DELL EMC POWERMAX FAMILY

Tier 0 Storage, Zero Compromise

ESSENTIALS

World's Fastest Storage Array

- Up to 10 M IOPS[2]
- 150 GB/s bandwidth[3]
- Up to 50% better latency[6]

End-to-End NVMe

- NVMe flash drives
- NVMe storage class memory ready*
- NVMe over fabric ready*

Smart Software

- Built-in machine learning engine for intelligent, automated data placement
- Analyze and forecast 40M[5] data sets with zero overhead

Massive Scale and Consolidation

- Up to 4 PB effective capacity
- Support for open systems, mainframe, IBM i, and file storage on the same array

Extreme Efficiency

- 4:1 storage efficiency guarantee with inline deduplication, compression, snaps, and thin provisioning
- 50 percent better data reduction[4]

Businesses are in the midst of an IT transformation. Every second saved means spending more time running the business and less time managing data. Flash changed the storage game with sub-millisecond latency, but next generation applications continue to push the performance boundaries that these all-flash arrays can provide. To address the needs of these applications, enterprises need a new generation of enterprise storage that provides unparalleled performance without compromising security, protection, scalability, availability, or efficiency.

Dell EMC PowerMax is the world's fastest storage array[1]. It delivers new levels of performance and efficiency with a future-proof architecture that features end-to-end non-volatile memory express (NVMe) and a built-in machine learning engine. PowerMax is built on the comprehensive functionality and proven resiliency of Dell EMC's flagship storage platform. It provides six-nines of availability, data-at-rest encryption (D@RE), massive scalability, and best-in-class data protection, including Symmetrix Remote Data Facility (SRDF), the gold standard in remote replication.

World's Fastest Storage Array

PowerMax delivers unprecedented levels of performance with up to 10 Million IOPS[2], 150 GB per second bandwidth[3], and predictable response times of 290 microseconds for mixed workloads. It is true Tier 0 storage designed for mission-critical applications of today and tomorrow – including databases and applications as well as real-time analytics, that demand uncompromising uptime and extremely low latency.

PowerMax: World's Fastest Storage Array
Designed for Applications of Today and Tomorrow

Tier 0 storage for traditional and next generation applications

- Up to 10M IOPS[2] and 150GB/s[3]

- Proven machine learning
- Inline dedupe and compression
- Active / Active datacenter replication

End-to-End NVMe, industry standard technology

- NVMe-based drives

Flash   SCM*

- NVMe based DAE
- NVMe over Fabric ready*

The PowerMax 8000 leads enterprise array performance density with five million IOPS[2] per rack and 125,000 IOPS[2] per U (rack unit). It also supports mixed open systems and mainframe environments. PowerMax 2000 is the entry point into next-generation enterprise storage, delivering rich data services and high availability at midmarket economics.

Mission-Critical Availability

- Six-nines of availability
- Gold standard in remote replication
- Non-disruptive data migration (NDM)

Reliable Protection

- Local protection with space efficient snapshots
- Any point in time recovery
- Direct backup to Dell EMC Data Domain

Proven Security

- Hardware encryption with D@RE
- Secure snapshots
- Tamper proof audit logs, secure access control

## Future-Proof, End-to-End NVMe

PowerMax offers unprecedented performance with a future-proof, end-to-end NVMe multi-controller architecture. The key to driving new levels of performance is NVMe, a high-performance protocol designed for modern media. NVMe was architected to take advantage of the parallelism of modern multicore CPUs and SSDs to overcome the limitations of storage protocols designed for hard disk drives (SCSI-based protocols like SAS).

NVMe maximizes the power of a multi-controller all-flash array and, more importantly, opens the door to the next media disruption with support for storage class memory (SCM)*. SCM will offer an order of magnitude better performance—bridging the performance gap between flash drives and volatile memory (DRAM). PowerMax supports NVMe-based flash and is SCM ready and will offer host connectivity via NVMe over Fabric (NVMeoF)*.

Smart Software

PowerMaxOS is the only storage operating system optimized for next-generation media—bringing autonomous storage to life with a built-in machine learning engine.
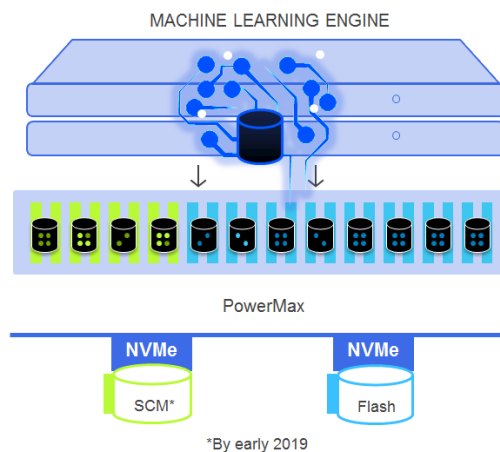
Built-in machine learning engine automatically optimizes data placement

The machine learning engine is designed to automatically place 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 that drive over 6 billion decisions per day. The engine uses predictive analytics and pattern recognition to maximize performance with no management overhead. Dell EMC is the only company that can deliver this level of intelligence currently analyzing over 425 billion data sets in real-time across the installed base with zero management overhead.

PowerMax arrays are built for simplicity and include appliance-based packaging with either the Essentials or Pro software package—adding enhanced security, remote replication, eNAS, optimization, and management features.
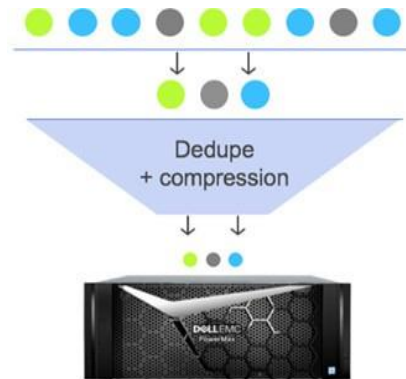
Extreme Efficiency

PowerMax delivers extreme efficiency with inline deduplication and compression delivering up to 5:1 data reduction (3:1 average), space efficient snaps, and thin provisioning. Its inline deduplication and compression have virtually zero impact on performance, can be used with all data services, and are turned on/off by application.
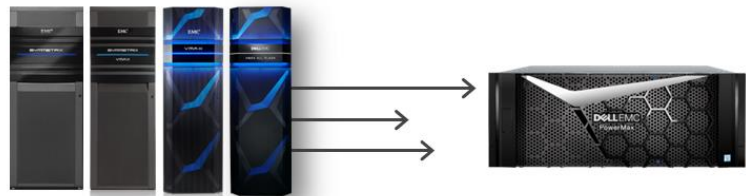

PowerMax inline deduplication and compression

Non-Disruptive Migration

To enable users to take advantage of this platform as quickly as possible, PowerMax provides seamless, non-disruptive migration from VMAX arrays and simple migration from third-party arrays.


Non-disruptive tech refresh from VMAX

Massive Scale and Consolidation

PowerMax is built to handle high demand, heavy transaction workloads while storing petabytes of vital data. Each PowerMax brick has one engine, one to two DAEs, and fully redundant components. The multi-dimensional scale enables millions of IOPS, petabytes of effective capacity, and hundreds of front-end ports.

PowerMax enables massive consolidation with support for mixed environments: open systems applications, mainframe, IBM i, and file storage on the same array—simplifying management and significantly lowering TCO.
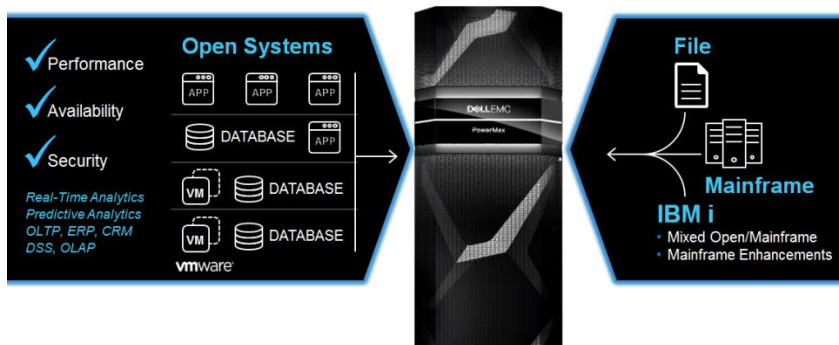
Massive Consolidation

Mission-Critical Availability

PowerMax delivers six-nines of availability in the most demanding, mission-critical environments. SRDF software, the gold standard in disaster recovery, offers unmatched flexibility and massive scalability to deliver remote replication over extended distances or across multiple sites. For continuous availability with zero down time, SRDF/Metro enables true active-active data center replication. PowerMax also offers no single points of hardware failure and hot swappable components to extend availability.

SRDF: The Gold Standard in Replication

- Synchronous
- Asynchronous
- Active/Active

R1

R2

Primary

Secondary

Reliable Data Protection

SnapVX provides zero-impact, space-efficient local snapshots that can be used for local protection and recovery or that can be repurposed for other use cases including development/test, analytics, backups, and patching. SnapVX secure snapshots prevent accidental or malicious deletion of your snapshots, securing them until they reach their 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.

In addition, Dell EMC ProtectPoint technology enables self-service data protection and up to 20 times faster backup and 10 times faster recovery by enabling backup directly from PowerMax to a Dell EMC Data Domain system. And Dell EMC RecoverPoint is available to provide heterogeneous replication support and recovery to any point in time.

Proven Security

PowerMax offers stringent security features to ensure businesses can meet corporate governance and compliance requirements and work across all available data services so that no tradeoffs need to be made. PowerMax data-at-rest encryption (ready for FIPS 140-2 validation) 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 the original PowerMax logs.

Optimization

Dell EMC PowerPath delivers performance, management automation, and TCE enhancements with PowerMax. These unique integrations detect applications and adapt service levels to improve performance, reduce provisioning complexity by auto associating initiators with hosts, unify host and array performance displays, IO Tagging, and improve management using detailed device usage information.

Dell EMC Storage Resource Manager (SRM) provides additional metrics and reporting tools for PowerMax users in heterogeneous storage environments (including non-Dell EMC) to help customers optimize storage resources and control the cost of rapid data growth

Service Levels (QoS)

PowerMax provides the option for customers to set latency requirements by application ensuring that critical applications operate at their necessary levels of performance and prevents a single application from getting more performance than it needs. The ability to set service levels is ideal for service providers or IT departments operating in an 'as a service' model.

Future-Proof Storage Loyalty Program

PowerMax is part of the Future-Proof Storage Loyalty Program, which is designed to provide investment protection through a set of world-class technology capabilities and programs that enable Dell EMC storage products to provide value for the entire lifetime of customers' applications. The unique program is available to customers at no additional cost in terms of maintenance or product prices. The Future-Proof Storage Loyalty Program for PowerMax includes: three-year satisfaction guarantee; 4:1 all-flash storage efficiency guarantee; never worry data migrations; hardware investment protection; all-inclusive software; and clear price maintenance.

Dell EMC Global Services

PowerMax platforms include a limited hardware warranty**. PowerMax hardware and software maintenance contracts offer 24x7 access to technical expertise, online services, remote monitoring and problem resolution, on-site services, and premium software maintenance, providing 24x7 access to technical expertise and rights to new releases of the software at no additional charge.

To speed implementation of PowerMax in your environment, take advantage of Dell EMC ProDeploy Plus services for up to 66% faster deployment and up to 49% fewer technical support calls. Customers can also choose ProSupport Plus for consistent best-in-class support delivered across their environment and up to 75% faster service request response time. Ask your Dell EMC sales representative about the specific services that can benefit your organization.

** Warranties may vary outside of the United States. Contact your Dell EMC representative for local warranty and service terms and conditions.

[1] Based on Dell EMC internal analysis of published bandwidth for PowerMax 8000 versus competitive mainstream arrays, March 2018.

[2] Based on Dell EMC internal analysis of max IO/s per second (within a single array) for the PowerMax 8000, March 2018.

[3] Based on Dell EMC internal analysis of GBs per second (within a single array) for PowerMax 8000, March 2018.

[4] Based on Dell EMC internal analysis of data reduction compared to VMAX 950F, March 2018.

[5] Based on Dell EMC internal analysis of PowerMax machine learning analytics, March 2018.

[6] Based on Dell EMC internal analysis using the Random Read Miss benchmark test in March 2018 comparing PowerMax 8000 against VMAX 950F with SAS SSDs. Actual response times will vary.

* SCM and NVMe over fabric coming in early 2019 via a non-disruptive upgrade.
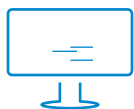
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