



## Solution Brief

# Deliver Quality Patient Care with Flash Solutions from NetApp

### KEY BENEFITS

#### Improve Patient Care with Reduced Latency

Speed decisions by hosting hot data on solid-state drives (SSDs), reducing overall latency.

#### Boost Performance Without Adding Hardware

Reduce latency and improve I/O throughput without adding more high-performance disk drives.

#### Keep Pace with Growing Clinical Data While Controlling Storage Costs

Combine SSDs with hard disk drives (HDDs) to deliver optimal performance at reduced cost.

#### Save on Power, Space, and Cooling

Improve operational savings with dense deployments that use fewer drives or capacity-optimized drives.

### Business Problem

An improved patient outcome often depends on immediate access to clinical data. With the ability to quickly retrieve patient information from electronic health records, picture archiving and communication systems, and other pertinent case data, clinicians can more easily make time-critical decisions.

Traditional storage can easily accommodate growing medical files with scalable capacity, but keeping pace with performance demands can be difficult. And because not all data in healthcare applications is uniformly active, it is critical for storage technology to be able to pick out the individual hot blocks in real time without dragging all the cold data along with it.

### Why Flash is Optimal

Flash storage plays a critical role in making high storage I/O achievable and affordable. It delivers a powerful combination of high performance and low latency, as well as reliability and superior data management. Healthcare organizations can accelerate workloads without compromising the way they deploy, manage, and protect data across their environment.

### Evidence-based decision support

Time-sensitive decisions depend on the ability to access critical data to determine the correct treatment plan. Moving hot data from HDDs to NetApp® flash media can speed access to patient data with intelligent read caches, reducing overall latency by a factor of 10 or more compared with HDDs.

### Optimized performance

By using the superior performance of flash media for the most frequently accessed data blocks, healthcare organizations can deliver on stringent performance SLAs while using lower-cost HDDs to meet capacity requirements.

### Improved TCO

NetApp flash solutions operate more efficiently, saving healthcare organizations money. Against an industry standard benchmark,<sup>1</sup> NetApp Flash Cache™ intelligent caching can eliminate up to 75% of the disk drives in a storage system while maintaining I/O throughput and improving response times.

### Enhanced mobile work styles

With NetApp hybrid and all-flash solutions, healthcare organizations can optimize storage performance and cost to meet mobile computing

requirements. NetApp flash-enabled storage solutions accelerate the virtual desktop infrastructure (VDI) end-user experience.

### NetApp Flash Solutions

Industry analysts recognize NetApp as a Flash market leader.<sup>2</sup> NetApp's comprehensive flash solutions are designed to meet any healthcare workload and maximize the value of flash across the entire compute, network and storage stack.

- Applications go faster and are more responsive
  - Up to 20x improvement in database performance
  - 70% faster application deployment
- Business operations finish sooner
  - Reduced server database latency by up to 85%
  - 70% reduction in time to deliver IT projects
- Our solutions eliminate overprovisioning and dramatically reduce costs
  - Up to 95% reduction in space, power, and cooling
  - Use lower-cost HDD as a capacity tier

NetApp extends best-in-class technology from our SSD vendors with innovative capabilities to help healthcare organizations deliver superior results with the right balance of performance, efficiency, reliability, and scale in a field-proven architecture. These solutions are integrated with our solution stack, storage efficiencies, and data protection to meet compliance requirements and risk posture.

### Hybrid Arrays Are the New Normal

Hybrid flash storage from NetApp combines the performance of flash with the cost-effective capacity of spinning disks.

- Speed of flash plus the capacity of disks
- Perfect for most workloads and shared storage environments
- The capability to optimize flash efficiency for maximum performance and minimal cost

- The ability to correctly size flash to achieve consistent performance

### Flash Cache

NetApp Flash Cache modules put active data blocks in the storage controller, speeding access by a factor of 10 or better compared with HDDs, without creating another storage tier.

- Optimize performance for random read intensive workloads without adding high-performance disk drives.
- Solid-State Flash Cache modules use no additional rack space and consume 95% less power.

### Flash Pool

NetApp Flash Pool™ intelligent caching is a standard NetApp Data ONTAP® feature that enables mixing regular HDDs with SSDs at an aggregate level. Flash Pool delivers data persistence through HA failover events, providing an additional level of performance consistency.

- Combine SSDs with hard drives to deliver optimal performance at reduced costs.
- Hosts hot data on SSDs, reducing overall latency.
- Dense deployments using fewer drives of capacity optimized drives results in operational savings.
- SSD cache with NetApp Flash Pool stays hot across planned and unplanned failovers.
- You get great performance for OLTP.

### Flash Arrays for Performance-Driven Applications

The NetApp® EF-Series and all-flash FAS arrays are ideal solutions for healthcare organizations looking to achieve greater IOPS, higher throughput, and reduced application wait time for faster clinical operations. For these crucial applications, the NetApp flash array delivers the extreme performance, IT efficiency, and proven reliability you need. NetApp's all-flash arrays combine consistent performance with enterprise-grade high availability and manageability, plus they offer worldwide 24/7 support.

### EF Flash Arrays

The NetApp EF550 flash array is designed for performance-driven applications with submillisecond latency requirements.

- Streamlined OS that excels at IO-intensive workloads
- Ultralow latency (sub 1 ms)
- Extreme IOPS density (450,000 IOPS in 2U)

### NetApp all-flash FAS

NetApp all-flash FAS, powered by the NetApp Data ONTAP operating system, is key to supporting high-speed workloads. It is especially valuable for mobile clinicians and database applications that require consistent low-latency performance.

- Low latency (1-2 ms) with robust data management
- Efficiencies such as dedupe and compression
- Multiprotocol support, secure multi-tenancy, scale-out with autobalancing

### Summary

NetApp flash solutions, based on over 200 patents, deliver dramatically enhanced performance over that of a pure HDD environment by adding a relatively small amount of flash storage. This significantly lowers the level of latency across clinical applications, allowing providers to work more quickly, deliver on both internal and external SLAs, and generally offer a better user experience across the board.

2. Gartner Market Share Analysis: SSD Components and SSD-Based Appliances, Worldwide, June 2013

### About NetApp

Leading organizations worldwide count on NetApp for software, systems and services to manage and store their data. Customers value our teamwork, expertise and passion for helping them succeed now and into the future.

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