

# KishHealth System speeds delivery of medical records with HP Converged Storage

KishHealth System improved the response time of its electronic medical records system and provided scalability for its PACS with HP Converged Storage



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Gary Paxson, Director of information systems, KishHealth System

**HP customer case study**  
HP Converged Storage improves performance of healthcare EMR and PACS systems

**Industry**  
Healthcare

## Objective

Upgrade its storage systems to provide the scalability and performance needed by its EMR and PACS systems

## Approach

Provide the performance required for its EMR system in a MEDITECH-certified solution and increase available storage for PACS images

## IT improvements

- Reduce management requirements of storage system
- Eliminate system performance decline during backups with StoreOnce backup
- Provide disaster recovery capabilities to help ensure system uptime

## Business benefits

- Reduce storage operations costs for PACS with IBRIX storage
- Reduce storage operations costs for EMR with 3PAR storage
- Improve MEDITECH EMR response time by 60 percent with 3PAR storage, which leads to improved patient routing

## A picture is worth 1,000 GB

Even the most diehard photographers have made the transition to digital photography. It just has too many benefits to ignore. Consumers have seen the capabilities of cameras increase dramatically. These increases in performance have brought about a need for increased storage. As the size of images increases to several megabytes each, even casual photographers have seen their need for storage increase and consumer-level hard drives that can store several terabytes of data are now common.

If one photographer can easily use terabytes of storage, imagine the storage requirements of your local hospital. Hospitals have also transitioned to digital imaging for their X-ray computed tomography (CT), magnetic resonance imaging (MRI), and other imaging equipment. These images are stored in picture archiving and communication system (PACS) solutions. By replacing hard copies of images, PACS provides improved access to the records—including remote access. It can also interface with other medical systems like electronic medical records (EMR) and be used to provide workflow automation to manage patient exams.

## Seeing the big picture

Imaging isn't the only area going digital in hospitals. Many hospitals are working to become paperless. They are moving to EMR systems and implementing computerized physician order entry (CPOE) to eliminate handwritten, paper-based communications and the associated errors that occur when orders are misread.



## About KishHealth System

KishHealth System is a community-owned health system located in Dekalb, Illinois. It consists of two hospitals and several additional specialty clinics and local doctors' offices. As a non-profit organization, KishHealth promotes community well-being by providing access to quality healthcare and promoting community wellness efforts.

KishHealth System, a community health system in Dekalb, Illinois, is making great progress on its initiatives to get as paperless as possible. It deployed MEDITECH EMR software to enable digital medical records for its 250 physicians and 1,300 employees. It also deployed an Afga Healthcare PACS solution to maintain its digital images.

When the other storage vendor storage system KishHealth was using for its PACS approached capacity, it began to evaluate its future storage needs. "Our dependence on technology was increasing, so replacing the storage for our PACS archive wouldn't address our long-term needs," says Gary Paxson, director of information systems for KishHealth System. "We needed to implement disaster recovery so if something happened at our primary data center we could keep the systems available from our other site."

Although the project initially began for storage for the PACS, it quickly expanded as KishHealth learned how having better storage capabilities could also help improve the performance of its EMR system. "As we learned more about the capabilities on the market, we became very interested in a system that could automate storage-tiering to help us improve the response times of our MEDITECH solution," says Paxson. Its current other storage vendor storage solution was divided into completely separate systems for different tiers of storage, which made it difficult to move data between tiers and also required all of the storage for an application to use the same storage tier.

### Diagnosing the cure

KishHealth wanted to buy a storage system that was certified by MEDITECH, which narrowed the field down to other storage vendor and HP. "The functionality of the HP 3PAR Storage just blew us away the first time we saw it. Add to that its flexibility and the scalability, and we knew it would be a great solution for us," says Paxson. "HP also did a great job of helping us understand their roadmap and their vision for their Converged Storage platforms."

KishHealth also owns an HP LeftHand P4000, which it uses for its VMware View virtual desktop infrastructure (VDI). "Our experience with the HP LeftHand solution was a big factor in the decision. We absolutely love it," says Paxson.

On the other hand, the other storage vendor offering was not so compelling to KishHealth. "As we went through the configuration process with the other storage vendor, their recommendation changed numerous times," says Paxson. "We didn't get the feeling they knew what would work the best for us."

## The healthy choice

KishHealth chose HP 3PAR T400 Storage for its MEDITECH EMR system. HP 3PAR is a certified MEDITECH storage solution. In addition, KishHealth purchased an HP StoreOnce D2D4324 Backup with HP Labs-developed deduplication. The HP StoreOnce system backs up and deduplicates the MEDITECH data, then sends it to the secondary data center, where KishHealth also deployed an HP 3PAR F400.

### Bringing performance to life with 60 percent improvement in response times

KishHealth has seen an immediate jump in performance with the new 3PAR storage. "We have seen the I/O per second increase from 270 to 716 on the HP 3PAR Storage. The response time has dropped from 4.09 seconds to 1.53 seconds," explains Paxson. "MEDITECH is screaming on that system."

KishHealth is using thin provisioning on the 3PAR solution to create a centralized pool of available storage rather than allocating it to specific applications. Thin provisioning has reduced the allocated storage by 62 percent.

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Gary Paxson, Director of information systems, KishHealth System

Beyond the performance benefits, the ease of use is a major benefit. "The 3PAR management console is intuitive and makes common management tasks simple," explains Paxson. "The management tools are very consistent with our previous experience with the HP LeftHand and the HP BladeSystem, so we could start using it without any additional training."

### The next steps to health

KishHealth will further improve the performance of its MEDITECH solution when it deploys BridgeHead Integrated Serverless Backup (ISB), offered through MEDITECH and BridgeHead Software. Currently it takes up to six hours to run backups on the MEDITECH system.

## Customer solution at a glance

### Hardware

- HP 3PAR T400 Storage
- HP 3PAR F400 Storage
- HP IBRIX X9320 Storage
- HP StoreOnce D2D4324 Backup
- HP LeftHand P4000 Storage
- HP ThinPro t5565

### Software

- HP StoreOnce deduplication
- MEDITECH EMR
- Afga Healthcare PACS
- VMware View v4.6

### Operating System

- Microsoft® Windows® Server 2008 R2

### Network Protocols

- 10 GB Ethernet
- 1 GB Ethernet
- 8 GB Fibre Channel

KishHealth runs the backups at night to limit the impact on users, but these are 24-hour a day systems, and the performance of the applications is significantly degraded during the backup process. “With the I/O performance of the HP 3PAR systems and the fact that the BridgeHead software uses snapshots, we expect the backup to be completed in minutes,” says Paxson. “We’ll have an extremely short backup time with BridgeHead. Then, with the backups being deduplicated by StoreOnce and then replicated to our backup storage systems, we are taking multiple leaps forward in the optimization and stability of our MEDITECH EMR system.”

KishHealth has also decided to move its VMware View VDI solution from the P4000 to the 3PAR storage. This move will help improve the response times of its desktops and reduce wait times for patients. The P4000 will be kept in service to support other storage needs.

## Just the PACS

For its Afga PACS storage, KishHealth selected an HP IBRIX X9320 Storage. It chose the IBRIX solution because of its capacity and scalability. The StoreOnce backup solution also deduplicates the PACS data and sends it to another IBRIX system at the secondary data center. “The system the other storage vendor proposed for our PACS solution would have been between 60 and 70 percent capacity from day one. That wasn’t very comforting,” says Paxson. “On the other hand, the HP system was between 30 and 40 percent capacity, but had the ability to expand and take that down to five to 10 percent.”

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The deduplication capabilities of the StoreOnce backup system are very beneficial for this solution. 58 TB of user data is being reduced to 4.3 TB of disk space on the backup system. This is a 92 percent reduction in storage space required.

A small project to address capacity issues on its PACS quickly grew as KishHealth learned of the benefits it could obtain from HP storage and backup systems. By replacing the storage for its MEDITECH EMR system with 3PAR, it has dramatically improved performance and reliability. Upgrading to the IBRIX X9000 has relieved its capacity issues on its PACS and provided room for years of growth. The StoreOnce backup solution along with the BridgeHead software have addressed the hospital’s performance issues during backups. KishHealth can now confidently continue to implement additional solutions to reduce paper in the hospital knowing that its storage systems have the performance and capacity to meet its needs for years to come.

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