

EMC Enterprise Flash Drives Solution for Healthcare

Delivering the highest levels of performance for clinical applications

The Big Picture

- EMC is the first company to release storage platforms that support Enterprise Flash technology.
- EMC Enterprise Flash drives improve performance dramatically by removing the long delays of retrieving data from hard disk drives when it is not in database or storage cache.
- Flash drives use 97.7 percent less energy per IOP than 15k RPM Fibre Channel drives.
- 1 TB SATA-II disks use 94 percent less energy per TB than 10k RPM Fibre Channel drives.
- Only EMC provides both Flash drives for performance and SATA disks for capacity and cost requirements in a single array—with tools that enable you to move data non-disruptively to the most efficient tier.

Business challenges

Rapid access to a broad range of patient information is critical to delivering quality patient care. Adoption of the Electronic Health Record (EHR) enables healthcare providers to electronically capture patient health information generated by an encounter and provide timely information for evidence-based decision support, quality management, and outcomes reporting. Similarly, Picture Archiving Communications Systems (PACS) are being deployed and more frequently consolidated with EHR applications to allow caregivers as well as other relevant patient data. Clinicians use these and other applications to make fast and well-informed decisions—speeding “time-to-diagnosis.”

The existing systems and architectures supporting these clinical applications were not designed to optimize high performance and are struggling to provide caregivers with rapid access to information stored in very large EHR databases, particularly when many concurrent users are logged in. Similarly, in large PACS environments, it is becoming increasingly difficult to gain quick access to very large multi-slice, 3-D, and full-motion image studies. These large databases and medical imaging files are stored on Fibre Channel or ATA drives where connectivity to this information is no longer meeting clinical requirements, negatively impacting access to patient care information. For years, magnetic disk drive technologies have defined performance boundaries for customers’ mission-critical storage environments. Now, better performance is needed.

Solution description

By deploying EMC® Enterprise Flash drives—in essence, adding high-performance Tier 0 to an existing EMC multi-tiered storage environment—healthcare organizations can gain rapid access to patient information with less infrastructure required. EMC Symmetrix®, Celerra®, and CLARiiON® storage platforms with Enterprise Flash drives deliver unprecedented single-millisecond response times that far surpass the highest performing drives on the market today. These Flash drives have been purpose built to EMC’s exacting specifications and achieve fast read/write performance, high reliability, and data integrity. They have been tested and qualified to withstand the intense workloads of high-end enterprise storage applications. EMC also has the tools that enable you to move data non-disruptively to the most efficient tier.

This breakthrough technology from EMC achieves the industry’s highest IOPS and lowest latency—accelerating response times by up to a factor of 10 for healthcare’s most demanding applications. And with Flash drives, a far less number of drives is required for IO-intensive workloads. This allows clinicians to gain the ultra-low response times demanded by certain clinical applications without performance bottlenecks of existing technologies. It also allows you to better manage capacity planning and save on energy costs.

Lowering storage and energy costs

One of the most compelling aspects of Flash drive deployments is that often a very small portion of data actually requires Tier-0-level performance. Healthcare organizations can leverage tools such as EMC ControlCenter® Performance Manager or work with EMC Professional Services to assess clinical and business applications to quickly identify which volumes are best suited for use with Flash drive technology. You may find that a small number of volumes have sufficiently high IOPS levels to warrant placing them on Flash drives; while many more volumes have low IOPS patterns and therefore can be safely relegated to other disk drive technologies. Segregating PACS or EHR volumes in this way can maximize performance where it matters and still maintain acceptable performance for less-IOPS-intensive workloads.

For example, a healthcare provider segments and moves PACS data currently stored on multiple Fibre Channel drives. A small number of PACS studies are moved to Flash; the previous nine months of other PACS studies are moved to Fibre Channel; and older, inactive images to SATA-II drives. Just by moving one percent of the data to Flash, storage acquisition costs are reduced by 17 percent. In this case, the capacity used remains the same; performance is improved where it's most needed; and overall costs are lowered.

EMC raises the industry standard for tiering options enabling healthcare organizations to achieve new levels of energy efficiency. Because there are no mechanical components in Flash drives, they require less power. In a storage array, Flash drives can store a terabyte of data using 38 percent less energy than traditional mechanical disk drives. It would take many Fibre Channel disk drives to deliver the same performance as a single Flash drive, which translates into a dramatic reduction in power consumption in a transaction-per-second comparison.

Solution value

With EMC Symmetrix, Celerra, and CLARiiON storage platform support for Flash drives, Fibre Channel disk drives, and SATA disk drives, EMC offers the broadest range of "in-the-box" storage-tiering options for the healthcare organizations. This enables them to meet performance-level requirements by identifying and moving volumes of information that require high performance to EMC Enterprise Flash drives. By aligning data availability, service-level requirements, and software functionality with capacity and cost considerations through tiered storage, EMC delivers the best performance, resiliency, and energy efficiency available today to healthcare providers.



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Take the next step

To learn more about how EMC Flash drives can enable your clinicians and other care givers to quickly access all the information they need to make quality care decisions, contact your local EMC sales representative.