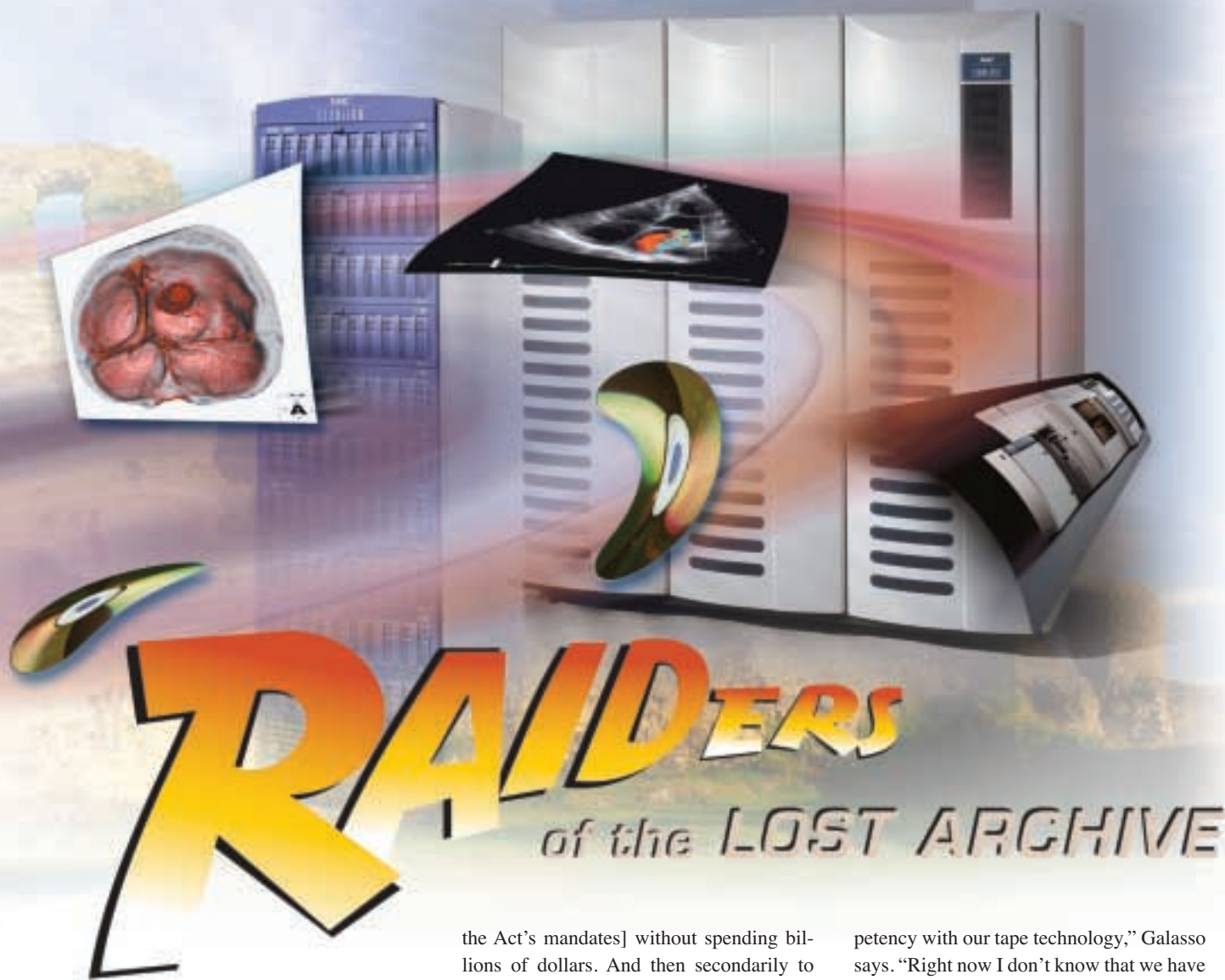


## COVER STORY



The typical questions surrounding storage still include whether to have a server attached approach or network attached storage (NAS), and whether to have local or offsite storage. Choices involve whether to manage the storage internally or pool it across multiple servers.

### The HIPAAcratic oath

As HIPAA looms large on hospitals' horizons, the concerns mount in direct proportion to the growing information storage needs. "In the IT environment of the hospital, their biggest fear with HIPAA, I think, is number one: how are we going to [meet

the Act's mandates] without spending billions of dollars. And then secondarily to that is, how are we going to handle this huge [amount] of information that is going to be coming from cardiology and radiology in an environment that we're already at a window that we can't afford to expand," says John Galasso, StorageTek's (Louisville, Colo.) manager of healthcare business development.

StorageTek offers five different types of tape, the T9840B tape being the fastest with 19 megabytes per second of transfer. As healthcare moves to a total digital age with the electronic medical record and eventually the computerized patient record, which will allow multimodalities and information to be displayed on the same screen, StorageTek sees itself well placed in the migration.

"All that is going to need to be backed up and protected and that's [our] core com-

petency with our tape technology," Galasso says. "Right now I don't know that we have a hard and fast Storage Area Network (SANs) strategy. We offer SANs in larger enterprises. We also offer network attached storage as a smaller enterprise solution. I believe right now we are the only company that can say we have built a multivendor, multimodality storage archive disaster recovery system in a hospital."

The solitary information island rapidly is disappearing, thanks in part to the driving force of HIPAA. "Every time [you] allow a department to set up an individual archive, [you] have a potential privacy and security breach," Galasso says. "So it makes more sense to move from a department mentality . . . and one of our strengths is the scalability of the storage we provide. We can store multiple hundreds of terabytes in one place and have it secure, safe and automatically backed up."

### RAIDing the Archive

The **University of Iowa's Hospitals and Clinics** (Iowa City, Iowa), which perform more than 216,000 imaging procedures a year, recently purchased **Eastman Kodak Co.'s** (Rochester, N.Y.) DirectView PACS, including **EMC Corp.** (Hopkinton, Mass.) RAID storage. The imaging volume increases brought about expanded storage needs, some of which resulted from the system's four multislice CT scanners.

"We watched the performance of the original archive and could not keep up with the load demands we were putting on it," Dave Owen, technical director of radiology engineering for the system says. "It wasn't a matter of the pipes not being big enough. It was just the archiving protocol; the structure of the old archive just couldn't keep up." They also have four MRIs that contribute significantly to the load.

Throughput was a primary issue. When they started including multislice CTs in the old archive, the system became problematic. "The whole processor capability was being taken up by this and everything would backlog," Owen says. "For example, emergency room CR exams would get caught in a queue because of all these CTs coming through, and we wouldn't deliver the images back for maybe 20 minutes, sometimes upward to an hour."

The speed of the new archive with the EMC RAID, Kodak's latest archive server release and the StorageTek tape library for long-term archive have met the system's needs. "We've really tried to test it and artificially have thrown huge loads at it, and it hasn't missed a beat," Owens says. "It's kept up and lived up to our expectations and our needs."

The hospital and clinic system intends to build up to multiterabytes and will expand RAID capacity as needed and without taking down the system.

Kodak says it is putting a lot of emphasis on increasing the amount of RAID storage that its customers use for short- or mid-term storage. "The reason we have done this is that historically we've found that there has not been enough RAID storage primarily because of price concerns that have included our

[PACS] systems," says Ken Rosenfeld, director of PACS & RIS and R&D for Kodak. "We have been leveraging digital tape libraries to make sure there is enough storage online such that they're able to do the type of workflow they need, and pull the number of studies as they're reviewing their current cases."

Better power here predictably translates into improved workflow. With the pre-fetching feature for prior studies, Rosenfeld says the customer has flexibility

with a much larger amount of storage and partnering with EMC to do so," Rosenfeld says. Kodak also uses StorageTek's 9840 tape technology, which has proven to be much more robust, reliable and higher performance than the older digital linear tape (DLT) technology.

### Sharing and openness

Whatever the storage solution decision as HIPAA hovers over hospitals nationally, all should be thinking open standards. "The standards are the daily reality in the IT world that guarantees that their system will remain upgradable, that data migration will be possible and a guarantee against premature obsolescence," says Henri (Rik) Primo, division manager of clinical networking PACS for **Siemens Medical Solutions** (Iselin, N.J.).

And as hospitals including Mass General, the Cleveland Clinic and others build archives that are accommodating

in defining that automated process based upon a certain set of text, date range of priors, most recent study, etc.

"They're configurable and powerful," Rosenfeld says. "That's a good thing because we're making sure we're not pulling data from archives we don't need to pull." When the [clinician] is presented with information he needs to diagnose a patient, he isn't presented with a list to search for the relevant case. He has only what he needs to see.

In the past, performance and pushing the tape libraries beyond what they were normally capable of handling without failure or mechanical problems were issues. "Now with DirectView PACS, we're offering systems

multiple vendors and multiple departments, your mother was right about the concept of sharing. "We have got to find a way to afford HIPAA compliance, and you can't do that by spending money in every department," says StorageTek's Galasso. "You need to have a centralized, sharable resource that provides the performance you need clinically and the regulatory compliance you have to meet in order to stay in business."

Galasso says HIPAA will continue to be a moving target. "It's not going to be a revolutionary implementation in healthcare where we're suddenly doing good data management," he says. "It's going to be an evolutionary opportunity as well." 