EVALUATION

Pure FlashArray//XL vs. Dell EMC PowerMax

Comparing system elements, features, and capabilities

Contents

Introduction

Modern storage requires next-generation primary storage strategies. Such strategies are shaped by the use of hybrid cloud and artificial intelligence in IT operations, as well as software-defined storage and consumption. Pure Storage® with FlashArray™ delivers a leading-edge platform that's built for resiliency. It provides the flexibility to scale up, builds on the cloud experience, and enables secure access whenever and wherever you need it.

Why Choose Pure?

Pure solutions are designed to meet your ever-growing storage demands—whatever the size of your business. Our solutions have evolved to bring more storage density and performance to data centers and redefine the storage experience.

According to Net Promoter Score (NPS), a customer loyalty metric, Pure Storage rated a score of 86, whereas Dell EMC rated a score of just 28. The NPS score measures customers' willingness to not only return for another purchase or service but also make a recommendation to their family, friends, or colleagues.
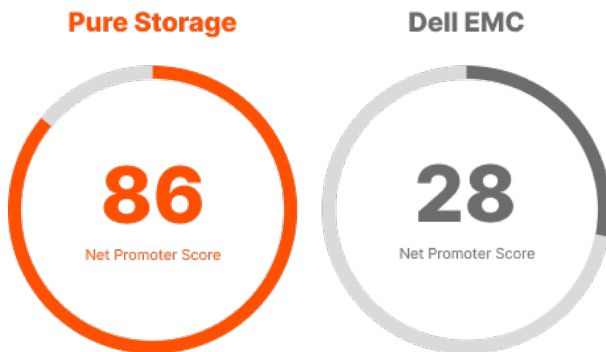
Pure Storage vs. Dell EMC Net Promoter Score
Pure Storage achieved a Net Promoter Score of 86, while Dell EMC rated a score of 28. NPS reported as of Jan 25, 2022

In this guide, we're focusing on FlashArray//XL, our performance-optimized at-scale solution. Built to support the largest databases, applications, and VMware environments, FlashArray//XL gives your business the freedom to innovate without storage constraint. FlashArray also provides complete enterprise data services built-in at no additional cost, including always-on protection against data loss and ransomware threats and a cloud-like model for quickly deploying new apps.

Top-tier Performance and Efficiency: Consolidate more business services—bigger databases, more users, and more app workloads—on fewer arrays.

App Acceleration: Flexibly run a wide range of business-critical apps, such as SAP HANA, Microsoft SQL Server, and Oracle—faster than ever.

Always-on Data Protection: Ensure data is always protected from disasters while also maximizing business continuity.

Ability to Act Like a Hyperscaler: Equip your data center for scalability and agility with storage as a service and eliminate the bottlenecks of traditional storage solutions.

FlashArray//XL vs. Dell EMC PowerMax

Below we compare multiple aspects of FlashArray//XL versus Dell EMC PowerMax. We start with essential elements of each system and then move to a deeper comparison of features and capabilities.

Comparison of System Components

The following table compares key system criteria across FlashArray//XL and Dell EMC PowerMax.

Criteria	Pure FlashArray//XL170	Dell EMC PowerMax 8000	FlashArray vs. PowerMax
Maximum Weight	350 pounds	3,195 pounds	89% less weight for Pure
Number of Rack Units	11U	84U	86% less rack space for Pure
Maximum Effective Capacity	5.47 PBe	4.5 PBe	21% more PBe for Pure
Maximum Power Required	3,320 W (3.688 kVA)	15,499 W (16,315 kVA)	78% less power for Pure
Maximum Controllers	2	16 (8 bricks)	Much simpler configuration for Pure
Heat Dissipation	7,040 BTU/hr	55,667 BTU/hr	87% less heat generated for Pure

Comparison of Features

The following competitive analysis table compares Pure Storage FlashArray//XL with Dell EMC PowerMax, taking into account their respective primary data storage capabilities and features.

Legend					
●	**Feature Supported**	◐	**Feature Partially Supported**	○	**Feature Not Supported**

Feature	Pure FlashArray//XL		Dell EMC PowerMax	
Architecture				
Flash Design	●	All array systems purpose-built for flash and non-volatile memory express (NVMe) by the pioneers of the all-flash array.	●	Flash management and NVMe access retrofitted onto legacy hybrid flash/spinning hard disk architecture. Source

Feature	Pure FlashArray//XL		Dell EMC PowerMax	
Drive Technology	●	DirectFlash Modules use raw-NAND flash, not commercially available solid state drives (SSDs). Optimized for performance with reduced supply chain risk.	●	Relies on SSD manufacturers for addressable interface to NAND. Does not optimize flash for performance and more subject to supply chain risks. Source
NVMe	●	End-to-end NVMe architecture in FlashArray since 2017.	●	NVMe access lacks an NVMe over Fabrics (NVMe-oF) backend fabric; uses "direct-attached NVMe" instead. Source
On-Drive Non-Volatile RAM (NVRAM)	●	DirectFlash Module with built-in non-volatile RAM (DFMD) allows NVRAM to scale with capacity, improves performance per rack unit, and increases storage density within the array chassis.	○	PowerMax does not have this capability. Source
Performance				
Low Latency	●	Supports DirectMemory Cache and DirectMemory Modules (Optane), reducing read latency to as low as 150µs for cache-enabled workloads.	●	FlashBoost reduces latency for data read to under 100µs. Source
Virtual Volumes (vVols)	●	Supports FlashArray-based vSphere vVols and simplifies deployment. The latest FlashArray 6.2 doubled the scale limit for volumes on the array, with up to 20,000 volumes of vVols and up	●	Supports 64,000 volumes per array. Source

Feature	Pure FlashArray//XL		Dell EMC PowerMax	
		to 5,000 volume groups of vVols virtual machines.		
Capacity				
Storage Density	●	Up to 5.5 PB effective in 11U for exceptional capacity density with enterprise-grade performance.	◐	Comparable capacity requires 84U, consuming almost 8x more data center space and adding complexity. Source
Scalable Capacity	●	Can seamlessly add capacity within the chassis or by adding up to two 3U expansion shelves while maintaining performance.	◐	Cannot scale capacity and performance independently. Must buy additional controller+media bricks with significant cost and space penalties. Source
Power and Cooling	●	Low power and cooling requirements help to meet Environmental, Social, and Governance (ESG) "green data center" goals.	◐	In addition to rack space, requires far more power and cooling to support the same workloads. Source
Upgradeability				
Non-Disruptive Upgrades (NDUs)	●	Pure has offered true NDUs—no forklift upgrades, no downtime, no data migration—ever since its first arrays were sold in 2012.	◐	Upgrades require forklift replacement of controllers, storage media, and data migration. Upgrading without downtime necessitates an extra-cost asynchronous replication (SRDF/A) capability. Source

Feature	Pure FlashArray//XL		Dell EMC PowerMax	
Upgrade Path	●	Can upgrade non-disruptively with data-in-place between generations of FlashArray controllers and between FlashArray//XL models.	◑	Cannot upgrade non-disruptively with data-in-place between generations of PowerMax bricks and from PowerMax 2000 to PowerMax 8000. Source
Performance Impact	●	System performance is maintained at 100% during upgrades and controller failures.	◑	Active/active dual-controller engines incur a performance impact during controller failure or upgrade. Source
Data Services				
Data Reduction	●	FlashArray//XL enables an average of 5:1 with only deduplication and compression, or an average of 10:1 with thin provisioning.	◑	The PowerMax Future-Proof Program has a 3.5:1 guarantee. 5:1 storage efficiency gurantee is possible with an additional ProSupport contract. Source
Data Encryption	●	Supports data-at-rest encryption with Advanced Encryption Standard (AES)-256 bit. Data encryption does not impact performance and maintains full data reduction capabilities. Compared to PowerMax, FlashArray supports a variety of industry standards and regulations for data protection, including FIPS 140-2 certified, NIST compliant, NIAP/Common Criteria validated, and PCI-DSS compliant.	◑	Supports end-to-end encryption and data-at-rest encryption (D@RE) with an integrated key manager, FIPS 140-2. Source
Snapshots	●	SafeMode snapshots on FlashArray lock down the critical data needed to recover from a cyberattack, so services can be restarted quickly without succumbing to attacker demands. Space-efficient, portable Purity Snapshots provide simple, built-in local and cloud protection. Free movement between FlashArrays, to FlashBlade, to third-party Network File System (NFS) servers, and to the cloud is included at no additional charge.	◑	Supports limited options for snapshot mobility. The included Essentials package provides management and migration tools like SnapVX snapshots, which can only be used for localized protection and recovery. For snapshot replication to cloud, Cloud Mobility for Dell EMC PowerMax is additionally required. It provides application-level protection for block devices through snapshot shipping to private and public clouds (Dell EMC ECS, AWS, Azure). Source
Ransomware Protection	●	SafeMode secures the snapshots needed for data recovery so that a malicious attacker cannot destroy them. Included at no additional charge.	●	SnapVX and Snapshot Policies can be used to create secure snapshots that cannot be deleted by users or other intrusive measures. Secure Snaps provides the ability to recover the user data environment from ransomware and malicious attacks. Source

Feature	Pure FlashArray//XL		Dell EMC PowerMax	
Business Continuity	●	Included at no additional cost, ActiveCluster delivers fully symmetric active/active synchronous replication to meet RPO and RTO zero capabilities at the storage layer.	◑	Available for an additional charge, SRDF/Metro provides active-active clustering. Requires third-site hardware with complex setup at all sites. Source
Disaster Recovery (DR)	●	Included at no additional cost and easy to set up and maintain, ActiveDR minimizes data loss at long distances for global disaster recovery. Includes single-command failover, intelligent failback, and non-disruptive disaster recovery testing.	◑	SRDF/A can provide additional levels of data resiliency through Smart DR, allowing both primary PowerMax sites (R1 and R2) to send a single copy of data to a shared DR site by asynchronous replication. SRDF software is included in the PowerMax Pro and zPro software packages, which must be ordered in addition to the Essentials and zEssentials software. Source
Cloud Integration	●	With Pure Cloud Block Store in Amazon Web Services or Microsoft Azure, FlashArray helps deliver consistent data services, resiliency, and APIs, so companies can run apps, enable disaster recovery, or perform testing and development seamlessly across on-premises and cloud environments.	◑	Supports cloud mobility to move data from PowerMax to AWS, Azure, Dell EMC Elastic Cloud Storage, or PowerScale for long-term retention only. Does not support cloud-native applications, which require short-term data migration and high-demand access. Source
Manageability				
Centralized Management	●	The Pure Storage Pure1 cloud-based platform provides centralized management. All data-service platforms can be seen from one place, whether on-premises FlashArray, Pure Cloud Block Store in AWS or Azure, or Portworx container storage.	◑	The Dell EMC storage management stack consists of isolated management tools like Storage Resource Manager, Unisphere, and CloudIQ. This makes storage management more complex. Source
Reports and Analytics	●	Pure1 provides AI-driven management, workload simulation, global dashboard, and virtual machine analytics, as well as predictive and proactive support. With the built-in reporting engine, shareable reports can be generated on commonly requested information such as capacity, performance, or even service subscription status.	◑	PowerMax uses CloudIQ for predictive analytics, and PowerMaxOS has a built-in machine learning (ML) engine. Complex reporting must be handled by a third party like Amazon ECS. Source
Continuous Infrastructure Tuning	●	Always-on Quality of Service (QoS) prevents workloads from using more than their fair share of resources on the array by efficiently throttling noisy neighbors. FlashArray maintains 100% performance, including active-active high availability, mirrored NVRAM, hot-swappable components, and stateless controller architecture.	◑	PowerMax OS employs QoS features like service levers, host input/output (I/O) limits, and initiator bandwidth limits. All PowerMax QoS features must be applied using traditional, isolated PowerMax management tools (Unisphere, REST API, and Solutions Enabler). Source

FlashArray Winning Strategy

Architecture with Environmental Advantage

Compared to PowerMax, FlashArray//XL offers higher density in less rack space, more effective storage capacity, and lower power consumption.

Efficient Storage Space

FlashArray//XL supports five advanced data reduction technologies for its all-flash arrays, whereas PowerMax supports only two options for data reduction.

All-Inclusive Licensing

All Pure Storage array software comes standard with a complete set of features, including replication, cloning, snapshots, encryption, ActiveCluster synchronous replication, and more. PowerMax comes with complex licensing and advanced features that are available at additional cost with PowerMax Pro and zPro software packages.

Better Extensibility to Cloud

Pure Storage offers next-level extensibility to the cloud with advanced capabilities like asynchronous replication, snapshots to the cloud, and scenarios for secondary sites in the cloud. PowerMax supports cloud-only scenarios for migrating data or long-term retention, but does not support cloud-native applications, which require short-term data migration and high-demand access.

Efficiency Guarantee

Pure Storage offers a written, right-size guarantee that's customized for customers, providing an average of 5:1 with only deduplication and compression, or an average of 10:1 if thin provisioning is included. The PowerMax Future-Proof Program has a 3.5:1 guarantee. A 5:1 storage efficiency guarantee is possible with the program but requires an additional ProSupport contract.

Fusion Integration and Storage as Code

Pure Fusion brings cloud scalability and agility into one SaaS management layer with automation for complex tasks. It also includes an API framework that enables on-demand storage as code. With PowerMax, storage infrastructure as code can only be consumed for container and DevOps automation.

Additional Resources

- Learn more about Pure FlashArray//XL

- Try FlashArray//XL for yourself free

- Dive into the Pure Storage Resource Center

- Contact Pure Storage