EMC VNX FAMILY

Next-generation unified storage, optimized for virtualized applications

Organizations of every type rely on the timely retrieval of information to facilitate transactions and decision making. While a typical organization is experiencing double-digit data growth, IT budgets, staffing, and traditional storage capabilities are not keeping pace. As a result, IT organizations are under constant pressure to employ more efficient storage strategies and increase the amount of data their staff can manage without additional headcount. Customers are looking to storage vendors for innovations to solve these challenges in the same way that server virtualization has enabled them to experience greater efficiency by pooling server resources and dynamically provisioning compute power according to business needs. The storage imperative is not only to move information dynamically according to business activity, but also to make the process fully automated and self-managing.

The EMC® VNX® family delivers industry-leading innovation and enterprise capabilities for file, block, and object storage in a scalable, easy-to-use solution. This next-generation storage platform combines powerful and flexible hardware with advanced efficiency, management, and protection software to meet the demanding needs of today's enterprises.

All of this is available in a choice of systems ranging from affordable entry-level solutions to high-performance, petabyte-capacity configurations servicing the most demanding application requirements. The VNX family includes the VNXe® series, purpose-built for the IT manager in smaller environments, and the VNX series, designed to meet the high-performance, high scalability requirements of midsize and large enterprises.


VNX Family

* Available Q4 2013

EMC²

THE VNX SERIES— POWERFUL, EFFICIENT PROTECTED, AND SIMPLE

A robust platform for consolidation of legacy block storage, file servers, and direct-attached application storage, the VNX series enables organizations to dynamically grow, share, and cost-effectively manage multi-protocol file systems and multi-protocol block storage access. The VNX operating environment enables Microsoft Windows and Linux/UNIX clients to share files in multi-protocol (NFS and CIFS) environments. At the same time, it supports iSCSI, Fibre Channel, and FCoE access for high-bandwidth and latency-sensitive block applications. The combination of EMC Atmos® Virtual Edition software and VNX storage supports object-based storage and enables customers to manage web applications from EMC Unisphere. In addition EMC ViPR™ provides federated management and object interfaces to VNX storage for a variety of cloud frameworks.
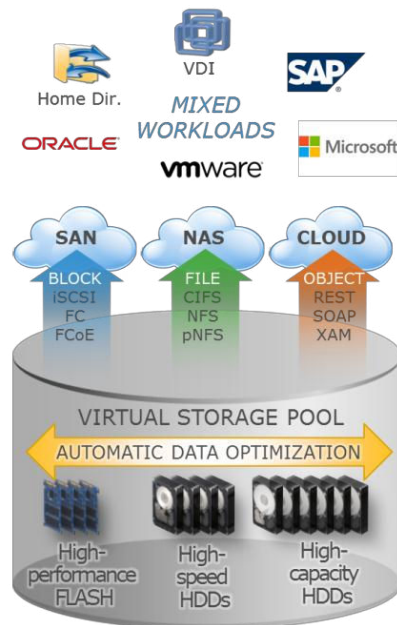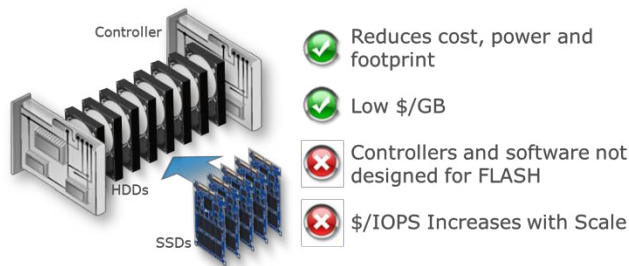

Ideal for mixed workloads, both physical and virtual, The VNX series next-generation storage platform is powered by the latest Intel Multi-Core Xeon E5-2600 series with a 6-Gb/s SAS drive back-end and delivers more firepower, greater efficiency, better protection – all with ease.

FLASH-OPTIMIZED TO BOOST SYSTEM PERFORMANCE

The VNX Series enabled with MCx (multi-core optimization) unleashes the power of Flash to address the high performance, low latency requirements of virtualized applications.
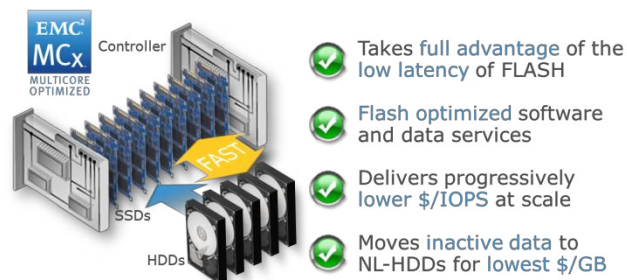
The traditional approach to building a hybrid array entails adding flash drives to a traditional hard disk based array This approach allows for consolidation of multiple workloads and deliver low $/GB. However, since the system was not designed for flash, it limits the scalability and increases the cost.

The Traditional Hybrid Array

- ✓ Reduces cost, power and footprint
- ✓ Low $/GB
- ✗ Controllers and software not designed for FLASH
- ✗ $/IOPS Increases with Scale

A better option is the VNX series Flash Optimized hybrid array design. By designing the system for Flash, bottlenecks are eliminated to deliver the highest performance and the lowest latency. Then, by adding FAST VP™ tiering and high capacity NL-SAS drives, you can drive down costs for inactive data.

The VNX FLASH Optimized Hybrid Array

- ✓ Takes full advantage of the low latency of FLASH
- ✓ Flash optimized software and data services
- ✓ Delivers progressively lower $/IOPS at scale
- ✓ Moves inactive data to NL-HDDs for lowest $/GB

MCx (Multi-Core RAID, Multi-Core Cache and Multi-Core FAST Cache) distributes all VNX data services across all Cores – up to 32. This approach delivers unprecedented application performance while maintaining affordable pricing: Compared to the previous generation, the VNX series with MCx delivers:

- Up to 4X more file transactions (580,796 SPECsfs2008 nfs Ops/Sec)*

- Up to 4X OLTP transactions (735K concurrent Oracle and SQL OLTP IOPS)**

- Up to 6X more virtual machines (6,600 VMs)

- Up to 3X more bandwidth for Oracle and SQL data warehousing (30GB/sec)

- Up to 3X performance for transactional NAS applications (such as VMware over NFS) with 60% faster response time

* Source: www.spec.org

** Source: Demartek

USE STORAGE CAPACITY MORE EFFICIENTLY—AUTOMATICALLY

When even a few Flash drives are combined with the EMC FAST™ Suite—an unrivaled set of software that tiers data across heterogeneous drives and boosts the most active data to cache—customers receive the optimal benefits of a FLASH 1st strategy.
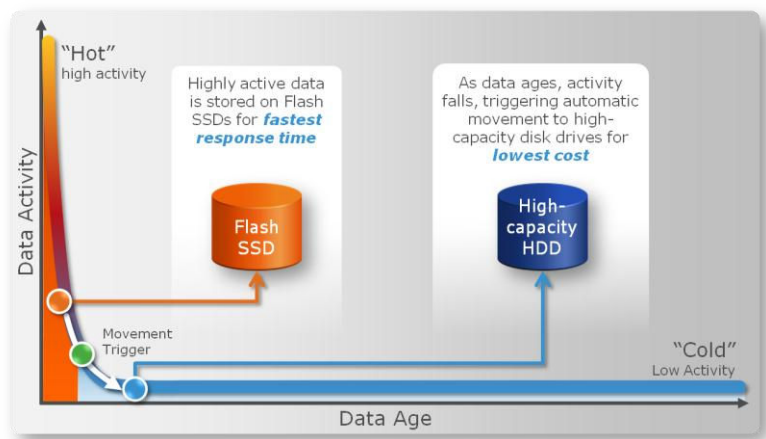
FLASH 1st, available only through EMC, ensures customers never have to make concessions for cost or performance. Highly active data is served from up to 4.2 terabytes of Flash drives with FAST Cache, which dynamically absorbs unpredicted spikes in system workloads. As that data ages and becomes less active over time, FAST VP (Fully Automated Storage Tiering for Virtual Pools) automatically tiers the data from high-performance to high-capacity drives in 256 megabyte increments, resulting in overall lower costs—regardless of application type or data age.

While only a few flash drives (typically less than 5%) are needed for improving performance and lowering cost, customers can further reduce costs with deduplication. VNX out-of-band block-based deduplication can dramatically lower the costs of the flash tier. In this example, compared to 210 15k drives, FAST + dedupe lowers the cost by 86%. The benefit of the compounded efficiency is ideal for Virtual machines and other environments with redundant data across multiple sources.
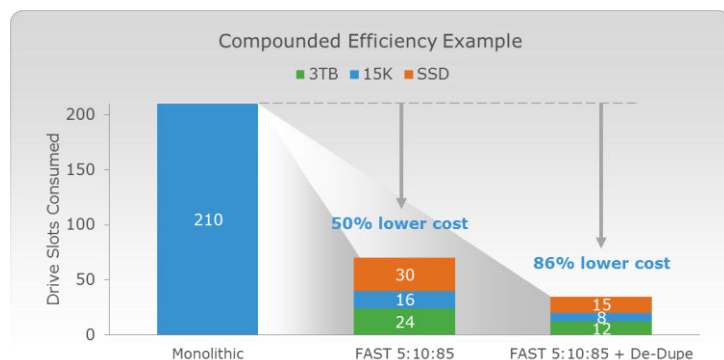
The VNX series is delivered with additional features to help ensure redundant or inactive data doesn't consume valuable storage resources. Block compression, intended for relatively inactive LUNs such as backup copies and static data repositories, automatically compresses data, enabling customers to recapture capacity and reduce the data footprint by up to 50 percent. File-level deduplication/compression reduces disk space used by up to 50 percent by selectively compressing and deduplicating inactive files. Because these features operate as background tasks, there is minimal system performance overhead.

CONTINUOUS AVAILABILITY TO KEEP THE BUSINESS RUNNING

The VNX series is architected to provide five-nines availability in mission-critical business environments. VNX availability and redundancy features include:

- Mirrored write cache, where each storage processor contains both primary cached data for its LUNs and a secondary copy of the cache for its peer storage processor

- Battery backup to allow for an orderly shutdown and cache de-staging to vault disks to ensure data protection in the event of a power failure

- RAID protection levels 0, 1, 1/0, 3, 5, and 6—all of which can co-exist in the same array simultaneously to match different protection requirements

- Proactive hot sparing enhances system robustness and delivers maximum reliability and availability

- Redundant data paths, power supplies, drive connections, and storage processors—all with non-disruptive field-replacement capabilities

- Continuous system monitoring, call-home notification, and advanced remote diagnostics

- EMC VPLEX® extends this continuous availability within and across data centers

Complete Portfolio of Protection for VNX

EMC VNX data protection software provides the right protection for every application need:

- Local protection is delivered with snapshots for point-in-time recovery and continuous data protection with RecoverPoint local replication

- Remote protection is available with the same DVR-like recovery with RecoverPoint Continuous Remote Replication

- To make application consistent replicas controlled by the application, Replication Manager and AppSync™ provide application protection – delivered as a service

EMC Backup and Recovery solutions, including Data Domain, Avamar®, and Networker®, shorten the backup window and speed recovery in concert with deduplication to reduce the backup size.

MANAGE, MONITOR, AND TUNE YOUR STORAGE ASSETS WITH EASE

EMC Unisphere makes it easy to manage VNX systems from anywhere with a simple, integrated user interface for distributed storage environments. The Unisphere dashboard is a single screen for at-a-glance management and reporting, enabling administrators to gain instant and actionable knowledge about what's occurring across the entire environment. Unisphere's single sign-on automatically discovers all VNX, EMC CLARiiON®, EMC Celerra®, and EMC RecoverPoint SE installations in the environment for seamless configuration.

One of the most significant capabilities of Unisphere is the integrated support ecosystem. The speed-dial-like capability provides users with immediate online access to support tools, best practices, software downloads, live chat support, ordering spares and submitting service requests.
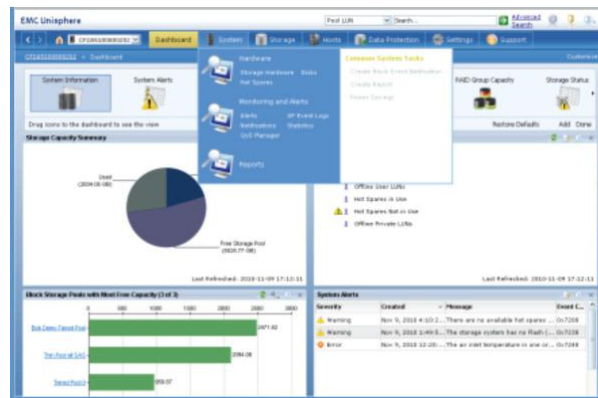
Unisphere Remote allows VNXe and VNX customers to monitor the health, alerts and performance of large numbers of VNXe and VNX systems along with XtremSW Cache deployments across a central console. Capabilities include an easy-to use customizable dashboard that aggregates system information like capacity, CPU utilization, health, and alerts. Users can see key system performance metrics for each system and can categorize dashboards by host, VMware and Hyper-V VMs as well as by storage types. Users can easily launch Unisphere and access the full suite of management on each VNXe or VNX system.

VNX Monitoring and Reporting provides basic monitoring and reporting capabilities for VNX customers. VNX Monitoring and Reporting automatically collects block and file storage statistics along with configuration data, and stores them into a database that can be viewed from dashboards and reports. Statistics include Virtual Provisioning, FAST Cache, FAST VP, and file-level de-duplication. This solution can retrieve information from one or several (up to 10) VNX storage systems including CLARiiON and Celerra. VNX Monitoring and Reporting provides preconfigured reports on storage performance and capacity. Users can change the report configurations and export them into various formats. Easily installed, VNX Monitoring and Reporting can run in physical and virtual environments.

Unisphere, Unisphere Remote, and VNX Monitoring and Reporting are included in the Unisphere Management Suite.

THE BEST STORAGE FOR VIRTUAL ENVIRONMENTS

The VNX series is the ideal mid-tier system for virtualized application environments. Whether the customer environment is VMware, Microsoft Hyper-V, or Xen-based, VNX is fully certified for all supported protocols to ensure successful deployments of virtualized infrastructures through all phases of implementation. EMC VNX is the #1 provider of VMware integration and the 1st storage platform to support Microsoft Server 2012 Hyper-V 3.0 environments.

EMC Virtual Storage Integrator (VSI) for VMware vSphere™ plug-ins, VASA (vSphere API for Storage Awareness), and VAAI (vStorage APIs for Array Integration) provides both administrators with visibility into the entire environment. Each can use their familiar management interface to view both virtual and physical resources, transparently provision storage, integrate replication, and access and offload all storage functions to the array.

- Provision storage from VMware vCenter™ in just two clicks.

- EMC VSI Leverage best practices to ensure optimal utilization and resiliency between storage and VMware.

- Hardware accelerated Fast Clones rapidly provision new virtual machines in seconds.

- On-demand VMDK compression for NFS Datastore reduces storage consumption by up to 50 percent.

- EMC Proven™ solutions and reference architectures, jointly developed with VMware, accelerate virtualization of mission-critical applications.

EMC Storage Integrator (ESI) is an agent-less, no-charge plug-in enabling application-aware storage provisioning for Microsoft Windows server applications, Hyper-V, VMware and Xen Server environments. It provides the ability for administrators to easily provision (using wizards) block and file storage for Microsoft Windows and Microsoft SharePoint in a Windows environment for physical & virtual environments.

The EMC Storage Analytics for VNX (ESA) delivers a single, end-to-end view of virtualized infrastructures (servers to storage) powered by the VMware® vCenter Operations Management Suite™ analytics engine. ESA delivers actionable performance analysis and proactively facilitates increased insight into storage resource pools to help detect capacity and performance issues so they can be corrected before they cause a major impact. ESA provides increased visibility, metrics and a rich collection of storage analytics for EMC VNX storage infrastructures in VMware virtual environments.
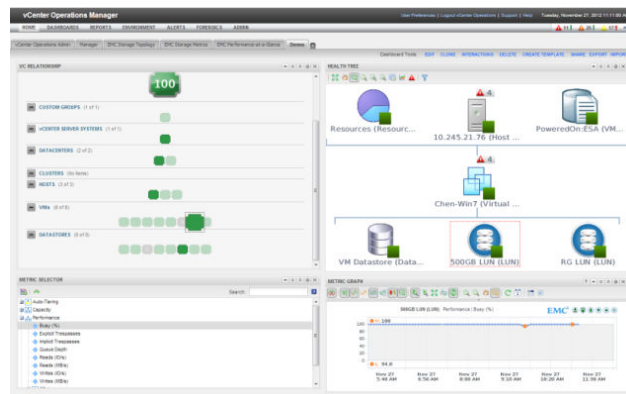
THE INDUSTRY'S MOST EXTENSIVE STORAGE SOFTWARE OFFERINGS

The VNX series software is available in two comprehensive packages to ensure customers have all of the necessary capabilities to protect and manage their information. The VNX Total Protection Pack includes replication capabilities, point-in-time recovery features such as snaps and clones combined with automated application copies for assured recovery, along with monitoring and alerting for compliance with protection policies. The VNX Total Efficiency Pack includes all of the protection features plus "set it and forget it" performance optimization. All VNX software is managed through Unisphere.

The VNX software is also available in modular suites:

• **FAST Suite**—Automatically optimize for the highest system performance and the lowest storage cost, simultaneously

• **Security and Compliance Suite**—Keep data safe from changes, deletions, and malicious activity

• **Local Protection Suite**—Practice safe data protection and repurposing

• **Remote Protection Suite**—Protect data against localized failures, outages, and disasters

• **Application Protection Suite**—Automate application copies and prove compliance

• **Unisphere Management Suite** – Monitor and manage multiple VNX systems with full visibility across the virtual stack.

VNX Series Packs		VNX Series Suites
VNX Total Efficiency Pack		FAST
		Security & Compliance
	VNX Total Protection Pack	Local Protection
		Remote Protection
		Application Protection

Features of Suites and Packs may vary depending on the system. See the EMC VNX Series Software Suites data sheet for details. VNXe Series Software Packs deliver simplified data protection; see the EMC VNXe Series Software Suites data sheet for more information.

THE VNXe SERIES—SIMPLE, EFFICIENT, AND AFFORDABLE

The VNXe series was developed with the IT manager in mind, and provides an integrated storage system for small to medium businesses as well as remote offices and departments in larger enterprise businesses. Starting at less than $10,000, the VNXe series provides true storage consolidation with a unique application-driven approach that eliminates the boundaries between applications and their storage.

This simple, application-driven approach to managing shared storage makes the VNXe series ideal for IT managers and application administrators who may have limited storage expertise. EMC Unisphere for the VNXe series enables easy, wizard-based provisioning of storage for Microsoft Exchange, file shares, iSCSI volumes, VMware, and Hyper-V. VNXe supports tight integration with VMware to further facilitate efficient management of virtualized environments. Complemented by Unisphere Remote, the VNXe series is also ideal for remote office-branch office (ROBO) deployments. Built-in efficiency capabilities, such as file deduplication with compression and thin provisioning result in streamlined operations and can save up to 50 percent in upfront storage costs. Software packs aimed at facilitating backup, remote data protection, and disaster recovery include features such as easy-to-configure application snapshots.

Storage Made Simple

| PROVISION | DIAGNOSE | FIX |

The VNXe series supports high availability by using redundant components—power supplies, fans, and storage processors—as well as dynamic failover and failback. Additionally, the VNXe series supports the ability to upgrade system software or hardware while the VNXe system is running. It even delivers single-click access to a world of resources such as comprehensive online documentation, training, and how-to videos to expand your knowledge and answer questions.

FLEXIBLE DEPLOYMENT OPTIONS – VSPEX AND VBLOCK

All EMC VNX platforms are available individually or as part of VSPEX™ proven infrastructure or VCE Vblock® converged infrastructure. Both VSPEX and Vblock speed cloud deployments with integrated servers, storage, network, hypervisor, and management in a proven configuration.

MAXIMIZE THE BENEFITS OF THE VNX FAMILY WITH EMC GLOBAL SERVICES

EMC provides the strategic guidance and technology expertise organizations need to address their business and IT challenges and accelerate the journey to the private cloud. Our 14,000+ service professionals and support experts worldwide, plus a global network of alliances and 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 customers' requirements across the information lifecycle.

All EMC VNX platforms include a three-year Enhanced support warranty, providing customers with next-business-day onsite coverage and 24x7 remote support. Customers can upgrade to Premium support to get 24x7, same-day onsite support. The VNX software warranty includes a 90-day defective media replacement. Customers can upgrade to Basic, Enhanced, or Premium software maintenance support to meet their IT requirements.

EMC delivers a full complement of services for the VNX series to ensure expected performance in customer environments. Expert planning, design, and implementation services help reduce time to return on investment. EMC Consulting also helps customers develop storage strategies to prepare for virtualization and the private cloud. EMC Education Services further drives the value of customer investments with a comprehensive portfolio of the industry's leading technology training and EMC Proven Professional certifications.

EMC is also a leader in data migration services, migrating over one petabyte of data every month using best-in-class automated tools for discovery, remediation, planning, and design.

EMC Customer Service—six-time winner of the SSPA STAR Award for outstanding mission-critical support—helps organizations keep their information available 24x7 to deliver competitive advantage and drive revenue.

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.

EMC²®