

Dell Storage

Redefining the economics of enterprise storage





More innovation. Less frustration.

Legacy storage architectures have historically been complex and costly with data rigidly coupled to hardware and frequent vendor-induced upgrades of both equipment and software licensing. Architectural limitations required overprovisioning of capacity to meet future SLAs at the same time that budgets remained constrained.

Today's technology is dramatically impacting storage architectures as organizations seek to deploy new features and capabilities, embark upon the next chapter in virtualization, and glean more insights from their data. The siloed storage systems of the past are giving way to broader ecosystems — enhancing data center capabilities, speed of execution and cost structures.

Come talk to Dell. As a solution partner, Dell offers the technology, know-how and experience to deliver new workload-optimized architectures that simplify IT for any size enterprise.

Welcome to the virtual era

Dell understands the storage hurdles of today. With the volume, velocity and value of data accelerating at an ever-increasing pace, making a departure from the costly and complex approach to storage of the past is critical. Dell is redefining the economics of enterprise storage through modern storage architectures, a focus on customer workloads, and an end-to-end integrated portfolio of server, storage, networking, software and services offerings. Dell can help you develop the right data center and virtualization strategies based on your workloads for faster response times and lower TCO. From performance-optimized flash technologies to the densest storage enclosures available from any major vendor — and anything in between — Dell's end-to-end storage portfolio can offer you an optimal solution for your business demands.

Redefining storage economics for today's workloads



Performance Optimized for business critical workloads

I/O intensive workloads for your mission critical applications and big data analysis leverage flash storage and server-side cache



Price Performance Optimized for collaboration and infrastructure

Optimized for server and desktop virtualized environments and traditional IT workloads where price matches performance



Cost Optimized for cold data and image archiving

Low TCO and cost-efficient price/TB with dense enclosures

"The combination of software, services and sales investments have made Dell a serious contender both in terms of scale and performance for almost any enterprise storage project."

— Eric Slack
Senior Analyst
Storage Switzerland

The power to do more

Legacy storage systems are ill-equipped to address the business needs of today. Designed in a previous era, these systems are deployed in storage silos, with limited ability to fully address virtualization needs or to deliver economies of both function and scale across today's data center environments. Dell's approach starts with modern storage architectures, with flexible, modular designs to easily integrate across our broad ecosystem of internal and external capabilities. The result is storage solutions designed to address specific workload and data center challenges, and to deliver real advances in capabilities and value.

Dell's modern storage architecture is designed from the ground up for virtualized environments: scalable, easily enhanced, and uncoupled from the limitations of any legacy architecture with intelligent tiering and innovative licensing. It offers the ability to deeply integrate across the Dell enterprise end-to-end portfolio, deploying common technologies across a family of storage products.

Dell Storage leverages state-of-the-art technologies to help you maximize efficiency while slashing storage costs by converging servers, storage and networking. To meet the demands of I/O intensive workloads, Dell's unique Data Progression technologies enable performance-optimized flash at the price of a hard disk solution. To run your business, Dell can help you achieve a balance of price and performance with your virtualized or traditional IT environments that can leverage the investments you've already made, thereby reducing your total cost of ownership. Lastly, a Dell cost-optimized solution is ideal for your cold data storage as it will allow you to reduce the overall cost of supporting your data.

The result?

You can optimize your data center infrastructure, grow storage on demand, adapt seamlessly to business needs, and intelligently manage data assuring business continuity while extracting more business value out of your growing data.

Putting the right data in the right place, at the right time, at the right cost

The Dell Storage portfolio is designed to effectively meet the storage needs of organizations of all sizes, from the largest global enterprise data centers to local small businesses.

Dell Storage SC Series

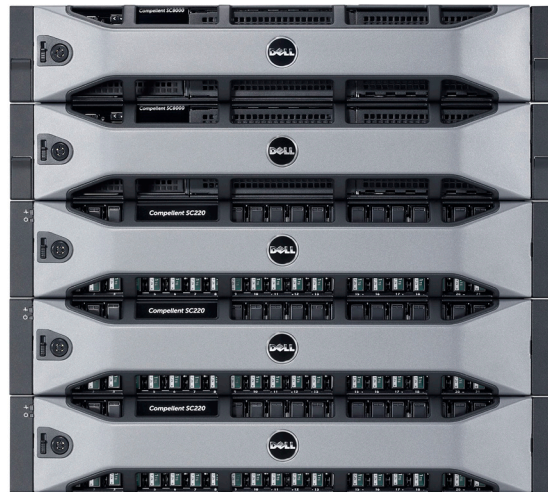
Self-optimized, intelligent enterprise storage

Enterprise-class performance designed for business results

Dell Storage SC Series, including the Compellent SC8000 and new Dell Storage SC4020, offers versatile, high-performance storage and ongoing economic value for storage area network (SAN) and network-attached storage (NAS) environments. Built on a virtualized, scalable pool of disks for block and file data, its flexible architecture supports various drive configurations including all-flash, hybrid flash and traditional spinning disk solutions for enterprise applications and file workloads.

Automated intelligent data tiering cost-effectively keeps hot data on high-performance drives and cold data on high-capacity disk drives, allowing you to reduce the cost of enterprise storage by optimizing performance for your data-intensive workloads without straining your budget or sacrificing capacity. With automated tiering among both write- and read-intensive SSDs, as well as traditional spinning disks, Dell Compellent's Data Progression technology optimizes performance — yielding flash performance at the price of traditional spinning disks.¹

In addition, intuitive and automated tools and reporting as well as Dell Copilot's industry-leading approach to services help you minimize time spent managing storage. With perpetual software licensing, you pay only once for features, even across hardware upgrades.



Dell Compellent SC8000

The SC8000 offers a virtualized storage platform designed for high scalability, advanced intelligence, centralized management, and flexible configuration options from high-performance arrays to the industry's densest enclosure.



Dell Storage SC4020

The SC4020 extends the advantages of enterprise storage to small and mid-sized deployments, offering the same advanced auto-tiering and virtualized storage features in a more compact, affordable format.

"We are now able to close our accounting period on the exact date, which has improved the overall efficiency of the organization through eliminating this delay. Dell Storage Center is delivering three times the number of IOPS compared to our previous solution."

— **Puneet Kaur Kohli**
Group Executive Vice President, IT & Operations
Bajaj Capital

¹The Dell Compellent all-flash solution costs less than a comparable 15K disk drive solution based on internal Dell analysis in July 2013 with Dell Compellent flash-optimized and spinning disk US list pricing.

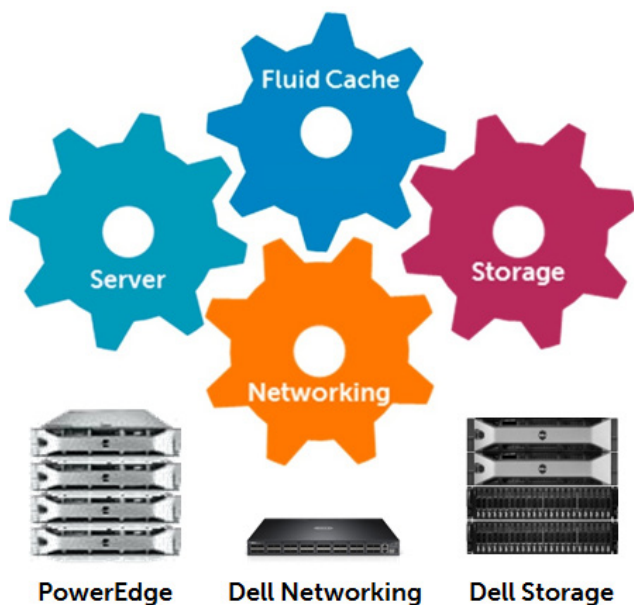
Dell Fluid Cache for SAN with Dell Storage Center 6.5

Reduce response time by bringing data closer to compute

Enterprise-class I/O performance for database and virtualization workloads

Dell Fluid Cache for SAN is a complete, flexible application acceleration solution providing scalable I/O performance for applications such as online transaction processing (OLTP) and virtual desktop infrastructure (VDI). Offering an extremely high level of performance for the most demanding business critical data, this end-to-end solution combines Fluid Cache software with Dell PowerEdge servers, Dell Compellent Storage Center storage area networks, and Dell Networking hardware and technologies. This solution uses Dell Express Flash PCIe SSDs installed in multiple servers and Dell Compellent Storage Center tiering to move hot data closer to computing resources. This technology minimizes storage latency while safeguarding data with a shared cache pool that provides full redundancy in the case of server failure. Fluid Cache for SAN ensures data is highly available with write-back caching that helps protect data reads as well as writes from server to SAN. Coupled with full coherency to Dell Compellent backend storage, the solution can continue processing data even in the event of a compute drive or node outage.

Fluid Cache for SAN extends the power of Compellent intelligent data placement from the SAN to the server. By providing a single infrastructure for data at both high and low ends of the performance spectrum, Fluid Cache for SAN with Storage Center 6.5 array software eliminates the tradeoffs between server performance and full-featured SAN benefits such as reliability, manageability and data protection. A single management interface and fully integrated SAN capabilities — including automated tiering, cache-aware snapshots, replication and compression — helps bring data closer to compute while dramatically reducing latency improving database response times by as much as 99%.²



Redrawing the lines of compute and storage to unleash the ultimate in application acceleration

- Turbocharge response times
- Scale database and virtualization performance
- Provide assured integrity and coherency
- Deliver faster business results

²Based on a Dell lab test of an 8-node cluster architecture of an OLTP Oracle workload simulation on a Dell hardware stack with Dell Fluid Cache for SAN vs. the same environment without Dell Fluid Cache for SAN.

Dell EqualLogic PS Series

Unified, virtualized storage

Performance and efficiency simplified for the real-world

Built on an advanced, peer-scaling storage architecture, the Dell EqualLogic PS Series simplifies the deployment and administration of consolidated storage environments, enabling efficient enterprise scalability for both performance and capacity without fork-lift upgrades. Its powerful, intelligent and simplified management improves productivity and streamlines IT infrastructure through unified block and file storage capabilities.

To address demanding workloads, the PS Series offers high-performing all-flash and hybrid arrays, powered by the newly-designed controllers and enhanced software for small- to mid-sized companies. The PS Series products include a comprehensive software portfolio with easy-to-use array software, host integration tools and all-inclusive licensing. In addition, the PS Series arrays are interoperable and can be mixed and matched to build tiered storage within a single storage pool or across multiple pools.



Dell EqualLogic PS Series

The PS Series applies a virtualized, scale-out architecture to simplify management, scale seamlessly, and reliably protect data.

"We can scale our storage in minutes with our Dell EqualLogic solution.... It enables us to dedicate more time to developing the IT infrastructure and responding to staff. This will lead to improved IT services."

— Nicolás Calvo
IT Systems Director
Depósitos Almacenes
Número Uno



Dell EqualLogic PS Series

The Dell Storage PS4210 Series arrays offer next-generation storage with industry-leading capabilities of the Dell EqualLogic PS Series product line for smaller data centers and remote offices. The PS4210

Series includes a hybrid array configuration that auto-tiers data and stores frequently accessed data on SSDs for rapid response, and stores cold data on HDDs within the same array.

Dell PowerVault MD3, MD and NX Series

Value and performance storage

Designed for quick deployment, easy management and efficient storage scalability

Optimized to meet the needs of small business, departmental, and branch office operations, the Dell PowerVault MD3, MD and NX Series are designed to offer affordability without compromising enterprise-class features and reliability. The MD3, MD and NX Series provides a range of storage options that include entry-level SAN or NAS appliances, and direct-attached storage (DAS) expansion enclosures. The versatile MD3 Series brings enterprise-level features to meet the demands of high performance and data protection. Enhanced premium features, mix-and-match hard drive configurations, and the ability to select between a small form factor and a compact high-density form factor are just some of the versatile options available with the MD3 Series. The NX Series offers solutions for companies who have standardized on Microsoft® Windows Storage Server® (WSS) software, or customers who want the flexibility to purchase software and capacity as their storage needs grow.



Dell PowerVault MD3 Series

The next generation of MD3 Series delivers the latest connectivity options and double the cache memory. MD3 Series offers affordable enterprise-level features and data protection without sacrificing performance.



Dell PowerVault MD Series

Modular DAS that adds capacity behind the MD3, NX, DR and DL Series as well as all the Dell PowerEdge servers.

“What we like about the MD3 product line is how much SAN you get for such a low cost. It’s pretty amazing that you can get so much storage and redundancy so affordably.”

— Timothy P. Carroll
Senior Network Engineer
XS, Inc.



Dell PowerVault NX Series

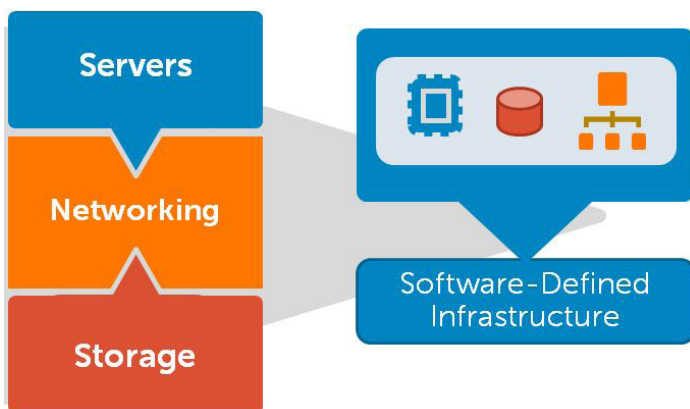
Built with award-winning Dell PowerEdge servers, the NX Series harnesses the innovations of WSS 2012 R2. The latest version of WSS software leverages host file serving features, and introduces many storage enhancements to the NX Windows NAS Series.

Dell software-defined storage solutions

Advance your IT with enhanced flexibility and orchestration

Your data center, defined by you

Dell's software-defined storage (SDS) portfolio is designed to make IT more efficient, deliver new IT faster, and make technology simpler and easier to use. Whatever your compute and storage needs involve, Dell and its partners can help you to choose the best approach that will grow with your business. Dell SDS solutions offer hypervisor-integrated systems and open source solutions to deliver IT infrastructure quickly and efficiently for your future-ready data center.



Dell's SDS partner technologies:

Nutanix®, Nexenta™, Microsoft® Storage Spaces, VMware® VSAN, and RedHat® Inktank Ceph

A powerful combination for a cost-effective software-defined strategy

Dell and Nexenta SDS solutions offer open-source storage software coupled with Dell's proven server, network and storage technologies and comprehensive management capabilities. These solutions are certified, pre-configured, and offer highly flexible SDS that includes SAN and NAS support, unlimited snapshots and cloning, block and file replication, and inline deduplication.

Expand your environment with ease as your business needs grow

Consolidate compute and storage into a single chassis with the Dell XC720xd web-scale converged appliance, powered by Nutanix software. Without disrupting your growing business needs, the XC appliance installs and integrates easily into any data center, and can deploy multiple virtualized, business-critical workloads such as VDI, test and development, and private cloud.



Dell XC720xd converged web-scale appliance

The XC720xd appliance integrates Dell's proven x86 server platform with Nutanix web-scale software for a highly scalable compute and storage solution.

Dell Compellent and EqualLogic FS Series NAS Appliances

Ensures efficiency by leveraging a shared infrastructure for block and file data

Dell FS Series with Fluid File System (FluidFS) software provides NAS for the Compellent and EqualLogic platforms, while achieving best-in-class performance with linear performance scaling and low cost per file OPS (operations per second). Both storage capacity and performance can be scaled non-disruptively and independently within a single namespace as requirements evolve, preventing the need for expensive forklift upgrades. FluidFS also supports a variety of reliability features to ensure robust data protection and high availability. Dell FluidFS can decrease the capacity needed for common enterprise data by 48% by deduplicating and compressing redundant data when it's no longer needed.³



Dell Compellent FS Series FS8600

Enterprise-class scale-out NAS with operational efficiencies and advanced features.



Dell EqualLogic FS Series FS7600/FS7610

Simplified and versatile NAS appliance for scale-out unified storage.

"We can offer researchers the lowest possible price point for data storage and the flexibility to use it however long they need it, thanks to the Dell Compellent NAS solution."

— **Charlie Collins**
Operations Manager, the ASU
Advanced Computing Center
Arizona State University

³ Based on May 2013 internal Dell analysis of the FS8600 NAS appliance with Fluid Data Reduction, using real-world home share environment comprised of Office files (21%), .GZ (19%) and .flate (19%) files, among others.

Dell PowerVault DR, DL, TL and ML Series

End-to-end disaster recovery solutions, D2D, dedupe and tape

Simple protection and recovery, designed to reduce complexity for organizations of all sizes

Dell PowerVault Data Reduction (DR) Series and Disk Library (DL) Series offer native disk-to-disk alternatives to tape libraries, and reduce the complexities of manual setup and legacy tape management. Designed for low-touch operation, Dell PowerVault DR and DL Series disk systems offer modular flexibility and rugged construction. With features such as proactive monitoring, alerts, reporting, and deduplication, DR and DL disk systems can help reduce costs, reduce complexity, streamline maintenance, and maximize system uptime.



Dell PowerVault DR Series

The DR Series offers a simple and cost-effective disk backup and recovery solution featuring deduplication, compression, replication and capacity expansion.



Dell PowerVault DL Series

Allows you to go beyond backup to integrated disaster recovery with the leading-edge technologies in AppAssure software for Microsoft Windows® and Linux®.

Tape Library (TL) Series provides a versatile, automated midrange tape backup solution. The Multi-library (ML) Series offers a modular tape library ready to intelligently protect your enterprise. The TL Series can create backup copies of data using the rewritable functionality of LTO media and can also create permanent, portable archive copies of data using WORM (write once, read many) capabilities. Extend LTO capabilities to enterprise-class deployments and help protect long-term investments with the ML Series that is designed to automate the retrieval, storage and management of tape cartridges with exceptional modular scalability.



Dell PowerVault TL Series

Offers expandable and affordable tape automation.

"We can ensure that clinicians and staff are better supported, and the hospital can continue delivering excellent services using the Dell DR4100 appliance even if the unexpected strikes our core infrastructure."

— James Pardon
System Administrator
Yeovil District Hospital

Dell PowerVault ML Series

A versatile, enterprise-level, top-rated modular tape library that allows you to scale your SAN backup solution.



Helping you realize your data center vision

Dell offers a wide range of professional services to simplify the assessment, design, implementation, management and maintenance of your IT environment, and to help you transition from platform to platform.

Dell Enterprise Consulting Services

Optimize the way your data is stored and protected, and simplify how it is managed with our expert consultants. Our proven methodology and tools are derived from years of global field experience that help you design the right storage plan to mitigate risk and decrease costs while optimizing and simplifying your data management. Our Consulting Workshops, Agile Consulting and Accelerators provide the consulting expertise you need to meet your needs.

Dell Enterprise Deployment Services


Our end-to-end deployment services ensure your Dell Storage installation, configuration and implementation is completed accurately and quickly — anytime, anywhere — with proven processes based on best practices acquired from thousands of deployments by our highly skilled experts.

Dell ProSupport Enterprise Suite for PS Series and MD Series

Dell ProSupport offers a suite of support services that enable you to choose support models based on how you use technology and where you want to allocate resources. We recommend Dell ProSupport Plus with SupportAssist for mission-critical systems or Dell ProSupport for premium hardware and software support for your Dell EqualLogic PS Series or Dell PowerVault MD Series solution. For hyper-scale data centers, we also offer ProSupport Flex for Data Center. Contact your Dell representative today for more information.⁴

Dell Compellent Copilot and Optimize

Dell Copilot Support goes beyond traditional support offerings by identifying and resolving potential problems before they happen. We also offer Copilot Optimize to provide additional in-depth expertise and services such as lifecycle planning, architecture configuration and software advice, technology upgrades and best-practice recommendations.



"If a drive goes down or we have another problem, a Dell engineer will come out straight away," says Cotti. "We knew we would get great support with Dell, but the Copilot team has far exceeded our expectations."

— Bill Cotti
PACS Administrator
Good Samaritan Hospital

⁴ Availability and terms of Dell Services vary by region. For more information, visit [Dell.com/servicesdescriptions](https://www.dell.com/servicesdescriptions).



"Dell seems to have hit a stride in integrating its portfolio products and in developing a clear message for the market in IDC's opinion: a set of feature-rich and affordable products with little to no hidden costs."

— Amita Potnis
IDC

Dell Storage solutions give you the power to do more

The virtual era offers an unprecedented opportunity for organizations to rethink and reinvent their computing infrastructures, specifically with an eye toward solutions to overcome the challenges of growing workloads and virtualization demands.

With its broad product and services portfolio, Dell offers unparalleled strengths as an IT solution partner. Let Dell collaborate with you to architect a storage solution that can scale seamlessly, adapt gracefully to new — even over-the-horizon — hardware and software capabilities, all while helping to reduce capital and operating costs.

As a solution partner, Dell offers the technology, know-how, and experience to help you develop the right architecture for your most important workloads and the right technology for innovation in your environment. And with a flexible, modular and modern architecture as the core design, Dell Storage can play a vital role in shifting your resources from maintenance to transformation.

Available in over 150 countries, Dell Storage is providing customers with innovative, simple and affordable solutions.

Why Dell Storage?

- Worldwide presence and expertise
- #1 supplier of internal and external storage⁵
- #1 iSCSI storage⁶ and DAS vendor⁷
- Price leader for hybrid-flash and all-flash Fibre Channel, NAS and iSCSI⁸
- Intelligent storage platforms with advanced virtualization capabilities
- Modular portfolio of customer-centric services
- Open, pragmatic, proven solutions
- Complete, end-to-end solution development, delivery and support

To explore the Dell Storage portfolio, visit Dell.com/Storage.

⁵ #1 supplier of internal and external storage worldwide based on total terabytes sold per IDC Worldwide Disk Storage System Tracker, Q2 2014.

⁶ #1 iSCSI storage vendor worldwide by revenue and marketshare per the IDC Worldwide Quarterly Disk Storage Systems Tracker Q2 2014.

⁷ #1 external DAS vendor by vendor revenue share worldwide per the IDC Worldwide Quarterly Disk Storage Systems Tracker Q2 2014.

⁸ IT Brand Pulse Annual Brand Survey, August 2014.

