DELL Technologies

Data Sheet

Dell PowerMax

Redefining Modern Storage



ESSENTIALS

- ✓ Powerful architecture with extreme performance consolidates demanding mixed workloads
- ✓ Built-in machine learning automates data placement for optimal performance with no management overhead
- ✓ Highly secure end-to-end efficient encryption safeguards digital assets with 3.5:1 data reduction[4], guaranteed by Dell Technologies

Powerful Architecture

- **Designed for speed** – true multi-controller scale-up, scale-out architecture with built-in end-to-end NVMe
- **Performance optimized** – up to 350GB/s sustained bandwidth[2], under 100µs read latency[3]
- **Efficiency without compromise** – global inline data reduction with guaranteed 3.5:1 average DRR[4]

Simple Operations

- **Intuitive storage management** – provision storage in less than 30 seconds
- **Workload consolidation** – massive consolidation of block, file, mainframe, IBM i storage on a single array
- **DevOps automation and containers** – workflow automation and streamlined IT processes (vRA, vRO, CSI, CSM, Kubernetes)
- **Non-disruptive data migration** – initiate data migrations from older arrays to PowerMax in three simple steps

Trusted Innovation

- **Mission-critical availability** – proven six nines availability[5] and gold-standard replication for business continuance, disaster recovery (BC/DR)
- **Deep VMware integration** – mission-critical availability and the highest scalability for VMware Virtual Volumes deployments (64,000 vVols)
- **Flexible consumption** – choice, predictability, and investment protection with pay-per-use solutions and Future-Proof guarantees

The journey to Digital Transformation requires a new approach to enterprise data storage

The new digital era is revolutionizing the way businesses work and operate, placing IT transformation at the core of being competitive. Technological innovations like artificial intelligence, machine learning, IoT, cloud computing, and big data analytics are the driving forces behind rapid data growth, traditional business model disruption, and – in many cases – the source of added IT complexity.

To address these paradigm shifts, organizations need a new generation of enterprise storage that provides unparalleled performance without compromising security, availability, scalability, protection and efficiency. Dell PowerMax is that platform , which offers massive scalability in every possible dimension—performance, capacity, connectivity, LUNs/devices and superior data services — all with a future-proof architecture featuring end-to-end non-volatile memory express (NVMe), storage class memory (SCM), built-in machine learning, and deep VMware integration.

PowerMax delivers proven six-nines of availability in a single array[1], offers leading security with end-to-end efficient encryption, and best-in-class data resiliency with Symmetrix Remote Data Facility (SRDF), the gold standard in remote replication for business continuance and disaster recovery (BC/DR). PowerMax is based on a powerful architecture, simple operation and trusted innovation that increases customer productivity, while dramatically reducing operational costs.

Powerful Architecture

PowerMax is architected to consolidate demanding mixed workloads through its unprecedented levels of performance with up to 350 GB per second bandwidth[2] and predictable read response times of under 100 microseconds[3]. It is true modern scale-up and scale-out storage designed for mission-critical applications of today and tomorrow – including databases and transaction processing applications as well as real-time analytics workloads that demand uncompromising uptime and extremely low latency.

PowerMax consists of two models, PowerMax 2000 and 8000. The PowerMax 8000 delivers industry leading performance density with up to 7.5 million IOPS[5] per rack and 187,000 IOPS[6] per U (rack unit). It supports mixed open systems, mainframe, IBM i, block and file environments. The PowerMax 2000 is the entry-point into mission-critical storage, delivering robust data services and high availability in a compact package.

PowerMax systems incorporate end-to-end NVMe technology with industry-standard NVMe flash drives, NVMe storage class memory drives, and FC-NVMe host connectivity via NVMe over Fabrics. PowerMax SCM, powered by dual-port Intel® Optane™ technology, offers extremely fast performance and low latency ideal for electronic trading, real-time analytics, high-performance databases and big data workloads to name a few.

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High Efficiency

PowerMax delivers extreme efficiency with global inline deduplication and compression, delivering up to 5:1 data reduction (3.5:1 guaranteed[4]), space-efficient snaps, and thin provisioning. Its inline deduplication and compression have virtually zero impact on performance, can be used with all PowerMax data services, and are turned on/off by application (storage group).

Simple Operation

PowerMax offers advanced management and monitoring tools for users to simplify and automate storage operations to increase ROI and lower costs. Unisphere for PowerMax is an intuitive management interface that enables IT managers to maximize human productivity by dramatically reducing the time required to provision, manage, and monitor PowerMax storage assets. In fact, customers can provision storage in under 30 seconds with Unisphere for PowerMax.

Based on HTML5, Unisphere delivers simplicity, flexibility, and automation which are key elements that accelerate modern data center transformation. For customers who frequently build up and tear down storage configurations, Unisphere for PowerMax makes reconfiguring the array even easier by reducing the number of steps required to delete and repurpose volumes.

Dell AIOps Health Checks

Dell AIOps enables proactive monitoring and predictive analytics to deliver alerts, aggregated PowerMax health scores, and provides proactive assistance with actionable insights and recommended remediation – all from the cloud and from your mobile devices free of charge.

DevOps Automation and Containers

Dell PowerMax customers can seamlessly consume storage infrastructure as code in a variety of development and automation environments using powerful APIs, SDKs, plugins for VMware automation tools like vRO and vRA and modules for the most popular configuration management tools like Ansible. In addition, PowerMax supports a major shift in software development by being the first major enterprise storage solution to implement the Container Storage Interface (CSI) driver standard to enable containerized storage workloads.

Massive Scale and Consolidation

PowerMax is built on a modern scale-up and scale-out storage architecture designed for mission-critical applications that demand extremely low latency and the highest availability. PowerMax enables massive consolidation of mixed environments: open systems, mainframe, IBM i, block and file storage – greatly simplifying operations and significantly lowering TCO.

The ability for PowerMax to run a wide range of traditional and modern applications, multi-protocol networks and multi-format storage diversity (physical and virtual volumes, containers, traditional files) provides business-enabling flexibility and helps customers simplify and consolidate their infrastructure.

Non-Disruptive Migration

To enable users to take advantage of PowerMax as quickly as possible, built-in migration tools provide seamless, non-disruptive migration from VMAX arrays and simple migration from third-party arrays to PowerMax. Customers can initiate non-disruptive migrations in three simple steps.

Appliance-Based Packaging

PowerMax arrays are built for simplicity and includes appliance-based packaging with either the Essential or the Pro software package. The Essential package ships with all PowerMax arrays and provides management and migration tools, SnapVX snapshots, inline dedupe and compression, and iCDM basic (AppSynch). The Pro package offers Essentials software plus enhanced security/encryption, remote replication, embedded NAS, PowerPath, and advanced management features. RecoverPoint replication software and PowerProtect Storage Direct backup licenses are sold separately.

VMware Integration

Dell and VMware offer the latest virtualization innovation for customers. Our latest innovation delivers greater levels of simplicity, scalability and data resiliency by tightly integrating PowerMax SRDF replication with VMware vSphere Virtual Volumes (vVols 2.0) and VMware Site Recovery Manager (SRM 8.3). These enhancements help organizations transition from a vSphere hardware-centric storage environment (VMFS/RDM datastores) to an application-centric vVols datastore model that provides massive scalability (64,000 vVols), high data resiliency (SRDF) and simple operation for VMware administrators.

Trusted Innovation

PowerMax is a culmination of over three decades of cutting-edge research and innovation that continually raises the bar for high-end storage across the industry.

Smart Software

PowerMaxOS brings autonomous storage to life with a built-in, machine learning engine. The machine learning engine analyzes all incoming I/O traffic and automatically places data on the correct media type (flash or SCM) based on the IO profile by analyzing and forecasting an average of 40 million data sets per array[7] to drive over 6 billion decisions per day[8]. The engine uses predictive analytics and pattern recognition to maximize performance without management overhead.

Mission-Critical Availability

PowerMax offers extreme levels of availability for the world's most critical applications with proven six-nines of availability in a single array, no single points of hardware failure, hot-swappable components, and PowerMaxOS non-disruptive code upgrades (NDU) in under 6 seconds[9]. SRDF software, the gold standard in disaster recovery, provides unmatched flexibility and massive scalability to deliver remote replication over extended distances or across multiple sites. Remote RAID, inherent in the design of SRDF/S replication, provides over 1000x less risk of data loss[14] from multiple drives failing in a RAID 5 group than RAID 6 by servicing all host reads and writes from the remote site with minimal performance impact.

The latest PowerMax innovation extends SRDF/Metro active/active replication by adding Smart DR (disaster recovery) for unmatched data resiliency and increased efficiency. Smart DR copies data from both primary arrays to one remote array to maintain data resiliency (DR operations) even if one primary array becomes unavailable. Copying the data to one remote array saves 50% of storage capacity[11] while reducing the SRDF/A network bandwidth needs, helping customers realize maximum data resiliency and efficiency from their SRDF/Metro Smart DR investment.

Reliable Data Protection

SnapVX provides space-efficient local snapshots that can be used for localized protection and recovery and other use cases including development/test, analytics, backups, and patching. SnapVX secure snapshots prevent accidental or malicious deletion, securing them for a specified retention period. In addition, integrated copy data management (iCDM) provides exceptional customer value by enabling application-consistent, on-array copy orchestration with critical applications like Oracle and VMware, enabling operational recovery and copy repurposing.

Dell PowerProtect Storage Direct facilitates self-service data protection while eliminating the needs for a dedicated backup server. PowerProtect provides up to 20 times faster backups and 10 times faster recovery by enabling backup directly from PowerMax to Dell Data Domain with optional cyber recovery. Dell RecoverPoint is available for heterogeneous replication and recovery to any point in time.

Proven Security

PowerMax offers comprehensive security features to ensure businesses can meet stringent corporate governance and compliance requirements while safeguarding mission-critical customer data from unwanted intrusion or cyberattacks. PowerMax data-at-rest encryption (FIPS 140-2 validated) secures every drive and delivers integration with external key managers, enabling customers to simplify security through a centralized key management platform. Tamper proof audit logs allow IT managers to quickly identify unwanted activity and feel confident in the accuracy of original PowerMax logs.

End-to-end efficient encryption enables PowerMax customers to secure storage assets by encrypting data from the host to the storage media on PowerMax. Dell Technologies has partnered with Thales Inc., a leading security firm, to integrate host-based encryption and PowerMax data reduction technology to secure PowerMax data while ensuring 3.5:1 data reduction, guaranteed.

Dell continues to pursue security-related testing and certifications like STIG hardening to support U.S. Federal requirements. And PowerMax is certified and listed on the U.S. DoD Approved Products List. Both Federal agencies and non-Federal customers benefit from PowerMax security hardening. (STIG: Security Technical Implementation Guide)

VxBlock Autonomous Converged Infrastructure

Organizations using Dell VxBlock systems report significantly better business outcomes, including lower costs, faster deployment time, and simpler life cycle management. VxBlock systems automate up to 98% of manual tasks associated with set-up, daily operations, and lifecycle management[11].

Future-Proof Program

PowerMax is part of the Future-Proof Program, which is designed to provide investment protection through a set of world-class technology capabilities and programs that enable Dell storage products to provide value for the entire lifetime of customers' applications. The program is available to customers at no additional cost in terms of maintenance or product prices.

Dell Technologies Services

For the most demanding workloads, we offer a host of services to maximize productivity across your environment. From planning through deployment and optimization, training and professional certifications—you'll have access to our global team of PowerMax experts, industry-leading tools and automated, proactive support.

For a faster path to productivity, take advantage of Dell ProDeploy Plus, delivering up to 66% faster deployment time and up to 85% less time on project planning[12]. To identify and resolve issues before they happen, PowerMax includes your choice of Dell ProSupport or ProSupport Plus, delivering 24x7 predictive support, automated case creation, 4-hour mission critical onsite hardware response and operating environment software upgrades. With ProSupport Plus, our most feature-rich offer, organizations experience up to 19% fewer critical issues and up to 70% faster response times[13]. Talk to a Dell Technologies representative for details about which services best fit your needs*.

** Services availability and terms of service vary by country.*

FUTURE-PROOF PROGRAM



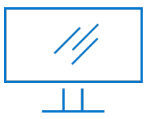
Dell Technologies Services

Ultimate choice and flexibility

Maximize productivity throughout the life of your technology – making PowerMax easy to adopt and manage. Across the street or across the globe, our experts can free up time and resources, significantly reducing IT effort so you can focus on innovation and business priorities.



1. Based on internal analysis of achieved availability for a single PowerMax 2000 or 8000 array, August 2020. Actual system availability will vary.
2. Based on Dell EMC internal analysis of Random Read Hits (64K IOs) Max GB per Second (Within a single array) for the PowerMax 8000, August 2020. Actual performance will vary.
3. Based on Dell EMC internal analysis of PowerMax 8000 random read hits (8K IOs), August 2020. Actual performance results will vary.
4. Based on Del EMC Future Proof program guarantee of 3.5:1 data reduction rate for reducible data. August 2020
5. Based on Dell EMC internal analysis of Random Read Hits Max IOs Per Second (Within a single array on one floor tile) for PowerMax 8000, August 2020. Actual performance will vary.
6. Based on Dell EMC internal analysis of Random Read Hits Max IOs Per Second for the PowerMax 8000 within one rack unit (1.75 inches), August 2020. Actual performance will vary.
7. Based on Dell EMC internal analysis of PowerMax 2000/8000 with 200TB of capacity, August 2020.
8. Based on Dell EMC internal analysis of a single PowerMax 2000 or 8000 array, August 2020.
9. Based on Dell EMC internal analysis of PowerMaxOS sw updates on PowerMax arrays, August 2020.
10. Based on Dell EMC internal analysis, comparing capacity and network bandwidth for PowerMax SRDF/Metro redundant systems with full DR protection vs. PowerMax SRDF/Metro Smart DR redundant systems with full DR protection. Actual savings may vary. August 2020.
11. Based on internal Dell EMC testing, Sept 2019. Analysis of manual steps replaced by Dell EMC converged infrastructure automation from delivery to production ready state on a 16 node 4 chassis system. Actual results will vary.
12. Based on July 2019 Principled Technologies Report commissioned by Dell EMC, "*Be production-ready sooner by using ProDeploy Plus for Enterprise*".
13. Based on a September 2019 internal analysis of service requests from August 2017 to August 2019 for Dell EMC Storage and Data Protection products.
14. Based on Dell EMC internal analysis of PowerMax 2000/8000 using SRDF/S with RAID 5 compared with PowerMax RAID 6, April 2021. Actual availability results will vary.



Learn More about PowerMax



Contact a Dell Technologies Expert

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