NetApp FlexArray Virtualization Software

The industry's only unified SAN and NAS storage virtualization platform

The Challenge
Expanding IT capabilities while reducing complexity

You've made substantial investments in your existing infrastructure, but IT requirements are changing. You're being asked to increase uptime, improve application performance, and consider new cloud strategies. You'd like to satisfy these operational requirements with the storage you already own while also providing new and better services to your end users. Unfortunately, many platforms cannot extend to meet new IT requirements.

Adding new storage architectures to your environment is one way to solve this challenge. But it can create silos of storage that increase complexity and require you to retire existing storage assets, which would be very costly.

The Solution
NetApp FlexArray virtualization software

Simplify your IT operations and deliver more value from existing investments with the only unified storage virtualization solution. NetApp® FlexArray virtualization software enables FAS8000 systems to provide full storage virtualization of EMC,

Hitachi, and NetApp E-Series arrays. This creates a single storage management architecture that expands the capabilities of your IT infrastructure and overcomes the limitations of your existing arrays.

FlexArray software helps meet your changing business requirements through increased uptime with nondisruptive operations, superior cost control with proven efficiency technologies, and improved workload performance with host-to-storage flash acceleration—all with the advantages of Data ONTAP®, the number-one storage operating environment. In addition, FlexArray helps you confidently transition to a hybrid cloud that leverages public cloud resources along with your on-premises storage and simplifies storage lifecycle transitions.

How NetApp FlexArray Works

FlexArray enables you to connect your existing storage arrays to FAS8000 controllers using your Fibre Channel SAN fabric. Array LUNs are provisioned to the FAS8000 and collected into a storage pool from which NetApp volumes are created and shared out to SAN hosts and NAS clients. The new volumes, managed by the FAS8000,
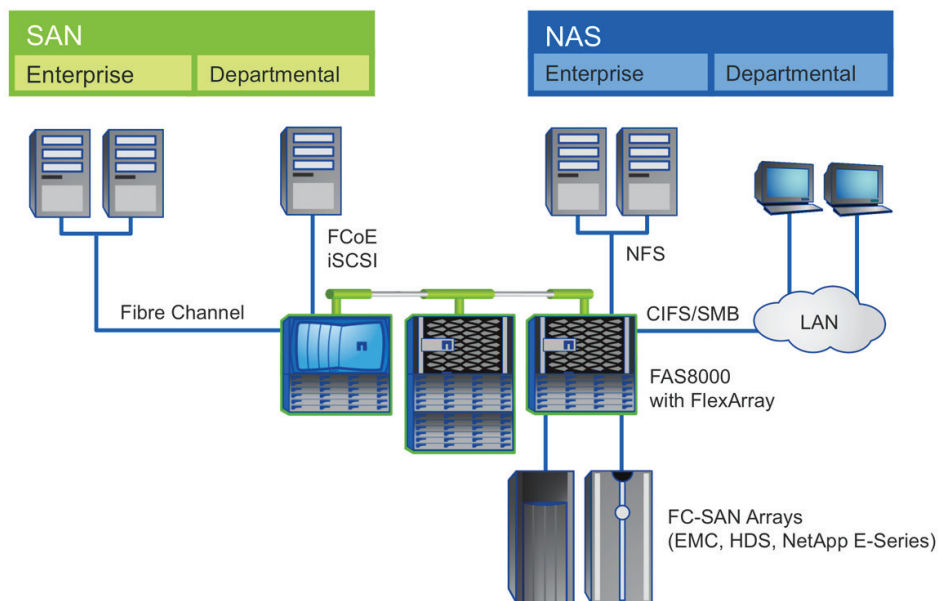
Figure 1) How FlexArray on FAS8000 works.

will benefit from the full suite of NetApp capabilities, such as Integrated Data Protection and storage efficiency. Provision the entire array to the FAS8000 or allow some hosts to continue to access the array directly.

Going forward, you have the flexibility to add new capacity with NetApp FAS disk shelves (SDDs and HDDs). When you're ready to retire older storage arrays, you can simply move data from the arrays to disk shelves on the FAS8000, with no user or application disruptions.

FAS8000 clustered storage systems are engineered specifically to deliver high performance and quickly adapt to evolving IT models. Powered by Data ONTAP and optimized for scale-out, the FAS8000 series has the flexibility to keep up with changing business needs while delivering on core IT requirements for uptime, scalability, and cost efficiency. Plus, FAS8000 systems with FlexArray can be deployed in FlexPod® converged infrastructure solutions, integrating your existing arrays with best-in-class NetApp and Cisco® components in a validated enterprise-class IT platform.

FlexArray on FAS8000 delivers virtualization capabilities similar to those of the NetApp V-Series open storage controller that customers have been successfully deploying for over 10 years. Both integrate your existing EMC, Hitachi, and E-Series arrays into a Data ONTAP environment. Rather than requiring a separate hardware virtualization platform, FlexArray software has the advantage of being installable at any time, either at initial system purchase or after the FAS8000 has been deployed.

The Benefits
Simplify IT operations and improve productivity
FlexArray has the flexibility to serve both SAN and NAS protocols at the same time without any complex add-on components, making the FAS8000 the ideal storage virtualization platform. Serve NAS workloads from your existing SAN array or support additional SAN protocols.

When existing storage is virtualized by FlexArray, you create a single storage management architecture with an easy-to-learn set of tools for provisioning,

performance management, and data protection that is tightly integrated with application providers such as Microsoft, VMware, Oracle, and others. Your IT team will reduce operational overhead and spend less time on day-to-day operations and data protection tasks such as backup and disaster recovery.

Eliminate planned downtime
With IT now integral to your business, the impact of downtime goes beyond dollars or productivity lost. To prevent the need for outages during software/firmware upgrades, component replacement, capacity addition, and other activities, our nondisruptive operations capabilities can dynamically assign, promote, and retire storage resources behind the scenes. With non-disruptive operations, essential tasks—even full storage refreshes—can occur during normal business hours without affecting applications or users.

Provide an on ramp to the cloud
Your current storage might lack the features, as well as the service provider ecosystem choice, that are necessary to support the combined use of private and public cloud resources. Remove

FLEXARRAY VIRTUALIZATION SOFTWARE	SUPPORTED CONFIGURATIONS
FAS models	FAS8020, FAS8040, FAS8060, FAS8080 EX: Purchase and activate FlexArray at any time
Data ONTAP versions	Data ONTAP 8.2.1 or later (clustered Data ONTAP and 7-Mode)
Arrays	EMC, Hitachi, NetApp E-Series (see Interoperability Matrix Tool for details) Also supports NetApp FAS disk shelves (SSDs and HDDs)
Protocols	FC SAN, FCoE, iSCSI, NFS, CIFS/SMB
Additional software	Supports all Data ONTAP software except SnapLock® Compliance (see FAS8000 for more details)
Number of disks plus array LUNs	FAS8020: up to 480 FAS8040: up to 720 FAS8060: up to 1,200 FAS8080 EX: up to 1,440
Flash portfolio	Flash Cache™ and Flash Accel: With FAS8000/FlexArray plus storage arrays or NetApp FAS disk shelves Flash Pool™: With FAS8000/FlexArray plus NetApp FAS disk shelves

Table 1) FlexArray virtualization software supports a broad range of storage arrays, protocols, flash, and scalable configurations.

those constraints by managing existing arrays with the FAS8000 and FlexArray software. With Data ONTAP as a universal data platform, you enable dynamic data portability with seamless connectivity between on- and off-premises clouds. You can pursue the long-term cloud strategy that makes the most sense for your business while storing and managing your data with NetApp technologies you understand and trust. Using Data ONTAP through FlexArray unlocks access to a broad range of partner-based cloud solutions so you can confidently transition into a hybrid cloud infrastructure:

- Over 175 cloud service providers, including Orange Business Services, Rackspace, Savvis, SunGard, and Verizon Terremark, have deployed services built on NetApp, allowing customers to connect their Data ONTAP storage to off-premises cloud resources using native NetApp technologies.
- NetApp also allows you to connect to and leverage the scale and cost efficiencies of hyperscale public clouds such as Amazon Web Services with private storage for public cloud solutions.

Accelerate broad range of workloads with flash

All FAS8000 systems can be flash-accelerated to boost throughput, lower latency, and meet service levels with predictable high performance. Data ONTAP and the FAS8000 simplify flash management for a more powerful hybrid system that leverages the full potential of both SSDs and HDDs.

Flash can be configured as persistent storage in the NetApp FAS shelf—including all-flash configurations—or as a self-managing virtual storage tier in the FAS8000 controller, with up to 18TB of flash per HA pair and 216TB per cluster. NetApp Flash Accel™ software extends the benefits of NetApp intelligent caching to the server level for automated end-to-end flash management with data coherency and the lowest possible latency.

Improve efficiency and return on investment

Using our leading storage efficiency technologies such as deduplication, compression, thin provisioning, and space-efficient Snapshot™ copies, you can dramatically increase disk utilization and reclaim stranded storage capacity.

This helps reduce pressure on storage budgets and increases the total return on your investment.

Virtual server and virtual desktop infrastructure (VDI) environments benefit significantly from NetApp efficiency improvements. These environments have a high degree of duplication with dozens or even hundreds of copies of the same operating systems. NetApp guarantees at least a 35% reduction in storage requirements with FlexArray plus FAS8000 in virtualized environments.

Get guaranteed savings

Your investment in NetApp storage virtualization will pay for itself in nine months or less, or we'll make up the difference.* This guarantee covers your FAS8000 system plus FlexArray software as well as the required software/ support.

Get More Business Value with Services

Whether you are planning your next-generation environment, need specialized know-how for a major deployment, or want to get the most from your current storage, NetApp and our certified partners can help.

We collaborate with you to enhance your IT capabilities through a full portfolio of services that covers your IT lifecycle with:

- **Strategy services**—to align IT with your business goals
- **Design services**—to architect your best storage environment
- **Deploy and transition services**—to implement validated architectures and prepare your storage environment

- **Operations services**—to deliver continuous operations while driving operational excellence and efficiency

In addition, NetApp provides in-depth knowledge transfer and education services that give you access to our global technical resources and intellectual property.

Learn more at *www.netapp.com/ services*

About NetApp

NetApp creates innovative storage and data management solutions that deliver outstanding cost efficiency and accelerate business breakthroughs. Discover our passion for helping companies around the world go further, faster at *www.netapp.com*.

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