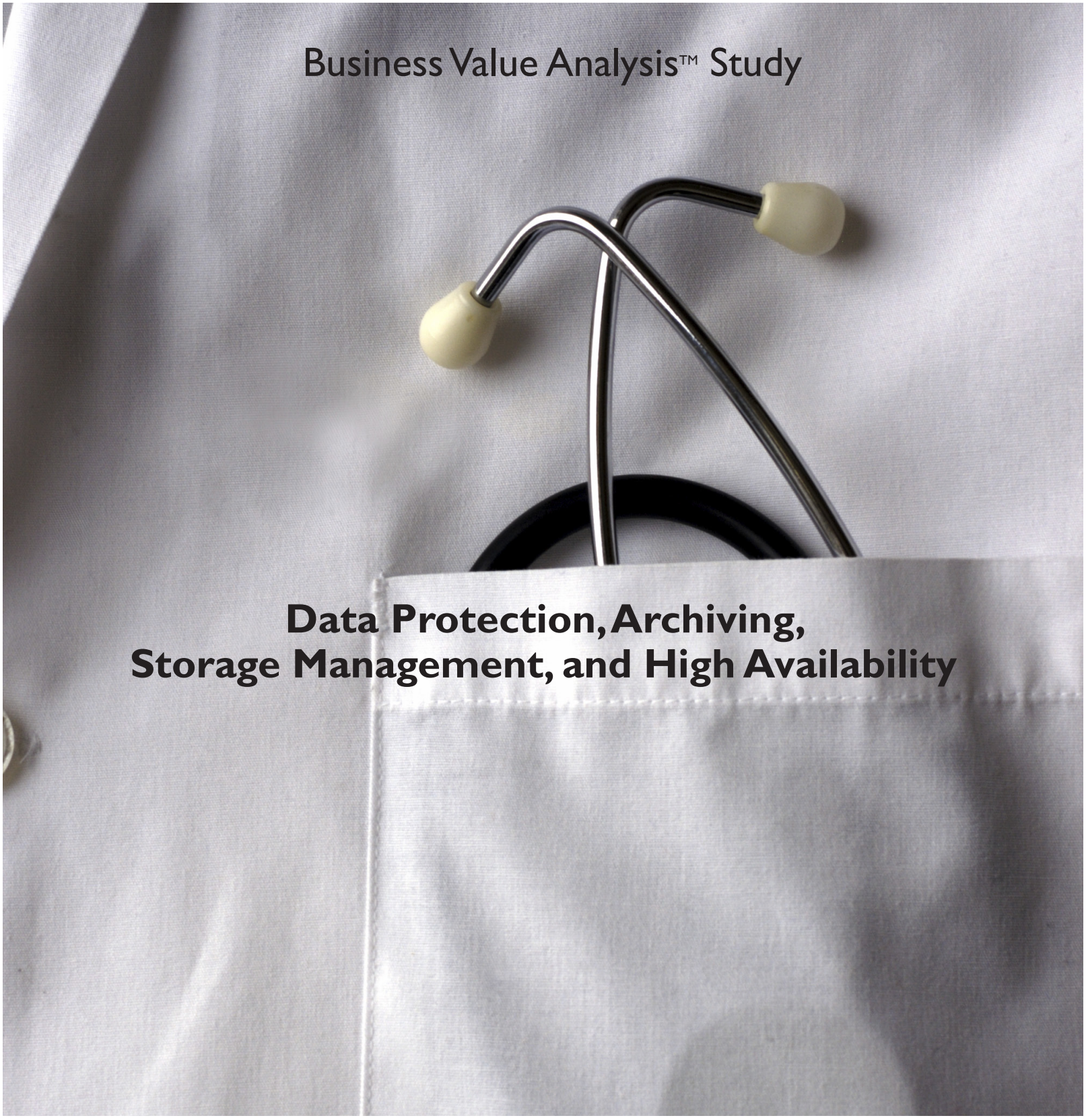
Business Value Analysis™ Study



Data Protection, Archiving, Storage Management, and High Availability

Sponsored by

symantec™

Baptist HEALTH SYSTEMS

Research and Analysis Conducted by

THE ALCHEMY SOLUTIONS GROUP

Contents

© 2009 The Alchemy Solutions Group. All Rights Reserved

Greg Malacane, Director, Research & Publishing
gregmalacane@alchemygroupinc.com

THE ALCHEMY SOLUTIONS GROUP

Executive Summary

Overview

Mississippi Baptist Health Systems (MBHS) is the largest private general hospital in Mississippi. From its modest beginnings in 1908 as a clinic run by two physicians, MBHS is now a major medical center, with nearly 600 patient beds and a variety of health and medical services for patients of all ages. The information services (IS) department at the hospital is a centralized operation, with one data center that supports the main hospital and eight outlying clinics. The IS department has more than 55 full-time staff members, including seven network engineers.

Barriers

The nature of MBHS' work requires instantaneous access to electronic medical records that impact patient care. The hospital's distributed network of patient-care locations, however, hampered the ability of staffers to gain immediate access to archived health records. The IS department noted that a major communications barrier stemmed from the way information was stored: data was housed in hundreds of "siloed" servers, underutilizing 95 percent of the storage space. At the same time, archive data volumes grew from 10 terabytes (TB) in 2004 to 130 TB in 2009, a pace expected to continue. MBHS, therefore, needed a way to simultaneously manage this growth and contain costs. The existing backup-and-recovery solution was heterogeneous and unreliable, resulting in unacceptably long delays for patients and doctors to access requested files. Further complicating matters, the hospital faced numerous compliance and governance challenges—stemming from the need to meet federal Health Insurance Portability and Accountability Act (HIPAA), as well as state regulations and hospital quality standards—that required a more robust and efficient storage management solution.

The Solution

To address these challenges, MBHS worked together with Symantec and Symantec partner, IBM, to launch a four-phase effort to overhaul and upgrade its storage infrastructure within MBHS' budgetary requirements. The process is proceeding according to the following steps:

- Phase 1 — Consolidated hospital data onto an IBM enterprise disk storage system and standardized backup operations on Veritas NetBackup 6.0.
- Phase 2 — Consolidated all backup and archive data—previously distributed across five backup libraries using three software tools—onto an IBM enterprise tape library using Veritas NetBackup 6.0 and Symantec Enterprise Vault File System Archiving.
- Phase 3 — Improved performance and reduced redundancy in the high-speed IBM server environment with Veritas Storage Foundation HA providing volume management for the Symantec Enterprise Vault System Archiving and Veritas NetBackup servers. Added failover capabilities during maintenance of the backup server by implementing Veritas Cluster Server. Worked with Symantec Business Critical Services to troubleshoot any problems in the new archiving and data protection systems.
- Phase 4 — Creating a disaster recovery data center that completes the storage management upgrade for MBHS.

Benefits

A Total Operational and Economic Impact (TOEI)™ analysis by The Alchemy Solutions Group found that the Symantec and IBM backup, archiving, clustering, and storage management solutions will produce the following tangible business values for MBHS from January 2005 through December 2009:

- **Backup Labor Productivity Gains and Cost Avoidance:** $843,792 in real and projected IS labor cost avoidance and productivity gains realized from January 2005 through December 2009 by consolidating backup-and-recovery operations with Veritas NetBackup.

© 2009 The Alchemy Solutions Group. All Rights Reserved

- **Storage Solution Cost Avoidance:** $2,393,333 in real and projected storage cost avoidance from March 2007 through December 2009 by using Symantec Enterprise Vault File System Archiving to deduplicate file system data and house it in less expensive storage tiers.
- **High-Availability Hardware Cost Avoidance and IS Storage Productivity Gains:** $52,172 in real and projected cost-avoidance and productivity gains from March 2007 through December 2009 by using Veritas Storage Foundation HA.
- **Archived File Retrieval End-User and IS Productivity Gains:** $94,278 in real and projected productivity gains for both end users and IS staff members from March 2007 through December 2009 with faster retrieval of archived data using Symantec Enterprise Vault File System Archiving.
- **Backup Data-Retrieval, End-User Productivity, and IS Productivity Gains:** $37,766 in real and projected productivity gains for both end users and IS staff members from March 2007 through December 2009 with faster retrieval of files from backed up data using Symantec Enterprise Vault File System Archiving.

About Mississippi Baptist Health Systems

Mississippi Baptist Health Systems (MBHS) began in 1908 as a clinic run by two Jackson, Miss., doctors, John Farrar Hunter and Harley Shands. In 1911, the Mississippi Baptist Convention acquired the clinic property and began operating as Mississippi Baptist Hospital. Through the years, the hospital developed into the state's largest private general hospital. In addition to its nearly 600-bed medical center, MBHS operates a variety of health and medical services at multiple locations throughout the greater Jackson area. Its mission is to serve the community by delivering quality, compassionate medical care and to effectively use education and technology to advance health outcomes.

Fact File: Mississippi Baptist Health Systems

Founded – 1911
Located – Jackson, Miss.
Market Sector – Healthcare Services
2008 Data
Beds – Nearly 600
Physicians – 500
Workforce – 2,500+
IS Staff – 55+
Website – http://www.mbhs.org

The information services (IS) department at MBHS runs an integrated clinical system that relies on electronic medical records being available at all patient treatment facilities. It runs a heterogeneous server environment with multiple major platforms. The IS department aims to support the lifesaving efforts of the medical staff by providing doctors and other hospital professionals with real-time access to patients' health data. The IS department is run by Becky Carruth, the information services director and a 31-year veteran of the organization. Carruth's team is comprised of more than 55 full-time staff members, including seven network engineers. Two of the network engineers central to the storage overhaul are Jimmy Touchstone, senior systems engineer, and Michael Long, senior network engineer.

Business Drivers

MBHS' core business philosophy is that an effective healthcare system thrives on optimal patient care. The hospital's IS department knows that effective technology integration is critical to improving patient outcomes and saving lives—the medical staff needs easy and immediate access to patients' health records 24 hours a day in a way that protects privacy and prevents data loss or damage. An effective solution also must handle the explosion of health information; meet availability, access, and compliance requirements; and be cost effective.

© 2009 The Alchemy Solutions Group. All Rights Reserved

Provide Data Availability for Optimal Patient Care

Doctors and other medical professionals need access to all of their patients' medical records updated to the day of the appointment. This includes not only making the data accessible through workstations, but also ensuring that medical staff members have real-time access to stored or archived data for use in patient assessment and treatment. Information about past test results, laboratory findings, and medical imaging enable medical staff to quickly and cost effectively treat the patient. Without this data, doctors may order unnecessary tests or miss a critical piece of diagnostic information. The IS department needed a solution that would provide immediate, accurate access to comprehensive patient medical records for doctors and staff.

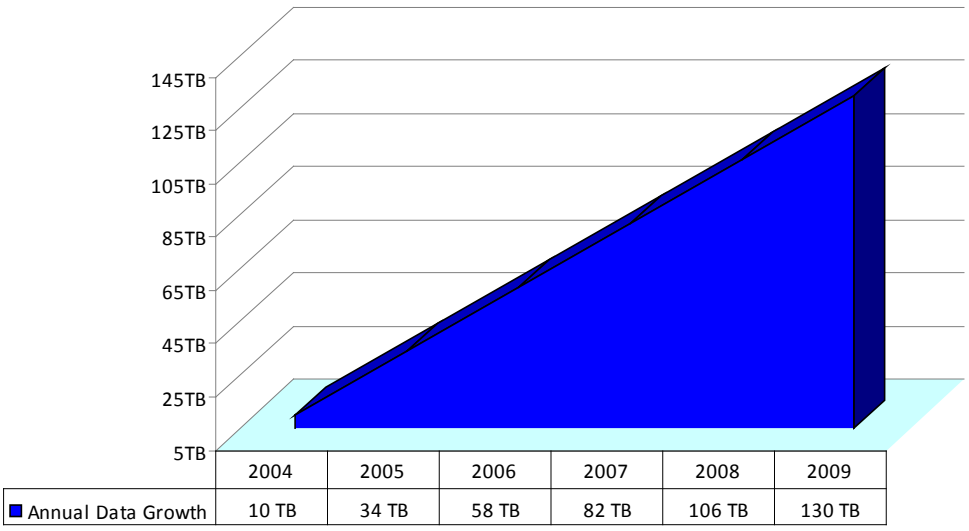
> "We aren't in the car business. We aren't in the grocery business. We're in the life-saving business. And that's where it really has to perform. And it has performed with that marriage of the correct hardware and the correct software and the correct interfacing to the network and the fabric."
>
> **Jimmy Touchstone**
> **Senior Systems Engineer**
> **Mississippi Baptist Health Systems**

Ensure Data Protection

Without a strong data backup solution, MBHS' patient medical records were essentially unprotected from being lost or damaged; a data failure could have seriously hampered patient care. The IS department needed an effective, reliable backup system to preserve patient information.

Manage Data Growth

The growth of data at MBHS exploded as the healthcare system transitioned from paper medical records to electronic files. MBHS was an early leader in what is now a national movement to improve electronic medical records (EMR). The exponential increase in data pushed the hospital to find a way to strategically manage its data storage requirements and, at the same time, to close a widening backup window, which had stretched to nearly 24 hours and put pressure on the system.



	2004	2005	2006	2007	2008	2009
Annual Data Growth	10 TB	34 TB	58 TB	82 TB	106 TB	130 TB

Chart 1: Annual Growth in Mississippi Baptist Health Systems Data

Meet Compliance Needs

MBHS faced a number of EMR compliance standards, including HIPAA, state regulations, and hospital policies. All of these various standards needed to be managed, constantly monitored, and regularly reviewed throughout the year. As the infrastructure of the EMR system grew at MBHS, so did the

© 2009 The Alchemy Solutions Group. All Rights Reserved

complexity of its compliance requirements. The IS department needed a way to manage more efficiently the different regulatory programs to remain in compliance. Moreover, legal statutes required that hospital information that might be used as legal evidence be securely archived for many years and retrieved on demand. The IS department wanted to link this requirement with other compliance needs to be sure the hospital was properly handling and storing sensitive data.

Technology Challenges

MBHS faced several technology challenges that are common in the healthcare industry: improved backup systems and processes, better storage utilization, robust data archival and file retrieval, bolstered data and server growth, and high data and application availability.

Standardize and Improve Backup Process

MBHS needed a backup solution that supported its heterogeneous server environment, which at the time contained multiple backup solutions. With five backup libraries and three backup software tools, IS management was becoming labor intensive. Backups were failing on a daily basis and there was little confidence in the overall backup and recovery processes. The backup window took nearly 24 hours, leaving no time to keep track of failed backups, let alone redo them. In addition, with the tools available at the time, the IS department had to restore an entire database to recover a specific file. MBHS needed to improve its backup success rates and create a granular restoration process that would dramatically reduce the hours and resources spent on backup and recovery.

> "A few years ago, we had hundreds of servers in our data canter and each had its own storage. Ninety-five percent of our storage was wasted. We didn't have redundancy or scalability. Backup systems were siloed and retrieval was slow."
>
> **Becky Carruth**
> **Director of Information Services**
> **Mississippi Baptist Health Systems**

Improve Storage Utilization

With data volumes exploding at MBHS, adding new servers was a costly proposition, and the IS department knew that existing servers were underutilized. MBHS realized it was spending too much money on hardware and on the associated administrative time required to maintain the distributed, siloed, heterogeneous environment. It needed a solution that would dramatically improve its storage utilization rates and control future storage hardware costs in the burgeoning data environment.

Speed File Retrieval of Archived Data

Before it launched the storage upgrade, MBHS maintained its archived data on tapes and stored them offsite. The IS department needed at least 24 hours to respond to requests for data because of the physical, labor-intensive process involved. This timeframe was completely unacceptable in light of the healthcare system's mission to serve patients quickly and efficiently. Speeding the file-retrieval process was essential for alleviating built-up demand and ensuring effective operations going forward.

Manage Data and Server Growth

With a limited IS department staff responsible for the entire data and server environment—combined with the rate of data growth—MBHS faced significant resource constraints. The IS department staff was frequently pulled away from critical issues and projects to handle storage-management and retrieval inefficiencies. MBHS staff members knew they needed to look for ways to manage data and server growth more efficiently without adding headcount.

© 2009 The Alchemy Solutions Group. All Rights Reserved

Achieve High Availability

As stated above, data and application availability was a key driver for MBHS, particularly from a business perspective. The IS department understood that this mandate extended to archived data and the systems on which this data resided. A failover mechanism and a level of redundancy were necessary to prevent interruption in service or lack of access to critical IS services or data in the case of a catastrophic event. A component of high availability, therefore, had to be included in any data backup and recovery effort.

IS Transformation

The IS department at MBHS made a strategic decision in 2004 to invest in a new storage infrastructure that would combine hardware and software into a seamless fabric to support hospital growth and the lifesaving mission of the organization. It spent the next two years conducting research and planning the storage makeover. In March 2006, the IS department launched a multiphase plan that created a standardized data backup, storage, and retrieval system for MBHS.

An underlying philosophy of the MBHS IS department is to create a "strategic forecasted enterprise" that can predict information needs ahead of time and integrate compatible software from the appropriate vendors. This reduces downtime and produces timely access for caregivers so they can readily assist patients. The storage initiative that launched in 2006 was a key component of the strategic forecasted enterprise at MBHS and will impact all future projects.

Action Plan and Decision Process

The MBHS IS team began planning its phased approach to overhauling its storage infrastructure in 2004. Several network engineers at MBHS, led by Senior Systems Engineer Jimmy Touchstone, created a multiphase approach to move the hospital to a centralized storage environment with backup, recovery, and archiving of all of the hospital's data. After two years of research and planning, the first phase launched in early 2006 with three planned phases:

- Consolidate storage environment and improve storage utilization of existing data center
- Standardize and optimize systemwide backup and recovery operations
- Implement enterprise data archiving and data protection infrastructure to meet compliance standards and to provide faster access to electronic patient records

> "Our roadmap was broken up into phases so we could get it done during different years. We showed senior management that if we spent this much right now, down the line we wouldn't have to reengineer the solution. It was a long-term investment in a scalable foundation that wouldn't have to be fork-lifted later."
>
> **Becky Carruth**
> **Director of Information Services**
> **Mississippi Baptist Health Systems**

"Jimmy Touchstone and some of the network administrators put together a roadmap for our senior leadership showing that it was the right thing to do," according to Becky Carruth, MBHS IS director. "Once they started down that road, they continued to hone the plan." Getting the management team on board from the beginning was critical to the ultimate success of the project, she added, and said the IS department structured the storage makeover with that in mind.

The MBHS IS department spent nearly two years conducting research and planning, testing, and talking with different solutions vendors before finally purchasing a Symantec–IBM combined solution in December 2005. The work was initially conducted by a Symantec reseller involving consultants who visited MBHS and sketched out the ideal environment for this centralized storage with backup, recovery, and archiving.

© 2009 The Alchemy Solutions Group. All Rights Reserved

"We told them that, number one, we wanted this to be compliant right off the bat," Touchstone said. "Number two, we wanted to be able to work with it [internally]. And we had to have speed."

Early in the process, while Touchstone and his colleagues developed the comprehensive plan, both Symantec and IBM representatives visited MBHS to begin to design the new systems for the organization.

"The really important part was that Symantec offered us an enterprise solution across all major platforms," Touchstone said. "We were able to do AIX, we were able to do Red Hat, we were able to do Windows. Symantec and IBM both got together and physically came on site and helped design these systems."

The synergy between the two vendors, in fact, contributed to the ultimate success of the project. Both Symantec and IBM worked with MBHS, reviewing the latest system configurations, and all parties contributed feedback to create the solution that was ultimately implemented.

Phase 1: Improve Storage Utilization

During the first phase of the project, in March 2006, MBHS was focused on consolidating its data center environment. Most of the storage that existed was spread out across different devices within the data center. "The data center was completely full," explained Touchstone, "and it wasn't three years old." MBHS selected an IBM System Storage DS8300 enterprise disk storage system and a consolidated archiving device. Medical imaging data was consolidated on an IBM System Storage N5200 disk-storage apparatus. MBHS then moved its existing version of NetBackup from an older system to an IBM System 3850 system upgrading to Version 6.0 to take advantage of its enterprise features and to establish NetBackup as an enterprise standard. This set the stage for the next phase—optimizing backup, recovery, and archiving—that would fully utilize NetBackup's functionality. The new, consolidated servers allowed the IS department to at last complete updates quickly, something that had lagged in the old environment. This consolidated environment also gave MBHS the redundancy that is so critical to a hospital environment.

Phase 2: Standardize Backup and Recovery and Archiving Infrastructure

Backup and Recovery

During the second phase of the project, MBHS concentrated on enhancing its backup-and-recovery operations. The organization had at least five backup libraries and two to three different pieces of software doing the backup, which was a convoluted process highly vulnerable to backup failure. MBHS was unable to meet its backup windows, and recovery of files was a time-consuming process. In March 2007, MBHS added an IBM System Storage TS3500 tape library with hierarchical storage management (HSM) software. It also rolled out Veritas NetBackup as the enterprise standard for backup and recovery, which dramatically reduced the backup process from almost 20 hours to three hours.

> "By deploying NetBackup and Enterprise Vault in conjunction with the IBM tape system, we've been able to consolidate not just one archive solution but every one the hospital uses. We have 100 terabytes on tape and the retrieval speed is virtually the same as if it were on disk."
>
> **Michael Long**
> **Senior Network Engineer**
> **Mississippi Baptist Health Systems**

The IS department made a strategic decision to make tape rather than disk the foundation of the data archive when they added the IBM System Storage TS1120 drives. "Those drives are expensive, but their speed makes all the difference," explained Touchstone. This speed was especially critical for the medical staff when retrieving archived medical studies, because it directly impacted the level of service given to patients. According to Touchstone, another storage vendor's proposal to use disk would have cost $900,000 more than the approach MBHS took to leverage tape with the IBM hardware and the Veritas NetBackup solution.

© 2009 The Alchemy Solutions Group. All Rights Reserved

NetBackup 6.0 standardization cut the amount of administrative time spent on backup considerably, despite the substantial growth in data between 2004 and 2009. In addition, standardizing on NetBackup had a positive impact on backup success rates. The granularity of the NetBackup environment has also been beneficial, enabling the IS department to restore specific files rather than an entire directory or volume.

Archiving

The other part of phase two—a new archiving solution—was also launched in March 2007, after a full year of planning. "We had to identify how much archive data was out there and what we needed to do with it," Touchstone said. It was important that the team be strategic about requirements for the archive system, including researching federal and state laws around data storage and retrieval requirements under HIPAA and other policies. The IS department needed to assemble the research and create a strategic forecast for how these requirements would impact MBHS' data archiving plans.

The high-performance IBM drives coupled with Symantec Enterprise Vault File System Archiving made a measurable impact on archive retrieval speeds. Behind the scenes, the Symantec Enterprise Vault software is working to make the entire environment more cost effective by eliminating the need for MBHS to purchase more servers to store growing medical records.

"What keeps us from having to buy storage servers is the fact that Enterprise Vault can go out there and take all the archive files, reference them, and move them off the storage servers to tape," Touchstone said. "The software still 'thinks' that the data is sitting there on the server, when it's actually sitting in a different location on the tape."

MBHS also purchased Veritas Storage Foundation HA in March 2007 to provide volume management for Symantec Enterprise Vault and Veritas NetBackup servers. It also added Veritas Cluster Server during this phase to provide failover capabilities during maintenance of the backup server. As Touchstone explained, "I'm using Symantec clustering, so I can failover to our backup server, do all my software updates to the main server, and then switch back to the main server and do the upgrades on the backup server. Nobody even knows it's down because it's running."

Phase 3: Application High Availability

The third phase of the project focused on providing a high availability (HA) environment for the electronic medical records that caregivers needed to access in real time. Initially, the high availability is being used to protect the backup data and archive data. As Touchstone explained, "If someone at 2 a.m. in the emergency room needed to pull up an archive, they had to be able to get it."

> "With Veritas Storage Foundation HA, I've improved the ability to manage storage utilization, watch it, and keep it online."
>
> **Jimmy Touchstone**
> **Senior Systems Engineer**
> **Mississippi Baptist Health Systems**

In March 2007, the IS department consolidated new higher-speed IBM M2 systems in its virtual machine (VM) farm to improve performance and redundancy.

MBHS created a partitioned library using Veritas Storage Foundation HA that contained three virtual libraries: a backup library managed by NetBackup; a fast-access virtual library that uses 100 gigabyte tapes with several drives; and an archive library that houses encrypted, archived data on optical disks. The data is stored using 256-bit encryption, which meets data protection compliance rules.

Using Veritas Storage Foundation HA on its Symantec Enterprise Vault and Veritas NetBackup servers, MBHS provided the high availability that the medical caregivers required while controlling the amount of IS resources necessary to manage the environment.

© 2009 The Alchemy Solutions Group. All Rights Reserved

Not only has Veritas Storage Foundation HA provided high availability by enabling virtual libraries and improving management, it has also enabled MBHS to make storage-allocation changes on the fly, without taking applications offline, thereby eliminating the downtime that used to occur. The previous system meant the IS department had to plan for downtime around the hospital's less busy times, most likely between 8 p.m. and 4 a.m. Some downtime was short, but it could last into the next day. The new system ended the IS department's midnight trips to the data center.

Phase 4: The Need for Disaster Recovery

As they began moving through the first phases of the project in 2006 and 2007 and as Touchstone's team refined its goals, they decided a fourth phase—disaster recovery—would complete the system. The goal of this final phase is to enable MBHS, in the event of a major disaster, to keep the health center up and running, complete with all of the information technology services needed for core operations, such as admitting, treating, billing, and discharging. The plan is to create a new disaster recovery data center and standardize on Symantec disaster recovery solutions.

> "The biggest value of Symantec Business Critical Services has been that they've been able to attack the problem quickly and professionally, and they've been able to save us from being down."
>
> **Jimmy Touchstone**
> **Senior Systems Engineer**
> **Mississippi Baptist Health Systems**

"If we have fire or a flood or some type of mechanical or human error in the main data center," Touchstone said, "then the tactical center can come online and keep the hospital operating and keep the data flowing."

Business Critical Services

Separate from the other project phases, in 2008, MBHS enlisted Symantec Business Critical Services to optimize its backup and archive environment. The IS department pushed for this coverage separate from the multiphase storage upgrade project to gain more complete enterprise support from an outside service provider. Symantec was engaged to evaluate the environment at MBHS and recommend Business Critical Services.

One specific example from December 2008 involving system logs illustrates how Business Critical Services immediately improved MBHS' backup-and-recovery environment. "They told me after a day or so they had enough logs and then they set up a small lab recreating our environment," Touchstone said, "and by January we were able to identify that the problem was caused by a faulty Dynamic Link Library (DLL) within the system. They replaced the DLL and we immediately saw our restore times go from five minutes down to a minute."

© 2009 The Alchemy Solutions Group. All Rights Reserved

Network Architecture

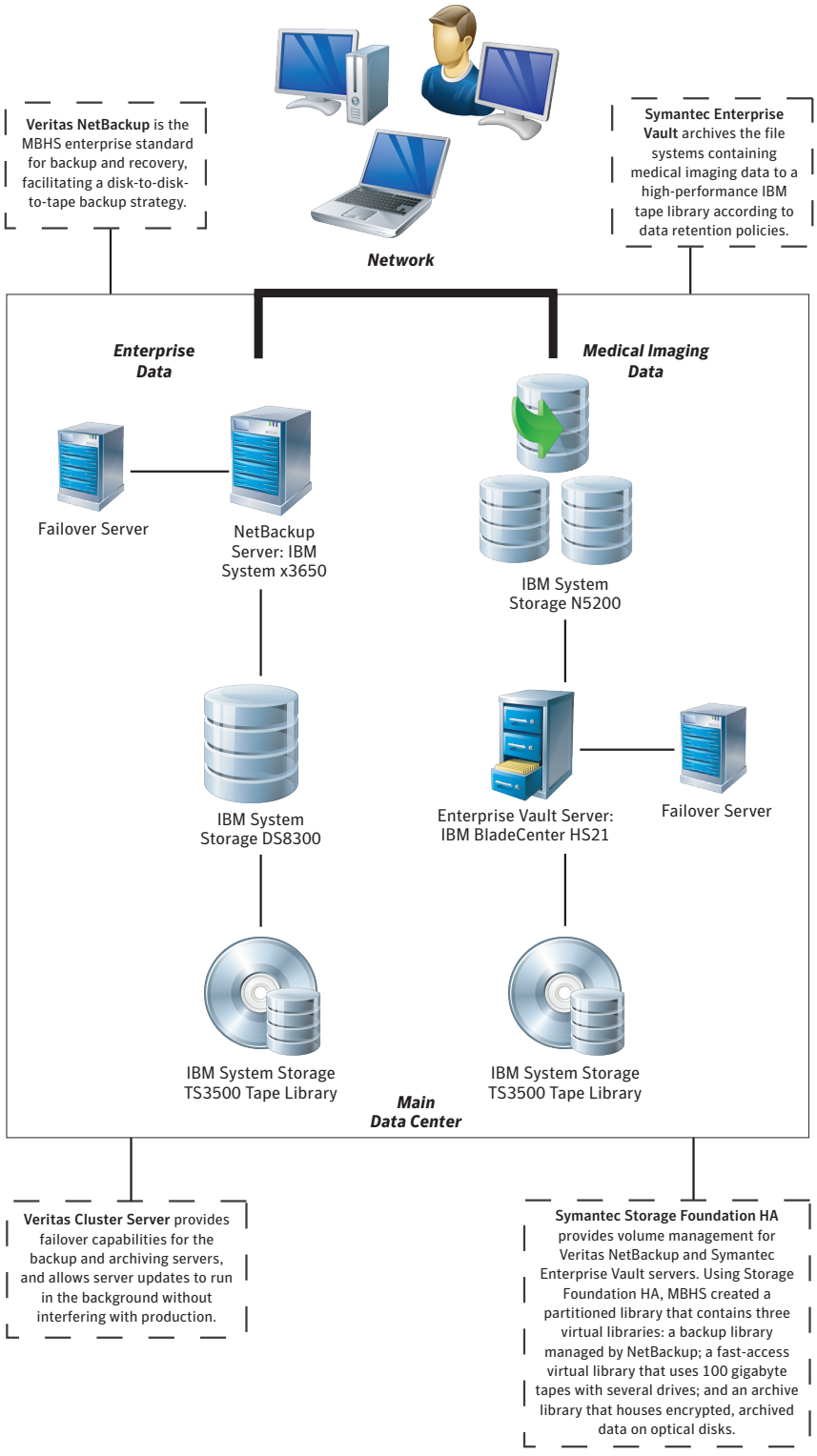


Figure: Mississippi Baptist Health System Architecture Diagram

© 2009 The Alchemy Solutions Group. All Rights Reserved

IS Evolution and Timetable

Phase 1

June 2004

Deployed Veritas NetBackup on HP platform.

March 2006

Installed IBM Enterprise 3850 and deployed Veritas NetBackup 6.0 across enterprise.

Phase 2-3

March 2007

Deployed Symantec Enterprise Vault and Symantec Enterprise Vault.

Installed File System Archiving and Veritas Storage Foundation HA (including Veritas Cluster Server).

September 2008

Symantec Business Critical Services.

Phase 4

Planning 2010

Disaster recovery program.

Business Value Analysis

Symantec data protection, archiving, storage management, and high availability solutions are generating substantial business value for MBHS. The TOEI analysis by The Alchemy Solutions Group identified five quantified metrics, listed below.

- Backup labor productivity gains and cost avoidance
- Storage solution cost avoidance
- High availability hardware cost avoidance and IS storage productivity gains
- Archived file retrieval end-user and IS productivity gains
- Backup data retrieval, end-user productivity, and IS productivity gains

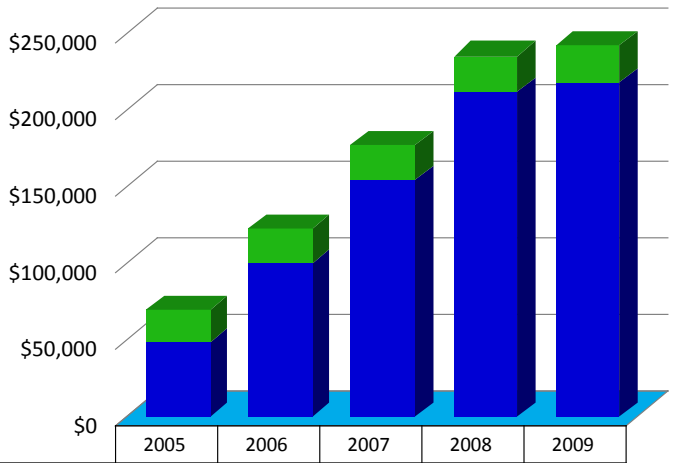
Calculations for all IS department full-time equivalents (FTEs) labor productivity savings are based on the average net mean salary of $52,820[1] and a 3.1 percent[2] average year-to-year salary increase. Likewise, employee productivity gains are based on a net mean average salary of $50,000[3] and a 3.1 percent year-to-year salary increase.

Backup Labor Productivity Gains and Cost Avoidance

Since 2004, data and backup volumes at MBHS have skyrocketed. The data volumes grew from 10 TB in 2004 to 130 TB in 2009. If MBHS continued with the previous siloed backup process in place it would have needed an estimated four more FTEs to manage the data growth they experienced. However, the number of FTEs managing the backup and recovery process actually dwindled from one FTE to a fraction of one FTE's time.

The MBHS IS staff is also spending less time addressing backup-and-recovery–related issues. Managing failed backups and related tasks previously consumed four hours a day. Since the deployment of Veritas NetBackup, this has been reduced to just 10 minutes. The Alchemy Solutions Group estimates the labor cost avoidance of additional FTEs, coupled with the productivity gain from managing issues, the benefit equates to $843,792 in both realized and projected savings from January 2005 through December 2009.

Despite the data growth rate, since the deployment of Veritas NetBackup in 2004, no additional FTEs have been added. IS spends 96% less time on backup and recovery each day since Veritas NetBackup was deployed, reducing time spent from four hours to 10 minutes daily.



	2005	2006	2007	2008	2009
IS Labor Productivity Gains	$21,318	$21,979	$22,660	$23,363	$24,087
IS Labor Cost Avoidance	$48,197	$99,383	$153,695	$211,280	$217,830

Chart 2: Backup Labor Productivity Gains and Cost Avoidance

© 2009 The Alchemy Solutions Group. All Rights Reserved

THE ALCHEMY SOLUTIONS GROUP

Storage Solution Cost Avoidance

A tiered storage solution that combines both hardware from IBM and Symantec Enterprise Vault File System Archiving enabled MBHS to avoid further investments in hardware to support its growing data archives. By using this solution in conjunction with Veritas NetBackup, MBHS works in an environment that classifies data based on importance and age. A competitive point solution would have cost MBHS $280,000 and require deployment in multiple locations per application. In contrast, the Symantec and IBM solutions together required only a one-time investment, with nominal ongoing maintenance costs. The cost avoidance related to purchasing additional storage is $2,393,333 in realized and projected savings from March 2007 through December 2009.

By deploying a single solution with Symantec Enterprise Vault File System Archiving and IBM hardware to archive data to less expensive storage tiers, MBHS is avoiding significant cost. The single solution with a cost of $350,000 and ongoing maintenance fees replaces six point solutions at a cost of $280,000 and ongoing maintenance fees. New applications deployed would require the point solution and extend the overall cost avoidance.

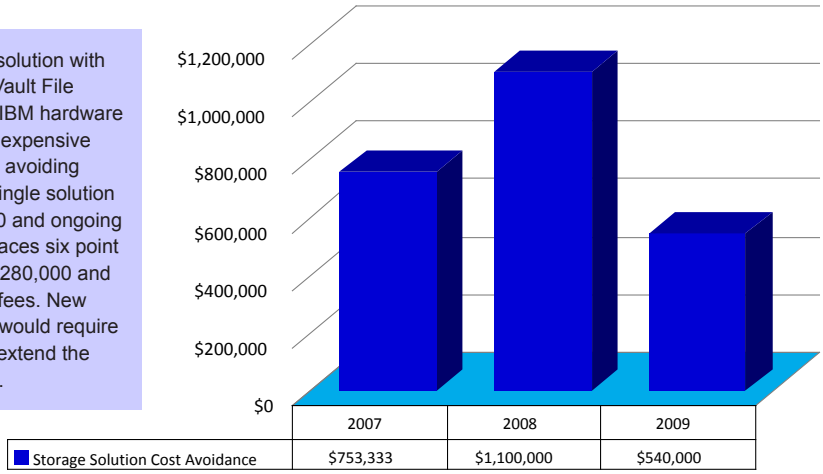


Chart 3: Storage Solution Cost Avoidance

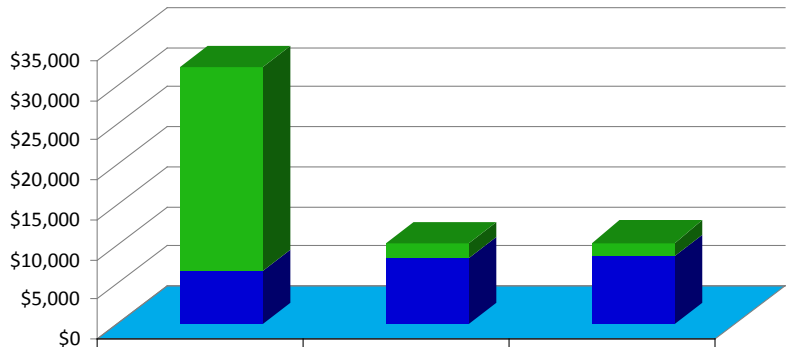
High Availability Cost Avoidance and Productivity Gains

Using Veritas Storage Foundation HA with Veritas Cluster Server for MBHS's backup and archiving environments enabled the organization to avoid costs associated with new hardware purchases. Symantec clustering allowed these services to be failed over to an existing server during routine maintenance and troubleshooting on the main servers, enabling high availability for the important medical records contained in these systems. MBHS saved $29,100 from March 2007 through December 2009 by not having to purchase two new clustered IBM 3850 servers and avoiding the cost of ongoing maintenance.

Symantec clustering also reduced the amount of cluster administration time. Previously, the IS department would often spend as long as a day rebuilding servers that went down, something that might happen a few times a year. Now it only takes one network engineer 10 minutes a day to administer the clusters, which saved MBHS $23,072 from March 2007 through December 2009.

© 2009 The Alchemy Solutions Group. All Rights Reserved

Since March 2007, Veritas Storage Foundation HA has allowed MBHS to eliminate the cost of two clustered IBM 3850 servers in the Symantec environment. Additionally, cluster administration time has been reduced by 90%.



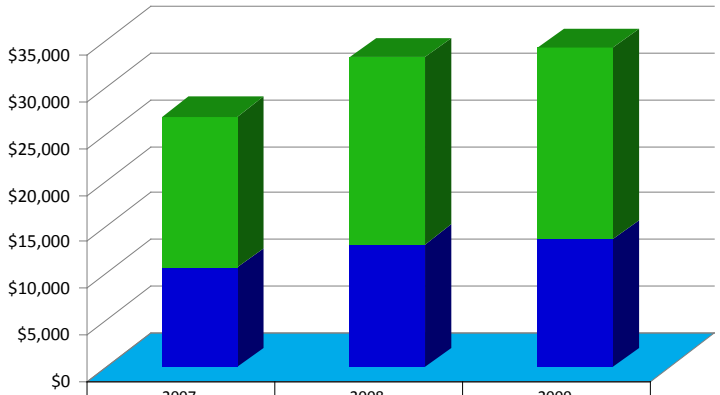
	2007	2008	2009
Hardware Cost Avoidance	$25,500	$1,800	$1,800
IS Storage Productivity Gains	$6,568	$8,126	$8,378

Chart 4: High Availability Hardware Cost Avoidance and IS Labor Productivity Gains

Archived File Retrieval End-User and IS Productivity Gains

End users and the IS department are pleased with the Symantec Enterprise Vault File System Archiving system installed in March 2007. It once took the IS department 520 hours annually looking for archived data to meet caregiver requests, which averaged 20 per week. On 10 percent of those requests, end users spent as many as 820 hours annually waiting for the archived information. Now requested archived files are retrieved in real time and delivered to the caregivers when they need the information. End-user wait time has been eliminated; in addition, the time the IS department used to spend retrieving archived files dropped significantly. MBHS' projected productivity gains will equal $94,278 from March 2007 through December 2009.

File retrieval of archived data is faster since Symantec Enterprise Vault File System Archiving was deployed in March 2007. Based on an average of 20 retrievals each week, IS now retrieves files in real time for a 100% savings of time. With the Storage Foundation HA solution, end users now do not incur any down time.



	2007	2008	2009
End-user Productivity Gains	$16,166	$20,000	$20,620
IS Productivity Gains	$10,673	$13,205	$13,614

Chart 5: Archived File Retrieval Productivity Gains

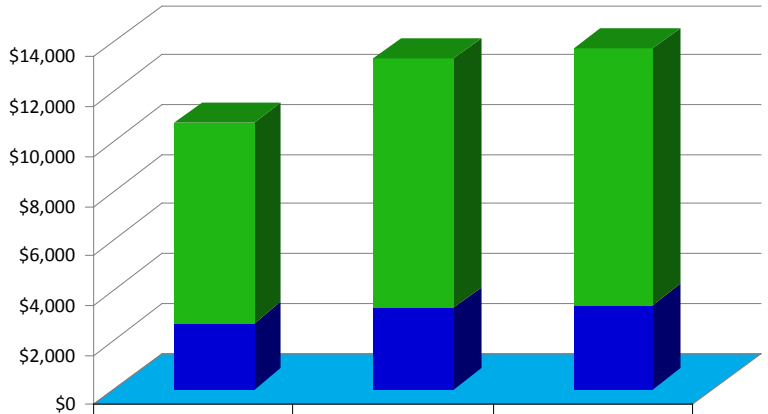
Backup Data Retrieval, End-User Productivity, and IS Productivity Gains

Since implementing Veritas NetBackup in March 2007 the file-retrieval process for backup data is faster, positively impacting end users and the IS department. The IS department previously spent 130 hours annually looking for backup data to meet caregiver requests, which averaged five per week. On 20 percent of those requests, end users spent as many as 416 hours annually waiting for the backed-up information to be retrieved. Now the files are retrieved in real time and delivered to the caregivers when they need them. End-user wait time has been eliminated and the IS department's time to retrieve backed-

© 2009 The Alchemy Solutions Group. All Rights Reserved

up data is dramatically reduced. MBHS will see $37,766 in productivity gains for both caregivers and IS department staff from March 2007 through December 2009.

Retrieval of files from backup data is also faster since Symantec Enterprise Vault File System Archiving was deployed. Based on an average of five retrievals each week, IS now retrieves the files in real time for a 100% improvement in time spent. End users were unable to be productive during 20% of the file retrievals, but now do not incur any down time.



	2007	2008	2009
End-user Productivity Gains	$8,083	$10,000	$10,310
IS Productivity Gains	$2,668	$3,301	$3,404

Chart 6: Backup Data Retrieval Productivity Gains

Conclusion

A healthcare system needs to operate 24 hours a day, 365 days a year. At any moment, caregivers need immediate access to patient records and information, some of which may be archived or located offsite. Protecting the data in health records and making them available to end users are important responsibilities for the IS department. At MBHS, through a phased storage-upgrade project, the IS department now meets these requirements. The clear vision of the IS department, implemented with Symantec software and IBM hardware solutions, delivered the following measurable business values to MBHS:

"The goal was to provide the caregivers with the information that they had to have to make these decisions to save these lives at the speed of 'right now.' Those were the parameters that we set and both Symantec and IBM met them brilliantly."

Jimmy Touchstone
Senior Systems Engineer
Mississippi Baptist Health Systems

- **Backup Labor Productivity Gains and Cost Avoidance:** $843,792 in IS labor cost avoidance and productivity gains realized from January 2005 through December 2009 by consolidating backup-and-recovery operations with Veritas NetBackup.
- **Storage Solution Cost Avoidance:** $2,393,333 in storage cost avoidance expected from March 2007 through December 2009 by using Symantec Enterprise Vault File System Archiving to merge and house data in less expensive storage tiers.
- **High-Availability Hardware Cost Avoidance and IS Storage Productivity Gains:** $52,172 in real and projected cost-avoidance and productivity gains from March 2007 through December 2009 by using Veritas Storage Foundation HA.
- **Archived File Retrieval End-User and IS Productivity Gains:** $94,278 in productivity gains for both end users and IS staff members from March 2007 through December 2009 with faster retrieval of archived data using Symantec Enterprise Vault File System Archiving.
- **Backup Data-Retrieval, End-User Productivity, and IS Productivity Gains:** $37,766 in real and projected productivity gains for both end users and IS staff members from March 2007 through December 2009 with faster retrieval of files from backed up data using Symantec Enterprise Vault File System Archiving.

Notes

1. Bureau of Labor Statistics, May 2008, Occupational Employment Statistics, Computer Specialist National Mean Annual Wage. http://www.bls.gov/oes/current/oes151099.htm.
2. Bureau of Labor Statistics, May 2008, Year-to-Year Salary Adjustment. http://www.bls.gov/cpi/home.htm.
3. Estimated end-user salary provided by Mississippi Baptist Health Systems, June 2009.

© 2009 The Alchemy Solutions Group. All Rights Reserved

THE ALCHEMY SOLUTIONS GROUP

The Alchemy Solutions Group

www.alchemygroupinc.com

The Alchemy Solutions Group is a global management consulting and marketing research firm providing program level support to senior IT, sales, marketing, and customer reference professionals in Fortune 1000 companies. Alchemy's Research and Publishing services help clients assess the economic impact of leading technology solutions in the global supply chain.

The Total Operational and Economic Impact (TOEI)™ Research Practice delivers public and private research services that measure a product's positive and potentially negative impact in post-implementation environments. Alchemy's Business Value Analysis (BVA)™ is one of the public communication mediums available for this research.

Alchemy leverages deep industry expertise and formal research best practices to help business leaders understand the key attributes of and constraints on corporate performance. TOEI research enables our clients to make decisions based on the operational and economic impact of select products and services, and help support integrated, marketing best practices.

Stanley King – Managing Director

stanleyking@alchemygroupinc.com

As MD of The Alchemy Solutions Group, Stanley King is responsible for establishing strategic relationships with executives who are committed to understanding the economic impact that products and services have in the global supply chain. Stanley's international sales and marketing experience and ongoing research efforts provide industry executives with the candid insight required to educate employees, customers, and their extended supply chains. The repurposing of TOEI research has proven valuable in terms of IT procurement, product development, go to market planning, enterprise sales, and long term customer support.

Prior to founding The Alchemy Solutions Group, Stanley served in the software industry for 19 years, specializing in mergers and acquisitions, executive management, field operations, sales management. With global experience in large technology companies like Oracle and in smaller technology start-ups, Stanley brings a wealth of insight in the support of Research and Publishing efforts at The Alchemy Solutions Group.

The information contained herein is subject to change without notice. The only warranties for products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. The Alchemy Solutions Group and Symantec shall not be liable for technical or editorial errors or omissions contained herein.

© 2009 The Alchemy Solutions Group. All Rights Reserved

Greg Malacane, Director, Research & Publishing
gregmalacane@alchemygroupinc.com