizes that organizations are at different stages in their storage management, with some focused on simply keeping up with growth of content in their enterprise, while others have moved to higher level concerns around information governance and management. Dell further recognizes that moving towards a true service level model of delivering insights to end users is not a simple, single step process. Instead, for many organizations, this process is an evolution of their data management practices versus a revolution. To help organizations take the vision of IDM and make it a practical reality, Dell can help by approaching this journey through three key phases:

Connect the storage infrastructure

Many organizations may have disparate departmental or application driven silos of storage around which capacity is being added continually, and their budgets and resources are not able to keep up with the growth. These organizations have core pain points around knowing what data they have, its location, its value, and specific attributes. As a result, IT organizations at this phase are looking to connect these disparate pools of storage and data into a single streamlined infrastructure that is designed to better keep up with growth and reduce ongoing budget and resources to manage.

Make data accessible

Organizations who already have awareness and control over their storage infrastructure may then be working towards optimizing the data to match the requirements of business stakeholders. In this phase, data is accessed and classified according to whether it is required for use in production systems, whether it should be archived to, for example, comply with regulatory requirements, or confidently deleted. The data is then placed on the right tier so that the value of the data is aligned with the cost of the storage.

Intelligently deliver information to end users

This last phase of evolution enables organizations to achieve a service model approach to deliver data to end users. Dell's fluid data architecture will enable this to be done in the most efficient way for customers through the ability to categorize, index, search, optimize, and move data throughout the infrastructure, and can enable a combination of private, public or hybrid cloud models.

How is Dell's IDM approach different?

Dell's approach is unique in how we seek to implement intelligent data management for organizations:

Customer led

Dell recognizes that every organization's environment, circumstances, and business requirements are different. Consequently, rather than force fitting "one size fits all" products or solutions into every environment, Dell has a comprehensive portfolio of technologies and services that can be leveraged to develop the best-fit solution for each customer. Consultative services catalyze the best-of-breed combination of Dell's Fluid Data™ architecture,

complementary software and technology components, professional service methodologies, and proven reference architectures to create technology solutions that solve specific customer problems.

Proven and cost effective

Dell believes customers are best served with solutions that are easy to deploy and easy to manage. Dell has reduced cost and complexity by designing and qualifying pre-integrated solution stacks and by applying best practices from prior engagements. This combination helps maximize solution ROI by significantly improving speed, quality and ease of implementation and ongoing management.

Integrated architecture

Dell's IDM approach incorporates an extensible technology foundation where key data and storage management features and control points are integrated natively yet delivered modularly. This Fluid Data architecture ensures that technology components work together, seamlessly, to automate storage and data management while providing flexibility and interoperability for heterogeneous hardware and software complements.

Investment protection

Dell's IDM approach is designed to provide flexibility and choice while incorporating advanced intellectual property components to provide long term data and storage management optimization and investment protection. Dell's Fluid Data architecture supports compatibility with existing standards-based heterogeneous environments as part of a phased evolutionary approach. However, Dell's Fluid Data architecture is designed to provide advanced storage and data management features within an extensible peer-scaling architecture that makes it a smart choice for customers seeking a revolutionary approach.

Benefits of Dell's IDM strategy

In this changing landscape where data is proliferating rapidly, the challenge to IT organizations has evolved beyond storing data, to actively managing data so that its value can be discerned and delivered to stakeholders when and where needed. Many industry providers have been attempting to deliver on this vision for customers for some time. Only Dell's IDM strategy can help customers convert this vision into a reality by:

- Minimizing the time and resources required to design, deploy, and support solutions
- Implementing in a pragmatic phased approach at the pace right for each organization
- Protecting and making use of, rather than throwing away existing investments

In summary, by focusing on implementing an IDM strategy with maximizing customer ROI in mind, Dell makes it possible for any organization – even those without deep pockets or armies of in house experts – to evolve towards fully leveraging the value of their data and its potential as a strategic and competitive asset.

To learn more about the Dell Intelligent Data Management strategy, visit:
www.dell.com/datamanagement

To explore the broad portfolio of Dell storage solutions, visit:
www.dellstorage.com

[1] Accenture survey of 250 Executives, 2008.
[2] IDC White Paper sponsored by EMC. The Digital Universe Decade – Are You Ready?, May 2010.
[3] IDC, Worldwide Mobile Worker Population 2009 – 2013 forecast, December 2009.

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