

## **Veritas Storage Foundation Scalable File Server (SFS) Solution Brief for Healthcare**

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### Introduction

Healthcare organizations are faced with the demands of supporting a growing patient population requiring more procedures and services while also trying to meet the challenges of reducing costs and enabling improved secure access to medical records. Some countries are in the process of creating nationalized Electronic Medical Records (EMR) and Clinical Health Records (CHR) portals or sharing existing facilities including records. Other countries, including the United States and China, lag behind in the adoption of EMR and other healthcare digital data management solutions.

#### Healthcare Trends and IT Issues

A current trend is the adoption of EMR in order to boost productivity, improve on patient care, reduce costs and eliminate errors or loss of access to critical patient information. The result is growing reliance on affordable and scalable shared file serving solutions.

Many healthcare organizations that are facing spiraling medical costs and growing patient populations still rely on costly and error prone paper-based medical records. In addition, these records must also adhere to compliance regulations including Health Insurance Portability and Accountability Act (HIPAA). However, given the current economic stimulus initiatives to invest in improved medical records systems, now would be an opportune time to take proactive action.

### Background and Issues

The primary business objective of healthcare organizations is to provide cost effective and timely services to their patients in venues ranging from traditional doctors' offices, general or specialized clinics, urgent care or hospital emergency rooms (ERs). Information Technology (IT) is not a core tenant and there is still a strong dependency on traditional paper-based records and associated error-prone and expensive human management. Even with trends of deploying sophisticated medical technologies, including Magnetic Resonance Imaging (MRI), that produce digital data stored on computer systems and voice based dictation and transaction to digital documents, physical paper-based records are still very much the norm, particularly in the U.S. and China.

#### Fundamental Issues

- More data to store for longer time
- Regulatory compliance and security
- Rising costs and shrinking budgets
- Movement towards EMR systems
- Reducing IT costs and complexity
- Return on Investment (ROI)
- Treatment in different venues

In addition to having to support more digital data for patient care, business or back-office, lab and other functions, healthcare IT organizations also need to retain data on-site and off-site for longer periods of time to meet compliance requirements. For example, patient registration and insurance coverage information needs to be accessible wherever the patient appears for treatment.

Demand drivers, needs and issues taxing healthcare IT organizations include:

- Growing, as well as aging, populations driving demand for more healthcare services
- U.S. HIPAA, Medicare and Medicaid compliance or similar programs in other countries
- Emergency rooms have become a focal point for the delivery of many healthcare services
- Local and remote EMR or CHR access from ER, urgent care and other venues
- Initiatives moving toward health information exchange (HIE) of EMR and CHR data
- Increasing volume of digitally born data from MRI, transcription tools and other sources
- Conversion of traditional physical paper- or film-based documents to digitally stored EMR
- Increasing pressure to support more information and store more data longer and for less cost

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### By the Numbers: Digitally Born and Digitized Data

IT departments in healthcare organizations are caring for more digital-born data as well as traditional records and documents that are being scanned and converted to digital files. Digital-born data includes documents, images and files that are created from MRI or other imaging systems and managed via patient archiving communication systems (PACS) and related applications.

A small hospital may generate 10,000 to 100,000 records a year while a large facility may generate over a million records per year. The size of files generated as part of an image studies range from a few 10s of Megabytes-MBytes (10,000,000 bytes) to several 100s of Mbytes per study.

#### The Need for Robust File Serving

The inherent file, data and storage sharing capabilities of a scalable network attached storage (NAS) including support for Unix or Linux Network File System (NFS) or Windows based Common Internet File System (CIFS) data access and file sharing make for a flexible, resilient and cost effective solution for curing healthcare IT data storage issues.

### What to look for in a healthcare file serving solution

Given the diverse needs and requirements of healthcare organizations that are looking to support growth while reducing costs, the following are attributes to consider when looking at a scalable and flexible data infrastructure solution.

**Scalability with stability** (*Solution remains stable with growth*) – Scalability with stability means that as capacity is increased, performance or availability are not negatively impacted. Likewise, as performance is increased, availability and capacities should not be negatively impacted, or availability should not suffer at the expense of increasing performance or capacity. Scaling with stability also means that added complexity, including management, does not occur as a solution is expanded.

#### Why Scalable NAS File Serving?

- Shared access to EMR and other data
- Accessible from networked devices
- Combines data and storage sharing
- Flexible to adapt to diverse needs
- Integrated file and data management
- Easy to use for IT staff and users

**Reliability** (*Data is safe and secure*) – Given the nature of EMR, CHR and other related data, it is of great importance that any stored information is safe, secure, and free of defects, preserving the coherency and consistency of data.

**Availability** (*Uptime for data to be available and accessible*) – Information needs to be accessible from wherever patient care or treatment is being provided.

**Integration** (*Work with different technologies*) – Co-existence and complementing investments in existing technologies (hardware, software, networks, applications, tools, procedures and people skills) are essential for removing complexity and cost while boosting productivity and efficiency.

**Flexibility** (*Adapt to different applications and environments*) – As there are many different types, sizes and areas of focus when it comes to healthcare organizations, there are also diverse sets of applications and needs for a scalable file server solution. From a flexibility standpoint, solutions should support the various performance, availability and capacity or quality of service requirements of these different environments from back office to database to EMR and PACS.

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**Ease of use** (*Leverage existing skill sets and technology*) – A combination of intuitive user interfaces (UI), including graphical user interfaces (GUI), command line interfaces (CLI) or interfaces with other management tools are part of enabling ease of use.

**Performance** (*How quickly information can be accessed*) - A fundamental premise for any IT solution supporting healthcare and patient-related applications is that a solution must be reliable, robust and scalable in terms of performance and resiliency. Performance is measured in different ways for various applications including response time or latency of how quickly EMR and other patient information can be accessed.

- Storage Solutions Should Provide:**
- Scalability with stability
  - Reliability and data integrity
  - Availability and accessibility
  - Integration and co-existence
  - Flexibility to adapt to changing needs
  - Ease of use for existing IT staff
  - Performance for rapid data access
  - Affordability and pay as you grow

**Affordability** (*Total cost of ownership-TCO-and Return on investment-ROI*) – File sharing and data serving solutions need to be affordable both for initial purchase and from an ongoing basis as the solution scales and grows.

**Putting it Together** – Veritas Storage Foundation Scalable File Server by Symantec  
 Veritas Storage Foundation Scalable File Server (SFS) by Symantec is a software-based solution that transforms industry standard servers and Fibre Channel or Serial Attached SCSI (SAS) attached storage from different vendors into a scalable NAS file serving solution. By being scalable, SFS enables tiered storage, including Fibre Channel, SAS or Serial ATA (SATA) disk drives, to be configured to support diverse application needs and cost criteria along with configuring the applicable number of nodes to meet performance and capacity requirements.

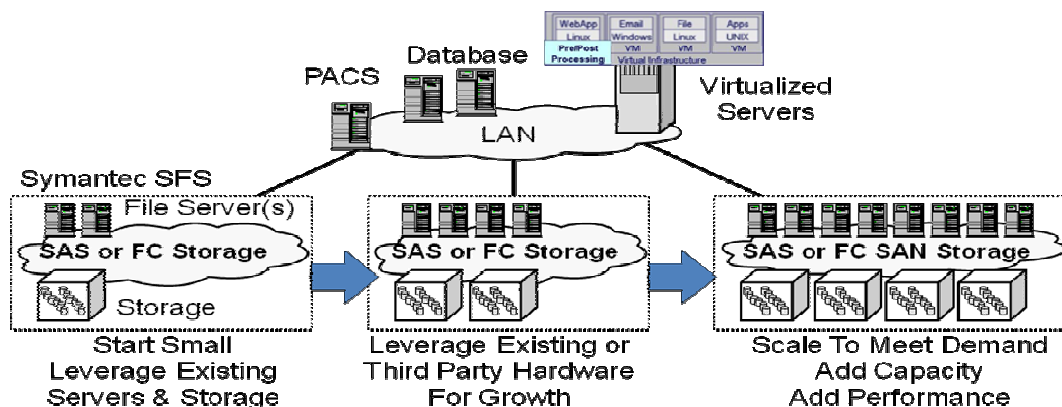


Figure 1 – Putting it All Together: Symantec SFS Examples

Figure 1 shows an example of how the Symantec SFS solution can be deployed to meet EMR and healthcare related data storage needs. From left to right, an environment can start with a simple configuration using existing servers and storage hardware combined with the Symantec SFS software to create a scale file serving solution. As additional storage performance and/or capacity are needed, additional file serving nodes and storage systems can be attached to scale with stability to meet specific needs. The result is a pay-as-you grow solution that also supports investment protection by being able to leverage existing server and storage hardware from

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various vendors. Features of Symantec SFS solution for healthcare file serving and storage needs include:

**Scalability** - Boost performance, availability, capacity without adding cost or complexity. This also means supporting large numbers of small files as well as supporting large files from a performance capacity standpoint. Another dimension of scalability of Symantec SFS is the ability to scale beyond the limits of a single NAS file serving storage system by supporting up to eight nodes clustered for performance, availability and capacity.

**Reliability** - Symantec SFS is designed from the ground up to be highly reliable and available. Technologies include point-in-time copy or snapshots, integration with backup/restore, replication and archiving technologies as well as a scalable field-proven commercial file system.

**Availability** - Tied to reliability is availability, another core tenant that Symantec SFS is built around, to provide highly available and reliable data protection and continued access to information when and where needed. This includes high availability features such as redundant file access servers to eliminate single points of failure including leveraging highly available existing or third party external storage systems.

**Integration** - Symantec SFS supports mixed workloads and applications from PACS imaging data to Oracle or other database systems. Another feature of SFS is the pre-integration of Symantec backup/restore data protection tools.

**Flexibility** - Symantec SFS supports different tiers of storage including high performance Fibre Channel or SAS disk drives for time sensitive applications and lower cost, high capacity SATA disk drives for less frequently accessed data. SFS can start in small configurations and scale in terms of performance, availability and capacity to meet changing needs while re-using existing hardware.

**Ease of use** - Integrated data and storage management enabling file sharing to co-exist with different applications to enable ease of use. As a scalable NAS file serving solution that leverages different vendors' server and storage hardware, Symantec SFS also enhances ease of use leveraging LAN, server and storage skill sets.

**Performance** - Symantec SFS is not bound by the limits of a single NAS storage system in that as more storage is added, additional file serving nodes can also be added. The result is the ability to scale performance, availability and capacity to meet the needs of different applications' performance and quality of service needs.

**Affordability** – The abilities to pay-as-you grow, leverage and re-use existing servers and storage hardware combined with built-in features such as snapshots, and high-availability clustering for availability combine to reduce hidden fees.

Of these attributes, three stand out in particular: scalability, high-availability and low cost. Pound-for-pound, SFS offers a great value to the healthcare along with other industries IT data sharing and storage needs. Learn more about Veritas Storage Foundation Scalable File Server by Symantec along with other related topics at [www.Symantec.com](http://www.Symantec.com).

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### **Conclusion**

Scalable file severing solutions, such as Symantec SFS, for healthcare enable modular growth allowing cost conscious organizations to pay as they go while reducing costs by leveraging existing owned server and storage hardware. Symantec SFS leverages time-tested software for file and data management while supporting industry standard file sharing including NFS for UNIX or Linux as well as Windows with CIFS.

Additional interoperability is in the form of support for SAS along with Fibre Channel attached storage systems that support Fibre Channel, SAS and SATA tiered disk storage to meet various performance, availability and capacity requirements. Another benefit of the solution is the integration with other Symantec data protection software to help remove complexity while improving on availability along with supporting BC and DR requirements.

With a continued trend of more data being generated and stored for longer periods of time, scalability of file serving solutions will become more important as will cost efficient and cost effective storage solutions.

The bottom line is that Symantec SFS provides a comprehensive, highly scalable file serving solution in a storage-agnostic manner with the proven reliability that healthcare organizations of all size require at a lower cost compared to traditional file serving solutions.

### **About the author**

Greg Schulz is founder of Server and StorageIO, an IT industry analyst consultancy firm and author of the books *The Green and Virtual Data Center* (CRC) and *Resilient Storage Network* (Elsevier). Learn more at [www.storageio.com](http://www.storageio.com) or on twitter @storageio.

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