Dell EMC PowerStore

Designed for the data era

ESSENTIALS

✓ New data-centric, intelligent, and adaptable infrastructure supports diverse requirements while simplifying IT operations

✓ Innovative AppsON capability lets you run virtualized workloads directly on the array, making them portable, agile and fast

✓ The only purpose-built array with a built-in VMware ESXi hypervisor.[1] Complements and extends your current VMware investments.

Data-centric

- **Any workload** – single architecture for physical, virtual, and container-based apps and databases. Designed for "6 9s" availability[2]

- **Performance optimized** – end-to-end NVMe design is up to 7X faster[3] than previous arrays with up to 3X better response time.[4]

- **Scale up and scale out** – independently add capacity or processing power.

- **Efficiency without compromise** – always-on inline data reduction with guaranteed 4:1 average DRR[5]

Intelligent

- **Programmable infrastructure** – end-to-end automation streamlines IT and DevOps

- **Autonomous appliance** – built-in machine learning optimizes resources

- **Proactive healthy analytics** – smart monitoring reduces risk and predicts needs

Adaptable

- **Flexible architecture** – container-based software stack enables application mobility

- **Flexible deployment** – modernize the core, edge and cloud without disruption

- **Flexible consumption** – choice, predictability and investment protection with pay-per-use solutions and data-in-place upgrades

Modern data center challenges require a new approach to storage infrastructure

In the new data era, the combination of massive amounts of data and unparalleled technology innovation has given businesses of all sizes the opportunity to become disruptive, digital powerhouses. But despite this potential, many learn that digital transformation can be complex and challenging. Data has become more diverse than ever before – and it is now being created, processed and stored *everywhere*, from edge to cloud. Most organizations have found that no single infrastructure can address all their data requirements, so they utilize different architectures, creating silos of IT resources that are managed and consumed independently.

At the same time, IT is under increasing pressure to deliver greater levels of simplicity and agility on the business side. Enterprise-grade, on-premises storage must now provide the same operational flexibility as cloud, becoming ever more adaptable, automated and easier to integrate with existing management frameworks.

To meet these conflicting demands, a new architecture and approach to storage is required. Dell Technologies introduces PowerStore – a modern storage appliance designed for the data era. This game-changing new platform unlocks the power of data, regardless of its structure or location, helping you adapt and transform your IT without disrupting current operations.

Start with best-in-class

Purpose-built storage arrays have evolved over the years to fill an essential role in the datacenter, providing ever-expanding levels of performance, capacity, and resiliency for mission-critical workloads. PowerStore begins with the very best of modern storage technology, delivering a new kind of storage appliance with advanced services to complement and extend existing on-premises environments.
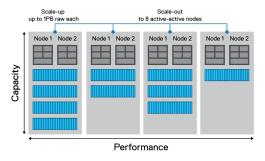
Any workload

PowerStore's single architecture for block, file, and VMware vVols leverages the latest technologies to support an enterprise-class variety of traditional and modern workloads – from relational databases, to ERP and EMR apps, cloud native applications, and file-based workloads such as content repositories and home directories.

The ability to accommodate application, multi-protocol network and multi-format storage diversity (physical and virtual volumes, containers, traditional files) within a single 2U appliance provides business-enabling flexibility and helps IT simplify and consolidate their infrastructure.
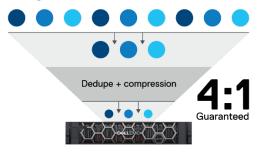
Performance optimized

Designed to leverage next-gen innovations such as end-to-end NVMe and dual port Intel® Optane™ solid state drives (SSDs) as Storage Class Memory (SCM), PowerStore delivers up to 7x more IOPs[3] and 3x lower latency[4] for real-world workloads compared to our previous storage generation, giving you all the headroom you need to ensure long-term value through multiple solution lifecycles.
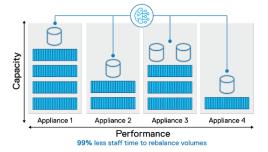
Next-gen performance, advanced clustering

Intelligent, "always on" data reduction

Machine learning engine

Automated, end-to-end workflows

Scale up and scale out

Expanding the capabilities of your initial PowerStore configuration is simple and extremely efficient, as capacity and performance may be scaled independently. Each active-active PowerStore appliance can grow to over 2.8 PB effective capacity,[5] and *multiple* appliances can be clustered for greater performance.

Efficiency without compromise

Regardless of how you grow, PowerStore costs remain consistently low. Deduplication and compression are "always on," and thanks to Intel QuickAssist hardware acceleration, PowerStore systems provide a guaranteed average 4:1 data reduction[6] without compromising performance.

Make it simpler, and more intelligent

But it's not just performance and scale. PowerStore also delivers unprecedented levels of intelligence and automation, eliminating complexity, while enabling faster delivery of new applications and services with up to 99% less management interaction.[7]

Programmable infrastructure

PowerStore streamlines application development and automates storage workflows through integration with VMware and a broad ecosystem of leading management and orchestration frameworks. You can provision PowerStore services directly from the application toolsets you use most. For example, IT and DevOps users can take advantage of plug-ins for VMware (vRO Plugin), Kubernetes (CSI Driver) and Ansible (Ansible Module), reducing deployment timeframes from days to seconds.[8]

Autonomous appliance

PowerStore includes built-in intelligence to eliminate dozens of time-consuming tasks and decision points. Labor-intensive processes like initial volume placement, migrations, load balancing and issue resolution are automated by PowerStore's onboard machine learning (ML) engine, which fine-tunes both individual and clustered appliances, optimizing performance and reducing cost, even as your environment evolves unpredictably.

Proactive health analytics

Dell EMC's CloudIQ, included with PowerStore, gives administrators faster time to insight,[10] with all the intel they need to take quick action and more efficiently manage their storage environment. By combining machine learning, advanced analytics and human intelligence, the cloud-based app reduces risk, spots anomalies before trouble occurs, and helps even IT generalists plan for future storage needs with powerful forecasting. CloudIQ makes storage management tasks easier, so you can get back to focusing on your business goals.

Ready to adapt when you are

If the advantages stopped here, PowerStore would already offer incredible storage value with a powerful lineup of enterprise-class features. However, the PowerStore difference goes much deeper with revolutionary new capabilities that not only support current needs, transforming the way you run your data center today, but also empower you to evolve your infrastructure as your business evolves – as unpredictable as that may be.
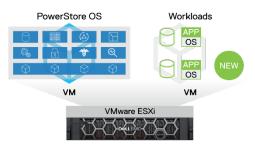
Flexible architecture

PowerStore's container-based software architecture, known as PowerStoreOS, improves performance, fault tolerance and security by isolating individual OS components as microservices. It also enables feature portability and rapid delivery of new or enhanced services over time.

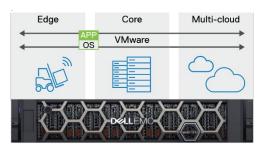## PowerStoreOS container-based microservices design

Deploy PowerStore OS directly on hardware, or in a VM running on the optional built-in VMware hypervisor

Introducing AppsON: Run any workload directly on PowerStore

Multiple deployment scenarios unlock the power of your data

Administrators can choose to deploy PowerStoreOS in a bare metal configuration directly on the PowerStore hardware, or within a virtual machine (VM) running on PowerStore's optional built-in VMware hypervisor, providing yet another layer of isolation, intelligence and abstraction.

When PowerStoreOS runs on a VM, administrators can also access the hypervisor to deploy their own applications *directly on the appliance,* using the same VMware tools and methods they use with external hosts. This game-changing capability, known as **AppsON**, is ideal for data-intensive workloads in core or edge locations where infrastructure simplicity and density is required, as well as for "infrastructure applications" such as anti-virus or monitoring software.

> With **AppsON**, PowerStore can provide both *storage capacity* for applications running throughout the enterprise and a *VMware-based environme*nt for hosting applications locally.

Best of all, since VMware ESXi is the underlying foundation, administrators can move seamlessly between these services. PowerStore cluster management, combined with VMware tools including vMotion and storage vMotion, enables easy application mobility in and out of PowerStore to other VMware targets.

Using a single storage instance, applications can be deployed on networked servers, hyperconverged infrastructure, or directly on the PowerStore appliance, and migrated transparently among any of them, allowing IT and application owners to quickly deploy and reassign workloads to the most effective environment based on current requirements and available resources.

Flexible deployment

PowerStore's compact footprint and adaptable design is ideal for:

- *Edge-based IoT data analytics and remote office applications* where ease of deployment and advanced replication is required

- *Core data center modernization*, when flexibility, application mobility, and VMware integration is critical for consistent operations

- *Multi-cloud access*, including hybrid solutions that allow customers to integrate on-premises infrastructure with public cloud while maintaining management and operational consistency.

Leveraging Dell Technologies Cloud Validated Designs, PowerStore can provide an ideal landing zone for data intensive workloads on VMware Cloud Foundation (VCF). PowerStore is also supported with Dell EMC Cloud Storage Services, which directly connects PowerStore to the users' cloud(s) of choice, as a managed service. Cloud Storage Services can provide DRaaS to VMware Cloud on Amazon Web Services (AWS) with full operational consistency using VMware.

Within any of these scenarios, PowerStore may be deployed as a standalone appliance complementing existing infrastructure, or as a storage option within Dell Technologies VxBlock for CI, our all-in-one autonomous infrastructure cloud platform.

Flexible consumption

PowerStore introduces the **Anytime Upgrade** program, a new optional advantage within the overall Dell EMC Future-Proof offering. Anytime Upgrade is the industry's most flexible controller upgrade program,[10] allowing you to continually modernize your PowerStore infrastructure without forklift upgrades, downtime, or application impact.

Unlike other programs, Anytime Upgrade lets you upgrade on your own terms, with multiple ways to enhance your PowerStore system.

- *Data-in-place node upgrades:* Upgrade the nodes (controllers) in your existing appliance to *Next Gen* or *Next Gen + Higher Model* versions.[12]

- *Scale-out upgrade:* Apply a discount credit to expand your PowerStore cluster with a second system equal to current model. [12]

Metro Area Solutions

PowerStore metro node

Metro node is a hardware add-on feature for PowerStore that provides true active-active synchronous replication over metro distances, enabling seamless data mobility to non-disruptively relocate workloads without application downtime.

Metro node allows simultaneous writes at both sites and supports Recovery Point Objective (RPO) and Recover Time Objectives (RTO) equal to zero downtime.

Moving to PowerStore

Native migration tools included

PowerStore offers more ways to migrate than ever, including new native tools that let you automate entire migrations directly from the PowerStore Manager wizard. If you have an existing Dell EMC storage platform, you can complete a non-disruptive array-to-array transfer in as few as seven clicks.[13] Hosts are remapped transparently, and completely offloaded, keeping workload performance high throughout the process.

Cross-platform solutions

PowerStore also gives you access to a range of other migration methods, from VPLEX and PowerPath/ME to host-based tools such as vMotion and Linux LVM, as well as comprehensive migration offerings from Dell Technologies Services. Whatever storage platform you're running today, we'll make sure you get to PowerStore quickly and smoothly – keeping your data fully secure along the way.

Dell Technologies Services

Choice and flexibility throughout the life of your appliance

End-to-end services help you configure, support and optimize PowerStore, making your new infrastructure solution easy to adopt and manage.

Plan Deploy Manage Support Educate Renew

Maximum value, worry-free results

Each Anytime Upgrade redemption option is completely non-disruptive, preserving existing drive and expansion enclosure investments. Upgrades may be executed at any time within your contract,[11] and you are not required to renew your maintenance contract to receive the upgrade. PowerStore's adaptable architecture combined with Anytime Upgrades effectively ends the traditional cycle of platform migration and forklift disruption.

Finally, **Dell Technologies On Demand** provides a range of options to easily purchase and scale storage – as you grow it, as you use it, or as a service. These flexible consumption models combine flexible payment solutions and value-added services to align spending with usage and optimize both financial and technological outcomes. In environments where capacity demands are cyclical or variable, usage-based consumption models deliver clear cost-savings and business advantages.

The future of storage is here

PowerStore both complements and advances your current infrastructure. Built from the ground up to provide unprecedented capabilities leveraging next-gen technology, the adaptable new platform simultaneously offers a familiar context and mature, comprehensive ecosystem support.

Whether your current environment includes traditional 3-tier solutions (servers, networks, arrays), hyperconverged infrastructure, hybrid or public cloud, or a mixture of everything, PowerStore helps you simplify and modernize without adding another management silo, allowing your IT staff leverage current skillsets while investing confidently in the future.

See PowerStore Spec Sheet for additional details.

1 – Based on Dell analysis of publicly available information on current solutions from mainstream storage vendors, April 2020.

2 – Based on the Dell Technologies specification for Dell EMC PowerStore, April 2020. Actual system availability may vary.

3 – Based on Dell analysis comparing IOPS on PowerStore 9000 4x cluster vs. Unity XT 880 running 70/30 random read/write mix, 8K block size with compression and deduplication active, March 2020. Actual results will vary.

4 – Based on Dell analysis comparing latency with PowerStore 9000 vs. Unity XT 880 at 300K IOPS, 8K random, 70/30 read/write mix, compression and deduplication active, March 2020. Actual results will vary.

5 – Assumes 4:1 average data reduction. Actual results may vary, depending on data types. PowerStore 500 model maximum single-appliance capacity is 1.2PBe per 2U base appliance.

6 – 4:1 average rate guaranteed across customer applications. Rates for individual applications may vary. See Future-Proof program terms and conditions for details.

9 – Based on Dell analysis of staff time required to maintain balanced PowerStore cluster vs. traditional multi-array deployment, March 2020. Factors in effort required to monitor, plan, define and execute volume migrations. Actual results will vary.

8 – Based on Dell analysis of effort required to deploy workloads with and without Ansible and vRO orchestration integrations, March 2020. Factors in effort required to monitor, plan, define and execute volume migrations. Actual results will vary.

9 – Based on an April 2020 Principled Technologies Report commissioned by Dell EMC, "Dell EMC CloudIQ streamlined the user experience in five cloud-based storage preventive management tasks", compared to HPE InfoSight with an HPE Primera array vs. CloudIQ with a Dell EMC Unity array. Actual results may vary. Full report: http://facts.pt/m8a5u3v

10 – Based on Dell analysis, April 2020 using publicly available data to compare the highest available program/subscription offers for controller upgrades. Requires purchase of Anytime Upgrade Standard or Select option and minimum 3-year ProSupport or ProSupport Plus contract at point of sale to qualify. Upgrade eligibility begins 180 days after invoice.

11 – Anytime Upgrade is available for purchase with PowerStore at POS only, and requires a ProSupport or ProSupport Plus contract with a 3, 4 or 5-year term. Upgrades available 180 days after program purchase.

12 – The Anytime Upgrade STANDARD offer provides an upgrade to Next Gen nodes when available. Anytime Upgrade SELECT adds "Next Gen + Higher Model" and "Scale-out" upgrade options. See rep for details..

13 – Based on Dell analysis of minimum effort required to execute non-disruptive migration of volume group using PowerStore's built-in migration tools for Unity, SC Series, PS Series and VNX arrays, March 2020. Actual results will vary.

Learn More about PowerStore

Contact a Dell Technologies Expert

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