

EMC VNX UNIFIED HYBRID FLASH SERIES

Performance of Flash; Cost-Effectiveness of Disk

ESSENTIALS

- Unified storage for **file and block** storage
- MCx™ multi-core optimization **unlocks the power of flash** in a hybrid flash array
- Powerful **multi-core** Intel CPUs with 6-Gb/s SAS backend
- Easy storage provisioning from the **#1 provider** of VMware® integration* and the **1st storage platform** to support Microsoft Server 2012 Hyper-V 3.0 environments
- Dense configurations with 120 drives in 3U of space
- **Administration simplicity** with EMC Unisphere™ Management Suite
- Drive level encryption for the entire array with **Data-at-Rest Encryption**
- VNXe3200 is the most affordable flash-optimized hybrid flash & all flash array **starting at less than \$12K**
- **Software Defined Storage with vVNX Community Edition.** [Free download available](#)

OVERVIEW

As the storage landscape trends toward a flash-centric world, the hybrid flash array continues to gain customer acceptance and will grow faster (4x) than all-flash arrays through 2018 because of their economics and flexibility. IDC cites that the hybrid flash array is still the most popular and cost-effective way organizations deploy solid-state storage in the enterprise today. Hybrid flash arrays make sense to tackle the combined challenges of performance, capacity, and data growth that are tightly coupled with constrained budgets and the constant need for improved ROI. This is especially true for general-purpose applications (databases, virtual servers, email, standard and transactional NAS) that have lots of cold/inactive data and only some hot/active data that makes up a relatively small part of the data stored on primary storage. So for cost-sensitive environments that need a balance of performance and capacity, hybrid flash will remain the de facto storage architecture in the enterprise for some time to come.

Even as the trend to all-flash arrays grows, most organizations still don't have the budget to deploy hundreds of terabytes of all-flash arrays. A flexible and affordable storage system is required that can change with your business, application, and integration needs. With the industry-leading VNX Hybrid Flash Array, you can go anywhere – as a unified storage and as a hybrid flash array – leveraging the VNX flash-based architecture that's cloud-ready for virtualization and hybrid cloud deployments.



REDEFINE

DATA SHEET

The EMC logo, consisting of the letters "EMC" in a white serif font on a blue background.

VNX STORAGE ARRAY

The EMC® VNX® family delivers industry-leading innovation and enterprise capabilities for file and block storage in a scalable, easy-to-use unified storage solution. VNX storage combines powerful and flexible hardware with advanced efficiency, management, and protection software to meet the affordability, efficiency, and performance 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 mixed workload requirements.

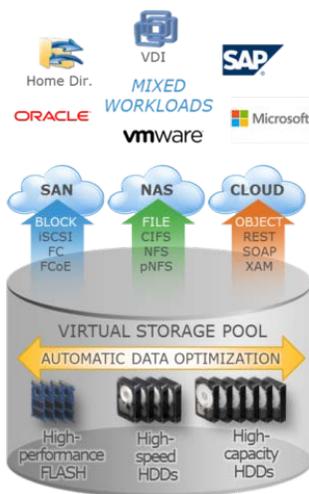


UNIFIED STORAGE

A robust unified hybrid flash storage platform for consolidation of legacy block storage, file servers, and direct-attached application storage, the VNX family enables organizations to dynamically grow, share, and cost-effectively manage multi-protocol file systems and multi-protocol block storage access. As a unified array, the VNX 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.

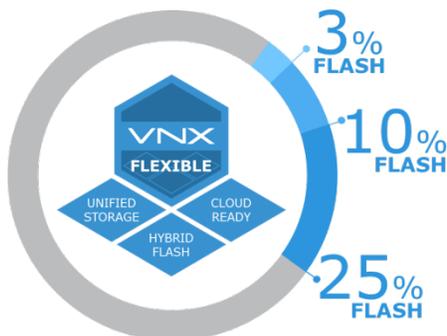
HYBRID FLASH

Trying to manually balance performance and capacity across hundreds of applications with active and inactive data is virtually an impossible task. The VNX flash-based architecture together with Fully Automated Storage Tiering (FAST) software, delivers the consistent performance of Flash with the cost-effectiveness of capacity-based spinning disks to customers. This powerful combination of hardware and policy-based software recognizes that not all data is created equal and therefore constantly auto-tuning, tiering, and caching data between flash and disk to simultaneously meet ITs performance and cost (\$/GB and \$/IOPS) goals.



VNX Flash Guidelines

As a result of seeing many more customers taking advantage of more flash in their VNX systems, EMC has created a guideline for using flash in a VNX – helping you to determine how much flash you need. The guideline suggests implementing either 3%, 10%, or 25% of Flash (of your total capacity) to start with in a VNX hybrid Flash Array. This approach enables you to consider a broad mix of application workloads with an optimized amount of Flash to deliver the best price/performance. Customers that use these guidelines can optimize their adoption of Flash to accommodate a wide range of application needs and growth in the following manner:



- Use a **Value Optimized VNX** with **3% Flash**:
 - For general purpose workloads that require the best \$/GB
- Use a **Balanced VNX System** with **10% Flash**:
 - For mixed, virtualized workloads requiring dynamic performance optimization
- Use a **Performance Optimized VNX** with **25% Flash**:
 - For demanding workloads that require all-flash performance

Determining which percentage of flash to start with depends on the workloads, number of users, data growth, and capacity. Many applications are not IO intensive and cannot take advantage of the increase in response and performance of flash.

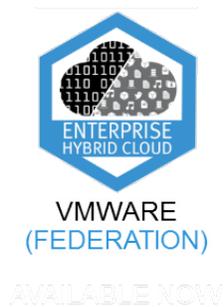
The VNX flash-optimized hybrid array allows customers to “dial-in” performance as they need it to affordably meet a wide range of business objectives. So in a mixed workload environment with multiple application types, most customers can implement a balanced VNX system with 10% flash and cover the majority of their performance requirements. See how your application environment can be optimized with VNX and Flash using the VNX Hybrid Flash Calculator.

CLOUD READY

Many companies have shifted to a virtualization first model and have begun to explore how the cloud can benefit them. Many organizations, interested in the economics, performance, and integration capabilities of different cloud deployment options have turned to EMC and VNX as a leader in both private and hybrid cloud architectures. EMC has built its hybrid cloud offerings based on VMware’s orchestration & automation components as part of the EMC Federation. Along with a strong installed base of data protection products - such as Data Domain, Avamar, NetWorker, and RecoverPoint – VNX is integrated into the VMware orchestration and automation ecosystem as part of the EMC hybrid cloud strategy. Through significant focus and investments in its hybrid cloud strategy EMC has a clear one-to-two year lead in providing a framework toward a hybrid cloud that meets the needs of best-of-breed cloud service providers.



EMC’s VNX simplified and automated hybrid flash array is an integral part of EMC’s hybrid cloud strategy enabling and accelerated path to private or hybrid cloud deployments. For organizations building private clouds, VNX was ranked #1 in virtualization integration and was the first platform to support Hyper-V 3.0 and related features like SMB3. For hybrid cloud deployments, a VNX combined with EMC ViPR™ provides a foundation for federated management and object interfaces to VNX storage for a variety of cloud frameworks. (Reference Architecture on EMC Hybrid Cloud with VMware)



For simplified and automated cloud provisioning and management, VNX platforms offer great FREE tools for VMware- and Microsoft-centric environments, including:

EMC Virtual Storage Integrator ([VSI](#)):

- VSI dramatically simplifies management of virtualized storage with the ability to map virtual machines to storage and to self-provision storage from VMware vCenter.



EMC Storage Integrator for Windows Suite ([ESI](#)):

- ESI integrates with Microsoft Management Center to provision applications in less time, monitor storage health with in-depth storage topology views, and automate storage management with rich scripting libraries. ESI also includes System Center integrations such as SCOM, SCO, and SCVMM.

DEPLOYMENT FLEXIBILITY

Many storage offerings tend to limit your deployment options by only allowing connectivity to the application you've purchased it for and nothing else. Flexibility is a mainstay value proposition of VNX. You can deploy a VNX stand-alone, as part of an embedded solution, converged, specialized appliance, and even as a software-defined storage appliance. Easily start as a block storage solution and then simply include file storage utilizing VNX for your NAS requirements.

SW Defined



Best of Breed



Purpose-Built



Converged



And the VNX hybrid flash deployment flexibility extends to converged infrastructures such as VCE VBLOCK and VSPEX Reference Architectures. Additionally, VNX is available in specialized and purpose-built configurations like the all flash VNXe3200 and VNX-VSS for Video Surveillance at the Edge – all delivering more value at a lower price point.

SOFTWARE-DEFINED STORAGE

IT organizations are increasingly looking to software-defined infrastructure solutions to provide agility and flexibility to their operational and development environments. EMC provides customers with the ability to easily create shared storage consisting of a virtual instance of the VNX unified storage protocol and management stack, without the requirement for dedicated storage platforms. vVNX provides this initial flexibility to test and development as well as other non-production environments. With the flexibility of software-defined storage, you can:

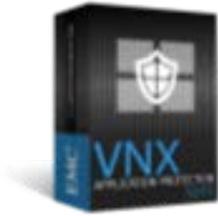
- Create storage environments based on familiar VNX features and interface and without a dedicated system
- Create multiple virtual VNX instances cost-effectively, using standard server hardware
- Test features such as data protection and disaster recovery without the need for multiple VNX systems

Get the vVNX Community Edition: [Free download](#)

THE INDUSTRY'S MOST EXTENSIVE STORAGE SOFTWARE OFFERINGS

Storage management is a key element for success with today's data-intensive and virtualized application environments. EMC VNX software simplifies storage management and enables you to increase efficiency and application performance with advanced features like FAST, deduplication, snapshots, replication, thin, and compression that also drive down costs (opex/capex).





EMC VNX Software Essentials

The VNX family of unified hybrid flash arrays offers the most comprehensive software functionality to ensure customers have all the necessary capabilities to protect and manage their information. The VNX Software Essentials Pack includes the most requested and essential software features in one cost-effective package.

The pack includes capabilities that dynamically improve storage performance, efficiency, availability, data protection, and costs. Complete details about VNX software features can be found in the [EMC Software Essentials](#) data sheet.



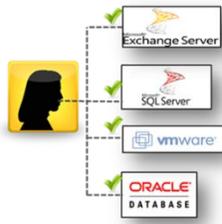
EMC Unisphere Management

EMC Unisphere is the next generation unified storage management platform that provides intuitive interfaces for the complete range of VNX unified hybrid flash storage arrays including VNX and VNXe. Unisphere's approach to storage management fosters simplicity, flexibility, self-help, and automation – all key requirements for the journey to the cloud. Complete details about VNX management capabilities can be found in the [EMC Unisphere Management](#) data sheet.



EMC Storage Analytics

The EMC Storage Analytics (ESA) solution delivers a single, end-to-end view of virtualized infrastructures (servers to storage) powered by VMware Vrealize Operations 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 on business operations. Complete details about VNX analytics capabilities can be found in the [EMC Storage Analytics](#) data sheet.



EMC AppSync

AppSync automates application-consistent copies of Microsoft Exchange, SQL Server, Oracle Database, VMware Data Stores, and Filesystems to provide data recovery based on defined service levels. Read more in [EMC Software Essentials](#)



VNX Data-At-Rest Encryption (D@RE)

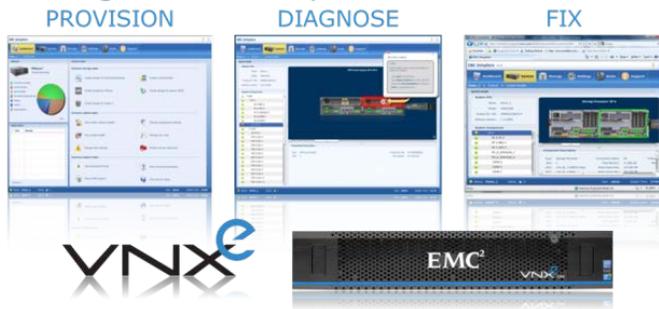
D@RE provides protection from drive removal or loss, and can eliminate the need for Data Erasure services. Read more in [EMC Software Essentials](#)

VNXe3200: THE MOST AFFORDABLE HYBRID STORAGE

The newest member of the EMC VNXe Series is the most affordable flash optimized hybrid array – and it's also the most capable. The new VNXe3200™ has the power of EMC's next generation VNX series unified storage systems - compressed into an efficient, easy-to-use package designed for resource-constrained IT departments in any size company. Starting at less than \$12K, the VNXe3200 is the most affordable flash-optimized hybrid array. The VNXe3200 comes with all of the right [Value-Add Software](#) making it easier to manage data capacity, performance, and protection.



Storage Made Simple



The VNXe3200 can be setup for NAS or SAN in minutes and is designed to integrate directly into your application and virtualization environments. It stores and protects your data while lowering your total costs in terms of \$/IOPS and \$/GB. The VNXe3200 was also designed for 99.999% availability utilizing dual controllers, flexible RAID options, and non-disruptive upgrades.

VNXe3200: Most Affordable Unified All Flash Storage

The VNXe3200 is also EMC's most affordable unified all flash storage. The [VNXe3200 all flash configurations](#) deliver sustained and predictable performance for virtual servers, databases, and transactional applications. Offered in 2TB, 3TB, 4TB, and 8TB slim 2U form factor configurations, the all flash VNXe3200 maintains the rich enterprise feature-set, management simplicity, and Connect Proactive Support capability of the VNXe3200 while providing a real price/performance alternative in the entry all-flash segment.



All-Flash

MAXIMIZE THE BENEFITS OF THE VNX FAMILY WITH EMC GLOBAL SERVICES

EMC VNX platforms come standard with a three- year Enhanced support warranty, which provides customers with next business- day onsite coverage and 24x7 remote support. Customers have the option to upgrade to Premium support to receive 24x7 same-day onsite support.

Outside of support EMC delivers a full complement of services for the VNX family which include expert planning, design, implementation, consulting, migration and education. Please contact your account team for further information.



store.emc.com/vnx

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