Clinical applications are delivered more efficiently with an EMC information infrastructure

As one of the largest pediatric outpatient centers in the nation and Alabama’s only pediatric Level I trauma center, Children’s is the tenth busiest pediatric medical center in the U.S. It is also home to the Children’s Center for Research and Innovation, where researchers and medical professors work together to find new ways to prevent and cure pediatric illness and disease.

With the intent to attract the best clinicians, Children’s Health System continues to build out its IT infrastructure using leading-edge technology to create an optimized work environment designed to facilitate exceptional patient care.

An area slated for improvement was in radiology. In the previous environment, diagnostics were supported by both physical X-rays and a tape-based archive solution which was nearing capacity. Locating X-ray films, some of which required retrieval from offsite locations, could take anywhere from 30 minutes to several hours. Because these were physical films and unable to be viewed online, attending physicians and radiologists were often called into the hospital at night to read and interpret X-rays, from the emergency room, for example.

The overburdened tape-based archival system with its slow retrieval times and frequent mechanical problems compounded information access and management challenges, as did the growing complexity and size of radiological data studies. Five years ago a typical imaging study had about 10 images. Now, a single study often contains up to 1,000 images.

The deployment of an integrated Siemens RIS/PACS application, supported by EMC® CLARiiON® CX series systems and EMC Centera® active archiving storage solutions, was chosen to provide fast, convenient electronic access to current and historical medical and radiological information and the scalability to accommodate more than three terabytes of image data being generated every year.

“We have very complex cases that require the radiologists to work shoulder-to-shoulder with our clinicians to interpret films and reach good clinical decisions as quickly as possible,” says Mike McDevitt, executive vice president and CIO. “We wanted a filmless solution that would give our radiologists and clinicians the ability to quickly access and review studies anywhere and at any time. Siemens had the best integrated RIS/PACS solution for our needs and they introduced us to EMC to provide the most appropriate storage solutions for our requirements.”

Information on demand

The transition to the new Siemens Image and Knowledge Management (IKM) syngo software platform, supported by a centralized storage environment consisting of EMC CLARiiON CX series storage for current studies and EMC Centera storage for active archives, now gives all radiologists and clinicians rapid web-based access to present and historical digital images.
“Our staff of eight pediatric radiologists can now perform 140,000 examinations per year versus 100,000 five years ago,” says Dr. Stuart Royal, Radiologist in Chief. “The efficiencies we are realizing in our ability to handle information and deliver it promptly are at least 40 percent greater today.”

By integrating RIS and PACS data into a common platform, supported by a centralized EMC infrastructure, medical information is now tied into radiological information in the most efficient way. The new Siemens IKM syngo software is designed to follow natural workflow, making information available from the emergency room, to radiology, to the operating room, and out to the intensive care units. Radiologists and clinicians can also access these images from home or office to provide phone consultations at any time, day or night.

“The fact that we can get radiologist consultation 24x7 in our emergency department is priceless,” says McDevitt. “That translates to better patient care.”

This dynamic Siemens/EMC solution also makes three-dimensional image reconstructions possible and easily accessible—whether it’s in the operating room, a physician’s desktop, or even on an exam room monitor in clinics such as orthopedic, ENT, and neurology.

“To be able to show patients a three-dimensional image at the clinic is very helpful and gives them a better understanding of the problem,” says Dr. Leslie Acakpo-Satchivi, a pediatric neurosurgeon and Assistant Professor of Surgery. “Also, with most imaging studies, physicians have had to define three-dimensional pathology with two-dimensional imaging. This solution has been invaluable in enabling us have a three-dimensional reconstruction to virtually see the patient’s anatomy and know exactly what to expect before ever making an incision.”

As a teaching hospital, Children’s Health System also finds the Siemens Medical and EMC solution a powerful tool for training and education.

“The solution is particularly valuable for a physician in training who is attempting to understand the pathology and the anatomy we deal with in neurosurgery,” says Dr. Acakpo-Satchivi. “These three-dimensional reconstructions make teaching easier because you can essentially see the pathology as it is, as opposed to trying to reconstruct it from different, smaller views.”

Specifically helping the facility address the challenges associated with tape archiving, EMC Centera with its self-healing architecture now replaces tape with secure, unalterable electronic archives that can also be quickly and easily accessed throughout the network.

“We now have an archive that enables us to readily compare historical images and reports.” says Dr. Royal. “It’s a much more efficient way for radiology to access archived records and it enables us to speed delivery of care.”

**Imaging study reports completed in record time**

Advanced voice recognition capabilities, embedded into the Siemens RIS/PACS solution, supported by an EMC information infrastructure, have also helped dramatically reduce image study reporting times. In the past, a report dictated to tape and processed by a transcriptionist could take anywhere from one to eight hours before review and signoff could take place. Now, a computer-generated
report from a dictation on an imaging study is completed and ready for proofing in minutes. It can then be made available to clinicians who are able to access both the report and associated images on the web-based system.

“While on call one weekend, we did over 300 cases in the hospital,” says Dr. Royal. “I dictated all those cases using our voice recognition system, looked at all the images, many of them with 1,000 images per patient, and was able to get the information out for immediate access. Many people came by and asked how I got the information out to them so quickly.”

Simplified management, business continuity, and room to grow

In addition to the EMC CLARiON CX series system that supports the Siemens RIS/PACS environment, a second EMC CLARiON system is also in place to accommodate other clinical information generated across the health system, including information from remote clinics.

EMC Navisphere® management software helps manage EMC CLARiON-based radiological and clinical data from a single console, while EMC PowerPath® provides server path failover and load balancing.

Within the EMC Centera environment, EMC Centera Viewer displays capacity utilization and operational performance. A second EMC Centera system, located in a separate building, supports replication between the two EMC Centera systems to ensure rapid recovery for continuous patient care if an outage or disaster occurs.

Both the EMC CLARiON and EMC Centera systems are highly scalable, providing the right amount of capacity to accommodate current and future needs and allowing for exceptional investment protection.

“We really liked how Siemens and EMC looked at our requirements over not just a one- or two-year period, but further out to a five-, six-, and seven-year strategy—and the fact that while dealing with integration we could also deal with scalability,” says McDevitt. “The EMC solution is so scalable, we weren’t buying a lot of storage that we didn’t need initially.”

Goals realized

The tight integration of the Siemens/EMC solution, and the outstanding partnership between the two companies, now provide advanced technology to streamline workflow for enhanced productivity and job satisfaction. This, in turn, has enabled the organization to attract and retain the best talent and deliver the highest quality care possible.

“The top three benefits in using a Siemens RIS/PACS system supported by EMC would be speed of information access, the ability to modulate images, and the fact that we can now easily share those images with other specialists,” says Dr. Peter Glaeser, medical director of the Emergency Department.” Since its implementation, our turnaround times have improved dramatically and there are so many things that we can now do with a digital image that we couldn’t do with film, such as zoom-in on certain aspects of an image, increase the contrast, or measure angles. It’s also a great advantage to enable radiologists, neurosurgeons, and other specialists to view the image from a distance, which allows for faster decisions on what’s best for the patient at that point in time.”