



# Accelerate your VMware journey with Dell storage

Fluid Data enhances efficiency, resiliency and agility



vmware®





The data center isn't truly virtualized without virtualized storage. **Dell Fluid Data** helps you through each step of your journey.



-  **Maximize efficiency**  
Consolidate your infrastructure simply and efficiently.
-  **Optimize resiliency**  
Virtualize and protect your mission-critical workloads with confidence.
-  **Increase agility**  
Build flexible, adaptable private cloud infrastructure that empowers business.



# Where are you on your journey to the cloud?

The virtual era of computing is upon us. Organizations of all sizes are looking to virtualization to realize greater IT efficiency, resiliency and agility.

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But often, virtualization initiatives stall, hampered by inefficient infrastructure, virtual sprawl, organizational inertia or pushback, and lack of comprehensive solutions to meet more stringent availability and protection requirements. As these concerns are vanquished, new requirements emerge for even greater automation, responsiveness and agility.

Wherever you are on your VMware journey, Dell can help. With an integrated, innovative portfolio of award-winning platforms, software tools, extensive VMware expertise, and worldwide services and support, Dell can help you gain more value from your virtualized infrastructure, accelerating your journey to the fully-virtualized data center and beyond.

At Dell, we call it the Fluid Data architecture. And it's at the core of a virtualized data center.

## Executive Summary

VMware virtualization technologies lay the foundation for the next-generation highly virtualized data center. As organizations make their journey to the cloud, careful consideration of the storage infrastructure is paramount.

When it comes to storage, traditional storage platforms simply weren't designed for the rapidly expanding data sets, hyper-dense servers, workload variability, and rate of change that define the "new normal." New solutions are warranted, unrestricted by legacy limitations.

"Dell and VMware remain closely aligned and committed to our common vision of the next-generation efficient, resilient, agile data center."

*Darren Thomas  
Vice President and General Manager  
Storage, Dell, Inc.*





## ▶ Maximize efficiency: IT consolidation

Keeping up with explosive data growth and siloed IT infrastructure can introduce inefficiency and undue infrastructure complexity.

As a premier VMware solutions provider, Dell can help overcome these challenges by consolidating disparate IT infrastructure into a modular, virtualized, integrated architecture. Based on the Dell Fluid Data architecture, Dell storage solutions automate and simplify storage management, providing new levels of operating efficiency and lowering the overall cost of storage.

### Virtualized storage pools

Dell's virtualized storage abstracts storage resources and presents a common pool of storage, simplifying management and conserving capacity.

### Rapid, VMware-integrated storage provisioning

To simplify storage management for VMware deployments, Dell provides integrated, automated tools, such as vCenter plug-ins, allowing administrators to easily provision, manage and grow datastores in one seamless, automated workflow.

### Automated tiering

Dell storage solutions automatically and transparently optimize data placement across storage tiers. This allows you to dedicate high-performance resources to the specific workloads that benefit most.

### Thin operations

Leading-edge technologies including thin provisioning, thin clones and thin writes eliminate the need to store duplicate data and white space. The result? A drastically reduced storage footprint and lower operational expense.

### Long-term investment protection

Bundled software features and perpetual licensing helps protect your software investments by allowing you to upgrade and grow your storage

infrastructure without incremental expense. Modular hardware and backward compatibility help ensure seamless expansion and technology refreshes without expensive, disruptive forklift upgrades.

### Dell vStart and DVS converged infrastructure

Dell offers integrated, pre-configured solutions combining best-of-breed server, storage and networking technologies, with bundled VMware software to optimize and simplify deployments and shorten time to value.

"By reducing the number of physical servers and increasing the level of automation on the SANs, we managed to reduce IT admin time by around **50%.**"

*Robert Sailer  
Head of IT  
Museum of Natural History Vienna*

Lower storage costs by up to **80%**

Manage complete infrastructure **simply**

**Protect** your storage investments from obsolescence

## Virtualize your mission-critical applications with confidence

"Dell Compellent storage gave us the performance we needed to enter the virtual computing space and establish best practices. Critical applications like SAP actually run better than on physical servers."

*Kai Sookwongse  
Manager, Infrastructure Svcs  
Mazda NA Operations*

Performance gains up to

**400%**

"We wanted easy-to-manage storage that would give us the ability to set up a disaster recovery scenario. Dell EqualLogic was the only solution that offered both, with replication features built-in at no additional cost."

*Rich Raether  
Manager Network Engineering  
Quarles & Brady*

**93%**

improvement in local recovery point objectives





## **Optimize resiliency:** Virtualizing mission-critical applications

As enterprises extend their virtual infrastructures to support mission-critical workloads and enhance service levels, they face increasing business risk. Implementing a fully virtualized data center requires an integrated approach. Our reliable infrastructure, tools and services tightly integrate with VMware to achieve high performance, availability, data protection and disaster recovery in mission-critical environments.

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### **Higher performance with automated tiering**

Dell storage automatically and transparently optimizes data placement, ensuring the most frequently-accessed data is always on the high-performance storage tier. The result? Drastically improved application performance and resource utilization.

### **Comprehensive integration with vStorage APIs**

Dell storage solutions are tightly integrated with vStorage APIs, including VAAI and VASA, enabling quick deployment of VMs, improved performance and scalability of VMFS file systems, and policy-based service level automation.

### **Non-disruptive upgrades**

Unlike traditional storage platforms, Dell storage solutions allow non-disruptive upgrades. No downtime, planned or unplanned, is required when upgrading capacity or performance.

### **Lightweight data protection**

Dell storage snapshots, clones and replicas are extremely space-efficient, storing only incremental changes. As a result, you can schedule and store multiple snapshots and recovery points to suit application needs—without impacting performance.

### **Integrated tools for online recovery**

The Dell storage portfolio provides automation tools to schedule, manage and recover from VM- and application-consistent snapshots and replicas. Integrated directly into the vCenter console, these tools provide a simple and efficient means of protecting and recovering critical data at a granular level.

### **Integrated backup and recovery tools**

Our solutions work seamlessly with enterprise backup and recovery software, including Dell's award-winning AppAssure solution and other leading third-party vendors. This ensures a simple, reliable, streamlined backup for your virtualized data center.

### **Simple, cost-effective replication**

Efficient replication supports synchronous and asynchronous data movement across wide area networks. Advanced configurations extend beyond disaster recovery and failover, supporting transparent rebalancing of VMware workloads across data centers.

### **Comprehensive vCenter Site Recovery Manager integration**

Storage Replication Adapters for Dell storage leverage our efficient thin replication technologies coupled with tight integration with vCenter Site Recovery Manager to enable pragmatic, cost-efficient disaster recovery for VMware environments.

## **Increase agility:** Cloud infrastructure

To accelerate responsiveness, IT needs to be able to seamlessly adapt and rapidly deploy new applications and services. To build more agile IT services, organizations are evolving their VMware environments to support a vCloud-based infrastructure with advanced automation and self-service provisioning. The underlying storage infrastructure needs to keep pace with growth, changing workload profiles, and spikes in demand. Dell storage solutions easily extend VMware infrastructure with the storage agility and flexibility warranted by cloud-scale infrastructures.

“The high availability and simplified, fast scalability of the Dell EqualLogic platform has played a vital role in achieving our customers’ goals.”

*Dante Orsini*  
Vice President of Business Development  
iland

### **Unified, multi-tiered storage for vCloud**

Through Dell’s unified NAS and SAN solutions, all vCloud storage needs are easily achieved. Dell multi-tiered storage solutions enable vCloud administrators to easily establish gold, silver and bronze resource tiers exploiting high-performance solid-state and low-cost disk media, alternative RAID types, and varying data protection services.

### **Automated and tunable service levels**

Dell extends vCloud environments with transparent auto-tiering and workload balancing within virtual data centers for even more efficient cloud utilization.

### **Advanced storage monitoring**

Advanced storage monitoring and reporting simplifies ongoing operations and facilitates capacity planning. Through intuitive, centralized interfaces, administrators can manage performance and capacity, report actual consumption, and anticipate and respond quickly to new storage needs.

### **Integrated and extendable workflows**

Dell storage support of standard scripting languages and command libraries enables advanced vCloud users to further integrate and automate workflows, enhancing productivity and accelerating provisioning.

### **Seamless evolution of cloud infrastructure**

Unlike traditional storage designs that force organizations into technology overhauls because of obsolescence, Dell storage solutions are designed with the cloud in mind. With Dell, you get fully elastic scalability, including non-disruptive expansion, technology refreshes without forklift upgrades and retention of software licenses between product generations.

### **Hybrid cloud compatibility**

Dell private vCloud infrastructures are fully compatible with the Dell vCloud and other public vCloud service providers, ensuring data and workload portability between on-premise and public cloud infrastructures.

**72%**  
faster VM provisioning

**95%**  
lower SAN traffic

**75%**  
lower host overheads



## ▶ Extending virtualization to the client environment: Desktop virtualization

With increased workforce mobility, IT organizations are looking for ways to better serve their user base and retain control of corporate data assets. Virtual desktops enhance manageability and improve protection, but as these environments expand, IT managers must contain operating costs, maintain the quality of the end user experience, and scale the infrastructure to meet greater demand. Dell provides end-to-end, integrated desktop virtualization solutions, designed for efficiency, high performance and simple management to meet the needs of the modern enterprise.

### Right-size storage footprint

Dell storage thin operations drastically reduce the storage footprint by eliminating duplicate data and white spaces across desktop VMs. Automated tiering ensures performance needs are met without overprovisioning storage resources.

### Mitigation of I/O storms

When multiple client devices access data concurrently, it generates massive I/O requests for storage. If not handled effectively, I/O storms can severely impact performance and the user experience. Through automated tiering and mixed media storage arrays, Dell storage ensures that the most frequently accessed data is always on the highest-performing storage tier, mitigating any performance issues.

### Simplifying virtual desktop data management

Dell offers VMware View-integrated tools to simplify provisioning of desktop VMs. Dell unified NAS and SAN storage solutions simplify configuration and management of VM and user data, facilitating greater control without adding complexity.

### Seamless scalability

Dell storage solutions are designed to seamlessly scale as new resources are required. Disk resources are non-disruptively added to the virtualized storage pool, providing additional performance and capacity to pre-existing virtual desktop environments and workloads.

“In desktop virtualization all the data sits on the centralized storage, so performance is critical. So, when we actually ran our tests on EqualLogic iSCSI, we were absolutely blown away by the results. EqualLogic was head and shoulders above the rest.”




*Brad Blake  
Chief Technology Officer  
Boston Medical Center*

Deliver **blazing fast**  
performance

**Simplify** VM provisioning  
and user data management

Save **90%** disk space  
using thin clones

# Dell storage portfolio

Compellent Storage Center	Dell EqualLogic PS and FS Series	Dell PowerVault Storage
		
<p>Self-optimized, powerful core storage designed for the virtual enterprise</p>	<p>Uncomplicated and versatile scale-out IP storage designed to simplify virtual deployments</p>	<p>Modular, affordable storage designed for virtualization without complexity</p>
<p>▶ Designed for large data centers, Dell Compellent is a fully-virtualized, self-optimizing storage platform for the most demanding virtual deployments.</p>	<p>▶ Dell EqualLogic virtualized IP storage is ideal for fast-growing organizations. Scale-out architecture enables seamless, non-disruptive upgrades and maintenance and all-inclusive software licensing lowers software costs.</p>	<p>▶ Optimized for the needs of small businesses, Dell PowerVault offers affordable, simple storage with enterprise-class features and reliability.</p>



# Accelerate your journey

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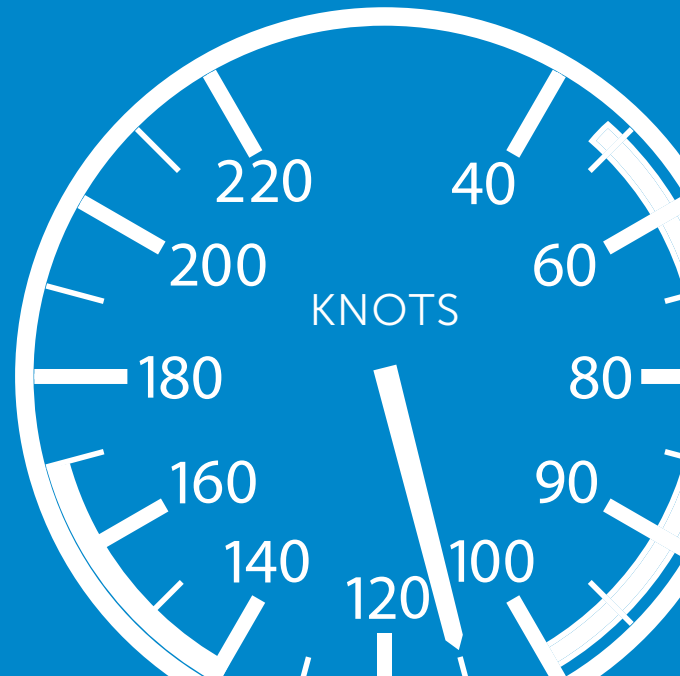
Virtualization has profoundly changed the way we build, manage and consume IT infrastructure.

Initially applied to minimize resource sprawl and reduce cost, virtualization has now become a key data center strategy for building resilient, agile cloud infrastructure.

Dell storage solutions play a vital role in assuring efficiency, resiliency and agility of the virtualized data center and cloud infrastructure. Through

advanced features, virtualized architecture, built-in intelligence and comprehensive integration with VMware platforms and tools, Dell storage solutions help optimize your virtualization deployment.

With a rich and integrated portfolio of storage, servers, networking infrastructure, software and tools, as well as extensive VMware expertise and professional services; let Dell help you accelerate your journey to the cloud.



Let us help you choose the right path forward.

Learn more about Dell's strategy for storage  
by visiting [www.dellstorage.com](http://www.dellstorage.com)

