

EMC VMAX 10K

Powerful, Trusted, Smart, and Efficient



ESSENTIALS

Leverage VMAX 10K reliability, availability, and scalability to consolidate critical applications

- Accelerate virtualization and transformation to the hybrid cloud
- Consolidate critical applications to reduce total cost of ownership (TCO)
- Increase performance and reduce costs with EMC Fully Automated Storage Tiering for Virtual Pools (FAST VP)

MOST ACCESSIBLE TIER 1 STORAGE

The EMC® VMAX® 10K storage system is a new class of enterprise storage purpose-built to provide leading high-end virtual storage capabilities to a growing number of IT organizations and service providers with demanding storage requirements and limited resources. It enables customers to virtualize and consolidate mission-critical applications to simplify management and lower TCO.

The VMAX 10K utilizes the same powerful and revolutionary scale-out Virtual Matrix Architecture™ delivered in the EMC VMAX 20K and VMAX 40K. The VMAX 10K delivers scalable performance, simplified management and provisioning, automated tiering, local and remote replication, and the ability to simultaneously support thousands of virtual machines using VMware® and other hypervisors.

POWERFUL

- Built using the industry proven VMAX architecture
- Unparalleled performance, reliability, and availability

TRUSTED

- Over 20 years of industry leadership delivering mission-critical storage solutions with fully redundant components
- Use SRDF-S business continuity solutions to protect critical information with 6 nines of data availability
- End-to-end data integrity, integrated RSA® secured access controls, and proven data protection solutions protect critical data assets

SMART

- Fully Automated Storage Tiering for Virtual Pools (FAST VP) automatically tunes array performance across different drive types
- Optimized hardware and software deliver scale-out performance, non-disruptive upgrades, and resiliency against hardware failure

EFFICIENT

- Virtual provisioning and FAST VP maximize use of resources to lower TCO
- End-to-end management that is intuitive and easy to use
- Four hour install — four minutes to first I/O

VIRTUAL PROVISIONING (VP) EFFICIENCY

The VMAX 10K is designed for a 100 percent virtually provisioned environment to reduce TCO by presenting each host, application, or file system with more storage than is actually physically allocated. Customers can decrease initial allocation of storage capacity and reduce labor costs by simplifying data layout and eliminating the extra steps normally required to accommodate capacity growth. Virtual Provisioning provides automated pool rebalancing and non-disruptive re-organization of thin pools to improve capacity utilization. It also reduces power and cooling costs by decreasing the amount of idle storage in the array.

SMART AUTOMATION WITH FAST VP

The VMAX 10K is available with EMC's FAST VP software to optimize array performance across all drive types in the array. This improves system performance while reducing cost. FAST VP dynamically allocates workloads based on service-levels and non-disruptively moves workloads across storage types, optimizing overall system performance. It moves the most active parts of your workloads to high-performance enterprise flash disks and least frequently accessed data to lower cost drives, leveraging the best performance and cost characteristics of different types of drives. Compared to a traditional single-tier disk solution, FAST VP delivers higher performance using fewer drives, reducing acquisition, power, cooling, and footprint costs.

FEDERATED TIERED STORAGE

Federated Tiered Storage (FTS) provides the capability to virtualize and manage heterogeneous arrays behind VMAX 10K. Customers can use trusted VMAX features such as FAST VP, EMC SRDF®, EMC TimeFinder®, and VLUN to consolidate and streamline operations in the hybrid cloud, simplifying management and extending the life and value of existing storage arrays. The external array can also be used as a FAST VP tier, benefitting from automated, dynamic data movement.

HOST I/O LIMITS

VMAX Host I/O Limits enable users to set maximum IOPS and/or throughput limits on a per-Storage Group basis. Customers can manage performance in industry-standard terms to enforce performance service levels and make performance more predictable. VMAX can automatically balance Host I/O limits across directors and support two levels of cascaded limits to simplify performance management in multi-application, multi-tenant, and cloud environments.

XTREMCACHE INCREASES SERVER PERFORMANCE

EMC XtremCache is an available server Flash caching solution that reduces latency and increases throughput to dramatically improve application performance by leveraging intelligent caching software and PCIe Flash technology. XtremCache, coupled with EMC FAST VP software, creates the most efficient and intelligent I/O path from the application to the data store. The result is a networked infrastructure that is dynamically optimized for performance, intelligence, and protection for both physical and virtual environments.

BUNDLED SOFTWARE SIMPLIFIES ORDERING

Every VMAX 10K includes VMAX OS, an intelligent operating environment that delivers more than 20 years of industry leadership running mission-critical applications. In addition, EMC offers easy-to-order software bundles providing the most popular licenses for daily operations: storage management, performance optimization, automation, and backup. Because no two environments are alike, VMAX 10K customers may also purchase individual software licenses separately for storage tiering, local data protection, replication, and disaster recovery. These licenses include FAST VP, SRDF, PowerPath, ProSphere, RecoverPoint, SRDF, TimeFinder for VMAX 10K, Replication Manager, EMC Storage Analytics and others. Please visit www.emc.com for the details and capabilities of each software title.

THE MOST POWERFUL STORAGE FAMILY

The EMC VMAX 10K system features the same revolutionary Virtual Matrix Architecture delivered on the world's most powerful Tier 1 storage systems, the VMAX 20K and VMAX 40K. The core element of the Virtual Matrix is the VMAX engine. The VMAX 10K engine includes the latest Intel XEON™ six-core processors, cache, front-end connectivity, redundant controllers, and back-end connectivity. The Virtual Matrix in VMAX 10K scales by aggregating up to four (4) VMAX 10K engines with a total of eight (8) redundant controllers (aka directors). This multi-controller architecture delivers the highest performance, availability, and consolidation at a price point that fits limited IT budgets. The scale-out architecture of the VMAX 10K supports up to 1.5 petabytes of usable capacity, supporting thousands of virtual servers. To simplify administration, the entire VMAX 10K array can all be managed using the included intuitive, web-based Unisphere for VMAX application.

THE MOST TRUSTED INDUSTRY STORAGE

VMAX is the brand that the most demanding enterprises have relied on for more than two decades to protect their data. VMAX 10K delivers business continuity with our trusted replication solutions, end-to-end data integrity protection, and SRDF for VMAX 10K and/or RecoverPoint for disaster recovery. In addition, securing mission-critical enterprise data is of paramount importance to today's enterprise. VMAX OS for VMAX 10K provides the highest levels of data integrity with integrated technology from RSA, the Security Division of EMC, to deliver built-in security capabilities that make it easier to reduce risks to sensitive data and improve compliance efforts.

TRUSTED ACCESS AND AUTHENTICATION

The VMAX Service Credential, Secured by RSA, prevents unauthorized service actions on the array. Integration with RSA enVision® provides automated, policy-based audit log management across the enterprise. The enhanced VMAX Audit Log provides a comprehensive, tamper-proof view of management and support actions. Add to this non-disruptive upgrades of EMC software applications, storage configuration changes, and serviceability — all designed to ensure that access to vital information is never in doubt — and service levels are never compromised.

DATA AT REST ENCRYPTION: FIPS 140-2 VALIDATED

VMAX Data at Rest Encryption (D@RE) provides hardware-based, on-array encryption, protecting information from unauthorized access when drives or arrays are removed from the data center. This technology eliminates the need for disk erasure services and allows for rapid decommissioning and repurposing of arrays, while helping achieve regulatory compliance. VMAX encryption offers intelligent key

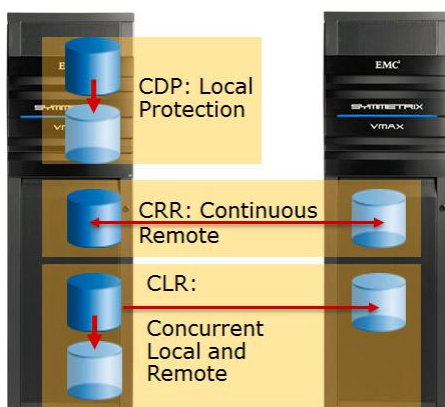
management that is easy to implement and maintain. Administrators can choose either automatic internal key management or integration with an RSA RKM/DPM key manager. EMC is the first array vendor to offer FIPS 140-2 validated Data at Rest Encryption for all drive types, with full support for automated tiering and no performance impact.

SCALABILITY AND FLEXIBILITY

The VMAX 10K array provides both scale-up and scale-out capabilities supporting large-scale consolidation with the added benefits of being easy to configure and manage. Customers obtain all the benefits of tiered storage on one platform, as well as the flexibility to rapidly address the changing needs of your business. A single-engine VMAX 10K can start with as few as 24 drives, scaling up to four engines supporting 1,560 drives for a maximum usable capacity of up to 1.5 petabytes. A four-engine array provides up to 512 GB (128 GB per engine) of cache memory and up to 64 Fibre Channel ports (32 FC ports using 16 Gb/s) or 32 1/10 Gb/s iSCSI or 10 Gb/s FCoE ports. VMAX 10K supports open systems and IBM i.

ENSURING BUSINESS CONTINUITY

EMC TimeFinder for VMAX 10K, EMC SRDF for VMAX 10K, and EMC RecoverPoint software are the most powerful and trusted applications for local and remote storage replication available in the industry. The TimeFinder, SRDF, and RecoverPoint families are widely deployed and are installed in tens of thousands of demanding environments worldwide. These applications enable volume clones and snaps for rapid local backup and restore, plus parallel processing activities like application testing and development. EMC RecoverPoint guards against primary site disasters and outages. Every VMAX 10K includes an integrated RecoverPoint splitter to enhance replication performance and integration.



RECOVERPOINT — HETEROGENEOUS REPLICATION

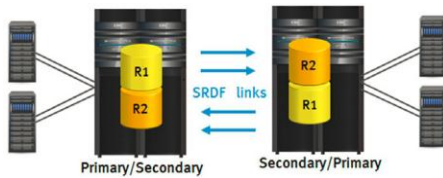
EMC RecoverPoint is an optional, heterogeneous data protection solution that protects both EMC and non-EMC storage environments, at local and/or remote sites with minimal performance impact. It provides two basic forms of protection, integrated continuous data protection (CDP) and continuous remote replication (CRR). These can be combined into concurrent local and remote (CLR) data protection.

RecoverPoint CDP provides synchronous local replication, enabling instant recovery of applications to any point in time with DVR-like roll back. Customers gain effective operational recovery from events such as database corruption, viruses, faults, and user errors, and can combine it with SRDF for highly scalable remote replication.

RecoverPoint CRR provides both dynamic synchronous and asynchronous remote replication for disaster recovery—with the ability to switch between the two based on user-defined policies. Bandwidth reduction technology such as write folding, data compression, and deduplication reduce replicated data traffic over the network by as much as 90 percent to optimize performance and minimize network costs.

RecoverPoint CLR provides concurrent operational (CDP) and disaster recovery (CRR) capabilities for the same data.

SRDF FOR HIGH-END REMOTE REPLICATION



EMC SRDF for VMAX 10K is the industry's most powerful suite of remote storage replication solutions for disaster recovery and business continuity. It protects against local and regional disruptions and increases application availability by reducing downtime. SRDF offers unmatched deployment flexibility with a wide range of distance-replication capabilities featuring minimal or no performance impact on applications and hosts. It can be deployed with TimeFinder and/or RecoverPoint to provide local replication and operational recovery. SRDF supports connectivity between VMAX 10K, VMAX 20K, VMAX 40K, DMX-3 and DMX-4 in various configurations including site-to-site, three-site, and star. SRDF for VMAX 10K offers:

- Flexibility — Extended long distance capability and support for 2, 3, and 4-site configurations let customers optimize resources while meeting service levels.
- Consistency — Coordinated processing across multiple sets of data and systems enhances enterprise-wide application restart.
- Peace of mind — SRDF is the world's most widely used high-end remote replication technology, with tens of thousands of licenses shipped.

INSTALL IN HOURS; PROVISION IN MINUTES

The VMAX 10K arrives pre-configured with array-based software applications already installed to enhance customer productivity. Each system is custom-built and pre-configured by the EMC factory. Your specific configuration — from drive types and tiers to RAID types — is pre-configured and loaded on the system before it's shipped to you, reducing your time-to-production. You can now set up the system in a few hours then provision in a few minutes.

MORE EFFICIENT DATA CENTER LAYOUTS

The VMAX 10K supports dispersed arrays. System bays and their associated storage bays can be separated by up to 10 meters of rack-to-rack distance. This technology provides installation flexibility to work around physical constraints like building columns, or simply when IT components must be in different areas of the data center. The VMAX 10K can also be installed in customer-supplied 3rd party racks that meet EMC specifications. This allows customers to standardize on one rack or cabinet design to reduce operational costs.



Dispersed array technology allows system bays and their associated storage bays to be separated as a unit by up to 10 meters of rack-to-rack distance allowing deployment in space constrained data centers

EXTEND VMAX VALUE TO FILE STORAGE (NAS)

Meet the industry's first single-floor-tile rack with Tier 1 block and file storage and 300 drives. VMAX 10K Block and File systems are ideal for customers that need to consolidate islands of block and file storage with a mission-critical Tier 1 array. This tightly integrated hardware design compliments advanced software features decreasing TCO up to 30% while reducing floor space up to 50%. Users can grow their single rack VMAX 10K File configurations up to 6 racks with 1,460 drives.

Customers can leverage FAST VP, Host I/O Limits, FTS, and data-at-rest encryption (D@RE) technologies for both block and file storage resulting in unmatched data security and much lower cost. And with the new Unisphere Link and Launch software customers can efficiently manage block and file storage resources as quickly as storage requirements change. This context-sensitive interface saves valuable time empowering IT administrators to easily manage relentless data growth.

Common use cases for VMAX file storage include: Microsoft Windows home directories, Windows server consolidation, virtualizing Tier 1 applications on NFS, VMware virtual machine linked clones (writable snaps), Oracle on NFS, SQL on SMB 3.0, and NAS backup and archive.



VBLOCK SYSTEM 720

- As an alternative, VMAX 10K can be consumed in a converged infrastructure.
- The Vblock 720 is optimized, agile, & resilient for minimized business risk and simplified IT operations.
- Visit www.VCE.com to learn how Vblock System 720 delivers a single product with seamless integration of leading compute, network, EMC storage, and virtualization technologies.

CONTACT US

To learn more about how EMC products, services, and solutions can help solve your business and IT challenges, [contact](#) your local representative or authorized reseller—or visit us at www.EMC.com.

EMC GLOBAL SERVICES FOR VMAX 10K

The VMAX 10K is designed with the highest levels of reliability with end-to-end management that is easy, intuitive, and quick. However, when support services are needed, EMC Customer Service — six-time winner of the SSPA STAR Award for outstanding mission critical support — is there to help. EMC provides the strategic guidance and technology expertise needed to address critical business and IT challenges. Our 14,000+ service professionals and support experts worldwide, plus a global network of partners, leverage proven methodologies, industry best practices, experience, and knowledge derived from EMC's 30-year information-centric heritage to address the full spectrum of requirements across the information lifecycle.

Ask your EMC sales representative about the full spectrum of EMC services that can benefit your organization.

All VMAX 10K platforms* include a three-year Premium Hardware support warranty, providing customers with 24x7 onsite coverage. VMAX 10K software includes a 90-day defective media replacement policy with optional Premium Software maintenance plans available.

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

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