



NetApp®

Solution Brief

High-Availability Access to Patient Records with Epic on NetApp Agile Storage Infrastructure



KEY BENEFITS

Enhance Patient Care with Nondisruptive Access to Medical Records

Deliver the high availability demanded by clinicians with a modern storage architecture that delivers 99.999% availability.

Support Exponential Data Growth of Patient Records

NetApp's award-winning storage efficiency technologies deliver more usable space and improved utilization to accommodate growing terabytes of patient data.

Simplify Storage Management

The NetApp® Data ONTAP® operating system delivers improved operational efficiencies to streamline tasks to protect patient data and availability.

Optimize Performance

Intelligent flash caching technologies complement traditional disk media to provide faster data access and improved efficiencies for EMR workloads.

The Challenge

Having access to the right information at the right time is critical for delivering quality patient care. Epic has become the clear industry leader by delivering an enterprise EHR solution that enables clinicians to make more informed decisions and deliver a higher quality of care. The patient care criticality of the Epic® system requires the IT organization to architect the most resilient infrastructure possible. While striving to simplify design and operations, healthcare organizations must balance technology investments with increasingly constrained budgets due to declining reimbursement levels.

As healthcare organizations optimize systems to meet the 2014 deadline for compliance with the Health Information Technology for Economic and Clinical Health¹ Act, selecting the right storage solution for digitization and interoperability across medical facilities is strategically important. In order to accommodate the management of all patient health information and accompanying exponential data growth, storage solutions that scale in capacity and bandwidth, provide

seamless data protection, and offer ease of administration are now a necessity.

The status quo of relying on main-frame-era legacy storage platforms is exposing their vulnerabilities, because requirements from clinical leadership have become more demanding. Progressive IT organizations now seek the careful balance provided by innovative storage technologies that have been proven to support the Epic production environment.

The Solution

Since 2010, Epic and NetApp have worked together to test and enable NetApp FAS storage systems running the Data ONTAP storage operating system to be successfully configured and deployed to meet customers' Epic production environment requirements. This testing, technical documentation, and growing number of successful mutual customers has resulted in Epic expressing an increasingly high level of comfort in NetApp's ability to meet Epic customers' needs (see the "Epic Storage Products and Technology Status" document for a current listing of comfort levels).

1. Health Information Technology for Economic and Clinical Health 2009 addresses the privacy and security concerns associated with the electronic transmission of health information.

“In architecting our Epic electronic medical records system, we knew it was essential to implement high-availability storage. Any downtime, even for upgrades, disrupts medical staff and compromises their ability to deliver responsive, quality care.”

Joseph Rowell

Manager of Enterprise Architect Solutions, Sentara Healthcare

Healthcare organizations can buy and implement Epic on NetApp solutions with confidence, knowing that these precisely architected solutions deliver a high-performance storage platform that exceeds Epic’s published SAN read and write latency requirements while improving flexibility and achieving cost and operational efficiencies. “NetApp delivered out-of-the-park performance,” says Brad Bishop, System Administrator, Group Health Cooperative of South Central Wisconsin. “Epic engineers actually asked us to rerun their Epic GenerateIO tests because they didn’t believe the numbers the first time. NetApp passed with flying colors.”

NetApp provides an ideal storage platform for Epic software environments with unique capabilities to meet the stringent storage performance requirements of Epic applications and the Caché database, including:

- **Optimized for random reads.** NetApp Flash Cache™ intelligent caching accelerates the random reads of the Epic user workload.
- **Optimized for writes.** NetApp’s patented Write Anywhere File Layout (WAFL®) paired with Non Volatile Random Access Memory aggregates optimizes Caché 80-second write burst cycles.

- **Protects against disk failures without the overhead penalty of RAID 10 mirroring.** NetApp RAID-Dual Parity (RAID-DP® technology) provides protection against disk failures thousands of times better than single-parity RAID, and without the typical performance penalty of traditional RAID 5 or RAID 6.
- **Efficient in supporting exponential patient data growth.** NetApp uses 40% less raw disk while managing the required replications of the Caché database using NetApp FlexClone® volumes, saving upward of 80% of the raw disk space.
- **Provides high availability.** NetApp delivers five-9s uptime in tier 1 environments.
- **Enhances backup and restore processes.** NetApp Snapshot™ copies and SnapMirror® technology augment the shadow copy and nightly backups to clones, providing the capability to more easily move copies to secondary arrays and provide fast, incremental restores from disk as part of a DR restoration process.
- **Simplifies Epic storage management.** The comprehensive, highly integrated Data ONTAP toolset delivers ease of administration and efficiency in supporting multiple replications, backups, and disaster/recovery.

Easy Access to Patient Records—Supporting Mobility and Roaming Desktops

Most Epic customers are evaluating the steps needed to support the changing client workstation environment. With the increased use of mobile devices across patient care facilities, coupled with clinicians’ desire to have “Bring Your Own Device” capability, providers must consider the additional storage architecture requirements for the increasingly virtualized hyperspace client environment.

Virtual desktops are also an important consideration for Epic customers. To support this shift, Epic has conducted extensive testing of hyperspace on virtual desktop infrastructure (VDI) on NetApp storage to provide sizing and deployment guidance and enable consistent performance. Refer to the latest version of the “Epic Hyperspace on Virtual Desktops” document for detailed guidance.

NetApp file-level FlexClone volumes can lower the cost of storage for VMware® and VDI by allowing customers to instantly make as many copies of virtual machines and virtual desktops as needed, with zero performance impact and minimal capacity use.

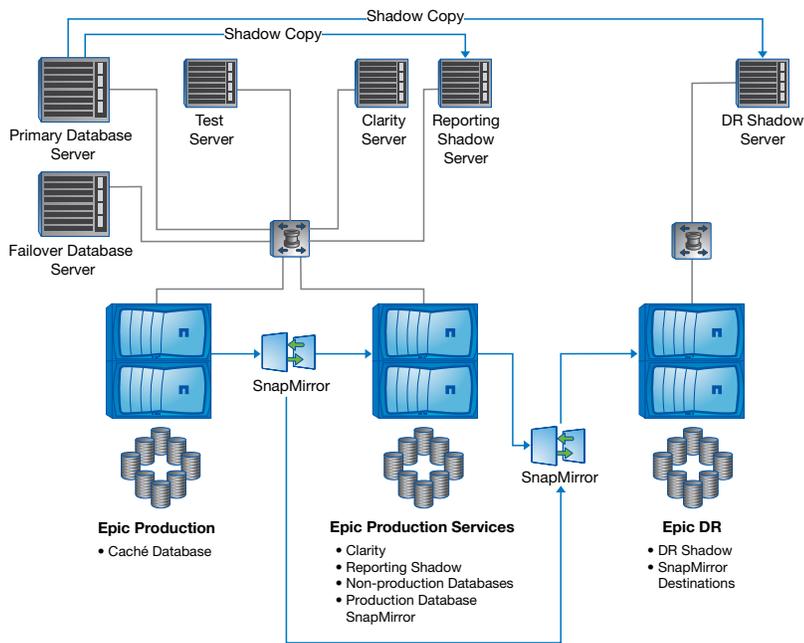


Figure 1) Epic on NetApp reference architecture.

In addition, it is increasingly common to virtualize servers when refreshing XenApp server farms. NetApp is a world leader in supporting virtualized server environments like these through our deeply integrated partnerships with VMware, Citrix, and Microsoft.

NetApp virtualization solutions

NetApp has done extensive testing and has developed reference architectures for VMware View™, VMware Always On Point of Care, and Citrix XenDesktop. There is also an option for a consolidated infrastructure via a FlexPod® data center platform, which is a Cisco Validated Design (CVD) incorporating Cisco® UCS™ servers, Nexus® switches, NetApp FAS storage, and VMware and Citrix hypervisors.

The FlexPod designs for virtual desktop infrastructure or for production platforms utilizing Red Hat Enterprise Linux® and VMware provide the benefits of preconfigured and pretested integrated infrastructure to streamline implementation and support while delivering predictable high performance. “Mercy Healthcare built a state-of-the-art data center and implemented a flexible cloud infrastructure to effectively deploy an Electronic Medical Health

Record for storing and protecting patient information and, in the future, to support smaller clinics and healthcare systems,” says Jeff Bell, former COO, Mercy Healthcare System, St. Louis. “With the help of the NetApp FlexPod architecture, we have saved over 40% of storage space, reduced power consumption by 50%, and now provide rapid access to and data protection for 1.7 million patients.”

Companies Built on NetApp Go Further, Faster

Customers rely on NetApp to store, manage, protect, and retain their most precious corporate assets: their data. They use our innovative storage and data management solutions for business-application, virtualization, and cloud environments. With an efficient and flexible storage infrastructure, our customers do not have to choose between saving money and improving business responsiveness.

Company snapshot

- \$6.3 billion in annual revenue
- NetApp Data ONTAP is the world’s #1 branded storage OS²
- #1 storage provider to the U.S. government³
- #3 world’s best multinational workplaces 2012
- #6 on FORTUNE’s “100 Best Company to Work For®” 2013 list⁴
- #51 on Forbes’s “World’s Most Innovative Companies 2012” list⁵
- #32 on “The Healthcare Informatics 100 for 2013”
- Member of the S&P 500, the NASDAQ 100, and the Fortune 500⁴

2. Source: IDC Worldwide Quarterly Disk Storage Systems Tracker Q4 2012, March 2013 (Open Networked Storage Systems revenue).

3. Federal agencies must report all contracts valued at \$3,000 or more. Based on FPDS-NG reports FY2009-2011, NetApp is the top storage provider.

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“Rather than deploying yet another solution from another vendor, we saw the value in standardizing on a single, agile storage infrastructure that could support our expanded Epic software installation, as well as our file-serving and other application environments, including Microsoft® Exchange and SQL Server® systems.”

David Stark

Chief Technology Officer, Group Health Cooperative of South Central Wisconsin

Improved Return on Investment

Working together, NetApp and Epic make it possible for healthcare professionals to use and share thousands of terabytes of medical data, maximize the return on IT investments, and keep up with the growing demands of records retention. NetApp offers fast, simple, scalable, and reliable data storage. Epic customers get a superior image management system and a cost-

effective, easy-to-maintain data storage solution that lowers their total cost of ownership while enhancing their profitability. Using joint solutions from NetApp and Epic, healthcare organizations are positioned to improve the delivery of patient care and increase clinical efficiency at healthcare facilities. By adding NetApp storage solutions, healthcare organizations will continue to see increased value across their Epic installations.

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.

Go further, faster®



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